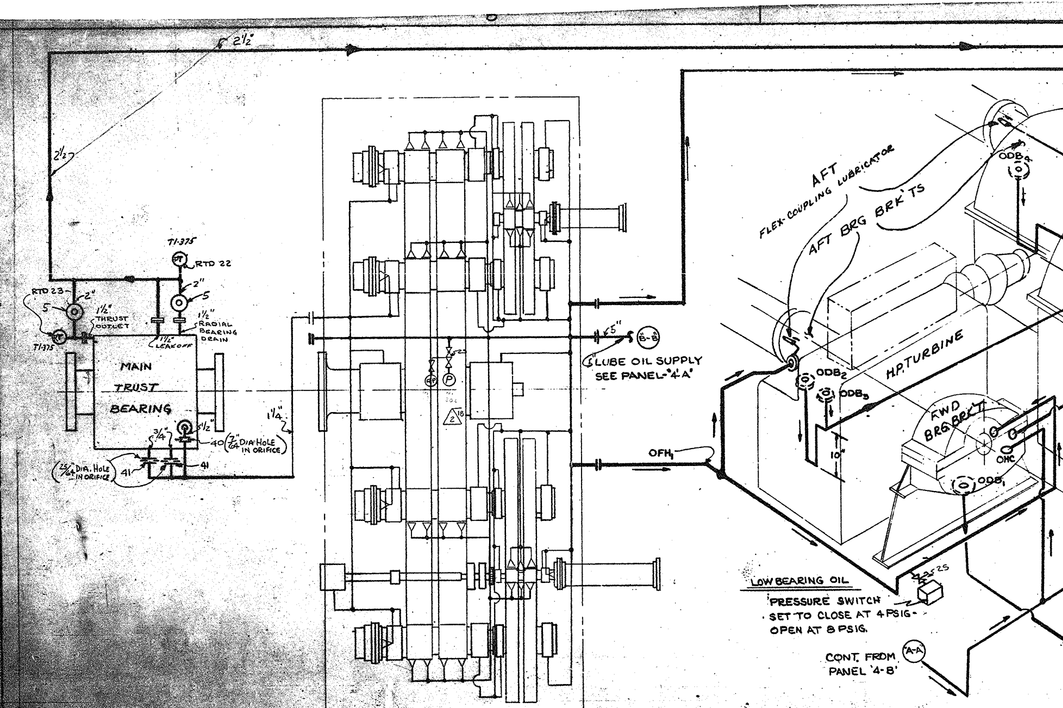
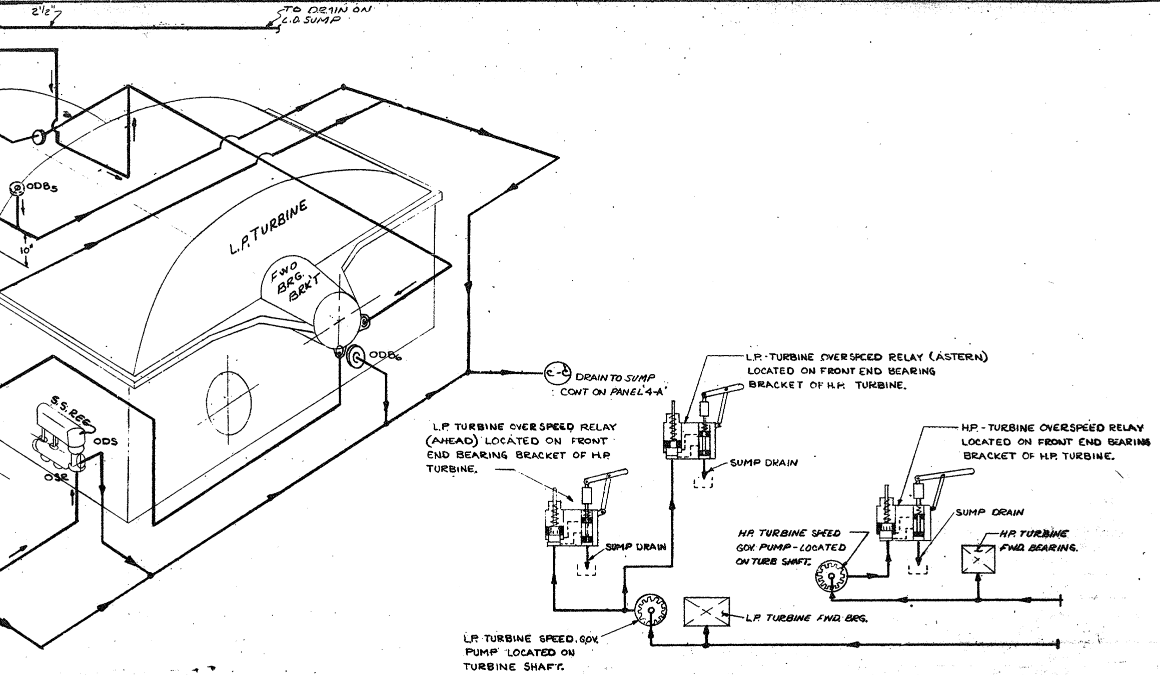

