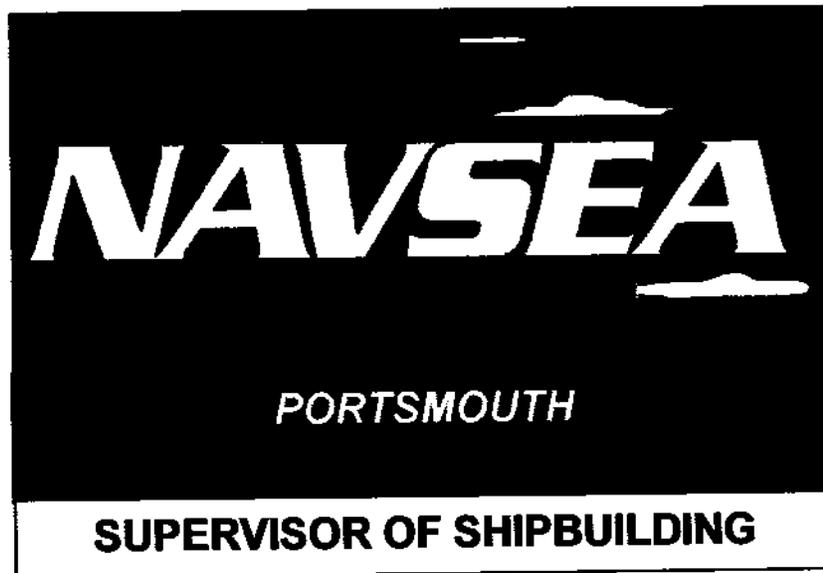


# USS LASALLE (AGF 3)

## PIPING ULTRASONIC TESTING DATA RECORD



SEMAT II INSPECTION COMPLETED BY  
SUPSHIP C&R USN  
PORTSMOUTH, VIRGINIA

GAETA, ITALY 28 JUNE – 14 JULY 2000

**USS LA SALLE (AGF-3)**

**ULTRASONIC TESTING PLAN BOOK CONTENTS**

Pipe clock position Diagram:

Piping System Ultrasonic Testing Recommendations/Suggestion From  
Past Experience/Lessons Learned.

SEMAT Inspection Procedure for Ultrasonic Testing of Piping.

Assessment Sheet for each Piping System Tested.

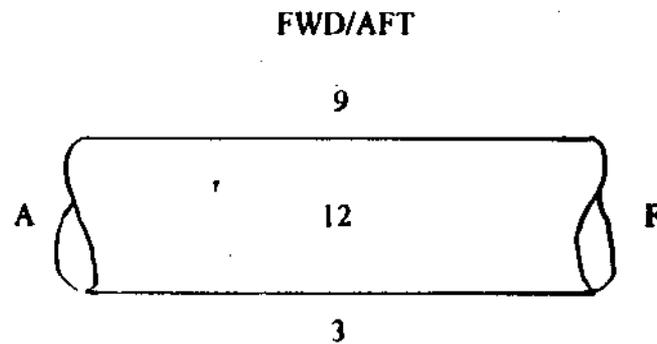
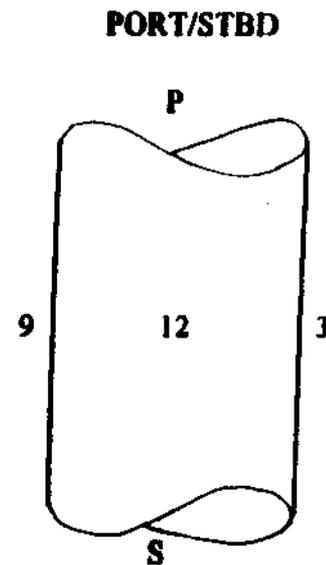
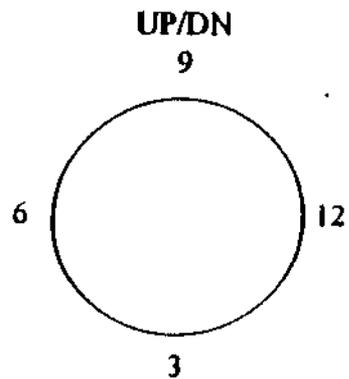
Ultrasonic Test Plan, Piping Measurement Point Diagrams and Data  
Sheets for the following Piping Systems:

Feedwater Piping

Fuel Oil Filling & Transfer Piping

Main Lube Oil Service Piping

FORWARD----->  
(TOP VIEW, LOOKING DOWN)



**PIPING SYSTEM ULTRASONIC TESTING RECOMMENDATIONS/  
SUGGESTIONS FROM PAST EXPERIENCE/LESSONS LEARNED:**

The following information is provided as supplemental information from lessons learned to the attached UT instructions, and not intended to supersede or replace it.

1. Two identical books with drawings and data sheets have been provided: a working copy for use during actual measurements, which tend to get somewhat dirty or ruffled during the process, and one for “clean” turn-in.
2. It was easier during the actual measurement process (for all but the CHT piping system) to record the readings directly on the drawing by each measurement point, including the clock position at which the measurement was taken, in pencil, and then later transcribing the measurement points in pencil to the working copy data sheets. When each piping system is completed, it is recommended that the data should then be transcribed in ink to the clean turn-in copies of the data sheets and then turned in along with the corresponding drawings.
3. For the CHT piping system, it was easier to record the measurements directly in pencil on the working copy data sheets, since four measurements should be taken at each measurement point whenever possible, except for lagged piping, and then later transcribed in ink to the “clean” turn-in data sheets for turn-in with the associated drawings.
4. Prior to taking measurements in a given space for a piping system, it is helpful to physically locate and number the measurement points with a grease pencil or china marker; this makes the actual measurement process faster and easier.
5. Some UT meters require calibration using calibration blocks of material of known thickness that is of the same material to be measured (e.g., Corrosion Resistant Steel (CRES) for the Fuel Oil Transfer and CHT designated measurement points, 90/10 Copper/Nickel (CU/NI) for the other piping system).
6. For the CHT piping system, due to the past history of problems and the nature of the system, four measurements at clock positions 3, 6, 9 and 12 at each point for the bare pipe (not lagged) when possible, and one measurement for lagged piping, preferably at 6 O’clock, when possible. In instances where not all four readings is possible for a given measurement point for bare pipe, then the appropriate “note1”, “note2”, or “note3” as described in paragraph (5) below should be entered in the appropriate space for that measurement point.
7. For the remaining piping system, whether lagged or not, one measurement, preferably at 6 O’clock, when possible, should be taken unless readings are suspect, in which case additional readings should be taken.

