SHIP'S PARTICULARS

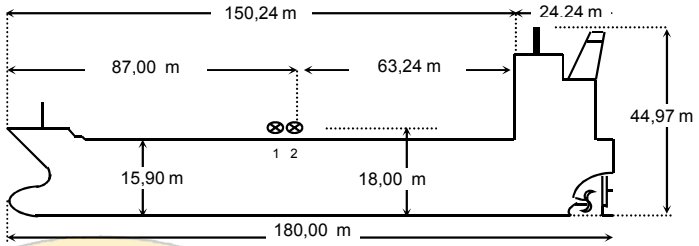
NAME	SUNGAI GERONG
CALL SIGN	POJO
FLAG	INDONESIA
PORT OF REGISTRY	JAKARTA
OFFICIAL NUMBER	GT.24167No.3874/Pst
IMO/LLOYDS NUMBER	9509906
CLASS SOCIETY	DNV + BKI
CLASS NOTATION	+1A1 Tanker for Oil ESP,CSR,ECO,BIS,SPM,LCS-DC,CLEAN,VCS-2,COAT-PSPC,(B),BMW-E(S)
P & I CLUB	NORTH OF ENGLAND

KEEL LAID	27 AUGUST 2010
LAUNCHED	06 JULY 2011
DELIVERED	26 DECEMBER 2011
SHIPYARD	ZHEJIANG CHENYE SHIPBUILDING. CO,Ltd.China

SATELLITE COMMUNICATION		
	INM-F	INM-C
E-MAIL	Pojo@amosconnect.com	
PHONE	00870773251764	
FAX	-	
TELEX	N/A	452502261
MMSI	525008073	
EX. NAMES	N/A	
CS / FLAG	INDONESIA	

OWNERS	PT. PERTAMINA (PERSERO) SHIPPING DEPARTEMENT JL.YOS SUDARSO NO.32-34 TG-PRIOK, JAKARTA-14320 INDONESIA TEL.+62213815111 FAX.+622143930441
OPERATORS	PT. PERTAMINA (PERSERO) SHIPPING DEPARTEMENT JL.YOS SUDARSO NO.32-34 TG-PRIOK, JAKARTA-14320 INDONESIA TEL.+62213815111 FAX.+622143930441

PRINCIPAL DIMENSIONS	
LOA	180,00 M
LBP	173,00 M
BREADTH (Extreme)	30,50 M
DEPTH (molded)	15,90 M
HEIGHT (maximum)	44,97 M
BRIDGE FRONT - BOW	150,24 M
BRIDGE FRONT - STERN	24,24 M
BRIDGE FRONT - M'FOLD	63,24 M



TONNAGE	REGD	SUEZ
NET	7,253 T	N/A
GROSS	24,167 T	N/A
GROSS Reduced for SBT	18,722 T	N/A

LOAD LINE INFORMATION	FREEBOARD	DRAFT	DWT
TROPICAL	6,726 M	9,204 M	30,678.426
SUMMER	6,914 M	9,016 M	29,755,633
WINTER	7,102 M	8,828 M	28,836,316
LIGHTSHIP	13,508 M	2,422 M	9,348.57
NORMAL BALLAST COND	9,360 M	6,570 M	27,505.00
DWT WITH SBT ONLY	N/A		
FWA	199 MM		
TPC @ Summer draft	49,6 T/CM		

TANK CAPACITIES (cbm)					
CARGO TANKS (98 %)				BLST TKS (100 %)	
GROUP I		SLOP P+S	1345.4	F.P.Tk.	1231.7
(1 P/S + 4 P/S)	12849.8			1 P/S	2993.071
GROUP II				2 P/S	2710.309
(2 P/S+5 P/S)	14933.1			3 P/S	2608.0
GROUP III		F.W Tanks 100%		4 P/S	2608.0
(3 P/S + 6 P/S)	13435.5	FW Tank (P)	134	5 P/S	2590.759
		FW Tank (S)	134	6 P/S	2809.997
				APT	653.877
TOTAL	41218.4	TOTAL	268	TOTAL	18205.7
OTHER DETAILS					
H. Level Alarm	95%	Level gauge		RADAR REMOTE READING	
Overfill Alarm	98%				

MACHINERY / PROPELLER / RUDDER	
MAIN ENGINE	HYUNDAY-MAN B & W 6S42MC7
M.C.R.	6480 KW@136 RPM
N.C.R.	5832 KW@131.3 RPM
MAX CRITICAL RANGE	50-65 RPM
AUX. BOILER (1 sets)	Thermal Oil Heater
GENERATOR (3 sets)	3x 6DK-26 ELECTRICAL GEN
EMER D.G. (1)	1 X CUMMIN 6CTA8 3-D (M)
PROPELLER	NiAl RIGHT HANDED,4BLADE,PITCH
RUDDER	TYPE HERIANA
STEERING GEAR	2x Elektro hidrolik Rotary Vane
FW GENERATOR CAP	2 X 20 CUM/DAY

BUNKER TANKS	
FOT 1.(P/S)	390.38
FOT 2. P	188.97
FOT 2 (S)	309.676
FO (SRV)	31.08
FO SETT	31.637
TOTAL	951.743
DOT 1.(P/S)	38.92
DOT 2.(S)	182.292
DO Set	17.399
DO Srv	23.199
TOTAL	261.81

WINCHES / WINDLASS / ROPES / EMERGENCY TOWING			
	FWD	AFT	PARTICULARS
WINCHES	2	2	Hydraulic winch 12 T 1st Layer Pull
MRG WIRES	N/A	N/A	
Winch BHC	50 T	50 T	Hydraulic winch 12 T 1st Layer Pull
WINDLASS	2	N/A	Hall type,stockless 7,8 T
FIRE WIRE	1	1	25 mm x 2 x 80 mtr
ANCHOR	2	N/A	Stockless anch Port 11 sckls Stbd 12 Sckls
EMG. TOWING	1	N/A	FAIR LEAD& STRONG POINT 200 TONS
	N/A	1	FAIR LEAD &CHAIN STOPPER 200 TONS

CARGO AND BALLAST PUMPING SYSTEM				
MAIN PUMPS	NO.	CAPACITY	HEAD	RPM
CARGO OIL P/P's	3	1300 cbm/hr	125 m	1791
CARGO EDUCTOR	1	200 cbm/hr	5 mwc	1800
STRIPING PUMP	1	150 cbm/hr	125 m	1775
BALLAST PUMP	2	650 cbm/hr	25 m	1188
TK CLEANING P	1	180 cbm/hr	145 m	1780

CARGO HOSE CRANES
1 set x 10 ton x 10m/min at full load

LIFE BOATS
2 x 30 prsn
6,57 X 2,36 X 1.200
Totally enclosed life boat
LIFE RAFTS
4 x 20 prsn, 1 x 6 prsn
PROV. CRANE (2nos)
1 set x 3,5 ton-6,92 M
1 set x 0,9 ton-7,15 M
10 min/m

MANIFOLD ARRANGEMENT (400 mm / Steel)	
Distance of cargo manifold to cargo manifold	2000 mm
Distance of cargo manifold to vpr. return manifold	2000 mm
Distance of manifolds to ship's rail	4425 mm
Distance of spill tray grating to centre of manifold	900 mm
Distance of main deck to centre of manifold	2100 mm
Distance of main deck to top of rail	1363 mm
Distance of top of rail to centre of manifold	737 mm
Distance of manifold to ship side	4600 mm
Distance of manifold from keel	18,00 M

IG / VAPOR EMISSION / VENTING	
IG BLOWER CAPACITY (3 nos)	2x5000 cum/hr
P/V VALVE PR./ VAC. SETTING	-350 mm/wg
P/V BREAKER PR./VAC. SETTING	1400 mm/wg

Min Bow Drft: 1.80 m
Blst Drft: 5,00 m, 7,00 m
MARPOL Trim: 3,00 m
Propeller Immer.:4.67m

FIRE FIGHTING SYSTEM	
E/RM	CO 2,FOAM &WATER MIST
PUMP ROOM	CO2 & FOAM
CARGO/DK AREA	FOAM AND WATER

Name Of Ship : SUNGAI GERONG
Flag : INDONESIA
Call Sign : P O J O
IMO No. : 9 5 0 9 9 0 6
DWT : 29756,819 MT
GRT : 24,167 Ts.
NET.T : 7253 Ts
LOA : 180.0 M

ARRIVAL

IMO CREW LIST

Voy. No. : 09/L/SG/IV/2016

PERTAMINA

Owner : PT.PERTAMINA (Persero)