2½"
2½"
T1-375
RTD 22
RTD 23
2"
5
2"
5
1½"
THRUST OUTLET
1½"
RADIAL BEARING DRAIN
T1-375
1½" LEAKOFF
MAIN TRUST BEARING
½"
¾"
40 (7/64" DIA HOLE IN ORIFICE)
(25/64" DIA. HOLE IN ORIFICE)
41
41
1¼"
5"
B-B
LUBE OIL SUPPLY SEE PANEL "4-A"
2
18
OFH₁
AFT FLEX-COUPLING LUBRICATOR
AFT BRG BRK'TS
ODB₄
ODB₂
ODB₃
H.P. TURBINE
10"
FWD BRG BRK'T
OHC
ODB₁
25
CONT. FROM PANEL '4-8'
A-A

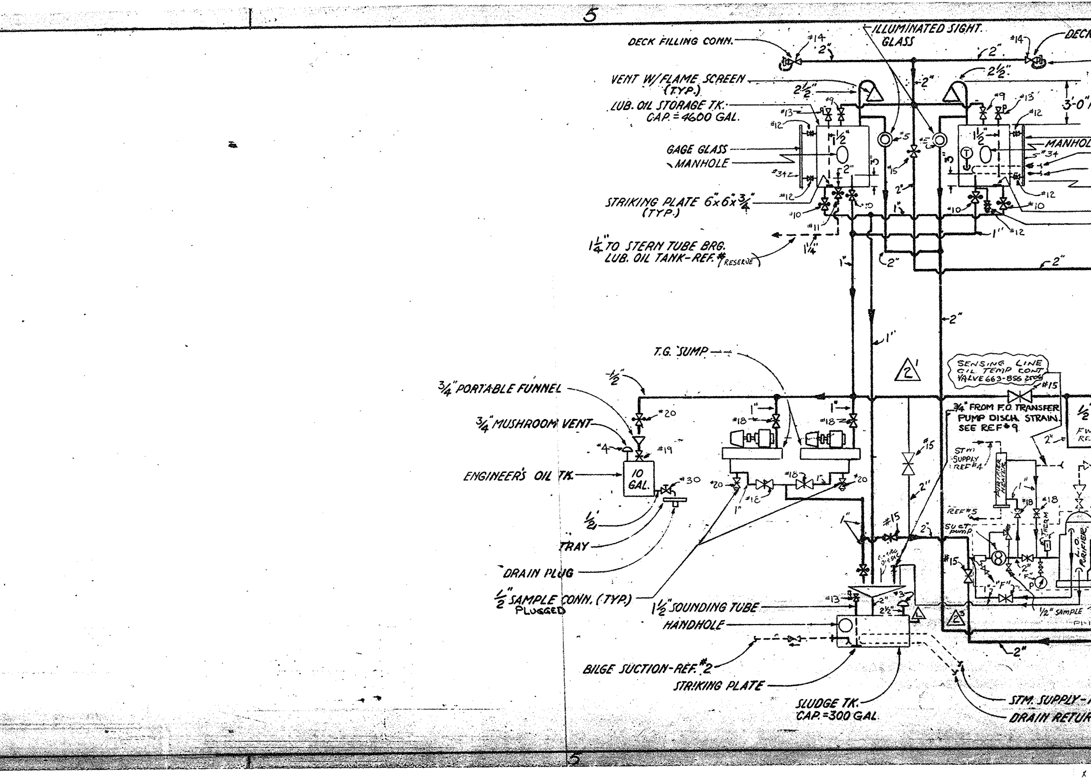
LOW BEARING OIL PRESSURE SWITCH SET TO CLOSE AT 4 PSIG. OPEN AT 8 PSIG.

