DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING AND EXPEDITIONARY WARFARE CENTER
1000 23RD AVENUE
PORT HUENEME CA 93043-4301

IN REPLY REFER TO:
4200/ACQ71
29 Feb 2016

Subject: REQUEST FOR TASK ORDER PROPOSAL N39430-16-D-1810; PLANNING TASK ORDER X002; HYPERBARIC SYSTEMS OVERHAUL AT NAVAL SCHOOL EXPLOSIVE ORDNANCE DISPOSAL (NAVSCOLEOD), EGLIN AFB, FL

General Information:

1. Planning Task Order (PTO) Number: X002
2. Issuing Office: NAVFAC EXWC
   1100 23rd Ave., Bldg 1100
   Port Hueneme, CA 93043-4301
3. Contract Specialist: Keith Garascia, (805) 982-2373, keith.garascia@navy.mil
4. Award Date: Offeror's should utilize 1 Jun 2016 as the planned award date.
5. Location: Eglin AFB, FL.
6. Site Visit: No site visit is currently planned.
7. Proposal Due Date: Proposals for this PTO are due at the closing date established for the overall solicitation.
8. Contract Type: Firm Fixed Price

Attachments:

1. Performance Work Statement - 60 Pages
2. Davis-Bacon Wage Determination: FL160170, modification 0, dated 8 Jan 2016 – 5 Pages
3. Quality Assurance Surveillance Plan – 8 Pages

Contract Clauses

In addition to the clauses included in the basic contract, the following clauses are tailored for this PTO and will appear in the awarded task order:

52.211-10 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984)

The Contractor shall be required to (a) commence work under this contract within 15 calendar days after the date the Contractor receives the notice to proceed, (b) prosecute the work diligently, and (c) complete the entire work ready for use not later than 365 days after award. The time stated for completion shall include final cleanup of the premises.

(End of clause)

252.232-7006 WIDE AREA WORKFLOW PAYMENT INSTRUCTIONS (MAY 2013)

(a) Definitions. As used in this clause--

Department of Defense Activity Address Code (DoDAAC) is a six position code that uniquely identifies a unit, activity, or organization.

Document type means the type of payment request or receiving report available for creation in Wide Area WorkFlow (WAWF).

Local processing office (LPO) is the office responsible for payment certification when payment certification is done external to the entitlement system.

(b) Electronic invoicing. The WAWF system is the method to electronically process vendor payment requests and receiving reports, as authorized by DFARS 252.232-7003, Electronic Submission of Payment Requests and Receiving Reports.

(c) WAWF access. To access WAWF, the Contractor shall--

(1) Have a designated electronic business point of contact in the System for Award Management at https://www.acquisition.gov; and

(2) Be registered to use WAWF at https://wawf.eb.mil/ following the step-by-step procedures for self-registration available at this Web site.

(d) WAWF training. The Contractor should follow the training instructions of the WAWF Web-Based Training Course and use the Practice Training Site before submitting payment requests through WAWF. Both can be accessed by selecting the “Web Based Training” link on the WAWF home page at https://wawf.eb.mil/.

(e) WAWF methods of document submission. Document submissions may be via Web entry, Electronic Data Interchange, or File Transfer Protocol.

(f) WAWF payment instructions. The Contractor must use the following information when submitting payment requests and receiving reports in WAWF for this contract/order:

(1) Document type. The Contractor shall use the following document type(s).

NAVCON

(2) Inspection/acceptance location. The Contractor shall select the following inspection/acceptance location(s) in WAWF, as specified by the contracting officer.

Destination

(3) Document routing. The Contractor shall use the information in the Routing Data Table below only to fill in applicable fields in WAWF when creating payment requests and receiving reports in the system.

Routing Data Table*

Field Name in WAWF	Data to be entered in WAWF

Pay Official DoDAAC	N68732
Issue By DoDAAC	N39430
Admin DoDAAC	N39430
Inspect By DoDAAC	N39430
Ship To Code	N/A
Ship From Code	N/A
Mark For Code	N/A
Service Approver (DoDAAC)	N/A
Service Acceptor (DoDAAC)	N39430
Accept at Other DoDAAC	N/A
LPO DoDAAC	N39430
DCAA Auditor DoDAAC	N/A
Other DoDAAC(s)	N/A

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(4) Payment request and supporting documentation. The Contractor shall ensure a payment request includes appropriate contract line item and subline item descriptions of the work performed or supplies delivered, unit price/cost per unit, fee (if applicable), and all relevant back-up documentation, as defined in DFARS Appendix F, (e.g. timesheets) in support of each payment request.

(5) WAWF email notifications. The Contractor shall enter the email address identified below in the “Send Additional Email Notifications” field of WAWF once a document is submitted in the system.
To be specified on each task order.

alin.schmutz@navy.mil

(g) WAWF point of contact. (1) The Contractor may obtain clarification regarding invoicing in WAWF from the following contracting activity's WAWF point of contact.

jill.haralson@navy.mil

(2) For technical WAWF help, contact the WAWF helpdesk at 866-618-5988.

(End of clause)

Section C

SPECIFICATION

for

HYPERBARIC SYSTEMS OVERHAUL

at

NAVAL SCHOOL EXPLOSIVE ORDNANCE DISPOSAL

at

EGLIN AIR FORCE BASE, FL

TABLE OF CONTENTS

SECTION 1: GENERAL PARAGRAPHS

SECTION 2: OPERATION/PERFORMANCE REQUIREMENTS

SECTION 3: PIPING & INSTRUMENTATION (P&I) TECHNICAL REQUIREMENTS

3.1 GENERAL REQUIREMENTS

3.2 SPECIFIC TO CONTRACT

SECTION 4: PRESSURE VESSEL FOR HUMAN OCCUPANCY (PVHO)- N/A

4.1 GENERAL REQUIREMENTS

4.2 SPECIFIC TO CONTRACT

SECTION 5: QUALITY ASSURANCE

5.1 GENERAL REQUIREMENTS

5.2 SPECIFIC TO THIS PROJECT

SECTION 6: TABLES & FIGURES

NOTE: THE SYMBOL "N/A" BESIDE A PARAGRAPH NUMBER INDICATES THAT NO SPECIFICATION IS INTENDED IN THAT PARAGRAPH.

SECTION 1

1. GENERAL PARAGRAPHS

1.1 GENERAL:

1.1.1 INTENTION: It is the declared and acknowledged intention and meaning to overhaul the hyperbaric systems, as described herein, to be pretested, overhauled, installed, and retested at the Naval School Explosive Ordnance Disposal (NAVSCOLEOD) at Eglin Air Force Base (AFB), FL. The contractor shall be responsible for all work specified herein. All Hyperbaric Facilities and system components shall be complete and 100 percent operational with regard to design and mission capability upon completion of the work.

1.1.2 DESCRIPTION OF WORK: The contractor shall provide all labor and materials for the design, procurement, fabrication, maintenance, repair, and assembly, shop testing and shipping of the described Hyperbaric Facilities. Further, the contractor shall prepare and submit all documents, records and manuals specified herein. Some examples of the work the contractor shall design, fabricate and install are as follows:

a. Overhaul and Installation of hyperbaric facilities as described herein.
b. Submission of design, fabrication & test documents.

1.1.3 DESCRIPTION OF FACILITIES: Section 6 contains drawings and schematics of the facilities. The contractor shall provide the work described herein.

1.1.4 GOVERNMENT FURNISHED EQUIPMENT (GFE): None

1.1.5 EXISTING CONDITIONS: The facility is currently operational. Copies of the existing drawings of the existing systems shall be turned over to the contractor upon request.

1.1.6 LOCATION: Installation and final system testing of the hyperbaric systems will be conducted at NAVSCOLEOD, Eglin AFB, FL.

1.1.7 TIME OF DELIVERY: The work shall begin (on the “Start Work date”) 15 consecutive calendar days after the "Award Date". The planned contract completion date is 365 consecutive calendar days after the “Award Date”. The completion date will be determined by the contractor’s proposal. The contractor shall make no component nor material procurement until after the Preliminary Design has been submitted, unless approval is received from the Contracting Officers Representative (COR).

1.1.8 RE-ENTRY CONTROL: The following re-entry control procedures are required to be performed by the contractor when breachment of a certification boundary is required during this contract. The re-entry control process must be coordinated with NAVSCOLEOD diving personnel.

1.1.8.1 PRELIMINARY RE-ENTRY CONTROL: The contractor shall submit to the NAVSCOLEOD Master Diver and the Contracting Officer, at least fifteen (15) days in advance of the desired start date, the following re-entry control information:

a. Requested Work Boundaries.

b. Estimated System Down Time (in days).

c. Desired Start Date.

1.1.8.2 FINAL RE-ENTRY CONTROL DOCUMENTATION: Upon completion of the work requiring re-entry control, the contractor shall submit the following information to the NAVSCOLEOD Master Diver and the Contracting Officer:

a. Purchase orders with manufacturers letters of compliance.

b. Weld procedure and welders qualifications.

c. NDT procedure, results of NDT, and inspectors qualifications.

d. Flush procedures and results.

e. Cleaning procedure and results of cleaning.

f. Hydrostatic test procedure and results.

g. Joint identification drawings and welding log.

h. Air sample results.

i. Joint Tightness Test.

j. System Drop Test.

k. Controlled Assembly Report.

1.1.9 “AS-NEW” DEFINITION: For all components that shall be serviced, refurbished to "as new" condition, inspected, and tested, the "as new" condition of the components is that condition which is acceptable to the original design and/or meeting the requirements of the quality control provisions of the Military Specification, or commercial code for the particular component. The "as new" condition includes, but is not limited to the following: complete internal/external visual inspection, replacement of all software, operational test and cleaning. In the event the component cannot be restored to "as new" condition an in-kind replacement for the component is required. The component must pass all the tests of the original design capabilities. Justification for replacement components must be accepted by the Contracting Officer.

1.1.10 "IN KIND" REPLACEMENT DEFINITION: The “in kind” replacement of a component is defined as the identical component if the identical component is still in manufacture. In the event the identical

component is no longer in manufacture, the replacement component must meet all of the requirements of the original component. The requirements of the original components can usually be obtained from the original supplier/manufacturer. If “in kind” components are not available, the COR will be notified by the contractor. The replacement components shall be reviewed and accepted by the COR prior to acquisition.

1.1.11 “HYPERBARIC” TERM: Anywhere in this specification where the term “Hyperbaric” is used, it shall be assumed (where applicable) to mean “Hyperbaric Systems”.

1.1.12 “PSI” TERM: Anywhere in this specification where the term “PSI” is used it shall be assumed (where applicable) to mean “PSIG”.

1.1.13 PRE-TESTING OF EXISTING SYSTEMS: The contractor shall pretest all overhauled facility components to determine performance of each component that is to remain in the system. Any equipment or component that successfully pass the pre-test and fail at final testing shall be replaced at the contractor’s expense.

1.2 ADDITIONAL PARAGRAPHS:

1.2.1 SPECIAL PERFORMANCE REQUIREMENTS DUE TO HAZARDS TO PERSONNEL: Attention of prospective offerors is called to the fact that this contract calls for the fabrication of life sensitive support systems. Failure to adhere to the highest standards of metallurgy, welding, oxygen cleanliness and workmanship will create severe hazards to persons working on or near these systems when they are pressurized. Failure to meet these requirements may be cause for termination for default, and in any event will be cause for Government rejection of components.

1.2.2 CONTRACTORS TECHNICAL RESPONSIBILITY: This specification contains technical requirements to which the contractor must adhere; however, it is the contractor's responsibility to confirm by engineering analysis that component sizes cited herein are adequate to perform the "Operational/ Performance Requirements" cited in Section 2. Typical of such items are pipe sizes, number of high pressure media storage flasks, etc. Data has been provided herein to demonstrate the conceptual feasibility of such a facility. Other technical issues that are not specified herein are at the discretion of the contractor. The contractor shall cite their intentions in these areas in the Preliminary Design.

1.2.3 CONFORMANCE REQUIREMENTS: Omissions from the drawings or specifications or the mis-description of details of work which are manifestly necessary to carry out the intent of the drawings and specifications, or which are customarily performed, shall not relieve the contractor from performing such omitted or misdescribed details of the work but they shall be performed as if fully and correctly set forth and described in the drawings and specifications.

1.2.4 CONTRACTOR'S SPECIFICATION CHECK: The contractor shall check all drawings and specifications furnished immediately upon receipt

and shall promptly notify the Government of any discrepancies. Numbers marked on drawings shall in general be followed in preference to scale measurements. Large scale drawings shall in general govern small scale drawings. The contractor shall compare all drawings and verify the data before laying out the work and will be responsible for any errors that might have been avoided thereby.

1.2.5 CONTRACTOR'S SITE VERIFICATION CHECK: The contract requires the interface of new material/equipment with existing equipment in the building. The contractor is responsible for on-site verification of existing conditions. The contractor is responsible for the integration of new equipment into existing spaces, and the interface of new equipment with existing systems, such as gas, electrical, water, etc. Prior to the submission of the Final Design, the contractor is responsible for visiting the site to facilitate layout of the work.

1.2.6 STANDARD PRODUCTS: Whenever practical, use will be made of materials and equipment that are standard catalog products of manufacturers regularly engaged in the production of such materials and equipment and shall be the manufacturer's latest standard design that complies with the specification requirements. Where two or more products of a similar type are used, they will be products of the same manufacturer. Where two or more products are of a similar type that the same manufacturer's model number can be used, all the products shall be identical. Where standard products are available which have been proven successful for hyperbaric application, they shall be used. Each major component used in this installation will be clearly marked so that the manufacturer, model, serial number, and the principal characteristics of the item can readily be determined.

1.2.7 DOCUMENT SUBMITTAL SCHEDULE: The following is a summary of the documents that are required to be submitted to the Government. Five copies of each document shall be submitted. Document descriptions are in Section 5, "Quality Assurance". Piecemeal submittal of documents is unacceptable; such submittals shall be returned. Submittals shall be completed and delivered no later than the dates listed below:

a. 60 Days After "Start Work Date":

1. Preliminary Design Package.
2. Quality Assurance Plan.
3. Preliminary System Manual Outline (where applicable).
4. Weld Procedures, Welders Qualification and Welder Qualification Records (where applicable).
5. 80% Valve & Component Database/Component Manufacturer's Design Data (CMDD).
6. Functional Test Plan, Painting Plan, Hydrostatic Test Plan, Cleaning Procedures and Plan; and gas sample procedures and plan (each where applicable).
7. Envelope Functional Test Plan.

b. 30 Days Before Contract Completion Date:

1. Record Drawings.
2. 100% Contractor's Records and Documents.
3. 100% Valve & Component Database/Component Manufacturer's Design Data (CMDD).
4. Final System Manual.
5. Gas Sample Reports.
6. Functional Test Records & Reports.
7. Purchase Orders.

c. Monthly Report: Each Monthly Submittal shall be delivered no later than 10 days after the beginning of each month and shall include:

1. Project Schedule.
2. Valve & Component database (latest revision).
3. Current Progress Report.

1.2.8 HYPERBARIC FACILITY CODES AND STANDARDS: The contractor's designs and all other work provided under this contract must assure in all instances that the finished hyperbaric facility conforms to the codes and standards listed below. Areas of conflict shall be brought to the attention of the Government. The issue of the respective code to be used for this contract is the effective code at the time of signing of the contract.

a. ASME Boiler and Pressure Vessel Code (BPVC) Section VIII

b. NAVSEA SS521-AA-MAN-010, "U.S. Navy Diving and Manned Hyperbaric Systems Safety Certification Manual".

c. USN Navy Dive Manual SS521-AG-PRO-010

d. Hyperbaric Facilities UFC 4-159-01N (formerly DM-39, "Hyperbaric Facilities Design Manual").

e. NFPA 99, "Health Care Facilities".

f. TMCHENG/05-010-SCA

1.2.9 REFERENCE SOURCES: Reference publications are cited throughout this specification. The addresses of the sponsoring organizations are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided.

a. Military Standards (MIL-STD-, MIL-V-, MIL-Q-, etc.) can be ordered from the following address:
Standardization Documents Order Desk
Building 4 D
700 Robbins Ave
Philadelphia, PA 19111-5094

or

General Services Administration
Specifications and Consumer Information

Distribution Sections (WFSLS)
Washington Navy Yard
Building 197
Washington, DC 20407

b. Navy/NAVSEA Publications:
Navy Publications and Forms Center
5801 Tabor Ave.
Philadelphia, PA 19120

c. American National Standards Institute (ANSI)
1430 Broadway
New York, New York 10018
Ph: 212-354-3300

d. American Society for Testing and Materials (ASTM)
1916 Race Street
Philadelphia, PA 19103
Ph: 215-299-5400

e. American Society of Mechanical Engineers (ASME)
345 East 47th Street
New York, New York 10017

f. Compressed Gas Association, INC. (CGA)
1235 Jefferson Davis Highway
Arlington, VA 22202
Ph: 703-979-0900

g. American Welding Society (AWS)
2501 N.W. 7th Street
Miami, FL 33125
Ph: 305-443-9353

h. Department of Defense (DOD) publications can be ordered from the following address:

US Army Adjutant General Publications Center
2800 Eastern Boulevard
Baltimore, Maryland 21220
Ph: 301-671-2533

i. National Fire Protection Association (NFPA)
1 Batterymarch Park
P.O. Box 9101
Quincy, MA 02269-9101
Ph: (617) 770-3000

1.2.10 SECURITY REQUIREMENTS: No employee or representative of the contractor will be permitted on Government property unless he/she furnishes satisfactory proof that he/she is a citizen of the United States or is specifically authorized admittance by the Government.

1.2.11 STATION REGULATIONS: The contractor and their employees and subcontractors shall become familiar with and obey all station regulations including fire, traffic and security regulations.

All personnel employed on the station shall keep within the limits of the work and avenues of ingress and egress. Personnel shall not enter any restricted areas unless required to do so and must be cleared for such entry. The contractor's equipment shall be conspicuously marked for identification. A Hot Work chit is required from base Fire Department prior to commencement of subject Hot Work performed at the Facility and a “designated Fire Watch” and appropriate required equipment will be provided by the Contractor.

1.2.12 ACCESS TO BUILDING: Regular working hours shall be an 8 ½ hour period established by the Government between 7 a.m. and 5 p.m. Monday through Friday, excluding Government holidays. The contractor shall make an application for work outside of the regular working hours 15 calendar days prior to such work to the Government.

1.2.13 EXISTING CONDITIONS AND EXTRA OBLIGATIONS OF THE CONTRACTOR: The contractor will be working in a specified section of the building. All other sections of the building other than the hyperbaric sections will be off limits to contractor personnel. The contractor and their employees will not be allowed outside the work area or in adjacent existing buildings without prior approval of the COR. The contractor shall not use the existing buildings for storage.

1.2.14 AVAILABILITY AND USE OF UTILITY SERVICES: The Government will furnish standard utility services free of charge for the specified installation work and on-site testing. Unique utility requirements (any utility service not available from the building) are the responsibility of the contractor.

1.2.15 STORAGE AREAS: Unsecured outside space, not to exceed 1500 ft2, will be available at the site for use as a storage area. All storage facilities, at the contractor’s own expense and in a manner satisfactory to the COR, shall be installed, maintained, and removed prior to the final acceptance of the work. Exact location for storage and work areas shall be provided to the contractor upon request after the award of the contract.

