

**NAVFAC P-1046  
May 1991**

**PRE-SURVEY OUTLINE BOOKLET  
FOR SHORE-BASED U.S. NAVY  
RECOMPRESSION CHAMBER SYSTEMS**



**SYSTEM CERTIFICATION AUTHORITY  
NAVAL FACILITIES ENGINEERING COMMAND  
C/O NFESC DET, CODE 07F  
WASHINGTON NAVY YARD, BLDG 218  
1435 10<sup>th</sup> ST. SE SUITE 3000  
WASHINGTON, DC 20374-5063**

# PSOB ADMINISTRATIVE INFORMATION



ACTIVITY / COMMAND: X \_\_\_\_\_

CODE: X \_\_\_\_\_

TYPE COMMANDER: X \_\_\_\_\_

ADDRESS: X \_\_\_\_\_

MANUFACTURER: X \_\_\_\_\_

X \_\_\_\_\_

SERIAL NUMBER: X \_\_\_\_\_

X \_\_\_\_\_

The responsibility to act as the sponsor, as defined by NAVSEA 22-521-AA-MAN-010, is held by:

X  
\_\_\_\_\_ *Command / Activity / Organization*

PSOB Prepared By: X \_\_\_\_\_  
*Name, Title and Organization*

\_\_\_\_\_  
*Signature*

X \_\_\_\_\_  
*Date*

Sponsor Approval: X \_\_\_\_\_  
*Name, Title and Organization*

\_\_\_\_\_  
*Signature*

X \_\_\_\_\_  
*Date*

NAVFAC SCA Approval: X \_\_\_\_\_  
*Name, Title and Organization*

\_\_\_\_\_  
*Signature*

X \_\_\_\_\_  
*Date*

# REVISIONS

| No. | Prepared By | Date | Approved By | Date | Approved by SCA | Date |
|-----|-------------|------|-------------|------|-----------------|------|
| X   | X           | X    | X           | X    | X               | X    |
| X   | X           | X    | X           | X    | X               | X    |
| X   | X           | X    | X           | X    | X               | X    |

## REVISING THE PRE-SURVEY OUTLINE BOOKLET

When the tenure of certification nears expiration, and a continuance of certification is requested. Selected pages of the PSOB will normally require revisions. These revisions will ensure that the PSOB reflects the latest information pertaining to the system. The pages and times normally requiring revision are as follows:

1. Administration Information - Complete Revision Block.
2. Record of Changes - Enter all changes made.
3. Page 8 - Inspections and Tests (Current Period):
  - Item VII
    - A. Provide Status.
    - B. Provide Date and Results.
    - C. Provide Date and Results.
    - D. Provide Date and Results.
    - E. Provide Latest Dates.
    - F. This item will require revision only if permanently installed hoses have been changed.
4. Pages 10 & 11 - Operation and Maintenance Procedures:
  - Item VIII
    - A. If OPs / EPs have been changed since approval by MAVFAC SCA enter the Serial Number and date of letter authorizing change.
    - B. List any outstanding feedbacks remaining open.
    - C. Enter appropriate “quarter after overhaul number”.
    - D. Enter total number of RECs issued during the last on-site visit.
5. Pages 14 & 15 - On-Site Survey - These pages will be revised by the SCA during the On-Site Survey.
6. Page 16 - Operational Demonstration - This page would require revision only if the diving command wishes to increase the maximum certified depth limit of the system.

# RECORD OF CHANGES

| REV. NO. | DATE | PAGE NO. | ITEMS CHANGED (LTR) | ENTERED BY |
|----------|------|----------|---------------------|------------|
| X        | X    | X        | X                   | X          |
| X        | X    | X        | X                   | X          |
| X        | X    | X        | X                   | X          |