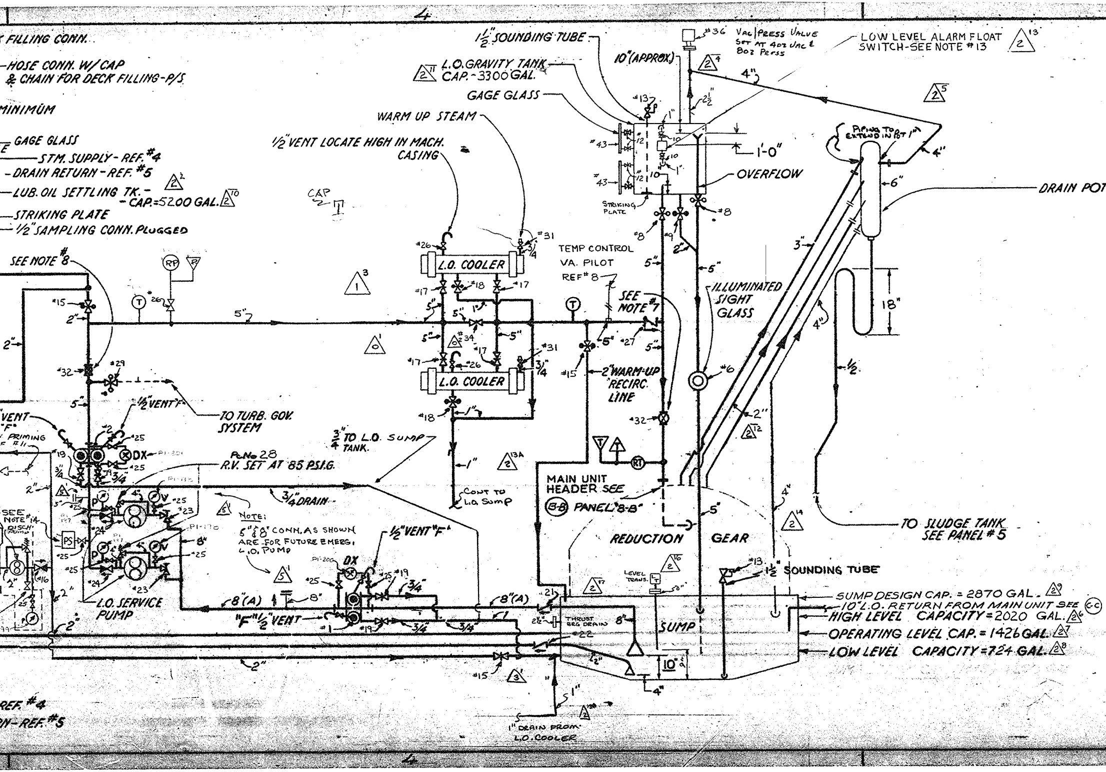
DETAIL OF TURBINE GEAR AND THRU


2½"
TO DRAIN ON L.O. SUMP
ODB5
10"
L.P. TURBINE
FWD BRG. BRKT
ODB6
S.S. REG.
ODS
OS2
DRAIN TO SUMP
CONT ON PANEL 4-A
L.P. TURBINE OVERSPEED RELAY (ASTERN) LOCATED ON FRONT END BEARING BRACKET OF H.P. TURBINE.
L.P. TURBINE OVERSPEED RELAY (AHEAD) LOCATED ON FRONT END BEARING BRACKET OF H.P. TURBINE.
SUMP DRAIN
SUMP DRAIN
H.P. - TURBINE OVERSPEED RELAY LOCATED ON FRONT END BEARING BRACKET OF H.P. TURBINE.
SUMP DRAIN
H.P. TURBINE SPEED GOV. PUMP - LOCATED ON TURB SHAFT.
H.P. TURBINE FWD. BEARING.
L.P. TURBINE FWD. BRG.
L.P. TURBINE SPEED GOV. PUMP LOCATED ON TURBINE SHAFT.

