NAVAL FACILITIES ENGINEERING SERVICE CENTER

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CONTRACT NO - N47408-99-D-8014

DELIVERY ORDER NO 0015 PIPELINE MODIFICATIONS AND REPAIRS
NAVSTA ROOSEVELT ROADS, CEIBA, PUERTO RICO

DESC PROJECT NO. DESC RRD 01-12

Project Certification Report

Pipeline Repairs and Modifications

NAVSTA Roosevelt Roads, Puerto Rico

Volume I

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ABBREVIATIONS

Abbreviation	Description
a.m.	ante meridian (before noon)
AC	alternating current
ACA	after contract award
ACI	American Concrete Institute
ACM	asbestos-containing-materials
A/E	architect engineer
AGM	above ground marker
AISC	American Institute of Steel Construction
AISI	American Institute of Steel and Iron
ANSI	American National Standards Institute
API	American Petroleum Institute
AROICC	Assistant Resident Officer in Charge of Construction
ASA	American Standards Association
ASME	American Society of Mechanical Engineers
AWS	American Welding Society
Bbl	barrel (42 gallons)
BOQ	Bachelor Officer Quarters
BOM	Bill of Materials
Bpd	barrels per day
Cfm	cubic feet per minute
CAD	computer aided drafting
CDRL	contract data requirements lists
CFR	Code of Federal Regulations
COMNAVBASE	Commander of Naval Base
COR	Contracting Officer's Representative
COTR	Contracting Officer Technical Representative
CP	cathodic protection
CPAF	cost plus award feed

Abbreviation	Description
ºC	degrees Centigrade
DC	direct current
DESC	Defense Energy Support Center
DFM	Diesel Fuel Marine
DFSP	Defense Fuel Support Point
DO	Delivery Order
DOD	Department of Defense
DOT	Department of Transportation
ECDET	East Coast Detachment
EGP	Electronic Geometry Pig
EPA	Environmental Protection Agency
ERD	environmental review document
FAR	Federal Acquisition Regulation
FCCM	facilities capital cost of money
FDS	Fuel Distribution System
ft.	feet (')
FISC	Fleet Industrial Supply Center
F76	diesel fuel
ºF	degrees Fahrenheit
Gal/ gal	Gallon
Gal/day	gallons per day
Gal/yr	gallons per year
GFI	Government Furnished Information
GOCO	Government Owned Contractor Operated
Gpm/ gpm	gallons per minute
ISA	Instrument Society of America
JP-5	Jet propulsion fuel, grade 5
JP-8	Jet propulsion fuel, grade 8
lbs/hr	Pounds per hour

Abbreviation	Description
lbs/yr	Pounds per year
LF/lf	Linear foot
MAC	Military Airlift Command
MAOP	Maximum allowable operating pressure (as per ASME B31.4)
MAWP	Maximum allowable working pressure
mbbl	1000 barrels
MBTU	Millions of British Thermal Units
MCAS	Marine Corps Air Station
MF	Magnetic flux
MILCON	Military construction
MLD	Metal loss detection
MOGAS	Motor gasoline
MOP	Maximum operating pressure
MSDS	Material Safety Data Sheet
N/A	Not applicable
NACE	National Association of Corrosion Engineers
NAS	Naval Air Station
NAVFAC	Naval Facilities
NAVFACCO	Naval Facilities Engineering Command Contracts Office, Washington, DC
NEC	National Electric Code
NESC	National Electric Safety Code
NFPA	National Fire Protection Association
NFESC	Naval Facility Engineering Services Center
NOB	Norfolk Operations Base
NPS	Nominal pipe size
NTR/EIC	Naval Technical Representative/Engineer In Charge
O&M	Operation and Maintenance
OSHA	Occupational Safety and Health Act
P&ID	piping and instrument diagram

Abbreviation	Description
PCR	project completion report
PEP	project execution plan
p.m.	post meridian (after noon)
PEI	Petroleum Equipment Institute
PH	pump house
PI	pipeline indicator
POL	petroleum, oil and lubricants
Psi	pounds per square inch
psia	pounds per square inch, absolute
psig	pounds per square inch, gauge
PWD	Public Works Department
QC	Quality Control
ROICC	Resident Officer in Charge of Construction
RVP	Reid vapor pressure
SF/sf	square feet
SMYS	specified minimum yield strength
TLR	truck loading rack
TVP	True vapor pressure
UT	ultrasonic testing

1. INTRODUCTION

Worley International Inc. (Worley) has been tasked by the Defense Energy Support Center (DESC) under Naval Facilities Engineering Service Center (NFESC) Contract No. N47408-99-D-8014 to provide management, design and engineering services to conduct a Pipeline Integrity Assessment Program (PIAP). The program objective is to assess the integrity and conduct periodic inspections of Petroleum, Oil and Lubricants (POL) pipelines worldwide. NFESC has tasked Worley under Delivery Order No. 0018 of the contract, to provide a Project Certification Report detailing the construction services, labor, materials and equipment necessary for the Contractor to satisfactorily accomplish the tasks for pipeline modifications and repairs set forth in Section 5 of this document at NAVSTA Roosevelt Roads, Puerto Rico.

This Project Certification Report summarizes the work performed by Worley under Delivery Order No. 0018 in preparing for and completing the construction services for the pipeline repairs and modifications. Worley provided qualified personnel, equipment, and services to perform the necessary repair work including provision of all construction services, labor, materials and equipment necessary to repair and modify the JP-5 and DFM pipelines by replacing leaking valves and joints, removing unnecessary valves from valve pits and demolishing the pits, installing above ground valve settings, installing pig launchers and receivers on the 12-inch JP-5 pipeline as well as making the pipeline piggable, and the necessary modifications to allow for annual pressure testing of the pipeline systems.

2. GENERAL SCOPE OF WORK

The scope of this Delivery Order included providing all construction services, labor, materials (except as stated herein), and equipment necessary for Worley International to satisfactorily accomplish the tasks set forth in this document for repairing and modifying the pipelines. All work was directed by the on-site representatives of Worley International, Inc. The services provided under Delivery Order 0018 consisted of:

- Preparing a Work Plan for Repairs and Modifications
- Preparing Pressure Test Procedures
- Preparing a Work Plan for Pigging Modifications
- Preparing a JP-5 Pigging Plan
- Repairs and Modifications to the pipelines
- Pressure testing of DFM and JP-5 pipeline systems
- Execution of Magnetic Flux Leakage (MFL) survey on the JP-5 12-inch pipeline
- Preparing a Project Certification Report for Repairs and Modifications
- Preparing a Pressure Test Report
- Preparing a Certification Report for the Pipeline Pigging Modifications
- Preparing a Pipeline Pigging Report

This document is serving as the Project Certification Report for Repairs and Modifications as well as the Project Certification Report for the Pipeline Pigging Modifications.

2.1 Definitions

The following definitions are used in this Project Certification Report:

1) The **Contractor** is the party that carried out all of the procurement, construction and commissioning of the work. The Contractor, as defined herein, is a subcontractor to Worley International Inc. (Worley).
2) The Worley **Quality Control Auditor (QC Auditor)** inspected all tasks and verified the tasks were in conformance with the Work Plan.
3) The **Worley Site Representative** was the on-site representative of Worley International Inc. for subcontract administration, technical guidance, monitoring execution of the work and coordination with the Government. The Contractor provided all notifications, submittals, reports, requests, etc., specified herein to the Worley Site Representative (not the Government) for review, approval and/or direction.
4) The **Navy Technical Representative (NTR)** and the **Contracting Officer's Technical Representative (COTR)** were the Government's technical points of contact.
5) The **Contracting Officer** is the Government authority having jurisdiction in contractual matters between Worley and the Government.

2.2 Project Responsibilities

2.2.1 Project Organization Chart

An overview of the major organizations and personnel involved in completing the construction on the pipelines is presented in Figure 2.1, Project Organization Chart.

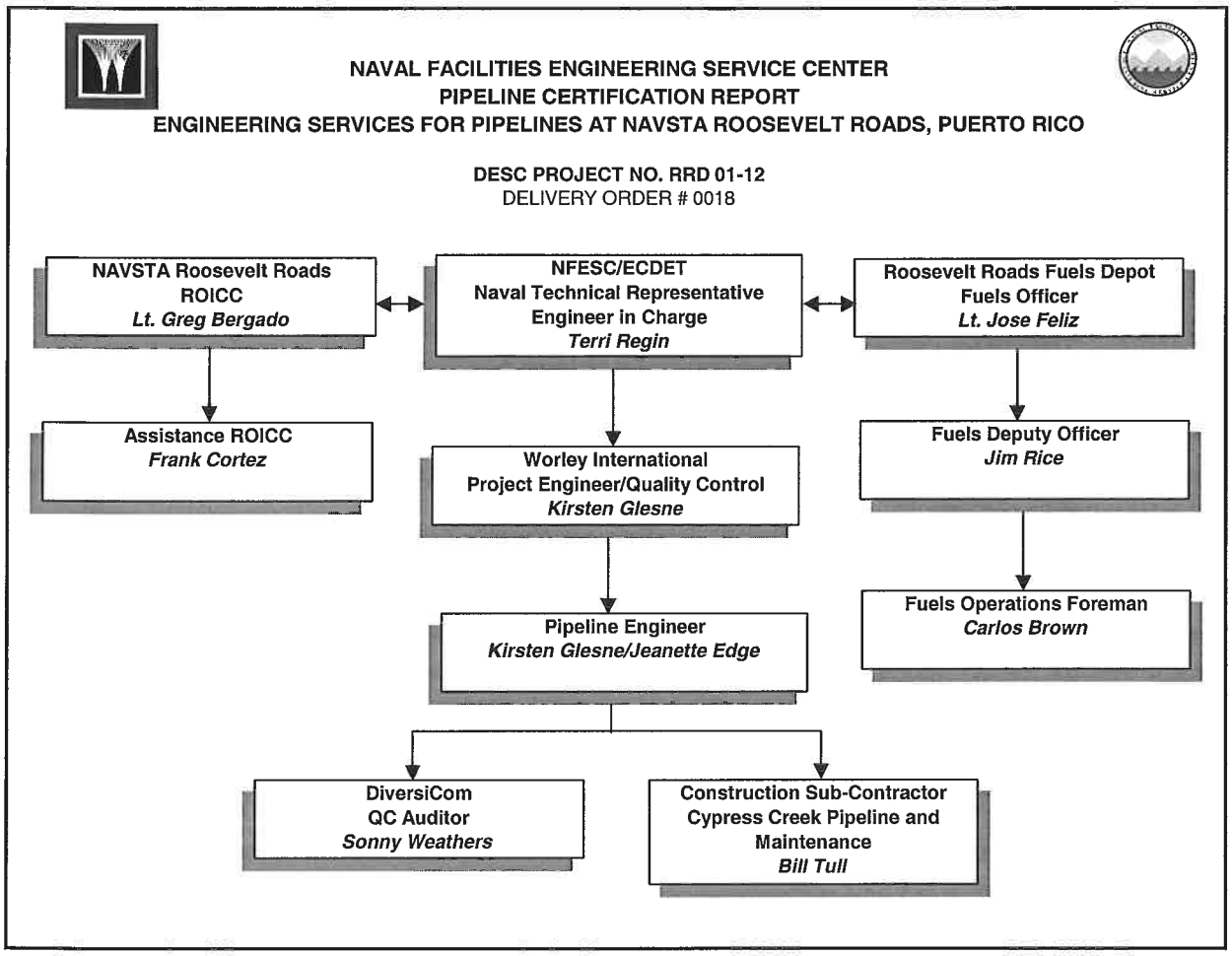


Figure 2.1, Project Organization Chart

2.2.2 Single Point Contacts

Single-point contacts within each organization for the project were as follows:

- NFESC, Navy Technical Representative ..... Terri Regin
- Fuels Officer ..... Lt. Jose Feliz
- Fuels Deputy Officer ..... Jim Rice
- Fuels Operations Foreman ..... Carlos Brown
- ROICC ..... Lt. Greg Bergado

- Assistant ROICC ..... Frank Cortez
- Worley, Pipeline Engineer ..... Kirsten Glesne
- Worley, QC Auditor ..... Sonny Weathers

2.2.3 Sub-Contractor

The following sub-contractors were used to complete the construction at NAVSTA Roosevelt Roads, Puerto Rico:

- Cypress Creek Pipeline Maintenance – Provided construction labor, equipment, and supplies for pipeline repairs and modifications and installation of pig traps.
- DiversiCom Site Development - Provided visual welding inspection for QA/QC for the modifications to the pipelines.
- Riviera Engineering – Provided Vacuum Truck service during pipeline repair and modifications.
- Alonso and Carus Iron Works– Provided radiographic and NDT services for the welds during construction.
- A&A Waste Management – Provided disposal services for concrete and roll-off containers for transportation of discarded steel.
- Steel and Pipes, Inc. – Provided off-site sandblasting, primer and painting materials and labor.

3. PURPOSE

The purpose of this Project Certification Report is to describe the scope of the activities performed during the repair and modifications to the pipelines at NAVSTA Roosevelt Roads, Puerto Rico.

These modifications were essentially divided into the following categories:

- Modifications which insured fuel system integrity, i.e. those modifications required to bring the systems up to current standards, where applicable and ensure compliance with applicable safety and environmental codes and regulations.
- Modifications required which enable annual pressure testing of the systems to be performed in accordance with 49 CFR 195.
- Modifications to the JP-5 12-inch pipeline to enable the pipeline to be pigged for inspection.

The Certification Report has been divided into the following categories:

- Description of Facilities (Section 4)
- Pipeline Repairs and Modifications (Section 5)
- Schedule (Section 6)
- Permits (Section 7)
- Health and Safety Plan (Section 8)
- Drug and Alcohol Testing (Section 9)
- Hazardous Material Control (Section 10)
- Materials and Workmanship (Section 11)
- Quality Control and Testing (Section 12)
- Sketches (Section 13)
- Submittals (Section 14)
- References (Section 15)

4. DESCRIPTION OF FACILITIES

4.1 Location

The U.S. Naval Station at Roosevelt Roads is located on the Northeast side of Puerto Rico, near the town of Ceiba. The approximate location of Ceiba, Puerto Rico is shown in Figure 4.1

Figure 4.1 – General Vicinity Map

4.2 General Description of Facilities

The POL facilities at Roosevelt Roads, Puerto Rico consist of three loading and offloading piers, a diesel tank farm, a diesel truck fill stand, a JP-5 tank farm, a JP-5 truck fill stand, a flight line day tank with filter separator manifold, and 20 hydrants. These facilities were built between 1950 and 2000. The following pipelines are included in this Certification Report: JP-5 and DFM pipelines to pier 3 pump house, pier 1A and pier 1; pipelines from piers to main pump house 1982 and pump house 466; pipelines from main pump house 1982 to diesel fuel tank farm and truck fill stand; pipelines from main pump house 1982 and pump house 466 to JP-5 tank farms and truck fill stand; pipeline from JP-5 tanks to flight line manifold and day tanks.

5. PIPELINE REPAIRS AND MODIFICATIONS

5.1 General

The scope of work for the POL facility repairs and modifications was to upgrade the system and remove unnecessary valve settings, allow pressure testing of the systems to meet 49 CFR 195 guidelines and modifications to the pipeline to achieve inspection by Magnetic Flux Leakage (MFL) inspection tool of the JP-5 12-inch pipeline.

A pre-implementation site visit was conducted by COTR NFESC (Terri Regin), Worley International (Kirsten Glesne and Dale England), and Cypress Creek Pipeline Maintenance (David Brounkowski and Bill Tull) from March 11 to March 15, 2002. This visit had the objectives of discussing the various operational issues and requirements involved in implementing the construction activities at NAVSTA Roosevelt Roads. The report of this visit and it recommendations are provided in the Pre-Implementation Minutes of Meeting, (refer to Appendix J, Section J-17).

5.2 Modifications and Repairs

The modifications and repairs comprised a wide variety of work scopes (refer to Table 5.1) and extended over the fuel system located through the Naval base. These modifications involved changes to all three-fuel distribution systems, i.e. JP-5, DFM-Primary (DFM), and DFM-Secondary (DFM-S)

5.2.1 Work Scope

The final work scope for the NAVSTA Roosevelt Roads modifications and repairs is fully defined in the following deliverables included in this document.

a) Scope of Work Description, (refer to Appendix B)

b) Marked-up Schematics: The Operations and Maintenance Manual schematics (provided as Government Furnished Information (GFI) to Worley), were updated to reflect "As-Builts" status based on the information collected during the construction and repairs process, (refer to Appendix A).

c) As-Built Sketches: Detailed piping sketches to show "As-Built" status based on the information collected during construction and repair process (refer to Appendix A)

d) Bill of Materials, (refer to Appendix I)

e) Materials and Construction Specifications: This covered the requirements for the provisions of all pipeline and equipment procurement, fabrication and construction services for the work, (refer to Appendix D).

f) Quality Control and Testing Specifications: This specification covered the requirements for the provisions of all QC associated with the work, (refer to Appendix E).

g) Submittals, (refer to Appendix H)

5.2.2 Detailed Workscope Definition

In order to clearly define the scope of work, Worley prepared the following for each modification:

a) Scope of Work Description: A detailed description is provided, which in step by step fashion describes the repairs and modifications, (refer to Appendix B).

b) As-Built Sketches: As Built Sketches showing the extent of the piping modifications or repairs has been prepared and included in this document, (refer to Appendix A).

c) Bill of Materials: A Bill of Materials has been prepared and included in this document, based on materials provided to complete the activities of each modification, (refer to Appendix I).

d) Photographs: Photographs both during and after construction have been included in this document, (refer to Appendix C).

5.2.3 Modifications

Table 5.1 List of Modifications

Mod No.	Description	Location	System
1	Remove cross connection between DFM, DFM-S and JP-5 pipelines	Pier 1A	JP-5, DFM, DFM-S
2	Install air eliminators on existing 2-inch vents on DFM, DFM-S and JP-5 pipelines near the cross connection.	Pier 1A	JP-5, DFM, DFM-S
3	Replace stripper piping in VP 27	VP 27	JP-5, DFM, DFM-S
4	Replace two 12-inch and four 16-inch valves at the shore end of pier 1 and pier 1A.	Piers 1 and 1A	JP-5, DFM, DFM-S
5	Replace fourteen 8-inch valves with 4-inch valves at barge end of Pier 1	Pier 1	JP-5, DFM, DFM-S
6	Cut and remove blinded 12-inch vertical column and cap 4-inch piping connected to column	Near VP 27	Unknown
7	Remove valves and fittings inside VP 25, weld in pipe and demolish pit.	VP 25	DFM-S
8	Remove excess piping, valves, and pumps and install two 12-inch valves and spool piece with drain, sampling probe and pressure gauge.	PH 466	DFM-S
9	Remove two blind flanges and weld two caps on pipelines	VP 23	DFM
10	Bring Pier 3 valves above ground, remove all unnecessary valves and fittings, replace with welded pipe and demolish pit.	VP 24	JP-5, DFM
11	Remove three gate valves, install above ground valve setting to isolate DFM and DFM-S, weld cap on abandoned section and demolish pit.	VP 8	DFM-S
12	Abandon DFM-S pipeline from VP 8 to VP 6. Remove valves at VP 6 and VP 7 and weld on caps.	VP 6, VP 7	DFM-S

Table 5.1 List of Modifications

Mod No.	Description	Location	System
13	Remove unneeded valves on 8-inch pipeline from VP 9 (in JP-5 tank farm) to flight line filter-separator manifold). • VP 4 and VP 5, weld in pipe and demolish pit. • VP 2, install spool piece and leave pit intact as it is a common pit with the water line. • VP 6, install a spool piece with low point drain, cap 12-inch abandoned pipeline and leave pit intact. • Install new valve at VP 3, install new spool pieces with new low point drains on each side of valve.	VP 2, VP 3, VP 4, VP 5, VP 6	JP-5
14	Remove two dresser couplings, two valves and tee, install new 8-inch and 12-inch valves and tee for pig launcher/receiver connection.	VP 9	JP-5
15	Install new double block and bleed valves in main pump house 1982, on JP-5 hill, and at tanks as needed to isolate pipeline segment for pressure testing. • Remove valves and fittings below ground at VP 56, install 12-inch pipe below ground, install 6-inch valve setting above ground and demolish pit. • Replace 12-inch valve with DBB valve in VP 10. • Remove 6-inch and 12-inch valves and blind flange in VP 11. • Remove 6-inch valve and install blind flange at Tank 1082. • Replace 12-inch gate valve with DBB valve at Tank 83. • Replace two 6-inch valve in Tank 381 pump house. • Replace two 16-inch and four 12-inch valves with DBB, remove JP-5 valve and install blinds at PH 1982. • Remove meter runs and install two 10-inch DBB valves and pipe spool in PH 1982.	PH 1982, VP 56, VP 10, VP 11, Tank 1082 Tank 83, Tank 381	JP-5, DFM
16	Remove air eliminator on "blow out pit" and weld on cap.	Near DFM-S VP 8	JP-5
17	Replace low point piping and valve on VP 7A	VP 7A	JP-5
18	Remove 12-inch and 6-inch valves, install welded pipe pups and demolish pit at JP-5 VP 9A.	VP 9A	JP-5

Table 5.1 List of Modifications

Mod No.	Description	Location	System
19	Remove 16-inch gate valves, install above ground setting, weld cap on abandoned 4-inch pipe and demolish pit.	VP 8	DFM
20	Remove valve TFD-141 and install pipe.	Near VP 8	DFM
Pigging	Install launcher/receiver and necessary valves on 12-inch pipeline near PH 1982.	PH 1982	JP-5
Pigging	Install launcher/receiver and necessary valves on 12-inch pipeline near VP 9.	VP 9	JP-5

6. SCHEDULE

6.1 General

Where possible, Worley attempted to adhere to the proposed project schedule. Scope changes and additions, operational constraints and unforeseen problems caused the schedule to vary. The actual project construction began on April 15, 2002 and was completed on October 31, 2002.

6.2 Work Hours

The government personnel at NAVSTA Roosevelt Roads generally worked from 7:00 am to 3:30 pm with lunch from 12:00 pm to 1:00 pm. Daily work that required the assistance of these personnel was generally restricted to these hours.

Worley and it's sub-contractors generally worked from 7:00 am to 5:00 pm with lunch from 12:00 pm to 12:45 pm, Monday thru Saturday. When required to complete tie-ins, additional hours were worked.

6.3 Actual Milestone Schedule

Activity	Completion Date
Arrive on-Site in Puerto Rico	15-April-2002
Pipeline Modifications and Repairs	28-June-2002
Installation of Pig Trap Valves	31-October-2002

7. PERMITS

Worley International obtained all construction permits as required to work on NAVSTA Roosevelt Roads. The permitting agencies contacted were as follows:

Permit	Contacted
NAVSTA Roosevelt Roads Excavation Permit	ROICC/Public Works
NAVSTA Roosevelt Roads Hazardous Operations Permit	Fire Inspector
NAVSTA Construction Permit	ROICC/Public Works

Copies of the Excavation, Construction and Hazardous Operations permits are included in this document, (refer to Appendix J, Section J-01).

8. HEALTH AND SAFETY PLAN

The contractor was responsible for implementing his safety program and for the on-site safety of the contractor personnel. The safety plan complied with the requirements of OSHA and the U.S. Army Corps of Engineers "Safety and Health Requirements Manual".

The Contractor also complied with FAR 52.236.13, "Accident Prevention"

The Health and Safety Plan is included as part of this document, (refer to Appendix F).

Cypress Creek Pipeline Maintenance also submitted to Worley and complied with their Health and Safety Plan. A copy of this plan is included in this document, (refer to Appendix G).

9. DRUG AND ALCOHOL TESTING

The Contractor was responsible for implementing his drug and alcohol-testing program. This program complied with the requirements of title 49 CFR Part 199.

10. HAZARDOUS MATERIALS CONTROL

The pipelines contained JP-5 and DFM. The pipeline repair and modification procedures included provisions to prevent spills to the ground and/or waterway. The NAVSTA Fuel Depot personnel partially defueled each system prior to its transfer to the Contractor. However, fuel was still present in the various pipelines. The remainder of the fuel was drained at a low point into a vacuum or transport truck and off-loaded into the appropriate tank with the approval of the Fuels Department.

At the location of the repair or modification the pipeline was drained in a controlled manner, either from an existing drain or vent or through a newly installed hot tap connection using a vacuum truck.

Worley subcontractors supplied the Worley Site Representative with a listing of all the Hazardous Materials stored on the job site. A materials safety data sheet (MSDS) was provided for each hazardous material, (refer to Appendix J, Section J-21).

11. MATERIALS AND WORKMANSHIP

The NAVSTA Roosevelt Roads Fuels Depot, NFESC, Worley and its sub-contractors provided materials, supplies, equipment and workmanship in accordance with the requirements stated in the Materials and Construction Specifications, (refer to Appendix D). The suppliers of the equipment and equipment descriptions are listed in Table 11.1. Appendix I lists the contractor-supplied materials.

Table 11.1 Equipment Supplied

Equipment Supplied By	Equipment
Riviera Engineering	Vacuum Truck
NAVSTA Roosevelt Roads Fuel Depot	Transport Truck
Cypress Creek Pipeline Maintenance	Construction Equipment
Alonso & Carus Iron Works	X-ray/NDT Testing Equipment
A & A Waste Management	Roll Off Containers

12. QUALITY CONTROL AND TESTING

Worley International provided quality control and testing per the requirements of the Quality Control and Testing Specification, (refer to Appendix E).

Worley International provided third party radiographic and NDT inspection from Alonso & Carus Iron Works of Puerto Rico who performed radiography and dye penetrant testing. An Examination Report Summary and Weld Reports were provided to the Worley Quality Control Inspector and have been included in this document, (refer to Appendix J, Section J-06).

Worley acquired inspection services of DiversiCom (Sonny Weathers) to provide onsite third party construction and welding inspection, (refer to Appendix J, Section J-24).

As part of the Scope of Work, Worley conducted QA/QC meetings during the modification and repair phase. The QA/QC meeting minutes are included in this document, (refer to Appendix J, Section J-18).

13. SKETCHES

The work was installed in accordance with the mods listed in Section 5 of this document and the as-built sketches listed in Appendix A. The O&M Manual schematics have been updated to reflect the changes made on the pipelines, (refer to Appendix A).

The contractor was responsible for the field verification of all locations, elevations and dimensions, in order to provide correct fit-up and tie-in of new piping to existing piping.

The pipeline repairs and modifications and installed pig launcher/receivers are detailed in the following sketches:

As-Built Sketches

Sketch No.	Description	Mod No.
SK-18-50-002	By-Pass Manifold Pier 1A DFM and JP-5	1 & 2
SK-18-50-060	VP #27 2" Pump By-pass JP-5 & DFM	3
SK-18-50-008	Pier #1	4
SK-18-50-010	Pier #1A	4
SK-18-50-012	Valve Station Pier 1 DFM, DFM-S & JP-5	5
SK-18-50-063	Vertical Tee Column Removal	6
SK-18-50-016	Valve Pit #25 DFM-S	7
SK-18-50-018	PH 466 DFM-S	8
SK-18-50-020	Valve Pit #23 DFM	9
SK-18-50-022	Valve Pit #24 DFM & JP-5	10
SK-18-50-050	Valve Pit #8 DFM-S	11
SK-18-50-026	Valve Pit #6 DFM-S	12
SK-18-50-028	Valve Pit #7 DFM-S	12
SK-18-50-032	Valve Pit #2 JP-5	13
SK-18-50-034	Valve Pit #3 JP-5	13
SK-18-50-036	Valve Pit #4 JP-5	13
SK-18-50-038	Valve Pit #5 JP-5	13
SK-18-50-040	Valve Pit #6 JP-5	13
SK-18-50-056	Valve Pit #9 JP-5	14
SK-18-50-044	Valve Pit #56 DFM-P	15
SK-18-50-055	6" Valve Replacement JP-5 Tank 381	15
SK-18-50-062	PH 1982 Meter Runs JP-5	15

As-Built Sketches

Sketch No.	Description	Mod No.
SK-18-50-065	Valve Pit #10 JP-5	15
SK-18-50-066	Valve Pit #11 JP-5	15
SK-15-50-064	V=Blow-out Pit JP-5	16
SK-18-50-059	Valve Pit #7A JP-5	17
SK-18-50-057	Valve Pit #9A JP-5	18
SK-18-50-051	Valve Pit #8 DFM-P	19
SK-18-50-052	Valve Pit #8 DFM-P Valve Removal	20
SK-18-50-053	Pig Launcher/Receiver PH 1982 JP-5	
SK-18-50-054	Pig Launcher/Receiver Near VP #9 JP-5	
SK-18-50-049	Pig Launcher/Receiver Details PH 1982 & JP-5 Tank Farm JP-5	

As-Built Sketches

Sketch No.	Description	Sheet
SK-18-15-1000	O&M Schematics Sheet 1 of 9	1
SK-18-15-1000	O&M Schematics Sheet 2 of 9	2
SK-18-15-1000	O&M Schematics Sheet 3 of 9	3
SK-18-15-1000	O&M Schematics Sheet 4 of 9	4
SK-18-15-1000	O&M Schematics Sheet 5 of 9	5
SK-18-15-1000	O&M Schematics Sheet 6 of 9	6
SK-18-15-1000	O&M Schematics Sheet 7 of 9	7
SK-18-15-1000	O&M Schematics Sheet 8 of 9	8
SK-18-15-1000	O&M Schematics Sheet 9 of 9	9

14. SUBMITTALS

The Contractor provided the submittals listed in Appendix H per the following schedule:

Submittal Item	Submittal Date
Project Planning and Administration Submittals	14-January-2002
Material and Workmanship Submittals	09-January-2003
Receipt of Furnished Equipment	09-January-2003
Quality Control and Testing Submittals	09-January-2003

15. REFERENCES

All work complied with the referenced documents listed below as applicable. Additional codes and standards were used only after approval was obtained from the COTR or NTR.

- *AMERICAN CONCRETE INSTITUTE (ACI)*

ACI SP66-94	(1994) ACI Detailing Manual of Concrete Reinforcement
ACI SP71-95	(1995) Building Code Requirements for Reinforced Concrete

- *AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)*

Specification for Structural Steel Buildings – Allowable Stress Design and Plastic Design

Specification for Structural Joints Using ASTM A325 and A490 Bolts

- *AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)*

ANSI A14.3	Safety Requirements for Fixed Ladders
ANSI A1264.1	Safety Requirements for Workplace Floor and Wall Openings, Stairs and Railing Systems
ANSI/NFPA 30	(1996) Flammable and Combustible Liquids Code
ANSI B16.5	(1996) Pipe Flanges and Flanged Fittings, NPS ½ Through NPS 24

- *AMERICAN PETROLEUM INSTITUTE (API)*

API 5L	1995 (Errata 1997) Specification for Line Pipe
API STD 607	Fire Test for Soft Seated Quarter Turn Valves
API STD 608	Metal Ball Valves, Flanged, Threaded and Butt Welding End
API STD 1104	1994 Welding of Pipelines and Related Facilities
API STD 1529	1998 Aviation Fueling Hose
API RP 1107	1991 Pipeline Maintenance Welding Practices
API RP 1109	1993 Marking Liquid Petroleum Pipeline Facilities
API BULL 2209	1978 Pipe Plugging Practices
API Spec 6D	1994 (Supp.2 1996) Pipeline Valves (Gate, Plug, Ball and Check Valves)

- *AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)*

ASME BPVC-II-C	Material Specifications
ASME BPVC-V	1998 Non-Destructive Examination
ANSI/ASME B16.3	1992 Malleable Iron Threaded Fittings
ASME/ANSI B16.39	1986 Malleable Iron Threaded Pipe Unions
ASME/ANSI B16.9	1993 Factory Made Wrought Steel Buttwelding Fittings

ASME/ANSI B16.5	1996 Pipe Flanges and Flanged Fittings
ASME B16.11	1996 Forged Fittings, Socket-Welding and Threaded
ASME B16.21	1992 Nonmetallic Flat Gaskets for Pipe Flanges
ASME B31.3	1996 Chemical Process Plant Piping and Petroleum Refinery Piping
ASME/ANSI B31.4	1992 Liquid Transportation Systems for Hydrocarbons, Liquid Petroleum Gas, Anhydrous Ammonia, and Alcohol
ASME B31G	1991 Manual for Determining the Remaining Strength of Corroded Pipelines
ANSI/ASME B1.1	Unified Inch Screw Threads (UN and UNR Thread Form)

- *AMERICAN SOCIETY FOR NON-DESTRUCTIVE TESTING, INC. (ASNT)*

ASNT TC-1A-96	Recommended Practice for Non-Destructive Testing

- *AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)*

ASTM A 36/A 36M-97a	Specification for Carbon Structural Steel
ASTM A 53-97	1997 Standard Specification for Pipe, Steel, Black and Hot-Dipped Zinc-Coated Welded and Seamless
ASTM A 105/A 105M-98	Standard Specification for Carbon Steel Forgings for Piping Applications
ASTM A123	Standard Specification for Zinc (Hot Dipped Galvanized) Coatings for Iron and Steel Products
ASTM A 185-97	Standard Specification for Welded Steel Wire Fabric for Concrete Reinforcement
ASTM A 193/A 193M-97	Standard Specification for Alloy Steel and Stainless Steel Bolting Materials for High Temperature Service
ASTM A 194/A 194-97	1997 Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service
ASTM A 234/A 234M-97	Standard Specification for Wrought Carbon Steel
ASTM A 276-94b	Standard Specification for Stainless and Heat Resisting Steel Bars and Shapes
ASTM A 307	Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi strength
ASTM A 325M-93	Standard Specification for High Strength Bolts for Structural Steel Joints
ASTM A370-95a	Standard Test Methods and Definitions for Mechanical Testing of Steel Products
ASTM A 615/A 615M-96a	Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement

ASTM C 39-96	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C 94-98	Standard Specification for Ready-Mixed Concrete
ASTM C 143C/143M-97	Standard Test Method for Slump of Hydraulic Cement Concrete
ASTM C 260-97	Standard Specification for Air-Entraining Admixtures for Concrete
ASTM C 309	Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C 405-82	(1992) e1 Standard Practice for Estimating Consistency of Wet-Mixed Thermal Insulating Cement
ASTM C 494-98	Standard Specification for Chemical Admixtures for Concrete
ASTM C 618-98	Standard Specification for Coal Fly Ash and Raw or Calcinated Natural Pozzolan for Use as a Mineral Admixture in Concrete
ASTM D 229-96	Standard Test Methods for Rigid Sheet and Plate Materials Used for Electrical Installations
ASTM D 698-91	Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb./ft (600 kN-m/m))
ASTM D 1556-90	(1996) e1 Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	1991 Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb./ft (2,700 kN-m/m))
ASTM D 1586-84	(1992) e1 Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils
ASTM D 1752-84	(1996) e1 Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction
ASTM D 2487-98	Standard Classification of Soils for Engineering Purposes
ASTM D 4253-93	Standard Test Methods for Maximum Index Density of Soils Using a Vibratory Table
ASTM D 4254-91	Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density
ASTM F 436-93	Standard Specification for Hardened Steel Washers

- *AMERICAN WATER WORKS ASSOCIATION (AWWA)*

AWWA C0984	Cold-Applied Tape Coatings for the Exterior of Special Sections, Connections, and Fittings for Steel Water Pipelines
AWWA C213	Fusion Bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipelines

AWWA C214	Tape Coating Systems for the Exterior of Steel Water Pipelines

- *AMERICAN WELDING SOCIETY, INC. (AWS)*

AWS B2.1-84	Standard for Welding Procedures and Performance Qualifications
AWS QC1	1996 Standard for AWS Certification of Welding Inspectors
AWS/ANSI Z49.1	1994 Safety in Welding and Cutting
AWS A5.1	1991 Carbon Steel Electrodes for Shielded Metal Arc Welding

- *CODE OF FEDERAL REGULATIONS*

29 CFR 1910	1998 Occupational Safety and Health Standards
29 CFR 1910.1000	Air Contaminants
29 CFR 1910.1025	Lead
29 CFR 1926	Safety and Health Regulations for Consultation
33 CFR 156	Oil and Hazardous Material Transfer Operations
33 CFR 154	Facilities Transferring Oil or Hazardous Materials in Bulk
49 CFR 195	1998 Transportation of Hazardous Liquids by Pipeline

- *COMMERCIAL ITEM DESCRIPTIONS (CID)*

CID A-A-1558	Paint, Stencil

- *CORPS OF ENGINEERS (COE)*

COE EM-385-1-1	Safety and Health Requirements Manual

- *FEDERAL SPECIFICATIONS (FS)*

FS L-C-530	(Rev. C) Coating, Pipe, Thermoplastic Resin
FS TT-P-19	Latex, Acrylic Emulsion
FS TT-E-490	(Rev. E) (Int. Am. 3) Enamel, Silicone Alkyd Copolymer, Semi gloss (For Exterior and Interior Non-Residential Use)
FS TT-T-291	(Rev. F) (Am. 1) Thinner, Paint, Mineral Spirits, Regular and Odorless

- *FEDERAL STANDARDS (FED-STD)*

FED-STD-313	(Rev. C) Material Safety Data, Transportation Data and Disposal Data for Hazardous Materials Furnished to Government Activities

- *MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY, INC. (MSS)*

MSS SP-58	Pipe Hangers and Supports - Materials, Design and Manufacture
MSS SP-69	Pipe Hangers and Supports - Selection and Application

- *MILITARY SPECIFICATIONS (MIL)*

MIL-HDBK-1022A	Department of Defense Handbook, Petroleum Fuel Facilities
MIL-PRF-85285	Coating, Polyurethane High Solids
MIL-P-28577	(Rev B) Primer, Water Borne Acrylic or Modified Acrylic for Metal Surfaces
MIL-P-28578	(Rev B) Paint, Water Borne Acrylic or Modified Acrylic for Metal Surfaces
MIL-P-24441	(Rev. A) (Supp. 1) Paint, Epoxy-Polyamide
MIL-C-83286	Coating, Urethane, Aliphatic Isocyanate
MIL-STD-161F	Identification Methods for Bulk Petroleum Products Systems, Including Hydrocarbon Missile Fuels

- *NATIONAL ASSOCIATION OF CORROSION ENGINEERS (NACE)*

NACE RP0188-90	Discontinuity Testing of Protective Coatings

- *NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)*

NFPA 30	Flammable and Combustible Liquids Code
NFPA 407	Aircraft Fuel Servicing

- *NAVAL FACILITIES ENGINEERING SERVICE CENTER*

  Guidelines for Planning, Performing and Reporting Pipeline Integrity Assessments, Parts 1 & 2, September 1993

- *STEEL STRUCTURES PAINTING COUNCIL (SSPC)*

SSPC PA 1	Shop, Field, and Maintenance Painting
SSPC PA 3	A Guide to Safety in Paint Application
SSPC SP 1	Solvent Cleaning
SSPC SP 2	Hand Tool Cleaning
SSPC SP 3	Power Tool Cleaning
SSPC SP 6/NACE3	Commercial Blast Cleaning
SSPC SP 7/NACE4	Brush-Off Blast Cleaning
SSPC SP 10	Near-White Blast Cleaning
SSPC VIS 1	Visual Standard for Abrasive Blast Cleaned Steel (Standard Reference Photographs)
SSPC Paint 21	Silicone Alkyd Paint

Appendix A – As-Built Sketches/Schematics and Final Certification

As-Built Sketch List

Sketch No.	Description	Mod No.	No. of Sheets
SK-18-50-002	By-Pass Manifold Pier 1A DFM and JP-5	1 & 2	1
SK-18-50-060	Valve Pit #27 2" Pump By-pass JP-5 & DFM	3	1
SK-18-50-008	Pier #1	4	1
SK-18-50-010	Pier #1A	4	1
SK-18-50-012	Valve Station Pier 1 DFM, DFM-S & JP-5	5	1
SK-18-50-063	Vertical Tee Column Removal	6	1
SK-18-50-016	Valve Pit #25 DFM-S	7	1
SK-18-50-018	PH 466 DFM-S	8	1
SK-18-50-020	Valve Pit #23 DFM	9	1
SK-18-50-022	Valve Pit #24 DFM & JP-5	10	2
SK-18-50-050	Valve Pit #8 DFM-S	11	1
SK-18-50-026	Valve Pit #6 DFM-S	12	1
SK-18-50-028	Valve Pit #7 DFM-S	12	1
SK-18-50-032	Valve Pit #2 JP-5	13	1
SK-18-50-034	Valve Pit #3 JP-5	13	1
SK-18-50-036	Valve Pit #4 JP-5	13	1
SK-18-50-038	Valve Pit #5 JP-5	13	1
SK-18-50-040	Valve Pit #6 JP-5	13	1
SK-18-50-056	Valve Pit #9 JP-5	14	1
SK-18-50-044	Valve Pit #56 DFM-P	15	1
SK-18-50-055	6" Valve Replacement JP-5 Tank 381	15	1
SK-18-50-062	PH 1982 Meter Runs JP-5	15	1
SK-18-50-065	Valve Pit #10 JP-5	15	1
SK-18-50-066	Valve Pit #11 JP-5	15	1
SK-18-50-064	Blow-Out Pit JP-5	16	1
SK-18-50-059	Valve Pit #7A JP-5	17	1
SK-18-50-057	Valve Pit #9A JP-5	18	1
SK-18-50-051	Valve Pit #8 DFM-P	19	1
SK-18-50-052	Valve Pit #8 DFM-P Valve Removal	20	1
SK-18-50-053	Pig Launcher/Receiver PH 1982 JP-5		1

Sketch No.	Description	Mod No.	No. of Sheets
SK-18-50-054	Pig Launcher/Receiver Near VP #9 JP-5		1
SK-18-50-049	Pig Launcher/Receiver Details PH 1982 & JP-5 Tank Farm		1

O&M Manual Schematic Sketches

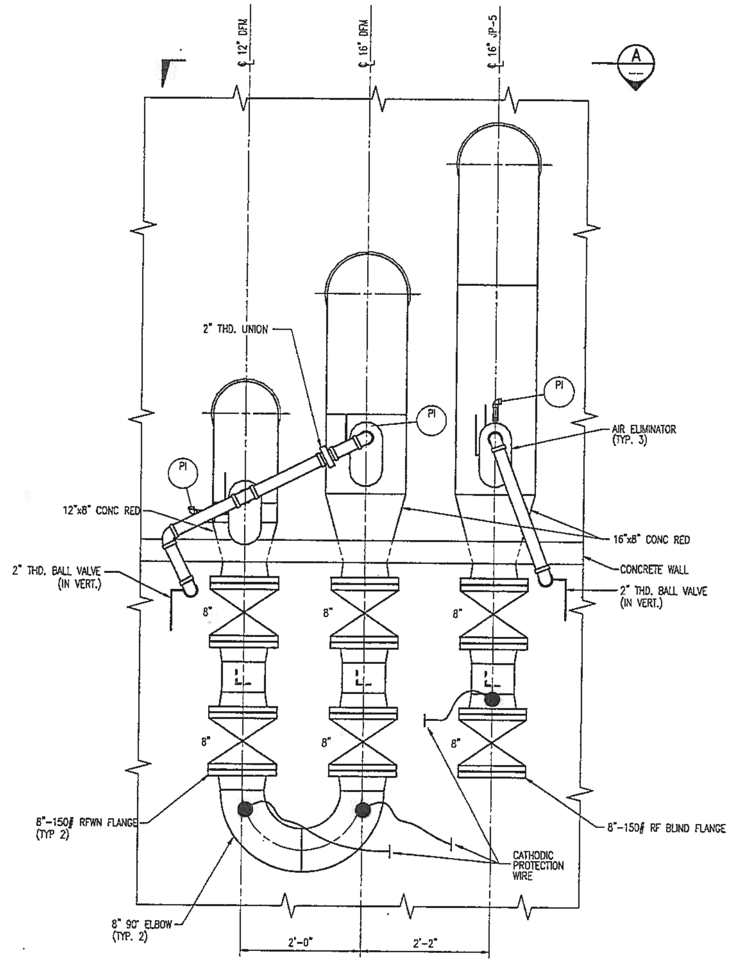
Sketch No.	Description	Sheet No.
SK-18-15-1000	O&M Schematics Sheet 1 of 9	1
SK-18-15-1000	O&M Schematics Sheet 2 of 9	2
SK-18-15-1000	O&M Schematics Sheet 3 of 9	3
SK-18-15-1000	O&M Schematics Sheet 4 of 9	4
SK-18-15-1000	O&M Schematics Sheet 5 of 9	5
SK-18-15-1000	O&M Schematics Sheet 6 of 9	6
SK-18-15-1000	O&M Schematics Sheet 7 of 9	7
SK-18-15-1000	O&M Schematics Sheet 8 of 9	8
SK-18-15-1000	O&M Schematics Sheet 9 of 9	9

FINAL CERTIFICATION

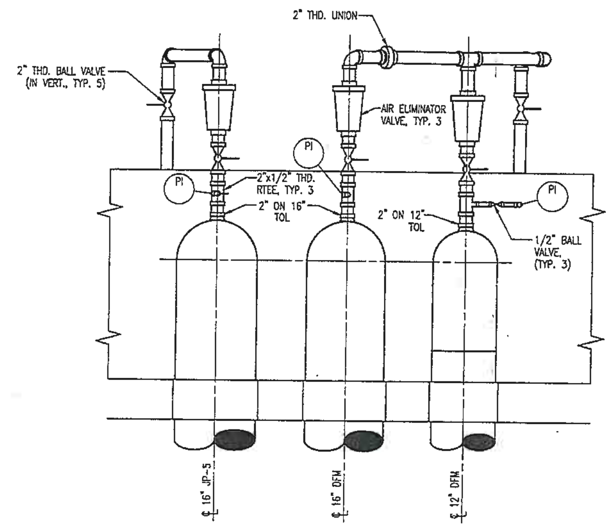
Worley International Inc. hereby certifies that the pipeline modifications at the NAVSTA Roosevelt Roads, Ceiba, Puerto Rico have been completed, inspected and tested and that these modifications are in compliance with Delivery Order 0018 issued against Contract No. N47408-99-D-8014.

By: Kirsten Glesne _____ Date: November 1, 2002

Kirsten Glesne
Pipeline Engineer



PLAN VIEW



SECTION A
SCALE: NTS

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

TITLE: MOD 1 & 2 BYPASS MANIFOLD PIER 1A DFM & JP5

DRAWN	MGS
DATE	12/18/01
CHECKED	
DATE	
ENGINEER	
DATE	
APPROVED	
DATE	

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CLIENT: Naval Facilities Engineering Service Center, Washington Navy Yard, 1435 10th Street S.E., Suite 3000, Washington, DC 20374-5063

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Worley International Inc
HOUSTON, TEXAS USA

WORLEY PROJECT NUMBER	LAST UPDATE		INT REV
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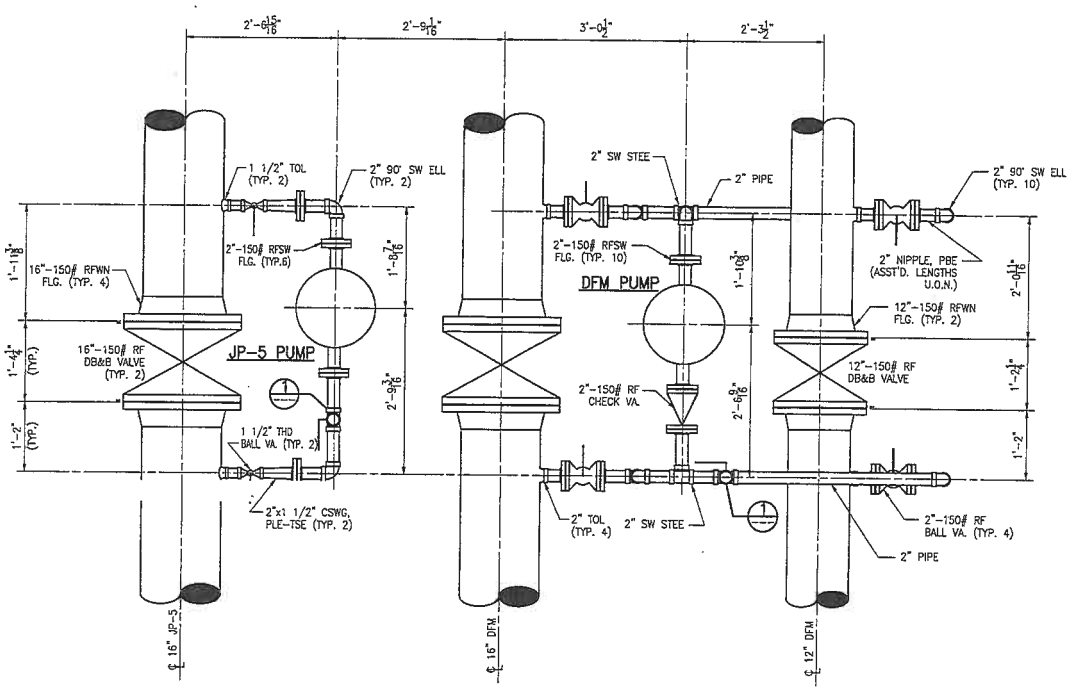

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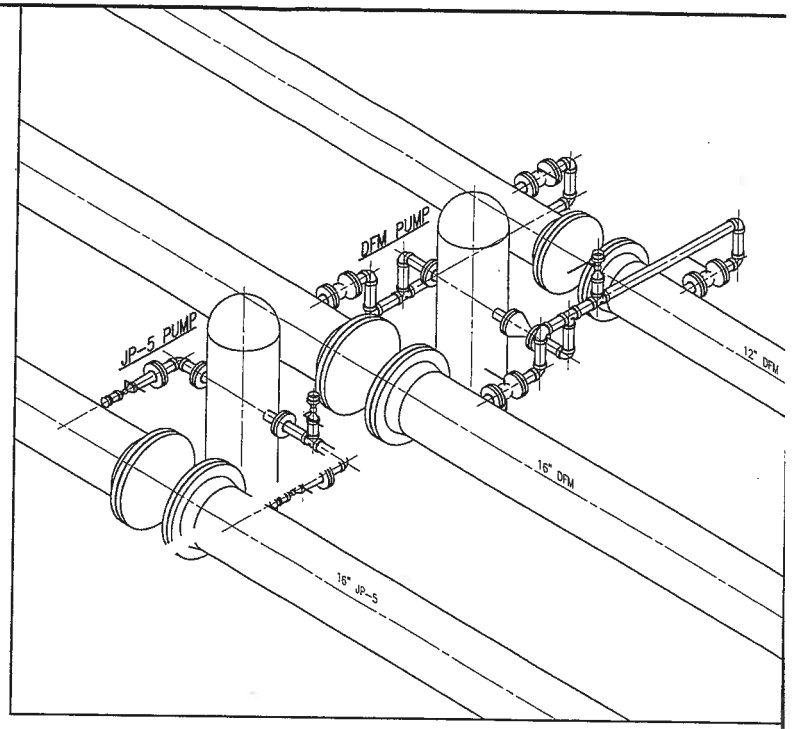

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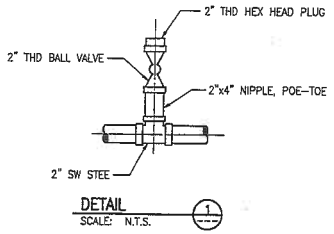

DETAIL 1
SCALE: N.T.S.

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

TITLE: MOD-3 VP-27 - 2" PUMP BY PASS JP-5 & DFM

DRAWN WO DATE 7/26/02
CHECKED DATE
ENGINEER DATE
APPROVED

SCALE NTS

DRAWING NO. SK-18-50-060 REV 0

Worley International Inc
HOUSTON, TEXAS USA

WORLEY PROJECT NUMBER 065-07074 | LAST UPDATE 09 JAN 2003 13:49 | WC REV 0A

DRAWING NUMBER | REFERENCE DRAWINGS

REV	DATE	REVISION
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CLIENT: Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E. Suite 3000
Washington, DC 20374-5063

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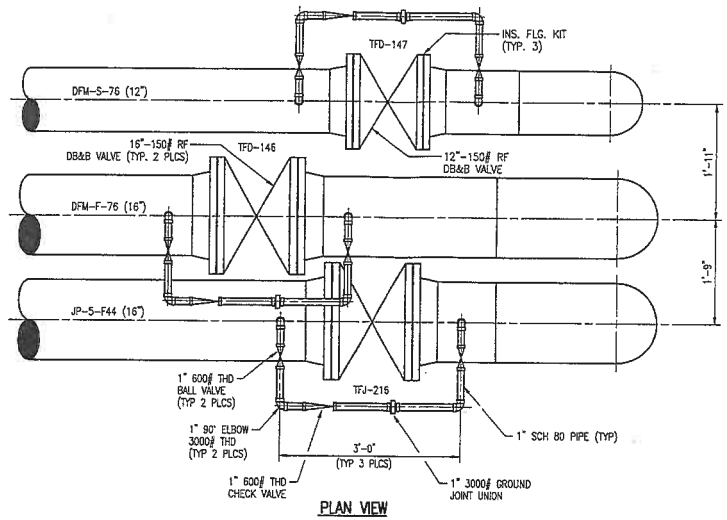

PLAN VIEW

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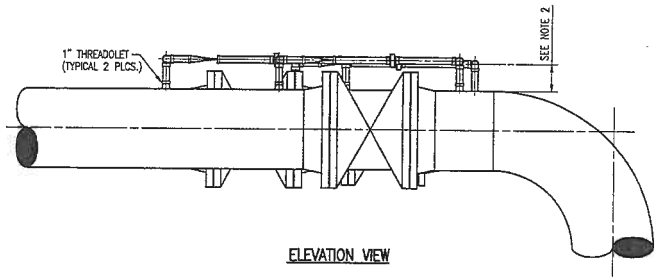

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Worley International Inc
HOUSTON, TEXAS USA

WORLEY PROJECT NUMBER	LAST UPDATE		INT REV
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DRAWING NUMBER

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CLIENT

Naval Facilities Engineering Service Center

Washington Navy Yard
1435 10th Street S.E., Suite 3000
Washington, DC 20374-5063

DRAWN	SPR
DATE	12/08/01
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PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

TITLE: MOD 4 PIER #1

SCALE: NTS

DRAWING NO.: SK-18-50-008

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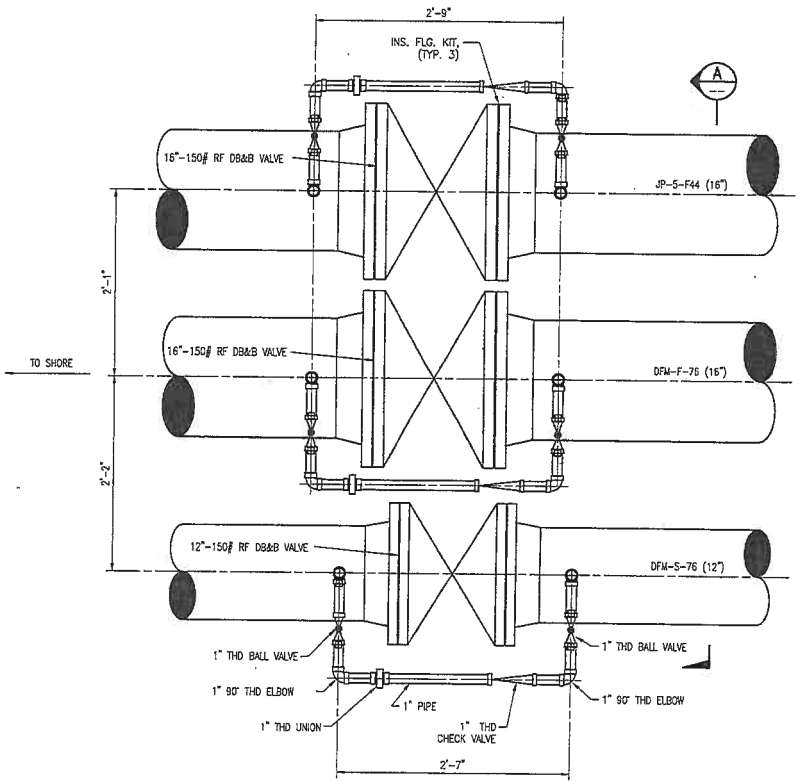

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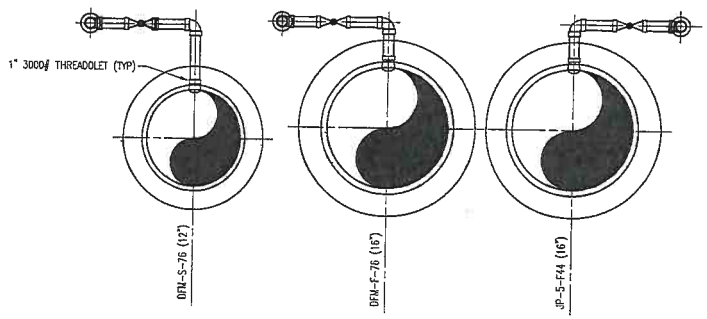

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Worley International inc
HOUSTON, TEXAS USA

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DRAWING NUMBER | RETRIEVE DRAWING

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0	12/15/01	APPROVED FOR CONSTRUCTION	MCS	--	--	--	--

CLIENT
Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E., Suite 3000
Washington, DC 20374-5063

DRAWN	SPR
DATE	12/08/01
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ENGINEER	
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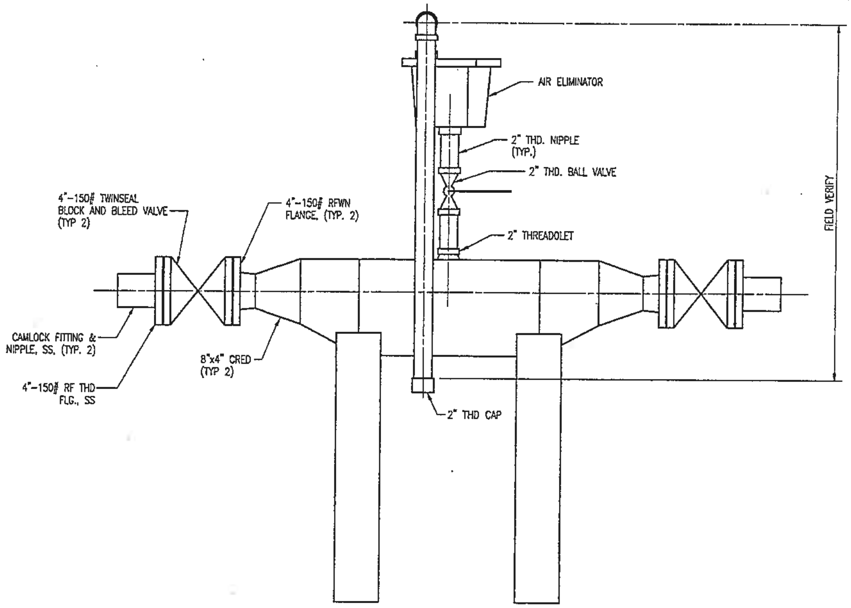
PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

TITLE: MOD 4 PIER #1A

SCALE: NTS | DRAWING NO. SK-18-50-010 | REV 1



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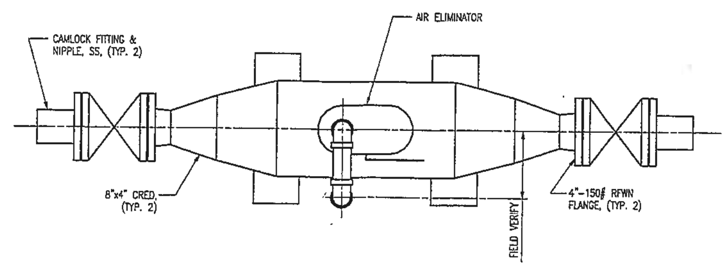

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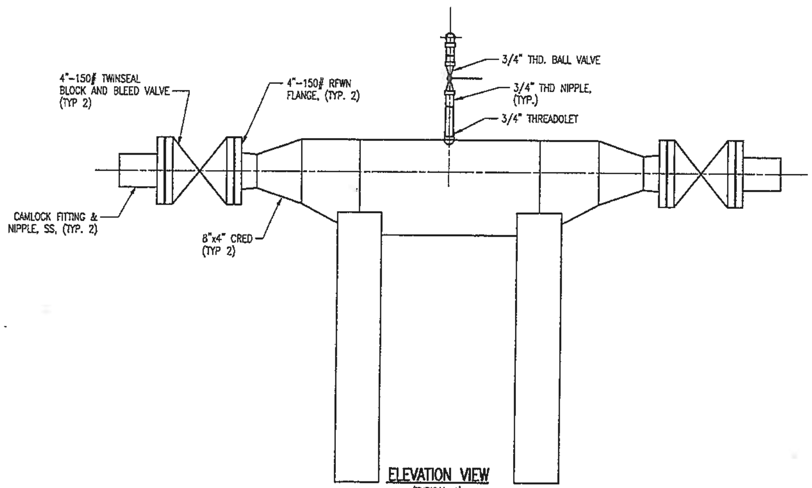

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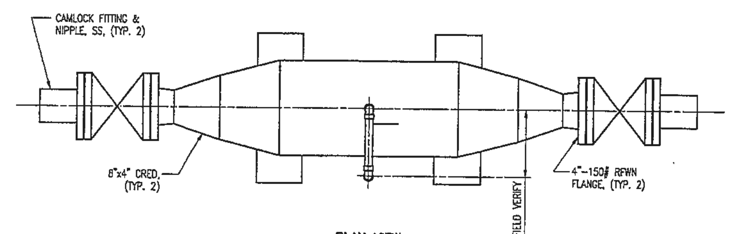

PLAN VIEW
(TYPICAL 4)

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

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HOUSTON, TEXAS USA

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DRAWING NUMBER | REFERENCE DRAWINGS

CLIENT: Naval Facilities Engineering Service Center
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Washington, DC 20374-5063

DRAWN	TDF
DATE	12/08/01
CHECKED	
DATE	
ENGINEER	
DATE	
APPROVED	
DATE	

TITLE: MOD-5
VALVE STATION PIER 1
DFM, DFM-S & JP-5

SCALE: NTS | DRAWING NO. SK-18-50-012 | REV 1

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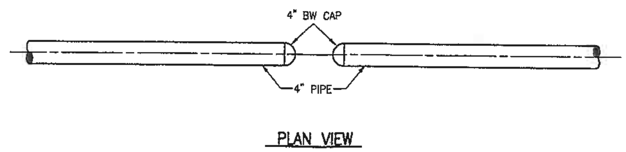

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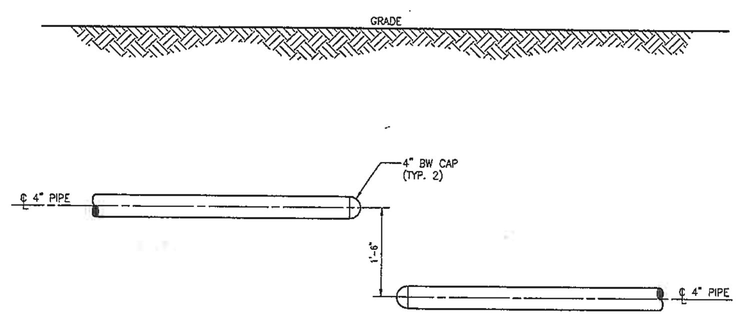

ELEVATION VIEW

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

TITLE: MOD-6 VERTICAL TEE COLUMN REMOVAL –

DRAWN	M. WHITE
DATE	01/07/03
CHECKED	
DATE	
ENGINEER	
DATE	
APPROVED	
DATE	

SCALE: N T S

DRAWING NO. SK-18-50-063

REV 0

CLIENT: Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E., Suite 3000
Washington, DC 20374-5063

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REV	DATE	REVISION	DRAWN	CHECK	ENG	APPRVL	CLIENT
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DRAWING NUMBER | REFERENCE DRAWINGS

Worley International Inc
HOUSTON, TEXAS USA

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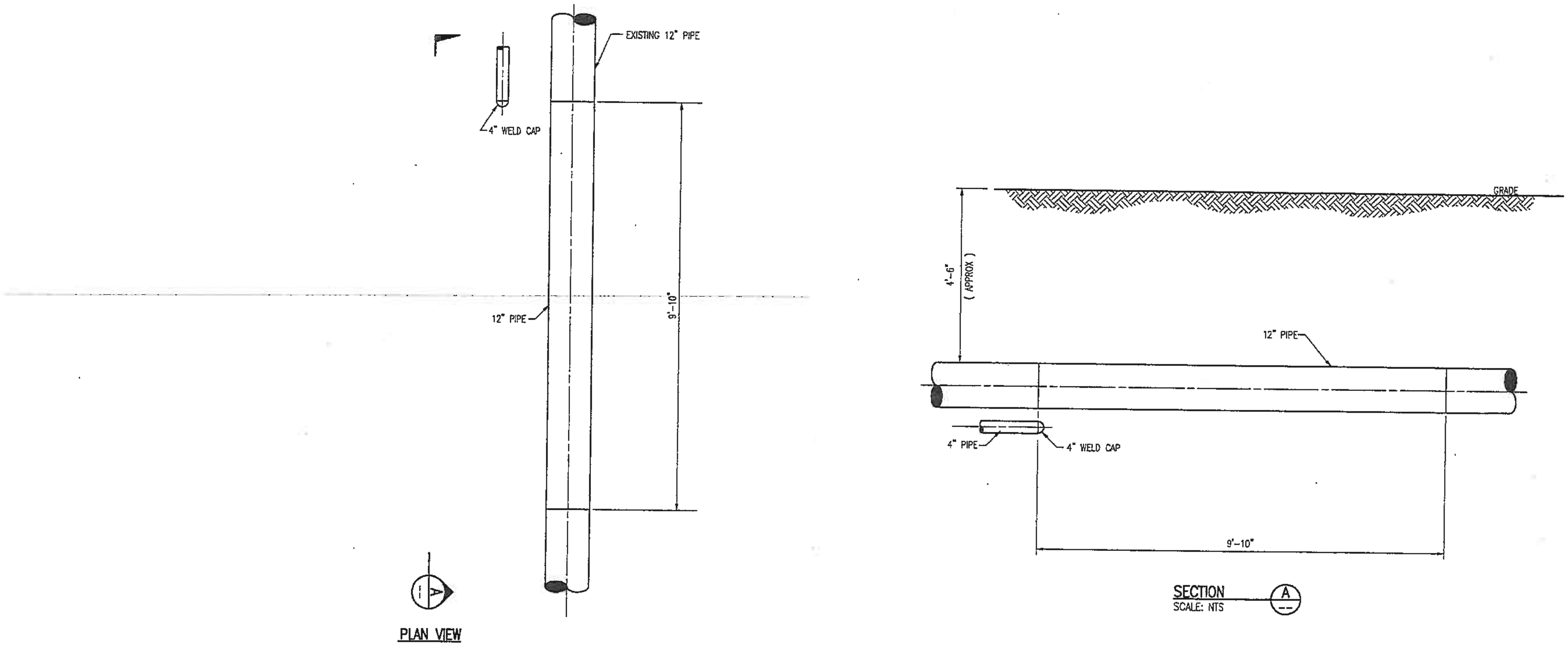

NOTES:
CONCRETE PIT BOTTOM REMAINS

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

TITLE: MOD-7 VALVE PIT #25 DFM-S

REV	DATE	REVISION				
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0	12/19/01	APPROVED FOR CONSTRUCTION	BTB	–	–	–

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Washington Navy Yard
1435 10th Street S.E., Suite 3000
Washington, DC 20374-5063

DRAWN: BTB
DATE: 12/19/01
CHECKED
DATE
ENGINEER
DATE
APPROVED

SCALE: NTS
DRAWING NO. SK-18-50-016
REV 1

Worley International Inc
HOUSTON, TEXAS USA

WORLEY PROJECT NUMBER: 065-07074
LAST UPDATE: 09 JAN 2003 12:50
INT REV: 1A

DRAWING NUMBER
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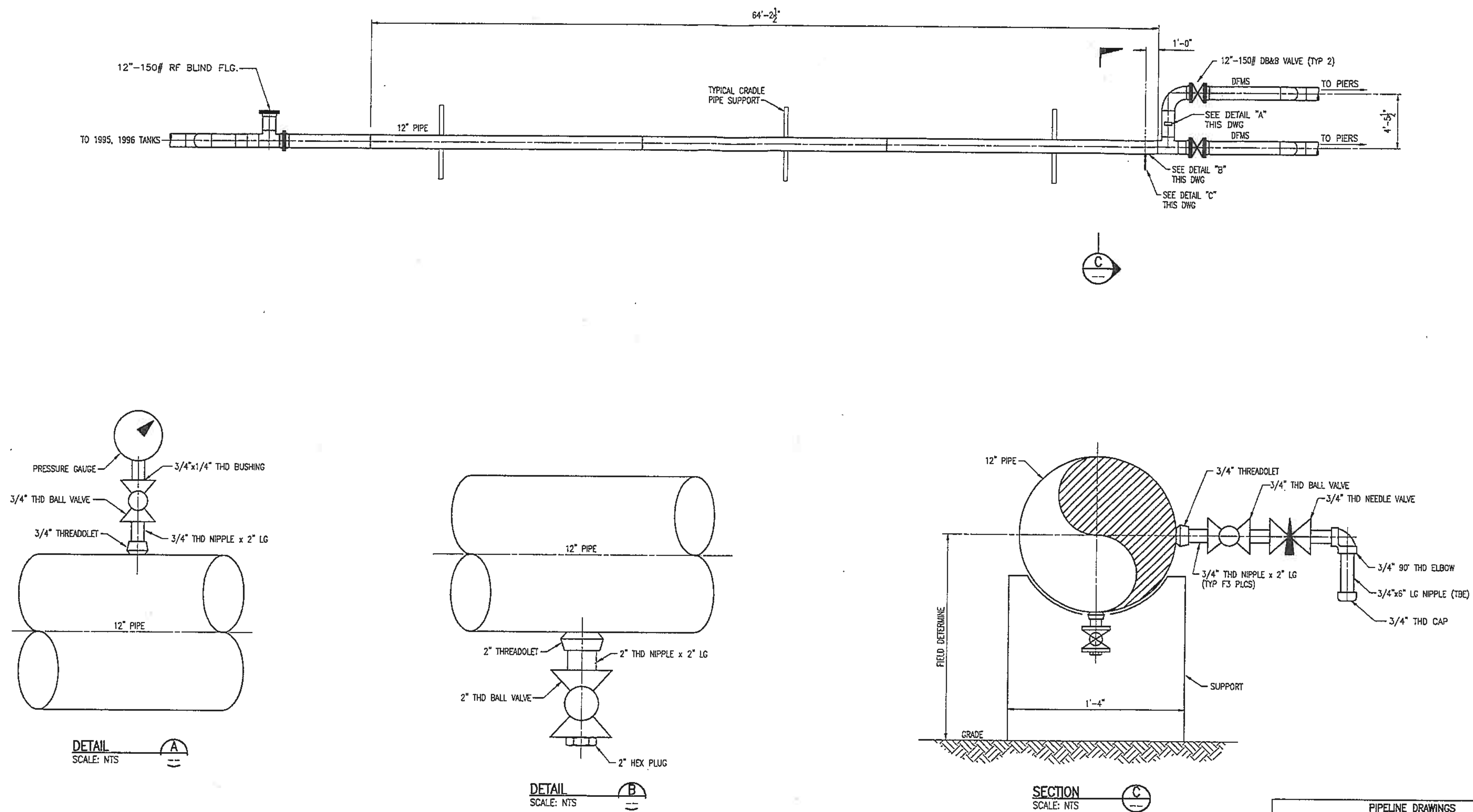

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

TITLE: MOD-8 DFM-S PH466

SCALE: NTS | DRAWING NO. SK-18-50-018 | REV 1

DRAWN: MGS DATE: 12/19/01
CHECKED / DATE / ENGINEER / DATE / APPROVED / DATE

CLIENT: Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E., Suite 3000
Washington, DC 20374-5063

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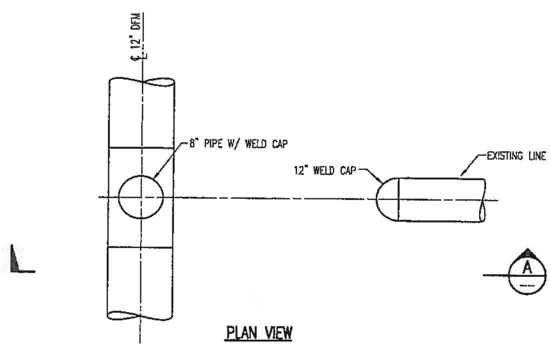
REV	DATE	REVISION	DRAWN	CHECK	ENG	APPRVL	CLIENT
1	01/08/03	AS-BUILT	MW				
0	12/19/01	APPROVED FOR CONSTRUCTION	MGS	-	-	-	-

DRAWING NUMBER | REFERENCE DRAWINGS

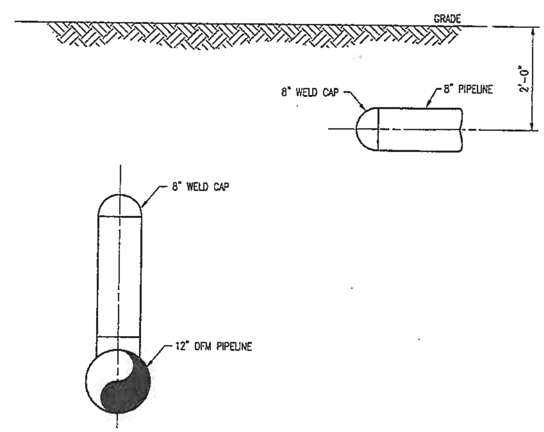
Worley International Inc
HOUSTON, TEXAS USA

WORLEY PROJECT NUMBER	LAST UPDATE		INT REV
065-07074	09 JAN 2003	12:52	1A

DESIGN FILE: N:\0...4\18\DRAWINGS\50\SK1850018.DWG TIME: 12:53 PLOT BY: MWHITE



PLAN VIEW



SECTION (A)
SCALE: NTS

NOTES:

CONCRETE PIT DEMOLISHED 12" BELOW GRADE.

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

Worley International Inc
HOUSTON, TEXAS USA

WORLEY PROJECT NUMBER	LAST UPDATE		INT REV
065-07074	09 JAN 2003	12:54	1C

DRAWING NUMBER | REFERENCE DRAWINGS

REV	DATE	REVISION	DRAWN	CHECK	ENG	APPR'L	CLIENT
1	12/20/02	AS-BUILT	MW				–
0	12/19/01	APPROVED FOR CONSTRUCTION	BTB	–	–	–	–

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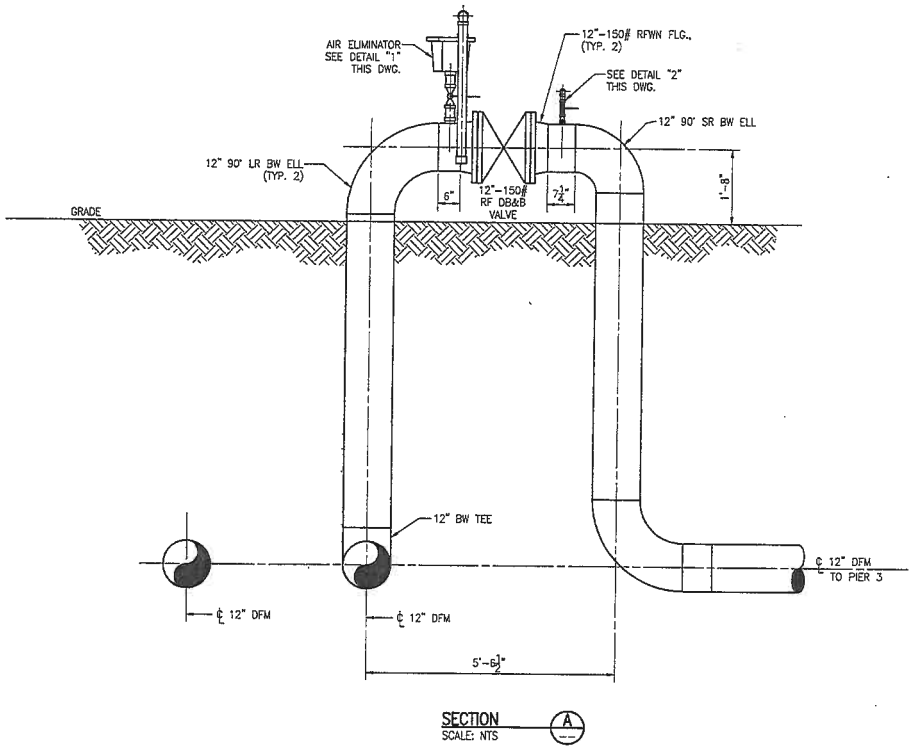
CLIENT: Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E., Suite 3000
Washington, DC 20374-5063

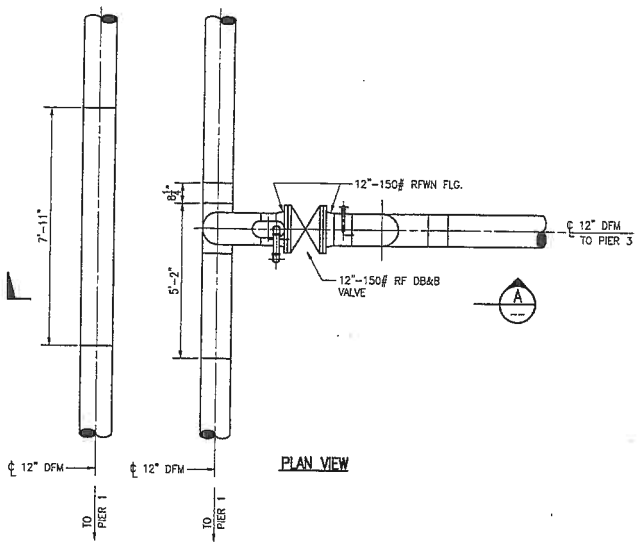
DRAWN: BTB
DATE: 12/19/01
CHECKED:
DATE:
ENGINEER:
DATE:
APPROVED:
DATE:

TITLE: MOD-9 VALVE PIT #23 DFM

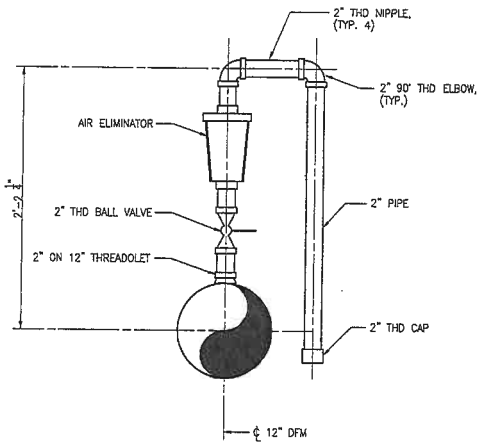
SCALE: NTS | DRAWING NO. SK-18-50-020 | REV 1



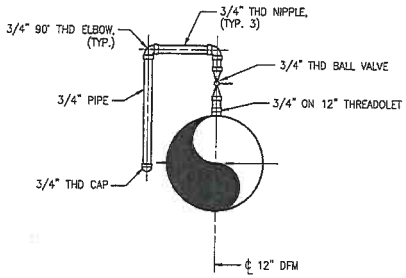
SECTION
SCALE: NTS (A)



PLAN VIEW (A)



DETAIL (1)
SCALE: NTS



DETAIL (2)
SCALE: NTS

NOTES:
1. CONCRETE PIT REMAINS BELOW GRADE.

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY:
U.S. ARMY ENGINEER DIVISION HUNTSVILLE
CORPS OF ENGINEERS
HUNTSVILLE, ALABAMA

TITLE: MOD-10
VALVE PIT #24 - DFM
SHT. 1 OF 2

SCALE: NTS

DRAWING NO. SK-18-50-022 REV 2

DRAWN BTB 12/19/01
CHECKED RS 1/2/02
ENGINEER KU 1/2/02
APPROVED DAE 1/9/02

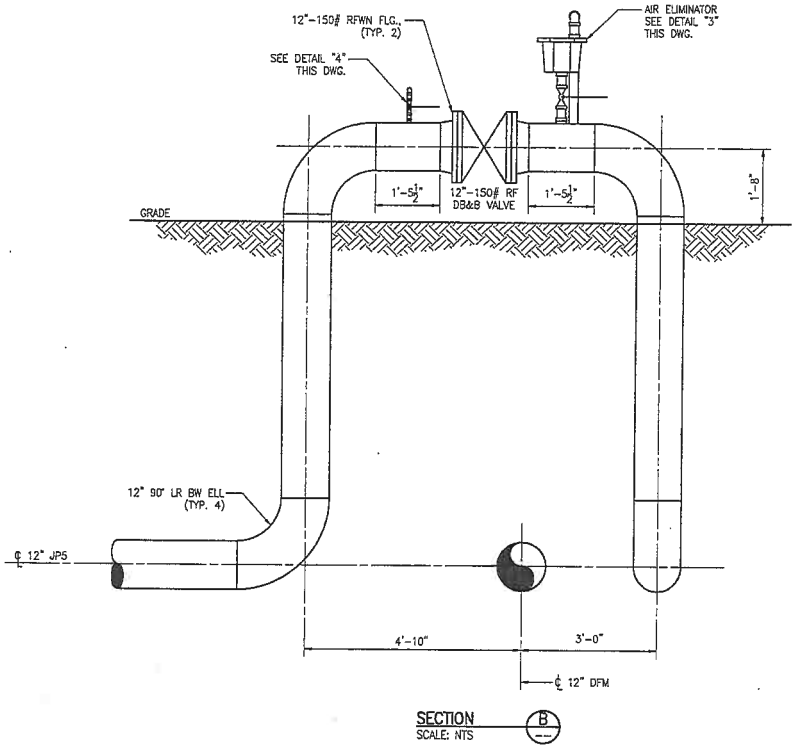
CLIENT: Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E. Suite 3000
Washington, DC 20374-5063

REV	DATE	REVISION	DRAWN	CHECK	ENG	APPRV	CLIENT
2	01/08/03	AS-BUILT	TW				–
1	2/6/02	CHANGED 16" JPS BRANCH FROM 16" TO 12"	MGS	–	–	–	–
0	12/19/01	APPROVED FOR CONSTRUCTION	BTB	RS	KU	DE	–

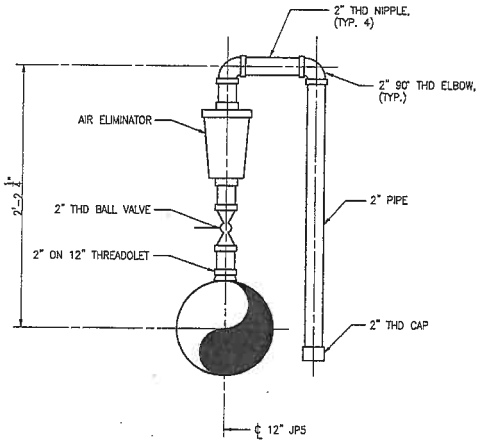
Worley International Inc
HOUSTON, TEXAS USA

WORLEY PROJECT NUMBER 055-07074 | LAST UPDATE 09 JAN 2003 12:56 | INT REV 2B

DRAWING NUMBER | REFERENCE DRAWINGS



SECTION B
SCALE: NTS



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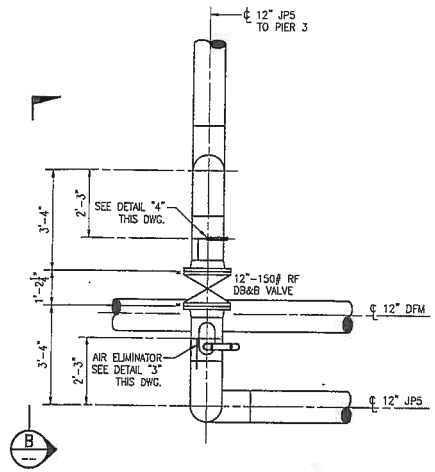
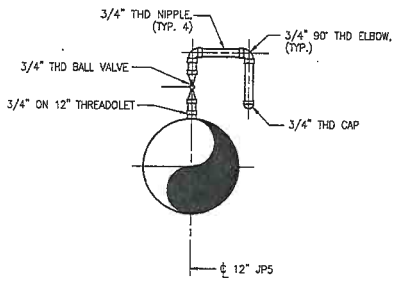
SCALE: NTS



PLAN VIEW



DETAIL 4
SCALE: NTS

NOTES:
1. CONCRETE PIT BOTTOM REMAINS.

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

TITLE: MOD-10 VALVE PIT #24 - JP5 SHT. 2 OF 2

SCALE: N.T.S.

DRAWING NO.: SK-18-50-022 | REV 0

DRAWN: M.WHITE DATE: 12/16/02
CHECKED DATE
ENGINEER DATE
APPROVED DATE

CLIENT: Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E., Suite 3000
Washington, DC 20374-5063

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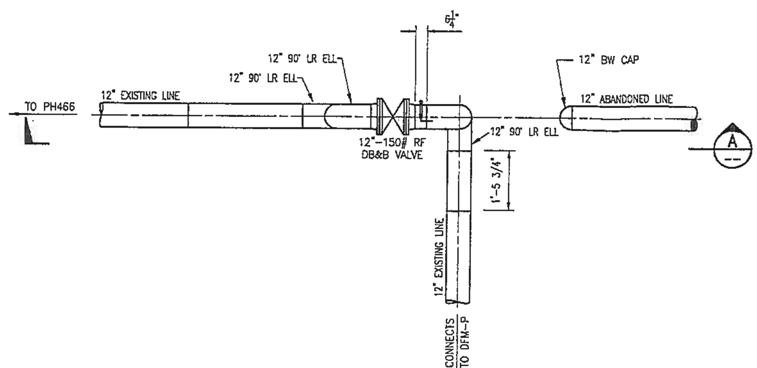
HOUSTON, TEXAS USA

WORLEY PROJECT NUMBER: 065-07074 | LAST UPDATE: 09 JAN 2003 12:58 | INT REV: 0A

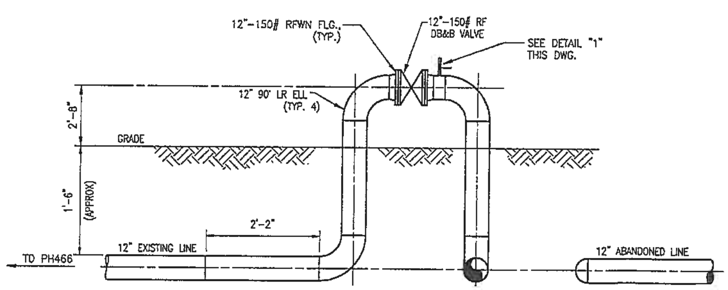
REV	DATE	REVISION	DRAWN	CHECK	ENG	APPRV	CLIENT
0	12/20/02	AS-BUILT	MW				-

DRAWING NUMBER
REFERENCE DRAWINGS

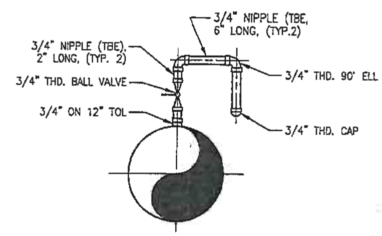
DESIGN FILE: N:\0
PW: MWHITE
PLOT TIME: 12:58
N:\18 DRAWINGS\50\SK18500022B.DWG



PLAN VIEW



SECTION A
SCALE: NTS



DETAIL 1
SCALE: NTS

NOTES:
1. CONCRETE PIT BOTTOM REMAINS.

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

TITLE: MOD 11 VALVE PIT #8 DFM-S

SCALE: NTS | DRAWING NO. SK-18-50-050 | REV 1

DRAWN: WO | DATE: 7/15/02 | CHECKED | DATE | ENGINEER | DATE | APPROVED | DATE

CLIENT: Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E., Suite 3000
Washington, DC 20374-5063

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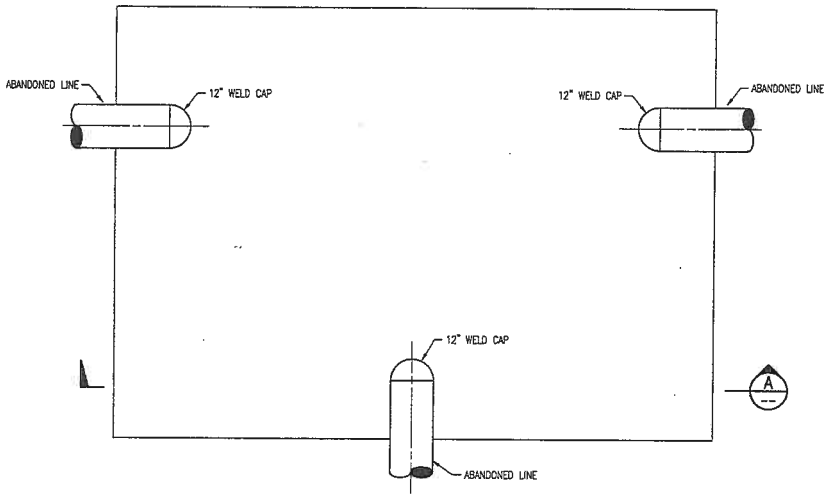
REV	DATE	REVISION	DRAWN	CHECK	ENG	APPRVL	CLIENT
1	01/08/03	AS-BUILT					
0	12/19/01	APPROVED FOR CONSTRUCTION	WO	-	-	-	-

Worley International Inc
HOUSTON, TEXAS USA

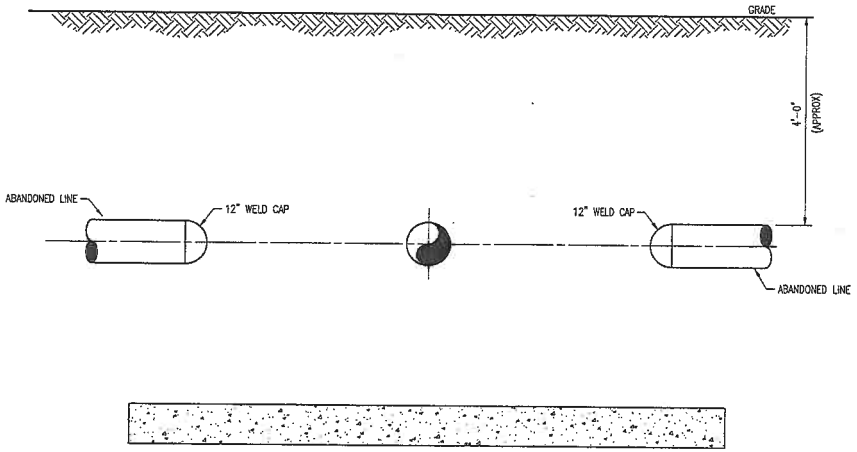
WORLEY PROJECT NUMBER	LAST UPDATE		INT REV
065-07074	09 JAN 2003	13:27	1C

DRAWING NUMBER | REFERENCE DRAWINGS

DESIGN FILE: N:\0 ...\4\18\DRAWINGS\50\SK1850050.DWG TIME: 13:28 PLO... BY: MWHITE



PLAN VIEW



SECTION A
SCALE: AS NOTED

NOTES:
1. CONCRETE PIT BOTTOM REMAINS.

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

TITLE: MOD-12 VALVE PIT #6 DFM-S

SCALE: NTS

DRAWING NO. SK-18-50-026 REV 1

DRAWN TDF DATE 12/15/01
CHECKED DATE
ENGINEER DATE
APPROVED DATE

CLIENT: Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E., Suite 3000
Washington, DC 20374-5063

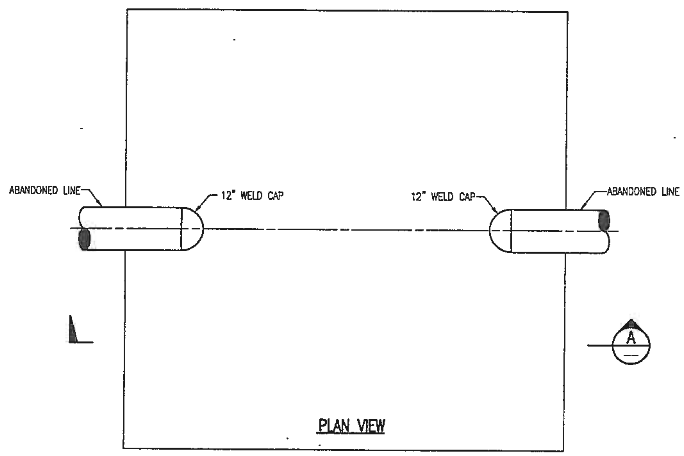
Worley International Inc
HOUSTON, TEXAS USA

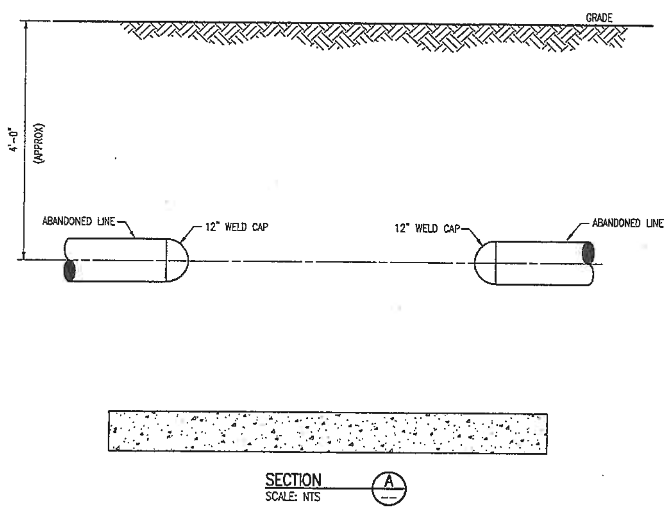
WORLEY PROJECT NUMBER 065-07074 | LAST UPDATE 09 JAN 2003 13:00 | INT REV 1C

DRAWING NUMBER | REFERENCE DRAWINGS

REV	DATE	REVISION	DRAWN	CHECK	ENG	APPRV	CLIENT
1	01/08/03	AS-BUILT	TW				
0	12/17/01	APPROVED FOR CONSTRUCTION	MDS	-	-	-	-

DESIGN FILE: N:\0741\01\DRAWINGS\50\SK18550026.DWG TIME: 13:00 PLO BY: MWHITE





NOTES:
1. CONCRETE PIT BOTTOM REMAINS.

PIPELINE DRAWINGS	
SITE	U.S. NAVAL STATION PUERTO RICO
ORIGINAL DATA SUPPLIED BY:	U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA
TITLE	MOD-12 VALVE PIT #7 DFM-S
SCALE	NTS
DRAWING NO.	SK-18-50-028
REV	1

DRAWN	TDF
DATE	12/15/01
CHECKED	RS
DATE	12-20-01
ENGINEER	DAE
DATE	12-20-01
APPROVED	DAE
DATE	01-09-02

CLIENT
Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E., Suite 3000
Washington, DC 20374-5063

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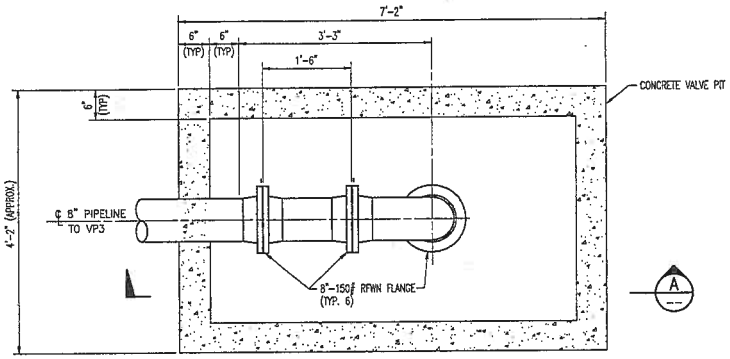
REV	DATE	REVISION	DRAWN	CHECK	ENG	APPRVL	CLIENT
1	01/08/03	AS-BUILT	MW				
0	12/17/01	APPROVED FOR CONSTRUCTION	MGS	RS	DAE	DAE	-

REFERENCE DRAWINGS
DRAWING NUMBER

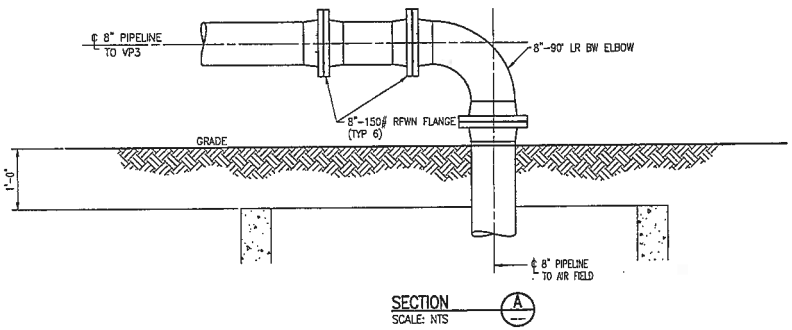
Worley International Inc
HOUSTON, TEXAS USA

WORLEY PROJECT NUMBER	LAST UPDATE		INT REV
065-07074	09 JAN 2003	13:01	1C

DESIGN FILE: N:\ ...\18\DRAWINGS\50\SK1850028.DWG TIME: 13:01 PLC BY: MWHITE



PLAN VIEW



SECTION
SCALE: NTS

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

Worley International Inc
HOUSTON, TEXAS USA

WORLEY PROJECT NUMBER	LAST UPDATE		INT REV
085-07074	09 JAN 2003	13:02	1C

DRAWING NUMBER | REFERENCE DRAWINGS

REV	DATE	REVISION	DRAWN	CHECK	ENG	APPRV. CLIENT
1	01/08/03	AS-BUILT	MGS	RS	DAE	–
0	12/10/01	APPROVED FOR CONSTRUCTION	MGS	RS	DAE	–

CLIENT: Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E., Suite 3000
Washington, DC 20374-5063

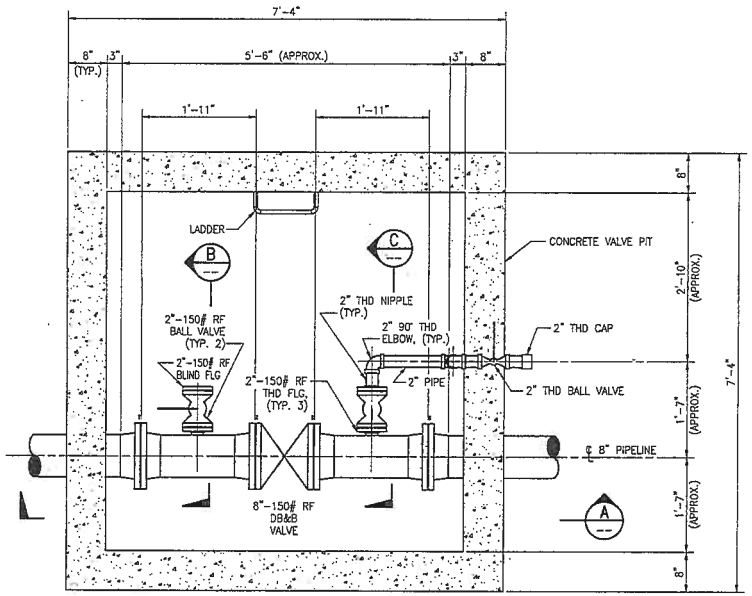
DRAWN	MGS	11/30/01
CHECKED	RS	12-20-01
ENGINEER	DAE	12-20-01
APPROVED	DAE	01-09-02

TITLE: MOD-13 VALVE PIT #2 JP-5

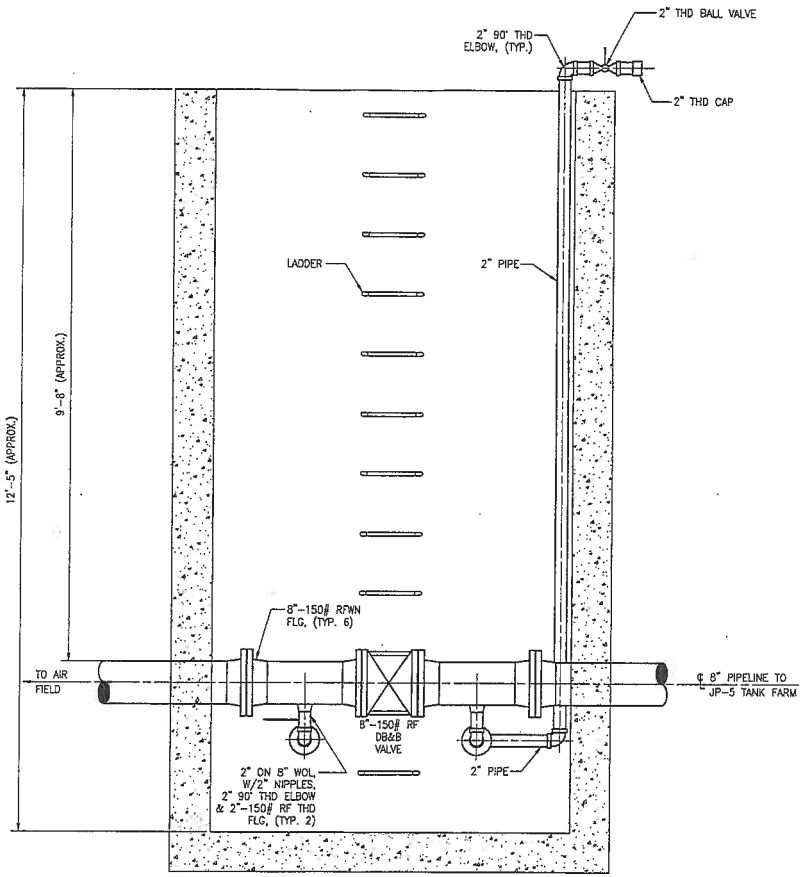
SCALE: NTS

DRAWING NO.: SK-18-50-032 | REV: 1

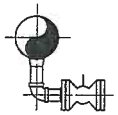
DESIGN FILE: N:\74\18\DRAWINGS\50\SK18500032.DWG
PLT: TIME: 13:03 BY: MWHITE



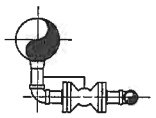
PLAN VIEW



SECTION A
SCALE: NTS



SECTION B
SCALE: NTS



SECTION C
SCALE: NTS

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

Worley International Inc
HOUSTON, TEXAS USA

WORLEY PROJECT NUMBER	LAST UPDATE		INT REV
065-07074	09 JAN 2003	13:04	1A

REV	DATE	REVISION	DRAWN	CHECK	ENG	APPRV.	CLIENT
1	01/08/03	AS-BUILT	MM				-
0	12/10/01	APPROVED FOR CONSTRUCTION	MGS	RS	DAE	DAE	-

DRAWING MANAGER | REFERENCE DRAWINGS

CLIENT: Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E., Suite 3000
Washington, DC 20374-5063

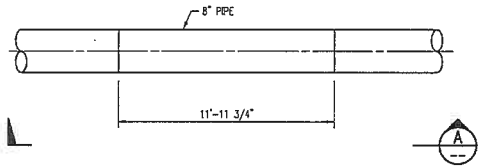
DRAWN	MGS	
DATE	11/5/01	
CHECKED	RS	
DATE	12-20-01	
ENGINEER	DAE	
DATE	12-20-01	
APPROVED	DAE	
DATE	01-09-02	

TITLE: MOD-13 VALVE PIT #3 JP-5

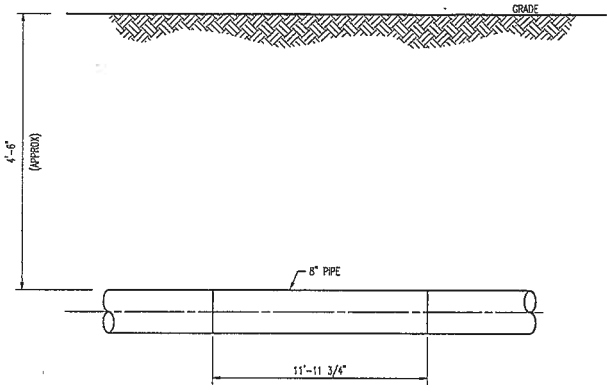
SCALE: NTS

DRAWING NO.: SK-18-50-034 | REV 1

DESIGN FILE: N:\174\18\DRAWINGS\50\SK18500034.DWG
PLT BY: MWHITE
TIME: 13:04



PLAN VIEW



SECTION A
SCALE: NTS

NOTES:
1. CONCRETE PIT BOTTOM REMAINS.