Agent : Penascop
Last Port : Singapore
Next Port : Belawan

NO	N A M E	NO. EMP	DATE OF BIRTH	R A N K	NATIONALITY	CERTIFICATE OF COMPETENCY			SEAMAN BOOK		PASSPORT		No. SEAMAN BERGAINING AGREAMENT
						CLASS	YEARS	No.	NO.	EXP.DATE	NO.	EXP.DATE	
1	SUHERI	746504	11-Mar-80	MASTER	INDONESIA	ANT I	2014	6200124903N10114	B 068757	19-May-16	B 1697890	5-Aug-20	PK.308/ 378 / SYB.TPK-2015
2	DODDY AMRIH PRAYOGO	10016651	27-May-85	CH. OFFICER	INDONESIA	ANT II	2011	6200418942N20311	Y 090355	9-Dec-16	A 9040546	8-Sep-19	PK.308 / 93 / SYB.TPK-2016
3	DIO SHANRIA PUTRA	750893	4-Oct-89	2ND OFFICER	INDONESIA	ANT III	2012	6201112835N30112	X 016873	5-Feb-17	A 8713548	11-Jul-19	PK. 308 / 257 / SYB.TPK-2016
4	JONAHA VALENTINO DAMANIK	10016445	23-Nov-91	3RD OFFICER	INDONESIA	ANT III	2013	6201291825N30113	Y 035625	11-Apr-18	B 3044146	5-Feb-21	PK. 308 / 1249 / SYB.TPK-2016
5	DANU PURWANTORO	10015114	19-Apr-90	4TH OFFICER	INDONESIA	ANT III	2014	6201640547N30314	Y 035206	22-May-16	B 2070652	14-Sep-20	PK. 308 / 681 / SYB.TPK-2015
6	HARSONO	747197	12-Mar-81	CHIEF ENGINEER	INDONESIA	ATT I	2014	6200144447T10114	W 030182	6-Apr-16	A 3309615	3-Jul-17	PK. 308 / 196 / SYB.PTK-2015
7	SUHARTONO	10016489	30-Dec-57	2ND ENGINEER	INDONESIA	ATT II	2015	6200035901T20215	X 009877	12-Jan-17	A 4343572	26-Dec-17	PK. 308 / 1233 / SYB.TPK-2016
8	ANDARIAS TANDIANAN RAMMA	750904	20-Dec-84	3RD ENGINEER	INDONESIA	ATT II	2013	620026193T20113	D 055233	10-Mar-18	B 0912771	16-Apr-20	PK. 308 / 434 / SYB.TPK-2016
9	RORI AGUSTIAN PRANATA	10015280	13-Aug-86	4TH ENGINEER	INDONESIA	ATT III	2013	6200257360T30113	W 054318	27-Jul-16	A 9594772	28-Nov-19	PK. 308 / 156 / SYB.TPK-2015
10	ABDULLAH HAMID	10016112	24-Jan-85	ELECTRICIAN	INDONESIA	ATT D	2013	6200479726T60713	C 089470	14-Oct-17	A 2630073	5-Apr-17	PK. 308 / 441 / SYB.TPK-2016
11	TRI HERSONO PURWANTO	10015341	14-Feb-62	BOATSWAIN	INDONESIA	ANT D	2001	6200075537N60201	Y 080161	17-Oct-16	A 6360133	10-Sep-18	PK. 308 / 559 / SYB.TPK-2015
12	JULIANUS JANADA	10015457	7-Apr-62	PUMP MAN	INDONESIA	ANT D	2001	6200071410N60201	E 017684	28-Sep-18	A 3405820	6-Aug-17	PK. 308 / 922 / SYB.TPK-2015
13	MUHAMMAD RUDI YANTO	10015316	1-Oct-78	ABLE SEAMAN - 1	INDONESIA	ANT D	2009	6200251755N60709	C 001350	16-Aug-16	B 2166588	2-Oct-20	PK. 308 / 174 / SYB.TPK-2015
14	YUSUF FAEZAL	10015765	27-Apr-75	ABLE SEAMAN - 2	INDONESIA	ANT-D	2013	6201031747N60213	E 034036	18-Nov-18	B 0786251	11-Mar-20	PK. 308 / 1004 / SYB.TPK-2015
15	SAHKRONI	10015880	9-Mar-81	ABLE SEAMAN - 3	INDONESIA	ANT D	2010	6201293983N60710	X 023383	1-Mar-17	B 0881721	24-Mar-20	PK. 308 / 398 / SYB.TPK-2015
16	ERIK TUPAMAHU	10015336	26-May-88	OS-1	INDONESIA	BST	2010	6 201345738010712	A 051338	19-Jun-17	A 3308565	25-Jun-17	PK. 308 / 376 / SYB.TPK-2015
17	MURDI	10016541	15-Mar-76	OS-2	INDONESIA	ANT D	2003	6200126644N60103	E 045920	30-Dec-18	A 2040586	16-Jan-17	PK. 308 / 254 / SYB.TPK-2016
18	RUDI AMRI	10015859	17-Aug-87	OS-3	INDONESIA	ANT D	2015	6200475118330715	B 082011	25-Jun-16	A 5890679	28-Jun-18	PK. 308 / 309 / SYB.TPK-2015
19	PONIDI	10015590	13-Sep-67	FOREMAN	INDONESIA	ATT D	2001	6200067797T60201	C 008373	12-Sep-16	A 6359735	6-Sep-18	PK. 308 / 317 /SYB.TPK-2015
20	SUTOPO	10016610	6-Aug-67	OILER - A	INDONESIA	ATT D	2002	6200086890T60202	D 004939	16-Sep-17	B 0143976	16-Dec-19	PK. 308 / 917 / SYB.TPK-2016
21	EDI BUDIANTORO	10015791	2-Dec-69	OILER - B	INDONESIA	ATT D	2001	6200068244T60201	X 080230	30-Sep-17	A 5492087	22-May-18	Pk. 308/ 1414 / SYB. TPK-2015
22	ATIB	10015274	10-May-75	OILER - C	INDONESIA	ATT D	2002	6200521530T60201	B 050302	10-Mar-18	A 7706903	24-Mar-19	PK. 308 / 1514 / SYB.TPK 2015
23	ASEP APRIAN	10015990	18-Jun-67	COOK 1	INDONESIA	ANT D	2005	6200408264N60105	C 047185	7-Mar-17	A 4966585	18-Mar-18	PK. 308 / 66 / SYB.TPK-2015
24	BURHAN	10015614	5-Mar-64	COOK 2	INDONESIA	ANT D	2006	6200131463N60706	Y 009046	19-Apr-18	A 6125396	26-Jul-18	PK. 308 / 279 / SYB.TPK-2015
25	EKO HARTOYO	10015442	16-Mar-83	MESS BOY	INDONESIA	BST	2012	6 201658029010112	B 026591	9-Oct-17	A 4252265	21-Dec-17	PK. 308 / 878 / SYB.TPK-2015
26	MUHAMMAD SYAHYUTI	20150203	16-Mar-95	DECK CADET	INDONESIA	BST	2015	6211520667010315	D 075147	16-Jun-18	B 1491090	26-Jun-20	No.196/F30340/2015-S6
27	BIZAR HARITS RASHIDI	20150175	11-Mar-95	DECK CADET	INDONESIA	BST	2014	6211407631010514	D 038185	28-Jan-18	B 0755340	31-Mar-20	No.170/F30340/2015-S6
28	FICKY YULIANTO	20150164	17-Jul-94	ENGINE CADET	INDONESIA	BST	2015	6211521007010315	D 074887	25-Jun-18	B 1496179	2-Jul-20	No.137/F30340/2015-S6
29	HEBRI WICAHYAKA	20150187	14-Apr-95	ENGINE CADET	INDONESIA	BST	2015	6211521011010315	D 074889	25-Jun-18	B 1496171	2-Jul-20	No.175/F30340/2015-S6

Date : 8-Apr-16
Port of : Tg.Langsat (Malaysia)

Note ;

