Engine Room Simulator

ERS Sulzer 12RTA84C-III

Variable List

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1 DIRECTORY LIST

2 VARIABLE LIST PAGES

2.1 Page:0100 MD01** SEA WATER SYSTEM - PRESS / TEMP

A:					
B:	P00771	mWC			Static SW pressure
C:					
D:	P00603	bar			Main SW pump suction pressure
E:	P00604	bar			Main SW pump discharge pressure
F:	P00632	bar	L=1.6	H=---	Main SW line supply pressure
G:					
H:	P00630	bar	L=---	H=0.8	SW filter diff pressure (low suction)
I:	P00631	bar	L=---	H=0.8	SW filter diff pressure (high suction)
J:					
K:	T00620	degC			SW temp inlet Sea Chest
L:	T00617	degC	L=10.0	H=40.0	SW temp inlet main SW line
M:					
N:	T00624	degC			SW temp outlet FW cooler 1
O:	T00625	degC			SW temp outlet FW cooler 2
P:	T00627	degC			SW temp outlet Steam Condenser
Q:	T00626	degC			SW temp outlet Fresh W Generator
R:					
S:	T00623	degC			SW temp inlet recirc valve
T:					

2.2 Page:0101 MD01** SEA WATER SYSTEM - FLOWS

A:					
B:	G00641	ton/h			SW flow inlet low suction Sea Chest
C:	G00642	ton/h			SW flow inlet high suction Sea Chest
D:					
E:	G00654	ton/h			Main SW line flow
F:					
G:	G00602	ton/h			Main SW pump flow (total)
H:	G00633	ton/h			Auxl SW pump flow
I:					
J:					
K:	G00645	ton/h			SW flow inlet FW cooler 1
L:	G00646	ton/h			SW flow inlet FW cooler 2
M:	G00650	ton/h			SW flow inlet Steam Condenser
N:	G00647	ton/h			SW flow inlet Fresh W Generator
O:					
P:	G00643	ton/h			SW flow overboard
Q:	G00644	ton/h			SW flow recirculation
R:					
S:	G00608	ton/h			Emerg suction Main SW pump flow
T:					

2.3 Page:0102 MD01** SEA WATER SYSTEM - VALVES/PUMPS

A:			
B:	R00613	<0-1>	Main SW pump 1
C:	R00614	<0-1>	Main SW pump 2
D:	R00616	<0-1>	Auxl SW pump
E:			
F:	V00703	%	Main SW pumps choke valve
G:			
H:	V00670	<0-1>	Main FW cooler 1 SW shut off valve
I:	V00671	<0-1>	Main FW cooler 2 SW shut off valve
J:	V00673	<0-1>	Steam Condenser SW supply valve
K:	V00674	<0-1>	Fresh W Generator SW supply valve
L:			
M:	V00675	<0-1>	SW overboard shut off valve
N:	V00676	<0-1>	SW recirc line shut off valve
O:			
P:	V00700	<0-1>	Low suction Sea Chest inlet valve
Q:	V00701	<0-1>	High suction Sea Chest inlet valve
R:			
S:	V00708	<0-1>	Emerg suction Main SW pump valve
T:			

2.4 Page:0103 MD01** SEA WATER SYSTEM - EMERGENCY

A:			
B:	E00710	kW	SW Main Fire pump 1 power
C:	E00709	kW	SW Main Fire pump 2 power
D:			
E:	P00712	bar	SW Fire line pressure
F:	G00713	ton/h	SW Fire line flow
G:	V00714	<0-1>	SW Fire line supply valve
H:			
I:			
J:	E00720	kW	SW Emergency Fire pump power
K:	P00724	bar	SW Emergency Fire pump pressure
L:	G00723	ton/h	SW Emergency Fire line flow
M:			
N:	V00705	<0-1>	Bottum Sea Chest inlet valve
O:	G00640	ton/h	Bottum Sea Chest inlet flow
P:	V00704	<0-1>	X-over SW shut off valve
Q:	G00653	ton/h	X-over flow from Bottum Sea Chest
R:			
S:	V00702	<0-1>	Emergency Bilge suction valve
T:	G00652	ton/h	Emergency Bilge suction flow