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

TITLE: MOD-13 VALVE PIT #4 JP-5

SCALE: NTS

DRAWING NO.: SK-18-50-036

REV: 1

DRAWN: MGS DATE: 11/29/01
CHECKED DATE
ENGINEER DATE
APPROVED DATE

CLIENT: Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E., Suite 3000
Washington, DC 20374-5063

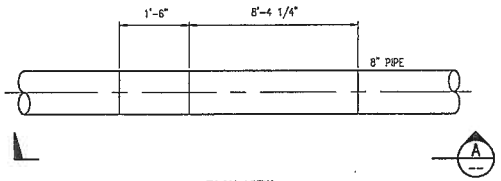
REV	DATE	REVISION	DRAWN	CHECK	ENG	APPRVL	CLIENT
1	01/08/03	AS-BUILT	MW				--
0	12/10/01	APPROVED FOR CONSTRUCTION	MGS				--

DRAWING NUMBER | REFERENCE DRAWINGS

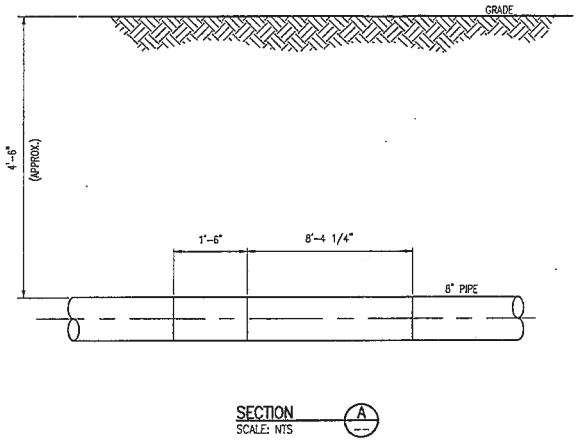
Worley International Inc
HOUSTON, TEXAS USA

WORLEY PROJECT NUMBER: 065-07074
LAST UPDATE: 09 JAN 2003 13:05
INT REV: 1A

DESIGN FILE: N:\7\18\DRAWINGS\50\SK1850036.DWG
PLT: BY: NWHITE
TIME: 13:06



PLAN VIEW



NOTES:
1. CONCRETE PIT BOTTOM REMAINS.

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

Worley International Inc
HOUSTON, TEXAS USA

WORLEY PROJECT NUMBER	LAST UPDATE		INT REV
065-07074	09 JAN 2003	13:14	1A

DRAWING NUMBER	REFERENCE DRAWINGS	REV	DATE	REVISION	DRAWN	CHECK	ENG	APPROV	CLIENT
		1	01/08/03	AS-BUILT	MW				–
		0	12/10/01	APPROVED FOR CONSTRUCTION	MGS				–

CLIENT: Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E., Suite 3000
Washington, DC 20374-5063

DRAWN	MGS
DATE	12/7/01
CHECKED	
DATE	
ENGINEER	
DATE	
APPROVED	
DATE	

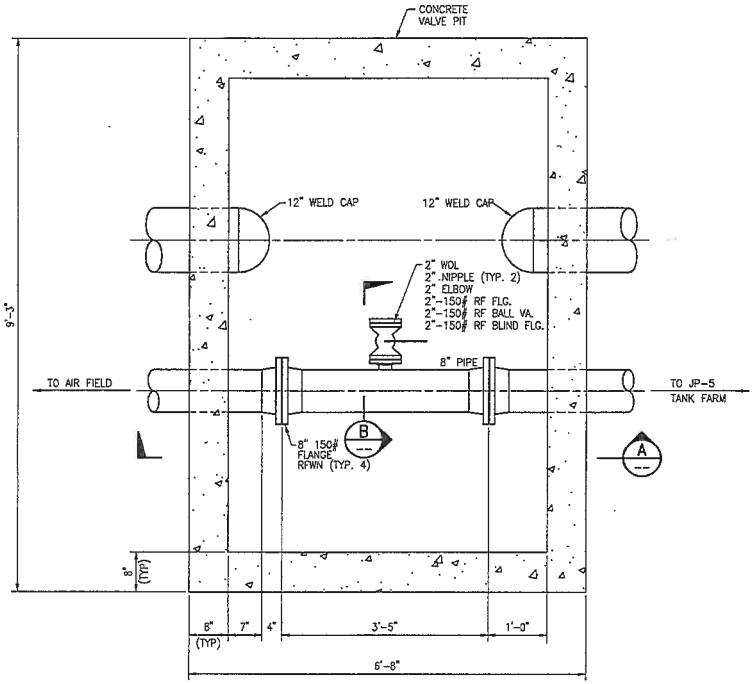
TITLE: MOD-13 VALVE PIT #5 JP-5

SCALE: NTS

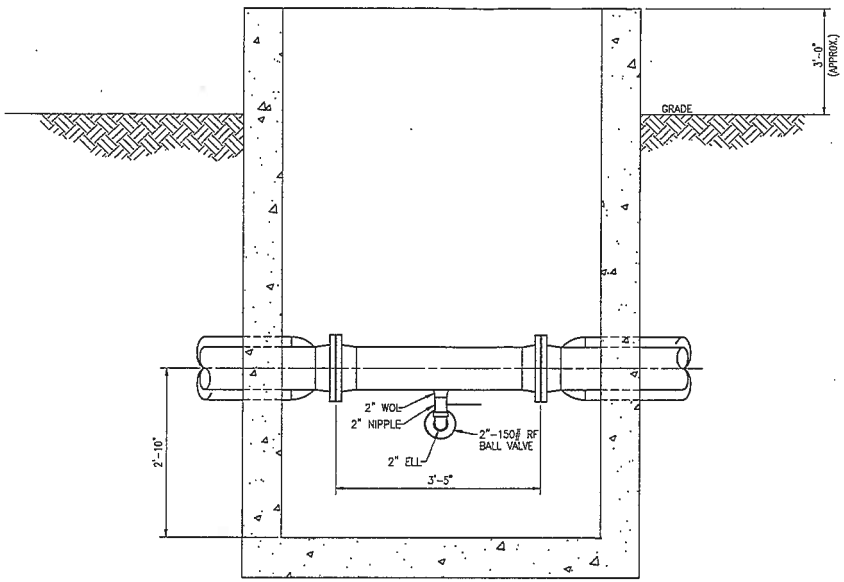
DRAWING NO.: SK-18-50-038

REV: 1

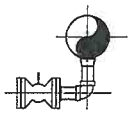
DESIGN FILE: N:\C74\18\DRAWINGS\50\SK18500038.DWG
TIME: 13:15
PLOT BY: MWHITE



PLAN VIEW



SECTION A
SCALE: NTS



SECTION B
SCALE: NTS

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

DESIGN FILE: N:\C74\18\DRAWINGS\50\SK1850040.DWG PLOT BY: MWHITE TIME: 13:21

Worley International Inc
HOUSTON, TEXAS USA

WORLEY PROJECT NUMBER	LAST UPDATE		INT REV
065-07074	09 JAN 2003	13:21	1C

REV	DATE	REVISION	DRAWN	CHECK	ENG	APPRV	CLIENT
1	01/08/03	AS-BUILT	MM				-
0	12/10/01	APPROVED FOR CONSTRUCTION	MGS	RS	DAE	DAE	-

CLIENT: Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E., Suite 3000
Washington, DC 20374-5063

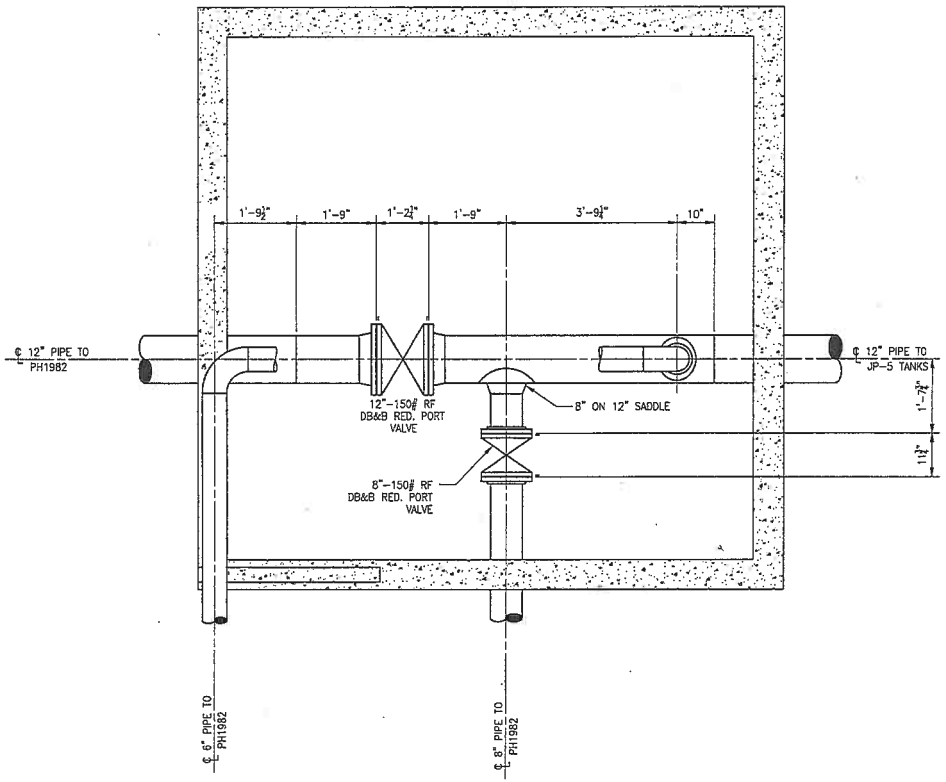
DRAWN	MGS
DATE	12/8/01
CHECKED	RS
DATE	12-20-01
ENGINEER	DAE
DATE	12-20-01
APPROVED	DAE
DATE	01-09-02

TITLE: MOD-13 VALVE PIT #6 JP-5

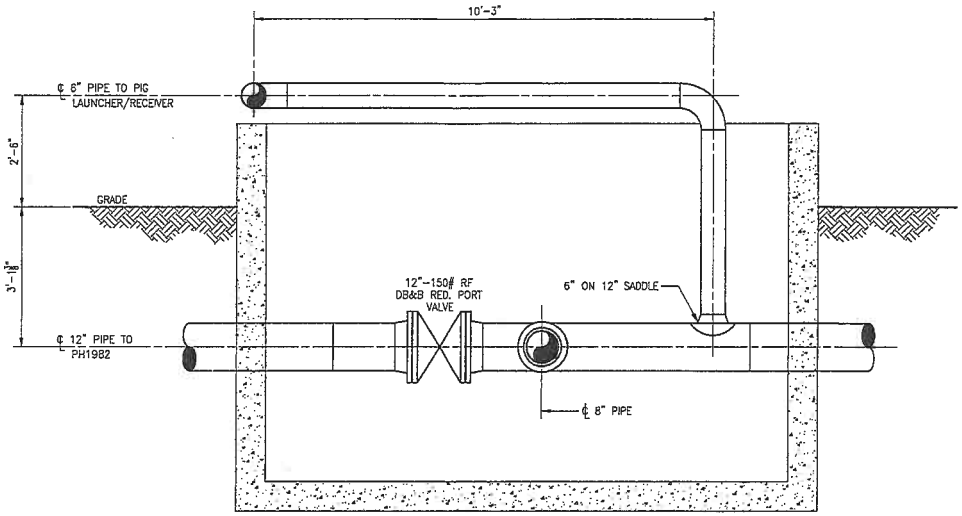
SCALE: NTS

DRAWING NO.: SK-18-50-040

REV: 1



PLAN



ELEVATION

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

Worley International Inc
HOUSTON, TEXAS USA

WORLEY PROJECT NUMBER	LAST UPDATE		INT REV
065-07074	09 JAN 2003	13:44	0A

DRAWING NUMBER	REFERENCE DRAWINGS	REV	DATE	REVISION	DRAWN	CHECK	ENG	APPROV	CLIENT
		0	01/08/03	AS-BUILT					–

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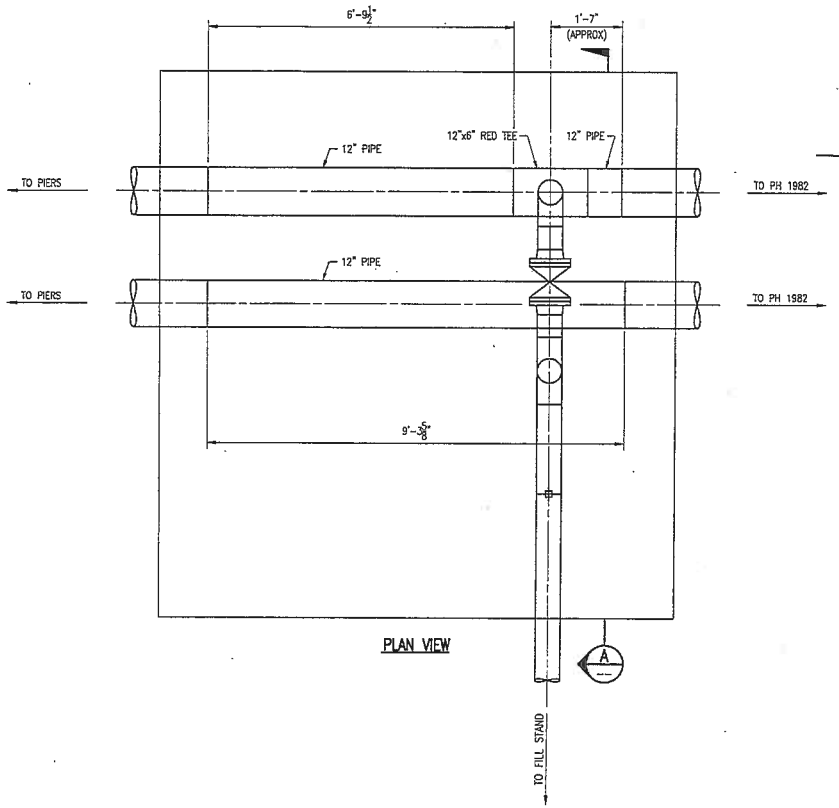
CLIENT: Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E., Suite 3000
Washington, DC 20374-5063

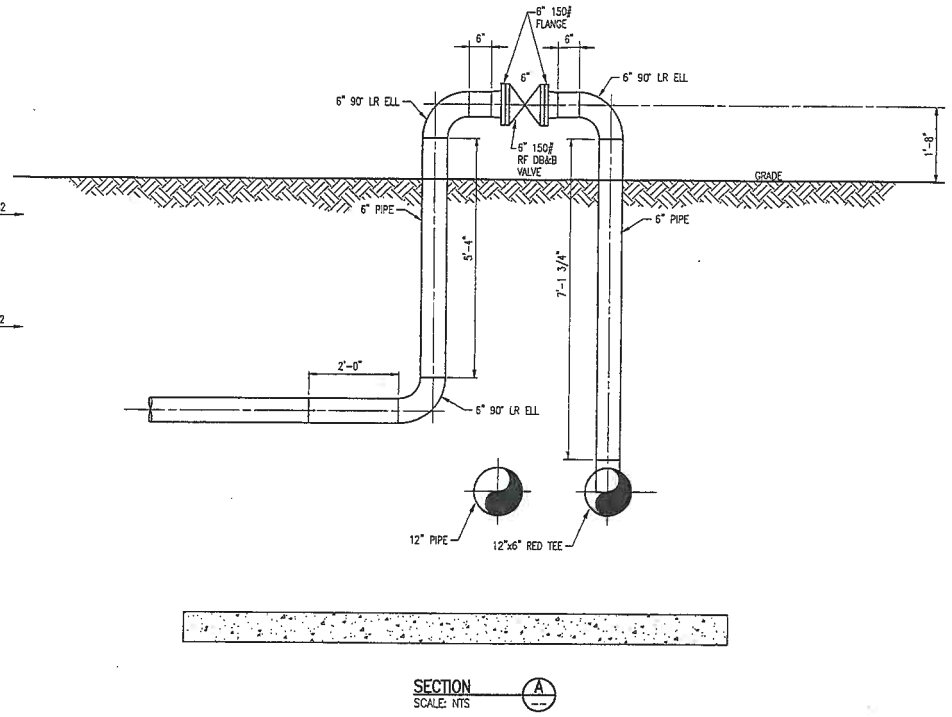
DRAWN	WD	
DATE	7/19/02	
CHECKED		
DATE		
ENGINEER		
DATE		
APPROVED		
DATE		

TITLE: MOD-14 VALVE PIT #9 JP-5

SCALE	DRAWING NO.	REV
NTS	SK-18-50-056	0



PLAN VIEW



SECTION
SCALE: NTS

A

NOTES:
CONCRETE PIT BOTTOM REMAINS

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

TITLE: MOD-15 VALVE PIT #56 DFM-P

DRAWN MGS 12/24/01
CHECKED
ENGINEER
APPROVED

SCALE: NTS

DRAWING NO. SK-18-50-044 REV 1

Worley International Inc
HOUSTON, TEXAS USA

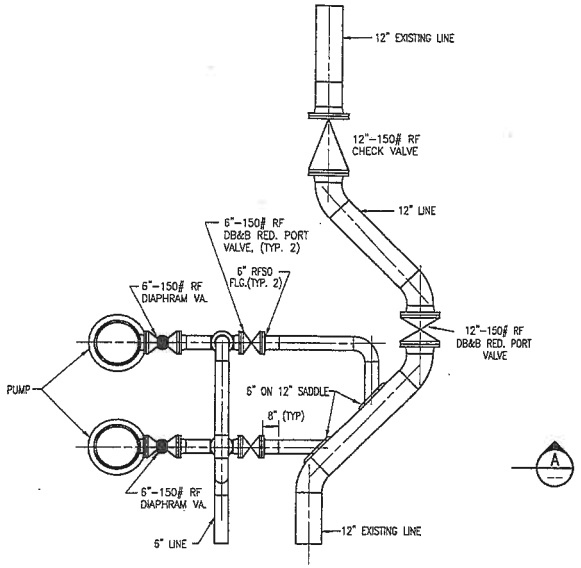
WORLEY PROJECT NUMBER 065-07074 | LAST UPDATE 09 JAN 2003 13:23 | INT REV 1C

DRAWING NUMBER | REFERENCE DRAWINGS

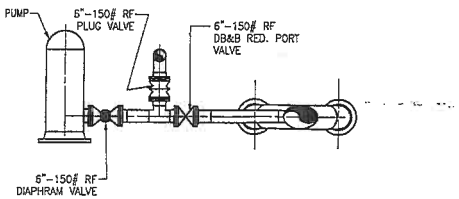
REV	DATE	REVISION	DRAWN	CHKD	ENGR	APPD
1	01/08/03	AS-BUILT	MW	–	–	–
0	12/24/01	APPROVED FOR CONSTRUCTION	MGS	–	–	–

CLIENT: Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E., Suite 3000
Washington, DC 20374-5063

DESIGN FILE: H:\06'4\16\DRAWINGS\SO\SK18S0044.DWG PLOT TIME: 13:24 Y: MWHITE



PLAN VIEW



SECTION A
SCALE: NTS

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

TITLE: MOD 15 6" VALVE REPLACEMENT JP-5 TANK 381

SCALE: NTS

DRAWING NO.: SK-18-50-055

REV: 0

DRAWN: WO DATE: 7/15/02

CHECKED DATE

ENGINEER DATE

APPROVED DATE

CLIENT: Naval Facilities Engineering Service Center, Washington Navy Yard, 1435 10th Street S.E., Suite 3000, Washington, DC 20374-5063

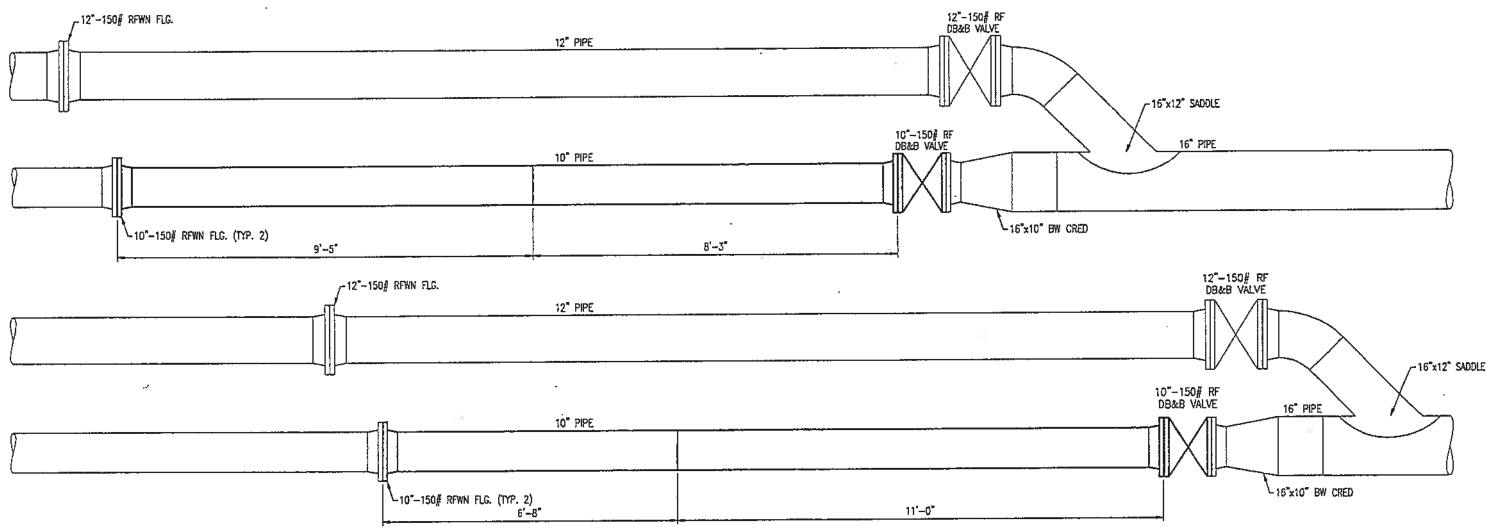
Worley International Inc, HOUSTON, TEXAS USA

WORLEY PROJECT NUMBER: 065-07074 | LAST UPDATE: 09 JAN 2003 13:41 | INT REV: 08

DRAWING NUMBER | REFERENCE DRAWINGS

REV	DATE	REVISION	DRAWN	CHECK	ENG	APPROVAL	CLIENT
0	01/08/03	AS-BUILT					

DESIGN FILE: N:\DGN\DRAWINGS\50\SK1850055.DWG PLOT TIME: 13:42 Y: MWHITE



PIPING PLAN

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

TITLE: MOD 15 PH-1982 METER RUNS JP-5

SCALE: NTS | DRAWING NO. SK-18-50-062 | REV 0

DRAWN: SPR | DATE: 8/16/02 | CHECKED | DATE | ENGINEER | DATE | APPROVED | DATE

CLIENT: Naval Facilities Engineering Service Center, Washington Navy Yard, 1435 10th Street S.E., Suite 3000, Washington, DC 20374-5063

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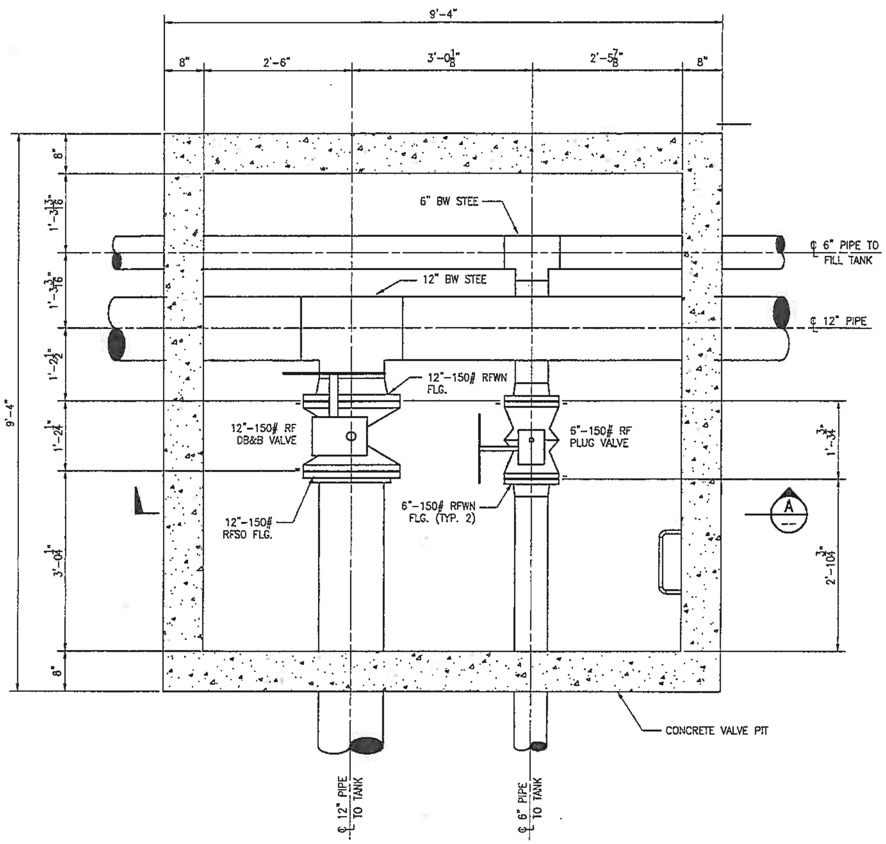
REV	DATE	REVISION	DRAWN	CHECK	ENG	APPR'VL	CLIENT
0	01/08/03	AS-BUILT	MW				

DRAWING NUMBER | REFERENCE DRAWINGS

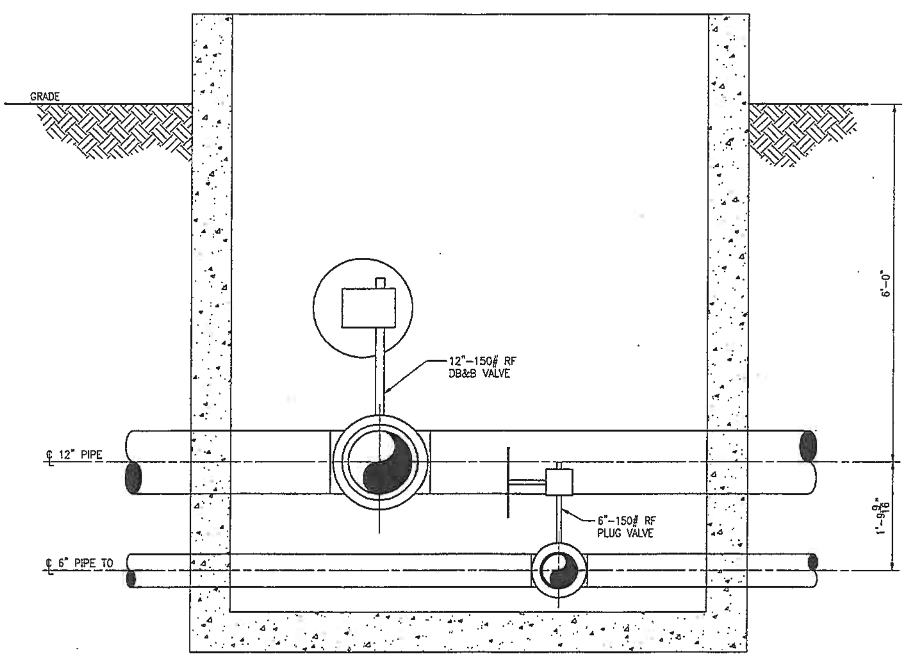
Worley International Inc, HOUSTON, TEXAS USA

WORLEY PROJECT NUMBER: 065-07074 | LAST UPDATE: 09 JAN 2003 13:51 | INT REV: 0B

DESIGN FILE: N:\065\7074\18\DRAWINGS\50\SK1850062.DWG PLOT DATE: 09 JAN 03 TIME: 13:51 PLOTTED BY: MWHITE



PLAN VIEW



SECTION (A)
SCALE: NTS

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

TITLE: MOD 15 VALVE PIT 10 JP-5

SCALE: NTS | DRAWING NO. SK-18-50-065 | REV 0

DRAWN M.WHITE DATE 01/07/03 | CHECKED | DATE | ENGINEER | DATE | APPROVED | DATE

CLIENT: Naval Facilities Engineering Service Center, Washington Navy Yard, 1435 10th Street S.E., Suite 3000, Washington, DC 20374-5063

REV	DATE	REVISION	DRAWN
0	01/08/03	AS-BUILT	MW

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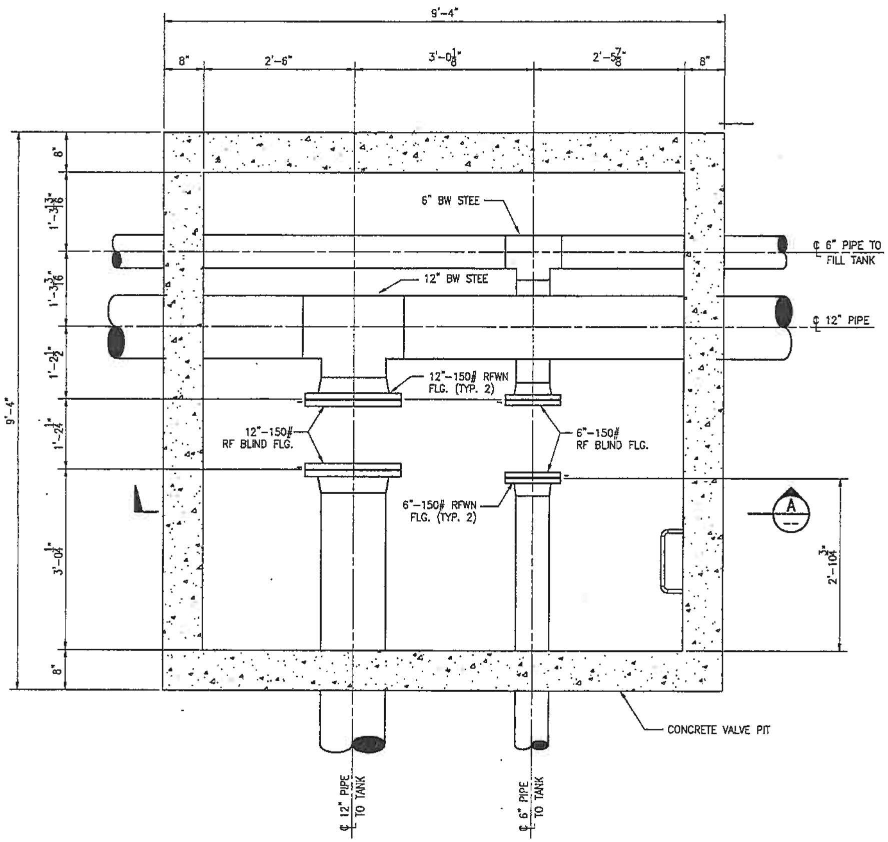
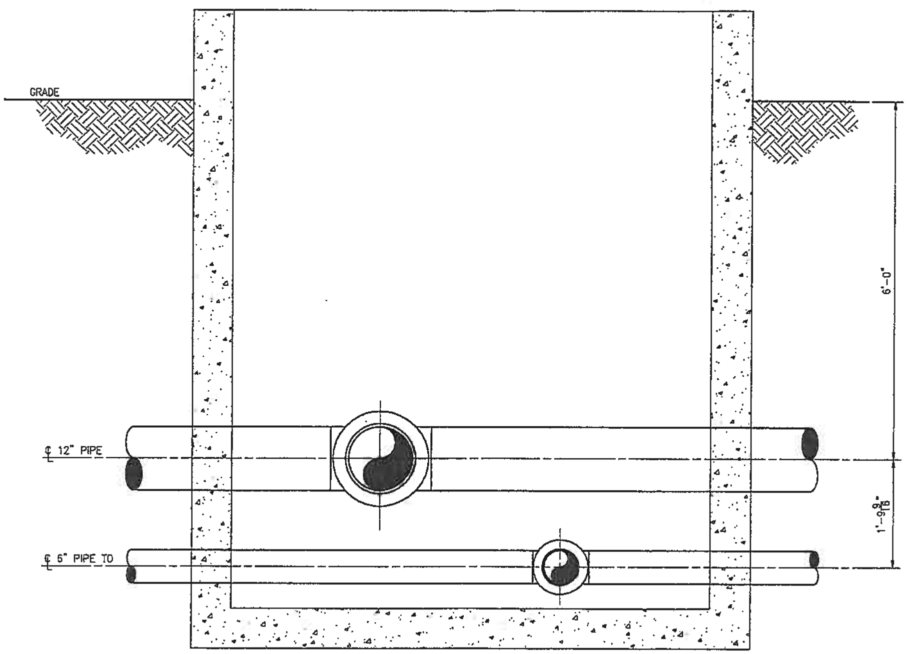
WORLEY PROJECT NUMBER 065-07074 | LAST UPDATE 09 JAN 2003 13:55 | INT REV 0A

DESIGN FILE: N:\0...4\18\DRAWINGS\50\SK1850065.DWG TIME: 13:55 PLOT BY: MWHITE



PLAN VIEW



SECTION (A)
SCALE: NTS

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

TITLE: MOD 15 VALVE PIT 11 JP-5

SCALE: N.T.S. DRAWING NO. SK-18-50-066 REV 0

DRAWN: M. WHITE DATE: 01/07/03
CHECKED / DATE / ENGINEER / DATE / APPROVED / DATE

CLIENT: Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E., Suite 3000
Washington, DC 20374-5063

REV	DATE	REVISION	DRAWN	CHECK	ENG	APPRV	CLIENT
0	01/08/03	AS-BUILT	MW				-

DRAWING NUMBER | REFERENCE DRAWINGS

Worley International Inc
HOUSTON, TEXAS USA

WORLEY PROJECT NUMBER	LAST UPDATE		INT REV
065-07074	09 JAN 2003	13:56	0A

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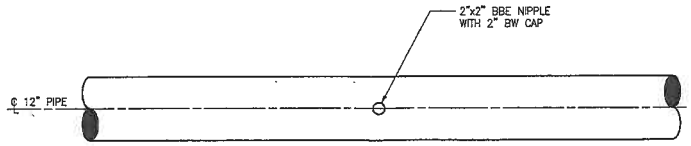
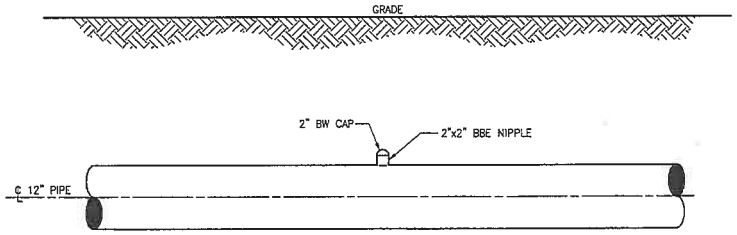


PLAN VIEW



ELEVATION VIEW

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION
PUERTO RICO

ORIGINAL DATA SUPPLIED BY:
U.S. ARMY ENGINEER DIVISION HUNTSVILLE
CORPS OF ENGINEERS
HUNTSVILLE, ALABAMA

TITLE: MOD-16
BLOW-OUT PIT
JP-5

SCALE: N.T.S.

DRAWING NO. SK-18-50-064 REV 0

Worley International Inc
HOUSTON, TEXAS USA

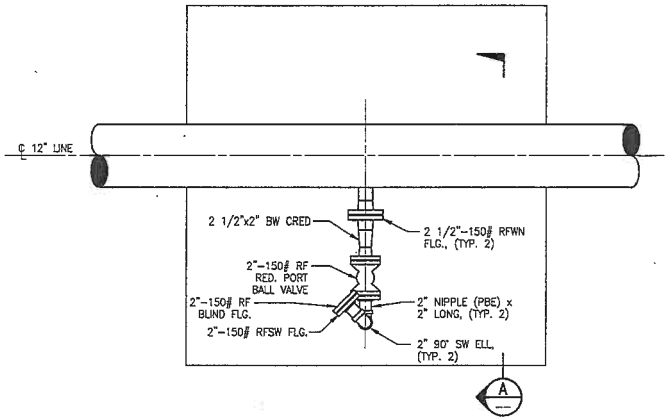
WORLEY PROJECT NUMBER: 065-07074
LAST UPDATE: 09 JAN 2003 13:54
INT REV: 0A

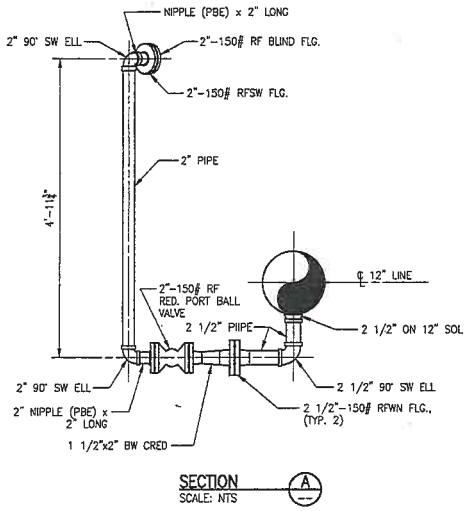
DRAWING NUMBER	REFERENCE DRAWINGS	REV	DATE	REVISION	DRAWN	CHECK	ENG	APPROV	CLIENT
		0	01/08/03	AS-BUILT					-

CLIENT: Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E., Suite 3000
Washington, DC 20374-5063

DRAWN M.WHITE DATE 01/07/03
CHECKED DATE
ENGINEER DATE
APPROVED DATE

DESIGN FILE: N:\D\...\SK18500064.DWG PLOT BY: MWHITE TIME: 13:54





SECTION A
SCALE: NTS

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

Worley International Inc
HOUSTON, TEXAS USA

WORLEY PROJECT NUMBER	LAST UPDATE		INT REV
065-07074	09 JAN 2003	13:47	08

DRAWING NUMBER	REFERENCE DRAWINGS	REV	DATE	REVISION	DRAWN	CHECK	ENG	APPRV	CLIENT
		0	01/08/03	AS-BUILT	MW				-

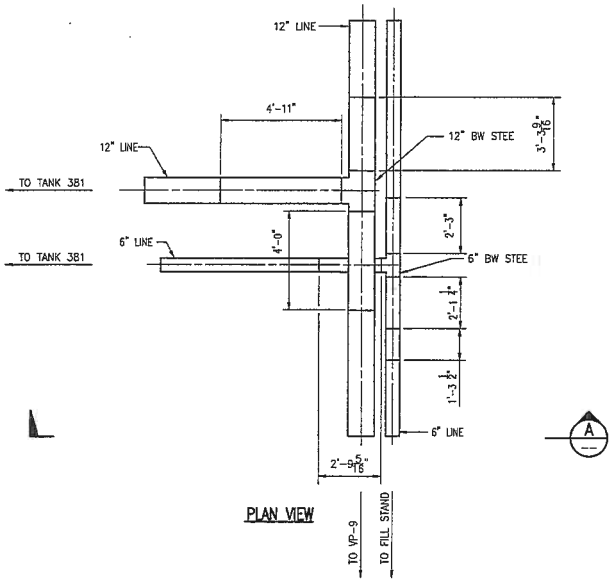
CLIENT: Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E., Suite 3000
Washington, DC 20374-5063

DRAWN	WO
DATE	7/19/02
CHECKED	
DATE	
ENGINEER	
DATE	
APPROVED	
DATE	

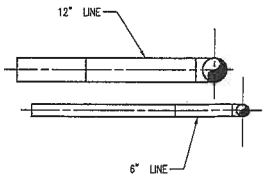
TITLE: MOD 17
VALVE PIT #7A
JP-5

SCALE	DRAWING NO.	REV
NTS	SK-18-50-059	0

DESIGN FILE: N:\0
74\18\DRAWINGS\50\SK1850059.DWG
TIME: 13:47
PLOT
BY: MWHITE



PLAN VIEW



SECTION A
SCALE: NTS

NOTE:
CONCRETE PIT BOTTOM REMAINS.

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION
PUERTO RICO

ORIGINAL DATA SUPPLIED BY:
U.S. ARMY ENGINEER DIVISION HUNTSVILLE
CORPS OF ENGINEERS
HUNTSVILLE, ALABAMA

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HOUSTON, TEXAS USA

WORLEY PROJECT NUMBER	LAST UPDATE		INT REV
065-07074	09 JAN 2003	13:45	08

REV	DATE	REVISION	DRAWN	CHECK	ENG	APPRVL	CLIENT
0	01/08/03	AS-BUILT	MW				

DRAWING NUMBER | REFERENCE DRAWINGS

CLIENT: Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E. Suite 3000
Washington, DC 20374-5063

DRAWN	WO
DATE	7/15/02
CHECKED	
DATE	
ENGINEER	
DATE	
APPROVED	
DATE	

TITLE
MOD 18
VALVE PIT 9A
JP-5

SCALE: NTS
DRAWING NO.: SK-18-50-057
REV: 0

DESIGN FILE: N:\U
PLOT BY: MWHITE
TIME: 13:46
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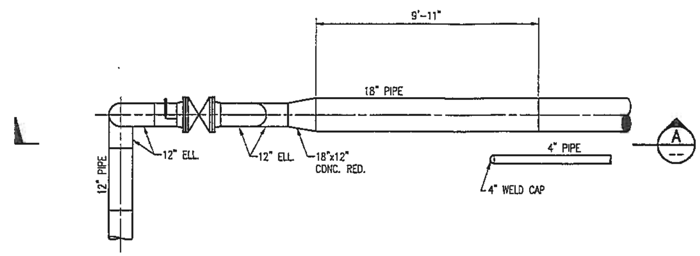
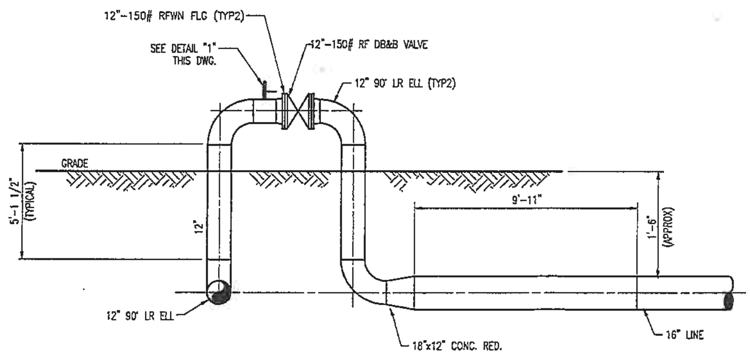
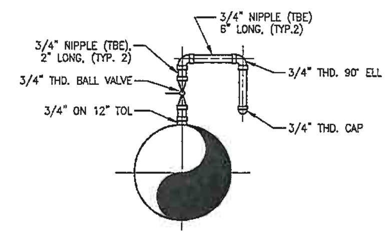


PLAN VIEW



SECTION (A)
SCALE: NTS



DETAIL (1)
SCALE: NTS

NOTES:

CONCRETE PIT BOTTOM REMAINS

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

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WORLEY PROJECT NUMBER	LAST UPDATE		NT REV
065-07074	09 JAN 2003	13:29	1C

REV	DATE	REVISION	DRAWN	CHECK	ENG	APPR'VL	CLIENT
0	01/08/03	AS-BUILT	MW			-	

DRAWING NUMBER | REFERENCE DRAWINGS

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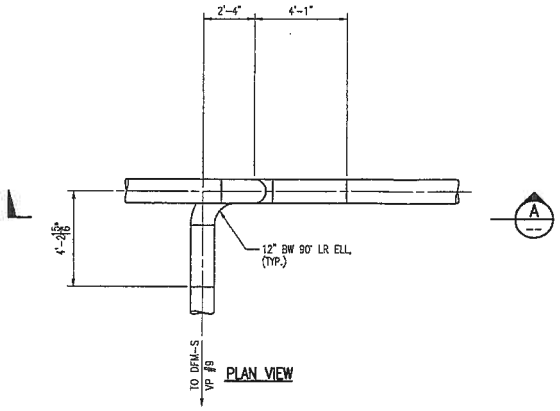
CLIENT: Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E. Suite 3000
Washington, DC 20374-5063

DRAWN: WO
DATE: 8/16/02
CHECKED:
DATE:
ENGINEER:
DATE:
APPROVED:
DATE:

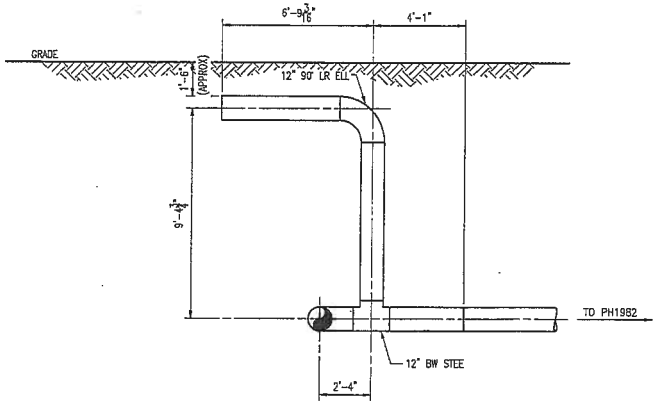
TITLE: MOD 19
VALVE PIT #8
DFM-P

SCALE: NTS
DRAWING NO. SK-18-50-051
REV 1

DESIGN FILE: N:\0...\18\DRAWINGS\50\SK1850051.DWG TIME: 13:30 PLOT BY: MWHITE



PLAN VIEW



SECTION A
SCALE: NTS

PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

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WORLEY PROJECT NUMBER	LAST UPDATE		INT REV
065-07074	09 JAN 2003	13:34	0B

DRAWING NUMBER	REFERENCE DRAWINGS	REV	DATE	REVISION	DRAWN	CHECK	ENG	APPRV	CLIENT
		0	01/08/03	AS-BUILT	///				–

CLIENT: Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E., Suite 3000
Washington, DC 20374-5063

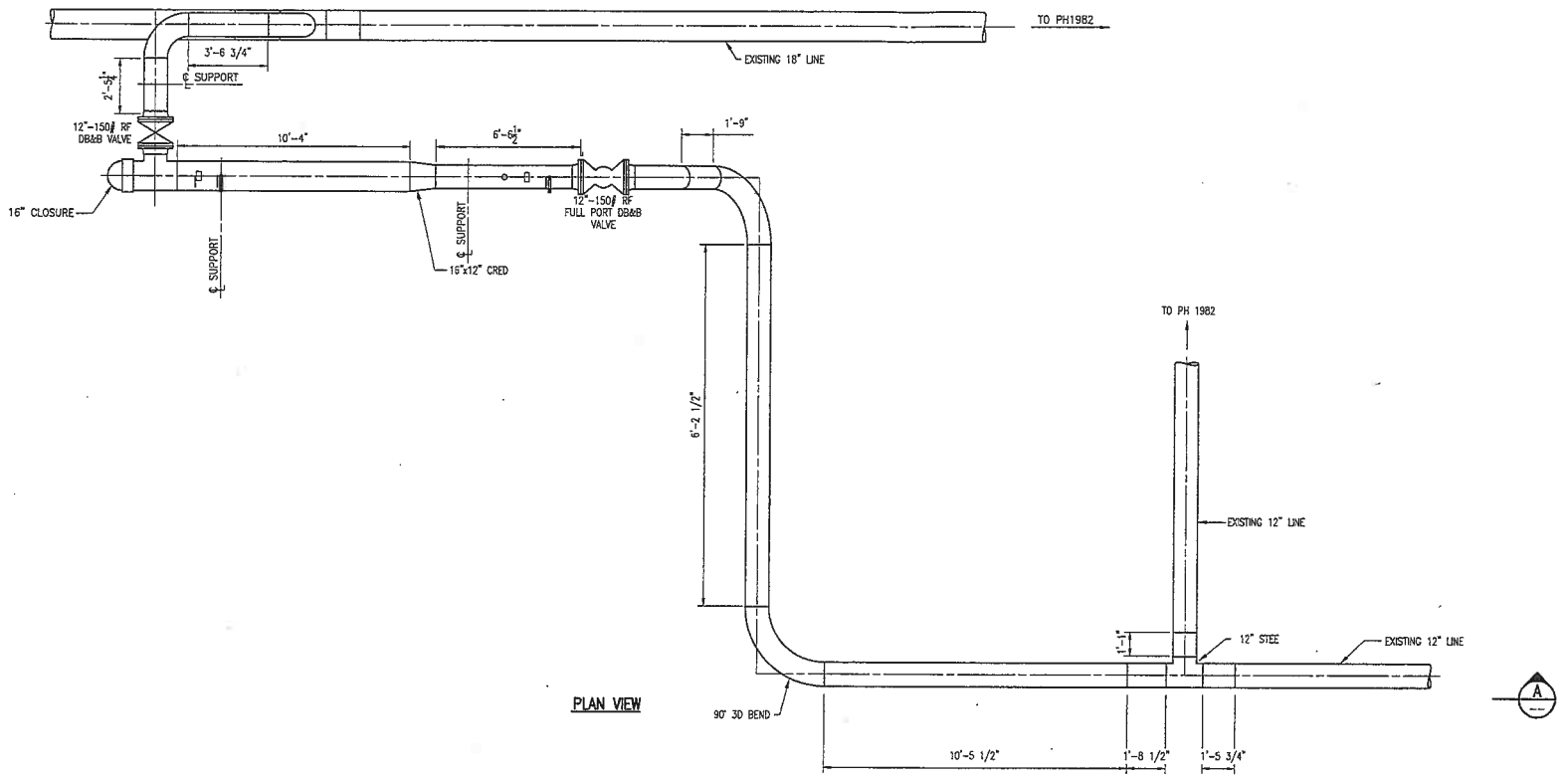
DRAWN	WO
DATE	8/16/02
CHECKED	
DATE	
ENGINEER	
DATE	
APPROVED	
DATE	

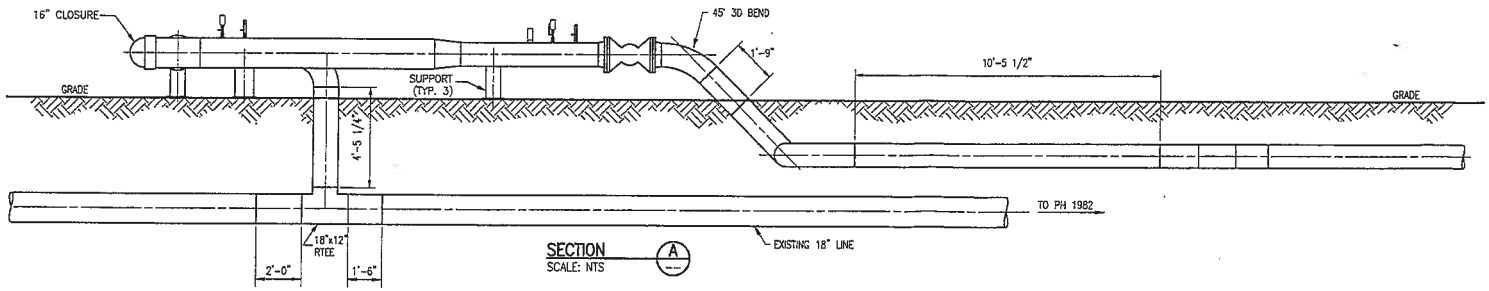
TITLE: MOD 20
VALVE PIT #8
DFM VALVE REMOVAL

SCALE: NTS

DRAWING NO. SK-18-50-052 REV 0

DESIGN FILE: N:\74\18\DRAWINGS\50\SK18500S2.DWG PLT BY: MWHITE TIME: 13:37





PIPELINE DRAWINGS

SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

Worley International Inc
HOUSTON, TEXAS USA

WORLEY PROJECT NUMBER	LAST UPDATE		INT REV
065-07074	09 JAN 2003	13:38	0B

DRAWING NUMBER

REFERENCE DRAWINGS

REV	DATE	REVISION	DRAWN	CHECK	ENG	APPROV.	CLIENT
0	01/08/03	AS-BUILT					

CLIENT: Naval Facilities Engineering Service Center
Washington Navy Yard
1435 10th Street S.E., Suite 3000
Washington, DC 20374-5063

DRAWN	WO
DATE	8/15/02
CHECKED	
DATE	
ENGINEER	
DATE	
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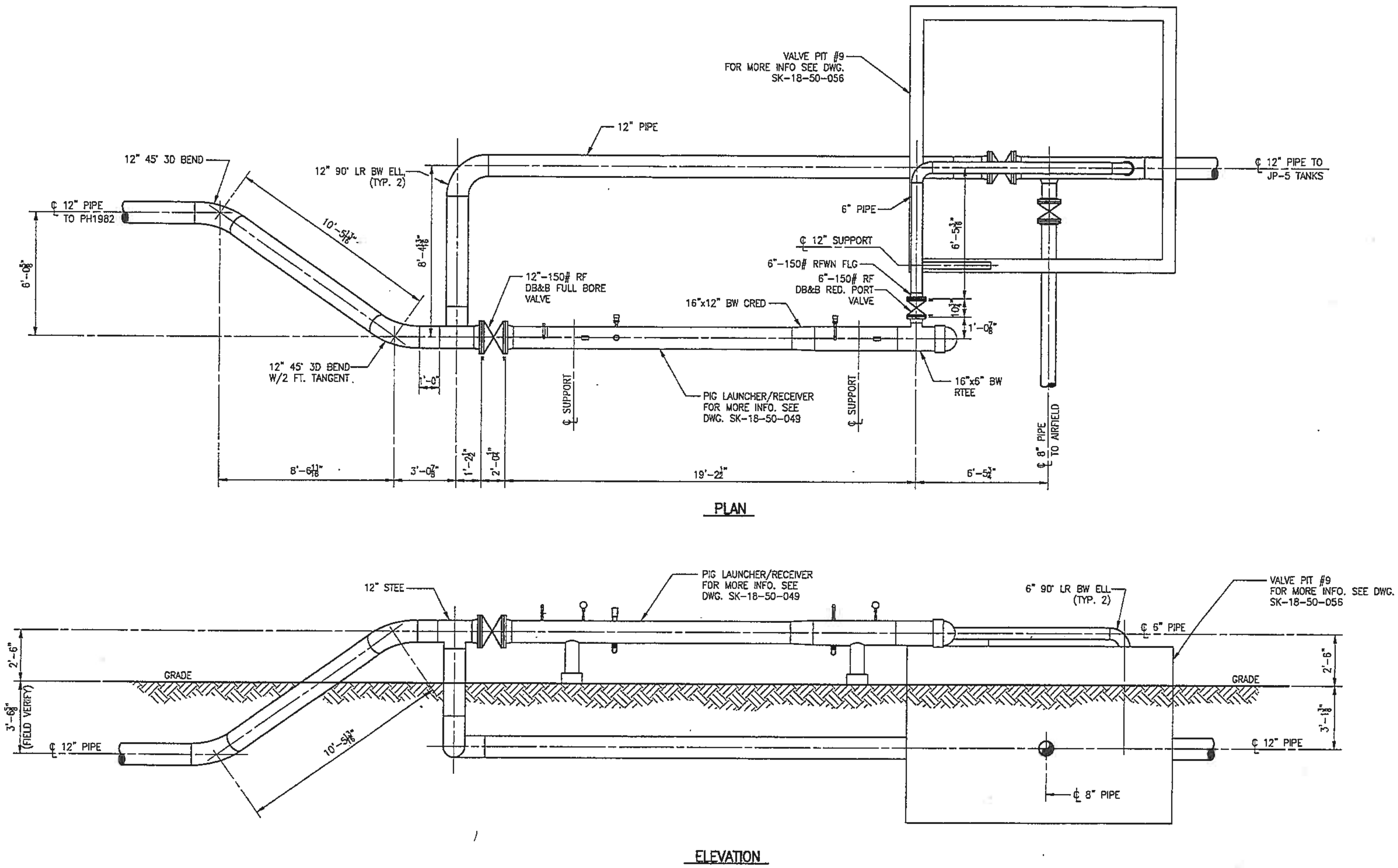
TITLE: PIG LAUNCHER / RECEIVER PH 1982 JP-5

SCALE: NTS

DRAWING NO.: SK-18-50-053

REV: 0



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SITE: U.S. NAVAL STATION PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

TITLE: PIG LAUNCHER/RECEIVER JP-5 TANK FARM JP-5

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SCALE: NTS | DRAWING NO. SK-18-50-054 | REV 0

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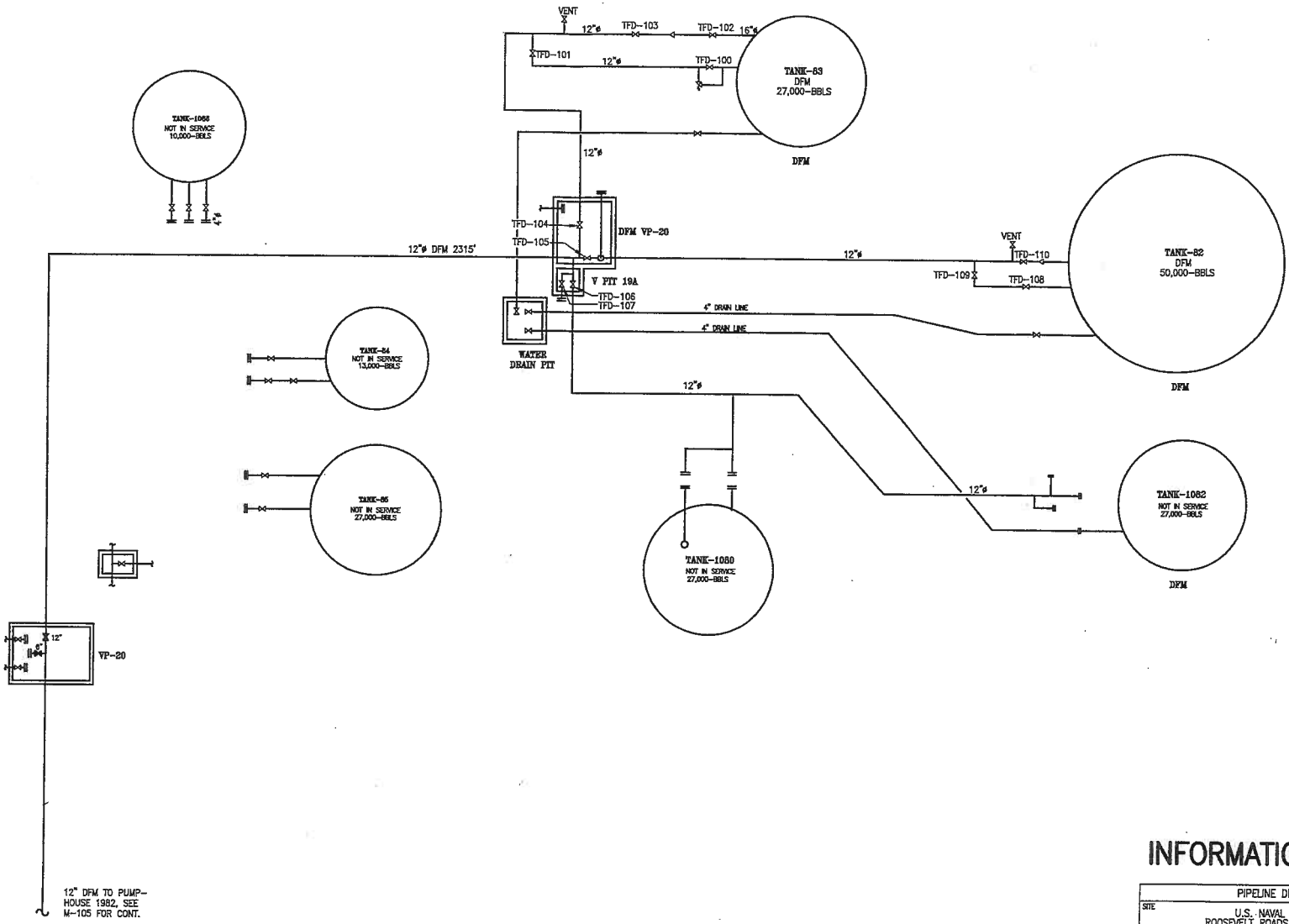

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SHEET 1 OF 9

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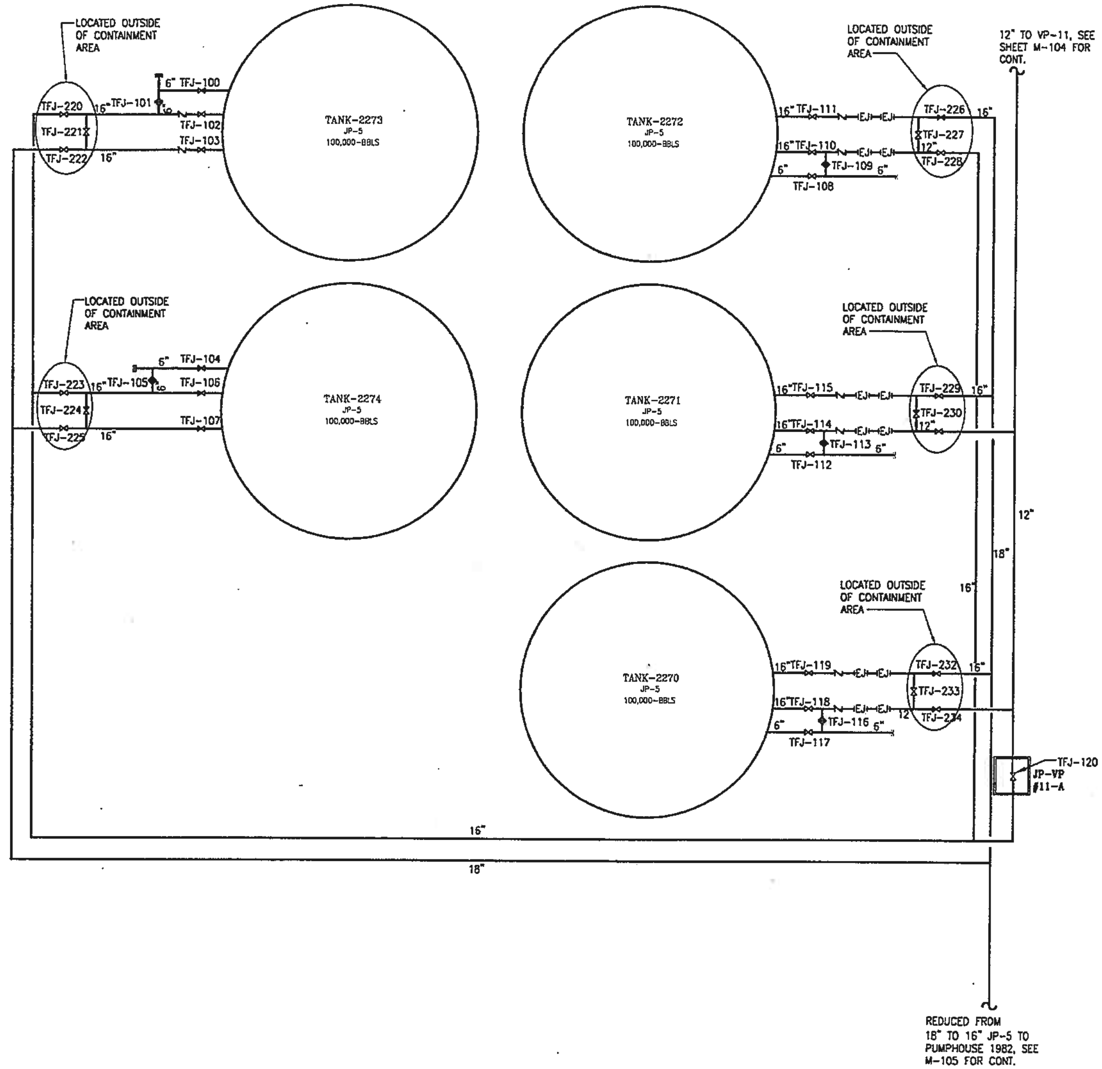

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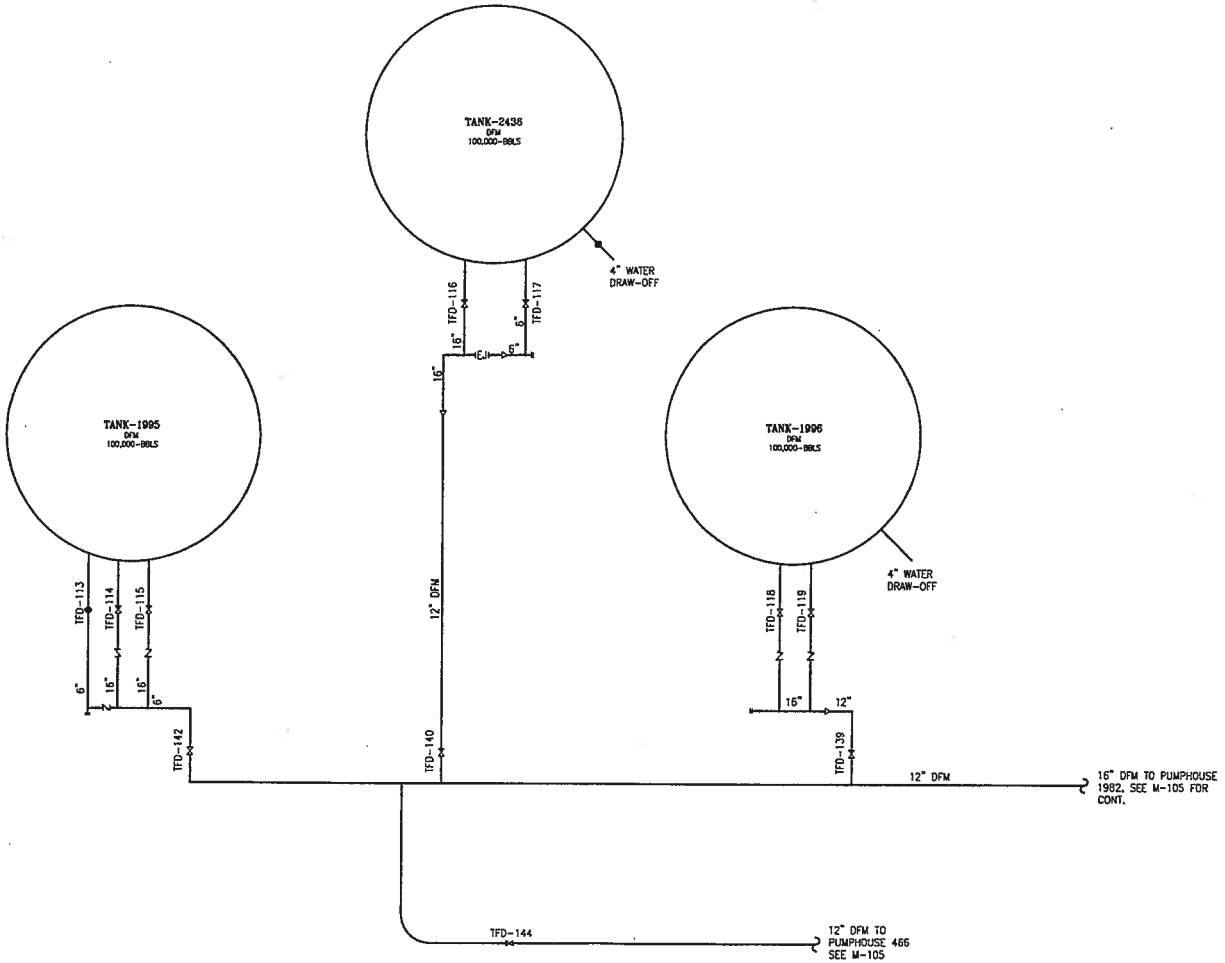

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065-07074	08 JAN 2003	10:05	0A

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PLOT DATE: 08 JAN 03
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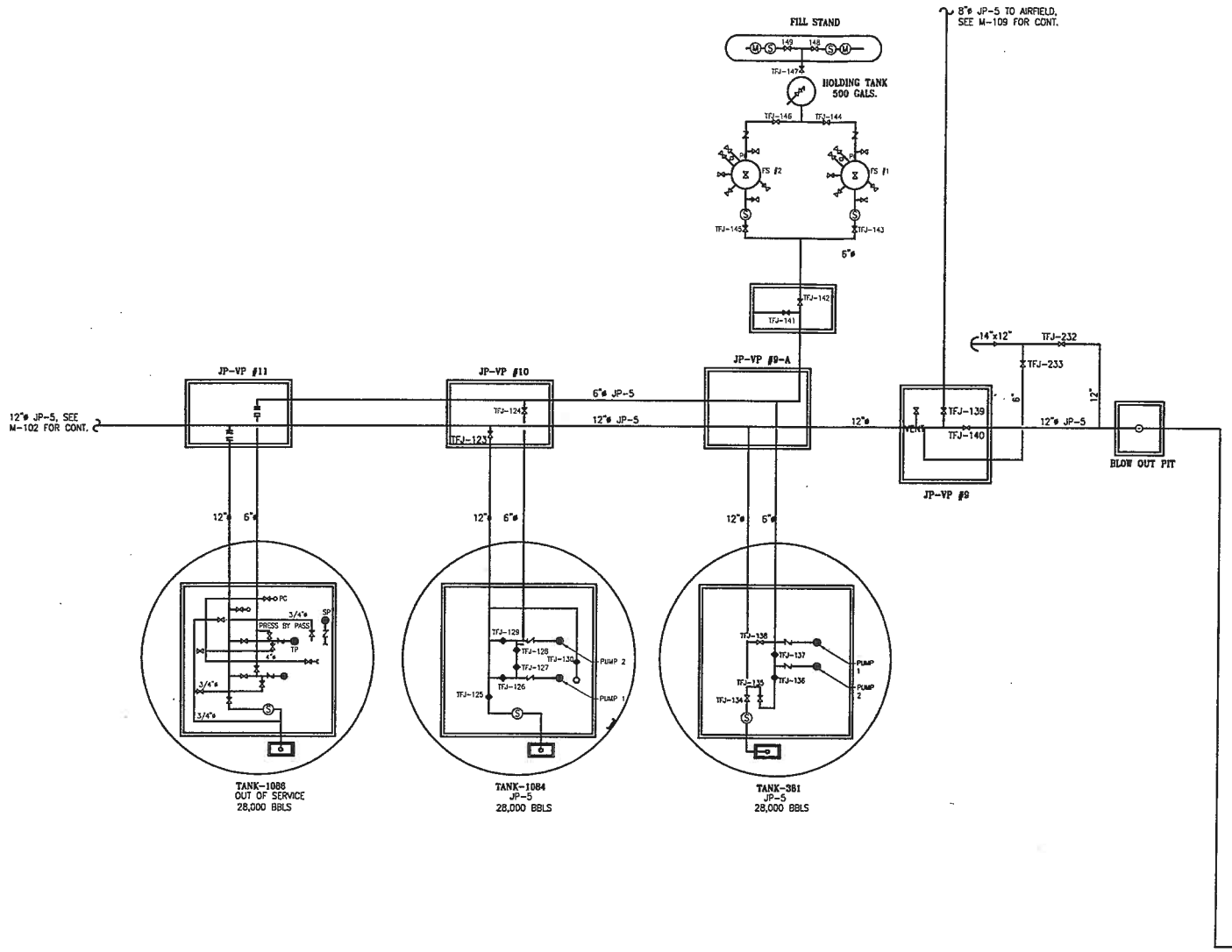

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ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

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SHEET 4 OF 9

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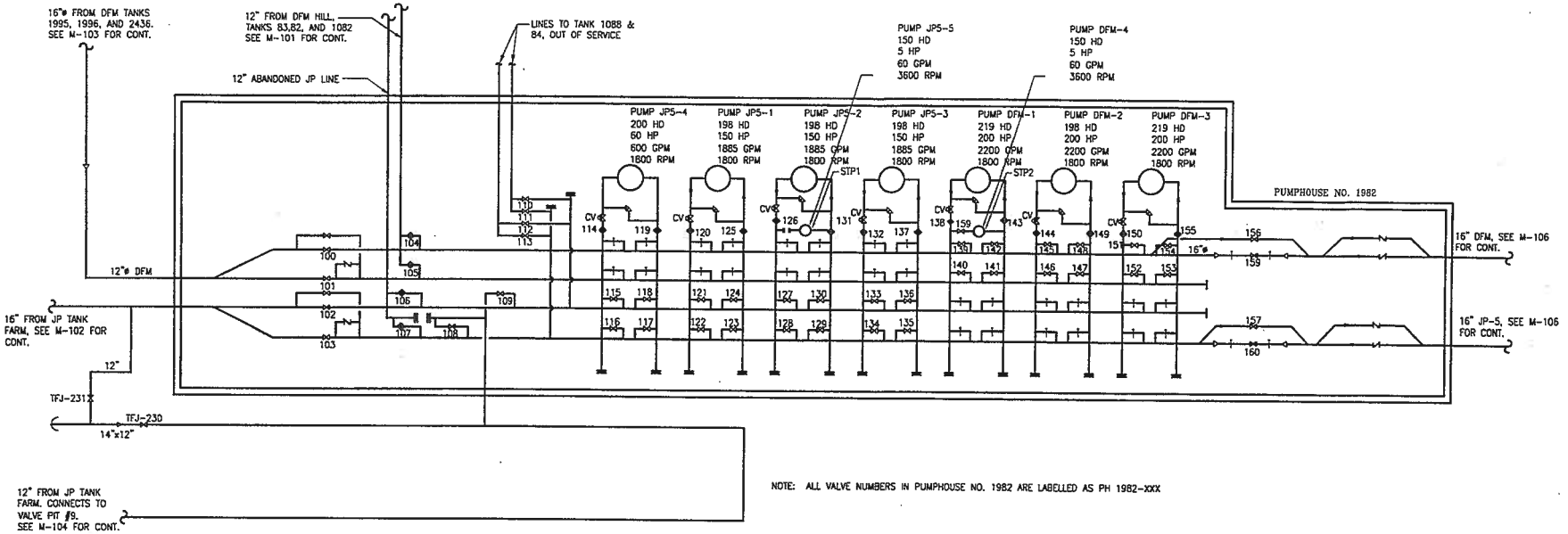
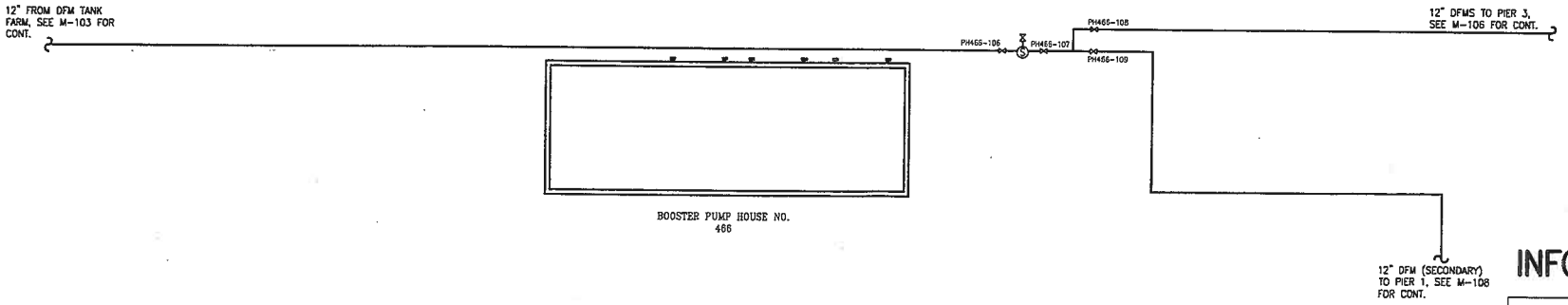


NOTE: ALL VALVE NUMBERS IN PUMPHOUSE NO. 1982 ARE LABELLED AS PH 1982-XXX



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ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

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WORLEY PROJECT NUMBER	LAST UPDATE		WT REV
065-07074	08 JAN 2003	15:28	0A

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SHEET 5 OF 9

SCALE: -

DRAWING NO.: SK-18-15-1000

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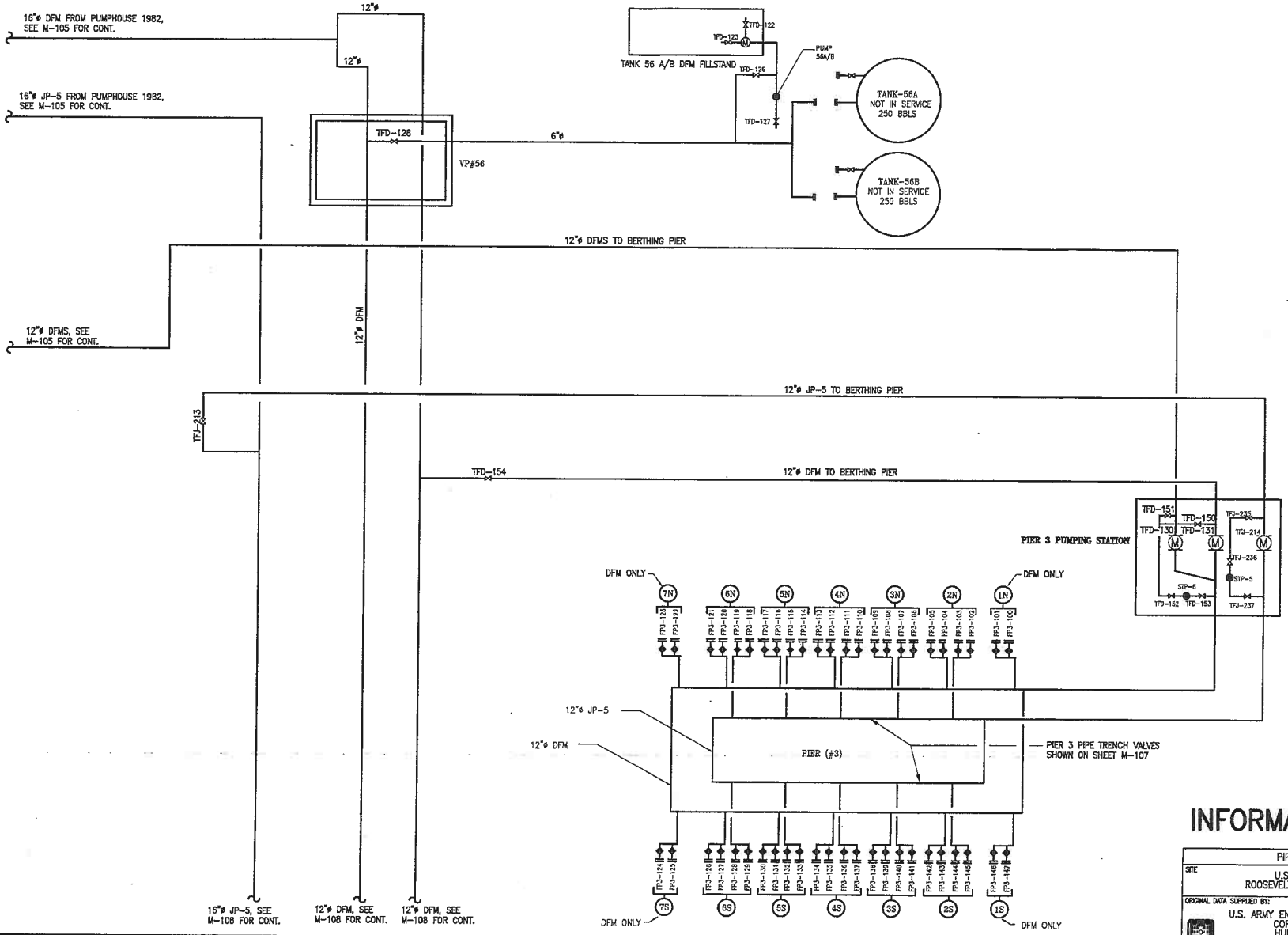

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TITLE: O & M – SHEET 6 OF 9

SCALE: –

DRAWING NO.: SK-18-15-1000

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BY: MFOSTER

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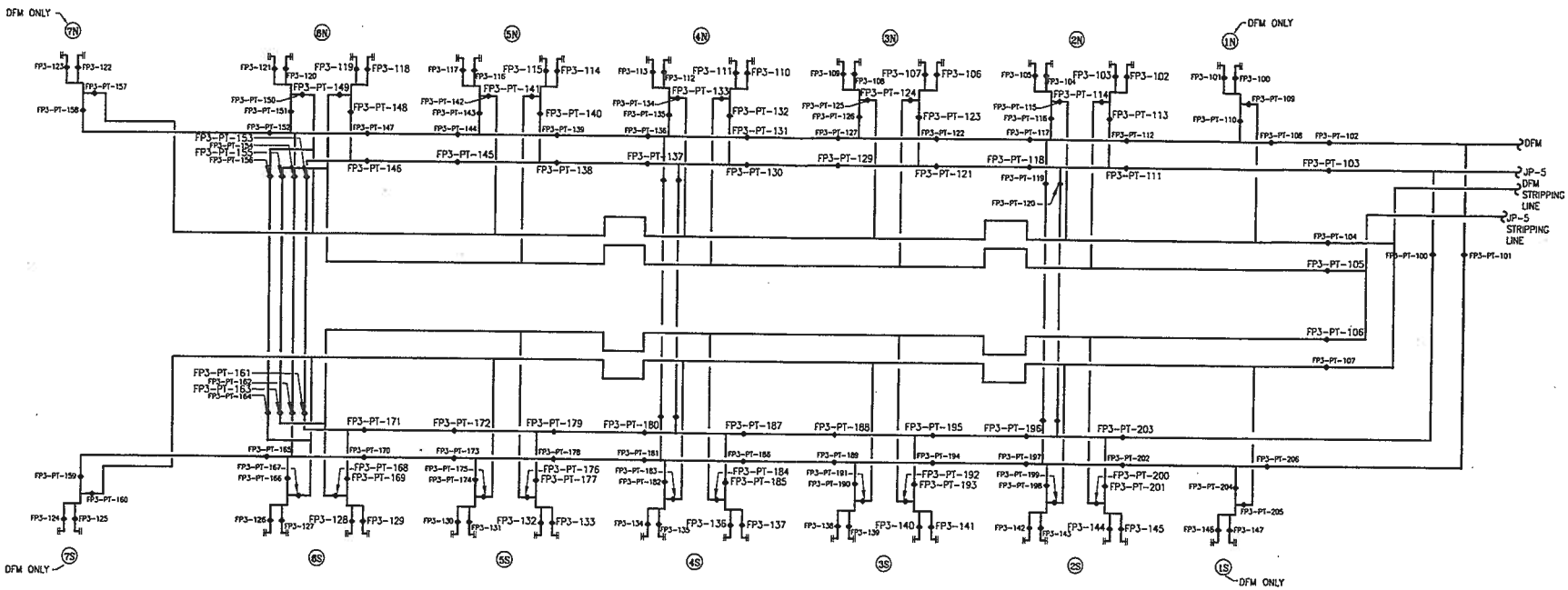

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SITE: U.S. NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

ORIGINAL DATA SUPPLIED BY: U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA

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WORLEY PROJECT NUMBER: 065-07074 | LAST UPDATE: 08 JAN 2003 16:32 | WT REV: 0A

DRAWING NUMBER | REFERENCE DRAWINGS

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TITLE: O & M
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SHEET 7 OF 9

SCALE: –

DRAWING NO.: SK-18-15-1000

REV: 0

PLOT DATE: 08 JAN 03 TIME: 16:32 BY: MFOSTER PL

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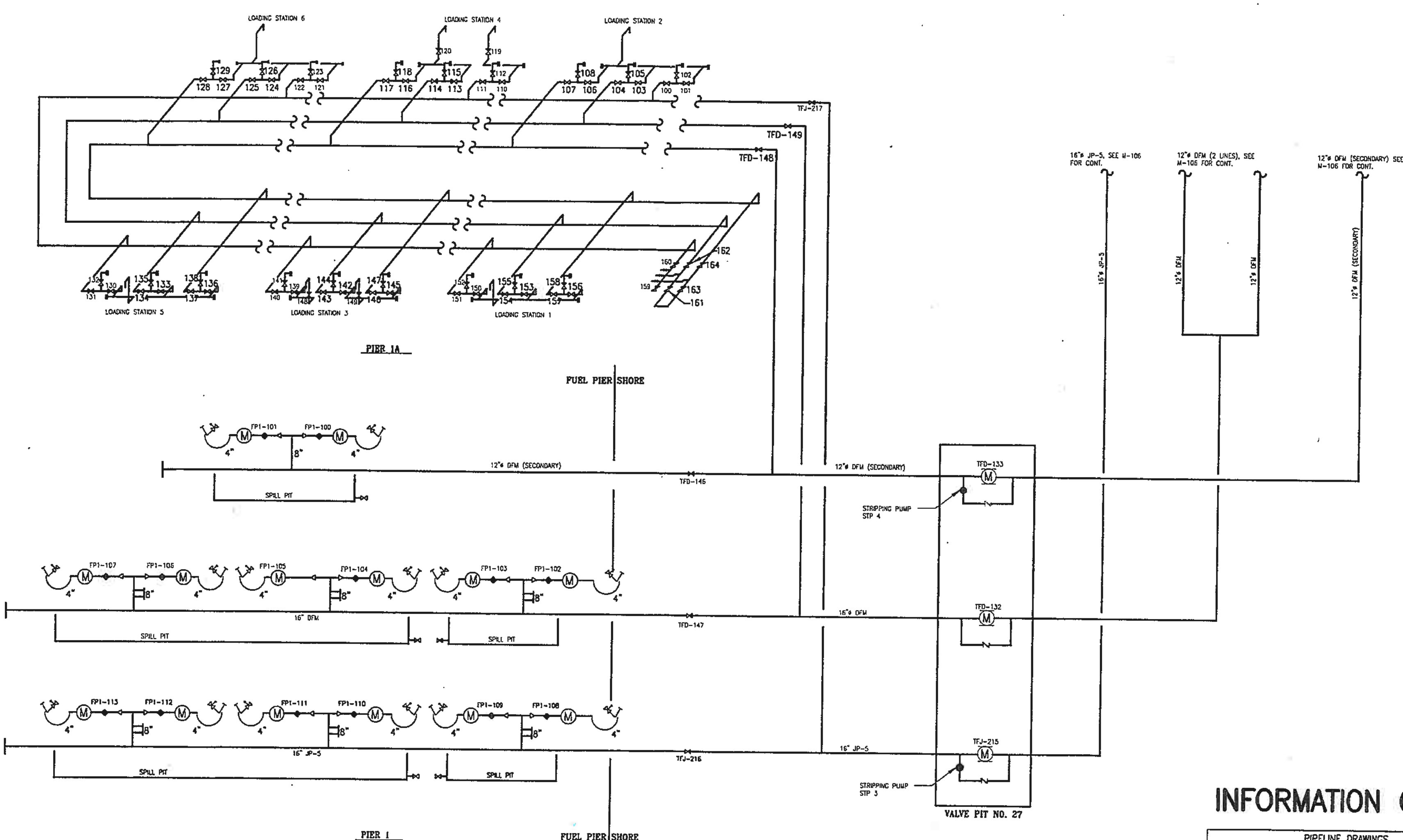
NOTES:
ALL VALVES ON PIER 1A HAVE THE PREFIX FP1A BEFORE THE VALVE NUMBERS.



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SITE	U.S. NAVAL STATION ROOSEVELT ROADS, PUERTO RICO
ORIGINAL DATA SUPPLIED BY:	U.S. ARMY ENGINEER DIVISION HUNTSVILLE CORPS OF ENGINEERS HUNTSVILLE, ALABAMA
TITLE	O & M SCHEMATICS — SHEET 8 OF 9
SCALE	-
DRAWING NO.	SK-18-15-1000
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DRAWN	MDF
DATE	01/08/03
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065-07074	08 JAN 2003	17:00	0A

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DESIGN FILE: N:\7074\18\DRAWINGS\15\SK18151000-8.DWG
PLOT DATE: 08 JAN 03 TIME: 17:00 P. BY: MFOSTER

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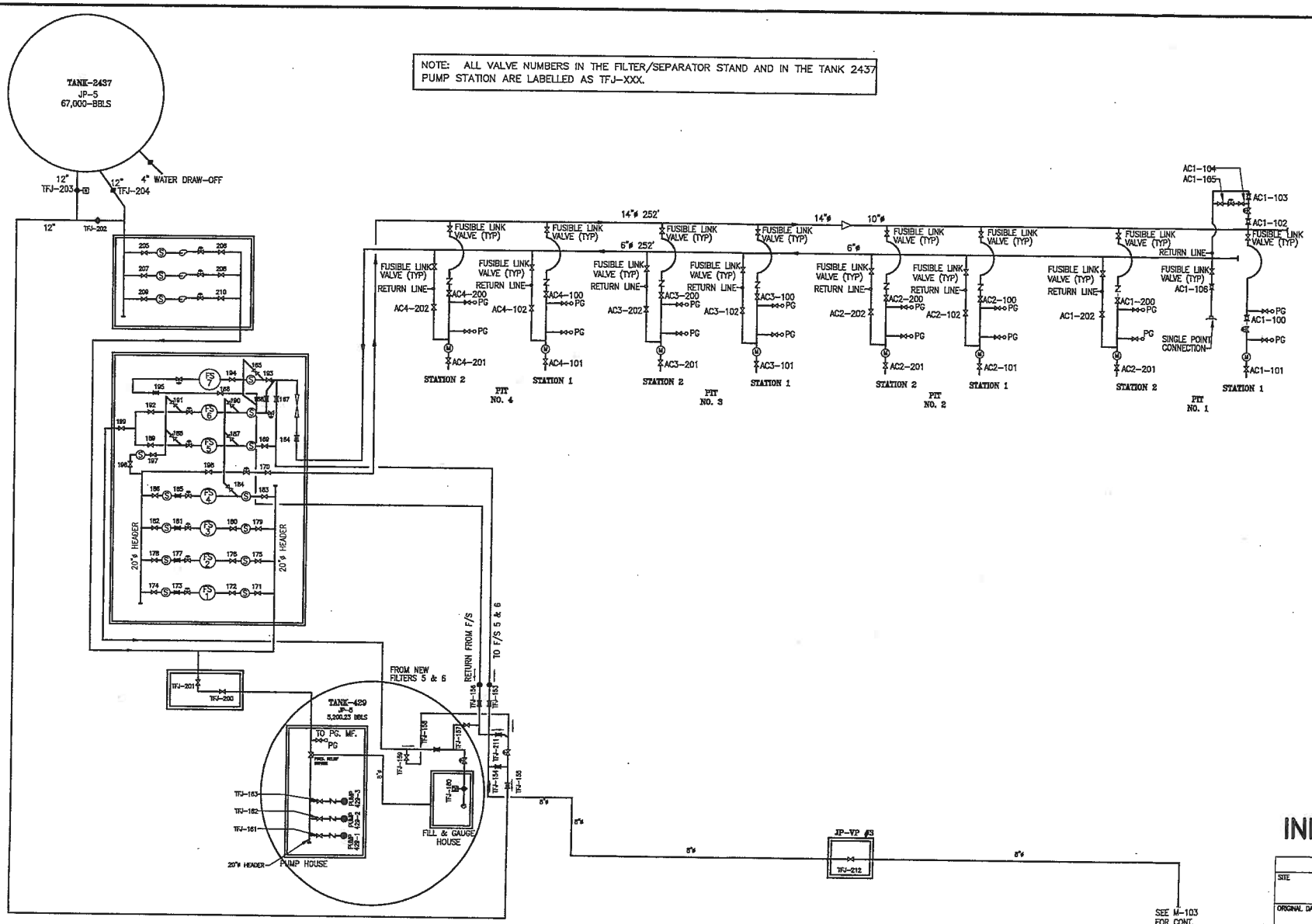
NOTE: ALL VALVE NUMBERS IN THE FILTER/SEPARATOR STAND AND IN THE TANK 2437 PUMP STATION ARE LABELLED AS TFJ-XXX.



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SITE: U.S. NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

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TITLE: O & M SCHEMATICS — SHEET 9 OF 9

SCALE: –

DRAWING NO.: SK-18-15-1000

REV: 0

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WORLEY PROJECT NUMBER: 065-07074 | LAST UPDATE: 09 JAN 2003 06:31 | INT REV: 0A

DRAWING NUMBER | REFERENCE DRAWINGS

REV	DATE	REVISION	DRAWN	CHECK	ENG	APPROV	CLIENT
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Appendix B – Scope of Work Detailed Repair and Modification Description

NFESC Pipeline Integrity Assessment Program
US Naval Station, Roosevelt Roads, Puerto Rico
Work Scope for Modifications and Repairs

Mod 1: Removed cross connection between DFM, DFM-S and JP-5 pipelines on Pier 1A.

Modifications	Sketch Number
1. Fabricated elbow fitting for connection of DFM and DFM-S pipelines.	SK-18-50-002
2. Radiographically inspected girth welds.	
3. Prepared surface, primed and painted fabricated fittings.	
4. Assured pipelines were drained.	
5. Removed existing spool piece.	SK-18-50-002
6. Bolted new spool piece on DFM pipelines and installed blind flange on JP-5 pipeline.	SK-18-50-002
7. Refilled and returned pipeline to service.	
8. Prepared surface, primed and painted were necessary.	SK-18-50-002

NFESC Pipeline Integrity Assessment Program
US Naval Station, Roosevelt Roads, Puerto Rico
Work Scope for Modifications and Repairs

Mod 2: Installed air eliminators on existing 2-inch vents on the DFM, DFM-S and JP-5 pipelines near cross connection on Pier 1A.

Modifications	Sketch Number
1. Assured pipelines were drained.	
2. Removed existing fittings down to the TOL on all three pipelines.	SK-18-50-002
3. Threaded on new 2-inch valves, nipples, air-eliminators, pipe and fittings.	SK-18-50-002
4. Refilled and returned pipeline to service.	
5. Prepared surface, primed and painted fittings.	SK-18-50-002

NFESC Pipeline Integrity Assessment Program
US Naval Station, Roosevelt Roads, Puerto Rico
Work Scope for Modifications and Repairs

Mod 3: Replaced stripper piping on DFM, DFM-S and JP-5 pipelines inside Valve Pit 27.

Modifications	Sketch Number
1. Fabricated 1½-inch and 2-inch stripper pipe and fittings.	SK-18-50-060
2. Assured pipelines were drained.	
3. Removed existing pipe and fittings.	SK-18-50-060
4. Welded on nipples and flanges for installation of new 2-inch flanged valves.	SK-18-50-060
5. Bolted on 2-inch valves.	SK-18-50-060
6. Bolted on welded pipe spools.	SK-18-50-060
7. Refilled and returned pipelines back to service.	
8. Prepared surface, primed and painted fittings.	SK-18-50-060

NFESC Pipeline Integrity Assessment Program
US Naval Station, Roosevelt Roads, Puerto Rico
Work Scope for Modifications and Repairs

Mod 4: Replaced two 12-inch and four 16-inch valves at the shore end of Pier 1 and Pier 1A on the DFM, DFM-S and JP-5 pipelines.

Modifications	Sketch Number
1. Assured pipelines were drained.	
2. Removed existing valves.	SK-18-50-008 SK-18-50-010
3. Broke away concrete to allow for installation of new valves.	
4. Bolted and installed new DB&B valves.	SK-18-50-008 SK-18-50-010
5. Removed existing pressure relief piping across valves.	SK-18-50-008 SK-18-50-010
6. Installed new pressure relief valves and piping across valves.	SK-18-50-008 SK-18-50-010
7. Refilled and returned pipeline back to service.	
8. Installed valve body pressure relief tubing on new valves.	SK-18-50-008 SK-18-50-010
9. Prepared surface, primed and painted new valves and pressure relief piping.	SK-18-50-008 SK-18-50-010
10. Patched concrete containment under valves.	

NFESC Pipeline Integrity Assessment Program
US Naval Station, Roosevelt Roads, Puerto Rico
Work Scope for Modifications and Repairs

Mod 5: Replaced fourteen 8-inch valves and camlock fittings at barge end of Pier 1.

Modifications	Sketch Number
1. Fabricated 8x4 reducer and flange fittings.	SK-18-50-012
2. Radiographically inspected girth welds on fabricated pieces.	
3. Prepared surface, primed and painted fabricated fittings.	
4. Assured pipelines were drained.	
5. Removed existing valves and fittings.	SK-18-50-012
6. Cut pipe on riser to remove 8-inch flange.	SK-18-50-012
7. Welded 8x4 reducer and flange fitting to pipeline riser.	SK-18-50-012
8. Bolted up new 4-inch DB&B valves and camlock fittings.	SK-18-50-012
9. Radiographically inspected girth welds on tie-in pieces.	
10. Refilled and returned pipeline back to service.	
11. Installed valve body pressure relief tubing on new valves.	SK-18-50-012
12. Prepared surface, primed and painted valves and touch up painting as needed.	SK-18-50-012

NFESC Pipeline Integrity Assessment Program
US Naval Station, Roosevelt Roads, Puerto Rico
Work Scope for Modifications and Repairs

Mod 6: Cut and removed blinded 12-inch vertical column and capped 4-inch piping connection to columns near head of Piers 1 and 1A.

Modifications	Sketch Number
1. Excavated and exposed piping.	
2. Assured pipelines were drained by removing blind flange on top of column and inserting hose to bottom of column.	
3. Cut 4-inch piping at connection to column.	SK-18-50-063
4. Removed 12-inch column and disposed of properly.	SK-18-50-063
5. Welded caps on abandoned 4-inch pipelines.	SK-18-50-063
6. Backfilled excavation and cleaned up site.	

NFESC Pipeline Integrity Assessment Program
US Naval Station, Roosevelt Roads, Puerto Rico
Work Scope for Modifications and Repairs

Mod 7: Removed valves and fittings inside Valve Pit 25, installed piping and demolished pit on DFM-S pipeline.

Modifications	Sketch Number
1. Excavated area around valve pit for demolition.	
2. Removed top and sides of VP 25 with a hammer hoe to expose piping and valves.	
3. Cut and removed rebar and concrete from excavation and properly disposed of.	
4. Assured pipeline was drained as much as possible.	
5. Unbolted flanges to allow for a controlled drain-up of remainder of product at low point in the pipeline.	
6. Removed valves and fittings at the flanges and disposed of properly.	
7. Injected nitrogen into pipeline to allow for a safe cutting environment.	
8. Torch cut flanges off and beveled pipe to prepare for tie-in.	SK-18-50-016
9. Measured, cut, and prepped pipe pup for installation.	SK-18-50-016
10. Clamped and welded new pipe piece into place.	SK-18-50-016
11. Radiographically inspected girth welds at tie-in locations.	
12. Prepared, primed and tape coated pipe.	SK-18-50-016
13. Backfilled excavation and cleaned up excavation site.	

NFESC Pipeline Integrity Assessment Program
US Naval Station, Roosevelt Roads, Puerto Rico
Work Scope for Modifications and Repairs

Mod 8: Removed excess piping, valves and pumps on DFM-S pipeline at Pump House 466 and installed two new 12-inch valves and spool pieces with drain, sampling probe and pressure gauge.

Modifications	Sketch Number
1. Fabricated spool pieces and fittings for new installation.	SK-18-50-018
2. Radiographically inspected girth welds on fabricated pieces.	
3. Prepared surface, primed and painted fabricated fittings.	
4. Assured pipelines were drained.	
5. Removed existing valves, piping, fittings, and pumps.	SK-18-50-018
6. Installed and bolted two new 12-inch DB&B valves and spool pieces.	SK-18-50-018
7. Welded tie-in points on pipe along horizontal run.	SK-18-50-018
8. Radiographically inspected girth welds on tie-in pieces.	
9. Refilled and returned pipeline back to service.	
10. Installed valve body pressure relief tubing on new valves.	SK-18-50-018
11. Prepared surface, primed and painted valves, welds and touch up painting as needed.	SK-18-50-018

NFESC Pipeline Integrity Assessment Program
US Naval Station, Roosevelt Roads, Puerto Rico
Work Scope for Modifications and Repairs

Mod 9: Remove two blind flanges and weld caps on the DFM and abandoned pipeline at Valve Pit 23.

Modifications	Sketch Number
1. Excavated area around valve pit for demolition.	
2. Removed top and sides of VP 23t with a hammer hoe to expose piping.	
3. Cut and removed rebar and concrete from excavation and properly disposed of.	
4. Assured pipeline was drained as much as possible.	
5. Removed blind flange from abandoned pipeline and DFM pipeline and disposed of properly.	SK-18-50-020
6. Injected nitrogen into pipeline to allow for a safe cutting environment.	
7. Torch cut flanges off and beveled pipe to prepare for tie-in.	SK-18-50-020
8. Welded cap on each pipeline.	SK-18-50-020
9. Radiographically inspected girth welds at tie-in locations.	
10. Prepared, primed and tape coated pipe.	SK-18-50-020
11. Backfilled excavation and cleaned up excavation site.	

NFESC Pipeline Integrity Assessment Program
US Naval Station, Roosevelt Roads, Puerto Rico
Work Scope for Modifications and Repairs

Mod 10: Brought Pier 3 valves above ground, removed all unnecessary valves and fittings at Valve Pit 24, replaced with welded pipe and demolished pit.

Modifications	Sketch Number
1. Fabricated valve setting for DFM and JP-5 new installation.	SK-18-50-022
2. Radiographically inspected girth welds on fabricated pieces.	
3. Prepared surface, primed and painted fabricated fittings.	
4. Excavated area around VP 24 for demolition.	
5. Removed top and sides of valve pit with a hammer hoe to expose piping and valves.	
6. Cut and removed rebar and concrete from excavation and properly disposed of.	
7. Assured pipeline was drained as much as possible.	
8. Open drain valve to drain-up of remainder of product at low point in the pipeline.	
9. Removed valves and fittings at the flanges and disposed of properly.	SK-18-50-022
10. Injected nitrogen into pipeline to allow for a safe cutting environment.	
11. Torch cut pipeline and beveled pipe to prepare for tie-in.	SK-18-50-022
12. Measured, cut, and prepped pipe and fitting for installation.	SK-18-50-022
13. Clamped and welded new pipe pieces into place.	SK-18-50-022
14. Radiographically inspected girth welds at tie-in locations.	
15. Bolted in new 12-inch DBB valves.	SK-18-50-022
16. Threaded on vents and air eliminators on either side of new 12-inch DBB valves.	SK-18-50-022
17. Prepared, primed and tape coated pipe.	SK-18-50-022
18. Backfilled excavation and cleaned up excavation site.	
19. Installed pressure relief valves and tubing on 12-inch DB&B valves.	SK-18-50-022
20. Prepared, primed and painted any remaining above ground pipe, valves and fittings.	SK-18-50-022

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Mod 11: Removed three gate valves at DFM-S Valve Pit 8, installed new above ground valve setting to isolate DFM and DFM-S pipelines, welded cap on abandoned section of DFM-S pipeline and demolished valve pit.

Modifications	Sketch Number
1. Fabricated valve setting for new installation.	SK-18-50-050
2. Radiographically inspected girth welds on fabricated pieces	
3. Prepared surface, primed and painted fabricated fittings.	
4. Excavated area around VP 8 for demolition.	
5. Removed top and sides of valve pit with a hammer hoe to expose piping and valves.	
6. Cut and removed rebar and concrete from excavation and properly disposed of.	
7. Assured pipeline was drained as much as possible.	
8. Welded on 2-inch nipple for hot tapping of pipeline in section of pipe to be removed.	
9. Hot tapped pipeline and vacuumed out remainder of product in the pipeline.	
10. Removed valves and fittings at the flanges and disposed of properly.	
11. Injected nitrogen into pipeline to allow for a safe cutting environment.	
12. Torch cut pipeline and beveled pipe to prepare for tie-in.	SK-18-50-050
13. Measured, cut, and prepped pipe and fittings for installation.	
14. Clamped and welded new pipe pieces into place.	SK-18-50-050
15. Radiographically inspected girth welds at tie-in locations.	
16. Bolted in new 12-inch DBB valves.	SK-18-50-050
17. Welded cap onto abandoned portion of pipeline.	SK-18-50-050
18. Threaded on vents valves and fitting of new 12-inch DBB valves.	SK-18-50-050
19. Prepared, primed and tape coated pipe.	SK-18-50-050
20. Backfilled excavation and cleaned up excavation site.	
21. Installed pressure relief valves and tubing on 12-inch DB&B valves.	SK-18-50-050
22. Prepared, primed and painted any remaining above ground pipe, valves and fittings.	SK-18-50-050

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Mod 12: Abandoned DFM-S pipeline from Valve Pit 8 to Valve Pit 6. Removed valves at Valve Pit 6 and Valve Pit 7 and welded on caps.

Modifications	Sketch Number
1. Excavated area around valve pit for demolition.	
2. Removed top and sides of VP 6 and VP 7 with a hammer hoe to expose piping.	
3. Cut and removed rebar and concrete from excavation and properly disposed of.	
4. Assured pipeline was drained as much as possible.	
5. Opened low point drain to complete the drain-up of fuel.	
6. Removed valves and fittings from VP 6 and VP 7.	SK-18-50-026 SK-18-50-028
7. Injected nitrogen into pipeline to allow for a safe cutting environment.	
8. Torch cut flanges off and beveled pipe to prepare for tie-in.	SK-18-50-026 SK-18-50-028
9. Welded cap on each pipeline.	SK-18-50-026 SK-18-50-028
10. Prepared, primed and tape coated pipe.	SK-18-50-026 SK-18-50-028
11. Backfilled excavation and cleaned up excavation site.	

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Mod 13: Removed unneeded valves on 8-inch JP-5 pipeline from Valve Pit 9 to flight line filter-separator manifold.