Total Crew On Board **29 Persons** *Include Master.*

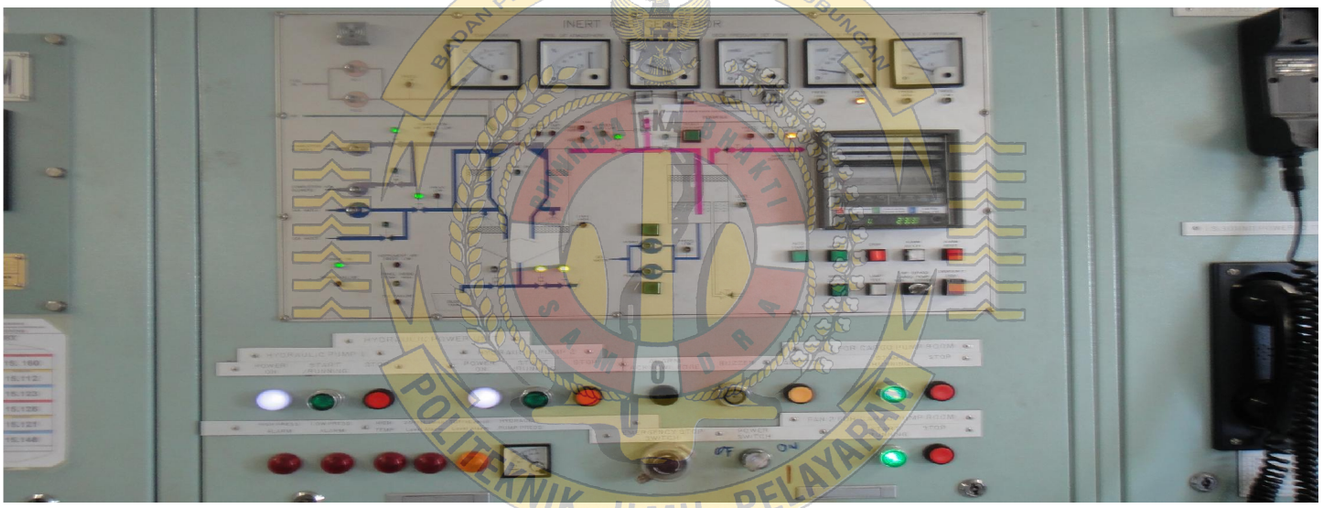
Capt. Suheri

LAMPIRAN 3

Gambar panel IGG di MT.Sungai Gerong

Figure On Bridge

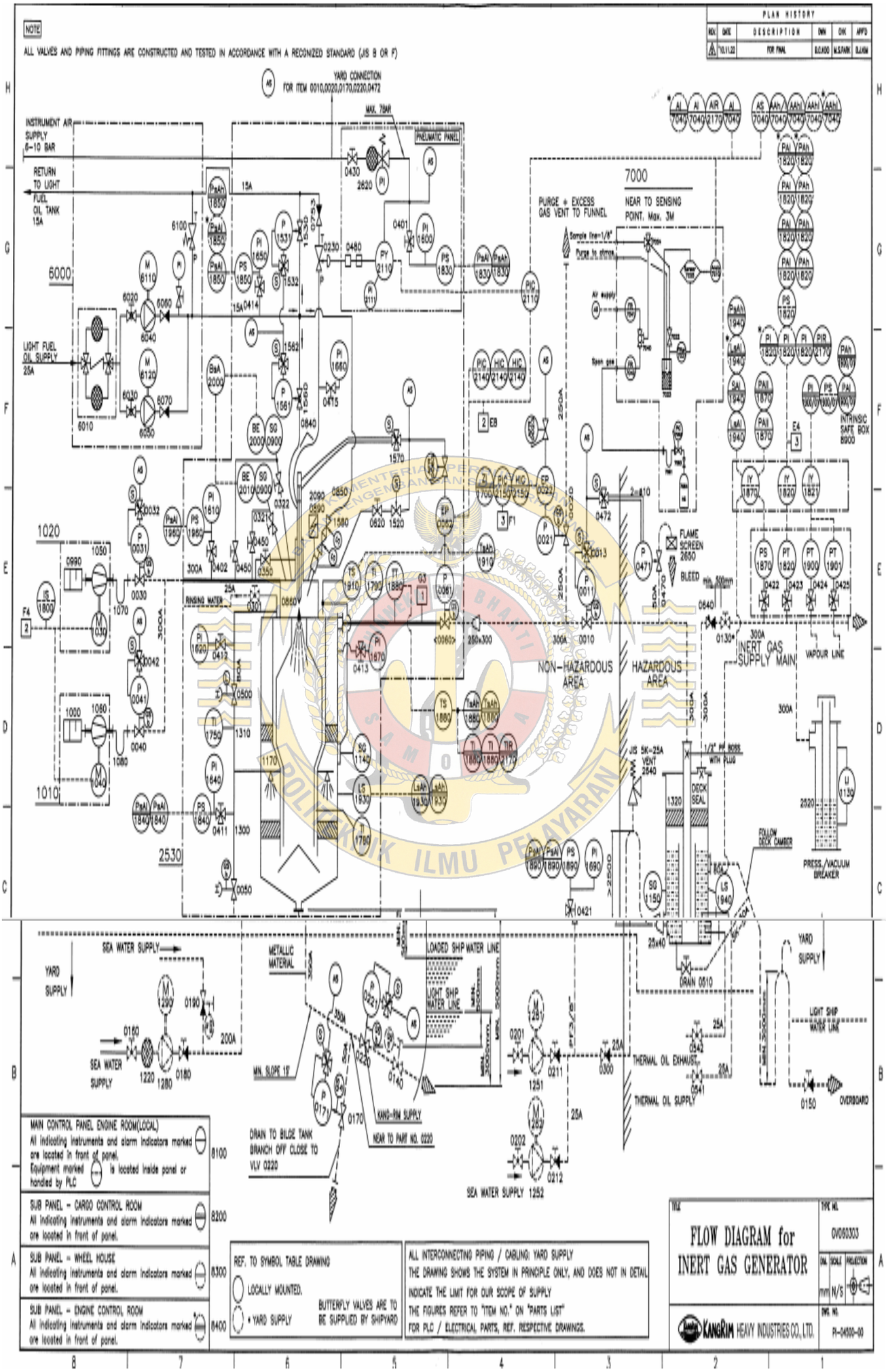
Figure On CCR



Panel IGG di CCR s

KEMENTERIAN PERHUBUNGAN
BADAN PENGEMBANGAN SDM PERHUBUNGAN
POLITEKNIK ILMU PELAYARAN SAMARINDA

LAMPIRAN 3


NOTE
ALL VALVES AND PIPING FITTINGS ARE CONSTRUCTED AND TESTED IN ACCORDANCE WITH A RECONIZED STANDARD (JIS B OR F)
PLAN HISTORY
DESCRIPTION
FOR PANL
INSTRUMENT AIR SUPPLY 6~10 BAR
RETURN TO LIGHT FUEL OIL TANK 15A
LIGHT FUEL OIL SUPPLY 25A
YARD CONNECTION FOR ITEM 0010,0020,0170,0220,0472
PNEUMATIC PANEL
7000
NEAR TO SENSING POINT, Max. 3M
PURGE + EXCESS GAS VENT TO FUNNEL
FLAME SCREEN 2650
BLEED
INERT GAS SUPPLY MAIN
VAPOUR LINE
INTRINSIC SAFE BOX 8900
NON-HAZARDOUS AREA
HAZARDOUS AREA
RINSING WATER
DECK SEAL
FOLLOW DECK CAMBER
PRESS./VACUUM BREAKER
SEA WATER SUPPLY
YARD SUPPLY
METALLIC MATERIAL
LOADED SHP WATER LINE
LIGHT SHP WATER LINE
MIN. SLOPE 15°
DRAIN TO BILGE TANK BRANCH OFF CLOSE TO VLV 0220
KANG-RIM SUPPLY
NEAR TO PART NO. 0220
THERMAL OIL EXHAUST
THERMAL OIL SUPPLY
OVERBOARD
SEA WATER SUPPLY 1252
MAIN CONTROL PANEL ENGINE ROOM(LOCAL) 8100
All indicating instruments and alarm indicators marked are located in front of panel.
Equipment marked is located inside panel or handled by PLC
SUB PANEL - CARGO CONTROL ROOM 8200
All indicating instruments and alarm indicators marked are located in front of panel.
SUB PANEL - WHEEL HOUSE 8300
All indicating instruments and alarm indicators marked are located in front of panel.
SUB PANEL - ENGINE CONTROL ROOM 8400
All indicating instruments and alarm indicators marked are located in front of panel.
REF. TO SYMBOL TABLE DRAWING
LOCALLY MOUNTED.
* YARD SUPPLY
BUTTERFLY VALVES ARE TO BE SUPPLIED BY SHIPYARD
ALL INTERCONNECTING PIPING / CABLING: YARD SUPPLY
THE DRAWING SHOWS THE SYSTEM IN PRINCIPLE ONLY, AND DOES NOT IN DETAIL
INDICATE THE LIMIT FOR OUR SCOPE OF SUPPLY
THE FIGURES REFER TO "ITEM NO." ON "PARTS LIST"
FOR PLC / ELECTRICAL PARTS, REF. RESPECTIVE DRAWINGS.
TITLE
FLOW DIAGRAM for INERT GAS GENERATOR
TYPE NO.
GV060303
KANGRIM HEAVY INDUSTRIES CO., LTD.
DWG. NO.
PI-04500-03

LAMPIRAN 3

Symbol Table for Inert Gas Generator

KANGRIM

INDICATING INSTRUMENTS

- SG — SIGHT GLASS
- FI — FLOW INDICATOR
- TI — TEMPERATURE INDICATOR
- PI — PRESSURE/VACUUM INDICATOR
- LI — LEVEL INDICATOR
- ZI — POSITION INDICATOR
- AI — ANALYSE INDICATOR O2 CONTENT
- MI — MOISTURE INDICATOR
- AIR — ANALYSE INDICATING RECODER
- PIR — PRESS. INDICATING RECORDER
- PDI — DIFFERENTIAL PRESS. INDICATOR
- FI — FLOW INDICATOR

ALARM

- PsAh — PRESS. SHUT DOWN ALARM HIGH
- PsAl — PRESS. SHUT DOWN ALARM LOW
- Pah — PRESS. ALARM HIGH
- Pahh — PRESS. ALARM VERY HIGH
- PAl — PRESS. ALARM LOW
- PAll — PRESS. ALARM VERY LOW
- TsAh — TEMP. SHUT DOWN ALARM HIGH
- LsAh — LEVEL SHUT DOWN ALARM HIGH
- LsAl — LEVEL SHUT DOWN ALARM LOW
- Aah — ANALYSE O2 ALARM HIGH
- Aal — ANALYSE O2 ALARM LOW
- BSA — BURNER FLAME SHUT DOWN ALARM
- Fal — FLOW FAILURE O2 SAMPLE
- FsAl — FLOW SHUT DOWN ALARM LOW
- lsAl — BLOWER FAILURE SHUT DOWN
- Mah — MOISTURE ALARM HIGH
- PdAh — DIFFERENTIAL PRESS. ALARM HIGH
- YA — COMMON ALARM
- XA — OXYGEN SENSOR FAILURE
- Vah — VIBRATION ALARM HIGH

SWITCHS

- PS — PRESS. SWITCH
- TS — TEMPERATURE SWITCH
- LS — LEVEL SWITCH
- FS — FLOW SWITCH
- IS — CURRENT SWITCH
- AS — ANALYSE SWITCH
- MS — MOISTURE SWITCH
- PdS — DIFFERENTIAL PRESS. SWITCH

VALVE TYPE

- 4-WAY VALVE
- 3-WAY VALVE
- CONTROL VALVE
- NON-RETURN VALVE (CV)
- SWING CHECK VALVE
- BUTTERFLY VALVE (BFV)
- REDUCTION VALVE (RDV)
- BALL VALVE
- SAFETY VALVE
- VACUUM BREAKER
- SPECTACLE FLANGE
- MANUAL HANDLE
- VACUUM / RELIEF VALVE
- ORIFICE

VALVE OPERATION

- MANUAL
- S — SOLENOID
- P — ACTUATOR
- EP — VALVE POSITIONER
- DIAPHRAGM

SIGNALS

- PNEUMATIC
- PROCESS
- ELECTRICAL

OTHERS

- BLOWER (ROOTS)
- BLOWER (CENTR. FAN)
- COMPRESSOR
- PUMP
- HEATER
- CYCLONE
- COOLER
- IGN. TRANSFORMER
- M — EL. MOTOR
- AE — ANALYZER
- BE — BURNER FLAME SCANNER
- AFR — AIR FILTER REGULATOR
- PIC — P + I CONTROLLER
- LC — LEVEL CONTROL
- TC — TEMPERATURE CONTROL
- HIC — HAND OPERATED INDICATING CONTROLLER
- PY — I/P CONVERTER
- PT — PRESSURE TRANSMITTER
- TT — TEMPERATURE TRANSMITTER
- IY — INTRINSIC SAFE RELAY
- VE — VIBRATION SENSOR
- AS — AIR SUPPLY
- AUTOMATIC DRAINER
- FILTER
- FLAME ARRESTOR
- SILENCER
- FLEX. CONNECTION
- FLEX. HOSE
- GS a — LIMIT SWITCH, OPEN POSITION
- GS b — LIMIT SWITCH, CLOSE POSITION
- QUICK COUPLING

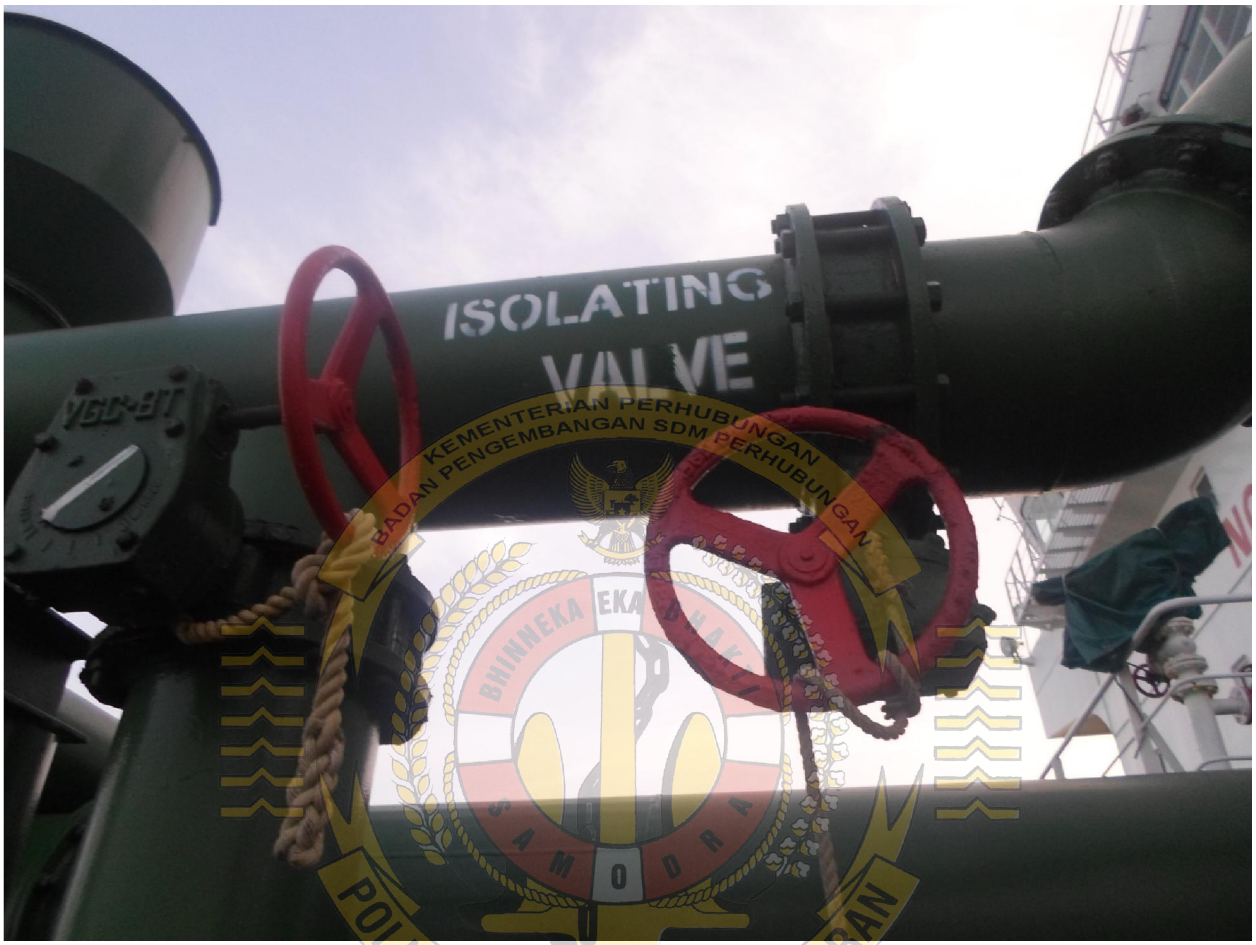
KEMENTERIAN PERHUBUNGAN BADAN PENGEMBANGAN SDM PERHUBUNGAN POLITEKNIK ILMU PELAYARAN SEMARANG