2.5 Page:0110 MD01** SEA WATER SYSTEM - TEMP CONTROL (1/2)

A:					
B:					
C:	X00736	<0-1>			SW temp contr auto switch
D:	Z00737	%			SW temp contr manual output
E:					
F:	T00731	degC			SW temp contr set point
G:	T00732	degC			SW temp contr sensor signal
H:	Z00733	%			SW temp contr output signal
I:	V00730	%			SW temp contr valve pos
J:					
K:					
L:	T00617	degC	L=10.0	H=40.0	SW temp inlet main SW line
M:	T00623	degC			SW temp inlet recirc valve
N:					
O:					
P:	N00755	%			SW temp contr motor speed
Q:					
R:					
S:					
T:					

2.6 Page:0111 MD01** SEA WATER SYSTEM - TEMP CONTROL (2/2)

A:			
B:	X00742	<0-1>	SW temp contr HW PID select
C:			
D:			
E:	C00745	%/degC	SW temp contr gain
F:	C00746	sec	SW temp contr integration time
G:	C00747	sec	SW temp contr derivation time
H:	C00750	<0-10>	SW temp contr derivation range
I:			
J:			
K:	C00751	sec	SW temp contr valve tc
L:	C00752	sec	SW temp contr sensor tc
M:	X00753	<0-2>	SW temp contr valve hyst type
N:			
O:			
P:	X00743	<0-1>	SW temp contr motor actuator select
Q:	C00754	%/sec	SW temp contr motor constant
R:			
S:			
T:			

2.7 Page:0120 MD01** SEA WATER PUMPS

A:	V00703	%			Main SW pumps choke valve
B:					
C:	R00613	<0-1>			Main SW pump 1
D:	R00614	<0-1>			Main SW pump 2
E:	R00616	<0-1>			Auxl SW pump
F:					
G:	E00610	kW			Main SW pump 1 power
H:	E00611	kW			Main SW pump 2 power
I:	E00607	kW			Auxl SW pump power
J:					
K:	Z00600	%			Main SW pump efficiency
L:	N00601	%			Main SW pump speed
M:	P00604	bar			Main SW pump discharge pressure
N:					
O:	G00602	ton/h			Main SW pump flow (total)
P:	G00633	ton/h			Auxl SW pump flow
Q:					
R:	P00603	bar			Main SW pump suction pressure
S:	P00632	bar	L=1.6	H=---	Main SW line supply pressure
T:					

2.8 Page:0121 MD01** SEA WATER PUMP DATA ++

A:					
B:					
C:	X00613	<0-1>			Main SW pump 1 overload trip
D:	C00613	kW			Main SW pump 1 overload limit
E:	D00613	sec			Main SW pump 1 overload delay
F:					
G:					
H:	X00614	<0-1>			Main SW pump 2 overload trip
I:	C00614	kW			Main SW pump 2 overload limit
J:	D00614	sec			Main SW pump 2 overload delay
K:					
L:	X00601	<0-1>			Main SW pump speed setting (test)
M:	C00601	%			Main SW pump speed setting
N:					
O:	K00616	<0-2>			Main SW circulation flow area adjust
P:	K00610	ton/h			Main SW pump nominal flow
Q:	K00611	bar			Main SW pump nominal press rise
R:	K00612	bar			Main SW pump nominal press droop
S:	K00613	<0-2>			Main SW pump nominal power coeff
T:					

2.9 Page:0200 MD02** SHIP TRIM/HEEL/DRAFT

A:					
B:	C15200	<1-10>			Ballast tanks time speed up factor
C:					
D:	Z15490	deg			Ship trim angle (by stern)
E:	Z15491	deg			Ship heel angle (by port)
F:					
G:	X15491	m			Ship draft (fore)
H:	X15492	m			Ship draft (aft)
I:	X15493	m			Ship draft (midship/stbd)
J:	X15494	m			Ship draft (midship/port)
K:					
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.10 Page:0201 MD02** WATER BALLAST TANKS no 1