**PIPING SYSTEM ULTRASONIC TESTING RECOMMENDATIONS/  
SUGGESTIONS FROM PAST EXPERIENCE/LESSONS LEARNED  
(CONTINUED):**

8. Measurements involving lagged piping require a “V” shaped cut to create a flap to gain access to the pipe surface with the probe. After the measurement is taken, the flap should be tucked back into place, and in highly visible areas (e.g., passageways and berthing areas) covered with a strip of adhesive lagging patch, if available. One measurement/lagging cut should be taken, unless close proximity of fittings, surface irregularities, or suspect readings require an additional cut in close proximity to obtain a valid reading.
9. In some cases, an accurate measurement cannot be made at a designated measurement point at any clock position due to surface irregularities (see note 1 at bottom of data sheets), or due to inaccessibility/location of the pipe (see note 2 at bottom of data sheets), or due to close proximity of pipe fittings (see note 3 at bottom of data sheets); in these instances, “note 1”, “note 2”, or “note 3” should be written in all four spaces for that measurement point.
10. In isolated cases, measurements cannot be taken because a measurement point either no longer exists or is no longer relevant because the pipe has been capped at that point, in which case “capped” should be written in all four spaces for that measurement point. Similarly, usually on the weather deck and involving CHT piping, a few measurement points may be covered with Passive Countermeasure System (PCMS) material; DO NOT CUT THIS MATERIAL; enter “PCMS” in the four data blocks for these measurement points.
11. At times, uneven, layered, or blistered paint on piping, whether lagged or not, may create superficial surface irregularities, making it difficult to obtain valid readings, even for UT meters designed to read through paint, in which case chipping and/or wirebrushing of the paint may be required to obtain valid readings.

Any additional “Lessons Learned” that would be helpful to future teams would be very much appreciated, and should be directed to Code 921.

SHIP SYSTEM Shipboard Piping Systems	SUBSYSTEM	MRC CODE  R-	
SYSTEM	EQUIPMENT System Piping	RATES GS-11/12	M/H 24.0
MAINTENANCE REQUIREMENT DESCRIPTION 1. Conduct SEMAT assessment procedure for ultrasonic testing of piping systems.		TOTAL M/H 24.0 ELAPSED TIME	
SAFETY PRECAUTIONS 1. Forces afloat comply with NAVOSH Program Manual for Forces Afloat, OPNAVINST 5100.19 series.			
TOOLS, PARTS, MATERIALS, TEST EQUIPMENT			
<b>TEST EQUIPMENT</b>			
1. Ultrasonic test meter			
<b>MATERIALS</b>			
1. [1749] Lubricating compound, silicone Hazardous Material User's Guide (HMUG) Group 11, Disposal Method 1			
3. [0721] Knife, pocket, Electricians			
4. [2271] Flashlight, Type 3, style 1, explosive proof			
5. [2384] Tape, measuring, 1/2" steel, 72", push-pull rewind			
<b>TOOLS</b>			
1. [0196] Brush, wire, scratch, Carbon steel, 14-1/2"			
2. [0611] Hammer, hand, Scaling, 1 LB			
<b>MISCELLANEOUS</b>			
1. [1365] NSTM Chapter 505			
2. System UT plans or System EOSS diagram			
3. Teflon probe covers			
<b>NOTE:</b> Numbers in brackets can be referenced to Standard PMS Materials Identification Guide (SPMIG) for stock number identification.			
PROCEDURE			
<b>NOTE 1:</b> Total man-hours listed are for accomplishment per system based on a DD class ship. Number of personnel and total man-hours may require adjustment on other class ships.			
<b>NOTE 2:</b> Accomplish either before availability, after availability, or before deployment.			
DISTRIBUTION STATEMENT D			
Distribution authorized to DOD components and DOD contractors only; critical technology; August 1997. Other requests for this document shall be referred to Naval Sea Systems Command (SEA 04TD). Destroy by any method that will prevent disclosure of contents or reconstruction of the document.			
LOCATION	DATE August 1997		<b>87</b> <b>AAAA</b> <b>N</b>

HAZARDOUS MATERIALS CONTROL STATEMENT (U)	
<p>The Hazardous Material Users Guide (HMUG), OPNAV P-45-110-91, provides additional control measures, precautions, personal protective equipment (PPE), and spill controls for the hazardous material(s) identified in the Tools, Parts, Materials, Test Equipment block.</p>	
PROCEDURE (Contd)	
<p><b>NOTE 3:</b> Ultrasonic testing shall be accomplished on sections of the piping system located on 2nd Deck and below in the following locations:</p> <ul style="list-style-type: none"> <li>a. All elbows, tees and bends. (Special attention shall be given to the outside radius).</li> <li>b. Piping low points.</li> <li>c. Areas requested to be surveyed by Port Engineer or ship's CHENG.</li> </ul>	
<p><b>NOTE 4:</b> The minimum allowable wall thickness for any piping system shall not be less than .050 inch as per NSTM section 505.</p>	
<p><b>NOTE 5:</b> Do not take UT readings on sil-brazed fittings. Sil-brazed fitting materials are porous and will not provide true readings.</p>	
<p><b>NOTE 6:</b> When conducting UT assessment of steam system piping or other high temperature systems, use teflon style probe covers with silicon lubricant. UT assessment of high temperature systems is best accomplished when system has been inactive for 8 hrs.</p>	
<p><b>CAUTION:</b> Those personnel who are in contact with wastewater, or assess wastewater treatment plants, should keep basic immunizations current. Immunizations required include typhoid, polio, and tetanus.</p>	
<p><b>CAUTION:</b> Personnel shall exercise extreme care when performing UT assessments on active steam piping and other high temperature systems.</p>	
<p><b>1. Conduct SEMAT Assessment Procedure for Ultrasonic Testing of Piping Systems.</b></p> <ul style="list-style-type: none"> <li>a. Prepare the pipe or tube to be assessed by removing all rust, scale, and paint to produce a moderately bright metal surface. (On insulated/lagged piping, use a utility knife to cut a triangular flap in the insulation/lagging in the area to be tested. Upon completion of testing in that area, reinsert the flap back into place.)</li> <li>b. Calibrate the ultrasonic test meter. The meter shall be calibrated to read within .005 inch of the test block thickness.</li> </ul>	
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PROCEDURE (Contd)