LAMPIRAN 4

Gas detector yang digunakan dikapal tanker di MT. Sungai Gerong

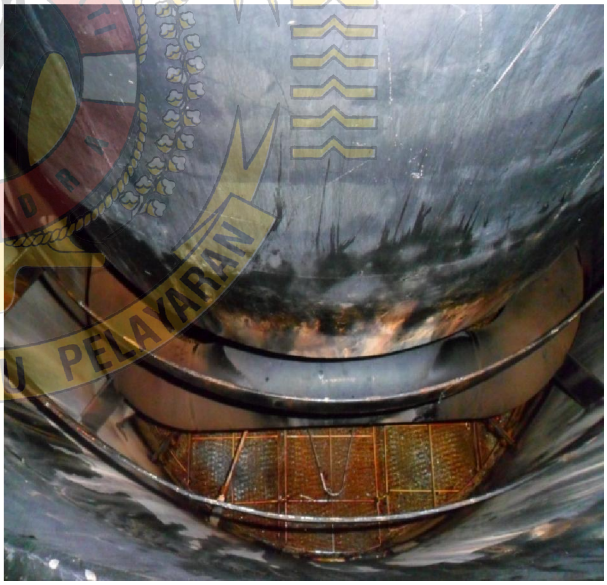
LAMPIRAN 5

Isolating valve yang digunakan dikapal tanker di MT. Sungai Gerong



LAMPIRAN 6

Scrubber IG saat sedang dibongkar oleh engine departement dikapal tanker di MT. Sungai Gerong



LAMPIRAN 7

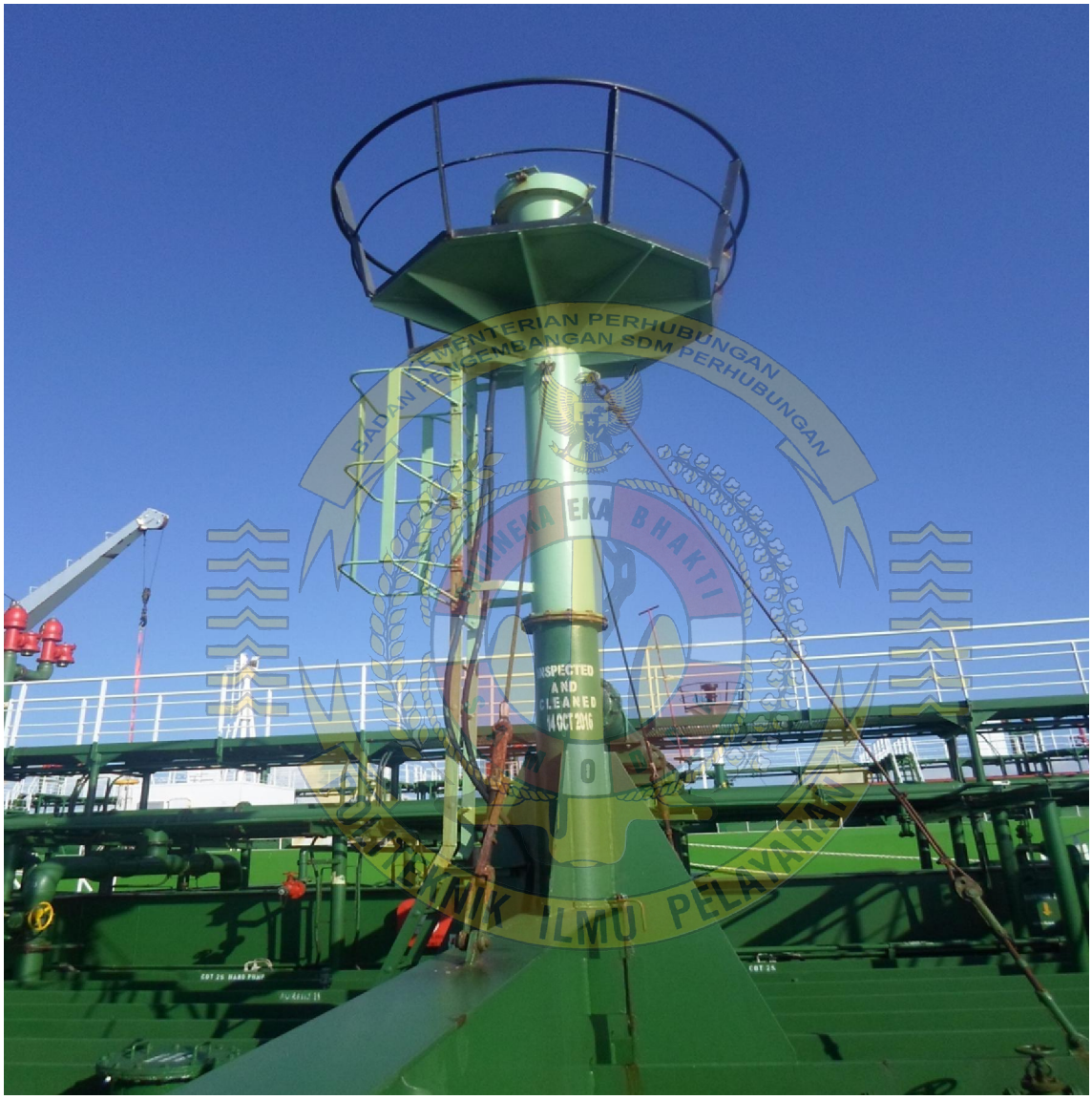
Select consumer yang digunakan dikapal tanker di MT. Sungai Gerong

LAMPIRAN 8

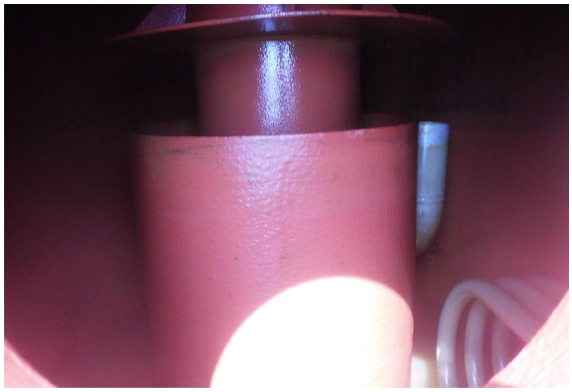
P/V breaker IGS yang digunakan dikapal tanker di MT. Sungai Gerong

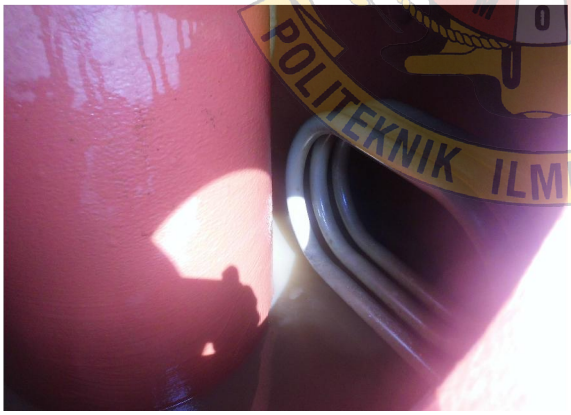
LAMPIRAN 9

Mast Riser yang digunakan dikapal tanker di MT. Sungai Gerong



Lampiran deckwater seal yang di cleaning tiap bulannya di MT.Sungai Gerong





LAMPIRAN 11

PT. PERTAMINA

PERTAMINA

Tank Cleaning Plan

Vessel Name: MT. Sungai Gerong
Call Sign : POJO

Date: 01 June 2016

1. Tank Cleaning work
   The Objective of tank cleaning work is as given below:
   Tank Cleaning perform will be for next nominated cargo Avtur and Load port Cilacap on 09 June 2016. Previous cargo Gasoline Ron 88 Unleaded. Tank to be cleaning all COT 1W, 2W, 3W, 4W, 5W, 6W. Tank Cleaning involves the removal of traces of oil and petroleum gases in tank and piping, specifically includes tasks mentioned below:
   - Flushing all top line, bottom line and washing of the tank with sea water
   - Gas freeing to create environment in the tank that the worker can enter in tank safely for mopping and inspection

2. Overall flow of work
   a. Connecting spool piece on cargo sea chest
   b. Filling of washing water in slop port up to 350 M3
   c. Start COP'S for flush the top line for each group's make sure all top line has been flushed and stripped for make the bottom line also flushed by water wash.
   d. The wash water should be circulated slop to slop and the equalizer valve to be operated as necessary (MMC standby to check the interface)
   e. Tank Cleaning by Butterworth Fixed or either Portable butterworth
   f. HC Gas purging using inert gas system till the HC 2 % by vol.
   g. Airing or Air Venting (Gas Free)
   h. Mopping till clean
   i. Decanting for min 36 hours for wash water in slop tank and discharge water from slop via ODME system to overboard and MMC to be standby to monitored the interface.

3. Filling washing water and method
   There are several method of filling washing water are available, however we decided to use method from sea chest cargo system. Filling the sea water (washing water), which is to be used for washing the tanks and lines, in the slop tank will use COP no. 1
   Deciding the quantity of water to be filled is 350 M3, consider the following point:
   - If the filling quantity too small, the defects mentioned below may occur
   - Reduction in the cleaning effect due to progressive contamination of washing water
   - Air/Gas may be drawn in to the COP
   - If the filling quantity too large the defects mentioned below may occur;
   - Increase in the time required for settling and discharge
   - Increase in the time required for discharge
   - Time required for filling water by COP about 30 mins
   - Filling start period
   - The filling of washing water starts when the preparations before tank cleaning and gas freeing work are completed after departure of the ship from discharging port. However, decide the start period after considering the points below:
   - Consider the sea area where water is taken into the ship ensuring that sea water at the lowest possible temperature can be filled
   - We will adjust the work schedule that the filling work is performed during daytime so that the condition of the sea water surface can be properly observed.

4. Heating of washing water
   However for this operation and requirements for next cargo Avtur and previous cargo Gasoline Ron 88 there are required to washing with Cold Water as per shell ship pre cargo matrix white oil petroleum product and components which is given by office for guidance.

5. Tank washing

Tank washing refers to the work of washing the cargo tanks with sea water using a fixed tank cleaning machine and portable tank cleaning machine if necessary and simultaneously, recovering the oil in the slop tank by continuously stripping the washing water using cargo EDUCTOR (eductor capacity is 120m3/hrs with driving 265m3/hrs). We will use the COP no. 1 for washing the tanks in order to maintain requirement pressure and the water jet length in good enough.