1.2.16 REPAIR AND RESTORATION: If the contractor, during performance of the work described herein, causes damage to other features or existing elements of the described hyperbaric facilities or components or adjacent areas of the facility, the contractor shall repair and restore the item(s) to their original condition using similar methods and identical finish, at the Contractor’s expense.

1.2.17 HAZARDOUS MATERIALS HANDLING: The contractor is responsible for submitting a list of all Hazardous Materials proposed for use within the scope of the contract, inclusive of the Safety Data Sheets (SDS) for each separate component, a minimum of 10 days prior to scheduled usage of the materials to the COR and the Command Engineering Officer to obtain government approval. All contracting personnel involved in the “on-site” contract performance and or administration must attend a Base Environmental Brief, prior to the start of any work. This can

be arranged by the Command Engineering Department or Supply Department personnel through the Base. All Hazardous materials used and waste generated in the course of the contract that are or must be removed from the Facility and Navy Base, must be disposed of in the manner as specified by the State code for disposal of non-hazardous and hazardous materials. The contractor is responsible for obtaining the DOT approved shippable containers used to transport the HAZMAT/HAZWASTE to the receiving facility. Documents signed by the receiving facility once the material reaches its final destination need to be returned to the Command Engineering Officer and copies forwarded to the Base Environmental Office, for reporting purposes.

1.2.18 KEY PERSONNEL: Personnel who are important to the performance of this project are to be identified in the proposal for the contract. Provide detailed resumes for all proposed key personnel that demonstrate their capability to perform the specific tasks as described in the Statement of Work. Provide a key personnel matrix which includes a summary description of the education, background, experience and capability of all proposed key personnel as it relates to the Work Statement. The workforce must be sized to be able to handle the scope of the project. The key personnel workforce must contain welders, technicians, and cleaning personnel who meet the qualification requirements to perform the required procedures of the statement of work.

1.2.19 WEIGHT HANDLING: The contractor shall comply with specific activity regulations pertaining to crane safety and operation (including allowable access routes and ground loading limitations) and shall notify the KO or COR in advance of any cranes entering the activity, or of any multi-purpose machines, material handling equipment, or construction equipment that may be used in a crane-like application to lift suspended loads. The contractor is required to comply with applicable American National Standard Institute (ANSI) or ASME standards (i.e., ASME B30.5 for mobile cranes, ASME B30.22 for articulating boom cranes, ASME B30.3 for construction tower cranes, and ASME B30.8 for floating cranes, ASME B30.9 for slings, ASME B30.20 for below the hook lifting devices, ASME B30.26 for rigging hardware, and ANSI/ITSDF B56.6 for rough terrain forklifts). Cranes, machines, and rigging equipment at a naval activity, DoD activity, NAVFAC EXWC project site, or in a foreign country shall comply with the appropriate host country safety standards. Barge-mounted mobile cranes require a third party certification from an Occupational Safety and Health Administration (OSHA) accredited organization (or a third party certification from a state accredited organization for those states with OSHA approved state plans), a load indicating device, a wind indicating device, and a marine type list and trim indicator readable in one-half degree increments. Third party certification is not required for barge-mounted mobile cranes at naval activities in foreign countries.

1.2.19.1 WEIGHT HANDLING CERTIFICATE OF COMPLIANCE: The contractor shall supply a certificate of compliance; reference (a), Appendix P, Figure P-1 that the crane (or other machine if

used to lift suspended loads) and the rigging equipment meet applicable OSHA and ANSI/ASME regulations citing the OSHA and ANSI/ASME regulations which are applicable (e.g., cranes/multipurpose machines used in cargo transfer will comply with 29 CFR 1917; cranes/multi-purpose machines used in construction, demolition, or maintenance shall comply with 29 CFR 1926; cranes/multi-purpose machines used in ship building, ship repair, or ship breaking shall comply with 29 CFR 1915; slings shall comply with ASME B30.9, and rigging hardware shall comply with ASME B30.26). For cranes (or other machines used to lift suspended loads) and rigging equipment at naval activities in foreign countries, the contractor shall certify that the crane (or other machine) and the rigging equipment conform to the appropriate host country safety standards. The contractor shall also certify that all of its crane (or other machine) operators working on the naval activity have been trained not to bypass safety devices (e.g., anti-two block devices) during lifting operations. The certifications are required to be posted on the crane.

1.2.19.2 CRANE OPERATOR QUALIFICATION: For mobile and commercial truck mounted cranes with OEM rated capacities of greater than 2000 pounds, the crane operator is required to be qualified by a source that qualifies crane operators (i.e., a union, a government agency, or an organization that tests and qualifies crane operators). Proof of current qualification shall be provided. Operators of cranes used in construction at activities under U.S. jurisdiction follow the qualification and certification requirements of 29 CFR 1926.1427. The contractor is required to certify (in accordance with NAVFAC P-307 Management of Weight Handling Equipment, Appendix P, Figure P-1) that the operator is qualified and trained for the operation of the crane or machine to be used.

1.2.19.3 CRANE QUALIFICATION: Proof or authorization from the machine OEM that the machine is capable of making lifts of loads suspended by rigging equipment is required for all multi-purpose machines, material handling equipment, and construction equipment used to lift loads suspended by rigging equipment. The contractor is required to demonstrate that the equipment is properly configured to make such lifts and is equipped with a load chart.

1.2.19.4 HOOKS: All hooks used on cranes, hoists, other machines, and rigging gear are required to have self-closing latches or the throat opening will be "moused" (secured with wire, rope, heavy tape, etc.) or otherwise secured to prevent the attached item from coming free of the hook under a slack condition. The following exceptions apply and will be approved by the contractor’s technical organization; items where the hook throat is fully obstructed and not available for manual securing and lifts where securing the hook throat increases the danger to personnel such as forge shop, dip tank, or underwater work.

1.2.19.5 CRITICAL LIFT PLAN: A critical lift plan is required for each of the following lifts:

a. Lifts involving hazardous materials (e.g., explosives, highly volatile substances);
b. Hoisting personnel with LHE;
c. Lifts made with more than one LHE;
d. Lifts where the center of gravity could change;
e. Lifts made when the load weight is 75% of the rated capacity of the LHE load chart or more (not applicable to gantry, overhead or bridge cranes);
f. Lifts without the use of outriggers using rubber tire load charts;
g. Lifts using more than one hoist on the same LHE;
h. Lifts involving Multiple Lift Rigging (MLR) Assemblies or other non-routine or technically difficult rigging arrangements;
i. Lifts involving submerged loads.
    1. Exception: lifts that were engineered to travel in guided slots throughout the lift and have fixed rigging and/or lifting beams, i.e., intake gates, tailgates/logs);
j. Lifts out of the operator's view.
    1. Exception: if hand signals used by a signal person in view of the operator or radio communications are available and in use, load does not exceed two tons AND is determined a routine lift by the lift supervisor;
k. Load Tests;
l. When land-based LHE mounted on barges, pontoons or other means of flotation are required to travel while lifting the load. > See Sections 16.L.03 and 16.L.04.
m. Any lift the operator believes should be considered critical.

1.2.19.6 CRITICAL LIFT PLAN (CON'T): The Critical Lift Plan will include the following as applicable:

a. The size and weight of the load to be lifted, including crane (or other machine) and rigging equipment that add to the weight (The OEM's maximum load capacities for the entire range of the lift shall also be provided.)
b. The lift geometry, including the crane (or other machine) position, boom length and angle, height of lift, and radius for the entire range of the lift (This is applicable to both single and multiple crane/machine lifts.)
c. A rigging plan; showing the lift points, rigging equipment, and rigging procedures
d. The environmental conditions under which lift operations are to be stopped
e. For lifts of personnel, the plan shall demonstrate compliance with the requirements of 29 CFR 1926.1431
f. For barge mounted mobile cranes, barge stability calculations identifying crane placement/footprint; barge list and trim based on anticipated loading; and load charts based on calculated list and trim specific to the barge the crane is mounted on (The amount of list and trim shall be within the crane manufacturer's requirements.)

g. For lifts in the vicinity of overhead power lines (i.e.; if any part of the crane or other machine; including the fully extended boom of a telescoping boom crane or machine; or the load could approach the distances noted in reference (a), Figure 10-3 during a proposed operation), the plan shall demonstrate compliance to 29 CFR 1926.1408-1411

1.2.19.7 WEIGHT HANDLING ACCIDENT NOTIFICATION: The contractor is required to notify the KO or COR as soon as practical, but no later than four hours after any WHE accident. The contractor is required to secure the accident site and protect evidence until released by the KO. The contractor is required to conduct an accident investigation to establish the root cause(s) of any WHE accident. Crane operations shall not proceed until cause is determined and corrective actions have been implemented to the satisfaction of the KO. The contractor is required to provide the KO, within 10 days of any accident, a Crane and Rigging Gear Accident Report using the form provided in Section 6 consisting of a summary of circumstances, an explanation of causes(s), photographs, and corrective actions taken.

1.2.19.8 SIGNAL PERSONS: The contractor is required to certify in the return proposal that signal persons used in construction work are qualified in accordance with 29 CFR 1926.1428.

END OF SECTION

SECTION 2

2. OPERATIONAL REQUIREMENTS: The hyperbaric facility is designed to perform the following operations and standards. **See Section 6 for schematics and figures.**

2.1 AIR SYSTEM: The air system shall be capable of providing a primary and secondary breathing and charging airline to the hyperbaric systems.

a. Storage Pressure: 5000 psi

b. Storage Configuration: Two (2) banks of 3 flasks (ea)

c. Compressor Charge Rate: 60 scfm @ 5000 psi

2.1.1 SCUBA CHARGING SYSTEM: The SCUBA Charging Station shall be capable of meeting the following requirements.

a. Charging Capacity: 8 sets of “single 80’s” Simultaneously up to 3300 psi

b. Charging rate: 400 psi/min (wet charge rate)

2.2 OXYGEN SYSTEM: The oxygen system shall be capable of providing oxygen to the chamber through the Built in Breathing System (BIBS).

a. Storage Pressure: 3000 psi

b. Storage Configuration: Two banks of (4) Oxygen K” bottles (total 8 flasks)

2.2.1 OXYGEN CHARGING SYSTEMS: The air system must be capable of providing breathing air for use to drive the MK16 oxygen booster pump. The system provides oxygen for charging the MK16 bottles.

a. Charge Capacity: 6 flasks simultaneously to 3000 psi

b. Charge rate: 200 psi/min

2.3 NITROX GAS SYSTEM: The Nitrox (NX) gas system shall be capable of providing nitrox gas to the chamber BIBS.

2.3.1 NITROX GAS STORAGE:

a. Storage Pressure: 3000 psi

b. Storage Configuration: Two banks of (4) Nitrox “K” bottles (total 8 flasks)

2.4 EXISTING RECOMPRESSION CHAMBER HULL

a. Maximum Allowable Working Pressure (MAWP) 110 psi

b. Maximum Temperature 125 degrees Fahrenheit

END OF SECTION

SECTION 3

3. PIPING & INSTRUMENTATION TECHNICAL REQUIREMENTS

3.1 GENERAL REQUIREMENTS:

3.1.1 **"POWER PIPING":** Hyperbaric piping, valves and components shall conform to the requirements of ANSI B31.1, "Power Piping". This specification refers to paragraphs in B31.1. The referenced B31.1 paragraph numbers are followed by an asterisk for identification purposes (illustration, "Paragraph 100.1.1*"). The piping, valves and components shall conform to the following additional requirements.

3.1.2 **PIPING**: Paragraph 100.1.1* "This code prescribes minimum requirements for the design, material, fabrication, erection, test, and maintenance of piping systems." “Piping" is defined in paragraph 100.1.1*; pipe, flanges, bolting gaskets, valves, relief valves, and the pressure containing portions of other components. Whenever pipe is stated in this specification in general terms, it shall be assumed to state a requirement for all pipe and tube used.

3.1.3 **PROVEN COMPONENTS**: Pressure containing components shall have been proven satisfactory by successful performance under comparable US NAVY service conditions. Components for a hyperbaric facility must have proven experience in existing hyperbaric facilities for high and low pressure air, oxygen and water service. Pressure vessels (other than the PVHO's) shall meet the requirements of ASME, Section VIII, Division 1 or other as specified.

3.1.4 **MATERIAL & COMPONENTS, GENERAL**: Material, components and equipment installed in the piping systems shall be as specified and suitable for the gasses and liquids contained and for the maximum operating temperature and pressure. All valves shall be placed so that they can be easily reached, operated and maintained by a person without extensive system disassembly or the aid of special equipment, such as ladders, or they shall be provided with other means of mechanical operation. Valves shall be placed so that accompanying gauges or other displays are easily read. Pipe and tubing shall be protected from abuse and accidents and be placed for ease of operation, maintenance and replacement.

3.1.5 **CALIBRATION**: All measuring instruments, gauges, relief valves, process control transmitters, indicators, etc., requiring calibration shall have at least twelve months remaining on their respective calibration at the time of the acceptance of the facility. All calibration shall be conducted by a METCAL certified calibration shop.

3.1.6 **MATERIAL PROTECTION**: Equipment and materials shall be properly stored, adequately protected and carefully handled to prevent contamination or damage before and during installation.

Equipment and materials shall be installed, handled, stored and protected in accordance with the manufacturer's recommendations.

3.1.7 PERSONNEL PROTECTION: Belts, pulleys, chains, gears, couplings, projecting setscrews, keys and other rotating parts located so that any person can come in close proximity thereto shall be fully enclosed or properly guarded. High temperature equipment and piping so located as to endanger personnel or create a fire hazard shall be properly guarded or covered with insulation. Areas of high noise shall be properly posted and adequate safety equipment shall be supplied.

3.1.8 MANUFACTURER INSTRUCTIONS: Where installation procedures or any part thereof are required to be in accordance with the recommendations of the manufacturer of the material being installed, printed copies of these recommendations shall be furnished to the COR with the Preliminary Design Submittal. Installation of the product shall not be allowed to proceed until the recommendations are received. Failure to furnish these recommendations can be cause for rejection of the material.

3.1.9 O-RING SEALS: All piping components such as valves, check valves, relief valves, reducers, and similar equipment, shall be installed with O-ring seal unions.

3.1.10 CHASES: All piping and electrical conduit shall run in chases. The chases shall be located so that they do not interfere with operations or maintenance. In Hyperbaric operating spaces the piping, conduit and chases shall be run so as to be of minimal presence to the operators and chamber occupants. The contractor’s design shall conform to component manufacturers' requirements.

3.1.11 PIPING, GENERAL: There shall be adequate joints for disassembly, cleaning and inspection. Single lengths of piping shall not exceed 30 feet between unions. All piping installed internal to the chamber shall be configured so as to not interfere with normal operations.

3.1.12 PIPING SIZE: Piping shall be sized to a maximum gas velocity of .8 mach or less.

3.1.13 WELDED PIPING AND FITTINGS: Piping, unless otherwise specified, shall be seamless annealed stainless steel conforming to ASTM A312, Type **316L**. Pipe shall be 1/2" or larger. All tube, unless otherwise specified, shall be seamless annealed stainless steel conforming to ASTM A269, Type **316L**. All fittings shall conform to ASTM A403, Type **316L** and shall be seamless. Tube shall be 1/2" I.D. or larger, except gauge and sampling lines which will be 1/4" or larger. All Piping (pipe, tube, and fittings) located in areas external to the building shall be 316 or 316L. Traceability details (heat numbers etc.) shall be etched or permanently marked on all piping (pipe, tube, fittings, tailpieces, threadpieces, etc.).

3.1.14 PIPE MATERIAL CERTIFICATIONS: The contractor shall submit material certifications for all weld filler metal (wire, rods,

etc.), pipe and fittings used in this contract. The material certifications shall ensure that the pipe, fittings and filler meet all specification requirements. The material certifications shall include, but are not limited to: complete analysis (chemical element percentage composition), mechanical physical properties including tensile, yield, elongation, and manufacturer and manufacturing details. Vendor supplied purchase orders, Vendor Certificates of Conformance (C of C) and Mill Certs for welded pieces shall accompany all piping (pipe, tube, valves and fittings) IAW US Navy System Certification Manual, SS521-AA-MAN-10.

3.1.15 JOINT STANDARDS: Only pipe joints that are fabricated, erected, tested and inspected to nationally accepted standards may be used (typically; butt welds, socket welds, bolted flange connections, O-ring faced fittings). Others are not acceptable (typically; brazed, byte type, flared, compression fittings and threaded).

3.1.16 FLEX HOSES: Flexible hoses shall be installed at reciprocating machinery. When a flexible hose is to be subjected to considerable vibration or flexing, sufficient slack shall be provided to avoid mechanical loading. Flexible hose burst pressure shall be four times operating pressure. Flexible hoses shall be installed so that operators of the equipment are not endangered in case of failure. All flexible hoses installed shall be labeled with a metal information tag according to the requirements in the NAVSEA S6430-AE-TED-010. All flex hoses shall have an independent identification number etched on the metal identification tag and on one of the end fittings. This identification number shall correspond to all documentation related to the respective flex hose (hydrotest, cleaning, etc.) All flexible hoses shall be subjected to a hydraulic proof test equal to twice the rated working pressure of the hose (See NAVSEA S6430-AE-TED-010). All flexible hoses shall be covered with non-corrosive stainless steel wire braid. All fittings shall be constructed of non-corrosive stainless steel.

3.1.16.1 FLEX HOSE RESTRAINER: All flex hoses shall have restrainers (Safety Lines), fabricated in accordance with the U.S. Navy Diving Manual. Safety lines shall be provided for the full length of each flex hose assembly; securely fastened at both ends. In the case of charging whips, the manifold end shall be securely fastened. The working end shall have a device for securing the line to the cylinder.

3.1.17 FITTINGS ID: The inside diameter of elbows, tees and other fittings shall be equal to or greater than the pipe to which they are attached.

3.1.18 PIPING ID: Identify piping in accordance with the table listed below. Identification shall apply to piping on each segment of pipe between fittings. All valve handles, operator controls and gauge outer rings shall have color coding applied. Provide two copies of the piping identification code framed under glass or acrylic and installed where instructed by the COR.

Piping Identification

System	Color
Helium	Buff
Oxygen	Green
Helium-Oxygen Mix	Buff & Green
Nitrogen	Light Gray
Nitrogen Oxygen Mix	Light Gray & Green
Exhaust	Silver
Air	Black
Chilled Water	Blue & White
Hot Water	Red & White
Potable Water	Blue
FES	Red

3.1.19 COMPONENT TAGS: All components shall be tagged with identification plates of plastic laminate measuring approximately ½ inch high, by 1 ½ inches long minimum, by 1/8 inch thick, firmly attached by contact adhesive or by other means acceptable to the Government. These plates shall be marked by engraving with ¼ inch high block type identification letters/numbers, and shall be color coded as appropriate. The Component Tag index shall be submitted with the Preliminary Design. Other means of tagging may be used, but must be approved by the COR.

3.1.20 COMPONENT ID PLATES: On the component identification plates, the following naming convention shall be used throughout the system and sub-systems. The first set of symbols shall identify the component; the second set shall identify the system; and the third set shall indicate the number of that component in the system. For example, BV-ALP1-3 indicates that the component is a ball valve in the Air Pressurization System and that it is a ball valve #3. This alphanumeric sequence will start at the High Pressure source and continue through to the last Low Pressure component or fixture. The following tables list the abbreviations for components and systems.

