

FOR OFFICIAL USE ONLY

NAVSHIPS 0903-002-4010

Training Aid Booklet-Volume 1

USS BONEFISH

SS582

PIPING

Revised By

PEARL HARBOR NAVAL SHIPYARD

NAVY DEPARTMENT

BUREAU OF SHIPS

DECEMBER 1965

LIST OF EFFECTIVE PAGES

| Page Numbers | Change In Effect | Page Numbers | Change In Effect | Page Numbers | Change in Effect |
|-------------------------|------------------|----------------------|------------------|------------------|------------------|
| Title Page | Original | 18, 18A, 18-1, 18-1A | Original | 34, 34A, 35, 35A | Original |
| List of Effective Pages | Original | 19, 19A, 19-1, 19-1A | Original | 35-1, 35-1A | Original |
| A thru H | Original | 20, 20A, 21, 21A | Original | 36, 36A, 37 | Original |
| 1 thru 3, 3A | Original | 21-1, 21-1A, 22, 22A | Original | 38, 38A, 39, 39A | Original |
| 4 thru 6, 6A | Original | 23, 23A, 23-1, 23-1A | Original | 40, 40A, 41, 41A | Original |
| 7 thru 9, 9A | Original | 24, 24A | Original | 42, 42A, 43, 43A | Original |
| 10 thru 13, 13A | Original | 25 thru 30, 30A | Original | 43-1, 44, 44A | Original |
| 14, 14A, 15, 15A | Original | 31, 31A, 32, 32A | Original | 45, 45A, 46 | Original |
| 16, 16A, 16-1, 16-1A | Original | 33, 33A, 33-1, 33-1A | Original | 47, 47-1, 47-1A | Original |
| 17, 17A, 17-1, 17-1A | Original | 33-2, 33-2A | Original | 48, 48A, 49, 49A | Original |

TAB-SS582-1 DISTRIBUTION: NSY MAREI, PG SCHOOL, SUBLANF, SUBPAC, NSD PHILA, SUBBASE NEW LONDON,
 SUBBASE NAVY #128, BUSHIPS CODE 525, Buship CODE 247.

FOREWORD

THIS BOOKLET HAS BEEN PREPARED TO ACQUAINT OPERATING PERSONNEL WITH MACHINERY AND HULL PIPING SYSTEMS. FOR SIMPLICITY, THE SYSTEMS ARE PRESENTED IN DIAGRAMMATIC FORM. IN MOST CASES, THE SYSTEM COMPONENTS ARE SHOWN IN THE PROPER COMPARTMENTS, ALTHOUGH NOT IN THEIR RELATIVE POSITIONS.

ALL PIPING, REGARDLESS OF ACTUAL SIZE, IS DEPICTED BY LINES OF CONSTANT WIDTH. COLOR HAS BEEN USED TO IDENTIFY EITHER THE FLUID ITSELF, OR FUNCTION OF THE FLUID FLOWING IN THE PIPING. A COLOR LEGEND APPEARS ON EACH PAGE HAVING COLOR.

THE DIAGRAMMATIC SYMBOLS USED TO DEPICT VARIOUS COMPONENTS ARE IDENTIFIED ON A SYMBOLS PAGE IN THE FRONT MATTER OF THE BOOKLET. A FEW OF THE DIAGRAMMATIC PAGES WHICH IDENTIFY COMPONENT FUNCTIONS.

FOR DESCRIPTIONS AND OPERATION OF THE SHIP'S PIPING SYSTEMS, REFER TO THE SHIP INFORMATION BOOK, VOLUME 2: PIPING, HEATING, VENTILATION, AND AIR CONDITIONING SYSTEMS.

TABLE OF CONTENTS

LIST OF EFFECTIVE PAGES
 TABLE OF CONTENTS
 ABBREVIATIONS
 SYMBOLS
 VALVE HANDLE COLOR CODE
 PARTIAL INDEX OF TECHNICAL PUBLICATIONS






































































| PLATE | TITLE | PLATE | TITLE | PLATE | TITLE |
|-------|---|-------|---------------------------------------|-------|---|
| 1 | HULL STRUCTURAL DIAGRAM | 20 | LP MGT BLOW | 39 | EXTERNAL HYDRAULIC SYSTEM |
| 2 | OUTBOARD FITTINGS | 21 | MGT AND NEGATIVE TANK ARRANGEMENTS | 39-1 | EXTERNAL HYDRAULIC MAST (TYPICAL) |
| 3 | HULL AND COMPARTMENT INTEGRITY | 21-1 | TRIM PUMP AND NEGATIVE TANKS CONTROL | 36 | COMPOSITE NO. 1 PERISCOPE AND FAIRING |
| 4 | TANKS AND ACCESS | 22 | VARIABLE BALLAST COMPOSITES | 37 | STEERING AND DIVING COMPOSITE |
| 5 | CONTROL FACILITIES | 23 | TRIM AND DRAIN SYSTEM - FWD | 38 | STEERING SYSTEM |
| 6 | PRIMARY SHIP CONTROL | 23-1 | TRIM AND DRAIN SYSTEM - AFT | 39 | SEEN PLANE'S SYSTEM |
| 7 | MANTABILITY | 24 | INDUCTION AND EXHAUST COMPOSITE | 40 | FAIRWATER PLANE'S SYSTEM |
| 8 | MACHINERY ARRANGEMENTS | 25 | INDUCTION AND EXHAUST CONTROLS | 41 | NEUTRE HYDRAULIC OPERATING-SEA VALVE |
| 9 | PROPULSION SHAFT ARRANGEMENTS | 26 | VENTILATION SYSTEM | 42 | SEAWATER SERVICE SYSTEM |
| 10 | TORPEDO AND TUBE ARRANGEMENTS | 27 | AIR CONDITIONING, FRESH SYSTEM | 43 | FUEL TRANSFER AND COMPENSATING |
| 11 | TYPICAL TORPEDO TUBE SYSTEMS | 28 | AIR CONDITIONING, HEATING SYSTEM | 43-1 | EXP. COLL AND FUEL TANK ARR |
| 12 | TORPEDO RAM AND CONTROL | 29 | AIR CONDITIONING, COMPOSITE | 44 | FUEL SERVICE AND ENGINE FUEL |
| 13 | TORPEDO HOIST | 30 | DISTILLING SYSTEM | 45 | PROPULSION LUBE SYSTEM |
| 14 | ANCHOR WINDLASS AND CAPSTAN-HYDRAULIC OPERATION | 31 | POTABLE WATER SYSTEM | 46 | DIESEL GEN AND SNORKEL EXHAUST CONTROL |
| 15 | TRASH EJECT - SIGNAL EJECT PYRO FLOOD | 32 | PLUMBING, FRESH AND DRAIN | 47 | COOLING, DIESEL GENERATOR AND EXHAUST (TYPICAL) |
| 16 | MAIN OVERBOARD SYSTEM | 33 | MAIN AND VITAL HYDRAULIC POWER PLANTS | 47-1 | SW COOLING, DIESEL GENERATOR AND EXHAUST |
| 16-1 | ESCAPE ARRANGEMENTS | 33-1 | MAIN AND VITAL HYDRAULIC SYSTEM - FWD | 48 | PROPULSION BATTERY SYSTEMS |
| 17 | HP AIR SYSTEM (3000 PSI) FWD | 33-2 | MAIN AND VITAL HYDRAULIC SYSTEM - AFT | 49 | REFRIGERATION FREON SYSTEM |
| 17-1 | HP AIR SYSTEM (3000 PSI) AFT | 34 | INTERNAL MAST HOISTS | | |
| 18 | SERVICE AIR SYSTEM - FWD | | | | |
| 18-1 | SERVICE AIR SYSTEM - AFT | | | | |
| 19 | HP AND EMER MGT BLOW | | | | |
| 19-1 | EMER MGT BLOW - ACT AIR | | | | |

ABBREVIATIONS

| | | | | | |
|-----------------|---|--------|--------------------------------|------|------------------------|
| AC | alternating current or air conditioning | CONN | connection | EXP | expansion |
| ACCUIM | accumulator | CONT | control | EXT | external |
| AMPL | amplifier | CW | circulating water or clockwise | FHT | fuel ballast tank |
| ANT | antenna | CYL | cylinder | FIL | filter |
| ASSY | assembly | DC | direct current | FL | flushing |
| ATT | attached | DECEL | deceleration | FO | fuel oil |
| AUX | auxiliary | DET | detector | FW | fresh water |
| BAL | balance | DF | drinking fountain | FWD | forward |
| BAT. | battery | DIR | directional | GAL | gallon |
| BHD | bulkhead | DISCHG | discharge | GEN | generator |
| BRG | bearing | DK | deck | GPM | gallons per minute |
| CCW | counterclockwise | DP | dash pot | HP | high pressure |
| CFM | cubic feet per minute | DR | drain | HW | hot water |
| CFOT | clean fuel oil tank | DSTL | distiller | HYD | hydraulic |
| CHG | charging | DW | distilled water | INBD | inboard |
| CHC | circulating | EJECT. | ejector | IND | indicator or induction |
| CO ₂ | carbon dioxide | ELEC | electric | KVA | kilovolt-ampere |
| CO ₂ | collecting | ELEX | electronic | LAV | lavatory |
| COIL | collecting | EMER | emergency | LKD | locked |
| COMP | compensating | ENG | engine | LKR | locker |
| COMPA | compressed air | EQUIP. | equipment | LO | lubricating oil |
| COMFR | compressor | ESC | escape | | |
| COMPT | compartment | EXH | exhaust | | |
| COND | condensate | | | | |

ABBREVIATIONS

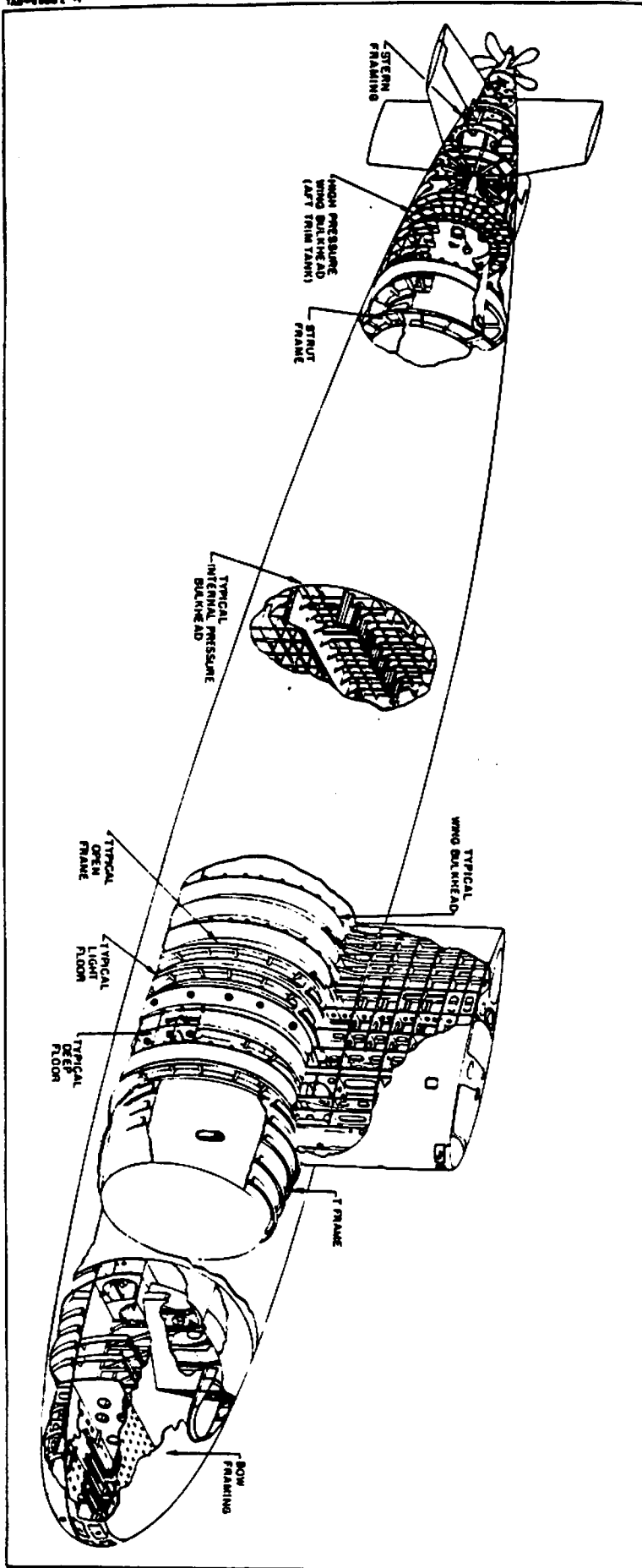
| | | | | | |
|-------|--------------------|--------|------------------------|--------|----------------------------------|
| L.P. | low pressure | OXY | oxygen | SALV | salvage |
| LUBR | lubricate | PERIS | periscope | SAN | sanitary |
| MACH | machinery | PL | plate | SERV | service |
| MAG | magazine, magnetic | PNEU | pneumatic | SH | shower or shut |
| MAN. | manifold | PRESS. | pressure | SR | stateroom |
| MANUV | maneuvering | PROP. | propulsion | ST | store |
| MBT | main ballast tank | PSI | pounds per square inch | STRD | starboard |
| MG | motor generator | PURIF | purifier | STDBY | standby |
| MN | main | PWR | power | STOW. | stowage |
| MOT | motor | PYRO | pyrotechnic | SUB | submersible |
| N | neutral | QTR | quarters | SUCT | suction |
| NE | neutral exhaust | R | right | SW | salt water, sea water, or switch |
| NEG | negative | REC | receiver | SWBD | switchboard |
| NEUT | neutral | RED. | reduction | SYS | system |
| NFO | normal fuel oil | REFR | refrigeration | TEMP | temperature |
| NO. | number | REG | regulator | TK | tank |
| NOR. | normal | REL | release | TRANS | transfer |
| NS | natural supply | REPLEN | replenish | UNLKID | unlocked |
| OP | open | HET | return | V | valve |
| OPR | operated | HETR | retractable | WC | water closet |
| OUTHD | outboard | RM | room | WR | wardroom |
| OVHD | overboard | RPM | revolutions per minute | WRSH | wardroom stateroom |
| OVFL | overflow | SAF | safety | | |

| VALVE SYMBOLS | VALVE SYMBOLS | VALVE SYMBOLS | VALVE SYMBOLS |
|--|---|---|---|
|  GLOBE OR GATE  GLOBE, NOSE  LOCKED SHUT  LOCKED OPEN  ANGLE, HULL  QUICK OPENING  KNOCKER VALVE  CROSS  PROPORTIONING, THREE WAY  NEEDLE  LOCK AND SHIELD |  CHECK  STOP CHECK  BACK PRESSURE  RELIEF  STOP COCK, 2 WAY  STOP COCK, 3 WAY  STOP COCK, 3 WAY  STOP COCK, 4 WAY  FLOAT OPERATED  PRESSURE REDUCING  FLOW CONTROL  BALL |  MOTOR OPERATED  SOLENOID CONTROL  SOLENOID ACTUATED, HYDRAULIC OPERATED  PNEUMATIC OPERATED <p>GENERAL SYMBOLS</p>  SIGHT FLOW  REDUCER  GAGE LINE CROSS OVER  SWING CONNECTION  HOSE, SOUND, ISOLATION OR ELECTRIC  VENT  FUNNEL  ORIFICE |  EXPANSION VALVE, MANUAL  EXPANSION VALVE, THERMOSTATIC <p>MANIFOLD</p> <p>GENERAL SYMBOLS</p>  FILTER  STRAINER  METAL EDGE STRAINER  BASKET STRAINER  DUPLEX STRAINER  DUPLEX STRAINER, MAGNETIC  PUMP, ROTARY LMO OR GEAR |
|  PUMP, CENTRIFUGAL  PUMP, HAND  SEPARATOR, WATER  AIR ELIMINATOR  FLASK, AIR, OXYGEN, ETC  SHOWER HEAD AND MIXING VALVE  LAV LAVATORY  SINK  UR URINAL  TRAP, PLUMBING  WATER CLOSET |  DECK DRAIN WITH BUILT-IN CHECK OR BELLOWS  EXPANSION JOINT  COOLING OR HEATING COIL  TEST CASTING, SPRINKLER SYSTEM AND DISTANT READING  THERMOMETER, LOCAL AND DISTANT READING  GAGES  METER, NOT ELECTRICAL  SALINITY TEST CELL  LIQUIDOMETER GAGE  NOTAMETER OR FLOWMETER  VENTURI  ALARM  LEAK DETECTOR  SOUNDING HOOD | | |

HANDLE COLOR CODE

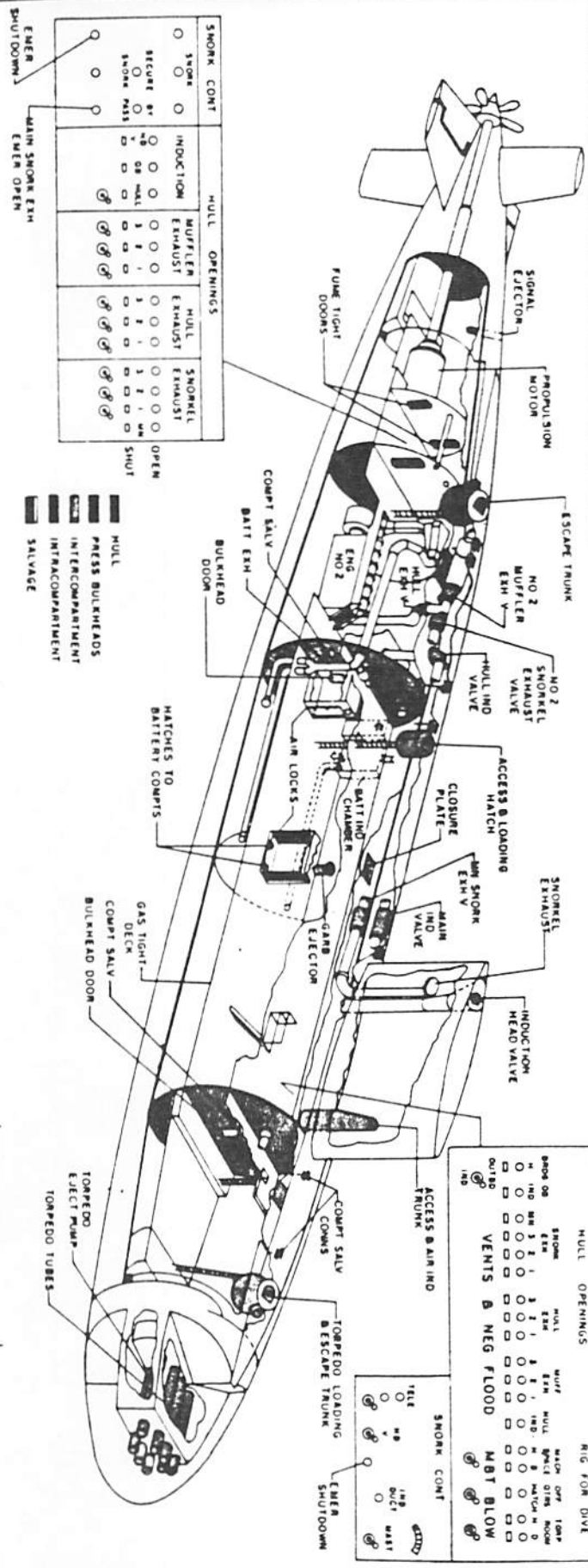
Handles on the subject ships will be colored as follows:

| | |
|--------------------------------------|------------------------|
| Access Fittings | Black |
| Fire Fighting Equipment | Red |
| Sea Water Valves | Green |
| Fresh Valves | Purple |
| Fresh Water Valves | Blue |
| Fuel and Lube Valves | Yellow/Red lettering |
| Hydraulic Valves | Yellow/Black lettering |
| Hydrogen Valves | Orange |
| HP (1000 PSI) Air and Nitrogen | Gray |
| LP Air | Tan |
| Oxygen Valves | Light Green |



NAVSHIPS TAB-35082-1

HULL STRUCTURAL DIAGRAM



MACHINERY COMPARTMENT MIDSHIP'S COMPARTMENT TORPEDO COMPART

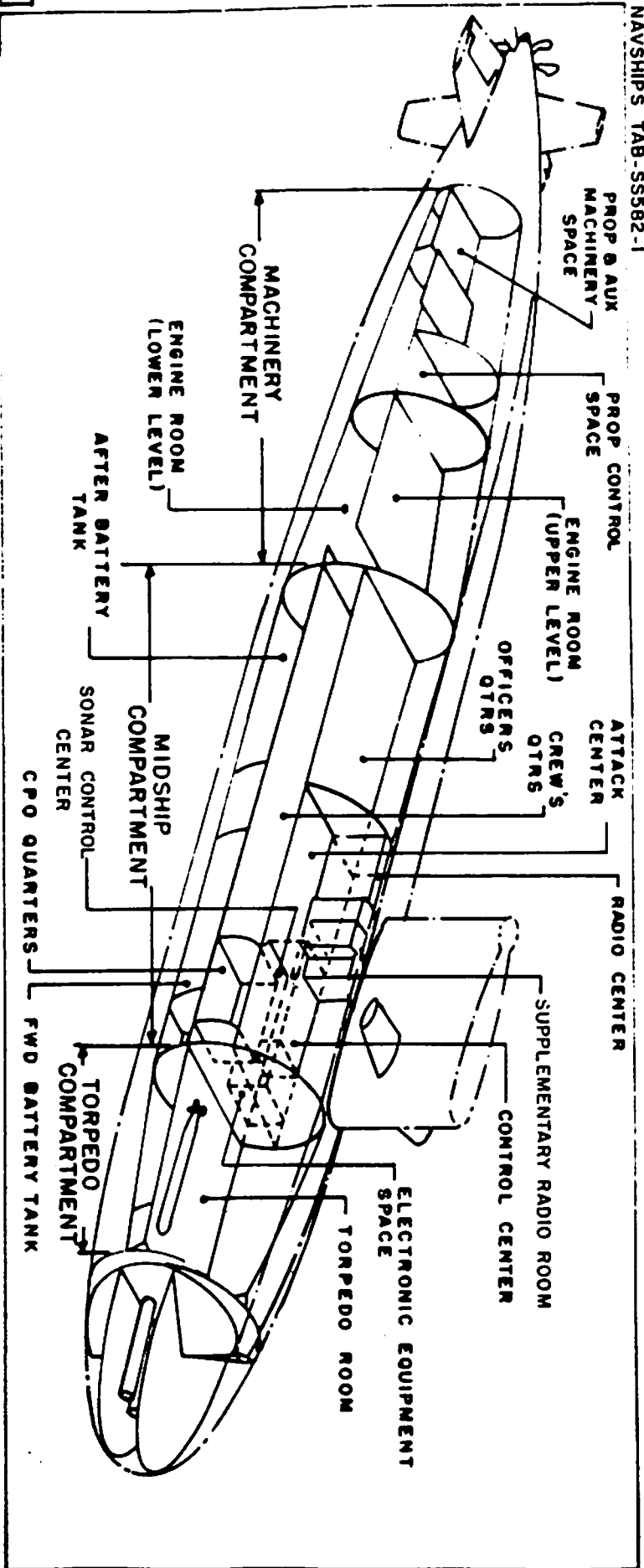
| SMOKE CONT | HULL OPENINGS | HULL EXHAUST | SMOKE EXHAUST |
|--|---------------------------------|-------------------------------|-----------------------------|
| <input type="radio"/> SMOKE | <input type="radio"/> INDUCTION | <input type="radio"/> MUFFLER | <input type="radio"/> SMOKE |
| <input type="radio"/> SECURE | <input type="radio"/> NO. 2 | <input type="radio"/> NO. 1 | <input type="radio"/> NO. 1 |
| <input type="radio"/> SMOKE | <input type="radio"/> HULL | <input type="radio"/> HULL | <input type="radio"/> HULL |
| <input type="radio"/> PASS | <input type="radio"/> HULL | <input type="radio"/> HULL | <input type="radio"/> HULL |
| <input type="radio"/> EMER SHUTDOWN | <input type="radio"/> HULL | <input type="radio"/> HULL | <input type="radio"/> HULL |
| <input type="radio"/> MAIN SMOKE EXH EMER OPEN | <input type="radio"/> HULL | <input type="radio"/> HULL | <input type="radio"/> HULL |

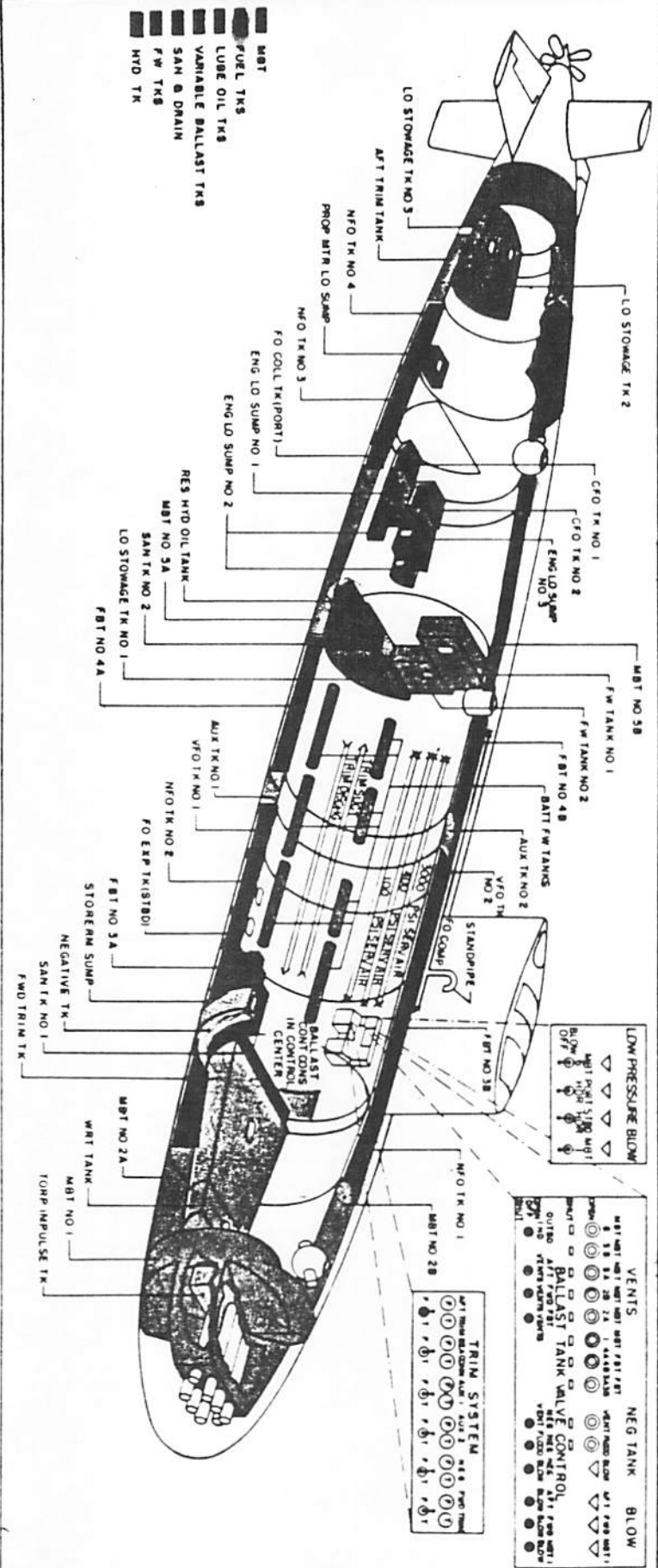
| HULL OPENINGS | | VENTS & NEG FLOOD | | RIG FOR DIVE | |
|------------------------|------|--------------------------|--------------------------|--------------------------|--------------------------|
| ROOM OR | TYPE | IND | OUT/IND | IND | OUT/IND |
| NO. 2 SMOKE | 1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| NO. 2 MUFFLER | 1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| NO. 2 SMOKE EXHAUST | 1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| HULL IND VALVE | 1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| ACCESS & LOADING MATCH | 1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| INDUCTION HEAD VALVE | 1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| MAIN SMOKE EXH VALVE | 1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| SMOKE EXHAUST VALVE | 1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| INDUCTION HEAD VALVE | 1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| ACCESS & AIR IND FRUNK | 1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| TORPEDO ESCAPE TRUNK | 1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| TORPEDO TUBES | 1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

3 HULL AND COMPARTMENT INTEGRITY

3A

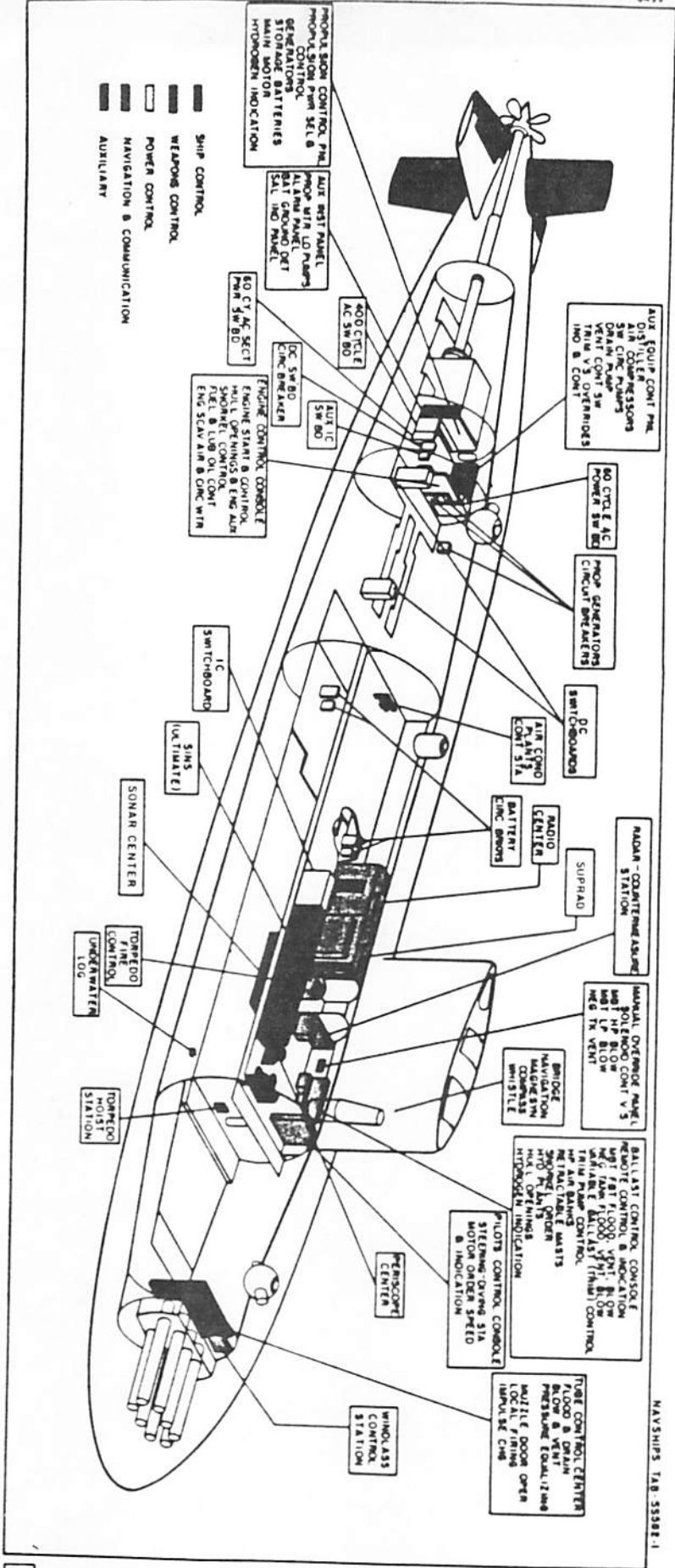
COMPARTMENTATION





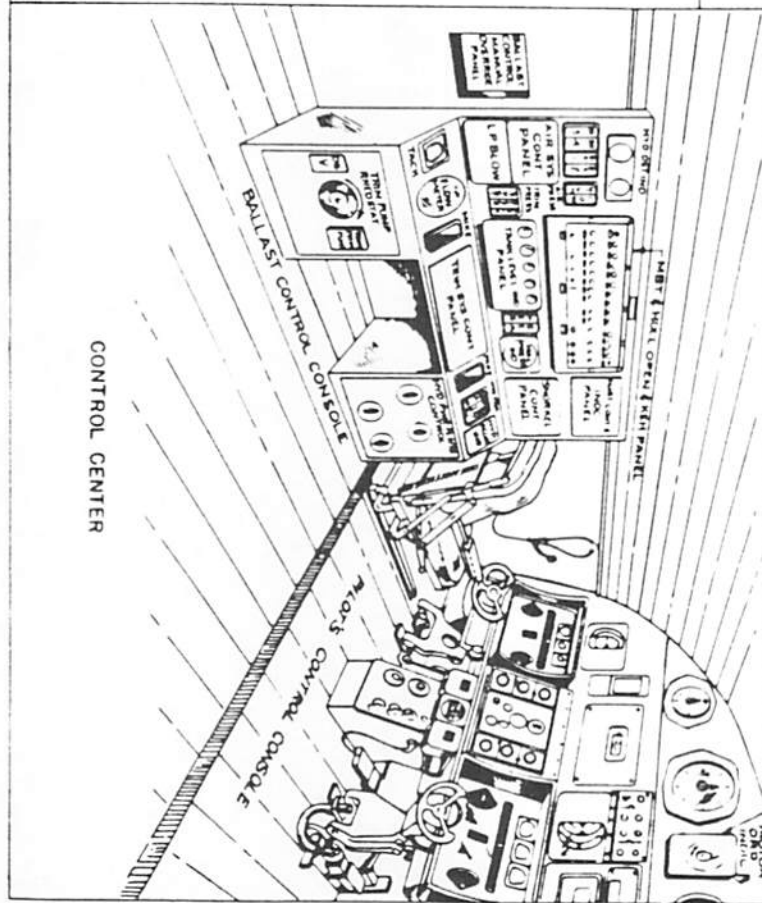
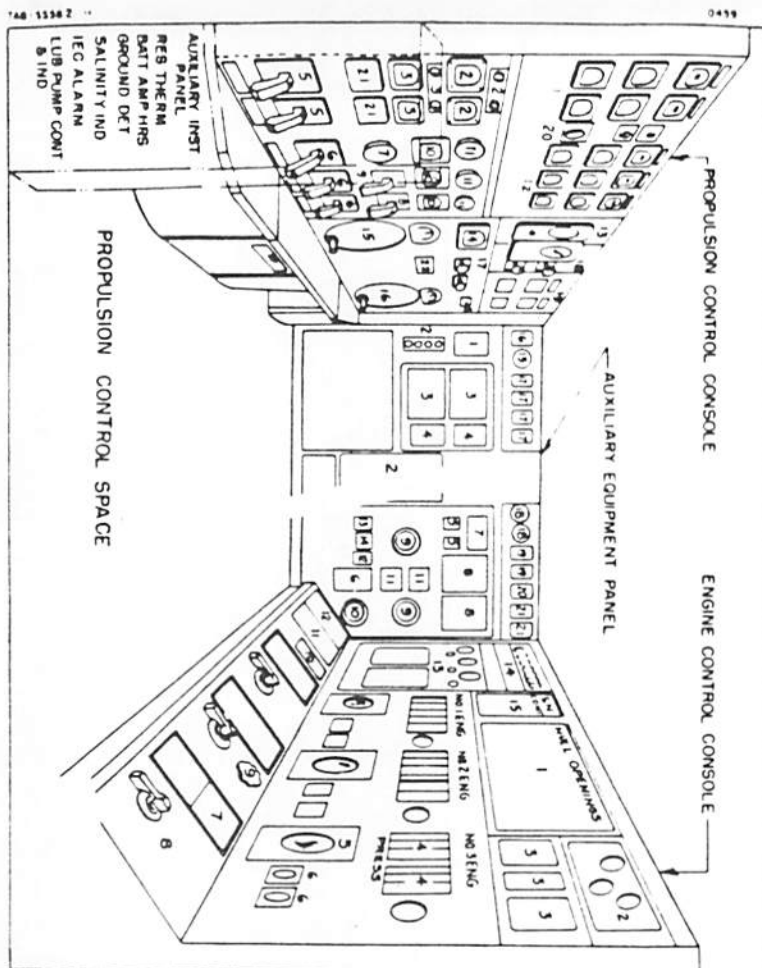
4 TANKS AND ACCESS