| ITEM I: RECOMPRESSION CHAMBER IDENTIFICATON  |        |        |                              |
|--|--------|--------|------------------------------|
| REQUIREMENT  | STATUS |        | RESPONSE *                   |
|  | RCVD # | APVD # |                              |
| A. Identification of Chamber   | X      | X      | A. Identification of Chamber |
| 1. Working Pressure  |        |        | 1. X                         |
| 2. Number of Locks   |        |        | 2. X                         |
| 3. Shell Material  |        |        | 3. X                         |
| 4. Riveted or Welded Construction  |        |        | 4. X                         |
| 5. ASME Code Stamp   |        |        | 5. X                         |
| 6. Serial Number   |        |        | 6. X                         |
| 7. Manufacture   |        |        | 7. X                         |
| 8. Date of Manufacture   |        |        | 8. X                         |
| 9. National Board Number   |        |        | 9. X                         |
| 10. Viewport Material<br>(Date of Manufacture if Acrylic)  |        |        | 10. X                        |
| B. Identify modifications to chamber's original configuration. (Include modification to lighting, manifolding, communications, wiring, etc.)   | X      | X      | B. X                         |
| C. Justify modifications to original configuration.  | X      | X      | C. X                         |
| D. Provide design concepts and calculation results covering modifications. (Supporting calculations should be provided on a continuation page. | X      | X      | D. X                         |

# For SCA use only: Date and Initial  
\* Use Continuation Sheets as necessary

| ITEM II: RECOMPRESSION PROFILE / OPERATING PARAMETERS   |        |        |            |
|---|--------|--------|------------|
| REQUIREMENT   | STATUS |        | RESPONSE * |
|   | RCVD # | APVD # |            |
| A. Describe the most demanding chamber operations contemplated. Include treatment tables, number of patients and tenders and pressurization and decompression requirements of tenders locking in and out. Where applicable, include similar requirements for surface decompression and pressure testing | X      | X      | A. X       |
| B. Provide here a summary only of Air / Oxygen required and Air / Oxygen available. Supporting calculations should be provided in Appendix A. Air / Oxygen available must be equal to or greater than Air / Oxygen required for both quantity (volume) and pressure.                                    | X      | X      | B. X       |

# For SCA use only: Date and Initial  
\* Use Continuation Sheets as necessary

| ITEM III: RECOMPRESSION CHAMBER AIR SUPPLY SYSTEM   |        |        |            |
|---|--------|--------|------------|
| REQUIREMENT   | STATUS |        | RESPONSE * |
|   | RCVD # | APVD # |            |
| A. Provide drawing number of schematic diagram of systems that furnish air to the chamber, showing all compressed air sources, controls, and processing equipment. Indicate operating parameters such as pressure and volume for appropriate components. Include date drawing was validated and list NAVFAC approval information. | X      | X      | A. X       |
| B. Provide drawing number of detailed plans of air piping covered in schematic diagram.   | X      | X      | B. X       |
| C. Provide air compressor identification and characteristics.   | X      | X      | C. X       |
| D. Provide compressed air processing equipment identification and characteristics. (Filters, separators, regulator make and model numbers, etc.)  | X      | X      | D. X       |

# For SCA use only: Date and Initial  
\* Use Continuation Sheets as necessary

ITEM III: RECOMPRESSION CHAMBER AIR SUPPLY SYSTEM (Continued)

| REQUIREMENT   | STATUS |        | RESPONSE * |
|---|--------|--------|------------|
|   | RCVD # | APVD # |            |
| E. Provide air storage vessel identification and characteristics (ASME, Mil.Spec, etc.)   | X      | X      | E. X       |
| F. Identify primary chamber air supply and describe procedures for shifting to secondary air supply.  | X      | X      | F. X       |
| G. Identify demands placed on compressed air systems other than supplying chamber. Will this demand be used during chamber operations? If so, show that this demand will not degrade system performance or cleanliness. | X      | X      | G. X       |