Components

Abbreviation	Name
AC	Air Compressor
AP	Air Purifier/Drier
3BV	Three Way Ball Valve
GCV	Gauge Calibration Valve
BV	Ball Valve
CV	Check Valve
FL	Filter
GV	Globe Valve
HF	High Pressure Flask
MS	Moisture Separator
NV	Needle Valve
PG	Pressure Gauge
PR	Pressure Regulator
RV	Relief Valve
VT	Volume Tank

PS	Pressure Switch
SV	Solenoid Valve
SCV	Stop Check Valve
QD	Quick Disconnect
FH	Flex Hose
EBV	Electric Ball Valve
M	Muffler

Systems

Abbreviation	Name
AHP1	High Pressure Air Bank #1
ALP1	Low Pressure Air Bank #1
AHP2	High Pressure Air Bank #2
ALP2	Low Pressure Air Bank #2
OX	Oxygen System
SG	Specialty Gas System
NS	Nitrogen System
NX	Nitrogen-Oxygen System

3.1.21 PANEL ID TAGS: All panels and major subsystems shall be identified with an ID plate. These plates shall be made of plastic laminate, two inches high and at least six inches long by one-eighth inch thick. The plates shall be marked by engraving with three-quarter inch high block type identification letters/numbers, and shall be color coded as appropriate. All piping entering/leaving a panel shall be identified. These plates shall be made of plastic laminate, 1 1/2 inches high and at least four inches long by one-eighth inch thick. The plates shall be marked by engraving with ½ inch high block type identification letters/numbers, and shall be color coded as appropriate. These labels shall be firmly attached by contact adhesive or by other means acceptable to the Government. ID tag wording shall be provided with the Preliminary Design. Other means of tagging may be used, but must be approved by the COR.

3.1.22 TUBING GUIDELINES: There shall be a length of straight tubing adjacent to the nut equal to 2 tube diameters or more. The total length of a tube assembly shall be 20 tube diameters or more. Each tube assembly shall have at least one bend equal to or greater than 90^{o}.

3.1.23 THROTTLE VALVES: All valves that regulate flow (other than on-off function), oxygen service valves, and high pressure valves (except for those remotely actuated) are considered throttle valves. They shall be globe or needle valves. These valves shall conform to MIL-V-24109. For throttle valves which are larger than those that meet the requirements of MIL-V-24109 (3" or greater), these valves shall conform to MIL-V-24109 with respect to control of flow and pressure. Valve Handles shall be color coordinated with the color code requirements of paragraph 3.1.18.

3.1.24 SHUTOFF VALVES: All hand operated valves, other than throttling valves, shall be ball valves. They shall be two-way (bi-directional) flow, three piece, with a swing out construction,

valves conforming to ASME/ANSI B-16.34 and utilizing a soft sealing surface. Socket weld end connections shall conform to ANSI B-16.11. Butt weld end connections shall conform to ANSI B-16.25. The construction materials shall be compatible with air and oxygen service. All valves shall be rated at a working pressure equal to or greater than the maximum possible system pressure. On panels, in which the direction in which the valve handles point indicates the open or closed position, the direction shall be the same for all valves on the panel. Valve Handles shall be color coordinated with the color code requirements of paragraph 3.1.18.

3.1.25 COMPONENT SEATS: Breathing gas components shall have seats and seals that are suitable for oxygen service.

3.1.26 LUBRICANTS: All lubricants shall be suitable for oxygen service IAW MIL-STD-1330D.

3.1.27 CHECK VALVES: All check valves shall utilize a soft sealing surface poppet or disc and spring.

3.1.28 PRESSURE GAUGES: Pressure gauges, except as otherwise specified, shall have a 4 1/2 inch dial and shall meet the following criteria:

a. Unless otherwise specified, shall be made with phosphor bronze or stainless steel, with helical coil or bourdon tube sensing elements.
b. The case shall be made of acrylonitrile butadiene styrene plastic and shall have a blowout relief device.
c. Oxygen gauges shall be cleaned and marked for oxygen service.
d. Oxygen gauges shall have a green outside case.
e. Each gauge shall be capable of isolation from the system by a three-way gauge calibration valve, which meets the requirements of MIL-V-24578, and snubber assembly.
f. They shall have an accuracy of 1% full scale unless otherwise specified.

3.1.29 GAUGE RANGE: The full range of pressure gauges shall be 130% to 150% of the maximum operational range.

3.1.30 VENT LINES: Vent lines shall be independent of each other and of other lines. All vent lines shall exhaust outside the building, and shall be so configured and capped to prevent ingress of weather or debris. They shall be designed to provide lightning protection.

3.1.31 RELIEF VALVES: Relief valves installed on PVHO and on ASME air storage flasks shall conform to and be marked and stamped in accordance with ASME Section VIII, Division 1, "Pressure Vessels". Non ASME coded relief valves shall be installed on systems other than PVHO's and ASME storage flasks. Relief valves shall be located so that the exhaust port is not nearer than 5 feet from operators, the vented gas shall be directed away from operators. Relief valves for piping greater than 1" NPT and for oxygen shall be piped outdoors. All non-ASME coded relief valves shall be adjustable-type relief valves.

3.1.32 REDUCTION STATIONS: Pressure regulating station components shall be selected so that output pressure will not drop below 90% of nominal set pressure for all conditions of flow and upstream pressure; and, maximum flow requirements shall be met under all conditions of upstream pressure and flow. Minimum upstream pressure shall be three times downstream pressure. Provide each pressure reducing station with a regulator, a filter upstream of the regulator, gauges to show the supply pressure, reduced pressure and a safety relief valve on the low pressure side with sufficient capacity to relieve the high pressure. Pressure regulators shall be capable of operating within a temperature range of 32 to 165 degrees Fahrenheit. All dome-loaded regulators shall be provided with appropriate hand loaded regulators for the adjustment of the reduced pressure downstream of the dome-loaded regulator. The exception shall be for the Scuba charge system dome loader, which shall have no hand loader and shall be set to 3300 psi. The exception for filters shall be that no filters shall be provided for maintenance panel or drive air panel regulators. All regulators shall be provided with straight thread o-ring fitting end connections.

3.1.33 FILTERS: Filters shall be provided preceding all pressure regulators, except as noted in the specification or drawings. A filter shall be provided downstream of all externally supplied supply banks ("K bottle banks for oxygen, nitrogen, etc., Liquid oxygen, Liquid nitrogen, etc.) and preceding all dome loaded regulators regardless if on the drawings or not. All filters, unless otherwise specified, shall be fabricated in accordance with ASME Section VIII Div I, and shall be capable of changing the filter element without removing the filter body from the line. It shall be capable of removing particulate larger than 10 microns unless otherwise specified. Filters shall be sized so that the pressure drop across a clean filter is not more than 2.5 percent for LP systems (500 psi and less) or not more than 15 psi for HP systems (500 psi and more) of the specified minimum inlet pressure to the regulator at maximum flow rate specified for the regulator. All filters shall be provided with straight thread O-ring fitting end connections. In an oxygen system, all components of a filter shall be manufactured using brass. In air systems, all components of the filter shall be manufactured using stainless steel.

3.1.34 UNIONS: Unions shall be installed in the piping and each end of the flexible hoses to facilitate removal and maintenance of components.

3.1.35 CONSOLES: The surfaces of consoles that are viewed by operators shall be non-reflective.

3.1.36 PANELS: Control Console’s and Control Panels for hyperbaric systems shall be constructed in a panel mount configuration, with the component bodies behind the panel, and only displays or operating mechanisms exposed. **All other panels** shall be constructed in an "exposed component, surface mounted" configuration. Panels and mounting brackets shall be fabricated of aluminum. The panels shall be manufactured of a minimum of ¼

inch plate. The exposed panel surface and all brackets shall be powder coated to the required color of the panel service after fabrication. The support brackets used to support the pipe and components shall also be powder coated after fabrication. All components on the panel shall be independently supported (pipe shall not be used to support components). Panels that cannot be supported due to their weight shall be supported with leg supports that adequately support the weight of the panels.

3.1.37 WELD JOINT INTERIOR: Paragraph 111* Welded Joints-The finished interior surface of pipe joints shall be smooth in order to reduce noise in the test piping. Backing rings, if used, shall be removed. There shall be no excess reinforcement on the inside of pipe joints caused by the welding process. Machine welding or consumable inserts shall be used in the welding process to avoid any excess reinforcing of the weld. The contractor shall provide a detail description of the weld process in the Preliminary Design.

3.1.38 WELDING QUALIFICATIONS: Paragraph 127.5* Qualification. All welders, welding procedures, and procedures shall be qualified by the contractor prior to welding on this project. Qualification by a previous employer is unacceptable. The following documents shall be submitted by the contractor:

a. QW-482 Welding Procedure Specification
b. QW-483 Procedure Qualification Record
c. QW-484 Welder or Welding Operator Qualification Test

3.1.39 WELD IDENTIFICATION: All welds shall have weld identification symbols etched on the pipe base metal adjacent to the respective weld. All etched weld numbers shall correspond to the welder log and Joint Identification Drawing (JID). The welders log and JID shall be submitted by the contractor. The welders log and JID shall contain sufficient information to cross reference between all welding qualifications, welding records, non-destructive testing (NDT) qualifications, and NDT records.

3.1.40 COMPONENT SUPPORTS: Pipe and/or tubing shall be adequately supported at intervals no greater than 100 pipe diameters, and in both directions at elbows. Components (valves, regulators, etc.) shall be supported so that the force required to operate the component or other normal operational load does not cause visual deflection, rotation or vibration. All piping that is currently installed that will not be removed shall be properly supported.

3.1.41 CONTAMINATION: Precautions shall be taken during fabrication to prevent construction dirt from entering pipe in storage or partially completed piping systems.

3.1.42 MACHINERY FOUNDATIONS: Reciprocating machinery shall be on independent foundations, with sound isolation mounts.

3.1.43 COMPRESSOR GROUNDING: Each compressor shall be grounded. Where a ground strap is provided at the isolation pad, the contractor shall connect the compressor to this strap. If no ground strap

is provided, the contractor is responsible for installing such ground strap, and grounding the compressor.

3.1.44 ALARMS: Alarms shall be aural and visual. Visual displays shall be LED and press to test. Each aural alarm shall have a manual shut-off. Illuminated visual alarms and displays shall be grouped as safety related or informational. Safety related alarms and displays shall be GREEN, indicating a safe condition; or RED, indicating an unsafe condition. Informational illuminated visual displays shall be WHITE. They shall indicate data such as "OPEN", "SHUT", etc.

3.1.45 OXYGEN SYSTEMS: Oxygen piping shall conform to the requirements of CGA Pamphlet G-4.4, "Industrial Practices for Gaseous-Oxygen Transmission and Distribution Piping Systems". The following are noted:

a. Pipe and fittings shall be stainless steel ASTM 316L.

b. All valves, regulators and other components shall be copper based alloy. All oxygen system valves shall meet the requirements for throttle valves as specified in paragraph 3.1.23.

c. Pipe joints shall be butt welded.

d. Vent lines shall be independent of other lines and shall vent outdoors. The vent line for venting oxygen shall be cleaned as required by this specification.

e. The oxygen vent shall be properly isolated from weather, combustibles, personnel, other systems and air compressor intakes.

f. Components for oxygen systems shall not react with oxygen nor fluorinated compounds in any way that might cause generation of heat or loss of oxygen to the surrounding atmosphere. Such components shall utilize polytetra fluoroethylene (teflon), or fluoroethylene (Viton) seals and gaskets. All other wetted parts shall be stainless steel or as otherwise specified.

g. Gauge and sampling piping provided in oxygen systems which are ¼ inch tube may have pipe joints which are socket welded. Gauge and sampling piping lengths and the amount of socket weld fittings shall be kept to a minimum.

h. All oxygen piping shall be grounded.

i. All filter elements and housings shall be manufactured of bronze or monel.

3.1.46 NON-DESTRUCTIVE EXAMINATION: Mandatory minimum non-destructive examination of welds shall conform to the requirements of Table 136.4* and the following.

WELD TYPE	EXAMINATION

Butt weld.....RT

Welded branch connections.....RT for 2" and over. MT or PT for less than 2".

Fillet, socket welds.....MT or PT all sizes.

NOTES:

a. Welds shall be given a visual examination in addition to the examination specified above. Acceptance standards for visual examination shall be those of American Welding Society, D1.1, paragraph 8.15.1, "Quality of Welds".

b. RT=Radiographic Exam (paragraph 136.4.5*)

c. PT=Liquid Penetrant Exam (paragraph 136.4.4*).

d. MT=Magnetic Particle Exam (paragraph 136.4.3*).

3.1.47 SYSTEM CLEANING: Pipe that contains gases that will be breathed by humans shall be cleaned.

a. The contractor shall be responsible for cleaning all new piping and components, and any existing piping and components on which work is performed, to the nearest disassembly joint. Equipment, materials, instruments, personnel and laboratory services required for cleaning and certification shall be provided by the contractor.

b. The contractor shall submit their cleaning procedures to the Government. Procedures for cleaning the air system must be consistent with MIL-STD-1330D. The use of organic solvents as a cleaning agent is prohibited.

c. Components which are certified clean upon delivery by the manufacturer will not require cleaning if the integrity is not violated. Components which have been shop tested and certified for cleanliness shall be bagged and removed from the system during cleaning operations. Systems may be cleaned as a whole or in sections provided all clean piping is kept isolated and free of contamination after cleaning.

d. An air gas sample shall be taken from the discharge of each air supply which will be breathed by humans. The total amount of gas samples taken shall ensure that there is analysis of the entire system. An additional sample shall be taken at one of the compressor air inlets. Samples shall be taken after hydrotesting, cleaning and assembly. Air purity shall meet or exceed the standards stated in the U.S. Navy Diving Manual (NAVSEA SS521-AG-PRO-010), Table 4-1, 4-2, 4-3, 4-4, or 4-5. Dew point analysis shall be conducted that confirms that less than -40^{o}F air is being supplied by the compressors.

e. Gas samples shall be taken at the discharge of all other pipe gas supplies which may be breathed by humans (oxygen, nitrox,

heliox,) or used for mixing of breathing supplies (nitrogen, helium, etc.). The total amount of gas samples taken shall ensure that there is analysis of the entire system. Samples shall be taken after hydrotesting, cleaning and assembly. Purity shall meet or exceed the standards stated in the U.S. Navy Diving Manual (NAVSEA SS521-AG-PRO-010), Table 4-1, 4-2, 4-3, 4-4, or 4-5.

f. Oxygen system cleaning procedures and gas sample requirements must comply with the requirements of MIL-STD-1330.

g. All gas samples shall be tested for the presence of unacceptable levels of all agents used in cleaning. An unacceptable level is any level less than $1/10^{th}$ the maximum OSHA eight (8) hour exposure level for any constituent in the cleaning material.

h. If liquid cleaning solutions are used requiring final H_2O rinse, the final rinse solution shall be sampled to insure cleaning agents do not remain in the system.

3.1.48 HYDROSTATIC TEST: Paragraph 137* - Leak Test. Piping shall be hydrostatically strength tested to 1-1/2 times the design pressure.

3.1.49 GAS LEAK TEST: A gas leak test shall be conducted after the hydrostatic strength test. The test shall be conducted with air unless otherwise specified. The maximum test pressure shall be the Maximum Operating Pressure. The gas pressure shall be permitted to stabilize as a result of temperature change. All possible sources of pressurization and volume storage (tanks, etc.) shall be isolated from the system. High pressure piping and low pressure piping in systems shall be tested independently. The maximum test pressure shall be safely brought to maximum operating pressure and held. After allowing for equalization, a bubble test will be performed. The pressure will then be brought to low pressure (50 psi) and left for an extended period of at least 3 hours. The pressure shall not drop.

3.2 SPECIFIC REQUIREMENTS:

3.2.1 COMPRESSORS AND PURIFIER PANEL:

3.2.1.1 The compressors are K60-E Bauer Compressors. The contractor shall reset the 4th stage relief to 5500 psi on each compressor.

3.2.1.2 The following flex hose shall be replaced "in-kind" as described in paragraph 1.1.10: **FH-AHP-1.** This flex hose is a 5000 psi working pressure flex hose.

3.2.1.3 The contractor shall fabricate new piping from each new compressor to the Gas Distribution Panel. The piping shall start with the "in kind" replacement of the two compressor flex hoses (as above) and terminate with a connection into the Gas Distribution Panel that currently says "From Purifier Panel". New tags shall be procured stating appropriately "From Compressor #1" and "From Compressor #2".

3.2.1.4 NV-AHP-1 and NV-AHP-2: These valves are ¼" MIL-V-24109 Derbyshire needle valves. The contractor shall overhaul these valves to "as new" condition as described in paragraph 1.1.9.

3.2.1.5 The contractor shall replace the existing undesignated Sherwood and Parker valves. They shall be replaced with calibration valves that are appropriate for the working pressure and flow for the application

3.2.1.6 All O-rings associated with piping, from the discharge from each of the two (2) compressors and two (2) purifiers to the Gas Distribution Panel shall be replaced "in-kind" as described in paragraph 1.1.10.

3.2.2 GAUGE RING REPLACEMENT: The contractor shall replace up to twenty (20) additional cracked gauge rings at NAVSCOLEOD in addition to what is listed below. The rings will be "in kind" to the existing rings.

3.2.3 AIR STORAGE FLASK PANELS AND FLASKS: This includes Storage Flask Panels #1 and #2 and their flasks.

3.2.3.1 The following valves associated with the Gas Farm Air Systems shall be overhauled to "as new" condition as described in paragraph 1.1.9:

a. **GV-AHP2-5:** This valve is a ½" MIL-V-24109 CPV globe valve.
b. **GV-AHP1-1, GV-AHP1-2, GV-AHP1-5, GV-AHP2-1,** and **GV-AHP2-2:** These valves are ½" MIL-V-24109 Derbyshire globe valves.
c. **GV-AHP1-6,** and **GV-AHP2-6:** These valves are ¼" MIL-V-24109 CPV globe valves.
d. **GV-AHP1-3, GV-AHP1-4, GV-AHP2-3,** and **GV-AHP2-4:** These valves are ¼" MIL-V-24109 Derbyshire globe valves.
e. **NV-AHP1-25**, **NV-AHP2-25**: These valves are ½" MIL-V-24109 CPV needle valves.

f. **NV-AHP1-1, NV-AHP2-1, NV-AHP1-2, NV-AHP2-2, NV-AHP1-26, and NV-AHP2-26:** These valves are ¼" MIL-V-24109 needle valves.
g. **GCV-AHP1-1** and **GCV-AHP2-1**: These are Derbyshire gauge calibration valves.
h. **RV-AHP1-1** and **RV-AHP2-1:** These are Fluid Mechanics relief valves. The contractor shall set the relief valves to 5500 psi.

3.2.3.2 FLASKS: These flasks are serial numbers 45840, 45841, 46384, 45842, 45843, and 46385.

a. **FLASK REPAINTING:** The contractor shall grind and paint the outside of each of the six flasks. The flasks shall be painted identically to the existing paint scheme. The contractor shall remove all rust and burrs from the exterior surface of the flasks. The paint used shall be appropriate for the conditions experienced in the Gas Farm. The contractor shall submit a paint plan in their Preliminary Design Submittal.
b. **FLASK BANK ROTATION:** The contractor shall rotate the flask banks 90 degrees counter clockwise and orient so that the flask vents on the end of each flask are facing the wall the as shown in Section 6. The contractor shall provide all interconnecting piping for this reconfiguration.