NAVSHIPS TAB-5582-1



NAVSHIPS TAB 3598E-1

5 CONTROL FACILITIES



6 PRIMARY SHIP CONTROL

NA/SHIPS TAB-55 582-1

PILOT LIGHT CONTROL CONSOLE

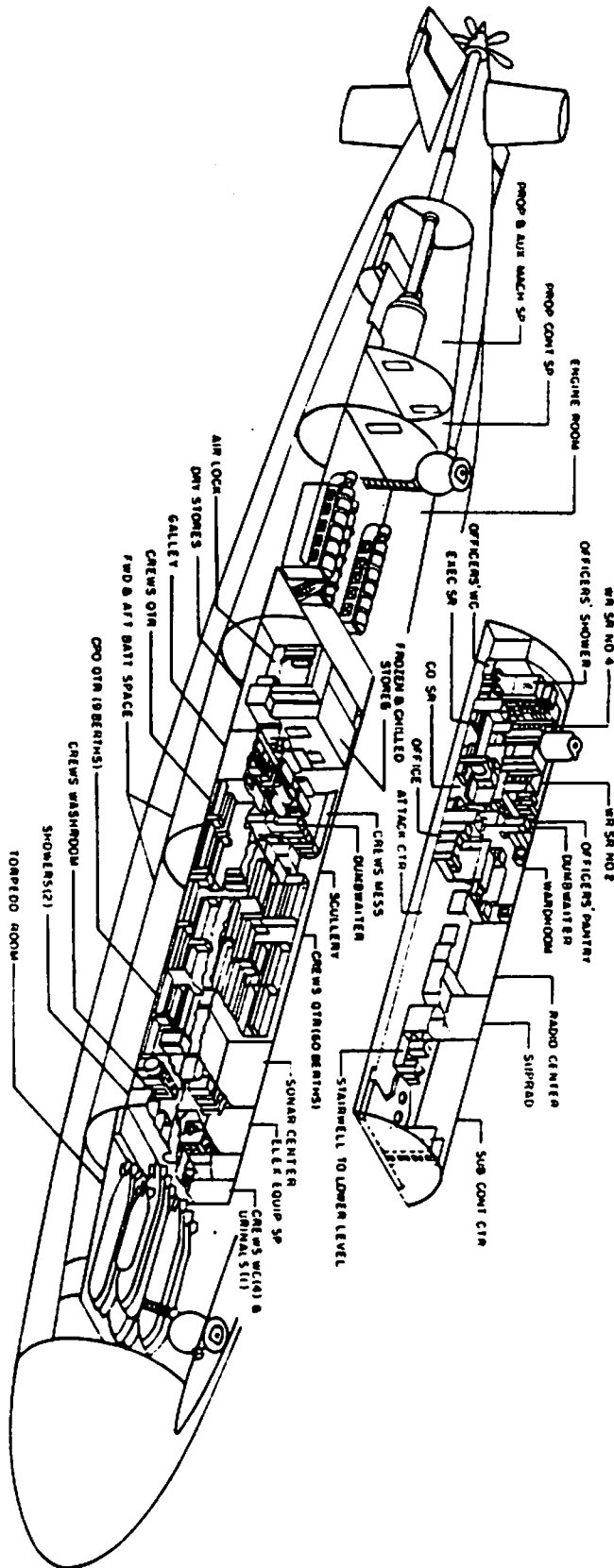
1. Battery Voltmeters - Ammeters
2. Hydrogen Indicator
3. Battery Airflow Indicator
4. Battery Circuit Breakers
5. Generator Circuit Breakers
6. Engine Speed Control
7. Generator Master Trip
8. Shortel-Surface Switch
9. Engine Thermometers
10. Generator Field Rheostats
11. Generator Voltmeters - Ammeters, Shunt Field Ammeters
12. Motor Under Telegraph
13. Propulsion Bus Volt
14. Setup Handwheel
15. Start Handwheel
16. Start Switch-Control Selector - Motor Field Disconnect
17. Motor Load Control
18. Motor Speed Control
19. Ammeters:
Motor Armature
Shunt Field
20. Battery Exhaust Fan Control
21. AMMETERS - RECIRC BATTERY FANS
22. ALTIMETER

ADJUTANT EQUIPMENT CONSOLE

1. Dummy Log Transmitter
2. Manual Override Trim System Valves
3. Temperature Monitoring - Air Compressor
4. P. H. Switch - Air Compressor
5. P. H. Switch - Distillere
6. P. H. Switch - Drain Pump
7. Distiller Indicator Panel
8. Heater Control Panel - Distillers
9. Rheostat Sea Water Pumps
10. Rheostat Drain Pump
11. Control Switch - Sea Water Pump
12. Control Switch - Drain Pump Priming Pump
13. Control Switch - Ventilation
14. Speed Control Switch - Ventilation
15. Compartment Thermostat
16. Control Air Gage
17. Indication - Air Compressor
18. Indication - Sea Water Pumps
19. Indication - Drain System
20. Indication - Trim System
21. Indication - Distillere
22. Drain Manifold

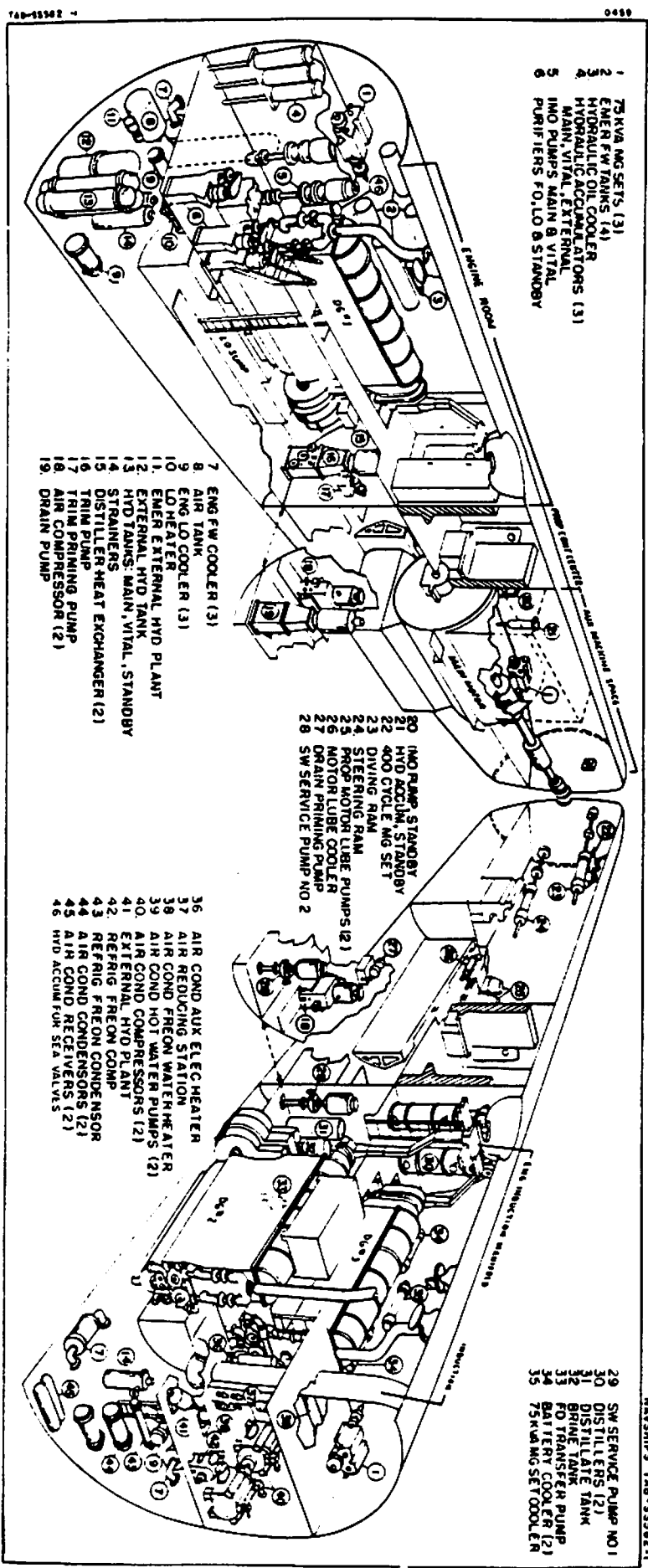
ENGINE CONTROL CONSOLE

1. Fuel (Spring Fuel)
2. Engine Crankcase Vacuum
3. Pressure - Shortel Exhaust
- Vital Hydraulic
- Fuel Oil Transmitter
- Pneumatic Governor Control
4. Pressure - Engine Lube Oil
- Fuel Filter (to-from) Fuel Root Paa
- L11 Pump Discharge Scavenge Ab
- LO Strainer (to-from)
- LO at Header
5. Thermometer
- FW to-from Engine
6. Temperature - FW to-from Engine
- L11 to-from Engine
7. Engine Start, Stop, Prime, Gas Space Drain
8. Engine Selector Valve
9. Engine Speed Control Valve
10. L11 Transmitter Pump Control Station
11. Pyrometer Selector Switch
12. Pyrometer Indicator
13. Engine Instrument Panel Warm System
Circulating Water Temperature
L11 Temperature
Scavenge Air Differential
14. Tank Level Indicator
15. Shortel Order



NAVSHIPS TAB-88392-1

7 HABITABILITY



- 1 75 KVA MG SETS (3)
- 2 EMER FW TANKS (1)
- 3 HYDRAULIC OIL COOLER
- 4 HYDRAULIC ACCUMULATORS (3)
- 5 MAIN, VITAL, EXTERNAL
- 6 HD PUMPS MAIN & VITAL
- 7 PUMPS MAIN & STANDBY

- 8 ENG FW COOLER (3)
- 9 AIR TANK
- 10 ENG LO COOLER (3)
- 11 LO HEATER
- 12 EMER EXTERNAL HYD PLANT
- 13 EXTERNAL HYD TANK
- 14 HD TANKS: MAIN, VITAL, STANDBY
- 15 STILLERS
- 16 DISTILLER HEAT EXCHANGER (2)
- 17 TRIM PUMP
- 18 TRIM PRIMING PUMP
- 19 AIR COMPRESSOR (2)
- 20 DRAIN PUMP

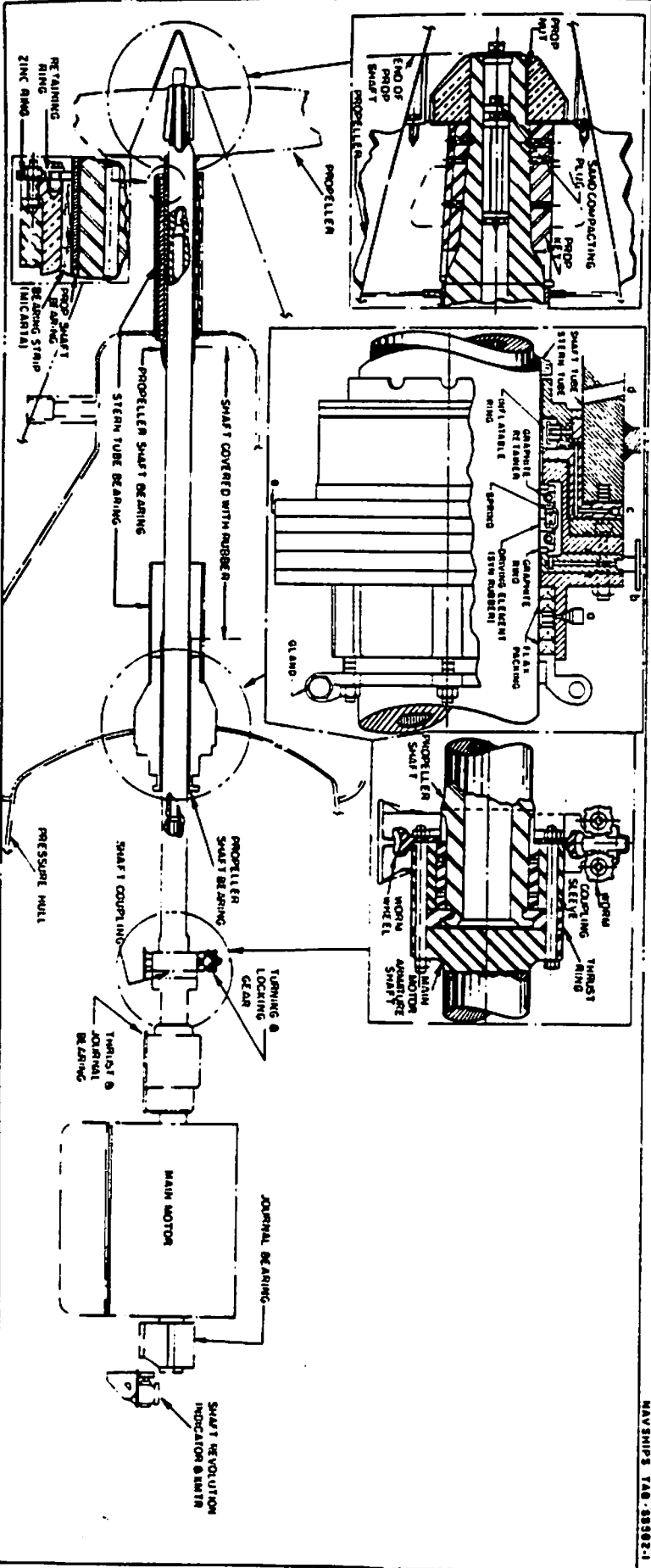
- 21 (HD PUMP, STANDBY)
- 22 HYD ACCUM, STANDBY
- 23 400 CYCLE MG SET
- 24 DIVING RAM
- 25 STEERING RAM
- 26 PROP MOTOR LUBE PUMPS (2)
- 27 MOTOR LUBE COOLER
- 28 DRAIN PRIMING PUMP
- 29 SW SERVICE PUMP NO 2

- 30 (HD PUMP, STANDBY)
- 31 HYD ACCUM, STANDBY
- 32 400 CYCLE MG SET
- 33 DIVING RAM
- 34 STEERING RAM
- 35 PROP MOTOR LUBE PUMPS (2)
- 36 MOTOR LUBE COOLER
- 37 DRAIN PRIMING PUMP
- 38 SW SERVICE PUMP NO 2

- 29 SW SERVICE PUMP NO 1
- 30 DISTILLERS (2)
- 31 DISTILLATE TANK
- 32 BRINE TANK
- 33 FO TRANSFER PUMP
- 34 BATTERY COOLER (2)
- 35 75 KVA MG SET COOLER

8 MACHINERY ARRANGEMENTS

NAVSHIPS 100-35982-1

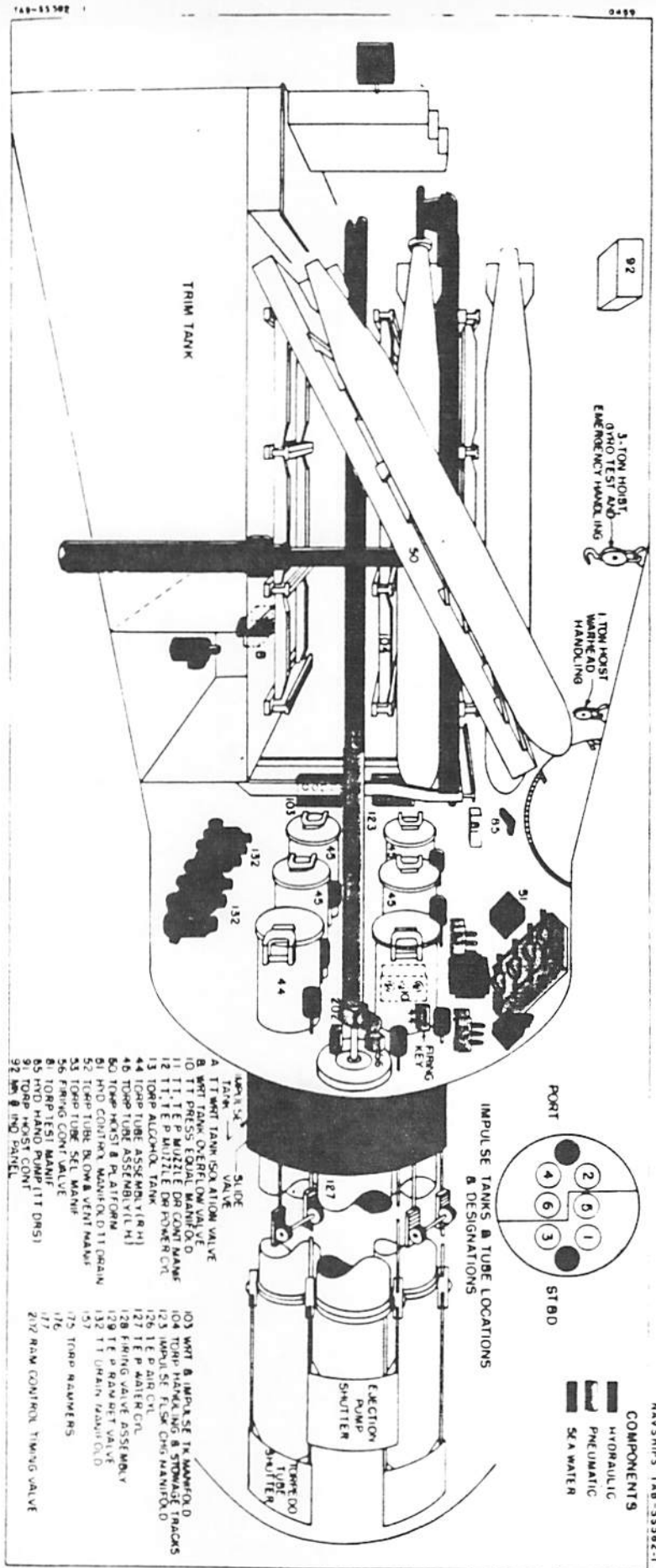


NAVSHPNS 740-88982-1

6 PROPULSION SHAFTING ARRANGEMENTS

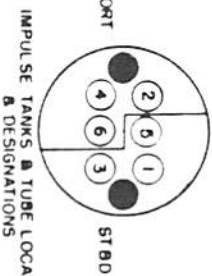
NAVSHIPS TAB-SS582-1

- a. Plex packing connection to sea water service system. See SMS-71, plate 42.
- b. Syntron seal connection to sea water service system. See SMS-69, plate 42.
- c. Service air to inflatable seal ring. See ALP-207, plate 18-1.
- d. Stern tube flushing connection. See SMS-76, plate 42.
- e. Syntron seal drain. See SMS-74, plate 42.

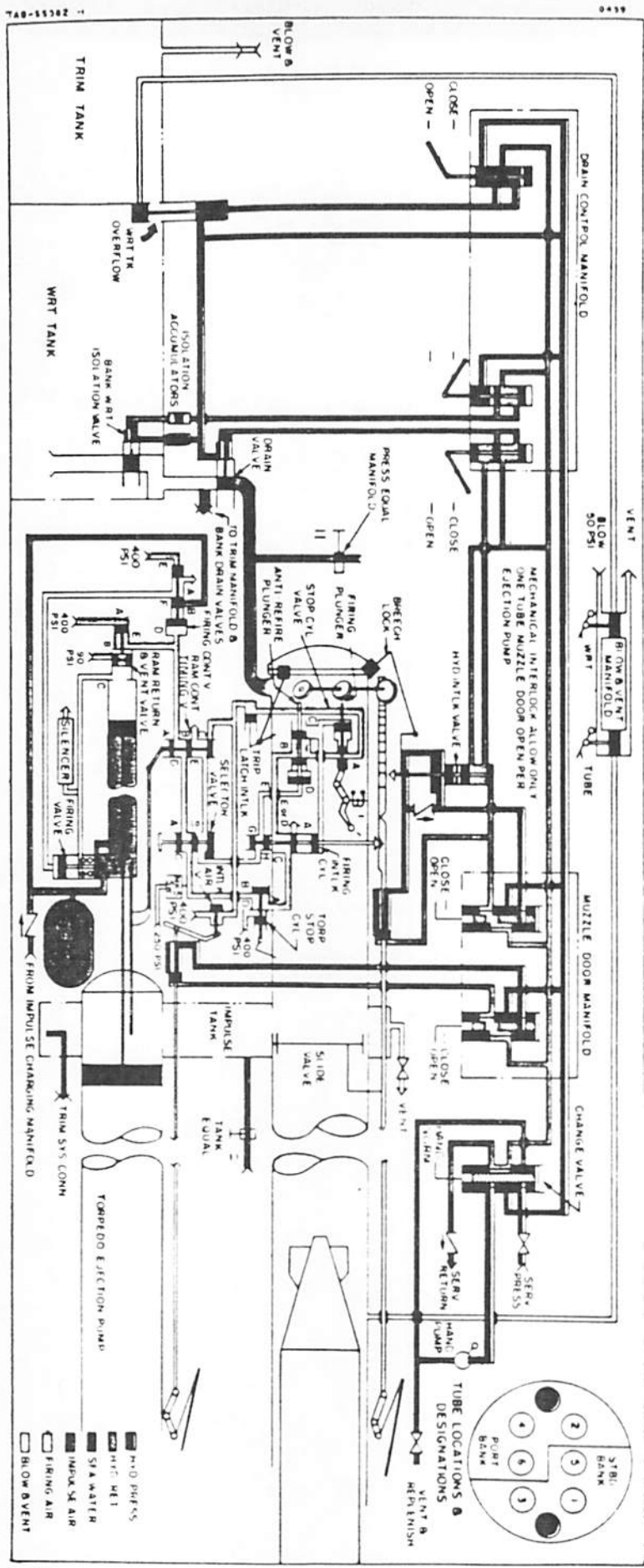


NAVSHIPS 148-35982-1

COMPONENTS
 HYDRAULIC
 PNEUMATIC
 SEA WATER



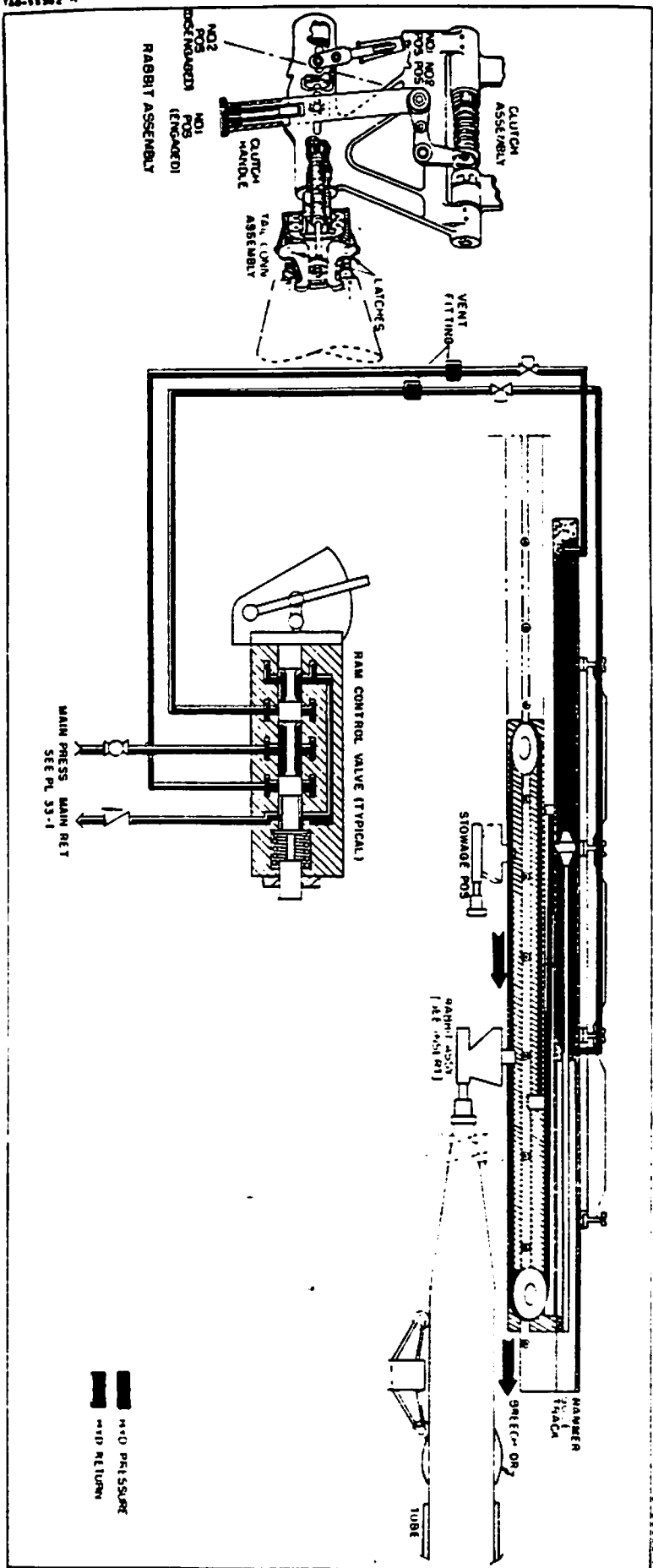
- 1 TORPEDO TUBE
- 2 TORPEDO TUBE
- 3 TORPEDO TUBE
- 4 TORPEDO TUBE
- 5 TORPEDO TUBE
- 6 TORPEDO TUBE
- 7 TORPEDO TUBE
- 8 TORPEDO TUBE
- 9 TORPEDO TUBE
- 10 WRT TANK OBERON VALVE
- 11 TT PRESS EQUAL MANIFOLD
- 12 TT T P MUZZLE DR CONT MANIF
- 13 TT T P MUZZLE DR POWER C/L
- 14 TORP ALCOHOL TANK
- 15 TORP TUBE ASSEMBLY (R/H)
- 16 TORP HEKST & PLATFORM
- 17 HYD CONTROL MANIFOLD TT DRAIN
- 18 TORP TUBE DOWN & VENT MANIF
- 19 TORP TUBE SEL MANIF
- 20 TORP TEST MANIF
- 21 HYD HAND PUMP TT DRSI
- 22 TORP TUBE DOWN
- 23 TORP TUBE DOWN
- 24 TORP TUBE DOWN
- 25 TORP TUBE DOWN
- 26 TORP TUBE DOWN
- 27 TORP TUBE DOWN
- 28 TORP TUBE DOWN
- 29 TORP TUBE DOWN
- 30 TORP TUBE DOWN
- 31 TORP TUBE DOWN
- 32 TORP TUBE DOWN
- 33 TORP TUBE DOWN
- 34 TORP TUBE DOWN
- 35 TORP TUBE DOWN
- 36 TORP TUBE DOWN
- 37 TORP TUBE DOWN
- 38 TORP TUBE DOWN
- 39 TORP TUBE DOWN
- 40 TORP TUBE DOWN
- 41 TORP TUBE DOWN
- 42 TORP TUBE DOWN
- 43 TORP TUBE DOWN
- 44 TORP TUBE DOWN
- 45 TORP TUBE DOWN
- 46 TORP TUBE DOWN
- 47 TORP TUBE DOWN
- 48 TORP TUBE DOWN
- 49 TORP TUBE DOWN
- 50 TORP TUBE DOWN
- 51 TORP TUBE DOWN
- 52 TORP TUBE DOWN
- 53 TORP TUBE DOWN
- 54 TORP TUBE DOWN
- 55 TORP TUBE DOWN
- 56 TORP TUBE DOWN
- 57 TORP TUBE DOWN
- 58 TORP TUBE DOWN
- 59 TORP TUBE DOWN
- 60 TORP TUBE DOWN
- 61 TORP TUBE DOWN
- 62 TORP TUBE DOWN
- 63 TORP TUBE DOWN
- 64 TORP TUBE DOWN
- 65 TORP TUBE DOWN
- 66 TORP TUBE DOWN
- 67 TORP TUBE DOWN
- 68 TORP TUBE DOWN
- 69 TORP TUBE DOWN
- 70 TORP TUBE DOWN
- 71 TORP TUBE DOWN
- 72 TORP TUBE DOWN
- 73 TORP TUBE DOWN
- 74 TORP TUBE DOWN
- 75 TORP TUBE DOWN
- 76 TORP TUBE DOWN
- 77 TORP TUBE DOWN
- 78 TORP TUBE DOWN
- 79 TORP TUBE DOWN
- 80 TORP TUBE DOWN
- 81 TORP TUBE DOWN
- 82 TORP TUBE DOWN
- 83 TORP TUBE DOWN
- 84 TORP TUBE DOWN
- 85 TORP TUBE DOWN
- 86 TORP TUBE DOWN
- 87 TORP TUBE DOWN
- 88 TORP TUBE DOWN
- 89 TORP TUBE DOWN
- 90 TORP TUBE DOWN
- 91 TORP TUBE DOWN
- 92 TORP TUBE DOWN
- 93 WRT & IMPULSE TANK MANIFOLD
- 94 TORP HAWEKING & STRONG TRACKS
- 95 IMPULSE FLUSH CHG MANIFOLD
- 96 T P AIR C/L
- 97 T P AIR C/L
- 103 WRT & IMPULSE TANK MANIFOLD
- 104 TORP HAWEKING & STRONG TRACKS
- 105 IMPULSE FLUSH CHG MANIFOLD
- 106 T P AIR C/L
- 107 T P AIR C/L
- 108 FIRING VALVE ASSEMBLY
- 109 T P RAWDET VALVE
- 110 T P RAWDET VALVE
- 111 T P RAWDET VALVE
- 112 T P RAWDET VALVE
- 113 T P RAWDET VALVE
- 114 T P RAWDET VALVE
- 115 T P RAWDET VALVE
- 116 T P RAWDET VALVE
- 117 T P RAWDET VALVE
- 118 T P RAWDET VALVE
- 119 T P RAWDET VALVE
- 120 T P RAWDET VALVE
- 121 T P RAWDET VALVE
- 122 T P RAWDET VALVE
- 123 T P RAWDET VALVE
- 124 T P RAWDET VALVE
- 125 T P RAWDET VALVE
- 126 T P RAWDET VALVE
- 127 T P RAWDET VALVE
- 128 T P RAWDET VALVE
- 129 T P RAWDET VALVE
- 130 T P RAWDET VALVE
- 131 T P RAWDET VALVE
- 132 T P RAWDET VALVE
- 133 T P RAWDET VALVE
- 134 T P RAWDET VALVE
- 135 T P RAWDET VALVE
- 136 T P RAWDET VALVE
- 137 T P RAWDET VALVE
- 138 T P RAWDET VALVE
- 139 T P RAWDET VALVE
- 140 T P RAWDET VALVE
- 141 T P RAWDET VALVE
- 142 T P RAWDET VALVE
- 143 T P RAWDET VALVE
- 144 T P RAWDET VALVE
- 145 T P RAWDET VALVE
- 146 T P RAWDET VALVE
- 147 T P RAWDET VALVE
- 148 T P RAWDET VALVE
- 149 T P RAWDET VALVE
- 150 T P RAWDET VALVE
- 151 T P RAWDET VALVE
- 152 T P RAWDET VALVE
- 153 T P RAWDET VALVE
- 154 T P RAWDET VALVE
- 155 T P RAWDET VALVE
- 156 T P RAWDET VALVE
- 157 T P RAWDET VALVE
- 158 T P RAWDET VALVE
- 159 T P RAWDET VALVE
- 160 T P RAWDET VALVE
- 161 T P RAWDET VALVE
- 162 T P RAWDET VALVE
- 163 T P RAWDET VALVE
- 164 T P RAWDET VALVE
- 165 T P RAWDET VALVE
- 166 T P RAWDET VALVE
- 167 T P RAWDET VALVE
- 168 T P RAWDET VALVE
- 169 T P RAWDET VALVE
- 170 T P RAWDET VALVE
- 171 T P RAWDET VALVE
- 172 T P RAWDET VALVE
- 173 T P RAWDET VALVE
- 174 T P RAWDET VALVE
- 175 T P RAWDET VALVE
- 176 T P RAWDET VALVE
- 177 T P RAWDET VALVE
- 178 T P RAWDET VALVE
- 179 T P RAWDET VALVE
- 180 T P RAWDET VALVE
- 181 T P RAWDET VALVE
- 182 T P RAWDET VALVE
- 183 T P RAWDET VALVE
- 184 T P RAWDET VALVE
- 185 T P RAWDET VALVE
- 186 T P RAWDET VALVE
- 187 T P RAWDET VALVE
- 188 T P RAWDET VALVE
- 189 T P RAWDET VALVE
- 190 T P RAWDET VALVE
- 191 T P RAWDET VALVE
- 192 T P RAWDET VALVE
- 193 T P RAWDET VALVE
- 194 T P RAWDET VALVE
- 195 T P RAWDET VALVE
- 196 T P RAWDET VALVE
- 197 T P RAWDET VALVE
- 198 T P RAWDET VALVE
- 199 T P RAWDET VALVE
- 200 T P RAWDET VALVE
- 201 T P RAWDET VALVE
- 202 T P RAWDET VALVE
- 203 T P RAWDET VALVE
- 204 T P RAWDET VALVE
- 205 T P RAWDET VALVE
- 206 T P RAWDET VALVE
- 207 T P RAWDET VALVE
- 208 T P RAWDET VALVE
- 209 T P RAWDET VALVE
- 210 T P RAWDET VALVE
- 211 T P RAWDET VALVE
- 212 T P RAWDET VALVE
- 213 T P RAWDET VALVE
- 214 T P RAWDET VALVE
- 215 T P RAWDET VALVE
- 216 T P RAWDET VALVE
- 217 T P RAWDET VALVE
- 218 T P RAWDET VALVE
- 219 T P RAWDET VALVE
- 220 T P RAWDET VALVE
- 221 T P RAWDET VALVE
- 222 T P RAWDET VALVE
- 223 T P RAWDET VALVE
- 224 T P RAWDET VALVE
- 225 T P RAWDET VALVE
- 226 T P RAWDET VALVE
- 227 T P RAWDET VALVE
- 228 T P RAWDET VALVE
- 229 T P RAWDET VALVE
- 230 T P RAWDET VALVE
- 231 T P RAWDET VALVE
- 232 T P RAWDET VALVE
- 233 T P RAWDET VALVE
- 234 T P RAWDET VALVE
- 235 T P RAWDET VALVE
- 236 T P RAWDET VALVE
- 237 T P RAWDET VALVE
- 238 T P RAWDET VALVE
- 239 T P RAWDET VALVE
- 240 T P RAWDET VALVE
- 241 T P RAWDET VALVE
- 242 T P RAWDET VALVE
- 243 T P RAWDET VALVE
- 244 T P RAWDET VALVE
- 245 T P RAWDET VALVE
- 246 T P RAWDET VALVE
- 247 T P RAWDET VALVE
- 248 T P RAWDET VALVE
- 249 T P RAWDET VALVE
- 250 T P RAWDET VALVE
- 251 T P RAWDET VALVE
- 252 T P RAWDET VALVE
- 253 T P RAWDET VALVE
- 254 T P RAWDET VALVE
- 255 T P RAWDET VALVE
- 256 T P RAWDET VALVE
- 257 T P RAWDET VALVE
- 258 T P RAWDET VALVE
- 259 T P RAWDET VALVE
- 260 T P RAWDET VALVE
- 261 T P RAWDET VALVE
- 262 T P RAWDET VALVE
- 263 T P RAWDET VALVE
- 264 T P RAWDET VALVE
- 265 T P RAWDET VALVE
- 266 T P RAWDET VALVE
- 267 T P RAWDET VALVE
- 268 T P RAWDET VALVE
- 269 T P RAWDET VALVE
- 270 T P RAWDET VALVE
- 271 T P RAWDET VALVE
- 272 T P RAWDET VALVE
- 273 T P RAWDET VALVE
- 274 T P RAWDET VALVE
- 275 T P RAWDET VALVE
- 276 T P RAWDET VALVE
- 277 T P RAWDET VALVE
- 278 T P RAWDET VALVE
- 279 T P RAWDET VALVE
- 280 T P RAWDET VALVE
- 281 T P RAWDET VALVE
- 282 T P RAWDET VALVE
- 283 T P RAWDET VALVE
- 284 T P RAWDET VALVE
- 285 T P RAWDET VALVE
- 286 T P RAWDET VALVE
- 287 T P RAWDET VALVE
- 288 T P RAWDET VALVE
- 289 T P RAWDET VALVE
- 290 T P RAWDET VALVE
- 291 T P RAWDET VALVE
- 292 T P RAWDET VALVE
- 293 T P RAWDET VALVE
- 294 T P RAWDET VALVE
- 295 T P RAWDET VALVE
- 296 T P RAWDET VALVE
- 297 T P RAWDET VALVE
- 298 T P RAWDET VALVE
- 299 T P RAWDET VALVE
- 300 T P RAWDET VALVE