DETAIL OF MAIN THROTTLE VALVE CONTROL

ST BEARINGS


5
DECK FILLING CONN.
#14
2"
ILLUMINATED SIGHT. GLASS
#14
DECK
2"
2½"
2"
VENT W/FLAME SCREEN (TYP.)
2½"
LUB. OIL STORAGE TK. CAP. = 4600 GAL.
#13
#9
#12
1½"
#5
#5
#9
#13
#12
3'-0"
GAGE GLASS
MANHOLE
1½"
MANHOL
#34
#34
2"
3"
#15
3"
2"
#12
#12
#12
STRIKING PLATE 6"x6"x¾" (TYP.)
#10
#10
#10
#10
1"
#11
1"
#12
1¼" TO STERN TUBE BRG. LUB. OIL TANK-REF. # (RESERVE)
1¼"
1"
2"
2"
2"
1"
T.G. SUMP
2
SENSING LINE OIL TEMP CONT VALVE 663-856 2506
#15
3/4" PORTABLE FUNNEL
½"
#20
1"
1"
#18
#18
¾" FROM F.O. TRANSFER PUMP DISCH. STRAIN. SEE REF #9
½
FW
RE
3/4" MUSHROOM VENT
#4
#19
#15
STM SUPPLY REF #4
2"
ENGINEER'S OIL TK.
10 GAL.
#30
#20
#18
1"
#20
#12
1"
2"
PURIFIER HEATER
1"
#18
#18
THERM
REF #5
½"
#15
1"
SUCT. PUMP
L.O. PURIFIER
TRAY
2"
2"
EXTRA DIESEL
#15
"F"
"F"
DRAIN PLUG
1"
P
½" SAMPLE CONN. (TYP.) PLUGGED
#13
2"
#3
½" SAMPLE
1½" SOUNDING TUBE
2½"
2
HANDHOLE
BILGE SUCTION-REF. #2
2"
STRIKING PLATE
SLUDGE TK. CAP. = 300 GAL.
STM. SUPPLY-
DRAIN RETUR
5



4
FILLING CONN.
HOSE CONN. W/CAP & CHAIN FOR DECK FILLING-P/S
MINIMUM
GAGE GLASS
STM. SUPPLY - REF. #4
DRAIN RETURN - REF. #5
LUB. OIL SETTLING TK. - CAP.=5200 GAL.
STRIKING PLATE
1/2" SAMPLING CONN. PLUGGED
CAP
SEE NOTE #8
RP
1½" SOUNDING TUBE
L.O. GRAVITY TANK CAP.-3300 GAL.
GAGE GLASS
WARM UP STEAM
1/2" VENT LOCATE HIGH IN MACH. CASING
10"(APPROX.)
#36
VAC/PRESS VALVE SET AT 4OZ VAC & 8OZ PRESS
LOW LEVEL ALARM FLOAT SWITCH-SEE NOTE #13
4"
2½"
1'-0"
OVERFLOW
#43
#12
#10
1"
STRIKING PLATE
#8
#9
PIPING TO EXTEND IN POT 1"
6"
DRAIN POT
3"
18"
1/2"
L.O. COOLER
L.O. COOLER
#26
#31
#17
#18
#34
TEMP CONTROL VA. PILOT REF #8
SEE NOTE #7
#27
5"
#15
#32
#29
2"
1/2" VENT "F"
TO TURB. GOV. SYSTEM
2" WARM-UP RECIRC. LINE
ILLUMINATED SIGHT GLASS
#6
3/4" TO L.O. SUMP TANK.
PC No 28 R.V. SET AT 85 PSI.G.
3/4" DRAIN
VENT "F"
PRIMING
DX
#19
#25
#24
#23
P
V
PS
SEE NOTE #14 DISCH PUMP
#16
L.O. SERVICE PUMP
NOTE: 5" & 8" CONN. AS SHOWN ARE FOR FUTURE EMERG. L.O. PUMP
1/2" VENT "F"
8"(A)
8"
"F" 1/2" VENT
#1
3/4
1"
CONT TO L.O. SUMP
RT
MAIN UNIT HEADER SEE B-B PANEL "8-B"
REDUCTION GEAR
TO SLUDGE TANK SEE PANEL #5
LEVEL TRANS.
LT
#13
1½" SOUNDING TUBE
#21
2½" THRUST BRG DRAIN
#22
SUMP
10"
4"
SUMP DESIGN CAP. = 2870 GAL.
10" L.O. RETURN FROM MAIN UNIT SEE C-C
HIGH LEVEL CAPACITY = 2020 GAL.
OPERATING LEVEL CAP. = 1426 GAL.
LOW LEVEL CAPACITY = 724 GAL.
1" DRAIN FROM L.O. COOLER
REF. #4
RN - REF. #5
4