3.2.3.3 GV-AHP1-25 and GV-AHP2-25: These valves are ½" MIL-V-24109 Tech Products globe valves. The contractor shall replace these valves with ½" MIL-V-24109 CPV globe valves.

3.2.3.4 PG-AHP1-1 and **PG-AHP2-1:** These are 0-8000 psi gauges. These gauges shall be calibrated IAW paragraph 3.1.5. Their gauge rings shall also be replaced "in kind" to the existing gauge rings.

3.2.3.5 PANEL POWDER COATING: Air Storage Flask Panels shall be re-powder coated to a color IAW paragraph 3.1.18.

3.2.3.6 PANEL ENCLOSURES: The contractor shall install new stainless steel enclosures for the Storage Flask Panels. The enclosure shall be fabricated of 316L stainless steel. The enclosure shall be water-tight. The door on the enclosure should open bottom to top. The enclosure should have devices that enable the door to be locked in the open or closed position.

3.2.3.7 All O-rings associated with the Storage Flask Panels up to the first valve on the Air Distribution Panel shall be replaced "in-kind" as described in paragraph 1.1.10.

3.2.4 AIR DISTRIBUTION PANEL:

3.2.4.1 The following valves associated with the Air Distribution Panel shall be overhauled to "as new" condition as described in paragraph 1.1.9:

a. **GV-AHP-3, GV-AHP-4, GV-AHP-5, GV-AHP-6, GV-AHP-8, GV-AHP-9, GV-AHP-11, GV-AHP-13, GV-AHP-20, GV-AHP-21.** These valves are ½" MIL-V-24109 Derbyshire globe valves.
b. **GCV-AHP-2, GCV-AHP-3, GCV-AHP-4, GCV-AHP-5, GCV-AHP-6, GCV-AHP-7, GCV-AHP-8, GCV-AHP-9, GCV-AHP-10, GCV-AHP-11,** and **GCV-AHP-23**: These gauge calibration valves are CPV model 980.

3.2.4.2 The following components associated with the Air Distribution Panel shall be replaced "in kind" as described in paragraph 1.1.10 or as otherwise described:

a. **GV-AHP-7:** This valve is a ½" MIL-V-24109 Tech Products globe valve. The contractor shall replace this valve with a ½" MIL-V-24109 CPV globe valve.
b. **SCV-AHP-1 SCV-AHP-2, SCV-AHP-3,** and **SCV-AHP-4**. These valves are ½" MIL-V-24109 CPV stop check valves.

3.2.4.3 **PG-AHP-2, PG-AHP-3, PG-AHP-4, PG-AHP-5, PG-AHP-6, PG-AHP-7, PG-AHP-8, PG-AHP-9, PG-AHP-10, PG-AHP-11,** and **PG-AHP-23**: These 0-8000 psi gauges shall be calibrated IAW paragraph 3.1.5. The gauge rings on **PG-AHP-2**, **PG-AHP-4**, **PG-AHP-5**, **PG-AHP-9**, and **PG-AHP-23** shall be replaced "in kind" to the existing gauges.

3.2.4.4 All O-rings associated with piping, on the Air Distribution Panel shall be replaced "in-kind" as described in paragraph 1.1.10.

3.2.5 TRUCK FILL PANEL:

3.2.5.1 The following valves associated with the Truck Fill Panel shall be overhauled to "as new" condition as described in paragraph 1.1.9:

a. **GV-AHP-1 and GV-AHP-2**: These valves are ½" MIL-V-24109 globe valves.
b. **GCV-AHP-1**: These gauge calibration valves are CPV model 980.

3.2.5.2 **PG-AHP-1:** This 0-8000 psi gauge shall be calibrated IAW paragraph 3.1.5.

3.2.5.3 **PANEL ENCLOSURES:** The contractor shall install a new stainless steel enclosure for the Truck Fill Panel. The enclosure shall be fabricated of 316L stainless steel. The enclosure shall be water-tight. The door on the enclosure should open bottom to top. The enclosure should have devices that enable to the door to be locked in the open or closed position.

3.2.5.4 **PANEL POWDER COATING:** The Truck Fill Panel shall be re-powder coated to a color IAW paragraph 3.1.18.

3.2.5.5 All O-rings associated with piping, on the Truck Fill Panel shall be replaced "in-kind" as described in paragraph 1.1.10.

3.2.6 OXYGEN SUPPLY PANELS:

3.2.6.1 The following valves associated with the Oxygen Supply Panels and Oxygen Bank Panels shall be overhauled to "as new" condition as described in paragraph 1.1.9:

a. **GV-OX-1, GV-OX-2, GV-OX-3,** and **GV-OX-4**: These valves are ½" MIL-V-24109 Derbyshire globe valves.
b. **NV-OX-1** and **NV-OX-2**: These valves are ¼" MIL-V-24109 Derbyshire needle valves.
c. **GCV-OX-1, GCV-OX-2, GCV-OX-3,** and **GCV-OX-4**: These gauge calibration valves are CPV model 980.

3.2.6.2 The following components associated with the Oxygen Supply Panels and Oxygen Bank Panels shall be replaced "in kind" as described in paragraph 1.1.10 or as otherwise described:

a. **FL-OX-1**: This is a Norman filter model 4535-GG-10DN. The oxygen filter shall be replaced with a brass or bronze based model and shall meet the requirements of paragraph 3.1.33 and 3.1.45.
b. **FH-OX-1 through FH-OX-8:** The contractor shall replace flex hoses. The flex hoses shall be "in kind" to the existing hoses.
c. **QD-OX-1 through QD-OX-8:** The contactor shall replace these quick disconnects. The contractor shall provide new fittings to connect the hoses directly to the manifold.

3.2.6.3 **PG-OX-1, PG-OX-2, PG-OX-3, and PG-OX-4:** These 0-5000 psi gauges shall be calibrated IAW paragraph 3.1.5. The gauge rings on **PG-OX-2, PG-OX-3,** and **PG-OX-4** shall be replaced "in kind" to the existing gauges IAW paragraph 1.1.10.

3.2.6.4 **MANIFOLDS REPLACEMENT:** The Contractor shall replace the existing oxygen supply manifolds. The replacement manifolds shall be fabricated of monel, have a wall thickness to accommodate a design working pressure of 3000 psi (according to ASME B31.1) and shall fit into the existing piping.

3.2.6.5 **PANEL POWDER COATING:** The Oxygen Supply Panels shall be re-powder coated to a color IAW paragraph 3.1.18.

3.2.6.6 **PANEL ENCLOSURES:** The contractor shall install new stainless steel enclosures for the Oxygen Supply Panels. The enclosures shall be fabricated of 316L stainless steel. The enclosure shall be water-tight. The door on the enclosure should open bottom to top. The enclosure should have devices that enable to the door to be locked in the open or closed position.

3.2.6.7 All O-rings associated with the Oxygen Supply Panels, from the inputs (8) of the panel to the first valve on the Oxygen Reduction Panel shall be replaced "in-kind" as described in paragraph 1.1.10.

3.2.7 NITROX SUPPLY PANELS:

3.2.7.1 The following valves associated with the Nitrox supply panels and Nitrox Bank Panels shall be overhauled to "as new" condition as described in paragraph 1.1.9:

a. **GV-NX-3, GV-NX-4,** and **GV-NX-5**: These valves are ½" MIL-V-24109 Derbyshire globe valves.
b. **NV-NX-5** and **NV-NX-7**: These valves are ¼" MIL-V-24109 Derbyshire needle valves.
c. **GCV-NX-1, GCV-NX-2,** and **GCV-NX-3**: These gauge calibration valves are CPV model 980. The contractor shall replace the label on GCV-NX-3. The current label says **GV-NX-3**.

3.2.7.2 The following components associated with the Nitrox supply panels and Nitrox Bank Panels shall be replaced "in kind" as described in paragraph 1.1.10 or as otherwise described:

a. **FL-NX-1**: This is a Norman filter model 4535-GG-10DN. The Nitrox filter shall be replaced with a brass or bronze based model and shall meet the requirements of paragraph 3.1.33 and 3.1.45.
b. **FH-NX-1 through FH-NX-8:** The contractor shall replace flex hoses. The flex hoses shall be "in kind" to the existing hoses.
c. **QD-NX-1 through QD-NX-8:** The contactor shall replace these quick disconnects. The contractor shall provide new fittings to connect the hoses directly to the manifold.

3.2.7.3 **PG-NX-1, PG-NX-2,** and **PG-NX-3:** These 0-5000 psi gauges shall be calibrated IAW paragraph 3.1.5. The gauge rings on **PG-NX-1, PG-NX-2,** and **PG-NX-3** shall be replaced "in kind" to the existing gauges IAW paragraph 1.1.10.

3.2.7.4 **MANIFOLDS REPLACEMENT:** The Contractor shall replace the existing nitrox supply manifolds. The replacement manifolds shall be fabricated of monel, have a wall thickness to accommodate a design working pressure of 3000 psi (according to ASME B31.1) and shall fit into the existing piping.

3.2.7.5 **PANEL POWDER COATING:** The Nitrox Supply Panels shall be re-powder coated to a color IAW paragraph 3.1.18.

3.2.7.6 **PANEL ENCLOSURES:** The contractor shall install new stainless steel enclosures for the Nitrox Supply Panels. The enclosures shall be fabricated of 316L stainless steel. The enclosure shall be water-tight. The door on the enclosure should open bottom to top. The enclosure should have devices that enable to the door to be locked in the open or closed position.

3.2.7.7 All O-rings associated with the Nitrox Supply Panels, from the inputs (8) of the panel to the first valve on the Nitrox Reduction Panel shall be replaced "in-kind" as described in paragraph 1.1.10.

3.2.8 SCUBA CHARGING PANEL:

3.2.8.1 The following valves associated with the SCUBA Charging Panel and manifold shall be overhauled to "as new" condition as described in paragraph 1.1.9:

a. **GV-AHP-17**: This valve is a ½" MIL-V-24109 CPV globe valve.
b. **NV-AHP-12:** This valve is a ½" MIL-V-24109 Derbyshire needle valve with a globe valve cartridge.
c. **NV-AHP-7:** This valve is a ¼" MIL-V-24109 Derbyshire needle valve.
d. **RV-AHP-2:** This is a fluid mechanics relief valve. The contractor shall overhaul and reset the relief valve to 3630 psi.
e. **GCV-AHP-18, GCV-AHP-19, GCV-AHP-20,** and **GCV-AHP-21**: These are Derbyshire gauge calibration valves.
f. **FL-AHP-4:** This is a Norman Filter model 4535-GG-10DN. The contractor shall clean and overhaul the sintered stainless steel filter element to "as-new" condition.
g. **PR-AHP-6:** This regulator is a Tescom model 26-1013-28-280.

3.2.8.2 The following components associated with the SCUBA Charging Panel and manifold shall be replaced "in kind" as described in paragraph 1.1.10 or as otherwise described.

a. **CV-AHP-4:** This is a ½" MIL-V-24109 Tech Products check valve. The contractor shall replace this valve with a ½" MIL-V-24109 CPV check valve.
b. The contractor shall replace flex hose assemblies **FH-AHP-3 through FH-AHP-10**. The replacement assemblies shall include new SCUBA yokes. The yokes shall be provided with new dust caps. The existing flex hoses are 3000 psi working pressure ¼" diameter x 36" in length. The new flex hose assemblies shall be 3300 psi working pressure.
c. The contractor shall replace Quick Disconnects **QD-AHP-1 through QD-AHP-8** with 3/8" Tomco Quick Disconnects model QC4-B-4F-K1-316-201. The contractor shall provide all adaptors required to facilitate this change.

3.2.8.3 **PG-AHP-18** and **PG-AHP-19:** These 0-8000 psi gauges shall be calibrated IAW paragraph 3.1.5.

3.2.8.4 **PG-AHP-20** and **PG-AHP-21:** These 0-5000 psi gauges shall be calibrated IAW paragraph 3.1.5.

3.2.8.5 **PANEL POWDER COATING:** The SCUBA Charging Panel shall be re-powder coated to a color IAW paragraph 3.1.18.

3.2.8.6 **PANEL ENCLOSURES:** The contractor shall install a new stainless steel enclosure for the SCUBA Charging Panel. The enclosure shall be fabricated of 316L stainless steel. The enclosure shall be water-tight. The door on the enclosure should open bottom to top. The enclosure should have devices that enable to the door to be locked in the open or closed or position.

3.2.8.7 All O-rings associated with the SCUBA Charging Panel and manifold, from the Air Distribution Panel to the end of the

hoses shall be replaced “in-kind” as described in paragraph 1.1.10.

3.2.9 MAINTENANCE REDUCTION PANEL AND ITS ASSOCIATED COMPONENTS:

3.2.9.1 The following valves associated with the Maintenance Reduction Panel and its associated components shall be overhauled to “as new” condition as described in paragraph 1.1.9:

a. **GV-AHP-19:** This valve is a ½” MIL-V-24109 Derbyshire globe valve.
b. **NV-ALP-1, NV-ALP-3,** and **NV-ALP-2:** This valve is a ¼” MIL-V-24109 needle valve.
c. **GCV-AHP-22, GCV-ALP-3, GCV-ALP-5** and **GCV-ALP-6**: These are Derbyshire gauge calibration valves.
d. **PR-AHP-7**: This regulator is a Tescom Model 4400 series regulator.
e. **FL-AHP-5:** This is a Norman Filter model 4535-GG-10DN. The contractor shall clean and overhaul the sintered stainless steel filter element to “as-new” condition.
f. **RV-ALP-3:** This is a Fluid Mechanics Relief Valve. This relief valve shall be overhauled and reset to 275 psi.

3.2.9.2 **PG-AHP-22:** This 0-8000 psi gauge shall be calibrated IAW paragraph 3.1.5.

3.2.9.3 **PG-ALP-3 PG-ALP-5 and PG-ALP-6:** These 0-300 psi gauges shall be calibrated IAW paragraph 3.1.5.

3.2.9.4 All O-rings associated with the Maintenance Reduction Panel and its Associated Components shall be replaced “in-kind” as described in paragraph 1.1.10.

3.2.10 MK-16 REDUCTION PANEL

3.2.10.1 The following components associated with the MK—16 Reduction Panel shall be overhauled to “as new” condition as described in paragraph 1.1.9:

a. **GV-AHP-16**: This valve is a ½” MIL-V-24109 Derbyshire globe valve.
b. **NV-AHP-8:** This valve is a ½” MIL-V-24109 Derbyshire needle valve.
c. **CV-AHP-3:** This valve is a ½” MIL-V-24109 CPV check valve.
d. **GCV-AHP-14, GCV-AHP-15, GCV-AHP-16,** and **GCV-AHP-17**: These are Derbyshire gauge calibration valves.
e. **FL-AHP-3:** This is a Norman Filter model 4535-GG-10DN. The contractor shall clean and overhaul the sintered stainless steel filter element to “as-new” condition.
f. **RV-AHP-1:** This is a Fluid Mechanics relief valve. The contractor shall reset this relief valve to 3300 psi.
g. **PR-AHP-5**: This regulator is a Tescom Model 44-1115-24.

3.2.10.2 **PG-AHP-14, PG-AHP-15, PG-AHP-16,** and **PG-AHP-17:** These are 0-5000 and 0-8000 psi gauges. The contractor shall calibrate these gauges IAW paragraph 3.1.5.

3.2.10.3 All O-rings associated with the MK-16 Charging Panel #1, shall be replaced “in-kind” as described in paragraph 1.1.10.

3.2.11 DEMOLITION OF DILUENT PANEL AND FROM GTS PANEL:

3.2.11.1 The contractor shall demolish The Diluent Panel and From GTS Panel and their components in their entirety. The materials shall be left for NAVSCOLEOD personnel to review (to see if they have a use for them) before it is removed from the site.

3.2.12 NEW O2 CHARGING PANEL:

3.2.12.1 The contractor shall provide a New O2 Charging Panel using GFE OPTA drive air booster pump. The charging system shall meet the requirements of paragraph 2.2.1. The panel shall be configured as shown in Section 6 and IAW Section 3.1

a. The contractor shall clean the interconnecting piping run from the Gas Farm the MK-16 Room IAW paragraph 3.1.47.

3.2.13 MK-16 CHARGING PANEL:

3.2.13.1 The following valves associated with the MK—16 Charging Panel shall be overhauled to “as new” condition as described in paragraph 1.1.9:

a. **NV-AHP-5** and **NV-AHP-11**: These valves are ½” MIL-V-24109 Derbyshire needle valves. The contractor shall replace these valves with ½” MIL-V-24109 CPV needle valves.
b. **NV-NX-1** and **NV-NX-2**: These valves are ¼” MIL-V-24109 Derbyshire needle valves.
c. **NV-AHP-6:** This valve is a ¼” MIL-V-24109 Derbyshire needle valve. The contractor shall replace the soft goods with soft goods for oxygen service.
d. **CV-NX-1** and **CV-NX-2:** These valves are ½” MIL-V-24109 CPV check valves.
e. **GCV-NX-3**: This is a Derbyshire gauge calibration valve.

3.2.13.2 PG-NX-3: This 0-5000 psi gauge shall be calibrated IAW paragraph 3.1.5.

3.2.13.3 All O-rings associated with the MK-16 Charging Panel #1, shall be replaced “in-kind” as described in paragraph 1.1.10.

3.2.13.4 The contractor shall move the MK-16 Charging Panel left to the location of the existing Diluent Panel (to be demolished as described above) as shown in Section 6.

3.2.14 AIR REDUCTION PANEL #1:

3.2.14.1 The following valves associated with the Air Reduction Panel #1 shall be overhauled to “as new” condition as described in paragraph 1.1.9:

a. **GV-AHP-14** and **GV-ALP-1**: These valves are ½" MIL-V-24109 Derbyshire globe valves.
b. **GV-ALP1-1:** This valve is a MIL-V-24109 CPV globe valve.
c. **CV-ALP1-1:** This valve is a MIL-V-24109 CPV check valve.
d. **GCV-ALP-1, GCV-AHP-12,** and **GCV-ALP1-1**: These are Derbyshire gauge calibration valves.
e. **RV-ALP-1:** This is a Fluid Mechanics relief valve. The contractor shall overhaul and reset the relief valve to 275 psi.
f. **FL-AHP-1:** This is a Norman Filter model 4535-GG-10DN. The contractor shall clean and overhaul the sintered stainless steel filter element to "as-new" condition.

3.2.14.2 **PR-AHP-3:** These are 44 series Tescom dome loaded regulator. The contractor shall replace PR-AHP-3 with a Tescom model 26-1221-1161-088 dome loaded regulator.

3.2.14.3 **PR-AHP-1:** These are 44 series Tescom hand loaded regulator. The contractor shall replace PR-AHP-1 with a Tescom model 26-1017-14 hand loaded regulator.

3.2.14.4 **PG-AHP-12:** This 0-8000 psi gauge shall be calibrated IAW paragraph 3.1.5.