Modifications	Sketch Number
1. Excavated area around VP4 and VP5 for demolition.	
2. Removed top and sides of VP4 and VP5 with a hammer hoe to expose piping and valves.	
3. Cut and removed rebar and concrete from excavation and properly disposed of.	
4. Assured pipeline was drained as much as possible.	
5. Unbolted flanges to allow for a controlled drain-up of remainder of product at low point in the pipeline.	
6. Installed 2-inch hot tap on pipe to be removed to aid in drain-up.	
7. Removed valves and fittings at the flanges and disposed of properly.	SK-18-50-036 SK-18-50-038
8. Injected nitrogen into pipeline to allow for a safe cutting environment.	
9. Torch cut flanges off and beveled pipe to prepare for tie-in.	SK-18-50-036 SK-18-50-038
10. Measured, cut, and prepped pipe pup for installation.	SK-18-50-036 SK-18-50-038
11. Clamped and welded new pipe piece into place at VP 4 and VP 5.	SK-18-50-036 SK-18-50-038
12. Radiographically inspected girth welds at tie-in locations.	
13. Prepared, primed and tape coated pipe.	SK-18-50-036 SK-18-50-038
14. Backfilled excavation and cleaned up excavation site.	
15. Fabricated spool pieces for new installation at VP 3.	SK-18-50-034
16. Radiographically inspected girth welds on fabricated pieces	
17. Prepared surface, primed and painted fabricated fittings.	
18. Assured pipeline was drained as much as possible.	
19. Removed valves and fittings at the flanges in VP 3 and disposed of properly.	SK-18-50-034

Mod 13: Removed unneeded valves on 8-inch JP-5 pipeline from Valve Pit 9 to flight line filter-separator manifold.

Modifications	Sketch Number
20. Bolted in new 8-inch DBB valves and spool pieces.	SK-18-50-034
21. Installed two new 2-inch drain valves on each side of DB&B valve inside VP 3.	SK-18-50-034
22. Installed pressure relief tubing on 8-inch DB&B valve inside VP 3.	SK-18-50-034
23. Fabricated spool pieces for new installation at VP 2.	SK-18-50-032
24. Radiographically inspected girth welds on fabricated pieces	
25. Prepared surface, primed and painted fabricated fittings.	
26. Assured pipeline was drained as much as possible.	
27. Removed valves and fittings at the flanges in VP 2 and disposed of properly.	SK-18-50-032
28. Bolted in new 8-inch spool piece.	SK-18-50-032
29. Fabricated spool piece for new installation at VP 6.	SK-18-50-040
30. Radiographically inspected girth welds on fabricated pieces	
31. Prepared surface, primed and painted fabricated fittings.	
32. Assured pipeline was drained as much as possible.	
33. Removed valves and fittings at the flanges in VP 6 and disposed of properly.	SK-18-50-040
34. Bolted in spool piece.	SK-18-50-040
35. Installed new 2-inch drain valve inside VP 6.	SK-18-50-040

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Mod 14: Removed two dresser couplings, two valves and tee, install new 8-inch and 12-inch valves and tee for pig launcher/receiver connection.

Modifications	Sketch Number
1. Fabricated flange fittings and spool pieces.	SK-18-50-056
2. Radiographically inspected girth welds on fabricated pieces.	
3. Prepared surface, primed and painted fabricated fittings.	
4. Assured pipelines were drained.	
5. Removed existing valves and fittings.	SK-18-50-056
6. Measured and cut 12-inch pipe.	SK-18-50-056
7. Welded in new spool piece and 12-inch flanges	SK-18-50-056
8. Bolted up new 12-inch DB&B valve.	SK-18-50-056
9. Cut holes for 8-inch and 6-inch saddles	SK-18-50-056
10. Welded on 6-inch and 8-inch saddles and pipe.	SK-18-50-056
11. Bolted up new 8-inch DB&B valve.	SK-18-50-056
12. Radiographically inspected girth welds on tie-in pieces.	
13. Refilled and returned pipeline back to service.	
14. Installed valve body pressure relief tubing on new DB&B valves.	SK-18-50-056
15. Prepared surface, primed and painted valves and touch up painting as needed.	SK-18-50-056

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Mod 15: Installed new DB&B valves in PH 1982, on JP-5 hill and at tanks as needed to isolate pipeline segments for pressure testing.

Modifications	Sketch Number
1. Assured pipelines were drained inside PH 1982.	
2. Removed existing two 12-inch and two 16-inch valves at head of PH 1982.	SK-18-15-1000
3. Bolted up four new DB&B valves at head of PH 1982.	SK-18-15-1000
4. Removed 2-inch check valves at head of PH 1982	SK-18-15-1000
5. Bolted up 2-inch blind flanges.	SK-18-15-1000
6. Installed valve body pressure relief tubing on four new valves.	
7. Fabricated pipe and flanges for meter run replacement inside PH 1982.	SK-18-50-062
8. Radiographically inspected girth welds on fabricated pieces.	
9. Prepared surface, primed and painted fabricated fittings.	
10. Assured pipelines were drained at meter runs inside PH 1982.	
11. Removed existing meters and spool pieces.	SK-18-50-062
12. Bolted in new 10-inch DB&B valves and spool pieces.	SK-18-50-062
13. Refilled and returned pipeline back to service.	
14. Installed valve body pressure relief tubing on new valves.	SK-18-50-062
15. Fabricated valve setting for DFM new installation at VP 56.	SK-18-50-044
16. Radiographically inspected girth welds on fabricated pieces.	
17. Prepared surface, primed and painted fabricated fittings.	
18. Excavated area around VP 56 for demolition.	
19. Removed top and sides of VP 56 with a hammer hoe to expose piping and valves.	
20. Cut and removed rebar and concrete from excavation and properly disposed of.	
21. Assured pipeline was drained as much as possible.	
22. Removed valves and fittings inside VP 56 at the flanges and disposed of properly .	SK-18-50-044
23. Injected nitrogen into pipeline to allow for a safe cutting environment.	
24. Torch cut both 12-inch pipelines and beveled pipe to prepare for tie-in.	SK-18-50-044

Mod 15: Installed new DB&B valves in PH 1982, on JP-5 hill and at tanks as needed to isolate pipeline segments for pressure testing.

Modifications	Sketch Number
25. Measured, cut, and prepped pipe and fittings for installation.	SK-18-50-044
26. Clamped and welded new pipe pieces into place.	SK-18-50-044
27. Radiographically inspected girth welds at tie-in locations.	
28. Bolted in new 6-inch DBB valve.	SK-18-50-044
29. Prepared, primed and tape coated pipe.	
30. Backfilled excavation and cleaned up excavation site.	
31. Installed pressure relief valves and tubing on 6-inch DB&B valve.	SK-18-50-044
32. Prepared, primed and painted any remaining above ground pipe, valves and fittings.	SK-18-50-044
33. Assured pipelines are drained inside VP 10.	SK-18-50-065
34. Removed existing 12-inch valve inside VP 10.	SK-18-50-065
35. Bolted up new 12-inch DB&B valves.	SK-18-50-065
36. Installed valve body pressure relief tubing on new DB&B valves	SK-18-50-065
37. Prepared surface, primed and painted valves and touch up painting as needed.	SK-18-50-065
38. Assured pipelines are drained inside VP 11.	SK-18-50-066
39. Removed existing 12-inch and 6-inch valves inside VP 11.	SK-18-50-066
40. Bolted on blind flanges on 12-inch and 6-inch pipelines.	SK-18-50-066
41. Prepared surface, primed and painted valves and touch up painting as needed.	SK-18-50-066
42. Assured pipelines are drained inside Tank 381 PH.	
43. Removed existing 6-inch valves inside Tank 381 PH.	SK-18-50-055
44. Injected nitrogen into pipeline to allow for a safe cutting environment.	
45. Torch cut both 6-inch pipelines and beveled pipe to prepare for tie-in.	SK-18-50-055
46. Welded on new 6-inch flanges.	SK-18-50-055
47. Bolted up two new 6-inch DB&B valves.	SK-18-50-055
48. Installed valve body pressure relief tubing on new 6-inch valves.	SK-18-50-055
49. Prepared surface, primed and painted valves and touch up painting as needed.	SK-18-50-055
50. Removed existing 3-inch valve inside Tank 381 PH.	
51. Installed two 3-inch blind flanges.	

Mod 15: Installed new DB&B valves in PH 1982, on JP-5 hill and at tanks as needed to isolate pipeline segments for pressure testing.

Modifications	Sketch Number

52. Assured pipelines are drained at Tank 1082.
53. Removed existing 6-inch valve.
54. Bolted in new 6-inch DB&B valve.
55. Assured pipelines are drained at Tank 83.
56. Removed existing 12-inch valve.
57. Bolted in new 12-inch DB&B valve.

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Mod 16: Removed air eliminator on "Blow-out pit" and weld on cap.

Modifications	Sketch Number
1. Assured pipeline was drained.	
2. Removed air eliminator and valves.	SK-18-50-064
3. Welded on 2-inch nipple and weld cap.	SK-18-50-064
4. Refilled and returned pipeline back to service.	

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Mod 17: Replaced low point piping and valves on VP 7A.

Modifications	Sketch Number
1. Fabricated 2-inch drain pieces.	SK-18-50-059
2. Radiographically inspected girth welds on fabricated pieces	
3. Prepared surface primed and painted fabricated fittings.	
4. Excavated pipeline outside of valve pit for drain-up.	
5. Welded on and hot tapped 2-inch TOR for drain up.	
6. Installed 2-inch full prot valve for drain-up.	
7. Assured pipelines were drained.	
8. Removed existing valves and fittings.	SK-18-50-059
9. Bolted up new 2-inch valves and fittings inside VP 7A.	SK-18-50-059
10. Removed 2-inch full port valve on TOR fitting.	
11. Welded on cap to 2-inch TOR fitting,	
12. Refilled and returned pipeline back to service.	

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Mod 18: Removed 12-inch and 6-inch valves, installed welded pipe and fittings and demolished pit at VP 9A.

Modifications	Sketch Number
1. Fabricated 12-inch and 6-inch tee fittings.	SK-18-50-057
2. Radiographically inspected girth welds on fabricated pieces	
3. Excavated area around valve pit for demolition.	
4. Removed top and sides of valve pit with a hammer hoe to expose piping and valves.	
5. Cut and removed rebar and concrete from excavation and properly disposed of.	
6. Assured pipeline was drained as much as possible.	
7. Open drain valve to drain-up of remainder of product at low point in the pipeline.	
8. Removed valves and fittings at the flanges and disposed of properly.	SK-18-50-057
9. Injected nitrogen into pipeline to allow for a safe cutting environment.	
10. Measured, cut, and prepped pipe and fitting for installation.	SK-18-50-057
11. Clamped and welded new pipe pieces and tees on 12-inch and 6-inch pipelines into place.	SK-18-50-057
12. Radiographically inspected girth welds at tie-in locations.	
13. Prepared, primed and tape coated pipe.	SK-18-50-057
14. Backfilled excavation and cleaned up excavation site.	

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Mod 19: Removed 16-inch gate valve, installed above ground setting, welded cap on abandoned 4-inch pipeline and demolished DFM VP 8.

Modifications	Sketch Number
1. Fabricated valve setting for DFM new installation.	SK-18-50-051
2. Radiographically inspected girth welds on fabricated pieces.	
3. Prepared surface, primed and painted fabricated fittings.	
4. Excavated area around VP 8 for demolition.	
5. Removed top and sides of valve pit with a hammer hoe to expose piping and valves.	
6. Cut and removed rebar and concrete from excavation and properly disposed of.	
7. Assured pipeline was drained as much as possible.	
8. Removed valves and fittings at the flanges and disposed of properly.	SK-18-50-051
9. Injected nitrogen into pipeline to allow for a safe cutting environment.	
10. Torch cut pipeline and beveled pipe to prepare for tie-in.	SK-18-50-051
11. Measured, cut, and prepped pipe and fitting for installation.	SK-18-50-051
12. Clamped and welded new pipe pieces into place.	SK-18-50-051
13. Radiographically inspected girth welds at tie-in locations.	
14. Bolted in new 12-inch DBB valve.	SK-18-50-051
15. Threaded on vent on new 12-inch DBB valve setting.	SK-18-50-051
16. Assured 4-inch pipeline was drained.	
17. Removed fittings and cut pipe and disposed of properly.	SK-18-50-051
18. Welded on 4-inch cap to abandon pipeline.	SK-18-50-051
19. Prepared, primed and tape coated pipe.	SK-18-50-051
20. Backfilled excavation and cleaned up excavation site.	
21. Installed pressure relief valves and tubing on 12-inch DB&B valve.	SK-18-50-051
22. Prepared, primed and painted any remaining above ground pipe, valves and fittings.	SK-18-50-051

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Mod 20: Removed Valve TFD-141 and installed piping on DFM pipeline.

Modifications	Sketch Number
1. Excavated area around valve for removal.	
2. Assured pipeline was drained as much as possible.	
3. Removed valves and fittings at the flanges and disposed of properly.	SK-18-50-052
4. Injected nitrogen into pipeline to allow for a safe cutting environment.	
5. Torch cut pipeline and beveled pipe to prepare for tie-in.	SK-18-50-052
6. Measured, cut, and prepped pipe for installation.	SK-18-50-052
7. Clamped and welded new pipe pieces into place.	SK-18-50-052
8. Radiographically inspected girth welds at tie-in locations.	
9. Prepared, primed and tape coated pipe.	SK-18-50-052
10. Backfilled excavation and cleaned up excavation site.	

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Pigging: Installed launcher/receiver and necessary valves on 12-inch pipeline near PH 1982.

Modifications	Sketch Number
1. Fabricated Pig launcher/receiver.	SK-18-50-053 SK-18-50-049
2. Radiographically inspected girth welds on fabricated pieces.	
3. Prepared surface, primed and painted fabricated fittings.	
4. Excavated trap area for installation and tie-in.	
5. Assured pipeline was drained as much as possible.	
6. Installed 2-inch nipple and valve to aid in drain up.	
7. Injected nitrogen into pipeline to allow for a safe cutting environment.	
8. Torch cut pipeline and beveled pipe to prepare for tie-in.	SK-18-50-053 SK-18-50-049
9. Measured, cut, and prepped pipe and fitting for installation.	SK-18-50-053 SK-18-50-049
10. Clamped and welded new pipe pieces into place.	SK-18-50-053 SK-18-50-049
11. Radiographically inspected girth welds at tie-in locations.	
12. Bolted in new valves and pig trap.	SK-18-50-053 SK-18-50-049
13. Installed vents, pressure gauges, and drain valves and connections.	SK-18-50-053 SK-18-50-049
14. Prepared, primed and tape coated pipe.	
15. Installed pipe supports and foundation under pig trap.	SK-18-50-053 SK-18-50-049
16. Backfilled excavation and cleaned up excavation site.	
17. Installed pressure relief valves and tubing on DB&B valves.	SK-18-50-053 SK-18-50-049
18. Prepared, primed and painted any remaining above ground pipe, valves and fittings.	SK-18-50-053 SK-18-50-049

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Pigging: Installed launcher/receiver and necessary valves on 12-inch pipeline near JP-5 VP 9.

Modifications	Sketch Number
1. Fabricated Pig launcher/receiver.	SK-18-50-054 SK-18-50-049
2. Radiographically inspected girth welds on fabricated pieces.	
3. Prepared surface, primed and painted fabricated fittings.	
4. Excavated trap area for installation and tie-in.	
5. Assured pipeline was drained as much as possible.	
6. Installed 2-inch nipple and valve to aid in drain up.	
7. Injected nitrogen into pipeline to allow for a safe cutting environment.	
8. Torch cut pipeline and beveled pipe to prepare for tie-in.	SK-18-50-054 SK-18-50-049
9. Measured, cut, and prepped pipe and fitting for installation.	SK-18-50-054 SK-18-50-049
10. Clamped and welded new pipe pieces into place.	SK-18-50-054 SK-18-50-049
11. Radiographically inspected girth welds at tie-in locations.	
12. Bolted in new valves and pig trap.	SK-18-50-054 SK-18-50-049
13. Installed vents, pressure gauges, and drain valves and connections.	SK-18-50-054 SK-18-50-049
14. Prepared, primed and tape coated pipe.	
15. Installed pipe supports and foundation under pig trap.	SK-18-50-054 SK-18-50-049
16. Backfilled excavation and cleaned up excavation site.	
17. Installed pressure relief valves and tubing on DB&B valves.	SK-18-50-054 SK-18-50-049
18. Prepared, primed and painted any remaining above ground pipe, valves and fittings.	SK-18-50-054 SK-18-50-049

Appendix C – Photographs

List of Photographs

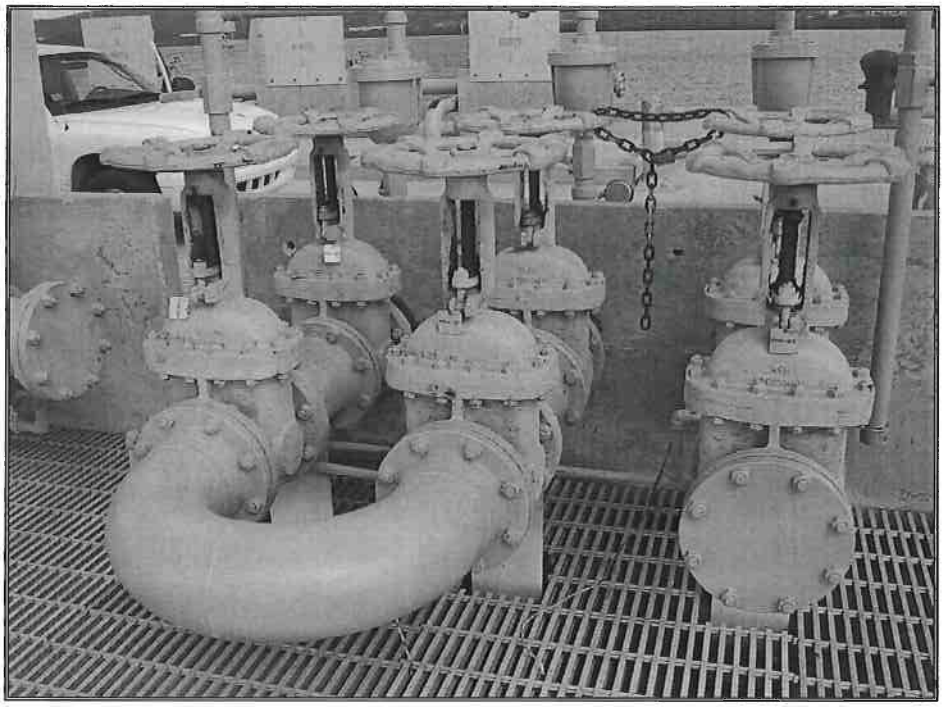


Photo 1A – Pier 1A Crossover Connection JP-5, DFM and DFM-S

Photo 2A – Pier 1A Air Eliminators

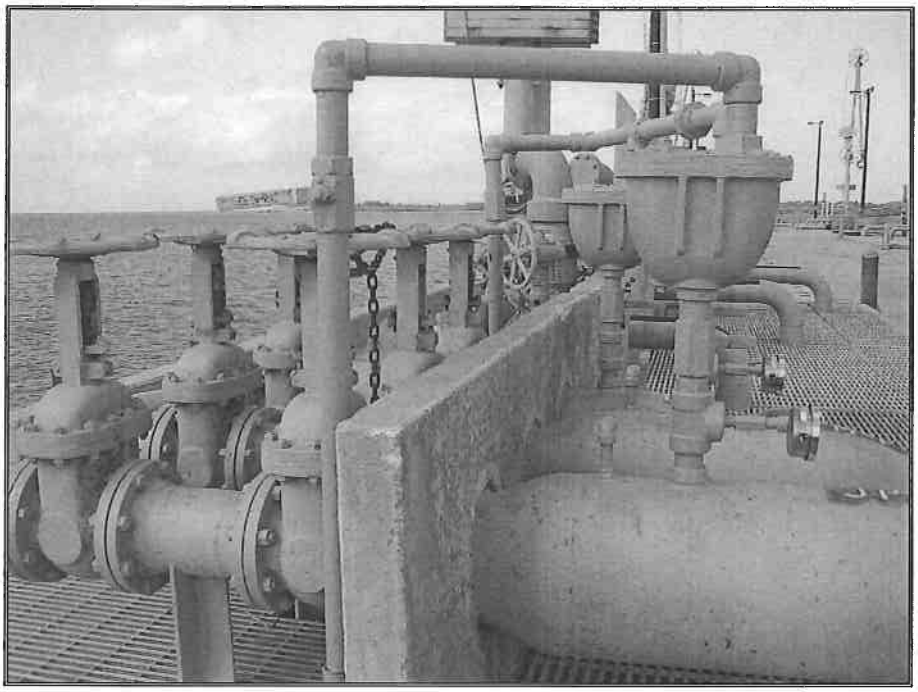


Photo 2B – Pier 1A Air Eliminators

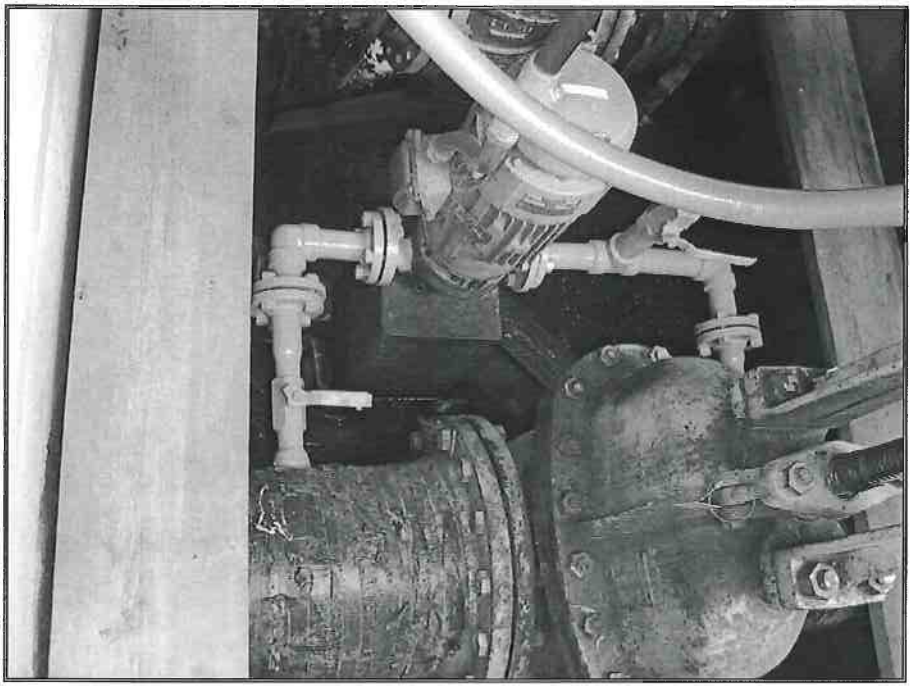


Photo 3A – VP 27 Stripper Piping

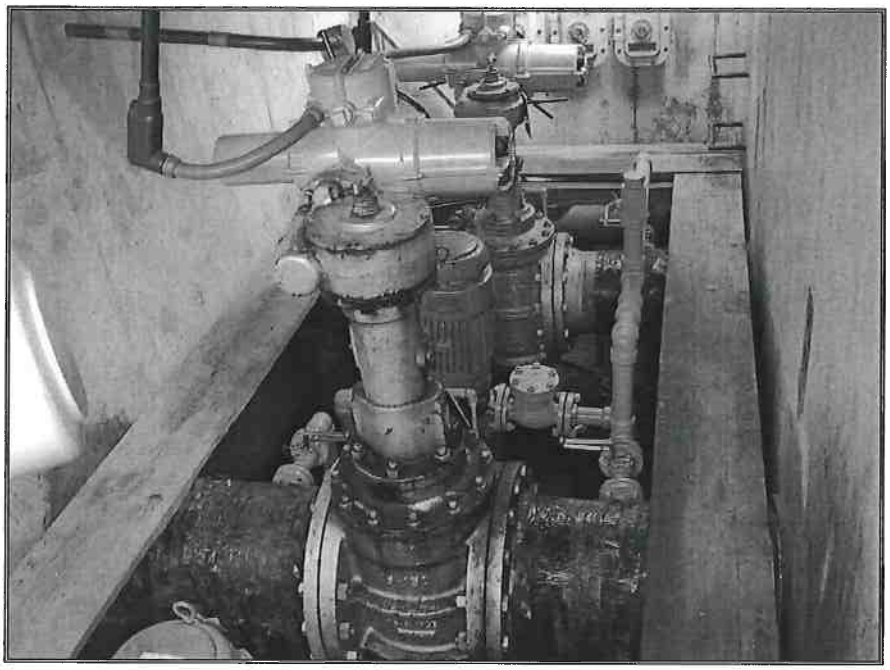


Photo 3B – VP 27 Stripper Piping

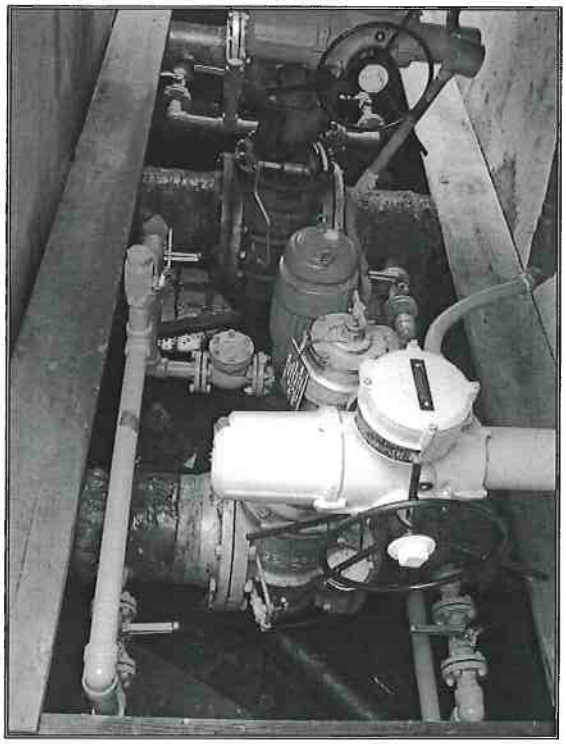


Photo 3C – VP 27 Stripper Piping

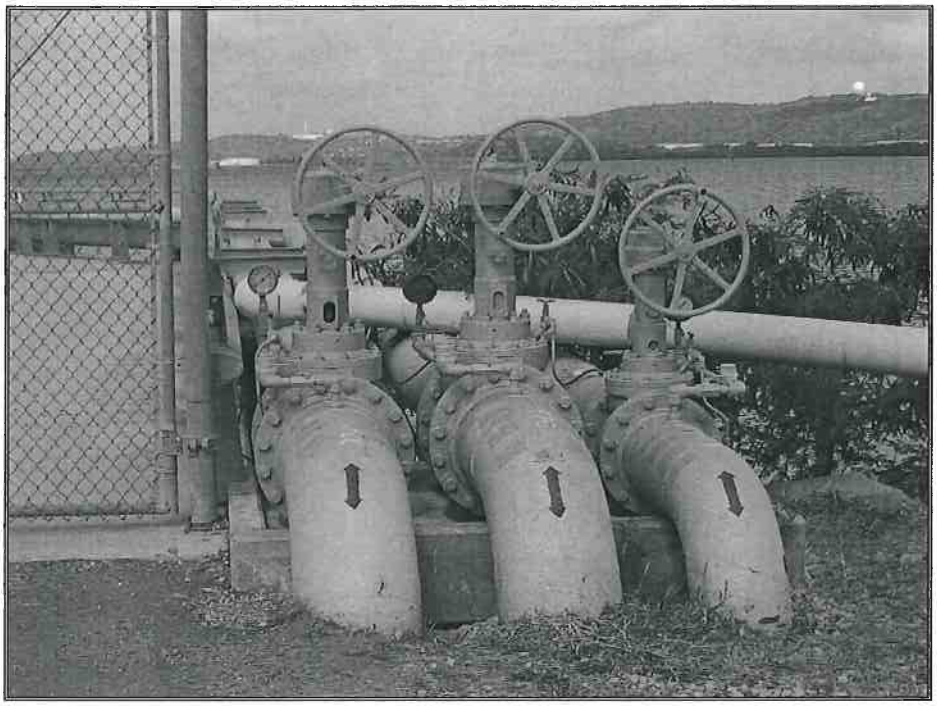


Photo 4A – Pier 1A Double Block and Bleed Valves

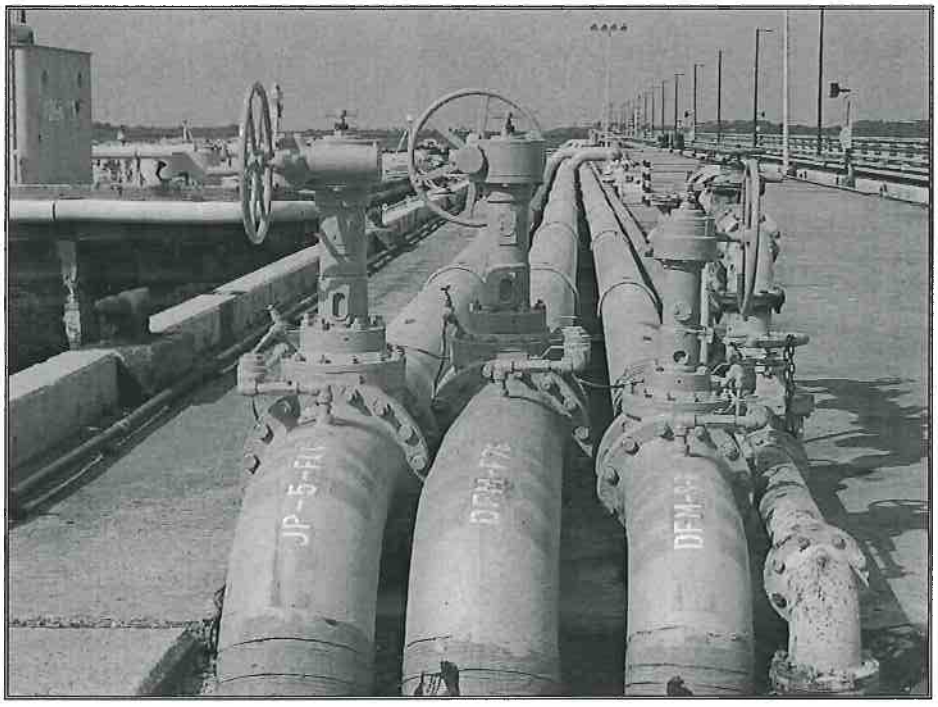


Photo 4B – Pier 1 Double Block and Bleed Valves

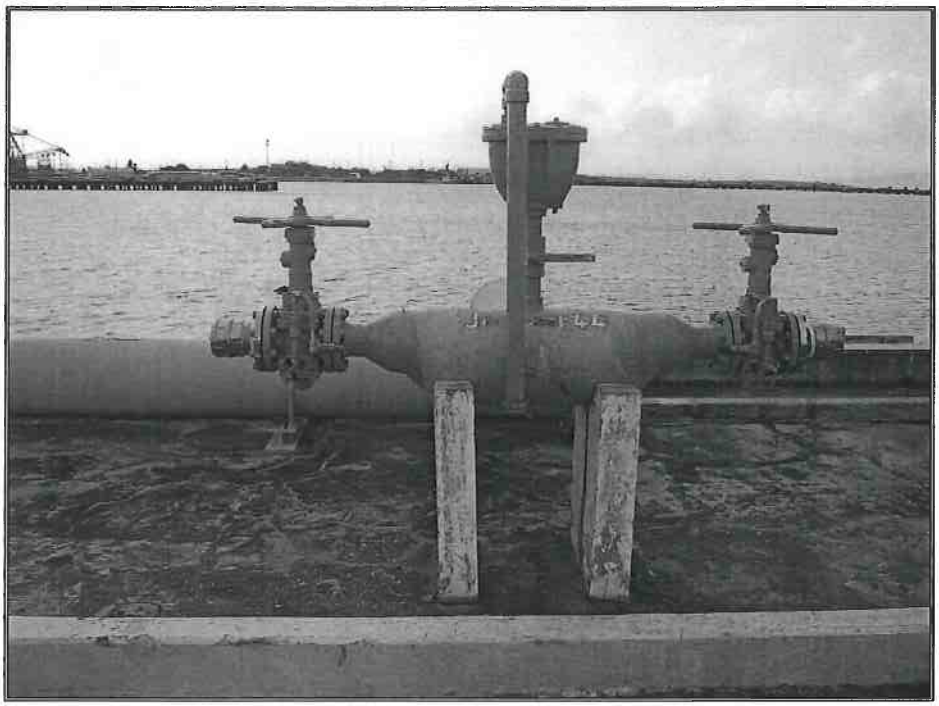


Photo 5A – Pier 1 4-inch Barge Riser with 2-inch Air Eliminator

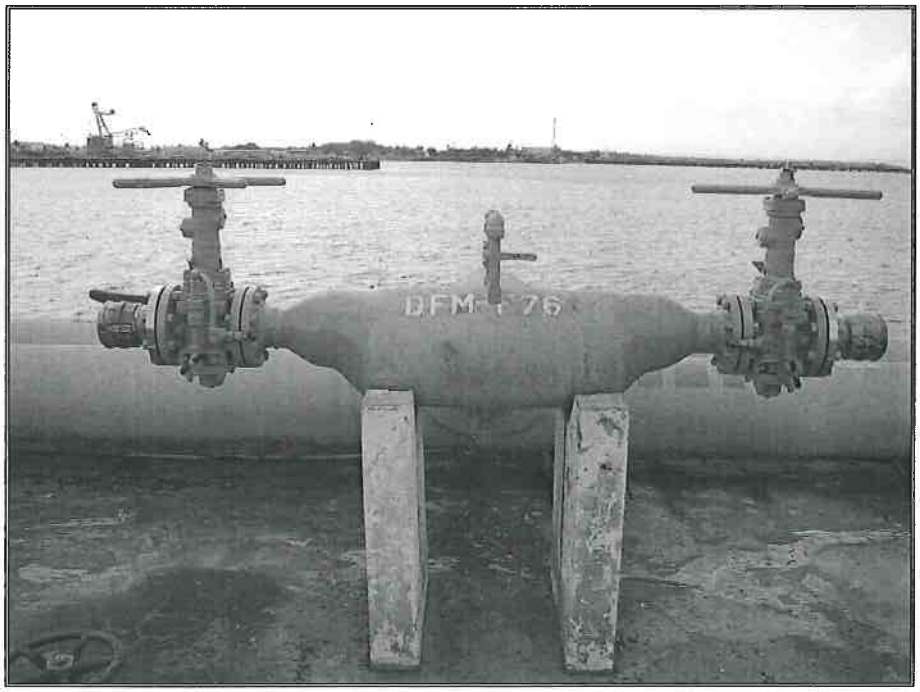


Photo 5B – Pier 1 4-inch Barge Riser with 3/4-inch Vent

Photo 5C – Pier 1 Barge Riser with 4-inch Camlock Fitting

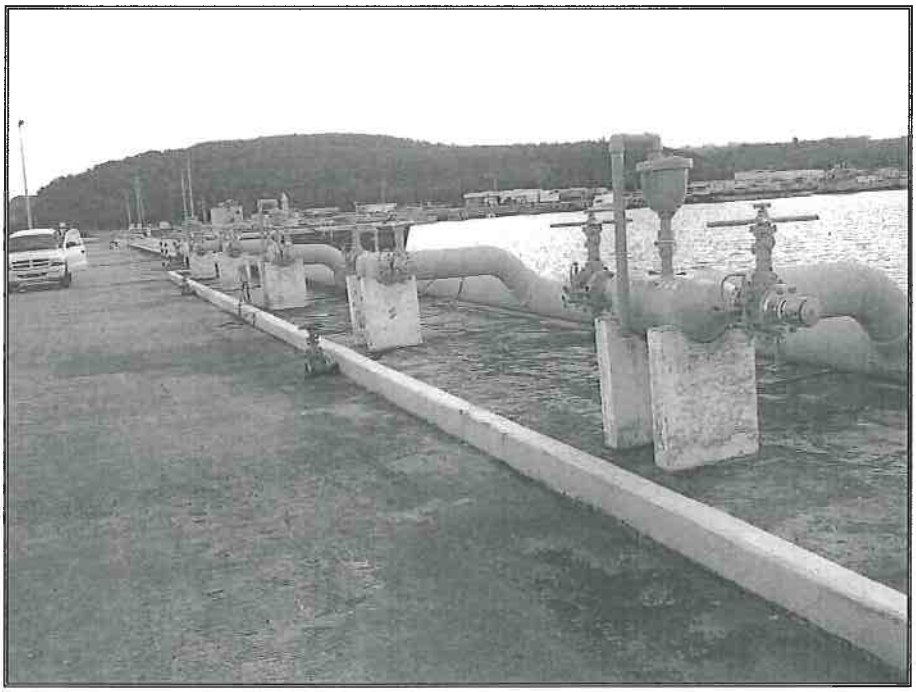


Photo 5D – Pier 1 Barge Risers JP-5, DFM and DFM-S Pipelines

Photo 7A – Valve Pit 25 Valve Removal DFM-S Pipeline

Photo 7B – Valve Pit 25 Valve Removal DFM-S Pipeline

Photo 8A – PH 466 Valve Installations DFM-S Pipelines

Photo 8B – PH 466 Pipe Installation DFM-S Pipeline

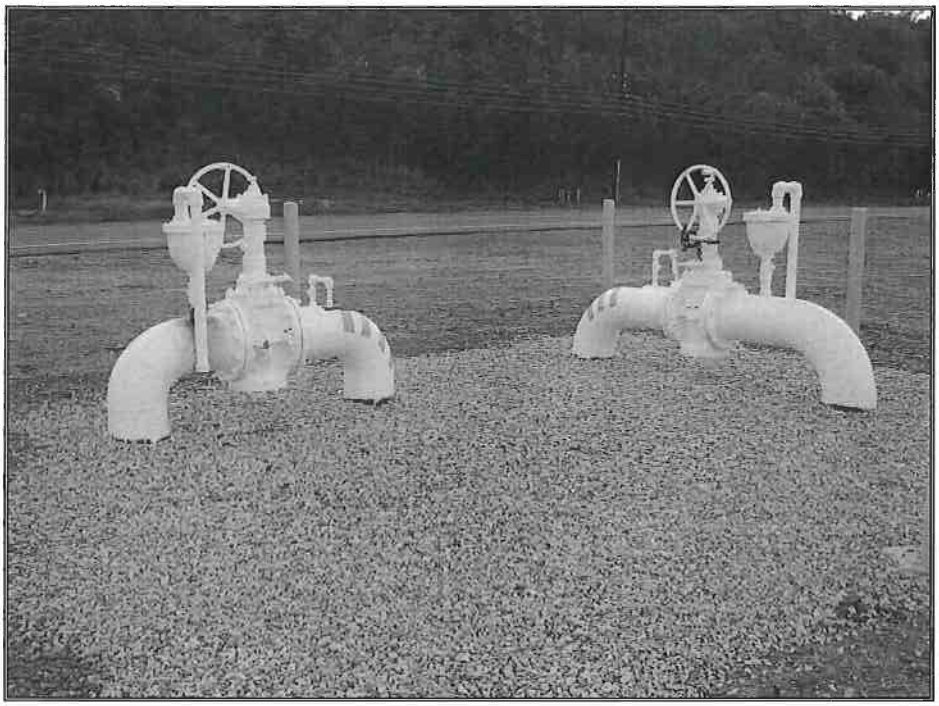


Photo 10A – VP 24 Valve Setting Installation DFM and JP-5 Pipelines to Pier 3

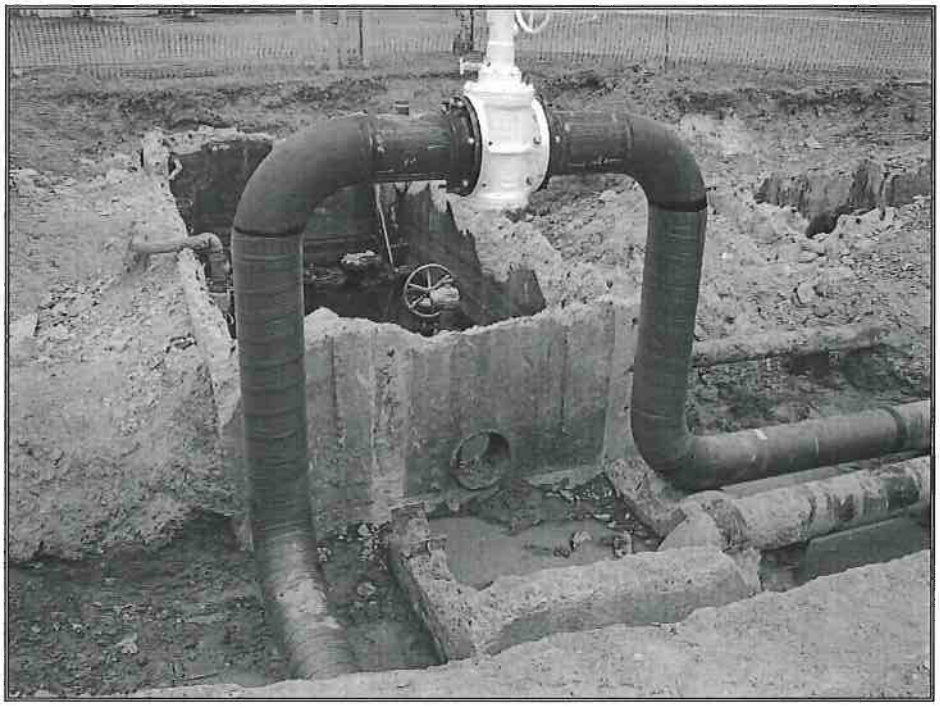


Photo 10B – VP 24 Valve Setting Installation JP-5 Pipeline to Pier 3

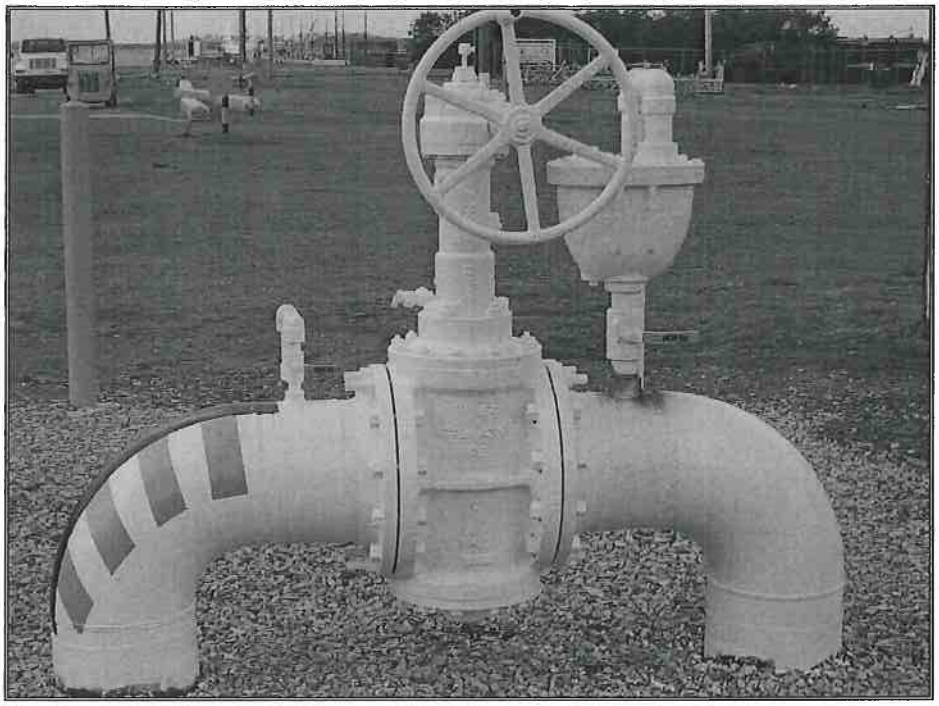


Photo 10C – VP 24 Valve Setting Installation DFM Pipeline to Pier 3

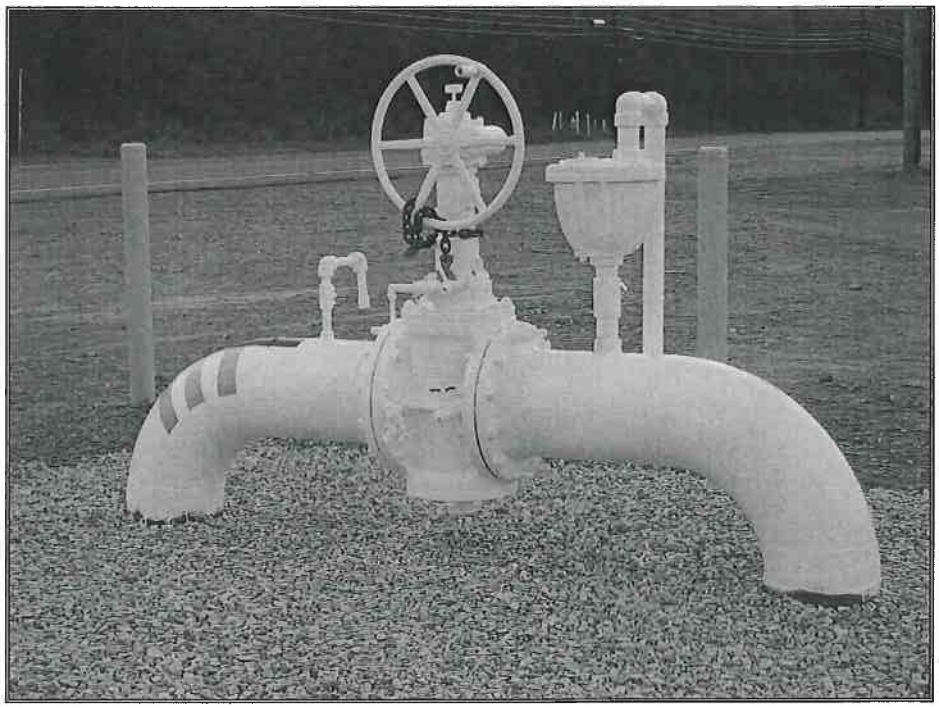


Photo 10D – VP 24 Valve Setting Installation JP-5 Pipeline to Pier 3

Photo 11A – VP 8 Valve Setting Installation DFM-S Pipeline

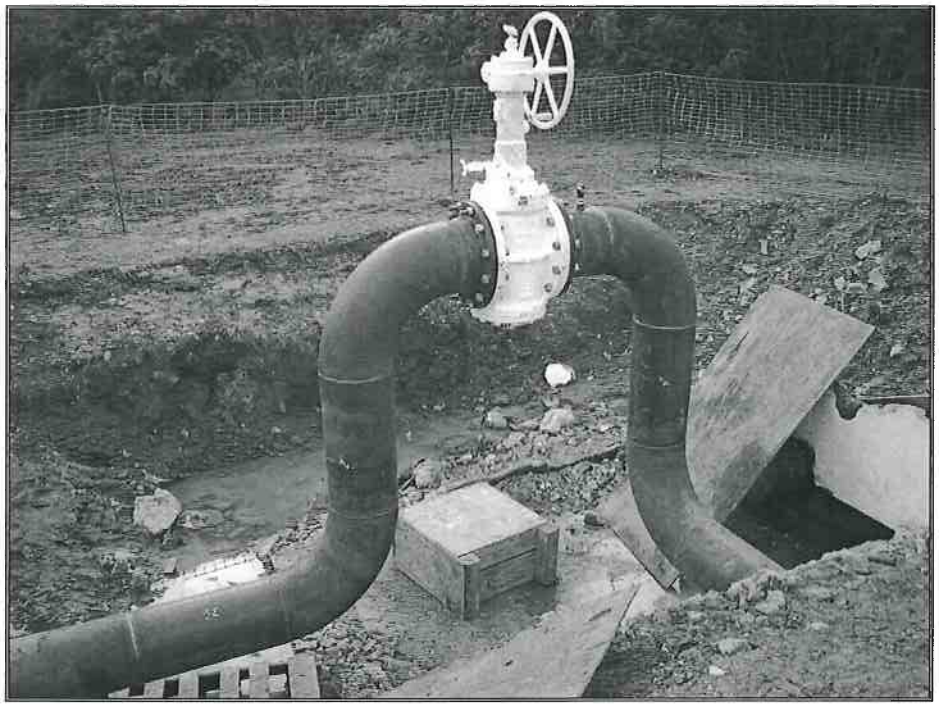


Photo 11B – VP 8 Valve Setting Installation DFM-S Pipeline

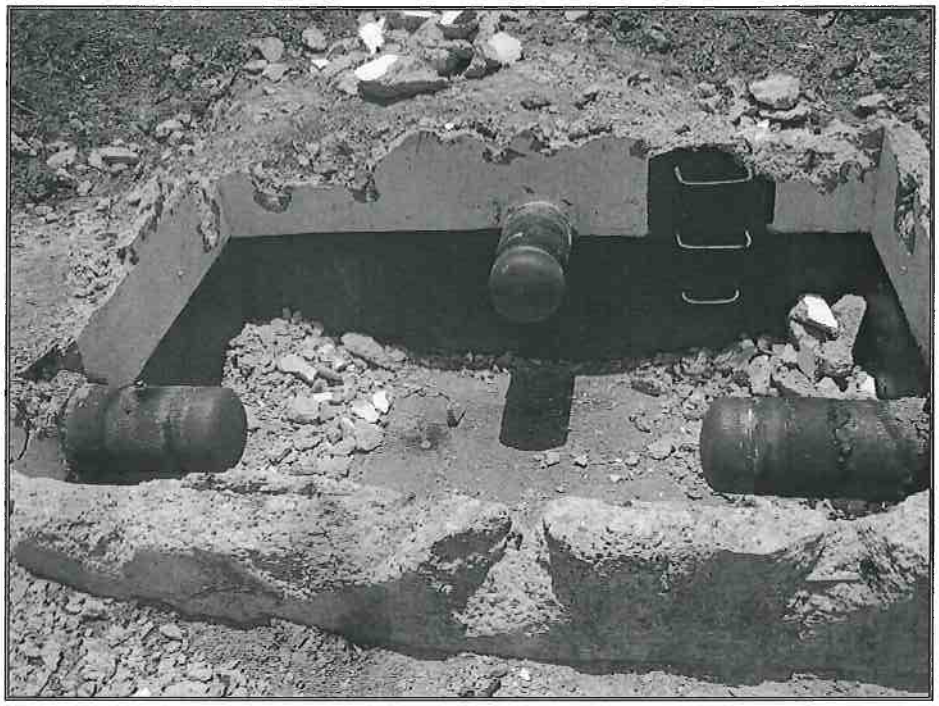


Photo 12A – VP 6 Valve Removal DFM-S Pipeline

Photo 13A – VP 3 Valve Removal JP-5 Airfield Pipeline

Photo 13B – VP 4 Valve Removal JP-5 Airfield Pipeline

Photo 13C – VP 4 Valve Removal JP-5 Airfield Pipeline

Photo 13D – VP 5 Valve Removal JP-5 Airfield Pipeline

Photo 13D – VP 5 Valve Removal JP-5 Airfield Pipeline

Photo 13F – VP 6 Valve Removal JP-5 Airfield Pipeline

Photo 13G – VP 6 Drain Valve Installation JP-5 Airfield Pipeline

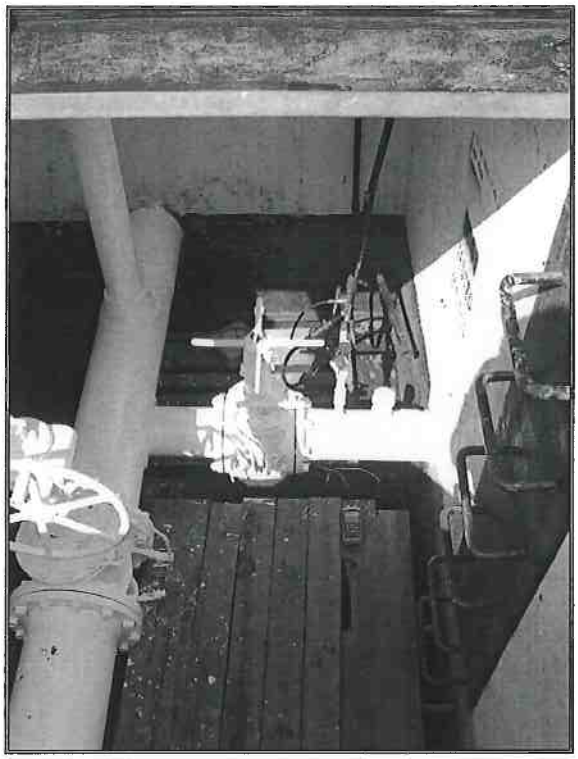


Photo 14A – VP 9 Valve Replacement JP-5 Pipeline

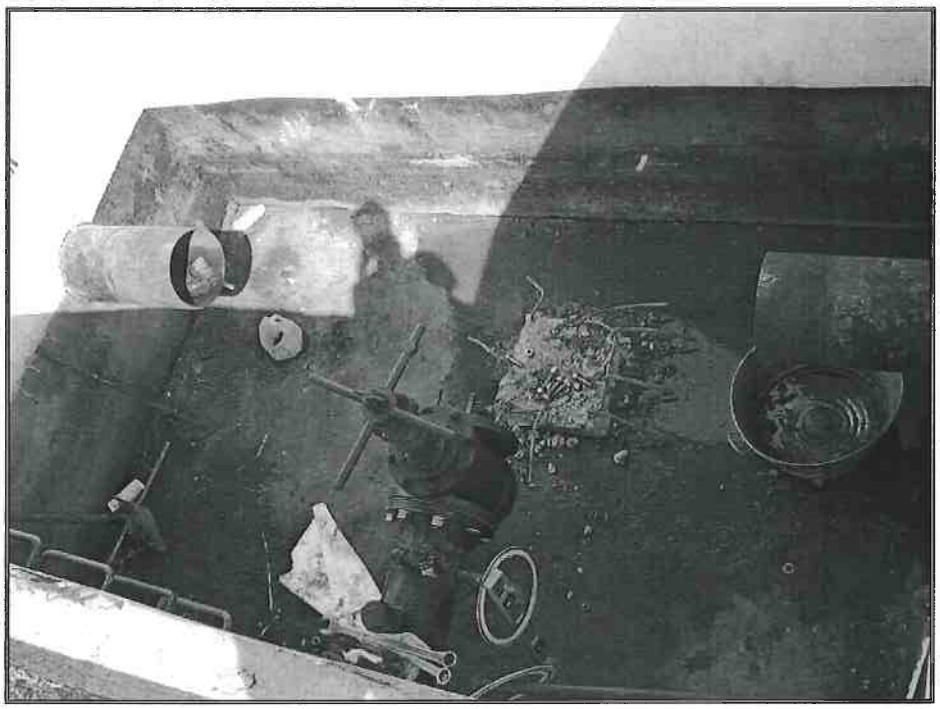


Photo 14B – VP 9 Valve Replacement JP-5 Pipeline

Photo 15A – PH 1982 Valve Installation

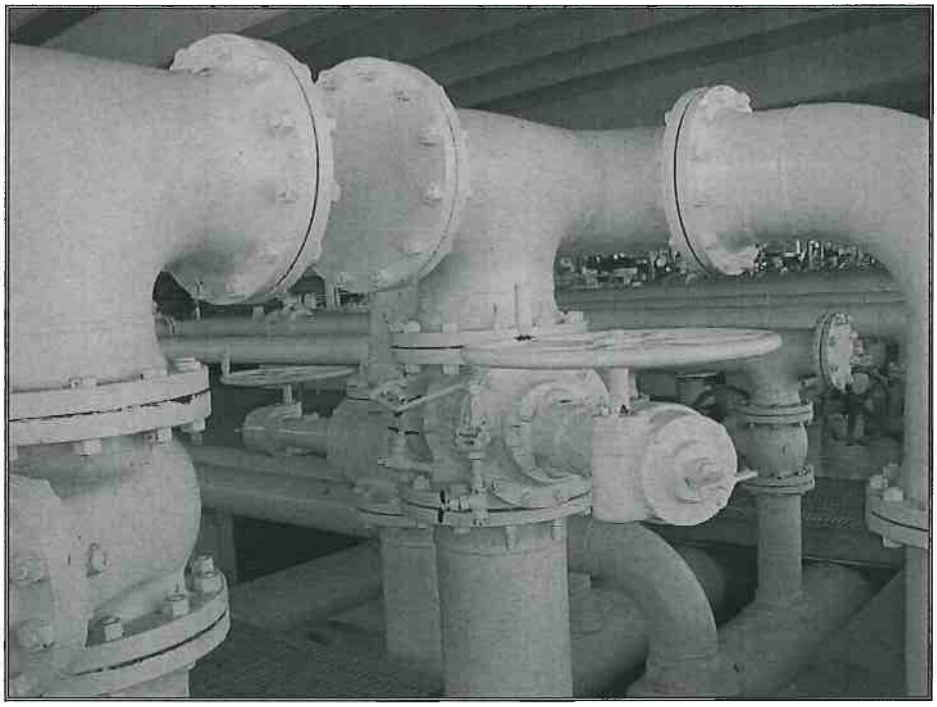


Photo 15B – PH 1982 Valve Installation and Removal

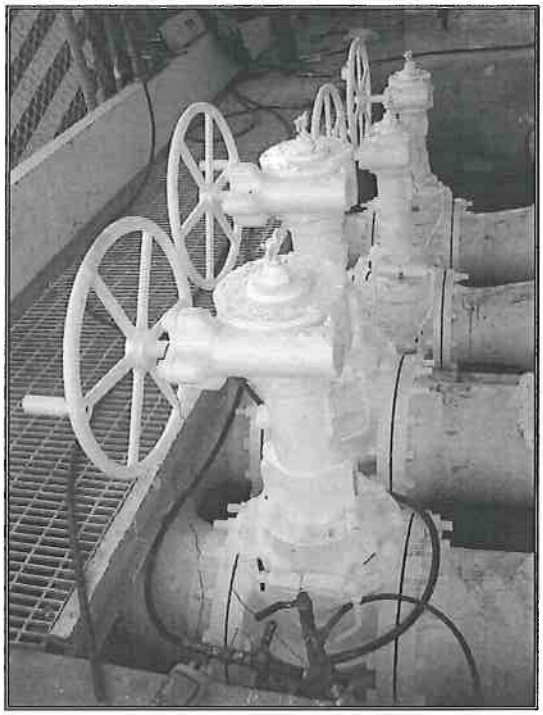


Photo 15C – PH 1982 Valve Installation JP-5 and DFM Pipelines

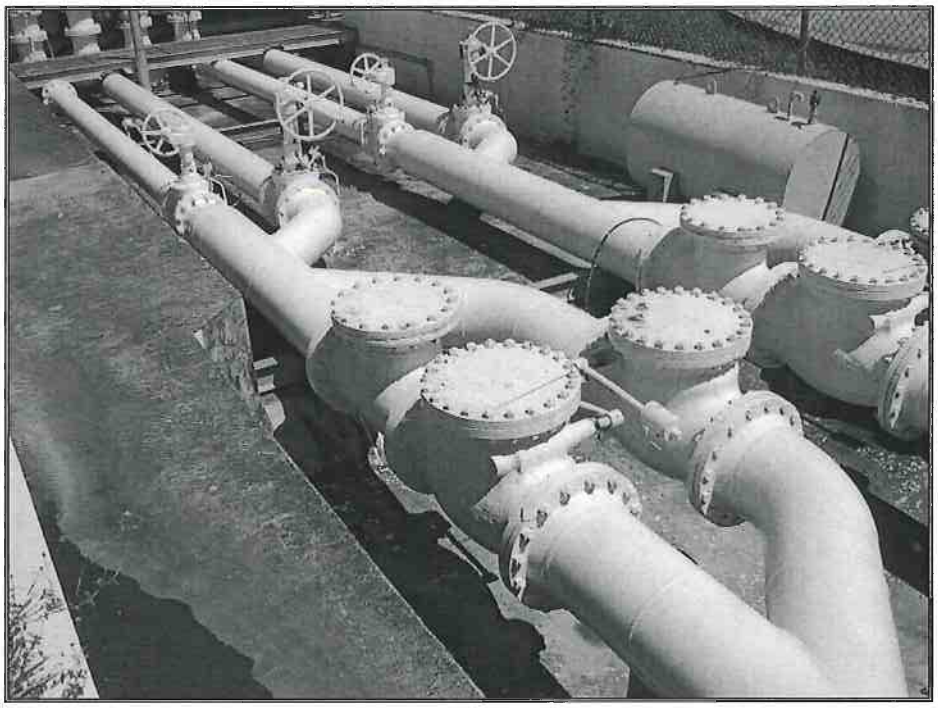


Photo 15D – PH 1982 Valve Installation and Meter Run Removal

Photo 15E – VP 56 Valve Setting Installation DFM Pipeline

Photo 15F – VP 56 Valve Setting Installation DFM Pipeline

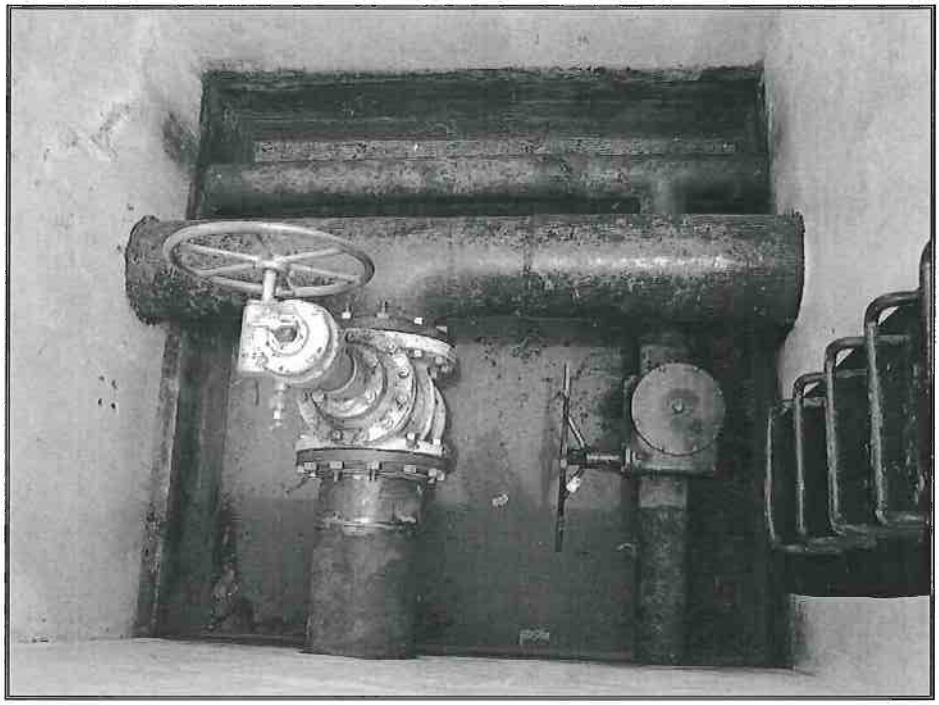


Photo 15G – VP 10 Valve Change out JP-5 Pipeline

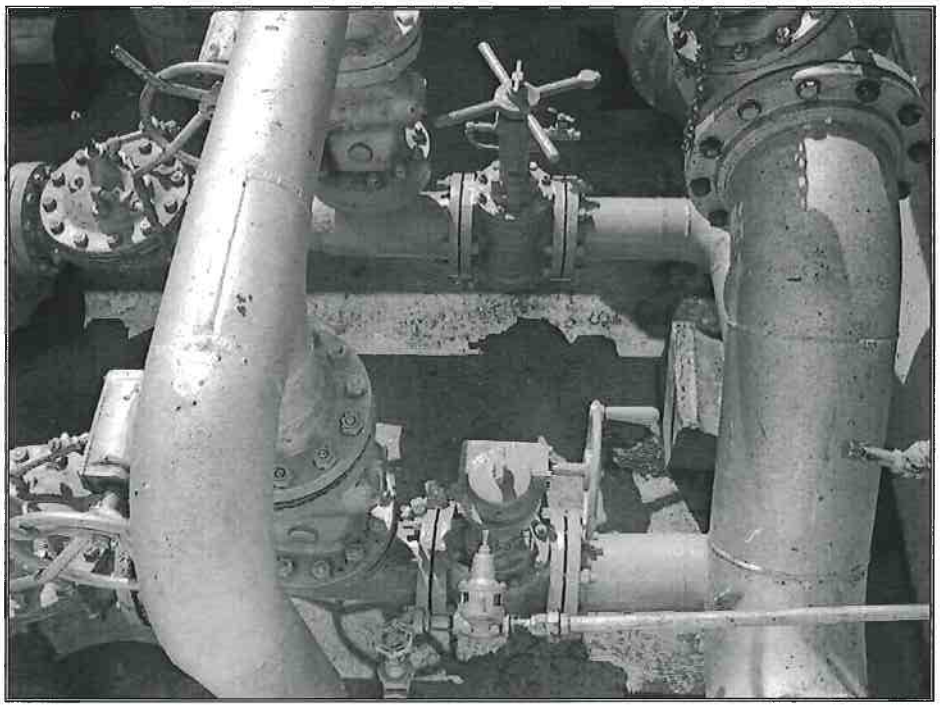


Photo 15H – Tank 381 Valve Replacement JP-5 Pipeline

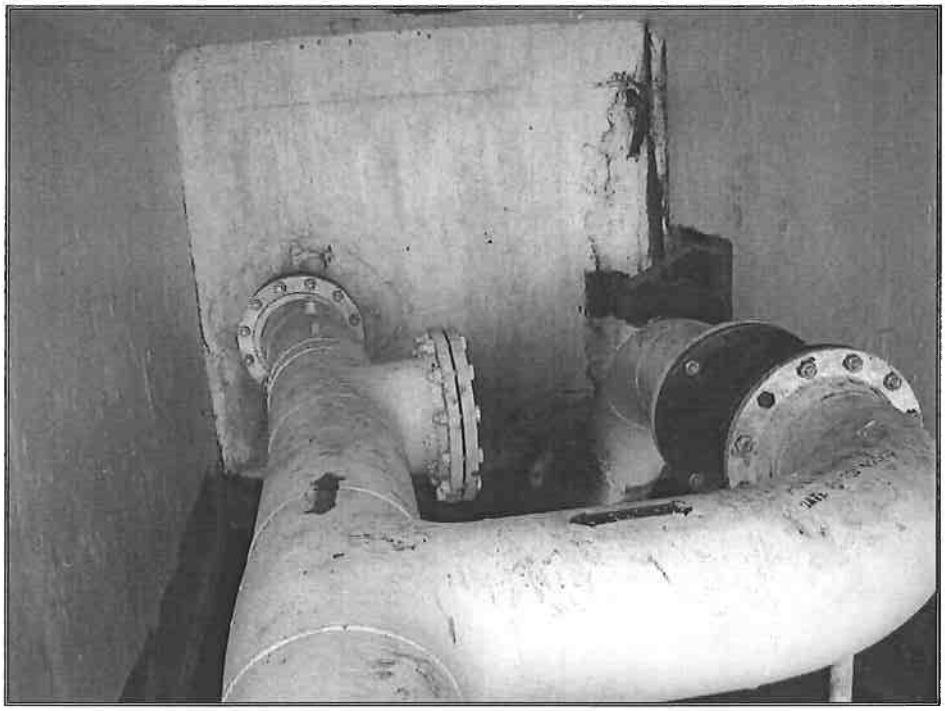


Photo 15I – Tank 1082 Valve Removals

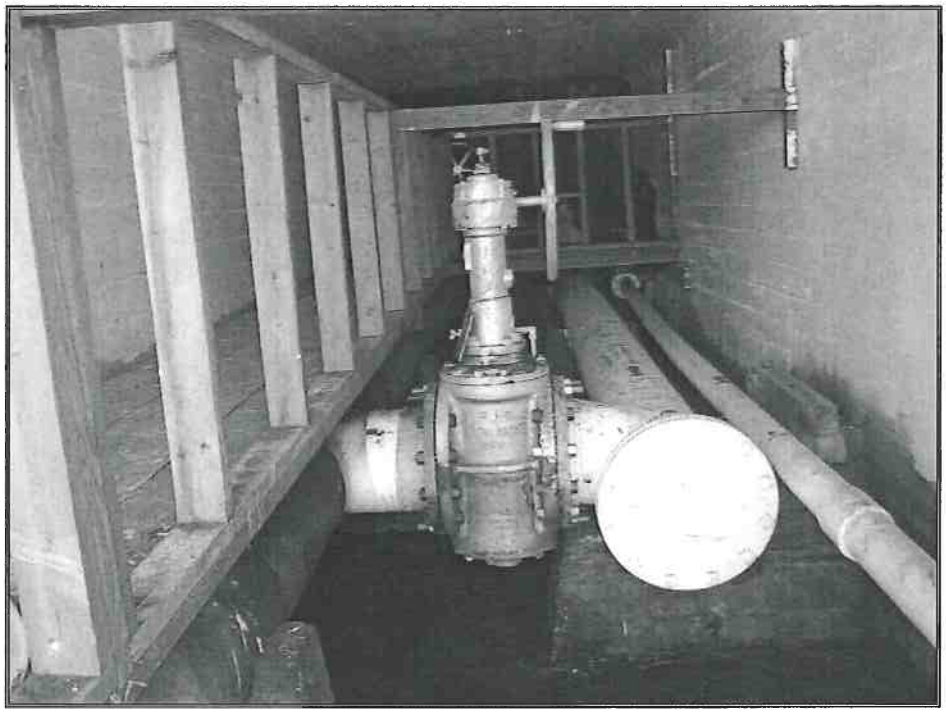


Photo 15J – Tank 83 Valve Replacement

Photo 16A – Blow Out Pit Removal JP-5 Pipeline

Photo 18A – Valve Pit 9A Valve Removal JP-5 Pipeline

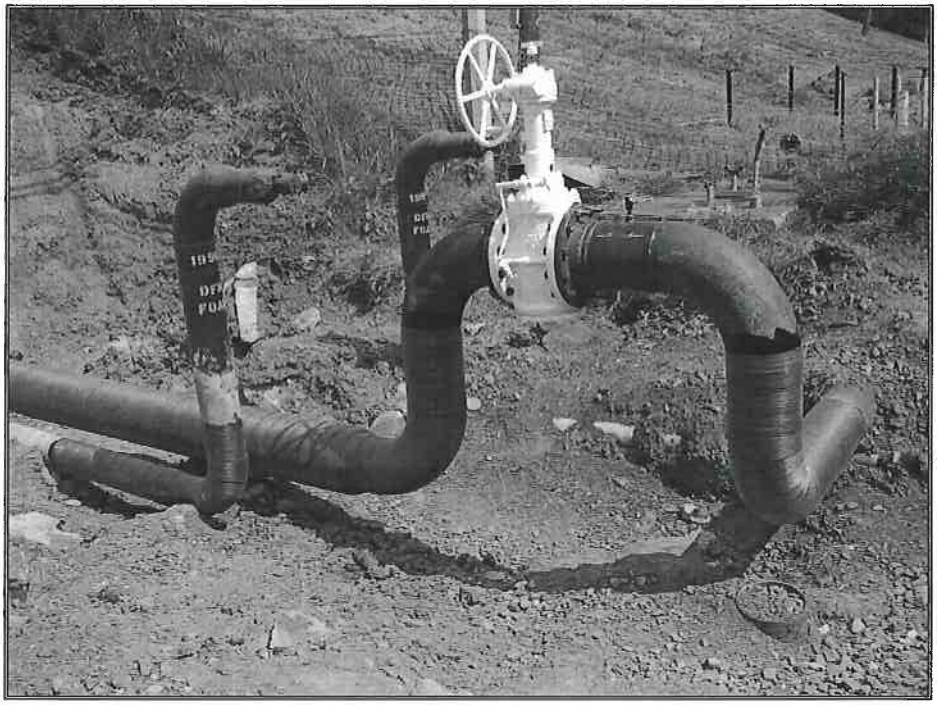


Photo 19A – Valve Pit 8 Valve Setting Installation DFM Pipeline

Photo 19B – Valve Pit 8 Valve Setting Installation DFM Pipeline

Photo 20A – Valve TFD-141 Removal DFM Pipeline

Photo 21A – PH 1982 Pig Trap Installation JP-5 Pipeline

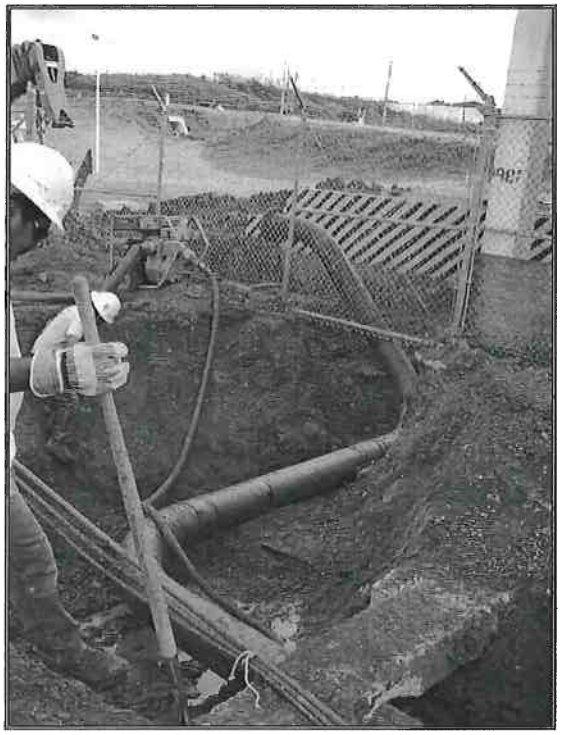


Photo 21B – PH 1982 Pig Trap Installation JP-5 Pipeline

Photo 21C – PH 1982 Pig Trap Installation JP-Pipeline

Photo 21D – PH 1982 Pig Trap Installation JP-5 Pipeline

Photo 22A – VP 9 Pig Trap Installation JP-5 Pipeline

Photo 22B – VP 9 Pig Trap Installation JP-5 Pipeline

Photo 22C – VP 9 Pig Trap Installation JP-5 Pipeline

Photo 22D – VP 9 Pig Trap Installation JP-5 Pipeline

Appendix D – Materials and Construction Specification

1.0 MATERIALS AND WORKMANSHIP

1.1 General

This specification covers the requirements for the provision of all pipeline and equipment procurement, fabrication and construction services for pipeline modifications and inspections. The Contractor shall in accordance with this Specification, satisfactorily complete all tasks as set out in the CONTRACT documents under the Scope of Work section.

1.2 References

All work shall comply with the referenced documents listed below as applicable. Additional codes and standards may only be used, after approval is obtained from the COTR or NTR.

- *AMERICAN CONCRETE INSTITUTE (ACI)*

ACI SP66-94	(1994) ACI Detailing Manual of Concrete Reinforcement
ACI SP71-95	(1995) Building Code Requirements for Reinforced Concrete

- *AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)*

	Specification for Structural Steel Buildings – Allowable Stress Design and Plastic Design
	Specification for Structural Joints Using ASTM A325 and A490 Bolts

- *AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)*

ANSI A14.3	Safety Requirements for Fixed Ladders
ANSI A1264.1	Safety Requirements for Workplace Floor and Wall Openings, Stairs and Railing Systems
ANSI/NFPA 30	(1996) Flammable and Combustible Liquids Code
ANSI B16.5	(1996) Pipe Flanges and Flanged Fittings, NPS ½ Through NPS 24

- *AMERICAN PETROLEUM INSTITUTE (API)*

API 5L	1995 (Errata 1997) Specification for Line Pipe
API STD 607	Fire Test for Soft Seated Quarter Turn Valves
API STD 608	Metal Ball Valves, Flanged, Threaded and Butt Welding End
API STD 1104	1994 Welding of Pipelines and Related Facilities
API STD 1529	1998 Aviation Fueling Hose
API RP 1107	1991 Pipeline Maintenance Welding Practices
API RP 1109	1993 Marking Liquid Petroleum Pipeline Facilities
API BULL 2209	1978 Pipe Plugging Practices
API Spec 6D	1994 (Supp.2 1996) Pipeline Valves (Gate, Plug, Ball and Check Valves)

- *AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)*

ASME BPVC-II-C	Material Specifications
ASME BPVC-V	1998 Non-Destructive Examination
ANSI/ASME B16.3	1992 Malleable Iron Threaded Fittings
ASME/ANSI B16.39	1986 Malleable Iron Threaded Pipe Unions
ASME/ANSI B16.9	1993 Factory Made Wrought Steel Butt welding Fittings
ASME/ANSI B16.5	1996 Pipe Flanges and Flanged Fittings
ASME B16.11	1996 Forged Fittings, Socket-Welding and Threaded
ASME B16.21	1992 Nonmetallic Flat Gaskets for Pipe Flanges
ASME B31.3	1996 Chemical Process Plant Piping and Petroleum Refinery Piping
ASME/ANSI B31.4	1992 Liquid Transportation Systems for Hydrocarbons, Liquid Petroleum Gas, Anhydrous Ammonia, and Alcohol
ASME B31G	1991 Manual for Determining the Remaining Strength of Corroded Pipelines
ANSI/ASME B1.1	Unified Inch Screw Threads (UN and UNR Thread Form)

- *AMERICAN SOCIETY FOR NON-DESTRUCTIVE TESTING, INC. (ASNT)*

ASNT TC-1A-96	Recommended Practice for Non-Destructive Testing

- *AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)*

ASTM A 36/A 36M-97a	Specification for Carbon Structural Steel
ASTM A 53-97	1997 Standard Specification for Pipe, Steel, Black and Hot-Dipped Zinc-Coated Welded and Seamless
ASTM A 105/A 105M-98	Standard Specification for Carbon Steel Forgings for Piping Applications
ASTM A123	Standard Specification for Zinc (Hot Dipped Galvanized) Coatings for Iron and Steel Products
ASTM A 185-97	Standard Specification for Welded Steel Wire Fabric for Concrete Reinforcement
ASTM A 193/A 193M-97	Standard Specification for Alloy Steel and Stainless Steel Bolting Materials for High Temperature Service
ASTM A 194/A 194-97	1997 Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service
ASTM A 234/A 234M-97	Standard Specification for Wrought Carbon Steel
ASTM A 276-94b	Standard Specification for Stainless and Heat Resisting Steel Bars and Shapes
ASTM A 307	Standard Specification for Carbon Steel Bolts and Studs, 60,000psi strength

ASTM A 325M-93	Standard Specification for High Strength Bolts for Structural Steel Joints
ASTM A370-95a	Standard Test Methods and Definitions for Mechanical Testing of Steel Products
ASTM A 615/A 615M-96a	Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM C 39-96	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C 94-98	Standard Specification for Ready-Mixed Concrete
ASTM C 143C/143M-97	Standard Test Method for Slump of Hydraulic Cement Concrete
ASTM C 260-97	Standard Specification for Air-Entraining Admixtures for Concrete
ASTM C 309	Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C 405-82	(1992) e1 Standard Practice for Estimating Consistency of Wet-Mixed Thermal Insulating Cement
ASTM C 494-98	Standard Specification for Chemical Admixtures for Concrete
ASTM C 618-98	Standard Specification for Coal Fly Ash and Raw or Calcinated Natural Pozzolan for Use as a Mineral Admixture in Concrete
ASTM D 229-96	Standard Test Methods for Rigid Sheet and Plate Materials Used for Electrical Installations
ASTM D 698-91	Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb./ft (600 kN-m/m))
ASTM D 1556-90	(1996) e1 Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	1991 Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb./ft (2,700 kN-m/m))
ASTM D 1586-84	(1992) e1 Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils
ASTM D 1752-84	(1996) e1 Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction
ASTM D 2487-98	Standard Classification of Soils for Engineering Purposes
ASTM D 4253-93	Standard Test Methods for Maximum Index Density of Soils Using a Vibratory Table
ASTM D 4254-91	Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density
ASTM F 436-93	Standard Specification for Hardened Steel Washers

- *AMERICAN WATER WORKS ASSOCIATION (AWWA)*

AWWA C0984	Cold-Applied Tape Coatings for the Exterior of Special Sections, Connections, and Fittings for Steel Water Pipelines
AWWA C213	Fusion Bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipelines
AWWA C214	Tape Coating Systems for the Exterior of Steel Water Pipelines

- *AMERICAN WELDING SOCIETY, INC. (AWS)*

AWS B2.1-84	Standard for Welding Procedures and Performance Qualifications
AWS QC1	1996 Standard for AWS Certification of Welding Inspectors
AWS/ANSI Z49.1	1994 Safety in Welding and Cutting
AWS A5.1	1991 Carbon Steel Electrodes for Shielded Metal Arc Welding

- *CODE OF FEDERAL REGULATIONS*

29 CFR 1910	1998 Occupational Safety and Health Standards
29 CFR 1910.1000	Air Contaminants
29 CFR 1910.1025	Lead
29 CFR 1926	Safety and Health Regulations for Consultation
33 CFR 156	Oil and Hazardous Material Transfer Operations
33 CFR 154	Facilities Transferring Oil or Hazardous Materials in Bulk
49 CFR 195	1998 Transportation of Hazardous Liquids by Pipeline

- *COMMERCIAL ITEM DESCRIPTIONS (CID)*

CID A-A-1558	Paint, Stencil

- *CORPS OF ENGINEERS (COE)*

COE EM-385-1-1	Safety and Health Requirements Manual

- *FEDERAL SPECIFICATIONS (FS)*

FS TT-P-19	Latex, Acrylic Emulsion
FS TT-E-490	(Rev. E) (Int. Am. 3) Enamel, Silicone Alkyd Copolymer, Semi gloss (For Exterior and Interior Non-Residential Use)
FS TT-T-291	(Rev. F) (Am. 1) Thinner, Paint, Mineral Spirits, Regular and Odorless

- *FEDERAL STANDARDS (FED-STD)*

FED-STD-313	(Rev. C) Material Safety Data, Transportation Data and Disposal Data for Hazardous Materials Furnished to Government Activities

- *MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY, INC. (MSS)*

MSS SP-58	Pipe Hangers and Supports - Materials, Design and Manufacture
MSS SP-69	Pipe Hangers and Supports - Selection and Application

- *MILITARY SPECIFICATIONS (MIL)*

MIL-HDBK-1022A	Department of Defense Handbook, Petroleum Fuel Facilities
MIL-PRF-85285	Coating, Polyurethane High Solids
MIL-P-28577	(Rev B) Primer, Water Borne Acrylic or Modified Acrylic for Metal Surfaces
MIL-P-28578	(Rev B) Paint, Water Borne Acrylic or Modified Acrylic for Metal Surfaces
MIL-P-24441	(Rev. A) (Supp. 1) Paint, Epoxy-Polyamide
MIL-C-83286	Coating, Urethane, Aliphatic Isocyanate
MIL-STD-161F	Identification Methods for Bulk Petroleum Products Systems, Including Hydrocarbon Missile Fuels

- *NATIONAL ASSOCIATION OF CORROSION ENGINEERS (NACE)*

NACE RP0169	Control of External Corrosion on Underground or Submerged Metallic Piping Systems
NACE RP0185	Extruded Polyolefin Resin Coating Systems with Soft Adhesives for Underground or Submerged Pipe
NACE RP0188-90	Discontinuity Testing of Protective Coatings
NACE RP0190	External Protective Coatings for Joints, Fittings, and Valves on Metallic Underground or Submerged Pipelines and Piping Systems

- *NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)*

NFPA 30	Flammable and Combustible Liquids Code
NFPA 407	Aircraft Fuel Servicing

- *STEEL STRUCTURES PAINTING COUNCIL (SSPC)*

SSPC PA 1	Shop, Field, and Maintenance Painting
SSPC PA 3	A Guide to Safety in Paint Application
SSPC SP 1	Solvent Cleaning
SSPC SP 2	Hand Tool Cleaning
SSPC SP 3	Power Tool Cleaning
SSPC SP 6/NACE3	Commercial Blast Cleaning
SSPC SP 7/NACE4	Brush-Off Blast Cleaning
SSPC SP 10	Near-White Blast Cleaning
SSPC VIS 1	Visual Standard for Abrasive Blast Cleaned Steel (Standard Reference Photographs)
SSPC Paint 21	Silicone Alkyd Paint

1.3 Submittals

Before commencing Work, the Contractor shall submit the following information:

1.3.1 Welding Certification

- Welder Personnel: Submit certification that all welding personnel are certified in accordance with API Standard 1104.
- Proposed welders' qualification test in accordance with API Standard 1104. Cost of qualifying welding procedures and welders shall be borne by the Contractor.
- Welding procedures and procedure qualifications in accordance with API Standard 1104.

1.3.2 Manufacturer's Catalog Data For Purchased Material

Submit manufacturer's data for all purchased materials, which as a minimum will include the following items:

a) Line-pipe and pipe bends.

b) Valves (i.e. butterfly, gate, globe, check, plug, needle).

c) Fittings (i.e. flanges, reducers, bolts/nuts/washers, gaskets, tees, end closures etc.).

d) Equipment (i.e. meters, strainers, pressure gauges, hose, etc.).

Typical information to be provided by the Contractor includes:

a) Material, component and installation specifications.

b) Performance test data.

c) Operations and Maintenance Manuals.

1.3.3 Material Certifications and Instructions

a) Manufacturer's product data including catalog details.

b) Manufacturer's installation instructions.

c) Manufacturer's recommended maintenance procedure and schedule(s).

d) Manufacturer's certification that the proposed products / items comply with the indicated requirements.

e) Schedule of materials indicating identification and location.

f) Manufacturer's certification that coatings on material (valves, etc.) have been factory tested and comply with the indicated requirements.

g) Material Safety Data Sheet (MSDS) for all hazardous materials to be used at the job site. MSDS format shall be in accordance with standard FED-STD-313.

1.3.4 Coating Manufacturer's Catalog Data and Instructions

Contractor shall provide information (only if applicable) regarding the items listed below:

a) Factory-applied coating system.

b) Field-applied coating and field joint system.

c) Use of mastics.

1.3.5 Paint Certificates and Instructions

The Contractor shall submit, for each type of coating, sealant, or other product furnished, the following items:

a) Manufacturer's Certificate. Submit a certificate from the manufacturer stating that the product conforms to both the physical properties and performance requirements stated in this document.

b) If the referenced specification has a Qualified Products List (QPL), certify that the product has been tested and approved for inclusion in the QPL.

c) Application instructions.

d) Environmental conditions and considerations for the application.

e) Manufacturer's material safety data sheets for coatings, solvents, and other potentially hazardous materials, as defined in FED-STD-313.

1.4 Definitions

1.4.1 General

- **Shall**

  In ASME B31.3 and NFPA 30 publications, the advisory provisions shall be considered mandatory, as though the word "shall" had been substituted for "should" wherever it appears.

- **"Authority Having Jurisdiction" and "Owner"**

  Navy Technical Representative (NTR).

1.4.2 Soil

- **Backfill**

  Material used in refilling a cut, trench or other excavation.

- **Cohesive Materials**

  Soils classified by ASTM D 2487-93 as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesive only when fines have a plasticity index greater than zero.

- **Cohesionless Materials**

  Soils classified by ASTM D 2487-93 as GW, GP, SW, and SP. Materials classified as GM and SM will be identified as cohesionless only when the fines have a plasticity index of zero.

- **Compaction**

  The process of mechanically stabilizing a material by increasing its density at a controlled moisture condition. "Degree of Compaction" is expressed as a percentage of the maximum density obtained by the test procedure described in ASTM D 698-91 or ASTM D 1557 for general soil types or ASTM D 4253-93 or ASTM D 4254-91 (Relative Density) for isolated cohesionless materials, abbreviated in this specification as 90 percent ASTM D 698-91 maximum density.

- **Granular Pipe Bedding**

  A dense, well-graded aggregate mixture of sand, gravel, or crushed stone (mixed individually, in combination with each other, or with suitable binder soils) placed on a sub grade to provide a suitable foundation for pipe. Granular bedding material may also consist of poorly graded sands or gravel where fast draining soil characteristics are desired.

- **Hard Material**

  Weathered rock, dense consolidated deposits, or conglomerate materials (excluding man made materials such as concrete) which are not included in the definition of "rock" but which usually require the use of heavy excavation equipment, ripper teeth, or jack hammers for removal. Material having a standard penetration resistance as determined by ASTM D 1586-84 between 60 and 600 blows per foot is arbitrarily defined herein as "Hard Material".

- **In-Situ Soil**

  Existing in place soil.

- **Lift**

  A layer (or course) of soil placed on top of sub grade or a previously prepared or placed soil in a fill or backfill.

- **Porous Fill**

  A granular soil material having a large void ratio when placed and compacted, allowing a free flow of fluid to or from the surrounding soil, with no more than (10%) of the material passing the 1/2-inch sieve.

- **Refill**

  Material placed in excavation to correct overcut in depth.

- **Rock**

  Solid homogeneous interlocking crystalline material with firmly cemented, laminated, or foliated masses or conglomerate deposits, neither of which can be removed without systematic drilling and blasting, drilling and the use of expansion jacks or feather wedges, or the use of backhoe-mounted pneumatic hole punchers or rock breakers; also large boulders, buried masonry, or concrete other than pavement exceeding 1/2 cubic yard in volume. Removal of "hard material" will not be considered rock excavation because of intermittent drilling and blasting that is performed merely to increase production. Material identified in the soil boring logs as having a standard penetration resistance as determined by ASTM D 1586-84 greater than 600 blows per foot is arbitrarily defined herein as "Rock".

- **Topsoil**

  In natural or undisturbed soil formations, the fine-grained, weathered material on the surface or directly below any loose or partially decomposed organic matter. Topsoil may be a dark-colored, fine, silty or sandy material with a high content of well-decomposed organic matter, often containing traces of the parent rock material. Gradation and material requirements specified herein apply to all topsoil references in this specification. The material shall be representative of productive soils in the vicinity.

- **Unyielding Material**

  Rock rib, ridge, rock protrusion, or soil with cobbles in the trench bottom requiring a covering of finer grain material or special bedding to avoid bridging in the pipe or conduit.

- **Unsatisfactory Material**

  In-situ soil or other material, which can be identified as having insufficient strength characteristics or stability to carry, intended loads in the trench without excessive consolidation or loss of stability. Also backfill material, which contains refuse, frozen material, large rocks, debris, soluble particles, and other material, which could damage the pipe or cause the backfill not to compact. Materials classified at PT, OH, or OL by ASTM D 2487 are unsatisfactory.

- **Unstable Material**

  Material in the trench bottom, which lacks firmness to maintain alignment and prevent joints from separating in the pipe, conduit, or appurtenance structure during backfilling. This may be material otherwise identified as satisfactory that has been disturbed or saturated.

1.4.3 Materials

- **Pipe**

  A tube through which product flows or is contained. May be attached to the line-pipe.

- **Line-pipe**

  A continuous run of pipe between adjacent block valves, pumps, or line fittings.

- **Coating**

  A continuous, uniformly thick layer formed on a surface by the mechanical application of a liquid, mastic, powdered or extruded film material. Some types of application require elevated temperatures.

- **Coating System**

  One or more coatings applied to a properly prepared steel surface. If only one coating, that coating is applied directly to the steel surface; if more than one coating, each coating is applied in one operation over the previously applied and cured coating. For some applications, the first coating is a primer. Coatings of a particular system function together as a collective entity to protect the steel surface from corrosion. Coating system may be either liquid or tape applied.

- **Tape**

  Prefabricated laminate of plastic film backing with a homogeneous sealant layer or a pressure-sensitive adhesive layer produced in sheets, pads, or rolls wound on hollow cores. Tape applications do not require elevated temperatures. Ultraviolet (UV) resistance is required for exposed crossings.

- **Tape Coating System**

  One or more layers of tape applied cold over a properly prepared and primed steel surface. Tape on the primed steel surface protects the steel from corrosion.

1.5 Unforeseen Hazardous Material

If material is encountered that may be dangerous to human health upon disturbance during construction operations, that portion of work shall be stopped and the Government shall be notified immediately. The Government will issue a modification for the Contractor to determine if the material is hazardous. If the material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If the material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification for the Contractor to dispose of the material in accordance with the applicable federal, state, and local regulations.

The Contractor shall take the proper precautions and adhere to the applicable federal, state, and local regulations concerning the handling of this material.

1.6 Environmental Protection Requirements

For the duration of the work, environmental protection as defined, shall be provided for and maintained. Environmental protective measures to control pollution that develops during normal construction practice shall be planned for and provided. Environmental protective measures required to correct conditions that develop during the construction of permanent or temporary environmental features associated with the project shall be planned for and provided.

1.7 Protection of Utilities

Contractor shall provide the utmost care and diligence during movement of construction machinery and equipment over pipes and utilities during construction. Perform work adjacent to non-Government utilities as indicated in accordance with procedures outlined by utility company. Excavation made with power-driven equipment is not permitted within two feet of known Government-owned utility or subsurface construction. For work immediately adjacent to or for excavations exposing a utility or other buried obstruction, excavate by hand. Start hand excavation on each side of the indicated obstruction and continue until the obstruction is uncovered or until clearance for the new grade is assured. Support uncovered lines or other existing work affected by the contract excavation until approval for back fill is granted by the NTR. Report damage to utility lines or subsurface construction immediately to the NTR.

2. MATERIALS

All material shall be new stock, except where re-use of existing facilities is identified in the scope.

2.1 Soil Materials

Solid materials, specified below, shall be free of debris, roots, wood, scrap material, vegetable matter, refuse, soft unsound particles, ice, or other deleterious and objectionable materials.

2.1.1 Backfill

Bring trenches to grade using material excavated on the site of this project. This material will be considered unclassified and no testing other than for compaction will be required before use as backfill.

2.1.2 Special Backfill for Structures and Pavements

Backfill trenches under roads, structures, and paved areas with material conforming to State DOT or local Standard.

2.1.3 Gravel

Clean, coarsely graded natural gravel, crushed stone or a combination thereof.

2.1.4 Topsoil Material

Salvaged topsoil from stockpile. Furnish additional topsoil from approved sources off the site if stockpiled material is insufficient to complete work indicated.

2.1.5 Borrow

Obtain borrow materials in excess of those furnished from excavations specified herein from sources off Government property.

2.1.6 Pipe Bedding

Provide material for pipe bedding conforming to the State DOT or local Standard.

2.2 Buried Warning and Identification Tape

Polyethylene plastic and metallic core or metallic-faced, acid- and alkali-resistant, polyethylene plastic warning tape manufactured specifically for warning and identification of buried utility lines. Provide tape on rolls, 3-inch-minimum width, color coded yellow of the intended utility with warning and identification imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED PETROLEUM LINE BELOW" or similar wording. Color and printing shall be permanent, unaffected by moisture or soil. Minimum thickness of tape shall be 0.003 inch. Tape shall have a minimum strength of 1500 pi lengthwise, and 1250 pi crosswise, with a maximum 350 percent elongation.

2.3 Pipes, Valves, and Fittings

2.3.1 Material

Material contacting the fuel shall be carbon steel containing up to a maximum of one percent copper. Brass fittings and couplings will not be permitted.

2.3.2 System

Capacity and efficiency of equipment shall not be less than that indicated. System components, including piping, equipment, valves, and accessories shall be suitable for maximum working pressures of either ANSI Class 150 or 300, as indicated on project drawings in the scope of work.

2.3.3 Carbon Steel Piping

ASTM A 53-97, Type E (electric-resistance welded, Grade B) or Type S (seamless, Grade B), black steel; Weight Class STD (Standard) for pipe sizes larger than 2 inches, Weight Class XS (Extra-Strong) for pipe sizes 2 inches and smaller.

2.3.4 Line Pipe

API SPEC 5L, seamless, submerged-arc weld or gas metal-arc weld; Grade B, black steel, Weight Class STD (Standard) for pipe sizes larger than 2 inches, Weight Class XS (Extra-Strong) for pipe sizes 2 inches and smaller.

2.3.5 Piping Connections

Flange connections shall be used for joining pipe to equipment. Threaded connections shall only be used where unavoidable, such as on differential pressure gauges, pressure snubbers, and fuel sample points. Socket weld joints shall be used on all piping below 2-inch (50mm) diameter nominal size.

2.3.6 Threaded Fittings and Socket Welded Fittings

ASME B16.11, threaded fittings and socket welded fitting shall conform to ASME B16.3, Class 150 or 300, as indicated on project drawings.

2.3.7 Butt Welding Fittings and Tapered Reducing Fittings

ASME/ANSI B16.9, ASTM A 234/A 234M-97, Type WPB, of the same material and weight as the piping in which fittings are installed. Backing rings shall conform to ASME B31.3 and be compatible with materials being welded.

2.3.8 Flanges

Flanges shall conform to ASME/ANSI B16.5, Class 150 or 300, Raised Face Type, ASTM A 105/A 105M-98, as indicated on drawings.

2.3.9 Unions

ASME/ANSI B16.39, Class 150 or 300, as indicated on drawings.

2.3.10 Gaskets

For ANSI Class 150 flanges, provide ASME B16.21, composition ring 0.0625-inch thick, of one piece factory cut, resistant to the effects of aviation hydrocarbon fuels and manufactured of fire-resistant materials.

For ANSI Class 300 flanges, provide spiral-wound (304) SS windings, graphite filler with steel outer ring. Provide full-face gaskets for flat-face flanged joints, and ring gaskets for raised-face flanged joints.

2.3.11 Bolts

ASTM A 193/A 193M-97a, Grade B8. Extend no less than two full threads beyond the nut with the bolts tightened to the required torque.

Note that for the double block and bleed plug valves, (Section 2.3.17 below); both bolts and studs shall be provided. The number and size shall be based on the manufacturers' recommendation for tapped flanges)

2.3.12 Nuts

ASTM A 194/A 194M-97, Grade 8.

2.3.13 Washers

ASTM F 436-93, flat, circular, stainless steel washers. Provide washers under bolt heads and nuts.

2.3.14 Spectacle Blinds/Line Blinds

A spectacle blind/line blind (slip blind) shall be used where absolute shut-off of flow is required, and the isolating valve is not provided with double block and bleed capability.

The selection of spectacle blinds or line blinds/hammer blinds shall be in accordance with the listing below. The thickness of blinds shall be calculated in accordance with ASME B31.3 and the material shall be consistent with the piping/valve material.

Blinds shall be located in horizontal lines where possible, and shall be accessible from the operating level or from permanent platforms. The location shall be as indicated on the schematics.

Blinds shall not be located together with another flangeless item (e.g. wafer type check or butterfly valves) between a pair of flanges.

Where slip blinds are installed, they shall be provided complete with a matching hammer blind, which shall be normally installed.

The following list provides a general guide for selecting blinds or spades and spacer wherein the weight of spectacle blind should not exceed 50 kg, otherwise slip and hammer blinds shall be utilized.

ANSI Rating	Spectacle Blind	Slip and Hammer Blind
ANSI Class 150	Up to and including 16-inch	18-inch and above
ANSI Class 300	Up to and including 12-inch	14-inch and above

2.3.15 Electrically Isolating (Insulating) Gasket for Flanges and Unions

Provide insulating gasket sets where indicated by drawings. Gaskets shall conform to ASTM D229-96 electrical insulating material of 1000 ohms minimum resistance. Material shall be resistant to the effects of aviation hydrocarbon fuels. Provide full face insulating gaskets between flanges. Provide full surface 0.03-inch thick wall thickness, spiral-wound Mylar insulating sleeves between the bolts and the holes in flanges; bolts may have reduced shanks of a diameter not less than the diameter at the root of threads. Provide 0.125-inch thick high-strength phenolic insulating washers next to flanges and flat circular stainless steel washers over insulating washers and under bolt heads and nuts. Provide bolts 0.5-inch longer than standard length to compensate for the thicker insulating gaskets and the washers under bolt heads and nuts.

2.3.16 Waterproof Seals

Provide watertight seals, which are resistant to the effects of aviation hydrocarbon fuels and compatible with existing equipment.

2.3.17 Valves

- **Materials of Construction**
  - Carbon steel bodies and bonnets shall be used on all valves except for aviation turbine fuels downstream of filter separators, where aluminum or stainless steel bodies shall be used. (Zinc, zinc-coated, copper, or copper bearing materials in contact with the fuel is not acceptable). Internally epoxy-coated valves are acceptable for general services but not as a substitute for a non-ferrous valve.
  - Aluminum valves shall not be used within a contained area.
  - Cast iron or bronze-bodied valves shall not be used in liquid petroleum service.
- **End Connections**
  - Flanges for all valves 2-inches and above. All flanges in 150# and 300# service shall be raised face.
  - Drains and vents on piping (1½-inches and below) shall be socket welded.
  - Threaded end connections shall be used for thermal relief valves and ¾-inch isolating ball valves.

- **Valve Operators**
  - Gear operators shall be provided for ball and plug valves larger than 6 inches (150 mm) and larger than 8-inches (200 mm) for butterfly valves.
  - Ball valves below 2-inches shall be provided with lever handles.
- **Valve Types**

  The valve types required for this project are:
  - Plug Valves (double block and bleed) - full bore (piggable) and reduced bore.
  - Ball Valves - and reduced bore.
  - Relief Valves.

  The plug valves shall be designed to API SPEC 6D, ANSI Class 150 or 300 as indicated in the scope. The valves shall be non-lubricated, resilient, and double seated, with tapered lift. The valve shall also be provided with a manual body bleed and automatic thermal relief valves to relieve the pressure buildup in the internal body cavity when the plug valve is closed. Relief valves shall discharge to the throat of and to the upstream side of the plug valve.

  The body shall be carbon steel with a chrome-plated interior, and tapered plug shall be carbon steel or ductile iron, chrome or nickel-plated. The sealing slips shall be steel or ductile iron, and Viton seals shall be provided. The valve design shall permit sealing slips to be replaced from the bottom with the valve mounted in the piping. Valves shall operate from fully open to fully closed by rotation of the hand wheel to lift and turn the plug. Valves shall have weatherproof operators with mechanical position indicators.

  Valves shall be maintainable without removing from the line.

  Where line pigging is required full port plug valves shall be installed, as indicated in the scope of work.

  - Ball Valves

    The ball valves shall be designed to API Spec 6D, ANSI Class 150 or 300 as indicated in the scope. The valves shall have carbon steel bodies with chromium plated or nickel plated steel balls. The stems and trim shall be stainless steel and Viton or Teflon seats, body seals and stem seals shall be provided. A body cavity drain and factory installed drain valve shall be provided. The valves shall be designed to be fire safe in accordance with API STD 607. The Valves shall have weatherproof operators with mechanical position indicators.

    The ball shall generally be floating for sizes up to 4-inches and trunion mounted for 6-inches and above.

    Where line pigging is required full port ball valves shall be installed, as indicated in the scope of work.

  - Butterfly Valves

    High-performance wafer trunion (butterfly) valves with eccentric disc shaft and clamping action for bubble-tight shutoff shall be provided. The valves shall be high-performance. The valves shall have Teflon or Viton synthetic seals or seating material and shall be designed so that if

the synthetic seating material is burned out in a fire, a metal-to-metal seat will remain to affect closure.

- Relief Valves

  ANSI class 300 thermal relief valves shall be provided. The relief valves shall have carbon steel bodies and stainless steel springs and discs.

  All relief valves shall be the Vendor's standard, however, relief valve body and trim shall be compatible with the fluid, and as a minimum, shall be carbon steel with 316 stainless steel trim.

  By definition the trim includes the nozzle, disc and disc holder, stem guide, blow down ring, ring pin, bushing and other internal components in contact with the process fluid. The nozzle and disc shall be forged 316 stainless steel with machined 316 stainless steel guides and stem.

  The relief valves shall be Taylor Valve Technology Inc, model number 8200, or similar, ¾-inch MNPT inlet, ¾-inch FNPT outlet.

2.3.18 Pressure Gauges

Liquid-filled (glycerin) gauges of range and dial size, as necessary, but not less than 0 to 160 pounds per square inch (0 to 1100 kPa) pressure range and 4-inch (100 mm) diameter dial shall be provided. Dual readout shall be provided where specified.

Gauges shall be selected so that normal operating pressure is in the middle of the range, and normally the minimum range of the gauge shall be 1.2 times the design pressure of the measured system.

Gauges shall be of all stainless steel construction, with black graduations on a white face and shall be capable of withstanding 150 % of the maximum anticipated pressure without affecting their calibration.

The gauge movements shall be of 304 stainless steel construction and the gauge case shall be of 316 stainless steel construction with a screwed retaining ring, weather-prone design and equipped with blowout protection at the back. Gauge lenses shall be shatterproof glass or acrylic plastic.

The accuracy shall be within 1 % of the scale range.

Each pressure gauge shall be provided with a pressure snubber.

2.3.19 Pipe Restraints, Straps, Hangers and Supports

MSS SP-58 and MSS SP-69, of the adjustable type, except as modified herein or indicated otherwise. Provide steel pipe hangers and supports. The finish of rods, nuts, bolts, washers, hangers, restraints, straps and supports shall be hot-dip galvanized.