A:					
B:	L15210	m	L=---	H=14.8	Stbd WB tank no 1 level
C:	M15210	ton			Stbd WB tank no 1 content (total)
D:	M15211	ton			Stbd WB tank no 1 content (bottum)
E:	M15212	ton			Stbd WB tank no 1 content (wing)
F:	G15210	ton/h			Stbd WB tank no 1 inlet flow
G:	G15211	ton/h			Stbd WB tank no 1 outlet flow
H:					
I:	V15210	<0-1>			Stbd WB tank no 1 inlet valve
J:	V15211	<0-1>			Stbd WB tank no 1 outlet valve
K:					
L:	L15310	m	L=---	H=14.8	Port WB tank no 1 level
M:	M15310	ton			Port WB tank no 1 content (total)
N:	M15311	ton			Port WB tank no 1 content (bottum)
O:	M15312	ton			Port WB tank no 1 content (wing)
P:	G15310	ton/h			Port WB tank no 1 inlet flow
Q:	G15311	ton/h			Port WB tank no 1 outlet flow
R:					
S:	V15310	<0-1>			Port WB tank no 1 inlet valve
T:	V15311	<0-1>			Port WB tank no 1 outlet valve

2.11 Page:0202 MD02** WATER BALLAST TANKS no 2

A:					
B:	L15220	m	L=---	H=14.8	Stbd WB tank no 2 level
C:	M15220	ton			Stbd WB tank no 2 content (total)
D:	M15221	ton			Stbd WB tank no 2 content (bottum)
E:	M15222	ton			Stbd WB tank no 2 content (wing)
F:	G15220	ton/h			Stbd WB tank no 2 inlet flow
G:	G15221	ton/h			Stbd WB tank no 2 outlet flow
H:					
I:	V15220	<0-1>			Stbd WB tank no 2 inlet valve
J:	V15221	<0-1>			Stbd WB tank no 2 outlet valve
K:					
L:	L15320	m	L=---	H=14.8	Port WB tank no 2 level
M:	M15320	ton			Port WB tank no 2 content (total)
N:	M15321	ton			Port WB tank no 2 content (bottum)
O:	M15322	ton			Port WB tank no 2 content (wing)
P:	G15320	ton/h			Port WB tank no 2 inlet flow
Q:	G15321	ton/h			Port WB tank no 2 outlet flow
R:					
S:	V15320	<0-1>			Port WB tank no 2 inlet valve
T:	V15321	<0-1>			Port WB tank no 2 outlet valve

2.12 Page:0203 MD02** WATER BALLAST TANKS no 3

A:					
B:	L15230	m	L=---	H=14.8	Stbd WB tank no 3 level
C:	M15230	ton			Stbd WB tank no 3 content (total)
D:	M15231	ton			Stbd WB tank no 3 content (bottum)
E:	M15232	ton			Stbd WB tank no 3 content (wing)
F:	G15230	ton/h			Stbd WB tank no 3 inlet flow
G:	G15231	ton/h			Stbd WB tank no 3 outlet flow
H:					
I:	V15230	<0-1>			Stbd WB tank no 3 inlet valve
J:	V15231	<0-1>			Stbd WB tank no 3 outlet valve
K:					
L:	L15330	m	L=---	H=14.8	Port WB tank no 3 level
M:	M15330	ton			Port WB tank no 3 content (total)
N:	M15331	ton			Port WB tank no 3 content (bottum)
O:	M15332	ton			Port WB tank no 3 content (wing)
P:	G15330	ton/h			Port WB tank no 3 inlet flow
Q:	G15331	ton/h			Port WB tank no 3 outlet flow
R:					
S:	V15330	<0-1>			Port WB tank no 3 inlet valve
T:	V15331	<0-1>			Port WB tank no 3 outlet valve

2.13 Page:0204 MD02** WATER BALLAST TANKS no 4

A:					
B:	L15240	m	L=---	H=14.8	Stbd WB tank no 4 level
C:	M15240	ton			Stbd WB tank no 4 content (total)
D:	M15241	ton			Stbd WB tank no 4 content (bottum)
E:	M15242	ton			Stbd WB tank no 4 content (wing)
F:	G15240	ton/h			Stbd WB tank no 4 inlet flow
G:	G15241	ton/h			Stbd WB tank no 4 outlet flow
H:					
I:	V15240	<0-1>			Stbd WB tank no 4 inlet valve
J:	V15241	<0-1>			Stbd WB tank no 4 outlet valve
K:					
L:	L15340	m	L=---	H=14.8	Port WB tank no 4 level
M:	M15340	ton			Port WB tank no 4 content (total)
N:	M15341	ton			Port WB tank no 4 content (bottum)
O:	M15342	ton			Port WB tank no 4 content (wing)
P:	G15340	ton/h			Port WB tank no 4 inlet flow
Q:	G15341	ton/h			Port WB tank no 4 outlet flow
R:					
S:	V15340	<0-1>			Port WB tank no 4 inlet valve
T:	V15341	<0-1>			Port WB tank no 4 outlet valve