# For SCA use only: Date and Initial  
 \* Use Continuation Sheets as necessary

| ITEM IV: RECOMPRESSION CHAMBER OXYGEN SUPPLY SYSTEM   |        |        |            |
|---|--------|--------|------------|
| REQUIREMENT   | STATUS |        | RESPONSE * |
|   | RCVD # | APVD # |            |
| A. Provide drawing numbers of schematic diagram of system which supplies chamber oxygen, showing all storage flasks, controls, and processing equipment. List NAVFAC approval info. | X      | X      | A. X       |
| B. Provide drawing numbers of detailed plans of the oxygen system covered in the schematic diagram.   | X      | X      | B. X       |
| C. Provide oxygen processing equipment identification and characteristics (filters, regulators, etc.)   | X      | X      | C. X       |
| D. Identify demands placed on oxygen system other than supplying the chamber.   | X      | X      | D. X       |
| E. Identify the chamber's oxygen supply and describe procedures for supplying oxygen to the chamber.  | X      | X      | E. X       |

# For SCA use only: Date and Initial  
\* Use Continuation Sheets as necessary

ITEM IV: RECOMPRESSION CHAMBER OXYGEN SYSTEM (Continued)

| REQUIREMENT   | STATUS |        | RESPONSE * |
|---|--------|--------|------------|
|   | RCVD # | APVD # |            |
| F. Provide manufacturer's model and serial numbers for the following: |        |        | F.         |
| 1. O <sub>2</sub> back pressure regulator                             | X      | X      | 1. X       |
| 2. O <sub>2</sub> pressure regulator                                  | X      | X      | 2. X       |
| 3. O <sub>2</sub> monitor   | X      | X      | 3. X       |
| 4. O <sub>2</sub> BIBS masks  | X      | X      | 4. X       |

# For SCA use only: Date and Initial  
 \* Use Continuation Sheets as necessary

ITEM V: ELECTRICAL SYSTEM SUPPORTING RECOMPRESSION CHAMBER OPERATIONS

| REQUIREMENT   | STATUS |        | RESPONSE * |
|---|--------|--------|------------|
|   | RCVD # | APVD # |            |
| A. Provide drawing number of schematic diagram of electrical circuits that support the recompression chamber. | X      | X      | A. X       |
| B. Describe primary and secondary (emergency) lighting arrangements for chamber operations.                   | X      | X      | B. X       |

# For SCA use only: Date and Initial  
 \* Use Continuation Sheets as necessary

ITEM VI: TREATMENT SUPPLIES AND OTHER PERTINENT MATERIALS

| REQUIREMENT   | STATUS |        | RESPONSE *   |
|---|--------|--------|--|
|   | RCVD # | APVD # |  |
| <p>A. List all materials to be stored in or carried into the chamber in the course of its utilization. Include recognition statements of material toxic or flammable characteristics / nature when such exist.</p> <p>Note: Availability and accessibility of supplies, material and equipment required for recompression treatment is to be in accordance with the U.S. Navy Diving Manual, Volume 1, Chapter 8.</p> | X      | X      | <p>A.</p> <ol style="list-style-type: none"> <li>1. X</li> <li>2. X</li> <li>3. X</li> <li>4. X</li> <li>5. X</li> <li>6. X</li> <li>7. X</li> <li>8. X</li> <li>9. X</li> <li>10. X</li> <li>11. X</li> <li>12. X</li> <li>13. X</li> </ol> |

# For SCA use only: Date and Initial  
 \* Use Continuation Sheets as necessary

| ITEM VII: INSPECTIONS AND TESTS (Current Period)  |        |        |            |
|---|--------|--------|------------|
| REQUIREMENT   | STATUS |        | RESPONSE * |
|   | RCVD # | APVD # |            |
| A. Provide status report of known material deficiencies for recompression chamber and support systems.  | X      | X      | A. X       |
| B. Report date and results of last pressure / leak integrity test of air and oxygen piping systems.   | X      | X      | B. X       |
| C. Provide date and results of last chamber pressure / leak test conducted in accordance with the U.S. Navy Diving Manual, Volume 1, Appendix D.  | X      | X      | C. X       |
| D. Provide date and results of last air purity test.  | X      | X      | D. X       |
| E. Report latest gauge calibration dates.   | X      | X      | E. X       |
| F. Report manufacturer, manufacturer's part number, and working, test and burst pressure data for all flexible hoses permanently installed in the system. Include inter-connecting hoses for portable compressor systems. | X      | X      | F. X       |