2.3.20 Low Friction Supports

Supports shall have self-lubricating anti-friction bearing elements composed of 100 percent virgin tetrafluoroethylene polymer and reinforcing aggregates, pre-bonded to appropriate backing steel members. The coefficient of static friction between bearing elements shall be 0.06 from initial installation for both vertical and horizontal loads and deformation shall not exceed 0.002-inch under allowable static loads. Bond between material and steel shall be heat cured, high temperature epoxy. Design pipe

hanger and support elements for the loads applied. Anti-friction material shall be a minimum of 0.09-inch thick. Steel supports shall be hot-dip galvanized. Units shall be factory designed and manufactured.

2.3.21 Miscellaneous Steel

ASTM A 36/A 36M-97a, standard mill finished structural steel shapes, hot-dip galvanized. All components of the structure shall be proportioned such that miscellaneous member stresses shall not exceed the allowable values given in AISC specifications.

2.3.22 Anchors, Straps, Bolts, Nuts, Washers and Screws

Anchors, straps, bolts, nuts, washers and screws shall be hot-dip galvanized steel, except provide Type 316 stainless steel bolts, nuts, washers, and screws under piers.

2.3.23 Pig Signals

The pig signalers shall be intrusive, weatherproof, corrosion resistant, bi-directional, high visibility, with a manual reset.

Pig signal shall be Enduro Pig Popper, Model PMM or similar.

2.3.24 Closures

Closures shall be clamp type, with hinge, positive sealing, and lockable ANSI Class 150 rating.

2.3.25 Pipe Sleeves

Pipe sleeves shall be provided where piping passes through walls and floors. Grout sleeves in position and location during construction. Provide sleeves of sufficient length to pass through entire thickness of walls and floors with a minimum one-inch clearance between exterior of piping or pipe insulation, and interior of sleeve or core-drilled hole. Seal space with mastic based sealant resistant to the effects of jet fuel.

2.3.26 Sleeves in Masonry and Concrete Walls and Floors

Provide hot-dip galvanized steel, ductile-iron, or cast-iron pipe sleeves. Core drilling of masonry and concrete may be provided in lieu of pipe sleeves provided those cavities in the core-drilled hole are completely grouted smooth. Sleeves shall be split and re-welded when installing around existing piping.

2.3.27 Pipeline Supports

Pipe supports are to be as specified in the project drawings, and shall conform to the requirements listed in Section 2.9 for the steel appurtenances and Section 2.6 for the concrete base.

Aboveground piping shall be supported so that the bottom of the pipe is a minimum of 18-inches (450mm) above the ground surface or higher if required to service valves and equipment. In areas subject to flooding, greater clearance may be desirable.

2.4 Export Facilities

2.4.1 Flowmeters

The flowmeters shall be flange-connected, carbon steel bodied positive displacement meters of the desired pressure and flow rating for the applicable service requirements.

The meters shall be provided with temperature compensation and a large numeral counter (register) with ticket printer (US gallons). In addition a non-temperature compensated counter (US gallons) shall be provided.

The flowmeters shall be provided with a strainer and air eliminator, upstream of the meter, see Section 2.4.2 below for details of the strainer.

The meter accuracy shall be plus or minus 0.5 percent over the range of offloading rates.

The meter shall be Liquid Controls LLC, Model Number MASS 120, or similar.

2.4.2 Strainers

Strainers are required on the suction side of all positive displacement pumps and meters.

For positive displacement meters the strainers shall meet the following specifications:

- Flanged and of steel construction and fitted with removable baskets of fine Monel metal or stainless steel mesh with large mesh reinforcements.
- The fine screen mesh shall be 40M (0.016 inches/0.40 mm).
- The effective screen area shall not be less than three times the cross sectional area of the pipe.

2.4.3 Fuel Hoses

Pressure hose connections between the transfer piping and vessels shall conform to API Bull 1529.

The hose shall be 4-inch as required for the design flow rate and shall be 50 feet long.

The hose shall be fabricated from stainless steel and shall be of the single braid design.

For hose flanges, use carbon steel, except at aviation turbine fuel issue points where the metal parts that contact the fuel shall be brass, stainless steel, or aluminum.

The hose shall have a fixed flange at one end and a floating flange at the other.

The hose shall be Unaflex model number SS-1, or similar.

2.5 Pipeline Welding Equipment and Material

All welding equipment, electrodes, welding wire, and fluxes shall be capable of producing satisfactory welds when used by a qualified welder or welding operator performing qualified welding procedures. All welding equipment and materials shall comply with the applicable requirements of API STD 1104.

2.5.1 Welding Electrodes

All welding electrodes shall be compatible with the materials to be welded and suitable for the electric current characteristics, the position of welding, and other conditions of intended use.

2.6 Underground Pipe Tape Wrapping System

2.6.1 Tape Coating System

Factory-applied coating with field machine-applied coatings at joints and damaged areas is the preferred method. If the work is a small retrofit or repair, factory-applied coatings may be too restrictive. Irregular surfaces such as tees, valve bodies, and flanges are done by hand.

Prefabricated tape with adhesive primer for use on pipe, couplings, damaged areas and fittings. The tape wrapping system shall conform to NACE RP0169 and NACE RP0190. The tape wrapping system shall conform to AWWA C209, Class I for fungus resistance, except that the fungus rating shall lie between zero and one for all specimens. The overall thickness of the tape wrap protection shall be not less than 45 mils. The tape system shall be suitable to be applied at ambient temperatures.

2.6.2 Adhesive Thermoplastic Resin Coating System (ATRCS)

Steel pipe factory-applied coating system conforming to NACE RP0185, TYPE A and coating manufacturer's instructions shall consist of a continuously extruded polyethylene coating applied on an adhesive undercoat.

2.6.3 Polyethylene-Butyl Adhesive Coating System (PBACS)

Factory-applied steel pipe system of extruded butyl adhesive compound, 7 mils minimum thickness, covered with overlapping layers of extruded polyethylene wrapping, 38 mils minimum thickness, in accordance with AWWA C214.

2.6.4 Mastics

Apply a coating of manufacturer approved mastic protection to irregular surfaces. Mastic shall be compatible with coating system. Apply the tape system over mastic. Mastic layer thickness shall conform to coating manufacturer's recommendation.

2.7 Cast In-Place Concrete

2.7.1 Ready-Mix Concrete

Ready mix concrete is defined in this Specification as concrete readily produced by a commercial establishment and delivered to the purchaser in the plastic state. Concrete shall be ready-mix concrete and shall conform to ASTM C 94-98, minimum compressive strength 3000 psi at 28 days. Slump shall be between 2 and 4-inches.

Air-entraining admixtures shall conform to ASTM C 260-97.

Water-reducing admixtures, retarding admixtures, accelerating admixtures, water reducing and accelerating admixtures, and water reducing and retarding admixtures shall conform to ASTM C 494-98.

Fly ash or other pozzolans used as admixtures shall conform to ASTM C 618-98, Class N, F or C except that maximum allowable loss on ignition shall be 6 percent.

Compressive strength tests shall be conducted in accordance with ASTM C 39-96.

2.7.2 Water

Water used in concrete mix shall be potable.

2.7.3 Steel Reinforcement

Deformed Steel Bars: Steel bars shall conform to ASTM A 615A/615M-96a, Grade 60 and ACI SP71-95.

Welded Wire Fabric: Welded wire fabric shall conform to ASTM A 185-97.

2.7.4 Forms

Forms shall be of wood, steel, or other approved material and shall conform to ACI SP71-95.

2.7.5 Curing Compound

Curing compound shall conform to ASTM C 309.

2.8 Grout

Grout shall be composed of cement, water, an air-entraining admixture, and sand mixed in proportions of one part Portland cement to two parts of sand, sufficient water to produce a workable mixture, and an amount of admixture, which will entrain sufficient air to produce durable grout. Mix grout in a concrete mixer.

2.9 Pipeline Markers

Pipeline markers shall be lightweight, impact and vandal resistant and high visibility and installed in locations indicated on the drawings.

The marker must state at least the following: "Warning" followed by the words "Petroleum Pipeline" (in lettering at least 1-inch high with an approximate stroke of one-quarter inch on a background of sharply contrasting color), the name of the operator and a telephone number (including area code) where the operator can be reached at all times.

2.10 Pipeline and Equipment Identification

All pipelines and tanks shall be identified as to product service by color-coding, banding, product names, and directions of flow in accordance with MIL-STD 161F.

Valves, pumps, meters and other items of equipment shall be tagged with stainless steel tags/nameplates suitably attached to the equipment item. The numbers shall correspond to those on the schematic flow

diagrams and other drawings for the installation, and the model number and serial number shall be provided (as a minimum).

2.11 Fiberglass Reinforced Plastic (FRP) Stairs

The FRP stair shall be designed to the requirements of ANSI 1264, and be able to safely support all loads without exceeding the allowable stresses for the materials of construction used.

The stair stringers shall be in the range 30 – 45° to the horizontal and the maximum number of risers between landings shall not exceed 18, i.e. the maximum vertical distance between landings shall not exceed 12 feet.

2.11.1 Material

Unless specified otherwise, all stringers, treads and handrails shall be of Fiber Reinforced Plastic (FRP) material. The FRP material shall consist of a polyester resin and fiberglass reinforcement, exhibit corrosion resistance to a seawater environment, and provide the required physical properties and strength.

If the FRP material does not exhibit adequate resistance to Ultra Violet (UV) degradation, this shall be provided through the use of an additional external coating system or an integral additive to the resin. The form of UV protection to be specified by FRP stair manufacturer. All materials shall conform to the material and product specifications of Fibergrate Composite Structures (or approved equivalent).

All finished surfaces of FRP items shall be smooth, resin-rich, and free of voids and without dry spots, cracks, crazes or un-reinforced areas. All glass fibers are to be well covered with resin to protect against their exposure due to wear and weathering. All structural shapes are to be manufactured by the pultrusion process with glass content ranging between 45% to 55%. There is no requirement for the polyester resin to be of fire-retardant type.

2.11.2 Handrails

All rails, posts and kick plates shall consist of pultruded structural shapes (from Fibergrate or approved equivalent). Top and midrails shall be 1.75-inches x 1/8-inch square tube. Posts shall be 2.125-inches x 0.188-inch square tube. Top and mid rails shall be continuous at post intersections. Nominal handrail height shall be 42-inches, with maximum post spacing based on 6 feet center to center.

2.11.3 Treads

Stair treads shall consist of fiberglass reinforced composite molded grating. All bearing bars and cross bars shall be molded into a one-piece construction. The treads shall be molded from a thermosetting polyester resin and shall be "Fibretread" or approved equivalent.

Grating bars shall have a non-porous, concave top surface to provide a skid resistant walking surface. Bar spacing shall be 1.5-inches center to center.

Tread panel dimensions shall be 36-inches long, by 9.375-inches wide and 1.5-inches thick. Treads shall be installed on stringer with a 1.5-inch lateral overlap, and 8-inch vertical rise between treads. Exact tread number to be determined onsite during stair construction.

2.11.4 Structural Shapes

Stringers shall be manufactured using pultruded FRP C-channel sections. Final stringer length to be determined and cut to suit during field installation of stair assembly between stair landing locations.

All structural members shall have a minimum Tensile Strength of 30,000 psi and be tested in accordance with ASTM D-638. Flexural strength shall be 30,000 psi minimum and be tested in accordance with ASTM D-790.

2.11.5 Fasteners

All fasteners and connectors shall be Type 316 stainless steel. Connectors shall be suitable for use with Fibergrate Composite Structures components (or approved equivalent).

2.11.6 Stair Landings

The stair landings shall be concrete pads and shall be constructed onsite. The pre-assembled stringer, tread and handrail assemblies shall be installed between each of the stair landings using approved fasteners.

2.12 Miscellaneous Steel Structures

2.12.1 Material

All material shall be new stock. Unless specified otherwise all materials such as wide flange beams, angles, channels, T-shapes, structural plate and bars shall conform to the requirements of ASTM A36. Structural pipe shall conform to ASTM A53.

Material grade and section properties are as indicated on the project drawings.

2.12.2 Design

All structures shall be designed to the requirements of AISC "Specification for Design Fabrication and Erection of Structural Steel for Buildings", and be able to safely support all loads without exceeding the allowable stresses for the materials of construction used.

All ladders, stairs, walkways and hand rails shall comply with the requirements of ANSI A14.3 and ANSI A1264.1.

Grating shall be heavy duty galvanized in accordance with ASTM A123. Steel grating treads and edge of landings at the top of stairs shall be fitted with non-skid cast abrasive nosing.

2.12.3 Bolts, Nuts and Washers

Fasteners shall comply with the following requirements:

- For non-structural steel-to-steel connections fasteners shall be carbon steel conforming to ASTM A307.
- For structural steel-to-steel connections fasteners shall be carbon steel conforming to ASTM A325.

- For dissimilar metal connections, fasteners shall be corrosion resistant steel complying with the applicable requirements of ASTM A276.
- Threads shall be coarse thread series conforming to ASME B1.1 or to another standard if approved.

2.13 Valve Pits/Covers

Concrete pits shall have built up area around pit to ensure that ground rainwater does not run into pit. The pit cover shall be constructed from aluminum and shall be of single or double leaf 1/4-inch (6.35 mm) diamond patterned plate design reinforced for a 150 lb./ft2 (732 kg/m2) live load, construction and aluminum design with hinges in non-traffic areas on underground fuel systems.

Valve pit cover shall be Bilco model K or KD or similar.

2.14 Traffic Bollards

Traffic bollards shall be concrete-filled steel pipe of minimum 4-inch (100 mm) diameter and 4-foot (1.2 m) height, embedded in concrete or welded to a steel plate mounted on the structure. The bollards shall be painted so as to be obvious.

3.0 WORKMANSHIP

3.1 Housekeeping at Job Site

3.1.1 Off-Site Storage

The Contractor shall make own arrangements for any necessary off-site storage or shop areas necessary for proper execution of the work.

3.1.2 On-Site Storage

The Government will provide an on-site storage and staging area. Location and area size to be announced.

3.1.3 Utilities

Unless directed otherwise, the Contractor shall provide utilities for the Contractor's use including power to the staging area. Unless directed otherwise, the Contractor shall provide chemical toilet facilities as necessary.

3.1.4 Storage of Hazardous Materials

The Contractor shall follow instructions from the base environmental coordinator for handling, storing and disposal of any hazardous waste.

Hazardous materials to be stored in the separate area are all products labeled with any of the following terms:

- Warning, Caution, Poisonous, Toxic, Flammable, Corrosive, Reactive, or Explosive. In addition, whether or not so labeled, the following materials shall be stored in the separate area: diesel fuel, gasoline, new and used motor oil, hydraulic fluid, cement, paints and paint thinners, two-part epoxy coatings, sealant, asphalt products, glues, solvents, and spill absorbent.

3.1.5 Site Conditions

a) All hazardous materials, which are delivered in containers, shall be stored in the original containers until use.

b) Traffic and parking areas shall be maintained in a sound condition, free of excavated material, construction equipment, mud, and construction materials. The Contractor shall repair breaks, potholes, low areas that collect standing water, and other deficiencies.

c) During the progress of the work, the Contractor shall keep the work site and other areas used by it in a neat and clean condition, and free from any accumulation of rubbish. The Contractor shall provide sufficient dumpsters and trash containers for collection of rubbish. The Contractor shall dispose of all rubbish and waste materials of any nature occurring at the work site, and shall establish regular intervals, at least weekly, for collection and disposal of such materials and waste. The Contractor shall also keep all roads free from dirt, rubbish, and unnecessary obstructions resulting from work operations.

3.2 Removing Product From Pipeline

Prior to any pipeline retrofits, modifications, testing, and repair by the Contractor to pipelines described in this Delivery Order, the Contractor shall ensure removal of all product residuals in the pipeline. This shall be achieved by displacement of product with inert gas or hot-tapping drain valves into pipeline. Safe readings on an explosiometer shall be obtained before proceeding with hot work. The complete method of draining, hot tapping, cutting or welding shall be submitted for approval in advance of the actual work.

3.2.1 General

During decommissioning and decommissioning operations the Contractor shall:

- Provide all necessary labor and equipment.
- Provide the nitrogen in a controlled gaseous form at the required rate and pressure into the pipeline for segment decommissioning.
- Provide and install pressure gauges and facilities for pipeline blow down and venting (if required).
- Recover fuel product using a vacuum truck, if required.

3.2.2 Special Precautions

Cooling effect of expanding nitrogen gas or evaporation of liquid nitrogen shall not be permitted to affect the system piping.

The temperature of system piping shall not fall below freezing. The formation of surface icing on any section of permanent piping shall not be permitted to occur as a result of decommissioning activities.

Pressure control of nitrogen supply must ensure that pressure in the system does not exceed normal operating limits. Flow rate of discharging product shall be kept within normal operating limits.

3.2.3 Swabbing and Testing

Exhausting gas shall then be tested for vapor content using an explosiometer.

3.2.4 Atmospheric Venting

When exhausting gas is below explosive limit, pipeline end closures may be removed and pipeline vented to atmosphere.

3.2.5 Nitrogen Gas and Equipment

The gas shall be dry commercial quality nitrogen gas supplied in cryogenic form. The unit shall include:

- A self-contained heater/ evaporator unit.
- Liquid pump with flowmeter and control.
- Manual pressure control and pressure indicator.
- Appropriate hoses and connections.

3.2.6 Segment Decommissioning

The pipelines shall be decommissioned as required to perform the modification identified in the Scope of Work. Product shall be recovered by vacuum truck attached to the low points within the line, while venting the pipeline segment at high points. After the product discharge and while the line contains nitrogen at a pressure exceeding 10 psig, all low point and other drain valves shall be opened (sequentially) to bleed any remaining fuel in the line at that low point. This shall be carried out at least twice at each drain valve. Each valve when open must give a full blow of liquid free nitrogen.

Valves in the lines may contain liquid fuel trapped in the body of the valve with the valve in the full open position. This fuel must be removed by selective stroking of the valve from full open to close (repeated) during nitrogen gas flow conditions.

3.2.7 Segment Re-Commissioning

Upon completion of the necessary work, the pipeline is to be re-commissioned to operational status, by displacing the inert gas with product for its decommissioned length. Controlled venting of the pipeline is to occur at the vent locations.

3.3 Permanent Abandonment

For pipelines that are to be permanently abandoned, the Contractor shall remove all fluid as per Section 3.2 above prior to decommissioning according to the procedures outlined in Section 3.2.6. For pigtails and closed end lines where access to vents or end caps is not readily available, the Contractor shall submit procedures on how the line will be purged with nitrogen to ensure decommissioning as per Section 3.2.6. For buried lines the Contractor shall ensure that the line is purged for the entire length of the line by either excavating and installing vent points or by the use of a temporary line to effect nitrogen placement. After nitrogen purging the line shall be checked for Lower Explosive Limits (LEL) using a certified explosiometer. Once the gas inside the pipeline is below explosive limit and verified by the Engineer the Contractor can proceed to isolate the line according to the methods indicated in the agreed procedure.

The Contractor may propose alternative methods to permanently seal pipelines that are not to be blind flanged or are not specifically called out on the drawings. These may consist of end caps (bullnose), pipeline grout plugs or other equivalent closure methods. The Contractor shall submit procedures for each pipeline segment abandonment outlining the methods for product removal, venting, nitrogen purging and sealing. At the conclusion of the abandonment, for each section, the line shall be clearly marked as abandoned.

3.4 Excavation

3.4.1 Protection

a) Shoring and Sheeting

Provide shoring and sheeting, as necessary. In addition to Section 25 A and B of COE EM-385-1-1 and other requirements set forth in this specification, include provisions in the shoring and sheeting

plan that will prevent undermining of pavements, foundations and slabs, and prevent slippage or movement in banks or slopes adjacent to the excavation.

Shore and sheet excavations as necessary to prevent injury to persons and damage to structures. Arrange shoring and sheeting to preclude injurious caving during removal. Obtain approval from the QC Engineer prior to removing shoring, sheeting, or bracing in excavations adjacent to on-grade slabs, foundations, or other structural elements.

Describe materials of shoring system to be used. Indicate whether components will remain after back filling. Provide plans, sketches or details along with calculations, indicating sequence and method of installation and removal.

b) Drainage and Dewatering

Plan for and provide the structures, equipment, and construction for the collection and disposal of surface and subsurface water encountered in the course of construction.

Drainage:

Surface water shall be directed away from excavation and construction sites so as to prevent erosion and undermining of foundations. Diversion ditches, dikes and grading shall be provided and maintained as necessary during construction. Excavated slopes and backfill surfaces shall be protected to prevent erosion and sloughing. Excavation shall be performed so that the site and the area immediately surrounding the site and affecting operations at the site shall be continually and effectively drained.

Dewatering:

Groundwater flowing toward or into excavations shall be controlled to prevent sloughing of excavation slopes and walls, boils, uplift and heave in the excavation and to eliminate interference with orderly progress of construction. French drains, sumps, ditches or trenches will not be permitted within three feet of the foundation of any structure, except with specific written approval, and after specific contractual provisions for restoration of the foundation area have been made. Control measures shall be taken by the time the excavation reaches the water level in order to maintain the integrity of the in-situ material.

c) Structures and Surfaces:

Protect newly backfilled areas and adjacent structures, slopes, or grades from traffic, erosion settlement, or any other damage. Repair and reestablish damaged or eroded grades and slopes and restore surface construction prior to acceptance. Protect existing streams, ditches, and storm drain inlets from water-borne soil by means of straw bale dike or filter fabric dams.

3.4.2 Surface Preparation

a) Stockpiling Topsoil

Strip suitable soil from the site where excavation or grading is indicated and stockpile separately from other excavated material. Material unsuitable for use as topsoil shall be stockpiled and used for backfilling. Locate topsoil so that the material can be used readily for the finished grading. Where sufficient existing topsoil conforming to the material requirements is not available on site,

provide borrow materials suitable for use as topsoil. Protect topsoil and keep in segregated piles until needed.

b) Cutting Pavement, Curbs, and Gutters

Make cuts with neat, parallel, straight lines one foot wider than trench width on each side of trenches and one foot beyond each edge of pits. When the saw cut is within 2 feet of an existing joint, remove pavement to the existing joint.

3.4.3 General Excavation and Trenching

a) Keep excavations free from water while construction is in progress.

b) Notify the QC Engineer immediately in writing if it becomes necessary to remove rock or hard, unstable, or otherwise unsatisfactory material to a depth greater than indicated. Make trench sides as nearly vertical as practicable except where sloping of sides is allowed. Sides of trenches shall not be sloped from the bottom of the trench up to the elevation of the top of the pipe. Excavate ledge rock, boulders, and other unyielding material to an overdepth at least 6-inches below the bottom of the pipe and appurtenances unless otherwise indicated or specified. Blasting will not be permitted. Over excavate soft, weak, or wet excavations as indicated. Use bedding material placed in 6-inch-maximum layers to refill overdepth to the proper grade. At the Contractor's option, the excavations may be cut to an overdepth of not less than 4 inches and refilled to required grade as specified.

c) Grade bottom of trenches accurately to provide uniform bearing and support for each section of pipe on undisturbed soil, or bedding material as indicated or specified at every point along its entire length except for portions where it is necessary to excavate for bell holes and for making proper joints. Dig bell holes and depressions for joints after trench has been graded. Dimension of bell holes shall be as required for properly making the particular type of joint to ensure that the bell does not bear on the bottom of the excavation. Trench dimensions shall be as indicated on drawings.

d) The Contractor shall notify the Base Environmental coordinator if any contaminated soils/waste are encountered during excavation.

3.5 Pipe Bends

The Contractor shall install new bends at pipe locations detailed on the project drawings. Short radii bends of 1.5D shall be installed on all non-piggable lines, bend radii measured from the pipe centerline.

The Contractor shall install pipe bends in accordance with the table below for all pipelines that are required to be piggable.

	Nominal Diameter (D)				
	6"	8"	10"	12"	14"
Minimum Bend Radii	6D	4D	3D	3D	3D

3.6 Cutting Existing Piping

Perform the initial cutting of the existing piping with a multi-wheel pipe cutter, using a nonflammable lubricant. After cutting, seal the interior of the piping with a gas barrier plug in accordance with API BULL 2209 or Contracting Officer's approval. The interior of the piping may be purged with nitrogen prior to and during the welding process. Alternative methods may be proposed for performing the work safely in the Cutting and Welding Plan. The complete method of cutting, sealing, and welding shall be submitted for approval in advance of the actual work.

3.7 Sealing and Cleaning of Open Pipe Ends

Groundwater and foreign matter must be prevented from entering the pipe through open ends after the pipe is cut. Open ends left below ground overnight must be sealed with water tight end caps or plugs.

The interior and ends of new piping and existing piping affected by the Contractor's operations shall be thoroughly cleaned of water and foreign matter. Piping systems shall be kept clean during installation by means of plugs or other approved methods. When work is not in progress, open ends of pipe and fittings shall be securely closed to prevent entry of water and foreign matter. Piping shall be inspected by the Contractor for debris and other foreign materials before placing into position.

3.8 Welding Operations

3.8.1 Requirements

All workmanship and welding operations shall conform to the requirements of API STD 1104 and examination and tests for carbon steel piping as identified in "Quality Control & Testing", paragraph 4.2. The welding shall be subject to inspection and test. Inspection and tests will not relieve the Contractor of the responsibility to furnish welds of satisfactory quality. All work shall be completed to the satisfaction of the NTR.

3.8.2 Welding Conditions

No welding of any kind shall be performed when the surfaces of the parts to be welded are wet.

3.8.3 Weld Details and Joint Preparation

Details of welding and joint preparation shall be in accordance with API STD 1104, and the contract drawings. Surfaces shall be clean and dry. Remove any existing coatings on the base metal in accordance with paragraphs 3.9 and 3.10.

3.9 Installation of Pipe, Piping, Valves and Fittings

Provide exterior aviation fuel distribution systems including above ground piping, buried piping, piping in manholes, and related work. Install piping straight and true to bear evenly on supports. Install valves with the operator and position indicator easily accessible. Install flanges at valves, fittings, and where indicated. The work includes installing piping up to and including the pumping equipment and valves. Provide each system complete and ready for operation. Equipment, materials, installation, workmanship, fabrication, assembly, erection, examination, inspection, and testing shall be in accordance with ASME B31.3 and NFPA 30, except as modified herein.

3.9.1 Protection Against Hazardous Conditions

The piping and the surrounding area shall be inspected for explosive vapors prior to work and frequently during the course of the work. If a hazardous condition exists, work shall cease until such condition has been corrected.

3.9.2 Safety

Work shall be conducted in accordance with the NFPA 30 and NFPA 407; safety rules shall be strictly observed. The flash points of fuels in degrees Fahrenheit are as follows:

Fuel	Flash Point (°F)
Diesel Fuel Marine (DFM)	140
MOGAS	(-) 45
Jet Fuel JP-5	140

3.9.3 Connections to Existing Systems

Notify the Contracting Officer in writing at least 15 days prior to the date that connections are required; receive approval before interrupting service. Provide materials required to make connections into existing systems and perform excavating, backfilling, compacting, and other incidental labor as required.

3.9.4 Pipe And Fittings

Inspect, test, and approve piping before burying, covering, or concealing. Provide fittings for changes in direction of piping and for connections. Jointing compound for pipe threads shall be polytetraflouroethylene (PTFE) pipe thread paste or PTFE powder and oil. Pipe nipples 6-inches long and shorter shall be extra strong. Make changes in piping sizes through tapered reducing pipe fittings.

3.9.5 Fittings and End Connections

Fittings and end connections shall be as identified in the detailed scope of work. Generally, threaded fittings and end connections shall be installed for sizes less than one inch; threaded or socket-welding or butt welding fittings and end connections for sizes one to 2-inches; threaded connections for threaded valves, traps, strainers, and threaded connections to equipment; butt welding fittings and end connections for sizes 2.5-inches and larger; and flanged connections for flanged valves, traps, strainers, and flanged connections to equipment.

3.9.6 Anchors, Straps, Bolts, Nuts, Washers, and Screws

Install where required for securing the work in place. Sizes, types, and spacing of anchors, straps and bolts not indicated or specified shall be as required.

3.10 Installation of Tape Coating System

Coating installation shall extend to a level of 1 foot above ground line for pipelines, which enter or leave the ground.

3.10.1 Coating System (TCS)

a) Surface Preparation

Surfaces shall be clean and dry or bare metal as required by coating manufacturer. Wire brush weld beads. Remove weld splatters by mechanical brushing. Remove heavy rust or mill scale with wire brush.

b) Application

Remove paper from backing paper-protected material before placing in final position. Reinforce coating at sling points with roofing felt or other approved heavy shielding material, or handle with nylon or canvas slings. Apply polyvinylchloride-butyl rubber laminated tape or pressure-sensitive organic plastic tape and its adhesive primer by single machine operation.

c) Pipe:

Spiral wrap straight runs in one layer, lapping the tape as applied. Overlap shall conform to recommendations of the tape manufacturer. When an outer wrap is used, overlap of outer wrap shall bridge joints of the tape. Apply at each end of straight runs a double wrap of one full width of tape at right angles to the axis in such a manner so as to seal ends of spiral wrapping. The minimum thickness of the tape wrap shall be not less than 30 mils.

d) Pipe Joints and Couplings and Damaged Areas of Coatings:

Clean joint areas that are to be taped, of burrs and rust. Smooth down or cut away damaged coating when not firmly bonded to pipe. Spiral wrap with a two-layer wrapping system, overlapping coating surface at least 3 inches. Initially stretch tape sufficiently to conform to the surface to which it is applied, using one layer half-lapped for tape 2 inches or less in width or one layer lapped at least one inch for tape more than 2 inches wide. Apply a second layer, lapped as above, with tension as tape comes off roll, and press to conform to shape of component. For other irregular surfaces such as bolted flanges and valve bodies where tape coating system-containing mastics is to be provided, apply mastic with brush.

3.10.2 Joints, and Other Irregular Surfaces for ATRCS

a) Application

Prepare surface as described in Section 3.10.1, wrap tape as specified except, apply the tape half-lapped, and prime extruded polyethylene coating and adhesive undercoat surfaces to be tape wrapped with a compatible primer as recommended by the tape manufacturer and approved by the extruded polyethylene coating applicator for use on the polyethylene coating. The minimum thickness of the tape wrap shall be not less than 30 mils.

b) Damaged Areas

Repair damaged areas of the extruded polyethylene coating by tape wrapping as specified in Section 3.10.1 except press residual material from the extruded polyethylene coating into the break, or trim off. Prime areas to be taped prior to applying half-lapped tape.

3.10.3 Joints and Other Irregular Surfaces For PBACS

a) Application

Clean both sides of weld area by wire brushing, and remove dust, moisture, and other contaminants. Apply primer recommended by tape manufacturer and acceptable to coating manufacturer on cleaned area. Apply tape spirally with a 50-percent overlap in accordance with the tape manufacturer's instructions. The minimum thickness of the tape wrap shall be not less than 30 mils.

b) Damaged Areas

Remove rough or protruding polyethylene from damaged area by abrading, filing, or cutting the material. Clean area to be repaired free of dust, moisture, and other contaminants. Cover with tape recommended by coating manufacturer and primer recommended by tape manufacturer. Apply primer over cleaned surface, and extend approximately 3 inches beyond damaged area. Apply tape over primer, and extend one inch beyond damaged area. Apply additional primer over tape patch. Spirally wrap additional tape around pipe with a 50-percent overlap to cover tape patch, and extend a minimum of 2 inches beyond the edge of the patch.

3.11 Painting

3.11.1 Regulatory Requirements

a) Environmental Protection:

In addition to requirements specified elsewhere for environmental protection, the Contractor shall provide coating materials that conform to the restrictions of the local Air Pollution Control District and regional jurisdiction. Notify the Contracting Officer of any paint specified herein which fails to conform to the rules for the location of the project. In localities where the specified coating or paint is prohibited, the Contracting Officer may direct the substitution of the acceptable coating systems.

b) Lead Content:

Do not use coatings having a lead content over 0.06 percent by weight of nonvolatile content.

c) Chromate Content:

Do not use coatings containing zinc-chromate or strontium-chromate.

d) Asbestos Content:

Materials shall not contain asbestos.

e) Mercury Content:

Materials shall not contain mercury or mercury compounds.

3.11.2 Delivery And Storage

Deliver materials in sealed, labeled containers bearing the manufacturers name, brand designation, specification number, batch number, color, and date of manufacture. Restrict storage and mixing of materials to the locations where painting is to be done.

3.11.3 Safety Methods

Apply coating materials using safety methods and equipment in accordance with the Contractor supplied safety plan.

3.11.4 Toxic Materials

To protect personnel from over exposure to toxic materials Contractor shall conform to the most stringent requirements of:

- The chemical manufacturer when using mineral spirits and other chemicals. Use impermeable gloves, chemical goggles and other recommended protective clothing to avoid exposure to skin, eyes and respiratory system.
- The appropriate OHSA standard in 29 CFR 1910.1025 for surface preparation on painted surfaces containing lead, zinc-chromate, strontium-chromate, asbestos or other toxic substances.
- 29 CFR 1910.1000.
- Manufacturer's Material Safety Data Sheets (MSDS).

3.11.5 Color Selection

Colors of finish coats shall be as indicated or specified. Manufacturers' names and color identification are used for the purpose of color identification only. Named products are acceptable for use only if they conform to specified requirements. Products of other manufacturers are acceptable if the colors approximate colors indicated and the product conforms to specified requirements.

3.11.6 Location And Surface Type To Be Painted

Paint all new and existing material that is not permanently buried to a level of 1 foot above grade, below which shall be wrapped. Steel located in underground valve pits may be either wrapped or painted. Galvanized structural steel (excluding straps) shall not be painted.

Also paint existing painted surfaces that are damaged during work.

3.11.7 Protection Of Areas And Spaces

Prior to surface preparation and coating applications, remove, mask, or otherwise protect, hardware, hardware accessories, machined surfaces, radiator covers, plates, lighting fixtures, public and private property, and other such items not to be coated that are in contact with surfaces to be coated. Following

completion of painting, workmen skilled in the trades involved shall reinstall removed items. Restore surfaces contaminated by coating materials, to original condition and repair-damaged items.

Items not to be painted include steel to be embedded in concrete, copper, stainless steel, aluminum, underground piping and galvanized structural steel.

3.11.8 Surface Preparation

Remove dirt, splinters, loose particles, grease, oil, disintegrated coatings, and other substances deleterious to coating performance as specified for each substrate.

a) Existing Coating Surfaces With No Defects

Before application of coatings, perform the following on surfaces covered by soundly adhered coatings, defined as those, which cannot be removed with a putty knife:

Wipe previously painted surfaces to receive solvent-based coatings, clean with a clean, dry cloth saturated with mineral spirits, FS TT-T-291. Allow surface to dry. Wiping shall immediately precede the application of the first coat of any coating, unless specified otherwise.

Sand existing enamel and other glossy surfaces to remove gloss. Brush, and wipe clean with a dry cloth.

The requirements specified are minimum. Comply also with the application instructions of the paint manufacturer.

b) Existing Coated Surfaces with Minor Defects

Sand, and treat minor defects to render them smooth. Minor defects are defined as scratches, nicks, cracks, gouges, spalls, alligatoring, chalking, and irregularities due to partial peeling of previous coatings.

c) Removal of Existing Coatings

Remove existing coatings from the following surfaces:

Surfaces containing large areas of minor defects;

Surfaces containing more than 20 percent peeling area; and

Surfaces designated by the Contracting Officer, such as surfaces where rust shows through existing coatings.

d) Substrate Repair

Repair substrate surface damaged during coating removal;

Sand edges of adjacent soundly-adhered existing coatings so they are tapered as smooth as practical to areas involved with coating removal; and

Clean and prime the substrate as specified.

3.11.9 Preparation Of Metal Surfaces

a) Existing and New Ferrous Surfaces

Shop-coated Surfaces and Small Areas That Contain Rust, Mill Scale and Other Foreign Substances: Solvent clean in accordance with SSPC SP 1 to remove oil and grease. Where shop coat is missing or damaged, clean according to SSPC SP2, SSPC SP3, SSPC SP 6, or SSPC SP 10. Brush-off blast remaining surface in accordance with SSPC SP 7; The shop coat may also be removed by water jetting up to a pressure of 3000psi. Use inhibitor as recommended by coating manufacturer to prevent premature rusting. After water jetting, if the surface does not have an anchor profile, abrasive blast to produce the profile recommended by the coating manufacturer, usually half the primer coating thickness.

b) Shop-coated valves: All shop coating on new valves shall be removed and an acceptable primer shall be applied.

c) Surfaces With More Than 20 Percent Rust, Mill Scale, and Other Foreign Substances: Clean entire surface in accordance with SSPC SP 6, SSPC SP 10 or water jetting. Use inhibitor as recommended by coating manufacturer to prevent premature rusting. After water jetting, if the surface does not have an anchor profile, abrasive blast to produce the profile recommended by the coating manufacturer.

d) Final Ferrous Surface Condition:

Cleaned surface shall be similar to photographs in SSPC VIS 1 as follows:

Degree of Cleaning	Adherent Mill Scale	Rusting Mill Scale	Rusted	Pitted and Rusted
Hand Tool Cleaning SSPC SP 2	(1)	B St 2	C St 2	D St 2
Power Tool Cleaning SSPC SP 3	(1)	B St 3	C St 3	D St 3

Note: (1) No photograph is available or recommended for comparison.

Cleaned surface shall be similar to photographs in SSPC VIS 1 as follows:

Degree of Cleaning	Adherent Mill Scale	Rusting Mill Scale	Rusted	Pitted and Rusted
Brush-off Blast Cleaning SSPC SP 7	(1)	B Sa 7	C Sa 1	D Sa 1
Commercial Blast Cleaning SSPC SP 6	(1)	(1)	C Sa 2	D Sa 2
Near White Blast Cleaning SSPC SP 10	A Sa 2.5	B Sa 2.5	C Sa 2.5	D Sa 2.5

Note: (1) No photograph is available or recommended for comparison.

e) Existing Surfaces with a Bituminous Coating

Remove chalk, mildew, and other loose material by washing with a solution of 1/4 cup household detergent, 1 quart 5 percent sodium hypochlorite solution and 3 quarts of warm water.

3.11.10 Application

a) Environmental Conditions

- Do not apply coating to surfaces during foggy or rainy weather or if
- The temperature is less than 5°F above the dew point.
- The temperature is below 40°F (for oil based paints), 50°F for latex paints, or over 95°F, unless approved by the Contracting Officer.

b) Coating Application

Apply coating materials in accordance with SSPC PA 1. SSPC PA 1 methods are applicable to all substrates, except as modified herein. Thoroughly work coating materials into joints, crevices, and open spaces. Touch up damaged coatings before applying subsequent coats. Interior areas shall be broom clean and dust free before and during the application of coating material.

c) Drying Time:

Allow time between coats, as recommended by the coating manufacturer, to permit thorough drying. Provide each coat in specified condition to receive the next coat.

Primers, and Intermediate Coats:

Do not allow primers or intermediate coats to dry more than 5 days, or longer than recommended by the manufacturer, before applying subsequent coats. Follow manufacturer's recommendations for surface preparation if primers or intermediate coats are allowed to dry longer than recommended by manufacturers of subsequent coatings. As a minimum, the surface of all pipe surfaces are to receive brush-off blast cleaning (SSPC SP7), a thin coat of the next coating, allowed to tack dry, and ending with the full required mil thickness of the following coating. For mechanical equipment, the surface is to receive, as a minimum, power tool cleaning (SSPC SP3), a

thin coat of the next coating, allowed to tack dry, and ending with the full required mil thickness of the following coating. The Contractor shall insure that blast material does not damage the mechanical components of the equipment or the face of the flanges. The Contractor shall also insure that adjacent painted surfaces are protected from all blasting operations. Each coat shall cover the surface of the preceding coat or surface completely, and there shall be a visually perceptible difference in shades of successive coats.

Finished Surfaces:

Provide finished surfaces free from runs, drops, ridges, waves, laps, brush marks, holidays, and variations in colors.

d) Equipment

Apply coatings with approved brushes, approved rollers, or approved spray equipment, unless specified otherwise. Spray areas made inaccessible to brushing by items such as ducts and other equipment.

e) Thinning of Paints

Reduce paints to proper consistency by adding fresh paint, except when thinning is mandatory for the type of paint being used. Obtain written permission from the Contracting Officer to use thinners. The written permission shall include quantities and types of thinners to use.

f) Coating Systems

Systems by Substrates: Apply coatings that conform to the respective specifications of exterior metal surfaces.

Minimum Dry Film Thickness (DFT): Apply paints, primers, varnishes, enamels, undercoats, and other coatings to a minimum dry film thickness of 1.5 mil each coat unless specified otherwise in "Quality Control & Testing," paragraph 4.5. Coating thickness where specified, refers to the minimum dry film thickness.

Coatings for Surfaces Not Specified Otherwise: Coat surfaces, which have not been specified, the same as surfaces having similar conditions of exposure.

Existing Surfaces Damaged During Performance of the Work, Including New Patches In Existing Surfaces: Coat surfaces with the following:

One coat of primer.

One coat of undercoat or intermediate coat.

One topcoat to match adjacent surfaces.

Existing Coated Surfaces To Be Painted: Apply coatings conforming to the respective specifications listed in the Tables herein, except that pre-treatments, sealers and fillers need not be provided on surfaces where existing coatings are soundly adhered and in good condition. Do not omit undercoats or primers.

3.11.11 Coating Systems For Metal

a) Primer: Apply specified ferrous metal primer on the same day that surface is cleaned. If flash rusting occurs, re-clean the surface prior to application of primer.

b) Inaccessible Surfaces: Prior to erection, use two coats of the specified primer on metal surfaces that will be inaccessible after erection.

c) Mill-primed Surfaces: Remove mill primer in accordance with Section 3.10.8 prior to applying field primer.

d) Surface Previously Coated with Epoxy or Urethane: Apply MIL-P-24441/1, Formula 150, 1.5 mils DFT immediately prior to application of epoxy or urethane coatings.

e) Pipes and Tubing; The semi-transparent film applied to pipes and tubing at the mill is not to be considered a shop coat. Prepare the surface in accordance with Section 3.10.8 and apply specified ferrous metal primer prior to application of subsequent coats.

f) Exposed Nails, Screws, Fasteners, and Miscellaneous Ferrous Surfaces. On surfaces to be coated with water-thinned coatings, spot prime exposed nails and other ferrous metal with latex primer, MIL-P-28577.

g) Apply coatings as shown in "Quality Control & Testing", paragraph 4.5. "DFT" means dry film thickness in mils.

3.12 Piping and Conduit Identification

Piping and Conduit Identification, Including Surfaces in Concealed Spaces: Provide in accordance with API RP 1109. Place stenciling in clearly visible locations. On piping and conduits not covered by API RP 1109, stencil approved names or code letters in letters a minimum of 1/2-inch high for piping and a minimum of 2-inches high elsewhere. Stencil arrow-shaped markings on the piping and conduit to indicate the direction of flow. Use black stencil paint, CID A-A-1558.

3.13 FRP Stairs

All grating or structural members which require cutting during installation shall have the affected surfaces sealed with catalyzed resin sealant of equal or superior corrosion resistance to the grating.

3.14 Miscellaneous Steel Structures

3.14.1 Construction

Construction of miscellaneous steel appurtenances shall comply with the following requirements:

- Contractor shall prepare construction plans, outlining the sequence of construction, unless specifically waived. Contractor shall prepare (if necessary) all shop and erection detail drawings.
- All steel structures shall be fabricated to the requirements of AISC "Specification for Design Fabrication and Erection of Structural Steel for Buildings".
- Rough edges and burrs left from flame cutting, sawing structural members, handrail, grating, etc. shall be ground smooth. Scars, grooves, random arc strikes and other imperfections shall be repaired prior to the application of protective coatings.
- Grating shall be attached in accordance with manufacturer's recommendation, except that number of attachments is to be approved.

- Bolted structural connections shall be made in accordance with AISC "Specification for Structural Joints using ASTM A325".

3.14.2 Erection

Contractor shall check elevations of all bearing surfaces and the location of column centerlines before erection proceeds. As erection Contractor shall verify that construction conforms to project drawings.

Erected sections of structures shall be capable of sustaining all external forces, including wind likely to occur during construction. Temporary braces, guys and other erection aids may be used to assist construction.

Welds attaching erection aids to the structure shall be located so that removal of these aids can be accomplished without removal of the parent metal. Welds attaching erection aids shall be removed by burning off and grinding flush.

3.14.3 Welding and Inspection

Welding and weld inspection shall comply with the requirements of AWS D1.1.

3.15 Concrete Work

3.15.1 Formwork

Formwork shall be in accordance with ACI SP71-95.

a) Preparation of Form Surfaces:

Forms shall be true to line and grade, mortar-tight and sufficiently rigid to prevent objectionable deformation under load. Formed surfaces for permanently exposed faces shall be smooth, free from irregularities, dents, sags, or holes. Exposed joints and exposed edges shall be chamfered. Internal ties shall be so arranged that when the forms are removed, the form ties shall not be less than two inches from concrete surfaces permanently exposed to view or exposed to water on the finished structure.

b) Form Coating:

Forms for exposed surfaces shall be coated with a non-staining form release coating, which shall be applied shortly before concrete is placed. Forms for unexposed surfaces may be wetted in lieu of coating immediately before the placing of concrete, with the exception of freezing weather when form release coating shall be used.

c) Removal of Forms:

Forms shall be removed carefully to prevent damage to the concrete.

3.15.2 Steel Reinforcing

a) General:

Reinforcement shall be free from loose, flaky rust and scale, and free from oil, grease, or other coating, which might destroy or reduce the reinforcement's bond with the concrete.

b) Fabrication:

Steel reinforcement shall be shop fabricated in accordance with ACI SP66-94. Shop details and bending shall be in accordance with ACI SP71-95.

c) Splicing:

Splices shall be in accordance with ACI SP71-95.

d) Supports:

Reinforcement shall be secured in place by the use of metal or concrete supports, spacers, or ties.

3.15.3 Concrete Placing

The concrete shall be placed in accordance with ACI SP71-95.

a) Embedded Items:

Before placing concrete, care shall be taken to determine that all embedded items are firmly and securely fastened in place. Embedded items shall be free of oil and other foreign matter such as loose coatings of rust, paint and scale. Embedding of wood in concrete will be permitted only when specifically authorized or directed.

b) Concrete Conveying:

Concrete shall be conveyed from mixers to forms as rapidly as practical by methods that will prevent segregation or loss of ingredients.

c) Concrete Placement:

Concrete shall be worked into the corners and angles of the forms and around reinforcement and embedded items without permitting the materials to segregate. Concrete shall be placed within 90 minutes after it has been mixed. It shall be placed on clean, damp surfaces free from water, ice, frost, mud, debris, or objectionable coatings. Concrete shall be consolidated with the aid of mechanical vibrating equipment supplemented by handspading and tamping. Vibrating equipment shall be of the internal type.

d) Lifts in Concrete:

Concrete shall be deposited in horizontal layers not to exceed 24 inches in thickness. The placement shall be carried on at a rate that will prevent the formation of cold joints. Slabs shall be placed in one continuously poured lift.

3.15.4 Finishing

Defective concrete, voids left by the removal of tie rods, and ridges and local bulging on concrete surfaces permanently exposed to view or exposed to water on the finished structure shall be repaired immediately after the removal of forms. Voids left by the removal of the tie rods shall be reamed and completely filled with dry-patching mortar. Defective concrete shall be repaired by cutting out the unsatisfactory material and placing new concrete secured with keys, dovetails, or anchors. Excessive rubbing of formed surfaces will not be permitted. Unformed surfaces of concrete exposed in the completed work shall have a wood float finish without additional mortar and shall be true to indicated elevations. Other surfaces shall be brought to specified elevations and left true and regular.

3.15.5 Curing and Protection

Do not allow concrete to dry out from time of placement until expiration of curing period, which is nominally seven days. Forms may be removed (if required) 48 hours after concrete placement.

Curing shall be accomplished by moist curing, by moisture-retaining cover curing, by membrane curing, or by combinations thereof.

Moist curing shall be accomplished by keeping the surface of the concrete wet or by covering the concrete with an absorptive cover saturated with water and kept wet.

Moisture-retaining cover curing shall be accomplished by covering the concrete surfaces with moisture-retaining cover for curing concrete.

Membrane curing shall be accomplished by applying a specified membrane-forming curing compound to damp concrete surfaces as soon as moisture film has disappeared.

3.15.6 Temperature

Provide and maintain 50°F minimum concrete temperature while curing. Concrete temperature form initial mixing through final cure shall not exceed 90°F. Shade concrete and start curing as soon as the surface of the fresh concrete is sufficiently hard to permit curing without damage.

3.16 Bedding

Bedding shall be of materials and depths as indicated for utility lines and utility line structures. Place bedding in 6-inch-maximum loose lifts. Provide uniform and continuous support for each section of structure except at bell holes or depressions necessary for making proper joints.

3.17 Buried Warning and Identification Tape

Install tape in accordance with manufacturer's recommendations except as modified herein. Bury tape 12 inches below finished grade; under pavements and slabs, bury tape 6 inches below top of sub grade.

3.18 Backfilling

Construct backfill in two operations (initial and final) as indicated and specified in this section. Place initial backfill in 6-inch-maximum loose lifts to one foot above pipe unless otherwise specified. Ensure that initially placed material is tamped firmly under pipe haunches. Bring up evenly in each side and along the full length of the pipe structure. Ensure that no damage is done to the utility or its protective coating. Place the remainder of the backfill (final backfill) in 9-inch-maximum loose lifts unless otherwise specified. Compact each loose lift before placing the next lift. Do not backfill when the material in the trench is muddy, except as authorized. Provide a minimum cover from final grade of 3 feet, or as specified in project drawings. Where settlements greater than the tolerance allowed herein for grading occur in trenches and pits due to improper compaction, excavate to the depth necessary to rectify the problem, then backfill and compact the excavation as specified herein and restore the surface to the required elevation. Coordinate backfilling with testing of utilities.

3.19 Compaction

Use hand-operated, plate-type, vibratory or other suitable hand tampers in areas not accessible to larger rollers or compactors. Avoid damaging pipes and protective pipe coatings. Compact material in accordance with the following unless otherwise specified. If necessary, alter, change, or modify selected equipment or compaction methods to meet specified compaction requirements.

3.19.1 Compaction of Pipe and Conduit Bedding

In rock, compact to 95 percent and in soil, compact to 90 percent of ASTM D 1557 maximum density.

3.19.2 Compaction of Backfill

Compact initial backfill material surrounding pipes, cables, conduits, or ducts, to 90 percent of ASTM D 698-91 maximum density except where bedding and backfill are the same material. Where bedding and backfill are the same material, compact initial backfill to the density of the bedding.

3.20 Finish Operations

3.20.1 Grading

Provide sod or topsoil in areas to be seeded or sodded. Grade areas to drain water away from structures and to provide suitable surfaces for mowing machines. Grade existing grades that are to remain but have been disturbed by the Contractor's operations.

3.20.2 Spreading Topsoil

Clear areas to receive topsoil for the finished surface of materials that would interfere with planting and maintenance operations. Scarify sub grade to a depth of 2 inches. Do not place topsoil when the sub grade is extremely wet or dry, or in other conditions detrimental to seeding, planting, or grading. Spread topsoil to a uniform depth of 4 inches over the designated areas.

Contractor is responsible for planting or seeding and damaged ROW to the agreement of the landowner. Pipeline ROW must be left in as good or better condition than it was prior to construction. If acceptable in writing from the landowner, appropriate compensation may be given to the landowner in exchange for seeding or sod with the Governments approval.

3.20.3 Disposition of Surplus Material

Surplus or other material not required or suitable for filling, backfilling, or grading shall be handled by the contractor is an appropriate manner.

3.20.4 Protection of Surfaces

Protect newly graded areas from traffic, erosion, and settlements that may occur. Repair or reestablish damaged grades, elevations, or slopes.

3.20.5 Pavement Repair

Repair pavement, curbs, and gutters as indicated on drawings. Do not repair pavement until trench or pit has been backfilled and compacted as specified herein. Provide a temporary road surface of crushed stone over backfilled portion until permanent pavement is repaired. Remove and dispose of temporary road surface material when permanent pavement is replaced. As a minimum, maintain one-way traffic on paved roads and streets crossed by trenches.

3.20.6 Property Damage

The contractor will be responsible for repairing or replacing any property damage that might take place during construction including, but not limited to, fencing repair, tree and shrub removal, vegetation, grass and sod damage. Contractor may negotiate compensation to the land owner for those items that can not be replaced or repaired with the Governments approval.

Appendix E – Quality Control and Testing Specification

1. GENERAL

The Contractor shall provide a quality control specialist to inspect all technical tasks of this Delivery Order and verify the tasks are in conformance with this statement of work. The qualifications and duties of the QC specialist are described in 4.0.

2. QC DELIVERABLES

2.1 QUALITY CONTROL CHECKLIST

a. Work Item Checklist

Maintain a Work Item Checklist for each definable feature of work. Each control check should indicate that the work performed complies with this Delivery Order requirement.

b. Rework Items List

Maintain a list of tasks requiring rework for cases of non-conformance. The rework items list shall include remedial actions to be taken and whether testing (e.g. weld inspections) may be required. Deliver to the NTR at each weekly QC meeting.

c. Certification of Rework Items

Deliver a QC certification for all rework items (if required) to the NTR at each weekly QC meeting.

2.2 CONTRACTOR PRODUCTION REPORTS

A Production Report is required for each day that work is performed on the pipeline. Unless unusual circumstances arise, the Production Report should be limited to 1-2 pages. The report is informal and can consist of hand written notes on a standard (Xeroxed) form. The report shall account for each calendar day while on-site. The reporting of work shall be identified by terminology consistent with the statement of work. Contractor Production Reports are to be prepared, signed and dated by the project QC specialist and shall contain the following information:

a. Date of report, report number, name of contractor, Delivery Order Number, title and location of tasks, and Construction manager present.

b. Weather conditions in the morning and in the afternoon. Include temperature, wind, rain, fog, and humidity.

c. A list of contractor and subcontractor personnel on the work site, their trades, employer, work location, description of work performed, and hours worked.

d. A list of contractor and subcontractor equipment on the work site, rented or owned, if rented - from who, location, description of work performed with equipment, and hours the equipment was on-site, used, idle, and/or down for repair.

e. A list of job safety action taken and safety inspection and safety inspections conducted. Indicate that safety requirements have been met including the results of the following:

- Was a job safety meeting held? (If YES, attach a copy of the meeting minutes.)
- Were there any lost time accidents? (If YES, attach a copy of the completed OSHA report.)
- Was crane/trenching/scaffold/high voltage electrical/ high work done? (If YES, attach a statement or checklist showing inspection performed.)

- Was hazardous material/waste released into the environment? (If YES, attached a description of what was released, how it was released, actions taken to contain/clean-up, people/organizations contacted, meetings held, and future actions to be taken.)

f. A list of material received each day that is incorporated into the project.

g. Include a "Remarks" section in the report which will contain pertinent information including problems encountered during work progress and delays, conflicts or errors in the drawings or specifications, field changes, safety hazards encountered, instructions given and corrective actions taken, delays encountered, minutes of QC meeting and/or other meetings, and a record of visitors to the work site.

2.3 WELDING

a. Visual Inspection: Submit notification that all welds have been visually inspected by welding personnel prior to final weld inspection.

b. Final Weld Inspection: Submit certification that final weld examination personnel are certified to ASNT SNTTC-1A Level II, for each procedure required.

c. Provide qualifications of non-destructive test examiners.

d. Provide nondestructive examination procedures in accordance with paragraph 4.2.

e. Provide an Inspection of Welds Report, including location of welds on drawing, x-ray number, and related test report.

2.4 CONCRETE, COATING AND PAINTING

a. Concrete test reports

b. Concrete mix design report

2.5 CLOSEOUT SUBMITTALS

a. Statement by Contractor which warrants that installation of valves is in accordance with manufacturer's specifications.

b. QC Final Certification

Upon completion of work under this delivery order, the QC specialist shall furnish a certificate to the COTR attesting that "the work has been completed, inspected, tested, and is in compliance with this delivery order of the Contract."

c. Environmental Documentation

Description, location, quantity of any hazardous and contaminated material generated and encountered during the execution of this project. Include all disposal records of any hazardous material that was disposed of by the contractor.

d. Red Line Drawings

3. QC MEETINGS

After the start of the modifications and inspection of the pipeline, the QC specialist shall conduct weekly QC meetings (or more frequent if necessary) at the work site with the project Construction Manager, and the NTR. The QC specialist shall notify the NTR for the scheduled meetings at the job site. As a minimum, the following shall be accomplished at each meeting:

- Review the minutes of the previous meeting.
- Review the schedule and the status of work.
- Work or testing accomplished since last meeting.
- Rework items identified since last meeting.
- Rework items completed since last meeting.
- Review the work to be accomplished in the next week and documentation required.
- Establish completion dates for rework items.
- Update the schedule showing planned and actual dates of the preparatory, initial and follow-up phases, including testing and any other inspection required by this delivery order.
- Discuss methods and the approach that will be used to provide a quality product through problem avoidance for each definable feature of work.

4. QC DUTIES

4.1 GENERAL

a. The Contractor shall provide a QC Specialist at the work site to implement and manage the QC program. The Quality Control specialist can be the same person as the Project Engineer or other qualified person on-site. The QC Specialist shall review all contract technical tasks of this delivery order and confirm that it is executed in conformance with this statement of work.

b. The QC specialist is required to attend the implementation kick-off meeting, QC meetings, and all working group meetings.

c. The QC specialist shall prepare and maintain the work item checklist, notify the contractor when a task is in nonconformance (rework item list), and sign off with the NTR when a task is complete and in conformance with this statement of work. (Work Item Checklist and Certification of Rework Items).

d. The QC Specialist shall ensure all welds are satisfactory and in conformance with the specifications. If the welds are tested by NDT, the QC Specialist shall review the results of the NDT.

e. The QC Specialist shall maintain a set of Red-Line Drawings indicating all new work performed on the pipeline. Weld numbers are to be annotated on the red line drawings. The drawings are to include a reference to all new valves, fittings, pipe, piping, etc. which are permanently installed on the pipeline.

4.2 FIELD QUALITY CONTROL - WELDING

Visual and nondestructive examinations shall be performed to detect surface and internal discontinuities in completed welds. Visual, or radiographic examination shall be required as indicted in the following table. When examination and testing indicates defects in a weld joint, a qualified welder shall repair the weld in accordance with the paragraph entitled "Corrections and Repairs" of this section.

EXAMINATIONS AND TESTS FOR CARBON STEEL PIPING

Examinations or Tests Required

MATERIAL OR APPLICATION	VISUAL	RADIOGRAPHIC
Tack welds	Yes	No
Root passes	Yes	No
Intermediate passes	Yes	No
Completed weld	Yes	100 percent

4.2.1 Visual Examination

Visually examine welds as follows:

a. Before welding - for compliance with requirements for joint preparation, placement of backing rings or consumable inserts, alignment and fit-up, and cleanliness.

   At work locations, adequate temporary lighting shall be installed to provide light to the general work area and also where necessary concentrated light at the exact work site.

   Hand held flashlights may be used for detailed examination of the work piece but are not acceptable as means of general lighting.

b. During welding - for conformance to the qualified welding procedure.

c. After welding - for cracks, contour and finish, bead reinforcement, undercutting, overlap, and size of fillet welds.

4.2.2 Nondestructive Examination (NDE)

NDE shall be in accordance with written procedures. Procedures for radiographic test and methods shall conform to ASME BPVC SEC V. The approved procedure shall be demonstrated to the satisfaction of the QC Specialist. In addition to the information required in ASME BPVC SEC V, the written procedures shall include:

a. Timing of the nondestructive examination in relation to the welding operations.

b. Safety precautions.

4.2.3 Acceptance Standards

A. Visual

The following indications are unacceptable:

(1) Cracks - external surface.

(2) Undercut on surface which is greater than 12.5 percent of the wall thickness for ASME/ANSI B31.4, provided that the remaining wall thickness is not less than the minimum design thickness. For ASME/ANSI B31.4 and in accordance with API STD 1104, undercuts over 1/64 inch through 1/32 inch or over 6 to 12.5 percent of the pipe wall thickness, whichever is smaller, shall not exceed 2 inches in a continuous weld length of 12 inches or 1/6 the length of the weld, whichever is smaller; and undercuts 1/64 inch or 6 percent of the wall thickness, whichever is smaller, are acceptable regardless of length.

(3) Weld reinforcement: ASME/ANSI B31.4, 3/16 inch.

(4) Lack of fusion on surface.

(5) Incomplete penetration (applies only when inside surface is readily accessible).

(6) Convexity of fillet weld surface greater than 10 percent of longest leg plus 0.03 inch.

(7) Concavity in groove welds.

(8) Concavity in fillet welds greater than 1/16 inch.

(9) Fillet weld size less than indicated or greater than 1 1/4 times the minimum specified fillet leg length.

B. Radiography

Welds that are shown by radiography to have any of the following discontinuities are unacceptable:

(1) Any type of crack or zone of incomplete fusion of penetration.

(2) Any other elongated indication, which has a length greater than:

(a) 1/4 inch for t up to 3/4 inch, inclusive;

(b) 1/3 t for t from 3/4 inch to 2 1/4 inches, inclusive;

(c) 3/4 inch for t over 2 1/4 inches where t is the thickness of the thinner portion of the weld.

("t" pertains to the thickness of the weld being examined. If a weld joins two members having different thickness at the weld, "t" is the thinner of these two thicknesses.)

(3) Any group of indications in line that have an aggregate length greater than t in a length of 12t, except where the distance between the successive indications exceeds 6L where L is the longest indication in the group.

(4) Porosity in excess of that shown acceptable in Appendix A-250, Acceptance Standard for Radiographically Determined Rounded Indications in Welds, ASME BPVC SEC I.

4.2.4 Corrections and Repairs

Remove defects and replace welds as specified in ASME/ANSI B31.4, unless otherwise specified. Repair defects discovered between weld passes before additional weld material is deposited. Wherever a defect is removed, and repair by welding is not required, the affected area shall be blended into the surrounding surface eliminating sharp notches, crevices, or corners. After defect removal is complete and before re-welding, reexamine the area by the same test methods originally used for that area. For repairs to base material, the minimum examination shall be the same as required for butt welds. Indication of a defect shall be regarded as a defect unless reevaluation by NDE or by surface conditioning shows that no unacceptable indications are present. The use of foreign material to mask, fill in, seal, or disguise welding defects will not be permitted.

4.3 FIELD QUALITY CONTROL - PIPE, PIPING, VALVES, AND FITTINGS

4.3.1 Inspections

Prior to initial operation, inspect piping system for compliance with drawings, specifications, and manufacturer's submittals.

4.3.2 Testing of Fabricated Items

Fabricated items such as pig launchers and receivers shall be factory tested as required by ASME/ANSI 31.4 and installed with weld testing conducted on-site.

4.4 FIELD QUALITY CONTROL - UNDERGROUND PIPE TAPE WRAPPING SYSTEM

The Contractor shall conduct inspections of the tape wrapping system. These inspections will conform to AWWA C214 and AWWA C213.

4.4.1 Field Inspection

The inspector will examine material surface preparation and application procedures performed in the field.

4.4.2 Field Test

The inspector will test the protective system for holes, voids, cracks, and other visually undetectable damage that may occur during handling and installation. During these critical applications no work

holidays (lapses) will be permitted. Tests will be conducted with an approved electrical-flaw detector in accordance with the detector manufacturer's printed instructions.

4.5 FIELD QUALITY CONTROL - PAINTING

Painting specifications of Table I apply to pipeline exterior metal surfaces. In addition to meeting the previously specified requirements, the Contractor shall demonstrate the operation of moving components for inspection by the Contracting Officer or representative. Perform this demonstration after appropriate curing and drying times of the coatings have elapsed.

TABLE I. EXTERIOR METAL SURFACES

SURFACE AREA	PRIMER COAT	DFT	INTERMEDIATE COAT	DFT	TOPCOAT	DFT
A. New steel that has been blast cleaned. (Up to SSPC SP 6)	MIL-P-24441/1 Formula 150 Type I (see note #3)	1.5 3.0	FS TT-E-489 MIL-P-24441/3 Formula 152 Type I	1.5 3.0	FS TT-E-489 MIL-PRF-85285 Type II	1.5 2.0
B. Existing steel that has been spot-blasted. (Up to SSPC SP 6)	Spot prime CID A-A-50557 on bare surface previously coated with alkyd or latex (see notes#1 & #2)	1.5	N/A		CID A-A-50570 or MIL-E-24635 or SSPC Paint-21	1.5 1.5 1.5
	Spot prime MIL-P-24441/1 Formula 150 on surfaces previously coated with epoxy (see notes #2 - #4)	3.0	N/A		MIL-PRF-85285 Type II	1.5
C. New and existing steel that has been blast cleaned up to SSPC SP 10	MIL-P-24441/1 Formula 150 Type I see notes #2 - #4	3.0	MIL-P-24441 Formula 152 Type I	3.0	CID A-A-50570 or MIL-PRF-85285 Type II	2.0 2.0

Table I Notes:

1. CID A-A-50557 is a waterborne acrylic or modified acrylic primer such as Devoe Mirrolac 8502, Frazee Acrylic Primer 561 or Pratt & Lambert Rustless.
2. CID A-A-50570 is a waterborne acrylic or modified acrylic paint such as Ameritone Regency 2500, Frazee Acrilite 221 or Pratt & Lambert Enducryl.
3. MIL-P-24441 is a polyamide epoxy such as Devoe Bar-Rust 235, Frazee Green Primer Formula 150 or Pratt & Lambert Poxy-Gard. See QPL-24441-37.
4. MIL-PRF-85285 is an aliphatic isocyanate urethane such as Devoe Dev-Thane 379 or Pratt & Lambert Endu-Thane. See QPL-85285-6 (1).

4.6 FIELD QUALITY CONTROL - BEDDING

Test bedding and backfill for conformance to specified requirements. Test bedding and backfill for moisture-density relations in accordance with ASTM D 698-91 as specified herein. Perform at least one of each of the required tests for each material provided. Perform sufficiently in advance of construction so as not to delay work. Perform density and moisture tests in randomly selected locations and in accordance with ASTM D 1556-90 as follows:

4.6.1 Bedding and Backfill in Trenches

One test per excavation.

4.6.2 Appurtenance Structures

One test per excavation.

Appendix F – Health and Safety Plan

NO.	INHERENT HAZARDS	TRIGGERING EVENT	RISK ASSESSMENT CODE *	PROBABILITY OF OCCURRENCE	CONTROL MECHANISMS / SAFETY MEASURES
1	Fire and Explosion	Fuel that comes in contact with an ignition source may ignite explosively. Fire may occur if a person is welding or smoking in close proximity of the fuel, or an electrical short occurs in proximity of the fuel, or static electricity build up occurs in proximity of the fuel or some other source of ignition comes in contact with the fuel.	RAC 3	Mandatory placards are located in fuel storage-areas warning of the hazard. All electrical equipment in or near fuel storage areas are said to be intrinsically safe. All equipment used for fuel transfer is grounded. Flammability tests are performed prior to welding where explosive mixtures are possible.	Do not smoke in the area of the on-site modification and inline inspection activities. Incidental spills should be minimized or eliminated. Do not perform acetylene cutting of drained fuel pipe; only use cold cutting procedures. Perform welding on existing lines after vapor sources in the line have been isolated by valves or plugs, and the gas mixture in the line has been purged and tested for flammability. Insure that all equipment is grounded during use.

NO.	INHERENT HAZARDS	TRIGGERING EVENT	RISK ASSESSMENT CODE *	PROBABILITY OF OCCURRENCE	CONTROL MECHANISMS / SAFETY MEASURES
2	Confined Space Entry	Exposure to dangerous vapors in an unmonitored confined space. A person enters a confined space without first properly monitoring the air quality. The atmosphere in the confined space is altered by some event or changed condition while a person is occupying that confined space.	RAC 3	Any confined spaces located in the area, which might need to be entered, will be tested for adequate oxygen prior to entry.	Entering a confined space is not anticipated to be required by **Worley International, Inc.** and its subcontractors' personnel during modification and inline inspection activities. Should it become necessary, do not enter a confined space unless the area has been tested, and it is proven that an adequate atmosphere exists for breathing. In addition, have a second person immediately outside of the confined space, and acting as a monitor for the person within the confined space.
3	Hearing Damage	Excess exposure to noise without ear protection.	RAC 4	Equipment noises beyond permissible levels from welding machines and pipeline pumps may occur during the course of work activities. Personnel affected will be provided hearing protection as appropriate.	Earplugs may be necessary near welding machines and pumps.

NO.	INHERENT HAZARDS	TRIGGERING EVENT	RISK ASSESSMENT CODE *	PROBABILITY OF OCCURRENCE	CONTROL MECHANISMS / SAFETY MEASURES
4	Muscle Strain	Improper lifting, moving and reaching. Minor and severe back, leg and arm muscle pain can occur when handling fittings, flanges and equipment. Severe damage to muscles, tendons and the spinal cord can result.	RAC 4	Lifting equipment will be used to move heavy items such as MFL inline inspection tools and fabricated piping sections. The size and type of other equipment is relatively easy to move or carry by one or two individuals.	Use proper lifting techniques when lifting alone or with someone else. Be realistic about your strength and lifting capabilities.
5	Foot Injury	Improper placement of foot beneath or near a moving object. Without proper footwear, severe damage to feet and toes can result.	RAC 4	Various tools, materials and equipment will be handled by Worley and its subcontractors' personnel and can be dropped. Steel-toe shoes will prevent most injuries to the feet from falling items.	Construction and pig handling personnel wear steel-toe shoes. Be alert to work that is going on around you and what you are walking on.
6	Skin Irritation	Fuel is spilled on skin. If incidental spillage of fuels is allowed to remain on skin for prolonged periods, irritation may occur. Excess sun exposure. Long-term skin damage may occur with risk of skin cancer.	RAC 4	Skin irritation is limited from fuel contact when the skin is washed within a few hours of contact. Sun irritation of the skin is limited when protective clothing and sunscreen lotions are used.	Determine that pipeline sections have been properly depressured and drained before breaking flanges or joints during pipeline modification activities. Wear gloves to minimize the effect of incidental spills. Take proper caution against sunburn even on cloudy days. Use high factor sunscreens and cover ups to prevent sunburn.

NO.	INHERENT HAZARDS	TRIGGERING EVENT	RISK ASSESSMENT CODE *	PROBABILITY OF OCCURRENCE	CONTROL MECHANISMS / SAFETY MEASURES
7	Drowning	Falling off of a pier or bulkhead into the water. Tripping on the pier or bulkhead, or not watching where one is walking.	RAC 3	Work is performed on a pier or bulkhead, and if one is not careful could trip on uneven planks, bolts, or equipment on or near the edge of the pier or bulkhead.	When on a pier or bulkhead watch where you are walking in order not to trip or fall into the water. Do not walk near the edge of a bulkhead or on a pier without informing another person. That other person should be in the same vicinity to determine immediately should you fall into the water. That other person must also initiate immediate emergency actions to notify others of the situation to initiate rescue procedures.
8	Automobile Accident	Slippery or dry roads, violation of driving laws and various events not under control of the driver. Single or multi vehicle accidents can occur if the operator of a motor vehicle does not take the proper caution required to operate a vehicle safely within speed limits on wet or dry roads and pipeline rights-of-way, nor maintain awareness of vehicles, equipment, animals and personnel in the vicinity.	RAC 3	This should not occur unless traffic laws are broken, or one drives in a manner not consistent with road conditions.	Use good sense and follow all applicable laws and regulations when driving in adverse or normal conditions. Drive more slowly on slick roads than on dry surfaces. Plan and signal, as appropriate, stops and other maneuvers well in advance.

NO.	INHERENT HAZARDS	TRIGGERING EVENT	RISK ASSESSMENT CODE *	PROBABILITY OF OCCURRENCE	CONTROL MECHANISMS / SAFETY MEASURES
9	Animals and Insects	Bitten by snake, animal and insect.	RAC 4	Animals will usually attack a human only if the human invades its territory. Repellents limit exposure to insect bites.	If an animal is encountered walk decisively away, and allow time for the animal to vacate the area. Use repellents as necessary to discourage insect bites.
10	Atmospheric Conditions	Lightning strikes, hurricanes and tornadoes.	RAC 3	Lightning strikes can be seen from far away so that proper cover can be taken during storms. Severe weather advisories will also give advance warning of lightning, hurricanes and tornadoes. Weather advisories will be monitored on the appropriate local forecast.	Avoid shelter near trees and seek cover in rubber-tired vehicle or building during thunder and lightning. Rely on weather warnings to seek proper shelter for hurricanes. For tornadoes do not remain in a vehicle or office-trailer, but seek cover in the lowest building level, interior space, (away from glass window and doors). If outdoors, lie prone in a ditch or squeeze into upper corner of a bridge overpass.

* Risk Assessment Codes

1 - Critical, 2 - Serious, 3 - Moderate, 4 - Minor, 5- - Negligible

Appendix G – Cypress Creek Pipeline Maintenance Health and Safety Plan

Index of Tabs

ACCIDENT PREVENTION PLAN

Statement of Company Safety Policy

Each person who works at Cypress Creek Pipeline Maintenance is important. Our success with Customers, and consequently the overall success of this business, depends upon the individual -- his or her personal skills, energies and contributions. At the same time, we shall be concerned and supportive of each other.

Respecting this, the company strives to provide a safe and healthful workplace. Additionally, Cypress Creek Pipeline Maintenance subscribes to these principles:

1. All accidents are preventable through implementation of effective Safety and Health Control Policies and Programs.

2. Safety and Health Controls are major parts of our daily work.

3. Accident prevention is good business. It increases productivity and minimizes human suffering.

4. Management is responsible for providing a reasonable and safe workplace for employees.

5. Employees are responsible for following safe work practices, company rules, and for preventing accidents and injuries.

6. Management must monitor company safety performance, working environment and conditions to ensure that safety objectives are achieved.

7. Our Safety Program requires the participation of all Employees -- to improve safety awareness, and to prevent accidents and injuries.

Your involvement, cooperation and personal commitment to safety are essential. Keeping a safe workplace is a Team effort. We need you on this Team. The company welcomes any helpful comments.

Together, we can make the difference. Together, we ***CAN*** prevent accidents and injuries. We must work, every minute of every hour of every working day, to keep each other safe in the workplace.

David Brounkowski
President of Cypress Creek Pipeline Maintenance Inc.

Authority & Accountability

The President of the Company shall accept the responsibility for providing resources and guidance for the development and implementation of the Safety & Health Program; selecting and designating the Safety Coordinators, Assistant Safety Coordinators and/or *Competent Persons* and establishing management policies and procedures toward effective implementation of the Safety & Health Program.

The Safety Coordinator shall be responsible and shall be held accountable for the overall implementation of the working plan. The President of the Company shall have the authority to delegate any and/or all portions of the Program to subordinates, however, shall be held responsible for the implementation of the Plan. Upper management personnel, Safety Coordinators and Supervisors shall have the duty and authority to approve and carry out all disciplinary actions for those who violate the policies, procedures and/or rules and regulations relating to this Safety & Health Program. Supervisor responsibilities and duties relating to this safety and health program are also explained in greater detail on the following pages.

Each employee of Cypress Creek Pipeline Maintenance shall be responsible and shall be held accountable for providing this company with the commitment to abide by the policies, procedures, rules, regulations and orders set forth by this Safety and Health Program. Each employee shall become actively involved in this program to assist the company in maintaining a safe and healthful workplace environment for all involved. Individual Employee Responsibilities relating to safety and health are explained in greater detail on the following pages.

Employers of outside contractors that provide or perform services at any location of Cypress Creek Pipeline Maintenance are responsible for ensuring that all employees, and services provided by the contractor's employees, are performed in a manner that is consistent with and/or equal to Federal Occupational Safety and Health Standards and the company's commitment to safety and health.

The Cypress Creek Pipeline Maintenance Accident Prevention Plan and Safety & Health Program shall be made available for review to all contractors. Should special work be contracted to an outside contractor by Cypress Creek Pipeline Maintenance, which is not part of this safety program, the Management of Cypress Creek Pipeline Maintenance, acting as a Host Employer, shall have the right to request from the contractor, for review, a safety plan for the work to be performed. The contractor's safety plan shall meet all safety and health standards required to perform the proposed work in order to comply with federal safety and health standards and maintain a safe and healthful workplace environment.

Safety Coordinator Responsibilities

An individual Employee(s) on the work site/facility shall be designated as a Safety Coordinator for the Company. The Safety Coordinator(s) shall be responsible for the overall implementation of the Company's safety and health program. The Safety Coordinator shall exercise these procedures by identifying hazards on the worksite or working conditions that are unsanitary, hazardous or dangerous to employees and controlling or eliminating them immediately.

Other *qualified* or *competent* Employees appointed by management may assist by performing Safety Coordinator duties. Therefore, for the purpose of this safety program, a *Competent Person* may be the President of the Company, a Safety Coordinator, a Safety Professional, a Supervisor, an Employee, or any other *qualified* person hired by the Company, capable of exercising the responsibilities of a *Competent Person* when authorized by the Company.

Note: A *Competent Person* is one who has the capability of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees and has the authority by the Company to take prompt corrective measures to eliminate them.

Note: A *Qualified Person* shall mean one who, by possession of a degree, certificate, or professional standing, or who has extensive knowledge, training and experience, has successfully demonstrated his/her ability to solve and resolve problems relating to the subject matter, the work, or the project.

Each Safety Coordinator and/or designated *Competent Person* shall demonstrate competency in safety and shall have specific training in and/or be knowledgeable about the implementation of the Company's safety and health policies outlined in this program, all safety operation procedures specific to the Company, and the applicable federal, state and municipal safety and health standards required to assist the Company in maintaining a safe workplace. The Safety Coordinators shall be responsible for monitoring and reporting the results as measured by criteria such as incident rates to upper management personnel.

Other responsibilities include; but shall not be limited to:

1. Represent and protect the Company's interest by assisting in establishing and enforcing the company's safety policies as outlined in this manual and maintaining a safe work environment for all Company Employees. This objective shall be achieved by working closely with all assigned Safety Coordinators to maintain compliance with all construction industry standards and other municipal, state and federal regulations applicable to the Company's type business.

2. Ensure that all work operations, applications, processes, tasks and/or functions performed by any company employee is executed in compliance with applicable municipal, state and/or federal safety and health laws.

3. Resolve questions, approve and/or recommend necessary expenditures to correct unsafe conditions.

4. Make regular shop and jobsite tours and safety inspections to determine if safe work practices are being observed; and to ensure that unsafe conditions do not exist.

5. Actively participate and follow the safety and health program.

6. Plan, coordinate, perform and/or delegate all safety training and testing given to Supervisors and Employees. Review results to ensure satisfactory. Maintain appropriate records of training and testing.
7. Report unsafe Employee practices and/or behavior to Supervisory personnel. Review and monitor disciplinary actions with the Employee.

8. Personally perform select safety inspections, surveys, audits, assessments and review safety inspection reports and unsafe or unsanitary conditions reported by Supervisors, Employees, *Competent Persons* or others. Make or obtain corrections as required to maintain a safe workplace and ensure compliance.

9. Conduct regular periodic *(at least monthly)* safety meetings with Employees to promote safety awareness and compliance with the Safety and Health Policies.

10. Ensure safety awareness is effective and being practiced among workers.

11. Ensure compliance with safe work practices and Company safety rules. Take appropriate disciplinary action to ensure compliance. This includes safe working procedures in all jobsite areas.

12. Investigate accidents and assist with completion of accident report forms when required.

13. Review reports of first aid incidents to determine possible preventative actions. Ensure that reportable injuries are being documented on OSHA 101 and 200 logs, and applicable state workers' compensation report forms. Take immediate corrective actions as required.

14. Ensure that specific programs (i.e. hazard communication, protection from bloodborne pathogens, respiratory protection, confined space entry, forklift safety) are implemented and complied with consistently.

15. Shall conduct Contractor Safety Orientation Training of the Company's safety policies prior to all Contractor personnel prior to commencing work operations. No contractor, contractor representative and\or Employee shall be allowed to perform any type of work on any Company facility, premises or jobsite unless they have been completed the Contractor Safety Orientation.

Competent Person Responsibilities

Under CFR '1926, Construction Industry Standard, OSHA relies heavily on the *Competent Person* to ensure, that each jobsite is safe for employees to perform work. The *Competent Person* shall be one or more individuals designated by the Company who have the capability of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees and who have the authority by the Company to take prompt corrective measures to eliminate them.

Each person designated as a *Competent Person* shall demonstrate competency in safety and shall have specific training in and/or be knowledgeable about the implementation of the Company's safety and health policies outlined in this program, all safety operation procedures specific to the Company, and any applicable federal, state and\or municipal safety and health regulations required to assist the Company in maintaining compliance and a safe workplace.

The following will identify the duties of a *Competent Person* that shall be performed in strict compliance with the contents of this safety program. The *Competent Person(s)* shall ensure that:

- He/she is knowledgeable in all safety operations relating to the type of work performed by Company personnel.

- He/she represents and protects the Company's interest by assisting in the enforcement of and establishing a safe work environment for all Company Employees. This objective shall be achieved by working closely with all assigned Safety Coordinators to maintain compliance with all construction industry standards and other municipal, state and federal regulations applicable to the Company's type business.

- Daily inspections are conducted of the surroundings and working conditions on the jobsite where Employees will be working ***BEFORE*** any Employee is allowed to start work.

- All operations are shut down or aborted in the area where there is an existing hazard posing an immediate danger to life and health (IDLH). The *Competent Person* shall have the authority to instruct and/or command all Employee and Management personnel to evacuate the premises and/or abort any operation. This act shall be executed ***ONLY*** if required to gain control of a situation and/or maintain safety in the workplace.

- Employees comply with all **"Company"** and **"Host Employer"** safety and health policies and procedures.

- Report any unsafe Employee practice and/or behavior to Supervisory personnel.

- Inspect all machinery, tools, equipment and personal protective equipment to ensure they are free from any structural damage, defects, wear or misuse.

- All daily safety inspections are documented and maintained on file until the job is completed or for a period determined by management.

- Any existing unsafe act or potentially hazardous condition is identified and promptly corrected.

- He/she is present on the jobsite at all times and supervise any potentially hazardous operation. Should a designated Competent need to leave the premises for any reason he/she shall ensure that another *Competent Person* shall temporarily take his/her place.

- He/she ***NOT*** only focus at the work at hand, but maintain alert at all times and look at the big picture to identify predictable hazards.

- All Employees are specifically trained to perform their job assignment(s) and have been trained on the safety hazards associated with their work tasks and work area.

- All Employees have been trained on the Company's policy and procedures for responding to an emergency.

- Emergency first aid services or a *qualified* person certified in first aid is available on the jobsite to each Employee working in remote locations where emergency medical services may not be readily accessible within 5-10 minutes.

- Each first aid kit is stocked with approved first aid supplies and a letter of approval from a consulting physician.

- Each Employee is properly fitted and provided with personal protective equipment for head, eyes, face, ears, feet, hands, body and respiratory (if required) at no cost to the Employee and ensure that each Employee properly wears them in all required areas.

- Employees exposed to, handling or potentially coming in contact with any potentially hazardous chemical, material, substance or the combination thereof, are provided with Material Safety data Sheets (MSDS) and be readily accessible at each remote location.

- Each Employee who *might* be exposed to working in elevated areas greater than six feet are provided with and wear fall protection.

- All fall protection systems including, but not limited to; guardrails, controlled access zones, personal fall arrest systems, barricades, covers, warning lines, safety nets, safety monitors, and fall protection plans are in compliance with CFR '1926, Subpart M, Fall Protection Standard

- He/she shall have no other duty when performing the role of a *Safety Monitor* in compliance with the CFR ' 1926 Subpart M, Fall Protection Standard.

- All spontaneous combustible /flammables materials are kept in a metal containers and away from any sources of heat.

- Ensure that each employee is provided with hot and cold potable water and adequate number of restroom facilities or portable restroom facilities and maintained in sanitary conditions.

- All soils have been properly tested, classified with proper type of protective systems (i.e. shoring and/or shielding equipment) selected to protect employees from undermining, sloughing, raveling, cave-in and any other potentially hazardous conditions when performing trenching and excavation work.

- Manual and powered hand tools and equipment are inspected to be free of potential electrical hazards, damages and defects.

- All machinery are provided with proper guarding.

- Good housekeeping practices are maintained on the job-site.

- All heavy machinery operations are being performed by trained operators knowledgeable in all safety hazards, maintenance procedures concerning their vehicle, and can demonstrate the ability to read and understand applicable loading charts.

- All hoisting, rigging and/or lifting operations are performed in compliance with all applicable standards and all employees are trained on the safety hazards associated with this type of operation.

- No unauthorized individual enter into any restricted or potentially hazardous areas.

- All required municipal, state of federal documents or postings be properly posted on the jobsite and at any remote location where they may be seen by Employees or for public view.

- Cooperation is maintained and assists with accident investigations including the completion of accident report forms when required.

Supervisor's Safety Responsibilities

Supervisors, Assistant Supervisors and any other Supervisory personnel such as: Field Supervisors, Foremen, Project Managers, Engineers or Superintendents and/or anyone supervising over any jobsite area or crew, with authority to direct the work and actions of others, shall be responsible for adhering to the following safety rules, procedures and policy guidelines.

Additionally, Supervisors shall be concerned about the safety and welfare of fellow Employees at work. Consequently, if a Supervisor sees a hazard or safety compliance violation in an area outside of his or her direct authority, he or she shall report this to the Supervisor in charge of the work area and then to the Safety Coordinator.

If the hazard or violation presents an ***IMMEDIATE DANGER*** to life or health, the Supervisor observing the danger *shall intervene immediately* to the extent necessary to prevent injury or harm to persons without causing danger to him/her self. **This is the primary and overriding priority**. Preventing damage to Company facilities and/or property is a secondary priority. Therefore, any hazards requiring abatement which are outside the Supervisor's authority and/or ability to correct or eliminate, shall be immediately reported to a Safety Coordinator and/or designated *Competent Person.*

Supervisor safety performance is part of their overall performance evaluation. Their job responsibilities include:

1. Ensure compliance with Company safety rules and regulations through daily supervision of workers. Take corrective and progressive disciplinary action to ensure Employee compliance with safety policies.

2. Conduct and/or assist in safety indoctrination and training for New Hires about Division safety practices and potential hazardous conditions within the assigned work area. This includes ensuring that Personal Protective Equipment is either issued or available to New Hires and they are properly trained in its use.
3. Conduct and/or assist with ongoing safety indoctrination and training for Employees; and provide additional safety training for Employees reassigned to new duties. This means making sure that Employees have received required safety training ***BEFORE*** they begin performing duties in the Company workplace.

4. Report and, if possible, correct unsafe conditions anywhere they are observed in the workplace. Request corrective actions through higher levels of supervision when the required correction is beyond his/her authority or ability to correct.

5. Ensure that all accidents, injuries and "near misses" are reported by Employees. Be sure that the injured Employee completes the First Aid Report form or Employee's Report of an Injury form as soon as possible and appropriate.

6. Investigate reported accidents and "near misses". Complete the Supervisor's Report of an Accident form, documenting circumstances relative to all recordable injuries.
7. Ensure that all injuries are promptly treated by first aid. If the Employee requires attention by a doctor (non-emergency), ensure that he or she is taken to the Company's designated primary care physician or hospital emergency room.

8. In emergency situations, alert and cooperate with the local Emergency Medical Service and/or Fire Department. Inform one of the Safety Coordinators immediately.

9. All Supervisory personnel shall work at all times to develop and support safety consciousness and maintain a cooperative attitude among Employees about safety.

10. All Supervisory personnel shall set an example by personal behavior, such as wearing required Personal Protective Equipment and complying with the safety policies, procedures, rules, regulations and orders outlined and hereafter set forth in this program. Supervisory personnel which fail to demonstrate support and/or compliance with the Company's endeavors to maintain a safe and healthful workplace environment shall be subject to disciplinary action and or immediate termination upon review by Company Management.

Employee Safety Responsibilities

The health and safety of each employee is a major responsibility. Therefore, all employees shall share this obligation. Employees must make every initiative to protect their own safety and that of their fellow workers. Employees shall know and follow the safe and proper procedures and be aware of the hazards pertaining to their job. Therefore, employees must at all times use the proper safety equipment provided.

As a condition of employment, employees ***Shall*** become familiar with, observe and obey company rules and established policy for health, safety and preventing injuries while at work. Additionally, employees ***MUST*** learn the approved safe practices and procedures that apply to their work.

Before beginning special work or new assignments, an employee should review applicable and appropriate safety rules.

If an employee has any question about how a task shall be done safely, he or she shall be under instruction ***NOT*** to begin the task until they discuss the situation with a Supervisor. Together, they shall determine the safe way to do the job.

If, after discussing a safety situation with an immediate Supervisor, and an employee still has questions or concerns remaining which have not been answered, he or she shall be required to contact the Safety Coordinator. Unsatisfactory answers and/or additional concerns shall be directed to, the General or Human Resources Manager.

It is of utmost importance that employees immediately report any hazardous conditions, unsafe practices or improperly functioning equipment in the work area. Only by constant attention and quick reporting by all employees will we be able to eliminate all hazards and thereby prevent accidents and make this the safest possible place of employment.

NO EMPLOYEE IS EVER REQUIRED to perform work that is unsafe.

Everyone who has agreed to work for Cypress Creek Pipeline Maintenance implicitly agrees to:

- Follow safety rules and procedures exactly and ask questions about any part of the job not understood.
- Be responsible for his/her own safety and the safety of fellow employees.
- Report all injuries/incidents to Supervisory/Management personnel no matter how minor.
- Regard safety as an important part of getting the job done.

Specific Job Execution Requirements

Workers are specifically ***PROHIBITED*** from doing a job, task or assignment if they have not been trained in safety rules and safe working procedures relating to that specific work.

When a new job or non-routine task involves heavy lifting, or a specific type of work that has not been previously reviewed for potential hazards and job safety requirements, a safety assessment shall be made by the affected Supervisor and the Safety Coordinator prior to beginning this work.

The planning and review shall consider the following:

1. Equipment requirements, including Personal Protective Equipment (PPE).
2. Visual survey of the area/vicinity of the lift or task.
3. Inspection of workplace environment; ergonomics and dynamics of the task as they relate to safety and health; materials and equipment required; personal protective equipment required.
4. Employee instruction in:
    a. The proper way to do the work;
    b. Safety rules pertaining to the work;
    c. Safe working procedures; and
    d. Proper use of Personal Protective Equipment.
5. Emergency procedures.
6. Assignment of responsibilities.

Safety Meetings

Safety meetings shall be conducted to discuss safety, health, environmental and security concerning the operations at Cypress Creek Pipeline Maintenance. Its primary function is to promote safety awareness and communication throughout the workplace.

Employees and Supervisory personnel shall be required to attended safety meetings. Employee safety meetings shall meet at least *monthly*. The safety meetings shall be conducted by the Safety Coordinator, Assistant Safety Coordinators, Supervisor or any other person designated by the Safety Coordinator/Management. Should a scheduled meeting have to be postponed, it shall be held later in the month, on a date and at a time determined by the Safety Coordinator.

Safety meetings may include employee safety training and address any safety issues or concerns that need to be addressed. Written attendance record must be maintained for documentation purposes. The duration of each safety meeting shall last long enough to effectively conduct the safety training topic and/or discuss any other additional issues requiring attention.

Employees Reporting a Hazard Are Protected

The purpose of this section is to state Cypress Creek Pipeline Maintenance's policy and procedure regarding protection for Employees who report a safety hazard. It affects all organization units of Cypress Creek Pipeline Maintenance operations.

POLICY & PROCEDURES

It is the policy and philosophy of Cypress Creek Pipeline Maintenance that every Employee feel secure and comfortable in reporting a perceived safety hazard to his or her Supervisor, to higher Management within the Company, or to any appropriate governmental authority.

To this end, and to protect the legitimate rights, health and safety of every Employee, it is the policy of the Company that no person shall discharge, or in any manner discriminate against any Employee who reports or calls to the attention of Management what he or she believes to be a safety or health hazard; or any unsafe, unhealthy condition or situation in the workplace.

Furthermore, no person shall discharge, terminate the employment of or in any manner discriminate against any Employee because such Employee has filed a complaint, instituted or caused to institute any proceeding under or related to state or federal occupational health and safety law, has testified or is about to testify in any such proceeding, or because of the exercise by such Employee on behalf of himself or others of any right afforded to him by state or federal law.

Any Employee who feels he or she has been discriminated against for any of the above reasons should report this directly to the Project Manager.

Access to Employee Exposure & Medical Records

Employees and former Employees of Cypress Creek Pipeline Maintenance, who are, have been or may be exposed to toxic substances or harmful physical agents, shall have direct access to exposure and medical records maintained by the Company, as required by OSHA Standard '1910.20 and '1926.33.

When hired, and at least every year thereafter, Cypress Creek Pipeline Maintenance Employees shall be informed of the existence, location and availability of these records. They shall be informed that the Safety Coordinator is the person responsible for maintaining and providing access to these records. Each Employee shall also be informed about their rights of access to these records. Request for these records must be made in writing to one of the Safety Coordinators or, in their absence, the Personnel Dept.

"Access" shall mean the right and opportunity to examine and copy. Access to Employee medical and exposure records shall be provided in a reasonable manner and place. Access shall be provided as promptly as possible. If access cannot be provided within 15 days after the Employee's request, the Company shall state the reason for the delay and the earliest date that the records shall be made available.

Responses to initial requests, and new information that has been added to the initial request, shall be provided without cost to the Employee or their designated representative. At the sole discretion of the Company, Employees requesting access shall be given records and the use of mechanical copying facilities so that the Employee may copy the records; or lend Employees their records for copying off the premises. Additionally, medical and exposure records shall be made available, on request, to authorized OSHA representatives to examine and copy.

Regarding exposure records, if no such records exist for the Employee making written request, the Company shall provide records (if such exist) of other Employees who have job duties/environment similar to those of the requesting Employee. Medical records relevant to the Employee requesting access shall be provided to this Employee, their designated representative, or to authorized representatives of OSHA, under guidelines and provisions contained in 1926.33(e)(2)(i)(ii). Access to the medical records of another Employee shall be provided ***ONLY*** if specific written consent can be obtained from that Employee. All medical exposure records of each Employee shall be preserved and maintained for at least the duration of employment plus thirty (30) years. All copies of medical exposure records shall be provided at no cost to any Employee (i.e. cost of photocopies).

The Employee requesting access, their designated representative, or OSHA shall also have access to analyses (if any such exist) that were developed using information from exposure or medical records about the employee's working conditions or workplaces. Personal identities, such as names, addresses, social security and payroll numbers, age, race and sex must be removed from the data analyses prior to access.

A copy of 29 CFR 1910.20 is maintained by the Company for general reference and review by Employees. It is available to any Employee upon request.

Comprehensive Surveys & Periodic Self-Inspections

Cypress Creek Pipeline Maintenance has implemented a program to identify, correct and control hazards on an ongoing basis. This program shall utilize multiple resources to ensure effectiveness:

COMPREHENSIVE SURVEYS.

Cypress Creek Pipeline Maintenance has arranged for each Division to receive a comprehensive safety and health audit by the Safety Coordinator periodically. These audits shall identify existing and potential hazards and non-compliance issues that should be addressed. The findings of the surveys shall be discussed and recommendations for corrective actions suggested.

Audits shall also be conducted to evaluate the overall effectiveness of the Accident Prevention Plan, Safety & Health Program, Employee Training Programs, and Incident Response Procedures. Records of these inspections shall be maintained by the Safety Coordinator or administrative staff as designated by the Company.

SAFETY & HEALTH SELF-INSPECTIONS.

Supervisors in each Division or Crew shall conduct scheduled in-house safety and health self-inspections each month and shall cover their areas of responsibility, which shall include, but shall not be limited to: any tools, equipment, machinery, operating procedures, safety systems and any existing and\or potential hazards on the worksite or working conditions that are unsanitary, hazardous or dangerous to employees.

All such inspections are considered part of the Supervisor's job description and responsibility. Therefore, safety and health self-inspections shall be conducted on an ongoing basis without interruption. The Safety Coordinator shall allocate adequate time and resources to perform the surveys. Inspections shall be conducted in any and/or all areas which may present or produce a potential hazard prior to the start of each shift and as needed to maintain a safe worksite.

NO Employee shall be allowed to begin work or enter the worksite unless it has been deemed safe by a *Competent Person.*

All inspections specific to operations performed on the jobsite, shall be conducted in compliance this safety program and any municipal, state and/or federal regulation, standard or ordinance and shall be documented and filed for verification.

Inspections shall be conducted with consistency and each division and/or crew shall develop and maintain one or more self-inspection checklists specific to the operation. The list shall be developed utilizing a general inspection checklist and shall be evaluated and updated with hazards that are identified during the inspections, and from other pertinent data (injury reports, "near misses," Employee observations and suggestions) as such information is acquired. Contents of checklists shall be reviewed on a regular basis to ensure that they are current and updated.

Checklists shall become a part of the permanent record of the inspection and shall serve as one confirmation of the self-inspection. Each checklist shall indicate the location or specific site or area surveyed, name and title of the inspector, date and time of the inspection, corrective action(s) taken for specific hazards or violations, and specific person(s) either initially informed or assigned to make sure that corrective actions are effectively implemented.

The self-inspection report shall be forwarded to the Safety Coordinator for use in trend analysis and recordkeeping.

Employees of the jobsite must be notified of the hazards that pose an immediate threat of physical harm or property damage, and be informed of measures or steps that shall be taken to eliminate, correct or control the hazard.

The Safety Coordinator shall review the self-inspection checklists and any other established documentation to ensure that a course of corrective action and timeline has been established for eliminating each deficiency.

Accident Reporting & Investigations

Cypress Creek Pipeline Maintenance shall investigate all work-related accidents, injuries and near miss incidents involving employees or other persons; or significant damage to company property. This investigation shall be used to develop preventive measures and implement corrective actions.

REPORTING.

All employees of Cypress Creek Pipeline Maintenance are required to report any of the following to their immediate Supervisor as quickly as possible and without delay:

- Accidents or incidents resulting in injury or illness of any magnitude (including first aid related cases);
- Accidents or incidents resulting in significant property or equipment damage; and
- Any near miss incidents that could potentially have resulted in injury or illness to an employee, or damage to property.

ACCIDENT INVESTIGATION.

The Safety Coordinator and/or Supervisor shall be responsible for conducting accident investigations that occur in their areas or that affect employees under their supervision. Upon notification of an accident or near miss incident, the responsible Supervisor(s) shall begin investigative proceedings to determine the following:

- How the accident or incident occurred;
- Special circumstances involved;
- Underlying, indirect or associated causes; and
- Corrective actions or preventive measures and controls indicated by investigation results.

Accidents and incidents involving situations where multiple Supervisors are affected, such as an employee of one area injured in another area, shall be investigated as a joint effort with the Supervisor of the area in which the accident or incident occurred taking charge of and being held accountable for the investigation.

DOCUMENTATION.

All activities and findings of the investigations shall be documented and recorded for review by the Safety Coordinator(s). Accident and incident investigation documentation shall record, as a minimum, the following information:

- Date of occurrence;
- Name of person(s) involved, job title, area assigned and length of experience in the company with this job;
- Location of occurrence;
- Nature and severity of injury or illness;
- Name of Supervisor(s) conducting the investigation;
- Job assignment or duties being performed at time of incident;
- A list of any Personal Protective Equipment and/or operator certification(s) required for this job or assignment, and whether the person(s) involved were using this PPE and/or held current certifications as required;
- Special circumstances or encumbrances;
- Details of how the accident or incident occurred;
- Equipment affected or involved;
- Comments of the person(s) injured or directly involved (unless unavailable due to injury);
- Names and comments of witnesses;
- Apparent direct cause;
- Apparent indirect, underlying or contributing factors (including fault or failure in Safety & Health Program elements); and
- Corrective action(s) implemented or preventive measures taken (including Safety & Health Program adjustments).

Analysis & Review

The Management and the Safety Coordinators of Cypress Creek Pipeline Maintenance shall review and analyze all records and documentation pertaining to the Safety & Health Program. This review shall be conducted *annually*. It will focus on hazard analysis and recognition of developing trends.

Trend analysis will identify recurring accidents and near miss incidents resulting in, or potentially involving injury, illness or property damage. The analysis will also recognize repeatedly identified hazards and/or violations needing corrective action(s) to establish which program component is failing and allowing this hazard or violation to exist. Special attention shall be devoted to areas and criteria that demonstrate failure in this Accident Prevention Plan. This Accident Prevention Plan shall also be revised to include the introduction of new procedures, processes and/or equipment.

Supervisors shall provide information and recommendations for corrective measures for trends developing in their areas.

Employees shall be made aware of developing trends and hazard exposures as they are recognized.

Trends of accidents or hazard recurrences shall be a focal point for corrective action and employee training as needed.

Corrective measures shall be followed by the Safety Coordinator and/or Supervisor of each Department until the causing factor has been eliminated or controlled.

Employee training records shall also be reviewed on a regular basis to ensure an adequate and effective training program is maintained. Employees shall also be interviewed from time to time to established retention of training and determine when information shall be supported or repeated.

DOCUMENTATION.

Any and all safety and health related training administered or provided by Cypress Creek Pipeline Maintenance shall be documented with at least the following information:

- Date of training session;
- Provider (name of person conducting training and affiliation, if not an employee of the company);
- Subject matter;
- Legible name of attendee(s) and supplemental identification if needed or required;
- Signature or acknowledgment of attendance.

All training records and documentation shall become a permanent part of each Employee Safety & Health Record as well as a Master Record that is used to determine that all employees are participating in the Program. Individual training records shall be maintained for the duration of employment plus thirty (30) years.

Cypress Creek Pipeline Maintenance
New Employee Orientation Review Form

Employee Name:

New Employee and Trainer/Supervisor shall initial in the designated space upon review of each question.	**Employee Initials**	**Trainer Initials**
A. PERSONAL CONDUCT		
1. Safety is the responsibility of each Employee.		
2. Working safely is a condition of employment.		
3. Report all job related injuries/illnesses no matter how slight, and mishaps or equipment damage.		
4. Horseplay is not allowed.		
5. Report any unsafe condition or act.		
6. If you are not sure your job is safe, ask your Supervisor. *DO NOT PROCEED.*		
7. Follow safety procedures and observe warning, danger and caution signs.		
B. PERSONAL PROTECTIVE EQUIPMENT		
1. Eye Protection (safety glasses, goggles, face shields)		
2. Foot Protection (work shoes, steel-toe, slip-resistant soles)		
3. Head Protection (hard hat, hair nets, hoods)		
4. Hearing Protection (ear plugs)		
6. Respiratory Protection (APR, SAR, SCBA respirators)		
7. Hand Protection (gloves-- neoprene, leather, rubber, latex)		
8. Body Protection (aprons, cover-alls, work clothes, etc.)		
9. Other PPE		
C. MACHINE & EQUIPMENT SAFETY		
1. Do not operate any machinery/equipment without prior authorization and without complete and clear instructions.		

2. Report damaged or missing machine guards or parts to your Supervisor.		
3. Do not wear loose clothing or dangling jewelry, key chains or other metals when working on or near operating machinery with moving parts.		
D. HAZARD COMMUNICATION - RIGHT -TO-KNOW		
1. Review the Company's HAZCOM Program & OSHA Hazard Communication Standards '1910.1200.		
2. Give Employee a tour of facility and show location of chemicals, explain safe handling methods of chemicals used in the Company.		
3. Illustrate first aid procedures for accidental exposure to these chemicals. (i.e. eye wash station, first aid kit, etc.)		
4. Show employee the location(s) of Right-to-Know Station(s) containing the Chemical Inventory List, Material Safety Data Sheets (MSDS) and written HAZCOM program.		
5. Show Employee how to locate specific chemicals in the MSDS books and how to read MSDS.		
E. TOUR OF FACILITY, SHOP & YARD		
1. Point out potential hazards (Physical, Chemical, Health)		
2. Location of fire extinguisher(s), restrooms, breakrooms, etc.		
F. FIRE SAFETY		
1. Explain the Company's policy on fire safety and prevention.		
2. Ensure the employee knows how to correctly operate a fire extinguisher and understand different types.		
3. Explain how to handle and store flammable liquid properly.		
G. EMERGENCY RESPONSE & EVACUATION		
1. Explain the Company's policy and procedures for responding to an emergency and evacuating the facility.		
2. Show Employee the location of emergency phone numbers.		