3.2.14.5 **PG-ALP1-1** and **PG-ALP-1:** These 0-1000 psi gauges. The contractor shall replace these gauges with gauges with 0-500 psi range. The new gauges shall be IAW Section 3.1.

3.2.14.6 All O-rings associated with the Air Reduction Panel #1, shall be replaced "in-kind" as described in paragraph 1.1.10.

3.2.15 AIR REDUCTION PANEL #2:

3.2.15.1 The following valves associated with the Air Reduction Panel #2 shall be overhauled to "as new" condition as described in paragraph 1.1.9:

a. **GV-ALP-2**: This valve is a ½" MIL-V-24109 Derbyshire globe valve.
b. **GV-AHP-15** and **GV-ALP2-1:** These valves are MIL-V-24109 CPV globe valves.
c. **CV-ALP2-1**: This is a MIL-V-24109 CPV check valve.
d. **GCV-ALP-2, GCV-AHP-13,** and **GCV-ALP2-1**: These are Derbyshire gauge calibration valves. The contractor shall replace these valves with CPV model 980 gauge calibration valves.
e. **RV-ALP-2:** This is a fluid mechanics relief valve. The contractor shall overhaul and reset the relief valve to 275 psi.
f. **FL-AHP-2:** This is a Norman Filter model 4535-GG-10DN. The contractor shall clean and overhaul the sintered stainless steel filter element to "as-new" condition.

3.2.15.2 The following components associated with the Air Reduction Panel #2 shall be replaced "in kind" as described in paragraph 1.1.10 or as otherwise described.

a. **PR-AHP-4:** These are 44 series Tescom dome loaded regulator. The contractor shall replace PR-AHP-4 with a Tescom model 26-1221-1161-088 dome loaded regulator.
b. **PR-AHP-2:** These are 44 series Tescom hand loaded regulator. The contractor shall replace PR-AHP-2 with a Tescom model 26-1017-14 hand loaded regulator.

3.2.15.3 PG-AHP-13: This 0-8000 psi gauge shall be calibrated IAW paragraph 3.1.5.

3.2.15.4 PG-ALP2-1 and **PG-ALP-2:** These 0-1000 psi gauges. The contractor shall replace these gauges with gauges with 0-500 psi range. The new gauges shall be IAW Section 3.1.

3.2.15.5 All O-rings associated with the Air Reduction Panel #2, shall be replaced “in-kind” as described in paragraph 1.1.10.

3.2.16 FES SUPPLY PANEL AND TANK:

3.2.16.1 The following valves associated with the FES Supply Panel and Tank shall be overhauled to “as new” condition as described in paragraph 1.1.9:

a. **SCV-AHP-23** and **SCV-AHP-24:** These valves are ½” MIL-V-24109 CPV stop check valves.
b. **GV-F-1**: This valve is a ½” MIL-V-24109 CPV globe valve.
c. **GV-F-2**: This valve is a ¼” MIL-V-24109 CPV globe valve.
d. **CV-F-1** and **CV-W-1:** These valves are ½” MIL-V-24109 CPV check valves.
e. **FL-AHP-6:** This is a Norman Filter model 4535GG-10-DN. The contractor shall clean and overhaul the sintered stainless steel filter element to “as-new” condition.
f. **GCV-AHP-23, GCV-AHP-24,** and **GCV-F-1**: These gauge calibration valves are CPV model 980.
g. **RV-F-1:** This is an ASME rated Fluid Mechanics relief valve. This valve shall be reset to 165 psi.
h. **BV-F-1, BV-F-2, BV-F-3, and BV-W-2:** These are ½” SS-63TSW8P Swagelok ball valves.

3.2.16.2 PR-AHP-8: The contractor shall replace this regulator with a regulator with adequate flow for the system to comply with NFPA 99. The new regulator shall meet the requirements of Section 3.1.

3.2.16.3 PG-AHP-23 and **PG-AHP-24:** The contractor shall calibrate these 0-8000 psi gauges IAW paragraph 3.1.5.

3.2.16.4 PG-F-1: The contractor shall calibrate these 0-300 psi gauges IAW paragraph 3.1.5.

3.2.16.5 SV-F-1: The contractor shall replace this valve with an electrical motor actuated ball valve. The new valve shall meet the requirements of Section 3.1. The contractor shall provide all wiring and piping necessary for the switch.

All functionality shall me maintained to keep the chamber fire extinguishing system IAW NFPA 99.

3.2.16.6 The contractor shall replace the magnetic level switch located in the FES Volume Tank. The replacement level switch shall be "in kind" to the existing level switch as described in paragraph 1.1.10.

3.2.16.7 **VT-F-1:** The contractor shall inspect the volume tank in accordance with TM CHENG/05-010-SCA (Hyperbaric Facility Pressure Vessels). The contractor shall re-hydro and re-rate the volume tank to 200 psi IAW ASME BPVC VIII Division 1. The existing tank has adequate wall thickness for this change. Test plans shall be prepared and submitted by the contractor to the COR.

3.2.16.8 All O-rings associated with the FES Supply Panel and Tank, shall be replaced "in-kind" as described in paragraph 1.1.10.

3.2.16.9 The contractor shall provide a hand held hose fire extinguishing system in the Outer and Inner Locks. The new FES piping shall be configured as shown in Section 6. The system shall be IAW Section 3.1 and NFPA Code. The new FES hoses shall be "in-kind", as described in paragraph 1.1.10, to the existing FES hoses in the Inner Lock. The hose setups shall be identical the hose set ups in the Outer Lock including the ½" quarter turn ball valve. The new piping for the Outer Lock shall be run through the 1" front side spare penetrator. The new piping for the Inner Lock shall be run through the spare penetrator located high on back side towards the closed end.

3.2.17 OXYGEN REDUCTION PANEL:

3.2.17.1 The following valves associated with the Oxygen Reduction Panel shall be overhauled to "as new" condition as described in paragraph 1.1.9:

a. **GV-OX-5** and **GV-OX-6:** These valves are ½" MIL-V-24109 Derbyshire globe valves.
b. **GCV-OX-5** and **GCV-OX-6**: These are Derbyshire gauge calibration valves.
c. **PR-OX-1**: This regulator is a Tescom Model 44-1111-24.
d. **RV-OX-1:** This is a Fluid Mechanics relief valve. This valve shall be reset to 110 psi.

3.2.17.2 **PG-OX-5:** The contractor shall calibrate this 0-5000 psi gauge IAW paragraph 3.1.5.

3.2.17.3 **PG-OX-6:** The contractor shall calibrate this 0-200 psi gauge IAW paragraph 3.1.5.

3.2.17.4 All O-rings associated with the Oxygen Reduction Panel, shall be replaced "in-kind" as described in paragraph 1.1.10.

3.2.18 NITROX REDUCTION PANEL:

3.2.18.1 The following valves associated with the Nitrox Reduction Panel shall be overhauled to "as new" condition as described in paragraph 1.1.9:

a. **GV-NX-1** and **GV-NX-2:** These valves are ½" MIL-V-24109 Derbyshire globe valves.
b. **GCV-NX-5** and **GCV-NX-6**: These are Derbyshire gauge calibration valves.
c. **PR-NX-1**: This regulator is a Tescom Model 44-1111-24.
d. **RV-NX-1:** This is a Fluid Mechanics relief valve. This valve shall be reset to 110 psi. The contractor shall tie the **RV-NX-1** discharge into the existing **RV-OX-1** discharge line to outside.

3.2.18.2 PG-NX-5: The contractor shall calibrate this 0-5000 psi gauge IAW paragraph 3.1.5.

3.2.18.3 PG-NX-6: The contractor shall calibrate this 0-200 psi gauge IAW paragraph 3.1.5.

3.2.18.4 All O-rings associated with the Oxygen Reduction Panel, shall be replaced "in-kind" as described in paragraph 1.1.10.

3.2.19 CHAMBER CONTROL CONSOLE:

3.2.19.1 The following valves associated with the Chamber Control Console shall be overhauled to "as new" condition as described in paragraph 1.1.9:

a. **ALP-5, ALP-7, ALP-8,** and **ALP-10**: These valves are 1 ¼" MIL-V-24109 CPV globe valves.
b. **EXH-7** and **EXH-11**: These valves are 2" MIL-V-24109 CPV globe valves.
c. **ALP-70** and **ALP-71**: These are ¼" Whitey ball valves

3.2.19.2 ALP-11, ALP-12, ALP-13, and **ALP-14:** These gauge calibration valves shall be replaced with CPV model 980.

3.2.19.3 GLP-2, GLP-3, GLP-4, and **GLP-5:** These are 0-300 fsw gauges. These gauges shall be calibrated IAW paragraph 3.1.5.

3.2.19.4 CHAMBER CANTY LIGHT SYSTEM: The contractor shall replace the six (6) Canty light fixtures (four (4) on the Inner Lock and two (2) in the Outer Lock), and inspect all mating surfaces on the chamber. A new lighting system shall be provided from externally mounted light tubes meeting the requirements of NAVSEAINST. 10560.2E. Dimmer switches shall be installed on the chamber control console for control of the new lights. The contractor shall provide for all equipment and wiring to allow installation of the new lighting system.

3.2.19.5 NEW UNINTERUPTED POWER SUPPLY (UPS): The contractor shall provide an Uninterrupted Power Supply (UPS) for the chamber. The UPS shall be capable of running the chamber CO2 monitor for a minimum of twenty-four (24) hours if the existing power at the Dive Locker Building is out.

3.2.19.6 All O-rings associated with the Chamber Control Console, shall be replaced "in-kind" as described in paragraph 1.1.10.

3.2.20 CHAMBER BIBS CONTROL PANEL:

3.2.20.1 The following valves associated with the Chamber BIBS Control Panel shall be overhauled to "as new" condition as described in paragraph 1.1.9:

a. **GV-B-1, GV-B-2, GV-NX-6,** and **GV-OX-8**: These valves are ½" MIL-V-24109 CPV globe valves.
b. **CV-B-1, CV-B-2, CV-NX-3,** and **CV-OX-2**: These valves are ½" MIL-V-24109 CPV check valves.
c. **NV-B-1** and **NV-OX-5**: These valves are ¼" MIL-V-24109 CPV needle valves.

3.2.20.2 GCV-B-1, GCV-B-2, GCV-B-3, GCV-NX-8, GCV-OX-8 and **GCV-OX-9:** These are Derbyshire gauge calibration valves. The contractor shall replace these valves with CPV model 980 gauge calibration valves.

3.2.20.3 MV-OX-1: This valve is a ¼" metering valve. The contractor shall replace the valve and replace the Swagelok piping downstream of it with piping meeting Section 3.1.

3.2.20.4 PG-B-1, PG-B-2, PG-B-3, PG-NX-8, and **PG-OX-8:** These are 0-1000 fsw gauges. These gauges shall be replaced with gauges that have a 0-300 psi range. The replacement gauges shall be IAW with Section 3.1.

3.2.20.5 PG-OX-9: This is a 0-200 psi gauge. The contractor shall calibrate this gauge IAW paragraph 3.1.5.

3.2.20.6 All O-rings associated with the Chamber BIBS Control Panel shall be replaced "in-kind" as described in paragraph 1.1.10.

3.2.21 CHAMBER EXTERIOR:

3.2.21.1 The following valves associated with the Chamber Exterior shall be overhauled to "as new" condition as described in paragraph 1.1.9:

a. **EXH-9** and **EXH-13:** These valves are 1" MIL-V-24109 CPV globe valves.
b. **BV-B-1** and **BV-B-2:** These valves are 1" Swagelok ball valves.
c. **GV-B-3** and **GV-B-4**: These valves are ½" MIL-V-24109 CPV globe valves.
d. **VV-40:** This is a Fluid Mechanics relief valve. It shall also be tested and reset to 110 psi.

e. **ALP-97**: This valve is a Whitey SS65TSW16P ball valve.

3.2.21.2 The following components associated with the Chamber Exterior shall be replaced “in kind” as described in paragraph 1.1.10:

a. The contractor shall replace flex hose assemblies **FH-ECS-1** and **FH-ECS-2**.

3.2.21.3 The contractor shall add ½” hull stop ball valves for the two ECS hoses. The new hoses shall connect the hull to the ECS flex hoses (**FH-ECS-1** and **FH-ECS-2**). The new valves shall be IAW Section 3.1

3.2.21.4 All O-rings associated with the Chamber exterior shall be replaced “in-kind” as described in paragraph 1.1.10.

3.2.21.5 The contractor shall blank the EKG Lead into the Inner Lock and provide a 1” blank tail piece.

3.2.22 CHAMBER INNER LOCK INTERIOR:

3.2.22.1 The following valves associated with the Chamber Inner Lock Interior shall be overhauled to “as new” condition as described in paragraph 1.1.9:

a. **CV-1** and **CV-2:** These valves are 1 ¼” MIL-V-24109 CPV check valves.
b. **CV-5** and **CV-6**: These valves are ½” MIL-V-24109 CPV check valves.
c. **HC-1** and **HC-2:** These valves are ½” ball valves.
d. **EXH-1:** This is a Whitey 2” Ball Valve.
e. **FB-1, EXH-6** and **VR-11 through VR-22**: These are ½” Whitey Ball Valves.
f. **EXR-1:** This is a Tescom regulator, model 26-2912-2122 A-006

3.2.22.2 The following components associated with the Chamber Inner Lock Interior shall be replaced “in kind” as described in paragraph 1.1.10:

a. The contractor shall replace quick disconnects **QD-1 through QD-12**.
b. The contractor shall replace existing FES flex hose **FH-5**. The new flex hose shall be “in kind” to the existing flex hose.

3.2.22.3 BIBS MASKS: The contractor shall replace the six (6) existing BIBS masks. The contractor shall replace these masks with Avox Pressure Vak II, model 803-152-02. The BIBS mask assemblies shall be complete and useable with the chamber piping BIBS system. The contractor shall coordinate the size of the face seals with the NAVSCOLEOD Master Diver.

3.2.22.4 CAISSON GAUGE: The contractor shall calibrate this gauge IAW paragraph 3.1.5.

3.2.22.5 All O-rings associated with the Chamber Inner Lock Interior shall be replaced “in-kind” as described in paragraph 1.1.10.

3.2.23 CHAMBER OUTER LOCK INTERIOR:

3.2.23.1 The following valves associated with the Chamber Outer Lock Interior shall be overhauled to “as new” condition as described in paragraph 1.1.9:

a. **CV-3** and **CV-4:** These valves are 1 ¼” MIL-V-24109 CPV check valves.
b. **CV-7** and **CV-8**: These valves are ½” MIL-V-24109 CPV check valves.
c. **EXH-10:** This is a Whitey 2” ball valve.
d. **EXH-12, VO-23, VO-24, VO-25,** and **VO-26**: These are ½” Whitey ball valves.
e. **EXR-2:** This is a Tescom regulator, model 26-2912-2122 A-006

3.2.23.2 The following components associated with the Chamber Inner Lock Interior shall be replaced “in kind” as described in paragraph 1.1.10:

a. The contractor shall replace quick disconnects **QD-13 through QD-16**.

3.2.23.3 BIBS MASKS: The contractor shall replace the two (2) existing BIBS masks. The contractor shall replace these masks with Avox Pressure Vak II, model 803-152-02. The BIBS mask assemblies shall be complete and useable with the chamber piping BIBS system. The contractor shall coordinate the size of the face seals with the NAVSCOLEOD Master Diver.

3.2.23.4 All O-rings associated with the Chamber Outer Lock Interior shall be replaced “in-kind” as described in paragraph 1.1.9.

3.2.24 VIDEO MONITORING SYSTEM: The Contractor shall provide for a Chamber Occupant Monitoring System that shall perform the following principle functions:

a. Video Monitoring of the chamber’s Inner Lock (two stations, both interior, one fixed mounted and one magnetic mounted).
b. Video Monitoring of the chamber’s Outer Lock (one station, interior).
c. Two Monitors, one that can be set to show any camera’s view or a three-place matrix of the all of the camera’s view.
d. Digital Video Recorder

3.2.24.1 MONITORS: The Contractor shall provide for three monitors as configured in the drawings in Section 6. These units shall be mounted on the front of the Control Console using the manufacturer’s standard rack mount hardware as shown on the Section 6. They shall be color monitors meeting the following minimum criteria:

1. Liquid Crystal Display
2. Power 120 V, 60 Hz
3. Picture screen minimum 20″ diagonal (2), and 50″ diagonal (1)
4. Front panel controls: Power on-off, AB line select, picture adjust controls (V-hold, tint, color, bright, contrast)
5. Resolution: 720p (minimum)

3.2.24.2 CONDUCTORS: Provide coaxial cable and other conductors meeting the recommendations of the manufacturers of the equipment in this section. Terminate coaxial cables with connectors compatible with the equipment using tools and procedures intended for the purpose.

3.2.24.3 INTERIOR INNER LOCK CAMERAS: The contractor shall provide for two (2) interior cameras in the Inner Lock. One camera shall be fix-mounted with Click-Bond and located above the IL/OL door. The camera shall be situated as to provide for maximum coverage of the Inner Lock. The other camera will be magnetically mounted as described below. The camera shall be manufactured so that it has a solid body with no air cavity except in the lens and otherwise shall meet all criteria for use inside a US Navy Chamber. The body shall be waterproof to 133 PSI and shockproof. The lens cavity shall be filled with inert nitrogen to prevent fogging under adverse conditions. The cameras shall have 8 LED lights set for illumination.

a. **MAGNETIC MOUNT FOR THE INNER LOCK INTERIOR CAMERA:** The contractor shall provide for a magnetic-type mount for the interior camera in the Inner Lock. The mount will act so that the camera may be situated in such a fashion as to allow the magnetic mount to be moved to different points in the chamber (allowing the external Dive Supervisor) to view a diver at any point in the chamber). The mount will have a universal ball joint so that the camera may be set to any viewing angle.

3.2.24.4 INTERIOR OUTER LOCK CAMERA: The contractor shall provide for one (1) interior camera in the Outer Lock. The camera shall be mounted with Click-Bond and located to allow for the most coverage of the Outer Lock. The camera shall be manufactured so that it has a solid body with no air cavity except in the lens and otherwise shall meet all criteria for use inside a US Navy Chamber. The body shall be waterproof to 133 PSI and shockproof. The lens cavity shall be filled with inert nitrogen to prevent fogging under adverse conditions. The camera shall have 8 LED lights set for illumination.

3.2.24.5 DIGITAL VIDEO RECORDER: The contractor shall provide for a digital video recorder (DVR) for the chamber occupant monitoring system. The DVR shall be capable of being selected on any one interior or exterior camera as described above. The DVR shall have a means of easy offload of video (USB port, Firewire Port, or DVD

recorder). The DVR shall have memory capacity of a minimum of 50 hours of Standard Definition (SD) video. The DVR shall be installed in the Data Logging Station above the Control Console. The contractor shall provide for all wire connections and switches for the DVR and its switching capability.

3.2.25 VIEWPORTS: All viewports shall be replaced; they shall conform to the current ASME PVHO 1 code at time of award of this contract. The material shall be item A conforming to L-P-391. The acrylic ports shall be annealed after machining. Each acrylic port shall be subjected to a hydrostatic test equal to one-and-a-half (1 ½) the vessel's maximum allowable working pressure for one hour prior to its installation in the chamber on both sides of the viewport. The test pressure shall be reduced to MAWP psi and held for twelve hours. During that period measurements shall be taken of the movement of the lens in the frame with a dial indicator. Readings shall be made and recorded at one-hour intervals.