- c. Take one reading at the bottom of piping/tubing. Where applicable, a second reading at a 90° interval around the circumference of the pipe shall be taken on the outside radius where flow is turbulent. When flow through a tee is supplied from the center run and discharges through either branch, readings shall be taken at the bottom and the back end of the tee (the wall of the tee that the flow discharges against).
- d. Record all readings taken on UT plans or EOSS diagrams at the location where the readings were taken.
- e. Compare recorded readings against the minimum allowable wall thickness values indicated in UT Piping Data Tables. When readings are at or below the minimum allowable wall thickness values indicated in the tables, or if marginal readings that may drop below the minimum prior to the next scheduled overhaul are indicated, continue surveying along the run of piping until satisfactory readings are indicated on both sides of the deteriorated sections. Measure and record the length and location of the deteriorated sections, as well as the size and material of the pipe. Report all discrepancies identified on applicable TARGET discrepancy reporting forms (2-K or Material Assessment Form).
- f. At the completion of the system survey, the lowest recorded reading at each test point shall be recorded onto two (2) clean plans/diagrams. One shall be turned in with the system test report and the other shall be retained for analysis.

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PROCEDURE (Contd)

UT PIPING DATA TABLES

**NOTE:**

1. The Design thickness listed is for reference purposes only. This figure will vary between classes and between ships within a class. The min wall thickness listed has been calculated based on NSTM section 505 requirements.
2. Some classes may use carbon steel for Fuel Oil systems. The min wall thicknesses listed for CRES apply.
3. The minimum allowable wall thickness for copper tubing 4" and below is .050".

FUEL OIL FILL AND TRANSFER SYSTEM				
NOM PIPE SIZE	OUT DIA	MATERIAL	DES THKNESS	MIN THKNESS
10"	10.75	CRES	.365	.057
8"	8.625	CRES	.322	.050
6"	6.625	CRES	.280	.050
6"	6.625	CU/NI 70/30	.134	.055
5"	5.563	CRES	.258	.050
5"	5.563	CU/NI 70/30	.125	.050
4"	4.500	CRES	.237	.050
4"	4.500	CU/NI 90/10	.109	.050
3"	3.500	CRES	.216	.050
2.5"	2.875	CRES	.203	.050
2.5"	2.875	CU/NI 70/30	.083	.050
2"	2.375	CRES	.154	.050
2"	2.375	CU/NI 90/10	.083	.050
1.5"	1.900	CU/NI 90/10	.072	.050
1.25"	1.660	CRES	.140	.050
1"	1.315	CRES	.133	.050

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PROCEDURE (Contd)

BOTTOM BLOW PIPING				
NOM PIPE SIZE	OUT DIA	MATERIAL	DES THKNESS	MIN THKNESS
2"	2.375	CS	.343	.130
1"	1.315	NI/CU	.179	.115
.75"	1.050	NI/CU	.154	.115

AUX SW, CHT, MN DRAINAGE, JP-5 AND FIREMAIN SYS				
NOM PIPE SIZE	OUT DIA	MATERIAL	DES THKNESS	MIN THKNESS
8"	8.625	CU/NI 90/10	.148	.077
6"	6.625	CU/NI 90/10	.134	.059
5"	5.563	CU/NI 90/10	.125	.050
4"	4.500	CU/NI 90/10	.109	.050
3"	3.500	CU/NI 90/10	.095	.050
2.5"	2.875	CU/NI 90/10	.083	.050
2"	2.375	CU/NI 90/10	.083	.050
1.5"	1.900	CU/NI 90/10	.072	.050
1"	1.315	CU/NI 90/10	.065	.050

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PROCEDURE (Contd)

**DISPOSAL METHODS FOR HAZARDOUS MATERIAL/WASTE IDENTIFIED IN THE TOOLS, PARTS, MATERIAL, AND TEST EQUIPMENT BLOCK**

Method 1: Containerize waste in original container, if possible, or use standard container as listed in Appendix B3-D of OPNAVINST 5100.19B, "Navy Occupational Safety and Health (NAVOSH) Program Manual for Forces Afloat" and Naval Ships' Technical Manual (NTSM) S9086-T8-STM-010/CH-593, Pollution Control. Store in accordance with OPNAVINST 5100.19B and NSTM Chapter 670. Do not mix chlorinated solvents with nonchlorinated solvents. Mark, label, or tag the container, according to ship procedures, with specific contents and any information on the contaminants. This information must also be provided on DD Form 1348-1 at time of offloading.