H. EMPLOYEE SAFETY HANDBOOK		
1. Review Employee Safety Handbook with Employee and review specific hazards the Employee may be exposed to in their assigned work area.		
2. Answer any questions Employee may have relating to the Company, safety, assigned work area, etc.		
I. DRUG & ALCOHOL POLICY		

Acknowledgment

This review was conducted to introduce our New Employees to Cypress Creek Pipeline Maintenance and provide them with an understanding of our company's commitment in maintaining a productive and safety conscious workforce.

I, _____
(Insert Employee's Name)

acknowledge receipt of:

- the New Employee Orientation for Cypress Creek Pipeline Maintenance.
- the Reassigned Employee Orientation for Cypress Creek Pipeline Maintenance.
- the Contract Safety Orientation for Cypress Creek Pipeline Maintenance.

Specifically, I have been instructed on the company's safety policies and procedures relating to safety in the workplace. I understand the importance of protecting myself and my fellow workers from potential exposure to hazards and I understand that safety is a condition of my employment.

I further understand that it is my responsibility to immediately inform my immediate *Supervisor* or the designated on-site *Safety Coordinator* of any potential hazards or working conditions I am not familiar with or do not know how to handle safely. In addition, it is my responsibility to immediately inform the above-mentioned person whenever I observe a fellow employee conducting unsafe practices. Finally, I will do my part to ensure that I assist my Cypress Creek Pipeline Maintenance maintain a safe and healthful workplace environment.

_____ _____
Trainer\Supervisor Signature Date

_____ _____
Employee Signature Date

Cypress Creek Pipeline Maintenance
Safety Meeting Report

Date:_____ Subject:_____ Time:_____

Instructor: _____ Class Hours:_____

Attendance Registration (Please sign clearly or print)

NAME	DEPARTMENT	SAFETY TOPIC DISCUSSED
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		SAFETY SUGGESTIONS
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		COMMENTS
18.		
19.		
20.		

Concepts About General Safety & Specific Duty Safety Requirements

The Safety & Health Program is designed to provide detailed information to Employees about the Company's safety related policies, as well as to serve as a training guide and reference source. This detailed information expands upon subjects summarized in the Employee Safety Handbook.

The Program presents ***GENERAL SAFETY TRAINING*** to all Employees about health and safety subject matter that pertains to all Company operations.

Job-specific or task-specific safety and health orientations shall be presented as ***SPECIFIC DUTY TRAINING.*** It shall be provided to Employees who are assigned to work in jobs or at tasks that require specialized safety/health knowledge, understanding and proficiency. Examples of these types of assignments include operation of cranes, hoists, trackhoes, motor graders, loaders, powered tools, equipment and machinery, powder actuated equipment, grinding and cutting equipment, and other operations when in the course and scope of employment with the Company.

Employees shall not be allowed to work in these Specific Duty assignments until they have successfully completed ***BOTH*** types of safety training.

Supervisors of Divisions and/or Crews working in remote locations shall ensure that current copies of any Employee training and certifications are maintained on the jobsite for verification.

Recordkeeping

Cypress Creek Pipeline Maintenance believes that the only valid means of reviewing and identifying trends and deficiencies in a safety program is through an effective Recordkeeping Program. The recordkeeping element is also essential in tracking the performance of duties and responsibilities under the Program.

Cypress Creek Pipeline Maintenance is committed to implementing and maintaining an active, up-to-date Recordkeeping Program. Therefore, all documents and records applicable to Cypress Creek Pipeline Maintenance shall be submitted and maintained on file for verification purposes at the address given below:

Cypress Creek Pipeline Maintenance Inc.
P.O. Box 3099
Pearland TX 77588
Attn: Recordkeeping

INJURY & ILLNESS DATA.

The Safety Coordinator shall maintain records of all work-related injuries and illnesses to our employees. The following records are applicable only to work-related injuries and illnesses.

Applicable forms or records:

- OSHA 200 Log or Recordable Injuries and Illnesses, or equivalent if required;
- OSHA 101 Supplemental Record of Injuries and Illnesses, or equivalent if required;
- Texas Workers' Compensation Commission Form(s) (as appropriate); and
- Record of first aid or other non-recordable incidents.

The OSHA 200 Log, an Annual Log of Recordable Injuries and Illnesses, or an equivalent record, shall be maintained at each job site for not less than five (5) years. The OSHA 101 Supplemental Record of Injuries and Illnesses, or an acceptable equivalent, shall be established bearing a case number correlating with the case identifier on the OSHA 200 Log and all pertinent and required information. The information contained or entered on these records shall be made current within six working days of a recordable incident.

The completed OSHA 200 Log shall be posted in a conspicuous location for employee review no later than February 1 of each year, for the previous calendar year, and shall remain in place for a period of not less than one (1) calendar month.

All data pertaining to injuries and illnesses that did not require medical treatment, or were otherwise not recordable on the above mentioned documents, shall be maintained in written record form. This shall include first aid treatment of any kind.

All injury and illness documentation and records shall be reviewed on a regular basis by Management and Supervisors to analyze occurrences, identify developing trends, and plan courses of corrective actions.

SAFETY & HEALTH SURVEYS & INSPECTIONS/PROGRAM EVALUATIONS.

Cypress Creek Pipeline Maintenance shall maintain and review records of all safety audits and inspections that are conducted within or that affect the company, our employees or facilities.

Applicable forms and records are:

- Comprehensive surveys reports and records of action(s) taken; and
- Documented checklists of self-inspections and records of action(s) taken.

Documentation shall also show the date corrections were made or action(s) taken. These reports and all associated documentation shall be maintained for record and periodic review to ensure hazard corrections and implemented recommendations are maintained.

A checklist shall be developed as part of the periodic self-inspection process. This checklist shall be utilized and completed including the name of the person performing the evaluation and the date the inspection takes place. The self-inspection checklist shall be reviewed by Management and Supervisors upon completion. All discrepancies identified during the survey shall be evaluated as soon as possible. The periodic self-inspection checklist shall be reviewed and evaluated on a regular basis to ensure current applicability. This review shall be performed throughout the workplace with input from Supervisors and employees of each work area. The checklist shall be retained along with other applicable data for review.

The formal Accident Prevention Plan components shall be reviewed *annually* in December to identify insufficiencies or component failure. Each component shall be audited individually with the findings documented and recorded. This documentation shall be utilized to identify trends in the Program element deficiency and to track improvement modifications. This documentation shall be maintained for review.

SAFETY OR RELATED MEETINGS.

Cypress Creek Pipeline Maintenance shall maintain accurate records of all proceedings associated with the Safety & Health Program of this company.

Applicable forms, logs and records or any other are data resulting from safety meetings in which discussions occurred that affects the Safety & Health Program shall be filed.

A person shall be designated to be responsible for keeping records at each function meeting. During each subsequent meeting, the records of the previous meeting shall be reviewed, discussed and resolved, and the document closed with an authorized signature designating all matters addressed.

TRAINING RECORDS.

Cypress Creek Pipeline Maintenance shall document and maintain records of all safety and health related training to employees of this company. Applicable forms or records are the training documentation records from such activities. All safety and health related training provided to employees of this company shall be documented. This documentation shall be maintained as proof of attendance and for review to assist in determining the need for additional or repeated training for employees on an individual basis.

Records and documentation of training shall include the presenter's name, date of training, topic or subject, legible identification of the attendee(s), and attendee signatures. The person providing training shall be responsible for generating the documentation. The training record shall become part of the Employee's Safety & Health File and shall be maintained by the Safety Coordinator.

ACCIDENT INVESTIGATION.

Cypress Creek Pipeline Maintenance shall ensure proper records and documentation of all accidents and incident investigation activities are maintained and reviewed. Applicable forms and records are:

- Accident investigation forms and supporting data including photographs, drawings, diagrams, videotapes and audiotape recordings; and

- Records of corrective action(s) or preventive measures implemented.

All accidents and near miss incidents at a company facility resulting in injury or illness to a person or damage to property, or the potential for either, shall be investigated and documented. All items of the designated accident investigation form shall be addressed in detail as soon as possible following a qualifying accident or incident.

The information acquired shall be utilized and reviewed by the Safety Coordinator, Supervisors and affected employees to establish all contributing factors and causes. From the investigation, a plan or correction action(s) shall be established to prevent recurrence of the mishap.

EQUIPMENT INSPECTION & MAINTENANCE.

Cypress Creek Pipeline Maintenance will maintain records and data pertaining to equipment and maintenance programs performed at each workplace. Applicable forms and records are:

- Routine inspection and maintenance records;
- Documentation of services performed by contract agreement; and
- Documentation of repair and replacement of parts or equipment.

Accurate records shall be maintained involving all routine inspection and maintenance procedures performed on equipment at this company. This documentation shall be periodically reviewed by those responsible for maintaining equipment.

Periodic Review & Revision of Program Elements

The Safety Coordinator, *Competent Person*, Supervisors, and/or others who may be designated by Management of Cypress Creek Pipeline Maintenance shall review and revise the components of the Accident Prevention Plan for effectiveness and implementation annually in January. Special attention shall be devoted to areas and criteria that demonstrate failure in a Program component, and introduction of new procedures, processes or equipment. Corrective measures shall be taken as needed to reemphasize or restructure the Accident Prevention Plan to perform at optimum effectiveness.

Information shall be solicited from Supervisors and Employees to determine effectiveness of each individual Program component, as well as for assistance in developing adjustments and corrections.

Workplace Safety & Health Program Overview

- 98% of all accidents are preventable.
- 88% of all accidents are due to human failure.
- 10% are due to condition failure.
- 2% would only even qualify to be considered "acts of God".

Accidents can cause injuries. Safety policies of Cypress Creek Pipeline Maintenance are based on the belief that ***INJURIES CAN BE PREVENTED***. It is the responsibility of each employee to work safely to strive to prevent injury to his/herself and to others. Each employee should remember the following ***BASIC SAFETY PRINCIPLES***:

- Most injuries are caused by unsafe acts.
- Unsafe acts develop into unsafe working habits.
- Injuries can be avoided, and employees can fulfill their responsibility to work safely by developing safe work habits.
- Employees responsibilities for working safely to prevent injury to themselves and others includes recognizing hazards, and acting to eliminate or minimize them.
- Many injuries occur while performing routine jobs.
- Even high hazard jobs can become routine if they are performed frequently.
- An unsafe condition is often the result of someone else's unsafe act.

Each employee should develop good work habits and properly plan each task in order to avoid accidents and injury.

- It is mandatory that employees follow all safety regulations pertaining to their job.
- Employees must advise the Site Supervisor if they do not have adequate safety protection for their job or task.
- Prior to starting any task, employees must know exactly what the task entails, and how it is to be performed in a safe manner.

- Make sure tools and equipment are in proper working order. Employees should not attempt to repair any equipment or machinery unless they have been trained and authorized to do so. Any unsafe equipment must be reported immediately.

Employees must know the ***BASIC CAUSES OF INJURY*** and then perform their job in such a manner as to eliminate or minimize potential hazards. Employees must be aware at all times of the following factors that contribute to the cause of injury:

- Striking against an object, or being struck by one.
- Getting caught in, on or between objects.
- Falling down, falling off.
- Contacting electric current, temperature extremes or radiation.
- Inhaling, swallowing or absorbing harmful material.
- Over-exertion from lifting, pulling, pushing or reaching.
- Noise causing injury to the ears or hearing loss.

REMEMBER:

GET IT READY SAFELY
- look all around
- expect the unexpected
- pass the word

DO IT SAFELY
- follow the rules
- stay alert

LEAVE IT SAFE
- clean up
- pass the word

Basic Elements of the Safety & Health Program

The safety program addresses at least 15 basic elements:

1. This written Safety & Health Program is accepted by top management as its statement of Company policy towards workplace safety, employee responsibilities and accountability. It is the plan for accomplishing Company goals relating to workplace safety.

2. This program establishes a Company-wide Safety Coordinator who is designated to coordinate and manage the Company's safety program. Specific responsibilities for the Safety Coordinator are explained in the Accident Prevention Plan.

3. The Safety Coordinator and Site Supervisors are trained in their responsibilities relating to the safety program. These responsibilities include employee training, job hazard identification, accident investigation, obtaining first-aid for job site injuries, and employee supervision relating to safety and injury prevention. Specific Site Supervisor safety responsibilities are explained in the Accident Prevention Plan.

4. Employees are trained in their responsibilities relating to the safety and health program. This includes safe work practices and hazard identification in their work area. Employees are instructed to report all accidents, unsafe conditions and work-related injuries or illnesses to their supervisor ***IMMEDIATELY***. New hires receive initial safety orientation and training in safe working procedures ***BEFORE*** they begin work on the job.

5. Formal workplace monitoring, through in-house and independent surveys, is conducted on an on-going basis. On-site safety management includes safety survey by Site Supervisors and the Safety Coordinator. Top management will periodically review and participate in safety monitoring as a way to confirm results. All discovered hazards are documented and the responsible employee, Safety Coordinator or Site Supervisor notified so that corrective action can be taken. Company policy relating to monitoring, explained in the Accident Prevention Plan, includes a method of following up on recommendations to ensure that noted hazards are corrected or eliminated.

6. The Safety Coordinator or Site Supervisor will conduct an accident investigation with emphasis on determining the actual cause of the accident and not finding fault. A written report, in the form and format provided by the Company, will be completed by the Site Supervisor in a timely manner. The report will include any suggestions for corrective action.

7. The Safety Coordinator will review all accident investigation reports to understand circumstances of the incident; determine if appropriate and adequate corrective actions have been taken; and initiate any changes or additions to this written safety and health program as may be indicated as a result of the incident. The Safety Coordinator will also conduct a periodic accident analysis to determine overall trends in accident or problem areas in Company operations. This is explained in the Accident Prevention Plan.

8. Safety meetings, including tailgate safety meetings, will be conducted to review workplace surveys, safety controls, problems, recent accidents, corrective actions, new regulations, equipment changes, and assignment-specific safety education.

9. The concept of Job Safety Analysis (JSA) will be utilized by management for each hazardous operation to determine the steps required to do the job safely and to control hazards. Analysis will also help establish what type(s) of personal protective equipment are required for the task. JSA will be used as a training tool for employees.

10. Hiring procedures include written applications that are in compliance with the Federal Americans with Disabilities Act (ADA) and other federal laws. Hiring procedures include reference checks; interviews; pre-placement medical evaluation (as required by the job description and allowed under the ADA) and a motor vehicle records (MVR) check if the job involves or includes driving a vehicle in the course and scope of employment.

11. Chemical safety standards, including compliance with the *OSHA Hazard Communication Standard*, will include maintaining material safety data sheets (MSDS), an inventory of hazardous chemicals authorized for the workplace and a copy of the Company's written Hazard Communication Program on each job site. MSDS provided by chemical suppliers are used as guidelines for the safe use, storage and disposal of these products.

12. When personal protective equipment (PPE) is required for a task, it ***SHALL*** be used by employees performing that task. Employees will be trained in the proper use of PPE as required for proper selection, fitting, use, storage and maintenance of such equipment. It is ***ESSENTIAL*** that PPE be maintained in good condition and be ready to use at all times. Scheduled inspections will be conducted for PPE required in the workplace.

13. Most positions in the Company do not require employees to render first aid or cardiopulmonary resuscitation (CPR) in the course and scope of their employment. However, it is every employee's responsibility to immediately report all accidents relating to injuries and/or illnesses to their immediate Site Supervisor. Employees will also summon emergency medical aid for an accident victim if the victim demonstrates any potential life threatening conditions. Emergency first aid will be obtained by contacting the on-site first responder and/or by calling 911.

Employee training in first aid and CPR is encouraged because of its value and benefit to individuals, their families and the community. The Company supports any employee who, while on the job chooses to act as a *"Good Samaritan"* and assist a fellow employee or another person with first aid or CPR. First Aid supplies and basic personal protective equipment against bloodborne pathogens will be provided and remain accessible to employees at every work site during all shifts. All employees will be trained in emergency and incident response procedures, including the use of portable fire extinguishers and emergency evacuation procedures.

14. Records are maintained relating to safety, training, accidents, injuries and safety results. These include accident investigation reports; Site Supervisor and employee reports of injuries; minutes of the safety meetings; records of employee safety and job training; workplace safety surveys; employee medical examination summaries and confidential records (as required); OSHA-required documentation for reporting occupational injuries and illnesses. Medical records are available to affected employees upon request.

15. A scheduled maintenance program is established for all heavy equipment, powered tools and Company vehicles to help ensure safety, dependability and operating efficiency. For assignments where employees are required to operate Company vehicles and/or powered equipment, regular inspection is a part of this program. Vehicle drivers and equipment operators will be responsible for reporting defects to their Site Supervisor.

EMERGENCIES

In emergencies, the rules of this program may be temporarily modified to facilitate the best and safest handling of the situation.

OTHER SITUATIONS

Site Supervisors will give employees specific instructions about any situations not addressed in this program. The Safety Coordinator will be available to advise and assist Site Supervisors as needed regarding such situations.

Conditions of Facilities & Premises

SIDEWALKS, DRIVEWAYS & WALKWAYS

At Cypress Creek Pipeline Maintenance offices and shop facilities sidewalks, driveways, and walkways will be maintained in good repair and free of debris and residuals such as grease, oil, and other materials which may be subject to cause bodily injury due to slips, trips and/or falls. In operational areas which pose a high risk to these type of potential injuries, care should be taken to insure that tracking residual materials into other areas of the site is eliminated.

Spills and fallen or dropped objects will be pickup immediately. Small particles and debris will not be allowed to accumulate on the floor at any time particularly around machinery. Additional safety guidelines will be followed as outlined in the *Preventing Slips, Trips & Falls* section in this tab.

LIGHTING

All lighting, inside and outside, will be inspected and maintained in good working order to provide and comply with illumination requirements and recommendations. Defective lighting such as bulbs, especially at all exits, emergency exits and outside lights shall be reported and repaired immediately.

Emergency lighting will be installed to provide required illumination to exit the premises in the event of interruption of normal lighting.

RESTROOMS

Restrooms will be kept clean and inviting for the use of all personnel and visitors. Cleaning and maintenance on a daily basis is a minimum requirement.

WATER FOUNTAINS

Water fountains will be kept clean and in good operating condition. Water fountains with electrical components will be plugged into grounded receptacles that are protected by a GFCI (ground fault circuit interrupter) device.

EATING AREAS

Employee eating areas are provided as a convenience. Persons using these facilities are expected to clean up after themselves out of respect for others and to support maintenance of the area. Trash, garbage and debris will be deposited in the proper receptacles available in the area. Tables and floors shall be kept clean and maintained in an appetizing manner. All cooking, food heating and coffee making shall be done in controlled, designated areas. The use of stray coffee pots, hot plates, or toasters outside these areas is prohibited. Housekeeping in areas where employees have food or beverages will be carried out in accordance with sound hygienic principles.

TRASH

All Company personnel in a workplace will help ensure that trash is not allowed to accumulate on the premises or in their work area. Wrappers, empty cans or bottles, discarded food -- all contribute to unacceptable housekeeping situations. Frequent policing of the area will be required to maintain a safe and healthful environment free of accumulating refuse and potential vermin. Convenient trash receptacles will be provided for easy disposal.

TRASH DISPOSAL

Boxes and/or combustible material must not accumulate anywhere on the premises. Dumpsters will not be overloaded. Supervisory personnel will schedule additional trash pick-ups if dumpster overloading is a problem. Sharp edged or jagged material, fluorescent tubes, pipe and lumber scraps will not be allowed to extend from trash receptacles or dumpsters in a manner that presents a hazard to persons in the area.

GRASS

Grassy areas on the Company premises, especially those adjacent to facilities, structures and work areas, will be kept mowed and maintained in a manner that supports safety and health. Potential hazards associated with high grass include: restricted visibility to trip hazards; fire hazards associated with dry grass; and providing a "friendly" environment for mosquitoes, snakes, rodents and stray animals.

Mowing and grass maintenance will be performed in accordance with routine safety procedures and specific safety recommendations of the manufacturer of any powered equipment used for the job (i.e. mowers, edgers, gasoline powered blowers and trimmers).

RODENTS, PESTS & INSECTS

Every enclosed workplace will be constructed, equipped and maintained in a manner that reasonably prevents the entrance or harborage of rodents, insects and other vermin. Regular professional extermination may be required for pest and vermin control. Extermination of mosquitoes may be necessary to control potential disease transmission and health risks. Extreme care must be taken to prevent contamination of any foods or edibles form food borne illness bacteria.

SUPPLIES & MATERIALS

Supplies and materials will be neatly stored in a safe, secure manner. Materials and supplies will be properly stored after each use. The standing rule should be: "A place for everything, and everything in its place." Supplies and materials will not be stored in walkways or in ways that create obstructions in corridors, at doorways, steps or stairs.

Preventing Slips, Trips & Falls

The best walking and working surface is flat, level, uncluttered, clean, dry and stable. This is a major consideration in preventing slips, trips and falls -- frequent causes of serious, disabling and even fatal injuries in the workplace.

Company safety rules and dress code require that employees wear sensible footwear with slip-resistant soles while at work. Specific sections of the Safety & Health Program target specific situations that can create trip and slip hazards in walkways. Department safety rules include keeping work areas clean and clear of clutter.

GENERAL REQUIREMENTS

All aisles and passageways, in Company facilities and on job sites, will be kept clear. Aisles and passageways will be clearly marked. Wet surfaces will be covered with non-slip material and all holes properly covered or marked with warning guards. All spills will be cleaned up immediately, and a caution sign placed on all wet or drying surfaces.

Inspect walkways to ensure that all floor openings that must remain open (such as floor drains) are covered with grates or similar covers.

In cases of passageways used by forklifts, trucks or other machinery, use a separate aisle for walking, if available. If no separately marked aisle is available, use extreme caution. Walking in a passageway used by machinery is like walking in the middle of a street used by cars: The employee may have the right of way, but the heavier vehicle cannot always see the pedestrian and cannot always stop in time.

The key to moving around in such circumstances is to stop, look and listen and then to move when there is no danger. Employees should make eye contact with the drivers of moving vehicles so that they can see the employee.

Equipment will be properly stored so that sharp edges do not protrude into walkways. Changes in elevations will be clearly marked, as must passageways near dangerous operations like welding, machinery operation or painting.

If there is a low ceiling, a warning sign will be posted. If the walkway or stairway is more than 30 inches above the floor or ground, it must have a guardrail.

This section also addresses care and maintenance of floors and walking surfaces, taking into account factors which affect the Coefficient of Friction (COF) as it relates to slip resistance of walkway surfaces.

Floor maintenance is every employee's responsibility. Metal scrap, loose parts, pieces, boxes and trash can be hazardous. Damage, defects or similar hazards observed in floors, aisles, thresholds, sidewalks, steps, stairs and other walkways should be reported immediately to the on-duty supervisor or the Safety Coordinator.

During floor maintenance (i.e. mopping floors in public areas and restrooms, and while stripping or applying wax, be sure to place *"Caution -- Wet Floor"* signs around the affected area. Wet floors create slippery conditions. They also coat shoe soles with moisture. Areas around vending machines and areas where food and beverages are consumed require special attention. Where there is food or beverages, there is always the chance of spills.

Maintenance and shop areas always have the potential for spills of lubricants, oil, grease and other residues. Housekeeping and proper floor maintenance are critical.

Trip hazards such as pallets, boxes, containers, product or materials stored or projecting into walkways are not allowed. Any employee or Supervisor who sees such a hazard must take immediate corrective action. This can include removing the hazard if this is practical, reasonable and possible; "guarding" the hazard by placing a barrier or marker over or around the hazard to warn others until it can be properly corrected; and reporting the situation to a supervisor or the Safety Coordinator.

PROPER FLOOR SURFACES CLEANING METHODS

Use sorbant material (the "kitty litter" type product) for absorption of oil spills during work. When cleaning an oil spill, ***DO NOT*** simply wipe up the spill and "run a dry rag over it". Oil based products will seep into the floor, leaving a very thin film or sheen of oily residue. Usually, the most effective method for cleaning up an oily spill is to wipe it up as much as possible and then use a dry powder cleaner to pickup the remaining residue. Then wipe up the powder.

When walking anywhere on the Company premises, inside or outside, watch where you are going and pay attention. Studies have shown that 98 percent of all trips, slips and falls are avoidable if proper attention is being paid.

Watch for change of height and change of surface. Be prepared for a difference in friction when going from one type of flooring or surface to another. An example here is walking from a carpeted surface onto tile or concrete. The Coefficient of Friction is substantially different between the two surfaces and this will be anticipated.

Shoes or boots with high heels or leather soles present their own hazards. These types of footwear are prohibited in the Company workplace, with the exception of specific positions in the business offices, or when employees are working off Company premises in public contacts where these types of footwear are appropriate to performance of the work.

Employees should wear footwear with slip-resistant soles in the Company workplace. Everyone should understand, however, that slip-resistant and rubber-soled footwear can become slippery when exposed to oil, grease or other such residue. For this reason, walk-off mats are provided in certain areas and situations for keeping soles clean during the work period.

The following rules pertaining to proper floor and walkway maintenance will be followed:

EXTERIOR WALKWAYS AND PAVEMENTS

- The Company strives to keep outside walkways, sidewalks and pavements in good condition. Potholes, cracks, obstructions, projections and other types of potential trip hazards should be reported to a Supervisor, regardless of where on Company premises these problems are discovered.

- Cleaning of walkways minimizes the amount of dirt, sand or grit on the parking lot, sidewalks, outside steps, porches and paved approaches to entrances. Cleaning walkways on the outside and inside of entrances is fundamental to slip and fall prevention because it helps prevent slippery material like dirt, sand, water and ice from being tracked inside.

- The Company has established a plan and schedule for regular and consistent sweeping of sidewalks, ramps, steps, stairs and exterior entry walkways leading to entrances. Cleaning will be done with brooms, mechanical sweepers or other methods which are appropriate to the task. Frequency of regular sweeping will be established based upon the volume of traffic through the entrance, exterior conditions and other such factors.

- Spills and potentially hazardous accumulations on exterior walkways and pavements, when reported, will be cleaned by sweeping, mopping, wet washing or other appropriate means in a timely manner.

WALKWAYS, LANDINGS AND FLOORS AT ENTRANCES

- On the inside, the initial 15-25 feet is a critical area for regular floor maintenance. People and equipment entering may bring in oil, grit, dirt and moisture. This will be controlled immediately. In some areas walk-off mats are provided on the inside of these entrances. The mats serve to wipe off and remove moisture picked up outside. The cleaner the shoe, the less chance for a slip and fall. Walk-off mats will be long enough for four or five normal strides and wide enough to cover entire entrance.

- Frequent cleaning and maintenance of walk-off mats is critical. This keeps them from becoming overloaded with dirt, sand, moisture and oil. A mat that is "overloaded" cannot perform its footwear cleaning function. An "overloaded" mat is worse than no mat at all.

- Daily maintenance may include vacuuming, or shaking the mat and cleaning the residue. Weekly maintenance should include shampooing or, in some cases, washing the mat (top and bottom) and allowing it to dry. Proper drying is important because a damp mat may actually apply moisture to footwear upon entry. A clean surface under the mat is very important. A dirty back can cause mat to slip or bunch up and cause a tripping hazard.

- Where mats are not used, be sure that entrances are kept clean and are not slippery. The same care will be given to aisles and walkways inside the shop facilities since they have the most traffic. Remember that dirt, grease and oil residue can build up quickly on heavy traffic aisles. Hand trucks and forklifts can also add to slippery conditions.

- Regarding regular interior floor care, contaminated floor polish or wax will not be used. ***NEVER*** pour unused polish or wax back into a container or drum. The slightest bit of dirt can cause bacterial contamination that can change the Coefficient of Friction. Contamination can also occur if an unclean applicator or mop is used. ***DO NOT*** use the same mop for mopping floors or cleaning spills and applying wax. Use separate mops or applicators for these jobs.

- Different types of wax are used for different floor surfaces. Make sure that you know and use the proper wax for the floor surface being maintained. Manufacturers are familiar with these conditions and decisions. They can recommend the proper wax to achieve an appropriate Coefficient of Friction for a particular surface.

- When floor maintenance includes use of a dust mop, ***DO NOT*** use mops that have been treated with oil to improve dust collection ability. An oil streak can increase chances for slips and falls.

- ***DO NOT*** allow oil treated walk-off mats. Oil is sometimes added to increase absorbency. But when moisture is added, this can be an additional slip and fall problem.

First Aid Stations

ALL INJURIES SHALL BE REPORTED AND TREATED AS SOON AS POSSIBLE AFTER AN INJURY!

If an employee of Cypress Creek Pipeline Maintenance becomes injured or ill due to an industrial or non-industrial problem and is in need of immediate medical aid, this will be reported to the supervisor.

Failure to report minor injuries or to receive medical treatment may result in serious infections or complications to the health of the employee.

A First Aid Station is located in each major building on the premises and at each job site. Each will be stocked with basic supplies specified in the inventory on the next page. Each First Aid Station will also contain First Aid Report forms.

When first aid is rendered, the supervisor will note treatment on the First Aid Report form. In the event the employee ***REFUSES*** First Aid and/or examination by a doctor, this will be noted in the First Aid Report.

IMPORTANT: *If an employee declines First Aid and/or medical treatment for a reported on-the-job injury after the supervisor recommends it, the employee will NOT be allowed to continue work. Supervisors will discuss each situation with the safety coordinator or the Personnel Dept.* ***BEFORE*** *allowing the employee to return to duty.*

The safety coordinator, or a designate, will be responsible for checking and maintaining the First Aid Stations. This person will take a regular inventory of supplies and make sure that the station or kit remains adequately stocked. The following First Aid Kit checklist can be used as a guide.

First Aid Kit Inventory Checklist

The First Aid Kit should contain:

Item	Quantity	Needed
Protective Rubber Gloves (Surgical Type)	2 pair	_____
Protective CPR Mask w/One-Way Valve	1 each	_____
Antiseptic Soap	1 each	_____
Absorbent gauze, 24" x 72"	1 pkg.	_____
Spool of absorbent gauze	1 spool	_____
Large adhesive bandages, 1"	1 pkg.	_____
Small adhesive bandages, 1/2"	1 pkg.	_____
Bandage compresses, 4", 1 per pkg.	1 pkg.	_____
Eye dressing	1 pkg.	_____
Bandage scissors	1 pair	_____
Tweezers	1 pair	_____
Triangular bandages, 1 per pkg.	3 pkg.	_____
Antiseptic pads, 3 per pkg.	2 pkg.	_____
Medical adhesive tape	1 roll	_____
Self-activating cool packs	2 each	_____
Burn ointment	4 pkg.	_____
Sterile eye wash, in bottle	1 each	_____
Heavy-duty sealable plastic bags	3 each	_____
Disposable splints	1 set	_____
Approved bio-hazard bags, red in color	4 each	_____
American Red Cross Pocket First Aid Guide		_____
First Aid Kit Inventory Checklist forms		_____
First Aid Report forms		_____

Date of order: _____ By: _____

For location: _____

Bloodborne Pathogens

When an employee comes into direct contact with the blood, bodily fluids or body tissues of another person, they are at risk of becoming infected with diseases that may be carried in the other person's body fluids.

Accidental exposures can happen on or off the work site, in any number of day-to-day situations. The Company believes that each employee must have a basic understanding and awareness of the dangers of contracting a potentially deadly disease through such exposures. Communicating basic information about these hazards, including information contained in this policy, is part of the company's safety and health program. Employees will be trained in bloodborne pathogen awareness on an annual basis.

Training records will be maintained containing the date of the training, a summary of the training session, names and qualifications of the instructors conducting the training and the names and job titles of the persons attending the training. Training records will also be maintained for a minimum of three (3) years from the date the training was conducted. Training will be conducted by a *qualified* or *competent* person knowledgeable in the subject matter.

Two well-known and deadly diseases -- the Hepatitis B Virus (HBV) and the Human Immunodeficiency Virus (HIV) -- can be transmitted by contact with infected blood, bodily fluids and tissues. HBV is known for causing severe liver disease that frequently results in death. HIV is the virus that causes Acquired Immune Deficiency Syndrome (AIDS).

Exposure to a deadly bloodborne pathogen can occur in different ways. One known way is when administering First Aid/CPR. If an employee is injured and bleeding from a severe laceration and another employee comes to the rescue by applying direct pressure to the wound; the rescuer has no way of knowing if the victim's blood is potentially carrying the HIV or HBV virus. This means that, unless the rescuer takes certain precautions when administering first aid, they could become infected.

Employees can be exposed to HIV, HBV or other bloodborne pathogens while performing routine cleaning or housekeeping jobs such as:

- Cleaning toilets or sinks;
- Wiping or mopping "accidents" involving vomit, feces or urine;
- Cleaning up the aftermath of an injury (blood on the floor, bloody rags or bandage remnants);
- Handling laundry that may be soiled with blood, or other bodily excretions; and
- Picking up trash bags that may contain discarded needles, syringes, blades, broken glass or other "sharps" that have been contaminated with blood.

ABOUT HEPATITIS B, HIV & AIDS

There is no way of knowing if someone is carrying HBV or HIV in their blood. Many times, the person infected is unaware of having contracted the deadly virus. Symptoms may not develop until several years after the initial exposure. Young and old, rich or poor, men and women, urban or country residents -- anyone may be a carrier of a contagious bloodborne disease.

Because there is no practical way to recognize an infected individual, it has become company policy that ALL body fluids will be considered to be contaminated and handled accordingly by using *UNIVERSAL PRECAUTIONS*. This includes the use of appropriate personal protective equipment when there is a potential exposure to bloodborne pathogens.

HIV and the disease it causes, AIDS, have received wide publicity over the last few years. However, in an occupational setting, employees are more likely to come in contact with the Hepatitis B Virus (HBV). Each year, around 300,000 individuals contract Hepatitis B in the U.S. This compares to an estimated 35,000 persons annually who become infected with the AIDS-causing Human Immunodeficiency Virus (HIV).

Medical authorities, including government medical experts, say that HBV and HIV cannot be spread through "casual contact" or by simply working or being near someone who is infected. HIV, HBV and other bloodborne pathogens are spread through exposure to blood, semen, vaginal fluids, specific other bodily excretions, and "unfixed" tissues or organs (where the skin is not intact).

Hepatitis B virus severely damages the liver and can lead to cirrhosis. This kind of damage is irreversible and frequently fatal. Persons who face routine exposure to blood (for example, medical and ambulance personnel, police officers and emergency workers) can take a vaccination to the Hepatitis B Virus that helps prevent infection.

Vaccination can also be given immediately after a suspected exposure to the disease. Consequently, it is ***EXTREMELY IMPORTANT*** that employees are instructed to report exposure ***IMMEDIATELY***.

Medical experience to date is that persons who become infected with HIV will later develop AIDS. While a limited number of medicines may slow the disease's progress, there is no cure for AIDS at this time. The disease causes the body's immune system to fail. This leave the AIDS patient especially vulnerable to other diseases and infections. These usually are the cause of death.

PREVENTING EXPOSURES

To prevent infection from HIV, HBV and other bloodborne pathogens, employees are instructed to use protection including appropriate PPE. Most of the time, skin is an effective barrier for keeping out germs and bloodborne viruses. However, even small wounds or breaks in the skin (i.e. dermatitis, skin rashes, acne, chapping, a torn fingernail or broken cuticles) can be an entry point for HIV or HBV.

The most likely ways that bloodborne diseases are transmitted include: sexual contact with someone who carries the disease; sharing needles with someone whose blood is infected; getting infected blood on your skin, into an open wound or the mucous membranes of the mouth, eyes or nose; or cuts or puncture wounds by an object that is contaminated with infected blood.

Due to the potential for exposure to deadly bloodborne pathogens, there is no regular position or job in the company that requires an employee to render first aid or cardiopulmonary resuscitation (CPR) to another person as a condition or duty of employment.

Employee training in first aid and CPR is encouraged because of its value and benefit to individuals, their families and the community. The company also supports any employee who, while on the job, chooses to act as a *"Good Samaritan"* and assist another employee or another person with first aid or CPR. First aid supplies and basic personal protective equipment against bloodborne pathogens are accessible to employees at every work site during all shifts.

If an employee decides to provide first aid to the victim, they should wear protective medical gloves from the First Aid Kit and leave on any other personal protective equipment (such as protective glasses with side shields or a full face shield) to help avoid getting blood into the eyes and face. Follow the example of emergency medical personnel, doctors and nurses. They wear personal protective equipment to prevent exposures to bloodborne pathogens. As much as possible, First Aid responders must do the same.

If blood or potentially contaminated material gets on the skin, employees are instructed to wash it off immediately using water and a non-abrasive or antiseptic soap or rinse. If an employee gets blood in their eyes, lips, mouth or nose, they should go to a sink, water fountain, eye wash or body wash station and flush the area with running water.

Employees must report any suspected exposure immediately. There is a vaccine for Hepatitis B. This will be discussed with a doctor as soon as possible after a potential exposure to the virus.

HOUSEKEEPING, SANITATION & HYGIENE PRACTICES

Housekeeping is very important on the work site because keeping a clean and sanitary work area helps prevent slips, trips, falls and other potential accidents which can result in bloodborne pathogen exposure. A written schedule will be developed for cleaning and methods of decontaminating work surfaces, especially after contact with blood or other potentially infectious materials. All potentially contaminated bins, pails, cans and similar receptacles intended for re-use should be inspected and decontaminated on a regular basis.

Regulated Waste containers are marked/labeled, leak proof and puncture resistant. Bio-hazard Labeling has the bio-hazard symbol, letters in fluorescent orange or orange-red with lettering and symbols in a contrasting color. Contaminated laundry is placed and transported in bags or containers labeled or color coded.

BIO-HAZARD SYMBOL

Employees handling potentially contaminated laundry must wear protective gloves and other appropriate personal protective equipment. Employees must ***ALWAYS*** wash their hands and remove any protective clothing before:

- Eating
- Drinking
- Smoking
- Applying cosmetics or lip balm
- Handling contact lenses

CLEANING UP BLOOD/BODY FLUIDS AFTER AN INJURY

The following applies to first aid providers, custodial personnel or any other person employed by the Company and assigned to clean the remains of an accident where human body fluids has been spilled.

After an injury, there may be blood and blood-stained remnants at the scene. This area will not be safe for others until it is properly cleaned to remove possible contamination.

Employees will be instructed that when cleaning up blood or body fluids:

- Restrict access to area by keeping bystanders out and away from the area until the emergency services and clean-up has been accomplished.

- Two pairs of protective gloves will be worn during the clean-up -- one pair over the other. This provides additional protection should something tear the outer pair.

- Employees will wear a leak proof apron or over-garment, if available to keep potentially contaminated body fluids from getting on or soaking through clothes.

- Disposable towels will be used to soak up the majority of the potentially contaminated human body fluid.

- All contaminated trash, bandages, wrappers, towels and any other waste containing material used to clean potentially infected human body fluids will be placed and sealed in a color-coded or labeled leak-proof bag or container designed for bio-hazardous waste disposal. First Aid Providers will also discard latex gloves, mouthpieces and any other personal protective equipment or material contaminated with the victim's body fluids into the bio-hazard container. The container will be labeled/marked reading **"REGULATED WASTE"**.

- Bio-hazardous waste containing *"SPECIAL WASTE "* (i.e. human body fluids in liquid form, sharps, body parts, body tissues, animal carcasses used for laboratory experiments, etc.) must be placed in a bio-hazard container and incinerated or be properly disposed of by a bio-hazardous waste service company.

- Bio-hazardous waste that does not contain *"SPECIAL WASTE"* will also be placed and sealed in a color-coded or labeled leak-proof bag or container designed for bio-hazardous waste disposal. The bio-hazard container will then be placed and sealed inside a different leak-proof/puncture-proof container and labeled, **"NO SPECIAL WASTE FROM A HEALTH CARE RELATED FACILITY"** and may be discarded with other regular trash

- Any sharp objects resulting from an accident (i.e. broken glass, wood, metal, etc.) that has been contaminated with blood or any other human body fluid will be placed and sealed in a leak-proof/puncture-proof container and will be disposed of as **"NO SPECIAL WASTE FROM A HEALTHCARE RELATED FACILITY"** as noted above.

- The contaminated area will be thoroughly cleaned and sanitized with disinfecting solution that will kill the HIV or HBV virus. Regular chlorine bleach is an effective disinfectant for these viruses Mix 3 cup household bleach to 1 gallon of water to make a working solution. MSDS for the bleach should be accessible to employees and filed with the other MSDS in the *Right-to-Know Station.*

- All mops, buckets and other equipment used in the clean-up will be disinfected by cleaning with the bleach-water solution to prevent spreading an infection by using contaminated cleaning equipment in other parts of the company.

- Employees will wash their hands, face or any other potentially contaminated body part or after removing contaminated protective clothing, by using an antiseptic hand cleanser in conjunction with clean cloth or paper towels or antiseptic towelettes any time they have been exposed to someone's body fluids.

NON-INJURY TYPE EXPOSURES

Some routine jobs in the workplace could expose an employee to bloodborne pathogens. Because feces, vomit, saliva and other bodily fluids may contain blood, when someone is cleaning a restroom they may be exposed if the blood is infected with pathogens. The blood may not be visible, but this only makes the situation more dangerous.

Employees will wear appropriate personal protective when cleaning restrooms, sinks, toilets, bathtubs, etc. An antiseptic cleaning solution will be used during the cleaning.

Personal protective equipment should include:

- Leak-proof gloves (of thickness and type most appropriate to prevent accidental tearing and exposing the hands to contamination);

- Eye protection (approved safety glasses or goggles); and

- Body protection (apron or outer garment to prevent contamination of clothes).

Trash containers can contain sharp items and broken glass, or discarded medical syringes and needles. Any of these could be contaminated. Employees must never grab, hold or carry a trash bag on the bottom or around the sides. It should be grasped by the top of the bag above the tie-off.

When cleaning up broken glass, employees should always use a dustpan and broom or brush. Broken glass should not be picked up directly by hand. All contaminated waste will be placed in red bio-hazard bags and place in a waste receptacle properly marked with the bio-hazard emblem and label reading **"REGULATED WASTE"**.

FIRST AID STATIONS & MEDICAL TREATMENT

If an employee makes the decision to administer first aid on an injured victim, they must wear protective gloves. The assisting employee(s) will take *Universal Precautions* and treat all bodily fluids as infectious. All First Aid Stations must include the following supplies:

- latex gloves
- one-way valve CPR mask
- bio-hazard bags
- leak-proof containers
- plastic baggies for placing severed body parts
- tongs

Proper follow-up procedures will include:

- Disinfecting contaminated area, clothing and equipment.
- Carefully removing any clothing or personal protective equipment contaminated with blood or other human bodily fluids and placing them in a labeled bio-hazard bag and treating it as *Regulated Waste.*
- Notifying the immediate supervisor of the potential contamination which may require *post exposure medical evaluation.*

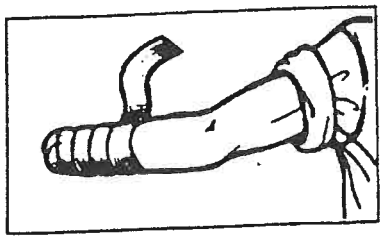
POST EXPOSURE MEDICAL EVALUATION

Should an employee become exposed to blood or an other potentially infectious material, the Company will ensure that a medical evaluation is conducted on the exposed employee(s) including offering the employee(s) an opportunity to take the HBV vaccine, conduct medical surveillance, monitoring, counseling and any other required follow-up procedures.

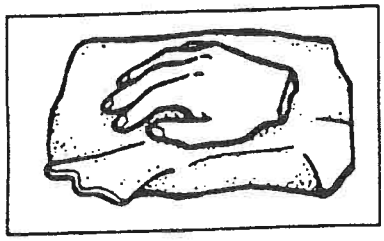
Emergency Procedure for a Severed Body Part. Time is critical. Call 9-1-1 for Emergency Medical Service immediately. Transport the Patient and the severed part to the health care facility as quickly as possible.

Keep the Patient from eating and drinking in case he is later placed under anesthesia.

Do not allow the Patient to drink alcohol to "deaden" the pain.

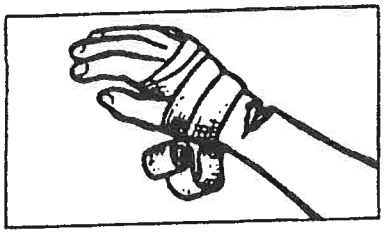


DRESSING THE REMAINING PART OF THE LIMB. Wrap the end of the limb in a compressive dressing so bleeding is stopped. Do not wrap it so tightly that blood flow is cut off to healthy tissue.

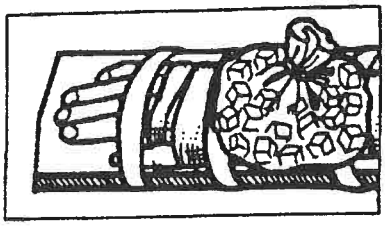


CARING FOR THE SEVERED PART. Wrap the severed part in a terrycloth towel, paper towel or piece of gauze.

PLACE THE SEVERED PART in a clean plastic bag or plastic container and seal it so that it is waterproof. Store plastic bag on ice.



WHEN A LIMB OR DIGIT IS PARTIALLY SEVERED. Wrap the injury with a compressive dressing tightly enough to stop blood flow.



SPLINT THE INJURED AREA by wrapping it securely to a piece of rigid material. Splints should only be used if you need to move a patient.

Ergonomics

CONCEPT

Ideally, the entire workplace system -- environment, machinery, equipment, tools and tasks -- will be designed with ergonomics in mind. When this is not possible, there are basically two ways to reduce existing ergonomic problems in the workplace: engineering controls and administrative controls.

Always consider engineering controls first. Engineering controls involve either purchasing ergonomically designed machines, tools, and equipment, or re-engineering existing hardware -- including work stations -- to be more compatible with workers in the performance of their tasks.

Administrative controls will vary, depending on the availability of resources, training, and job complexity. One effective administrative control where jobs are very similar is rotating workers who perform difficult jobs so that they aren't doing the same jobs every day. This can decrease the risk of worker injury.

Training is another administrative control. Workers can be trained to recognize undue physical stresses that result from awkward postures and repetition, particularly in combination with high forces. This knowledge might encourage them to avoid such stresses by changing the way they perform tasks. Employees can be trained to "warm up" before starting stressful jobs, especially if such jobs are assembly line in nature. Jogging, calisthenics, aerobics, and isometrics help to stretch and loosen muscles, and can subsequently condition and prepare the muscles to do the work. Further, workers will be encouraged to suggest less stressful techniques, and changes in tool, equipment, and work station design.

However, administrative controls will be considered only interim measures until engineering controls are feasible. Typically, the best control involves redesign of the task itself.
Some ergonomic concerns are as follows:

- Design of tools to match needs of worker
- Design of work space
- Design of controls and displays
- Development of job procedures
- Minimizing injurious forces (e.g., noise, vibrations, weights to be lifted or moved)
- Making the work environment compatible with as many workers as possible

WORKPLACE FACTORS

- External (geographic, sociological, type of industry, occupation, tools, machines, shift, illumination, temperature, humidity, air movement, air contaminants, noise, clothing)

- Human (health, age, sex, size, muscular activity, acclimatization, group, isolated work, management)

- Physical Factors (limitation of reach, height of work bench, height of seat, work position, interface device, foot pedal, steering wheel, lever, push button, sensory input, visual, auditory, kinesthetic, proprioception, vibratory, olfactory, arrangement of physical space, personal protective equipment, work load, among others)

IMPACTS - SOLUTIONS

IMPACT	SOLUTION
Vibration	Repetitive movement of body part; measured in cycles per second. Vibration may make performance of tasks more difficult. Defining characteristics include frequency, amplitude, duration and direction.
Whole Body Vibration	Sources: seat of vehicles, deck of ship. Body responds with cardiopulmonary response resembling moderate alarm or exercise. Injuries may include spinal disorders.
Vibration Control	There are three possible points of control: at the source (e.g., use and maintain proper tools), during route of transmission (e.g., isolate vibration), and at receiving person (e.g. reduce duration, provide rest periods)
Hand Tools	Small, light tools are not always best; heavier tools may dampen or reduce vibration. Center of tool's mass will be close to center of grip.
Manual Lifting	Lifting without mechanical support. Lifting task is related to the task (e.g., weight, size, rate or pace of work, height to be lifted, and distance), the environment (temperature, air flow), and the person (e.g., age, sex physical condition, work posture).
Cumulative Trauma Disorders	Upper extremity (e.g., hands, wrist, arms, shoulder, neck) cumulative trauma disorders often result from awkward posture, height of hand or force used, or high repetition. The hazard increases with vibration, cold and contact with tools and work surfaces.
Carpal Tunnel Syndrome	CTS. Compression of the median nerve in the wrist often resulting from tendonitis and caused by frequent, forceful wrist flexion and extension.

IMPACTS	SOLUTIONS
Data Entry	The operation of Video Display Terminals (VDTs) includes risk factors, particularly dealing with high frequency use. Controls include keeping wrists in a neutral posture, supporting the arms to reduce shoulder and neck stress, orientation of the VDT to reduce neck flexion, and frequent rest breaks.
Seated Workplace Design	Seated work may result in cumulative back or upper extremity injuries. Controls include padding, arm supports, seat height, and seat design to keep feet on the floor and reduce contact stress behind the knee.
Factors in Visual Discrimination	Illumination (amount of light in footcandles), glare (a different level of light within the field of view), contrast (difference of background compared to object in view), changing light (adjustment time for the eyes), distance, angle of view, time available to view, movement of object, distractions.
Sitting vs. Standing	Sitting is good when (1) need for worker stability, (2) long work periods, (3) use both feet for controlling equipment, (4) precise foot movements needed. Standing is good when (1) operator needs to reach and move to perform job, (2) large areas need to be monitored.

Heat-Related Sickness

Heat is a serious hazard outdoors in hot weather and indoors when the work exposes workers to unusually hot temperatures and high humidity. A person's body builds up heat when they work and sweats to get rid of extra heat. But sometimes — say, if they are up on a roof, pouring hot asphalt, or lifting heavy loads — their body may not cool off fast enough.

Too much heat can make a person tired, hurt job performance, and increase their chance of injury. Overheating can cause skin rash on the minor side, and progress into a range of conditions that can be life-threatening. Effects of physical overheating include:

- ***Dehydration.*** When the body loses water, a person cannot cool off fast enough. They will feel thirsty and weak.

- ***Cramps.*** The heat can cause muscle cramps, even after a person leaves work.

- ***Heat exhaustion.*** The victim feels tired, nauseous, headachy, and giddy (dizzy and silly). The skin is damp and looks muddy or flushed. Fainting may occur.

- ***Heat stroke.*** This is a life-threatening condition. The victim may have hot, dry skin and a high temperature. The skin dryness is because the body's ability to sweat is compromised or has shut down. Victims may feel confused, suffer convulsions or lose consciousness. Heat stroke can kill quickly and emergency medical assistance is urgently needed.

A person's risk of developing heat stress depends on several factors. These include their physical condition, the weather (temperature ***AND*** humidity), how much clothing they are wearing, how fast they must move and how much physical demand is being places on the body (lifting, heavy work), if there is air circulation over the body, whether the person is in direct sun light, and whether they are taking medication. Evaluation of workplace conditions using the Wet-Bulb Globe Temperature Index. is one precise way to estimate the risk of heat stress.

TYPES OF HEAT SICKNESS (in a progressing order of seriousness)

- **HEAT RASH** is recognized by tiny, red, blister like eruptions on the skin and by a prickly, itchy, burning sensation. *First Aid: Bathe skin to prevent infection and put on dry clothes.*

- **SUNBURN** is caused by the exposure of unprotected skin to ultraviolet light. Symptoms of first degree sunburn are red, painful skin. Second degree sunburn causes blistering and/or peeling. *First Aid: Skin lotions, topical anesthetics and staying in a shaded area.*

- **HEAT CRAMPS** bring painful muscle spasms. *First Aid: Water and/or electrolyte replacement beverage. Get medical assistance.*

- **HEAT EXHAUSTION** results from loss of too much water or salt from the body. It causes cool, moist skin, obvious sweating and rapid pulse (more than 150 beats per minute). It may or may not cause fever. *First Aid: Water and/or electrolyte replacement beverage.*

- **HEAT STROKE** (thermoregulatory failure) is characterized by hot, dry skin, a flushed face, body temperature of 105 degrees F (40.6" C) or higher, rapid pulse and brain disorders such as headaches, confusion, delirium or unconsciousness. Usually, there is an absence of sweating because the body's "cooling system" has shut down. There may also be difficulty breathing, constricted pupils, high blood pressure, strange behavior, weakness, nausea or vomiting. *First Aid: This is a potentially **LIFE-THREATENING** condition. The victim must be removed from the heat source and the body temperature lowered as quickly as possible. Immerse in water (garden hose, shower, bath tub) or cover and massage the body with wet cool soaked towels or sheets. **DO NOT** give liquids to an unconscious person. Call for emergency medical assistance immediately.*

PROTECTIVE MEASURE TO AVOID HEAT STRESS

Here is advice that employees can be given toward preventing heat-related illness:

- Drink a lot of cool water all day— before you feel thirsty. Every 15 minutes, you may need a cup of water (5 to 7 ounces).

- Keep taking rest breaks. Rest in a cool, shady spot. Use fans.

- Wear light-colored clothing, made of cotton.

- Do the heaviest work in the coolest time of the day.

- Work in the shade.

- For heavy work in hot areas, take turns with other workers, so some can rest.

- If you travel to a warm area for a new job, you need time for your body to get used to the heat. Be extra careful the first two weeks on the job.

- If you work in protective clothing, you need more rest breaks. You may also need to check your temperature and heart rate.

OSHA does not have a special rule for heat. But because heat stress is known as a serious hazard, workers are protected under the General Duty Clause of the Occupational Safety and Health Act. The clause says employers must provide "employment free from recognized hazards causing or likely to cause physical harm."

ADMINISTRATIVE AND WORK PRACTICE CONTROLS

Heat stress often can be reduced by rescheduling work. Sometimes, strenuous tasks can be postponed until a cooler time of day or a cooler season. Heavy jobs will be spread out over longer periods of time, allowing employees to pace themselves appropriately and to take work breaks as needed.

Employees will be trained in the causes, symptoms, treatment and prevention of heat stress.

General Safety Policy

1. All Company and subcontractor employees are required to follow all Cypress Creek Pipeline Maintenance safety policies and procedures as a minimum. While performing work at a job site, both the Company *Job Site Safety Manual* and the client's or general contractor's safety policies and procedures will be used as guidelines with the most stringent of the two taking priority.

2. The Company Site Supervisor, in conjunction with the Safety Coordinator, will establish a written site safety plan specifically tailored to the work to be performed at each Company job site. This plan will incorporate and supplement the Company *Job Site Safety Manual* and applicable client safety policies and procedures.

3. The Company *Job Site Safety Manual* and the written site-specific safety plan are to be reviewed with each employee during the new hire orientation. Utilization of specific and detailed aspects of this program will be ongoing and will be discussed and reviewed throughout the project during regularly scheduled safety meetings and training sessions.

4. Regular formal safety audits will be conducted at each location to assure compliance and to measure the effectiveness of the written site safety plan.

General Job Site Safety Rules

Applicable OSHA Standard: General Duty Safety Responsibilities

Purpose: This policy describes general safety rules to be followed while working at or visiting construction worksites.

Scope: This policy applies to all employees and subcontractors working within Cypress Creek Pipeline Maintenance controlled work sites.

1.0 Safety Rules

1.1 All company and subcontractor employees are expected to comply with all specific safety instructions, posted signs, instructions given by your supervisor and all rules listed in this manual.

1.2 Use a common-sense approach to any potentially hazardous job. Any questions or comments concerning safety practices or specific unsafe conditions are to be directed to your immediate supervisor. If conditions arise which make it unsafe to proceed with your assigned job, stop and immediately notify your supervisor or the Site Supervisor.

1.3 Know the location of fire extinguishers, safety showers, eye wash stations and other safety equipment in your work area. Check the equipment before you start work to ensure it is ready for use.

1.4 All injuries, regardless of how small, must be reported to your supervisor and treated as soon as possible. However, all injuries shall be reported no later than by the end of the work shift (see *Accident/Incident Investigation*). Failure to do so can lead to disciplinary action up to and including termination.

1.5 All employees are required to wear approved clothing such as short or long sleeve shirts, full length trousers and serviceable work boots and shoes when engaged in maintenance or construction work. Undershirt type "T" shirts, tank tops, sport shoes, sandals or soft shoes are not permitted. Shirts must have 4" sleeves and a collar. Specific clothing and any additional protective clothing will be detailed in the written site safety plan.

1.6 Hair worn below the collar is not recommended. Employees engaged in maintenance or construction work must contain long hair under the hard hat in such a manner as not to interfere with the intended design of the suspension system and cannot be allowed to fall free when the hat is removed.

1.7 Where employees are required to wear respiratory protection equipment, they must be clean shaven. (Mustaches are allowed if trimmed to the corners of the mouth).

1.8 Equipment, machinery, or power tools may be operated only when authorized and qualified to do so.

1.9 Clean up your work area immediately after work is completed. No job is complete until the area is clear of parts, tools, spilled product and other debris.

1.10 Smoke only in designated smoking areas.

1.11 Compressed gas or air will not be used to dust off hands, face, hair or clothing.

1.12 Water coolers will be used for cooling and storing drinking water only.

2.0 Employee Conduct

2.1 Employees found engaging in the following unsafe acts are subject to reprimand or other disciplinary action, including termination:

- Being under the influence of intoxicating drink or illegal drugs or the possession of either on the jobsite.
- Fighting, horseplay or other disruptive actions.
- Willful or habitual violation of safety rules.
- Altering or bypassing safety devices, personal protective equipment or safety alarms.
- The use of safety equipment, tools, machines or chemicals for purposes other than their intended use.
- Operating equipment, tools, machines, motor vehicles or mobile equipment in a reckless or careless manner.

Accident/Incident Investigation and Reporting

Applicable OSHA Standards: 29 CFR 1904.12, 1910.119, 1926.64

Purpose: To establish methods, guidelines and responsibilities for the prompt investigation and reporting of all accident / incidents within Cypress Creek Pipeline Maintenance.

Scope: This policy applies to all employees and subcontractors working within Cypress Creek Pipeline Maintenance controlled jobsites.

1.0 Introduction

Accident/incident investigation is the process of identifying the underlying causes of incidents and implementing steps to prevent similar events from occurring. The intent of an incident investigation is for Cypress Creek Pipeline Maintenance to learn from past experiences and thus avoid repeating past mistakes.

The report its findings and recommendations will be shared with those who can benefit from the information. The focus of the investigation will be to obtain facts, and not to place blame. The investigation process will clearly deal with all involved individuals in a fair, open and consistent manner.

2.0 Definitions

Accident/Incident- Any unexpected, unplanned, and undesirable event. The term is used to encompass all serious and non-serious events.

Non-Serious Accident/Incident- An incident that results in only a minor injury, equipment damage or release/spill where corrective action to prevent recurrence is obvious and quickly implemented with no long term follow-up.

Serious Accident/Incident- Any accident/incident that results in or has the potential to result in:

- A lost workday case or;
- Major property or equipment damage or;
- A release of highly hazardous chemicals or;
- A fatality

Incident Investigation Team- A group that is formed to investigate a particular incident.

Near Miss- Any incident that a serious consequence did not occur, but could have.

3.0 Investigation Requirements Non-Serious Incidents

3.1 Initial Reporting

3.1.1 Reporting of incidents is the responsibility of the Site Supervisor. Initial reports of incidents must be made by employees to the Site Supervisor. They in turn will verbally report the incident to the Company Safety Coordinator no later than the end of the work day. The Site Supervisor, using the form included in Attachment "A" *Injury/Incident Report*, will document this initial incident report.

3.1.2 A first aid log will be maintained for all injuries and illnesses that occur on the job. The first aid log will contain at least the following:

- Employee's name
- Site Supervisor's
- Date of injury or illness
- Description of injury or illness
- Classification of injury or illness

The log should be updated daily and submitted to the Company's Safety Coordinator weekly, in order to update the overall Company log.

3.1.3 A safety bulletin will be prepared whenever it is desirable to circulate safety information about a non-serious incident. The bulletin will contain general and specific information and lessons learned from minor injuries or near misses. Typically these are written when there is no follow up recommendations to be completed. See Attachment "F" for proper format of a safety bulletin. The distribution for the safety bulletin will be as follows:

- Company president
- Company Safety Coordinator
- Site Supervisors
- Subcontractor management, as applicable

4.0 Investigation Requirements Serious Incident

4.1 Initial Reporting

4.1.1 Serious incidents will be reported immediately to the Site Supervisor and the Company's Safety Coordinator. An immediate report will also be made to the host employer's or general contractor's representative, who will in turn inform their respective management.

The Site Supervisor is responsible for initiating an investigation of appropriate incidents. However, if the Site Supervisor is uncertain whether an incident should be investigated, he/she will confer with the Company's Safety Coordinator regarding whether the incident should be investigated. Once a determination is made to investigate the incident, the formation of the investigation team and the time and location of the investigation will be promptly set. The Company's Safety Coordinator will normally serve as chairman of the investigation team and will coordinate meetings and notifications.

4.1.2 After reporting the incident, the Site Supervisor will begin collecting written statements from all persons involved or those who may have information concerning the incident and schedule any appropriate drug screenings. All statements will be dated and signed by their authors before they leave the work site for the day. Attachment "B" *Witness Statement* will be used for this purpose.

4.1.3 The initial meeting of the investigation team must occur as promptly as possible (typically by the end of the day), but in no case later than 48 hours following the incident. Individuals assigned to the team will participate with the understanding that the investigation should be completed as soon as possible.

4.2 Disturbance of the scene of the incident

4.2.1 If an incident occurs, immediate care should be given to any injured parties, but the physical scene of the incident should be left undisturbed unless approval is obtained from the investigation team leader or unless a serious personnel, environmental or property hazard exists. If the scene is to be disturbed, pictures shall be taken to document original conditions.

4.3 Information collected

4.3.1 The exact nature of information that will be needed to conduct a thorough incident investigation will vary depending on the type of event. This information could include:

- Statements from those involved or eye witnesses;
- Pictures of the location of the incident;
- Pieces or parts of failed equipment;
- Copies of pertinent safe work permits;
- Equipment maintenance records;
- Employee training records.

See Attachment "C" *Incident Investigation Pre-Meeting Checklist.*

4.3.2 Additional background information and documentation for incidents involving subcontractors should include copies of the following:

- Any safe work permits issued affecting the work;
- Subcontractor acknowledgements;
- Work agreements between Cypress Creek Pipeline Maintenance and any other companies involved in the work project.

4.4 Performing the investigation

4.4.1 The investigation team leader will lead the discussion during the formal investigation meetings. The team leader will:

- State the reason for the meeting;
- Ask the involved individuals (employees or subcontractors) to describe what happened;
- Lead the team in completing the investigation (generally this involves answering who, what, when, where, why and how).

Additional guidance on information gathering and analysis is provided as Attachment "D".

4.5 Report completion

4.5.1 The investigation team leader will coordinate the completion of the incident report. A general format and content is given in Attachment "E". The report will contain no personal names and the incident description will contain facts only (no inferences or speculation).

4.5.2 The draft report will be approved by the Site Supervisor and forwarded to the corporate office for prompt review and approval by the President of the Company.

4.6 Report distribution

4.6.1 The final approved report will be sent to the Safety Coordinator for distribution. Distribution will include:

- Company President;
- All Site Supervisors;
- Investigation team members (except non-Company employees);
- Each individual assigned responsibility for recommendations;
- Corporate files;
- Subcontractor company, as applicable

4.6.2 The Site Supervisor at each jobsite should develop his or her own practice with regard to communication of incident investigation and safety bulletin information.

4.6.3 Neither the copies of the distributed formal approved report nor the published safety bulletin should contain the names of the individuals involved in the incident. Corporate file copies of both types of documents should contain the names.

4.7 Follow-up to closure

4.7.1 Once published, Company safety bulletins and formal incident investigation reports will be reviewed at the next scheduled safety meeting by Company personnel and affected subcontractors.

4.7.2 Each recommendation resulting in an action assignment made in the report will have a person assigned to assure these actions are addressed in a timely manner.

4.8 Report retention

4.8.1 Completed incident investigation reports and follow-up documentation shall be retained in corporate files for at least five (5) years from the date of the incident along with copies of information, statements, permits, and other data collected during the investigation.

Attachment "A"

(Existing Company Form)

Attachment "B"
Witness Statement

Project No: _____ Accident/Incident Investigation No._____

In your own words, describe the accident/incident (use back if necessary):

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____ I believe this statement to be true to the best of my knowledge and without coercion.

_____ _____
Witness Name (Please Print) SS#

_____ _____
Witness Signature Date

Attachment "C"

Incident Investigation Pre-Meeting Checklist

1. Resolve any uncertainty regarding whether or not to investigate the incident with the Company's Safety Coordinator and then obtain incident investigation number.

2. Collect information pertinent to the investigation (indicate N/A if not applicable):

____ Individual statements from those involved or eye witness;
____ Pictures of the location of the incident;
____ Pieces or parts of failed equipment;
____ Copies of pertinent safe work permits;
____ Employee training materials or records;
____ Equipment maintenance records.

3. Arrange the investigation team and meeting:

____ Time (by the end of the day which the incident occurs, if possible; otherwise, no later than 48 hours from the time of the incident)
____ Place
____ Schedule team members:

- Lead Person(s);
- Site Supervisor;
- Involved employees;
- Subcontractor employees or representative, as applicable

4. Agree with team on meeting schedule and report timing and assign responsibilities.

Attachment "D" / page 1 of 2

Additional Guidance on Information Gathering and Analysis

1. Additional Guidance on Information Gathering.

The following considerations may also be useful in determining direct and contributing causes of an incident:

Positions

- Did existing controls work or were they adequate;
- Witness locations;
- Location/Orientation/Condition of debris or equipment
- Sources of distraction

Parts Evidence, equipment that may have;

- Malfunctioned;
- Been misfitted or poorly installed;
- Been poorly maintained;
- Been faulty in design;
- Been improperly operated or used;

Factors potentially affecting individuals:

- Level of training/job experience/lack of supervision;
- Poor judgement
- Emotional factors
- Medication/drugs

2. Information Analysis

Define sequence of events:

- Initiating event;
- Intermediate response/actions;
- Final step resulting in perceived incident;
- Sequence of events in response to the incident;

Analyze each event. Why did it occur?

- Human error or unsafe act;
- Mechanical failure;
- Poor design;
- Program failure;
- Poor procedure;
- Failure to follow procedure;
- Inadequate training or equipment;
- Unsafe conditions;
- Unrecognized hazard;

What could have been done to prevent this occurrence?

Subsequent events;

- Examine each subsequent event for action and response;
- Determine whether each step was appropriate or adequate;

3. Corrective Action Determination

Human error prevention;

- Training;
- Change in procedure;
- Elimination of distractions
- Disciplinary actions if deliberate

Mechanical failure;

- Preventative maintenance change;
- Change in design/specification;
- Change in material;

Program failure;

- Revise procedures;
- Improve routine assessment of programs.

Attachment "E"

Cypress Creek Pipeline Maintenance

Accident/Incident Investigation Report

No._____
(Number obtained from Safety Coordinator)

Date of Report:

To: Distribution

From: Investigation Team Leader

Date/Time of Incident:

Date/Time Incident Investigation Began:

Location of Incident: (Actual location and specific jobsite)

Description of Incident

Describe how the incident occurred clearly and precisely. Use photos or sketches where appropriate. Description should be concise, chronological and understandable to anyone.

Results of Investigation

Indicate the date and time the incident was investigated. List, in logical order, pertinent facts uncovered in the investigation.

Direct and Contributing Causes of the Incident

Specify the causes of the incident and explain:

- Personal protective equipment
- Position of people
- Actions of people
- Tools and equipment
- Procedures
- Training
- Etc.

Recommendations to Prevent Recurrence

Recommendations made by the investigation team to prevent a recurrence of the incident.

Corrective Actions

Concisely list immediate and long-term actions. For each action, indicate the person responsible for the follow-up and estimate date of completion.

Investigated By

List of the investigation team members.

Approved by

Includes the Company President and Safety Coordinator

Attachment "F"

Cypress Creek Pipeline Maintenance

SAFETY BULLETIN

What Occurred

What Resulted

Significant Causes

Preventative Actions Being Implemented

Job Site

Date Posted:

Date to be Removed:

Fire Prevention Practices & Overview

Strict fire prevention rules have been established for Cypress Creek Pipeline Maintenance to prevent personal injuries and loss of life, to protect property, and to avoid construction and business interruptions. Company job site fire safety includes the following elements, as needed:

- Fire prevention programs are implemented.
- Fire prevention programs are reviewed regularly.
- Job site surveys are made regularly to identify and eliminate fire hazards.
- Training is given to employees in fire response, including use of fire extinguishers and evacuation procedures. Supervisors provide each worker with specific instructions about fire hazards unique to the individual assignment and job site.
- Records are kept of activities including fire prevention reviews, surveys, corrective actions, equipment maintenance and testing.

FLAMMABLE AND COMBUSTIBLE LIQUIDS. Store in approved safety containers and keep in their proper storage area on the job site. Do not use flammable liquids as cleaning agents.

JOB SITE OFFICES, SUPPLY AND CHANGING FACILITIES. Keep offices, supply and changing rooms at the job site clean and in proper order. They must not contain accumulations of trash, greasy clothing, rags, paper or other combustible material. Good housekeeping will be enforced.

UNUSUAL ODORS. Promptly investigate unusual odors, especially smoke or gas odors.

NATURAL GAS. Identify and locate all natural gas facilities in the job site area. Protect gas lines and connections from damage caused by heavy equipment, digging, vehicle impacts and similar exposures.

COMMON SOURCES OF IGNITION

Electricity is one of the leading causes of fires on a job site. Fire can erupt from faulty or overloaded wiring and overheated equipment motors. Electricity may cause a fire if it arcs or overheats electrical equipment and can cause injury or death through shocks and burns.

Smoking, a common cause of fires, can be controlled through employee training, warning signs and enforcement of Company job site safety policies. Smoking by Company employees is prohibited in on-site trailers, supply sheds and other buildings, and in work areas of the job site, with the exception of locations specifically designated and posted as smoking areas.

Smoking by visitors or anyone else is specifically prohibited in areas where flammable liquids are stored or dispensed and where combustible materials are stored.

Heating systems and appliances are among the most prevalent causes of fires in job site offices, trailers and structures. Heat producing appliances and associated equipment operate at temperatures above the ignition temperature of many common materials.

Sparks and embers from forklifts, powered equipment and generators, electrical arcs and hot metal from cutting and welding operations often start fires. Sparks and embers can be controlled with properly-designed equipment, hot work permit systems, good housekeeping and other fire prevention precautions.

Spontaneous ignition often results from improper storage and accumulation of oily rags and combustible wastes. The Company enforces a *good housekeeping program* on the job site, including *daily* removal of combustible wastes and isolation of combustibles subject to spontaneous ignition (which are stored in appropriate containers).

Arson can be avoided or deterred by maintaining alert employees and supervisors who report suspicious or unusual conduct or activity while maintaining consistent job site security procedures.

Mechanical sparks from foreign materials and loose components in generators, compressors and other powered equipment can start fires in the machines themselves and nearby combustibles. Recommended controls include proper machine maintenance and prompt reporting of equipment that is not operating properly.

Static sparks can ignite flammable vapors, gases and fumes. Bonding, grounding, ionization and humidification are used to control these problems, as needed.

Lightning rods, surge capacitors and grounding help prevent dangerous power surges in electrical transmission circuits and associated equipment when lightning strikes.

BONDING AND GROUNDING

Static electricity is generated through the physical contact and separation of materials. Examples include the flow of gases, liquids or pulverized materials through pipes, hoses, chutes or pneumatic conveyors; by blending, mixing and agitation operations; by rubber tires on vehicles, and by fast-moving belts.

Greater electrical charges are developed in cold and dry atmospheres. The principal hazards created by static electricity are fires and explosions caused by sparks igniting vapors, gases or dusts. Static sparks are dangerous ignition sources wherever the air contains an ignitable mixture.

Hazardous areas include containers of flammable liquids, and around tank truck fill openings, or barrel bungholes. Flammable liquid containers will be bonded and grounded to prevent spark-ignited fires and explosions.

BONDING equalizes static electricity by creating a conductive connection between drums and receivers. A flexible conductor such as a bonding strap or wire is adequate. Solid metal contacts between containers can also be used.

GROUNDING dissipates static electricity into the earth to eliminate its buildup. Grounding straps, cables or wires will be connected to known grounds using grounded metal structural parts of buildings. ***DO NOT*** use water or gas pipes for grounding. All grounding equipment will be tested periodically for effectiveness.

FLAMMABLE LIQUID STORAGE CABINETS

When small quantities of flammable liquids are stored in on-site buildings, they will be kept in specially designed flammable liquid storage cabinets. Cabinets are not required for storage of flammables inside of a storage room that has been specially designed for that purpose (see next section, *Storage of Flammables*). Flammable liquid storage cabinets:

- Provide a fire and heat resistant enclosure;
- Protect flammable liquids against flash fires;
- Prevent excessive internal temperatures in the presence of fires;
- Contain spills;
- Contribute to a cleaner, safer workplace;
- Eliminate the need to make frequent trips to a bulk storage room; and
- When locked, prevent theft of flammable liquids.

CONSTRUCTION OF FLAMMABLES STORAGE CABINETS

The design and construction of cabinets used for flammable liquids storage should conform to Occupational Safety and Health Administration 29 CFR 1910.106 and National Fire Protection Association Standard No. 30.

Metal cabinets constructed in the following manner are acceptable. The bottom, top, door and sides will be at least No.18 gauge steel and double-walled with a 1 2-inch airspace. Joints will be riveted, welded or made tight by some equally effective means. The door should have a three-point latch arrangement and the door sill will be raised at least 2 inches above the bottom of the cabinet to retain spilled liquid within the cabinet.

Wooden cabinets constructed in the following manner are acceptable. The bottom, sides and top will be constructed of an exterior grade plywood at least 1 inch thick that will not break down or delaminate in a fire. All joints will be riveted and fastened in two directions with wood screws. When more than one door is used, there will be a riveted overlap of at least 1 inch. Doors will be equipped with a means of latching and hinges will be mounted so that they will not lose their holding capacity when subjected to a fire exposure. A raised sill or pan at least 2 inches in depth will be provided at the bottom of the cabinet to retain spilled liquid within the cabinet.

WARNING SIGNS -- All flammable liquid storage cabinets will be labeled in conspicuous lettering: ***"FLAMMABLE – KEEP FIRE AWAY."***

CAPACITY

Not more than 120 gallons of Class I, Class II and Class IIIA liquids will be stored in a storage cabinet (see table below). Of this total, not more than 60 gallons will be of Class I and Class II liquids. Not more than three storage cabinets will be kept in a single fire area, with one exception; in industrial facilities, up to three additional cabinets or groups of cabinets may be located in the same fire area if they are separated from the other cabinets by at least 100 feet.

Flammable liquid containers will be kept in storage cabinets when not being used, and the doors to the cabinets will be kept closed.

CONTAINER TYPE	FLAMMABLE LIQUIDS			COMBUSTIBLE LIQUIDS	
	Class 1A	Class 1B	Class 1C	Class II	Class III
Glass	1 pint	1 quart	1 gallon	1 gallon	5 gallons
Metal (Other than DOT Drums approved plastic)	1 gallon	5 gallons	5 gallons	5 gallons	5 gallons
Safety Cans	2 gallons	5 gallons	5 gallons	5 gallons	5 gallons

FLAMMABLE LIQUID means liquid having a flash point below 100 °F (37.8 °C), except any mixture having components with flashpoints of 100 °F (37.8 °C) or higher, the total of which make up

99 % or more of the total volume of the mixture *and* having a vapor pressure not exceeding 40 pounds per square inch (absolute) (2068.6 mm at 100 °F (37.8 °C).
Flammable liquids will be known as Class 1 liquids. Class 1 liquids are divided into three classes as follows:

Class 1A	Liquids having a flashpoint below 73 °F (22.8 °C), and having a boiling point below 100 °F (37.8 °C).
Class 1B	Liquids having a flashpoint below 73 °F (22.8 °C), and having a boiling point at or above 100 °F (37.8 °C).
Class 1C	Liquids having flashpoints at or above 73 °F (22.8 °C) and boiling points below 100 °F (37.8 °C).

COMBUSTIBLE LIQUID means a liquid having a flash point at or above 100 °F (37.8 °C), but below 200 °F (93.3 °C), except any mixture having components with flashpoints of 200 °F (93.3 °C), or higher, the total volume of which make up 99% or more of the total volume of the mixture.

Combustible liquids are divided into two classes:

Class II	Liquids that have flashpoints at or above 100 °F (37.8 °C) and below 140 °F (60 °C).
Class III	Liquids that have flashpoints at or above 140 °F (60 °C). They are further subdivided into two classes:
Class IIIA	Liquids with flashpoints at or above 140 °F (60 °C) and below 200 °F (93.4 °C).
Class IIIB	Liquids with flashpoints at or above 200 °F (93.4 °C).

Storage of Flammables

Only approved containers and tanks will be used for the storage and handling of flammable and combustible liquids. All connections on drums and combustible liquid piping, vapor and liquid will be kept tight. All flammable liquids will be kept in closed containers when not in use. All containers must have lids, bungs, and/or valves shut when not in immediate use.

Storage rooms for flammable and combustible liquids must have explosion-proof lights. Storage rooms for flammable and combustible liquids should have mechanical or gravity ventilation. Storage areas will be adequately vented to prevent the development of excessive vacuum or pressure, as a result of filling, emptying, or atmosphere temperature changes. In addition, the storage areas must be equipped with emergency venting that will relieve excessive internal pressure caused by fire exposure.

Flammables must be stored in areas that do not contain the following sources of ignition:

- open flames
- sparks (e.g. static, electrical and mechanical)
- smoking
- cutting and welding
- chemical and physical-chemical reactions (including electrical shock)
- friction heat
- lightning
- spontaneous ignition
- hot surfaces
- radiant heat

Absolutely ***NO SMOKING*** or ***OPEN FLAMES*** are allowed within 50 feet of a flammable storage area at any time. ***"NO OPEN FLAMES"*** signs must be posted where appropriate in areas where flammable or combustible materials are stored.

Safety cans will be used for dispensing flammable or combustible liquids at point of use. All spills of flammable or combustible liquids will be cleaned up promptly.

Liquefied petroleum gas will be stored, handled, and used in accordance with safe practices and standards. No smoking signs will be posted on liquefied petroleum gas tanks. Liquefied petroleum storage tanks will be guarded to prevent damage from vehicles. All solvent wastes and flammable liquids will be kept in fire-resistant, covered containers until they are removed from the job site.

Fire separators will be placed between containers of combustibles or flammables when stacked one upon another to assure their support and stability.

Fuel gas cylinders and oxygen cylinders will be separated by distance, fire resistant barriers, etc., while in storage. Appropriate fire extinguishers will be mounted within 75 ft. of outside areas containing flammable liquids, and within 10 ft. of any inside storage area for such materials. Extinguishers will be placed free from obstructions or blockage. All extinguishers will be fully charged and in their designated places unless in use.

The Company will ensure that proper storage procedures of any potentially hazardous chemical, substance or material meet or exceed the safety requirements and *threshold quantity limits (TQL)* set by the Occupational Safety & Health Administration (OSHA) 29 CFR 1910 - Subpart H, and the Environmental Protection Agency (EPA) 40 CFR 264.50.

Employees required to respond to any emergency resulting from fire, explosion, spill of hazardous materials or waste will be specifically trained in these procedures.

Fire Protection Equipment & Methods of Emergency Evacuation Alarm

Consideration will be given to each job site and, as appropriate, each job site area to confirm that each has an adequate compliment of fire extinguishers of the proper type.

An emergency evacuation alarm will be the first method used to communicate a fire, evacuation or drill on the job site. The alarm sound will be generated by an electric or compressed air horn that is loud enough to be heard in all areas of the site.

Personnel working on the job site will be given an orientation on the methods of alarm prior to starting work on the job site. This orientation will include explanation of any special alarm signals (for example, long horn sound for fire, short horn beeps for chemical release emergency).

Fire Protection Equipment Inspection Program

Fire protection equipment and systems are used infrequently. Equipment will be inspected and tested on a regularly scheduled basis to determine the condition of operation. An inspection program will be instituted for all portable hand fire extinguishers and alarm devices used on the job site. This includes fire extinguishers in Company vehicles on the job site.

Necessary component parts of the program are as follows:

- Management has designated a responsible individual on the job site who is *qualified* and *trained* to perform inspection of fire extinguishers. Vendors, contractors and certified inspectors may be utilized as needed to perform or support these inspections.

- The site supervisor has authority to institute prompt action to correct any noted deficiencies in selection, availability, placement or operational readiness of fire extinguishers on the job location. This includes removing immediately any portable fire extinguishers determined to be inoperative, or which have gauges that are not "in the green," or which do not have current inspection tags and pins secured in place by the fire extinguisher service provider.

- Air horns will be tested regularly as part of the routine fire equipment inspection.

Fire Extinguishers

TYPE OF FIRE	Class A *Ordinary combustibles; wood; paper; cloth*	Class B *Flammable liquids; grease; gasoline; paints; oils*	Class C *Energized electrical equipment; fuse boxes; motors; switches*
Dry Chemical Ammonium Phosphate • Stored Pressure • Cartridge Operated	A, B & C or B & C	A, B & C or B & C	A, B & C or B & C
Dry Chemical Sodium Bicarbonate Potassium Bicarbonate Potassium Chloride • Same as above	NO	A, B & C or B & C	A, B & C or B & C
Carbon Dioxide • Stored Pressure	NO	B & C	B & C
Water • Stored Pressure • Pump Tank	A	NO	NO
AFFF Foam • Stored Pressure	A	A	NO
Halon 1211 • Stored Pressure	A, B & C	A, B & C	A, B & C

Note: *Due to regulations passed by the Environmental Protection Agency (EPA), Halon type extinguishers will no longer be fabricated nor available for refill and use. Halon is known to cause deterioration in the earth's ozone layer.*

Type of Fire	Class D *Involves Combustible Metals*	Met-L-X Chemical Cartridge Operated Extinguisher

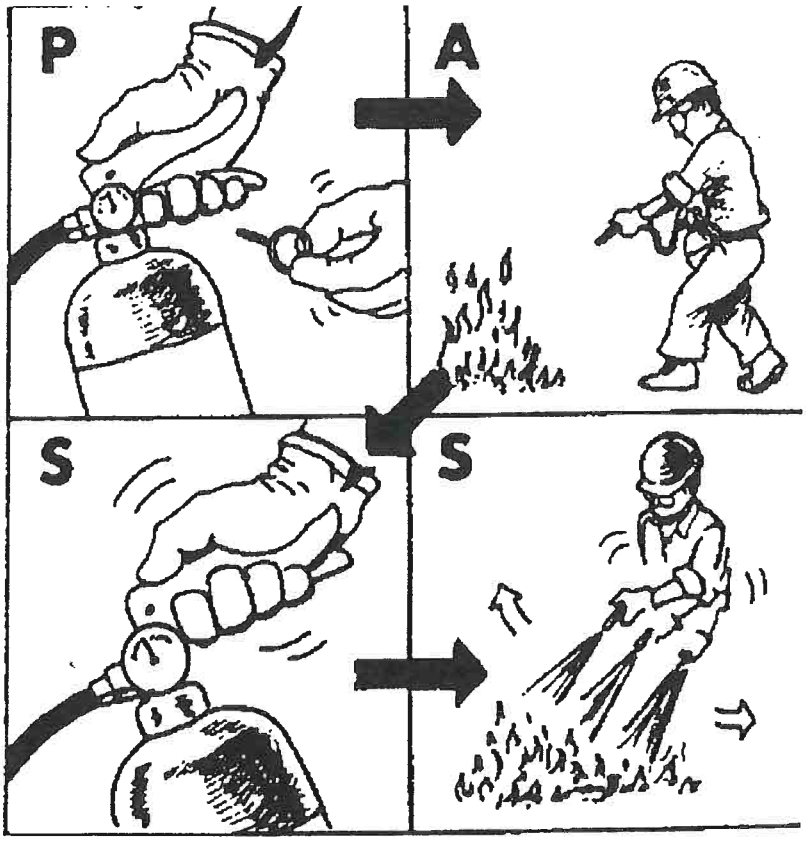
Combustible Metals Include:

- Magnesium
- Zirconium
- Lithium
- Dry Powder
- Calcium
- Potassium
- Titanium
- Sodium
- Sodium-Potassium
- Aluminum
- Thorium

REMEMBER TO

P. A. S. S.

WHEN USING AN EXTINGUISHER:



P -- Break the seal and ***PULL*** the pin.

A -- Stand about 8-10 feet from the fire and ***AIM*** the nozzle at the base of the fire. If you stand too close, pressure of the spray can spread the fire.

S -- ***SQUEEZE*** the trigger while holding the extinguisher upright. Stand away and move in on fire.

S -- ***SWEEP*** the extinguisher from side to side, covering the area of the fire with the extinguishing agent.

NEVER fight a fire when:

- You do not know what is burning.
- The fire is spreading beyond the place where it started.
- The fire could spread between you and the nearest fire exit. ***ALWAYS*** keep your back to the nearest fire exit!
- You do not have an adequate number of fire extinguishers.
- A flammable liquid is burning and not physically contained.

In ***ANY*** of these situations, ***DO NOT*** fight the fire yourself! Evacuate and call for help!

Emergency Response & Evacuation Procedure

Despite all precautions, there always is the possibility of fire or an emergency requiring evacuation at the job site. An emergency evacuation plan will be established for each job site, designating primary and secondary escape routes from each work area. These are routes for getting to a designated gathering area, selected for the job site, in the quickest, safest and most direct manner.

The gathering area, where all job site personnel will gather after the evacuation, will be located a safe distance away from the work area. Once personnel are evacuated, they will remain in the gathering area until a roll call is taken and the "all clear" announcement is made by a Company supervisor.

At the gathering area, emergency evacuation leaders and supervisors will be responsible for assembling personnel so that the roll call can be taken. Roll call will be conducted to ensure that all on-site personnel are accounted for. If personnel cannot be accounted for, this will be immediately reported to a fire or emergency services officer on the scene, or the site supervisor. Evacuated personnel ***WILL NOT*** re-enter the evacuated area until the "all clear" is sounded.

All site personnel will be trained in evacuation procedures established for the job site prior to arrival at the site, or during a pre-work "tailgate" safety meeting.

Cypress Creek Pipeline Maintenance

JOB SITE SAFETY

(Basic Job Site Safety Manual)

General Safety for Job Sites

GENERAL CONSTRUCTION SAFETY GUIDELINES

Construction work can be particularly hazardous. Personal protective equipment, fire safety, electrical and scaffold safety, fall protection and other precautions are essential for safe construction work. Refer to specific company safety programs regarding specific hazards and work situations (i.e. excavation safety, forklift operations, scaffold erection and inspection, cranes and hoists).

Follow these guidelines when visiting or working at construction sites:

- Hardhats, safety glasses with side shields and steel-toed footwear are required on all job sites. Additional personal protective equipment (PPE) may be required for specific jobs, tasks and work assignments.
- Do not walk, stand, or work under suspended loads. If you raise a load, be sure to crib, block, or otherwise secure the load as soon as possible.
- Avoid placing unusual strain on equipment or materials.
- Be prepared for unexpected hazards. ***BE ALERT!***
- Do not walk under partially demolished walls or floors.
- Stop working outdoors and seek shelter during lightning storms.
- Do not begin working until barricades, warning signs or other protective devices have been installed to isolate the work area.
- Do not throw or toss debris outside barricaded areas.
- Walk around or step over holes, rocks, and roots in your pathway.
- Stay clear of all trucks, forklifts, cranes, and other heavy equipment when in operation.
- Do not approach any heavy equipment until the operator has seen you and has signaled to you that it is safe to approach.
- Keep combustible liquids stored and covered in approved containers.

Barriers & Guards

Company employees must use barriers and guards as necessary to protect employees, other contractors and visitors from physical hazards. If an employee suspects that a hazard is not sufficiently protected, they should notify the site supervisor immediately. The supervisor will involve the general contractor site supervisor and safety personnel as required. Barriers, guards, and warning signs are required to ensure safety against existing hazards.

Types of Barriers and Guards

Standard types of barriers and guards include the following:

- Guardrails and handholds
- Saw horses
- Tape
- Toeboards
- Cones
- Other physical barriers and solid separators (dust barriers, hazard barriers, temporary walkways, etc.)

Signs that state DANGER, WARNING, or CAUTION are also important when barriers or guards are necessary. Remember to make signs legible, visible, and brief.

Areas that Need Barriers or Guards

Any area that poses a physical threat to workers and/or pedestrians requires barriers or guards. Areas that typically require permanent or temporary protection include the following:

- Excavation Sites
- Construction Sites
- Stairways
- Hatches
- Chutes
- Open Manholes
- Under and around elevated platforms and scaffolding

- Areas with moving machinery
- Temporary wall, floor or rooftop openings

Using Barriers or Guards

The following list provides guidelines for using barriers and guards:

- When necessary, reroute pedestrian and vehicular traffic to completely avoid a construction site area.
- Guard any permanent ground opening into which a person could fall with a guardrail, load-bearing cover, or other physical barrier.
- Ensure that temporary floor openings, such as pits and open manholes, are guarded by secure, removable guardrails. If guardrails are not available, have someone guard the opening.
- Ensure that all stairways, ladderways, hatchways, or chute floor openings have handrails or hinged covers.
- Ensure that enclosed stairways with four or more steps have at least one railing, and that open stairways with four or more steps have two railings.
- Ensure that all platforms and walkways that are elevated or located next to moving machinery are equipped with handrails, guardrails, or toeboards.
- Barricade any wall openings through which a person or tools could fall. Use gates, doors, guardrails, or other physical barriers to block the opening.
- Mark and guard any excavation that is deeper than 12 inches.
- Mark and/or guard potholes and sidewalk damage as appropriate.
- Protect smoke detectors with some type of cover when construction work, such as dust or fume producing activities, may affect smoke detectors. Remove protectors immediately at the end of the activity or at the end of each day.

Heavy Equipment Safety

When using heavy equipment, there are five basic guidelines that employees must always follow to ensure safety:

- Know how to properly operate the equipment you are using.
- Do not use heavy machinery when you are drowsy, intoxicated, or taking prescription medication that may affect your performance.
- Use only equipment that is appropriate for the work to be done.
- Inspect your equipment to ensure that it is in good working condition before beginning a job. In addition, ensure that regular inspections and maintenance are conducted as appropriate.
- Do not stress or overload your equipment.

Accidents with heavy equipment do not just "happen." They are caused. Therefore, employees should also follow these guidelines:

- Before leaving equipment unattended, make sure that all buckets, blades, etc. are on the ground; transmission is in neutral; engine is off; and equipment is secure against movement
- Never get on or off of moving equipment
- Do not attempt to lubricate or adjust a running engine
- Turn the engine off before refueling
- Keep all shields and safety guards in place
- Avoid underground utilities and overhead power lines.

Forklift Safety on Job Sites

The following list provides general safety guidelines:

- Only authorized employees may operate forklifts.
- Do not allow riders.
- Do not raise persons on the forks of a lift unless using an approved manlift platform that is designed for this purpose. The platform shall be physically attached to the lift so that it cannot slip or move off the forks. The platform shall have side rails, mid rails and secure anchor points for attachment. Do not drive the forklift while people are on the attached man-lift platform.
- Do not speed.
- Do not walk, stand, or work under the elevated portion of a forklift (even if it is not loaded).
- Ensure that the forklift has an overhead barrier to protect the operator from falling objects.

In addition, follow these guidelines for safe forklift operation:

- Always work within the capacity limits of your forklift. Follow the manufacturer's guidelines concerning changes in the lift capacity before adding an attachment to a forklift. Consult with the manufacturer if there are questions or any uncertainty regarding lift capacity after modifications.
- Do not operate a forklift in areas where hazardous concentrations of an explosive atmosphere (i.e. acetylene, butadiene, hydrogen, ethylene, or diethyl ether) may have accumulated.
- Apply the foot brake and shift gears to neutral before turning the key.
- Lift the load an inch or two to test for stability; if the rear wheels are not in firm contact with the floor, take a lighter load or use a forklift that has a higher lift capacity.
- After picking up a load, adjust the forks so that the load is tilted slightly backward for added stability.
- Raise the forks an additional two inches to avoid hitting or scraping the ramp surface as you approach the ramp.
- Steer the forklift wide when making turns.
- Sound the forklift horn when approaching blind corners, doorways or aisles to alert other operators and pedestrians.
- Never raise or lower a load while moving.

- Be sure the top load sits squarely on the stack. An uneven load could topple.
- Travel with loads slightly tilted back against the mast for stability.
- Travel with loads at the proper height. A stable clearance height is usually four to six inches at the tips and two inches at the heels of fork blades. Lift stacked loads in the same manner as loads on the floor.
- If you cannot see over a load, drive in reverse. Do not try to look around a load and drive forward.
- Drive unloaded forklifts in reverse when going up a ramp and forward when going down a ramp. When ascending or descending an inclined ramp or grade, drive the forklift with the load upgrade.
- Drive a loaded forklift in a forward gear when going up a ramp. Upon approaching the ramp, raise the forks an additional two inches to avoid hitting or scraping the ramp surface.
- Do not attempt to turn around the forklift on a ramp.
- Do not use a gear for the opposite direction of travel as a means to slow down or stop the forklift.
- When preparing to leave the forklift unattended, lower the mast, neutralize the controls, shut the power off, and set the brakes. The forklift is "unattended" when the operator is more than 25 feet away or the forklift is out of view.

SPECIFIC FORKLIFT OPERATIONS

PICKING UP A LOAD

- "Square up" on the center of the load and approach it straight on with the forks in the travel position.
- Stop when the tips of your forks are about a foot from the load.
- Level the forks and slowly drive forward until the load is resting against the backrest of the mast.
- Lift the load high enough to clear whatever is under it.
- Back up about one foot, then slowly and evenly tilt the mast backwards to stabilize the load.

PUTTING DOWN A LOAD

- "Square up" and stop about one foot from the desired location.
- Level the forks and drive to the loading spot.
- Slowly lower the load to the floor or ground.
- Tilt the forks slightly forward so that you do not hook the load.
- When the path behind you is clear of obstructions, back straight out until the forks have cleared the pallet.

STACKING ONE LOAD ON TOP OF ANOTHER

- Stop about one foot away from the loading area and lift the mast high enough to clear the top of the stack.
- Slowly move forward until the load is squarely over the top of the stack.
- Level the forks and lower the mast until the load is no longer supported by the forks.
- Look over both shoulders for obstructions and back straight out if the path is clear. "Square up" on the center of the load and approach it straight on with the forks in the travel position.
- Stop when the tips of your forks are about a foot from the load.
- Level the forks and slowly drive forward until the load is resting against the backrest of the mast.
- Lift the load high enough to clear whatever is under it.
- Back up about one foot, then slowly and evenly tilt the mast backwards to stabilize the load.

Mobile Cranes & Hoists on Job Sites

Only authorized employees may operate mobile cranes and hoists. When using hoists, remember to follow the five safety guidelines for working with heavy equipment. (Refer to the tab on mobile cranes and hoists for more information.) In addition, follow the guidelines in the following sections. The following are general guidelines for working with hoists:

- Never walk, stand, or work beneath a hoist.
- Isolate hoisting area with barriers, guards, and signs, as appropriate.
- Never exceed the capacity limits of your crane and hoist.
- Wear work gloves and other personal protective equipment, as appropriate, when working and handling rough, sharp-edged or abrasive material such as chains, cables, ropes or slings.
- Ensure that hoists are inspected regularly.
- Always hold tension on the cable when reeling it in or out.
- When the work is complete, always rig the hoist down and secure it.
- When the load block or hook is at floor level or its lowest point of travel, ensure that at least two turns of rope remain on the drum.
- Be prepared to stop operations immediately if signaled by the safety watch or another person.
- Do not use chain slings if links are cracked, twisted, stretched or bent.
- Fabricate all wire in wire rope slings by using thimbles; do not form eyes by using wire clips or knots.
- Do not shorten slings by using make-shift devices such as knots or bolts.
- Do not use a kinked chain.
- Protect slings from the sharp edges of their loads by placing pads over the sharp edges of the items that have been loaded.
- Do not place your hands between the sling and its load when the sling is being tightened around the load.
- Do not alter or remove the safety latch on hooks. Do not use a hook that does not have a safety latch, or if the safety latch is bent or otherwise visibly damaged.
- Lift the load from the center of the hooks, not from the point.

Ensure that the hoist is directly above a load before picking it up. This keeps the hoist from becoming stressed. Picking up loads at odd angles may result in injury to people or damage to the hoist. Do not pick up loads by running the cable through, over, or around obstructions. These obstructions can foul the cable or catch on the load and cause an accident.

AVOIDING ELECTRICAL HAZARDS WITH HOISTS

Do not hoist loads when any portion of the hoisting equipment or suspended load can come within six feet of high-voltage electrical lines or equipment. If you need to hoist near high-voltage electrical lines or equipment, first obtain clearance from the site supervisor.

INSPECTING HOISTS

Hoists should be inspected daily. If there is any question about the working condition of a hoist, do not use it. Hoist inspectors should note the following:

- The hooks on all blocks, including snatch blocks, must have properly working safety latches.
- All hooks on hoisting equipment should be free of cracks and damage.
- The maximum load capacity for the hoist must be noted on the equipment.
- Cables and wiring should be intact and free of damage.

Housekeeping at the Job Site

- Do not place materials such as tools, boxes, buckets, or trash in walkways and passageways.
- Do not kick objects out of your pathway; pick them up or push them out of the way.
- Do not throw matches, cigarettes or other smoking materials into trash bins.
- Do not store or leave items on stairways or near ladder access on scaffolds.
- Do not block or obstruct evacuation routes from scaffolds, emergency exits or accesses to safety and emergency equipment such as fire extinguishers or fire alarms.

Portable Welding Equipment

- Wear a welding helmet or welding goggles during welding operations.
- Do not use personal or employee-owned power tools and portable appliance while at work.
- Do not perform welding tasks while wearing wet cotton gloves or wet leather gloves.
- Insulated work gloves are required for all welders when using welding equipment.
- Do not use welding apparatus if power plug is cut, frayed, split or otherwise visibly damaged or modified.
- When replacing power plugs and cords of welding apparatus, always check to ensure that the ground wire is connected and the power plug prongs are not worn off, allowing the plug to be inserted backward.

Compressed Gas Cylinders

STORAGE AND HANDLING

- Do not handle oxygen cylinders if your gloves are greasy or oily.
- Store all cylinders in the upright position.
- Place valve protection caps on gas cylinders that are in storage or not in use.
- Do not lift cylinders by the valve protection cap.
- Do not store compressed gas cylinders in areas where they can come in contact with chemicals labeled "Corrosive."
- Place cylinders on a cradle, slingboard, pallet or cylinder basket to hoist them.
- Do not place cylinders against electrical panels or live electrical cords where the cylinder can become part of the circuit.
- Do not use a flame to check for propane cylinder leak, use a leak or monitor detector.

USE OF CYLINDERS

- Do not use dented, cracked or other visually damaged cylinders.
- Use only an open ended or adjustable wrench when connecting or disconnecting regulators and fittings.
- Do not transport cylinders without first removing regulators and replacing the valve protection caps.
- Close the cylinder valve when work is finished, when the cylinder is empty or at any time the cylinder is moved.
- Do not store oxygen cylinders near fuel gas cylinders such as propane or acetylene or near combustible material such as oil or grease.
- Stand to the side of the regulator when opening the valve.
- If a cylinder is leaking around a valve or a fuse plug, move it to an outside area away from where work is performed and tag it to indicate the defect.
- Do not hoist or transport cylinders by means of magnets or choker slings.

- Do not use compressed gas to clean the work area, equipment or yourself.
- Do not remove the valve wrench from acetylene cylinders while the cylinder is in use.
- Open compressed gas cylinder valves slowly. Open fully when in use to eliminate possible leakage around the cylinder valve stem.
- Purge oxygen valves, regulators, and lines before use.

Truck Operations

- When carrying flammable liquid (gasoline, fuel) on a crew truck, the flammable must be carried in an approved safety container equipped with spring-loaded cover. The exception is paint, which may be hauled in the manufacturer's container.
- Check all lug bolts and axle flange nuts at least weekly to ensure they are tight. When personnel are riding in a truck, all tools must be securely stored outside the cab. All loose objects such as tools, fittings, supplies and equipment must be secured firmly to ensure they do not fall off the truck and into or onto other vehicles.
- Auto cranes and hoists must have the swivel and lifting arm secured when not in use.
- Do not use personnel standing or sitting on hoods or truck bumpers for counterbalance of a load.
- The winch line on a winch truck is the responsibility of the driver. An approved winch line is required to avoid injury to the driver from shifting loads or flying winch lines.
- Keep all trucks and truck beds free of oil and grease. Always stand clear when inflating truck tires to avoid injury. Use a tire safety cage when possible to avoid injury.
- When pulling a trailer with coupling poles, safety chains must be used that shall hold the load in the event the coupling pins break. Coupling pins should be secured to prevent them from moving out of place.
- When hauling pipe (i.e. scaffolding components or similar types of loads), the bolsters of trucks should be inlaid with wood so that pipes shall always rest on wood instead of steel. This helps assure that the load can be securely bound. Never transport pipe on a flatbed truck until at least 2 metal bolsters cradle the load. A minimum of two chain load binders are required to secure the pipe in place.

Aerial Lift/ Cherry Picker

Working on aerial lifts, cherry pickers or any other lift where an Employee shall be elevated, poses a hazard due to high elevations. Therefore, the following safety precautions shall be taken when ever Employees are required to operate or mount an aerial lift.

LADDER TRUCKS & TOWER TRUCKS

Aerial ladders shall be secured in the lower traveling position by the locking device on top of the truck cab, and the manually operated device at the base of the ladder before the truck is moved for highway travel.

EXTENSIBLE & ARTICULATING BOOM PLATFORMS

- Lift controls shall be tested each day prior to use to determine that such controls are in safe working condition.
- Only authorized persons shall operate an aerial lift.
- Belting off to an adjacent pole, structure, or equipment while working from an aerial lift shall not be permitted.
- Employees shall always stand firmly on the floor of the basket, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position.
- A body belt shall be worn and a lanyard attached to the boom or basket when working from an aerial lift.
- Boom and basket load limits specified by the manufacturer shall not be exceeded.
- The brakes shall be set and when outriggers are used, they shall be positioned on pads or a solid surface. Wheel chocks shall be installed before using an aerial lift on an incline, provided they can be safely installed.
- An aerial lift truck shall not be moved when the boom is elevated in a working position with men in the basket, except for equipment which is specifically designed for this type of operation.
- Articulating boom and extensible boom platforms, primarily designed as personnel carriers, shall have both platform (upper) and lower controls. Upper controls shall be in or beside the platform within easy reach of the operator. Lower controls shall provide for overriding the upper controls. Controls shall be plainly marked as to their function. Lower level controls shall not be operated unless permission has been obtained from the employee in the lift, except in case of emergency.
- Climbers shall not be worn while performing work from an aerial lift.
- The insulated portion of an aerial lift shall not be altered in any manner that might reduce its insulating value.
- Before moving an aerial lift for travel, the boom(s) shall be inspected to see that it is properly cradled and outriggers are in stowed position.

ELECTRICAL TESTS

All electrical tests shall conform to the requirements of ANSI A92.2-1969 section 5. However equivalent D.C. voltage tests may be used in lieu of the A.C. voltage specified in A92.2-1969; D.C. voltage tests which are approved by the equipment manufacturer or equivalent entity shall be considered an equivalent test.

BURSTING SAFETY FACTOR

The provisions of the American National Standards Institute standard ANSI A92.2-1969, section 4.9 Bursting Safety Factor shall apply to all critical hydraulic and pneumatic components. Critical components are those in which a failure would result in a free fall or free rotation of the boom. All noncritical components shall have a bursting safety factor of at least 2 to 1.

WELDING STANDARDS

All welding shall conform to the following standards as applicable:

- Standard Qualification Procedure, AWS B3.0-41.
- Recommended Practices for Automotive Welding Design, AWS D8.4-61.
- Standard Qualification of Welding Procedures and Welders for Piping and Tubing, AWS D10.9-69.
- Specifications for Welding Highway and Railway Bridges, AWS D2.0-69.

Man Lifts & Scissor Lifts

Only trained and authorized operators shall be permitted to operate aerial lifts, man lifts and scissor lifts. Methods shall be devised to train operators in the safe operation of this equipment. This training shall include:

Information about federal Occupational Health and Safety (OSHA) regulations contained in 29 CFR-1910.66 (Powered platforms for building maintenance); 1910.67 (Vehicle-mounted elevating and rotating work platforms); and 1910.68 (Manlifts).

Only those employees determined by the Department Supervisor to be competent by reason of training and experience top operate aerial lifts, man lifts and scissor lifts shall be permitted to operate such equipment.