3.2.25.1 O-RING SEALS: O-ring seals shall be fluorocarbon elastometer rubber material conforming to MIL-R 83248.

3.2.25.2 RUBBER: Rubber shall conform to ASTM D2000, durometer 50 through 70, class K, type A, unless otherwise specified.

3.2.25.3 ACRYLIC VIEWPORT SEAT LUBRICANT: Lubricant for acrylic viewport seats, rubber gaskets and o-rings shall be silicone grease that conforms to MIL-S 8860B.

3.2.26 TEMPERATURE GAUGE: The contractor shall provide a digital temperature gauge for the chamber interior. The gauge shall read in units of degrees Fahrenheit.

3.2.27 CHAMBER MANWAY DOOR REFURBISHMENT: All running parts of the two (2) Chamber manway door assemblies shall be lubricated. The lubricant for all carbon steel and stainless steel hinge components, rolling element bearings, and support system pins and pillow blocks shall be a grease in accordance with MIL-G-27617 (type 3)(halocarbon). All hatch bearings shall be removed and replaced with new bearings. All stainless steel Zerk fittings shall be inspected, and any that are not in "as new" condition shall be replaced. Manway Door Hinge components shall not be fabricated of aluminum. The contractor shall demonstrate that each manway closure operates properly and freely. Operation of the closure hinges shall be smooth without binding or chattering. The contractor shall inspect and clean the O-ring groove and replace the O-ring in all manways (3 each). These O-rings shall be "in-kind" to the existing O-rings and shall meet the requirements of Section 3.1. The contractor shall adjust the alignment of the manway so that it stays wherever it sets (in the open position, the closed position or anywhere in between. New detents shall be provided for keeping the doors in the closed position.

3.2.28 PIPING SYSTEM O-RINGS: All piping & tubing unions associated with the interconnecting piping for the systems refurbished in

paragraphs 3.2.2 through 3.2.9 (including components not refurbished in this overhaul) shall be broken and inspected. All O-rings shall be replaced. The O-rings shall meet the requirements of Section 3.1.

3.2.29 SPOT PAINTING CORRODED SURFACES: The contractor shall provide spot painting of areas of corrosion in the interior of the chamber. All painted surfaces are to be in “as new” condition. The contractor shall remove all necessary piping and components from the interior of the chamber that prevent prep and painting of the corroded areas. The paint to be applied shall be Bright White Carboguard 890H. Paints shall be delivered in original factory containers that plainly show the designated name, specification number, batch number, color, date of manufacture, manufacturer's directions, all of which shall be legible at the time of use. Threaded hardware, stainless steel surfaces such as hatch handle and viewport retaining rings, hatch sealing surfaces, entire stainless steel and penetration surfaces, and viewport penetrations shall be masked or otherwise protected prior to surface preparation and coating operations. Following completion of painting, masking or protective materials shall be removed and metal surfaces cleaned as required. The interior surfaces shall be "surface prepared" for painting in accordance with SSPC SP-7. Surfaces shall be "roughed" and cleaned in a manner to assure proper adherence of surface to existing paint. The final Dry Film Thickness to be applied shall be a minimum of 8 mils. The finished surfaces of the chamber interior shall be free from runs, sags, and variations in color, texture, and finish. All surfaces including edges, corners, crevices, welds, and fasteners shall receive a film thickness equivalent to adjacent painted surfaces. OSHA Safety Data Sheets shall be provided for the paint system to be utilized as well as all solvents or thinners used in the preparation and clean-up of the surfaces or mixing of the paints. The contractor shall take special precautions to see that proper ventilation is provided during painting. Continuous forced-air circulation must be provided during coating application. Precautions shall be taken to provide eye protection for the workmen. No painting shall be done adjacent to any fire hazard such as welding or open flame. Surfaces damaged by the contractor during overhaul shall be refurbished to "as new" condition at the contractor's cost. The contractor is responsible for any spills, drips, or any other marring of the surrounding area done by the prep and painting of the interior chamber hull.

3.2.30 RETAGGING ENTIRE SYSTEM: The contractor shall retag all of the valves and components for the entire facility. The existing tags reflect the staggered initial procurement of the hyperbaric systems and are in consistent. The new tag systems shall follow paragraph 3.1.20 and 3.1.21. The contractor shall submit this schematic with their Preliminary Design. Object Quality Evidence (OQE) done by the contractor should be tracked according to the new numbering on this schematic.

3.2.31 EXTERIOR PIPING SUPPORTS REPLACEMENT: The contractor shall replace all piping supports located on the exterior of the building. This shall include all support on the exterior

panels, and all supports on the interconnecting piping. The exterior supports shall be replaced “in kind” IAW paragraph 1.1.9. This does not include replacement of the support on MIL-V-24109 valves.

3.2.32 SOUND ISOLATION ON CHAMBER EXHAUST: The contractor shall provide for sound isolation for the chamber exhaust lines. This sound isolation shall dampen the sound produced when conducting a maximum allowed vent (30 FSW per minute) from 190 FSW so that occupants inside the chamber and chamber operators shall not be exposed to sustained levels higher than 110 dB per vent period.

END OF SECTION

SECTION 4

4. N/A

END OF SECTION

SECTION 5

5. QUALITY ASSURANCE

5.1 GENERAL REQUIREMENTS:

5.1.1 All work performed shall be in accordance with and to the standards and specifications cited in each section. Any changes in design or deviation from accepted standards must be documented and submitted to the Government prior to change or implementation.

5.1.2 **DESIGN REVIEW MEETINGS:** Design and fabrication review meetings shall be held by the contractor at the contractor's facility or the installation site, at time intervals no greater than six weeks. Two weeks advance written notice shall be furnished to the Government prior to each meeting.

5.1.3 **CONTRACT ADHERENCE:** The contractor shall rigidly adhere to the requirements for qualification, certification, test, examination and inspection required by the various contract documents.

5.1.4 **SUBCONTRACTORS:** Subcontractors shall be monitored by the contractor to assure timely and adequate performance and adherence to approved specifications. Copies of all certifications/qualifications required for the subcontractor to perform their work shall be submitted by the contractor to the Government.

5.1.5 **SUBMISSION NUMBER:** All submissions and submittals required by this contract shall include one (1) original and three (3) copies of the submission.

5.1.6 **DISK COPIES:** Systems manuals shall be prepared using a commercially available word processing program. All drawings shall be prepared on a commercially available computer aided design program. The Valve & Component Database shall be prepared on a commercially available spreadsheet design program. All submissions (Preliminary Design, Final Design, and As-Built) of systems manuals, drawings, and Valve & Component Database shall include CD copies of the system manuals, drawings, and Valve & Component Database formatted for MS Excel. Final disk submission of systems manuals, drawings, and Valve & Component Database shall be marked "As built". Final disk submissions of drawings shall include all the names of all signers present, and the date of signature. Complete files must be in current NMCI/NGEN computer program product format such as MS Word 2010, MS Excel 2010, Portable Document Format (PDF) Version 10, AutoCAD 2010 (minimum). All drawings shall be provided in AutoCAD format. The contractor shall provide a minimum of two (2) copies of all CD's. **In addition, the contractor shall scan the entire accepted as built submittal in portable document format (pdf) and submit two (2) CD's to NAVFAC EXWC and five (5) CD's to the end user.**

5.1.7 NOTIFICATION OF TESTING: The contractor shall provide the Government with written notification of all on site testing. This notification shall be received by the Government a minimum of 30 working days prior to the date of the test.

5.1.8 CONTRACTOR'S RECORDS AND DOCUMENTS: The contractor shall submit copies of all records and documents required by this contract and the codes and specifications cited herein. One original and three copies shall be submitted.

5.1.9 PIECEMEAL SUBMITTAL: Piecemeal submittal of any submittals required by this specification is unacceptable, and such submittals will be returned without review.

5.1.10 QUALITY CONTROL PLAN: The contractor's Quality Control Plan shall be in accordance with International Organization for Standardization (**ISO 9000)**, and with any further quality requirements specified in the contract. A description of the organization that will fulfill the quality program requirements with a definition of the responsibility and authority of each functional element, shall be included. All of the contractor's documented policies or procedures which implement the quality program shall be identified in appropriate places with the plan. A short summary of the objective or purpose of each procedure shall be given. The plan must delineate, by flow chart or similar technique, where inspection, audit and other controls are to be applied to assure conformance with the contract quality requirements and must identify each assembly, process and inspection instructions applicable to the contract hardware and show where it is to be applied. The plan shall describe the method by which the plan will be applied to sub-contractors.

5.1.11 PRELIMINARY DESIGN PACKAGE: Documents in this package shall be of sufficient detail to demonstrate that the contractor's plan for the work described in this contract is in conformance with this contract as well as demonstrating the technical and functional feasibility of the contractor's plan. All elements of the design shall be in strict conformance with the hyperbaric facility code requirements as stated in paragraph 1.2.8. It shall clearly indicate where equipment, components and piping runs are intended to be located. Pragmatic issues of installation and maintenance shall be addressed. During development of the Preliminary Design, the contractor is responsible for visiting the site to facilitate layout of work. Drawings shall be in accordance with ASME Y14.100M. Drawings shall be 17" x 22", LEVEL 2 drawings. The Government will respond to the Preliminary Design submittal within 30 days of receipt. The preliminary package shall consist of the following applicable items, as a minimum.

a. General Arrangement Drawings.
b. System piping and electrical schematics.
c. Calculations.
d. Proposed Material and Manufacturing Specifications and qualifications.
e. Preliminary Component Manufacturer's Design Data.

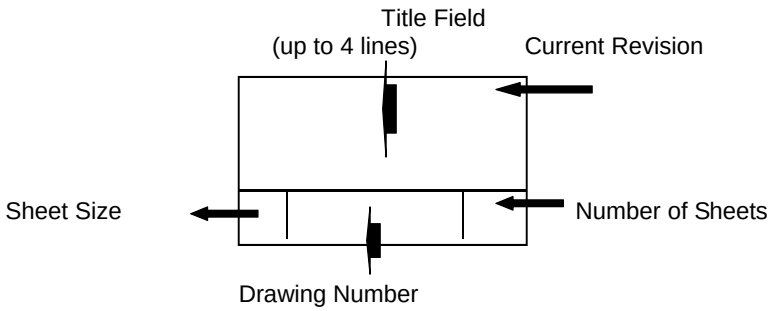
f. Subcontractors Identification, Qualifications, and Certifications.
g. Hyperbaric Systems Manual Outline.
h. Component and Panel ID tags.
i. Test Plans
j. Welding Qualifications and Procedures
k. Cleaning Qualifications and Procedures
l. Painting Plan
m. Non-destructive Testing Plan and Qualifications

5.1.12 DRAWING PACKAGE: The drawing package shall be configured, and contain the elements, as described below:

a. Title Page: The title page shall contain the contractors name and address, the contract name, location and number, the NAVFAC EXWC ECDET name and address, and any other pertinent information identified.

b. Drawing Tree: The drawing tree shall start with a "Top Drawing", with subsequent drawings developing from subsystems to elements to components, etc. Elements of a subsystem shall be numbered as sub drawings of the subsystem, etc. (see d. below).

1. The drawing tree will use the following convention for identifying drawings:



c. General Arrangement Schematic: A single, overall schematic drawing of the entire system shall be provided. This drawing shall be organized to provide easy understanding of the capabilities and configuration of the entire system. It shall show which building or room in which each component is located. Each component shall be clearly shown and the tag number shall be included next to each component. **Two (2) 37" X 28" copies of overall schematic shall be provided to the end user. These shall be suitably framed for display.** This drawing shall be organized to provide easy understanding of the capabilities and configuration of the entire system. Any certification boundaries shall be shown. The overall schematic shall show the room in which each component is located. Each component shall be clearly shown and the component tag number shall be included next to the component. The AutoCAD copy of this drawing shall have all embedded data (new and existing) attached to each valve and component as

described in paragraph 5.1.17, entitled “VALVE & COMPONENT DATABASE”. The existing Valve and Component List shall be available upon request. Torque values shall be embedded into the drawing where applicable for mechanically attached fittings.

d. Drawing Numbers: Each drawing (each drawing sheet) shall be given an independent and unique drawing number. Drawings shall be sequential in number. Where there are multiple layers of one drawing for fabrication details (panels, etc.), these drawings can have numbers with the unique drawing number followed by -1, -2, -3, etc. (i.e. 23456-1, 23456-2, etc.). A single drawing number for the entire drawing package is not acceptable.

e. Flow arrows and set pressures (i.e., regulators, relief valves, etc.) shall be provided on all schematic drawings.

f. The contractor shall not use any special or third party fonts.

g. The contractor shall not use descriptive text on a drawing that has an attributed drawing element already assigned to manage that information.

h. The contractor shall not use single or double quotation marks on drawing.

i. The contractor is to ensure that all entities are to be created on the model tab (model space), full size (1:1). All standard drawing blocks will be placed in model space on the “0” (zero) layer. All dimensions are to be associative and placed on the DIM layer, Font and Text Height, Dimension Extension Lines and Offsets, Arrowheads and Line-weights are preset.

j. The contractor shall identify all certification boundaries on all applicable As-Built schematics. These boundaries shall be identified by dashed lines.

5.1.13 RECORD DRAWINGS AND DOCUMENTATION: The contents shall show the work as it was actually performed. The drawings shall be 17" X 22", or as designated herein or a drawing size acceptable to the COR. It shall consist of:

a. Engineering Drawings of an “As Built” condition.

b. A serialized group of all component catalogues that are delivered with the components. They usually contain operation, maintenance, exploded view, replacement part numbers, etc.

c. Weld Maps and Joint Identifications.

5.1.14 COMPONENT MANUFACTURER'S DESIGN DATA: The contractor shall provide the Component Manufacturer's Design Data (CMDD) for all components provided as part of this contract. The CMDD shall be

provided in one completely marked and coordinated package sufficient to assure full compliance with the specification requirements. Submittals for each manufactured product shall include, but not be limited to the following: Manufacturer's descriptive literature and catalog cuts, manufacturer's operation and maintenance manual **(2 Copies)**, equipment drawings, diagrams, performance and characteristic curves, catalog model or number, nameplate data, size, layout dimensions, capacity, specification reference, component tag number, and find number from valve and component list/drawings.

5.1.15 SYSTEMS MANUAL: The contractor shall provide Systems Manuals. The contractor is responsible for providing all sections for systems provided under this contract. The manual shall consist of the following:

a. General Facility Description:
b. System Certification:
c. There shall be a section addressing each of the Hyperbaric Systems. The following data shall be provided by the Contractor for each system:

    1. System Operational Capabilities, Limitations and Set Points.
    2. System Narrative Description.
    3. System Piping and Electrical Schematics.
    4. System Operating Instructions.
    5. System Maintenance Instructions.
    6. System Design Computations.
    7. System Spare Parts Data.
    8. Component List.
    9. System Functional Test.

5.1.16 CONTRACTOR'S RECORDS AND DOCUMENTS: Contractors records and documents shall include all records and documents required by Section 1 and 3. These shall include, but are not limited to:

a. Test reports
b. Inspection reports
c. Test plans
d. Travelers/route sheets
e. Mill certs/material reports
f. Procedures
g. Qualifications
h. Records
i. Working drawings
j. Radiographs
k. Shop Drawings

5.1.17 VALVE & COMPONENT DATABASE: The Valve & Component Database provides design, procurement and manufacturer's data about the components. The database requirement shall be met by the use of MS Excel in the format shown in Section 6 Figure 1. The database fields (columns) shall include: system information, logistical information, and maintenance information.

5.1.18 FUNCTIONAL TEST PLAN: The contractor shall submit a functional test plan for the complete test of all hardware provided as part of this specification. The functional test plan shall include valve line up, functional testing procedures, pass/fail criteria and shut down of the system being tested. There shall be initial blocks for all steps of the functional test plan. There shall be final signature blocks for both the contractor's completion and the Government's witnessing of successful functional test. The plan will provide information as to all equipment needed for testing and the calibration information for that equipment. The test plan shall contain, as a minimum, the following data:

a. Test purpose/objectives.
b. Identify each assembly to be tested.
c. Describe test set up at each level of test, including diagrams and sketches to illustrate the test set-up.
d. Describe or identify all test equipment required. Calibration of test equipment.
e. Describe all test procedures, including test sequence, test parameters, participants, **and pass/fail criteria**.
f. Provide sample test data sheets to illustrate test data to be documented and delivered at each level of test.
g. Establish criteria for acceptance at each level of test and describe the procedures to be followed in the event of malfunction or failure.
h. Identify critical or unusual tests or test conditions.
i. Overall test schedule.

5.1.19 SYSTEM FUNCTIONAL TEST: The contractor shall be required to demonstrate by testing that all piping, instrumentation and systems are capable of meeting all the criteria contained in this specification. The functional test shall not be conducted until all other required testing has been completed, gas analysis reports have been received, and final, as built drawings have been submitted to the Government. The contractor shall prepare a test plan and a test report.

5.1.20 PROJECT SCHEDULE: The contractor shall prepare a contract progress schedule that clearly defines the tasks necessary to accomplish the work. The schedule shall be a GANTT chart, CPM chart or "ROADMAP". The schedule shall be composed of defined and documented Milestones and Tasks (M&T). Milestones are defined as having no time duration; whereas, Tasks have time duration. The schedule shall show the order and interdependence of M&T and the sequence of M&T execution necessary to complete the contract. The schedule shall show the M&T that comprise the critical path. It shall show the float for those M&T not on the critical path. Procurement and subcontracting tasks may cite total individual procurement or subcontract cost. Copies of M&T documents whose work was completed during a monthly period shall be submitted with the monthly progress report for that period. The M&T documents shall be signed by the contractor to indicate certified completion of the Task. The monthly update of the contract schedule shall contain the date of effect of that update and a list of the revision dates of the schedule. The following shall be included in the schedule as either milestones

or tasks, as a minimum, in addition to others necessary to describe the work:

a. Work Tasks.
b. Contractual execution date requirements milestones.
c. Government furnished information and/or equipment milestones.
d. Contractual submittal date requirements milestones.
e. Procurement activities including major equipment tasks.
f. Subcontract activities tasks.
g. Quality Control checks.

5.1.21 MONTHLY REPORT: The contractor shall provide a monthly report, which shall include an update of the Project Schedule and Valve & Component Database. The revised documents shall reflect any changes occurring since the last updating. It shall also include a current Progress Report containing a summary of all work performed and any problems and their solutions encountered during the reporting period. The report shall include statements of the overall status of the project. This report shall be sent electronically in its entirety to the COR.

5.1.22 PURCHASE ORDERS: The contractor shall submit all purchase orders for all material purchased. The Contractor shall prepare a database or table which cross-references data such as purchase order number, find number (if applicable), and any other pertinent information such as heat numbers. The purchase orders shall be kept in a separate three-ring binder (or binders). Each purchase order (and its applicable data) shall be separated by its own individual tab.

5.1.23 FACILITY FUNCTIONAL TEST: The contractor shall be required to demonstrate by testing that all piping, instrumentation, machinery, and systems meet the following criteria:

a. Are hazard free.
b. Are in accordance with applicable Codes and Standards.