NAVSHIPS TAB-53982-1

II TYPICAL TORPEDO TUBE SYSTEM

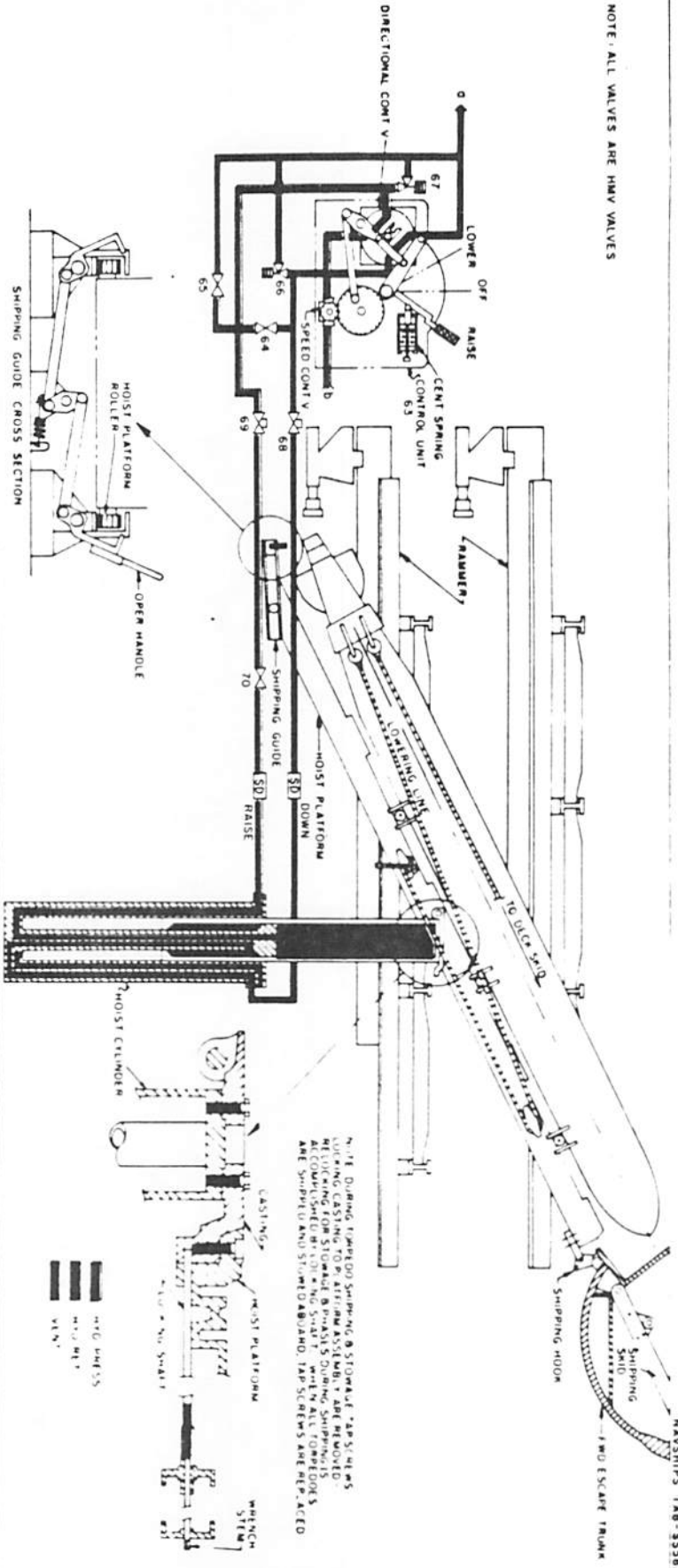
1 2835-88-04



NAVSHIP 9, TAG-88902-1

12 TORPEDO RAM AND CONTROL

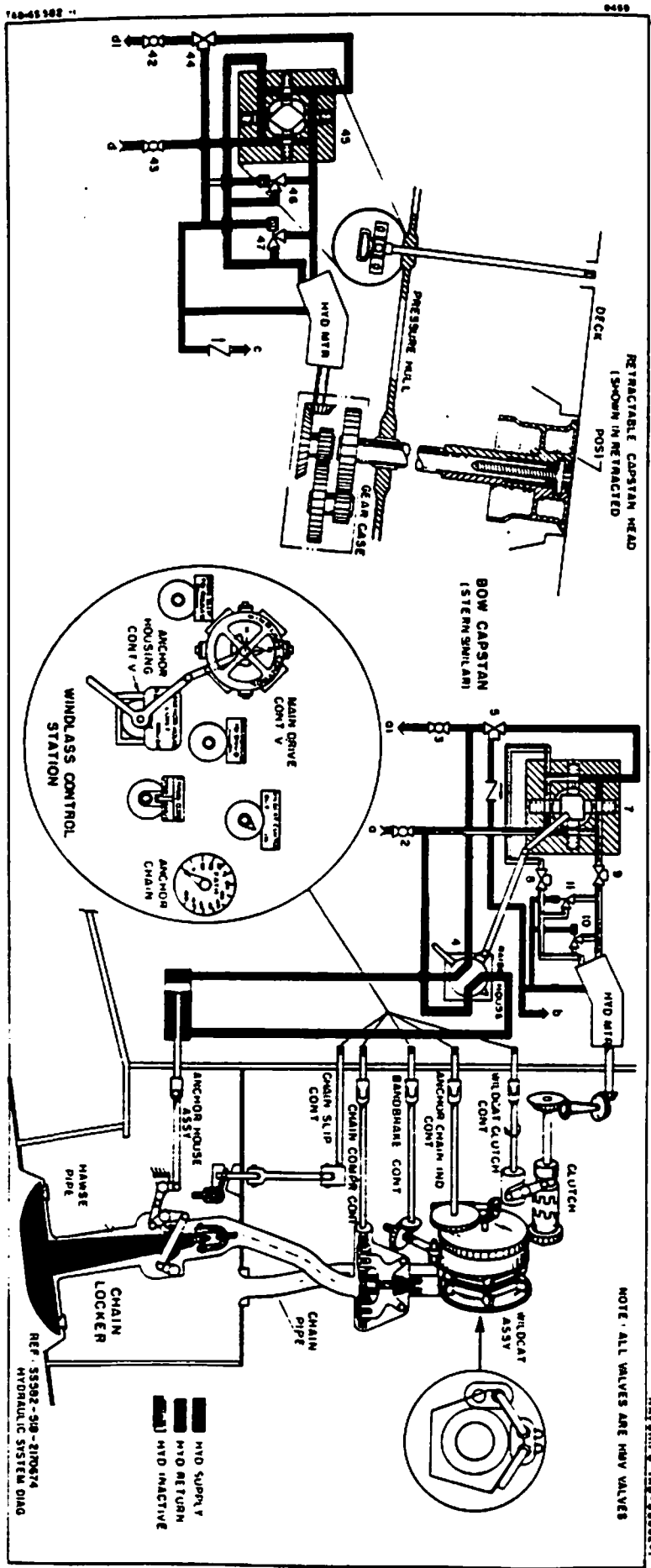
NOTE: ALL VALVES ARE HMV VALVES



NAVSHIPS TAB-SS92-1

- HMV (63) Torpedo hoist control valve
- HMV (64) Torpedo hoist return by-pass
- HMV (65) Torpedo hoist pressure by-pass
- HMV (66) Torpedo hoist relief
- HMV (67) Torpedo hoist relief
- HMV (68) Torpedo hoist flow control - lower
- HMV (69) Torpedo hoist flow control - raise
- HMV (70) Torpedo hoist throttling pressure

- a Main return from torpedo hoist. See plate 33-1
- b Main pressure to torpedo hoist. See plate 33-1

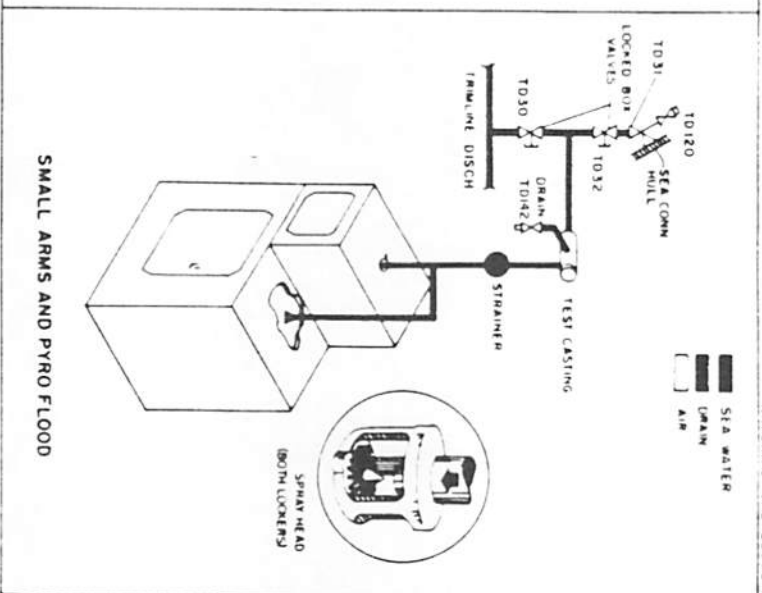
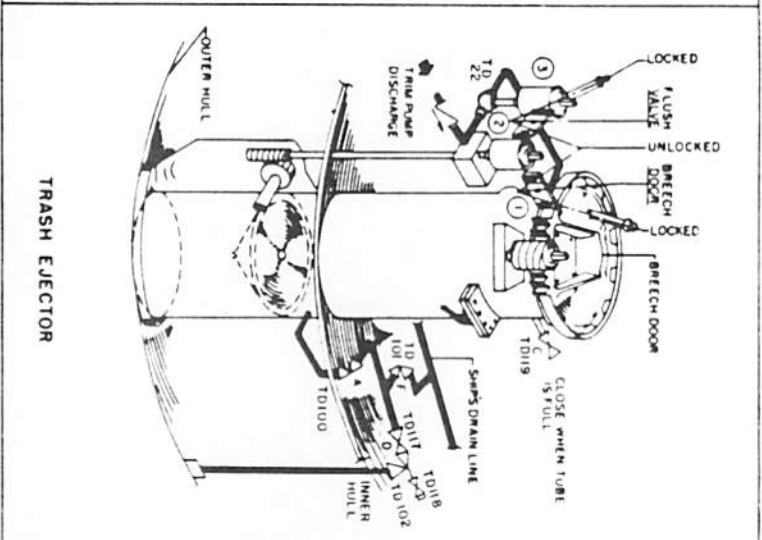
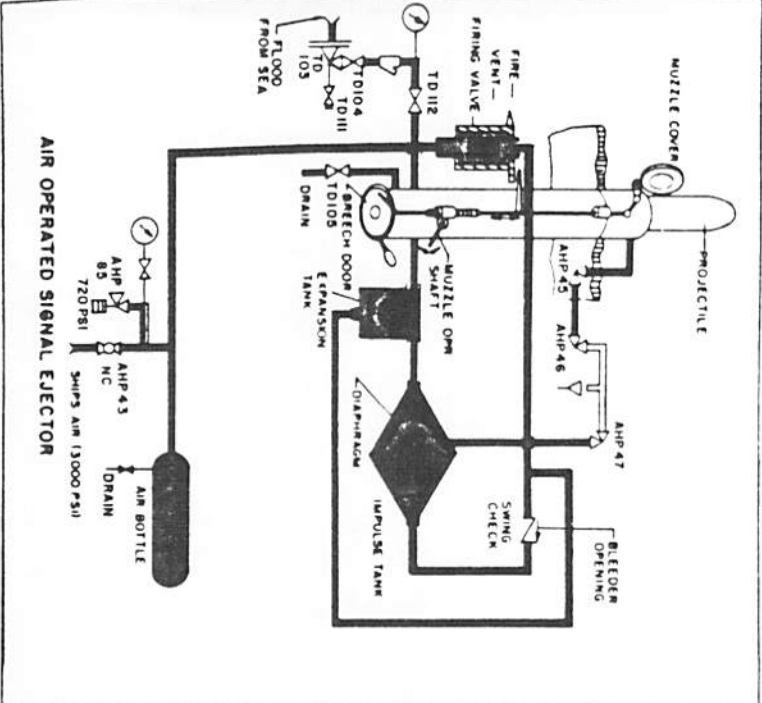


14 HYD OPERATION - ANCHOR WINDLASS & CAPSTANS

- HRV(2) Main pressure to anchor windlass control valve.
- HRV(3) Main return from anchor windlass control valve.
- HRV(4) Anchor house lock control valve.
- HRV(5) Return flow control from anchor windlass control valve.
- HRV(7) Anchor windlass control valve.
- HRV(8) Speed control pressure to motor.
- HRV(9) Speed control return from motor.
- HRV(10) Sequence valve - pressure relief.
- HRV(11) Sequence valve - return relief.
- HRV(12) Main return from fwd capstan control valve.
- HRV(13) Main pressure to fwd capstan control valve.
- HRV(14) Return flow control from fwd capstan control valve.
- HRV(15) Fwd capstan control valve.
- HRV(16) Sequence valve - return relief.
- HRV(17) Sequence valve - pressure relief.
- a Main pressure to anchor windlass. See plate 33-1.
- a1 Main return from anchor windlass. See plate 33-1.
- b Vent and replenish anchor windlass. See plate 33-1.
- b1 Vent and replenish fwd capstan. See plate 33-1.
- c Main pressure to fwd capstan. See plate 33-1.
- c1 Main return from fwd capstan. See plate 33-1.
- d
- d1

144

HYD OPERATION - ANCHOR WINDLASS & CAPSTAN



NAVSHIPS TAB-55982-1

15 TRASH EJECT, SIGNAL EJECT, PYRO FLOOD

TRASH EJECTOR

TD(22) Garbage ejector flooding.
 TD(100) Garbage ejector flood A drain - hull.
 TD(101) Garbage ejector drain to drain line.
 TD(102) Garbage ejector flood from sea - hull.
 TD(117) Garbage ejector flood from sea - backup.
 TD(118) Garbage ejector blow.
 TD(119) Garbage ejector vent.

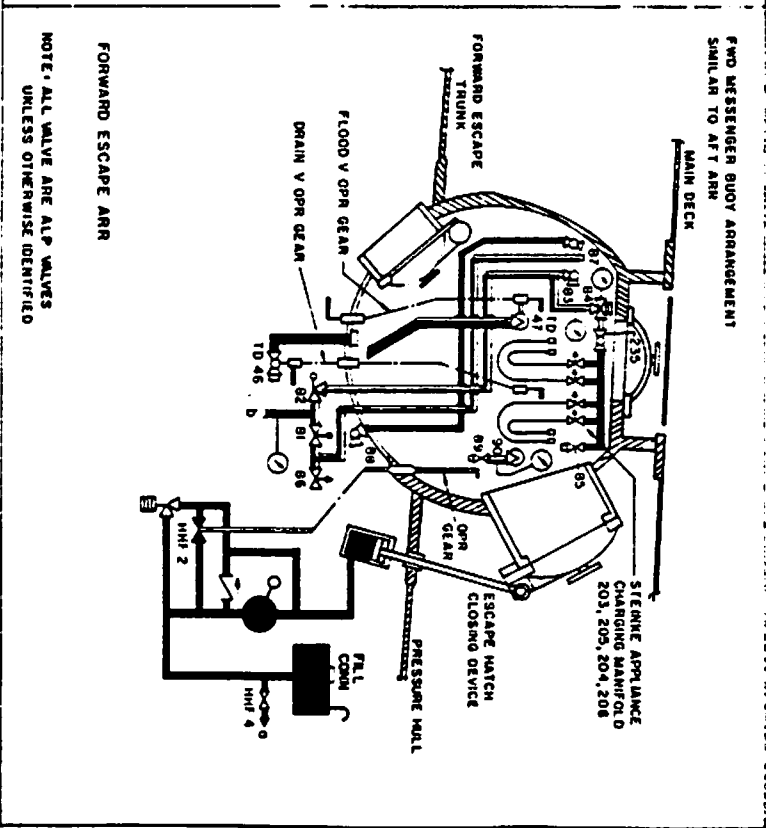
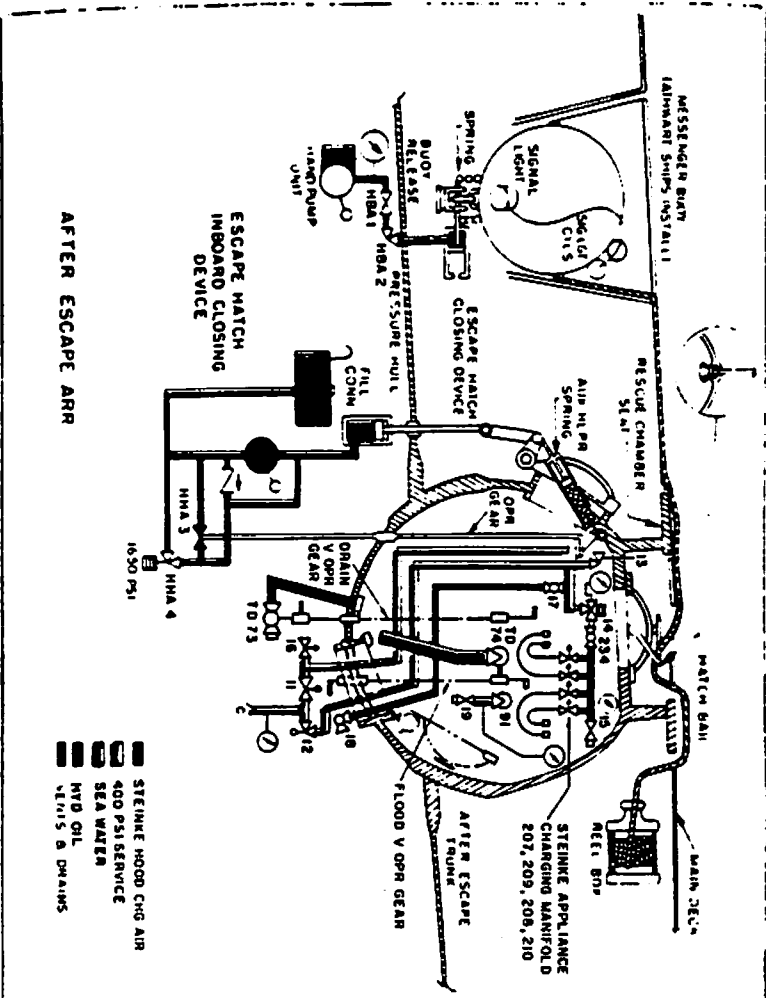
SIGNAL EJECTOR

TD(103) Signal ejector flood from sea - hull.
 TD(104) Signal ejector flood from sea - backup.
 TD(105) Signal ejector drain, aft.
 TD(111) Signal ejector flood, blow.
 TD(112) Signal ejector flood.
 AHP(43) 3000/ air to aft signal ejector.
 AHP(45) Aft signal ejector vent outbd.
 AHP(46) Aft signal ejector vent inbd.
 AHP(47) Aft signal ejector impulse tank vent
 AHP(85) Aft signal ejector relief.

15A TRASH EJECTOR, SIGNAL EJECTOR, PYRO FLOOD

SMALL ARMS & PYRO FLOOD

TD(30) Pyro and small arms ammo locker flood from trim line.
 TD(31) Pyro and small arms ammo locker flood from sea.
 TD(32) Pyro and small arms ammo locker flood from sea.
 TD(120) Pyro and small arms ammo locker blow.
 TD(142) Pyro and small arms ammo locker test casting drain.



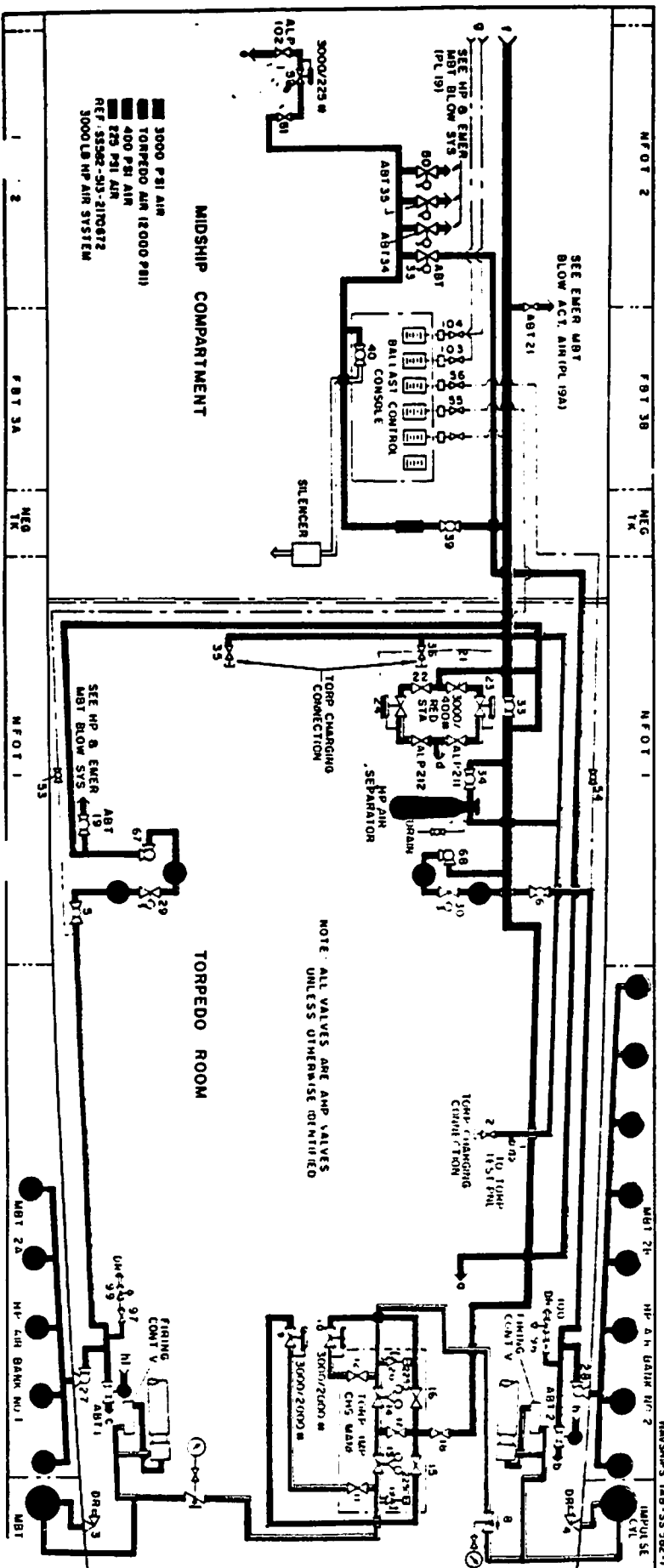
NAVYIMP-148-8892-1

16-1 ESCAPE ARRANGMENT

NAVSHIPS TAB-SS582-1

ALP(11) 400# Blow aft escape trunk from comp't.
 ALP(12) 400# Air to aft escape trunk.
 ALP(13) 400# Blow aft escape trunk from trunk.
 ALP(14) Aft escape trunk Steinke chlorine remilitator.
 ALP(15) Aft escape trunk hose connection.
 ALP(16) Aft escape trunk vent from comp't.
 ALP(17) Aft escape trunk vent from trunk.
 ALP(18) Aft escape trunk vent.
 ALP(19) Aft escape trunk sea press. gauge line blow.
 ALP(81) 400# blow fwd escape trunk from comp't.
 ALP(82) 400# air to fwd trunk.
 ALP(83) 400# blow fwd trunk from trunk.
 ALP(84) Fwd escape trunk Steinke charging regulator.
 ALP(85) Fwd escape trunk hose connection.
 ALP(86) Fwd escape trunk vent from comp't.
 ALP(87) Fwd escape trunk vent from trunk.
 ALP(88) Fwd escape trunk vent.
 ALP(89) Fwd escape trunk sea press. gauge line blow.
 ALP(90) Fwd escape trunk sea press. gauge line.
 ALP(91) Aft escape trunk sea press. gauge line.
 ALP(203) Chg air to Steinke appliance - fwd eso trunk - S.
 ALP(204) Chg air to Steinke appliance - fwd eso trunk - P.
 ALP(205) Chg air to Steinke appliance - fwd eso trunk - S.

ALP(206) Chg air to Steinke appliance - fwd eso trunk - P.
 ALP(207) Chg air to Steinke appliance - aft eso trunk - S.
 ALP(208) Chg air to Steinke appliance - aft eso trunk - P.
 ALP(209) Chg air to Steinke appliance - aft eso trunk - S.
 ALP(210) Chg air to Steinke appliance - aft eso trunk - P.
 TD(16) Fwd eso trunk drain - hose conn to trim line disch.
 TD(17) Eso trunk flood from sea.
 TD(71) Aft eso trunk drain - hose conn to trim line disch.
 TD(74) Eso trunk flood from sea.
 HRF(2) 2-way V - fwd eso hatch closing device - press/vent.
 HRF(3) Helief fwd eso hatch closing device.
 HRF(4) Fwd eso hatch closing device sup tk fill to torp hand. sup tk.
 HIA(3) 2-way V - aft eso hatch closing device - press/vent.
 HIA(4) Helief aft eso hatch closing device.
 HBA(1) Aft messenger buoy release - backup.
 HBA(2) Aft messenger buoy release - hull.
 H-1 oil to torp handling sup tank.
 400# air sup. See b PI 18.
 400# air sup. See g PI 18-1.

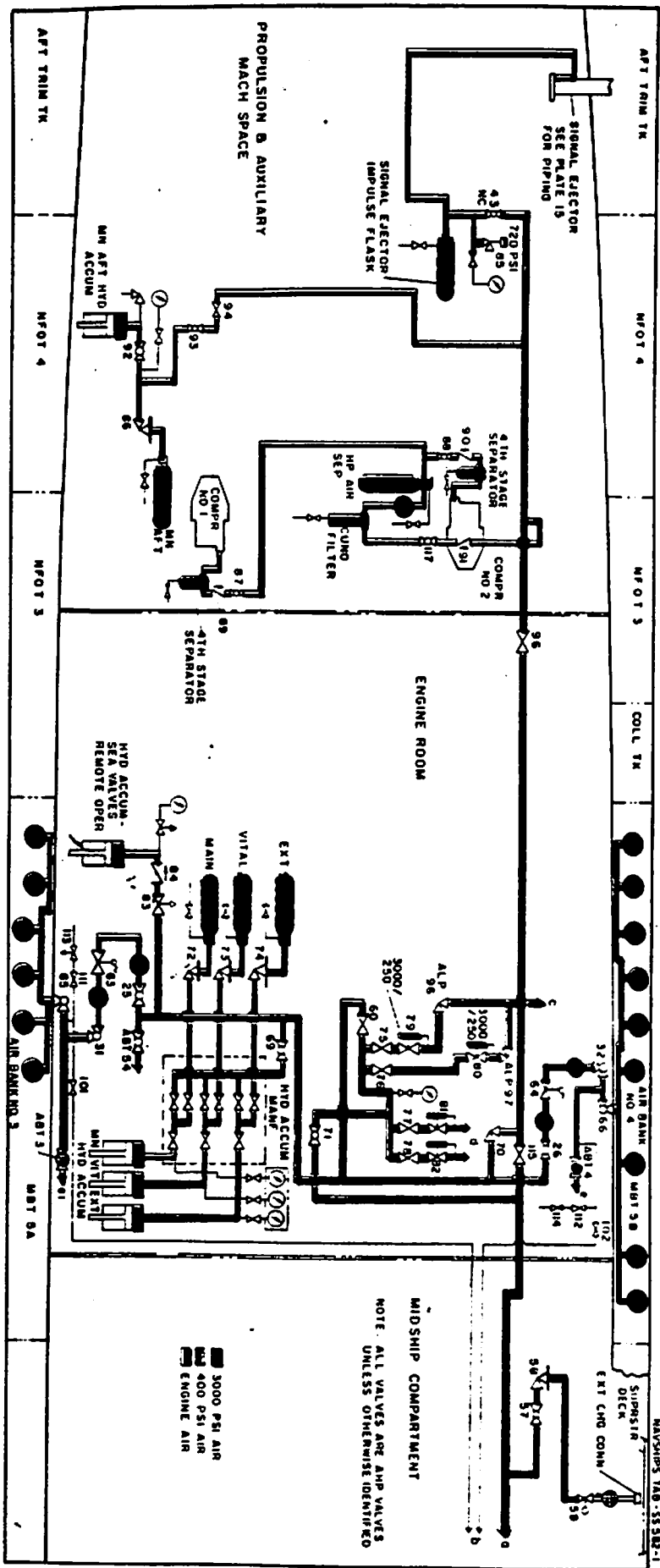


17 3000 PSI HP AIR SYSTEM - FWD

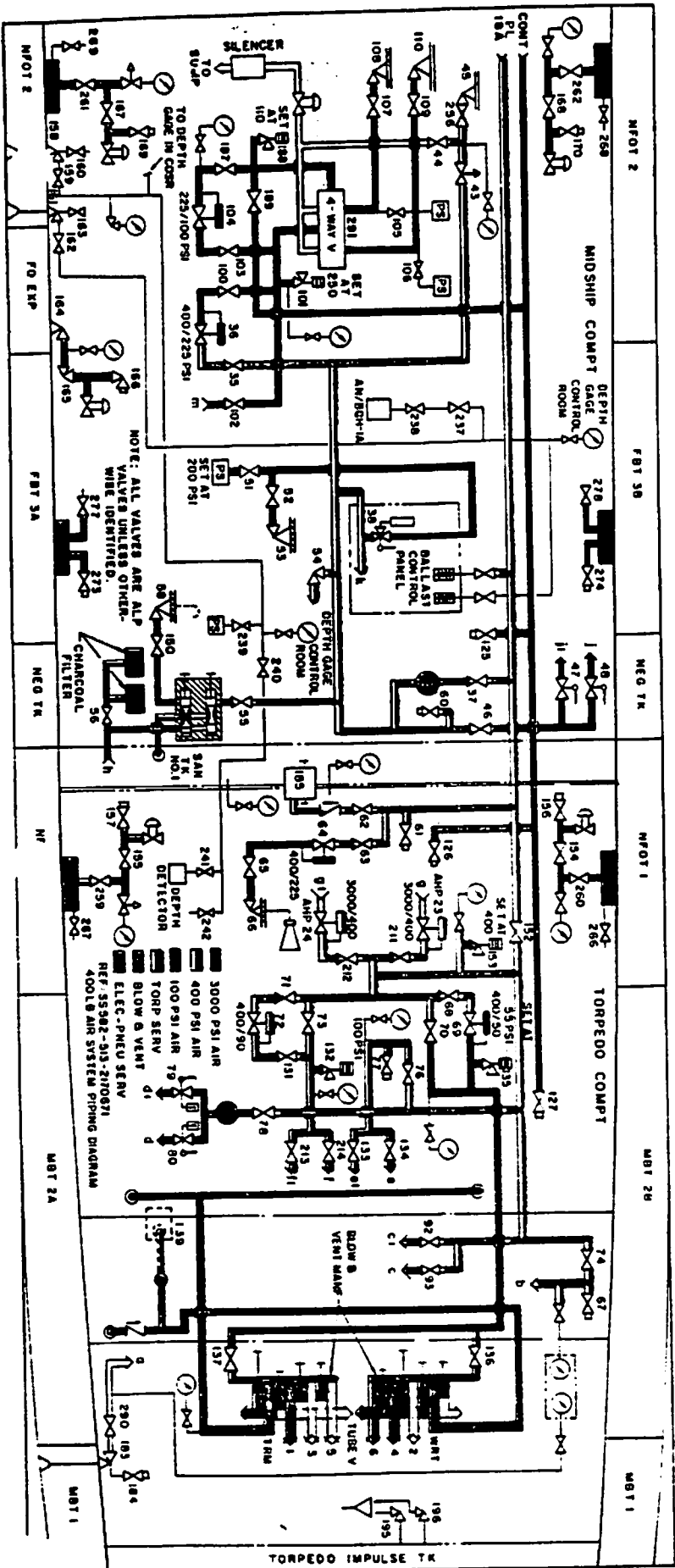
AHP(1) 3000# air to torpedo test panel.
 AHP(2) 3000# air - torpedo charging connection.
 AHP(3) Torpedo impulse cylinder drain - stbd.
 AHP(4) Torpedo impulse cylinder drain - port.
 AHP(5)* 3000# air bank No. 1 shutoff.
 AHP(6)* 3000# air bank No. 2 shutoff.
 AHP(9) 3000/2000# reducer - torp impulse air - stbd.
 AHP(10) 3000/2000# reducer - torp impulse air - port.
 AHP(11) 2000# air from reducer - stbd.
 AHP(12) 2000# air from reducer - port.
 AHP(13) 3000# air to torp impulse cross conn - stbd.
 AHP(14) 3000# air to torp impulse cross conn - port.
 AHP(15) 3000# air to 3000/2000# reducer - stbd.
 AHP(16) 3000# air to 3000/2000# reducer - port.
 AHP(17) 3000/2000# reducer bypass.
 AHP(18) 3000# air supply to 3000/2000# reducing station.
 AHP(19) Torpedo impulse air relief - stbd.
 AHP(20) Torpedo impulse air relief - port.
 AHP(21) 3000# air supply to 3000/400# reducing station.
 AHP(22) 3000# air supply to 3000/400# reducing station.
 AHP(23) 3000/400# reducer.
 AHP(24) 3000/400# reducer.
 AHP(27) 3000# air bank No. 1 null valve.
 AHP(28) 3000# air bank No. 2 null valve.
 AHP(29) 3000# air bank No. 1 solenoid (MAROTTA).
 AHP(30) 3000# air bank No. 2 solenoid (MAROTTA).
 AHP(33) 3000# air supply forward.
 AHP(34) 3000# air to air separator.
 AHP(35) 3000# air to torpedo charging conn - stbd.
 AHP(36) 3000# air to torpedo charging conn - port.
 AHP(39) 3000# air service.
 AHP(40) Pressure equalizing line.
 AHP(50) 3000# air to negative tank blow - solenoid (MAROTTA).
 AHP(51) 3000# air to 3000/225# reducer.
 AHP(52) 3000/225# reducer to snorkel head valve control valve.
 AHP(53) Gage shutoff - air bank No. 1.
 AHP(54) Gage shutoff - air bank No. 2.
 AHP(55) Gage shutoff - air bank No. 1.
 AHP(56) Gage shutoff - air bank No. 2.
 AHP(67) 3000# air bank No. 1 - shutoff.
 AHP(68) 3000# air bank No. 2 - shutoff.
 AHP(97) HP air bank No. 1 blow drain.
 AHP(98) HP air bank No. 2 blow drain.
 AHP(99) HP air bank No. 1 blow drain.
 AHP(100) HP air bank No. 2 blow drain.
 AHP(103) Gage shutoff - air bank No. 3.
 AHP(104) Gage shutoff - air bank No. 4.
 AHT(1) 3000# EMHT blow - HRT No. 1 & 2A.
 AHT(2) 3000# EMHT blow - HRT No. 1 & 2B.
 AHT(19) 3000# air supply - cross conn to HBT header.
 AHT(21) 3000# actuating air supply EMHT blow valve.
 AHT(33) 3000# blow - HRT No. 1, port - solenoid (Marotta).
 AHT(34) 3000# blow - aft group - solenoid (Marotta).
 AHT(35) 3000# blow - aft group - solenoid (Marotta).

ALP(102) 225# air from 3000/225# reducer.
 ALP(211) 400# air from 3000/400# reducer.
 ALP(212) 400# air from 3000/400# reducer.
 a 3000# air to HRT No. 1 blow. See a plate 19.
 b 3000# EMHT blow - HRT No. 1 & 2B. See b plate 19.
 c 3000# EMHT blow - HRT No. 1 & 2A. See c plate 19.
 d 400# air service. See plate 18.
 e 225# air to snorkel head valve control. See m plate 18.
 f 3000# air supply. See a plate 17-1.
 g Gage connection from air bank 3 & 4. See b plate 17-1.
 h 3000# actuating air. See plate 19-1.
 h1 3000# actuating air. See plate 19-1.

* Valves AHP(5) and AHP(6) are NDV items called for by Bu 1sr 55580 Ser 648-488 of 1 March 1966 and will not be installed on the USS BOWDITCH during the 1964-1965 Subsafe Overhaul.