No employee known to have defective uncorrected eyesight or hearing, or to be suffering from heart disease, epilepsy, or other ailments which may suddenly incapacitate him shall be permitted to operate an aerial lift, man lift or scissor lift.

Only trained and authorized persons shall be permitted to operate aerial lifts, man lifts and scissor lifts. Operators of aerial lifts, man lifts and scissor lifts shall be qualified as to visual, auditory, physical, and mental ability to operate the equipment safely.

The primary responsibility of the operator is to use aerial lifts, man lifts and scissor lifts safely following the instructions given in the training program.

Unsafe or improper operation of an aerial lift, man lift or scissor lift can result in: death or serious injury to the operator or others; damage to product, facilities or other property.

Only trained and authorized operators shall be permitted to operate the aerial lifts. A malfunctioning lift shall be shut down until repaired. The controls shall be plainly marked as to their function and shall be tested each day prior to use to determine that they are in safe operating condition. All personnel in the platform shall wear an approved safety harness with lanyard attached to the platform attachment point.

Load limits specified by the manufacturer shall not exceed 500 pounds. Instruction on warning placards must be legible and aerial lifts may not be field modified. Lifts may only be used as intended by the manufacturer.

Aerial lifts shall not be used near electric power lines unless the lines have been de-energized or adequate clearances are maintained. Employees using aerial lifts shall be instructed how to recognize and avoid unsafe conditions and hazards. Ground controls shall not be operated unless permission has been obtained from personnel in the platform (except in case of emergency).

Daily inspection of the area lift shall be performed. Personnel shall always stand on the floor of the platform (not on boxes, planks, railing, or other devices).

OPERATION

- Maintain safe clearance from electrical lines and apparatus. The operator must allow for platform sway and rock or sag in electrical lines. The aerial lift is not electronically insulated and the operator must maintain a clearance of at least ten feet between any part of the machine or its load and any electrical line or apparatus carrying up to 50,000 volts. One foot additional clearance shall be given for each additional 30,000 volts.

- Allow only those authorized and qualified to operate machine and who have demonstrated that they understand proper operation maintenance of the unit. The operator must not mechanically block the platform foot switch.
- The operator must know the weight (people and tools) 500 pounds is the maximum for all positions. The operator must never exceed manufacturer's rated platform capacity. Refer to capacity indicator, on boom or mounted in platform control console.
- Never operate a malfunctioning machine. If a malfunction occurs, shut down machine and notify proper authorities and do not allow ground personnel in areas around and under the raised platform.
- Approved hard hats will be worn by all operating and ground personnel.
- Make sure machine is positioned on a firm, level, and uniform supporting surface before raising or extending the boom, If not, tipping can occur.
- Read and obey all warnings, cautions, and operating instructions on the machine and in the JLG operation and safety handbook.
- Be familiar with locations and operation of all safety and override controls.
- Machine should always be shut off when refueling. No smoking is permitted. Never refuel during an electrical storm. Be sure that caps are closed and secure at all other times.
- Never attempt to free machine by lifting it off the ground with the boom.
- Never attach wire, cable, or any similar items to a platform for lifting purposes.
- When riding in or working from platform, both feet must be firmly positioned on the deck.
- Always use the safety belt. Secure belt lanyard to proper attachment point on platform, never to an adjacent object or structure.
- Do not use the drive or telescope features of the machine to move either the machine or other objects.
- Do not operate any machine on which danger, warning, caution or instruction placards or decals are missing or not readable.
- Do not pull the machine or other objects by attaching wire, cable or similar items to the platform, then retracting and extending the boom.
- Do not attempt to use the boom for crane functions.
- Never walk the boom to gain access to, or leave the platform.
- Never slam control lever through neutral to opposite direction, return lever to neutral; stop -- then proceed.
- Never position ladders, steps, or similar items in the platform to provide additional reach for any purpose.
- Always operate controls with slow, even pressure.
- Stow boom and shut off all power before leaving machine.

SCISSOR LIFTS

- Always conduct a walk around inspection at the beginning of each shift prior to using a scissor lift.
- This inspection should include the following:
- Check scissor end joints for cracks and broken weld points. Check the hydraulic cylinders, hoses and fittings.
- Check drive axles, wheels and hubs for loose, damaged or missing parts.
- Check tires for cracks, cuts, bulges and proper inflation.
- Check the battery for cables that might be frayed or have broken insulation.
- Make sure that the terminal posts are not loose on the battery.
- Check for corrosion and cracking around the battery terminals.
- On propane or diesel powered lifts, check the fuel tank for cracks, broken welds, or any damage.
- Checks on fuels systems should always be conducted outdoors, never indoors.
- Always make sure there is a fire extinguisher on hand, in the event of a fire.
- Check outriggers, stabilizers and guardrails.
- Always make sure to read the rating capacity, and the placard.
- After conducting the walk around inspection, test to make sure the lift is working correctly by elevating it from the ground controls. This test should be conducted for any lift that has been in service for three months or 150 hours. Any lift that has been out of service for three months or longer should be inspected prior to use.
- Control boxes should be readily accessible to the operator.
- If a control box is not permanently attached, its normal location should be clearly marked.
- Check the controls prior to operation of the lift: the movement controls should automatically return to off or neutral when released: Upper controls should be protected against accidental operation from ground level: Ground level controls should have some type of device to prevent someone from operating the device from ground level while workers are in the lift, operating controls from the control box.
- The operator must know the rating capacity. The lift must be equipped with a capacity brake that will prevent it from moving while on a slope.
- All new employees whose job requires them to operate a scissor lift must be trained on the functions and hazards of the scissor lift prior to being authorized to operate one.
- Scissor lift operators must understand the concept of stability which includes factors such as height, weight and conditions. The operator must always inspect the work area for hazards such as drop-offs, bumps, debris, or other obstacles on the floor.
- Check for areas with high voltage or any overhead obstructions before proceeding with driving the scissor lift or raising or lowering the platform. Electricity: always be alert for any electrical hazard and always keep a distance of 10 to 35 feet between the lift and any power lines. Add more distance to account for swaying power lines and/or platform movement.

Fall protection is very important when working on or operating a scissor lift. Follow these basic rules regarding fall protection while operating or working on a scissor lift:

- Make sure that guard rails are in place.
- Make sure you are tied off.
- Never place a load on the platform that is heavier than the capacity rating provided by the manufacturer.
- Ensure that all loads, including tools are evenly distributed on the platform.
- When driving the lift to the work site, make sure the route to the work site is not obstructed.
- Watch out for other traffic on the job site.
- Make sure pedestrians are at least 6 feet away from the lift.
- Never drive the lift on a slope or grade that exceeds the level indicated on the placard.
- Do not drive the lift in a confined area, or in reverse, and do not operate at high speeds on a grade.
- Always yield the right of way if another lift or vehicle is traveling close by.
- Position the lift chassis upon arriving at the work location.
- Always check the overhead, side and below to determine the clearance available when raising or lowering the lift.
- Never climb on the scissor arms in order to get on the platform.
- Never stand on boxes, ladders, planks or railings on the platform.
- Platforms must be within 1 foot of the adjacent structure before attempting to enter the structure.
- Never leave cords from power tools hanging off the platform.
- The lift operator is responsible for all machine operations on the lift.
- Before extending or retracting the platform, make sure other employees that are on the lift with you are aware that the platform is going to be extended or retracted. Check the equipment and structures also before extending or retracting.
- Always retract the platform prior to lowering.
- Always retract the stabilizers and leveling jacks prior to moving the lift.

Personal Protective Equipment

Applicable OSHA Standard: 29 CFR 1910 Subpart I

Purpose: Protective equipment, including personal protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.

Scope: This policy applies to all employees and subcontractors at work locations that are controlled by Cypress Creek Pipeline Maintenance.

1.0 Application

1.1 Controlling hazards.

PPE devices alone should not be relied on to provide protection against hazards, but should be used in conjunction with guards, engineering controls, and sound manufacturing practices.

1.2 The Company will provide employees with the proper protective equipment (PPE) for use in their specific tasks.

1.3 This PPE includes but is not limited to eyes, face, head, respiratory, and extremities.

1.4 The PPE will be maintained and stored in accordance with the manufacturer's recommendations.

2.0 Employee-Owned Equipment

2.1 Where employees provide their own protective equipment, the Site Supervisor shall be responsible to assure its adequacy, including proper maintenance, and sanitation of such equipment.

3.0 Design

3.1 All PPE shall meet OSHA/NIOSH standards and approval.

3.2 Where a standard may not apply a competent person will analyze the equipment and give approval or disapproval for its use.

4.0 Hazard Assessment and Selection

4.1 Selection of PPE will be based on Company supervision's assessment of the hazards associated with the job site and the recommendations included on the safe work permit provided by the host employer or general contractor.

4.2 Prior to the beginning of any job task, Company supervision will determine the PPE necessary to safeguard the employees assigned to do the work. When the job task are complicated in nature the Site Supervisor and the host employer or general contractor safety representative will be consulted for their expertise in determining the proper PPE for the task.

4.3 Company supervision will ensure that the PPE is available and is included on the work permit. The information on the permit will be discussed with the crew assigned to do the work.

4.4 When reviewing the scope of work prior to the commencement of the job, Company supervision will assess the hazards associated with the work and its environment. This assessment will be distributed to the Site Safety Supervisor/Representative so they can determine the needs of the job.

4.5 PPE determined for the job will be verbally communicated to the employees during a tool box safety meeting prior to the commencement of the job.

4.6 PPE will be ordered in various sizes and types to accommodate a variety of individuals who may be assigned work.

5.0 Defective and Damaged Equipment

5.1 Defective or damaged equipment will not be used.

5.2 When PPE is removed for disposal it will be tagged as such, if not disposed of immediately.

6.0 Training

6.1 The Company will provide training to each employee who is required to use PPE. Each such employee shall be trained to know at least the following:

- When PPE is necessary;
- What PPE is necessary;
- How to properly don, doff, adjust, and wear PPE;
- The limitations of the PPE; and,
- The proper care, maintenance, useful life and disposal of the PPE.

6.2 Each affected employee shall demonstrate an understanding of the training specified in 6.1, and the ability to use PPE properly, before being allowed to perform work requiring the use of PPE.

6.3 When Company supervision has reason to believe that any affected employee who has already been trained does not have the understanding and skill required, the employee shall be retrained. Circumstances where retraining is required include, but are not limited to, situations where:

- Changes in the workplace render previous training obsolete; or
- Changes in the types of PPE to be used render previous training obsolete; or inadequacies in an affected employee's knowledge or use of assigned PPE indicate that the employee has not retained the requisite understanding or skill.

6.4 Company supervision shall verify that each affected employee has received and understood the required training through a written certification that contains the name of each employee trained, the date(s) of training, and that identifies the subject of the certification.

7.0 Eye and Face Protection

7.1 The minimum eye protection allowed outside of an office area is ANSI (Z.87.1-1989) approved side shield safety glasses.

7.2 Contact lenses are not allowed at work areas unless approved in writing by management.

7.3 Supervisors and the host employer or general contractor will determine what tasks require other eye protection, such as chemical goggles and face shields.

7.4 Goggles that can be worn over corrective spectacles without disturbing the adjustment are acceptable.

7.5 Employees ***SHALL*** wear their eye protection to adequately protect themselves from hazards in the work area.

7.6 Questions about eye protection should be brought to your supervisor and resolved before the job is started. Special protection concerns should also be discussed with your supervisor.

7.7 All face and eye protection equipment shall be kept clean and in good repair.

7.8 Full-face shields are required to be worn over side shield safety glasses or chemical goggles for grinding and chipping and any other designated assignment.

8.0 Head Protection

8.1 Approved hard hats (ANSI-Z89.1-1986) in good condition are required. Protective helmets designed to reduce electrical shock hazard shall be worn by each affected employee when near exposed electrical conductors which could contact the head (ANSI -Z89.2-1971). Metal hard hats shall not be worn.

8.2 Hard hats shall be worn in work areas where there is a potential for injury to the head from falling or flying objects.

9.0 Hand Protection

9.1 Cypress Creek Pipeline Maintenance will select and require employees to use appropriate hand protection when employee's hands are exposed to hazards such as those from skin absorption of harmful substances, severe cuts or lacerations, sever abrasions, punctures, chemical burns, thermal burns, and harmful temperature extremes.

9.2 The selection of the appropriate hand protection will be based on an evaluation of the performance characteristics of the hand protection relative to the task(s) to be performed, conditions present, duration of use and the hazards and potential hazards identified.

9.3 All field employees should obtain work gloves suitable for the work they will perform. Gloves shall be worn when required.

10.0 Foot Protection

10.1 Each affected employee shall wear protective footwear when working in areas where there is a danger of foot injuries due to falling and rolling objects, or objects piercing the sole and where such employee's feet are exposed to electrical hazards.

10.2 Protective footwear need comply with (ANSI Z41-1991). Steel-toed shoes are required on most job sites. The Company requires the wearing of steel-toed shoes for anyone in the field with the exception of office personnel who are restricted to operations off of job sites.

11.0 Assessment Guidelines

11.1 Conduct a walk-through survey of the areas in question. The purpose of the survey is to identify sources of hazards to workers and co-workers. Consideration should be given to the basic hazard categories:

- Impact
- Penetration
- Compression (roll-over)
- Chemical
- Heat
- Harmful dust
- Light (optical) radiation

11.2 During the walk-through survey the Site Supervisor should observe:

- Sources of motion; i.e., machinery or processes where any movement of tools, machine elements or particles could exist, or movement of personnel that could result in collision with stationary objects;
- Sources of high temperatures that could result in burns, eye injury or ignition of protective equipment, etc.;
- Types of chemical exposures;
- Sources of harmful dust;
- Sources of light radiation, i.e., welding, brazing, cutting, furnaces, heat treating, high intensity lights, etc.;
- Sources of falling objects or potential for dropping objects;
- Sources of sharp objects which might pierce the feet or cut the hands;
- Sources of rolling or pinching objects which could crush the feet;

- Layout of workplace and location of co-workers; and
- Any electrical hazards.

11.3 In addition, injury/accident data should be reviewed to help identify problem areas.

11.4 Following the walk-through survey, it is necessary to organize the data and information for use in the assessment of hazards. The objective is to prepare for an analysis of the hazards in the environment to enable proper selection of protective equipment.

11.5 Having gathered and organized data on a workplace, an estimate of the potential for injuries should be made. Each of the basic hazards (11.1) should be reviewed and a determination made as to the type, level of risk, and seriousness of potential injury from each of the hazards found in the area. The possibility of exposure to several hazards simultaneously should be considered.

12.0 Selection Guidelines

12.1 After completion of the procedures in 11.0, the general procedure for selection of protective equipment is to:

- Become familiar with the potential hazards and the type of protective equipment that is available, and what it can do; i.e., splash protection, impact protection, etc.
- Compare the hazards associated with the environment; i.e., impact velocities, masses, projectile shape, radiation intensities, with the capabilities of the available protective equipment.
- Select the protective equipment which ensures a level of protection greater than the minimum required to protect employees from the hazards.
- Fit the user with the protective device and give instructions on care and use of the PPE. It is very important that end users be made aware of all warning labels for and limitations of their PPE.

13.0 Selection Chart Guidelines For Eye And Face Protection

13.1 The crafts and occupations associated with roofing installation, carpentry, welding and most construction activities generally require eye protection.

The following chart provides general guidance for the proper selection of eye and face protection to protect against hazards associated with the listed hazard "source" operations.

Eye and Face Protection Selection Chart

Source	Assessment of Hazard	Protection
IMPACT - Chipping, grinding machining, masonry work, woodworking, sawing, drilling, chiseling, powered fastening, riveting, and sanding.	Flying fragments, objects, large chips, particles sand, dirt, etc.	Spectacles with side protection goggles, face shields. For severe exposure, use faceshield.
HEAT-Furnace operations, pouring, casting, hot dipping, and welding.	Hot sparks . Splash from molten metals High temperature exposure	Faceshields, goggles, spectacles with side protection For severe exposure use faceshield. Faceshields worn over goggles. Screen face shields, reflective face shields.
CHEMICALS-Acid and chemicals handling, degreasing plating.	Splash Irritating mists	Goggles, eyecup and cover types. For severe exposure, use face shield. Special-purpose goggles.
DUST - Woodworking,..... buffing, general dusty conditions.	Nuisance dust	Goggles, eyecup and cover types.
LIGHT and/or RADIATION - Welding: Electric arc	Optical radiation .	Welding helmets or welding shields. Typical shades: 10-14.
Welding: Gas	Optical radiation .	Welding goggles or welding face shield. Typical shades: gas welding 4-8, cutting 3-6, brazing 3-4.
Cutting, Torch brazing, Torch soldering	Optical radiation .	Spectacles or welding face-shield. shades, 1.5-3.
Glare	Poor vision	Spectacles with shaded or special-purpose lenses, as suitable.

14.0 Selection Guideline for Head Protection

14.1 All head protection (helmets) is designed to provide protection from impact and penetration hazards caused by falling objects. Head protection is also available which provides protection from electric shock and burn. When selecting head protection, knowledge of potential electrical hazards is important.
Class A helmets, in addition to impact and penetration resistance, provide electrical protection from low-voltage conductors (they are proof tested to 2,200 volts). Class B helmets, in addition to impact and penetration resistance, provide electrical protection from high-voltage conductors (they are proof tested to 20,000 volts). Class C helmets provide impact and penetration resistance (they are usually made of aluminum which conducts electricity), and should not be used around electrical hazards.

14.2 Where falling object hazards are present, helmets must be worn. Some examples include: working below other workers who are using tools and materials which could fall; working around or under conveyor belts which are carrying parts or materials; working below machinery or processes which might cause material or objects to fall; and working on exposed energized conductors. Some examples of occupations for which head protection is generally required are: carpenters, welders, forklift operators, and mobile crane personnel (operators and ground support workers).

15.0 Selection Guidelines For Foot Protection

15.1 Safety shoes and boots which meet the ANSI Z41-1991 Standard provide both impact and compression protection. Where necessary, safety shoes can be obtained which provide puncture protection. In some work situations, metatarsal protection should be provided, and in other special situations electrical conductive or insulating safety shoes would be appropriate.

15.2 Safety shoes or boots with impact protection would be required for carrying or handling materials such as lumber, metal construction components and parts, or heavy tools -- any of which could be dropped; and for other activities where objects might fall onto the feet. Safety shoes or boots with compression protection would be required for work activities involving skid trucks (manual material handling carts) around bulk rolls (such as felt rolls) and around heavy pipes on a job site, all of which could potentially roll over an employee's feet. Safety shoes or boots with puncture protection would be required where sharp objects such as nails, wire, tacks, screws, large staples, scrap metal, etc., could be stepped on by employees causing a foot injury.

16.0 Selection Guidelines For Hand Protection

16.1 Gloves are often relied upon to prevent cuts, abrasions, burns, and skin contact with chemicals that are capable of causing local or systemic effects following dermal exposure. OSHA is unaware of any gloves that provide protection against all potential hand hazards, and commonly available glove materials provide only limited protection against many chemicals.
Therefore, it is important to select the most appropriate glove for a particular application and to determine how long it can be worn, and whether it can be reused.

16.2 It is also important to know the performance characteristics of gloves relative to the specific hazard anticipated; e.g., chemical hazards, cut hazards, flame hazards, etc. These performance characteristics should be assessed by using standard test procedures.

Before purchasing gloves, the employer should request documentation from the manufacturer that the gloves meet the appropriate test standard(s) for the hazard(s) anticipated. Other factors to be considered for glove selection in general include:

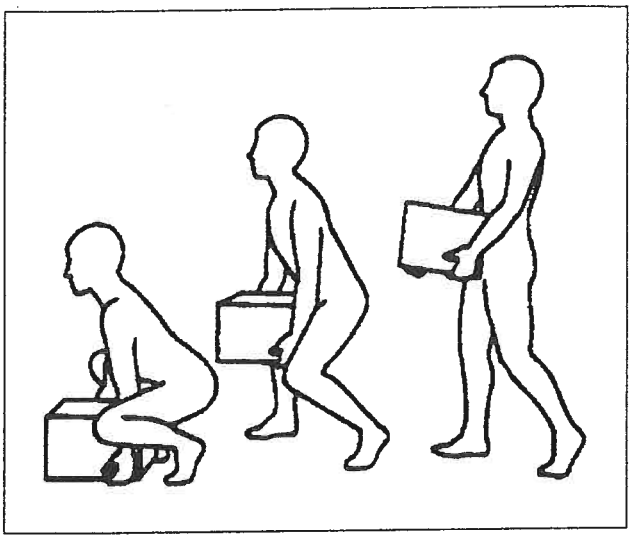
- As long as the performance characteristics are acceptable, in certain circumstances, it may be more cost effective to regularly change cheaper gloves than to reuse more expensive types; and,
- The work activities of the employee should be studied to determine the degree of dexterity required, the duration, frequency, and degree of exposure of the hazard, and the physical stresses that will be applied.

16.3 With respect to selection of gloves for protection against chemical hazards:

- The toxic properties of the chemical(s) must be determined; in particular, the ability of the chemical to cause local effects on the skin and/or to pass through the skin and cause systemic effects;
- Generally, any "chemical resistant" glove can be used for dry powders;
- For mixtures and formulated products (unless specific test data are available), a glove should be selected on the basis of the chemical component with the shortest breakthrough time, since it is possible for solvents to carry active ingredients through polymeric materials; and,
- Employees must be able to remove the gloves in such a manner as to prevent skin contamination.

Safe Lifting Procedures

Safe lifting is a ***PRIORITY*** for everyday activities, both on and off the job. On a jobsite, practicing safe lifting techniques is a condition of employment at Cypress Creek Pipeline Maintenance.



By using safe lifting technique, you can lift safely and prevent accidental strain and injury.

Before you lift anything, ***THINK*** about the load. Ask yourself: "Is it too heavy?" "Can I lift it alone, or do I need help?" "Is it too awkward for one person to handle, or should I ask a co-worker for help?"

If the load is manageable, follow these rules for safe lifting:

- Before lifting or carrying, check the walkway for trip hazards, holes, obstructions or anything that could cause a slip, trip or fall.
- Make sure that your footing is firm.
- Lift with the strong muscles in your legs, ***NOT*** with your weaker back muscles.
- When lifting, keep your back as straight as possible, maintaining the natural curvature of your spine. ***DO NOT*** lean over to lift. While lifting or carrying, turn by moving your feet, ***NOT*** by twisting your body.
- As you lift, tighten your stomach muscles. This gives additional support to back muscles. It also encourages a safer posture while you lift.
- Bend at your knees – ***NOT*** at your waist.
- "***HUG***" the load. Hold it close to your body as you gradually straighten your legs to a standing position. Try to keep your back as straight "up and down" as possible.

- ***DO NOT TWIST!*** Twisting can overload your spine and unevenly compress the discs between your back bones.

- Make sure your feet, knees and torso are pointed in the same direction when lifting and carrying.

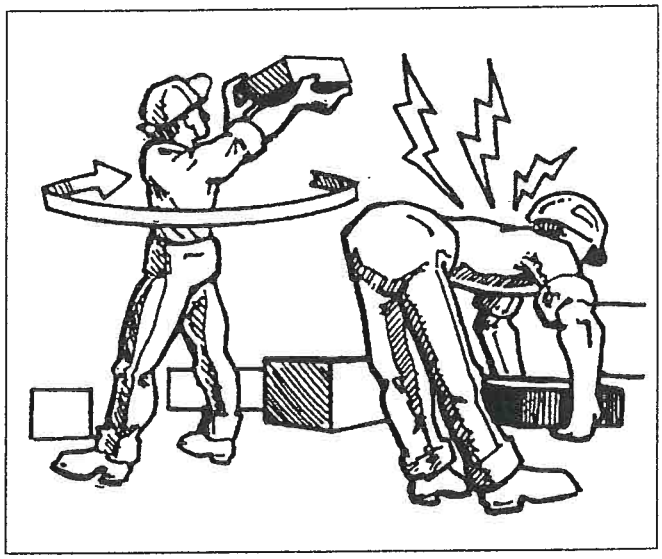
- Use these same techniques when setting down your load.

- Some employees may prefer to use a back belt. Back belts ***DO NOT*** prevent back injuries. They only encourage proper posture for safe lifting. Using a back belt ***DOES NOT*** make you stronger. You ***CANNOT*** lift more than your normal physical limits just because you are wearing a back belt. You must read and follow the belt manufacturer's instructions for proper use of the product. Generally, this means you should tighten the belt for performing a lifting task, and wear it loose when the task is completed. You should not wear the belt tight all the time. If the belt has suspenders, make sure that the suspenders do not catch on objects as you are walking or working. If you have questions about proper use of the back belt, ask your supervisor.

- ***NEVER*** try to lift anything that you think is too heavy. ***ALWAYS GET HELP!***

- Avoid lifting higher than shoulder height.

NEVER lean over at the waist and lift while your back is in line with the floor. With or without a back support belt, this is an improper lifting position. It puts unnecessary strain on the back, even when the load is comparatively light.



Twisting and leaning over to lift, as shown in the illustration at right, are improper methods and are expressly prohibited.

Employees should notify the Site Supervisor at the beginning of the shift if they have back pain or have suffered back strain or injury while off duty.

Site Supervisors should know that any employee who reports hurting their back at work ***MUST*** be checked by a doctor before they return to the job.

Electrical Safety / Facility & Job Site Operations

PURPOSE

G&H Construction has designed and adopted the electrical safety program to prevent electrically related injuries to personnel and damage to Company property and client facilities. This program also provides for proper training of Site Supervisors to ensure they have the required knowledge and understanding of electrical work practices and procedures. Only employees who are qualified to perform electrical work, knowledgeable about this program, and authorized by the Company are allowed to repair or replacement electrical components or electrically powered tools or equipment.

Electricity has long been recognized as a serious workplace hazard, exposing employees to such dangers as electric shock, electrocution, fires and explosions. References: NFPA 70E, Electrical Safety Requirements for Employee Workplaces, National Electrical Code (NEC) and OSHA Standard (Electrical Safety) 29 CFR 1910.331 to 1910.339

RESPONSIBILITIES

Management

- Provide training for qualified and unqualified employees
- Conduct inspections to identify electrical safety deficiencies in facilities and at job sites
- Guard and correct all electrical deficiencies promptly
- Ensure all new electrical installations meet codes and regulations

Employees

- Report electrical deficiencies immediately
- ***NOT*** work on electrical equipment unless authorized and trained
- Properly inspect all electrical equipment prior to use

HAZARD CONTROL

Engineering Controls

- All electrical distribution panels, breakers, disconnects, switches, junction boxes shall be completely enclosed
- Water tight enclosure shall be used where there is possibility of moisture entry either from operations or weather exposure.
- Electrical distribution areas will be guarded against accidental damage by locating in specifically designed rooms, use of substantial guard posts and rails and other structural means.
- A clear approach and 3 foot side clearance shall be maintained for all distribution panels.
- All conduit shall be fully supported throughout its length. Non-electrical attachment to conduit is prohibited.
- All non-rigid cords shall be provided strain relief where necessary.

Administrative Controls

- Only trained and authorized employees may conduct repairs to electrical equipment.
- Contractors performing electrical work must be hold a license for the rated work
- Areas under new installation or repair will be sufficiently guarded with physical barriers and warning signs to prevent unauthorized entry.
- Access to electrical distribution rooms is limited to those employees who have a need to enter.
- All electrical control devices shall be properly labeled.
- Work on energized circuits is prohibited unless specifically authorized by senior facility management.
- All qualified employees will follow established electrical safety procedures and precautions.

Protective Equipment

- Qualified employees will wear electrically rated safety shoed/boots.
- All tools used for electrical work shall be properly insulated.
- Electrical rated gloves shall be available for work on electrical equipment.
- Electrically rated matting will be installed in front of all distribution panels in electric. utility rooms

ELECTRICAL EQUIPMENT

Examination

Electrical equipment shall be free from recognized hazards that are likely to cause death or serious physical harm to employees. Safety of equipment shall be determined using the following considerations:

- Suitability for installation and use in conformity with the provisions of this subpart.
- Suitability of equipment for an identified purpose may be evidenced by listing or labeling for that identified purpose.
- Mechanical strength and durability, including, for parts designed to enclose and protect other equipment, the adequacy of the protection thus provided.
- Electrical insulation.
- Heating effects under conditions of use.
- Arcing effects.
- Classification by type, size, voltage, current capacity, and specific use.
- Other factors which contribute to the practical safeguarding of employees using or likely to come in contact with the equipment.
- Extension cords and cords on powered tools, devices or equipment shall not be used and shall be taken out of service on discovery of: damage to plugs or electrical cord insulation; spliced extension cords or repairs made with electrical tape; or missing grounding prongs on plugs.

Identification of Disconnecting Means and Circuits

Each disconnecting means for motors and appliances shall be legibly marked to indicate its purpose. Each service, feeder, and branch circuit, at its disconnecting means or over-current device, shall be legibly marked to indicate its purpose. These markings shall be of sufficient durability to withstand the environment involved.

A disconnecting means is a switch that is used to disconnect the conductors of a circuit from the source of electric current. Disconnect switches are important because they enable a circuit to be opened, stopping the flow of electricity, and thus can effectively protect workers and equipment.

Each disconnect switch or over-current device required for a service, feeder, or branch circuit must be clearly labeled to indicate the circuit's function, and the label or marking should be located at the point where the circuit originates. For example, on a panel that controls several motors or on a motor control center, each disconnect must be clearly marked to indicate the motor to which each circuit is connected. In the figure below, the Number 2 circuit breaker in the panel box supplies current only to disconnect Number 2, which in turn controls the current to motor Number 2. This current to motor Number 2 can be shut off by the Number 2 circuit breaker or the Number 2 disconnect.

All labels and markings must be durable enough to withstand weather, chemicals, heat, corrosion, or any other environment to which they may be exposed.

DEFINITION OF TERMS

- **Qualified Worker:** An employee trained and authorized to conduct electrical work.
- **Unqualified**: Employees who have not been trained or authorized by management to conduct electrical work.

TRAINING

Training for Unqualified Employees

Training for Unqualified Employees is general electrical safety precautions to provide an awareness and understanding of electrical hazards.

Electrical Safety Rules for Non-Qualified Workers

- Do not conduct any repairs to electrical equipment.
- Report all electrical deficiencies to your supervisor.
- Do not operate equipment if you suspect and electrical problem.
- Water and electricity do not mix.
- Even low voltages can kill or injure you.
- Do not use cords or plugs if the ground prong is missing.
- Do not overload electrical receptacles.

Training for Qualified Employees

Training for Qualified Employees includes specific equipment procedures and requirements of:

Electrical Safety, 29 CFR 1910.331 to 1910.339

PERSONAL PROTECTIVE EQUIPMENT

Employees working in areas where the potential contact with exposed electrical sources are present and likely, will be provided and shall use Personal Protective Equipment (PPE). The following rules apply to the use and care of PPE:

- PPE shall be used where contact with exposed electrical sources are present and likely.
- PPE shall be designed for the work being performed and environment in which it is used.
- PPE shall be visually inspected and/or tested before use. Any defects or damage shall be replaced, repaired or discarded.
- In cases where the insulating capabilities of the PPE may be damaged during the work, a protective outer cover, such as leather, must be used.
- Employees shall wear non-conductive head protection wherever there is a danger of injury from electrical burns or shock from contact with exposed energized parts.
- Employee shall wear protective eye/face equipment whenever there is a danger from electrical arcs or flashes or from flying objects resulting from an electrical explosion.

Electrical PPE Inspection Schedule

Type of equipment	When to test
Rubber insulating line hose	Upon indication that insulating value is suspect.
Rubber insulating covers	Upon indication that insulating value is suspect
Rubber insulating blankets	Before first issue and every 12 months
Rubber insulating gloves	Before first issue and every 6 months
Rubber insulating sleeves	Before first issue and every 12 months

ELECTRICAL LOCKOUT & TAGOUT REQUIREMENTS

A lock and a tag shall be placed on each disconnecting means used to deenergize circuits and equipment on which work is to be performed, except as provided for below. Only designated Authorized Persons shall place or remove a lockout and tagout. Lockout and tagout shall be performed as specified in the Company's written Lockout and Tagout Program.

WORKING AT ELEVATED LOCATIONS

Any person working on electrical equipment on a crane or other elevated must take necessary precautions to prevent a fall from reaction to electrical shock or other causes. A second person, knowledgeable as a safety watch, must assume the best possible position to assist the worker in case of an accident. Portable ladders shall have non-conductive siderails if they are used where the employee or the ladder could contact exposed energized parts.

GENERAL PROTECTIVE EQUIPMENT AND TOOLS

General protective equipment and tools shall be used when in the proximity of, or working on, exposed energized parts. The following rules apply:

- When working on or near exposed energized parts, Qualified Employees shall use insulated tools or handling equipment suitable for the voltage present and working environment. In cases where the insulation may be damaged, a protective outer layer should be employed.
- Fuse handling equipment, insulated for the circuit voltage, shall be used to remove or install fuses when the terminal is energized.
- Ropes and other hand lines used near exposed energized equipment shall be non-conductive.

WARNINGS AND BARRICADES

Warnings and barricades shall be employed to alert Unqualified Employees of the present danger related to exposed energized parts. The following rules apply:

- Safety signs, warning tags, etc., must be used to warn Unqualified Employees of the electrical hazards present, even temporarily, that may endanger them.
- Non-conductive barricades shall be used with safety signs to prevent Unqualified Employees access to exposed energized parts or areas.
- Where barricades and warning signs do not provide adequate protection from electrical hazards, an Attendant shall be stationed to warn and protect Employees.

POWERED EQUIPMENT SAFETY RULES

- Electrical equipment is defined as cord or plug-type electrical devices that include the use of flexible or extension cords. Examples of portable electrical equipment included powered hand tools, powered bench tools, fans, radios, etc. The following safety rules apply to portable electrical equipment (PEE): PEE shall be handled in such a manner as to not cause damage. Power cords may not be stapled or otherwise hung in a way that may cause damage to the outer jacket or insulation.
- PEE shall be visually inspected for damage, wear, cracked or spilt outer jackets or insulation, etc., before use or before each shift. PEE that remain connected once put in place need not be inspected until relocated. Any defects; such as cracked or split outer jackets or insulation must be repaired, replaced or placed out of service.
- Always check the compatibility of cord sets and receptacles for proper use.
- Ground type cord sets may only be used with ground type receptacles when used with equipment requiring a ground type conductor.
- Attachment plugs and receptacle may not be altered or connected in a way that would prevent the proper continuity of the equipment grounding conductor. Adapters may not be used if they interrupt the continuity of the grounding conductor.
- Only portable electrical equipment that is double insulated or designed for use in areas that are wet or likely to contact conductive liquids may be used.
- Employees that are wet or have wet hands may not handle PEEs (plug-in, un-plug, etc.). Personal protective equipment must be used when handling PEEs that are wet or covered with a conductive liquid.
- Locking-type connectors shall be properly secured after connection to a power source.

ELECTRICAL CIRCUIT SAFETY PROCEDURES

Electrical power and lighting circuits are defined as devices specifically designed to connect, disconnect or reverse circuits under a power load condition. When these circuits are employed, the following rules apply:

- Cable connectors (not of load-break type) fuses, terminal plugs or cable splice connectors may not be used, unless an emergency, to connect, disconnect or reverse in place of proper electrical circuits.
- After a protective circuit is disconnected or opened, it may not be connected or closed until it has been determined that the equipment and circuit can be safely energized.
- Overcurrent protectors of circuits or connected circuits may not be modified, even on a temporary basis, beyond the installation safety requirements.
- Only Qualified Employees may perform test on electrical circuits or equipment.
- Test equipment and all associated test leads, cables, power cords, probes and connectors shall be visually inspected for external damage before use.
- Any damage or defects shall be repaired before use or placed out of service.
- Test equipment shall be rated to meet or exceed the voltage being tested and fit for the environment in which it is being used.
- Where flammable or ignitable materials are stored, even occasionally, electrical equipment capable of igniting them may not be used unless measures are taken to prevent hazardous conditions from developing.

STANDARD OPERATING PROCEDURES

Electrical Pre-Work Procedure

Except in extreme cases, work on electrical equipment will be done with all electrical circuits in the work area deenergized by following the Lockout/Tagout procedure. When working on or near energized electrical circuits with less than 30 volts to ground, the equipment need not be de-energized if there will be no increased exposure to electrical burns or to explosion from electric arcs.

To prepare for work on electrical systems or components, the following procedure applies:

Caution: Treat all electrical circuits as "Live" until they have been tagged and locked out, and tested by the following procedure.

- Obtain permission from supervisor to conduct work

- Lockout and tagout all sources of electrical power
- Verify deenergized condition before any circuits or equipment are considered and worked as deenergized.
- A qualified person shall operate the equipment operating controls or otherwise verify that the equipment cannot be restarted.
- Verify proper operation of the voltmeter at a live electrical source of the same rated voltage as the circuit to be worked.
- Using the Voltmeter, check all exposed circuits phase to phase and phase to ground for evidence of voltage/current in the circuit.
- Conduct work on the circuit only after determining that there is no voltage in any of the exposed circuits.
- If voltage is detected in any exposed circuit, STOP, inform supervisor and determine source and procedure to eliminate voltage.
- Conduct work
- Close up all exposed circuits, boxes, controls, equipment.
- Remove lockout and tagout
- Obtain supervisor permission to energize circuits

WORKING ON OR NEAR EXPOSED ENERGIZED CIRCUITS

In the rare situation when energized equipment (or working in near proximity to energized equipment) cannot be de-energized, the following work practices must be used to provide protection:

Caution: Unqualified Employees are prohibited from working on or near exposed energized circuits.

- Obtain permission from the Site Supervisor to work on or near energized electrical circuits.
- Lockout and tagout all circuits possible.
- Treat all circuits as energized.
- Remove all conductive clothing and jewelry (rings, watches, wrist/neck chains, metal buttons, metal writing instruments, etc.).

- Use proper personal protective equipment, shields and/or barriers to provide effective electrical insulation from energized circuits. This may include electrically rated insulated gloves, aprons, rubber soled shoes, insulated shields, insulated tools, etc.

- Provide adequate lighting. Do not enter areas with exposed energized parts unless illumination (lighting) is provided so that employee may work safely. Do not reach around obstructions of view or lighting (blindly) into areas where exposed energized parts are located.

- Employees entering a confined space with exposed energized parts, must use protective barriers, shields, or equipment or insulated materials rated at or above the present voltage to avoid contact.

- Doors or other hinged panels shall be constructed and secured to prevent them from swinging into an Employee and causing contact with exposed energized parts.

- Housekeeping in areas of exposed energized parts may not be completed in areas with close contact unless adequate safeguards (insulation equipment or barriers) are present. Conductive cleaning material (steel wool, silicon carbide, etc.) or liquids may not be used unless procedures (lock and tag out, etc.) are in place and followed.

- Station a safety observer outside work area. The sole function of this person is to quickly deenergize all sources of power or pull worker free from electrical work area with a non-conductive safety rope if contact is made with an energized electrical circuit.

- A person qualified in CPR must be readily available to the scene.

RE-ENERGIZING ELECTRICAL CIRCUITS AFTER WORK COMPLETED

These requirements shall be met, in the order given, before circuits or equipment are reenergized, even temporarily.

- A qualified person shall conduct tests and visual inspections, as necessary, to verify that all tools, electrical jumpers, shorts, grounds, and other such devices have been removed, so that the circuits and equipment can be safely energized.

- Warn employees exposed to the hazards associated with reenergizing the circuit or equipment to stay clear of circuits and equipment.

- Remove each lock and tag. They shall be removed by the employee who applied it or under his or her direct supervision. However, if this employee is absent from the workplace, then the lock or tag may be removed by a qualified supervisor designated to perform this task provided that:

  - The Site Supervisor ensures that the employee who applied the lock or tag is not available at the workplace, and

- The Site Supervisor ensures that the employee is aware that the lock or tag has been removed before he or she resumes work at that workplace.

- Conduct a visual determination that all employees are clear of the circuits and equipment.

Ground Fault Circuit Interrupters (GFCI) & Assured Grounding Program

Applicable OSHA Standards: 29 CFR 1926.404

Purpose: To establish methods, guidelines and responsibilities to protect Cypress Creek Pipeline Maintenance employees from electrical exposure while on construction sites.

Scope: This program applies to all employees and subcontractors working within Company controlled job sites. This assured equipment grounding conductor program covers all cord sets, receptacles which are not a part of the building or structure, and equipment connected by cord and plug which are available for use or used by employees on construction sites.

1.0 Introduction

All 120-volt, single-phase 15- and 20-ampere receptacle outlets on construction sites, which are not a part of the permanent wiring of the building or structure and which are in use by employees, shall have approved ground-fault circuit interrupters for personnel protection. Receptacles on a two-wire, single-phase portable or vehicle-mounted generator rated not more than 5kV, where the circuit conductors of the generator are insulated from the generator frame and all other grounded surfaces, need not be protected with ground-fault circuit interrupters.

2.0 Program

2.1 General Requirements

2.1.1 Employees shall not use any equipment that has not met the requirements of this program.

2.1.2 A copy of this program is kept on-site with the site supervisor.

2.1.3 The site supervisor is responsible for implementing and monitoring the GFCI and assured grounding program.

2.1.4 The GFCI is not a replacement for visually checking all chords, wires, and other electrical devices for defects.

2.1.5 All 120 volt, single phase, 15 and 20 ampere receptacles shall be of the grounding type and their contacts shall be grounded by connection to the equipment grounding conductor of the circuit supplying the receptacles in accordance with applicable requirements of the National Electrical Code.

2.1.6 All 120 volt cord sets (extension cords) shall have an equipment grounding conductor which shall be connected to the grounding contacts of the connectors on each end of the cord. Extension cord sets used with portable electric tools and appliances shall be of the three-wire type and shall be designed for heavy or extra heavy-duty usage. Flexible cords used with temporary and portable lights shall be designed for heavy or extra heavy-duty usage.

2.1.7 The exposed noncurrent-carrying metal parts of 120 volt cord and plug connected tools or equipment that are likely to become energized shall be grounded in accordance with the applicable requirements of the National Electrical Code.

2.1.8 Employees shall visually inspect receptacles, flexible cord sets (extension cords), electrical equipment and electrical tools before each day's use for external defects such as:

- Deformed or missing pins;
- Insulation damage;
- Indication of possible internal damage.

Where there is evidence of damage the item shall be taken out of service until tests or any required repairs have been made.

2.2 Testing

2.2.1 All 120-volt, single-phase 15- and 20-ampere receptacle outlets on construction sites, which are not a part of the permanent wiring of the building or structure, 120 volt flexible cord sets and 120 volt cord and plug connected equipment which are in use by employees, shall be tested.

2.2.2 A qualified person will be designated by the site supervisor to be responsible for testing, tagging and documentation of testing of all equipment-grounding conductors.

2.2.3 All equipment-grounding conductors will be tested for continuity and they shall be electrically continuous. A continuity inspection device will be used or a voltmeter that is specifically designed to test for continuity.

2.2.4 Each receptacle and attachment cap or plug shall be tested for correct attachment of the equipment-grounding conductor. The equipment-grounding conductor shall be connected to the proper terminal.

2.2.5 All required test shall be performed;

- Before its first use;
- Before the equipment is returned to service following any repairs;
- Before the equipment is used after any incident that can be reasonably suspected to have caused damage (for example, when a cord is run over).
- At intervals not exceeding 3 months, except that cord sets and receptacles, which are fixed and not exposed to damage, shall be tested at intervals not exceeding 6 months.

2.2.6 Test verification shall be by means of a color coded marking tape on the receptacle, cord set or equipment to identify that it has passed the test and to indicate the quarter as illustrated in the following table:

Quarter	Month	Color Code	Number
1st	January	White	1
1st	February	White	2
1st	March	White	3
2nd	April	Green	1
2nd	May	Green	2
2nd	June	Green	3
3rd	July	Red	1
3rd	August	Red	2
3rd	September	Red	3
4th	October	Orange	1
4th	November	Orange	2
4th	December	Orange	3
	Repair Color	Brown	

3.0 Training

3.1 Training Program

- Video – (Current available videos to be used at the instructors discretion)
- What the standard covers – OSHA 29 CFR 1926.404

Ground-fault circuit interrupters

All 120-volt, single-phase 15- and 20-ampere receptacle outlets on construction sites, which are not a part of the permanent wiring of the building or structure and which are in use by employees, shall have approved ground-fault circuit interrupters for personnel protection. Receptacles on a two-wire, single-phase portable or vehicle-mounted generator rated not more than 5kV, where the circuit conductors of the generator are insulated from the generator frame and all other grounded surfaces, need not be protected with ground-fault circuit interrupters.

Assured equipment grounding conductor program

The employer shall establish and implement an assured equipment grounding conductor program on construction sites covering all cord sets, receptacles which are not a part of the building or structure, and equipment connected by cord and plug which are available for use or used by employees.

- Company Specific Items - Cypress Creek Pipeline Maintenance, Ground Fault Circuit Interrupters (GFCI) and Assured Grounding Program, All Sections.
- Testing/Qualifying

A score of between 80% and 100% will require a review of missed questions, if any, and the score corrected to 100%.

A score of below 80% will require complete retraining and testing.

Cypress Creek Pipeline Maintenance
Ground Fault Circuit Interrupters (GFCI) and Assured Grounding Program

TEST

Employee Name (Print):_____

Employee Signature:_____ Score:_____

Instructor:_____ Date:_____

Circle the most correct answer:

T F 1. This policy applies to all employees and subcontractors working within Cypress Creek Pipeline Maintenance controlled job sites.

T F 2. Employees may use any equipment that has not met the requirements of this program.

T F 3. The GFCI is not a replacement for visually checking all cords, wires, and other electrical devices for defects.

T F 4. All 120 volt cord sets (extension cords) shall have an equipment grounding conductor which shall be connected to the grounding contacts of the connectors on each end of the cord.

T F 5. All 120-volt, single-phase 15- and 20-ampere receptacle outlets on construction sites, which are not a part of the permanent wiring of the building or structure, 120 volt flexible cord sets and 120 volt cord and plug connected equipment which are in use by employees, shall be tested.

T F 6. A qualified person, designated by the site supervisor, is responsible for testing, tagging and documentation of testing of all equipment-grounding conductors.

T F 7. Test verification shall be by means of a color-coded marking tape on the receptacle, cord set or equipment to identify that it has passed the test and to indicate the quarter it was tested.

T F 8. All test shall be performed whenever there is time for it.

T F 9. Each receptacle and attachment cap or plug shall be tested for correct attachment of the equipment-grounding conductor.

T F 10. The equipment-grounding conductor shall be connected to the proper terminal.

Cypress Creek Pipeline Maintenance
Ground Fault Circuit Interrupters (GFCI) and Assured Grounding Program

TEST ANSWER KEY

1. T
2. F
3. T
4. T
5. T
6. T
7. T
8. F
9. T
10. T

CHEMICAL SAFETY & HAZARD COMMUNICATION INFORMATION

Chemical Safety

Chemicals are present in virtually every workplace. Even the routine chemicals we use every day -- cleaning products in the home, spray paints, finger nail and shoe polishes, gasoline and motor oil -- each has a potential to cause illness or injury if misused.

Cypress Creek Pipeline Maintenance has adopted specific rules and protocols to protect employees from exposure to hazardous chemicals used at job sites. Clear understanding of the Company's Hazard Communication Program is a priority. Material Safety Data Sheets (MSDS) for these chemicals will be maintained on each job site and reviewed by site supervisors and personnel who use or have exposure to these products in their work.

EVERYONE who works at the Company will be constantly aware of potential chemical hazards. For this reason, the Company has adopted specific safety rules and protocols for responding to an individual's concern or complaint regarding chemicals used at the Company. Management, Site Supervisors and employees ***MUST*** respect and obey these procedures as a condition of employment:

- ***ANYONE*** who works for the Company and suspects that there is a hazardous or potentially hazardous chemical exposure situation in the workplace ***MUST*** report this to their Site Supervisor immediately. If you are not satisfied with the Site Supervisor's response, report the situation to the safety coordinator.

- Employees are ***PROTECTED*** from making any such report. See the section *"Employees Are Protected from Reporting a Hazard"* in the Company's Accident Prevention Plan.

To maintain a safer workplace, and to comply with OSHA requirements, Cypress Creek Pipeline Maintenance has established a written Hazard Communication Program, specific procedures regarding use of chemicals in the workplace, and individual training of employees regarding chemical safety and compliance with the Hazard Communication Standard.

The Hazard Communication Program includes policy and procedures about Material Safety Data Sheets (MSDS), labeling and employee training. MSDS materials will be readily available for each hazardous substance used. A training program plus regular question and answer sessions on dealing with hazardous materials will be given to keep employees informed.

The program will include an explanation of what an MSDS is and how to use and obtain one; MSDS contents for each hazardous substance or class of substances; explanation of the "Right-to-Know"; identification of where employees can see the employer's written hazard communication program and where hazardous substances are present in their work area; the health hazards of substances in the work area, how to detect their presence, and specific protective measures to be used; as well as informing them of hazards of non-routine tasks and unlabeled pipes.

Information about the risks of using or misusing chemicals is available from manufacturers and suppliers. This information is used to provide the engineering, protective equipment and procedures needed to safeguard workers. A material is defined as ***HAZARDOUS*** when it has one or more of the following characteristics:

- The flashpoint is below 140 degrees F (60 degrees C) or it is subject to spontaneous heating.
- Its threshold limit value below 500 parts per million for gases or vapors, below 500 milligrams per cubic meter (mg/M3) for fumes and below 25 million particles per cubic foot for dusts, or a single oral lethal dose(LD) below 500 milligrams per kilogram.
- It is subject to polymerization with the release of large amounts of energy.
- It is a strong oxidizing or reducing agent, or can cause first degree burns to the skin on brief exposure or is systemically toxic by contact.
- It may produce, in the course of normal operations, dusts, gases, fumes, vapors, mists or smoke with one or more of the above characteristics.

Material Safety Data Sheets (MSDS) are obtained from product manufacturers, suppliers and distributors. These sheets tell how to protect employees, property and the environment through proper use, storage and disposal of chemicals. Manufacturers provide Material Safety Data Sheets to:

- Inform users about products, and
- Encourage controls that will protect manufacturer and user against liability and financial loss due to a preventable accident.

Strict observation of the following general guidelines greatly reduces the probability of accidents during the transportation, storage and use of hazardous chemicals:

- Ban smoking, eating and drinking in areas where chemicals are stored or used.
- Keep all containers closed and drums sealed; if a container leaks, prevent the spread of the material leaking, inform management and the person designated for chemical safety, and clean up the spill safely.
- Label containers properly and keep chemicals in their original containers.
- Dispose of chemical containers by following written procedures consistent with municipal, county, state and federal regulations.
- Keep incompatible chemicals physically apart.

Hazard Communication Program

Applicable OSHA Standard: 29 CFR 1910.1200, 1926.59

Purpose: The purpose of this program is to ensure that the hazards of all chemicals produced or imported are evaluated, and that information concerning their hazards is transmitted to Cypress Creek Pipeline Maintenance and its employees.

Scope: This program applies to any chemical which is known to be present in any Cypress Creek Pipeline Maintenance workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency.

1.0 General

1.1 The following written Hazard Communication Program (HCP) is to be implemented for personnel of Cypress Creek Pipeline Maintenance The originals will be kept on file at the corporate offices located in Pearland, Texas. It will be used by all personnel. The Safety Coordinator will be responsible for ensuring the program is current and enforced.

1.2 A copy of this program is to be made available to an employee(s) upon hiring, and a copy will be supplied to any employee(s) upon request.

1.3 The Safety Coordinator will be contacted when a copy of the program is needed.

1.4 The program will be updated when new chemicals or hazards are introduced into the working environment, and reviewed annually.

1.5 The corporate office will check all chemical purchase requests (PR) to be sure a statement requesting a Material Safety Data Sheet (MSDS) appears on the purchase request before being processed.

2.0 Container Labeling

2.1 The Site Supervisor will be responsible for all containers of hazardous chemicals entering the workplace and will assure that the chemical containers are properly labeled with:

- chemical name;
- hazard warnings; and
- name and address of the manufacturer, importer, or responsible party
- HMIS labels properly marked

2.2.1 No container(s) shall be used until they have been checked by the Site Supervisor or competent person and an MSDS is reviewed by safety and in file. If the chemical is to be transferred to a separate container, the Site Supervisor will ensure that the new container is properly labeled; i.e., that all secondary containers are labeled with an extra copy of the original manufacturer's label or with generic labels which have a block for identity and blocks for the hazard warning. For help with labeling, please contact the Site Supervisor or Safety Coordinator. The executive vice president and safety coordinator will review the labeling system annually and update as required.

2.3 The Site Supervisor will ensure that the contents of piping is properly identified. The Site Supervisor will also inform employees of the hazards associated with chemicals contained in piping within the work areas.

3.0 Material Safety Data Sheets (MSDSs)

3.1 The corporate office or Site Supervisor, whichever is in charge of purchasing a chemical product, will be responsible for obtaining an MSDS for each product. The Site Supervisor will maintain the MSDS system at the construction site. The Site Supervisor will review incoming data sheets for new and significant health/safety information and will ensure that the new information is given to the affected employees. Copies of all MSDS will be kept by the Site Supervisor. The Site Supervisor and Safety Coordinator will review each MSDS annually for accuracy and completeness.

3.2 The MSDS system shall include:

- current master inventory list of all MSDSs indexed alphabetically and by vendor;
- the identity used on the MSDS shall be the same as used on the container label;
- the chemical and common name of all ingredients determined to present a hazard shall appear on all MSDS;
- the MSDS shall list:
  - the physical and chemical characteristics of the chemical including vapor pressure, flash point, etc.;
  - the fire, explosion, and reactivity hazard(s) of the chemical mixture including the boiling point, flash point and auto ignition temperature;
  - health hazards of the chemical mixture including signs and symptoms of exposure and medical conditions recognized as aggravated by exposure with primary route(s) of entry;

- permissible exposure limit (PEL) or any other exposure limit used or recommended by the manufacturer, importer, or employer;
- whether on carcinogen listing (NTP) or has been found to be a potential carcinogen (IARC listing) or by OSHA (see Appendix A immediately following this program);
- control measures including fire, engineering, personal protective equipment;
- general precautions for safe handling and use including protective measures during repair and maintenance and procedures for clean-up of spills and leaks;
- emergency and first aid procedures;
- date prepared or changed;
- name, address, telephone numbers of manufacturer, importer, or responsible party to call in an emergency.

3.3 The MSDS will be available for use by employees. Each Site Supervisor will keep a current and up-to-date copy of the program on file. New chemicals shall not be used until a MSDS has been obtained and reviewed for health hazards by the Site Supervisor or Safety Coordinator.

4.0 Employee Training And Education

4.1 Before starting work, the respective Site Supervisor of a new employee will go over their copy of the HCP and each MSDS applicable to their job, i.e. handouts, video tapes, etc. Before any new chemical is used, all effected employees will be informed of its use, will be instructed on safe use, and will be trained on hazards associated with the new chemical. All employees will attend additional training, as appropriate, to review the HCP and MSDS. Appropriate reference material will also be discussed during the training session(s).

4.2 The minimum orientation and training for a new employee is as follows:

- an overview of the requirements contained in the Hazard Communication standard, 29 CFR 1926.59;
- chemicals present in their workplace operations and this office;
- location and availability of the written HCP;
- physical and health effects of the hazardous chemicals listed on the inventory list of this program;
- methods and observation techniques used to determine the presence or release of hazardous chemicals in the work area;

- how to lessen or prevent exposure to these hazardous chemicals through usage of control/work practices and personal protective equipment;
- steps taken by Cypress Creek Pipeline Maintenance, to lessen or prevent exposure to the chemicals listed on the inventory list;
- emergency procedures to follow if exposed to any chemicals; and
- location of MSDS file and location of hazardous inventory list.

4.3 Prior to a new chemical being introduced into any section of the workplace, each employee will be given information and training as outlined above by the Site Supervisor. MSDS must be available prior to use.

4.4 After attending the training class, each employee will sign a form to verify that they attended the training, that the written HCP is made available for review, and that he/she understands the HCP.

4.5 Before entering a job site, the Site Supervisor will ascertain what hazards employees may be exposed to and then take appropriate action to protect the employees. If the employee has any question about what protection is needed, they should contact the Site Supervisor or Safety Coordinator immediately.

5.0 Non-Routine Tasks

5.1 Before any non-routine task is performed, employees shall be advised and/or they must contact the Site Supervisor for special precautions to follow and the foreman shall inform any other personnel who could be exposed.

5.2 In the event that such tasks are required, the Site Supervisor or Safety Coordinator will provide the following information about such activity as it relates to the specific chemicals expected to be encountered:

- specific chemical name(s) and hazard(s);
- protective personal equipment required and safety measures to be taken;
- measures that have been taken to lessen the hazards including ventilation, respirators, presence of other employee(s), and emergency procedures.

6.0 Other Personnel Exposure (Contractors and Subcontractors)

6.1 It will be the responsibility of the Site Supervisor or Safety Coordinator to provide other personnel or outside contractors with the following information as follows:

- hazardous chemicals to which they may be exposed to while in the workplace;

- measures to lessen the possibility of exposure;
- location of MSDS for all hazardous chemicals; and
- procedures to follow if they are exposed.

6.2 The Site Supervisor or Safety Coordinator will also be responsible for contacting each contractor before work is started to gather and disseminate any information concerning chemical hazards the contractor is bringing into the workplace, and vice versa.

APPENDIX A

The following chemicals are regulated by OSHA as carcinogens in substance specific standards that include labeling requirements.

- Asbestos
- 4-Nitrobyphenyl
- Alpha-Napthylamine
- Methyl Chloromethyl Ether
- 3,3 Dichlorobenzidine (and its salts)
- Bis-Chloromethyl Ether
- Beta-Naphthylamine
- Benzidine
- 4-Aminodiphenyl
- Ethyleneimine
- Beta-Propiolactone
- 2-Acetylaminofluorene
- 4-Dimethylaminoazobenzene
- N-Nitrosodimethylamine
- Vinyl Chloride (and poly-vinyl Chloride)
- Inorganic Arsenic
- 1,2 Dibromo-3-Chloropropane
- Acrylonitrile
- Ethylene Oxide
- Formaldehyde
- Benzene

Policy for Job Site Chemical Inventory

The safety policy of Cypress Creek Pipeline Maintenance requires that all chemicals used in the workplace will be evaluated for:

- Flammability
- Reactivity
- Acute Toxicity
- Chronic Toxicity
- Capability for a Sudden Release of Pressure

An inventory-type list of Material Safety Data Sheets will be maintained in a Master Reference File and at each job site. The following procedures will be followed for MSDS

- MSDS will be placed in the MSDS book.
- Chemical information will be listed on a chemical list form which includes
  - ☐ Trade name
  - ☐ Location
  - ☐ MSDS date
  - ☐ Type (i.e., solvent, adhesive, cleaning agent, lubricant, etc.)
  - ☐ Hazard evaluation
- Each time a new product is introduced into the workplace, this procedure will be followed and the MSDS control book updated as well as the new chemical added to the attached *Chemical Inventory List.*

Inventory of Hazardous Chemicals in the Workplace

Page _____ of _____

Product/Chemical Name	Location of Product or Chemical in the Workplace	MSDS No.	MSDS Date	Describe the Type of Chemical or Product	1 -- Flammable 2 -- Reactive 3 -- Acute Toxicity 4 -- Chronic Toxicity 5 -- Sudden Pressure Release			
					1	*2*	*3*	*4*

Chemical Inventory List

CHEMICAL NAME (as appears on label)	*MANUFACTURER*	*LOCATION*

Monitoring for Chemical Exposures

Hygiene monitoring will be performed as needed to ensure the safety and health of employees at a job site. Monitoring will be done to help determine the proper selection of engineering controls, personal protective equipment and work practices whenever there is a question with regard to exposure to concentrations of hazardous substances in excess of permissible or published exposure limits.

Examples of work-related situations that may require implementation of hygiene monitoring include, but are not limited to: work situations when chemicals are used in; new surface preparation or painting processes; degreasing and/or cleaning processes; on-site coating processes, spray applications or dip tank processes; sand blasting or abrasive blasting; etc. Additionally, the need for hygiene monitoring will be evaluated when an employee expresses concern over exposure to a chemical or chemical product present or being used at the job site.

The need for hygiene monitoring will be based on the following criteria:

- To identify IDLH (Immediate Danger to Life and Health) conditions;
- To identify potential exposure(s) over permissible exposure limits or published exposure limits; and
- To identify other dangerous conditions, such as the presence of flammable atmospheres or oxygen-deficient environments.

Periodic monitoring will be conducted whenever there is the possibility of an IDLH condition or flammable atmosphere developing, or when there is indication that permissible or published exposure limits have risen. This will include whenever:

- Work begins on a new location within a job site
- Contaminants not previously identified are being handled
- New operations are initiated
- Employees are handling leaking drums or containers, or are working in areas of obvious liquid contamination or exposure to fumes, vapors, smokes, dusts or other potential contaminants

Monitoring will be performed by *qualified* outside safety and/or industrial hygiene personnel. Types of monitoring may include: direct-reading monitoring instruments (such as combustible gas indicators, oxygen meters, calorimetric indicator tubes, and organic vapor monitors.

Certain monitoring and/or testing may require laboratory analysis of samples. This laboratory analysis will be performed by a laboratory recognized as *qualified* to do the respective type(s) of industrial hygiene analysis. When laboratory analysis is required, results will be interpreted by a Certified Industrial Hygienist or some other person professionally *qualified* to do such interpretation.

Records of industrial hygiene monitoring will be maintained by the Company for a period of 30 years. The Safety Coordinator is responsible for maintaining monitoring records.

Hazardous Waste Controls

Hazardous waste control operations are performed when a hazardous material or hazardous waste spill has occurred and could possibly harm employees, other personnel at the job site, or the environment. A hazardous material or waste spill can be defined as *" an uncontrolled release of a material, chemical, gas, or bodily fluid in a sufficient quantity which could endanger lives or the environment."* The following safety policies will be followed for responding to potentially hazardous spills *(i.e. fuel, oil, paints, coolant, methyl ethyl ketone (MEK), hydraulic fluids, etc.)*.

CONTROL MEASURES

Construction operations have the potential to generate hazardous chemical wastes. There are laws and regulations with strict rules for the disposal of hazardous wastes. The *Resource Conservation and Recovery Act (RCRA)* is an important law that regulates hazardous waste disposal. Site Supervisors should be familiar with requirements for disposal of such wastes.

Generally, there are only two legal ways to depose of hazardous waste:

- Recycle the hazardous waste; or
- Have a licensed hazardous waste disposal contractor remove the hazardous waste to a treatment facility.

Some general safety practices for handling hazardous waste include:

- Ensuring that employees designated to handle hazardous waste are properly trained.
- Referring to Material Safety Data Sheets (MSDS) for proper disposal methods.
- Placing waste in proper storage containers and make sure they are labeled as to their contents and labeling complies with the laws and regulations.
- Keeping hazardous waste containers covered and sealed.
- ***NOT*** mixing different hazardous wastes.
- Wearing proper personal protective equipment when handling hazardous waste.
- ***NOT*** storing empty containers without lids outdoors on the job site where they can fill with rain water.

HAZWOPER TRAINING

The training guidelines listed below will be followed should employees and/or Site Supervisors be expected to respond to a hazardous material or waste spill, as defined in title 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response, "HAZWOPER".

- No employee will perform or respond to a hazardous spill of any type unless he/she has been trained, certified and demonstrates competency in *Hazardous Material Handling(HAZMAT)* and/or *Hazardous Waste Operations and Emergency Response (HAZWOPER).*

- Company management will ensure that all in-Company or contractor spill response teams perform emergency operations and procedures in compliance with 20 CFR 1910.120.

- Any person who is involved in hazardous materials management or emergency response of hazardous waste must successfully complete an appropriate training program in order to respond effectively to the hazardous material or waste incident. These persons will demonstrate competency in the required areas of Hazardous Materials Management and Hazardous Waste Operations Management training prior to performing any response, containment or clean-up duties. These persons will complete annual refresher training that is appropriate to be in compliance with OSHA requirements for assigned duties and responsibilities.

- Training will be conducted by a person trained in or knowledgeable about Hazardous Materials Management and Hazardous Waste Operations and Emergency Response.

- Records of each person trained will be maintained at the Company corporate office indefinitely and will include the amount and type of training given.

- The job descriptions of the person(s) involved in emergency response or hazardous material handling operations will be language specific to duties the of Hazardous Waste Management.

THIS IS NOT A WRITTEN HAZARDOUS WASTE

OPERATIONS AND EMERGENCY RESPONSE PROGRAM.

Fire Watch and Fire Protection Training

Applicable OSHA Standards: 29 CFR 1910 Subpart L, 1926 Subpart F

Purpose: To establish methods and guidelines for the training of personnel in fire watch and fire protection.

Scope: This policy applies to all employees and subcontractors working within Cypress Creek Pipeline Maintenance controlled job sites.

1.0 Introduction

The Company is responsible for the development and maintenance of an effective fire protection and prevention program at each job site throughout all phases of the construction, repair, alteration, or any demolition work. This training policy/module is intended for personnel working as Fire Watch during burning or welding performed during these activities.

2.0 Requirements

2.1 Fire Watches

2.1.1 Fire Watches shall be trained at the worksite by the Site Supervisor. Training is to be documented and employees training files updated to reflect the training.

2.1.2 Training shall be done when employees are initially hired and annually thereafter.

3.0 Training Program Content

3.1 Cause and Prevention:

Fires do not just happen. They are caused by carelessness in operating equipment, handling hazardous materials and personal habits, such as smoking. Even though these actions are not usually deliberate, this still does not lessen the results. Only you can protect yourself against these hazards by learning carefully how to prevent fires. The three main Ingredients of fire prevention are:

A. Be alert for trouble before a fire starts.
B. Eliminate all unsafe habits, which lead to fires.

C. Conduct a fire prevention investigation of your work area prior to work start to remove any potential fire hazards.

3.2 General Fire Prevention Rules:

3.2.1 Become familiar with the four classes of fire, their burning characteristics and the proper extinguishing agent for each.

- **Class A** fires involve normal combustibles such as wood or paper. Water is a proper extinguisher.
- **Class B** fires involves oils and flammable liquids. CO2 and dry chemicals are the correct extinguishers.
- **Class C** fires involve electrical equipment. CO2 and dry chemicals are the correct extinguishers. Never use water on fires involving energized electrical equipment to avoid electrical shock and spreading of fire.
- **Class D** fires involve combustible metals and require special approved extinguishing agents.

3.2.2 Employees must never tamper with or move fire fighting equipment except for actual use.

3.2.3 Report any equipment defects to your supervisor.

3.2.4 Employees must know the location and proper operation of all protective fire equipment in the vicinity of their work areas.

3.2.5 Material and supplies must be stored carefully to prevent falling, spilling, etc.

3.2.6 All chemicals and solvents must be kept in properly labeled and approved containers.

3.2.7 Used rags must be kept in metal or metal lined containers having metal covers.

3.2.8 Never use flammable liquids for cleaning purposes.

3.2.9 Before using solvents, discuss needed precautions with your supervisor and other parties involved.

3.2.10 To extinguish a clothing fire on yourself or another person, **DROP** to the ground **AND ROLL** to cause a smothering effect or use a fire blanket or other means if available.

3.2.11 Know primary and secondary exit routes from your area. When an alarm sounds, evacuate immediately. Know site specific codes for emergency pages.

3.3 Fire Extinguisher and Other General Information:

3.3.1 All fire extinguishers shall be placed in conspicuous locations near the work area. Know where the nearest fire extinguisher is located, the type of fire it should be used on and how to operate it.

3.3.2 A fire extinguisher must be within 20 - 30 feet of flame or ignition type operations in progress.

3.3.3 All fires, whether they are ignitions or smolders, must be reported to the Site Supervisor, so that an investigation can be initiated to determine cause.

3.3.4 Any fire extinguisher that has been used shall be returned to the Site Supervisor for replacement.

3.3.5 Supervisors shall make sure that all employees under their supervision understand the proper use of a fire extinguisher.

3.3.6 Keep work areas clean and orderly, free of trash and scrap materials as this could prevent small fires from becoming major disasters.

3.3.7 Keep all passageways, work areas and aisles clean to facilitate evacuation should a fire start.

3.3.8 Equipment must never be refueled while running or when hot.

3.3.9 All combustible materials under or near welding or burning operations must be moved to a safe distance away or covered with fire retardant material.

3.3.10 Smoking is not allowed on the project except in areas designated as smoking areas. Discard butts in approved containers, not on the floor or in trash cans.

3.3.11 All fires start because of a combination of ignition source, heat, fuel, and oxygen.

3.3.12 The number one cause of workplace fires is electrical equipment. These include:

- Damaged electrical cords
- Loose electrical connections
- Overloaded Circuits
- Defective power tools
- Welding and Cutting Operation
- Chemical Reactions
- Heaters

NOTE: DO NOT ATTEMPT TO FIGHT A FIRE IF:

- You do not know what is burning;
- The fire is spreading rapidly out of control;
- You don't have adequate equipment;
- You might inhale toxic smoke.

Only trained and qualified personnel are permitted to fight fires. Your training covers only small smolders and fires that are easily put out with a fire extinguisher.

3.4 Welding and Cutting Operations

As a **Fire Watch** you must be aware that welding sparks can travel as far as 35 feet. Safe procedures prior to and during welding operations are:

- Ensure that the area has been checked by an authorized person with a meter for flammable gases and vapors;
- Remove any combustibles such as paper, rags, etc;
- Have a fire extinguisher and misting hose (if required) on hand;
- Assure that proper PPE is on hand and being used;
- Remain 30 minutes after spark producing and welding operations are over to assure that no smoldering or fires break out;

3.5 How to Use a Fire Extinguisher

3.5.1 First rule of thumb is **"DON'T PANIC"** - Keep your calm and wits about you, don't let an adrenaline rush cause you to loose control. Just remember the word **PASS,** which stands for **P**ull the pin, **A**im, **S**queeze, and **S**weep.

- **PULL THE PIN** - This will allow you to use the extinguisher.
- **AIM AT THE BASE OF THE FIRE** - In order to extinguisher a fire you must put out the source.
- **SQUEEZE THE TOP HANDLE OR LEVER** - This releases the pressurized extinguishing agent in the extinguisher.
- **SWEEP FROM SIDE TO SIDE** - Until the fire is completely out. Do not sweep up and down. Then move a safe distance away until you are sure the fire is out.

3.6 Hands-on instruction will be used for demonstration.

3.7 Testing Requirements

3.7.1 A score of between 80% and 100% will require a review of missed questions, if any, and the score corrected to 100%.

3.7.2 A score of below 80% will require complete retraining and testing.

3.8 Handouts

See Attachment "A"

4.0 FIRE WATCH TEST

Circle the most correct answer

1. T - F Fires are caused by carelessness.

2. T - F There are four (4) classes of fires A, B, C, and D

3. T - F A Fire Watch is responsible for knowing the location of all fire fighting equipment in the vicinity of their work area.

4. T - F To extinguish a clothing fire, the rule is to drop and roll.

5. T - F Know all exit routes in the vicinity of your work area.

6. A fire extinguisher must be within _____ feet of a flame or ignition source.

   10 to 15 feet 35 to 40 feet 20 to 30 feet 50 or more feet

7. T - F All fires must be reported to the safety department.

8. T - F Fire Extinguishers can be used more than once without being replaced.

9. T - F It is all right to re-fuel equipment while equipment is still running.

10. T - F Fuel, Heat and Oxygen must be present for fires to start.

11. T - F The number one cause of workplace fires in carelessness.

12. T - F Anyone can fight a fire.

13. Welding sparks can travel as far as _____.

    10 feet 25 feet 35 feet 50 feet

14. T - F A Fire Watch must remain a minimum of 30 minutes after spark producing and welding operations.

15. T - F Before work begins, a Fire Watch is responsible for checking the area for combustibles.

16. T - F It is all right to start welding without checking the area for gas and vapors first.

17. T - F A fire hose set on MIST may be required to wet down areas where welding operations are being performed.

18. T - F An up and down motion of a fire extinguisher is used to put out a fire.

19. T - F It's all right to tamper with fire fighting equipment.

20. T - F A Fire Watch must be alert for potential fire sources in their work area at all times.

5.0 FIRE WATCH TEST ANSWER KEY

1. T
2. T
3. T
4. T
5. T
6. 20 to 30 feet
7. T
8. F
9. F
10. T
11. T
12. F
13. 35 feet
14. T
15. T
16. F
17. T
18. F
19. F
20. T

Attachment "A"
Hand Outs

(To be Determined at Time of Class)

Hand and Power Tools

Applicable OSHA Standards: 29 CFR 1910.242

Purpose: This policy is to provide guidelines for the safe condition of tools and equipment used by employees, including tools and equipment that may be furnished by employees.

Scope: This policy applies to all employees and subcontractors working within Cypress Creek Pipeline Maintenance controlled work sites.

1.0 General

1.1 Compressed air shall not be used for cleaning purposes except where reduced to less than 30 p.s.i. and then only with effective chip guarding and personal protective equipment.

1.2 All portable, power-driven circular saws having a blade diameter greater than 2 in. shall be equipped with guards above and below the base plate or shoe. The upper guard shall cover the saw to the depth of the teeth, except for the minimum arc required to permit the base to be tilted for bevel cuts. The lower guard shall cover the saw to the depth of the teeth, except for the minimum arc required to allow proper retraction and contact with the work. When the tool is withdrawn from the work, the lower guard shall automatically and instantly return to covering position.

1.3 All hand-held powered circular saws having a blade diameter greater than 2 inches, electric, hydraulic or pneumatic chain saws, and percussion tools without positive accessory holding means shall be equipped with a constant pressure switch or control that will shut off the power when the pressure is released.

1.4 All hand-held powered drills, tappers, fastener drivers, horizontal, vertical, and angle grinders with wheels greater than 2 inches in diameter, disc sanders with discs greater than 2 inches in diameter, belt sanders, reciprocating saws, saber, scroll, and jig saws with blade shanks greater than a nominal one-fourth inch, and other similarly operating powered tools shall be equipped with a constant pressure switch or control, and may have a lock-on control provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on.

1.5 All other hand-held powered tools, such as, but not limited to, platen sanders, grinders with wheels 2 inches in diameter or less, disc sanders with discs 2 inches in diameter or less, routers, planers, laminate trimmers, nibblers, shears, saber, scroll, and jig saws with blade shanks a nominal one-fourth of an inch wide or less, may be equipped with either a positive "on-off" control.

1.6 Saber, scroll, and jig saws with nonstandard blade holders may use blades with shanks which are non-uniform in width, provided the narrowest portion of the blade shank is an integral part in mounting the blade.

1.7 The operating control on hand-held power tools shall be so located as to minimize the possibility of its accidental operation, if such accidental operation would constitute a hazard to employees.

1.8 Belt sanding machines shall be provided with guards at each nip point where the sanding belt runs onto a pulley. These guards shall effectively prevent the hands or fingers of the operator from coming in contact with the nip points. The unused run of the sanding belt shall be guarded against accidental contact.

1.9 All cracked saws shall be removed from service.

1.10 Portable electric powered tools shall meet the electrical requirements of policy B-16 Assured Grounding GFCI Program.

1.11 A tool retainer shall be installed on each piece of utilization equipment which, without such a retainer, may eject the tool.

1.12 Hose and hose connections used for conducting compressed air to utilization equipment shall be designed for the pressure and service to which they are subjected.

2.0 Portable Abrasive Wheels

2.1 Abrasive wheels shall be used only on machine provided with safety guards.

2.2 A safety guard shall cover the spindle end, nut and flange projections. The safety guard shall be mounted so as to maintain proper alignment with the wheel, and the strength of the fastenings shall exceed the strength of the guard.

2.3 Safety guards on all operations where the work provides a suitable measure of protection to the operator may be so constructed that the spindle end, nut and outer flange are exposed. Where the nature of the work is such as to entirely cover the side of the wheel, the side covers of the guard may be omitted.

2.4 Safety guards used on machines known as right angle head or vertical portable grinders shall have a maximum exposure angle of 180 deg., and the guard shall be so located so as to be between the operator and the wheel during use. Adjustment of guard shall be such that pieces of an accidentally broken wheel will be deflected away from the operator.

2.5 The maximum angular exposure of the grinding wheel periphery and sides for safety guards used on other portable grinding machines shall not exceed 180 deg. and the top half of the wheel shall be enclosed at all times.

2.6 Immediately before mounting, all wheels shall be closely inspected and sounded by the user (ring test, see Subpart O, 1910.215(d)(1)) to make sure they have not been damaged in transit, storage, or otherwise. The spindle speed of the machine shall be checked before mounting of the wheel to be certain that it does not exceed the maximum operating speed marked on the wheel.

2.7 Grinding wheels shall fit freely on the spindle and remain free under all grinding conditions. A controlled clearance between the wheel hole and the machine spindle (or wheel sleeves or adaptors) is essential to avoid excessive pressure from mounting and spindle expansion.

2.8 All contact surfaces of wheels, blotters, and flangers shall be flat and free of foreign matter.

3.0 Explosive Actuated Fastening Tools

3.1 Explosive-actuated fastening tools which are actuated by explosives or any similar means and propel a stud, pin, fastener, or other object for the purpose of affixing it by penetration to any other object shall meet the design requirements in "American National Standard Safety Requirements for Explosive-Actuated Fastening Tools," ANSI A10.3-1970.

3.2 Operators and assistants using tools shall be safeguarded by means of eye protection. Head and face protection shall be used, as required by working conditions, as set forth in policy B-3 Personal Protective Equipment.

3.3 Fasteners used in tools shall be only those specifically manufactured for use in such tools.

3.4 Before using a tool, the operator shall inspect it to determine to his satisfaction that it is clean, that all moving parts operate freely, and that the barrel is free from obstructions.

3.5 When a tool develops a defect during use, the operator shall immediately cease to use it, until it is properly repaired.

3.6 Tools shall not be loaded until just prior to the intended firing time. Neither loaded nor empty tools are to be pointed at any workmen.

3.7 No tools shall be loaded unless being prepared for immediate use, nor shall an unattended tool be left loaded.

3.8 In case of a misfire, the operator shall hold the tool in the operating position for at least 30 seconds. He shall then try to operate the tool a second time. He shall wait another 30 seconds, holding the tool in the operating position; then he shall proceed to remove the explosive load in strict accordance with the manufacturer's instructions.

3.9 A tool shall never be left unattended in a place where it would be available to unauthorized persons.

3.10 Fasteners shall not be driven into very hard or brittle materials including, but not limited to, cast iron, glazed tile, surface-hardened steel, glass block, live rock, face brick, or hollow tile.

3.11 Driving into materials easily penetrated shall be avoided unless such materials are backed by a substance that will prevent the pin or fastener from passing completely through and creating a flying-missile hazard on the other side.

3.12 Fasteners shall not be driven directly into materials such as brick or concrete closer than 3 inches from the unsupported edge or corner, or into steel surfaces closer than one-half inch from the unsupported edge or corner, unless a special guard, fixture, or jig is used. (Exception: Low-velocity tools may drive no closer than 2 inches from an edge in concrete or one-fourth inch in steel.)

3.13 Fasteners shall not be driven through existing holes unless a positive guide is used to secure accurate alignment.

3.14 No fastener shall be driven into a spalled area caused by an unsatisfactory fastening.

3.15 Tools shall not be used in an explosive or flammable atmosphere.

3.16 All tools shall be used with the correct shield, guard, or attachment recommended by the manufacturer.

3.17 Any tool found not in proper working order shall be immediately removed from service. The tool shall be inspected at regular intervals and shall be repaired in accordance with the manufacturer's specifications.

3.18 Unfired loads shall not be placed in roadways or pedestrian traffic areas.

Heavy Equipment & Machinery
General Safety Practices

IMPORTANT NOTE: The safety information in this section is for specific equipment that is most likely mechanically different in important ways from the equipment actually in use at the Company. It is included here as an example of the kind of safety information provided by manufacturers. Also, this information contains good, common-sense safety information that pertains to all routine operations for this type of equipment.

It is <u>ESSENTIAL</u> that operators read current and machine-specific manufacturer's instructions, operator, service and safety requirements for equipment prior to operation.

All safety operations for heavy equipment primarily depends on the skill and training of the operator, and maintenance of the equipment. The following procedures help to maintain a safe work environment while operating heavy equipment and machinery.

- Only authorized operators will operate any heavy equipment or machinery.
- Operators will operate equipment in a safe manner, and within the operating range specified by the manufacturer's operation manual, and load charts.
- Operators must wear seat belts in equipment provided with roll over protection.
- Operators will minimize travel next to trenches, and all vehicles must be parked away any trenches and/or excavations.
- Machines must be parked on level ground with attachments lowered and the engine shut off. Operators must remove the key from the ignition when the equipment is unattended.
- When climbing on or off equipment and trucks, maintain 3 points of contact with the equipment or truck. ***NEVER*** jump off.
- Passengers are not permitted on the machine or in the cab.

- Employees are not permitted to ride the load, bucket, sling, headache ball, or hook.

- No employee will work under the lifted loads, and operators must never move loads over people.

- Employees should stay clear of equipment while it is in operation and/or motion.

- All equipment must be inspected daily prior to beginning work and operators and/or mechanics should perform daily maintenance.

- Backup alarms, anti-two-block devices, boom angle indicators, and other safety devices must be kept in working orders. ***NEVER*** remove guards or block the safety devices. ***ALWAYS*** shut off the engine when refueling.

- All energy sources on equipment or machinery shall be locked out or otherwise made inoperable before cleaning, greasing, oiling, or making adjustments and/or maintenance repairs. Operators should never leave equipment parked at night next to the highway or active construction area without lights or reflectors to identify the location of the equipment.

Engines & High Pressure Lines

Do not perform any duty involving the use and/or maintenance of engines and high pressure lines without proper instruction from your Supervisor in such duties, including the location of such lines. Provide positive lock-out measures to ensure that the source of power is not activated during engine repair, inspection or adjustments. All exposed revolving parts such as radiator or cooling fans, belts, flexible drives, generators, water pump pulleys, shafts, couplings and other moving parts must be provided with adequate shielding to prevent contact.

Do not attempt to tighten or loosen unions or other connections under pressure. Check pressure release valves periodically according to manufacturer's recommendation. Secure lines or piping systems that may kick under pressure.

Do not hammer on lines under pressure. High pressure lines must be fitted with high pressure fittings.

Exercise caution during repair to insure only high pressure fittings are being installed. Hold a pre-planning safety meeting, including safety factors, before unusual or temporary jobs begin.

Truck Operations / General Safety

- When carrying flammable liquid (gasoline, fuel) on a crew truck, the flammable must be carried in an approved safety container equipped with spring-loaded cover. The exception is paint, which may be hauled in the manufacturer's container.

- Check all lug bolts and axle flange nuts at least weekly to ensure they are tight. When personnel are riding in a truck, all tools must be securely stored outside the cab. All loose objects such as tools, fittings, supplies and equipment must be secured firmly to ensure they do not fall off the truck and into or onto other vehicles.

- Auto cranes and hoists must have the swivel and lifting arm secured when not in use.

- Do not use personnel standing or sitting on hoods or truck bumpers for counterbalance of a load.
- The winch line on a winch truck is the responsibility of the driver. An approved winch line is required to avoid injury to the driver from shifting pipe or flying winch lines.

- Keep all trucks and truck beds free of oil and grease. Always stand clear when inflating truck tires to avoid injury. Use a tire safety cage when possible to avoid injury.

Mobile Cranes & Hoist Safety

Applicable OSHA Standards: 29 CFR 1910.180, 1926.251, 1926.550

Purpose: To provide Cypress Creek Pipeline Maintenance personnel with a guideline for the safe operation, use and inspection of mobile cranes and hoists.

Scope: This policy applies to wheel mounted cranes of both truck and self-propelled wheel type, and any variations thereof which retain the same fundamental characteristics used at Company-controlled work sites, or job site locations where Company personnel are performing work.

Definitions

Accessory -- A secondary part or assembly of parts which contributes to the overall function and usefulness of a machine.

Axis of Rotation -- The vertical axis around which the crane superstructure rotates.

Base -- The traveling base or carrier on which the rotating superstructure is mounted such as a car, truck, crawlers, or wheel platform.

Boom Angle -- The angle between the longitudinal centerline of the boom and the horizontal. The boom longitudinal centerline is a straight line between the boom foot pin (heel pin) centerline and boom point sheave pin centerline.

Boom Hoist -- A hoist drum and rope reeving system used to raise and lower the boom. The rope system may be all live reeving or a combination of live reeving and pendants.

Boom -- Member hinged to the front of the rotating superstructure with the outer end supported by ropes leading to a gantry or A-frame and used for supporting the hoisting tackle.

Boom Stop -- A device used to limit the angle of the boom at the highest position.

Brake -- A device used for retarding or stopping motion by friction or power means.

Cab -- A housing which covers the rotating superstructure machinery and/or operator's station. On truck-crane trucks a separate cab covers the driver's station.

Clutch -- A friction, electromagnetic, hydraulic, pneumatic, or positive mechanical device for engagement or disengagement of power.
Counterweight -- A weight used to supplement the weight of the machine in providing stability for lifting working loads.

Crane Safe Work Permit -- The permit issued by the Site Supervisor or Crane Competent Person at the job site to the crane operator before any mobile hoisting work is performed.

Critical Lift -- A lift where:

- The load exceeds 80% of the crane's capacity.
- Weight of the lift exceeds 50% of the load chart rating of the equipment being used and the lift is over power lines, process equipment, piping, or personnel are being lifted.
- Two booms are required.
- Poles or derricks have been erected.
- Personnel are being lifted.
- Crane is traveling with load.
- Any lift in a Critical Lift Area.

Designated -- Means selected or assigned by the Company or a representative of the Company as being qualified to perform specific duties.

Drum -- Cylindrical members around which ropes are wound for raising and lowering the load or boom.

Dynamic -- Means loads introduced into the machine or its components by forces in motion. for hoisting and lowering loads.

Gantry -- Structural frame, extending above the superstructure, to which the boom support ropes are reeved.

Jib -- An extension attached to the boom point to provide added boom length for lifting specified loads. The jib may be in line with the boom or offset to various angles.

Load (working) -- Means the external load, in pounds, applied to the crane, including the weight of load-attaching equipment such as load blocks, shackles, and slings.

Load block [lower] -- Means the assembly of hook or shackle, swivel, sheaves, pins, and frame suspended by the hoisting ropes.

Load block [upper] -- Means the assembly of hook or shackle, swivel, sheaves, pins, and frame suspended from the boom point.

Load hoist -- A hoist drum and rope reeving system.
Load Ratings -- Crane ratings in pounds established by the manufacturer.

Locomotive Crane -- Consists of a rotating superstructure with power-plant, operating machinery and boom, mounted on a base or car equipped for travel on railroad track. It may be self-propelled or propelled by an outside source. Its function is to hoist and swing loads at various radii.

Mobile Hoisting Equipment -- Conventional rigid boom cranes, hydraulic cranes, and flex-lifts.

Outriggers -- Extendable or fixed metal arms, attached to the mounting base, which rest on supports at the outer ends.

Reeving -- Means a rope system in which the rope travels around drums and sheaves.

Rigging -- Any cables, chokes, slings, hooks, beams, spreaders, or other device used to attach or lift the load.

Rope -- Refers to a wire rope unless otherwise specified.

Side Loading -- A load applied at an angle to the vertical plane of the boom.

Superstructure -- The rotating upper frame structure of the machine and the operating machinery mounted thereon.

Swing -- Means the rotation of the superstructure for movement of loads in a horizontal direction about the axis of rotation.

Swing Mechanism -- The machinery involved in providing rotation of the superstructure.

Tackle -- Assembly of ropes and sheaves arranged for hoisting and pulling.

Truck Crane -- Consists of a rotating superstructure with powerplant, operating machinery and boom, mounted on an automotive truck equipped with a powerplant for travel. Its function is to hoist and swing loads at various radii.

Wheel Mounted Crane -- Consists of a rotating superstructure with powerplant, operating machinery and boom, mounted on a base or platform equipped with axles and rubber-tired wheels for travel. The base is usually propelled by the engine in the superstructure, but it may be equipped with a separate engine controlled from the superstructure. Its function is to hoist and swing loads at various radii.

Whipline -- A separate hoist rope system of lighter load capacity and higher speed than provided by the main hoist.

Winch Head -- A power driven spool for handling of loads by means of friction between fiber or wire rope and spool.

Responsibilities

Site Supervisor

The Site Supervisor or his/her designate is responsible for assuring that:

- Employees know, understand, and comply with the requirements of this policy.
- Employees are trained in the procedures and use of equipment they are to use to complete the job.
- Audit and inspect for compliance of this policy.
- Each crane is on a regular (daily, monthly, annual) inspection schedule.
- Proof of regular inspections using the checklist in this policy are available.
- Rental or leased cranes have a valid annual certification sticker or other documents prior to the use of the cranes.
- Competent, qualified operators are used when lifting.
- A *Crane Safe Work Permit* is issued for the following:
    a. All lifts with cranes having a capacity greater than ten (10) tons.
    b. All critical lifts.
- Joint responsibility with the crane operator for the safe operation of the crane(s) and the safety of the lift is maintained.
- Failure to comply with this policy will result in disciplinary action, up to and including discharge.

Crane Operators

The crane operator is responsible for:

- Knowing, understanding, and complying with this policy.
- Inspecting cranes on a daily basis and reporting defects noted during these inspections.
- Reporting any unsafe conditions to supervision.
- Knowing the weight of loads PRIOR to lifting.
- Knowing the wind speed PRIOR to lifting.
- Performing a daily inspection using the *Daily Operators Inspection Report* at the beginning of each days work PRIOR to the crane use. Any deficiencies that affect the safe operations of the crane shall be repaired PRIOR to use. Each daily inspection report shall remain with the operator during the operation of the crane and turned in at the end of the work day.
- Perform a lifting job specific pre-task assessment using *Operators Lift Pre-Task Safety Assessment* for each lift.
- Insure the load, rigging, procedures, and lift are safe to use. The operator is responsible for the load and lift when the crane is connected to the load.
- Assume joint responsibility with the Site Supervisor for the safe operation of the crane(s) and the safety of the lift.
- Understand that failure to comply with this policy will result in disciplinary action, up to and including discharge.

General Requirements

Pre-Lift

- Manufacture's lifting procedures and methods shall be observed at all times.
- No modifications or additions which affect the capacity or safe operation of the equipment shall be made by Cypress Creek Pipeline Maintenance without the manufacturer's written approval. If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals, shall be changed accordingly. In no case shall the original safety factor of the equipment be reduced.

- All cranes shall have a qualified competent operator.
- Inspect cranes when they arrive on site for mechanical integrity, load chart, operating manual, and annual certification decal/sticker. (See policy on Rigging)
- The crane operator must complete an *Operator's Lift Pre-Task Assessment* and *Mobile Hoisting Safe Work Procedure* PRIOR to lifting.
- Rated load capacities, recommended operating speeds, special hazard warnings, or instructions shall be in a conspicuously place on all equipment, as required, and shall be visible to the operator while at the control station.
- Inspect all rigging devices before use. Follow manufacturer's capacities and recommendations.
- Obtain a *Crane Safe Work Permit* for all cranes with capacities of ten (10) tons or more and critical lifts.
- Work with lifts, cranes, or any hoisting equipment must be supervised at all times.
- A qualified Signal Person must be provided.
- Wooden pads on outriggers will be used on all non-concrete surfaces. Mats will be used as needed.
- The rear of the rotating superstructure of a crane will be barricaded to warn of the pinch point hazard.
- The area where an overhead lift is made will be barricaded if personnel can have access and walk under the load.
- Load block, headache ball, hooks, boom tip, and anti-two block devices shall be marked with highly visible fluorescent orange paint.
- All jibs shall have positive stops to prevent their movement of more than five degrees above the straight line of the jib and boom on conventional type crane booms. The use of cable type belly slings does not constitute compliance with this rule.

Lifting

- Lifting multiple loads, "Christmas treeing", is prohibited.
- Hand signals to crane operators shall be those prescribed by the applicable ANSI standard for the type of crane in use. An illustration of the signals shall be posted at the job site.

- All employees shall be kept clear of loads about to be lifted and of suspended loads.
- There shall be no sudden acceleration or deceleration of the moving load.
- Side loading of booms shall be limited to freely suspended loads. Cranes shall not be used for dragging loads sideways.
- No hoisting, lowering, swinging, or traveling shall be done while anyone is on the load or hook.
- On truck-mounted cranes, no loads shall be lifted over the front area except as approved by the crane manufacturer.
- The operator shall test the brakes each time a load approaching the rated load is handled by raising it a few inches and applying the brakes.
- Outriggers shall be used when the load to be handled at that particular radius exceeds the rated load without outriggers as given by the manufacturer for that crane. Where floats are used they shall be securely attached to the outriggers. Wood blocks used to support outriggers shall:
  - ☐ Be strong enough to prevent crushing.
  - ☐ Be free from defects.
  - ☐ Be of sufficient width and length to prevent shifting or toppling under load.
- Neither the load nor the boom shall be lowered below the point where less than two full wraps of rope remain on their respective drums.
- When two or more cranes are used to lift one load, one designated person shall be responsible for the operation. He/she shall be required to analyze the operation and instruct all personnel involved in the proper positioning, rigging of the load, and the movements to be made.
- In transit the following additional precautions shall be exercised:
  - ☐ The boom shall be carried in line with the direction of motion.
  - ☐ The superstructure shall be secured against rotation, except when negotiating turns when there is an operator in the cab or the boom is supported on a dolly.
  - ☐ The empty hook shall be lashed or otherwise restrained so that it cannot swing freely.

- Before traveling a crane with load, a designated person shall be responsible for determining and controlling safety. Decisions such as position of load, boom location, ground support, travel route, and speed of movement shall be in accord with his determinations.

- A crane with or without load shall not be traveled with the boom so high that it may bounce back over the cab.

- When rotating the crane, sudden starts and stops shall be avoided. Rotational speed shall be such that the load does not swing out beyond the radii at which it can be controlled. A tag or restraint line shall be used when rotation of the load is hazardous.

- When a crane is to be operated at a fixed radius, the boom-hoist pawl or other positive locking device shall be engaged.

- Ropes shall not be handled on a winch head without the knowledge of the operator.

- While a winch head is being used, the operator shall be within convenient reach of the power unit control lever.

- The operator shall not be permitted to leave his position at the controls while the load is suspended.

- No person should be permitted to stand or pass under a load on the hook.

- If the load must remain suspended for any considerable length of time, the operator shall hold the drum from rotating in the lowering direction by activating the positive controllable means of the operator's station.

Other Requirements

- Cranes shall not be operated without the full amount of any ballast or counterweight in place as specified by the maker, but truck cranes that have dropped the ballast or counterweight may be operated temporarily with special care and only for light loads without full ballast or counterweight in place. The ballast or counterweight in place specified by the manufacturer shall not be exceeded.

- Necessary clothing and personal belongings shall be stored in such a manner as to not interfere with access or operation.

- Tools, oil cans, waste, extra fuses, and other necessary articles shall be stored in the tool box, and shall not be permitted to lie loose in or about the cab.

- Refueling with small portable containers shall be done with an approved safety type can equipped with an automatic closing cap and flame arrester.

- Machines shall not be refueled with the engine running.
- A carbon dioxide, dry chemical, or equivalent fire extinguisher shall be kept in the cab or vicinity of the crane.
- Operating and maintenance personnel shall be made familiar with the use and care of the fire extinguishers provided.

Operations Near Overhead Electrical Lines

Except where electrical distribution and transmission lines have been deenergized and visibly grounded at point of work or where insulating barriers, not a part of or an attachment to the equipment or machinery, have been erected to prevent physical contact with the lines, equipment or machines shall be operated proximate to power lines only in accordance with the following:

- For lines rated 50 kV. or below, minimum clearance between the lines and any part of the crane or load shall be 10 feet.
- For lines rated over 50 kV., minimum clearance between the lines and any part of the crane or load shall be 10 feet plus 0.4 inch for each 1 kV. over 50 kV., or twice the length of the line insulator, but never less than 10 feet.
- In transit with no load and boom lowered, the equipment clearance shall be a minimum of 4 feet for voltages less than 50 kV., and 10 feet for voltages over 50 kV., up to and including 345 kV., and 16 feet for voltages up to and including 750 kV.
- A person shall be designated to observe clearance of the equipment and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means.
- Cage-type boom guards, insulating links, or proximity warning devices may be used on cranes, but the use of such devices shall not alter the requirements of any other regulation of this part even if such device is required by law or regulation.
- Any overhead wire shall be considered to be an energized line unless and until the person owning such line or the electrical utility authorities indicate that it is not an energized line and it has been visibly grounded.
- Prior to work near transmitter towers where an electrical charge can be induced in the equipment or materials being handled, the transmitter shall be de-energized or tests shall be made to determine if electrical charge is induced on the crane.

The following precautions shall be taken when necessary to dissipate induced voltages:

- ☐ The equipment shall be provided with an electrical ground directly to the upper rotating structure supporting the boom; and
- ☐ Ground jumper cables shall be attached to materials being handled by boom equipment when electrical charge is induced while working near energized transmitters. Crews shall be provided with nonconductive poles having large alligator clips or other similar protection to attach the ground cable to the load.
- ☐ Combustible and flammable materials shall be removed from the immediate area prior to operations.

Inspection Requirements

The Crane Operator and the Crane Competent Person are responsible for performing inspections using *Daily Operators Inspection Report -- Mobile Crane Operation*, *Monthly Hydraulic Crane Inspection Report* and *Monthly Inspection of Truck Cranes.*

A thorough, annual inspection of the hoisting machinery shall be made by a competent person, or by a government or private agency recognized by the U.S. Department of Labor. Cypress Creek Pipeline Maintenance shall maintain a record of the dates and results of inspections for each hoisting machine and piece of equipment.

Any defects found will be repaired by a qualified person before the crane is used.

Wire rope shall be taken out of service when any of the following conditions exist:

- In running ropes, six randomly distributed broken wires in one lay or three broken wires in one strand in one lay;
- Wear of one-third the original diameter of outside individual wires.
- Kinking, crushing, bird caging, or any other damage resulting in distortion of the rope structure;
- Evidence of any heat damage from any cause;
- Reductions from nominal diameter of more than one-sixty-fourth inch for diameters up to and including five-sixteenths inch, one-thirty-second inch for diameters three-eighths inch to and including one-half inch, three-sixty-fourths inch for diameters nine-sixteenths inch to and including three-fourths inch, one-sixteenth inch for diameters seven-eighths inch to 1 1/8 inches inclusive, three-thirty-seconds inch for diameters 1 1/4 to 1 1/2 inches inclusive;

- In standing ropes, more than two broken wires in one lay in sections beyond end connections or more than one broken wire at an end connection.

- Wire rope safety factors shall be in accordance with American National Standards Institute B 30.5-1968 or SAE J959-1966.

Training Requirements

Training will be conducted on the requirements of this policy annually, whenever this policy is revised, and for new crane operators or newly hired operators.

Crane operators and the rigging crew will review this policy prior to lifts. If the job has multiple lifts this policy will be reviewed once prior to the jobs starting. All new crane operators and rigging crew members will review this policy prior to starting work.

Portable Ladders

Applicable OSHA Standards: 29 CFR 1910.25, 1926.1053

Purpose: This policy is to ensure the safe use, care and serviceability of portable ladders used in the workplace.

Scope: This policy applies to all employees and subcontractors working within Cypress Creek Pipeline Maintenance controlled work sites.

1.0 Care and Use of Ladders

1.1 Care of Ladders

1.1.1 Ladders shall be maintained in good condition at all times, the joint between the steps and side rails shall be tight, all hardware and fittings securely attached, and the movable parts shall operate freely without binding or undue play.

1.1.2 Metal bearings of locks, wheels, pulleys, etc., shall be frequently lubricated.

1.1.3 Frayed or badly worn rope shall be replaced.

1.1.4 Safety feet and other auxiliary equipment shall be kept in good condition to insure proper performance.

1.1.5 Before each use, employees shall inspect the ladder and those which have developed defects shall be withdrawn from service for repair or destruction and tagged or marked as "Dangerous, Do Not Use."

1.1.6 Rungs should be kept free of grease and oil.

1.1.7 Ladder components shall be surfaced so as to prevent injury to an employee from punctures or lacerations, and to prevent snagging of clothing.

1.1.8 Wood ladders shall not be coated with any opaque covering, except for identification or warning labels which may be placed on one face only of a side rail.

1.2 Use of Ladders

1.2.1 Portable rung and cleat ladders shall, where possible, be used at such a pitch that the horizontal distance from the top support to the foot of the ladder is one-quarter of the working length of the ladder (the length along the ladder between the foot and the top support).

1.2.2 The ladder shall be so placed as to prevent slipping, and it shall be lashed, or held in position. Ladders shall not be used in a horizontal position as platforms, runways, or scaffolds.

1.2.3 Portable ladders shall be so placed that the side rails have a secure footing.

1.2.4 Ladder rungs, cleats, and steps shall be parallel, level, and uniformly spaced when the ladder is in position for use.

1.2.5 Ladders shall not be placed in front of doors opening toward the ladder unless the door is blocked upon, locked, or guarded.

1.2.6 Ladders shall not be placed on boxes, barrels, or other unstable bases to obtain additional height.

1.2.7 Ladders with broken or missing steps, rungs, or cleats, broken side rails, or other faulty equipment shall not be used; improvised repairs shall not be made.

1.2.8 A metal spreader or locking device shall be provided on each stepladder to hold the front and back sections in an open position when the ladder is being used.

1.2.9 Short ladders shall not be spliced together to provide long sections.

1.2.10 Ladders made by fastening cleats across a single rail shall not be used.

1.2.11 Ladders shall not be used as guys, braces, or skids, or for other than their intended purposes.

1.2.12 Tops of the ordinary types of stepladders shall not be used as steps.

1.2.13 On two-section extension ladders the minimum overlap for the two sections in use shall be as follows:

Size of ladder (feet)	Overlap (feet)
Up to and including 36	3
Over 36 up to and including 48	4
Over 48 up to and including 60	5

1.2.14 No ladder should be used to gain access to a roof unless the top of the ladder shall extend at least 3 feet above the point of support, at eave, gutter, or roofline.

1.2.15 The bracing on the back legs of step ladders is designed solely for increasing stability and not for climbing.

1.2.16 When ascending or descending, the climber must face the ladder.

1.2.17 Portable ladders shall have nonconductive siderails if they are used where the employee or the ladder could contact exposed energized parts.

1.2.18 Metal ladders shall not be used.

1.2.19 Except when portable ladders are used to gain access to fixed ladders (such as those on utility towers, billboards, and other structures where the bottom of the fixed ladder is elevated to limit access), when two or more separate ladders are used to reach an elevated work area, the ladders shall be offset with a platform or landing between the ladders.

1.2.20 Each employee shall use at least one hand to grasp the ladder when progressing up and/or down the ladder.

1.2.21 An employee shall not carry any object or load that could cause the employee to lose balance and fall.

2.0 Training

2.1 Cypress Creek Pipeline Maintenance shall provide a training program for each employee using ladders and stairways, as necessary. The program shall enable each employee to recognize hazards related to ladders and stairways, and shall train each employee in the procedures to be followed to minimize these hazards.

2.2 The Site Supervisor shall ensure that each employee has been trained by a competent person in the following areas, as applicable:

- The nature of fall hazards in the work area;

- The correct procedures for erecting, maintaining, and disassembling the fall protection systems to be used;
- The proper construction, use, placement, and care in handling of all stairways and ladders;
- The maximum intended load-carrying capacities of ladders and
- The standards contained in 1926.1053 Subpart X.

2.3 Retaining shall be provided for each employee as necessary so that the employee maintains the understanding and knowledge acquired through compliance with this guideline.

Control of Hazardous Energy Lockout/Tagout

Applicable OSHA Standards: 29 CFR 1910.147

Purpose: This policy establishes the minimum requirements for the lockout of energy isolating devices at work locations controlled by Cypress Creek Pipeline Maintenance. It shall be used to ensure that the machine or equipment is stopped, isolated from all potentially hazardous energy sources and locked out before employees perform any servicing or maintenance where the unexpected energization or start-up of the machine or equipment or release of stored energy could cause injury.

Scope: All Company employees and subcontractors are required to comply with the restrictions and limitations imposed upon them during the use of this lockout and tagout program. This policy does not apply to the following:

- Work on cord and plug connected electric equipment for which exposure to the hazards of unexpected energization or start up of the equipment is controlled by the unplugging of the equipment from the energy source and by the plug being under the exclusive control of the employee performing the servicing or maintenance.