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## MAIN FEED PIPING SYSTEM

UT #	SIZE	12	3	6	9	VIEW
1	5 COPPER	0.080	0.085	0.090	0.085	B
2	5	0.090	0.085	NOTE 2	0.090	A
3	5	0.090	0.080	0.085	0.090	B
4	5	0.090	0.085	NOTE 2	0.090	A
5	5	0.080	NOTE 2	NOTE 2	0.090	C
6	5	NOTE 2	NOTE 2	NOTE 2	0.085	C
7	4	0.125	0.120	0.120	0.130	A
8	4	NOTE 2	NOTE 2	NOTE 2	NOTE 2	
9	4	0.095	NOTE 2	NOTE 2	0.090	A
10	4	0.080	0.080	NOTE 2	0.075	A
11	5	0.090	0.095	NOTE 2	NOTE 2	A
12	2	0.090	0.090	NOTE 2	0.095	A
13	4	NOTE 2	0.120	0.120	0.130	A
14	4	NOTE 2	0.090	NOTE 2	0.090	C
15	2	NOTE 2	0.075	NOTE 2	NOTE 2	C
16	3.5	0.075	NOTE 2	NOTE 2	0.065	A
17	3.5	0.070	0.080	NOTE 2	0.065	C
18	3.5	0.090	0.075	NOTE 2	0.075	B
19	4 CARB STL	-	-	0.120	-	C
20	4 CARB STL	-	-	0.120	-	C

UT #	SIZE	12	3	6	9	VIEW
21	4 CARB STL	NOTE 3	NOTE 3	NOTE 3	NOTE 3	
22	4 CARB STL	0.190	-	-	-	C
23	4 CARB STL	0.105	-	-	-	C
24	4 CARB STL	0.195	-	-	-	C
25	4 CARB STL	0.125	-	-	-	C
26	4 CARB STL	-	-	-	0.175	B
27	4 CARB STL	X CONN				
28	4 CARB STL	X CONN				
29	4 CARB STL	X CONN				
30	4 CARB STL	X CONN				
31	2	NOTE 3	NOTE 3	NOTE 3	NOTE 3	C
32	3	0.230	0.225	0.110	0.240	B
33	3	-	0.210	-	-	B
34	3	0.145	NOTE 3	NOTE 3	0.125	A
35	3.5	0.075	0.075	NOTE 2	0.065	C
36	5 COPPER	0.150	0.145	0.150	0.145	A
37	5 COPPER	0.150	0.150	NOTE 2	0.145	C
38	5 COPPER	0.105	NOTE 2	NOTE 2	0.125	C
39	5 COPPER	0.080	0.070	NOTE 2	0.080	C
40	5 COPPER	0.100	0.075	NOTE 2	0.095	A

NOTE 1: DUE TO SURFACE IRREGULARITIES UNABLE TO OBTAIN ACCURATE U/T READINGS.

NOTE 2: DUE TO LOCATION OF THE PIPE UNABLE TO OBTAIN U/T READINGS.

NOTE 3: DUE TO CLOSE PROXIMITY OF PIPE FITTINGS UNABLE TO OBTAIN U/T READINGS.

NOTE 4: VIEW A = PIPING RUNNING FORE AND AFT TOP OF PPG IS 12 O'CLOCK; VIEW B = PIPING RUNNING UP AND DOWN 12 O'CLOCK IS FORWARD; VIEW C = PIPING RUNNING PORT AND STBD 12 O'CLOCK IS TOP, 3 O'CLOCK IS FORWARD.

## MAIN FEED PIPING SYSTEM

UT #	SIZE	12	3	6	9	VIEW
41	2 COPPER	0.075	NOTE 2	NOTE 2	0.075	A
42	3.5	0.095	0.070	0.065	0.075	A
43	3.5	0.070	0.075	0.070	0.075	A
44	3.5	0.075	0.080	0.075	0.065	A
45	3.5	0.080	NOTE 2	NOTE 2	0.075	C
46	3.5	0.075	0.060	NOTE 2	0.065	C
47	3.5	0.075	0.075	NOTE 2	0.075	A
48	2.5	0.095	0.080	NOTE 2	0.080	C
49	3.5	0.075	0.070	NOTE 2	0.075	A
50	3.5	0.075	0.080	0.075	0.070	B
51	2.5	0.075	0.070	0.075	0.070	C
52	2.5	0.075	0.075	0.075	0.070	C
53	4 CARB STL	X CONN				
54	4 CARB STL	X CONN				
55	4 CARB STL	X CONN				
56	4 CARB STL	X CONN				
57	4 CARB STL	X CONN				
58	4 CARB STL	0.175	-	-	-	C
59	4 CARB STL	NOTE 2	NOTE 2	NOTE 2	NOTE 2	
60	3 CARB STL	NOTE 2	NOTE 2	NOTE 2	NOTE 2	

UT #	SIZE	12	3	6	9	VIEW
61	4 CARB STL	-	0.140	-	-	C
62	4 CARB STL	-	-	0.170	-	C
63	4 CARB STL	-	0.160	-	-	B
64	2.5 COPPER	0.075	0.075	0.070	NOTE 1	B
65	2.5 COPPER	0.075	0.075	0.075	0.075	B
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NOTE 1: DUE TO SURFACE IRREGULARITIES UNABLE TO OBTAIN ACCURATE U/T READINGS.

NOTE 2: DUE TO LOCATION OF THE PIPE UNABLE TO OBTAIN U/T READINGS.

NOTE 3: DUE TO CLOSE PROXIMITY OF PIPE FITTINGS UNABLE TO OBTAIN U/T READINGS.

NOTE 4: VIEW A = PIPING RUNNING FORE AND AFT TOP OF PPG IS 12 O'CLOCK; VIEW B = PIPING RUNNING UP AND DOWN 12 O'CLOCK IS FORWARD; VIEW C = PIPING RUNNING PORT AND STBD 12 O'CLOCK IS TOP, 3 O'CLOCK IS FORWARD.