GENERAL NOTES

1. FOR PIPING MATERIAL SCHEDULE SEE REF. NO. 1.
2. ALL PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST RULES AND REGULATIONS OF A.B.S. AND U.S.C.G.
3. TANKS TO BE TESTED TO A HYDROSTATIC PRESSURE OF 5 PSIG AFTER INSTALLATION AND AT LEAST TO THE MAXIMUM HIGHT THE LIQUID MAY RISE IN THE VENT WHICH EVER IS GREATER.
4. RADIUS OF PIPE BENDS SHALL NOT BE LESS THAN 3 TIMES THE NOMINAL PIPE DIAMETER.
5. ALL L.O. PIPING TO BE KEPT CLEAR OF HOT SURFACES. 18" CLEARANCE FROM 650°F SURFACES.
6. L.O. STRAINERS AND PUMPS TO BE PROVIDED WITH DRIP PANS.
7. △2 20 ORIFICE TO BE ADJUSTED DURING DOCK TRIALS TO PROVIDE A PRESSURE OF ..12...PSIG AT THE L.O. INLET HEADER TO THE UNIT WITH OIL AT 115°F AND 270 SSU.
8. △2 20 ORIFICE IF REQUIRED TO MAINTAIN ..55...PSI AT TURBINE GOVERNING SYSTEM. (RESERVATION)
9. CARE SHALL BE TAKEN TO INSTALL A PURIFIER AND A HEATER PROPERLY (ACCORDING TO VENDOR'S INSTRUCTION).
10. ALL DRAIN PIPING SHALL BE RUN WITH CONTINOUS SLOPE TO ENSURE PROPER DRAINAGE.
11. ALL PIPING SHALL BE DESIGNED AND INSTALLED WITH MINIMUM BENDS AND ELBOWS, PARTICULARY ON SUCTION SIDE.
12. PRIOR TO FILLING WITH INITIAL OPERATING CHARGE, THE COMPLETE SYSTEM SHALL BE THOROUGHLY CLEANED AND FLUSHED IN ACCORDANCE WITH THE PROPOSED RECOMMENDED FOR TURB. LUB. SYSTEM PAPER #47-A-39 A.S.M.E. TRANS. 1948 VOL.70, PAGE #363.
13. PRESSURE SWITCH SET TO ENERGIZE LOW LEVEL ALARM ON CONSOLE WHEN THE OIL LEVEL IN THE GRAVITY TANK DROPS ONE FOOT BELOW THE OVERFLOW LEVEL.
14. PRESSURE SWITCH TO START STBY PUMP WHEN PRESSURE AT THE DISCHARGE OF LEAD PUMP WILL DROP BY 10 PSI. (FINAL SETTING IN THE FIELD).

△2 15

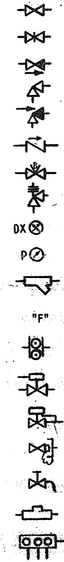
RESERVATIONS.

1. L.O HEADER HOOK-UP RESERVED PENDING VENDOR INFORMATIONS
2. L.O. PURIFIER / HEATER HOOK UP PENDING VENDOR SELECTION

PANEL "7-A"

| | |
|---|---|
| ⋈ | GATE VALVE LOCKED OPEN |
| ⋈ | GATE VALVE LOCKED CLOSED |
| ⋈ | QUICK OPEN SELF CLOSING VALVE |
| ⋈ | 3 WAY TEMPERATURE CONTROL VALVE |
| Ⓞ | ILLUMINATED SIGHT FLOW |
| ▽ | FUNNEL |
| ⊗ | ADJUSTABLE ORIFICE |
| ⊘ | VACUUM GAGE |
| RP | PRESSURE GAGE ON CONT. CONSOLE |
| Ⓣ | DIAL TYPE THERMOMETER |
| RT | TEMP. GAGE ON CONT. CONSOLE |
| RL | REMOTE LEVEL GAGE |
| Ⓛ | LEVEL INDICATOR |
| ▽ P | LOW PRESSURE ALARM |
| ▽ T | LOW TEMP. ALARM |
| △ T | HIGH TEMP. ALARM |
| ▽ L | LOW LEVEL ALARM |
| △ L | HIGH LEVEL ALARM |
| ◉◉ | MAGNETIC-DUPLEX STRAINER |