- Hot tap operations involving transmission and distribution systems for substances such as gas, steam, water or petroleum products when they are performed on pressurized pipelines, provided that the employer demonstrates that- {1} continuity of service is essential; {2} shutdown of the system is impractical; and {3}documented procedures are followed, and special equipment is used which will provide proven effective protection for employees.

1.0 Definitions

Affected employee - An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

Authorized employee - A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this section.

Capable of being locked out - An energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.

Energized - Connected to an energy source or containing residual or stored energy.

Energy isolating device - A mechanical device that physically prevents the transmission or release or energy, including but not limited to the following: A manually operated electrical circuit breaker, a disconnect switch, a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and, in addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches and other control circuit type devices are not energy isolating devices.

Energy source - Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

Hot tap - A procedure used in the repair maintenance and services activities which involves welding on a piece of equipment (pipelines, vessels or tanks) under pressure, in order to install connections or appurtenances. it is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, steam, and petrochemical distribution systems.

Lockout - The placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout device - A device that utilizes a positive means such as a key lock to hold an energy isolating device in the safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.

Normal production operations - The utilization of a machine or equipment to perform its intended production function.

Servicing and/or maintenance - Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.

Setting up - Any work performed to prepare a machine or equipment to perform its normal production operation.

Tagout - The placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Tagout device - A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

2.0 General Information

2.1 Host Employer or General Contractor Lockout/Tagout Program

2.1.1 Company employees and subcontractors will be informed of the host employer's or general contractor's lockout and tagout program ("non-company" program) before handling any equipment and/or circuits.

2.1.2 A copy of the host employer's or general contractor's program will be located with the Company program in the project supervisor's office.

2.1.3 Company employees will physically see lockout and tagout devices used by the host employer or general contractor as part of their information requirement.

2.1.4 Company employees will not remove any locks or tags put on by employees of the host employer or general contractor.

2.1.5 Normally host employer or general contractor lockout and tagout rules will be followed in conjunction with company procedures. Locks placed by personnel of the host employer or general contractor will normally be applied first, with the locks of company personnel placed next.

2.1.6 Equipment listings and surveys are provided by the host employer or general contractor during the pre-job meeting.

2.1.7 It is the responsibility of the supervisor to ensure that all Company employees have been informed about the host employer's or general contractor's lockout and tagout program and are provided documentation of such.

2.2 Company, Basic Requirements

2.2.1 Controls that are to be deactivated during the course of work on energized or de-energized equipment shall be locked out and /or tagged out.

2.2.2 A lockout and tagout log book shall be kept indicating equipment that has been locked or tagout out. See Attachment "A" Equipment Lockout and Tagout Log

2.2.3 If an energy isolating device is not capable of being locked out, a tagout system will be utilized.

2.2.4 Only the authorized employees who are performing the servicing or maintenance shall perform lockout or tagout.

2.2.5 The lock/tag should have at least the following information:

- Date/Time
- Job #
- Individual's name
- Company

2.2.6 A separate individually numbered lock and key must be assigned to each individual employee participating in the lockout and tagout program. The lock must be craft color coded with a scheme that does not conflict with clients color code. Attachment "B" Lock/Tag Identification and Standardization must be completed and on file in the office of the Site Supervisor prior to beginning work at each job site.

2.2.7 A list of all authorized employees as per Attachment "B" will be maintained in the Site Supervisor's office.

2.2.8 All Company employees are considered affected employees. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this program.

2.2.9 Lockout and tagout devices selected for a particular job site shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.

2.2.10 Tagout devices shall be constructed and printed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible. Tags shall not deteriorate when used in corrosive environments such as areas where acid and alkali chemicals are handled and stored.

2.2.11 Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or other metal cutting tools.

2.2.12 Tagout devices, including their means of attachment, shall be substantial enough to prevent inadvertent or accidental removal. Tagout device attachment means shall be of a non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds and having the general design and basic characteristics of being at least equivalent to a one-piece, all environment-tolerant nylon cable tie.

2.2.13 Tagout devices shall warn against hazardous conditions if the machine or equipment is energized and shall include a legend such as the following: "Do Not Start. Do Not Open. Do Not Close. Do Not Energize. Do Not Operate."

2.2.14 The Company shall conduct a periodic inspection of the energy control procedure at least annually to ensure that the procedure and the requirements of this Program are being followed. The inspection shall be conducted to correct any deviations or inadequacies identified.

2.2.15 The periodic inspection shall be performed and documented by the Site Supervisor. The inspection and documentation shall include:

- A review between the inspector and each authorized employee, of that employee's responsibilities under the Company program.
- The machine or equipment on which the energy control procedure was being utilized;
- The date of the inspection;
- The affected employees included in the inspection;
- The person performing the inspection.

3.0 Energy Control Procedures

3.1 Preparation for shutdown

3.1.1 Before an authorized or affected employee turns off a machine or equipment, the authorized employee shall identify:

- The type and magnitude of the energy;
- The hazards of the energy to be controlled;
- The method or means to control the energy.

3.2 Machine or equipment shutdown

3.2.1 The machine or equipment shall be turned off or shut down using the procedures established for the machine or equipment. Refer to manufactures information or client procedures if available.

3.2.2 An orderly shutdown must be utilized to avoid any additional or increased hazard(s) to employees as a result of the equipment stoppage.

3.3 Machine or equipment isolation

3.3.1 All energy isolating devices that are needed to control the energy to the machine or equipment shall be physically located and operated by the authorized employee in such a manner as to isolate the machine or equipment from the energy source(s).

3.4 Lockout or tagout device application

3.4.1 The authorized employees shall affix lockout or tagout devices to each energy isolating device.

3.4.2 Lockout devices, where used, shall be affixed in a manner to that will hold the energy isolating devices in a "safe" or "off" position.

NOTE: *Tagout devices may not be used if the energy isolating device is capable of being locked out.*

3.4.3 Tagout devices, where used, shall be affixed in such a manner as will clearly indicate that the operation or movement of energy isolating devices from the "safe" or "off" position is prohibited.

3.5 Stored energy

3.5.1 Following the application of lockout or tagout devices to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, and otherwise rendered safe with zero energy.

3.5.2 If there is a possibility of reaccumulation of stored energy to a hazardous level, verification of isolation shall be continued until the servicing or maintenance is completed, or until the possibility of such accumulation no longer exists.

3.6 Verification of isolation

3.6.1 Prior to starting work on machines or equipment that have been locked out or tagged out, the authorized employee shall verify that isolation and deenergization of the machine or equipment have been accomplished.

3.7 Release From Lockout or Tagout

3.7.1 The work area shall be inspected to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.

3.7.2 The work area shall be checked to ensure that all employees have been safely positioned or removed.

3.7.3 Before lockout or tagout devices are removed and before machines or equipment are energized, affected employees shall be notified by the authorized employee that the lockout or tagout devices will be removed.

3.7.4 After lockout or tagout devices have been removed and before a machine or equipment is started, affected employees shall be notified by authorized employees that the lockout or tagout device(s) have been removed.

3.8 Lockout or tagout devices removal

3.8.1 Each lockout or tagout device shall be removed from each energy isolating device by the employee who applied the device.

3.8.2 When the authorized employee who applied the lockout or tagout device is not available to remove it, that device may be removed under the direction of the Site Supervisor provided that the following specific procedures are followed:

- Verify that the authorized employee who applied the device is not at the facility;
- Make all reasonable efforts to contact the authorized employee to inform him/her that his/her lockout or tagout device has been removed;
- Ensure that the authorized employee has this knowledge before he/she resumes work at that facility.

3.9 Testing or positioning of machines, equipment or components

In situations in which lockout or tagout devices must be temporarily removed from the energy isolating device and the machine or equipment energized to test or position the machine, equipment or component thereof, the following sequence of actions shall be followed:

3.9.1 Clear the machine or equipment of tools and materials in accordance with paragraph 3.7.1

3.9.2 Remove employees from the machine or equipment area in accordance with paragraph 3.7.2.

3.9.3 Remove the lockout or tagout devices as specified in paragraph 3.8.1

3.9.4 Energize and proceed with testing or positioning.

3.9.5 Deenergize all systems and reapply energy control measures in accordance with sections 3.2 through 3.6 to continue the servicing and/or maintenance.

3.10 Outside personnel and subcontractors

3.10.1 Whenever outside servicing personnel are to be engaged in activities covered by the scope and application of this program, Company authorized employees and the outside employer authorized employees shall inform each other of their respective lockout or tagout procedures.

3.10.2 Company authorized employees shall ensure that all affected employees understand and comply with the restrictions and prohibitions of the outside employer's energy control program.

3.11 Group lockout or tagout

3.11.1 When servicing and/or maintenance is performed by a crew, craft, department or other group, a written procedure will be prepared by the Site Supervisor which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device. The written program must contain the following requirements:

- Primary responsibility is vested in an authorized employee for a set number of employees working under the protection of a group lockout or tagout device;
- Provision for the authorized employee to ascertain the exposure status of individual group members with regard to the lockout or tagout of the machine or equipment;
- When more than one crew, craft, department, etc. is involved, assignment of overall job-associated lockout or tagout control responsibility to an authorized employee designated to coordinate affected work forces and ensure continuity of protection;

- Each authorized employee shall affix a personal lockout or tagout device to the group lockout device, group lockbox, or comparable mechanism when he or she begins work, and shall remove those devices when he or she stops working on the machine or equipment being serviced or maintained.

3.11.2 A copy of this written procedure, when used, shall be placed with this program at the job site.

3.11.3 The Site Supervisor is responsible for ensuring that all authorized and affected employees are trained on the written group lockout or tagout procedure and maintaining documentation of such.

3.12 Shift or personnel changes

3.12.1 If a personnel or shift change is necessary a change over period will be established so that authorized employees may exchange their assigned locks/tags. Authorized personnel assuming control of lockout of equipment will be fully briefed in the scope and stage of the work by those who are being relieved.

4.0 Training and Communication

The Company shall provide training to ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage, and removal of the energy controls are acquired by employees. See Attachment "C" *Lockout/Tagout Training Module*.

Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment or processes that present a new hazard, or when there is a change in the energy control procedures. Additional retraining shall also be conducted whenever a periodic inspection under paragraphs 2.2.15 and 2.2.16 of this program reveals, or whenever the Site Supervisor has reason to believe that there are deviations from or inadequacies in the employee's knowledge or use of the energy control procedures. The retraining shall reestablish employee proficiency and introduce new or revised control methods and procedures, as necessary.

The Site Supervisor shall document that employee training has been accomplished and is being kept up to date. The documentation shall contain each employee's name and dates of training.

Attachment "A"
Lockout/Tagout Equipment Log

Job #____________________ Location:____________________ Date:____________

Equipment Name/Number	Date Locked/Tagged Out	Lock Number	Date Lock/Tag Removed

Attachment "B"
Lock/Tag Identification and Standardization

Job # _____ Location:_____ Date:_____

Craft	Color Code

Lock Number	Authorized Employee
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
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21.	
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27.	
28.	

Attachment C
Cypress Creek Pipeline Maintenance
Lockout / Tagout Training Module

Training will cover:

- Video – (Current available videos to be used at the instructor's discretion)
- Key Definitions of the control of hazardous energy Lockout/Tagout program, Section 1.0 Definitions
- What the standard covers – OSHA 29 CFR 1910.147

  This standard covers the servicing and maintenance of machines and equipment in which the "unexpected" energization or start up of the machines or equipment, or release of stored energy could cause injury to employees.
- Company Specific Items - Control of Hazardous Energy Lockout/Tagout program Section 2.0 General Information
- The Lockout/Tagout Procedure - Control of Hazardous Energy Lockout/Tagout program Section 3.0 Energy Control Procedures
- Testing/Qualifying

  A score of between 80% and 100% will require a review of missed questions, if any, and the score corrected to 100%.

  A score of below 80% will require complete retraining and testing.

Cypress Creek Pipeline Maintenance
Control of Hazardous Energy Lockout/Tagout

TEST

Employee Name(Print):_____

Employee Signature:_____ Score:_____

Instructor:_____

Date:_____

Read each question and circle the correct answer.

1. The term lockout is best defined as:

   A. Blocking the flow of energy from a power source to a piece of equipment.

   B. Shutting down a piece of equipment for service or maintenance work.

   C. Applying a lock to a piece of equipment to show that it should not be used.

   D. Applying a tag to a piece of equipment to show that it should not be used.

2. A lockout procedure is used whenever:

   A. The servicing or repair work to be done places an employee in danger.

   B. An equipment guard must be removed for servicing.

   C. A power source can be locked out for servicing.

   D. All of the above.

3. Tagouts refers to:

   A. The warning tag attached to a power source or piece of machinery telling others not to restart.

   B. The process of blocking energy from reaching a piece of equipment.

   C. Signing off that a certain piece of machinery has been serviced.

   D. A device that physically prevents others from restarting equipment.

4. An authorized employee is one who:

   A. Works on machinery that is subject to lockout.

   B. Services machinery that is subject to lockout.

   C. Actually locks out equipment for servicing.

   D. Both B and C.

5. An affected employee is one who:

   A. Works on machinery that is subject to lockout.

   B. Works in an area where lockout is used.

   C. Services machinery that is subject to lockout.

   D. Both A and B.

6. Zero energy state refers to:

   A. A power source that is locked out for servicing.

   B. A power source that is locked out and tagged for servicing.

   C. The release of all stored energy from a power source.

   D. The release of all locks and tags so that energy can be restored.

7. It is all right to lend your lock to a co-worker if:

   A. The co-worker's lock is in another part of the building or plant.

   B. The co-worker's lock is in another building miles away from where he is working.

   C. You know you won't be using your lock.

   D. None of the above.

8. If you come across a piece of equipment that is turned off but not locked out, you would:

   A. Ask someone working in the area if it could be turned back on.

   B. Notify someone who is authorized to perform lockout.

   C. Never restart the equipment.

   D. Both B and C.

9. A lockout audit must be performed by:

   A. An authorized person who works with the lockout procedure to be inspected.

   B. An authorized person who doesn't work with a lockout procedure to be inspected.

   C. A person from the Health and Safety department.

   D. None of the above.

10. Lockout and tagout procedures are in place to:

   A. Prevent the accidental start-up of equipment.

   B. Prevent workers from taking short-cuts while servicing equipment.

   C. Prevent accidents.

   D. All of the above.

11. Locks:

   A. Are provided by the employer.

   B. Can be used only for lockout purposes.

   C. Must never be used to lock tool boxes, storage sheds, or other such items.

   D. All of the above.

12. Energy Isolating device are:

A. Mechanical device that physically prevents the transmission or release of energy.

B. A manually operated electrical circuit breaker.

C. A disconnect switch.

D. None of the above.

13. Retraining must be provided whenever:

A. There is a change in job assignments.

B. A change in machines, equipment or process that presents a new hazard.

C. A safety inspector shows up on the job.

D. Both A and B

LOCKOUT/TAGOUT - ANSWER KEY

1. A
2. D
3. A
4. D
5. D
6. C
7. D
8. D.
9. B
10. D
11. D
12. A
13. D

Confined Space Entry Program

PURPOSE

Cypress Creek Pipeline Maintenance has established a Permit Required Confined Space (PRCS) Program to protect authorized employees who may be presented with confined spaces during Company operations.

Due to the nature of work done by the Company, confined space exposures to hazardous atmospheres, engulfment in materials, conditions that may trap or asphyxiate are ***EXTREMELY UNLIKELY***. Company policy is to ***PROHIBIT*** any work by employees in a confined space unless the job has been personally reviewed and approved in advance by the Company Safety Coordinator.

The Company has established written safe work procedures for confined space operations primarily so that Site Supervisors and employees will recognize confined space situations and be aware of the potential dangers to be avoided.

Many workplaces contain confined spaces not designed for human occupancy which due to their configuration hinder employee activities including entry, work and exit. Asphyxiation is the leading cause of death in confined spaces. The hazards encountered and associated with entering and working in confined spaces are capable of causing bodily injury, illness, and death to the worker. Accidents occur among workers because of failure to recognize that a confined space is a potential hazard.

It should therefore be considered that the most unfavorable situation exists in every case and that the danger of explosion, poisoning, and asphyxiation will be present at the onset of entry. Reference: *OSHA-Permit-Required Confined Spaces* (29 CFR 1910.146). Should a confined space work assignment be approved by the Company Safety Coordinator, the following safe work concepts and procedures shall be strictly followed.

Responsibilities

Management

- Ensure proper training for entry & rescue teams
- Provide proper equipment for entry & rescue teams
- Ensure confined space assessments have been conducted
- Ensure all permit required confined spaces are posted
- Annually review this program and all Entry Permits

- Evaluate Rescue Teams/Service to ensure they are adequately trained and prepared
- Ensure rescue team at access during entry into spaces with IDLH atmospheres

Employees

- Follow program requirements
- Report any previously un-identified hazards associated with confined spaces

Entry Supervisor

Entry supervisors are responsible for the overall permit space entry and must coordinate all entry procedures, tests, permits, equipment and other relevant activities. The following entry supervisor duties are required:

- Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure
- Verifies, by checking that the appropriate entries have been made on the permit, all test specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin
- Terminate the entry and cancel the permit when the entry is complete and there is a need for terminating the permit
- Verify that rescue services are available and that the means for summoning them are operable
- Remove unauthorized persons who enter or attempt to enter the space during entry operations
- Determine whenever responsibility for a permit space entry operation is transferred and at intervals dictated by the hazards and operations performed within the space that entry operations remain consistent with the permit terms and that acceptable entry conditions are maintained.

Entry Attendants

At least one attendant is required outside the permit space into which entry is authorized for the duration of the entry operation. Responsibilities include:

- To know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure
- To be aware of possible behavioral effects of hazard exposure on entrants
- To continuously maintain an accurate count of entrants in the permit space and ensures a means to accurately identify authorized entrants

- To remain outside the permit space during entry operations until relieved by another attendant (once properly relieved, they may participate in other permit space activities, including rescue if they are properly trained and equipped).
- To communicate with entrants as necessary to monitor entrant status and alert entrants of the need to evacuate.
- To monitor activities inside and outside the space to determine if it is safe for entrants to remain in the space and orders the entrants to immediately evacuate if: the attendant detects a prohibited condition, detects entrant behavioral effects of hazard exposure, detects a situation outside the space that could endanger the entrants; or if the attendant cannot effectively and safely perform all the attendant duties.
- To summon rescue and other emergency services as soon as the attendant determines the entrants need assistance to escape the permit space hazards.
- To perform non-entry rescues as specified by that rescue procedure and entry supervisor
- Not to perform duties that might interfere with the attendants' primary duty to monitor and protect the entrants.
- To take the following action when unauthorized persons approach or enter a permit space while entry is under way:
    1. Warn the unauthorized persons that they must stay away from the permit space,
    2. Advise unauthorized persons that they must exit immediately if they have entered the space, and
    3. Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.

Entrants

All entrants must be authorized by the entry supervisor to enter permit spaces, have received the required training, used the proper equipment, and observes the entry procedures and permit. The following entrant duties are required:

- Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;
- Properly use the equipment required for safe entry;
- Communicate with the attendant as necessary to enable the attendant to monitor the status of the entrants and to enable the attendant to alert the entrants of the need to evacuate the space if necessary;
- Alert the attendant whenever; the entrant recognizes any warning signs or symptoms of exposure to a dangerous situation, or any prohibited condition is detected; and

- Exit the permit space as quickly as possible whenever; the attendant or entry supervisor gives an order to evacuate the permit space, the entrant recognized any warning signs or symptoms of exposure to a dangerous situation, the entrant detects a prohibited condition, or an evacuation alarm activated.

Definition of Confined Spaces Requiring an Entry Permit

A "confined space" as recognized under general safety and OSHA interpretation:

1. Is large enough or so configured that an employee can bodily enter and perform work.
2. Has limited or restricted means for entry or exit (i.e. tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry).
3. Is not designed for continuous employee occupancy.

Permit required confined space (permit space), is a confined space that has one or more of the following characteristics:

1. Contains or has a potential to contain a hazardous atmosphere.
2. Contains a material that has the potential for engulfing an entrant.
3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly covering walls or by a floor that slopes downward and tapers to a smaller cross-section.
4. Contains any other recognized serious safety or health hazard.

Each Permit-Required Confined Space will be marked "Confined Space – Entry Permit Required".

Entry Standard Operating Procedures

A Standard Operating Procedure (SOP) has been developed for each space to standardize the entry procedure. The SOP outlines:

- Hazards
- Hazard Control & Abatement
- Acceptable Entry Conditions
- Means of Entry
- Entry Equipment Required
- Emergency Procedures

Permit Required Confined Space Entry General Rules

During all Confined Space Entries, the following Safety Rules must be strictly enforced:

1. Only Authorized and Trained Employees may enter a Confined Space or act as Safety Watch person.
2. No Smoking is permitted in a Confined Space or near entrance/exit area.
3. During Confined Space Entries, a Watch person must be present at all times.
4. Constant visual or voice communication will be maintained between the Safety Watch person and Employees entering a Confined Space.
5. No bottom or side entry will be made or work conducted below the level any hanging material or material which could cause engulfment.
6. Air and Oxygen Monitoring is required before entering any Permit-Required Confined Space. Oxygen levels in a Confined Space must be between 19.5 and 23.5 percent. Levels above or below will require the use of an SCBA or other approved air supplied respirator. Additional ventilation and Oxygen Level Monitoring is required when welding is performed. The monitoring will check Oxygen Levels, Explosive Gas Levels and Carbon Monoxide Levels. Entry will not be permitted if explosive gas is detected above one-half the Lower Explosive Limit (LEL).
7. To prevent injuries to others, all openings to Confined Spaces will be protected by a barricade when covers are removed.

Confined Space Entry Procedures

Each employee who enters or is involved in the entry must:

1. Understand the procedures for confined Space Entry
2. Know the Hazards of the specific space
3. Review the specific procedures for each entry
4. Understand how to use entry and rescue equipment

Confined Space Entry Permits

Confined Space Entry Permits must be completed before any Employee enters a Permit-Required Confined Space. The Permit must be completed and signed by an Authorized Member of Management before entry.

Permits will expire before the completion of the shift or if any pre-entry conditions change. Permits will be maintained on file for 12 months.

Contractor Entry

All work by non-company employees that involves the entry into confined spaces will follow the procedures of this program. The information of this program and specific hazards of the confined spaces to be entered will be provided to Contractor Management prior to commencing entry or work.

Training

Training for Confined Space Entry includes:

- Duties of Entry Supervisor, Entrant and Attendants
- Confined Space Entry permits
- Hazards of Confined Spaces
- Use of Air Monitoring Equipment
- First Aid and CPR Training
- Emergency Action & Rescue Procedures
- Confined Space Entry & Rescue Equipment
- Rescue training, including entry and removal from representative spaces

Confined Space Hazards

Flammable Atmospheres

A flammable atmosphere generally arises from enriched oxygen atmospheres, vaporization of flammable liquids, byproducts of work, chemical reactions, concentrations of combustible dusts, and "desorption" of chemical from inner surfaces of the confined space.

An atmosphere becomes flammable when the ratio of oxygen to combustible material in the air is neither too rich nor too lean for combustion to occur. Combustible gases or vapors will accumulate when there is inadequate ventilation in areas such as a confined space. Flammable gases such as acetylene, butane, propane, hydrogen, methane, natural or manufactured gases or vapors from liquid hydrocarbons can be trapped in confined spaces, and since many gases are heavier than air, they will seek lower levels as in pits, sewers, and various types of storage tanks and vessels. In a closed top tank, it should also be noted that lighter than air gases may rise and develop a flammable concentration if trapped above the opening.

The byproducts of work procedures can generate flammable or explosive conditions within a confined space. Specific kinds of work such as spray painting can result in the release of explosive gases or vapors. Welding in a confined space is a major cause of explosions in areas that contain combustible gas.

Chemical reactions forming flammable atmospheres occur when surfaces are initially exposed to the atmosphere, or when chemicals combine to form flammable gases. This condition arises when dilute sulfuric acid reacts with iron to form hydrogen or when calcium carbide makes contact with water to form acetylene. Other examples of spontaneous chemical reactions that may produce explosions from small amounts of unstable compounds are acetylene-metal compounds, peroxides, and nitrates. In a dry state, these compounds have the potential to explode upon percussion or exposure to increased temperature.

Another class of chemical reactions that form flammable atmospheres arise from deposits of pyrophoric substances (carbon, ferrous oxide, ferrous sulfate, iron, etc.) that can be found in tanks used by the chemical and petroleum industry. These tanks containing flammable deposits will spontaneously ignite upon exposure to air.

Combustible dust concentrations are usually found during the process of loading, unloading, and conveying grain products, nitrated fertilizers, finely ground chemical products, and any other combustible material. High charges of static electricity, which rapidly accumulate during periods of relatively low humidity (below 50%), can cause certain substances to accumulate electrostatic charges of sufficient energy to produce sparks and ignite a flammable atmosphere. These sparks may also cause explosions when the right air or oxygen to dust or gas mixture is present.

Toxic Atmospheres

The substances to be regarded as toxic in a confined space can cover the entire spectrum of gases, vapors, and finely-divided airborne dust in industry. The sources of toxic atmospheres encountered may arise from the following:

- The manufacturing process (for example, in producing polyvinyl chloride, hydrogen chloride is used as will as vinyl chloride monomer, which is carcinogenic).
- The product stored [removing decomposed organic material from a tank can liberate toxic substances, such as hydrogen sulfide (H_2S)].
- The operation performed in the confined space (for example, welding or brazing with metals capable of producing toxic fumes).

During loading, unloading, formulation, and production, mechanical and/or human error may also produce toxic gases which are not part of the planned operation.

Carbon monoxide (CO) is a hazardous gas that may build up in a confined space. This odorless, colorless gas that has approximately the same density as air is formed from incomplete combustion of organic materials such as wood, coal, gas, oil, and gasoline; it can be formed from microbial decomposition of organic matter in sewers, silos, and fermentation tanks.

Carbon monoxide is an insidious toxic gas because of its poor warning properties. Early stages of CO intoxication are nausea and headache. Carbon monoxide may be fatal at 1000 ppm in air, and is considered dangerous at 200 ppm, because it forms carboxyhemoglobin in the blood which prevents the distribution of oxygen in the body.

Carbon monoxide is a relatively abundant colorless, odorless gas, therefore, any untested atmosphere must be suspect. It must also be noted that a safe reading on a combustible gas indicator does not ensure that CO is not present. Carbon monoxide must be tested for specifically. The formation of CO may result from chemical reactions or work activities, therefore fatalities due to CO poisoning are not confined to any particular industry.

There have been fatal accidents in sewage treatment plants due to decomposition products and lack of ventilation in confined spaces. Another area where CO results as a product of decomposition is in the formation of silo gas in grain storage elevators. In another area, the paint industry, varnish is manufactured by introducing the various ingredients into a kettle, and heating them in an inert atmosphere, usually town gas, which is a mixture of carbon dioxide and nitrogen.

In welding operations, oxides of nitrogen and ozone are gases of major toxicologic importance, and incomplete oxidation may occur and carbon monoxide can form as a byproduct.

Another poor work practice, which has led to fatalities, is the recirculation of diesel exhaust emissions. Increased CO levels can be prevented by strict control of the ventilation and the use of catalytic converters.

Irritant (Corrosive) Atmospheres

Irritant or corrosive atmospheres can be divided into primary and secondary groups. The primary irritants exert no systemic toxic effects (effects on the entire body). Examples of primary irritants are chlorine, ozone, hydrochloric acid, hydrofluoric acid, sulfuric acid, nitrogen dioxide, ammonia, and sulfur dioxide. A secondary irritant is one that may produce systemic toxic effects in addition to surface irritation. Examples of secondary irritants include benzene, carbon tetrachloride, ethyl chloride, trichloroethane, trichloroethylene, and chloropropene.

Irritant gases vary widely among all areas of industrial activity. They can be found in plastics plants, chemical plants, the petroleum industry, tanneries, refrigeration industries, paint manufacturing, and mining operations.

Prolonged exposure at irritant or corrosive concentrations in a confined space may produce little or no evidence of irritation. This may result in a general weakening of the defense reflexes from changes in sensitivity. The danger in this situation is that the worker is usually not aware of any increase in his/her exposure to toxic substances.

Asphyxiating Atmospheres

The normal atmosphere is composed approximately of 20.9% oxygen and 78.1% nitrogen, and 1% argon with small amounts of various other gases. Reduction of oxygen in a confined space may be the result of either consumption or displacement.

The consumption of oxygen takes place during combustion of flammable substances, as in welding, heating, cutting, and brazing. A more subtle consumption of oxygen occurs during bacterial action, as in the fermentation process.

Oxygen may also be consumed during chemical reactions as in the formation of rust on the exposed surface of the confined space (iron oxide). The number of people working in a confined space and the amount of their physical activity will also influence the oxygen consumption rate.

A second factor in oxygen deficiency is displacement by another gas. Examples of gases that are used to displace air, and therefore reduce the oxygen level are helium, argon, and nitrogen. Carbon dioxide may also be used to displace air and can occur naturally in sewers, storage bins, wells, tunnels, wine vats, and grain elevators. Aside from the natural development of these gases, or their use in the chemical process, certain gases are also used as inerting agents to displace flammable substances and retard pyrophoric reactions.

Gases such as nitrogen, argon, helium, and carbon dioxide, are frequently referred to as non-toxic inert gases but have claimed many lives. The use of nitrogen to inert a confined space has claimed more lives than carbon dioxide. The total displacement of oxygen by nitrogen will cause immediate collapse and death. Carbon dioxide and argon, with specific gravities greater than air, may lie in a tank or manhole for hours or days after opening. Since these gases are colorless and odorless, they pose an immediate hazard to health unless appropriate oxygen measurements and ventilation are adequately carried out.

Oxygen deprivation is one form of asphyxiation. While it is desirable to maintain the atmospheric oxygen level at 21% by volume, the body can tolerate deviation from this ideal. When the oxygen level falls to 17%, the first sign of hypoxia is a deterioration to night vision which is not noticeable until a normal oxygen concentration is restored. Physiologic effects are increased breathing volume and accelerated heartbeat. Between 14-16% physiologic effects are increased breathing volume, accelerated heartbeat, very poor muscular coordination, rapid fatigue, and intermittent respiration. Between 6-10% the effects are nausea, vomiting, inability to perform, and unconsciousness. Less than 6%, spasmatic breathing, convulsive movements, and death in minutes.

Mechanical Hazards

If activation of electrical or mechanical equipment would cause injury, each piece of equipment should be manually isolated to prevent inadvertent activation before workers enter or while they work in a confined space. The interplay of hazards associated with a confined space, such as the potential of flammable vapors or gases being present, and the build-up of static charge due to mechanical cleaning, such as abrasive blasting, all influence the precautions which must be taken.

To prevent vapor leaks, flashbacks, and other hazards, workers should completely isolate the space. To completely isolate a confined space, the closing of valves is not sufficient. All pipes must be physically disconnected or isolation blanks bolted in place. Other special precautions must be taken in cases where flammable liquids or vapors may re-contaminate the confined space.

The pipes blanked or disconnected should be inspected and tested for leakage to check the effectiveness of the procedure. Other areas of concern are steam valves, pressure lines, and chemical transfer pipes. A less apparent hazard is the space referred to as a void, such as double walled vessels, which must be given special consideration in blanking off and inerting.

Thermal Effects

Four factors influence the interchange of heat between people and their environment. They are: (1) air temperature, (2) air velocity, (3) moisture contained in the air, and (4) radiant heat. Because of the nature and design of most confined spaces, moisture content and radiant heat are difficult to control. As the body temperature rises progressively, workers will continue to function until the body temperature reaches approximately 102°F. When this body temperature is exceeded, the workers are less efficient, and are prone to heat exhaustion, heat cramps, or heat stroke. In a cold environment, certain physiologic mechanisms come into play, which tend to limit heat loss and increase heat production. The most severe strain in cold conditions is chilling of the extremities so that activity is restricted. Special precautions must be taken in cold environments to prevent frostbite, trench foot, and general hypothermia.

Protective insulated clothing for both hot and cold environments will add additional bulk to the worker and must be considered in allowing for movement in the confined space and exit time. Therefore, air temperature of the environment becomes an important consideration when evaluating working conditions in confined spaces.

Noise

Noise problems are usually intensified in confined spaces because the interior tends to cause sound to reverberate and thus expose the worker to higher sound levels than those found in an open environment. This intensified noise increases the risk of hearing damage to workers which could result in temporary or permanent loss of hearing. Noise in a confined space which may not be intense enough to cause hearing damage may still disrupt verbal communication with the emergency standby person on the exterior of the confined space. If the workers inside are not able to hear commands or danger signals due to excessive noise, the probability of severe accidents can increase.

Vibration

Whole body vibration may affect multiple body parts and organs depending upon the vibration characteristics. Segmental vibration, unlike whole body vibration, appears to be more localized in creating injury to the fingers and hands of workers using tools, such as pneumatic hammers, rotary grinders or other hand tools which cause vibration.

Other Hazards

Some physical hazards cannot be eliminated because of the nature of the confined space or the work to be performed. These hazards include such items as scaffolding, surface residues, and structural hazards. The use of scaffolding in confined spaces has contributed to many accidents caused by workers or materials falling, improper use of guard rails, and lack of maintenance to insure worker safety. The choice of material used for scaffolding depends upon the type of work to be performed, the calculated weight to be supported, the surface on which the scaffolding is placed, and the substance previously stored in the confined space.

Surface residues in confined spaces can increase the already hazardous conditions of electrical shock, reaction of incompatible materials, liberation of toxic substances, and bodily injury due to slips and falls. Without protective clothing, additional hazards to health may arise due to surface residues.

Structural hazards within a confined space such as baffles in horizontal tanks, trays in vertical towers, bends in tunnels, overhead structural members, or scaffolding installed for maintenance constitute physical hazards, which are exacerbated by the physical surroundings. In dealing with structural hazards, workers must review and enforce safety precautions to assure safety.

Hot Work Welding, Burning and Cutting

Applicable OSHA Standard: 29 CFR 1910 Subpart Q

Purpose: This policy is intended as a guide for the safe use of welding and burning equipment.

Scope: This policy applies to all employees and subcontractors working within Cypress Creek Pipeline Maintenance controlled job sites.

1.0 General

1.1 "Hot work" means riveting, welding, flame cutting or other fire or spark-producing operation.

1.2 Only properly trained and instructed employees shall be permitted to use electric, oxygen and fuel gas welding, burning and cutting equipment.

1.3 Employees shall be protected from radiant energy eye hazards by spectacles, cup goggles, helmets, hand shields or face shields with filter lenses. Filter lenses shall have an appropriate shade number, as indicated in the following table for the work performed. Variations of one or two shade numbers are permissible to suit individual preferences.

FILTER LENSES FOR PROTECTION AGAINST RADIANT ENERGY

Operation	Shade No.
Soldering	2
Torch Brazing	3 or 4
Light cutting, up to 1 inch	3 or 4
Medium cutting, 1-6 inches	4 or 5
Heavy cutting, over 6 inches	5 or 6
Light gas welding, up to 1/8"	4 or 5
Medium gas welding, 1/8 – ½"	5 or 6
Heavy gas welding, over ½"	6 or 8
Shielded Metal-Arc Welding 1/16 to 5/32 - inch electrodes.	10
Inert-gas Metal-Arc Welding (Non-ferrous) 1/16 - to 5/32 - inch electrodes.	11
Shielded Metal-Arc Welding: 3/16 to 1/4 - inch electrodes 5/16 - and 3/8 - inch electrodes	 12 14

1.4 To the extent possible, hot work shall be performed in designated locations that are free of hazards.

1.5 Hot work shall not be performed in flammable or potentially flammable atmospheres, on or in equipment or tanks that have contained flammable gas or liquid or combustible liquid or dust-producing material, until a designated person has tested the atmosphere inside the equipment or tanks and determined that it is not hazardous.

1.6 When hot work must be performed in a location that is not free of hazards, all necessary precautions shall be taken to confine heat, sparks, and slag so that they cannot contact flammable or combustible material.

1.7 Fire extinguishing equipment suitable for the location shall be immediately available and shall be maintained in readiness for use at all times (see *Fire Protection Prevention Training*).

1.8 Drums and containers which contain or have contained flammable or combustible liquids shall be kept closed. Empty containers shall be removed from the hot work area.

1.9 Inspect all leads torches, hoses, gauges and other equipment daily before use.

1.10 Always check around and below before commencing hot work operations. Use blankets or other protective devices where required. Cover electrical wires to prevent damage.

1.11 Wear an approved respirator or assure some means of local exhaust ventilation when performing hot work in an area subject to accumulation of fumes and vapor. When in doubt, ask the Site Safety Supervisor/Representative for assistance. Any employee exposed to the same atmosphere as the welder or burner shall be protected by the same type of respiratory and other protective equipment as that worn by the welder or burner.

Hot work activities requiring local ventilation and/or respirators include:

a) Zinc bearing base or filler metal or metals coated with zinc bearing materials (see *Lead Compliance Program*).

b) Lead based metals; metals containing lead other than as an impurity or metals coated with lead bearing materials (*see Lead Compliance Program*).

c) Cadmium bearing filler materials; or cadmium coated base materials.

d) Chromium bearing metals or metals coated with chromium bearing materials.

e) Beryllium containing base or filler metals. Because of it's high toxicity, work involving beryllium shall be done with both local exhaust ventilation and air supplied respirators.

1.12 Adequate spark containment methods or barricades shall be used when welding burning or cutting overhead.

1.13 Never heat an object lying flat on a concrete floor. Be sure to provide an air space between the material and the floor, as concrete will explode under extreme heat.

2.0 Electric Arc Welding and Cutting

2.1 All work shall have a separate and adequate ground.

2.2 Welding leads shall not be placed in aisles, stairways or landings where they will present tripping hazards. Excessive leads and hoses should be avoided.

2.3 Only manual electrode holders intended for arc welding and cutting and capable of handling the maximum current required for such welding or cutting shall be used.

2.4 Current-carrying parts passing through those portions of the holder gripped by the user and through the outer surfaces of the jaws of the holder shall be insulated against the maximum voltage to ground.

2.5 Arc welding and cutting cables shall insulated, flexible and capable of handling the maximum current required by the operations, taking into account the duty cycles.

2.6 Only cable free from repair or splice for 10 feet (3 m) from the electrode holder shall be used unless insulated connectors or splices with insulating quality equal to that of the cable are provided.

2.7 Insulated connectors of equivalent capacity shall be used for connecting or splicing cable. Cable lugs, where used as connectors, shall provide electrical contact. Exposed metal parts shall be insulated.

2.8 Ground return cables shall have current-carrying capacity equal to or exceeding the total maximum output capacities of the welding or cutting units served.

2.9 Arc welding and cutting machine frames shall be grounded, either through a third wire in the cable containing the circuit conductor or through a separate wire at the source of the current. Grounding circuits shall have resistance low enough to permit sufficient current to flow to cause the fuse or circuit breaker to interrupt the current.

2.10 When electrode holders are left unattended, electrodes shall be removed and holders placed to prevent employee injury.

2.11 Hot electrode holders shall not be dipped in water.

2.12 When arc welders or cutters leave or stop work or when machines are moved, the power supply switch shall be kept in the off position.

2.13 Arc welding or cutting equipment having a functional defect shall not be used.

2.14 Arc welding and cutting operations shall be separated from other operations by shields, screens, or curtains to protect employees in the vicinity from the direct rays and sparks of the arc.

3.0 Gas Welding and Cutting

3.1 Compressed gas cylinders:

a) Shall have valve protection caps in place except when in use, hooked up or secured for movement. Oil shall not be used to lubricate caps;

b) Shall be hoisted only while secured, as on a cradle or pallet, and shall not be hoisted by mallet, choker sling or cylinder caps;

c) Shall be moved only by tilting or rolling on their bottom edges;

d) Shall be secured when moved by vehicle;

e) Shall be secured while in use;

f) Shall have valves closed when cylinders are empty, being moved or stored;

g) Shall be secured upright except when hoisted or carried;

h) Shall not be freed when frozen by prying the valves or caps with bars or by hitting the valve with a tool;

i) Shall not be thawed by boiling water;

j) Shall not be exposed to spark, hot slag, or flame;

k) Shall not be permitted to become part of electrical circuits or have electrodes struck against them to strike arcs;

l) Shall not be used as rollers or supports;

m) Shall not have contents used for purposes not authorized by the supplier;

n) Shall not be used if damaged or defective;

o) Shall not have gases mixed within, except by gas suppliers;

p) Shall be stored so that oxygen cylinders are separated from fuel gas cylinders and combustible materials by either a minimum distance of 20 feet (6 m) or a barrier having a fire-resistance rating of 30 minutes;

q) Shall not have objects that might either damage the safety device or obstruct the valve placed on top of the cylinder when in use.

3.2 Fuel gas shall be used only as follows:

a) Before regulators are connected to cylinder valves, the valves shall be opened slightly (cracked) and closed immediately to clear away dust or dirt. Valves shall not be cracked if gas could reach possible sources of ignition;

b) Cylinder valves shall be opened slowly to prevent regulator damage and shall not be opened more than 1 1/2 turns. Any special wrench required for emergency closing shall be positioned on the valve stem during cylinder use. For manifolded or coupled cylinders, at least one wrench shall be immediately available. Nothing shall be placed on top of a cylinder or associated parts when the cylinder is in use.

c) Pressure-reducing regulators shall be attached to cylinder valves when cylinders are supplying torches or devices equipped with shut-off valves;

d) Cylinder valves shall be closed and gas released from the regulator or manifold before regulators are removed;

e) Leaking fuel gas cylinder valves shall be closed and the gland nut tightened. If the leak continues, the cylinder shall be tagged, removed from service, and moved to a location where the leak will not be hazardous. If a regulator attached to a valve stops a leak, the cylinder need not be removed from the workplace but shall be tagged and may not be used again before it is repaired;

f) If a plug or safety device leaks, the cylinder shall be tagged, removed from service, and moved to a location where the leak will not be hazardous.

3.3 Fuel gas and oxygen hoses shall be easily distinguishable from each other by color or sense of touch. Oxygen and fuel hoses shall not be interchangeable. Hoses having more than one gas passage shall not be used.

3.4 When oxygen and fuel gas hoses are taped together, not more than four (4) of each 12 inches (10.2 cm of each 30.5 cm) shall be taped.

3.5 Hose shall be inspected before use. Hose subjected to flashback or showing evidence of severe wear or damage shall be tested to twice the normal working pressure but not less than 200 p.s.i. (1378.96 kPa) before reuse. Defective hose shall not be used.

3.6 Hose coupling shall not unlock or disconnect without rotary motion.

3.7 Hose connections shall be clamped or securely fastened to withstand twice the normal working pressure but not less than 300 p.s.i. (2068.44 kPa) without leaking.

3.8 Gas hose storage boxes shall be ventilated.

3.9 Torch tip openings shall only be cleaned with devices designed for that purpose.

3.10 Torches shall be inspected before each use for leaking shut-off valves, hose couplings and tip connections. Torches with such defects shall not be used.

3.11 Fire Prevention (*See Fire Protection Prevention Training*)

Appendix H – Submittals List

Submittals List

Project Planning and Administration Submittals

Submittal No.	Title	Appendix or Section
P02	Construction Permits	J-01
P03	Safety Plan	Appendix F and G
P04	Drug and Alcohol Testing	Section
P05	Hazardous Material Control	Section
P06	Contractor Furnished Material List	Appendix I

Materials and Workmanship Submittals

Submittal No.	Title	Appendix or Section
W01	Welder Personnel Certification	J-02
	Welding Procedures	J-03
W06	Manufacturers Catalog Data - Valves	J-09
W09	Manufacturers Catalog Data – Pig Trap Closures	J-10
W14	Manufacturers Catalog Data – Pressure Gauges	J-11
W15	Manufacturers Catalog Data – Pig Signals	J-12
	Manufacturers Certificate of Compliance - Pipe	J-07
	Manufacturers Certificate of Compliance – Valves	J-08
W22	MSDS for all Hazardous Material on Site	J-21
W26	Manufacturers Catalog Data - Coating	J-13
W29	Coating Manufacturers Instructions	J-13
W30	Painting Instructions – Environmental Conditions for Application	J-13

Construction Submittals

Submittal No.	Title	Appendix or Section
W01	Welder Personnel Certification	J-02
Q05	Welding - NDT Personnel Qualifications	J-04

Construction Submittals

Submittal No.	Title	Appendix or Section
	Manufacturers Catalog Data – Pressure Gauges	J-11
	Manufacturers Catalog Data – Coating	J-13
	Coating Manufacturers Instructions	J-13
	Manufacturers Catalog Data – Pig Trap Closures	J-10
	Manufacturers Catalog Data – Pig Signals	J-12
	Manufacturers Catalog Data – Valves	J-09
	Manufacturers Certificate of Compliance - Pipe	J-07
	Manufacturers Certificate of Compliance – Valves	J-08
W22	MSDS for all Hazardous Material on Site	J-21
	Oxygen Meter Certification of Calibration	J-23
	Inspection – Inspector Personnel Qualifications	J-24
Q08	Welding – Radiographic Inspection of Welds Reports	J-05
	Contractor Records or Weld Examinations (Weld Maps)	J-06
	Worley Daily Production Reports	J-14
	Worley Weekly Production Reports	J-15
	Contractor Project Daily Time Sheets	J-16
	Contractor Furnished Material List	Appendix I
	Pre-Implementation Meeting Minutes	J-17
	QC Meting Minutes	J-18
	Excavation Permits	J-01
	Safety Meeting Sign-In Forms	J-19
	Hot Work Permits	J-01
	Incident Reports	J-20
	Non-Hazardous Waste Manifest	J-22
	GPS Pipeline Readings	J-25

Quality Control and Testing Submittals

Submittal No.	Title	Appendix or Section
Q01	Quality Control Checklist – Work Item Checklist	J-26
Q04	Worley Daily Production Reports	J-14
	Worley Weekly Production Reports	J-15
Q05	Welding - NDT Personnel Qualifications	J-04
Q08	Welding – Radiographic Inspection of Welds Reports	J-05
Q15	Close-out Submittals – Valve Installation Statement	Appendix A
Q16	Close-out Submittals QC Final Certification	Appendix A

Appendix I – Contractor Furnished Materials

Contract Furnished Materials List

Material Description	Spec.	N.S (IN)	SCH	Quantity	
VALVE					
General Twin Seal, DB&B Valve, Reduced Bore, FE	ANSI 150#	16"		6	each
General Twin Seal, DB&B Valve, Reduced Bore, FE	ANSI 150#	12"		7	each
General Twin Seal, DB&B Valve, Reduced Bore, FE	ANSI 150#	10"		2	each
General Twin Seal, DB&B Valve, Reduced Bore, FE	ANSI 150#	8"		2	each
General Twin Seal, DB&B Valve, Reduced Bore, FE	ANSI 150#	6"		2	each
General Twin Seal, DB&B Valve, Reduced Bore, FE	ANSI 150#	4"		14	each
General Twin Seal, DB&B Valve, Full Bore, FE	ANSI 150#	12"		2	each
Ball Valve, RP, FE	ANSI 150#	2"		4	each
Ball Valve, RP, FE	ANSI 150#	1 1/2"		4	each
Ball Valve, RP, Thrd.	ANSI 150#	2"		18	each
Ball Valve, RP, Thrd.	ANSI 150#	1 1/2"		2	each
Ball Valve, RP, Thrd.	ANSI 150#	1"		12	each
Ball Valve, RP, Thrd.	ANSI 150#	3/4"		18	each
Ball Valve, RP, Thrd.	ANSI 150#	1/2"		12	each
Needle Valve, Thrd.	ANSI 150#	3/4"		2	each
Check Valve, FE	ANSI 150#	2"		1	each
Pressure Releif Check Valve, threaded	ANSI 150#	1"		12	each
PIPE					
Pipe CS, ASTM-A53-97 ERW	Grade B	16"	STD	18	feet
Pipe CS, ASTM-A53-97 ERW	Grade B	12"	STD	258	feet
Pipe CS, ASTM-A53-97 ERW	Grade B	10"	STD	36	feet
Pipe CS, ASTM-A53-97 ERW	Grade B	8"	STD	54	feet
Pipe CS, ASTM-A53-97 ERW	Grade B	6"	STD	60	feet
Pipe CS, ASTM-A53-97 ERW	Grade B	4"	STD	90	feet
Pipe CS, ASTM-A53-97 ERW	Grade B	2"	STD	90	feet
Pipe CS, ASTM-A53-97 ERW	Grade B	1 1/2"	STD	20	feet
Pipe CS, ASTM-A53-97 Seamless	Grade B	1"	STD	40	feet
FLANGE					
Flange, WN, RF, CS	ANSI 150#	16"	STD	2	each
Flange, WN, RF, CS	ANSI 150#	12"	STD	19	each
Flange, WN, RF, CS	ANSI 150#	10"	STD	4	each
Flange, WN, RF, CS	ANSI 150#	8"	STD	11	each
Flange, WN, RF, CS	ANSI 150#	6"	STD	4	each
Flange, WN, RF, CS	ANSI 150#	4"	STD	14	each
Flange, WN, RF, CS	ANSI 150#	2"	STD	7	each

Material Description	Spec.	N.S (IN)	SCH	Quantity	
Flange, RF Slip-on	ANSI 150#	12"	STD	1	each
Flange, RF Slip-on	ANSI 150#	8"	STD	1	each
Flange, RF Slip-on	ANSI 150#	2"	STD	10	each
Flange, RF Slip-on	ANSI 150#	1 1/2"	STD	8	each
Flange, RF Threaded, Stainless Steel	ANSI 150#	4"	STD	14	each
Flange, RF Threaded	ANSI 150#	2"	STD	1	each
Blind Flange, RF, CS	ANSI 150#	12"	STD	8	each
Blind Flange, RF, CS	ANSI 150#	8"	STD	1	each
Blind Flange, RF, CS	ANSI 150#	6"	STD	6	each
Blind Flange, RF, CS	ANSI 150#	2"	STD	11	each
TEE					
Tee B.W.	CS	16"	STD	1	each
Tee B.W.	CS	12"	STD	5	each
Tee B.W.	CS	6"	STD	1	each
Reducing Tee, B.W	CS	16" x 12"	STD	1	each
Reducing Tee, B.W	CS	16" x 6"	STD	1	each
Reducing Tee, B.W	CS	12" x 6"	STD	1	each
Tee Socket Welded	CS	2"	STD	8	each
Reducing Tee, Threaded	CS	2" x 1/2"	STD	6	each
Reducing Tee, Threaded	CS	1" x 1/2"	STD	6	each
ELBOW					
Elbow 45 Deg, BW, Long Radius	CS	16"		4	each
Elbow 90 Deg, BW, Long Radius	CS	12"	STD	18	each
Elbow 90 Deg, BW, Short Radius	CS	12"	STD	1	each
Elbow 45 Deg, BW, Long Radius	CS	12"	STD	4	each
Elbow 90 Deg, BW, Long Radius	CS	8"	STD	2	each
Elbow 90 Deg, BW, Long Radius	CS	6"	STD	5	each
Elbow 90 Deg, Thrd.	CS	2"	ES	32	each
Elbow 90 Deg, Thrd.	CS	1 1/2"	ES	8	each
Elbow 90 Deg, Thrd.	CS	1"	ES	24	each
Elbow 90 Deg, Thrd.	CS	3/4"	ES	25	each
Elbow 90 Deg, Socket Weld	CS	2"	ES	17	each
BEND					
90 Deg, 3D Radius Hot bend with 2 ft tangents	CS	12"	STD	2	each
45 Deg, 3D Radius Hot bend with 2 ft tangents	CS	12"	STD	3	each

Material Description	Spec.	N.S (IN)	SCH	Quantity	
REDUCER					
Concentric Reducer, B.W	CS	18" x 12"	STD	2	each
Concentric Reducer, B.W.	CS	16" x 12"	STD	2	each
Concentric Reducer, B.W.	CS	8" x 4"	STD	14	each
Concentric Reducer, B.W.	CS	2" x 1 1/2"	STD	6	each
CAP					
Cap, Weld end	CS	12"	STD	8	each
Cap, Weld end	CS	8"	STD	2	each
Cap, Weld end	CS	4"	STD	2	each
Cap, Weld end	CS	2"	STD	1	each
Cap, Thrd.	CS	2"	ES	10	each
Cap, Thrd.	CS	3/4"	ES	13	each
GASKET					
Spiral Wound Gasket	ANSI 150#	16"		8	each
Spiral Wound Gasket	ANSI 150#	12"		41	each
Spiral Wound Gasket	ANSI 150#	10"		6	each
Spiral Wound Gasket	ANSI 150#	8"		12	each
Spiral Wound Gasket	ANSI 150#	6"		12	each
Spiral Wound Gasket	ANSI 150#	4"		28	each
Spiral Wound Gasket	ANSI 150#	2"		24	each
Spiral Wound Gasket	ANSI 150#	1 1/2"		8	each
Insulating Gasket	ASNI 150#	16"		4	each
Insulating Gasket	ASNI 150#	12"		2	each
Insulating Gasket	ASNI 150#	8"		1	each
Garlock Paper Gasket	ANSI 150#	12"		10	each
Garlock Paper Gasket	ANSI 150#	6"		10	each
Garlock Paper Gasket	ANSI 150#	2"		6	each
Garlock Paper Gasket	ANSI 150#	1 1/2"		4	each
NIPPLE					
Nipple TBE 4" x 4"	SS	4"	STD	14	each
Nipple TBE 2" x 3"	CS	2"	ES	22	each
Nipple TBE 2" x 2"	CS	2"	ES	31	each
Nipple TBE 2" x 6"	CS	2"	ES	3	each
Nipple TBE 1" x 2"	CS	1"	ES	24	each
Nipple TBE 3/4" x 2"	CS	3/4"	ES	28	each
Nipple TBE 3/4" x 6"	CS	3/4"	ES	23	each

Material Description	Spec.	N.S (IN)	SCH	Quantity	
Nipple TBE 1/2" x 2"	CS	1/2"	ES	3	each
WELDOLET					
Weldolet	CS	2"	ES	3	each
THREADOLET					
Threadolet	CS	2"	STD	16	each
Threadolet	CS	1 1/2"	STD	12	each
Threadolet	CS	1"	ES	16	each
Threadolet	CS	3/4"	ES	18	each
SADDLE					
Saddle, Welded	CS	12" x 6"	STD	1	each
Saddle, Welded	CS	12" x 8"	STD	1	each
UNIONS					
Union, Threaded	CS	2"	STD	1	each
Union, Threaded, Insulated (Grounded)	CS	1"	STD	6	each
BUSHINGS					
Bushing, Threaded	CS	3/4" x 1/4"	STD	5	each
Bushing, Threaded	CS	1/2" x 1/4"	STD	3	each
PLUGS					
Plug, Threaded	CS	2"	STD	3	each
CAMLOCK FITTINGS					
Camlock Fitting Part B Threaded	SS	4"	STD	14	each
Camlock Part D Female x Threaded	SS	4"	STD	14	each
Camlock Dust Plug	SS	4"	STD	14	each
TUBING					
SS Tubing	SS	3/4"	STD	10	each
TRAP CLOSURES					
Hinged Pig Trap Closure	ANSI 150#	16"	STD	2	each
PIG INDICATOR					
Enduro Pig Popper	CS	2"	ES	2	each

Material Description	Spec.	N.S (IN)	SCH	Quantity	
AIR ELIMINATORS					
Air Eliminator, Threaded Cast Steel	ANSI 150#	2"	STD	8	each
PRESSURE GAUGE					
Pressure Gauge	0-1000 psi	1/4"		9	each
STUD AND NUT					
Bolt ASTM A-193A, Nut A-194A	Grade B8	1" x 5 1/4"		192	each
Bolt ASTM A-193A, Nut A-194A	Grade B8	7/8" x 4 1/2"		564	each
Bolt ASTM A-193A, Nut A-194A	Grade B8	3/4" x 4		104	each
Bolt ASTM A-193A, Nut A-194A	Grade B8	3/4" x 3 3/4"		96	each
Bolt ASTM A-193A, Nut A-194A	Grade B8	5/8" x 3 1/2"		224	each
Bolt ASTM A-193A, Nut A-194A	Grade B8	5/8" x 3"		84	each
Bolt ASTM A-193A, Nut A-194A	Grade B8	1/2" x 2 3/4"		32	each
PIPE SUPPORTS					
Adjustable Pipe Supports	Steel			9	each

Appendix J – Construction Submittals

Construction Submittals

SUBMITTAL	DESCRIPTION	NUMBER OF SHEETS
J-01	Construction Permits	67
J-02	Welder Personnel Certification	6
J-03	Welding Procedures	7
J-04	Welding - NDT Personnel Qualifications	24
J-05	Welding – Radiographic Inspection of Welds Reports	64
J-06	Contractor Records or Weld Examinations (Weld Maps)	22
J-07	Manufacturers Certificate of Compliance - Pipe	30
J-08	Manufacturers Certificate of Compliance – Valves	40
J-09	Manufacturers Catalog Data - Valves	32
J-10	Manufacturers Catalog Data – Pig Trap Closures	6
J-11	Manufacturers Catalog Data – Pressure Gauges	2
J-12	Manufacturers Catalog Data – Pig Signals	15
J-13	Manufacturers Catalog Data - Coating	16
J-14	Worley Daily Production Reports	64
J-15	Worley Weekly Production Reports	29
J-16	Contractor Project Daily Time Sheets	101
J-17	Pre-Implementation Meeting Minutes	4
J-18	QC Meeting Minutes	10
J-19	Safety Meeting Sign-In Forms	62
J-20	Incident Reports	3
J-21	MSDS for all Hazardous Material on Site	201
J-22	Non-Hazardous Waste Manifest	4
J-23	Oxygen Meter Certification of Calibration	3
J-24	Inspection – Inspector Personnel Qualifications	3
J-25	GPS Pipeline Readings	9
J-26	Quality Control Checklist – Work Item Checklist	2

J-01 Construction Permits

Public Works Dig Permit

Date April 2, 2002

From: Maintenance Control Division, PWD

To: **Worley International Inc.**

Subj: Excavation Permit for Repair Pipelines at Pit Valves

Ref: (a) Your memo of Digging Request.

The excavation permit is approved based on the existing information contained in construction drawings and utility plans.

1. **All excavated areas shall be returned to the original condition**, including but not limited to: concrete and road cuts, ground excavations, sidewalks and grass areas.
2. Care must be observed during the excavation process and excavation by hand shall be performed whenever utilities are present as shown in project drawings.
3. The contractor will arrange for repairs of any utilities damaged or disconnected.
4. If during the digging the operators or workers observe ceramics, bones, seashells, relics, or other potentially historic material, the work must be stopped and the Environmental Engineering Division contacted at (787) 865-3155 for an evaluation.
5. The contractor should get approval (signature) from Fuels Division, for any fuel lines, and NAVCOMTELSTA for any fiber optic cable or communication lines, prior to approval by Public Works Department.
6. Any soil/waste for disposal shall be arranged through EED.
7. Notify EED of any area found contaminated with petroleum product

Carlos Brow _____ Fuel lines

_____ Communication lines

Fuels Division Representative x 4080

NAVCOMTELSTA Representative x 4999

4/2/2002 _____ Environmental Division

Public Works Environmental Division

4/3/02 _____ Water, Electric / Sewer line

Public Works Maintenance Control Division 4268/4068 x 470,423

U.S. NAVAL STATION, ROOSEVELT ROADS
PUBLIC WORKS DEPARTMENT
PSC 1008 BOX 3021
FPO AA 34051-3021

4330
Memo N02C-A525
April 16, 2002

MEMORANDUM

From: Public Works Officer
To: Worley International Inc. (Kirsten Glesne)

Subj: BUILDING PERMIT 02-014, REPAIRS AND MODIFICATIONS TO FUELS SECONDARY PIPELINE SYSTEM (WR#21005053)

Encl: (1) Building Permit 02-014
(2) Public Works Dig Permit

1. Enclosure (1) has been approved. A copy of the Public Works Dig Permit issued by the Maintenance Control Division (MCD) is submitted in enclosure (2).

2. Point of contact is Mr. Pedro Calderín, Public Works Department, Technical Management Division, at 865-4156, extension 443.

T. D. PRICE, P.E.
By direction

Copy to:
EED
MCD
FIRE DEPARTMENT
FUELS DIVISION, J. RICE

BUILDING PERMIT
PART II, REVIEW FORM
NAVSTAROOSRDSINST 11011.1D

PERMIT NUMBER: 02-014

SECTION A – PERMIT REVIEW, TMD

DATE/TIME:

1. Project Title: **Repairs and Modifications to Fuels Secondary Pipeline System**

2. Project/Work Request # 21005053

3. Category Code # 125-10

4. Site Approval:

- [X] Routine
- [ ] Explosive Safety
- [ ] Airfield Safety
- [ ] Electromagnetic Radiation
- [ ] Hazards of Electromagnetic Radiation to Ordnance (HERO) Survey
- [ ] Hazards of Electromagnetic Radiation to Personnel (HERP) Survey
- [ ] Hazards of Electromagnetic Radiation to Fuels (HERF) Survey

5. Land Use:

- [X] Compatible
- [ ] Not Compatible

6. National Historic Preservation Act Compliance: (Architectural Resources) N/A

- [ ] Included in the National Register of Historic Places.
- [ ] Eligible/Potentially Eligible for the National Register of Historic Places
- [ ] State Historic Preservation Office Consultation Required

7. National Environmental Policy Act Compliance

- [X] Record of Categorical Exclusion (CATEX)
- [ ] Environmental Assessment (EA)
- [ ] Environmental Impact Statement (EIS)
- [ ] Preliminary Assessment of Environmental Effects (PAOEE)

8. Special Requirements:

- [ ] Base Exterior Architecture Plan (BEAP) Compliance
- [ ] Seismic Zone 3 Design
- [ ] 138 MPH Wind Load Design
- [ ] Energy Efficient Lighting
- [ ] Signs
- [X] Other- FUELS DIV. REQUIREMENTS

9. Asbestos Manager Certification:

- [ ] Required
  - [ ] Certified
  - [ ] Not Certified
- [X] Not Required

10. Real Estate Requirements: N/A

A. Real Estate Instrument
- [ ] New
- [ ] Renewal
- [ ] Modification

B. Assistant Secretary of the Navy Approval
- [ ] Required
- [ ] Exempt
  - [ ] Up to 5 Yr term with construction improvements less than $5,000
  - [ ] Agricultural Outlease with a term not to exceed 10 Years
  - [ ] Use Agreement and Host-Tenant agreements with other DOD agency
  - [ ] Renewal without right to construct improvements
  - [ ] Lease for mobile antenna with up to 20 Yr term

C. Other
- [ ] Inter-Service Support Agreement (ISSA)
- [ ] Memorandum of Agreement (MOA)
- [ ] Memorandum of Understanding (MOU)
- [ ] Environmental Baseline Survey (EBS)

11. Available Utility Capacities: N/A

A. Potable Water Capacity (GPD) _____
B. WWTP Capacity (MGD) _____
C. Power Capacity _____

12. Dedicated Utility Capacities to Future Projects: N/A

A. Potable Water (GPD) _____
B. WWTP (MGD) _____
C. Power _____

13. Remarks:

PREPARED BY: PEDRO CALDERIN 16 APR 2002

14. Endorsement

Signature: _____ Date: 18 Apr 02

BUILDING PERMIT

PART I, REQUEST AND APPROVAL FORM
NAVSTAROOSRDSINST 11011.1D

PERMIT NUMBER:

SECTION A – CUSTOMER REQUEST

DATE/TIME:

From: Worley International, Inc.
Attn: Kirsten Glesne

2. To: **Public Works Department**
Technical Management Division

3. Customer POC/Phone #:
713-933-1129 office
318-218-5303 mobile
☐ NSRR ☐ Tenant

4. Customer Signature: Kirsten Glesne

5. Date: 3/21/02

6. Type of Action:

- ☐ New Construction
- ☐ Relocation of Structure
- ☐ Space Allocation
- ☐ Major Modification to Existing Facility
- ☐ Signs/Pavement Markings Facility
- ☒ Excavation
- ☒ Maintenance and/or Repairs
- ☐ Addition to Existing Facility
- ☐ Equipment Installation
- ☐ Other

7. Project Description:
Worley will be doing repairs and modification to the JP-5, DMF and DFM Secondary pipeline systems. Work under this contract will include removal of valve pits, replacement of existing valves, replacement of existing piping and installation of new valves on existing pipeline. We will not be rerouting or installing any new pipelines. All work is a modification or repair to the existing system. Excavation will need to be done around the valve pits to be demolished as indicated in the sketches
All fuel removed from the pipeline will be returned to the system. All valve pits will be drained prior to excavation by fuels and handled properly. Solid waste (concrete) from the demolition of the valve pits will be hauled off site to a proper disposal site.

8. Proposed Site: Multiple locations, see attached maps and sketches

9. Approximate Area to be Impacted (i.e, acres, etc.): See attached maps and sketches

10. Project Utility Requirements:

- ☐ Potable Water
- ☐ Electric Power
- ☐ Fire Protection
- ☐ Sewer
- ☐ Telephone
- ☐ Network Connection
- ☐ Gas

11. Facility Requirements:

- ☐ Custodial Services
- ☐ Refuse Collection
- ☐ Preventive Maintenance for Dynamic Equipment
- ☐ Pest Control
- ☐ Grounds Maintenance
- ☐ Facility Operations and Maintenance

12. Other Project Requirements:

- ☐ Parking (# of Spaces) _____
- ☐ Humidity Control
- ☐ UPS
- ☐ Back-Up Generator
- ☐ Intrusion Detection System (IDS)
- ☐ Automatic Transfer Switch
- ☐ Remote Transmission of IDS
- ☐ Demolition
- ☐ Fencing

13. Special Environmental Considerations:

A. Hazardous Wastes	☐ Yes	☐ No	☒ Unknown	D. Asbestos	☐ Yes	☐ No	☒ Unknown
B. Oily Wastes	☐ Yes	☐ No	☒ Unknown	E. Lead	☐ Yes	☒ No	☐ Unknown
C. Conditional Exempt Wastes	☐ Yes	☐ No	☒ Unknown				

SECTION B – PERMIT ENDORSEMENTS

(TO BE FILLED IN BY PWD)

1. Endorsements:
TMD 16 APR 2002 FMTUD 16 APR 2002 EED 18 APR 2002 FIRE DIVISION 5 APR 2002

SECTION C – PERMIT APPROVALS

1. Approval:
- ☒ Granted
- ☐ Rejected
- ☐ Conditional

2. Conditions for Approval:

3. Type of Permit:
- ☐ New Construction Permit
- ☐ Space Allocation Permit
- ☐ Project Site Approval Permit
- ☐ Traffic Safety Permit
- ☒ Excavation
- ☐ Lay-down Area Permit
- ☐ Equipment Installation Permit
- ☐ Alteration, Maintenance and/or Repair Permit
- ☐ Asbestos/Lead Abatement Permit

4. Project/Work Request #
21005053

5. Approval Period:

6. Approving Official Signature:

7. Date:
18/APR 02

Worley International Inc

13105 Northwest Freeway, Suite 200
Houston, TX 77040 USA
Telephone 713 690 1131
Facsmile 713 690 1981

March 21, 2002

Our reference: 065/07074-18
File: 11

Pedro Calderin
Technical Management Division
US Naval Station, Roosevelt Roads

Dear Mr. Calderin

RE: BUILDING AND EXCAVATION PERMIT FOR WORK ON POL PIPELINES AT NAVSTA ROOSEVELT ROADS, PUERTO RICO

As per our discussion on March 13, 2002, Worley is please to submit this application for a building permit and excavation permit for the upcoming work on the POL pipelines located throughout the base. The building permit application form is enclosed. Since it is know that we will need excavation permits, we have also enclosed sketches and a memo indication the locations of the excavations sites as requested by Luis Colon.

We will be on-site to commence work April 16, 2002. It is our understanding that this will give sufficient time to obtain all of the necessary permits. Our discussions with Madeline Rivera indicated that our work would not require any EQB permits. We will send a letter identifying our work that she can place in her files if there should be an issue in the future.

If there is any additional information you require from Worley or it's subcontractors, please do not hesitate to contact myself at (713) 690-1131-office or (318) 218-5303-mobile. I look forward to working with you on this project and appreciate your assistance.

Kindest Regards,
WORLEY INTERNATIONAL INC.

Kirsten Glesne

Kirsten Glesne
Pipeline Engineer

enc

cc TR,JM, JR

Worley
International Inc

MEMORANDUM

DATE	March 21, 2002
TO	Luis Colon
FROM	Kirsten Glesne
COPY	Pedro Calderin Teri Regin
PROJECT	065/07074-18
SUBJECT	Excavation Permits
DOC NO	0707418/G11-0655L
FILE LOC	11

Worley International and it's subcontractors will be repairing and modify the POL pipelines located throughout NAVSTA Roosevelt Road beginning April 16, 2002. As part of this work, we will be demolishing some existing valve pits. This work will require some excavations. The attached sketches indicate the locations of the valves pits.

In order to demolish the valve pits, some excavation around the pit will be required. This excavation will not cover a large area, but a sufficient amount to allow for the removal of the concrete and do the necessary welding of the pipeline inside the pits. There will be heavy equipment used for the excavation, lifting of valves and pipes and demolition of the concrete pits. If this in any way will affect the utilities in the vicinity of the pits, please identify these locations.

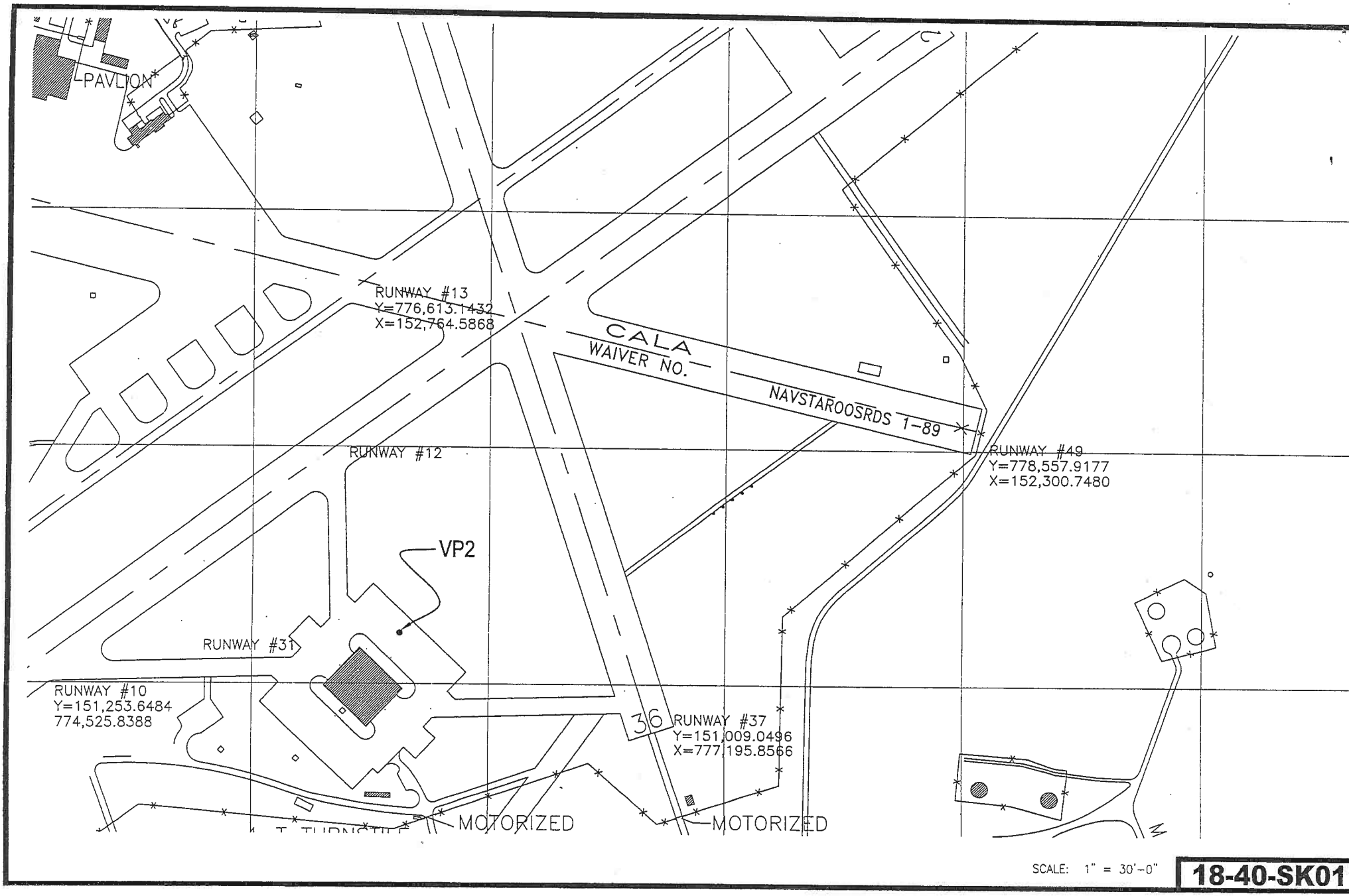
The following sketches indicate the location of the valve pits that we will be excavating around:

- **Sketch 18-40-SK01** – Valve Pit 2 (VP2)
- **Sketch 18-40-SK02** – Valve Pit 23 (VP23), Valve Pit 24 (VP 24), Valve Pit 25 (VP25), Valve Pit 56 (VP56), Valve Pit 9 Secondary (VP9), and the buried tee
- **Sketch 18-40-SK03** – Valve Pit 4 (VP4), Valve Pit 5 (VP5), Valve Pit 6 (VP6), Valve Pit 7 (VP7) Valve Pit 9 (VP9), Valve Pit 6 Secondary (VP6)

The attached sketches are approximate locations of the valve pits. All valve pits are easily visible and marking of utilities should be based on the physical location of the valve pits rather than location indicated on the sketches.

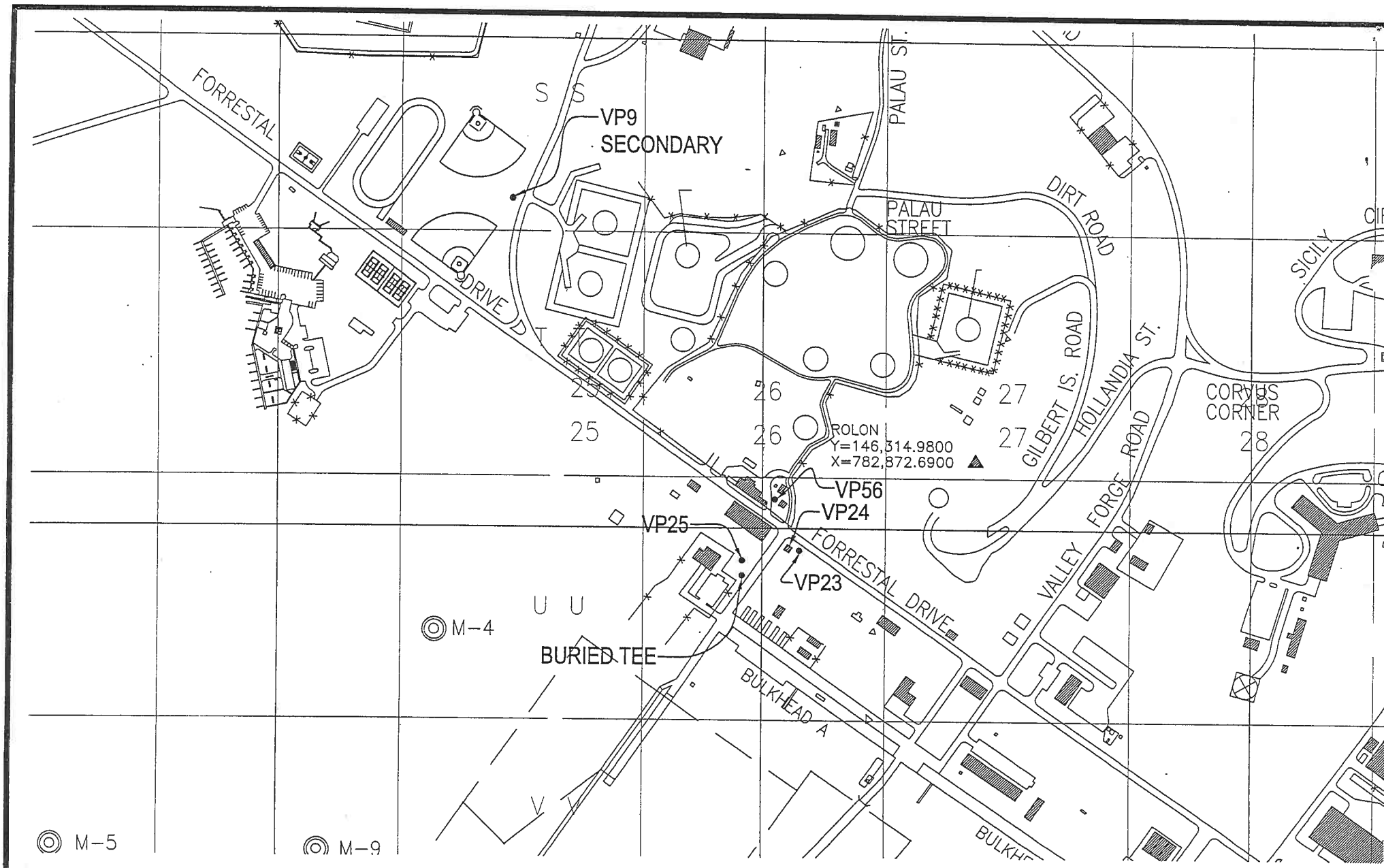
Please feel free to contact me at (713) 933-1129-office or (318) 218-5303-mobile should you have any additional questions or concerns. I will be the responsible party on site during the construction phase starting April 16, 2002.

Thanks you in advance for you assistance with this work.



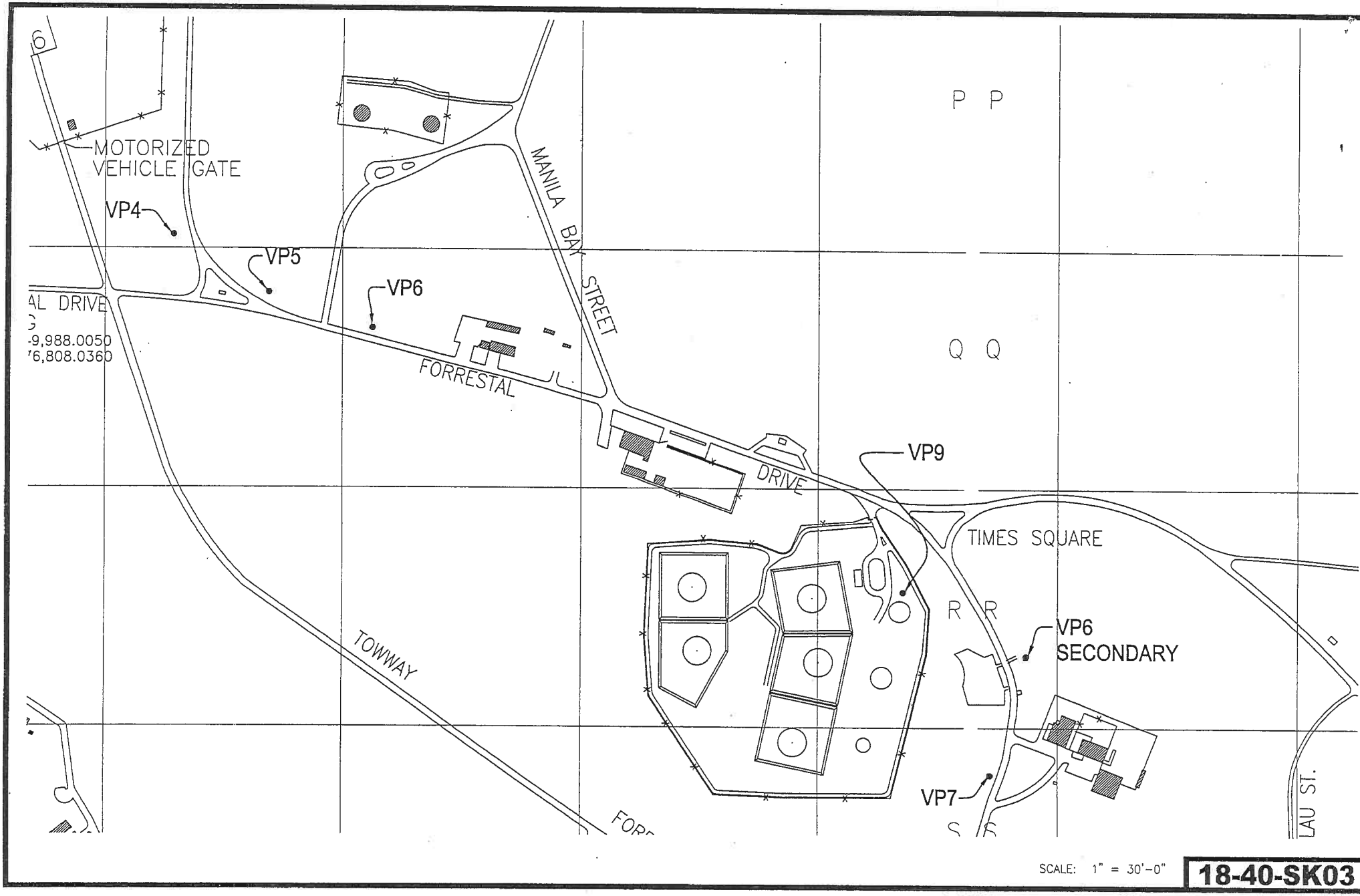
SCALE: 1" = 30'-0"

18-40-SK01



SCALE: 1" = 30'-0"

18-40-SK02



SCALE: 1" = 30'-0"

18-40-SK03

Public Works Dig Permit

Date April 2, 2002

From: Maintenance Control Division, PWD

To: **Worley International Inc.**

Subj: Excavation Permit for Repair Pipelines at Pit Valves

Ref: (a) Your memo of Digging Request.

The excavation permit is approved based on the existing information contained in construction drawings and utility plans.

1. **All excavated areas shall be returned to the original condition**, including but not limited to: concrete and road cuts, ground excavations, sidewalks and grass areas.
2. Care must be observed during the excavation process and excavation by hand shall be performed whenever utilities are present as shown in project drawings.
3. The contractor will arrange for repairs of any utilities damaged or disconnected.
4. If during the digging the operators or workers observe ceramics, bones, seashells, relics, or other potentially historic material, the work must be stopped and the Environmental Engineering Division contacted at (787) 865-3155 for an evaluation.
5. The contractor should get approval (signature) from Fuels Division, for any fuel lines, and NAVCOMTELSTA for any fiber optic cable or communication lines, prior to approval by Public Works Department.
6. Any soil for disposal shall be arranged through EED.
7. Notify EED (waste) of any area found contaminated with petroleum product

Carlos Brown Fuel lines _____ Communication lines

Fuels Division Representative x 4080 **NAVCOMTELSTA Representative x 4999**

4/4/2002
_____ Environmental Division

Public Works Environmental Division

4/3/02
_____ Water, Electric / Sewer line

Public Works Maintenance Control Division 4268/4068 x 470,423

DEPARTMENT OF THE NAVY
U S NAVAL STATION ROOSEVELT ROADS
PSC 1008 BOX 3001
FPO AA 34051-3001

NAVSTAROOSRDSINST 11011.1D
N02C

16 JAN 2002

NAVSTA ROOSEVELT ROADS INSTRUCTION 11011.1D

Subj: BUILDING PERMIT AND SPACE ALLOCATION

Ref: (a) OPNAVINST 11010.20F
(b) OPNAVINST 11000.16A
(c) NAVFAC P-72
(d) NAVFAC P-80
(e) Uniform Building Code
(f) National Fire Protection Codes

Encl: (1) Building Permit, Part I, Request and Approval Form
(2) Building Permit, Part II, Review Forms

1. Purpose. To establish the requirement for, and to prescribe procedures to be used in, obtaining approval to occupy facilities, perform construction, or perform excavation on Naval Station Roosevelt Roads (NSRR), Puerto Rico.

2. Cancellation. NAVSTAROOSRDSINST 11011.1C

3. Background. Reference (a) assigns the responsibility of real property management to the Commanding Officers of Naval Shore Activities. Included in the management responsibility is that of properly assigning real property resources so that they are efficiently used in accomplishing mission tasks and functions.

4. Definitions

a. Construction: As defined in reference (b), is the erection, installation, or assembly of a new real property facility; or the addition, expansion, extension, alteration, conversion, or replacement of an existing real property facility; or the relocation of a real property facility.

b. Real property facility: Separate and individual building, structure, or other real property improvement to include ground improvement structures and utilities.

c. Addition, expansion, and extension: Each constitute a

physical increase to a real property facility. As a general rule, if the dimensions used to record the facility in inventory are increased, then an addition, expansion, or extension has occurred.

d. Alteration: Work required to adjust interior arrangements or other physical characteristics of an existing real property facility so that it may be more effectively adapted to or utilized for its designated purpose.

e. Conversion: Major structural revision of a real property facility, which changes its original functional purpose resulting in a change to the facility's current 3-digit basic category code.

f. Replacement: Complete reconstruction of a real property facility destroyed or damaged beyond economical repair.

g. Relocation: Physical movement of a real property facility from one location to a different location.

h. Space: Physical area of a real property facility, or part of a real property facility.

5. Applicability. This instruction applies to all NSRR offices and departments. Additionally, it applies to all organizational components occupying NSRR facilities and all organizational components to which NSRR provides real property maintenance, fire protection or environmental services by agreement.

6. Action. To implement/enforce the intent of this instruction, the following actions are assigned:

a. Commanding Officer, NSRR: Approves or disapproves recommendations of the Public Works Officer for assignment, allocation, and physical/structural changes of real property assets.

b. Executive Officer, NSRR: Chairs the Space Allocation Meeting to review space allocation assignments proposed by the Public Works Officer.

c. Public Works Officer, NSRR:

(1) Recommends space allocation assignments for all real property assets of the U.S. Naval Station.

(2) Maintains updated Plant Account Records to reflect these assignments.

(3) Ensures compliance for inventory and reporting, as specified by references (b) and (c).

(4) Performs engineering evaluation and recommendations on requested physical/structural changes or alterations to real property facilities to ensure compliance with references (e) and (f).

(5) Review all permit requests for conformance with the NSRR Base Master Plan (latest update), Base Exterior Architectural Plan, maintainability, fire protection, environmental impact, impact on Cultural, Historic and Natural Resources preservation, and impact on community services such as utilities, traffic, drainage, etc, documenting completion on the building permit, part II, Review Forms (encl (2)). Recommend approval, disapproval, or conditional approval within 14 working days. For assets which will be on NSRR plant account, the PWO shall perform a complete project review as specified in reference (b).

(6) Approving official signatory of the Building Permit, Part I, Request and Approval Form.

d. NSRR Offices, Departments, and Organizational Components Occupying NSRR Facilities:

(1) Prior to executing any construction, excavation, moving into or out of any portion of a facility or grounds, or installing exterior signage, submit a Building Permit, Part I Request and Approval Form, (encl (1)), with section A completed, to Public Works Department, Technical Management Division (TMD) for review. Construction, excavation, or move may not begin before building permit is issued.

(2) Prior to occupying any space or facility not already authorized, submit a Building Permit, Part I Request and Approval Form, (encl 1), with section A completed, to TMD for review. Moving into a space, facility, or onto grounds prior to approval may not begin until a building permit is issued.

(3) Contracting agents are responsible to ensure their contractors comply with this instruction.

JOHN R. WARNECKE

Distribution:
NAVSTAROOSRDSINST 5216.3Y
List 1, 1A, and 1B

BUILDING PERMIT
PART I, REQUEST AND APPROVAL FORM
NAVSTAROOSRDSINST 11011.1D

PERMIT NUMBER:

DATE/TIME:

SECTION A – CUSTOMER REQUEST

1. From:

2. To:
Public Works Department
Technical Management Division

3. Customer POC/Phone #: ☐ NSRR ☐ Tenant

4. Customer Signature:

5. Date:

6 Type of Action:

☐ New Construction
☐ Relocation of Structure
☐ Space Allocation
☐ Major Modification to Existing Facility
☐ Signs/Pavement Markings Facility
☐ Excavation
☐ Maintenance and/or Repairs
☐ Addition to Existing Facility
☐ Equipment Installation
☐ Other

7. Project Description:

8. Proposed Site:

9. Approximate Area to be Impacted (i.e, acres, etc.):

10. Project Utility Requirements:

☐ Potable Water
☐ Electric Power
☐ Fire Protection
☐ Sewer
☐ Telephone
☐ Network Connection
☐ Gas

11. Facility Requirements:

☐ Custodial Services
☐ Refuse Collection
☐ Preventive Maintenance for Dynamic Equipment
☐ Pest Control
☐ Grounds Maintenance
☐ Facility Operations and Maintenance

12. Other Project Requirements:

☐ Parking (# of Spaces) ____
☐ Humidity Control
☐ UPS
☐ Back-Up Generator
☐ Intrusion Detection System (IDS)
☐ Automatic Transfer Switch
☐ Remote Transmission of IDS
☐ Demolition
☐ Fencing

13. Special Environmental Considerations:

A. Hazardous Wastes	☐ Yes	☐ No	☐ Unknown	D. Asbestos	☐ Yes	☐ No	☐ Unknown
B. Oily Wastes	☐ Yes	☐ No	☐ Unknown	E. Lead	☐ Yes	☐ No	☐ Unknown
C. Conditional Exempt Wastes	☐ Yes	☐ No	☐ Unknown				

SECTION B – PERMIT ENDORSEMENTS

(TO BE FILLED IN BY PWD)

1. Endorsements:
TMD FMTUD EED FIRE DIVISION

SECTION C – PERMIT APPROVALS

1. Approval:
☐ Granted
☐ Rejected
☐ Conditional

2. Conditions for Approval:

3. Type of Permit:
☐ New Construction Permit
☐ Space Allocation Permit
☐ Project Site Approval Permit
☐ Traffic Safety Permit
☐ Excavation
☐ Lay-down Area Permit
☐ Equipment Installation Permit
☐ Alteration, Maintenance and/or Repair Permit
☐ Asbestos/Lead Abatement Permit

4. Project/Work Request #

5. Approval Period:

6. Approving Official Signature:

7. Date:

Encl (1)

BUILDING PERMIT
PART I, REQUEST AND APPROVAL FORM
NAVSTAROOSRDSINST 11011.1D

PERMIT NUMBER:

DATE/TIME:

SECTION A – CUSTOMER REQUEST

1. From:

2. To:
Public Works Department
Technical Management Division

3. Customer POC/Phone #:

{ FORMCHECKBOX } NSRR { FORMCHECKBOX } Tenant

4. Customer Signature:

5. Date:

6. Type of Action:

{ FORMCHECKBOX } New Construction { FORMCHECKBOX } Relocation of Structure
{ FORMCHECKBOX } Space Allocation
{ FORMCHECKBOX } Major Modification to Existing Facility
{ FORMCHECKBOX } Signs/Pavement Markings Facility
{ FORMCHECKBOX } Excavation
{ FORMCHECKBOX } Maintenance and/or Repairs
{ FORMCHECKBOX } Addition to Existing Facility
{ FORMCHECKBOX } Equipment Installation
{ FORMCHECKBOX } Other

7. Project Description:

8. Proposed Site:

9. Approximate Area to be Impacted (i.e, acres, etc.):

10. Project Utility Requirements:

{ FORMCHECKBOX } Potable Water
{ FORMCHECKBOX } Electric Power
{ FORMCHECKBOX } Fire Protection
{ FORMCHECKBOX } Sewer
{ FORMCHECKBOX } Telephone
{ FORMCHECKBOX } Network Connection
{ FORMCHECKBOX } Gas

11. Facility Requirements:

{ FORMCHECKBOX } Custodial Services
{ FORMCHECKBOX } Refuse Collection
{ FORMCHECKBOX } Preventive Maintenance for Dynamic Equipment
{ FORMCHECKBOX } Pest Control
{ FORMCHECKBOX } Grounds Maintenance
{ FORMCHECKBOX } Facility Operations and Maintenance

12. Other Project Requirements:

{ FORMCHECKBOX } Parking (# of Spaces) ____
{ FORMCHECKBOX } Humidity Control
{ FORMCHECKBOX } UPS
{ FORMCHECKBOX } Back-Up Generator
{ FORMCHECKBOX } Intrusion Detection System (IDS)
{ FORMCHECKBOX } Automatic Transfer Switch
{ FORMCHECKBOX } Remote Transmission of IDS
{ FORMCHECKBOX } Demolition
{ FORMCHECKBOX } Fencing

13. Special Environmental Considerations:

A. Hazardous Wastes { FORMCHECKBOX } Yes { FORMCHECKBOX } No { FORMCHECKBOX } Unknown
B. Oily Wastes { FORMCHECKBOX } Yes { FORMCHECKBOX } No { FORMCHECKBOX } Unknown
C. Conditional Exempt Wastes { FORMCHECKBOX } Yes { FORMCHECKBOX } No { FORMCHECKBOX } Unknown
D. Asbestos { FORMCHECKBOX } Yes { FORMCHECKBOX } No { FORMCHECKBOX } Unknown
E. Lead { FORMCHECKBOX } Yes { FORMCHECKBOX } No { FORMCHECKBOX } Unknown

SECTION B – PERMIT ENDORSEMENTS

(TO BE FILLED IN BY PWD)

1. Endorsements:

TMD _____ FMTUD _____ EED _____ FIRE DIVISION _____

SECTION C – PERMIT APPROVALS

1. Approval:	2. Conditions for Approval:	3. Type of Permit:	
{ FORMCHECKBOX } Granted { FORMCHECKBOX } Rejected { FORMCHECKBOX } Conditional		{ FORMCHECKBOX } New Construction Permit { FORMCHECKBOX } Space Allocation Permit { FORMCHECKBOX } Project Site Approval Permit { FORMCHECKBOX } Traffic Safety Permit { FORMCHECKBOX } Excavation	{ FORMCHECKBOX } Lay-down Area Permit { FORMCHECKBOX } Equipment Installation Permit { FORMCHECKBOX } Alteration, Maintenance and/or Repair Permit { FORMCHECKBOX } Asbestos/Lead Abatement Permit

4. Project/Work Request #	5. Approval Period:	6. Approving Official Signature:	7. Date:

MEMORANDUM

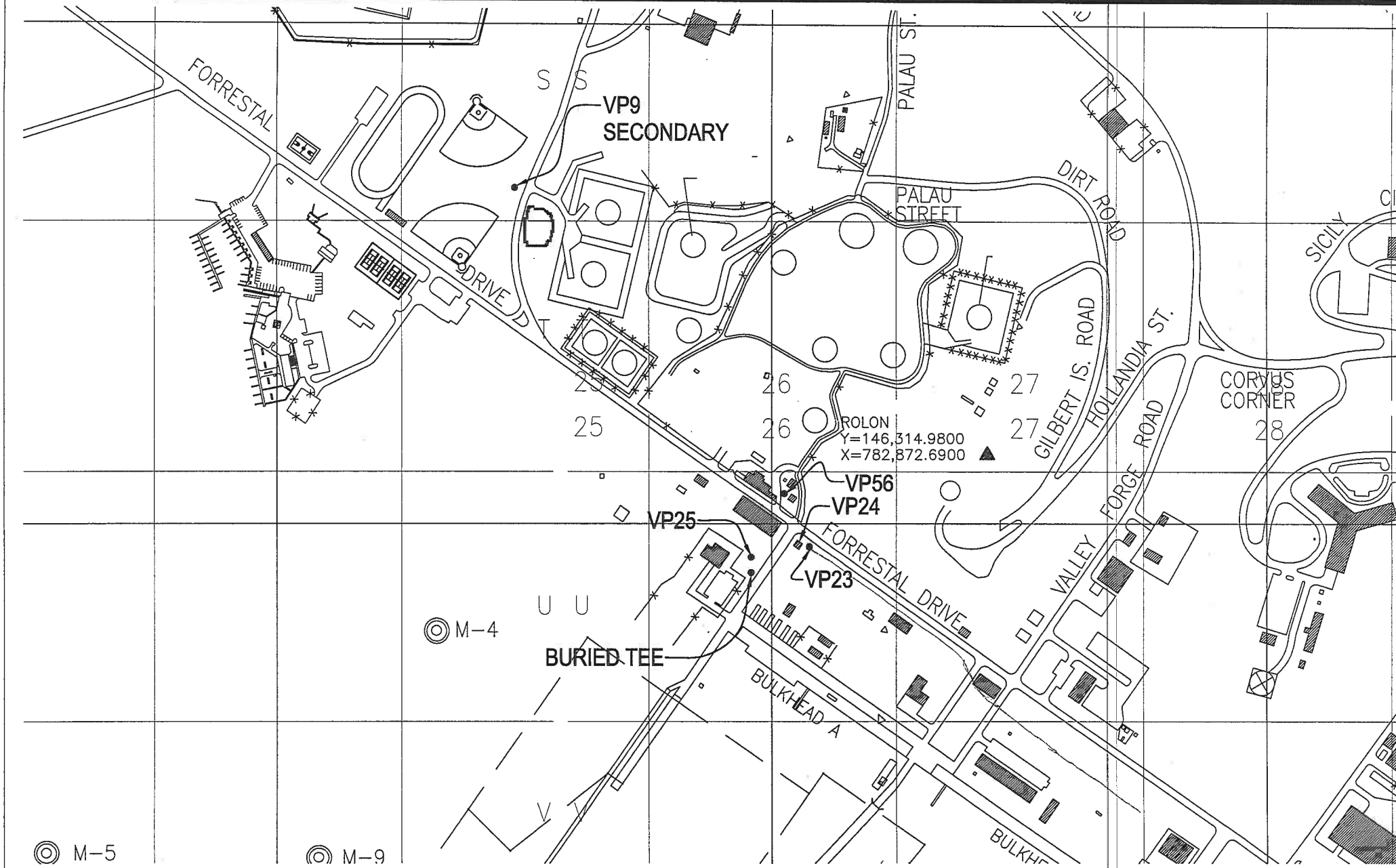
DATE	May 28, 2002
TO	Luis Colon
FROM	Kirsten Glesne
COPY	Terri Regin-NFESC, LT. Bergado - ROICC, Frank Cortez – ROICC
PROJECT	065/7074-18
SUBJECT	Contract N47408-99-D-8014, D.O. 0018, NAVSTA Roosevelt Roads, Ceibe, Puerto Rico Excavation Permit
DOC NO	0707418_G11_0728D

Worley International and its subcontractors have been requested by NFESC to do some additional work on the fuels pipelines. This work will installing an above ground valve setting as well and demolition of an additional pit in the JP-5 tank farm.

Attached is a sketch indicating the approximate location of the excavations. There will be heavy equipment used for the excavation.

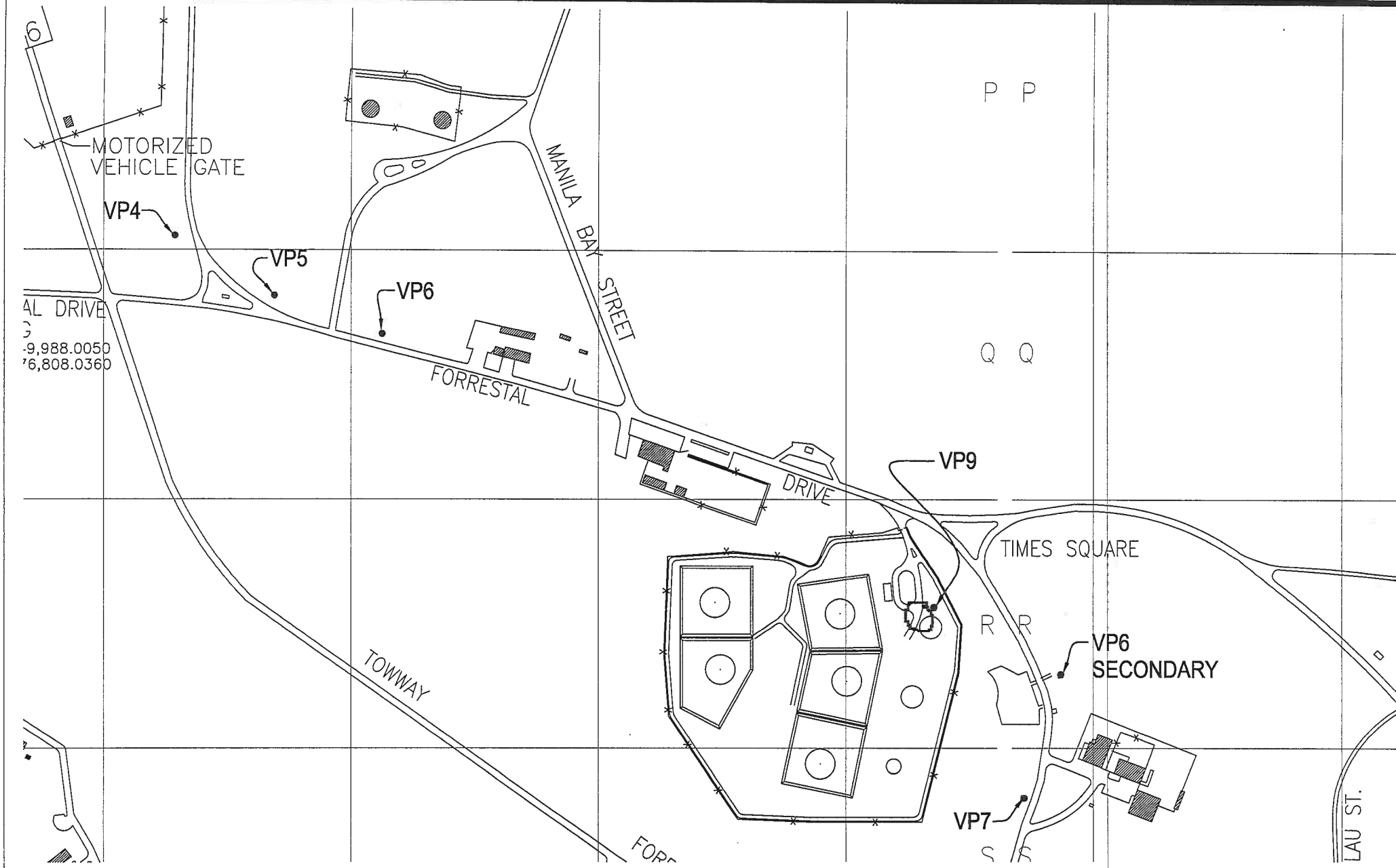
If this work in any way will affect the utilities in the vicinity of the pits, please identify these locations. Several sources have indicated that there are fiber optic lines in this area.

In order to meet the operations schedule, we will need to begin this excavation ASAP. Please do not hesitate to give me a call at 318-218-5303 or in the fuels office if you have any questions or concerns.



SCALE: 1" = 30'-0"

18-40-SK02



SCALE: 1" = 30'-0"

18-40-SK03

HAZARDOUS OPERATION PERMIT NUMBER: 02-409

FROM: FIRE DEPARTMENT

TO: Worley Int. DEPARTMENT

DATE	START TIME	EXPECTED COMPLETION TIME
19/Apr/02	1130	19/Apr/02 1800

LOCATION OF WORK (Area and building No.): Fabrication Area. by bldg #466

OPERATION

- [x] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [x] CO2 EXTINGUISHER
- [ ] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)

1. Post a fire watch
2. Maintain any combustibles away from welding area
3. Subject to spot check inspection

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator) James MacAll.	SIGNATURE (Supervisor/Officer in Charge) James McCall
FIRE WATCH (Name/Grade) Stephen Bundy	SIGNATURE (Inspector) R Mantooth
	TIME PERMIT GRANTED 1125

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 02-410

FROM: FIRE DEPARTMENT

TO: Worthy Int DEPARTMENT

DATE: 18/Apr/02 | START TIME: 1200 | EXPECTED COMPLETION TIME: 1800

LOCATION OF WORK (Area and building No.): Pit V-P-25 (Pit is not in use)

OPERATION

- [ ] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [ ] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)
Post a fire watch.