## FUEL OIL PIPING SYSTEM

UT #	SIZE	12	3	6	9	VIEW
1	4	NOTE 1	NOTE 1	NOTE 1	NOTE 1	
2	4	NOTE 1	NOTE 1	NOTE 1	NOTE 1	
3	4	NOTE 1	NOTE 1	NOTE 1	NOTE 1	
4	4	NOTE 1	NOTE 1	NOTE 1	NOTE 1	
5	8	0.320	0.335	0.325	0.305	B
6	8	0.355	0.345	NOTE 2	0.345	C
7	8	0.360	0.355	0.305	0.345	B
8	4	NOTE 1	NOTE 1	NOTE 1	NOTE 1	B
9	4	NOTE 1	NOTE 1	NOTE 1	NOTE 1	B
10	4	NOTE 1	NOTE 1	NOTE 1	NOTE 1	B
11	4	0.100	NOTE 1	0.140	0.140	B
12	8	NOTE 1	NOTE 1	NOTE 1	NOTE 1	A
13	8	0.355	0.350	0.330	0.315	B
14	8	0.340	0.340	0.310	0.340	A
15	6	0.280	0.265	0.255	0.265	A
16	6	0.285	0.290	NOTE 2	0.270	A
17	6	0.275	0.285	NOTE 2	0.260	B
18	5	0.285	0.290	0.285	0.245	A
19	4	0.240	0.240	NOTE 2	0.205	A
20	4	0.125	0.220	NOTE 2	0.210	C

UT #	SIZE	12	3	6	9	VIEW
21	6	0.305	0.295	NOTE 2	0.275	A
22	8	0.135	NOTE 2	NOTE 2	0.140	A
23	NOTE 3					
24	NOTE 3					
25	6	NOTE 1	NOTE 1	NOTE 1	NOTE 1	C
26	6	0.210	0.205	NOTE 2	0.220	C
27	NOTE 3					
28	5	0.315	0.280	NOTE 2	0.265	C
29	5	0.320	0.280	0.300	0.280	C
30	NOTE 3					
31	NOTE 3					
32	NOTE 3					
33	NOTE 3					
34	6	0.400	0.410	NOTE 2	0.450	B
35	NOTE 3					
36	6	0.140	NOTE 2	0.140	0.145	B
37	4	0.140	NOTE 2	0.135	NOTE 2	B
38	4	0.130	0.135	0.135	NOTE 2	B
39	4	0.135	0.140	0.135	NOTE 2	B
40	4	0.140	0.135	0.140	NOTE 2	B

NOTE 1: DUE TO SURFACE IRREGULARITIES UNABLE TO OBTAIN ACCURATE U/T READINGS.

NOTE 2: DUE TO LOCATION OF THE PIPE UNABLE TO OBTAIN U/T READINGS.

NOTE 3: DUE TO CLOSE PROXIMITY OF PIPE FITTINGS UNABLE TO OBTAIN U/T READINGS.

NOTE 4: VIEW A = PIPING RUNNING FORE AND AFT TOP OF PPG IS 12 O'CLOCK; VIEW B = PIPING RUNNING UP AND DOWN 12 O'CLOCK IS FORWARD; VIEW C = PIPING RUNNING PORT AND STBD 12 O'CLOCK IS TOP, 3 O'CLOCK IS FORWARD.

# FUEL OIL PIPING SYSTEM

UT #	SIZE	12	3	6	9	VIEW
41	8	NOTE 2	0.145	0.205	NOTE 2	C
42	8	NOTE 2	NOTE 2	0.240	0.270	C
43	8	0.360	0.220	0.245	0.235	B
44	8	0.350	NOTE 2	0.355	0.330	B
45	8	0.260	0.240	0.280	0.310	B
46	NOTE 3					
47	8	0.270	0.240	0.250	0.280	B
48	8	0.260	0.265	0.260	0.260	B
49	8	0.245	0.245	0.135	NOTE 1	C
50	8	0.285	0.240	0.230	0.260	B
51	8	0.250	0.265	0.235	0.240	C
52	8	0.265	0.250	0.240	0.260	A
53	8	0.250	0.260	0.260	0.265	B
54	8	0.280	0.260	0.230	0.255	C
55	8	0.270	0.265	0.250	0.265	B
56	8	0.290	0.270	0.255	0.285	B
57	8	0.300	0.325	0.305	0.350	B
58	8	0.240	0.250	0.235	0.230	B
59	8	0.245	0.270	0.260	0.255	B
60	8	0.270	0.235	0.225	0.255	B

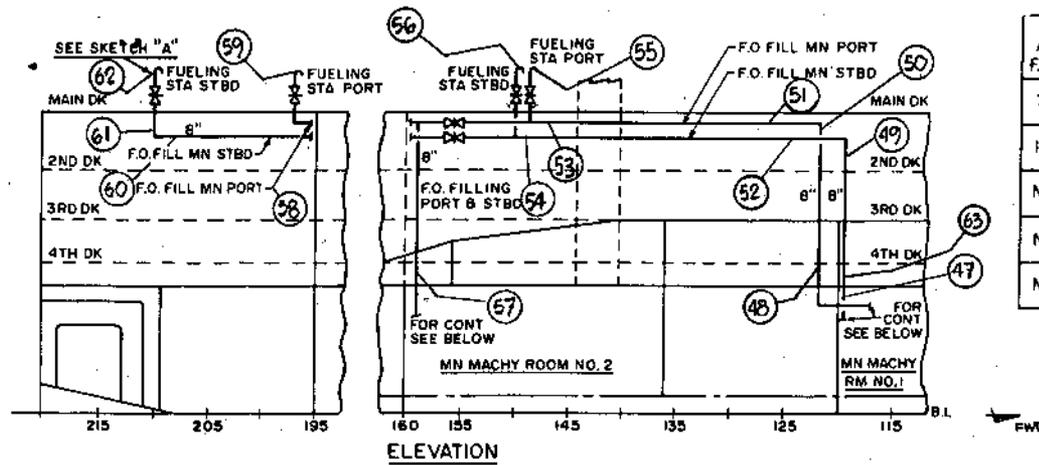
UT #	SIZE	12	3	6	9	VIEW
61	8	0.250	0.265	0.220	0.290	C
62	8	0.270	0.280	0.245	0.240	B
63	8	0.350	0.380	0.310	0.370	B
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NOTE 1: DUE TO SURFACE IRREGULARITIES UNABLE TO OBTAIN ACCURATE U/T READINGS.

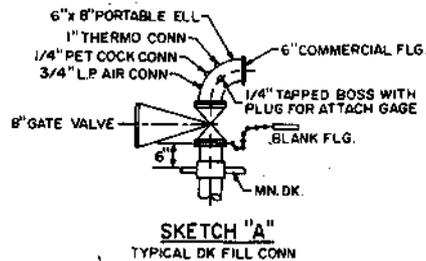
NOTE 2: DUE TO LOCATION OF THE PIPE UNABLE TO OBTAIN U/T READINGS.