*Specification Fixed tank cleaning machine

Nozzle diameter [mm]	Pressure [bar]	Flow [m³/h]	Max. effective jetlength achieved [m]
Ø12	6 8 10	- 32,0 35,0	15,0 19,0 20,5
Ø14	6 8 10	- 42,0 45,0	- 20,0 23,0
Ø16	6 8 10	- 50,0 55,0	20,0 22,0 24,0
Ø18	6 8 10	- 57,0 64,0	20,0 23,0 25,0

*Specification portable tank cleaning machine

Nozzle diameter [mm]	Pressure [bar]	Flow [m³/h]	Max. effective jetlength achieved [m]
Ø7	6 8 10	7,3 8,0 8,5	9,1 10,5 11,0
Ø8	6 8 10	10,0 11,3 12,2	9,5 10,8 12,0
Ø9	6 8 10	10,4 11,6 12,6	10,6 11,3 12,5
Ø10	6 8 10	13,0 14,2 16,0	11,6 13,0 14,8
Ø11	6 8 10	15,0 16,2 17,7	14,0 15,0 16,0

- Tank washing sequence

Always wash tanks connected to drip lines around the manifold after the drip lines have been washed.

Wash one of the forward tanks last because oil is pushed into the forward end of the TC line. The tank washing sequence is closely linked to the HC gas purging and air venting (gas free) work sequence implemented after washing. Therefore, decide the washing sequence taking into consideration the distance of equipment to be moved for gas free operations, minimized movements and work effect/timescale

2W ⇨ 3W ⇨4W ⇨ 5W⇨ 6W ⇨ 1W

- Washing Time

The washing time is decided by the factors below:

Washing pattern

Number of washes

RPM of the washing machine

Top Washing and bottom washing for 2 hrs and stripping 1 hrs

It is very important that during tank cleaning work we must use cargo eductor system to keep tank well drain/dry and maintain trim min 2.0 m for successfully result of the cleaning.

List to be adjust as required as we aware that the suction all tanks are in aft centre bulkhead. However pressure on main TC line have to maintain in range of 7 kg/cm2 and max 8 kg/cm2 and same time minimum 8 kg/cm2 eductor driving pressure. All TC line has been tested and design to work with best performance on 10 kg/cm2.

6. HC Gas Purging

Before supply air or Gas Free the washed tank, perform HC (Hydrocarbon) gas purging using inert gas to prevent the atmosphere in tank from reaching the flammable range of petroleum gases. Reduce the HC concentration to below 2% by volume (HC gas does not explode if its volume ratio is less than 2%) while maintaining the atmosphere within the tank in non-flammable condition.

- HC gas purging method

In this method we will use tank by tank as we aware the ship designed for Purging we can use line number 3 which is connected with IG line on pump room top and will delivered to designated tank and use bottom line cross over for tank which is need to purge and the exhaust will used PV Valve (Primary and Secondary). Implement HC gas purging according to the operational manual.

Time required for HC gas purging is decided by the items given below:

-Tank Volume
-Number of tanks
-Number IG fans to be used (quantity of inert gas to be supplied)
-Gas purging method

*Duration of purging is planned to change atmosphere in all tanks minimum 2 times by volume, for the purging operations calculation is:

Capacity 100% of tanks and Capacity of IG Fans is 5000 m3/hrs

1 P = (2690.163 x 2) = 5380.326 m3 / 5000 m3 = 64.6 mins (1 hr 04mins 34sec)
1 S = (2692.042 x 2) = 5384.084 m3 / 5000 m3 = 64.6 mins (1 hr 04mins 36sec)
2 P = (3772.681 x 2) = 7545.362 m3 / 5000 m3 = 90.5 mins (1 hr 30mins 30sec)
2 S = (3769.640 x 2) = 7539.280 m3 / 5000 m3 = 90.5 mins (1 hr 30mins 30sec)
3 P = (3868.983 x 2) = 7737.966 m3 / 5000 m3 = 92.9 mins (1 hr 32mins 54sec)
3 S = (3865.487 x 2) = 7730.974 m3 / 5000 m3 = 92.8 mins (1 hr 32mins 46sec)
4 P = (3868.658 x 2) = 7737.316 m3 / 5000 m3 = 92.8 mins (1 hr 32mins 51sec)
4 S = (3859.467 x 2) = 7718.934 m3 / 5000 m3 = 92.6 mins (1 hr 32mins 38sec)
5 P = (3855.865 x 2) = 7711.730 m3 / 5000 m3 = 92.5 mins (1 hr 32mins 32sec)
5 S = (3854.790 x 2) = 7709.580 m3 / 5000 m3 = 92.5 mins (1 hr 32mins 31sec)
6 P = (2988.200 x 2) = 5976.400 m3 / 5000 m3 = 71.7 mins (1 hr 11mins 43sec)
6 S = (2986.427 x 2) = 5972.854 m3 / 5000 m3 = 71.7 mins (1 hr 11mins 41sec)
Approximate time for HC Gas Purging ⟹ = 1009.7 mins (16hrs 49mins 42sec)

*Number of IG fans to be used

The IG Fans only will use is 1 IG Fan because of if they do for parallel it will shutting down and the IG Fans will used as running hours if it is necessary to change with another IG Fans with same capacity 5000m3/hrs.

7. Gas Freeing / Air Venting

Venting refers to supplying fresh air into the tanks in which HC Gas purging has been completed and replacing the gas in the tanks so that the environment in the tank is made conductive to work (cleaning and mopping) to be performed by ship staff.

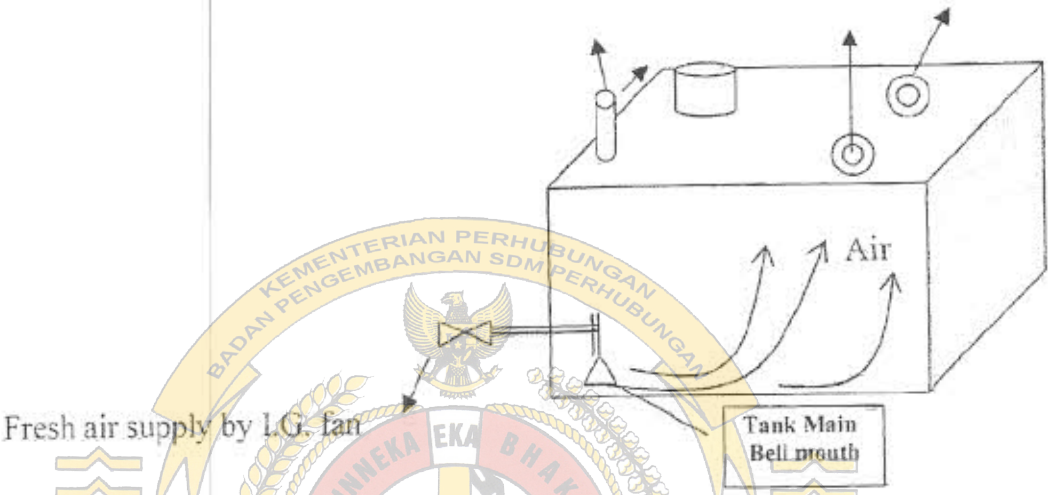
- Gas Free method

We have two methods on board MT.Sungai Gerong as below:

1. Method of using portable fans and air duct.

In this method, portable fans are installed in the tank cleaning holes on the upper deck, air supplied to the tank and the inert gas discharged.
*Forward side: Supply fan and Aft side via deck seal as exhaust

2. Using method IG fans
In this method, fresh air is supplied using IG fans. When the method is implemented, blind flanges is inserted in the IG Branch line or make sure shut and locked of the tank that has already been gas freed. Will use the same technique as Purging system use line number 3 which is connected with IG line on pump room top and will delivered to designated tank and use bottom line cross over for tank which is need to supply fresh air and the exhaust will used PV Valve (Primary and Secondary) or man hole on deck. These methods will very effective and very safe operation for gas free of the cargo tanks.



* Duration of Gas Free is planned to change atmosphere in all tanks minimum 2.5 times by volume, for the gas free operations calculation is:
Capacity 100% of tanks and Capacity of IG Fans is 5000 m3/hrs
1 P = (2690.163 x 2.5) = 6725.408 m3 / 5000 m3 = 80.7 mins (1 hr 20mins 42sec)
1 S = (2692.042 x 2.5) = 6730.105 m3 / 5000 m3 = 80.8 mins (1 hr 20mins 46sec)
2 P = (3772.681 x 2.5) = 9431.703 m3 / 5000 m3 = 113.2 mins (1 hr 53mins 11sec)
2 S = (3769.640 x 2.5) = 9424.100 m3 / 5000 m3 = 113.1 mins (1 hr 53mins 05sec)
3 P = (3868.983 x 2.5) = 9672.458 m3 / 5000 m3 = 116.1 mins (1 hr 56mins 04sec)
3 S = (3865.487 x 2.5) = 9663.718 m3 / 5000 m3 = 116.0 mins (1 hr 56mins 00sec)
4 P = (3868.658 x 2.5) = 9671.645 m3 / 5000 m3 = 116.1 mins (1 hr 56mins 04sec)
4 S = (3859.467 x 2.5) = 9648.668 m3 / 5000 m3 = 115.8 mins (1 hr 55mins 47sec)
5 P = (3855.865 x 2.5) = 9639.663 m3 / 5000 m3 = 115.7 mins (1 hr 55mins 41sec)
5 S = (3854.790 x 2.5) = 9636.975 m3 / 5000 m3 = 115.6 mins (1 hr 55mins 39sec)
6 P = (2988.200 x 2.5) = 7470.500 m3 / 5000 m3 = 89.7 mins (1 hr 29mins 39sec)
6 S = (2986.427 x 2.5) = 7466.068 m3 / 5000 m3 = 89.6 mins (1 hr 29mins 36sec)
Approximate time for Gas Freeing ⟹ = 1262.4 mins (21 hrs 02mins 24sec)

*Number of IG fans to be used
The IG Fans only will use is 1 IG Fan because of if they do for parallel it will shutting down and the IG Fans will used as running hours if it is necessary to change with another IG Fans with same capacity 5000m3/hrs.
Continuing the venting and keep gas free atmosphere. Even if the target value (O2 21%, HC below 1% LEL, H2S below 5 ppm) of the atmosphere in the tank have been reached, HC gas is always generated from any part inside the cargo tanks. Therefore, portable fans

Tank Cleaning Plan

will continuously maintain safe gas free atmosphere in the tanks until mopping and inspection completed.

8. Settling and discharge water
Settling is the process by which the washing water containing a mix of oil and sea water, where has been collected after cleaning each tank, is allowed to remain still in the slop tank so that oil and water can be separated. According to the MARPOL, discharging water from slop refers to the work of discharging only the water that has been separated from oil-water mix by settling using ODM equipment for discharge overboard as much as possible. The time required for settling is subject to the type of oil loaded on the ship and the ship motion, but generally 36 hours minimum required.

9. Total Time need for all operations:

a.	Prepared Spool piece for sea chest to cargo line	: 2 hrs
b.	Time for filling slop port with sea water	: 1 hrs
c.	Top line flushing and bottom line flushing	: 6 hrs
d.	Tank cleaning each tank and stripping @2hrs total 12tanks	: 26hrs
e.	HC Gas Purging and preparation	: 20hrs
f.	Gas Freeing and preparation	: 24hrs
g.	Mopping and Inspection by shore/cleaning gang in tanks 3tanks/day in day time only 12hrs (12 man power)	: 48hrs
	Total time (approx.)	: 6 days

Time calculated above mentioned state correctly belief our best knowledge without any prejudice and all operations goes smoothly.