17-1 3000 PSI HP AIR SYSTEM - AFT



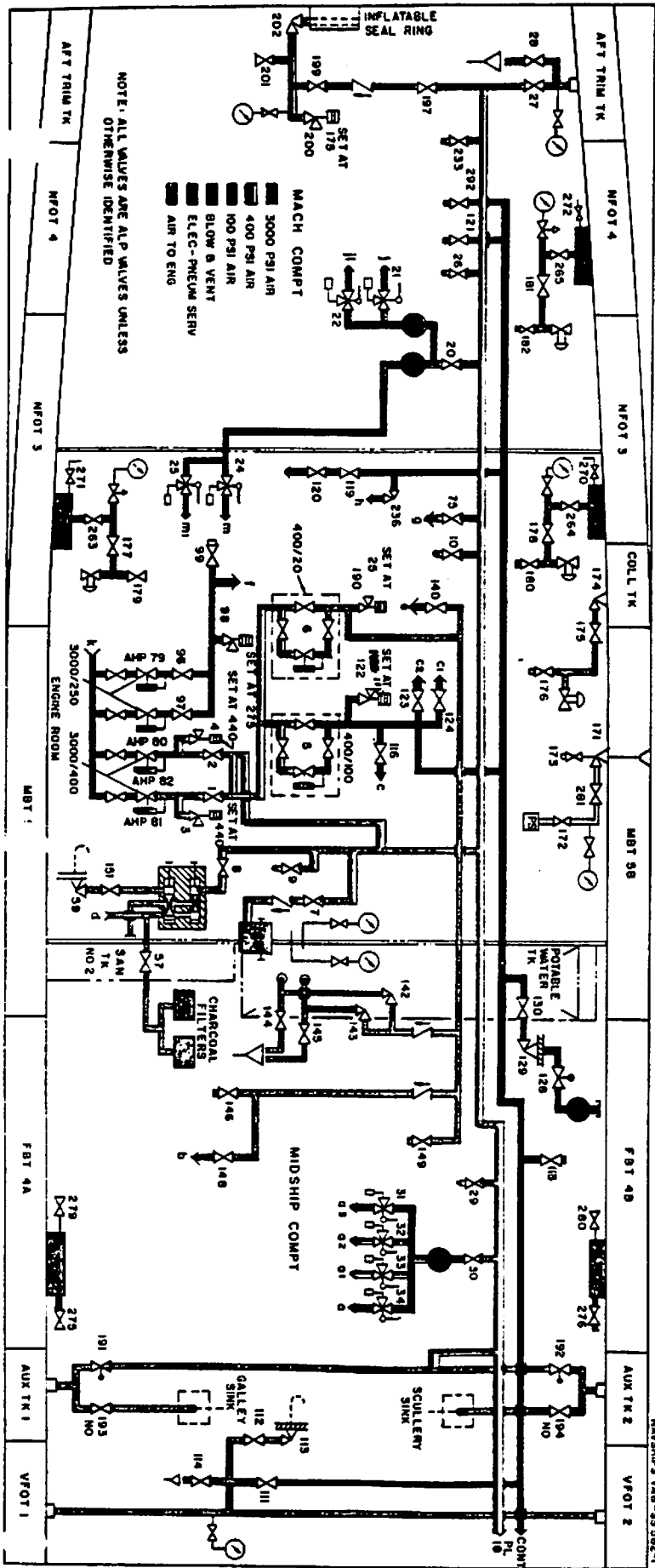
NAVENORS 1A8-55982-1

18 SERVICE AIR SYSTEM - FWD

ALP(95) 400# air to 300/225# pressure reducer.
 ALP(96) 400#/225# pressure reducer.
 ALP(97) 400# air service - midship, fwd.
 ALP(98) 400# control air, negative tank vent V.
 ALP(99) 400# air to snorkel induction mast drain.
 ALP(100) 400# vent, snorkel induction mast drain.
 ALP(101) 400# blow/vent snork ind mat dr, hull.
 ALP(102) 400# control air to TD system, negative
 ALP(103) tank flood & drain valve.
 ALP(104) 400# cont air to TD-29, neg tk flood valve.
 ALP(105) 400# cont air to TD-2, neg tk dr valve.
 ALP(106) 400# control air to negative tank vent
 ALP(107) pressure switch.
 ALP(52) 400# control air to AHP-41, negative
 ALP(59) tank vent valve, backup.
 ALP(54) 400# vent valve, hull.
 ALP(55) 400# air to hydro gear, sanitary tank 1.
 ALP(56) 400# air to san tank 1 blow & vent man.
 ALP(58) Sanitary tank 1 outboard vent.
 ALP(60) 400# air hose conn - midship comp, fwd.
 ALP(61) 400# air hose conn - torp room, aft.
 ALP(62) 400# air to compartment air.
 ALP(63) 400# air whistle.
 ALP(64) 400#/225# pressure reducer to whistle.
 ALP(65) 225# air to whistle - backup.
 ALP(66) 400# air to hose conn - torp room, fwd.
 ALP(67) 400# air to hose conn - torp room, fwd.
 ALP(68) 400# air to 400/50# reducing station.
 ALP(69) 400#/50# pressure reducer.
 ALP(70) 400#/90# pressure reducer bypass.
 ALP(71) 400# air to 400#/90# reducing station.
 ALP(72) 400#/90# pressure reducer.
 ALP(73) 400#/90# pressure reducer bypass.
 ALP(74) 400# air to fwd escape trunk.
 ALP(76) 400# air to ram return vent valves.
 ALP(77) 400# air hose conn - torp room.
 ALP(78) 400# control air to TD system, fwd trim
 ALP(79) tank flood and drain valve.
 ALP(80) drain valve.
 ALP(80) 400# control air to TD-33, fwd trim tank
 flood valve.
 ALP(92) 400# air to torp firing system, port.
 ALP(93) 400# air to torp firing system, stbd.
 ALP(100) 225# air from 400#/225# pressure reducer.
 ALP(101) 225# air pressure relief.
 ALP(102) 225# air from 3000#/225# pressure reducer.
 ALP(103) 225# air to 275#/100# pressure reducer.
 ALP(104) 225#/100# pressure reducer, control room.
 ALP(105) 225# air to snork hd valve press sv.
 ALP(106) 225# air to snork hd valve press sv.
 ALP(107) 225# air to snork hd, to shut, backup.

ALP(108) 225# air to snork hd V, to shut, hull.
 ALP(109) 225# air to snork hd V, to open, hull.
 ALP(110) 225# air to snork hd V, to open, hull.
 ALP(125) 100# air hose conn - midship comp.
 ALP(126) 100# air hose conn - torp room, aft.
 ALP(127) 100# air hose conn - torp room, fwd.
 ALP(131) 90# air from 400#/90# press reducer.
 ALP(132) 400#/90# air reducing station relief.
 ALP(133) 400# air to ram return vent valve.
 ALP(134) 400# air to ram return vent valve.
 ALP(135) 400#/50# air reducing station relief.
 ALP(136) 50# air to blow and vent manifold, port.
 ALP(137) 50# air to blow and vent manifold, stbd.
 ALP(139) 50# blow, WRT tank quick acting valve.
 ALP(150) Interlook with WRT overflow valve.
 ALP(152) Sanitary tank 1 outboard vent, backup.
 ALP(153) 400# air service - torp room.
 ALP(154) 3000#/400# pressure reducing sta relief.
 ALP(155) Blow and vent NPORT 1, port.
 ALP(156) Blow and vent hose conn, NPORT 1, port.
 ALP(157) Blow and vent hose conn, NPORT 2, stbd.
 ALP(158) Sea conn to depth & sea press gages, hull.
 ALP(159) Sea conn to depth & sea press gages, backup.
 ALP(160) Sea pressure gage, shallow, blow conn.
 ALP(161) Sea conn to depth and sea press gage, hull.
 ALP(162) Sea conn to depth and sea press gage, backup.
 ALP(163) Sea press gage, deep, blow down.
 ALP(164) Blow and vent - FO exp tank, hull.
 ALP(165) Blow and vent - FO exp tank, backup.
 ALP(166) Blow and vent - FO exp tank, hose conn.
 ALP(167) Blow and vent - NPORT 2, stbd.
 ALP(168) Blow and vent - NPORT 2, port.
 ALP(169) Blow and vent - NPORT 2, stbd, hose conn.
 ALP(170) Blow and vent - NPORT 2, port, hose conn.
 ALP(183) Sea press torp tube equalization - hull.
 ALP(184) Sea press torp tube equalization, blow.
 ALP(185) Compartment salvage air supply, fwd.
 ALP(187) 100# air from 225#/100# press red.
 ALP(188) 225#/100# press reducing sta relief.
 ALP(189) 100# supply to service line.
 ALP(195) Inbd vent - torp impulse tank, stbd.
 ALP(196) Inbd vent - torp impulse tank, port.
 ALP(211) 400# air from 3000#/400# red sta-torp rm.
 ALP(212) 400# air from 3000#/400# red sta-torp rm.
 ALP(213) 90# air to ram return and vent valve, stbd.
 ALP(214) 90# air to ram return and vent valve, port.
 ALP(237) Sea pressure shutoff to depth element.
 ALP(238) Sea pressure shutoff to depth element.
 ALP(239) Sea press shutoff to depth element press sv.
 ALP(240) Sea pressure shutoff to depth detector.
 ALP(241) Sea pressure shutoff to depth detector.
 ALP(242) See pressure shutoff to depth detector vent
 ALP(256) 400# blow and vent snorkel induction mast
 drain, backup.
 ALP(259) NPORT 1, bd, blow and vent manifold backup.

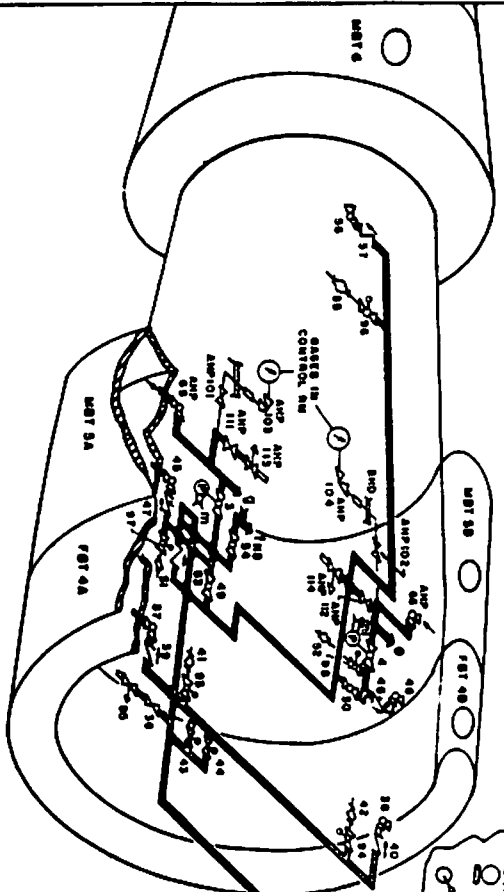
ALP(260) NPORT 1, port, blow & vent manifold
 backup.
 ALP(261) NPORT 2, stbd, blow/vent man. backup.
 ALP(262) NPORT 2, port, blow/vent man. backup.
 ALP(266) NPORT 1, port, blow/vent man. sample.
 ALP(267) NPORT 1, stbd, blow/vent man. sample.
 ALP(268) NPORT 2, port, blow/vent man. sample.
 ALP(269) NPORT 2, stbd, blow/vent man. sample.
 ALP(273) NPORT 2, stbd, blow/vent man. backup.
 ALP(274) FBT 3A, stbd, blow/vent man. backup.
 ALP(277) FBT 3B, port, blow/vent man. backup.
 ALP(278) FBT 3A, stbd, blow/vent man. sample.
 ALP(290) FBT 3B, port, blow/vent man. sample.
 AHP(23) Sea press torp tube eq, backup.
 AHP(24) 3000#/400# pressure reducer.
 a See a plate 23.
 b 400# air to fwd ase trunk. See b
 plate 16-1.
 c 400# air to torp firing valve.
 See plate 11.
 d 400# air to torp firing valve.
 See plate 11.
 d1 400# control air to TD-33, fwd
 trim tank flood. See e1 plate 23.
 e 400# control air to TD-1, fwd trim
 tank drain. See e plate 23.
 e1 400# air to ram return vent valve.
 See plate 11.
 f 400# air to ram return vent valve.
 See plate 11.
 f1 90# air to ram return and vent valve.
 See plate 11.
 g 3000# air supply. See plate 17.
 g1 3000# air supply. See plate 17.
 h Plumbing vent. See a plate 32.
 j 400# control air to TD-2, negative
 tank drain. See e3 plate 23.
 j1 400# control air to TD-29, negative
 tank flood valve. See e2 plate 23.
 k 400# control air HRT LP blow. See a
 plate 20.
 m 225# air from 3000#/225# pressure
 reducer, AHP-52. See e plate 17.



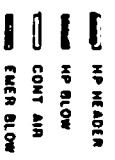
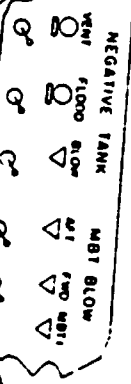
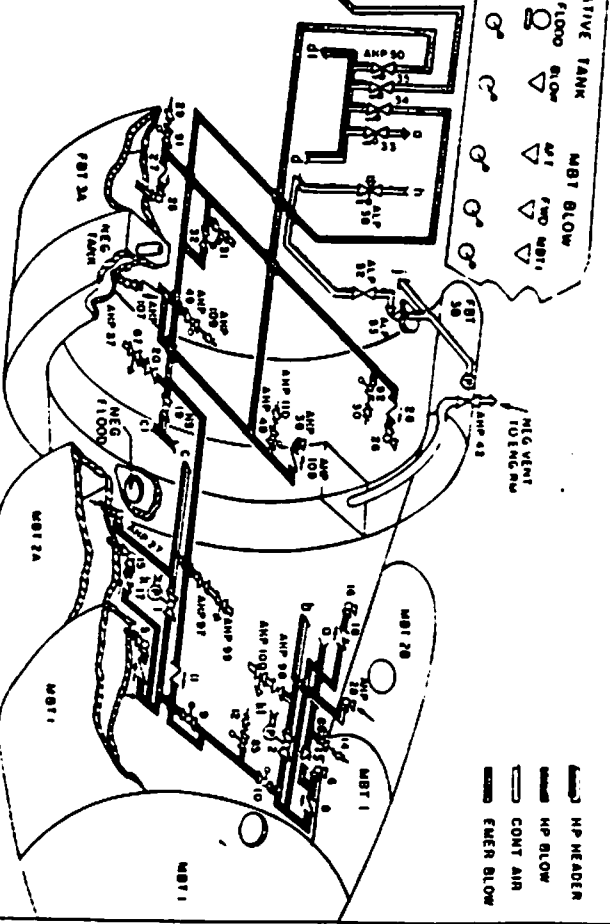
NAVYSHIP'S TAB-55 985-1

18-1 SERVICE AIR SYSTEM-AFT

| | | | | | |
|----------|---|----------|---|----|--|
| ALP(1) | 1000/1000# press red sta blocking valve. | ALP(145) | Vent - potable water tank 2. | a3 | 400# cont air to aux tank 1 flood. |
| ALP(2) | 1000/400# press red sta blocking valve. | ALP(146) | 20# blow battery water cooling system, aft battery. | b | 20# blow - battery fresh water tanks. |
| ALP(3) | 1000/400# press red sta relief. | ALP(148) | 20# blow - hose conn, battery water cooling | o | 100# air to main and vital hyd eye supply tank. See m plate 33. |
| ALP(4) | 1000/400# press red sta relief. | ALP(149) | 20# blow - hose conn, battery water cooling | o1 | 100# air to FO peak position for diator. |
| ALP(5) | 400/100# press reducing station. | ALP(151) | Sanitary tank 2 outboard vent, backup. | o2 | 100# air to air conditioning system. See plate 29. |
| ALP(6) | 400/20# pressure reducing station. | ALP(171) | Sanitary tank 2 outboard vent, backup. | d | 20# air to distillate test tank. See b plate 32. |
| ALP(7) | 400# air to midship compartment. | ALP(172) | Sea press to trim pump press sw. blowdown. | e | See b plate 30. |
| ALP(9) | 400# air to san tank 2 blow/vent man. | ALP(173) | Sea press to trim pump press sw. blowdown. | f | 250# air to engine start. |
| ALP(9) | 400# blow to hydro gauge san tank 2. | ALP(174) | Blow/vent - FO coil tank, hull. | g | 400# air to escape trunk. See o plate 16-1. |
| ALP(10) | 400# air hose conn - engine room, aft. | ALP(175) | Blow/vent - FO coil tank, backup. | h | 100# air to brine tank. (Blank) |
| ALP(20) | 400# control air to aft trim tank flood and drain and trim pump suet & diach. | ALP(176) | Blow/vent - FO coil tank, hose conn. | j | 400# control air to aft trim tank drain, TD-6. See o3 plate 23-1. |
| ALP(21) | 400# cont air to TD-6, aft trim tank drain. | ALP(177) | Blow/vent - NPOT 3, atbd. | j1 | 400# control air to aft trim tank flood, TD-21. See o2 plate 23-1. |
| ALP(22) | 400# cont air to TD-21, aft trim tank drain. | ALP(178) | Blow/vent - NPOT 3, port. | k | 400# control air to trim pump suction, TD-8. See o plate 23-1. |
| ALP(24) | 400# control air to TD-8, trim pump suet. | ALP(179) | Blow/vent - NPOT 3, atbd, hose conn. | m | 400# control air to trim pump discharge, TD-16. See o1 plate 23-1. |
| ALP(25) | 400# control air to TD-16, trim line diach. | ALP(181) | Ble /vent - NPOT 4, port. | n | |
| ALP(26) | 400# air hose conn - mach space. | ALP(182) | Blow/vent - NPOT 4, port, hose conn. | | |
| ALP(27) | 400# blow - aft trim tank. | ALP(186) | Compartment salvage air supply. | | |
| ALP(28) | Aft trim tank vent. | ALP(190) | 400/20# press red sta relief. | | |
| ALP(29) | 400# air hose conn - control room. | ALP(191) | 400# blow - aux tank 1. | | |
| ALP(30) | 400# cont air to TD sys, aux tanks 1 & 2; flood and drain. | ALP(192) | 400# blow - aux tank 2. | | |
| ALP(31) | 400# cont air to TD-27, aux tank 1 flood. | ALP(193) | Vent - aux tank 1. | | |
| ALP(32) | 400# cont air to TD-3, aux tank 1 drain. | ALP(194) | Vent - aux tank 2. | | |
| ALP(33) | 400# cont air to TD-26, aux tank 2 flood. | ALP(197) | Air to inflatable seal. | | |
| ALP(34) | 400# cont air to TD-4, aux tank 2 drain. | ALP(199) | Air to inflatable seal. | | |
| ALP(57) | Sanitary tank 2 inboard vent. | ALP(200) | Air to inflatable seal, relief. | | |
| ALP(59) | Sanitary tank 2 outboard vent. | ALP(201) | Air to inflatable seal, vent. | | |
| ALP(75) | 400# air to aft escape trunk. | ALP(202) | Air to inflatable seal. | | |
| ALP(96) | 250# air from 3000/250# press red. | ALP(233) | 400# air hose conn, mach space. | | |
| ALP(97) | 250# air from 3000/400# press red. | ALP(236) | 100# air to brine tank. (Blank) | | |
| ALP(98) | 250# air from 3000/250# press red relief. | ALP(263) | NPOT 3, atbd, blow/vent man. - backup. | | |
| ALP(99) | 250# air hose conn - engine room. | ALP(264) | NPOT 3, port, blow/vent man. - backup. | | |
| ALP(111) | 100# air blow - VTOP 1 & 2. | ALP(265) | NPOT 4, port, blow/vent man. - backup. | | |
| ALP(112) | Outboard vent VTOP 1 & 2 - backup. | ALP(270) | NPOT 3, port, blow/vent man. - backup. | | |
| ALP(113) | Outboard vent VTOP 1 & 2 - hull. | ALP(271) | NPOT 3, atbd, blow/vent man. - sample. | | |
| ALP(114) | Inboard vent, VTOP 1 & 2. | ALP(272) | NPOT 4, port, blow/vent man. - sample. | | |
| ALP(115) | 100# air hose conn - midship comp, aft. | ALP(275) | FBI 4A, atbd, blow/vent man. - backup. | | |
| ALP(116) | 100# air to main and vital hyd system supply tanks. | ALP(276) | FBI 4B, port, blow/vent man. - backup. | | |
| ALP(119) | 100# air to engine shaft jacking. | ALP(279) | FBI 4A, atbd, blow/vent man. - sample. | | |
| ALP(120) | 100# air to engine shaft jacking. | ALP(280) | FBI 4B, port, blow/vent man. - sample. | | |
| ALP(121) | 100# air hose conn - mach space. | ALP(281) | See press to trim pump press sw - backup. | | |
| ALP(122) | 100# pressure reducing station relief. | AHP(79) | 3000/250# press red - air to eng start. | | |
| ALP(123) | 100# air to air conditioning system. | AHP(80) | 3000/250# press red - air to eng start. | | |
| ALP(124) | 100# air to FO peak position indicator. | AHP(81) | 3000/400# press red - service air. | | |
| ALP(128) | 100# air outboard charging conn. | AHP(82) | 3000/400# press red - service air. | | |
| ALP(129) | 100# air outboard charging conn, hull. | | | | |
| ALP(130) | 100# air outboard charging conn, backup. | | | | |
| ALP(140) | 20# air to distillate test tank. | | | | |
| ALP(142) | 20# blow to potable water tank 1. | | | | |
| ALP(143) | 20# blow to potable water tank 2. | | | | |
| ALP(144) | Vent - potable water tank 1. | | | | |



NOTE: ALL VALVES ARE AOT VALVES
UNLESS OTHERWISE IDENTIFIED



NAVSHIP 3, TAB-33382-1

REF: 33582-513-217209
EMER PIPING DIAG

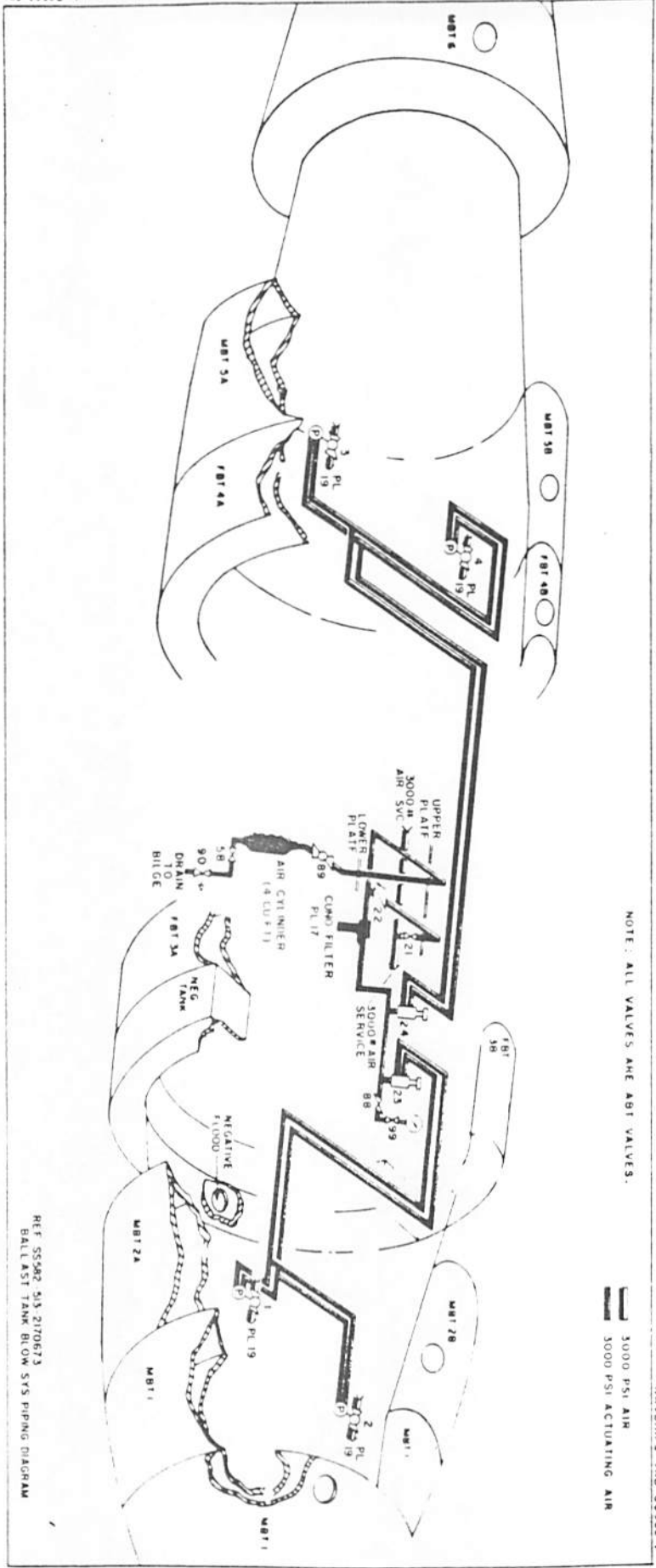
ABR(1) 3000# emergency MBR blow - MBR No. 1 & 2A.
 ABR(2) 3000# emergency MBR blow - MBR No. 1 & 2B.
 ABR(3) 3000# emergency MBR blow - MBR No. 5A & 6.
 ABR(4) 3000# emergency MBR - MBR No. 5B & 6.
 ABR(5) 3000# blow - MBR No. 1 - stbd.
 ABR(6) 3000# blow - MBR No. 1 - port.
 ABR(9) 3000# blow - forward group, cross-connection - stbd.
 ABR(10) 3000# blow - forward group, cross-connection - port.
 ABR(12) 3000# blow - forward group, auto-drain.
 ABR(14) 3000# blow - MBR No. 1 auto-drain - port.
 ABR(15) 3000# blow - MBR No. 2A - stbd, hull.
 ABR(16) 3000# blow - MBR No. 2B - port, hull.
 ABR(19) 3000# HP air supply, cross-connection to MBR header.
 ABR(20) 3000# blow - forward group - drain.
 ABR(25) 3000# blow - PRT No. 3A - stbd, hull.
 ABR(26) 3000# blow - PRT No. 1B - port, hull.
 ABR(29) 3000# blow - PRT No. 3A auto-drain-stbd.
 ABR(30) 3000# blow - PRT No. 3B auto-drain - port.
 ABR(31) 3000# blow - PRT No. 3A-3B - vent - looked open when carrying fuel oil.
 ABR(32) 3000# blow - PRT No. 3A-3B - header - looked shut when carrying fuel oil.
 ABR(33) 3000# blow - MBR No. 1 - port, solenoid.
 ABR(34) 3000# blow - forward group, solenoid.
 ABR(35) 3000# blow - aft group, solenoid.
 ABR(36) 3000# blow - aft group drain.
 ABR(37) 3000# blow - PRT No. 4A - stbd, hull.
 ABR(38) 3000# blow - PRT No. 4B - port, hull.
 ABR(41) 3000# blow - PRT No. 4A auto-drain - stbd.
 ABR(42) 3000# blow - PRT No. 4B auto-drain - port.
 ABR(43) 3000# blow - PRT No. 4A-4B vent - looked open when carrying fuel oil.
 ABR(44) 3000# blow - PRT No. 4A-4B - looked shut when carrying fuel oil.
 ABR(45) 3000# blow - MBR No. 5A - stbd, hull.
 ABR(46) 3000# blow - MBR No. 5B - port, hull.
 ABR(49) 3000# blow - aft group, cross-connection - stbd.
 ABR(50) 3000# blow - aft group, cross-connection - port.
 ABR(51) 3000# blow - MBR No. 5A auto-drain - stbd.
 ABR(52) 3000# blow - MBR No. 5B auto-drain - port.
 ABR(54) 3000# HP air supply, cross-connection to MBR header.
 ABR(55) 3000# blow - MBR No. 6 auto-drain.
 ABR(56) 3000# blow - MBR No. 6, hull.
 AHP(27) 3000# air bank No. 1, hull.
 AHP(28) 3000# air bank No. 2, hull.
 AHP(37) 3000# air - negative tank blow - stbd, hull.
 AHP(38) 3000# air - negative tank blow - port, hull.

AHP(42) Negatives tank vent - port.
 AHP(50) 3000# blow - negative tank, solenoid.
 AHP(65) 3000# air bank No. 3 - stbd, hull.
 AHP(66) 3000# air bank No. 4 - port, hull.
 AHP(98) HP air bank No. 2 blow - drain.
 AHP(99) HP air bank No. 1 blow - drain.
 AHP(100) HP air bank No. 2 blow - drain.
 AHP(109) 3000# blow negative tank - auto-drain, stbd.
 AHP(110) 3000# blow negative tank - auto-drain, port.
 AHP(111) HP air bank No. 3 blow - drain.
 AHP(112) HP air bank No. 4 blow - drain.
 AHP(113) HP air bank No. 3 blow - drain.
 AHP(114) HP air bank No. 4 blow - drain.
 ALP(38) Control valve - 400# air to air operated negative tank vent valves.
 ALP(52) 400# control air to air operated negative tank vent valves.
 ALP(59) 400# control air to air operated negative tank vent valves.
 a From ABR-39, MBR No. 1 blow.
 a1 3000# air to MBR No. 1 blow.
 b 3000# air from air bank No. 2, plate 17
 o 3000# air from air bank No. 1, plate 17
 o1 3000# air from air bank No. 1, plate 17
 d 3000# air service, plate 17
 d1 3000# air to reducer - snorkel head valve, plate 17
 e 3000# air - air bank No. 4, plate 17-2.
 f 3000# air service header, plate 17-2.
 r 3000# air from air bank No. 3, plate 17-2.
 R 400# actuating air negative tank vent valves.
 h To negative vent valve AHP-41, stbd.
 j

ABR(85)* 3000# blow - forward group, auto-drain shutoff.
 ABR(86)* 3000# blow - MBR No. 1, auto-drain shutoff, P.
 ABR(91)* 3000# blow - PRT 3A, auto-drain shutoff, S.
 ABR(92)* 3000# blow - PRT 3B, auto-drain shutoff, P.
 ABR(93)* 3000# blow - PRT 4A, auto-drain shutoff, S.
 ABR(94)* 3000# blow - PRT 4B, auto-drain shutoff, P.
 ABR(96)* 3000# blow - MBR 6, auto-drain shutoff.
 ABR(97)* 3000# blow - MBR 5A, auto-drain shutoff, S.
 ABR(98)* 3000# blow - MBR 5B, auto-drain shutoff, P.

AHP(48)* Auto-drain shutoff, 3000# negative tank blow, port.
 AHP(49)* Auto-drain shutoff, 3000# negative tank blow, stbd.

* These valves are NDV items called for by BU Ltr SS580 Ser 648-48 of 1 March 1965 and will not be installed on the USS BONEFISH during the 1964-1965 SUBSAFE overhaul.



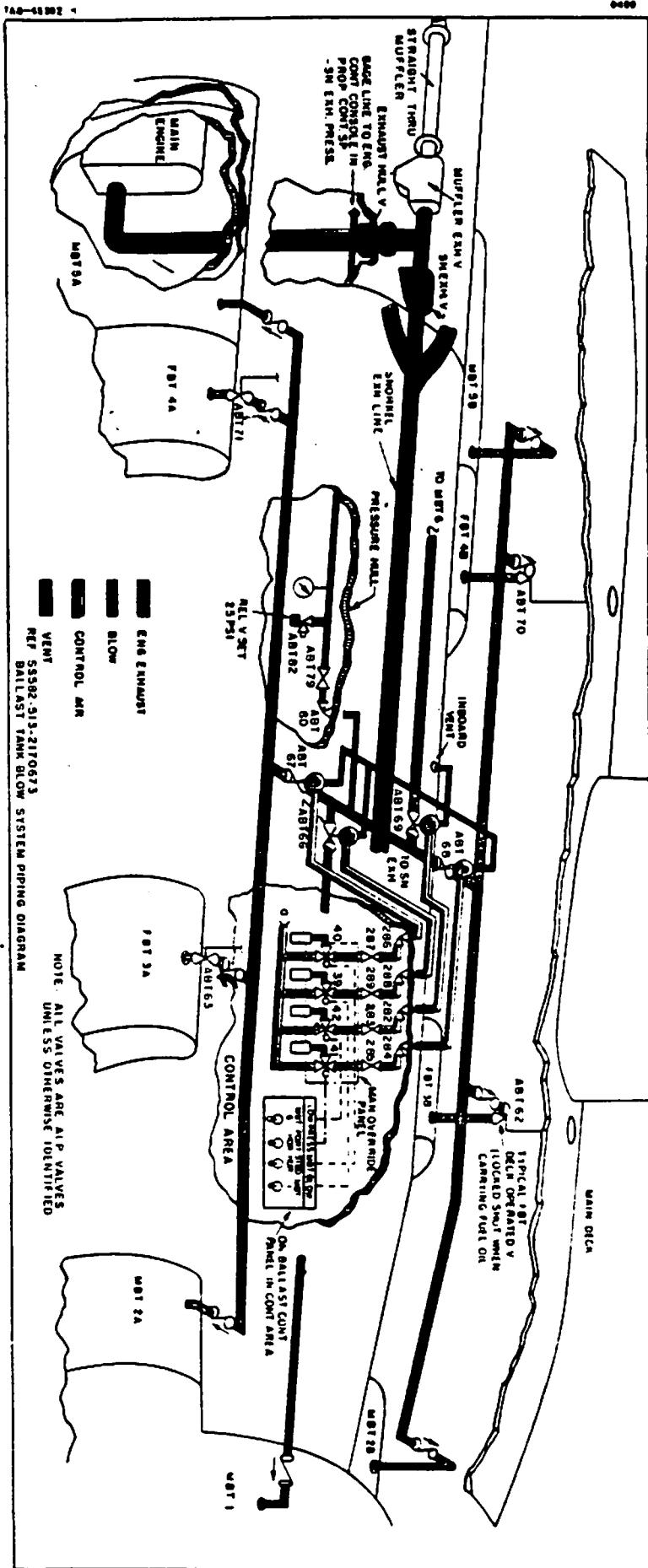
REF: 55982, 515, 2170623
 BALLAST TANK BLOW SYS PIPING DIAGRAM

NAVSHIPS TAB-SS582-1

ABT (1) 3000# emergency MBT blow - MBT No. 1 & 2A.
ABT (2) 3000# emergency MBT blow - MBT No. 1 & 2B.
ABT (3) 3000# emergency MBT blow - MBT No. 5A & 6.
ABT (4) 3000# emergency MBT blow - MBT No. 5B & 6.
ABT (21) 3000# actuating air supply emer MBT blow valve.
ABT (23) 3000# actuating air supply fwd emer MBT blow valve.
ABT (24) 3000# actuating air supply aft emer MBT blow valve.
ABT (58) 3000# actuating air supply emer MBT blow, flask drain.
ABT (89)* 3000# actuating air flask shutoff.
ABT (90)* 3000# actuating air flask drain.

* Valves ABT (89) and ABT (90) are NIV items called for by BU Ltr
SS580 Ser Q48-H88 of 1 March 1965 and will not be installed on
the USS BORETISH during the 1964-1965 Subsafe overhaul.

19-1A EMER MBT BLOW - ACTUATING AIR



ABR(62) Engine exhaust gas blow - FBT 1B, port.
 ABR(63) Engine exhaust gas blow - FBT 2A, stbd.
 ABR(66) Engine exhaust gas blow - MBF 1.
 ABR(67) Engine exhaust gas blow - stbd header.
 ABR(68) Engine exhaust gas blow - port header.
 ABR(69) Engine exhaust gas blow - MBF 6.
 ABR(70) Engine exhaust gas blow - FBT 4B, port.
 ABR(71) Engine exhaust gas blow - FBT 4A, stbd.
 ABR(79) Exhaust gas to main snorkel exh valve auto open switch.
 ABR(80) Exhaust gas to main snorkel exh valve auto open switch.
 ABR(82) Main snorkel exhaust gas pressure relief.
 ALP(39) 400# control air to eng exh gas blow - MBF 1.
 ALP(40) 400# control air to eng exh gas blow - stbd header.
 ALP(41) 400# control air to eng exh gas blow - port header.
 ALP(42) 400# control air to eng exh gas blow - MBF 6.
 ALP(2R2) 400# control air to eng exh gas blow - MBF 6, backup.
 ALP(2R3) 400# control air to eng exh gas blow - port header.
 ALP(2R4) 400# control air to eng exh gas blow - port header backup.
 ALP(2R5) 400# control air to eng exh gas blow - stbd header.
 ALP(2R6) 400# control air to eng exh gas blow - stbd header backup.
 ALP(2R7) 400# control air to eng exh gas blow - MBF 1.
 ALP(2R8) 400# control air to eng exh gas blow - MBF 1.
 ALP(2R9) 400# control air to eng exh gas blow - MBF 1 backup.

400# service air. See k plate 1B.

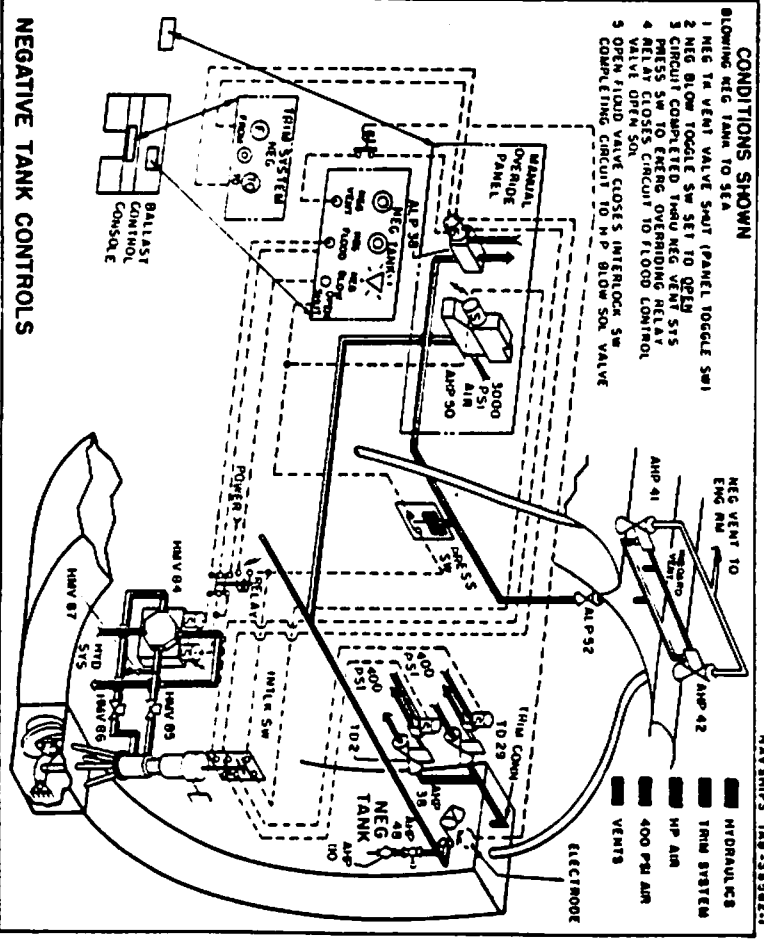
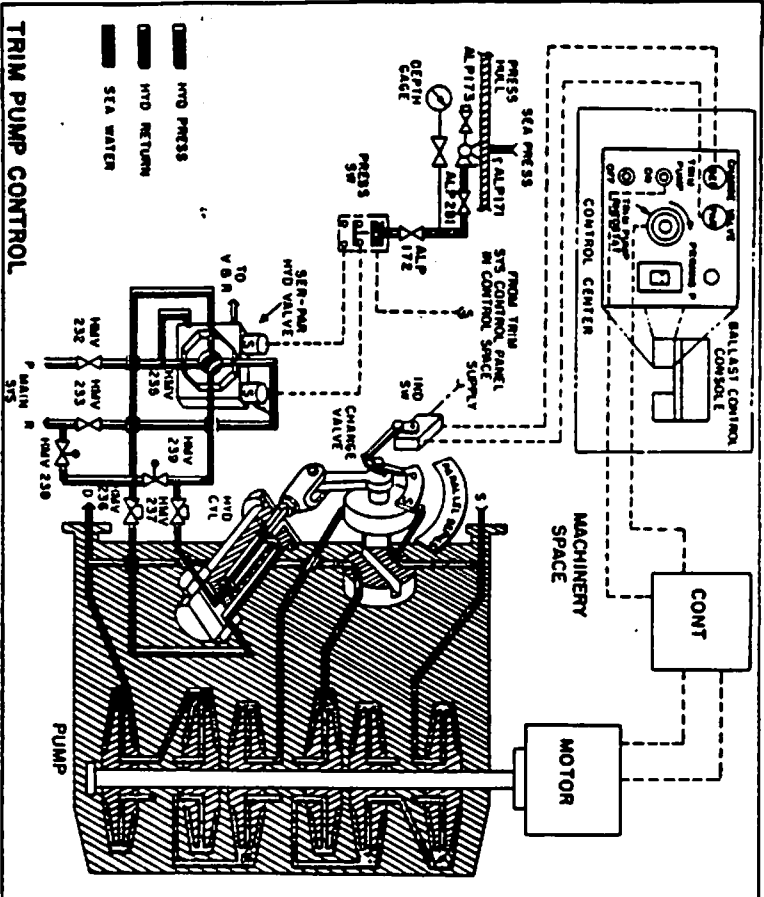
NAVSHIPS TAB-SS582-1

AHP(37) 3000# negative tank blow, stbd.
 AHP(38) 3000# negative tank blow, port.
 AHP(41) Negative tank vent, stbd.
 AHP(42) Negative tank vent, port.
 AHP(48)* 3000# negative tank blow, port, auto drain shutoff.
 AHP(49)* 3000# negative tank blow, stbd, auto drain shutoff.
 AHP(50) 3000# air to negative tank blow.
 AHP(52) Negative tank inbd vent.
 AHP(109) 3000# blow negative tank, stbd, auto-drain.
 AHP(110) 3000# blow negative tank, port, auto-drain.
 ALP(32) 400# control air to air operated valve, negative tank vent.
 ALP(40) 400# control air to air operated valve, stbd header.
 ALP(42) 400# control air to air operated valve, MBT 6.
 ALP(51) 400# control air to negative tank vent pressure switch.
 ALP(52) 400# control air to negative tank vent, backup.
 ALP(53) 400# control air to negative tank vent, hull.
 ALP(282) 400# control air to engine exhaust gas blow, MBT 6.
 ALP(283) 400# control air to engine exhaust gas blow, MBT 6 backup.
 ALP(286) 400# control air to engine exhaust gas blow, stbd header.
 ALP(287) 400# control air to engine exhaust gas blow, stbd header backup.
 AHT(35) 3000# blow aft trim.
 AHT(67) Exhaust gas blow, stbd header.
 AHT(69) Exhaust gas blow, MBT 6.
 TD(2) Negative tank drain to trim suction line.
 TD(29) Negative tank flood from trim discharge.