SYMBOL



GLOBE VALVE
GATE VALVE
GLOBE STOP CHECK VALVE
ANGLE VALVE
ANGLE STOP CHECK VALVE
HORIZ SWING CHECK VALVE
BUTTERFLY VALVE
RELIEF VALVE
DX DUPLEX COMPOUND GAGE
P PRESSURE GAGE
"Y" STRAINER
"F" VENDOR FURNISHED
DUPLEX STRAINER
PRESSURE REGULATING PILOT ACTUATED
PRESSURE REGULATING SELF CONTAINED
HOSE GLOBE WITH CAP & CHAIN
TEST COCK
TRAP
MANIFOLD

OCF-2
37-1 2FULL
36E A/2SIZE
365 2
CF-10
NIE-1
36G-1
7-15-71-0 JB
10 5-71-1-JB
4-17-72-2-JB
7-27-72-4 JB
10-12-72 5 EK

| ALT. | PANEL | ITEM | ALTERATION | BUILDER DATE | BY |
|---|---|---|---|---|---|
| 0 | 4B | 1 | ADDED 3-WAY TEMP. CONTROL VA. & SHUT-OFF VALVES. | | |
| | 4B | 2 | CHANGE L.O. COOLER BY-PASS VA. FROM GATE TO GLOBE VA. | | |
| 1 | 2A | 1 | CHANGED PUMP GPM FROM 550 TO 450 GPM. | 9/8/71 | M.P |
| | | 2 | CHANGED FLOW VELOCITY TABLE TO SUIT ABOVE | | |
| | 4 | 3 | REMOVED TEMP CONTROL VA. & RELATED MANIFOLD ON L.O. COOLER AS PER MECH ENGINEERS. 9/30/71 | R.F.K. 10-1-71 | [redacted] |
| 2 | 5 | 1 | ADDED 2" CROSS CONNECTION BETWEEN L.O. SETTLING & STORAGE TANKS TO L.O. PURIFIER | | |
| | 4 | 2 | CHANGED CAPACITY OF L.O. SETTLING TK. FROM 4600 GALS. TO 5200 GALS. | | |
| | | 3 | CHANGED PURIFIER SUCTION VALVE FROM GLOBE STOP CHECK TO GATE. | | |
| | 3&4 | 4 | COMBINED VENT FROM DRAIN POT TIED TO 2½" L.O. GRAVITY TANK VENT | | |
| | 3 | 5 | DELETED WATER/OIL SEPARATOR. | | |
| | 3 | 6 | ADDED HIGH LEVEL CAP. 2020 GAL. | J.M. | |
| | | 7 | CHG'D. OPER. LEVEL CAP. FROM 900 TO 1426 GAL. | | |
| | | 8 | CHG'D. LOW LEVEL CAP. FROM 750 TO 724 GAL. | | |
| | | 9 | CHG'D. SUMP DESIGN CAP. FROM 4250 TO 2870 GAL. | | |
| | 4 | 10 | CHG'D. L.O. SETTLING TK. CAP. FROM 5700 TO 5200 GAL. | | [redacted] |
| | 4 | 11 | ADDED TWO 2" VENTS FROM REDUCTION GEAR TO DRAIN POT TO AGREE WITH VENDOR DWG | | |
| | 4 | 12 | CHANGED LOW LEVEL ALARM SWITCH FROM GEM TO A RELIANCE TYPE ON THE L.O. GRAVITY TANK | | |
| | 4 | 13 | RERUN L.O. COOLER DRAIN TO SUMP AS PER OPER ENG'R REQST | | |
| | 5 | 14 | ADDED 4" VENT FROM L.O. SUMP TK TO COLLECTING POT. | | |
| | 3 | 15 | REMOVED RESERVATIONS #1 & 2 | | |
| | 4 | 16 | ADDED 3" CONN ON SUMP FOR LEVEL TRANS. | | |
| | 4 | 17 | ADDED 2½" CONN ON SUMP FOR THRUST BRG DRAINS | | |
| | 8 | 18 | ADDED REMOTE PRESS SENSOR TO MN RED. GEAR | R.A.K. 4-13-72 | |
| | ALL | 19 | ADDED PI & TI NUMBERS TO DIAG | 4-13-72 | M.P |
| | 2 | 20 | REMOVED RESERVATIONS IN NOTES 7 & 8 | | |
| 3 | 4 | 1 | RERAN L.O. STRAINER DRAINS TO L.O. SUMP AS PER OPERATING ENG'RS REQUEST<br>ADDED VAC/PRESS VALVE TO L.O. GRAVITY TK. | | |
| | 8 | 2 | CHANGED LOCAL THERMOMETERS ON THRUST BEARING TO RTD'S AS PER SUN LTR DATED 6/13/72 SERIAL No E-M-72-1569 | | |
| 4 | 1 | 1 | ADDED HULLS 662 & 664 TO TITLE BLOCK | 7/26/72 JOC.EW. | [redacted] |
| 5 | 4 | 1 | ADDED 5" & 8" CONN. FOR FUTURE EMERG. L.O. PUMP. R.A.K. 10-12-72 | 10/12/72 | Rec [redacted] |