# For SCA use only: Date and Initial  
\* Use Continuation Sheets as necessary

| ITEM VII: INSPECTIONS AND TESTS (Current Period) (Continued)  |        |        |            |
|---|--------|--------|------------|
| REQUIREMENT   | STATUS |        | RESPONSE * |
|   | RCVD # | APVD # |            |
| G. For initial construction systems or redesigned systems being re-certified upon completion of major overhaul:   | X      | X      | G.         |
| 1. Provide results of operational flow tests conducted in accordance with NAVFAC approved test procedures.  | X      | X      | 1. X       |
| 2. Provide results of operational pressure tests conducted in accordance with NAVFAC approved test procedures.  | X      | X      | 2. X       |
| H. Provide date and results of last air storage vessel inspection and hydrostatic test and indicate criteria used (e.g. NSTM Chapter 551, NAVFAC MO-324). | X      | X      | H. X       |

# For SCA use only: Date and Initial  
\* Use Continuation Sheets as necessary

| ITEM VIII: OPERATIONS AND MAINTENANCE PROCEDURES  |        |        |   |
|---|--------|--------|---|
| REQUIREMENT   | STATUS |        | RESPONSE *  |
|   | RCVD # | APVD # |   |
| <p>A. Provide operating and emergency procedures for the overall diving system and indicate that they have been:</p> <p>1. Validated by the diving staff.</p> <p>2. Approved by NAVFAC.</p>   | X      | X      | <p>A.</p> <p>1. Date Validated:<br/>X<br/>Validated By:<br/>X</p> <p>2. NAVFAC Approval Letter Serial Number:<br/>X<br/>NAVFAC Approval Letter Date:<br/>X</p>  |
| <p>B. Provide PMS instructions for the overall diving system. Ensure MIPs and MRCs are provided for:</p> <p>1. Compressors</p> <p>2. Flasks</p> <p>3. Volume Tanks</p> <p>4. Filters</p> <p>5. Moisture Separators</p> <p>6. Viewports</p> <p>7. Chamber Communications</p> <p>8. Regulating/Reducing Valves</p> <p>9. System Gauges</p> <p>10. Relief Valves</p> <p>11. System Valves</p> <p>12. Door Gaskets</p> <p>13. System Flexible Hoses</p> <p>14. Lights</p> <p>15. Oxygen Breathing Masks</p> <p>16. Sound Powered Phones</p> <p>17. Power Cables/Ground Straps</p> <p>18. Receptacles</p> <p>19. Air Samples</p> | X      | X      | <p>B.</p> <p>1. X</p> <p>2. X</p> <p>3. X</p> <p>4. X</p> <p>5. X</p> <p>6. X</p> <p>7. X</p> <p>8. X</p> <p>9. X</p> <p>10. X</p> <p>11. X</p> <p>12. X</p> <p>13. X</p> <p>14. X</p> <p>15. X</p> <p>16. X</p> <p>17. X</p> <p>18. X</p> <p>19. X</p> |

# For SCA use only: Date and Initial  
\* Use Continuation Sheets as necessary

ITEM VIII: OPERATION AND MAINTNENACE PROCEDURES (Continued)

| REQUIREMENT  | STATUS |        | RESPONSE *   |
|--|--------|--------|--|
|  | RCVD # | APVD # |  |
| C. List all PMS related deficiencies and all PMS feed backs submitted since last certification. (Include all MRCs not performed as required or as scheduled.)  | X      | X      | C.<br>1. X<br>2. X<br>3. X<br>4. X<br>5. X<br>6. X<br>7. X<br>8. X<br>9. X |
| D. List by "Quarter after overhaul number" the PMS quarterly Schedule in effect at the time of the on-site survey. For systems or equipment not covered by PMS list applicable maintenance instruction and submit the maintenance program to SCA for review. | X      | X      | D. X   |
| E. List by short title all Reentry Control (REC) procedures issued since last certification. Provide REC procedures / instructions for review by SCA during on-site survey.  | X      | X      | E.<br>1. X<br>2. X<br>3. X<br>4. X<br>5. X<br>6. X<br>7. X<br>8. X<br>9. X |