21A

MBT & NEGATIVE TANK ARRANGEMENT

IPW(84) Vial hyd return from relative tank flood control valve.
 IPW(85) Negative tank flood - flow control, shut.
 IPW(86) Negative tank flood - flow control, open.
 IPW(87) Negative tank flood, bypass.
 a Vial hyd supply to negative tank flood control valve. See plate 33-1.
 al Vial hyd return from negative tank flood control valve. See plate 33-1.
 b Vent and replenish, negative tank flood. See plate 33-1.
 c 400# control air, negative tank flood. See J plate 18.
 o1 400# control air, negative tank drain. See J plate 18.
 d Negative tank flood from trim discharge. See plate 23.
 dl Negative tank drain to trim suction line. See plate 23.
 e 3000# air supply. See plate 17.
 f 3000# air supply. See plate 17.
 g 400# air supply. See plate 18.
 h 400# air supply. See plate 18.
 j 400# air supply. See plate 18.



21-1 TRIM PUMP & NEG TANKS CONTROL

NAVSHIPS TAB-SS582-1

HMW (232) Main pressure to trim pump control
 HMW (233) Main return from trim pump control
 HMW (235) Trim pump control valve
 HMW (236) Flow control to trim pump control
 HMW (237) Flow control from trim pump control
 HMW (238) Return bypass from control valve
 HMW (239) Press. cross-over from trim pump control

ALP (171) Sea press. to trim pump press. sv, hull
 ALP (172) Sea press. to trim pump press. sv
 ALP (173) Sea press. to trim pump press. sv, blowdown
 ALP (261) Sea press. to trim pump press. sv, backup

ALP (38) 4000^f control air to neg tank vent valve
 ALP (52) 4000^f control air to neg tank vent valve,
 backup

AHP (38) 3000^f neg tank blow, port
 AHP (41) Neg tank vent, stbd
 AHP (42) Neg tank vent, port
 AHP (48)* 3000^f neg tank blow, auto-drain shutoff,
 port
 AHP (50) 3000^f air to neg tank blow
 AHP (110) 3000^f blow neg tank, auto-drain, port

HMW (84) Vlt hyd ret from neg tank flood control
 valve
 HMW (85) Neg tank flood - flow cont - shut
 HMW (86) Neg tank flood - flow cont - open
 HMW (87) Neg tank flood - bypass

TD (2) Neg tank drain to trim wet line
 TD (29) Neg tank flood from trim dash

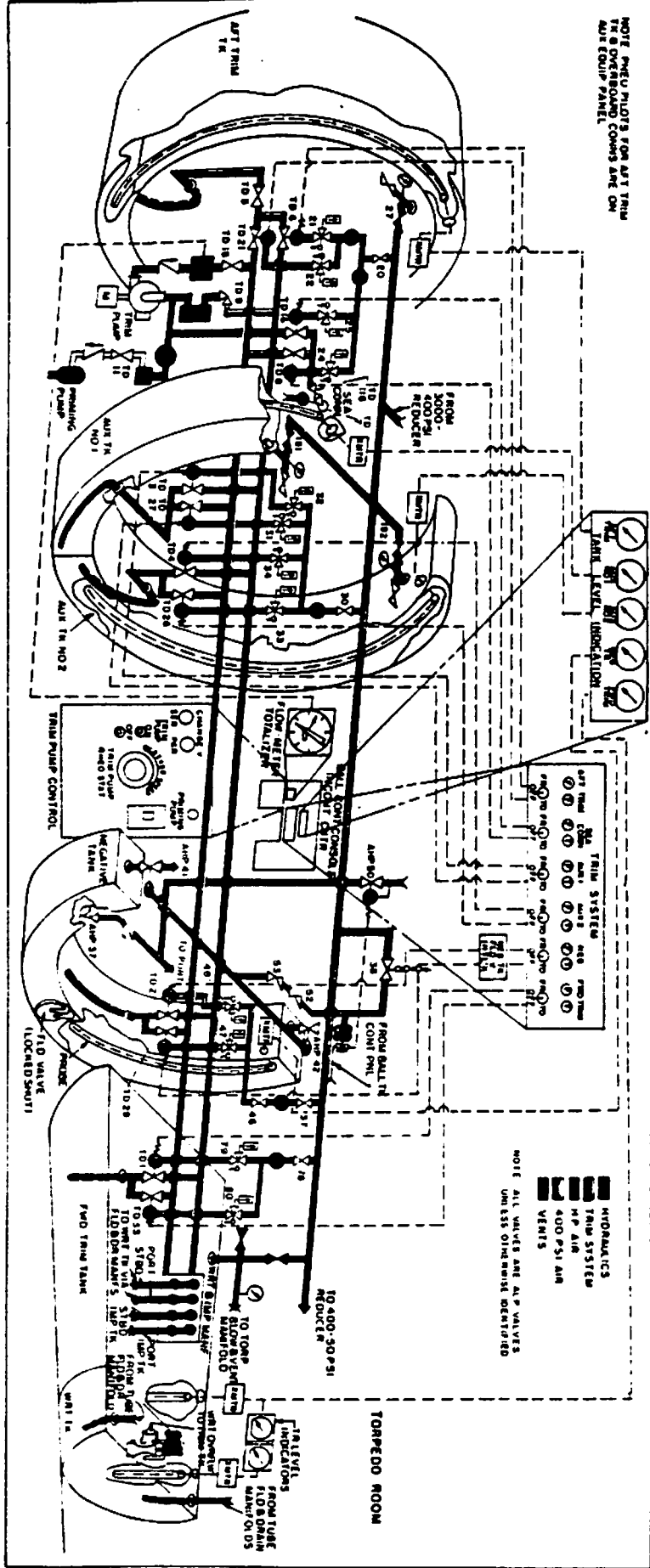
21-1A

TRIM PUMP CONTROL

NEGATIVE TANK CONTROLS

* Valve AHP(48) is an MW item called for by BU Ltr SS580 ser 648-486 of March 1965 and will not be installed on the USS BORWIS during the 1964-1965 SUBSAFE overhaul.

NOTE: PRESSURE GAUGES FOR AIR TRIM IN THE OVERBOARD COMBES ARE ON MAIN EQUIP PANEL.



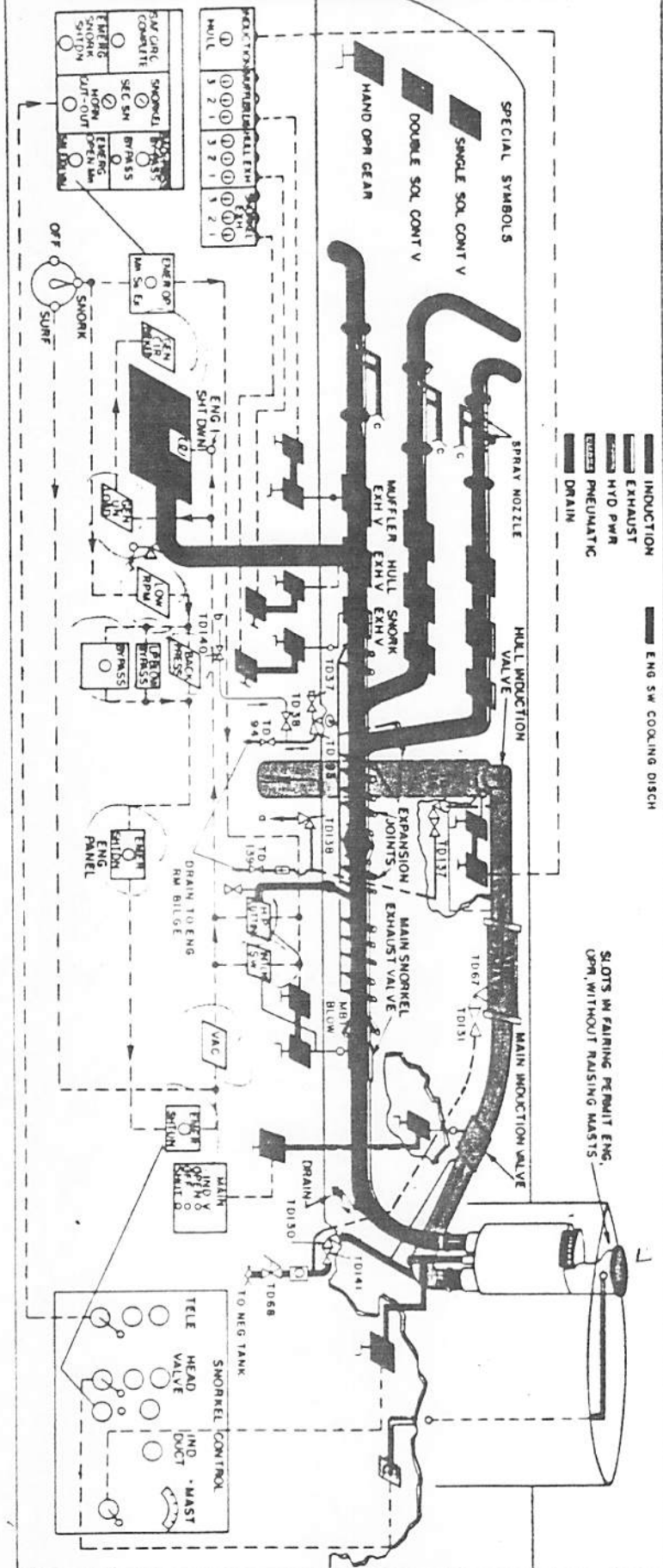
NAVSHIPS 149-64302-1

22 VARIABLE BALLAST COMPOSITES

(rol air to TD eye, aft trim tank and trim pump.
 (rol air to TD-6, aft trim tank drain.
 (rol air to TD-21, aft trim tank flood.
 (rol air to TD-8, trim pump section
 (rol air to TD-16, trim line discharge.
 v - aft trim tank.
 (rol air to TD eye, aux tanks 1 & 2 flood & drain.
 (rol air to TD-27, aux tank 1 flood.
 (rol air to TD-3, aux tank 1 drain.
 (rol air to TD-26, aux tank 2 flood.
 (rol air to TD-4, aux tank 2 drain.
 service - midship fwd.
 (rol air, negative tank vent valve.
 (rol air to TD eye, negative tank flood and drain valves.
 (rol air to TD-29, negative tank flood valve.
 (rol air to TD-2, negative tank drain valve.
 (rol air to AHP eye, negative tank vent valve backup.
 (rol air to AHP eye, negative tank vent valve, hull.
 (rol air to TD eye, fwd trim tank flood and drain valves.
 (rol air to TD-1, fwd trim tank drain valve.
 (rol air to TD-33, fwd trim tank flood valve.
 v - aux tank 1.
 v - aux tank 2.
 tank drain to trim suction line.

AHE BALLAST COMPOSITE

TD(2) Negative tank drain to trim suction line.
 TD(3) Aux tank 1 drain to trim suction line.
 TD(4) Aux tank 2 drain to trim suction line.
 TD(5) Aft trim tank flood and drain.
 TD(6) Trim suction from aft trim tank.
 TD(7) Trim pump suction and discharge.
 TD(8) Trim pump suction.
 TD(9) Trim pump suction, backup.
 TD(11) Trim eye priming pump suction from priming valve.
 TD(15) Trim pump discharge.
 TD(16) Trim line discharge to sea.
 TD(21) Trim discharge to aft trim tank.
 TD(22) Aux tank 2 flood.
 TD(26) Aux tank 1 flood.
 TD(27) Negative tank flood.
 TD(29) Negative tank flood.
 TD(33) Fwd trim tank flood.
 TD(116) Trim pump suction and discharge - backup.
 AHP(37) 3000# blow negative tank, stbd, hull.
 AHP(41) Negative tank vent, stbd.
 AHP(42) Negative tank vent, port.
 AHP(50) 3000# blow - negative tank, solenoid.

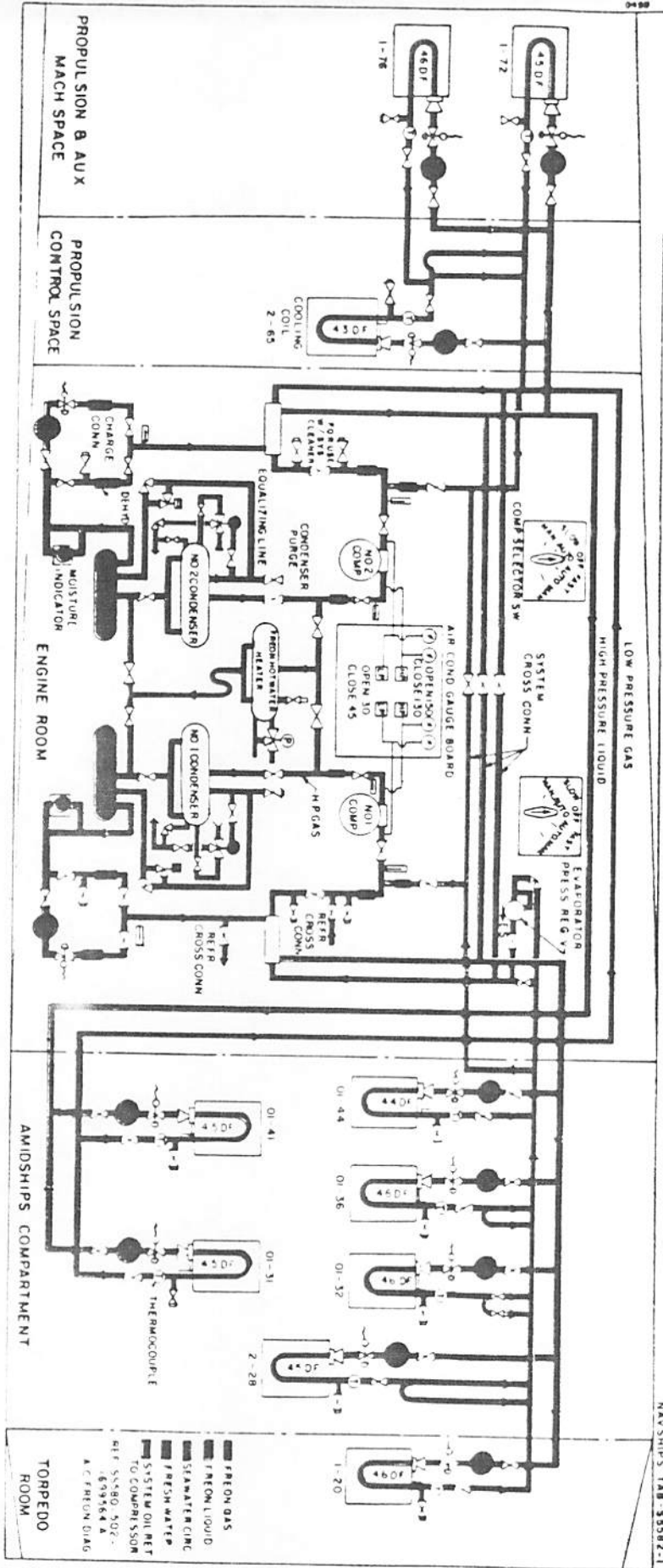


NAVSHIPS TAB-53582-1

24 INDUCTION AND EXHAUST COMPOSITE

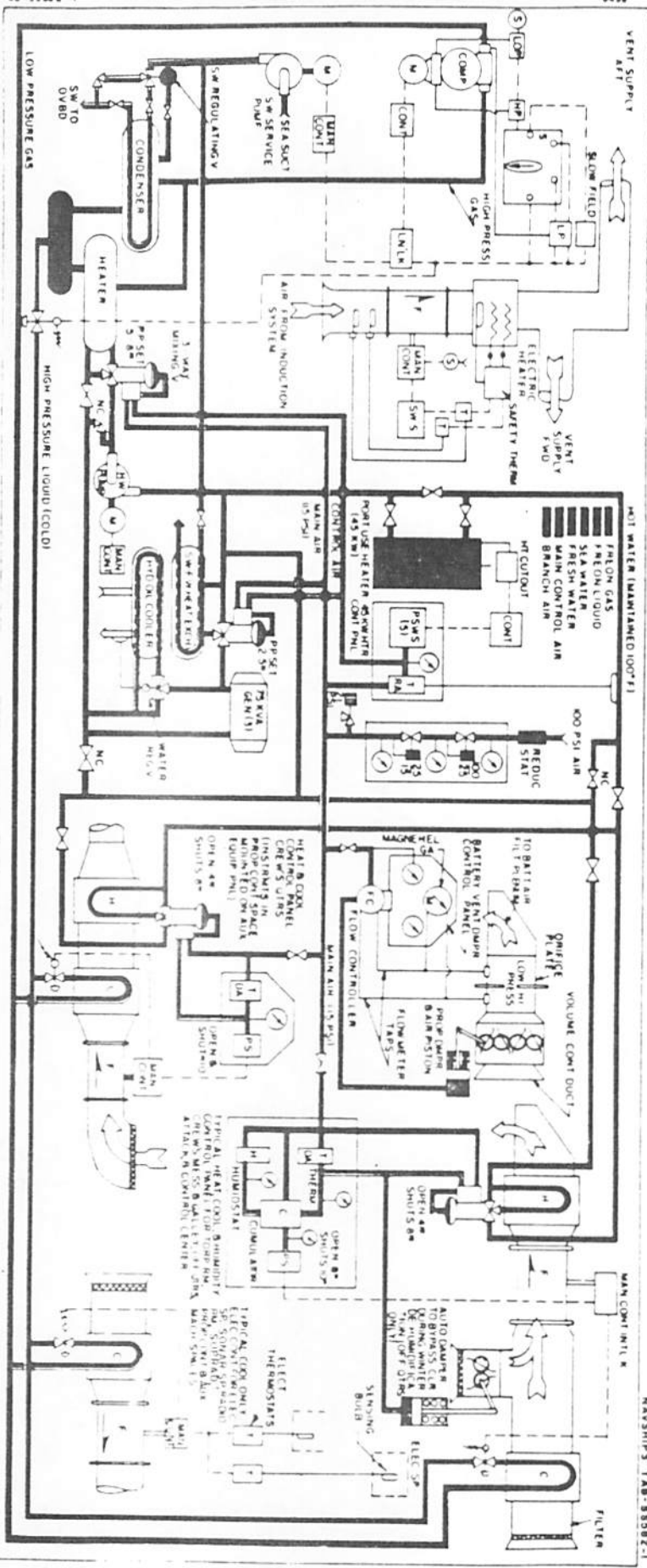
NAVSHIPS TAB-SS562-1

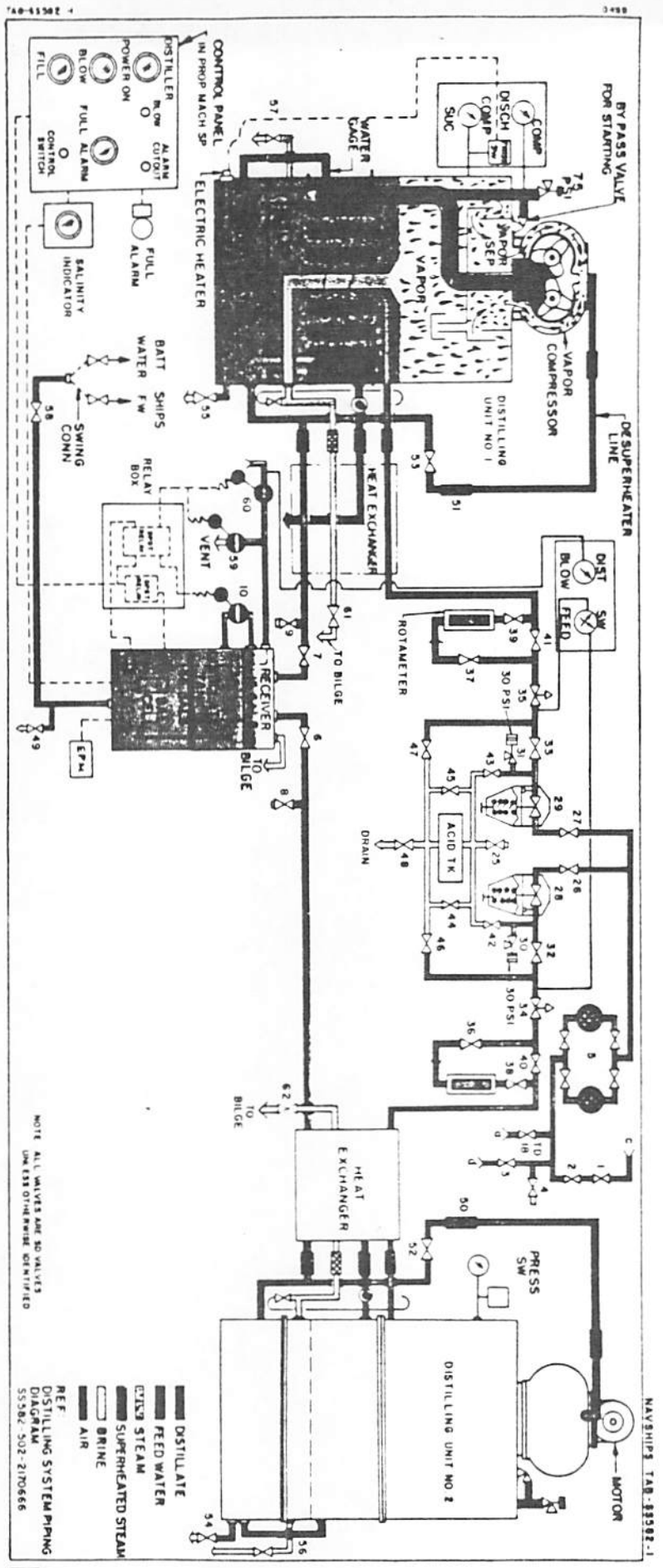
- TD(38) Snorkel exhaust flushing.
 - TD(67) Snorkel induction separator drain to negative tank.
 - TD(68) Snorkel induction mist and separator drain to negative tank.
 - TD(93) Snorkel exhaust drain and flush.
 - TD(94) Snorkel exhaust drain to engine room bilge.
 - TD(130) Snorkel induction drain to negative tank.
 - TD(131) Snorkel induction water separator drain - backup.
 - TD(136) Snorkel induction drain.
 - TD(138) Main engine air induction drain.
 - TD(139) Snorkel induction and main engine air induction drain to bilge.
 - TD(140) Snorkel exhaust flushing from trim pump discharge.
 - TD(141) Snorkel induction drain to negative tank, backup.
 - TD(37) Snorkel exhaust drain and flush, blowdown.
- a Main engine air induction drain.
- b Snorkel exhaust flushing from trim pump discharge. See plate 23-1.
- c Engine sea water cooling discharge. See e plate 47-1.



NAVSHIPS TAB-35982-1

27 AIR CONDITIONING FREON SYSTEM





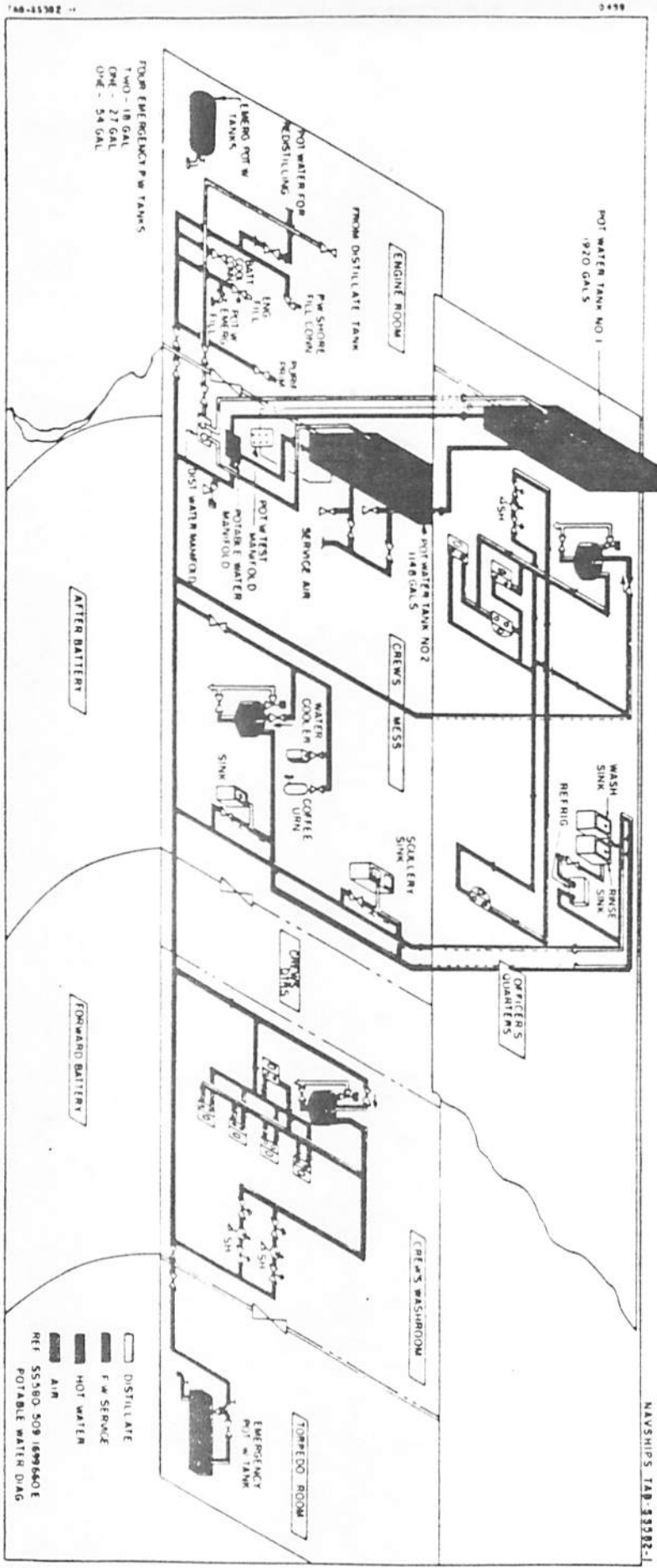
NAVSHIPS TAB-88382-1

REF. DISTILLING SYSTEM PIPING DIAGRAM 55582-502-210666

DISTILLING SYSTEM

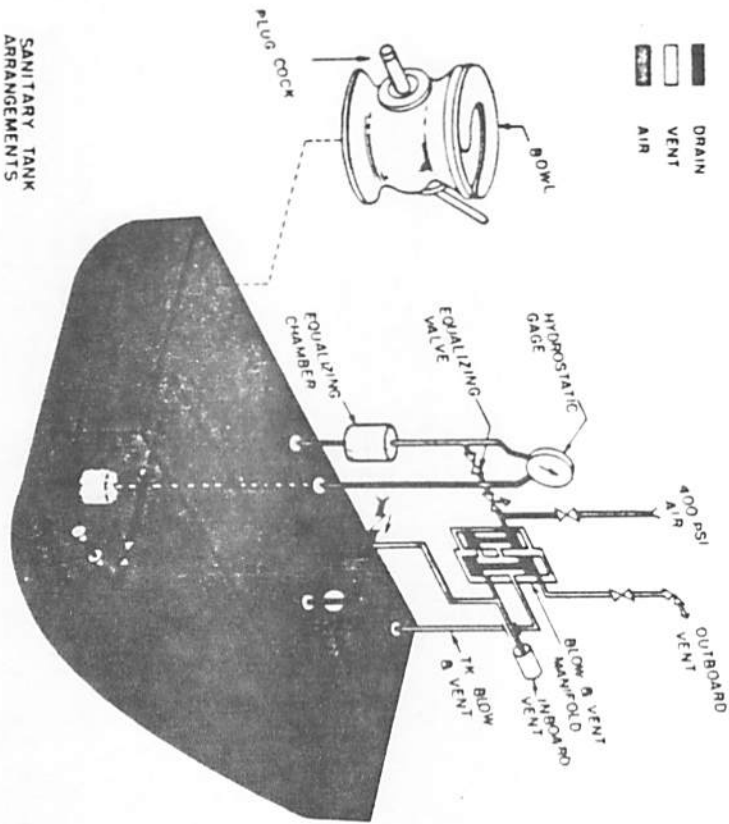
NAVYSHIP 71B-SS02-1

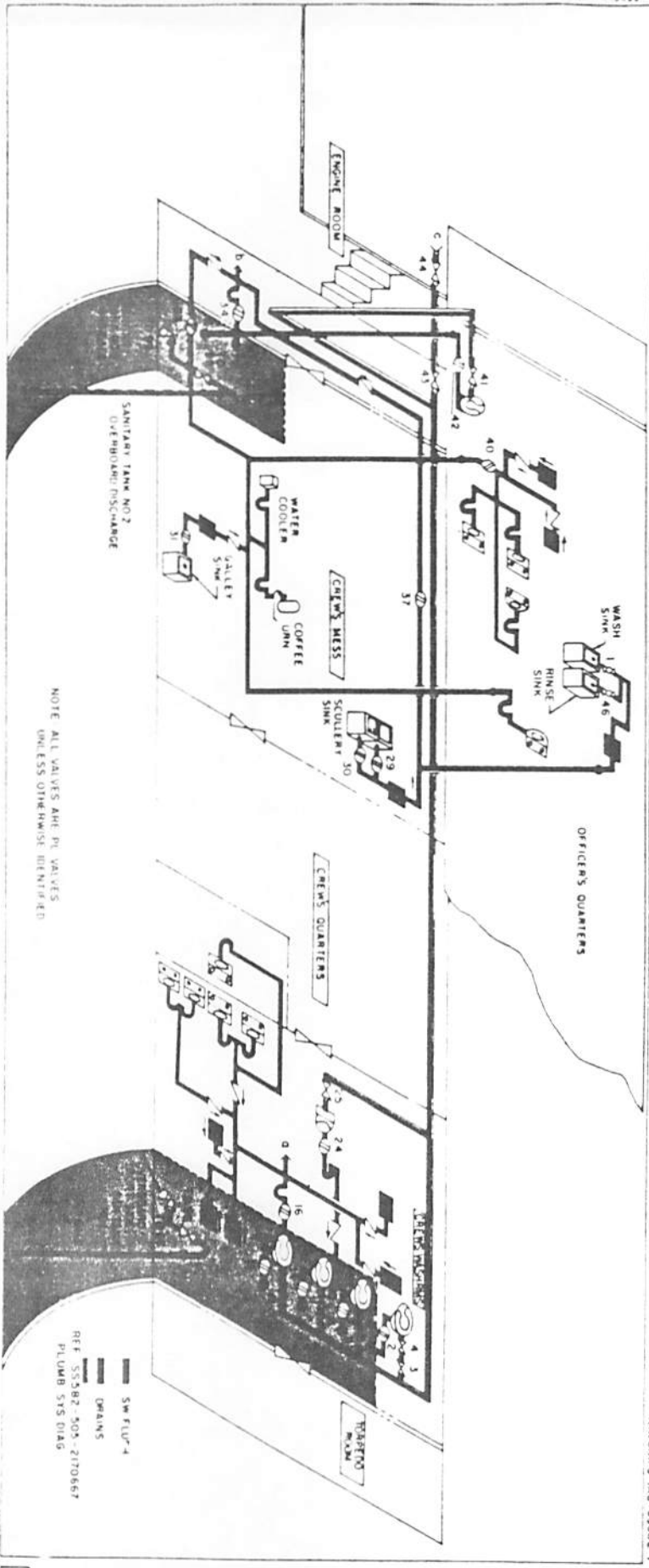
| | | | |
|--------|---|--|--|
| SD(1) | See water feed to feed manifold. | | |
| SD(2) | Sea water feed to feed manifold. | | |
| SD(3) | Fresh water feed to feed manifold. | | |
| SD(4) | Hose connection for acid cleaning. | | |
| SD(5) | Distiller feed manifold. | | |
| SD(6) | Cond heat exchanger No. 2 to dis- tillate tank. | | |
| SD(7) | Cond heat exchanger No. 1 to dis- tillate tank. | | |
| SD(8) | Hose connection for acid tank. | | |
| SD(9) | Hose connection for acid tank. | | |
| SD(10) | Distillate tank - from receiver to tank. | | |
| SD(25) | Acid pump fill connection. | | |
| SD(26) | Feed to regulator valve No. 2. | | |
| SD(27) | Feed to regulator valve No. 1. | | |
| SD(28) | Regulator - feed to No. 2 rotameter. | | |
| SD(29) | Regulator - feed to No. 1 rotameter. | | |
| SD(30) | Relief - feed to No. 2 rotameter. | | |
| SD(31) | Relief - feed to No. 1 rotameter. | | |
| SD(32) | Feed to No. 2 rotameter. | | |
| SD(33) | Feed to No. 1 rotameter. | | |
| SD(34) | Flow control - feed to No. 2 rotameter. | | |
| SD(35) | Flow control - feed to No. 1 rotameter. | | |
| SD(36) | Feed to No. 2 rotameter. | | |
| SD(37) | Feed to No. 1 rotameter. | | |
| SD(38) | Feed from No. 2 rotameter. | | |
| SD(39) | Feed from No. 1 rotameter. | | |
| SD(40) | Feed bypass - No. 2 rotameter. | | |
| SD(41) | Feed bypass - No. 1 rotameter. | | |
| SD(42) | Feed No. 2 regulator valve to acid tank. | | |
| SD(43) | Feed No. 1 regulator valve to acid tank. | | |
| SD(44) | Acid tank bypass. | | |
| SD(45) | Acid tank bypass. | | |
| SD(46) | Acid flushing to No. 2 rotameter. | | |
| SD(47) | Acid flushing to No. 1 rotameter. | | |
| SD(48) | Acid tank drain. | | |
| SD(49) | Distillate tank cond drain to bilge. | | |
| SD(50) | Desuper heat drip to compr No. 2 still. | | |
| SD(51) | Desuper heat drip to compr No. 1 still. | | |
| SD(52) | Desuper heat drip to compr No. 2 still. | | |
| SD(53) | Desuper heat drip to compr No. 1 still. | | |
| SD(54) | Distiller No. 2 cond drain to bilge. | | |
| SD(55) | Distiller No. 1 cond drain to bilge. | | |
| SD(56) | Distiller No. 2 brine drain to bilge. | | |
| SD(57) | Distiller No. 1 brine drain to bilge. | | |
| SD(58) | Distilled water from distillate tank to fresh water/distilled water sys. | | |
| SD(59) | Distillate tank vent. | | |
| SD(60) | 20g/ air to distillate tank. | | |
| SD(61) | No. 1 heat exchanger brine drain to bilge. | | |
| SD(62) | No. 2 heat exchanger brine drain to bilge. | | |
| TD(18) | Distiller feed from trim system. | | |
| a | See water supply from trim system. See e plate 23-1. | | |
| b | 20 psi air to distillate tank. See a plate 18-1. | | |
| c | See water supply. See d plate 42. | | |
| d | Fresh water feed to feed manifold. See Plate 31. | | |



31 POTABLE WATER SYSTEM

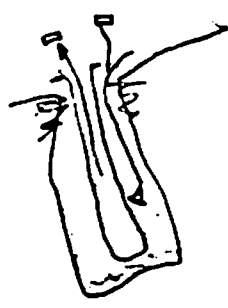
SANITARY TANK ARRANGEMENTS





- PL(1) Pantry wash sink drain.
- PL(2) Crew's WC drain.
- PL(3) Crew's VR & WC flushing.
- PL(4) Crew's VR & WC flushing.
- PL(5) Crew's VR & WC flushing.
- PL(6) Crew's VR & WC flushing.
- PL(7) Crew's WC discharge.
- PL(9) Crew's VR & WC flushing.
- PL(10) Crew's VR & WC flushing.
- PL(11) Crew's WC discharge.
- PL(13) Crew's VR & WC flushing.
- PL(14) Crew's VR & WC flushing.
- PL(15) Crew's WC discharge.
- PL(16) Shower, lavatory and floor drain to sanitary tank No. 1.
- PL(24) Crew's urinal discharge.
- PL(25) Flushing to crew's urinal.
- PL(29) Sullery sink drain.
- PL(30) Sullery sink drain.
- PL(31) Galleys sink drain.
- PL(33) Drain to sanitary tank No. 2.
- PL(34) P/S drain to sanitary tank No. 2.
- PL(37) Drain to sanitary tank No. 2.
- PL(40) Drain to sanitary tank No. 2.
- PL(41) Crew's urinal flushing.