| SYMBOL | PIPE SIZE | FLOW VELOCITY G.P.M. | FLOW VELOCITY FT/SEC. | REMARKS |
|---|---|---|---|---|
| A | 8" | 450 | 2.88 | L.O. SUCTION TO PUMPS |
| B | 5" | 450 | 7.21 | L.O. DISCHARGE FROM PUMPS |

SUBMITTALS

| SUBMITTED TO | DATE | APPROVAL LTR. NO. | APPROVAL DATE | RESUBMIT | RESUBMIT | APPROVAL LTR. NO. | APPROVAL DATE |
|---|---|---|---|---|---|---|---|
| U.S.C.G. | 5-3-71 | — | 7-2-71 | 9-28-72 | — | — | 10-19-72 |
| A.B.S. | 5-3-71 | 78-2 | 5-17-71 | 9-28-72 | — | — | 10-24-72 |

## DIAGRAMMATIC ARRANGEMENT OF
## LUBRICATING OIL SYSTEM

ROLL-ON, ROLL-OFF
TRAILER CARRIER
SUN HULL 663

ISSUE FOR HULLS 662 & 664 4

BUILDER
SUN SHIPBUILDING & DRY DOCK CO
CHESTER, PA U.S.A.

[redacted]

DRAWN BY K.A.C.
CHECKED BY [redacted]
DATE APRIL 27, 1971
SCALE NONE
ENGINEER T. 4-29-71

HEAD MECHANIC [redacted]
CHIEF ENGINEER

SUN DWG. NO. 663-901-100 ALT. No 5

1 [redacted] DESTROY ALT #4 [redacted]

| QTY | SERVICE | G.P.M. | DISCH. | DRIVE |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| 1 | LUBE OIL PURIFIER | 5 | 35 PSI | MOTOR |
| 2 | LUB. OIL SERVICE | 450 | 75 PSI | MOTOR |

PUMP TABLE

| NO. | TITLE | BUILDER NO. |
|---|---|---|
| 11 | POTABLE FRESH WATER IN ENG. ROOM | 663-919-109 |
| 10 | GE DWG LUBE OIL & CONTROL OIL DIAGRAM | D-4005 685 |
| 9 | FUEL OIL SYSTEM | 663-869-100 |
| 8 | MAIN & AUXILLIARY CIRCULATING SYSTEM | 901-100 |
| 7 | LIST OF GAGES | 856-16 |
| 6 | LIST OF THERMOMETERS | 856-17 |
| 5 | CONTAMINATED STEAM DRAINS SYSTEM | 907-103 |
| 4 | CONTAMINATED STEAM SYSTEM | 900-106 |
| 3 | TURB. GLAND SEAL SYSTEM | 907-100 |
| 2 | BILGE & BALLAST SYSTEM | 918-100 |
| 1 | PIPING MATERIAL SCHEDULE | 663-800-2 |

REFERENCE PLANS

663-901-100