END OF SECTION

SECTION 6

6. TABLES & FIGURES

Valve & Component Database

Designator	Find #	Description	Model #	Manufacturer	Address	City	St.	Zip	Telephone	DWG #	Sys.	Panel/Location	PSI	Body Material	Seat Material	Conn.	Conn. Material	Kit #	Cost

FIGURE 1: VALVE & COMPONENT DATABASE FORMAT

LEGEND

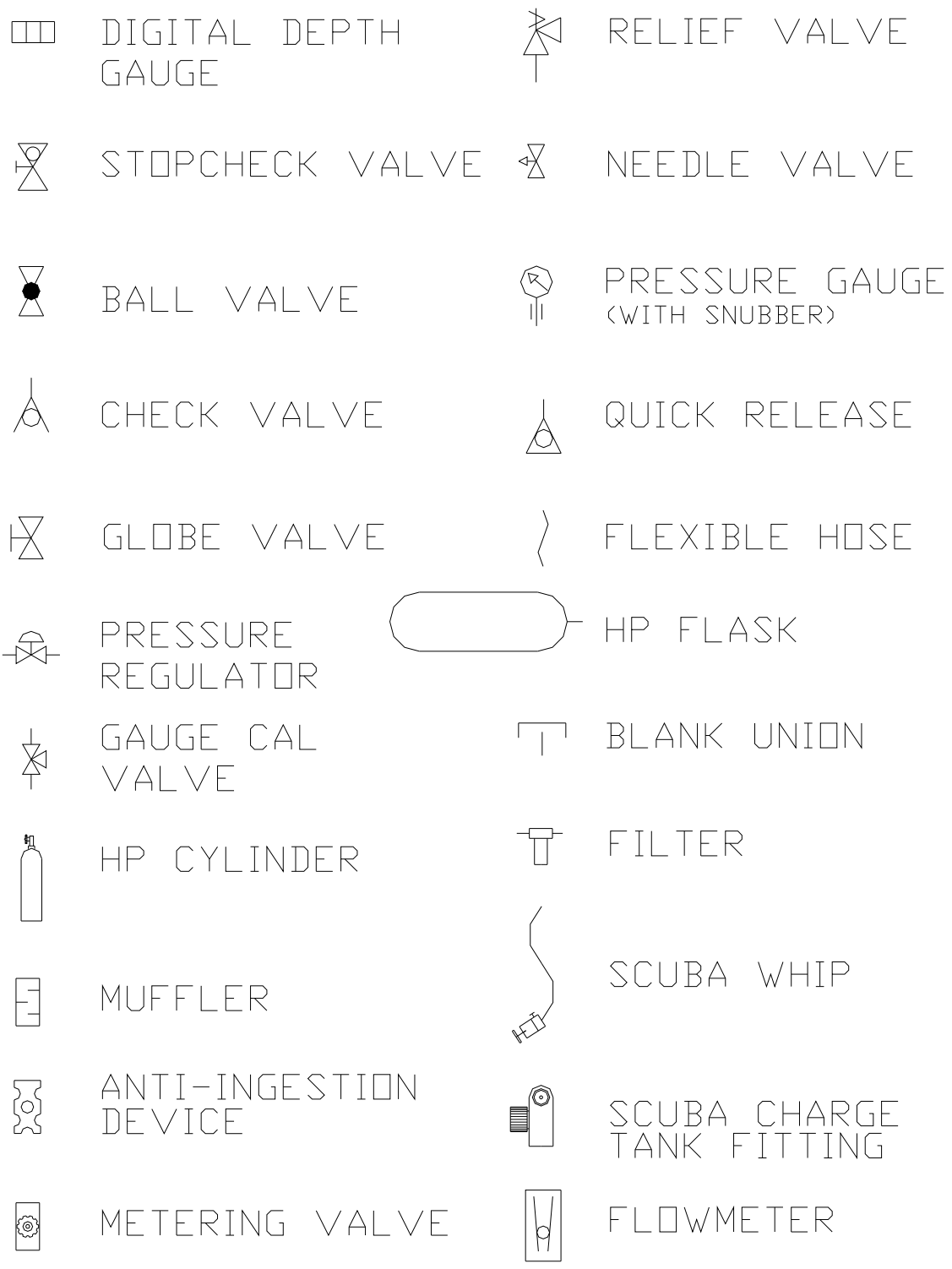


FIGURE 2: LEGEND

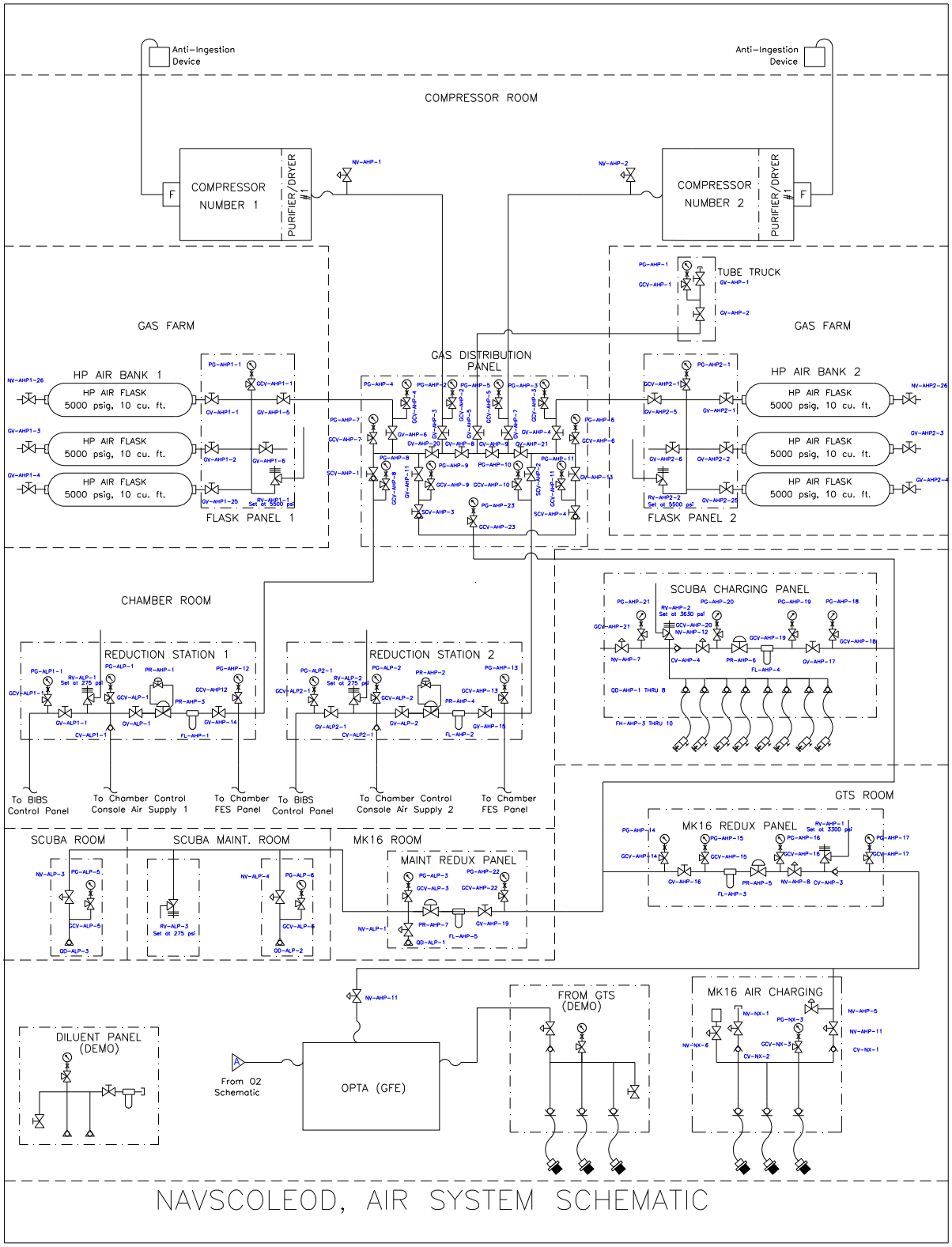


FIGURE 3: AIR SCHEMATIC

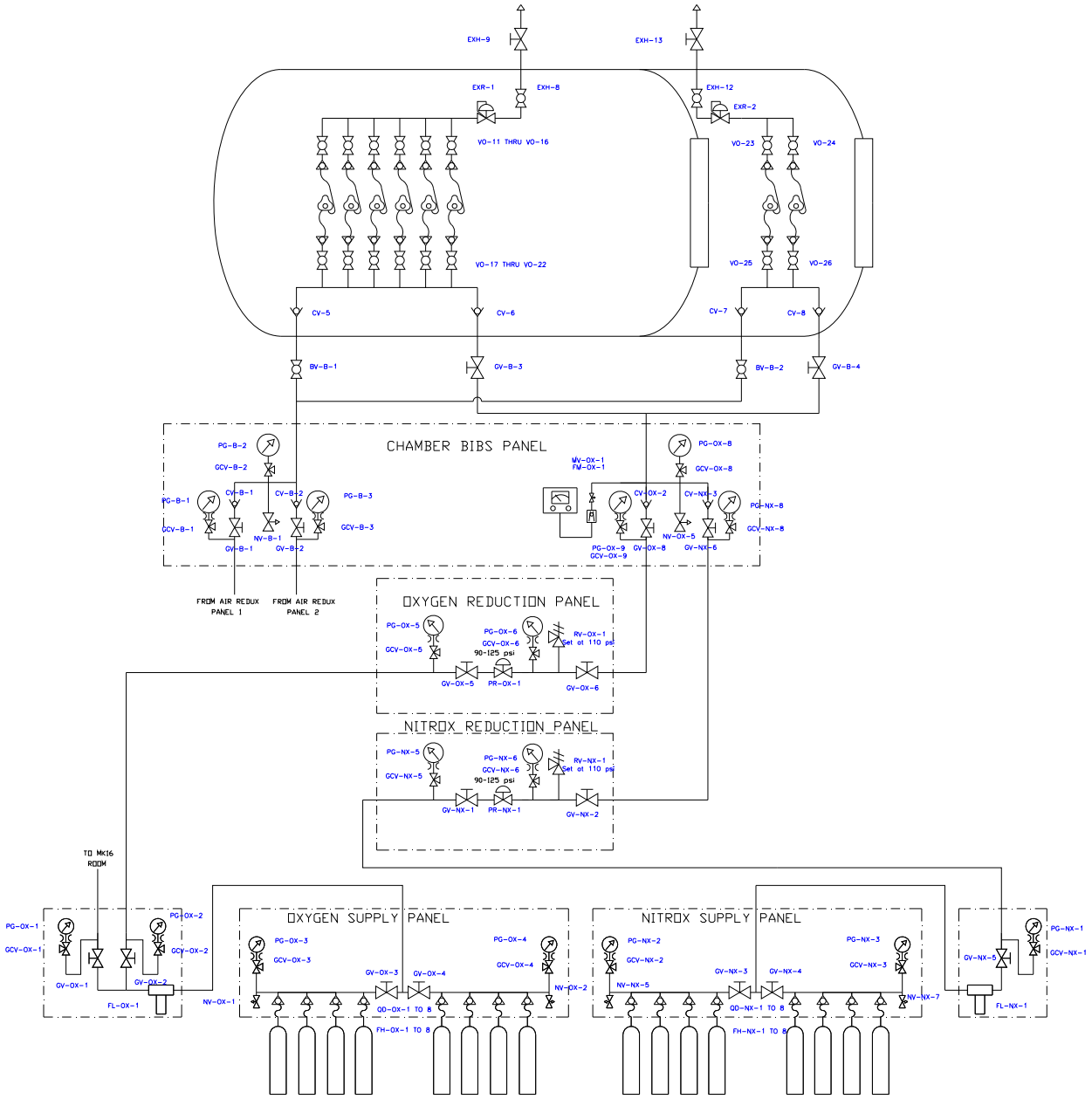


FIGURE 4: BIBS GAS SCHEMATIC

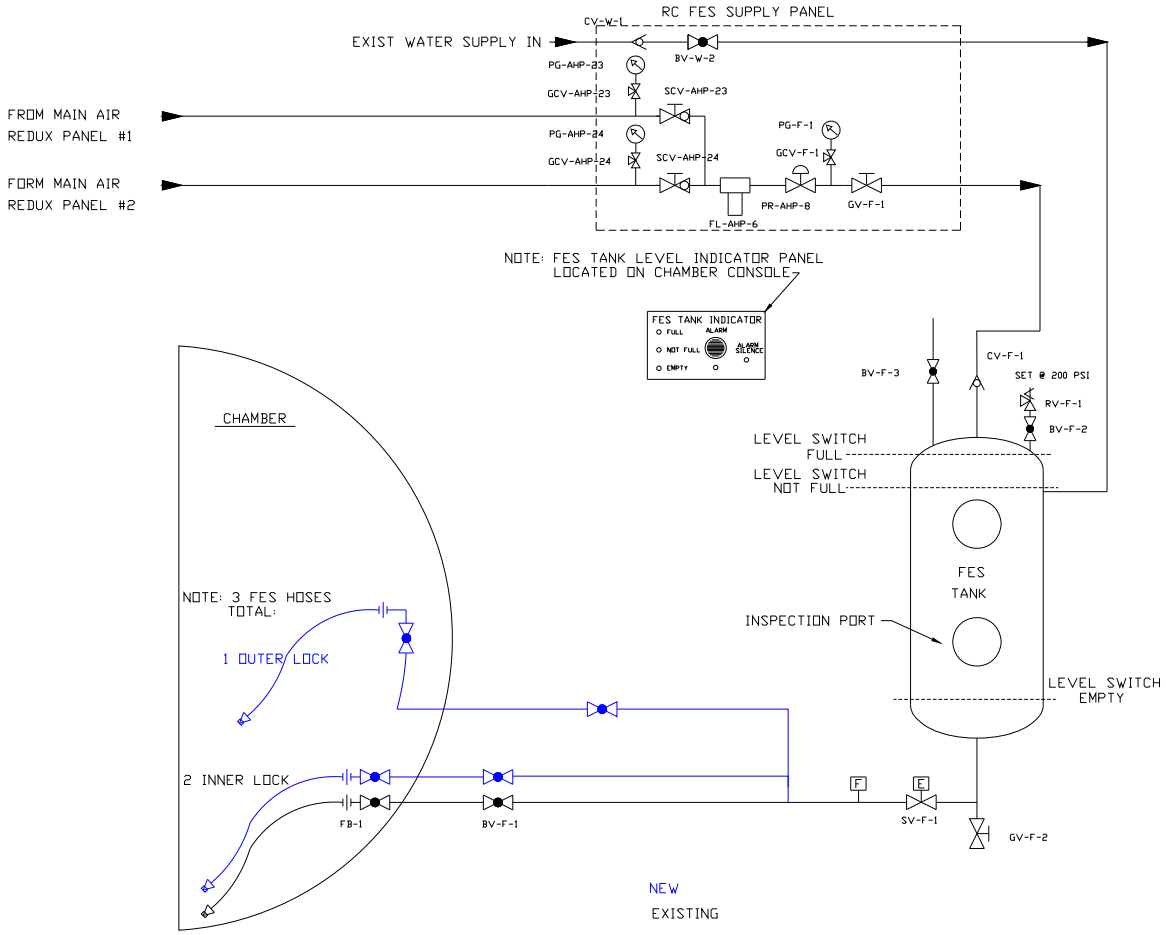


FIGURE 5: FES SCHEMATIC

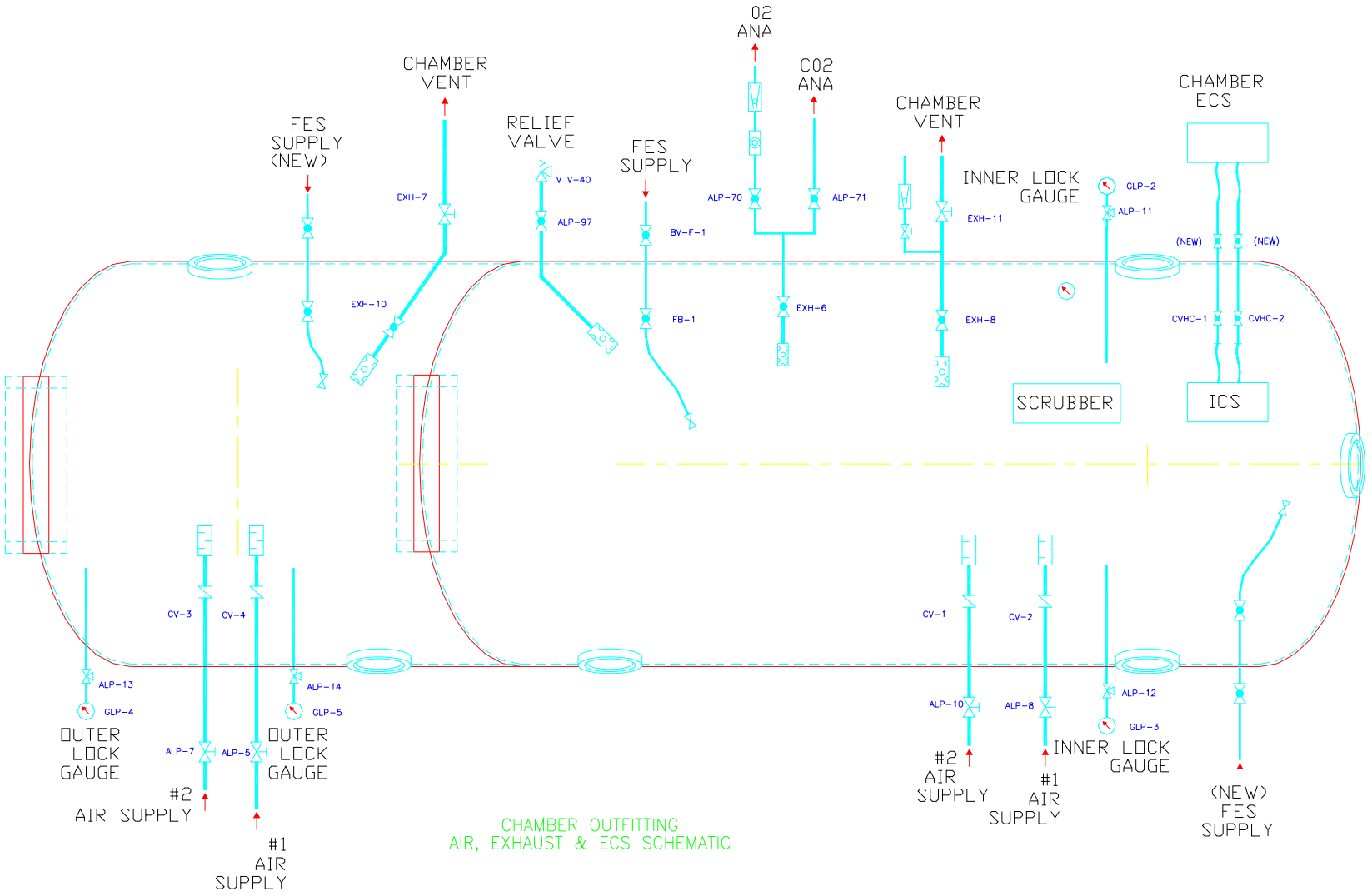


FIGURE 6: CHAMBER OUTFITTING SCHEMATIC

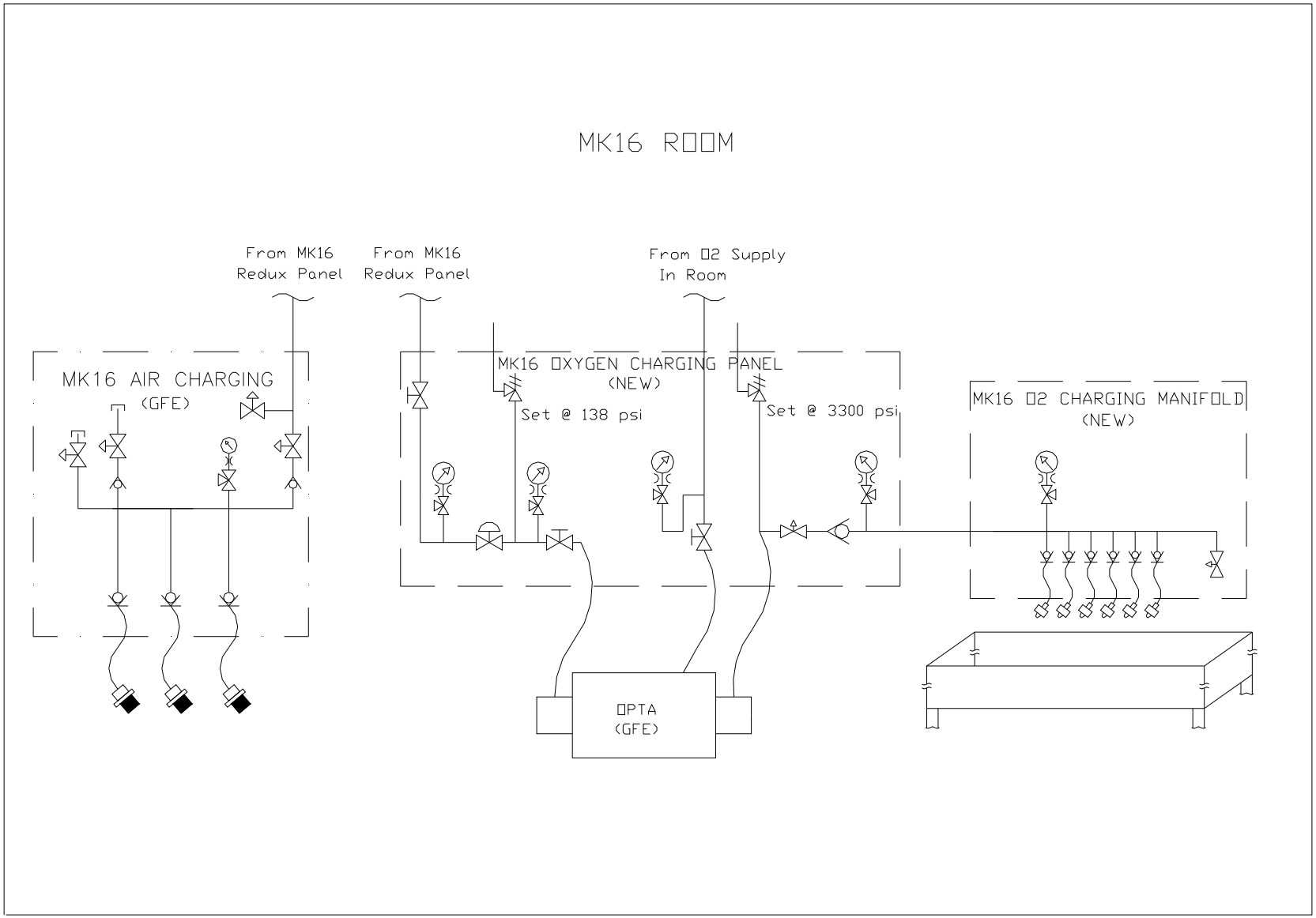


FIGURE 7: MK16 CHARGING SCHEMATIC

END OF SECTION

END OF SPECIFICATION

General Decision Number: FL160170 01/08/2016 FL170

Superseded General Decision Number: FL20150170

State: Florida

Construction Type: Heavy

County: Okaloosa County in Florida.

HEAVY CONSTRUCTION PROJECTS (Including Sewer and Water Lines)

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.15 for calendar year 2016 applies to all contracts subject to the Davis-Bacon Act for which the solicitation was issued on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.15 (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2016. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/08/2016

ENGI0653-012 10/01/2012

	Rates	Fringes
POWER EQUIPMENT OPERATOR:		
Cranes 100 Tons & Over (Conventional & Hydraulic) & Tower Cranes	$ 26.30	11.13
Cranes Under 100 Tons	$ 25.30	11.13
Oiler	$ 23.85	11.13

Cranes with 350 feet or more boom and/or 400 ton capacity - additional $1.10 per hour.

Cranes with 500 feet boom and/or 600 ton capacity - additional $1.45 per hour.

IRON0798-008 01/01/2013

	Rates	Fringes
IRONWORKER, STRUCTURAL	$ 24.09	12.56

LABO0559-003 03/15/2013

	Rates	Fringes
LABORER: Grade Checker	$ 16.40	5.65

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* PAIN0164-006 08/01/2014

	Rates	Fringes
PAINTER: Brush, Roller and Spray	$ 19.50	8.83

SUFL2009-166 06/24/2009

	Rates	Fringes
CARPENTER	$ 15.36	0.00
CEMENT MASON/CONCRETE FINISHER	$ 14.77	3.50
ELECTRICIAN	$ 17.25	3.02
LABORER: Common or General	$ 12.00	0.00
LABORER: Landscape	$ 7.25	0.00
LABORER: Pipelayer	$ 11.51	2.94
LABORER: Power Tool Operator (Hand Held Drills/Saws, Jackhammer and Power Saws Only)	$ 10.63	2.20
OPERATOR: Asphalt Paver	$ 11.59	0.00
OPERATOR: Backhoe Loader Combo	$ 16.10	2.44
OPERATOR: Backhoe/Excavator	$ 13.11	1.51
OPERATOR: Bulldozer	$ 15.00	4.98
OPERATOR: Grader/Blade	$ 16.00	2.84
OPERATOR: Loader	$ 13.89	2.07
OPERATOR: Mechanic	$ 14.32	0.00
OPERATOR: Roller	$ 10.76	0.00
OPERATOR: Scraper	$ 11.00	1.74
OPERATOR: Trackhoe	$ 20.92	5.50
OPERATOR: Tractor	$ 10.54	0.00
TRUCK DRIVER, Includes Dump Truck	$ 8.52	0.25
TRUCK DRIVER: Lowboy Truck	$ 12.73	0.00
TRUCK DRIVER: Off the Road Truck	$ 12.21	1.97

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current

negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

QUALITY ASSURANCE SURVEILLANCE PLAN (QASP)

FOR

HYPERBARIC OVERHAUL AT
NAVAL SCHOOL EXPLOSIVE ORDANCE DISPOSAL (NAVSCOLEOD)

Issued: 1/14/2016

TABLE OF CONTENTS

1 INTRODUCTION 1
1.1 Purpose 1
1.2 Performance Management Approach 1
1.3 Performance Management Strategy 1
2 ROLES AND RESPONSIBILITIES 2
2.1 The Contracting Officer 2
2.2 The Contracting Officer's Technical Representative 2
3 IDENTIFICATION OF REQUIRED PERFORMANCE STANDARDS/QUALITY LEVELS 2
4 METHODOLOGIES TO MONITOR PERFORMANCE 2
4.1 Surveillance Techniques 3
4.2 Customer Feedback 3
4.3 Acceptable Quality Levels 3
5 QUALITY ASSURANCE DOCUMENTATION 3
5.1 The Performance Management Feedback Loop 3
5.2 Monitoring Forms 3
6 ANALYSIS OF QUALITY ASSURANCE ASSESSMENT 4
6.1 Determining Performance 4
6.2 Reporting 4
6.3 Reviews and Resolution 4
ATTACHMENT 1: PERFORMANCE REQUIREMENTS SUMMARY 5
ATTACHMENT 2: SAMPLE QUALITY ASSURANCE MONITORING FORM 6

QUALITY ASSURANCE SURVEILLANCE PLAN
(QASP)

1 INTRODUCTION

This Quality Assurance Surveillance Plan (QASP) is pursuant to the requirements listed in the Statement of Work (SOW) entitled Hyperbaric Overhaul at Naval School Explosive Ordance Disposal (NAVSCOLEOD). This plan sets forth the procedures and guidelines Naval Facilities Engineering and Expeditionary Warfare Center (NAVFAC EXWC) will use in ensuring the required task orders are achieved by the contractor.

1.1 Purpose

1.1.1 The purpose of the QASP is to describe the systematic methods used to monitor performance and to identify the required documentation and the resources to be employed. The QASP provides a means for evaluating whether the contractor is meeting the performance standards/quality levels identified in the SOW and the contractor's quality control plan (QCP), and to ensure that the government pays only for the level of services received.

1.1.2 This QASP defines the roles and responsibilities of all members of the integrated project team (IPT), identifies the performance objectives, defines the methodologies used to monitor and evaluate the contractor's performance, describes quality assurance documentation requirements, and describes the analysis of quality assurance monitoring results.

1.2 Performance Management Approach

1.2.1 The PWS structures the acquisition around "what" service or quality level is required, as opposed to "how" the contractor should perform the work (i.e., results, not compliance). This QASP will define the performance management approach taken by NAVFAC EXWC to monitor and manage the contractor's performance to ensure the expected outcomes or performance objectives communicated in the SOW are achieved. Performance management rests on developing a capability to review and analyze information generated through performance assessment. The ability to make decisions based on the analysis of performance data is the cornerstone of performance management; this analysis yields information that indicates whether expected outcomes for the project are being achieved by the contractor.

1.2.2 Performance management represents a significant shift from the more traditional quality assurance (QA) concepts in several ways. Performance management focuses on assessing whether outcomes are being achieved and to what extent. This approach migrates away from scrutiny of compliance with the processes and practices used to achieve the outcome. A performance-based approach enables the contractor to play a large role in how the work is performed, as long as the proposed processes are within the stated constraints. The only exceptions to process reviews are those required by law (federal, state, and local) and compelling business situations, such as safety and health. A "results" focus provides the contractor flexibility to continuously improve and innovate over the course of the contract as long as the critical outcomes expected are being achieved and/or the desired performance levels are being met.

1.3 Performance Management Strategy

1.3.1 The contractor is responsible for the quality of all work performed. The contractor measures that quality through the contractor's own quality control (QC) program. QC is work output, not workers, and therefore includes all work performed under this contract regardless of whether the work is performed by

contractor employees or by subcontractors. The contractor's QC program will set forth the staffing and procedures for self-inspecting the quality, timeliness, responsiveness, customer satisfaction, and other performance requirements in the SOW. The contractor will develop and implement a performance management system with processes to assess and report its performance to the designated government representative. The contractor's QCP will be submittal with the Preliminary Design Submittal in accordance with paragraph 5.1.10 of the performance work statement. This QASP enables the government to take advantage of the contractor's QC program.

1.3.2 The government representative(s) will monitor performance and review performance reports furnished by the contractor to determine how the contractor is performing against communicated performance objectives. The government will make determination regarding incentives based on performance measurement metric data and notify the contractor of those decisions. The contractor will be responsible for making required changes in processes and practices to ensure performance is managed effectively.

2 ROLES AND RESPONSIBILITIES

2.1 The Contracting Officer

The contracting officer (KO) is responsible for monitoring contract compliance, contract administration, cost control, and for resolving any differences between the observations documented by the Contracting Officer's Technical Representative (COR) and the contractor. The KO will designate one full-time COR as the government authority for performance management. The number of additional representatives serving as technical inspectors depends on the complexity of the services measured, as well as the contractor's performance, and must be identified and designated by the KO.

2.2 The Contracting Officer's Technical Representative