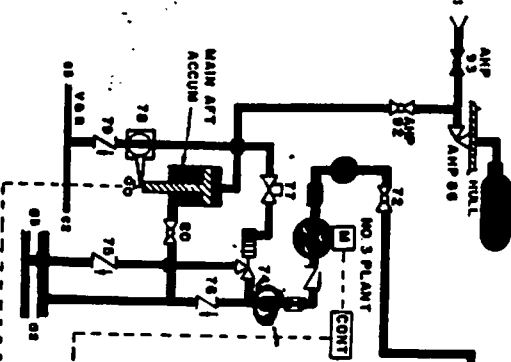
- PL(42) Officer's WC disch to sanitary tank.
- PL(43) Flushing main to VR & WC.
- PL(44) Flushing main to VR & WC.
- PL(45) Pantry rinse sink drain.
- TD(96) Sanitary tank No. 1 overboard disch.
- TD(97) Sanitary tank No. 1 overboard disch, hull.
- TD(98) Sanitary tank No. 2 overboard disch.
- TD(99) Sanitary tank No. 2 overboard disch, hull.
- a Plumbing vent. See h Plate 18.
- b Plumbing vent. See d Plate 18-1.
- o See water flushing. See a Plate 42.



REF: 85302-308-2170674
 HYD SYS DIAGRAM

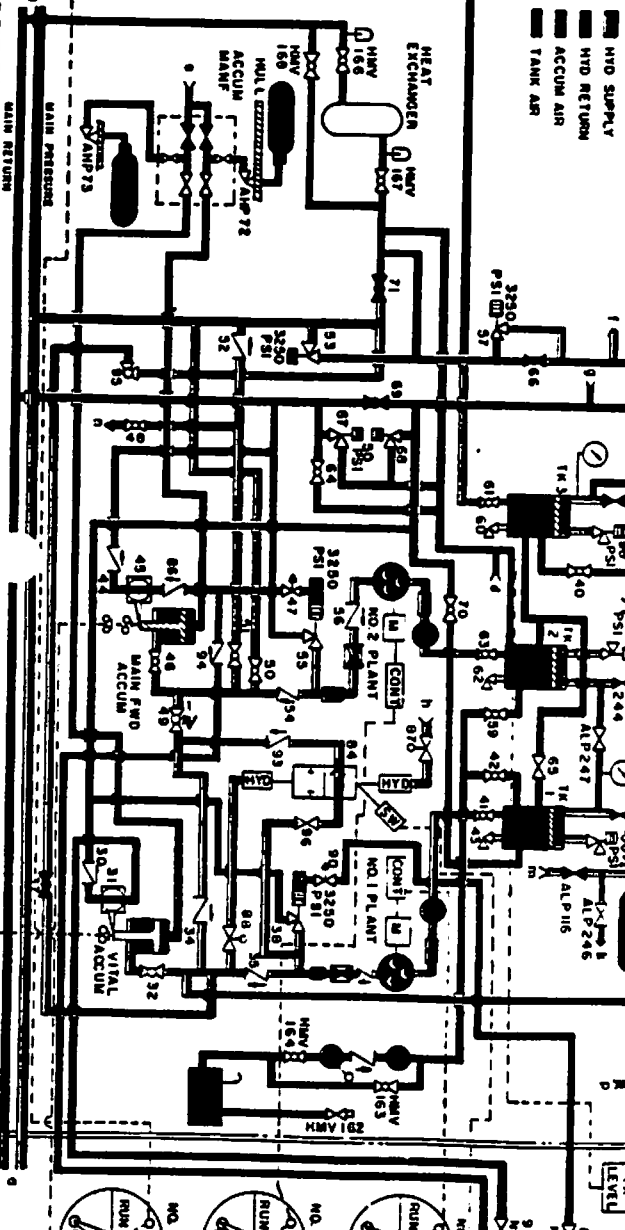
NOTE: ALL VALVES ARE HPP VALVES
 UNLESS OTHERWISE IDENTIFIED

PROPULSION MACH SPACE

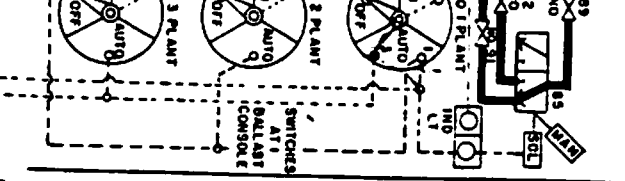


■ HYD SUPPLY
 ■ HYD RETURN
 ■ ACCUM AIR
 ■ TANK AIR

ENGINE ROOM



MIDSHIPS COMPARTMENT



NAVSHIPS TAB-35302-1

33 MAIN AND VITAL HYDRAULIC POWER PLANTS

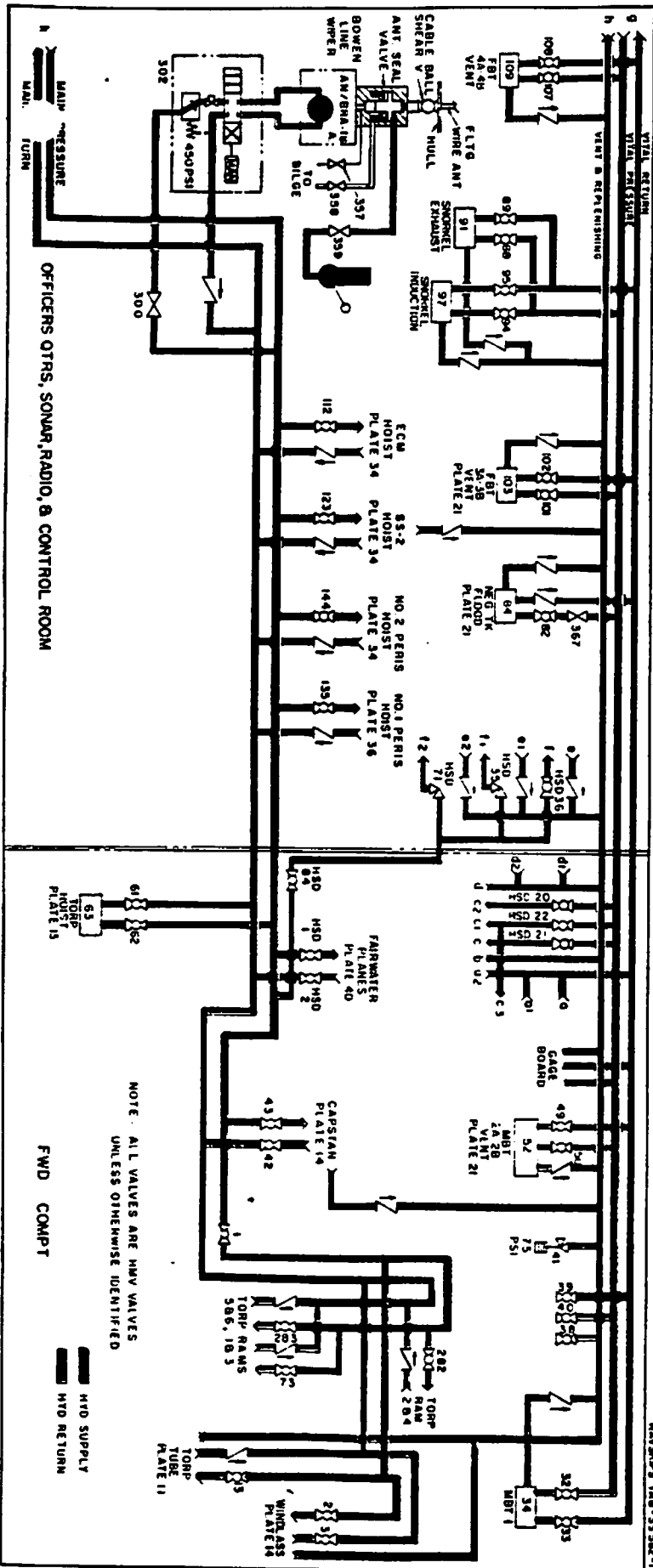
HPP(91) Pilot valve. Vital accumulator actuate - Plant No. 1.
 HPP(92) Vital accumulator - Charge & Disch. Pilot control to pilot - Vital Accum - Plant No. 1.
 HPP(93) Cross-connection - Vital & Fwd Main. Relief-unloading - Vital pump - Plant No. 1. Vent & replenish to supply tank 3. Tank No. 1 supply to vital pump. Reserve oil supply to supply tank No. 1. Supply tank No. 1 drain. Pilot valve Fwd Main accumulator actuate - Plant No. 2.
 HPP(46) Fwd Main Accumulator - charge & disch. Flow control to pilot - Fwd Main Accumulator. Fwd Pump Supply to External Accum Pilot Valve. Cross-connection - main to vital. Cross-connection No. 3 Plant to No. 1 & 2 Plants.
 HPP(51) Fwd Main Plant No. 2 Disch. Relief from power plant No. 2. Relief-unloading from No. 2 main pump. Relief from power plant No. 1 vital. Reserve oil supply to main supply tank. Supply tank No. 3 drain. Tank No. 3 supply to aft main pump No. 3. Supply tank No. 2 drain. Tank No. 2 supply to fwd main pump No. 2. Cooler bypass. Main and Vital Supply tanks cross-connection. Vital system hand bypass. Relief. Main return to supply tanks. Relief. Vital return to supply tanks. Cross-connection - main and vital return. Vital & main return to supply tank No. 1. Main system hand bypass. Aft main pump 3 suction. Relief-unloading - No. 3 main pump. Pilot control to pilot - aft main accum. Pilot valve aft main accumulator actuate. Aft main accumulator charge & disch. Pilot oper blocking valve cross-over-vital pump to main eye. Solenoid oper 4-way accumulator selector valve.
 HPP(87) Main pilot pressure to blocking valve HPP-84.
 HPP(88) Vital pilot pressure to blocking valve HPP-84.
 HPP(89) Vital accum unloading valve pilot to accum selector valve HPP-85.
 HPP(90) Pilot control vital accum unloading valve pilot to accum selector valve.
 HPP(91) Pressure from accum selector valve to main accum blocking valve.

HPP(92) Pressure from accum selector valve to vital accum blocking valve.
 HPP(95) Cross conn - main to vital.
 HPP(96) Cross conn - vital pump to main system.
 HWV(163) Hand pump bypass - reserve oil tank.
 HWV(164) Supply to hand pump from reserve oil tank.
 HWV(166) Return to heat exchanger.
 HWV(167) Return from heat exchanger.
 HWV(168) Heat exchanger - bypass.

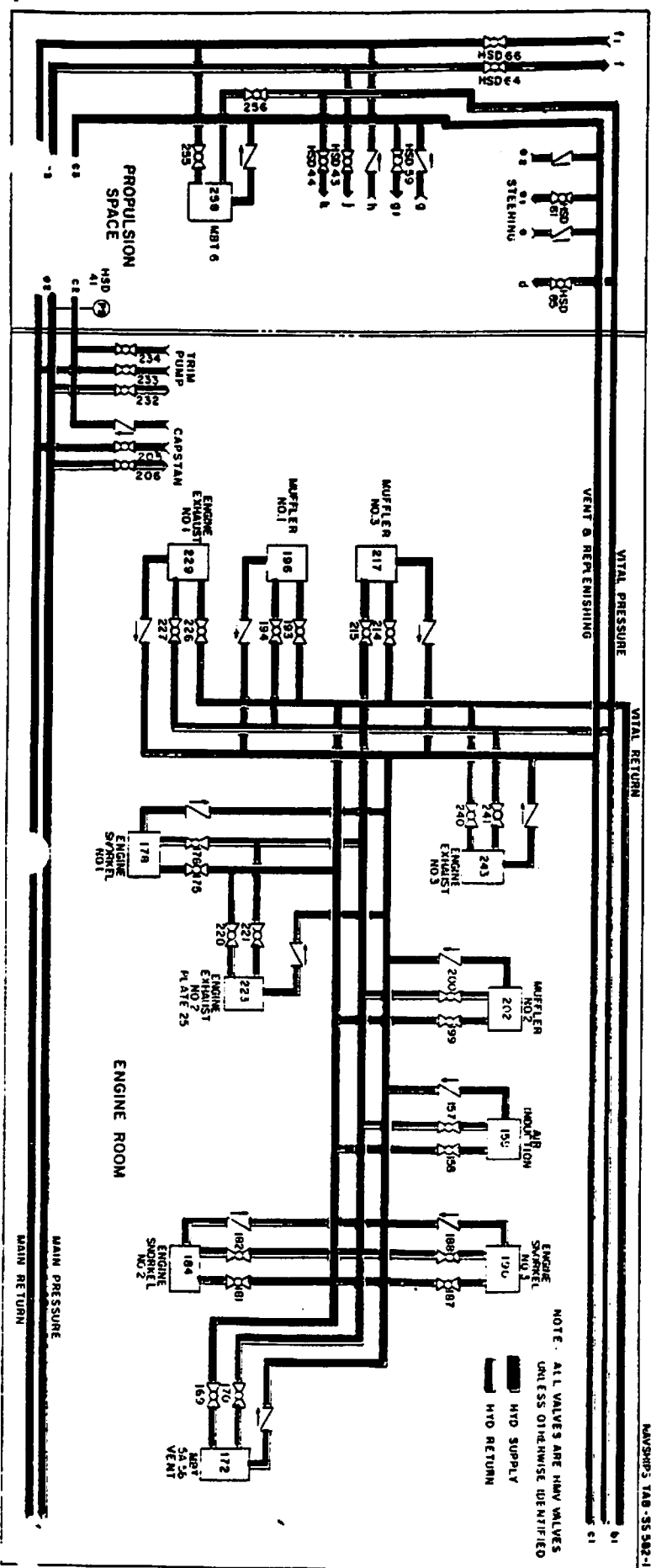
AHP(72) 3000# air to hydraulic accumulator - No. 2 main fwd.
 AHP(73) 3000# air to hydraulic accumulator - No. 1 vital.
 AHP(86) 3000# air to hydraulic accumulator - No. 3 main aft.
 AHP(92) 3000# air to hydraulic accumulator - No. 3 main aft.
 AHP(93) 3000# air to hydraulic accumulator - No. 3 main aft.
 ALP(116) 100# air supply to hydraulic oil tanks.

a Main hydraulic piping forward. See a on P1 39-1.
 a1 Main hydraulic piping. See a1 on P1 39-2.
 a2 Main hydraulic piping. See a2 on P1 39-2.
 a3 Main hydraulic piping. See a3 on P1 39-2.
 b Vital hydraulic piping. See b on P1 39-1.
 b1 Vital hydraulic piping. See b1 on P1 39-2.
 b Vent and replenish. See o on P1 39-1.
 o1 Vent and replenish. See o1 on P1 39-2.
 o2 Vent and replenish. See o2 on P1 39-2.
 o3 Vent and replenish. See o3 on P1 39-2.
 e From external hydraulic system. See b P1 35.
 e 3000# air supply to hydraulic accumulator. See P1 17-1.
 e1 3000# air supply to hydraulic accumulator. See P1 17-1.
 f Vital supply to sea valves remote operation - see f plate 41.
 g Vital return from sea valves remote operation - see g plate 41.
 h Press from stern diving power transfer valve pilot line. See k plate 39.
 k 100 psi air to external hydraulic supply tank.
 m 100 psi air supply. See plate 18-1.
 n Main fwd pump supply to external hyd plant emergency pump. See a plate 35.

Vent from external hydraulic plant.



33-1 MAIN & VITAL HYDRAULIC SYSTEM-FORWARD



NOTE: ALL VALVES ARE HWY VALVES UNLESS OTHERWISE IDENTIFIED

HTD SUPPLY
HTD RETURN

NAVSHIP'S TAB-35-582-1

| | | | |
|----------|--|----------|---|
| HMV(157) | Vital pressure to hull induction operating gear. | HMV(222) | Control valve No. 2 eng exh opr gear. |
| HMV(158) | Vital return from hull induction operating gear. | HMV(226) | Vital return from No. 1 eng exh opr gear. |
| HMV(159) | Control valve hull induction operating gear. | HMV(227) | Vital pressure to No. 1 eng exh opr gear. |
| HMV(169) | Vital return from HBT No. 5A & 5B vent operating gear. | HMV(229) | Control valve No. 1 engine exh opr gear. |
| HMV(170) | Vital pressure to HBT No. 5A & 5B vent operating gear. | HMV(232) | Main pressure to trim pump. |
| HMV(172) | Control valve HBT No. 5A & 5B vent operating gear. | HMV(233) | Main return from trim pump. |
| HMV(175) | Vital return from No. 1 engine snorkel exhaust operating gear. | HMV(234) | Vent and return - trim pump. |
| HMV(176) | Vital pressure to No. 1 engine snorkel exhaust operating gear. | HMV(240) | Vital return from No. 3 eng exh opr gear. |
| HMV(178) | Control valve No. 1 engine snorkel exhaust operating gear. | HMV(241) | Vital pressure to No. 3 eng exh opr gear. |
| HMV(181) | Vital return from No. 2 engine snorkel exhaust operating gear. | HMV(243) | Control valve No. 3 eng exh opr gear. |
| HMV(182) | Vital pressure to No. 2 engine snorkel exhaust operating gear. | HMV(255) | Vital return from HBT No. 6 vent opr gear. |
| HMV(184) | Control valve No. 2 engine snorkel exhaust operating gear. | HMV(256) | Vital pressure to HBT No. 6 vent opr gear. |
| HMV(187) | Vital return from No. 3 engine snorkel exhaust operating gear. | HMV(258) | Control valve HBT No. 6 vent operating gear. |
| HMV(188) | Vital pressure to No. 3 engine snorkel exhaust operating gear. | HSD(41) | Pressure switch - steering & diving. |
| HMV(190) | Control valve No. 3 engine snorkel exhaust operating gear. | HSD(43) | Main press to servo cont valve - stern diving. |
| HMV(199) | Vital return from No. 1 muffler exhaust operating gear. | HSD(44) | Vital press to power trans valve - stern diving. |
| HMV(194) | Vital pressure to No. 1 muffler exhaust operating gear. | HSD(59) | Vent & replen - hand pump sup stern diving. |
| HMV(196) | Control valve No. 1 muffler exhaust operating gear. | HSD(64) | Main pressure to servo control valve - steering. |
| HMV(199) | Vital return from No. 2 muffler exhaust operating gear. | HSD(66) | Main return from servo control valve - steering. |
| HMV(200) | Vital pressure to No. 2 muffler exhaust operating gear. | HSD(81) | Vent & replen - hand pump supply steering. |
| HMV(202) | Control valve No. 2 muffler exhaust operating gear. | HSD(85) | Vital pressure to power transfer valve - steering. |
| HMV(205) | Main return from after operation. | | |
| HMV(206) | Main pressure to after operation. | | |
| HMV(214) | Vital return from No. 3 muffler exhaust operating gear. | a1 | Main hydraulic piping. See a1 on plate 33. |
| HMV(215) | Vital pressure to No. 3 muffler exhaust operating gear. | a2 | Main hydraulic piping. See a2 on plate 33. |
| HMV(217) | Control valve No. 3 muffler exhaust operating gear. | a3 | Main hydraulic piping. See a3 on plate 33. |
| HMV(220) | Vital return from No. 2 engine exhaust operating gear. | b1 | Vital hydraulic piping. See b1 on plate 33. |
| HMV(221) | Vital pressure to No. 2 engine exhaust operating gear. | o1 | Vent and replenish. See c1 on plate 33. |
| | | o2 | Vent and replenish. See o2 on plate 33. |
| | | o3 | Vent and replenish. See o3 on plate 33. |
| | | d | Vital pressure to steering power transfer valve, shift to emer. See b plate 38. |
| | | e | Vent from sequence and servo valves. See h plate 38. |
| | | e1 | Replenish hand pump from V & R line. See k plate 38. |
| | | e2 | Vent from steering servo return flow control valve. See e plate 38. |
| | | f | Main pressure to steering servo valve. See a on plate 38. |
| | | f1 | Main return from steering servo valve. See a1 plate 38. |
| | | g | Vent from stern plane sequence and servo valves. See g plate 39. |
| | | g1 | Replenish stern plane hand pump from V & R. See j plate 39. |
| | | h | Main return from stern plane servo valve. See a1 plate 39. |
| | | j | Main pressure to stern plane servo valve. See a plate 39. |
| | | k | Vital pressure to stern plane power transfer valve, shift to emer. See b on plate 39. |

- HMV (112) ECM mast hoist main pressure shut-off
- HMV (114) ECM mast hoist pressure flow control
- HMV (115) ECM mast hoist return flow control
- HMV (116) ECM mast hoist control valve
- HMV (117) ECM mast hoist control valve
- HMV (119) ECM mast hoist deceleration - lever
- HMV (120) ECM mast hoist deceleration - raise
- HMV (121) ECM mast hoist drain - hull
- HMV (122) ECM mast hoist drain - backup

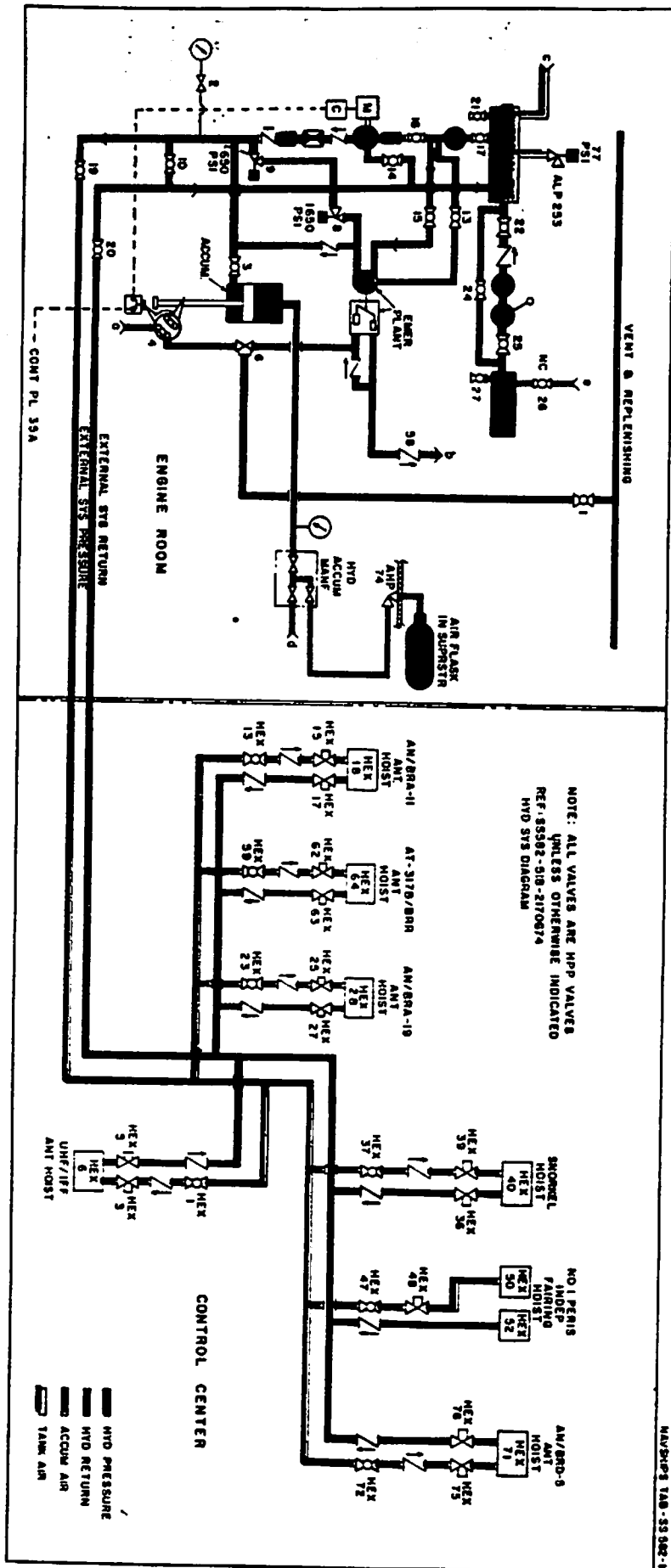
- HMV (126) SS-2 mast hoist return flow control
- HMV (127) SS-2 mast hoist pressure flow control
- HMV (128) SS-2 mast hoist 3-position, 4-way, solenoid-pilot control valve with manual override
- HMV (130) SS-2 mast hoist relief valve
- HMV (131) SS-2 mast hoist 2-way, normally open, cam actuated deceleration valve, upper
- HMV (132) SS-2 mast hoist 2-way, normally open, cam actuated deceleration valve, lower
- HMV (139) SS-2 mast hoist drain - backup
- HMV (134) SS-2 mast hoist drain - hull

- HMV (146) No. 2 periscope hoist flow control - return
- HMV (147) No. 2 periscope hoist flow control - pressure
- HMV (148) No. 2 periscope hoist control valve
- HMV (149) No. 2 periscope hoist relief valve
- HMV (150) No. 2 periscope hoist deceleration - raise
- HMV (151) No. 2 periscope hoist drain - hull
- HMV (152) No. 2 periscope hoist drain - backup

- a Main pressure to No. 2 periscope hoist. See plate 33-1
- a1 Main return from No. 2 periscope hoist. See plate 33-1
- b Main pressure to ECM mast hoist. See plate 33-1
- b1 Main return from ECM mast hoist. See plate 33-1
- c Main pressure to SS-2 mast hoist. See plate 33-1
- c1 Main return from SS-2 mast hoist. See plate 33-1
- d Vent and replenish - SS-2 mast hoist. See plate 33-1

KEY TO SS ANTENNA MAST SWITCHES

| Switch | Service | Actuation |
|--------|---|---|
| 1 SPDT | "Fully Raised" Indicator Light | Raise eyelet: by mast upon reaching fully raised position |
| 2 SPDT | Drive motor power supply | Raise eyelet: by mast upon reaching fully raised position |
| 3 SPDT | SS transmitter interlock | Raise eyelet: by mast upon reaching fully raised position |
| 4 SPDT | "Fully Housed" Indicator Light | Lower eyelet: by mast upon reaching fully housed position |
| 5 SPDT | Returns control valve to neutral position | Lower eyelet: by mast upon reaching fully housed position |

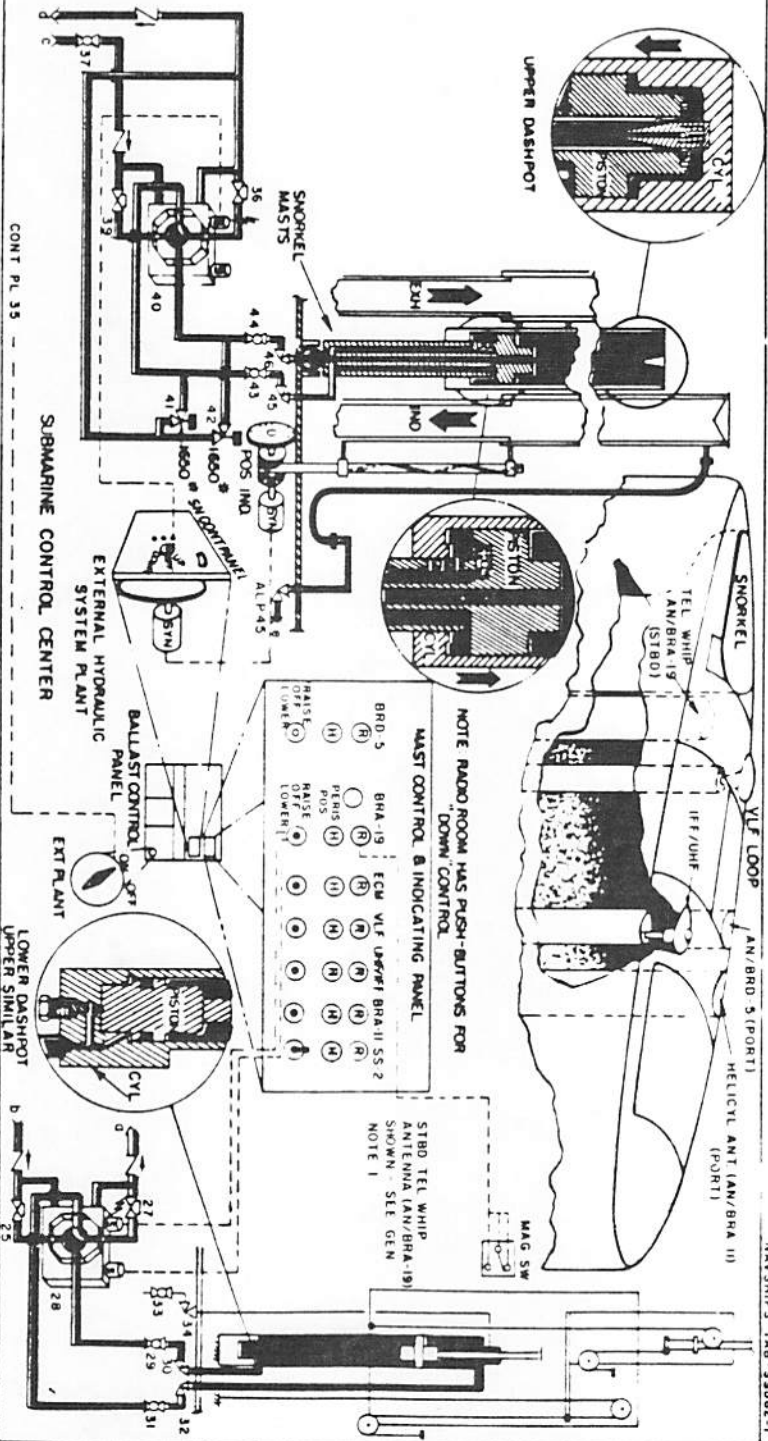


35 EXTERNAL HYDRAULIC SYSTEM

NAVSUP 148-53 982-1

| | | | | | |
|---------|---|---------|---|----------|---|
| HPP(1) | Vent to vent & replenish line from flow control valve. | HEX(5) | Pressure flow control from UHF/IFP antenna hoist control. | HEX(59) | Pressure to AT-317B/BR antenna hoist control valve. |
| HPP(2) | Shutoff to gear. | HEX(6) | Control valve for UHF/IFP antenna hoist. | HEX(62) | Pressure flow control to AT-317B/BR antenna hoist control valve. |
| HPP(3) | Accumulator charging/discharge shutoff. | HEX(13) | Pressure to AN/ERA-11 antenna hoist. | HEX(63) | Return flow control from AT-317B/BR antenna hoist control valve. |
| HPP(4) | Accumulator charging blocking valve. | HEX(15) | Pressure flow control to AN/ERA-11 antenna hoist control valve. | HEX(64) | AT-317B/BR antenna hoist control valve. |
| HPP(6) | Flow control to emer hyd motor pump. | HEX(17) | Return flow control from AN/ERA-11 antenna hoist control valve. | HEX(71) | AN/ERD-5 antenna hoist control valve. |
| HPP(8) | Relief pressure from emer hyd pump. | HEX(18) | Control valve for AN/ERA-11 antenna hoist. | HEX(72) | Pressure to AN/ERD-5 antenna hoist control valve. |
| HPP(9) | Relief pressure from hyd pump. | HEX(23) | Pressure to AN/ERA-19 antenna hoist control valve. | HEX(75) | Pressure flow control to AN/ERD-5 antenna hoist control valve. |
| HPP(10) | Hand bypass - ext pressure to return. | HEX(23) | Pressure to AN/ERA-19 antenna hoist control valve. | HEX(76) | Return flow control from AN/ERD-5 antenna hoist control valve. |
| HPP(13) | Hand hyd pump drain. | HEX(25) | Pressure flow control to AN/ERA-19 antenna hoist control valve. | AMP(74) | 3000# air to hyd system. |
| HPP(14) | Hyd pump drain - return to tank. | HEX(27) | Return flow control from AN/ERA-19 antenna hoist control valve. | ALP(253) | Supply tank relief. |
| HPP(15) | Emer hyd pump suction. | HEX(28) | Control valve for AN/ERA-19 antenna hoist. | | Pressure from main hydraulic system to hyd pump. See n plate 33. |
| HPP(16) | Hyd pump suction. | HEX(36) | Return flow control from snorkel hoist control valve. | | Hyd oil return to main hyd supply tank. See d plate 33. |
| HPP(17) | Hyd pump supply from tank. | HEX(37) | Pressure to snorkel hoist control valve. | | 100 psi air to external system hyd oil supply tank. See k plate 33. |
| HPP(19) | External pressure shutoff. | HEX(39) | Pressure flow control to snorkel hoist control valve. | | 3000 psi air supply to accumulator. See plate 17-1. |
| HPP(20) | External return shutoff. | HEX(40) | Snorkel hoist control valve. | | Reserve hyd oil tank fill line from escape trunk. |
| HPP(21) | Drain from supply tank. | HEX(47) | Pressure to No. 1 periscope indep fair hoist control valve. | | |
| HPP(22) | Pressure from hand pump. | HEX(48) | Pressure flow control to indep fair hoist control valve. | | |
| HPP(24) | Hand pump bypass - external reserve oil tanks. | HEX(50) | Independent fairing hoist control valve. | | |
| HPP(25) | Supply to hand pump from reserve tank. | HEX(52) | Independent fairing hoist 2-way relief valve. | | |
| HPP(26) | Fill to reserve oil tank. | | | | |
| HPP(27) | Drain from reserve oil tank. | | | | |
| HEX(1) | Pressure to UHF/IFP antenna hoist control. | | | | |
| HEX(3) | Pressure flow control to UHF/IFP antenna hoist control. | | | | |

- GENERAL NOTES**
- 1 STBD TELESCOPING WHIP ANTENNA SHOWN; HOIST CYLINDERS FOR VLF MAST IFF/UHF MAST, AN/BRD-5 MAST, & AN/BRA-11 MAST SIMILAR
 - 2 ALL VALVES ARE HEX VALVES UNLESS OTHERWISE IDENTIFIED
- HYDRAULIC PRESSURE
 - ▨ HYDRAULIC RETURN
 - AIR SUPPLY



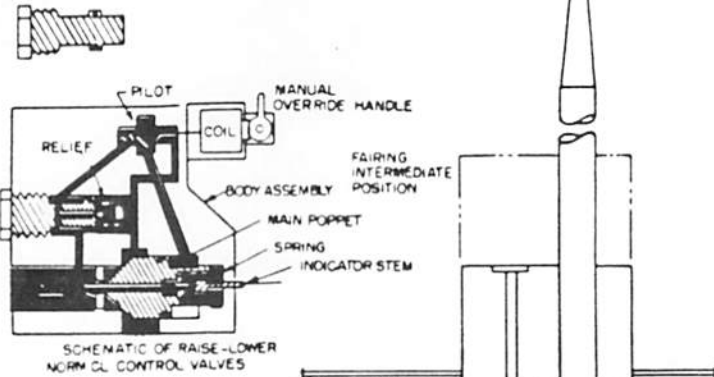
35-1 EXTERNAL HYDRAULIC HOISTS (TYPICAL)

| | | | |
|---------|---|---|--|
| HEX(25) | AN/ERA-19 hoist pressure flow control to control valve. | a | External hydraulic system return from AN/ERA-19 hoist. See plate 35. |
| HEX(27) | AN/ERA-19 hoist return flow control from control valve. | b | External hydraulic system pressure to AN/ERA-19 hoist. See plate 35. |
| HEX(28) | AN/ERA-19 hoist control valve. | c | External hydraulic system pressure to snorkel hoist. See plate 35. |
| HEX(29) | AN/ERA-19 hoist pressure to raise, backup. | d | External hydraulic system return from snorkel hoist. See plate 35. |
| HEX(30) | AN/ERA-19 hoist pressure to raise, hull. | e | 400# blow/vent snorkel induction mast drain. See plate 18. |
| HEX(31) | AN/ERA-19 hoist pressure to lower, backup. | | |
| HEX(32) | AN/ERA-19 hoist pressure to lower, hull. | | |
| HEX(33) | AN/ERA-19 hoist drain, backup. | | |
| HEX(34) | AN/ERA-19 hoist drain, hull. | | |
| HEX(36) | Snorkel hoist return flow control from control valve. | | |
| HEX(37) | Snorkel hoist pressure shutoff to control valve. | | |
| HEX(39) | Snorkel hoist pressure flow control to control valve. | | |
| HEX(40) | Snorkel hoist control valve. | | |
| HEX(41) | Snorkel hoist pressure to lower, relief. | | |
| HEX(42) | Snorkel hoist pressure to raise, relief. | | |
| HEX(43) | Snorkel hoist pressure to lower, backup. | | |
| HEX(44) | Snorkel hoist pressure to raise, backup. | | |
| HEX(45) | Snorkel hoist pressure to lower, hull. | | |
| HEX(46) | Snorkel hoist pressure to raise, hull. | | |
| ALP(45) | 400# blow and vent, snorkel induction mast drain, hull. | | |