2.14 Page:0205 MD02** WATER BALLAST TANKS no 5

A:					
B:	L15250	m	L=---	H=14.8	Stbd WB tank no 5 level
C:	M15250	ton			Stbd WB tank no 5 content (total)
D:	M15251	ton			Stbd WB tank no 5 content (bottum)
E:	M15252	ton			Stbd WB tank no 5 content (wing)
F:	G15250	ton/h			Stbd WB tank no 5 inlet flow
G:	G15251	ton/h			Stbd WB tank no 5 outlet flow
H:					
I:	V15250	<0-1>			Stbd WB tank no 5 inlet valve
J:	V15251	<0-1>			Stbd WB tank no 5 outlet valve
K:					
L:	L15350	m	L=---	H=14.8	Port WB tank no 5 level
M:	M15350	ton			Port WB tank no 5 content (total)
N:	M15351	ton			Port WB tank no 5 content (bottum)
O:	M15352	ton			Port WB tank no 5 content (wing)
P:	G15350	ton/h			Port WB tank no 5 inlet flow
Q:	G15351	ton/h			Port WB tank no 5 outlet flow
R:					
S:	V15350	<0-1>			Port WB tank no 5 inlet valve
T:	V15351	<0-1>			Port WB tank no 5 outlet valve

2.15 Page:0206 MD02** WATER BALLAST TANKS no 6

A:					
B:	L15260	m	L=---	H=14.8	Stbd WB tank no 6 level
C:	M15260	ton			Stbd WB tank no 6 content (total)
D:	M15261	ton			Stbd WB tank no 6 content (bottum)
E:	M15262	ton			Stbd WB tank no 6 content (wing)
F:	G15260	ton/h			Stbd WB tank no 6 inlet flow
G:	G15261	ton/h			Stbd WB tank no 6 outlet flow
H:					
I:	V15260	<0-1>			Stbd WB tank no 6 inlet valve
J:	V15261	<0-1>			Stbd WB tank no 6 outlet valve
K:					
L:	L15360	m	L=---	H=14.8	Port WB tank no 6 level
M:	M15360	ton			Port WB tank no 6 content (total)
N:	M15361	ton			Port WB tank no 6 content (bottum)
O:	M15362	ton			Port WB tank no 6 content (wing)
P:	G15360	ton/h			Port WB tank no 6 inlet flow
Q:	G15361	ton/h			Port WB tank no 6 outlet flow
R:					
S:	V15360	<0-1>			Port WB tank no 6 inlet valve
T:	V15361	<0-1>			Port WB tank no 6 outlet valve

2.16 Page:0207 MD02** FORE/AFT PEAK WATER BALLAST TANKS

A:					
B:	L15200	m	L=---	H=9.8	Fore Peak WB tank level
C:	M15200	ton			Fore Peak WB tank content (total)
D:	M15201	ton			Fore Peak WB tank content (low)
E:	M15202	ton			Fore Peak WB tank content (high)
F:	G15200	ton/h			Fore Peak WB tank inlet flow
G:	G15201	ton/h			Fore Peak WB tank outlet flow
H:					
I:	V15200	<0-1>			Fore Peak WB tank inlet valve
J:	V15201	<0-1>			Fore Peak WB tank outlet valve
K:					
L:	L15300	m	L=---	H=9.8	Aft Peak WB tank level
M:	M15300	ton			Aft Peak WB tank content (total)
N:	M15301	ton			Aft Peak WB tank content (low)
O:	M15302	ton			Aft Peak WB tank content (high)
P:	G15300	ton/h			Aft Peak WB tank inlet flow
Q:	G15301	ton/h			Aft Peak WB tank outlet flow
R:					
S:	V15300	<0-1>			Aft Peak WB tank inlet valve
T:	V15301	<0-1>			Aft Peak WB tank outlet valve