The COR is designated in writing by the KO to act as his or her authorized representative to assist in administering a contract. COR limitations are contained in the written appointment letter. The COR is responsible for technical administration of the project and ensures proper government surveillance of the contractor's performance. The COR is not empowered to make any contractual commitments or to authorize any contractual changes on the government's behalf. Any changes that the contractor deems may affect contract price, terms, or conditions shall be referred to the KO for action. The COR will have the responsibility for completing QA monitoring forms used to document the inspection and evaluation of the contractor's work performance. Government surveillance may occur under the inspection of services clause for any service relating to the contract.

3 IDENTIFICATION OF REQUIRED PERFORMANCE STANDARDS/QUALITY LEVELS

The required performance standards and/or quality levels are included in the SOW and in Attachment 1, "Performance Requirements Summary." The Contractor Performance Assessment Reporting System (CPARS) rates contractor's using five categories; "Exceptional", "Very Good", "Satisfactory", "Marginal", and "Unsatisfactory." If the contractor exceeds the service or performance level, they will receive an "Exceptional" Rating. If the contractor meets the required service or performance level, they will be rated with a "Very Good", "Satisfactory" or "Marginal" rating, depending on the quality of the service and their performance level. If the contractor fails to meet the required service or performance level will result in a rating of "Unsatisfactory." Please note that there are other reasons where a lower or higher rating may be warranted. These reasons will be listed in the evaluation which will be provided to the contractor upon contract completion.

4 METHODOLOGIES TO MONITOR PERFORMANCE

4.1 Surveillance Techniques

In an effort to minimize the performance management burden, simplified surveillance methods shall be used by the government to evaluate contractor performance when appropriate. The primary methods of surveillance are (include those that apply)

- Each month, the COR, shall review the generated documentation and enter summary results into the associated eProject record or by utilizing the Surveillance Activity Checklist, Attachment 2 and uploading into eProjects.
- Periodic monitoring – The COR or NTR typically performs the periodic monitoring on an interval.
- Random monitoring – Will be performed by the COR, NTR or other designated personnel.

4.2 Customer Feedback

The contractor is expected to establish and maintain professional communication between its employees and customers. The primary objective of this communication is customer satisfaction. Customer satisfaction is the most significant external indicator of the success and effectiveness of all services provided and can be measured through customer complaints.

Performance management drives the contractor to be customer focused through initially and internally addressing customer complaints and investigating the issues and/or problems but the customer always has the option to communicate complaints to the COR, as opposed to the contractor.

Customer complaints, to be considered valid, must set forth clearly and in writing the detailed nature of the complaint, must be signed, and must be forwarded to the COR. The COR will accept those customer complaints and investigate using the Quality Assurance Monitoring Form, identified in Attachment 2 and checking the Customer Complaint box.

Customer feedback may also be obtained either from the results of formal customer satisfaction surveys or from random customer complaints.

4.3 Acceptable Quality Levels

The acceptable quality levels (AQLs) included in Attachment 1, Performance Requirements Summary Table, for contractor performance is structured to allow the contractor to manage how the work is performed. For certain critical activities such as those involving; materials data, welding, NDT, cleaning, and As-Built Submittal report, the desired performance level is established at 100 percent.

5 QUALITY ASSURANCE DOCUMENTATION

5.1 The Performance Management Feedback Loop

The performance management feedback loop begins with the communication of expected outcomes. Performance standards are expressed in the SOW and are assessed using the performance monitoring techniques shown in Attachment 1.

5.2 Monitoring Forms

The government's QA surveillance, accomplished by the COR, will be reported using the monitoring forms in Attachment 2. The form, when completed, will document the government's assessment of the contractor's performance under the contract to ensure that the required results are being achieved.

5.2.1 The COR will retain a copy of all completed QA surveillance forms.

6 ANALYSIS OF QUALITY ASSURANCE ASSESSMENT

6.1 Determining Performance

6.1.1 Government shall use the monitoring methods cited to determine whether the performance standards/service levels/AQLs have been met. Attention of prospective bidders is called to the fact that this contract calls for the fabrication of life sensitive support systems. Failure to adhere to the highest standards of metallurgy, welding, oxygen cleanliness and workmanship will create severe hazards to persons working on or near these systems when they are pressurized. If the contractor has not met the minimum requirements, they may be asked to develop a corrective action plan to show how and by what date it intends to bring performance up to the required levels.

6.2 Reporting

6.2.1 Once a month, the COR will update the associated eProject record summarizing the overall results of the quality assurance surveillance of the contractor's performance. This update will include the contractor's submitted monthly progress report and a summary of task order surveillance or the completed quality assurance monitoring form (Attachment 2). This will become part of the QA documentation. It will enable the government to demonstrate whether the contractor is meeting the stated objectives and/or performance standards, including cost/technical/scheduling objectives.

6.3 Reviews and Resolution

6.3.1 The COR may require the contractor's project manager, or a designated alternate, to meet with the KO and other government IPT personnel as deemed necessary to discuss performance evaluation. The KO will define a frequency of in-depth reviews with the contractor, including appropriate self-assessments by the contractor; however, if the need arises, the contractor will meet with the COR as often as required or per the contractor's request. The agenda of the reviews may include:

- Performance assessment data
- Issues and concerns of both parties
- Projected outlook for progress against schedule, including a corrective action plan analysis
- Recommendations for improved efficiency and/or effectiveness

6.3.2 The Quality Action Report (QAR) must coordinate and communicate with the contractor to resolve issues and concerns regarding marginal or unacceptable performance.

6.3.3 The COR and contractor should jointly formulate tactical and long-term courses of action. Decisions regarding changes to metrics, thresholds, or service levels should be clearly documented. Changes to service levels, procedures, and metrics will be incorporated as a contract modification at the convenience of the KO.

ATTACHMENT 1: PERFORMANCE REQUIREMENTS SUMMARY

Required Services (Tasks)	Performance Standards	Acceptable Quality Levels	Methods of Surveillance	Incentive (Positive and Negative)
Material data	Contractor is in compliance with SOW 100% of the time	100%	Plan review conducted by COR. On-site inspection conducted by COR	CPARS Review
Welding	Contractor is in compliance with SOW 100% of the time	100%	Plan review conducted by COR. On-site inspection conducted by COR	CPARS Review
NDT	Contractor is in compliance with SOW 100% of the time	100%	Plan review conducted by COR. On-site inspection conducted by COR	CPARS Review
Cleaning	Contractor is in compliance with SOW 100% of the time	100%	Plan review conducted by COR. On-site inspection conducted by COR	CPARS Review
Create or Update AutoCAD Drawings	Hyperbaric facilities CAD drawings instructions	100%	Final Report Submittal	CPARS Review
As-Built Submittal	Recommended remediation actions agree with draft and final reports	99% of submittal requirements	Draft and Final Report Review	CPARS Review

ATTACHMENT 2: QUALITY ASSURANCE MONITORING FORM

SERVICE or STANDARD: _____

_____

_____

_____

_____

SURVEY PERIOD: _____

SURVEILLANCE METHOD (Check):

❒ Periodic Inspection ❒ Random Sampling ❒ Customer Complaint

LEVEL OF SURVEILLANCE (Check):

❒ Monthly ❒ Weekly ❒ Daily ❒ As needed

PERCENTAGE OF ITEMS SAMPLED DURING SURVEY PERIOD: _____ %

ANALYSIS OF RESULTS:

Observed Service Provider Performance Measurement Rate: _____%

Service Provider's Performance (Check): ❒ Meets Standards

❒ Does Not Meet Standards

Narrative of Performance During Survey Period: _____

_____

_____

_____

_____

PREPARED BY: _____ **DATE:** _____