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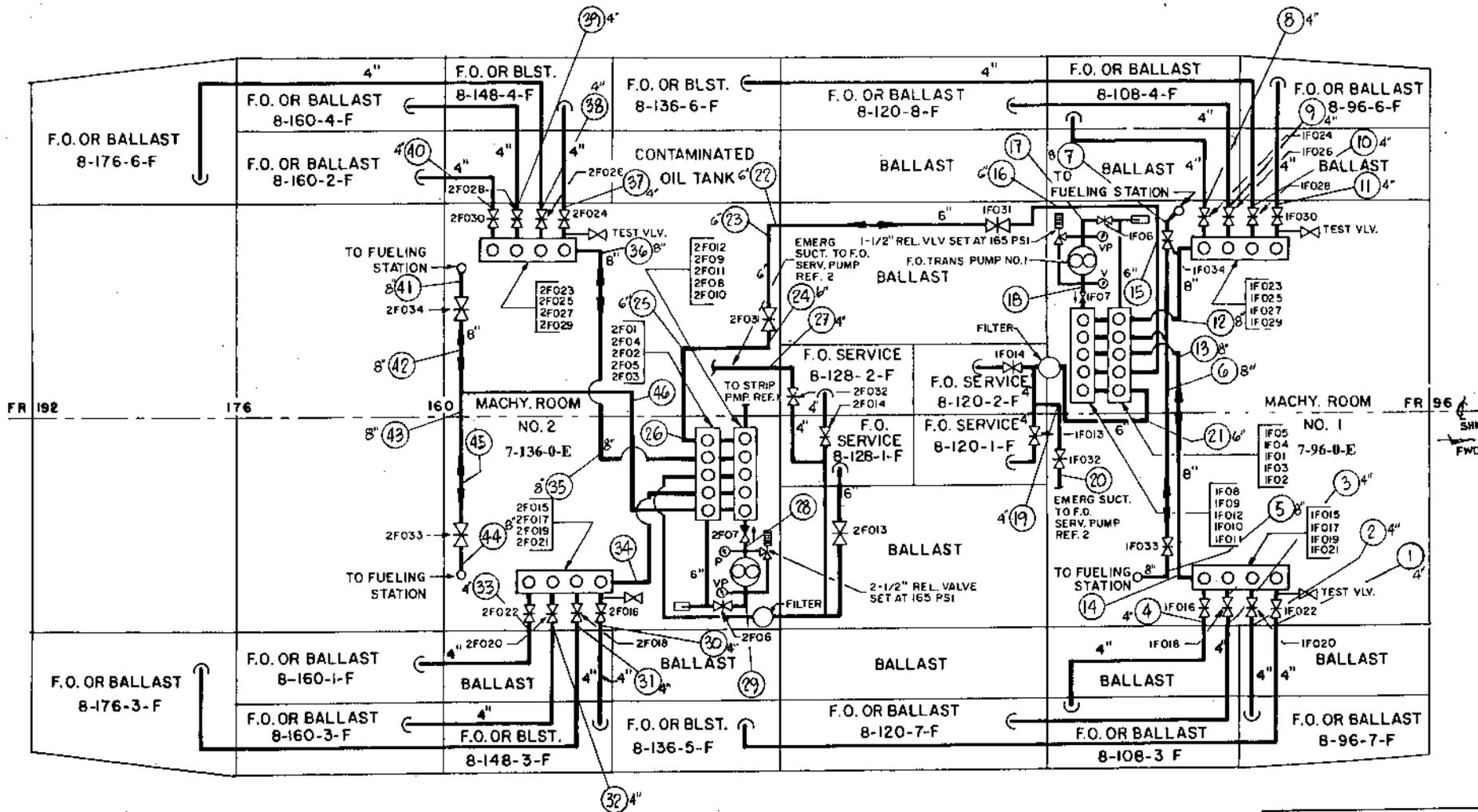


SIB AGF-3 F.O. NO.	REFERENCES		
	NO.	TITLE	BUSHIPS DWG. NO.
7-2	1	F.O. TANK STRIPPING SYS.	LPDI-511C-1773068
16-3	2	F.O. SERVICE SUCTION & DISCHARGE PIPING	210A-5144 LPDI-210-1773065
NO F.O.	3	LINE SLEEVES & SLEEVES PIPING PEN. OF STRUCTURE	545-1340510
NO F.O.	4	STD SLEEVES BOSSES & CHILL RINGS	54823-557534
NO F.O.	5	LIST OF TESTS FOR PIPING SYSTEMS	LPDI-585-1775772



LEGEND	
	GATE VALVE
	GLOBE VALVE
	GLOBE ST. CHK. VALVE
	RELIEF VALVE
	MANIFOLD
	PRESSURE GAGE
	GAGE COMPOUND
	THERMOMETER

**USS LA SALLE (AGF-3)**  
Fuel Oil Filling & Transfer  
Piping U/T Diagram



USS LA SALLE (AGF-3)  
Fuel Oil Filling & Transfer  
Piping U/T Diagram

## LUBE OIL PIPING SYSTEM

UT #	SIZE	12	3	6	9	VIEW
1	3	0.140	0.150	0.145	0.140	C
2	NOTE 3					
3	3	0.140	0.145	0.150	0.140	A
4	2.5	0.135	0.130	0.130	0.140	C
5	4	0.125	0.130	0.145	0.130	B
6	4	0.135	0.140	0.145	0.140	C
7	6	0.120	NOTE 2	0.170	0.190	A
8	5	0.430	0.390	0.360	0.390	C
9	5	0.365	NOTE 3	0.350	0.360	A
10	NOTE 3					
11	5	0.130	0.120	NOTE 2	NOTE 2	C
12	5	0.185	0.190	0.180	0.175	C
13	5	0.185	0.190	0.180	0.190	C
14	5	0.120	0.150	NOTE 2	0.130	C
15	5	0.165	0.170	NOTE 2	0.175	C
16	5	0.120	NOTE 2	NOTE 2	NOTE 2	C
17	3	0.140	0.135	NOTE 2	0.130	C
18	3	NOTE 3	NOTE 3	NOTE 3	NOTE 3	
19	5	0.185	0.195	NOTE 1	0.190	A
20	5	0.180	0.195	NOTE 1	0.190	C