# For SCA use only: Date and Initial  
 \* Use Continuation Sheets as necessary

ITEM VIII: OPERATIONS AND MAINTENANCE PROCEDURES (Continued)

| REQUIREMENT  | STATUS |        | RESPONSE *   |
|--------------|--------|--------|--|
|              | RCVD # | APVD # |  |
| E. Continued |        |        | E.<br>11. X<br>12. X<br>13. X<br>14. X<br>15. X<br>16. X<br>17. X<br>18. X<br>19. X<br>20. X<br>21. X<br>22. X<br>23. X<br>24. X<br>25. X<br>26. X |

# For SCA use only: Date and Initial  
 \* Use Continuation Sheets as necessary

| ITEM IX: ON-SITE SURVEY (Note: Request Survey via Sponsor to NAVFAC)              |        |        |       |
|---|--------|--------|-------|
| REQUIREMENT   | STATUS |        | NOTES |
|   | INSP*  | APVD # |       |
| Note: This item is performed by the System Certification Authority.               |        |        |       |
| A. Inspection of material condition of chamber, equipment and support systems.    | X      | X      | A. X  |
| B. Verification of accessibility to vital equipment.                              | X      | X      | B. X  |
| C. Verification of conformance to "as built" drawings.                            | X      | X      | C. X  |
| D. Verification of material identification and control.                           | X      | X      | D. X  |
| E. Verification of material condition of viewports and their date of manufacture. | X      | X      | E. X  |
| F. Verification of oxygen system operability.                                     | X      | X      | F. X  |
| G. Review of Reentry Control records.   | X      | X      | G. X  |
| H. Review of fabrication, construction, & assembly procedures / records.          | X      | X      | H. X  |

\* For SCA use only: Date Inspected and Initial

# For SCA use only: Date Approved and Initial

ITEM IX: ON-SITE SURVEY (Note: Request Survey via Sponsor to NAVFAC) (Continued)

| REQUIREMENT  | STATUS |        | NOTES |
|--|--------|--------|-------|
|  | INSP*  | APVD # |       |
| I. For initial construction or refurbished systems, review of test plans / procedures / records for fabrication, construction, and assembly. | X      | X      | I. X  |
| J. Review of proof and performance test procedures / records (i.e. leak tests, hydrostatic tests, operational tests, etc.).                  | X      | X      | J. X  |
| K. Review of system cleaning procedures and records.   | X      | X      | K. X  |
| L. Review of current system air sampling results.  | X      | X      | L. X  |

\* For SCA use only: Date Inspected and Initial

# For SCA use only: Date Approved and Initial

| ITEM X: OPERATIONAL DEMONSTRATION (For SCA Use Only)                         |        |        |       |
|--|--------|--------|-------|
| REQUIREMENT  | STATUS |        | NOTES |
|  | INSP*  | APVD # |       |
| A. Name of SCA or designated representative.                                 | X      | X      | A. X  |
| B. Date of operational demonstration.  | X      | X      | B. X  |
| C. Primary air demonstration to 165 fsw.                                     | X      | X      | C. X  |
| 1. Provide Maximum depth achieved  | X      | X      | 1. X  |
| 2. Total time to descend (Inner lock only. Maximum allowable time 3 minutes) | X      | X      | 2. X  |
| D. Secondary air demonstration to 165 fsw.                                   | X      | X      | D. X  |
| 1. Maximum depth achieved  | X      | X      | 1. X  |
| 2. Total time to descend (Inner and outer locks no time limit.)              | X      | X      | 2. X  |
| E. General comments  | X      | X      | E. X  |

\* For SCA use only: Date Inspected and Initial

# For SCA use only: Date Approved and Initial

This recompression chamber system has been found to be functional and postdive inspection verifies that no condition exists or has developed as a result of this operational demonstration which could be dangerous or impair the satisfactory operation of this system.

---

Signature and Date

APPENDIX A: SUPPORTING AIR / OXYGEN CALCULATIONS