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator): James Mccall	SIGNATURE (Supervisor/Officer in Charge): James Mccall	
FIRE WATCH (Name/Grade): Stephen Gungy	SIGNATURE (Inspector): [illegible]	TIME PERMIT GRANTED: 1130

NAVSTAROOS RDS 11320/1 (Rev 2-99)

FROM
FIRE DEPARTMENT

TO
Worley Int. DEPARTMENT

OPERATION

- [x] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

DATE	START TIME	EXPECTED COMPLETION TIME
4/25/02	13:00	18:00

LOCATION OF WORK (Area and building No.)
UP - 6, 7, 8 and 25

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)
Constant Fire Watch

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [x] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [x] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [x] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [x] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator) Biff Tull	SIGNATURE (Supervisor/Officer in Charge)	
FIRE WATCH (Name/Grade) Jane McCall	SIGNATURE (Inspector)	TIME PERMIT GRANTED 13:00

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT

NUMBER: 02-480

FROM: FIRE DEPARTMENT

TO: Cypress Creek DEPARTMENT

DATE: 29 Apr 02 | START TIME: 0800 | EXPECTED COMPLETION TIME: 1700

LOCATION OF WORK (Area and building No.): Front (Open Area) Bldg 466

OPERATION

- [x] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason) 29 Apr 02 through 3 MAY 02

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)

Fire watch at all times

Weekly / Spot Check

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS

(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator): J. McCall

SIGNATURE (Supervisor/Officer in Charge): M McCall

FIRE WATCH (Name/Grade): S. Grundy

SIGNATURE (Inspector):

TIME PERMIT GRANTED: 0745

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER:

FROM
FIRE DEPARTMENT

TO
DEPARTMENT

OPERATION

- ☐ WELDING
- ☐ CUTTING
- ☐ BRAZING
- ☐ FLAMMABLE LIQUID TRANSFER
- ☐ OPEN FIRES
- ☐ HOT TAPPING
- ☐ SOLDERING
- ☐ TAR KETTLE
- ☐ GRINDING

DATE	START TIME	EXPECTED COMPLETION TIME

LOCATION OF WORK (Area and building No.)

OPERATION IS ☐ APPROVED ☐ DISAPPROVED (Give reason)

REQUIREMENTS

- ☐ FIRE EXTINGUISHERS AS FOLLOWS
- ☐ WATER TYPE
- ☐ CO_2 EXTINGUISHER
- ☐ DRY CHEMICAL
- ☐ AREA WET DOWN
- ☐ FIRE BLANKET
- ☐ REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- ☐ SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- ☐ COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- ☐ NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- ☐ COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- ☐ ALL WALL AND FLOOR OPENINGS COVERED
- ☐ COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- ☐ EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- ☐ CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- ☐ CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- ☐ COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- ☐ TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- ☐ SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- ☐ TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- ☐ FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- ☐ PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- ☐ FUEL TANK ACCESS PLATES IN PLACE
- ☐ FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- ☐ FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- ☐ STREAMERS ATTACHED TO COVERED FUEL VENTS
- ☐ PRESSURE REMOVED FROM FUEL SYSTEM
- ☐ CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- ☐ ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- ☐ AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- ☐ WELDING SCREENS IN POSITION
- ☐ ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- ☐ CLEAN AREA WHERE WELD IS TO BE MADE
- ☐ COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- ☐ FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- ☐ FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- ☐ GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- ☐ ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- ☐ GROUND LEADS CLAMPED TO GROUNDING PLUG
- ☐ GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- ☐ AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- ☐ TUG AVAILABLE - TOW BAR ATTACHED
- ☐ HANGAR DOORS OPEN
- ☐ CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- ☐ QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

COPY TO (Operator)	SIGNATURE (Supervisor/Officer in Charge)	
FIRE WATCH (Name/Grade)	SIGNATURE (Inspector)	TIME PERMIT GRANTED

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT

NUMBER: 02-486

FROM: FIRE DEPARTMENT

TO: Cypress Creek DEPARTMENT

DATE: 29 Apr 02 | START TIME: 0920 | EXPECTED COMPLETION TIME: 1700

LOCATION OF WORK (Area and building No.): Pt. VP-23 Front of Fuel Lab (Entrance to Pier 1)

OPERATION

- [ ] WELDING
- [ ] OPEN FIRES
- [X] CUTTING
- [ ] HOT TAPPING
- [ ] BRAZING
- [ ] SOLDERING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] TAR KETTLE
- [ ] GRINDING

OPERATION IS [ ] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [X] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [X] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [X] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)

1. Fire watch at all times
2. Gas free performed

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [X] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [X] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [X] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [X] ALL WALL AND FLOOR OPENINGS COVERED
- [X] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [X] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [X] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [X] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator) Bill Tull	SIGNATURE (Supervisor/Officer in Charge) Bill Tull	
FIRE WATCH (Name/Grade) J. Lopez	SIGNATURE (Inspector)	TIME PERMIT GRANTED 0910

NAVSTAROOS RDS 11320/1 (Rev 2-99)

FROM
FIRE DEPARTMENT

TO Cypress Creek Pipeline DEPARTMENT

OPERATION

- ☐ WELDING
- ☐ OPEN FIRES
- ☒ CUTTING
- ☐ HOT TAPPING
- ☐ BRAZING
- ☐ SOLDERING
- ☐ FLAMMABLE LIQUID TRANSFER
- ☐ TAR KETTLE
- ☐ GRINDING

DATE	START TIME	EXPECTED COMPLETION TIME
0810	0810	1730 thru

LOCATION OF WORK (Area and building No.)

Valve Pit-23 next to bldg 192
-24

OPERATION IS ☒ APPROVED ☐ DISAPPROVED (Give reason)

REQUIREMENTS

- ☒ FIRE EXTINGUISHERS AS FOLLOWS
- ☐ WATER TYPE
- ☐ CO2 EXTINGUISHER
- ☒ DRY CHEMICAL
- ☐ AREA WET DOWN
- ☐ FIRE BLANKET
- ☒ REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)

Fire Watch at all times
Gas Free test performed by contractor

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- ☐ SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- ☒ COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- ☒ NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- ☒ COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- ☒ ALL WALL AND FLOOR OPENINGS COVERED
- ☒ COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- ☐ EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- ☐ CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- ☐ CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- ☐ COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- ☒ TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- ☒ SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- ☒ TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- ☐ FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- ☐ PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- ☐ FUEL TANK ACCESS PLATES IN PLACE
- ☐ FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- ☐ FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- ☐ STREAMERS ATTACHED TO COVERED FUEL VENTS
- ☐ PRESSURE REMOVED FROM FUEL SYSTEM
- ☐ CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- ☐ ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- ☐ AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- ☐ WELDING SCREENS IN POSITION
- ☐ ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- ☐ CLEAN AREA WHERE WELD IS TO BE MADE
- ☐ COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- ☐ FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- ☐ FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- ☐ GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- ☐ ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- ☐ GROUND LEADS CLAMPED TO GROUNDING PLUG
- ☐ GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- ☐ AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- ☐ TUG AVAILABLE - TOW BAR ATTACHED
- ☐ HANGAR DOORS OPEN
- ☐ CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- ☐ QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

COPY TO (Operator) mccall	SIGNATURE (Supervisor/Officer in Charge)	
FIRE WATCH (Name/Grade) HARTNESS Dacey	SIGNATURE (Inspector) Juan R Cabrera	TIME PERMIT GRANTED 0805

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT

NUMBER: 02-503

FROM: FIRE DEPARTMENT

TO: Worley DEPARTMENT

DATE: 5/1/02 | START TIME: 0752 | EXPECTED COMPLETION TIME: 1600

LOCATION OF WORK (Area and building No.): UP #4

OPERATION

- [x] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)

Constant Fire Watch

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [x] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [x] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [x] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [x] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

COPY TO (Operator): S. McCall

SIGNATURE (Supervisor/Officer in Charge): [signature]

FIRE WATCH (Name/Grade): T. Gundy

SIGNATURE (Inspector): [signature]

TIME PERMIT GRANTED: 0752

NAVSTAROOS RDS 11320/1 (Rev 8-99)

HAZARDOUS OPERATION PERMIT

NUMBER: 02-512

FROM: FIRE DEPARTMENT

TO: Worley DEPARTMENT

DATE: 2 May-02 | START TIME: 0750. | EXPECTED COMPLETION TIME: 1500

LOCATION OF WORK (Area and building No.): V-P # 24 and 23.

OPERATION

- [ ] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [ ] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)
1. Post a fire Watch.

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator) Bill Tull	SIGNATURE (Supervisor/Officer in Charge) X. Bill Tull	
FIRE WATCH (Name/Grade) Hartwiss.	SIGNATURE (Inspector) R Mendez	TIME PERMIT GRANTED 0743

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 02-513

FROM: FIRE DEPARTMENT

TO: Worley DEPARTMENT

DATE: 2-May-02 | START TIME: 0930 | EXPECTED COMPLETION TIME: 1500

LOCATION OF WORK (Area and building No.): V-P-#4

OPERATION

- [x] WELDING
- [ ] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [ ] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)
Post a fire watch
The fire will be flowing to prevent any ice.

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT, TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator) Mccall	SIGNATURE (Supervisor/Officer in Charge)	
FIRE WATCH (Name/Grade) Cundy	SIGNATURE (Inspector)	TIME PERMIT GRANTED 0800

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT

NUMBER: 02-521

FROM: FIRE DEPARTMENT

TO: Worley DEPARTMENT

DATE: 2 MAY 02 | START TIME: 1415 | EXPECTED COMPLETION TIME: 1730

LOCATION OF WORK (Area and building No.): Valve Pit #25

OPERATION

- [ ] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [ ] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)

Fire watch at all times
Gas Free test performed by Contractor

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator) mccall	SIGNATURE (Supervisor/Officer in Charge)	
FIRE WATCH (Name/Grade) Gundy	SIGNATURE (Inspector)	TIME PERMIT GRANTED 1470

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 02 527

FROM: FIRE DEPARTMENT

TO: Cypress Creek Pipe Line DEPARTMENT

DATE: 5/8/02 | START TIME: 0813 | EXPECTED COMPLETION TIME: 0530

LOCATION OF WORK (Area and building No.): Entrance to Plant #1 DFM drum Dock #25

OPERATION

- [x] WELDING
- [ ] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [ ] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [ ] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.) Post Fire Watch

865-3253 / 4187

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [x] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

NOTE: NO HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

COPY TO (Operator): Gormody | SIGNATURE (Supervisor/Officer in Charge): [signature]

FIRE WATCH (Name/Grade): Hartness | SIGNATURE (Inspector): [signature] | TIME PERMIT GRANTED: 0813

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT

NUMBER: 02-530

FROM: FIRE DEPARTMENT

TO: Cypress Creek Pipeline DEPARTMENT

OPERATION

- [x] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

DATE	START TIME	EXPECTED COMPLETION TIME
5/3/02	1107	1600

LOCATION OF WORK (Area and building No.)
Entrance to Pier 14
DFM Line Valve

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason) Gas free test Completed

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL ~~865-4333~~

REMARKS: (Special instructions issued, to whom, etc.)
Post Fire Watch

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [ ] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [x] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [x] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator) M Beckwith	SIGNATURE (Supervisor/Officer in Charge)	
FIRE WATCH (Name/Grade) Hartness	SIGNATURE (Inspector)	TIME PERMIT GRANTED 1107

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 532

FROM: FIRE DEPARTMENT

TO: Worley DEPARTMENT

DATE: 5/4/02 | START TIME: 0800 | EXPECTED COMPLETION TIME: 1200

LOCATION OF WORK (Area and building No.): Pier 1-D

OPERATION

- [ ] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

OPERATION IS [ ] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)

FIRE WATCH AT ALL TIME

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [ ] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [x] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [x] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [x] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [ ] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [ ] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [ ] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

COPY TO (Operator): MC CALL

SIGNATURE (Supervisor/Officer in Charge):

FIRE WATCH (Name/Grade): HARTNESS

SIGNATURE (Inspector):

TIME PERMIT GRANTED: 0750

NAVFAC RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 02-539

FROM: FIRE DEPARTMENT

TO: Cypress Creek DEPARTMENT

DATE	START TIME	EXPECTED COMPLETION TIME
6 MAY02	0735	1700

LOCATION OF WORK (Area and building No.): Front of Bldg 466 Open Area Canvas

OPERATION

- [X] WELDING
- [X] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [X] GRINDING

OPERATION IS [X] APPROVED [ ] DISAPPROVED (Give reason) 6MAY02 through 10MAY02 Weekly

REQUIREMENTS

- [X] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [X] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [X] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.) Fire watch at all times

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [X] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [X] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [X] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [X] ALL WALL AND FLOOR OPENINGS COVERED
- [X] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [X] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [X] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [X] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator) Jim Bo McCall SIGNATURE (Supervisor/Officer in Charge)

FIRE WATCH (Name/Grade) Randy SIGNATURE (Inspector) TIME PERMIT GRANTED 0732

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 02-545

FROM: FIRE DEPARTMENT

TO: Cypress Creek DEPARTMENT

DATE	START TIME	EXPECTED COMPLETION TIME
6 MAY 02	1045	1700

LOCATION OF WORK (Area and building No.): Pit #7 Chaide area

OPERATION

- [x] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)
Fire watch at all times
② Gas free test was performed

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator) J. McCall	SIGNATURE (Supervisor/Officer in Charge)	
FIRE WATCH (Name/Grade) T. Gandy	SIGNATURE (Inspector)	TIME PERMIT GRANTED 1032

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 02-549

FROM FIRE DEPARTMENT

TO Worley Int. DEPARTMENT

DATE 7 MAY 02 | START TIME | EXPECTED COMPLETION TIME 1230 hr

LOCATION OF WORK (Area and building No.)

Pier 1 Replace Valves

OPERATION

- [ ] WELDING
- [ ] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [ ] GRINDING

OPERATION IS [X] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [X] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [X] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [X] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)

Fire watch at all times
Gas Free test performed by Contractor, test will be Done until job Finish.

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [X] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [X] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [X] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [X] ALL WALL AND FLOOR OPENINGS COVERED
- [X] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [X] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [X] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [X] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

COPY TO (Operator) Tull	SIGNATURE (Supervisor/Officer in Charge)	
FIRE WATCH (Name/Grade) Lopez	SIGNATURE (Inspector)	TIME PERMIT GRANTED 0750

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT

NUMBER: 02-559

FROM: FIRE DEPARTMENT

TO: Worley DEPARTMENT

DATE: 9-May-02 | START TIME: 0745 | EXPECTED COMPLETION TIME: 1500

LOCATION OF WORK (Area and building No.): V Pit #24

OPERATION

- [x] WELDING
- [ ] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [ ] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)
(1) Post a fire watch
(2)

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

COPY TO (Operator): McCall

SIGNATURE (Supervisor/Officer in Charge): K Sloane

FIRE WATCH (Name/Grade): Escondo

SIGNATURE (Inspector): R Manch

TIME PERMIT GRANTED: 0740

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER:

FROM: FIRE DEPARTMENT

TO: Worley DEPARTMENT

DATE: 9-May-02 | START TIME: 0700 | EXPECTED COMPLETION TIME: 1530

LOCATION OF WORK (Area and building No.): Pier # 1, Bolt cutting on fuel pipe Main intake

OPERATION

- [ ] WELDING
- [X] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [ ] GRINDING

OPERATION IS [X] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [X] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [X] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [X] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.) OPSTO fire watch

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [X] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [X] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [X] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [X] ALL WALL AND FLOOR OPENINGS COVERED
- [X] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIV ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [X] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [X] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [X] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator): Mccall

SIGNATURE (Supervisor/Officer in Charge):

FIRE WATCH (Name/Grade): Escondo

SIGNATURE (Inspector):

TIME PERMIT GRANTED: 0745

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 53557

FROM FIRE DEPARTMENT – 8/4 2

TO Worley DEPARTMENT

OPERATION

- [x] WELDING
- [ ] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [ ] GRINDING

DATE	START TIME	EXPECTED COMPLETION TIME

LOCATION OF WORK (Area and building No.)
Forrestal Road.
Bridge Bldg 192

OPERATION IS [ ] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [ ] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [ ] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [ ] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [ ] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [ ] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

COPY TO (Operator) J. McCALL	SIGNATURE (Supervisor/Officer in Charge) [signature]	
FIRE WATCH (Name/Grade) J. GUNDY	SIGNATURE (Inspector) [signature]	TIME PERMIT GRANTED 745

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 02-577

FROM: FIRE DEPARTMENT

TO: Worley DEPARTMENT

DATE	START TIME	EXPECTED COMPLETION TIME
13MAY02	0730	1700

LOCATION OF WORK (Area and building No.): Work Shop front of Bldg 446

OPERATION

- [x] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason) 13 MAY02 through 17MAY02 Weekly

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)
"Fire watch at all times
Subject to spot check

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

COPY TO (Operator) J. McCall	SIGNATURE (Supervisor/Officer in Charge)	
FIRE WATCH (Name/Grade) Gandy	SIGNATURE (Inspector)	TIME PERMIT GRANTED 0727

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 02-602

FROM
FIRE DEPARTMENT

TO
Cypress Creek DEPARTMENT

DATE	START TIME	EXPECTED COMPLETION TIME
16 MAY02	0745	1700

LOCATION OF WORK (Area and building No.)
Pier 1. (Entrance Valves)

OPERATION

- ☐ WELDING
- ☑ CUTTING
- ☐ BRAZING
- ☐ FLAMMABLE LIQUID TRANSFER
- ☐ OPEN FIRES
- ☐ HOT TAPPING
- ☐ SOLDERING
- ☐ TAR KETTLE
- ☐ GRINDING

OPERATION IS ☐ APPROVED ☐ DISAPPROVED (Give reason)

REQUIREMENTS

- ☒ FIRE EXTINGUISHERS AS FOLLOWS
- ☐ WATER TYPE
- ☐ CO2 EXTINGUISHER
- ☒ DRY CHEMICAL
- ☐ AREA WET DOWN
- ☐ FIRE BLANKET
- ☒ REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)
Fire watch at all times

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- ☐ SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- ☒ COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- ☒ NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- ☒ COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- ☒ ALL WALL AND FLOOR OPENINGS COVERED
- ☒ COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- ☐ EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- ☐ CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- ☐ CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- ☐ COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- ☒ TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- ☒ SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- ☒ TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- ☐ FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- ☐ PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- ☐ FUEL TANK ACCESS PLATES IN PLACE
- ☐ FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- ☐ FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- ☐ STREAMERS ATTACHED TO COVERED FUEL VENTS
- ☐ PRESSURE REMOVED FROM FUEL SYSTEM
- ☐ CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- ☐ ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- ☐ AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- ☐ WELDING SCREENS IN POSITION
- ☐ ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- ☐ CLEAN AREA WHERE WELD IS TO BE MADE
- ☐ COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- ☐ FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- ☐ FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- ☐ GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- ☐ ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- ☐ GROUND LEADS CLAMPED TO GROUNDING PLUG
- ☐ GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- ☐ AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- ☐ TUG AVAILABLE - TOW BAR ATTACHED
- ☐ HANGAR DOORS OPEN
- ☐ CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- ☐ QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

COPY TO (Operator) McCall	SIGNATURE (Supervisor/Officer in Charge)	
FIRE WATCH (Name/Grade) Gourdy	SIGNATURE (Inspector)	TIME PERMIT GRANTED 0739

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 02-604

FROM: FIRE DEPARTMENT

TO: Cypress Creek DEPARTMENT

DATE: 16 MAY 02 | START TIME: 0745 | EXPECTED COMPLETION TIME: 1700

LOCATION OF WORK (Area and building No.): Pier 1A (FP1 108) JP5 - F44 Valve

OPERATION

- [x] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [ ] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)

1. Fire watch at all times
2. Gas free test

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator): McCall	SIGNATURE (Supervisor/Officer in Charge):	
FIRE WATCH (Name/Grade): Gandy	SIGNATURE (Inspector):	TIME PERMIT GRANTED: 0745

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 02-605

FROM: FIRE DEPARTMENT

TO: Worley Inc, DEPARTMENT

DATE: 16 May 02 | START TIME: 1430 | EXPECTED COMPLETION TIME: 1835

LOCATION OF WORK (Area and building No.): Valve pit #4

OPERATION

- [X] WELDING
- [X] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [ ] GRINDING

OPERATION IS [X] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [X] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [X] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [X] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)
Post a fire Watch

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [X] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [X] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [X] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [X] ALL WALL AND FLOOR OPENINGS COVERED
- [X] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIV ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [X] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [X] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [X] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator): Mccall

SIGNATURE (Supervisor/Officer in Charge):

FIRE WATCH (Name/Grade): Gandy

SIGNATURE (Inspector):

TIME PERMIT GRANTED: 1435

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 02-606

FROM: FIRE DEPARTMENT

TO: Worley Inc. DEPARTMENT

DATE: 16 May-02 | START TIME: 1655 | EXPECTED COMPLETION TIME: 1830

LOCATION OF WORK (Area and building No.): Valve Pit

OPERATION

- [X] WELDING
- [X] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [ ] GRINDING

OPERATION IS [X] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [X] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [X] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [X] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)
Post a fire watch at all times

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [X] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [N/A] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [N/A] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [N/A] ALL WALL AND FLOOR OPENINGS COVERED
- [ ] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [X] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [X] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [X] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator) Mccall	SIGNATURE (Supervisor/Officer in Charge)	
FIRE WATCH (Name/Grade) Eaudy	SIGNATURE (Inspector)	TIME PERMIT GRANTED 1645

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 02-609

FROM: FIRE DEPARTMENT

TO: Worley Inter DEPARTMENT

DATE	START TIME	EXPECTED COMPLETION TIME
5/17/02	0800	1800

LOCATION OF WORK (Area and building No.): Pier #1 705 Pipe Line

OPERATION

- [x] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)
Post Fire Watch
Gas free test — Complete

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [x] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [x] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator) McCall	SIGNATURE (Supervisor/Officer in Charge)	
FIRE WATCH (Name/Grade)	SIGNATURE (Inspector)	TIME PERMIT GRANTED 0800

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 02-226

FROM: FIRE DEPARTMENT

TO: Wardy DEPARTMENT

DATE	START TIME	EXPECTED COMPLETION TIME
21 MAY 02	0830	1700

LOCATION OF WORK (Area and building No.)
Billiard Bldg 466
New Pipe System

OPERATION

- [x] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)
Fire watch at all times

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

COPY TO (Operator) McCall	SIGNATURE (Supervisor/Officer in Charge)	
FIRE WATCH (Name/Grade) Gandy	SIGNATURE (Inspector)	TIME PERMIT GRANTED 0817

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 02-652

FROM: FIRE DEPARTMENT

TO: Worley DEPARTMENT

DATE	START TIME	EXPECTED COMPLETION TIME
24 MAY 02	0830	1700

LOCATION OF WORK (Area and building No.): Pit # 8

OPERATION

- [x] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [ ] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)

Fire watch at all times

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

COPY TO (Operator): Grady	SIGNATURE (Supervisor/Officer in Charge): [signature]	
FIRE WATCH (Name/Grade): McCall	SIGNATURE (Inspector): [signature]	TIME PERMIT GRANTED: 0828

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 02-722

FROM: FIRE DEPARTMENT

TO: Wardy DEPARTMENT

DATE: 5 Jan 02 | START TIME: 0945 | EXPECTED COMPLETION TIME: 1700

LOCATION OF WORK (Area and building No.): Pit #8

OPERATION

- [x] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)

Fire watch at all times

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIV ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator): Sandy	SIGNATURE (Supervisor/Officer in Charge): [signature]	
FIRE WATCH (Name/Grade): McCalls	SIGNATURE (Inspector): [signature]	TIME PERMIT GRANTED: 0917

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 02-732

FROM: FIRE DEPARTMENT

TO: Worley DEPARTMENT

DATE	START TIME	EXPECTED COMPLETION TIME
6/6/02	1245	1830

LOCATION OF WORK (Area and building No.): Value Pit # 8-B

OPERATION

- [X] WELDING
- [X] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [X] GRINDING

OPERATION IS [X] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [X] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [X] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [X] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)
① Post a fire watch

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [X] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [X] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [X] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [X] ALL WALL AND FLOOR OPENINGS COVERED
- [X] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [X] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [X] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [ ] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator) McCall.	SIGNATURE (Supervisor/Officer in Charge) X Bill Sull	
FIRE WATCH (Name/Grade) Brandy.	SIGNATURE (Inspector) R. Mauldin	TIME PERMIT GRANTED 1240

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT

NUMBER: 02-733

FROM: FIRE DEPARTMENT

TO: Worley DEPARTMENT

DATE: 6/6/02 | START TIME: 1530 | EXPECTED COMPLETION TIME: 1900

LOCATION OF WORK (Area and building No.): Pit #56

OPERATION

- [x] WELDING
- [ ] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)
Post a fire watch

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator): Carlin
SIGNATURE (Supervisor/Officer in Charge): [signature]
FIRE WATCH (Name/Grade): Mccall
SIGNATURE (Inspector): R Moulton
TIME PERMIT GRANTED: 1515

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 02-747

FROM: FIRE DEPARTMENT

TO: Worley DEPARTMENT

DATE: 6/7/02 | START TIME: 1550 | EXPECTED COMPLETION TIME: 1900

LOCATION OF WORK (Area and building No.): Valve Pit 8 by Fuel Tank 1996

OPERATION

- [x] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)
Post Fire Watch
Gas free test Completed

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [x] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [x] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator) McCall	SIGNATURE (Supervisor/Officer in Charge)	
FIRE WATCH (Name/Grade) Grundy	SIGNATURE (Inspector)	TIME PERMIT GRANTED 1550

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 02-761

FROM: FIRE DEPARTMENT

TO: Worley DEPARTMENT

DATE: 6/11/02 | START TIME: 0745 | EXPECTED COMPLETION TIME: 1200

LOCATION OF WORK (Area and building No.): By Bldg 192 VP-23

OPERATION

- [x] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)

Post Fire Watch

Gas free test Completed

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator) McCall	SIGNATURE (Supervisor/Officer in Charge) for Bill Tull	
FIRE WATCH (Name/Grade) Grundy	SIGNATURE (Inspector)	TIME PERMIT GRANTED 0745

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 02-763

FROM: FIRE DEPARTMENT

TO: Worley DEPARTMENT

DATE	START TIME	EXPECTED COMPLETION TIME
6/6/02	0840	1600

LOCATION OF WORK (Area and building No.): Entrance to Pier #1

OPERATION

- [x] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO_2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)
Constant Fire Watch

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [x] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [x] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [x] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [x] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator) McCall	SIGNATURE (Supervisor/Officer in Charge)	
FIRE WATCH (Name/Grade) Gundy	SIGNATURE (Inspector)	TIME PERMIT GRANTED 0840

NAVSTAROOS RDS 11320/1 (Rev 2-89)

HAZARDOUS OPERATION PERMIT NUMBER: 02-764

FROM: FIRE DEPARTMENT

TO: Worley DEPARTMENT

DATE: 06/14/02 | START TIME: 0846 | EXPECTED COMPLETION TIME: 1600

LOCATION OF WORK (Area and building No.): Bldg. 466

OPERATION

- [x] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)
Constant Fire Watch

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [x] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [x] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [x] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [x] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

COPY TO (Operator) Mc Cart	SIGNATURE (Supervisor/Officer in Charge)	
FIRE WATCH (Name/Grade) Gurley	SIGNATURE (Inspector)	TIME PERMIT GRANTED 0846

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 02-769

FROM: FIRE DEPARTMENT

TO: Wooley DEPARTMENT

DATE: 6/12/02 | START TIME: 16:48 | EXPECTED COMPLETION TIME: 23:00

LOCATION OF WORK (Area and building No.): Bldg. 1982 Fuel Farm

OPERATION

- [x] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)
Constant fire watch.
Gas free test Performed by Bill Trull.

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [x] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [x] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [x] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [x] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

COPY TO (Operator) McCall	SIGNATURE (Supervisor/Officer in Charge)	
FIRE WATCH (Name/Grade) Gundy	SIGNATURE (Inspector)	TIME PERMIT GRANTED 1648

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT

NUMBER: 02-771

FROM: FIRE DEPARTMENT

TO: Workcy DEPARTMENT

DATE: 13 Jun 02 | START TIME: 0800 | EXPECTED COMPLETION TIME: 1730

LOCATION OF WORK (Area and building No.): Pump 1982 Pipes

OPERATION

- [x] WELDING
- [ ] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [ ] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)

Fire Watch at all times
Contractor Performed Gas
Fire Test

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator): McCall	SIGNATURE (Supervisor/Officer in Charge):	
FIRE WATCH (Name/Grade): Gundy	SIGNATURE (Inspector):	TIME PERMIT GRANTED: 0755

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT

NUMBER: 02-785

FROM: FIRE DEPARTMENT

TO: Worley DEPARTMENT

DATE: 14 Jun 02 | START TIME: 1455 | EXPECTED COMPLETION TIME: 1730

LOCATION OF WORK (Area and building No.): Valve pit #9

OPERATION

- [x] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)

Fire Watch at all times
Gas Free test Performed By Contractor

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator): McCall

SIGNATURE (Supervisor/Officer in Charge):

FIRE WATCH (Name/Grade): Gundy

SIGNATURE (Inspector):

TIME PERMIT GRANTED: 1450

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 02-801

FROM: FIRE DEPARTMENT

TO: Worley DEPARTMENT

DATE: 6/18/02 | START TIME: 0800 | EXPECTED COMPLETION TIME: 2100

LOCATION OF WORK (Area and building No.): T-381 pump p17 and VP-8A

OPERATION

- [x] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

OPERATION IS [ ] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO_2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. ~~FIRE~~ ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.) Post Fire Watch

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator): Recall	SIGNATURE (Supervisor/Officer in Charge): [signature]	
FIRE WATCH (Name/Grade): GUNDY	SIGNATURE (Inspector): [signature]	TIME PERMIT GRANTED: 0800

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT

NUMBER: 02-806

FROM: FIRE DEPARTMENT

TO: Worley DEPARTMENT

DATE	START TIME	EXPECTED COMPLETION TIME
6/18/02	1120	1200

LOCATION OF WORK (Area and building No.): VP-27 @ Pier 4

OPERATION

- [x] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)

Post Fire Watch

Gas Free Test Completed

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [x] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [x] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator) McCall	SIGNATURE (Supervisor/Officer in Charge) P. L. Moore	
FIRE WATCH (Name/Grade) Grady	SIGNATURE (Inspector)	TIME PERMIT GRANTED 1125

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT

NUMBER: 02-812

FROM: FIRE DEPARTMENT

TO: Worley DEPARTMENT

DATE	START TIME	EXPECTED COMPLETION TIME
6/13/02	0856	1530

LOCATION OF WORK (Area and building No.): VP-27 @ Area #1

OPERATION

- [x] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO_2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)

Post Fire Watch

Gas Free Test Completed

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [x] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [x] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator) McCall	SIGNATURE (Supervisor/Officer in Charge)	
FIRE WATCH (Name/Grade) Gundey	SIGNATURE (Inspector)	TIME PERMIT GRANTED 0856

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 02-817

FROM: FIRE DEPARTMENT

TO: Worley DEPARTMENT

DATE	START TIME	EXPECTED COMPLETION TIME
20 Jun 02	0745	1730

LOCATION OF WORK (Area and building No.): Pump House 1992

OPERATION

- [X] WELDING
- [X] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [X] GRINDING

OPERATION IS [X] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [X] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [ ] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [X] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)

Fire Watch at all times Gas Free test performed by Contractor.

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [X] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [X] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [X] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [X] ALL WALL AND FLOOR OPENINGS COVERED
- [X] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [X] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [X] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [X] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

COPY TO (Operator) mccall	SIGNATURE (Supervisor/Officer in Charge)	
FIRE WATCH (Name/Grade) Gundy	SIGNATURE (Inspector)	TIME PERMIT GRANTED 0740

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT NUMBER: 02-819

FROM: FIRE DEPARTMENT

TO: Worley DEPARTMENT

DATE	START TIME	EXPECTED COMPLETION TIME
20 JAN 02	0300	1730 M

LOCATION OF WORK (Area and building No.): Valve Pit 27

OPERATION

- [x] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO_2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING BLDG. FIRE ALARM OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)
Fire Watch at all times.

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
- [x] COVERS SUSPENDED BENEATH WORK TO COLLECT SPARKS

WORK ON ENCLOSED EQUIPMENT/SYSTEMS
(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

NOTE: NO-HOT WORK OR OPEN FLAMES IS AUTHORIZED WITHIN 50 FEET OF STORED FLAMMABLE LIQUIDS, CHANGE OF CONDITIONS OR DEVIATION OF INSTRUCTIONS WILL VOID THIS PERMIT.

AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

COPY TO (Operator) McCall	SIGNATURE (Supervisor/Officer in Charge)	
FIRE WATCH (Name/Grade) Gundy	SIGNATURE (Inspector)	TIME PERMIT GRANTED 0755

NAVSTAROOS RDS 11320/1 (Rev 2-99)

HAZARDOUS OPERATION PERMIT

NUMBER: 02-826

FROM: FIRE DEPARTMENT

TO: Worley DEPARTMENT

DATE: 6/21/02 | START TIME: 0750 | EXPECTED COMPLETION TIME: 1530

LOCATION OF WORK (Area and building No.): Pier #1

OPERATION

- [x] WELDING
- [x] CUTTING
- [ ] BRAZING
- [ ] FLAMMABLE LIQUID TRANSFER
- [ ] OPEN FIRES
- [ ] HOT TAPPING
- [ ] SOLDERING
- [ ] TAR KETTLE
- [x] GRINDING

OPERATION IS [x] APPROVED [ ] DISAPPROVED (Give reason)

REQUIREMENTS

- [x] FIRE EXTINGUISHERS AS FOLLOWS
- [ ] WATER TYPE
- [ ] CO2 EXTINGUISHER
- [x] DRY CHEMICAL
- [ ] AREA WET DOWN
- [ ] FIRE BLANKET
- [x] REPORT ANY FIRE USING ~~BLDG. FIRE ALARM~~ OR DIAL 865-4333

REMARKS: (Special instructions issued, to whom, etc.)

Post Fire Watch @ ALL Times

Gass Free Test – Completed

BUILDING WELDING FIRE SAFETY CHECK LIST

ATTENTION

BEFORE APPROVING ANY CUTTING AND WELDING PERMIT, THE FIRE SAFETY SUPERVISOR OR HIS APPOINTEE SHALL INSPECT THE WORK AREA AND CONFIRM THAT PRECAUTIONS HAVE BEEN TAKEN.

PRECAUTIONS

- [ ] SPRINKLERS IN SERVICE

WITHIN 35 FEET OF WORK

- [x] COMBUSTIBLE FLOORS WET DOWN, COVERED WITH DAMP SAND, METAL OR OTHER SHIELDS
- [x] NO COMBUSTIBLE MATERIAL OR FLAMMABLE LIQUIDS
- [x] COMBUSTIBLES PROTECTED WITH COVERS, GUARDS OR METAL SHIELDS
- [x] ALL WALL AND FLOOR OPENINGS COVERED
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(TANKS, CONTAINERS, DUCTS, DUST COLLECTORS, ETC.)

- [ ] EQUIPMENT CLEANED OF ALL COMBUSTIBLES
- [ ] CONTAINERS, TANKS, PIPING AND EQUIPMENT PURGED OF EXPLOSIVE ATMOSPHERES

WORK ON WALLS OR CEILINGS

- [ ] CONSTRUCTION NONCOMBUSTIBLE & WITHOUT COMBUSTIBLE COVERING
- [ ] COMBUSTIBLES MOVED AWAY FROM OPPOSITE SIDE OF WALL

FIRE WATCH

- [x] TO BE PROVIDED DURING AND UNTIL 30 MINUTES AFTER OPERATION
- [x] SUPPLIED WITH EXTINGUISHER OR WATER HOSE
- [x] TRAINED IN USE OF EQUIPMENT AND IN SOUNDING OF THE FIRE ALARM

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AIRCRAFT WELDING FIRE SAFETY CHECK LIST

ATTENTION

SAFEGUARDING FUEL SYSTEMS

- [ ] FUEL SYSTEM CLOSED ON AIRCRAFT BEING WELDED
- [ ] PORTION OF FUEL SYSTEM ON ADJACENT AIRCRAFT WITHIN 100 FROM WELDING POINT CLOSED
- [ ] FUEL TANK ACCESS PLATES IN PLACE
- [ ] FUEL TANK FILL AND VENT OPENINGS CLOSED OR COVERED
- [ ] FUEL LINES, VALVES, MANIFOLDS IN PLACE, SECURED/CAPPED
- [ ] STREAMERS ATTACHED TO COVERED FUEL VENTS
- [ ] PRESSURE REMOVED FROM FUEL SYSTEM
- [ ] CHECK AREA INCLUDING HANGAR FLOOR DRAINS WITH COMBUSTIBLE GAS ANALYZER

SAFEGUARDING OTHER WORK

- [ ] ALL OTHER WORK SUSPENDED WITHIN 20 OF WELDING POINT
- [ ] AREA PLACARDED: "WELDING OPERATIONS IN PROGRESS"
- [ ] WELDING SCREENS IN POSITION
- [ ] ADJACENT WORKERS NOTIFIED PRIOR TO START OF OPRNS.

HOUSEKEEPING

- [ ] CLEAN AREA WHERE WELD IS TO BE MADE
- [ ] COMBUSTIBLE MATL. REMOVED IN SURROUNDING AREA
- [ ] FLOOR CLEAR OF ANY OIL OR FUEL SPILLS
- [ ] FLOOR DRAINS CHECKED IN AREA FOR OIL CONTAMINATION

WELDING EQUIPMENT

- [ ] GENERATORS 5' CLEAR OF AIRCRAFT ENGINE, FUEL TANKS
- [ ] ELECTRICAL EQUIPMENT 18" (minimum) OFF FLOOR
- [ ] GROUND LEADS CLAMPED TO GROUNDING PLUG
- [ ] GAS CYLINDER SECURELY FASTENED TO PREVENT TIPPING REGULATORS, GAGES WORKING PROPERLY

MOBILITY OF AIRCRAFT

- [ ] AIRCRAFT PARKING BRAKES OFF AND WHEELS CHOCKED
- [ ] TUG AVAILABLE - TOW BAR ATTACHED
- [ ] HANGAR DOORS OPEN
- [ ] CLEAR PATH TO PERMIT TOWING AIRCRAFT OUTSIDE
- [ ] QUALIFIED TOW OPERATOR AVAILABLE AND ALERTED

COPY TO (Operator): McCall

SIGNATURE (Supervisor/Officer in Charge): [signature]

FIRE WATCH (Name/Grade): Gundy

SIGNATURE (Inspector): [signature]

TIME PERMIT GRANTED: 0750

NAVSTAROOS RDS 11320/1 (Rev 2-99)

J-02 Welder Personnel Certification

WGP WELDER QUALIFICATION RECORD

TWC	API 1104	API 1107	ASME Section IX	AWS D1.1
[X]	[ ]	[ ]	[ ]	[ ]

Test Date:	Tested in Accordance with WPS#:	Company WPS	Contractor WPS	Qualified	Disqualified
1-7-02	TWC #1	[X]	[ ]	[X]	[ ]

Welder Name:	SS #:	Welder	Welder Operator	Company Welder	Contract Welder
JAMES McCALL	453 167 7817	[X]	[ ]	[ ]	[X]

Project/Account or Job #:	Location of Test	Job Description/Progect Name:
7591	STA 30 EL CAMPO, TX	A.E.R WHARTON, COUNTY, TX

	Mfg. (If Known)	Grade/P #:	Grade/P #:	Pipe Dia.	Wall Thk.	Joint Design (V-Bevel, J-Bevel, Etc.)
Pipe Butt Weld Test	U.S.S.	X60 TO	X60	16"	.500	SINGLE-V-BEVEL

	Mfg. (If Known)	Run Pipe Grade/P #:	Dia.	Wt.	Br. Conn or Slv. Grade/P#:	Dia.	Wt.
Branch Conn. or Sleeve Test							

	Mfg. (If Known)	Grade/P #:	Grade/P #:	Plate Length/Width	Plate Thk.	Joint Design (V-Bevel, Tee-Joint, Etc.)
Plate Weld Groove or Fillet Test		TO				

Modified Butt Weld Joint	Regular Butt Weld Joint	Branch Connection	Hot Tap Weld	Sleeve Weld	Butt & Branch	Other - (Describe)	Was Back-up strip used?
[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ] Yes [X] No

Shielded Metal Arc (SMAW)	Gas Tungsten Arc (TIG)	Gas Metal Arc (MIG)	Gas Welding	Sub Arc	Manual	Semi-Auto	Auto	Forehand	Backhand
[X]	[ ]	[ ]	[ ]	[ ]	[X]	[ ]	[ ]	[ ]	[ ]

Entire Circum. Weld	1/2 Circum. Weld	1G Rolled	2G	5G	6G	2F	3F	4F	Pipeline Cap	Strip Cap	Lace Cap	Size of Reinforcement:
[ ]	[X]	[ ]	[ ]	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[X]	[ ]	1/16"

[ ] CO % [ ] ARGON % [ ] HELIUM % Flow Rate: CFM Trailing Gas: CFM Type Flux:

Welding Machine Make	Size or Capacity:				
LINCOLN	250	[X] Reverse	[ ] Straight	[ ] AC	[X] DC

	Stringer Bead	Hot Pass	Filler Passes	Cap	I.D. Pass	Re-Certification RV Radiography
AWS Number	E6010	E8010	E8010	E8010		Ref # (XR#)
Size of Wire or Electrodes	5/32	5/32	3/16	3/16		Attach Copy of Weld Insp. Film Report
No. of Passes	1	1	3	3		Preheat, Min.: 250 °F
Direction of Welding	[ ] Up [ ] Horiz [X] Down [ ] Roll	[ ] Up [ ] Horiz [X] Down [ ] Roll	[ ] Up [ ] Horiz [X] Down [ ] Roll	[ ] Up [ ] Horiz [X] Down [ ] Roll	[ ] Up [ ] Horiz [ ] Down [ ] Roll	Wind Break Used [ ] Yes [X] No

Destructive Test Specimen Mark and Results

S for Side Bend, N for Nick Break, F for Face Bend, M for Macro Etch Etc.

SB 1	OK	N-2	CLEAN
SB 3	OK	N-5	CLEAN
SB 4	OK		
SB 6	OK		

Remarks on Tensils

	Thickness	Width	Area	Load	Ultimate P.S.I.	Remarks
1.						
2.						
3.						
4.						

Remarks:

Contractor: FLINT Account #: 7591

Tested by: TRANSCO (Williams Co., Transco, WEG, Etc.) Welding Inspector: ROW HOLT (Print Name) 1-7-02 Date of Report

Signature: Row Holt

Distribution: Original - Pipeline Support Copy - Project File

WGP - 0120
1/00
Page 1 of 1

WGP WELDER QUALIFICATION RECORD

TWC	API 1104	API 1107	ASME Section IX	AWS D1.1
☐	☐	☐	☒	☐

Test Date:	Tested in Accordance with WFS#:	Company WPS	Contractor WPS	Qualified	Disqualified
1-7-02	84.04A	☒	☐	☒	☐

Welder Name:	SS #:	Welder	Welder Operator	Company Welder	Contract Welder
JAMES McCALL	453 16 7817	☒	☐	☐	☒

Project/Account or Job #:	Location of Test	Job Description/Progect Name:
7591	STA 30 EL CAMPO, TX.	A.E.R WHARTON COUNTY, TX.

	Mfg. (If Known)	Grade/P #:	Grade/P #:	Pipe Dia.	Wall Thk.	Joint Design (V-Bevel, J-Bevel, Etc.)
Pipe Butt Weld Test	U.S.S.	X42 TO	X 42	2 3/8	.218	SINGLE-V-BEVEL

	Mfg. (If Known)	Run Pipe Grade/P #:	Dia.	Wt.	Br. Conn or Slv. Grade/P#:	Dia.	Wt.
Branch Conn. or Sleeve Test							

	Mfg. (If Known)	Grade/P #:	Grade/P #:	Plate Length/Width	Plate Thk.	Joint Design (V-Bevel, Tee-Joint, Etc.)
Plate Weld Groove or Fillet Test		TO				

Modified Butt Weld Joint	Regular Butt Weld Joint	Branch Connection	Hot Tap Weld	Sleeve Weld	Butt & Branch	☐ Other - (Describe)	Was Back-up strip used?
☐	☒	☐	☐	☐	☐		☐ Yes ☒ No

Shielded Metal Arc	Gas Tungsten Arc	Gas Metal Arc	Gas Welding	Sub Arc	Manual	Semi-Auto	Auto	Forehand	Backhand
(SMAW) ☒	(TIG) ☐	(MIG) ☐	☐	☐	☒	☐	☐	☐	☐

Entire Circum. Weld	1/2 Circum. Weld	1G Rolled	2G	5G	6G	2F	3F	4F	Pipeline Cap	Strip Cap	Lace Cap	Size of Reinforcement:
☒	☐	☐	☐	☐	☒	☐	☐	☐	☒	☐	☐	1/16"

☐ CO % ☐ ARGON % ☐ HELIUM % Flow Rate: CFM Trailing Gas: CFM Type Flux:

Welding Machine Make	Size or Capacity:				
LINCOLN	250	☒ Reverse	☐ Straight	☐ AC	☒ DC

	Stringer Bead	Hot Pass	Filler Passes	Cap	I.D. Pass	Re-Certification RV Radiography
AWS Number	E6010	E8010	E8010	E8010		Ref # (XR#)
Size of Wire or Electrodes	1/8	1/8	1/8	1/8		Attach Copy of Weld Insp. Film Report
No. of Passes	1	1	1	1		Preheat, Min.: 200 °F
Direction of Welding	☐ Up ☐ Horiz ☒ Down ☐ Roll	☐ Up ☐ Horiz ☒ Down ☐ Roll	☐ Up ☐ Horiz ☒ Down ☐ Roll	☐ Up ☐ Horiz ☒ Down ☐ Roll	☐ Up ☐ Horiz ☐ Down ☐ Roll	Wind Break Used ☐ Yes ☒ No

Destructive Test Specimen Mark and Results	S for Side Bend,		N for Nick Break,	F for Face Bend,		M for Macro Etch Etc.
	RB-2	OK		FB-1	OK	
	RB-4	OK		FB-3	OK	

Remarks on Tensils	Thickness	Width	Area	Load	Ultimate P.S.I.	Remarks
1.						
2.						
3.						
4.						

Remarks:

Contractor: FLINT Account #: 7591

Tested by: TRANSCO (Williams Co., Transco, WEG, Etc.) Welding Inspector: RON HOLT (Print Name) 1-7-02 Date of Report

Signature: Ron Holt

Distribution: Original - Pipeline Support Copy - Project File

WGP WELDER QUALIFICATION RECORD

TWC	API 1104	API 1107	ASME Section IX	AWS D1.1
☐	☐	☐	☒	☐

Test Date:	Tested in Accordance with WFS#:	Company WPS	Contractor WPS	Qualified	Disqualified
1-7-02	88.04A	☒	☐	☒	☐

Welder Name:	SS #:	Welder	Welder Operator	Company Welder	Contract Welder
James McCall	453 16 7 7817	☒	☐	☐	☒

Project/Account or Job #:	Location of Test	Job Description/Progect Name:
7591	STA 30 El Campo, Tx	A.E.R. Wharton County, Tx

	Mfg. (If Known)	Grade/P #:	Grade/P #:	Pipe Dia.	Wall Thk.	Joint Design (V-Bevel, J-Bevel, Etc.)
Pipe Butt Weld Test	U.S.S.	X42 TO	X42	2 3/8	.218	Single-V-Bevel

	Mfg. (If Known)	Run Pipe Grade/P #:	Dia.	Wt.	Br. Conn or Slv. Grade/P#:	Dia.	Wt.
Branch Conn. or Sleeve Test							

	Mfg. (If Known)	Grade/P #:	Grade/P #:	Plate Length/Width	Plate Thk.	Joint Design (V-Bevel, Tee-Joint, Etc.)
Plate Weld Groove or Fillet Test		TO				

Modified Butt Weld Joint	Regular Butt Weld Joint	Branch Connection	Hot Tap Weld	Sleeve Weld	Butt & Branch	☐ Other - (Describe)	Was Back-up strip used?
☐	☒	☐	☐	☐	☐		☐ Yes ☒ No

Shielded Metal Arc (SMAW)	Gas Tungsten Arc (TIG)	Gas Metal Arc (MIG)	Gas Welding	Sub Arc	Manual	Semi-Auto	Auto	Forehand	Backhand
☒	☐	☐	☐	☐	☒	☐	☐	☐	☐

Entire Circum. Weld	1/2 Circum. Weld	1G Rolled	2G	5G	6G	2F	3F	4F	Pipeline Cap	Strip Cap	Lace Cap	Size of Reinforcement:
☒	☐	☐	☐	☐	☒	☐	☐	☐	☒	☐	☐	1/16"

☐ CO % ☐ ARGON % ☐ HELIUM % Flow Rate: CFM Trailing Gas: CFM Type Flux:

Welding Machine Make	Size or Capacity:	☒ Reverse	☐ Straight	☐ AC	☒ DC
Lincoln	280				

	Stringer Bead	Hot Pass	Filler Passes	Cap	I.D. Pass	Re-Certification RV Radiography
AWS Number	E6010	E8018	E7018	E7018		Ref # (XR#)
Size of Wire or Electrodes	1/8	1/8	1/8	1/8		Attach Copy of Weld Insp. Film Report
No. of Passes	1	1	1	1		Preheat, Min.: 200 °F
Direction of Welding	☐ Up ☐ Horiz ☒ Down ☐ Roll	☒ Up ☐ Horiz ☐ Down ☐ Roll	☒ Up ☐ Horiz ☐ Down ☐ Roll	☒ Up ☐ Horiz ☐ Down ☐ Roll	☐ Up ☐ Horiz ☐ Down ☐ Roll	Wind Break Used ☐ Yes ☒ No

Destructive Test Specimen Mark and Results	S for Side Bend,	N for Nick Break,	F for Face Bend,	M for Macro Etch Etc.
	RB-2 OK		FB-1 OK	
	RB-4 OK		FB-3 OK	

Remarks on Tensils	Thickness	Width	Area	Load	Ultimate P.S.I.	Remarks
1.						
2.						
3.						
4.						

Remarks:

Contractor: Flint Account #: 7591

Tested by: Transco (Williams Co., Transco, WEG, Etc.) Welding Inspector: Ron Holt (Print Name) 1-7-02 Date of Report

Signature: Ron Holt

Distribution: **Original - Pipeline Support** **Copy - Project File**

WGP WELDER QUALIFICATION RECORD

TWC	API 1104	API 1107	ASME Section IX	AWS D1.1
☐	☐	☐	☒	☐

Test Date:	Tested in Accordance with WFS#:	Company WPS	Contractor WPS	Qualified	Disqualified
1-7-02	98.01A	☒	☐	☒	☐

Welder Name:	SS #:	Welder	Welder Operator	Company Welder	Contract Welder
JAMES McCALL	453 / 67 / 7817	☒	☐	☐	☒

Project/Account or Job #:	Location of Test	Job Description/Progect Name:

	Mfg. (If Known)	Grade/P #:	Grade/P #:	Pipe Dia.	Wall Thk.	Joint Design (V-Bevel, J-Bevel, Etc.)
Pipe Butt Weld Test	U.S.S.	P#8	TO P#8	4"	.237	SINGLE-V-BEVEL

	Mfg. (If Known)	Run Pipe Grade/P #:	Dia.	Wt.	Br. Conn or Slv. Grade/P#:	Dia.	Wt.
Branch Conn. or Sleeve Test							

	Mfg. (If Known)	Grade/P #:	Grade/P #:	Plate Length/Width	Plate Thk.	Joint Design (V-Bevel, Tee-Joint, Etc.)
Plate Weld Groove or Fillet Test			TO			

Modified Butt Weld Joint	Regular Butt Weld Joint	Branch Connection	Hot Tap Weld	Sleeve Weld	Butt & Branch	Other - (Describe)	Was Back-up strip used?
☐	☒	☐	☐	☐	☐	☐	☐ Yes ☒ No

Shielded Metal Arc (SMAW)	Gas Tungsten Arc (TIG)	Gas Metal Arc (MIG)	Gas Welding	Sub Arc	Manual	Semi-Auto	Auto	Forehand	Backhand
☐	☒	☐	☐	☐	☒	☐	☐	☐	☐

Entire Circum. Weld	1/2 Circum. Weld	1G Rolled	2G	5G	6G	2F	3F	4F	Pipeline Cap	Strip Cap	Lace Cap	Size of Reinforcement:
☒	☐	☐	☐	☐	☒	☐	☐	☐	☒	☐	☐	1/16

☐ CO % ☒ ARGON 100 % ☐ HELIUM % Flow Rate: 30-60 CFM Trailing Gas: 100% CFM Type Flux:

Welding Machine Make	Size or Capacity:	Reverse	Straight	AC	DC
LINCOLN	250	☐	☒	☐	☒

	Stringer Bead	Hot Pass	Filler Passes	Cap	I.D. Pass	Re-Certification RV Radiography
AWS Number	ER316L	ER316L	ER316L	ER316L		Ref # (XR#)
Size of Wire or Electrodes	1/8	1/8	1/8	1/8		Attach Copy of Weld Insp. Film Report
No. of Passes	1	1	2	1		Preheat, Min.: °F
Direction of Welding	☒ Up ☐ Horiz ☐ Down ☐ Roll	☒ Up ☐ Horiz ☐ Down ☐ Roll	☒ Up ☐ Horiz ☐ Down ☐ Roll	☒ Up ☐ Horiz ☐ Down ☐ Roll	☐ Up ☐ Horiz ☐ Down ☐ Roll	Wind Break Used ☐ Yes ☒ No

Destructive Test Specimen Mark and Results	S for Side Bend,	N for Nick Break,	F for Face Bend,	M for Macro Etch Etc.
	RB-2 OK		FB-1 OK	
	RB-4 OK		FB-3 OK	

Remarks on Tensils	Thickness	Width	Area	Load	Ultimate P.S.I.	Remarks
1.						
2.						
3.						
4.						

Remarks:

Contractor: FLINT Account #: 7591

Tested by: TRANSCO (Williams Co., Transco, WEG, Etc.) Welding Inspector: RON HOLT (Print Name) 1-7-02 Date of Report

Signature: Ron Holt

Distribution: **Original - Pipeline Support** **Copy - Project File**

WGP - 0120
1/00
Page 1 of 1

ENRON

API 1104 Welder Qualification
Destructive Test Report

NAME OF WELDER	ID MARK	TEST LOCATION
Bob E Wills SS# 466-76-7586	BPC # 2	Pearland Tx.

TEST CONDITIONS AND RESULTS

Weld Type	Test 1		Test 2		Test 3	Test 4
	Butt	Branch	Butt	Branch	Branch Fillet	Lap Fillet
Pipe Nominal Diameter Inches	12 3/4	X		12 3/4 X 12 3/4	8 5/8 X 12 3/4	
Pipe Wall Thickness Inches	.250			.250	.250 x .250	
Pipe Yield Strength	X-60			X-60	GrB x X-60	
Filler Metal	SP+ 6010 To+ 8010			SP+ 6010 To+ 8010	E 7018	
Welding Standard No.	8405			8416	8411	
All test specimens were acceptable except as noted (identify strap & defect)						

WELDER CERTIFICATION

This certifies the above welder to weld on Enron facilities limited to the following:

Test Number	WELDING: Process: Arc Welding: Shielded Metal SMAW	Gas Metal GMAW	Sub-merged SAW	Tungsten Inert Gas TIG	Other (Specify)	Method: Manual M	Semi-automatic SA	Automatic A	Class Filler Metal	Direction Travel: Up	Down	Qualification: Multiple	Single * (See Sect. on Below)
1	✓					✓			SP+ 6010 & 70+ 8010		✓	✓	
2	✓					✓			SP+ 6010 & 70+ 8010		✓	✓	
3	✓					✓			E 7018	✓		✓	

★ ADDITIONAL LIMITATIONS FOR SINGLE QUALIFICATION

Test Number	PIPE: Outside Diameter Inches: < 2.375	≥ 2.375 ≤ 12.75	> 12.75	All	Wall Thickness Inches: < .1875	≥ .1875 ≤ .750	> .750	All	Axis: Vertical	Horizontal	All	Axis: Fixed	Rolled	Both	Joint Design: Vee Bevel	Other Sketch	Fillet Only When Checked: Branch	Lap	Both
1				✓				✓			✓	✓			✓				
2				✓				✓			✓	✓				✓			
3				✓				✓			✓	✓				✓			

SIGNATURE OF WELDER: Bob E Wills

WELDING INSPECTOR'S APPROVAL: [illegible]

DATE OF APPROVAL: 1-11-02

DATE CERTIFICATION EXPIRES: 6-11-02

6-MONTH EXTENSION BASED ON TEST OF PRODUCTION OR TEST BUTT-WELD

W O NUMBER	Pipe & Test Weld Data: PIPE DIAMETER	WALL THICKNESS	GRADE	WELDING STANDARD NO.	EXTENSION OF ORIGINAL QUALIFICATION IDENTIFIED AS
					☐ Test 1 ☐ Test 2 (See Test Conditions above)

TEST METHOD: ☐ Radiographic ☐ Destructive (ref ES 8195, Form 022-3563)

Daily Radiographic Report No.: _____ XR No.'s _____

SIGNATURE OF WELDER	WELDING INSPECTOR'S APPROVAL	DATE OF APPROVAL	DATE CERTIFICATION EXTENSION EXPIRES

W O NUMBER	Pipe & Test Weld Data: PIPE DIAMETER	WALL THICKNESS	GRADE	WELDING STANDARD NO.	EXTENSION OF ORIGINAL QUALIFICATION IDENTIFIED AS
					☐ Test 1 ☐ Test 2 (See Test Conditions above)

TEST METHOD: ☐ Radiographic ☐ Destructive (ref ES 8195, Form 022-3563)

Daily Radiographic Report No.: _____ XR No.'s _____

SIGNATURE OF WELDER	WELDING INSPECTOR'S APPROVAL	DATE OF APPROVAL	DATE CERTIFICATION EXTENSION EXPIRES

Form 000-736 (6/96)

J-03 Welding Procedures

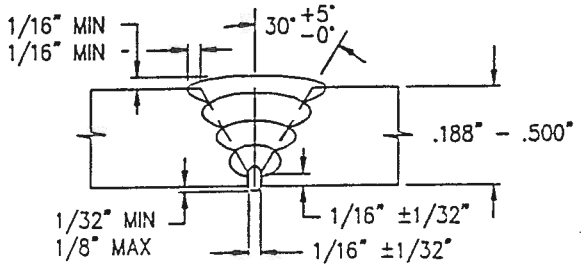
FORM 611M

CYPRESS CREEK PIPELINE MAINTENANCE INC.

CYPRESS CREEK PIPELINE MAINTENANCE
WELDING PROCEDURE SPECIFICATION

PROCEDURE: HP-WP1	PROCESS: MANUAL, SHIELDED METAL ARC
MATERIAL: ≤ API 5L GR X-42	
DIAMETER: < 2 3/8" O.D.	WALL THICKNESS: 0.188" – 0.500"

JOINT DESIGN:



FILLER METAL: E6010 (AWS)

NUMBER OF PASSES:
- 0.188" UP TO 0.312" WALL – 3 PASSES
- 0.312" UP TO 0.375" WALL – 4 PASSES
- 0.375" UP TO 0.500" WALL – 5 PASSES
- 0.500" WALL – 6 PASSES

ELECTRICAL CHARACTERISTICS:
- CURRENT: DC
- POLARITY: REVERSE
- VOLTAGE: 22 – 28 VOLTS (AS MEASURED BETWEEN ELECTRODE HOLDER AND PIPE)

CURRENT, ELECTRODE SIZE AND TRAVEL SPEED:

WALL THICKNESS	PASS	ELECTRODE DIAMETER	CURRENT (AMPS)	TRAVEL SPEED (IN/MIN)
0.188" UP TO 0.250"	STRINGER	1/8"	110 – 130	10 – 16
	HOT PASS	5/32"	170 – 200	10 – 16
	FILLERS	5/32"	160 – 190	8 – 12
	CAP	5/32" OR 3/16"	150 – 180	6 – 9
0.250" THRU 0.500"	STRINGER	5/32"	135 – 165	10 – 16
	HOT PASS	5/32"	170 – 200	10 – 16
	FILLERS	3/16"	170 – 200	8 – 12
	CAP	3/16"	160 – 180	6 – 9

POSITION: FIXED	AXIS: HORIZONTAL	DIRECTION: DOWNHILL

NUMBER OF WELDERS: ONE PER PASS	TIME LAPSE: 5 MIN. MAXIMUM INTERVAL BETWEEN COMPLETION OF STRINGER BEAD AND START OF HOT PASS
CLAMP TYPE: EXTERNAL (REMOVE ONLY AFTER COMPLETING 50% OF STRINGER BEAD, UNIFORMLY SPACED AROUND PIPE)	CLEANING: POWER TOOL

PREHEAT:

WELDS REQUIRED	AIR OR PIPE TEMPERATURE (°F)	MINIMUM PREHEAT TEMPERATURE (°F) WHEN SPECIFIED OR WHEN MOISTURE IS PRESENT	MAXIMUM PREHEAT TEMPERATURE (°F)
LINE PIPE	> 38	150	400
	< 38	150	400
	< 0	200	400
RIVER CROSSINGS	> 60	200	400
	< 60	200	400
	< 0	250	400
TRANSITIONS, VALVES, REPAIRS	ANY TEMPERATURE	250	400

REVISION: 0	DATE: JULY 21, 1995

FORM 611M

CYPRESS CREEK PIPELINE MAINTENANCE INC.

CYPRESS CREEK PIPELINE MAINTENANCE
WELDING PROCEDURE SPECIFICATION

PROCEDURE: HP-WP2

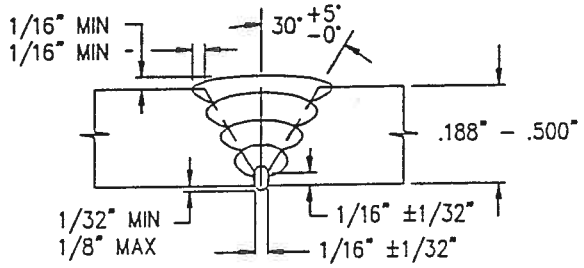
PROCESS: MANUAL, SHIELDED METAL ARC

MATERIAL: ≤ API 5L GR X-42

DIAMETER: 2 3/8" – 12 3/4" O.D.

WALL THICKNESS: 0.188" – 0.500"

JOINT DESIGN:



FILLER METAL: E6010 (AWS)

NUMBER OF PASSES:
0.188" UP TO 0.312" WALL – 3 PASSES
0.312" UP TO 0.375" WALL – 4 PASSES
0.375" UP TO 0.500" WALL – 5 PASSES
0.500" WALL – 6 PASSES

ELECTRICAL CHARACTERISTICS:
CURRENT: DC
POLARITY: REVERSE
VOLTAGE: 22 – 28 VOLTS (AS MEASURED BETWEEN ELECTROD HOLDER AND PIPE)

CURRENT, ELECTRODE SIZE AND TRAVEL SPEED:

WALL THICKNESS	PASS	ELECTRODE DIAMETER	CURRENT (AMPS)	TRAVEL SPEED (IN/MIN)
0.188" UP TO 0.250"	STRINGER	1/8"	110 – 130	10 – 16
	HOT PASS	5/32"	170 – 200	10 – 16
	FILLERS	5/32"	160 – 190	8 – 12
	CAP	5/32" OR 3/16"	150 – 180	6 – 9
0.250" THRU 0.500"	STRINGER	5/32"	135 – 165	10 – 16
	HOT PASS	5/32"	170 – 200	10 – 16
	FILLERS	3/16"	170 – 200	8 – 12
	CAP	3/16"	160 – 180	6 – 9

POSITION: FIXED

AXIS: HORIZONTAL

DIRECTION: DOWNHILL

NUMBER OF WELDERS: ONE PER PASS

TIME LAPSE: 5 MIN. MAXIMUM INTERVAL BETWEEN COMPLETION OF STRINGER BEAD AND START OF HOT PASS

CLAMP TYPE: INTERNAL, WHERE POSSIBLE, EXTERNAL OTHERWISE. (REMOVE INTERNAL CLAMPS ONLY AFTER 100% OF STRINGER BEAD IS COMPLETED AND EXTERNAL CLAMPS ONLY AFTER COMPLETING 50% OF STRINGER BEAD, UNIFORMLY SPACED AROUND PIPE).

CLEANING: POWER TOOL

PREHEAT:

WELDS REQUIRED	AIR OR PIPE TEMPERATURE (°F)	MINIMUM PREHEAT TEMPERATURE (°F) WHEN SPECIFIED OR WHEN MOISTURE IS PRESENT	MAXIMUM PREHEAT TEMPERATURE (°F)
LINE PIPE	> 38	150	400
	< 38	150	400
	< 0	200	400
RIVER CROSSINGS	> 60	200	400
	< 60	200	400
	< 0	250	400
TRANSITIONS, VALVES, REPAIRS	ANY TEMPERATURE	250	400

REVISION: 0

DATE: JULY 21, 1995

RKR 08/02/9

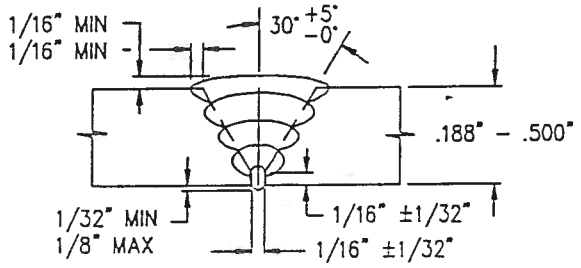
FORM 611MS7

CYPRESS CREEK PIPELINE MAINTENANCE INC.

CYPRESS CREEK PIPELINE MAINTENANCE
WELDING PROCEDURE SPECIFICATION

PROCEDURE: HP-WP3	PROCESS: MANUAL, SHIELDED METAL ARC
MATERIAL: ≤ API 5L GR X-42	
DIAMETER: > 12 3/4" O.D.	WALL THICKNESS: 0.188" – 0.500"

JOINT DESIGN:



FILLER METAL: E6010 (AWS)

NUMBER OF PASSES:
- 0.188" UP TO 0.312" WALL – 3 PASSES
- 0.312" UP TO 0.375" WALL – 4 PASSES
- 0.375" UP TO 0.500" WALL – 5 PASSES
- 0.500" WALL – 6 PASSES

ELECTRICAL CHARACTERISTICS:
- CURRENT: DC
- POLARITY: REVERSE
- VOLTAGE: 22 – 28 VOLTS (AS MEASURED BETWEEN ELECTRODE HOLDER AND PIPE)

CURRENT, ELECTRODE SIZE AND TRAVEL SPEED:

WALL THICKNESS	PASS	ELECTRODE DIAMETER	CURRENT (AMPS)	TRAVEL SPEED (IN/MIN)
0.188" UP TO 0.250"	STRINGER	1/8"	110 – 130	10 – 16
	HOT PASS	5/32"	170 – 200	10 – 16
	FILLERS	5/32"	160 – 190	8 – 12
	CAP	5/32" OR 3/16"	150 – 180	6 – 9
0.250" THRU 0.500"	STRINGER	5/32"	135 – 165	10 – 16
	HOT PASS	5/32"	170 – 200	10 – 16
	FILLERS	3/16"	170 – 200	8 – 12
	CAP	3/16"	160 – 180	6 – 9

POSITION: FIXED	AXIS: HORIZONTAL	DIRECTION: DOWNHILL

NUMBER OF WELDERS: TWO PER PASS

TIME LAPSE: 5 MIN. MAXIMUM INTERVAL BETWEEN COMPLETION OF STRINGER BEAD AND START OF HOT PASS

CLAMP TYPE: INTERNAL, WHERE POSSIBLE, EXTERNAL OTHERWISE. (REMOVE INTERNAL CLAMPS ONLY AFTER 100% OF STRINGER BEAD IS COMPLETED AND EXTERNAL CLAMPS ONLY AFTER COMPLETING 50% OF STRINGER BEAD, UNIFORMLY SPACED AROUND PIPE.

CLEANING: POWER TOOL

PREHEAT:

WELDS REQUIRED	AIR OR PIPE TEMPERATURE (°F)	MINIMUM PREHEAT TEMPERATURE(°F) WHEN SPECIFIED OR WHEN MOISTURE IS PRESENT	MAXIMUM PREHEAT TEMPERATURE (°F)
LINE PIPE	> 38	150	400
	< 38	150	400
	< 0	200	400
RIVER CROSSINGS	> 60	200	400
	< 60	200	400
	< 0	250	400
TRANSITIONS, VALVES, REPAIRS	ANY TEMPERATURE	250	400

REVISION: 0	DATE: JULY 21, 1995

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RKR 08/02/95

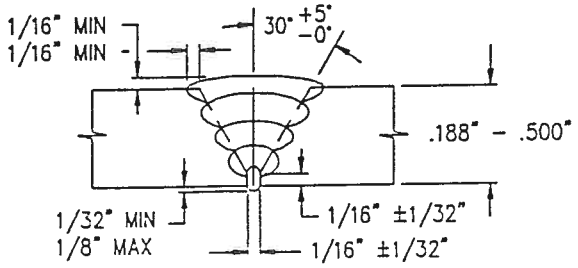
FORM 611MS7

CYPRESS CREEK PIPELINE MAINTENANCE INC.

CYPRESS CREEK PIPELINE MAINTENANCE
WELDING PROCEDURE SPECIFICATION

PROCEDURE: HP-WP4	PROCESS: MANUAL, SHIELDED METAL ARC
MATERIAL: API 5L GR X-46 – API 5L GR X-60	
DIAMETER: < 2 3/8" O.D.	WALL THICKNESS: 0.188" – 0.500"

JOINT DESIGN:



FILLER METAL: E7010 (AWS)

NUMBER OF PASSES:
- 0.188" UP TO 0.312" WALL – 3 PASSES
- 0.312" UP TO 0.375" WALL – 4 PASSES
- 0.375" UP TO 0.500" WALL – 5 PASSES
- 0.500" WALL – 6 PASSES

ELECTRICAL CHARACTERISTICS:
- CURRENT: DC
- POLARITY: REVERSE
- VOLTAGE: 22 – 28 VOLTS (AS MEASURED BETWEEN ELECTRODE HOLDER AND PIPE)

CURRENT, ELECTRODE SIZE AND TRAVEL SPEED:

WALL THICKNESS	PASS	ELECTRODE DIAMETER	CURRENT (AMPS)	TRAVEL SPEED (IN/MIN)
0.188" UP TO 0.250"	STRINGER	1/8"	110 – 130	10 – 16
	HOT PASS	5/32"	170 – 200	10 – 16
	FILLERS	5/32"	160 – 190	8 – 12
	CAP	5/32" OR 3/16"	150 – 180	6 – 9
0.250" THRU 0.500"	STRINGER	5/32"	135 – 165	10 – 16
	HOT PASS	5/32"	170 – 200	10 – 16
	FILLERS	3/16"	170 – 200	8 – 12
	CAP	3/16"	160 – 180	6 – 9

POSITION: FIXED	AXIS: HORIZONTAL	DIRECTION: DOWNHILL

NUMBER OF WELDERS: ONE PER PASS	TIME LAPSE: 5 MIN. MAXIMUM INTERVAL BETWEEN COMPLETION OF STRINGER BEAD AND START OF HOT PASS
CLAMP TYPE: EXTERNAL (REMOVE ONLY AFTER COMPLETING 50% OF STRINGER BEAD, UNIFORMLY SPACED AROUND PIPE)	CLEANING: POWER TOOL

PREHEAT:

WELDS REQUIRED	AIR OR PIPE TEMPERATURE (°F)	MINIMUM PREHEAT TEMPERATURE(°F) WHEN SPECIFIED OR WHEN MOISTURE IS PRESENT	MAXIMUM PREHEAT TEMPERATURE (°F)
LINE PIPE	> 38	150	400
	< 38	150	400
	< 0	200	400
RIVER CROSSINGS	> 60	200	400
	< 60	200	400
	< 0	250	400
TRANSITIONS, VALVES, REPAIRS	ANY TEMPERATURE	250	400

REVISION: 0	DATE: JULY 21, 1995

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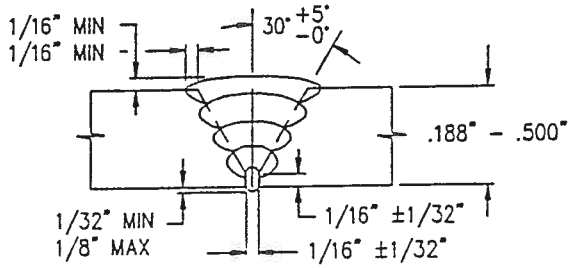
RHR 08/02/95

CYPRESS CREEK PIPELINE MAINTENANCE INC.

CYPRESS CREEK PIPELINE MAINTENANCE
WELDING PROCEDURE SPECIFICATION

PROCEDURE: HP-WP5	PROCESS: MANUAL, SHIELDED METAL ARC
MATERIAL: API 5L GR X-46 – API 5L GR X-60	
DIAMETER: 2 3/8" – 12 3/4" O.D.	WALL THICKNESS: 0.188" – 0.500"

JOINT DESIGN:



FILLER METAL: E7010 (AWS)

NUMBER OF PASSES:
- 0.188" UP TO 0.312" WALL – 3 PASSES
- 0.312" UP TO 0.375" WALL – 4 PASSES
- 0.375" UP TO 0.500" WALL – 5 PASSES
- 0.500" WALL – 6 PASSES

ELECTRICAL CHARACTERISTICS:
- CURRENT: DC
- POLARITY: REVERSE
- VOLTAGE: 22 – 28 VOLTS (AS MEASURED BETWEEN ELECTRODE HOLDER AND PIPE)

CURRENT, ELECTRODE SIZE AND TRAVEL SPEED:

WALL THICKNESS	PASS	ELECTRODE DIAMETER	CURRENT (AMPS)	TRAVEL SPEED (IN/MIN)
0.188" UP TO 0.250"	STRINGER	1/8"	110 – 130	10 – 16
	HOT PASS	5/32"	170 – 200	10 – 16
	FILLERS	5/32"	160 – 190	8 – 12
	CAP	5/32" OR 3/16"	150 – 180	6 – 9
0.250" THRU 0.500"	STRINGER	5/32"	135 – 165	10 – 16
	HOT PASS	5/32"	170 – 200	10 – 16
	FILLERS	3/16"	170 – 200	8 – 12
	CAP	3/16"	160 – 180	6 – 9

POSITION: FIXED	AXIS: HORIZONTAL	DIRECTION: DOWNHILL

NUMBER OF WELDERS: ONE PER PASS	TIME LAPSE: 5 MIN. MAXIMUM INTERVAL BETWEEN COMPLETION OF STRINGER BEAD AND START OF HOT PASS
CLAMP TYPE: INTERNAL, WHERE POSSIBLE, EXTERNAL OTHERWISE. (REMOVE INTERNAL CLAMPS ONLY AFTER 100% OF STRINGER BEAD IS COMPLETED AND EXTERNAL CLAMPS ONLY AFTER COMPLETING 50% OF STRINGER BEAD, UNIFORMLY SPACED AROUND PIPE).	CLEANING: POWER TOOL

PREHEAT:

WELDS REQUIRED	AIR OR PIPE TEMPERATURE (°F)	MINIMUM PREHEAT TEMPERATURE(°F) WHEN SPECIFIED OR WHEN MOISTURE IS PRESENT	MAXIMUM PREHEAT TEMPERATURE (°F)
LINE PIPE	> 38	150	400
	< 38	150	400
	< 0	200	400
RIVER CROSSINGS	> 60	200	400
	< 60	200	400
	< 0	250	400
TRANSITIONS, VALVES, REPAIRS	ANY TEMPERATURE	250	400

REVISION: 0	DATE: JULY 21, 1995

FORM 611M

CYPRESS CREEK PIPELINE MAINTENANCE
WELDING PROCEDURE SPECIFICATION

CYPRESS CREEK PIPELINE MAINTENANCE INC.

PROCEDURE: HP-WP6

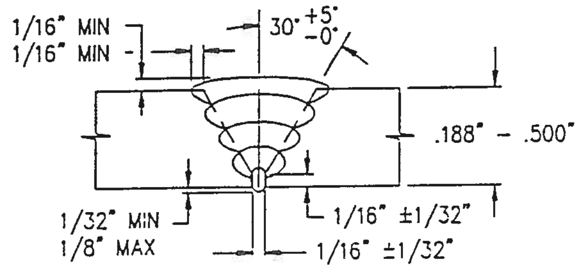
PROCESS: MANUAL, SHIELDED METAL ARC

MATERIAL: API 5L GR X-46 – API 5L GR X-60

DIAMETER: > 12 3/4" O.D.

WALL THICKNESS: 0.188" – 0.500"

JOINT DESIGN:



FILLER METAL: E7010 (AWS)

NUMBER OF PASSES:
0.188" UP TO 0.312" WALL – 3 PASSES
0.312" UP TO 0.375" WALL – 4 PASSES
0.375" UP TO 0.500" WALL – 5 PASSES
0.500" WALL – 6 PASSES

ELECTRICAL CHARACTERISTICS:
CURRENT: DC
POLARITY: REVERSE
VOLTAGE: 22 – 28 VOLTS (AS MEASURED BETWEEN ELECTRO[DE] HOLDER AND PIPE)

CURRENT, ELECTRODE SIZE AND TRAVEL SPEED:

WALL THICKNESS	PASS	ELECTRODE DIAMETER	CURRENT (AMPS)	TRAVEL SPEED (IN/MIN)
0.188" UP TO 0.250"	STRINGER	1/8"	110 – 130	10 – 16
	HOT PASS	5/32"	170 – 200	10 – 16
	FILLERS	5/32"	160 – 190	8 – 12
	CAP	5/32" OR 3/16"	150 – 180	6 – 9
0.250" THRU 0.500"	STRINGER	5/32"	135 – 165	10 – 16
	HOT PASS	5/32"	170 – 200	10 – 16
	FILLERS	3/16"	170 – 200	8 – 12
	CAP	3/16"	160 – 180	6 – 9

POSITION: FIXED | **AXIS:** HORIZONTAL | **DIRECTION:** DOWNHILL

NUMBER OF WELDERS: TWO PER PASS

TIME LAPSE: 5 MIN. MAXIMUM INTERVAL BETWEEN COMPLETION OF STRINGER BEAD AND START OF HOT PASS

CLAMP TYPE: INTERNAL, WHERE POSSIBLE, EXTERNAL OTHERWISE. (REMOVE INTERNAL CLAMPS ONLY AFTER 100% OF STRINGER BEAD IS COMPLETED AND EXTERNAL CLAMPS ONLY AFTER COMPLETING 50% OF STRINGER BEAD, UNIFORMLY SPACED AROUND PIPE).

CLEANING: POWER TOOL

PREHEAT:

WELDS REQUIRED	AIR OR PIPE TEMPERATURE (°F)	MINIMUM PREHEAT TEMPERATURE(°F) WHEN SPECIFIED OR WHEN MOISTURE IS PRESENT	MAXIMUM PREHEAT TEMPERATURE (°F)
LINE PIPE	> 38	150	400
	< 38	150	400
	< 0	200	400
RIVER CROSSINGS	> 60	200	400
	< 60	200	400
	< 0	250	400
TRANSITIONS, VALVES, REPAIRS	ANY TEMPERATURE	250	400

REVISION: 0

DATE: JULY 21, 1995

RKR 08/02/95 WELL\IL468\611NS779.DWG

J-04 Welding – NDT Personnel Qualifications

ALONSO & CARUS iron works, inc.
ROAD 869 KM. 0.09, BO. PALMAS, P.O. BOX 566, CATAÑO, PUERTO RICO 00963

NON DESTRUCTIVE TESTING-PERSONNEL QUALIFICATION RECORD

NAME: Jose A. Ruiz **Level of Certification: 11**

NDT Method:

"A" Radiographic Testing
"B" Magnetic Particle (wet and dry)
"C" Ultrasonic thickness
"D" Liquid Penetrant (Solvent and water washable)

EFFECTIVE PERIOD OF CERTIFICATION **February 11, 1999** TO **February 11, 2004**

Reference Method:

1. Operating the Emergency Procedure Manual of Alonso & Carus
2. Industrial Radiography Manual US Atomic Energy Commission
3. ASME Code Section V, Nondestructive Examination
4. ASTM Code Standards
5. The American Society for Non-Destructive Testing SNT-TC-1A
6. NDE Written Procedure Alonso & Carus

RECORD OF ANNUAL PHYSICAL EXAMINATION

Date Administered	Oct.28/ 2000	MAY 7 2001							
Vision Test	20/20	20/20							
Corrective Lenses (yes or no)	NO	NO	JAEGER TEST						
Color test	14/14	Ishihara	14/14						
Examiners Name or Initials	Sandra Quilez #321		JUDY RIOS LIC. O.D. #523						

NDE Training: Alonso & Carus Iron Works Inc. written practice Sections A,B,C, & D
Rev. 1 RECERTIFICATION BY CONTINUING SATISFACTORY PERFORMANCE

Certification: NDE Level III _____ Date February 11,1999
QC Manager _____ Date February 11,1999
Chairman of the Board _____ Date February 11, 1999

VISUAL ACUITY RECORD

[EXA]MINATION [PERFO]RMED ON	EMPLOYEE'S NAME (Last, First) Ruiz José A.			EXAMINATION DATE 5/07/01
				TITLE NDE Technitian
	SOCIAL SECURITY NUMBER 581-51-5813			ID NUMBER A-22
	DATE OF BIRTH 25/12/60	BRANCH OFFICE	REGIONAL OFFICE	

JAEGER TEST

METHOD OF TEST

☑ J-1 Held 15" (± 1 inch) from the eyes. ☐ J-2 Held 19" (± 1 inch) from the eyes.

NEAR VISION TEST

	RIGHT EYE	LEFT EYE	BOTH EYES	RESULTS
Uncorrected	20/20	20/20	20/20	☑ Acceptable ☐ Unacceptable
Corrected	N/A	N/A	N/A	

COLOR VISION

Ishihara's Test Method (14 Plate Concise Edition.) Hold plate 30" (±1 inch) from the individual tilted so that the plane of the plate is at right angles to the line of vision.

	RESULTS
☑ 10 or more plates of plate numbers 1 through 11.	☑ Acceptable ☐ Unacceptable
☐ 9 or less plates of plate numbers 1 through 11. ☐ HSB-LP1 used	☐ Acceptable ☐ Unacceptable

RESTRICTIONS

RESTRICTIONS

☐ Yes — Indicate corrective measure below. ☑ No Restrictions

CORRECTIVE MEASURE (Required while witnessing non-destructive examinations.)

☐ Eye Glasses ☐ Contact Lenses ☐ Other Aid Explain:

RESULTS EXPLAINED

The results of this Visual Acuity Test have been explained to me.

SIGNED (Employee) [signature]

[COMM]ENTS

Good Visual Acuity and Healthy fundus ou.

			DATE OF NEXT EXAMINATION
EXAMINED BY	OFFICE Optica 2EE Borinquen	SIGNATURE [signature]	TITLE O.D. Lic #523
[REVIEW]ED AND [APPROV]ED BY	DATE SIGNED	SIGNATURE	TITLE
	ORIGINAL TO		
	COPIES TO		

Confía en la experiencia de

OPTICA LEE / BORINQUEN

AHORROS - VARIEDAD - CALIDAD - GARANTIA

Ruiz Jose A. 40 y/o
NOMBRE EDAD

795-8815
TELEFONO

New Pa.
Jaeger Test 20/20 20/20
VAsc 20/20 20/20
RX
Ishihara 14/14 (OD) 14/14 (OS)

	Sph.	Cyl.	Axis	ADD
O.D.	No	Rx	Needed	
O.S.				

Dr. [signature] 523

OPTICA
LEE / BORINQUEN

The American Society for Nondestructive Testing, Inc.

November 15, 2000

AA-91324
Jose A. Ruiz
Alonso & Carus Iron Works
PO Box 566
Catano, PR 00963

ASNT IRRSP Applicant:

AMERICAN SOCIETY FOR NONDESTRUCTIVE TESTING

INDUSTRIAL RADIOGRAPHY
RADIATION SAFETY PERSONNEL
CERTIFICATION CARD

CERTIFICATION NO. AA-91324
SS# 581-51-5813
EXPIRATION DATE Oct 2005

NAME JOSE A. RUIZ

SIGNATURE

The ASNT IRRSP certification exams have been graded for the tests given: Saturday, October 28, 2000.

EXAMINATION TYPE:			IRRSP EXAMINATION RESULTS:
IRRSP	RAM	BOTH	-- PASS --
	X		Score: 78% Required to Pass: 70%

☐ Your ASNT certification card is enclosed. ASNT IRRSP certification shall be valid for five (5) years from the date of the written successful examination completion date, unless suspended or revoked for cause.

☐ The following marked information is missing from your application file and is needed by ASNT IRRSP certification will not be conferred until all examination/application requirements have been fulfilled. If your information is not received by the said date, retesting will be necessary as mandated by the NRC.

_____ Passport Photos (2) _____Training Requirements _____ Hands-on-Experience

_____ Requirements Verified (Documentation of 40 hrs) _____ Employer Verification _____ Statements signed and witnessed

_____Practical(s) Examination

NOTE TO EXAMINEES:

Both the written examination and the practical examination(s) must be successfully completed to be considered for ASNT certification. The written and practical examinations appropriate for the category of radiation safety producing equipment must be successfully completed within six (6) months of each other.

Thank you for your cooperation.

ASNT Technical Services Department

ALONSO & CARUS iron works, inc.
ROAD 869 KM. 0.09, BO. PALMAS, P.O. BOX 566, CATAÑO, PUERTO RICO 00963

RADIOGRAPHER'S LEVEL III DESIGNATION

TO: JOSE A. RUIZ **DATE:**

Based on your present knowledge, experience and employment records, I am hereby designating you to perform the duties and responsibilities of Radiographer Level III and Radiation Safety Officer under radioactive material licensed issued to Alonso & Carus Iron Works, Inc. by the United States Atomic Energy Commission (N.R.C. Lic. No. 52-21350-01). You should be cautioned that your duties and responsibilities as a radiographer would involve the performance of operations, which can be hazardous to you, your fellow employee and the public.

Alonso & Carus Iron Works, Inc.

Juan Pardo,
Chief Engineer

/gb

ALONSO & CARUS iron works, inc.
ROAD 869 KM. 0.09, BO. PALMAS, P.O. BOX 566, CATAÑO, PUERTO RICO 00963

RADIOGRAPHER'S LEVEL III DESIGNATION

Based on your present knowledge, experience and employment records, I am hereby designating Mr. Jose A. Ruiz as our Level III in the following methods: Liquid Penetrant, Magnetic Particles, Radiographic Testing, Radiographic Safety Officer for Alonso & Carus Iron Works, Inc., NDT Dept. Mr. Ruiz will be in charge of any NDT activities as described in Alonso & Carus Written Practice NDE-1 and as provided in ASNT's SNT-TC-1A Practice Guidelines. Mr. Ruiz will be working under the radioactive material license issued to Alonso & Carus by the United States Atomic Energy Commission (Nuclear Regulatory Commission License Number 52-21350-01). Attached please find current copies of Mr. Ruiz's NDT experience: (Appendix C from NDE-1), NDE Training records (Appendix D from NDE-1) and prior Certification as Level I and II.

Alonso & Carus Iron Works, Inc.

José Soto, Quality Control Manager

Juan Pardo, Chief Engineer

/gb

ALONSO & CARUS iron works inc.
ROAD 869, KM. 0.09 BO. PALMAS, P.O. BOX 566, CATAÑO, PUERTO RICO 00963

NON DESTRUCTIVE TESTING-PERSONNEL QUALIFICATION RECORD

NAME: FERNANDO J KRANZ Level of Certification: ASS. TECH

NDT Method:

"A" Radiographic Testing
"B" Magnetic Particle (wet and dry)
"C" Ultrasonic thickness
"D" Liquid Penetrant (Solvent and water washable)

Date of certification: AUG. 1, 1999 TO AUG. 1, 2002

Reference Method:

1. Operating the emergency Procedure manual of Alonso & Carus
2. Industrial Radiography Manual, US Atomic Energy Comission
3. ASME code section V, Nondestructive Examination
4. ASTM Code Standards
5. The American Society for Non-Destructive Testing SNT-TC-IA

EXAMINATION DATA:

	RT	MT	UT	PT
General	95	82	80	86
Specific	82	82	82	84
Practical	84	86	84	82
Final Grade	89%	83.2%	81.6%	84.4%

N.D.E. TRAINING: Alonso & Carus Iron Works Inc. written practice Sections A,B,C Rev.____

Certification: NDE Level III WILFREDO RIVERA Date AUG. 1, 1999

Q.C. MANAGER Date AUG. 1, 1999

ALONSO & CARUS iron works inc.
ROAD 869, KM. 0.09 BO. PALMAS, P.O. BOX 566, CATAÑO, PUERTO RICO 00963

NON DESTRUCTIVE TESTING-PERSONNEL QUALIFICATION RECORD

NAME: JORGE HERNANDEZ Level of Certification: ASS. TECH.

NDT Method:

"A" Radiographic Testing
"B" Magnetic Particle (wet and dry)
"C" Ultrasonic thickness
"D" Liquid Penetrant (Solvent and water washable)

Date of certification: Aug. 1, 1999 to Aug. 1, 2002

Reference Method:

1. Operating the emergency Procedure manual of Alonso & Carus
2. Industrial Radiography Manual, US Atomic Energy Comission
3. ASME code section V, Nondestructive Examination
4. ASTM Code Standards
5. The American Society for Non-Destructive Testing SNT-TC-IA

EXAMINATION DATA:

	RT	MT	UT	PT
General	80	80	80	80
Specific	80	80	80	80
Practical	80	80	80	80
Final Grade	80 %	81 %	80 %	80 %

N.D.E. TRAINING: Alonso & Carus Iron Works Inc. written practice Sections A,B,C Rev.____

Certification: NDE Level III WILFREDO RIVERA Date Aug. 1, 1999

Q.C. MANAGER ING. JOSE M. SOTO Date Aug. 1, 1999

ALONSO & CARUS iron works inc.
ROAD 869, KM. 0.09 BO. PALMAS, P.O. BOX 566, CATAÑO, PUERTO RICO 00963

NON DESTRUCTIVE TESTING-PERSONNEL QUALIFICATION RECORD

NAME: WILLIAM RIOS ORTEGA Level of Certification: I

NDT Method:

"A" Radiographic Testing
"B" Magnetic Particle (wet and dry)
"C" Ultrasonic thickness
"D" Liquid Penetrant (Solvent and water washable)

Date of certification: APRIL 12-1999 TO APRIL 12-2002

Reference Method:

1. Operating the emergency Procedure manual of Alonso & Carus
2. Industrial Radiography Manual, US Atomic Energy Comission
3. ASME code section V, Nondestructive Examination
4. ASTM Code Standards
5. The American Society for Non-Destructive Testing SNT-TC-IA

EXAMINATION DATA:

	RT	MT	UT	PT
General	82	80	80	84
Specific	84	80	80	84
Practical	86	80	80	90
Final Grade	83.6%	80%	80%	85.8%

N.D.E. TRAINING: Alonso & Carus Iron Works Inc. written practice Sections A,B,C Rev.____

Certification: NDE Level III Wilfredo Rivera Date APRIL 12-1999

Q.C. MANAGER [signature] Date APRIL 12-1999

CERTIFICATE

of
Completion

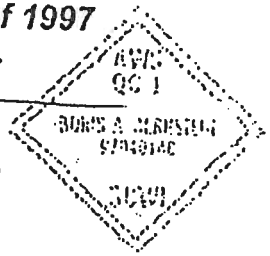
Presented By

TECHNI-WELD LAB

Recognizing

José A. Ruiz Carlo

as having satisfactor completed the
WELDING INSPECTION TRAINING
course held at Techni-Weld Lab facilities in Dorado, PR
Presented this 14 of September of 1997



Boris A. Bernstein
AWS/Senior CWI # 97040148
ASNT LEVEL III # JM-1765

The American Society for Nondestructive Testing

The Continuing Education Unit ®

CONTINUING EDUCATION UNITS

Awarded To

Jose A. Ruiz

Who attended the Continuing Education Course and

has satisfactorily completed program objectives

on the subject of

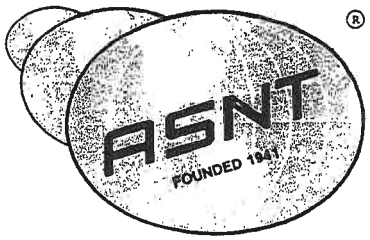
MAGNETIC PARTICLE LEVEL III REFRESHER COURSE

SEPTEMBER 20-21, 2001

Presented by A.S.N.T.

Given this 21ST **day of** SEPTEMBER 2001

1.5		
CEUs Awarded	**Course Director**	**ASNT Headquarters Staff**



The American Society for Nondestructive Testing

The Continuing Education Unit ®

CONTINUING EDUCATION UNITS

Awarded To

Jose A. Ruiz

Who attended the Continuing Education Course and

has satisfactorily completed program objectives

on the subject of

RADIOGRAPHIC LEVEL III REFRESHER COURSE

SEPTEMBER 24-26, 2001

Presented by A.S.N.T.

Given this 26TH day of SEPTEMBER 2001

2.3

CEUs Awarded

Course Director

ASNT Headquarters Staff

ASNT®
FOUNDED 1941

The
American
Society
for
Nondestructive
Testing

The Continuing
Education Unit ®

CONTINUING EDUCATION UNITS

Awarded To

Jose A. Ruiz

Who attended the Continuing Education Course and

has satisfactorily completed program objectives

on the subject of

PENETRANT LEVEL III REFRESHER COURSE

SEPTEMBER 27-28, 2001

Presented by A.S.N.T.

Given this 28TH day of SEPTEMBER 2001

1.5
CEUs Awarded

William A. Suekri[illegible]
Course Director

James W. Hough[illegible]
ASNT Headquarters Staff

The American Society for Nondestructive Testing

The Continuing Education Unit ®

CONTINUING EDUCATION UNITS

Awarded To

Jose A. Ruiz

Who attended the Continuing Education Course and

has satisfactorily completed program objectives

on the subject of

BASIC LEVEL III REFRESHER COURSE

OCTOBER 3-5, 2001

Presented by A.S.N.T.

Given this 5TH day of OCTOBER 2001

2.3	William A. Svekric	James W. Hoyle
CEUs Awarded	Course Director	ASNT Headquarters Staff

American Welding Society

Certifies that Associate Welding Inspector

Jose A. Ruiz

has complied with the requirements of Section 6.1
of the AWS Standard for Qualification and
Certification of Welding Inspectors QC1-96

98060114

Mar 1998

HELLIER AWARDS THIS CERTIFICATE TO

Jose A. Ruiz

IN RECOGNITION OF HAVING SUCCESSFULLY
COMPLETED AN EDUCATIONAL COURSE, AND
DEMONSTRATED PROFICIENCY BY SATISFACTORY
COMPLETION OF AN EXAMINATION ON THE SUBJECT OF

Radiation Safety
(40 Hours)

IN WITNESS THEREOF THESE SIGNATURES HAVE BEEN
HERETO AFFIXED

July 16, 1999

GENERAL MANAGER

INSTRUCTOR

HELLIER

TECHNICAL TRAINING & CONSULTING

HELLIER AWARDS THIS CERTIFICATE TO

Jose A. Ruiz Carlo

IN RECOGNITION OF HAVING SUCCESSFULLY
COMPLETED AN EDUCATIONAL COURSE, AND
DEMONSTRATED PROFICIENCY BY SATISFACTORY
COMPLETION OF AN EXAMINATION ON THE SUBJECT OF

Ultrasonic Testing
Level II
(40 Hours)

IN WITNESS THEREOF THESE SIGNATURES HAVE BEEN
HERETO AFFIXED

March 30, 2001

GENERAL MANAGER

INSTRUCTOR

HELLIER

TECHNICAL TRAINING & CONSULTING

HELLIER AWARDS THIS CERTIFICATE TO

Fernando Kranz Santana

IN RECOGNITION OF HAVING ATTENDED AN EDUCATIONAL COURSE ON THE SUBJECT OF

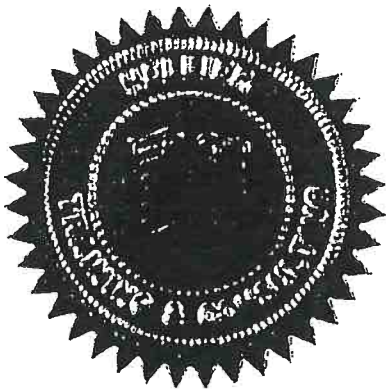
Radiation Safety
(40 Hours)

IN WITNESS THEREOF THESE SIGNATURES HAVE BEEN HERETO AFFIXED

July 16, 1999

GENERAL MANAGER

INSTRUCTOR



HELLIER

TECHNICAL TRAINING & CONSULTING

HELLIER AWARDS THIS CERTIFICATE TO

William Rios Ortega

IN RECOGNITION OF HAVING SUCCESSFULLY
COMPLETED AN EDUCATIONAL COURSE, AND
DEMONSTRATED PROFICIENCY BY SATISFACTORY
COMPLETION OF AN EXAMINATION ON THE SUBJECT OF

Radiation Safety

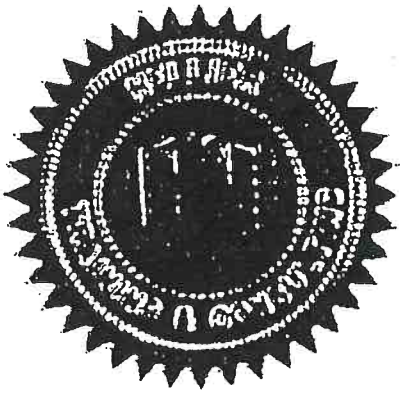
(40 Hours)

IN WITNESS THEREOF THESE SIGNATURES HAVE BEEN
HERETO AFFIXED

July 16, 1999

GENERAL MANAGER

INSTRUCTOR

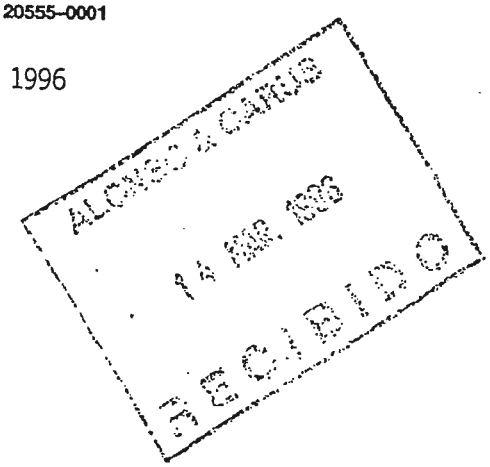


HELLIER

TECHNICAL TRAINING & CONSULTING

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

March 1, 1996



ALONSO & CARUS IRON WORKS, INC.
ATTN: Mr. Jose A. Ruiz
Radiation Safety Officer

P.O. BOX 566
CATANO, PR 00963

SUBJECT: ONE-TIME EXTENSION OF LICENSE EXPIRATION DATE
LICENSE NUMBER 52-21350-01, DOCKET NUMBER 3020541

Dear Mr. WILFREDO RIVERA

On January 16, 1996, the Nuclear Regulatory Commission (NRC) amended its regulations in 10 CFR 30, 40, and 70 to extend the expiration date of certain byproduct, source, and special nuclear material licenses by five years (61 FR 1109). The above referenced license was extended by this rulemaking and will now expire on March 31, 2004. Your license will not be amended to show this extended date until the next routine licensing action. Until then, you may provide copies of this letter to vendors and other interested parties as evidence that the license has been extended as a result of the rule.

The extended license authorizes the same activities and contains the same limitations as it previously did. There will be no change in the frequency that the NRC inspects activities authorized by this license.

The amended rules state that in the case of licensees who are granted extensions and who have a currently pending renewal application for that extended license, the application will be considered withdrawn by the licensee and any renewal fees paid by the licensee for that application will be refunded. This will apply to licenses with expiration dates after July 1, 1995, for which renewal applications and the appropriate fees have been submitted and the renewal is still pending. Refunds will be mailed to licensees under separate cover.

All licensees, including those whose renewal applications were withdrawn by this rulemaking, who wish to change their radiation safety programs must request amendment of their licenses to reflect these changes. Amendment requests must include the correct amendment fee since the NRC cannot apply pending renewal refund balances toward amendment fees.

If you have any questions regarding this letter, please contact the individual below.

Region 2: Jose Diaz-Velez, (404) 331-7438

Thank you for your cooperation in this matter.

Sincerely,

Donald A. Cool, Director
Division of Industrial and Medical Nuclear Safety
Office of Nuclear Materials Safety and Safeguards

NRC FORM 374 U.S. NUCLEAR REGULATORY COMMISSION PAGE 1 OF 3 PAGES

Amendment No. 4

MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee	In accordance with letter dated
1. Alonso & Carus Iron Works, Inc.	June 19, 2001
	3. License number 52-21350-01 is amended in its entirety to read as follows:
2. P. O. Box 566	4. Expiration date **March 31, 2004 (Extended)**
	5. Docket No. 030-20541
Cataño, Puerto Rico 00963	Reference No.

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
A. Iridium 192	A. Sealed radiography source contained in a source assembly registered pursuant to 10 CFR 32.210 or an equivalent Agreement State regulation (See Condition No. 14)	A. Not to exceed 100 curies per sources (See Condition No. 14)
B. Uranium (depleted in U235)	B. Metal shielding material	B. Not to exceed 999 kilograms

9. Authorized Use:

A. For use in a compatible gamma radiography exposure device registered pursuant to 10 CFR 32.210 or an equivalent Agreement State regulation for performing industrial radiography, and in a compatible source changer (shipping container) registered pursuant to 10 CFR 32.210 or an equivalent Agreement State regulation for source storage and exchange (See Condition No. 13).

B. For use as shielding in radiography exposure devices and source changers (shipping containers).

CONDITIONS

10. Licensed material may be stored and used at the licensee's facility at Road 869 KM. 0.09 BO, Palmas, Puerto Rico and may be used at temporary job sites of the licensee anywhere the U.S. Nuclear Regulatory Commission maintains jurisdiction for regulating the use of radioactive material.

11. The Radiation Protection Officer for the activities authorized by this license is **José Ruiz.**

CONDITIONS

Continued-

12. Licensed materials shall be used by, or under the supervision of, and in the physical presence of individuals who have been trained and certified according to the following criteria:

    A. As specified in the Operating and Emergency Procedures attached to the letter dated February 18, 1994 and as modified in the letter with attachments dated March 14, 1994.

    B. The provisions of 10 CFR 34.21.

    C. The licensee shall maintain records of individuals designated as radiographers and their qualifications.

13. All newly manufactured radiographic exposure devices and associated equipment acquired after January 10, 1992 shall comply with the requirements of 10 CFR 34.20. The licensee shall maintain records to verify compliance with this Section of the NRC's Regulations.

14. The licensee is authorized to receive, possess, and use sealed sources of iridium-192 where the radioactivity exceeds the maximum amount of radioactivity specified in this license provided:

    A. Such possession does not exceed the quantity per source specified in Item 8 by more than 20% for iridium-192;

    B. Records of the licensee show that no more than the maximum amount of radioactivity per source specified in this license was ordered from the supplier or transferor of the byproduct material; and

    C. The levels of radiation for radiographic exposure devices and storage containers do not exceed those specified in 10 CFR 34.21.

15. Notwithstanding the periodic leak test required by of Section 34.25(b) of 10 CFR Part 34, such requirement does not apply to radiography sources that are stored and not being used. The sources excepted from this test shall be tested for leakage before use or transfer to another person.

16. Sealed sources containing licensed material shall not be opened by the licensee.

17. The licensee may transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."

18. A. The licensee shall maintain records of information important to safe and effective decommissioning at the address specified in Condition No. 10 pursuant to the provisions of 10 CFR 30.35(g) until this license is terminated by the Commission.

    B. In addition the licensee shall maintain all other records and reports required by 10 CFR 19, 20, 30 and 34 and the terms and conditions of this license, at each of the licensee's temporary job sites.

19. In addition to the possession limits in Item 8 and Condition 14, the licensee shall further restrict the possession of licensed material to quantities below the minimum specified 10 CFR 30.35(d) for establishing decommissioning financial assurance.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number
52-21350-01

Docket or Reference Number
030-20541

Amendment No.
4

19. In addition to the possession limits in Item 8 and Condition 14, the licensee shall further restrict the possession of licensed material to quantities below the minimum specified 10 CFR 30.35(d) for establishing decommissioning financial assurance.

20. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents including any enclosures, listed below. The Nuclear Regulatory Commission's regulations shall govern unless the statements, representations and procedures in the licensee's application and correspondence are more restrictive than the regulations.

A. Letter dated October 25, 1993

B. Letter with attachments dated February 18, 1994 (includes Operating and Emergency Procedures)

C. Letter with attachments dated March 14, 1994 (response to deficiency letter dated March 7, 1994, includes updated pages to Operating and Emergency Procedures)

D. Letter w/ attachments dated June 19, 2001 (change RSO)

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Hector Bermudez

DATE JUN 2 7 2001

BY _____

Region II, Division of Nuclear Materials Safety
61 Forsyth Street, Suite 23T85
Atlanta, GA 30303

N:\ACTIVE\52-21350-01 A04.wpd