WORK PLANNING MEETING:
Tank Cleaning Plan understood and reviewed by all concerned officers, crew and engineers.

Prepared by Ch Off

Doddy Amrih Prayogo

Approved by Master

Capt. Ramses

Read and Understood by:

2ND OFFICER :
3RD OFFICER :
4TH OFFICER :
PUMPMAN :
BOSUN :
AB 1 :
AB 2 :
AB 3 :

CH. ENGINEER :
2ND ENGINEER:
3RD ENGINEER:
4TH ENGINEER:
ELECT. ENG :
FOREMAN :
OILER A :
OILER B :

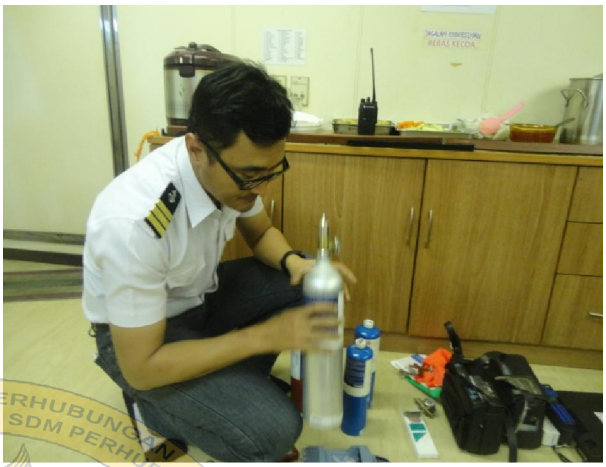
OS 1 :
OS 2 :
OS 3 :
D/CDT 1 :
D/CDT 2 :

OILER C :
ENG CDT 1 :
ENG CDT 2 :

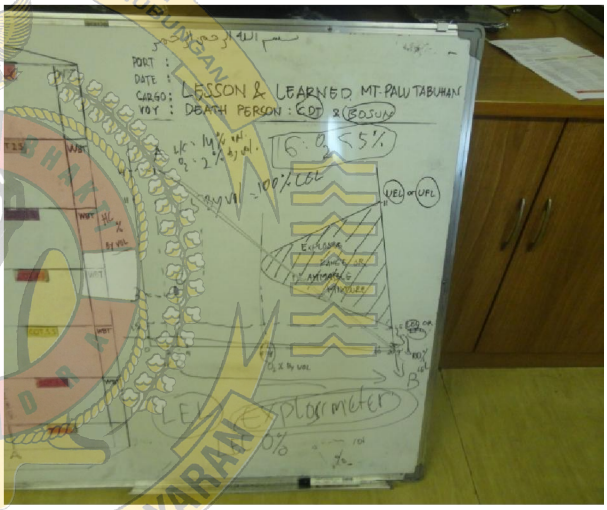
KEMENTERIAN PERHUBUNGAN
BADAN PENGEMBANGAN SDM PERHUBUNGAN
BHINNEKA EKA BHAKTI SAMUDRA
POLITEKNIK ILMU PELAYARAN

LAMPIRAN 12

familirisasi dikapal tanker di MT. Sungai Gerong



LAMPIRAN 12



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BHINNEKA TUNGGAL IKA
POLITEKNIK ILMU PELAYARAN
SEMARANG

No. Report : 160100-0350

TIME SHEET

FM.01.PET

Vessel : MT. SUNGAI GERONG
Port : ANCHORAGE AREA, CILACAP
Product : AVTUR
Date : JUNE 16, 2016

ACTIVITIES (Discharging / Loading)	DATE	HOUR
Vessel arrived at		
Notice of Readiness tendered		
Anchor dropped		
Anchor up		
Mooring Master / Pilot on board for berthing		
First line connected		
All secured at		
Notice of Readiness accepted		
Free Pratique Granted		
Surveyor on board	JUNE 16, 2016	09.20
Key meeting held	JUNE 16, 2016	09.30 - 09.45
Initial tank inspection / ullaging completed	JUNE 16, 2016	09.50 - 12.30
Hose / Loading Arm connected (x)		
Commenced Discharge / taking ballast		
Completed Discharge / taking ballast		
Commenced Loading / Discharge		
One foot / Initial Sampling completed		
Completed Loading / Discharge		
Final Sampling completed		
Final tank inspection / ullaging completed	JUNE 16, 2016	14.00 - 15.00
Hose / Loading arm disconnected		
Figure/Calculation ascertained		
Documents on board		
Mooring Master / Pilot on board for unberthing		
Vessel unberthed		
Vessel sailed		

Remarks:
JUNE 16, 2016 dari jam 12.00 - 14.00 melakukan pencucian kembali di COT 1P dan 2P dikarenakan kondisi dari tanki tersebut yang kurang bersih (kotor).

Surveyor

DODDY AMRIH PRAYOGO
Chief Officer

This report reflects our findings at time and place of inspection/testing only and is hereby given to the best of our knowledge and ability but without prejudice towards any question of rights and/or liability or any party concerned. Our responsibility is limited to the exercise of reasonable care.

CARSURIN *Quality With Integrity*

| Coal | Minerals | Laboratory Testing | Oil & Gas | Marine | Marine Offshore | Petroleum | Chemicals | Cargo | Agriculture | Lloyd's Agent |

No. Report : 160100 0350

TANK INSPECTION REPORT

FM.02.PET

Vessel : MT. SUNGAI GERONG
Port : AMCHORAGE AREA, CILACAP
Product : AVTUR
Date : JUNE 16, 2016

To whom it may concern,

The following information is received from the Master/Chief Officer of the above vessel

Vessel's Tank to be inspected	Tank coating/material	1st last cargo	2nd last cargo	3rd last cargo
1W, 2W, 3W, 4W	EPOXY	GASOLINE 88 RON	GASOLINE 88 RON	GASOLINE 88 RON
5W and 6W	EPOXY	GASOLINE 88 RON	GASOLINE 88 RON	GASOLINE 88 RON

Heating coil : Provided / Not Provided *)

- Method of Cleaning (Provided by Vessel's Representative / Chief Officer)

1. Butterworthing with hot fresh water at temperature 50°C
2. Flushing with fresh water in all cargo tank, top line, bottom line with all cargo manifold.
3. Draining
4. Drying
5. Mopping till dry
6. After being inspect and all cargo tank found clean and dry vessel prepared to inert all cargo tank which is nominated for next grade cargo

The inspection was carried out and completed on June 16, 2016 at 15.00 hours

After thorough inspection and considering to the cargo's compatibilities, we concluded that the above vessel's cargo tanks as well as pumps and pipelines which have been inspected visually at accessible points at the time of inspection were found to be (clean and dry / ~~unclean~~) and (ready / ~~unready~~) for receiving the nominated cargo.

Note: *) Cross the inappropriate one

Surveyor

FOR RECEIPT ONLY.

DODDY AMRIH ARAYOGO
Chief Officer / Vessel Representative

This report reflects our findings at time and place of inspection/testing only and is hereby given to the best of our knowledge and ability but without prejudice towards any question of rights and/or liability or any party concerned. Our responsibility is limited to the exercise of reasonable care.

HEAD OFFICE: | Wisma 77 - Tower 2, 19th Floor, Jl. Letjen S. Parman Kav. 77 - Slipi, Jakarta 11410, INDONESIA |
| P : +62.21.2967 5868 | F : +62.21.2967 5818 / 28 | E : headoffice@carsurin.com | www.carsurin.com

OFFICES: | Total : 20 | Java : 4 | Kalimantan : 9 | Sumatera : 5 | Sulawesi : 1 | Maluku : 1 |

LABORATORIES: COAL & MINERALS | JAVA : Cikarang | KALIMANTAN : Banjarbaru, Berau, Bontang, Samarinda, Tamiang Layang, Tanah Merah | SULAWESI : Kendari | SUMATERA : Jambi, Palembang |
PETROCHEM | Cilegon |
AGRICULTURE | Medan |

No. Report: 160100.0350

CERTIFICATE OF TANK CLEANLINESS / DRYNESS

FM.03.PET

Vessel	: MT. SUNGAI GERONG	Product	: AVTUR
Port	: ANCHORAGE AREA, CILACAP	Date	: JUNE 16, 2016

To whom it may concern,

THIS IS TO CERTIFY that the undersigned surveyor attended on board the above vessel whilst she was berthed at the above port/place for the purpose of carrying out visual cleanliness/dryness inspection of the following nominated vessel's cargo tanks:

Port : 1, 2, 3, 4, 5 and 6

Centre : -

Starboard : 1, 2, 3, 4, 5 and 6

The inspection was carried out and completed on June 16, 2016 at 15.00 hours

After thorough inspection, we concluded that the above vessel's cargo tanks as well as pumps and pipelines which have been inspected visually at accessible points and found to be clean and dry were suitable/ready for receiving the nominated cargo.

Surveyor

DODDY AMRIH PRAYOGO
Chief Officer

This report reflects our findings at time and place of inspection/testing only and is hereby given to the best of our knowledge and ability but without prejudice towards any question of rights and/or liability or any party concerned. Our responsibility is limited to the exercise of reasonable care.

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KEMENTERIAN PERHUBUNGAN
BADAN PENGEMBANGAN SDM PERHUBUNGAN
BHINNEKA EKA BHAKTI
SAMUDRA
POLITEKNIK ILMU PELAYARAN

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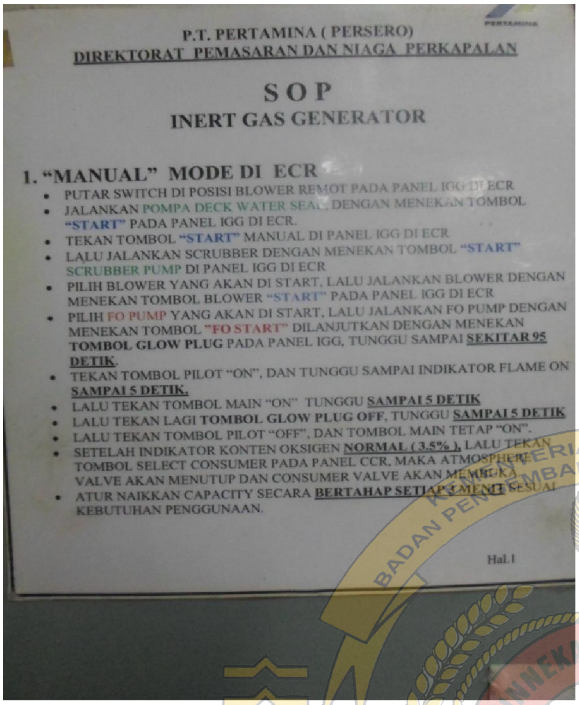
KEMENTERIAN PERHUBUNGAN
BADAN PENGEMBANGAN SDM PERHUBUNGAN
BHINNEKA EKA BHAKTI
SAMUDRA
POLITEKNIK ILMU PELAYARAN