2.17 Page:0208 MD02** WATER BALLAST LINES Flow / Press

A:			
B:	P00771	mWC	Static SW pressure
C:			
D:	P15401	bar	WB pump suction pressure
E:	P15402	bar	WB pump discharge pressure
F:			
G:	P15403	bar	WB Bottum line pressure
H:	P15404	bar	WB Filling line pressure
I:			
J:			
K:	G15400	ton/h	WB Sea Chest inlet flow
L:			
M:	G15405	ton/h	WB Bottum line suction flow
N:	G15406	ton/h	WB Bottum line discharge flow
O:	G15407	ton/h	WB Filling line discharge flow
P:	G15402	ton/h	WB overboard flow
Q:			
R:			
S:			
T:			

2.18 Page:0220 MD02** MAIN WATER BALLAST PUMPS

A:			
B:			
C:	G15410	ton/h	Water Ballast pump 1 flow
D:	E15410	kW	Water Ballast pump 1 power
E:			
F:	C15410	bar	Water Ballast pump 1 press rise constant
G:	C15411	bar	Water Ballast pump 1 press drop constant
H:	C15412	ton/h	Water Ballast pump 1 nom flow
I:	C15413	ton/h	Water Ballast pump 1 max flow
J:			
K:			
L:			
M:	G15420	ton/h	Water Ballast pump 2 flow
N:	E15420	kW	Water Ballast pump 2 power
O:			
P:	C15420	bar	Water Ballast pump 2 press rise constant
Q:	C15421	bar	Water Ballast pump 2 press drop constant
R:	C15422	ton/h	Water Ballast pump 2 nom flow
S:	C15423	ton/h	Water Ballast pump 2 max flow
T:			

2.19 Page:0221 MD02** AUXIL WATER BALLAST PUMP

A:					
B:					
C:	G15430	ton/h			Water Ballast pump 3 flow
D:	E15430	kW			Water Ballast pump 3 power
E:					
F:	C15430	t/h/bar			Water Ballast pump 3 flow drop constant
G:	C15431	bar			Water Ballast pump 3 max press (recirc)
H:	C15433	ton/h			Water Ballast pump 3 max flow
I:	C15434	kW			Water Ballast pump 3 nom power
J:					
K:					
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.20 Page:0230 MD02** ANTI HEELING SYSTEM (1/3)

A:					
B:	X15481	<0-1>			Anti Heeling pump 1 auto
C:	X15482	<0-1>			Anti Heeling pump 2 auto
D:					
E:	C15480	deg			Anti Heeling control set point
F:	C15481	deg			Anti Heeling control low dev (stop)
G:	C15482	deg			Anti Heeling control high dev (start)
H:					
I:	C15483	m			Anti Heeling control min tank level
J:	C15484	m			Anti Heeling control max tank level
K:	C15485	sec			Anti Heeling control restart delay
L:					
M:	Z15488	deg			Anti Heeling control sensor signal
N:	C15488	sec			Anti Heeling control sensor tc
O:					
P:	L15250	m	L=---	H=14.8	Stbd WB tank no 5 level
Q:	L15350	m	L=---	H=14.8	Port WB tank no 5 level
R:					
S:	X15483	<0-1>	L=---	H=1.0	Anti Heeling control fail
T:					

2.21 Page:0231 MD02** ANTI HEELING SYSTEM (2/3)

A:			
B:			
C:			
D:	P15471	bar	Anti Heeling pump suction pressure
E:	P15472	bar	Anti Heeling pump discharge pressure
F:	P15473	bar	Anti Heeling line stbd pressure
G:	P15474	bar	Anti Heeling line port pressure
H:			
I:	G15471	ton/h	Anti Heeling line stbd suction flow
J:	G15472	ton/h	Anti Heeling line port suction flow
K:	G15473	ton/h	Anti Heeling line stbd dicharge flow
L:	G15474	ton/h	Anti Heeling line port dicharge flow
M:			
N:	G15477	ton/h	Stbd WB tank heeling control outlet flow
O:	G15478	ton/h	Port WB tank heeling control outlet flow
P:			
Q:			
R:			
S:			
T:			