UT #	SIZE	12	3	6	9	VIEW
21	5	0.110	0.190	NOTE 2	0.190	C
22	4	0.320	0.340	NOTE 2	NOTE 2	C
23	4	NOTE 3	0.350	0.340	0.345	C
24	NOTE 3	NOTE 3	NOTE 3	NOTE 3	NOTE 3	
25	4	0.170	0.160	0.140	0.155	B
26	NOTE 2	NOTE 2	NOTE 2	NOTE 2	NOTE 2	
27	2.5	0.140	0.140	0.130	0.130	C
28	2.5	0.130	NOTE 1	NOTE 1	0.135	C
29	4	0.140	0.140	0.135	0.125	B
30	4	0.140	0.130	0.130	0.145	C
31	6	0.250	0.240	NOTE 2	0.245	C
32	5	0.405	0.405	0.395	0.390	C
33	5	NOTE 3	NOTE 3	NOTE 3	NOTE 3	
34	NOTE 3	NOTE 3	NOTE 3	NOTE 3	NOTE 3	
35	5	0.140	0.140	NOTE 2	0.145	A
36	5	0.180	0.180	0.180	0.170	B
37	5	0.145	0.145	0.130	0.140	B
38	5	0.140	NOTE 1	0.140	0.140	C
39	number not used					
40	5	0.200	0.195	0.170	0.190	C

NOTE 1: DUE TO SURFACE IRREGULARITIES UNABLE TO OBTAIN ACCURATE U/T READINGS.

NOTE 2: DUE TO LOCATION OF THE PIPE UNABLE TO OBTAIN U/T READINGS.

NOTE 3: DUE TO CLOSE PROXIMITY OF PIPE FITTINGS UNABLE TO OBTAIN U/T READINGS.

NOTE 4: VIEW A = PIPING RUNNING FORE AND AFT TOP OF PPG IS 12 O'CLOCK; VIEW B = PIPING RUNNING UP AND DOWN 12 O'CLOCK IS FORWARD; VIEW C = PIPING RUNNING PORT AND STBD 12 O'CLOCK IS TOP, 3 O'CLOCK IS FORWARD.

# LUBE OIL PIPING SYSTEM

UT #	SIZE	12	3	6	9	VIEW
41	3	0.130	0.130	NOTE 2	0.125	A
42	3	0.140	0.135	NOTE 2	0.130	A
43	5	0.270	0.265	NOTE 1	0.285	C
44	NOTE 3					
45	NOTE 3					
46	NOTE 3					
47	4	NOTE 3	NOTE 3	NOTE 3	NOTE 3	
48	5	0.185	0.180	0.180	0.185	B
49						
50						
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						

UT #	SIZE	12	3	6	9	VIEW
61						
62						
63						
64						
65						
66						
67						
68						
69						
70						
71						
72						
73						
74						
75						
76						
77						
78						
79						
80						

NOTE 1: DUE TO SURFACE IRREGULARITIES UNABLE TO OBTAIN ACCURATE U/T READINGS.

NOTE 2: DUE TO LOCATION OF THE PIPE UNABLE TO OBTAIN U/T READINGS.

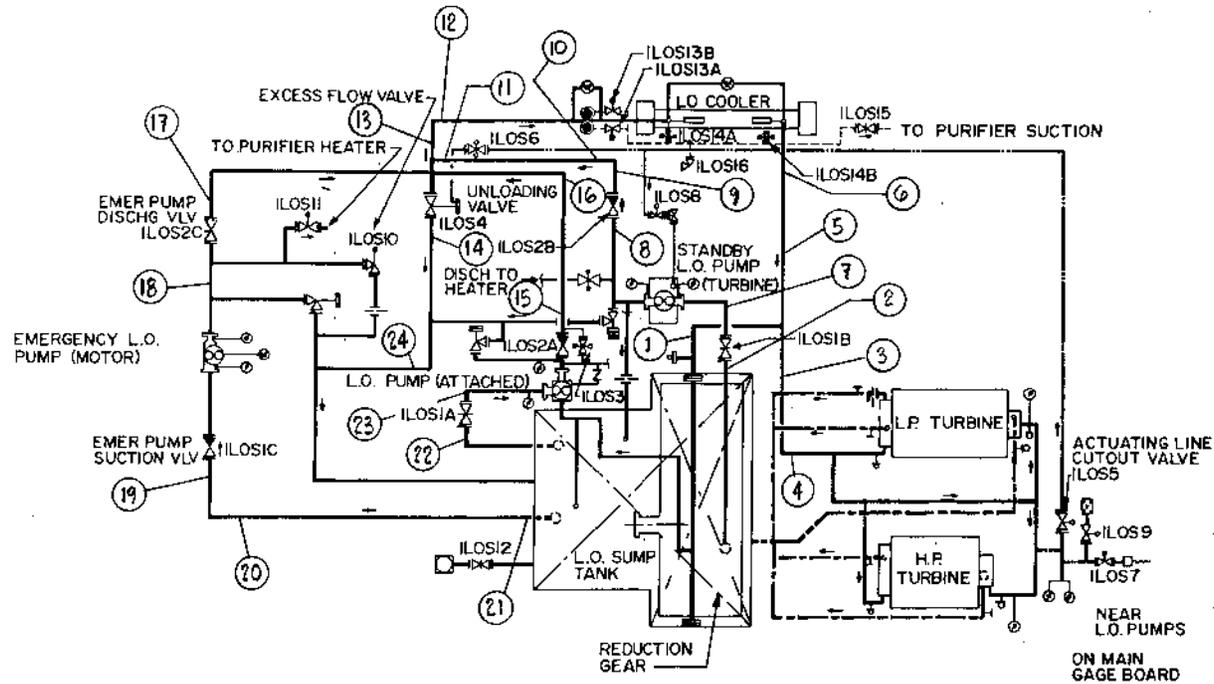
NOTE 3: DUE TO CLOSE PROXIMITY OF PIPE FITTINGS UNABLE TO OBTAIN U/T READINGS.