LAMPIRAN 16

SOP Inert gas system yang ditempelkan di CCR



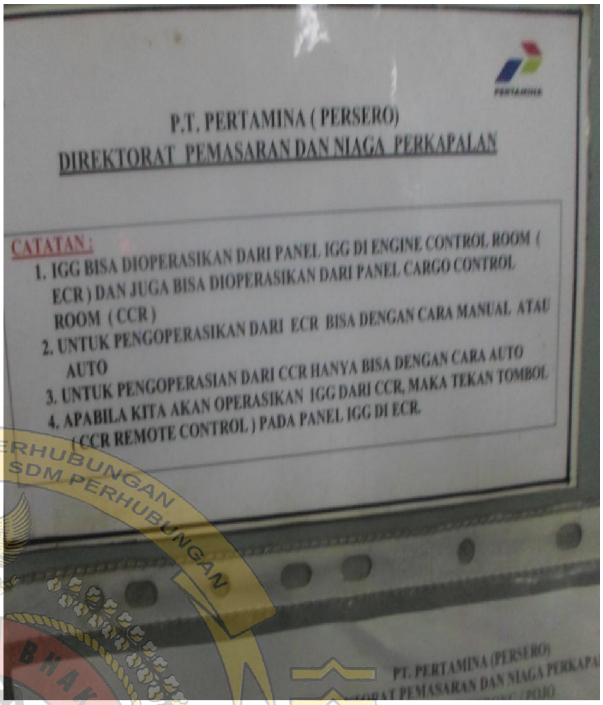
P.T. PERTAMINA (PERSERO)
DIREKTORAT PEMASARAN DAN NIAGA PERKAPALAN

SOP
INERT GAS GENERATOR

1. "MANUAL" MODE DI ECR

- PUTAR SWITCH DI POSISI BLOWER REMOT PADA PANEL IGG DI ECR
- JALANKAN POMPA DECK WATER SEAL DENGAN MENEKAN TOMBOL "START" PADA PANEL IGG DI ECR.
- TEKAN TOMBOL "START" MANUAL DI PANEL IGG DI ECR
- LALU JALANKAN SCRUBBER DENGAN MENEKAN TOMBOL "START" SCRUBBER PUMP DI PANEL IGG DI ECR
- PILIH BLOWER YANG AKAN DI START, LALU JALANKAN BLOWER DENGAN MENEKAN TOMBOL BLOWER "START" PADA PANEL IGG DI ECR
- PILIH FO PUMP YANG AKAN DI START, LALU JALANKAN FO PUMP DENGAN MENEKAN TOMBOL "FO START" DILANJUTKAN DENGAN MENEKAN **TOMBOL GLOW PLUG** PADA PANEL IGG, TUNGGU SAMPAI **SEKITAR 95 DETIK**.
- TEKAN TOMBOL PILOT "ON", DAN TUNGGU SAMPAI INDIKATOR FLAME ON **SAMPAI 5 DETIK.**
- LALU TEKAN TOMBOL MAIN "ON" TUNGGU **SAMPAI 5 DETIK**
- LALU TEKAN LAGI **TOMBOL GLOW PLUG OFF**, TUNGGU **SAMPAI 5 DETIK**
- LALU TEKAN TOMBOL PILOT "OFF", DAN TOMBOL MAIN TETAP "ON".
- SETELAH INDIKATOR KONTEN OKSIGEN **NORMAL (3,5%),** LALU TEKAN TOMBOL SELECT CONSUMER PADA PANEL CCR, MAKA ATMOSPHERE VALVE AKAN MENUTUP DAN CONSUMER VALVE AKAN MEMBUKA
- ATUR NAIKKAN CAPACITY SECARA **BERTAHAP SETIAP 3 MENIT** SESUAI KEBUTUHAN PENGGUNAAN.

Hal.1

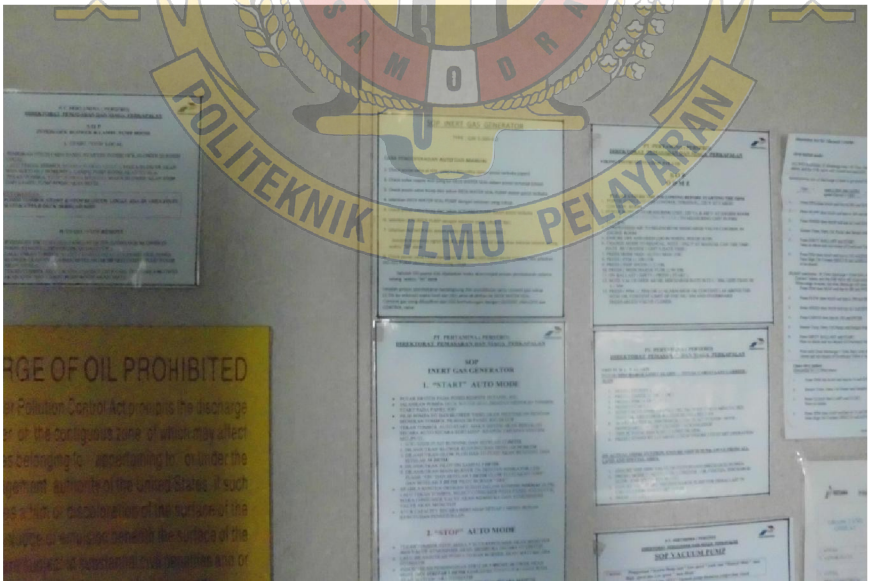


P.T. PERTAMINA (PERSERO)
DIREKTORAT PEMASARAN DAN NIAGA PERKAPALAN

CATATAN :

1. IGG BISA DIOPERASIKAN DARI PANEL IGG DI ENGINE CONTROL ROOM (ECR) DAN JUGA BISA DIOPERASIKAN DARI PANEL CARGO CONTROL ROOM (CCR)
2. UNTUK PENGOPERASIKAN DARI ECR BISA DENGAN CARA MANUAL ATAU AUTO
3. UNTUK PENGOPERASIAN DARI CCR HANYA BISA DENGAN CARA AUTO
4. APABILA KITA AKAN OPERASIKAN IGG DARI CCR, MAKA TEKAN TOMBOL (CCR REMOTE CONTROL) PADA PANEL IGG DI ECR.

PT. PERTAMINA (PERSERO)



KEMENTERIAN PERHUBUNGAN
BADAN PENGEMBANGAN SDM PERHUBUNGAN
BHINNEKA EKA BHAKTI
SAMUDRA
POLITEKNIK ILMU PELAYARAN

LAMPIRAN 17

Non return valve dikapal tanker di MT. Sungai Gerong

KEMENTERIAN PERHUBUNGAN
BADAN PENGEMBANGAN SDM PERHUBUNGAN
POLITEKNIK ILMU PELAYARAN

LAMPIRAN 17

A. TRANSKIP WAWANCARA

Nama Kapal : MT. Sungai Gerong

Pemilik Kapal : PT. Pertamina (Persero)

Alamat : JalanYosSudarsonomor 32-34 Jakarta Utara

Tempat Penelitian : Kapal MT. Sungai Gerong

TanggalPenelitian:22 September 2015 – 01 Desember 2016

B. DAFTAR RESPONDEN

1. Nakhoda
2. Mualim I *(Chief Officer)*
3. Mualim II *(Second Officer)*
4. Mualim III *(Third Officer)*
5. KKM (*Chief enginer*)
6. Juru Pompa *(Pump Man)*
7. Juru Mudi *(Able Seaman)*
8. Kelasi *(Ordinary Seaman)*
9. KKM *(Chief Engginer*)

KEMENTERIAN PERHUBUNGAN BADAN PENGEMBANGAN SDM PERHUBUNGAN
BHINNEKA EKA BHAKTI SAMUDRA
POLITEKNIK ILMU PELAYARAN

C. DAFTAR PERTANYAAN

1. Wawancara dengan Nakhoda

Hasilwawancara yang dilakukan penelititerhadapNahkoda:

Nama : Capt. SUHERI

Jabatan : Nakhoda

Kapal : MT. Sungai Gerong

1. Apakahtujuan (pemasangan) Inert gassistem ?

   Jawaban: TujuanpemasanganInert gas system adalah untuk menurukan kadar oksigen dibawah 8% by volume di tanki agar tidak terjadi ledakan dan kebakaran pada kapal tanker saat kapal beroperasi seperti pada saat memuat, membongkar dan melalkukan tank cleanning.

2. Bagaimana cara pengoperasian pengoperasian inert gas system terhadap pencegahan kecelakaan kerja diatas kapal tanker ?

   Jawaban:Pengoperasian inert gas system merupakan gas lembam yang dimasukkan kedalam tanki untuk mencegah kebakaran,ledakan di kapal tanker. Dan kecelakaan kerja dapat terjadi jika adanya ketidakpahaman, bekerja diluar prosedur safety yang biasa dilakukan dan kurangnya tanggung jawab maka Dalam mengantisipasi adanya suatu tindakan pencegahan kecelakaan harus ditekankan pada setiap awak kapal, yang mana sudah menjadi tanggung jawab masing-masing awak kapal itu sendiri.

3. Bagaimana pencegahan kecelakaankerja pada saat tank cleaning?

   Jawaban:Tank cleaning merupakan proses pembersihan tanki dikapal saat kapal akan memuat muatan minyak yang lebih bersih lagi agar tidak terjadinya kontaminasi cargo tersebut. Perlunya mengikuti prosedur dalam tank cleaning dan sebelum crew kapal masuk didalam tanki perlunya check gas

agar saat mooping didalam tanki tidak terjadi kercunan gas yang mengakibatkan kematian.

4. Apakah yang dimaksud dengan pemasukan inert gas system hubungannya dengan tank cleaning ?

   Jawaban:Pemasukan inert gas system memiliki 3 cara yaitu inert gas, purging dan gas free yang memiliki fungsi untuk keselamatan kapal agar dapat beroperasi dengan semestinya dengan menggunakan inert gas system tersebut sehingga tidak terjadi kecelakaan kerja seperti ledakan, kebakaran, kematian dan keterlambatan dalam mengoperasikan kapal dalam memuat, membongkar, serta melakukan tank cleaning dengan baik dan benar.

2. Wawancara dengan Mualim I

Hasilwawancara yang dilakukan penelititerhadapMualim I *(Chief Officer)*:

Nama : DODDY AMRIH PRAYOGO

Jabatan : Mualim I *(Chief Officer)*

Kapal : MT. Sungai Gerong

1. Sudah berapa lama anda menjabat sebagai Mualim 1 di atas kapal, khususnya kapal tanker dengan menggunakan pengoperasian inert gas system ?

   Jawaban: Saya menjabat sebagai Mualim 1 di atas kapal tanker dengan menggunakan pengoperasian inert gas system selama kurang lebih 3 tahun.

2. Secara garis besar persiapan-persiapan apa saja yang dilakukan saatpengoperasian IGS?

   Jawaban: Pengoperasian inert gas system yang benar dan tepat adalah dengan mengikuti SOP yang telah tertempel pada dinding cargo control room dan sesuai dengan book manual yang terdapat dikapal kapal tanker yaitu

mengikuti dengan urutan-urutan yang benar agar pengoperasian dapat berjalan lancar.

3. Bagaiaman cara pengoperasian pengoperasian inert gas system terhadap pencegahan kecelakaan kerja diatas kapal tanker ?

   Jawaban:Upaya mengendalikan peralatan inert gas system, bisa kita ketahui dengan daftar buku perawatan yang telah dikerjakan sebelumnya, yang mana sebagai perwira pengganti sebelumnya akan melanjutkan proyek kerja dari perawatan peralatan seperti melakukan cleaning deck water seal setiap satu bulan, mengechek airnya didalam deck water seal sesuai batas minimumnya.