2.22 Page:0232 MD02** ANTI HEELING SYSTEM (3/3)

A:			
B:			
C:	G15450	ton/h	Anti Heeling pump 1 flow
D:	E15450	kW	Anti Heeling pump 1 power
E:			
F:	C15450	bar	Anti Heeling pump 1 press rise constant
G:	C15451	bar	Anti Heeling pump 1 press droop constant
H:	C15452	ton/h	Anti Heeling pump 1 nom flow
I:	C15453	ton/h	Anti Heeling pump 1 max flow
J:			
K:			
L:			
M:	G15460	ton/h	Anti Heeling pump 2 flow
N:	E15460	kW	Anti Heeling pump 2 power
O:			
P:	C15460	bar	Anti Heeling pump 2 press rise constant
Q:	C15461	bar	Anti Heeling pump 2 press droop constant
R:	C15462	ton/h	Anti Heeling pump 2 nom flow
S:	C15463	ton/h	Anti Heeling pump 2 max flow
T:			

2.23 Page:0300 MD03** HFO TRANSFER

A:			
B:			
C:	R00266	<0-1>	HFO transfer pump 1
D:	G00266	ton/h	HFO transfer pump 1 flow
E:	E00266	kW	HFO transfer pump 1 power
F:			
G:	R00267	<0-1>	HFO transfer pump 2
H:	G00267	ton/h	HFO transfer pump 2 flow
I:	E00267	kW	HFO transfer pump 2 power
J:			
K:	P00260	bar	HFO transfer pump suction press
L:	P00261	bar	HFO transfer pump discharge press
M:			
N:	G00269	ton/h	MDO Settling tank FO transfer flow
O:	T00269	ton/h	MDO Settling tank FO transfer temp
P:	V00269	<0-1>	MDO Settling tank FO supply valve
Q:			
R:			
S:			
T:			

2.24 Page:0301 MD03** MDO TRANSFER

A:			
B:	R00268	<0-1>	MDO transfer pump
C:	G00268	ton/h	MDO transfer pump flow
D:	E00268	kW	MDO transfer pump power
E:			
F:	P00262	bar	MDO transfer pump suction press
G:	P00263	bar	MDO transfer pump discharge press
H:			
I:	G00269	ton/h	MDO Settling tank FO transfer flow
J:	T00269	ton/h	MDO Settling tank FO transfer temp
K:	V00269	<0-1>	MDO Settling tank FO supply valve
L:			
M:			
N:	V00258	<0-1>	Transfer pump suction x-over valve
O:	G00258	ton/h	Transfer pump suction x-over flow
P:	V00259	<0-1>	Transfer pump discharge x-over valve
Q:	G00259	ton/h	Transfer pump discharge x-over flow
R:			
S:			
T:			

2.25 Page:0302 MD03** HFO BUNKER TANK - AFT

A:					
B:					
C:	L00202	m	L=---	H=---	Aft HFO Bunker tank FO level
D:					
E:	G00200	ton/h			Aft HFO Bunker tank inlet flow
F:	G00201	ton/h			Aft HFO Bunker tank outlet flow
G:					
H:	V00203	<0-1>			Aft HFO Bunker tank suction valve
I:	V00204	<0-1>			Aft HFO Bunker tank filling valve
J:					
K:					
L:	T00205	degC	L=40.0	H=---	Aft HFO Bunker tank FO temp
M:	V00206	%			Aft HFO Bunker tank steam control valve
N:	G00207	kg/h			Aft HFO Bunker tank steam flow
O:					
P:	T00206	degC			Aft HFO Bunker tank contr set point
Q:	C00206	%/degC			Aft HFO Bunker tank contr gain
R:	C00207	%			Aft HFO Bunker tank contr bias
S:					
T:					

2.26 Page:0303 MD03** HFO BUNKER TANK - STBD

A:					
B:					
C:	L00232	m	L=---	H=---	Stbd HFO Bunker tank FO level
D:					
E:	G00230	ton/h			Stbd HFO Bunker tank inlet flow
F:	G00231	ton/h			Stbd HFO Bunker tank outlet flow
G:					
H:	V00233	<0-1>			Stbd HFO Bunker tank suction valve
I:	V00234	<0-1>			Stbd HFO Bunker tank filling valve
J:					
K:					
L:	T00235	degC	L=40.0	H=---	Stbd HFO Bunker tank FO temp
M:	V00236	%			Stbd HFO Bunker tank steam control valve
N:	G00237	kg/h			Stbd HFO Bunker tank steam flow
O:					
P:	T00236	degC			Stbd HFO Bunker tank contr set point
Q:	C00236	%/degC			Stbd HFO Bunker tank contr gain
R:	C00237	%			Stbd HFO Bunker tank contr bias
S:					
T:					