NOTE 4: VIEW A = PIPING RUNNING FORE AND AFT TOP OF PPG IS 12 O'CLOCK; VIEW B = PIPING RUNNING UP AND DOWN 12 O'CLOCK IS FORWARD;VIEW C = PIPING RUNNING PORT AND STBD 12 O'CLOCK IS TOP, 3 O'CLOCK IS FORWARD.

# MAIN L.O. SERVICE PIPING

## MACHINERY ROOM 1

7-96-0-E

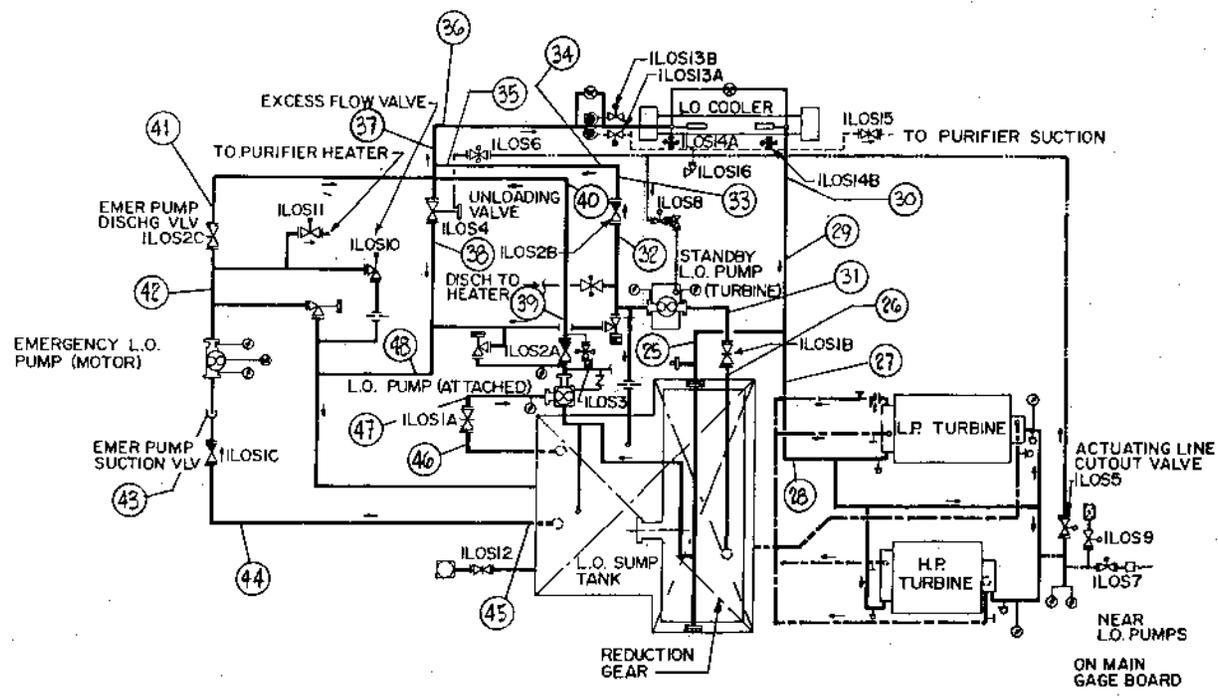


### LEGEND OF SYMBOLS

- GLOBE STOP CHECK VALVE
- GLOBE STOP CHECK VALVE LOCKED CLOSED
- GATE VALVE
- GATE VALVE LOCKED OPEN
- GATE VALVE LOCKED CLOSED
- UNLOADING VALVE
- ANGLE RELIEF VALVE
- ANGLE STOP VALVE
- ANGLE STOP VALVE LOCKED CLOSED
- PRESSURE GAGE
- L.O. STRAINER
- L.O. COOLER
- THERMOMETER
- CLEANOUT CONNECTION
- MOTOR PRESSURE SWITCH
- L.O. LOW PRESSURE ALARM
- DUPLEX PRESSURE GAGE
- ORIFICE
- MAIN L.O. SERVICE PIPING
- TURBINE L.O. DRAIN PIPING
- L.O. COOLER & STRAINER DRAIN PIPING
- ACTUATING PIPING
- FLOAT GATE
- TEST GAGE CONNECTION
- SWING CHECK VALVE

**USS LA SALLE (AGF-3)**  
Main Lube Oil Service  
Piping U/T Diagram

**MAIN L.O. SERVICE PIPING  
MACHINERY ROOM 2  
7-136-0-E**



**LEGEND OF SYMBOLS**

-  GLOBE STOP CHECK VALVE
-  GLOBE STOP CHECK VALVE LOCKED CLOSED
-  GATE VALVE
-  GATE VALVE LOCKED OPEN
-  GATE VALVE LOCKED CLOSED
-  UNLOADING VALVE
-  ANGLE RELIEF VALVE
-  ANGLE STOP VALVE
-  ANGLE STOP VALVE LOCKED CLOSED
-  PRESSURE GAGE
-  L.O. STRAINER
-  L.O. COOLER
-  THERMOMETER
-  CLEANOUT CONNECTION
-  MOTOR PRESSURE SWITCH
-  L.O. LOW PRESSURE ALARM
-  DUPLEX PRESSURE GAGE
-  ORIFICE
-  MAIN L.O. SERVICE PIPING
-  TURBINE L.O. DRAIN PIPING
-  L.O. COOLER & STRAINER DRAIN PIPING
-  ACTUATING PIPING
-  FLOAT GATE
-  TEST GAGE CONNECTION
-  SWING CHECK VALVE

**USS LA SALLE (AGF-3)  
Main Lube Oil Service  
Piping U/T Diagram**