4. Apakah yang dimaksud dengan pemasukan inert gas system hubungannya dengan tank cleaning ?

   Jawaban: Inert gas system merupakan alat keselamatan bagi kapal tanker untuk dapat mengoperarikan agar tidak terjadinya ledakan kebakaran dan selain itu juga dapat menghilangkan hidro carbon dan gas beracun setelah tank cleaning dengan melakukan purging. Purging merupakan system pemasukan gas lemban untuk mengurangi kadar hidrokarbon sampai 2% atau kurang dari volume setelah itu dapat dilakukan gas free sehingga setelah dicheck maka gas gas beracun dapat hilang dan bisa dimasukin crew kapal untuk mopping tanki kapal.

3. Wawancara dengan Mualim II

Hasilwawancara yang dilakukan penelititerhadapMualim II *(Second Officer)*:

Nama : DIO SHANRIA PUTRA

Jabatan : Mualim II *(Second Officer)*

Kapal : MT. Sungai Gerong

1. Sudah berapa lama anda menjabat sebagai Mualim 1 di atas kapal, khususnya kapal tanker dengan menggunakan pengoperasian inert gas system ?

   Jawaban:Saya menjabat sebagai Mualim 2 di atas kapal tanker dengan menggunakan pengoperasian inert gas system selama kurang lebih 1 tahun.

2. Apa saja yang anda lakukan pada saat persiapanpengopersian inert gas system?

   Jawaban:Pada saat jam jaga saya pukul 12.00-16.00 dan 00.00-04.00apabila pada saat mempersiapkan pengoperasian IGS sayaakanmelakukansesuaidengan SOPdansesuai dengan order yang diberikan oleh Mualim I.

3. Pada saat tugas jaga, apa saja yang anda lakukan pada saat pelaksanaanpengoperasian IGS?

   Jawaban:Saya akan melaksanakan pengoperasiansesuaidengan SOP dandengan order yang telah dibuat oleh Mualim I dengan mengadakan pengasawasan terhadap awak kapal dalam setiap kegiatan pengoperasian IGS.

4. Apakah tujuan dari (pemasangan) inert gas system ?

   Jawaban: Tujuan dari pemasangan inert gas system adalah untuk menurunkan dan mempretahankan kadar oksigen dibawah 8% agar tidak terjadi ledakan dan kebakaran

5. Setelah selesai pengoperasian IGS apa yanganda lakukan sebagai perwira jaga sewaktu tugas jaga?

   Jawaban: Setelahselesaipengoperasiansayaakan melakukan check kembali pada setiap tanki bahwa kadar oksigen pada tanki sudah dibawah 8% dan setelah itu saya akan melaporkan kepada Chief officer dan saya akan melakukan sesuai SOP dan yang diperintahkan oleh Chief officer.

4. Wawancara dengan Mualim III

Hasilwawancara yang dilakukan penelititerhadapMualim III *(Third Officer)*:

Nama :JONAHA VALENTINO DAMANIK

Jabatan : Mualim III *(Third Officer)*

Kapal : MT. Sungai Gerong

1. Sudah berapa lama anda menjabat sebagai Mualim 3 di atas kapal, khususnya kapal tanker dengan menggunakan pengoperasian inert gas system ?

   Jawaban: saya baru saja on board dikapal tanker yang mengunakan pengoperasian inert gas system seperti ini.

2. Sebagai perwira jaga,apa saja yang anda lakukan pada saat pengoperasian IGS?

   Jawaban: Saya sebagai perwira jaga pada saat jam jaga saya akan melaksanakan pengoperasian sesuaidengan SOP dan apa yang di order Mualim I dengan mengadakan pengawasan pada saat pengoperasian IGS berlangsung dan mengkordinir anak buah saya sesuai yang ada dalam SOP.

3. Apa yang third dapatkan pada saat chief officer melakukan familirisasi ?

   Jawaban: Pemahaman saya tidak banyak, seperti pada saat proses tank cleaning adanya inert gas system dan dilakukan kembali pemasukan gas lembam yang disebut purging karena dalam proses ini setelah saya

lihat begitu lama dan memakan waktu tetapi setelah kita mengikuti familirisasi yang dilakukan oleh Chief Officer saya dapat mengerti dan menjadi tambahan pengetahuan untuk inert gas system dan banyaknya famirisasi yg dilakukan sepeti penggunaan check gas dapat lebih baik dalam menggunakan itu. Familirisai ini penting bagi kita dan crew kapal agar dalam bekerja dapat berjalan dengan baik.

5. Wawancara dengan Bosun

Hasilwawancara yang dilakukan penelititerhadapJuru Pompa *(Pump Man)*:

Nama : TRI HERSONO PURWANTO

Jabatan : Bosun

Kapal : MT. Sungai Gerong

1. Apakah tugas anda pada saat kegiatan pengoperasian IGS?

   Jawaban: Tugas saya sebenarnya harian untuk perawatan kapal dan jika saya sebagai bosun dibutuhkan untuk pengoperasian inert gas saya akan melakukan sesuai yang diorder oleh mualim satu.

2. Apakah tujuan pemasangan Inert gas system?

   Jawaban: Tujuannya kapal tanker adalah agar tidak terjadi ledakan, kebakaran dan agar crew kapal dapat berkaja dengan safety.

3. Bagaimana pencegahan kecelakaan kerja pada saat tank cleanning?

   Jawaban: Tank cleaning adalah permbersihan tanki yang dilakukan oleh awak kapal untuk menggatikan muatan ke muatan yg berbeda dari yang sebelumnya seperti dari premium ke avtur untuk prosesnya saya sebagai bosun mengikuti perintah dari perwira dan melakukan bersama anggota saya atas koordinasi dari perwira dengan pengalaman yg saya miliki selama bekerja dikapa tanker..

4. Apa yang Bosun dapatkan pada saat chief officer melakukan familirisasi ?

   Jawaban: Saat familirisasi yang dilakukan oleh chief officer disitu saya menjadi mengerti adanya prose purging dalam proses tank cleaning agar crew kapal dalam saat masuk tanki dapat bekerja dengan safety dan tidak terjadi kematian yang diakibatkan oleh keracunan gas beracun Hidrocarbon.

6. Wawancara dengan Juru Pompa *(Pump Man)*

Hasilwawancara yang dilakukan penelititerhadapJuru Pompa *(Pump Man)*:

Nama : JULIANUS JANADA

Jabatan : Juru Pompa *(Pump Man)*

Kapal : MT. Sungai Gerong

1. Apakah tugas anda pada saat kegiatan pengoperasian IGS?

   Jawaban: Tugas saya pada saat pengoperasian IGS yaitu melaksanakan order dari mualim satu seperti mempersiapkan line-line IGS di deck dibantu oleh Kelasi dan Juru mudi dan melakukan perawatan seperti cleaning deck water seal tiap bulannya.

2. Apa yang menjadi hambatan pada saat pengoperasian IGS?

   Jawaban: Yang menjadihambatansaatpengoperasian IGS adalahkurangnyapengetahuan crew tentangpengoperasian.

3. Apa yang Pumpman dapatkan pada saat chief officer melakukan familirisasi ?

   Jawaban: Tank cleaning adalah pembersihan tanki saat kapal akan ganti minyak premium ke avtur dan untuk proses sampai masuk tank cleaning saya ikut sesuai perintah dari C/O.begitu juga adanya inert gas system

dikapal ini proses tank cleaanning lebih lama menurut saya karena seperti orderan C/O adanya purging baru gas freeing. Disitu saya yg kurang paham tetapi setelah C/O memberikan sebuah familirisasi untuk itu dapat saya pahami dan menjadi tambahan ilmu bagi saya.

4. Bagaimana tindakan anda pada saat mengetahui bahwa saranapengoperasian IGStidak bekerja dengan maksimal?

   Jawaban: Saya akan melaporanya kepada Mualim I sebagai Perwira yang bertanggung jawab tentang kondisi dari sarana yang sudah tidak layak tersebut.

7. Wawancara dengan Juru Mudi*(Able Seaman)*

1. Apakah tugas anda pada saat kegiatan pengoperasian IGS?

   Jawaban: Membantu Pump Mandalammenyiapkan line-line untuk IGS danmelaksanakan order dari Mualim 1.

2. Apakahsarana dan prasarana yang digunakan dalam pengoperasian IGS masihlayakdigunakan?

   Jawaban: Sarana prasarana di atas kapal masihlayaktetapimasihperluperawatan.

3. Bagaimana tindakan anda saat memasuki tanki saat melakukan mopping?

   Jawaban: Saya mengikuti order dari Chief officer dan bekerja dengan safety dan dengan familirisai dengan mengunnakan Perngoperasian inert gas dengan cara purging kita dapat melakukan dengan safety.

8. Wawancara dengan Kelasi*(Ordinary Seaman)*

1. Apakah tugas anda pada saat kegiatan pengoperasian IGS?

   Jawaban: Membantu Pump Man dalammenyiapkan line-line untuk IGS Apakah sarana dan prasarana yang digunakan dalam pengoperasian IGS masihlayakdigunakan?

2. Apakah sarana dan prasarana yang digunakan dalam pengoperasian IGS masihlayakdigunakan?

   Jawaban: Sarana prasarana di atas kapal masih layak tetapi masih perlu perawatan.

3. Bagaimana tindakan anda pada saat memasuki tanki saat akan melakukan mopping?

   Jawaban: Saya akan mengikuti order dari Mualim 1 untuk tanki yang sudah dapat dimasukin dan bekerja dengan safety.

4. Wawancara dengan KKM

Hasil wawancara yang dilakukan penelititerhadapNahkoda:

Nama : HARSONO

Jabatan : Chief Enginer (KKM)

Kapal : MT. Sungai Gerong

1. Apakah tujuan (pemasangan) Inert gas sistem ?

   Jawaban: Tujuan pemasangan Inert gas system adalah untuk memasukin gas lembam didalam tanki agar tidak terjadi ledakan,kebakaran dan untuk keselamatan jiwa seluruh crew kapal .

2. Bagaimana cara pengoperasian pengoperasian inert gas system terhadap pencegahan kecelakaan kerja diatas kapal tanker ?

   Jawaban: Saya sebagai KKM dikapal juga harus mengetahui bahwa pengoperasian inert gas sytem dijalankan karena tugas saya sebagai

mengawasi, merawat dan memperbaiki semua pesawat yang berada dikapal ini termasuk inert gas system sehingga pengoperasian dapat berjalan dengan baik sesuai dengan SOP yang tercantum di CCR tersebut officer deck harus memberitahukan engine room jika suda siap maka pengoperasian tersebut dilakukan oleh orang deck.

3. Apa yang menjadi hambatan dalam pengoperasian inert gas system?

   Jawaban: Yang menjadi hambatan jika crew kapal termasuk dalam perawatan jika tidak dilakukan perawatan secara berkala maka pengoperasian inert gas system akan terjadi masalah sehingga saya sebagai KKM akan mengawasi dan melakukan perbaikan jika terjadi masalah pada pesawat inert gas system.

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