2.27 Page:0304 MD03** HFO BUNKER TANK - PORT

A:					
B:					
C:	L00216	m	L=---	H=---	Port HFO Bunker tank FO level
D:					
E:	G00214	ton/h			Port HFO Bunker tank inlet flow
F:	G00215	ton/h			Port HFO Bunker tank outlet flow
G:					
H:	V00217	<0-1>			Port HFO Bunker tank suction valve
I:	V00220	<0-1>			Port HFO Bunker tank filling valve
J:					
K:					
L:	T00221	degC	L=40.0	H=---	Port HFO Bunker tank FO temp
M:	V00222	%			Port HFO Bunker tank steam control valve
N:	G00223	kg/h			Port HFO Bunker tank steam flow
O:					
P:	T00222	degC			Port HFO Bunker tank contr set point
Q:	C00222	%/degC			Port HFO Bunker tank contr gain
R:	C00223	%			Port HFO Bunker tank contr bias
S:					
T:					

2.28 Page:0305 MD03** HFO BUNKER TANK - FWD

A:					
B:					
C:	L00246	m	L=---	H=---	Fwd HFO Bunker tank FO level
D:					
E:	G00244	ton/h			Fwd HFO Bunker tank inlet flow
F:	G00245	ton/h			Fwd HFO Bunker tank outlet flow
G:					
H:	V00247	<0-1>			Fwd HFO Bunker tank suction valve
I:	V00250	<0-1>			Fwd HFO Bunker tank filling valve
J:					
K:					
L:	T00251	degC	L=40.0	H=---	Fwd HFO Bunker tank FO temp
M:	V00252	%			Fwd HFO Bunker tank steam control valve
N:	G00253	kg/h			Fwd HFO Bunker tank steam flow
O:					
P:	T00252	degC			Fwd HFO Bunker tank contr set point
Q:	C00252	%/degC			Fwd HFO Bunker tank contr gain
R:	C00253	%			Fwd HFO Bunker tank contr bias
S:					
T:					

2.29 Page:0306 MD03** MDO BUNKER TANK

A:					
B:					
C:	L00280	m	L=---	H=---	MDO Bunker tank FO level
D:					
E:	G00280	ton/h			MDO Bunker tank inlet flow
F:	G00281	ton/h			MDO Bunker tank outlet flow
G:					
H:	V00280	<0-1>			MDO Bunker tank suction valve
I:	V00281	<0-1>			MDO Bunker tank filling valve
J:					
K:					
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.30 Page:0310 MD03** FO OVERFLOW TANKS / SPILL OIL TANK

A:					
B:	L00270	m	L=---	H=0.5	HFO Overflow tank FO level
C:	G00270	ton/h			HFO Overflow tank inlet flow
D:	G00271	ton/h			HFO Overflow tank outlet flow
E:	G00272	ton/h	L=---	H=---	HFO Overflow tank FO deck spill
F:					
G:	L00284	m	L=---	H=0.5	MDO Overflow tank FO level
H:	G00284	ton/h			MDO Overflow tank inlet flow
I:	G00285	ton/h			MDO Overflow tank outlet flow
J:	G00286	ton/h	L=---	H=---	MDO Overflow tank FO deck spill
K:					
L:	L00263	m	L=---	H=2.5	Spill oil tank level
M:	G00260	ton/h			Spill oil tank inlet flow
N:	G00261	ton/h			Spill oil tank outlet flow
O:	G00256	<0-1>	L=---	H=1.0	Spill oil tank overflow (fire !!)
P:	C00256	<0-1>	L=---	H=---	Spill oil tank overflow fire inhibit
Q:					
R:					
S:					
T:					