35-1A EXTERNAL HYDRAULIC HOISTS (TYPICAL)

HOIST SUPPLY V SIMILAR EXCEPT FOR PLUG SHOWN

TYPE BB PERISCOPE FULLY RAISED

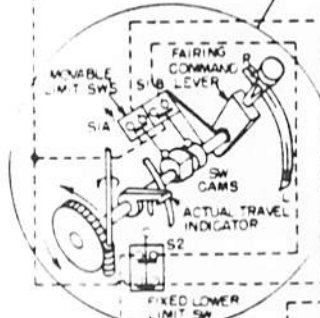
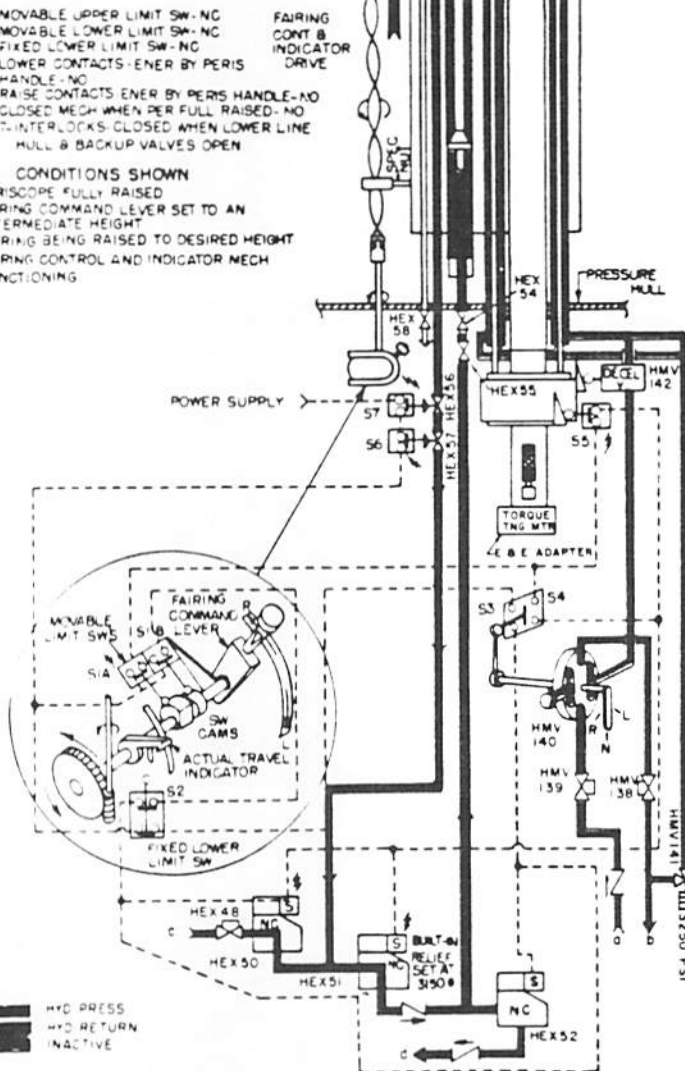


SWITCHES

- S1A - MOVABLE UPPER LIMIT SW-NC
- S1B - MOVABLE LOWER LIMIT SW-NC
- S2 - FIXED LOWER LIMIT SW-NC
- S3 - LOWER CONTACTS - ENER BY PERIS HANDLE-NO
- S4 - RAISE CONTACTS ENER BY PERIS HANDLE-NO
- S5 - CLOSED MECH WHEN PER FULL RAISED-NO
- S6 - ST-INTERLOCKS CLOSED WHEN LOWER LINE HULL & BACKUP VALVES OPEN

CONDITIONS SHOWN

- 1 PERISCOPE FULLY RAISED
- 2 FAIRING COMMAND LEVER SET TO AN INTERMEDIATE HEIGHT
- 3 FAIRING BEING RAISED TO DESIRED HEIGHT
- 4 FAIRING CONTROL AND INDICATOR MECH FUNCTIONING



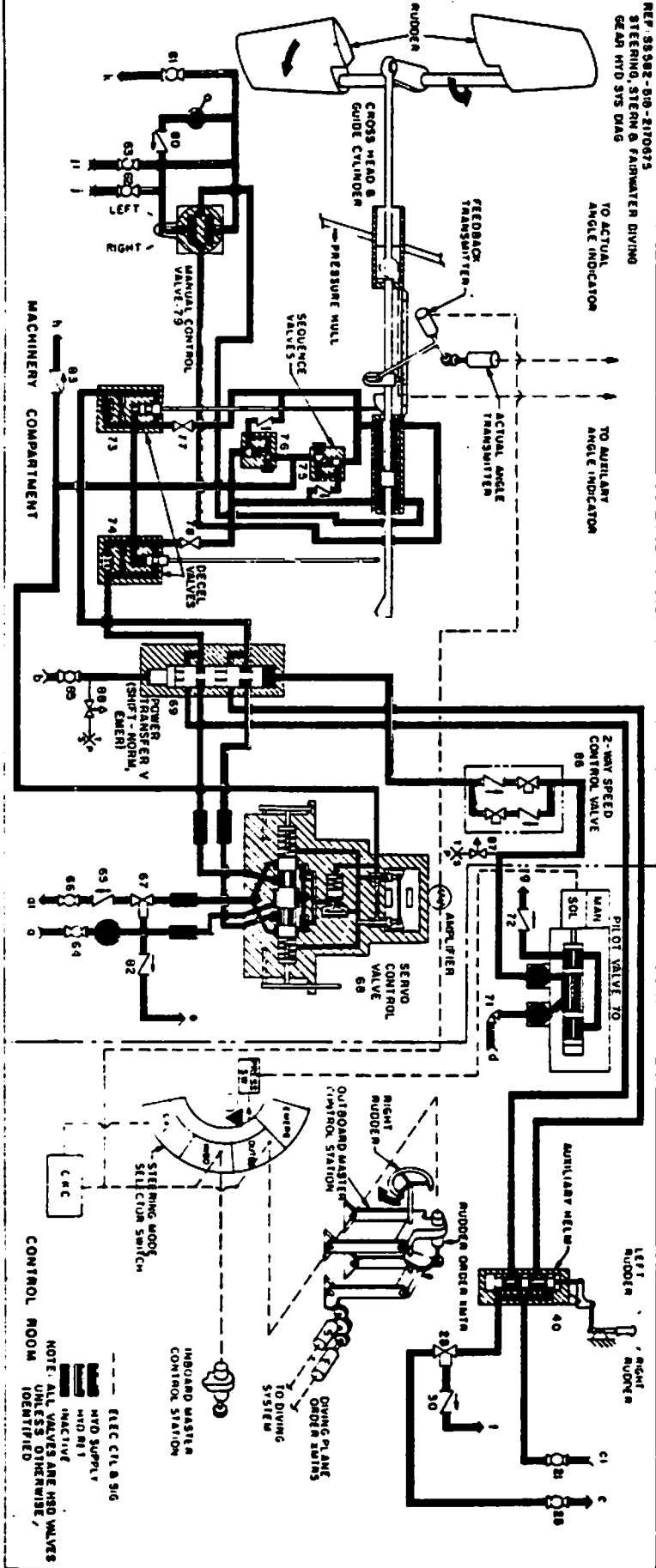
NAVSHIPS TAB-33582-1

HMV (138) No. 1 periscope hoist return flow control
 HMV (139) No. 1 periscope hoist pressure flow control
 HMV (140) No. 1 periscope hoist control valve
 HMV (141) No. 1 periscope hoist relief valve
 HMV (142) No. 1 periscope hoist deactivation valve - raise

HEX (48) No. 1 periscope independent fairing hoist pressure flow control
 HEX (50) No. 1 periscope independent fairing hoist control valve
 HEX (51) No. 1 periscope independent fairing hoist 2-way relief
 HEX (52) No. 1 periscope independent fairing hoist 2-way relief
 HEX (54) No. 1 periscope independent fairing hoist raise, hull
 HEX (55) No. 1 periscope independent fairing hoist raise, backup
 HEX (56) No. 1 periscope independent fairing hoist lower, hull
 HEX (57) No. 1 periscope independent fairing hoist lower, backup
 HEX (58) No. 1 periscope independent fairing hoist drain, hull

- a Main system pressure to No. 1 periscope hoist. See plate 33-1
- b Main system return from No. 1 periscope hoist. See plate 33-1
- c External system pressure to fairing hoist. See plate 35
- d External system return from fairing hoist. See plate 35

REF: 83382-89-2170523
 STEERING, STEER & FAIRWATER DIVING
 GEAR HYD SYS DIAG



38 STEERING SYSTEM

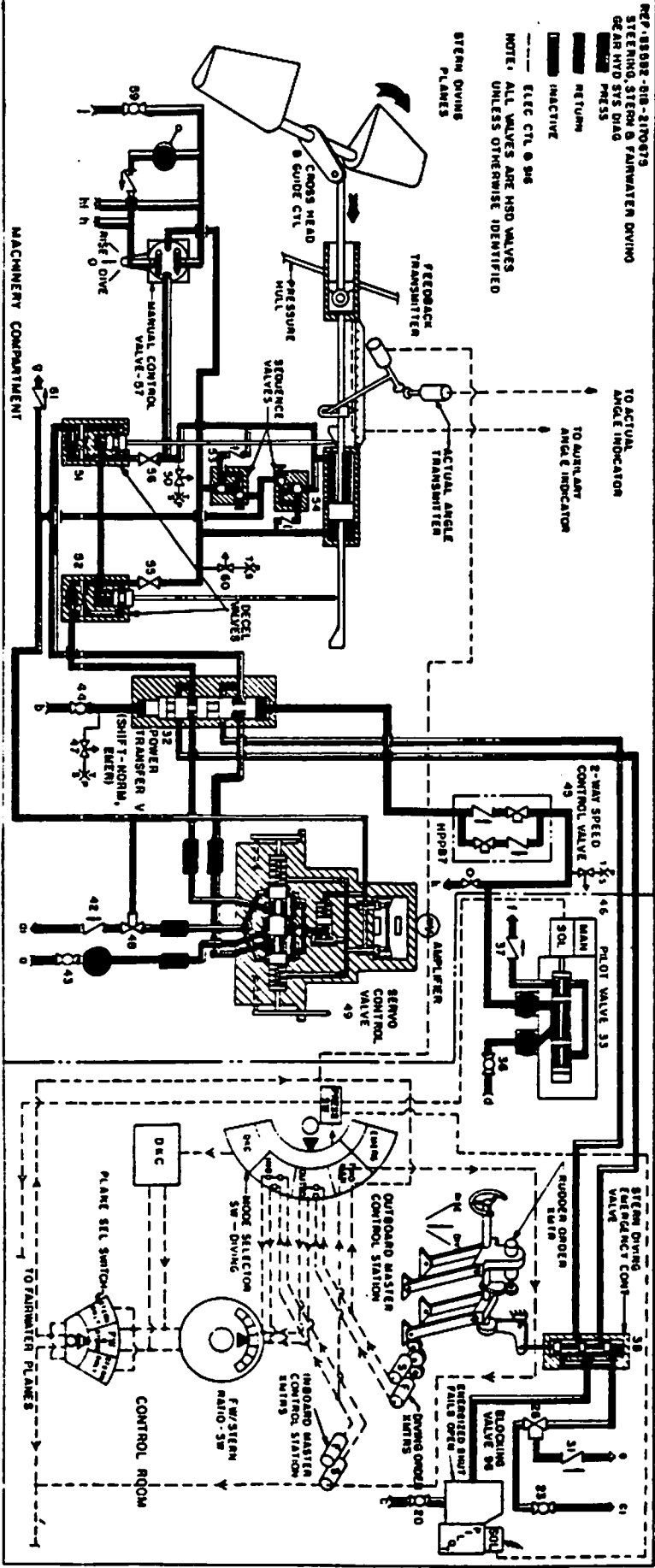
HSD(21) Vital pressure to emergency control valve.
 HSD(25) Vital return from emergency control valve.
 HSD(28) Flow control return from emergency control valve.
 HSD(40) Emergency control valve.
 HSD(62) Hand pump cross-connection steering and stern diving pressure.
 HSD(63) Hand pump cross-connection steering and stern diving return.
 HSD(64) Main pressure to servo control valve HSD-68.
 HSD(67) Flow control - return from servo control valve.
 HSD(68) Servo control valve - normal steering.
 HSD(69) Power transfer valve - positive shift to normal/emerg.
 HSD(70) Pilot valve for main press to per trans valve shift to norm.
 HSD(71) Main pressure to pilot valve HSD-70.
 HSD(73) Deceleration valve - right rudder.
 HSD(74) Deceleration valve - left rudder.
 HSD(75) Sequence - pressure relief - left rudder.
 HSD(76) Sequence - pressure relief - right rudder.
 HSD(77) Pressure to left rudder - shutoff for hand operation.
 HSD(78) Pressure to right rudder - shutoff for hand operation.

38A STERLING SYSTEM

HSD(81) Vent and replenish - hand pump supply.
 HSD(85) Vital press to power trans valve shift
 HSD(86) Speed control for power transfer valve.
 HSD(87) Main pressure test station - normal.
 HSD(88) Vital pressure test station - emergency.
 a Main pressure to servo valve. See f on plate 33-2.
 a1 Main return from servo valve. See f1 on plate 33-2.
 b Vital pressure to power transfer valve, shift to emerg. See k on plate 33-2.
 e Vital return from emerg control valve. See e2 on plate 33-1.
 e1 Vital pressure to emerg control valve. See e on plate 33-1.
 d Main pressure to pilot valve. See f2 on plate 33-1.
 e Vent to V & R from servo return flow control valve.
 e See e2 plate 33-2.
 f Vent to V & R from emerg control return flow control valve. See d plate 33-1.
 g Vent to V & R from pilot valve. See e2 on plate 33-1.
 h Vent to V & R from decel and servo valves. See e on plate 33-2.
 j Hand pump cross connection, steering & diving - pressure. See h plate 39.
 j1 Hand pump cross connection, steering & diving - return. See h1 plate 39.
 k Replenish from V & R to hand pump. See e1 plate 33-2.

STEERING, STERN & FAIRWATER DIVING
GEAR HYD SYS DIAG

■ RETURN
 ■ INACTIVE
 ■ ELEC CTL @ 908
 NOTE: ALL VALVES ARE MSD VALVES
 UNLESS OTHERWISE IDENTIFIED

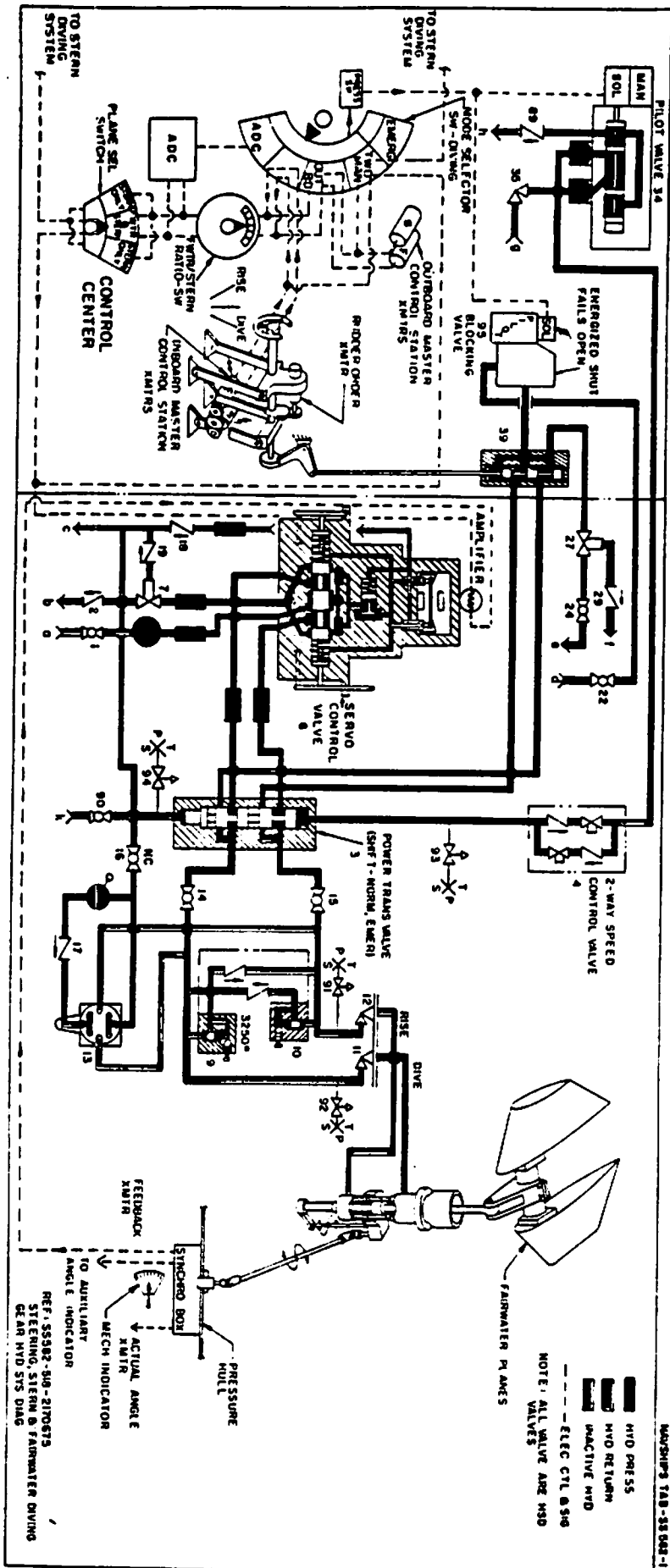


39 STERN PLANES SYSTEM

NAV-07079 218-2170679-1

| | | | |
|---------|--|---------|--|
| HSD(20) | Vital pressure to emergency control valve. | HSD(59) | Vent and replenish to hand pump. |
| HSD(23) | Vital return from emergency control valve. | HSD(60) | Pressure test station - press to dive. |
| HSD(26) | Flow control return from emergency control valve. | HSD(96) | Bleeking valve (emar) to rise. |
| HSD(32) | Power transfer valve - positive shift - Norm/emar. | HPP(87) | Main pilot shutoff to bleeking V HPP(84). |
| HSD(33) | Pilot valve for power transfer valve, HSD-32, norm. | a | Main supply to servo valve. See j plate 33-2. |
| HSD(36) | Main pressure to pilot valve. | a1 | Main return from servo valve. See h plate 33-2. |
| HSD(38) | Emergency control valve. | b | Vital pressure to pur transfer valve, shift to emar. See k plate 33-2. |
| HSD(43) | Main pressure to servo control valve, HSD-49. | e | Vital pressure to emar control valve. See o2 plate 33-1. |
| HSD(44) | Vital pressure to power trans valve shift to emar. | o1 | Vital return from emar control valve. See a plate 33-1. |
| HSD(45) | Speed Control for power transfer valve, HSD-32. | d | Main pressure to pilot valve. See f plate 33-1. |
| HSD(46) | Main pressure test station - shift to norm. | e | Vent from emar control valve return flow control valve. See dl plate 33-1. |
| HSD(47) | Vital pressure test station - shift to emar. | f | Vent from pilot valve. See e plate 33-1. |
| HSD(48) | Main return flow control from servo, HSD-49. | g | Vent from deol and servo valves. See g plate 33-2. |
| HSD(49) | Servo control valve - normal control. | h | Hand pump cross connection, steering and diving - pressure. See j plate 38. |
| HSD(50) | Pressure test station - press to rise. | hl | Hand pump cross connection, steering and diving - return. See j1 plate 38. |
| HSD(51) | Deceleration valve - rise. | j | Hand pump vent and replenish. See g1 plate 33-2. |
| HSD(52) | Deceleration valve - rise. | k | Pilot pressure to bleeking valve HPP(84). See h plate 33. |
| HSD(53) | Pressure to dive relief. | | |
| HSD(54) | Pressure to rise relief. | | |
| HSD(55) | Pressure to dive - shutoff for hand operation. | | |
| HSD(56) | Pressure to rise - shutoff for hand operation. | | |
| HSD(57) | Hand control for hand pump. | | |

STEERING PLANT SYSTEM



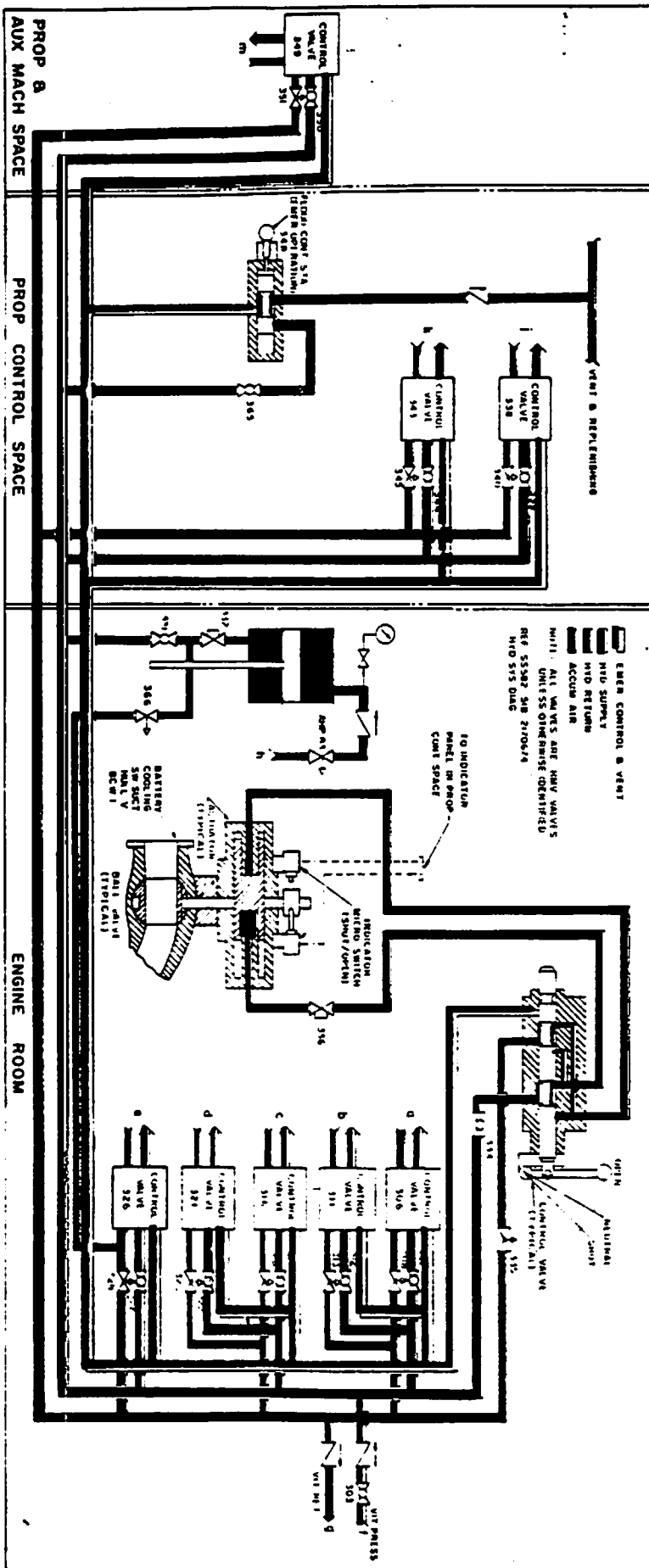
40 FAIRWATER PLANES SYSTEM

NAVSHIPS 11B-55582-1

| | | | |
|---------|---|---------|--|
| HSD(1) | Main pressure shutoff. | HSD(92) | Test pressure station - pressure to dive. |
| HSD(3) | Power transfer - positive shift, normal/ emer. | HSD(93) | Test press sta - main press to shift pwr trans valve to norm. |
| HSD(4) | Pilot control to power transfer valve. | HSD(94) | Test press sta - vit press to shift pwr trans valve to emer. |
| HSD(6) | Servo control valve - normal power. | HSD(95) | Blocking valve (emer) to rise. |
| HSD(7) | Pilot control from servo valve. | | |
| HSD(9) | Relief valve - dive. | | |
| HSD(10) | Relief valve - rise. | | |
| HSD(11) | Pressure to dive. | | |
| HSD(12) | Pressure to rise. | | |
| HSD(13) | Hand pump control. | a | Main pressure to servo valve. See plate 33-1. |
| HSD(14) | Pressure to dive - shutoff. | b | Main return from servo valve. See plate 33-1. |
| HSD(15) | Pressure to rise - shutoff. | c | Vent and replenish. See b on plate 33-1. |
| HSD(16) | Hand pump supply from V & R. | d | Vital pressure to emer control valve, HSD-39. See e1 on plate 33-1. |
| HSD(22) | Vital pressure to emer control valve. | e | Vital return from emer control valve. See a1 on plate 33-1. |
| HSD(24) | Vital return from emer control valve. | f | Vent to vent and replenish line. See d2 on plate 33-1. |
| HSD(27) | Pilot control from emer control valve. | g | Main pressure to pilot valve, HSD-34, power transfer valve shift to normal. See f1 on plate 33-1. |
| HSD(34) | Pilot valve for main press control to power trans valve, normal. | h | Pilot valve return to vent and replenish. See e1 on plate 33-1. |
| HSD(35) | Main pressure to pilot valve HSD-34. | k | Vital pressure to power transfer valve, HSD-3, shift to emergency. See o3 on plate 33-1. |
| HSD(39) | Emergency control valve. | | |
| HSD(90) | Vital pressure to power transfer valve shift to emer. | | |
| HSD(91) | Test pressure station - pressure to rise. | | |

40A

PAIRWATER PLANES SYSTEM



41 REMOTE HYDRAULIC OPERATING SEA VALVE

HWV(305) Vital press to remote oper sea valves.
 HWV(306) Cent valve for actuator No. 1 SV orbd
 diach backup valve.
 HWV(307) Vital pressure to HWV-306.
 HWV(308) Vital return from HWV-306.
 HWV(311) Cent valve for actuator No. 1 SV orbd
 diach hull valve.
 HWV(312) Vital pressure to HWV-311.
 HWV(313) Vital return from HWV-311.
 HWV(316) Cent valve for actuator No. 1 SV serv
 suet hull valve.
 HWV(317) Vital pressure to HWV-316.
 HWV(318) Vital return from HWV-316.
 HWV(321) Cent valve for actuator No. 1 SV serv
 suet backup valve.
 HWV(322) Vital pressure to HWV-321.
 HWV(323) Vital return from HWV-321.
 HWV(326) Cent valve - actuator for trim pump
 suet and diach hull valve.
 HWV(327) Vital pressure to HWV-326.
 HWV(328) Vital return from HWV-326.
 HWV(331) Vital pressure to accumulator.
 HWV(332) Flow control to accumulator.
 HWV(333) Cent valve - actuator for last cool-
 ing SV suet hull valve.

42A REPORTS RTD OPERATION SEA VALVE

HWV(334) Vital pressure to HWV-333.
 HWV(335) Vital return from HWV-333.
 HWV(336) Flow control from HWV-333 to actuator.
 HWV(338) Cent valve - actuator for No. 2 SV
 service suet hull valve.
 HWV(339) Vital pressure to HWV-338.
 HWV(340) Vital return from HWV-338.
 HWV(343) Control valve - actuator for No. 2 SV
 service suet backup valve.
 HWV(344) Vital pressure to HWV-343.
 HWV(345) Vital return from HWV-343.
 HWV(348) Vent and over press bleeding valve.
 HWV(349) Cent valve - actuator for No. 2 SV
 orbd diach hull valve.
 HWV(350) Vital pressure to HWV-349.
 HWV(351) Vital return from HWV-349.
 HWV(365) Master isolation valve.
 HWV(366) Hydraulic accumulator bypass.
 ANP(83) 3000g air supply to hydraulic accum-
 ulator.

o Pressure to No. 1 SV suction hull
 valve, SWS 28. See plate 42.
 o Pressure to trim pump suction & diach
 hull valve, TD 7. See plate 3-1.
 f Vital pressure. See f on plate 33.
 g Vital return. See g on plate 33.
 h 3000g air supply to accumulator. See
 plate 17-1.
 j Pressure to No. 2 SV suction hull valve,
 SWS 33. See plate 42.
 k Pressure to No. 2 SV suction backup
 valve, SWS 34. See plate 42.
 n Pressure to SV serv orbd diach hull
 valve, SWS 57. See plate 42.

e Pressure to SV serv orbd discharge
 backup valve, SWS 35. See plate 42.
 b Pressure to SV serv orbd discharge
 hull valve, SWS 54. See plate 42.

SWS(1) SW to No. 1 AC condenser.
 SWS(2) SW to No. 2 AC condenser.
 SWS(3) SW regulating to No. 2 AC condenser.
 SWS(4) SW from No. 2 AC condenser.
 SWS(5) SW 3-way valve bypass - No. 2 AC condenser.
 SWS(6) SW from No. 1 AC condenser.
 SWS(7) SW to 3-way valve - No. 2 AC condenser.
 SWS(8) SW to 3-way valve - No. 1 AC condenser.
 SWS(9) SW regulating to No. 1 AC condenser.
 SWS(10) SW 3-way valve bypass - No. 1 AC condenser.
 SWS(11) SW from refr condenser.
 SWS(12) SW to refr condenser.
 SWS(13) SW 3-way valve bypass - refr condenser.
 SWS(14) SW regulating to refr condenser.
 SWS(15) SW to 3-way valve - refr condenser.
 SWS(22) AC & Refr System continuous vent shut-off.
 SWS(23) SW eng room service overboard discharge - backup.

SWS(24) SW eng room service overboard discharge - hull.
 SWS(25) SW to AC heat exchanger.
 SWS(26) SW from AC heat exchanger.
 SWS(28) No. 1 SW service pump suction - hull.
 SWS(29) No. 1 SW service pump suction - backup.
 SWS(30) No. 1 SW service pump suction - blowdown.
 SWS(31) SW from No. 1 service pump.
 SWS(33) No. 2 SW service pump suction - hull.
 SWS(34) No. 2 SW service pump suction - backup.
 SWS(35) SW from No. 2 service pump.
 SWS(37) SW to No. 1 HP air compressor.
 SWS(38) SW to No. 2 HP air compressor.
 SWS(39) SW from No. 1 HP air compressor.
 SWS(40) SW from No. 2 HP air compressor.
 SWS(43) SW to No. 1 HP air compressor - bypass.
 SWS(44) SW to No. 2 HP air compressor - bypass.
 SWS(47) No. 1 SWS pump discharge to FO & Compensating system.
 SWS(48) No. 2 SWS pump discharge to FO & Compensating system.

SWS(49) No. 1 & 2 SWS pump combined discharge.
 SWS(50) SW to forward main motor air cooler.
 SWS(51) SW to aft main motor air cooler.
 SWS(52) SW from forward main motor air cooler.
 SWS(53) SW from aft main motor air cooler.
 SWS(54) Main motor air cooler supply - bypass.
 SWS(55) SW to main motor LO cooler.
 SWS(56) SW from main motor LO cooler.
 SWS(57) Motor room SW overboard discharge - hull.
 SWS(58) Motor room SW overboard discharge - backup.

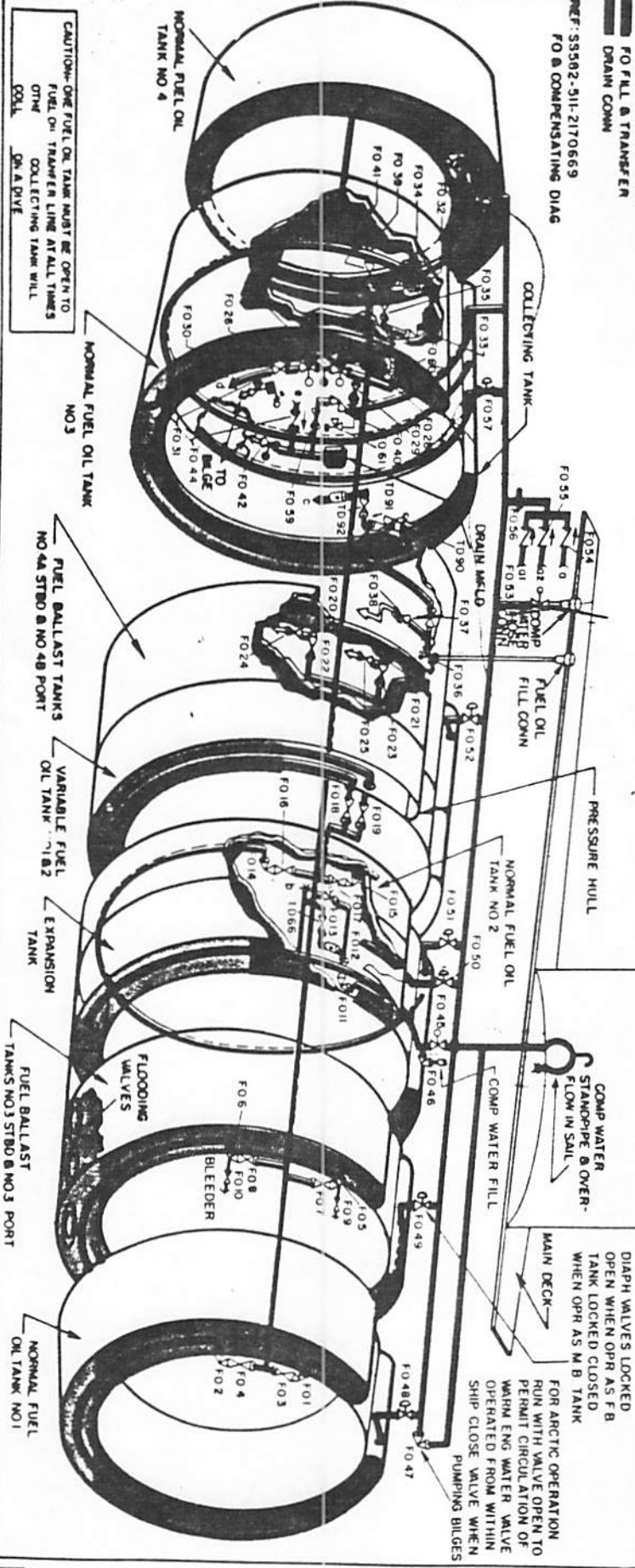
SWS(60) Continuous vent SWS pump No. 1.
 SWS(61) Continuous vent overboard SWS pump No. 1.
 SWS(62) Continuous vent SWS pump No. 2.
 SWS(63) Continuous vent overboard SWS pump No. 2.

SW(24) SW flushing to WR & WC.
 SW(25) SW feed to feed manifold.
 SW(26) Brine tank drain - overboard.
 SW(77) Battery cooling sea water from coolers - overboard.

a Sea water to water closet flushing. See e plate 32.
 b Battery cooling sea water discharge. See plate 40.
 c Brine discharge overboard. See plate 30.
 d Sea water to distillate. See a plate 30.
 e Hydraulic pressure for remote control. See b plate 41.
 f Hydraulic pressure for remote control. See a plate 41.
 g Hydraulic pressure for remote control. See d plate 41.
 h Hydraulic pressure for remote control. See j plate 41.
 i Hydraulic pressure for remote control. See k plate 41.
 j Sea water to fuel oil compensating system. See a plate 43.
 k Hydraulic pressure for remote control. See a plate 41.
 l Service air to inflatable seal ring. See ALP-202, plate 18-1.

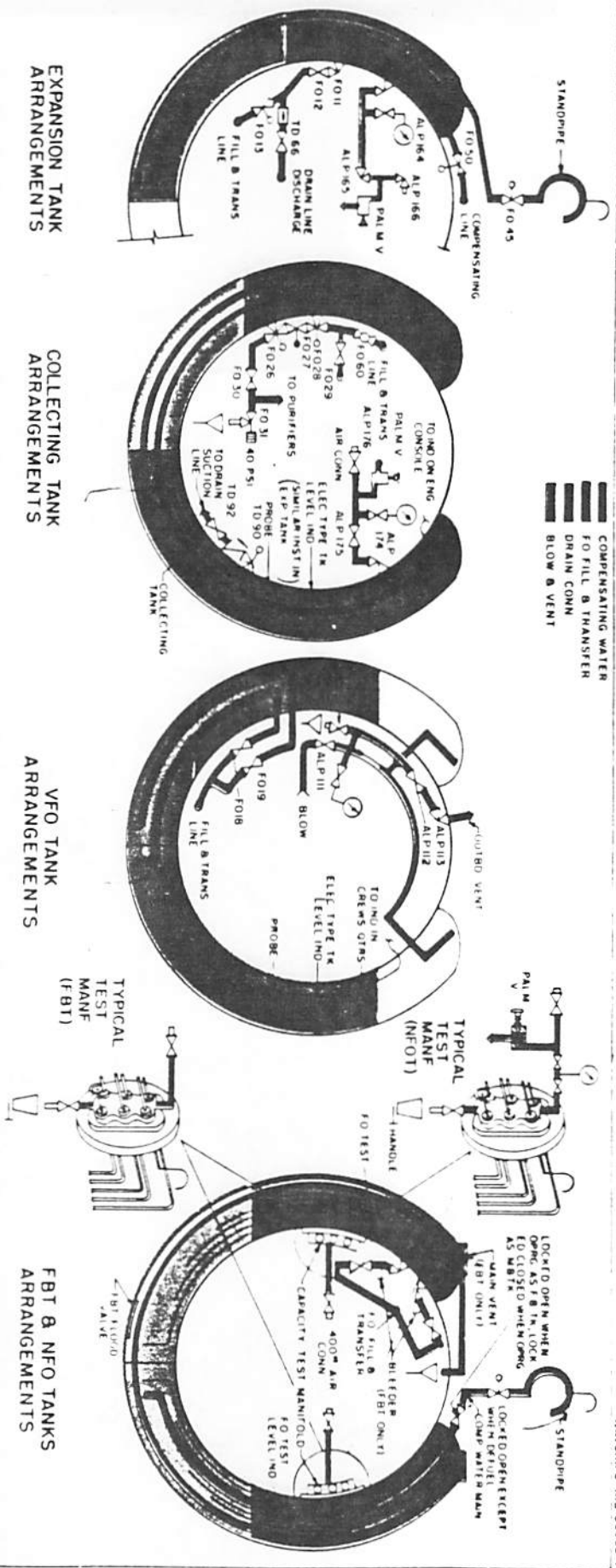
COMPENSATING WATER
 FO FILL & TRANSFER
 DRAIN CONN

REF: 58382-511-2170669
 FO & COMPENSATING DIAG

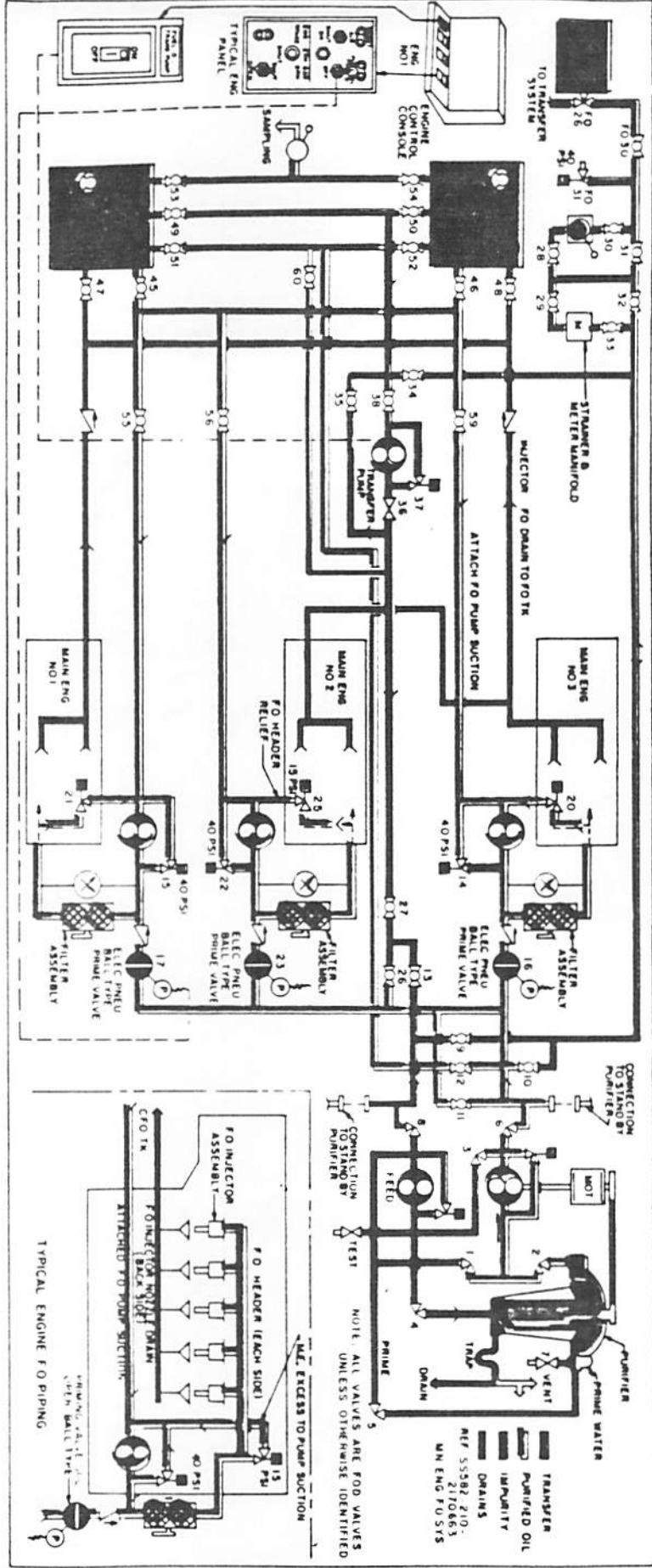


NW/SHP'S 1A-B-55 582-1

| | | | |
|--------|---|--------|--|
| PO(1) | PO fill & transfer - NPORT 1, stbd, hull. | PO(52) | Compensating water to PBT 4A & 4B. |
| PO(2) | PO fill & transfer - NPORT 1, port, hull. | PO(53) | Compensating water fill. |
| PO(3) | PO fill & transfer - NPORT 1 backup, stbd. | PO(54) | Main eng 3 circulating water diach to compensating water. |
| PO(4) | PO fill & transfer - NPORT 1 backup, port. | PO(55) | Main eng 1 circulating water diach to compensating water. |
| PO(5) | PO fill & transfer - PBT 3A, hull. | PO(56) | Main eng 2 circulating water diach to compensating water. |
| PO(6) | PO fill & transfer - PBT 3B, hull. | PO(57) | Compensating water to NPORT 3. |
| PO(7) | PO fill & transfer - PBT 3A backup. | PO(58) | Compensating water to NPORT 4. |
| PO(8) | PO fill & transfer - PBT 3B backup. | PO(59) | Compensating water from drain pump, backup. |
| PO(9) | PO fill & transfer - PBT 3A bleedoff. | PO(60) | PO to collecting tank bypass. |
| PO(10) | PO fill & transfer - PBT 3B bleedoff. | PO(61) | PO fill & transfer, relief. |
| PO(11) | PO fill & transfer - expansion tank hull. | PO(66) | Drain line diach to PO expansion tank. |
| PO(12) | PO fill & transfer - expansion tank backup. | PO(90) | Drain pump suction from coil tank. |
| PO(13) | PO fill & transfer - expansion tank. | PO(92) | Drain pump suction from coil tank. |
| PO(14) | PO fill & transfer - NPORT 2 hull, port, hull. | | |
| PO(15) | PO fill & transfer - NPORT 2 hull, stbd, hull. | a | Sea water from main eng 3 cooling orbd diach. See a plate 47-1. |
| PO(16) | PO fill & transfer - NPORT 2 backup, port. | a1 | Sea water from main eng 2 cooling orbd diach. See a1 plate 47-1. |
| PO(17) | PO fill & transfer - NPORT 2 backup, stbd. | a2 | Sea water from main eng 1 cooling orbd diach. See a2 plate 47-1. |
| PO(18) | PO fill & transfer - VPORT 2, port. | b | Drain line connection to expansion tank. See plate 23. |
| PO(19) | PO fill & transfer - VPORT 1, stbd. | e | Drain manifold suction coil tank. See plate 23-1. |
| PO(20) | PO fill & transfer - PBT 4B hull. | d | PO to fuel pump. See plate 44. |
| PO(21) | PO fill & transfer - PBT 4, A hull. | e | Sea water service to compensating system. See h plate 42. |
| PO(22) | PO fill & transfer - PBT 4B. | | |
| PO(23) | PO fill & transfer - PBT 4A. | | |
| PO(24) | PO fill & transfer - PBT 4B bleedoff. | | |
| PO(25) | PO fill & transfer - PBT 4A bleedoff. | | |
| PO(26) | PO fill & transfer - from collecting tank. | | |
| PO(27) | PO fill & transfer cross connection collecting tank. | | |
| PO(28) | PO fill & transfer to collecting tank. | | |
| PO(29) | PO fill & transfer - collecting tank backup. | | |
| PO(30) | PO pump suction from collecting tank. | | |
| PO(31) | PO pump suction from collecting tank, relief. | | |
| PO(32) | PO fill & transfer - NPORT 3 hull, port. | | |
| PO(33) | PO fill & transfer - NPORT 3 hull, stbd. | | |
| PO(34) | PO fill & transfer - NPORT 3 backup, port. | | |
| PO(35) | PO fill & transfer - NPORT 3 backup, stbd. | | |
| PO(36) | PO filling hull. | | |
| PO(37) | PO filling backup. | | |
| PO(38) | PO filling - drain. | | |
| PO(39) | PO fill & transfer - NPORT 4 hull | | |
| PO(40) | Drain pump suction and discharge to compensating water. | | |
| PO(41) | PO fill & transfer - NPORT 4 backup. | | |
| PO(42) | Compensating water drain to bilge. | | |
| PO(44) | Sea water service to compensating water system. | | |
| PO(45) | Compensating water standpipe & overflow. | | |
| PO(46) | Compensating water fill. | | |
| PO(47) | Compensating water (circulating warm water). | | |
| PO(48) | Compensating water to NPORT 1. | | |
| PO(49) | Compensating water to PBT 3A & 3B. | | |
| PO(50) | Compensating water to expansion tank. | | |
| PO(51) | Compensating water to NPORT 2. | | |



NAVSHIPS 148-53982-1



MASSIPS TAB-85582-1

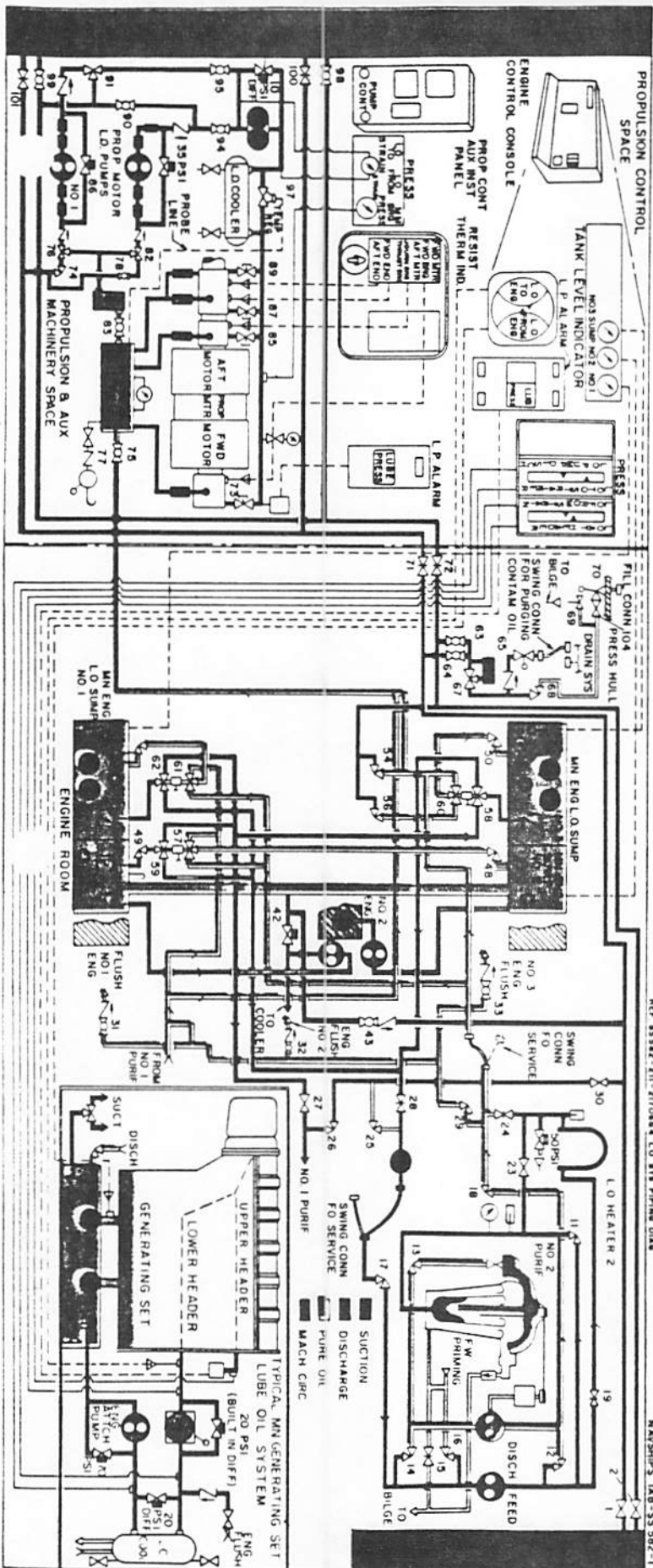
NAVSHIPS TAB-SS582-1

POD(1) PO purifier feed pump bypass.
 POD(2) PO purifier discharge.
 POD(3) PO purifier feed pump disch bypass.
 POD(4) PO purifier feed pump to purifier.
 POD(5) PO purifier priming.
 POD(6) PO purifier disch pump disch.
 POD(7) PO purifier water drain to bilge
 POD(8) PO purifier feed pump suction.
 POD(9) PO purifier suction and trans pump defuel.
 POD(10) PO purifier defuel.
 POD(11) PO purifier to ME priming.
 POD(12) PO discharge from purifier.
 POD(13) PO to purifier suction trans pump defuel
 and purifier defuel.
 POD(14) PO eng att pump disch relief - No. 3 ME.
 POD(15) PO eng att pump disch relief - No. 1 ME.
 POD(16) PO to No. 3 eng priming.
 POD(17) PO to No. 1 eng priming.
 POD(20) PO excess from No. 3 ME.
 POD(21) PO excess from No. 1 ME.
 POD(22) PO eng att pump disch relief.
 POD(23) PO to No. 2 eng priming.
 POD(25) PO excess from No. 2 ME.
 POD(26) PO to eng priming.
 POD(27) PO to eng prime and purifier suction.

POD(28) PO from strainer.
 POD(29) PO to meter.
 POD(30) PO to strainer.
 POD(31) PO strainer bypass.
 POD(32) PO meter bypass.
 POD(33) PO from meter.
 POD(34) PO trans pump suet from collecting tank.
 POD(35) PO trans pump bypass.
 POD(36) PO trans pump disch.
 POD(37) PO trans pump relief.
 POD(38) PO trans pump suction.
 POD(45) PO eng att pump suet main CFO tank No. 1.
 POD(46) PO eng att pump suet main CFO tank No. 2.
 POD(47) Eng gravity drain main CFO tank No. 1.
 POD(48) Eng gravity drain main CFO tank No. 2.
 POD(49) PO trans pump suet main CFO tank No. 1.
 POD(50) PO trans pump suet main CFO tank No. 2.
 POD(51) CFO tank No. 1 return main.
 POD(52) CFO tank No. 2 return main.
 POD(53) CFO tank No. 1 sampling main.
 POD(54) CFO tank No. 2 sampling main.
 POD(55) PO eng att pump suet CFO tank - No. 1 ME.
 POD(56) PO eng att pump suet CFO tank - No. 2 ME.
 POD(59) PO eng att pump suet CFO tank - No. 3 ME.
 POD(60) PO trans pump disch.

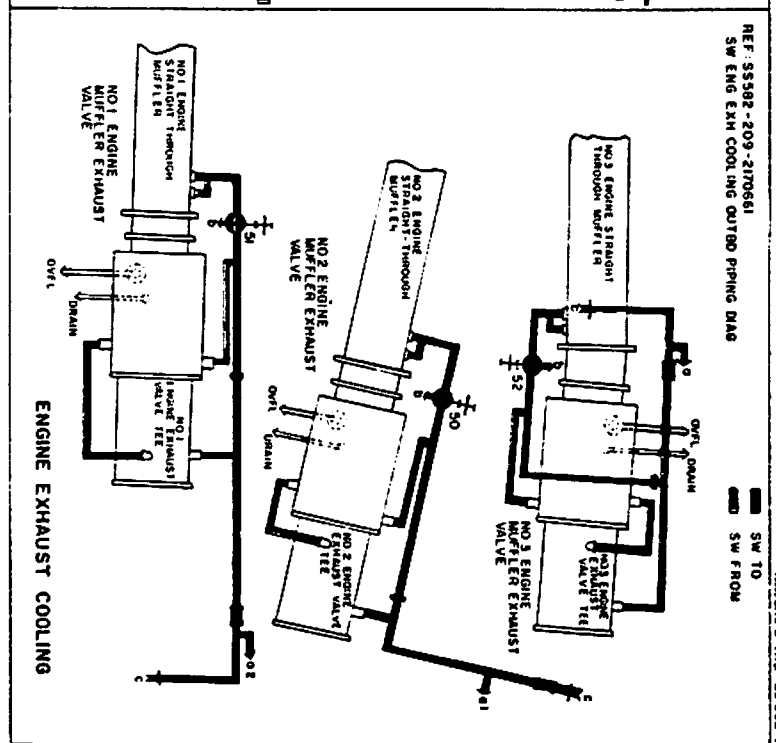
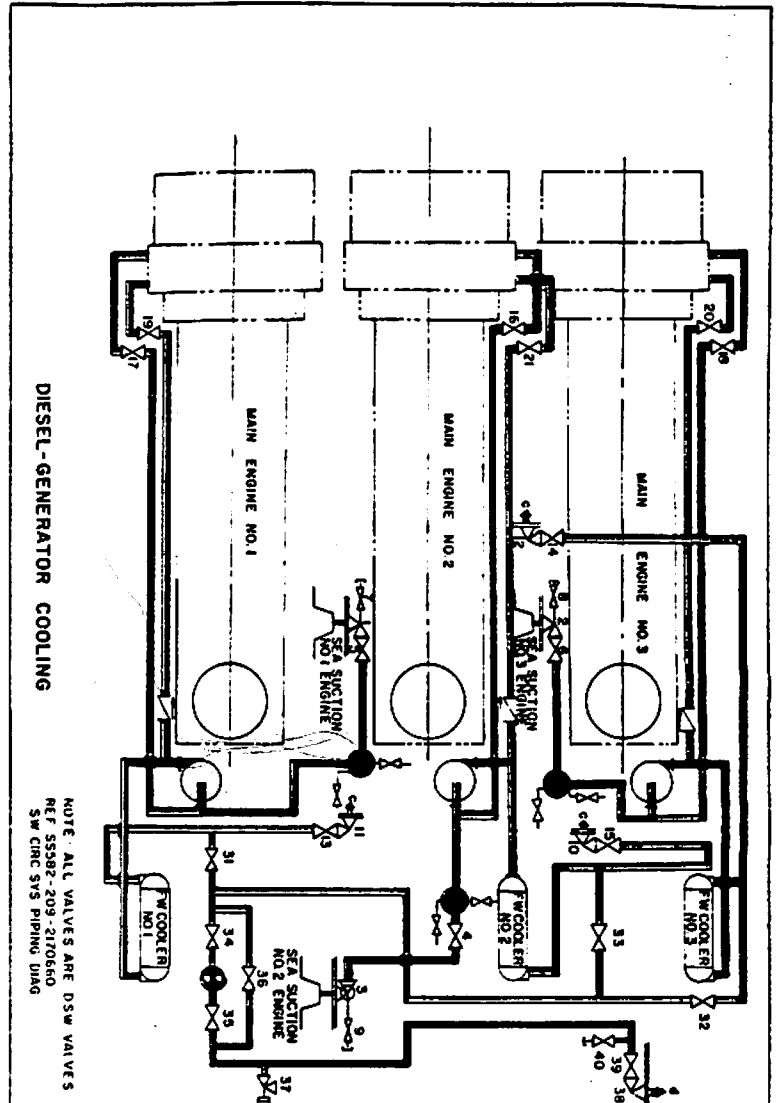
PO(26)
 PO(30)
 PO(31)

PO #111 and trans from collecting tank
 PO pump suction from coll tank backup
 PO pump suction from coll tank - rel.



45 PROPULSION LUBE SYSTEM

| | | | |
|--------|---|---------|--|
| LO(1) | LO transfer & purifier pump suction from LO Storage Tk 1. | LO(77) | Hand pump suction - main motor sump. |
| LO(2) | LO filling to LO storage tank 1. | LO(78) | LO pump No. 2 suction - frame main. |
| LO(11) | No. 2 LO purifier feed pump disch - heater bypass. | LO(82) | LO pump No. 2 suction - cross conn. |
| LO(12) | No. 2 LO purifier feed pump disch - bypass. | LO(83) | Main motor sump tank suet. |
| LO(13) | No. 2 LO purifier discharge. | LO(85) | LO bearing main disch to aft bearing. |
| LO(14) | No. 2 LO purifier feed pump bypass. | LO(86) | LO bypass & return to LO pump No. 1 suction. |
| LO(15) | No. 2 LO purifier water drain to bilge. | LO(87) | LO bearing main disch to fwd thrust bearing. |
| LO(16) | No. 2 LO purifier trimming. | LO(89) | LO bearing main disch to aft thrust bearing. |
| LO(17) | No. 2 LO purifier feed pump suction. | LO(90) | LO pump No. 2 disch to transfer main. |
| LO(18) | No. 2 LO purifier disch pump disch. | LO(91) | LO pumps disch to transfer main. |
| LO(19) | No. 2 LO purifier shutoff to No. 2 heater. | LO(92) | LO bypass & return to LO pump No. 2 suction. |
| LO(23) | No. 2 heater shutoff to No. 2 purifier. | LO(94) | LO pump No. 2 disch. |
| LO(24) | No. 2 heater shutoff to main engine flushing. | LO(95) | LO pump No. 1 disch. |
| LO(25) | No. 2 LO purifier transfer main suction. | LO(96) | LO strainer bypass. |
| LO(26) | No. 1 LO purifier transfer main suction. | LO(97) | Temperature control of LO to main air bearing. |
| LO(27) | No. 1 LO purifier suction. | LO(98) | LO storage tank No. 2 fill. |
| LO(28) | No. 2 LO purifier suet - LO sump 1, 2, & 3. | LO(99) | LC storage tank No. 3 fill. |
| LO(29) | No. 2 LO purifier disch to main engine flushing. | LO(100) | LO storage tank No. 2 suction. |
| LO(30) | LO purifier pump suction from main. | LO(101) | LO storage tank No. 3 suction. |
| LO(31) | LO to No. 1 main engine flushing. | LO(104) | LO filling line - backup. |
| LO(32) | LO to No. 2 main engine flushing. | | |
| LO(33) | LO to No. 3 main engine flushing. | | |
| LO(42) | No. 2 HE attach pump disch roller. | | |
| LO(47) | LO sump suction to frame main. | | |
| LO(48) | LO purifier disch to No. 2 sump. | | |
| LO(49) | LO purifier suction from No. 2 sump. | | |
| LO(50) | LO purifier disch to No. 3 sump. | | |
| LO(51) | LO purifier disch to No. 1 sump. | | |
| LO(54) | LO purifier disch to disch main. | | |
| LO(56) | LO purifier disch to disch main. | | |
| LO(57) | LO purifier disch - 3-way plug valve. | | |
| LO(58) | LO purifier suet - 3-way plug valve. | | |
| LO(59) | LO purifier suet - 3-way plug valve. | | |
| LO(60) | LO purifier disch - 3-way plug valve. | | |
| LO(61) | LO purifier disch - 3-way plug valve. | | |
| LO(62) | LO purifier suet - 3-way plug valve. | | |
| LO(63) | LO filling & delubing - disch main. | | |
| LO(64) | LO filling & delubing - cross conn - pump suet. | | |
| LO(65) | LO disch to swing conn - drain line. | | |
| LO(67) | LO filling strainer bypass. | | |
| LO(68) | LO filling strainer - isolation. | | |
| LO(69) | LO filling drain. | | |
| LO(70) | LO filling line overboard. | | |
| LO(71) | LO frame pump suet isolation - Eng Rm. | | |
| LO(72) | LO frame pump disch isolation - Eng Rm. | | |
| LO(73) | LO to prep air fed journal bearing - balancing. | | |
| LO(74) | LO sump No. 1 suet - frame main. | | |
| LO(75) | LO purifier disch to main air sump. | | |
| LO(76) | LO pump No. 1 suction err 3 conn. | | |



47-1 SW COOLING, DIESEL-GENERATOR AND EXHAUST

NAVSEP-TAB-83 832-1

NAVSHIPS TAB-SS582-1

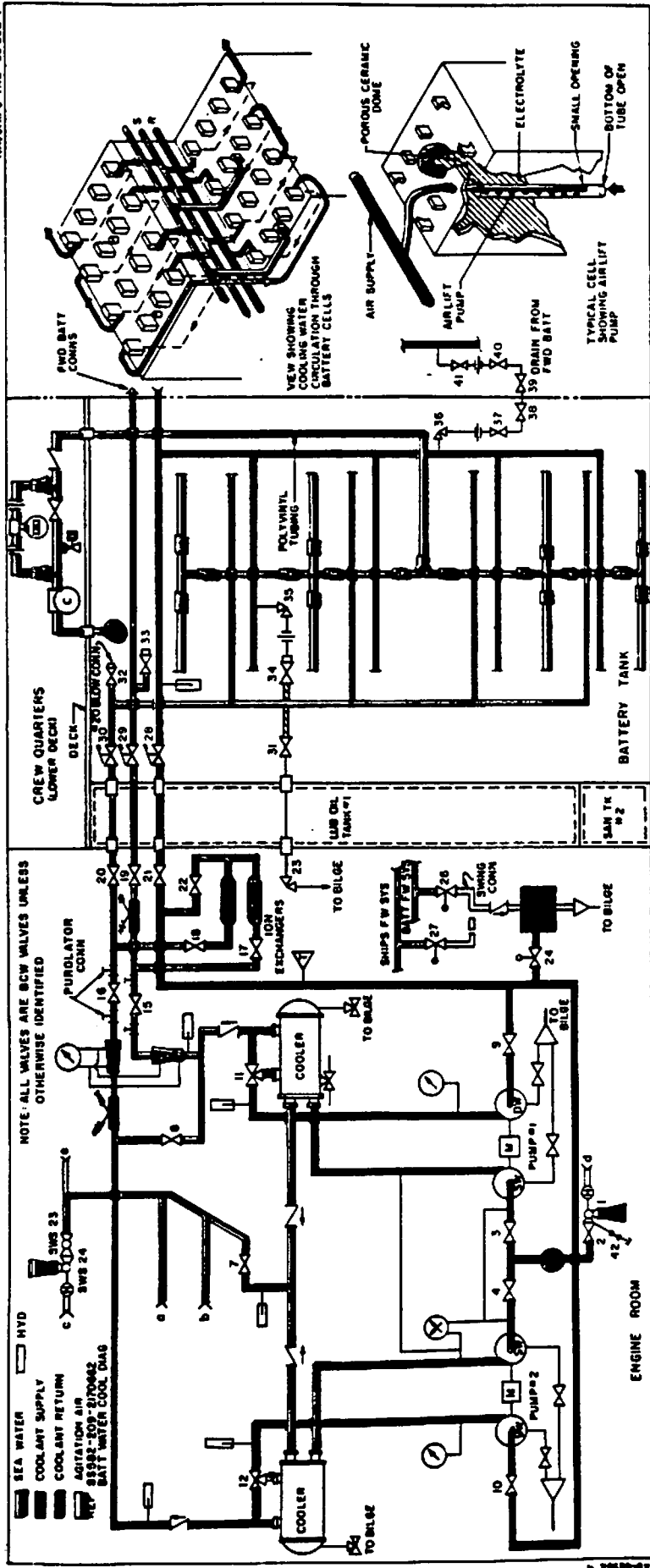
| | | | |
|---------|--|----|--|
| DSW(1) | No. 1 Engine sea suction - hull. | | |
| DSW(2) | No. 3 Engine sea suction - hull. | | |
| DSW(3) | No. 2 Engine sea suction - hull. | | |
| DSW(4) | No. 2 Engine sea suction - backup. | | |
| DSW(5) | No. 1 Engine sea suction - backup. | | |
| DSW(6) | No. 3 Engine sea suction - backup. | | |
| DSW(7) | No. 1 Engine sea suction - blowdown. | | |
| DSW(8) | No. 3 Engine sea suction - blowdown. | | |
| DSW(9) | No. 2 Engine sea suction - blowdown. | | |
| DSW(10) | No. 2 Engine sea water overboard discharge. | | |
| DSW(11) | No. 1 Engine sea water overboard discharge. | | |
| DSW(12) | No. 3 Engine sea water overboard discharge. | | |
| DSW(13) | No. 1 Engine sea water overboard discharge - backup. | | |
| DSW(14) | No. 3 Engine sea water overboard discharge - backup. | | |
| DSW(15) | No. 2 Engine sea water overboard discharge - backup. | | |
| DSW(16) | SW from No. 2 generator air cooler. | a | |
| DSW(17) | SW from No. 1 generator air cooler. | a1 | |
| DSW(18) | SW from No. 3 generator air cooler. | a2 | |
| DSW(19) | SW to No. 1 generator air cooler. | b | |
| DSW(20) | SW to No. 3 generator air cooler. | c | |
| DSW(21) | SW to No. 2 generator air cooler. | d | |
| DSW(31) | SW discharge from No. 1 engine to snorkel de-icing pump. | | |
| DSW(32) | SW discharge from No. 3 engine to snorkel de-icing pump. | | |
| DSW(33) | SW discharge from No. 2 engine to snorkel de-icing pump. | | |
| DSW(34) | Snorkel de-icing pump suction. | | |
| DSW(35) | Snorkel de-icing pump discharge. | | |
| DSW(36) | Snorkel de-icing pump bypass. | | |
| DSW(37) | Snorkel de-icing pump relief. | | |
| DSW(38) | Snorkel de-icing pump discharge to snorkel head valve - hull. | | |
| DSW(39) | Snorkel de-icing pump discharge to snorkel head valve - backup. | | |
| DSW(40) | Snorkel de-icing pump discharge - blowdown. | | |
| DSW(50) | Circ water from muffler valve & overboard discharge No. 2 engine. | | |
| DSW(51) | Circ water from muffler valve & overboard discharge No. 1 engine. | | |
| DSW(52) | Circ water from muffler valve & overboard discharge No. 3 engine. | | |
| | Sea water from No. 3 engine to fuel oil compensating system. See plate 43. | | |
| | Sea water from No. 2 engine to fuel oil compensating system. See plate 43. | | |
| | Sea water from No. 1 engine to fuel oil compensating system. See plate 43. | | |
| | Circulating SW overboard discharge. | | |
| | Diesel engine SW cooling overboard discharge to muffler & FC compensating. | | |

47-1A

COOLING, DIESEL-GENERATOR AND EXHAUST

Engine circulating SW discharge 1
snorkel de-icing.

NAVSHIPS TAB-35 582-1

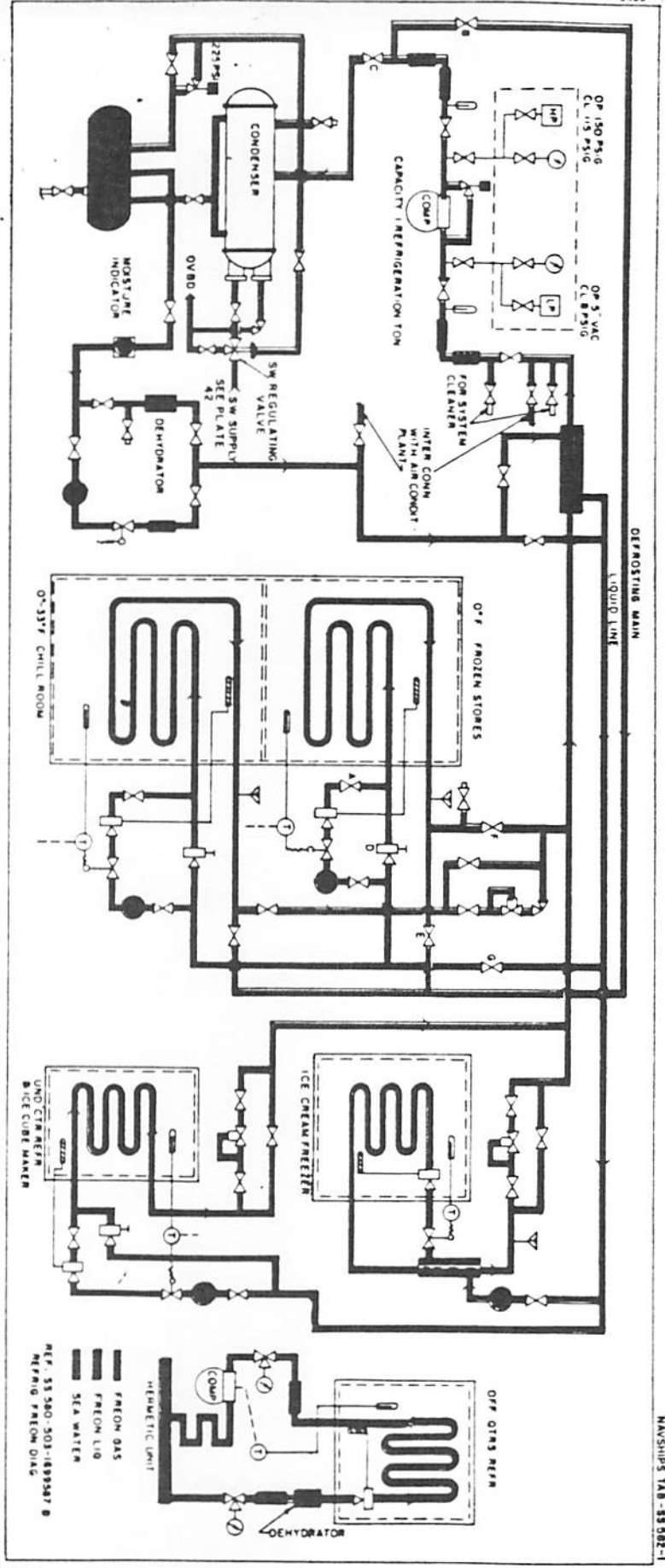


5 2

148-48382-4

- BCV(1) Bat. cooling SV sweat, pumps 1 & 2.
H/d operated.
- BCV(2) Bat. cooling SV sweat backup.
- BCV(3) Bat. cooling SV sweat, pump 1.
- BCV(4) Bat. cooling SV sweat, pump 2.
- BCV(7) Bat. cooling SV from coolers or/bd.
- BCV(8) Bat. cooling DW cross-conn, fwd & aft battery.
- BCV(9) Bat. cooling DW sweat, pump 1.
- BCV(10) Bat. cooling DW sweat, pump 2.
- BCV(11) Bat. cooling DW from cooler 1.
- BCV(12) Bat. cooling DW from cooler 2.
- BCV(15) Bat. cooling DW purulator conn, fwd bat.
- BCV(16) Bat. cooling DW purulator conn, aft bat.
- BCV(17) Bat. cooling DW to 1cm exchanger fwd bat.
- BCV(18) Bat. cooling DW to 1cm exchanger, aft bat.
- BCV(19) Bat. cooling DW from cooler 1 to fwd bat.
- BCV(20) Bat. cooling DW from cooler 2 to aft bat.
- BCV(21) Bat. cooling DW return from batteries.
- BCV(22) Bat. cooling DW return from ion exchangers.
- BCV(23) Bat. cooling DW drain to bilge, fwd and aft bat.
- BCV(24) Bat. cooling DW from exp tank.
- BCV(26) Bat. cooling DW from bat water sys to exp tank.
- BCV(27) Bat. cooling fresh water from ship's fresh water sys to exp tank.
- BCV(28) Bat. cooling DW return from fwd and aft batteries.
- BCV(29) Bat. cooling DW supply to fwd bat.
- BCV(30) Bat. cooling DW supply to aft bat.
- BCV(31) Bat. cooling DW drain fwd and aft bat. fwd conn.
- BCV(32) Bat. cooling 20f air, blow & vent, fwd bat.
- BCV(33) Bat. cooling 20f air, blow & vent, aft bat.
- BCV(34) Bat. cooling DW drain, fwd & aft bat, fwd conn.
- BCV(35) Bat. cooling DW drain, fwd & aft bat, fwd conn.
- BCV(36) Bat. cooling DW drain, fwd & aft bat, aft conn.
- BCV(37) Bat. cooling DW drain, fwd & aft bat, aft conn.
- BCV(38) Bat. cooling DW drain, fwd & aft bat, aft conn.
- BCV(39) Bat. cooling DW drain, aft bat, to fwd bat.
- BCV(40) Bat. cooling DW drain, aft bat, to fwd bat.
- BCV(41) Bat. cooling DW drain, aft bat, to fwd bat.
- BCV(42) Bat. cooling sea suction blow.
- BCV(39) AC heat exchanger discharging or/bd. See plate 42.
- BCV(40) B-line dash or/bd. (Blank)

48A PROPULSION BATTERY SYSTEM



REF. 33 580-303-189587 B
 REFRIG FREON DIAG
 HEAT EXCH. UNIT
 FREFON GAS
 FREFON LIQ
 SEA WATER

NAVSHIPS 148-39 002-1

49 REFRIGERATION FREON SYSTEM