2.31 Page:0320 MD03** FUEL BUNKERING STATION (1/2)

A:			
B:	X10830	<0-2>	Bunker select (0,1,2)=(XFO,MDO,HFO)
C:			
D:	V10831	<0-1>	Stbd Bunker filling shut off valve
E:	G10831	ton/h	Stbd Bunker filling line flow
F:	V10832	<0-1>	Port Bunker filling shut off valve
G:	G10832	ton/h	Port Bunker filling line flow
H:			
I:	P10820	bar	Bunker line FO pressure (input)
J:	T10820	dgrC	Bunker line FO temp (input)
K:			
L:	C10820	kJ/kg	Bunker FO heat value (input)
M:	C10821	kg/m3	Bunker FO density (input)
N:	C10822	cSt	Bunker FO viscosity (input)
O:	C10823	%	Bunker FO sulphor content (input)
P:	C10824	%	Bunker FO water content (input)
Q:	C10825	ppm	Bunker FO dirt (particles)(input)
R:	C10826	¨<0-100>	Bunker FO cetan number (input)
S:			
T:	C10830	<1-10>	Bunkering time speed up factor

2.32 Page:0321 MD03** FUEL BUNKERING STATION (2/2)

A:			
B:	C10800	kJ/kg	Standard HFO heat value (lower)
C:	C10801	kg/m3	Standard HFO density (at 15 dgrC)
D:	C10802	cSt	Standard HFO viscosity (at 50 dgrC)
E:	C10803	%	Standard HFO sulphor content
F:	C10804	%	Standard HFO water content
G:	C10805	ppm	Standard HFO dirt (particles)
H:	C10806	¨<0-100>	Standard HFO cetan number (ignition)
I:	P10800	bar	Standard HFO pressure
J:	T10800	dgrC	Standard HFO temperature
K:			
L:	C10810	kJ/kg	Standard MDO heat value (lower)
M:	C10811	kg/m3	Standard MDO density (at 15 dgrC)
N:	C10812	cSt	Standard MDO viscosity (at 50 dgrC)
O:	C10813	%	Standard MDO sulphor content
P:	C10814	%	Standard MDO water content
Q:	C10815	ppm	Standard MDO dirt (particles)
R:	C10816	¨<0-100>	Standard MDO cetan number (ignition)
S:	P10810	bar	Standard MDO pressure
T:	T10810	dgrC	Standard MDO temperature

2.33 Page:0330 MD03** BUNKER TANK FUEL QUALITY (1/3)

A:			
B:	C10840	kJ/kg	Aft HFO Bunker tank FO heat value
C:	C10841	kg/m3	Aft HFO Bunker tank FO density (15)
D:	C10842	cSt	Aft HFO Bunker tank FO viscosity (50)
E:	C10843	%	Aft HFO Bunker tank FO sulphor content
F:	C10844	%	Aft HFO Bunker tank FO water content
G:	C10845	ppm	Aft HFO Bunker tank FO dirt (particles)
H:	C10846	¨<0-100>	Aft HFO Bunker tank FO cetan number
I:			
J:			
K:			
L:	C10870	kJ/kg	Fwd HFO Bunker tank FO heat value
M:	C10871	kg/m3	Fwd HFO Bunker tank FO density (15)
N:	C10872	cSt	Fwd HFO Bunker tank FO viscosity (50)
O:	C10873	%	Fwd HFO Bunker tank FO sulphor content
P:	C10874	%	Fwd HFO Bunker tank FO water content
Q:	C10875	ppm	Fwd HFO Bunker tank FO dirt (particles)
R:	C10876	¨<0-100>	Fwd HFO Bunker tank FO cetan number
S:			
T:			

2.34 Page:0331 MD03** BUNKER TANK FUEL QUALITY (2/3)

A:			
B:	C10850	kJ/kg	Stbd HFO Bunker tank FO heat value
C:	C10851	kg/m3	Stbd HFO Bunker tank FO density (15)
D:	C10852	cSt	Stbd HFO Bunker tank FO viscosity (50)
E:	C10853	%	Stbd HFO Bunker tank FO sulphor content
F:	C10854	%	Stbd HFO Bunker tank FO water content
G:	C10855	ppm	Stbd HFO Bunker tank FO dirt (particles)
H:	C10856	¨<0-100>	Stbd HFO Bunker tank FO cetan number
I:			
J:			
K:			
L:	C10860	kJ/kg	Port HFO Bunker tank FO heat value
M:	C10861	kg/m3	Port HFO Bunker tank FO density (15)
N:	C10862	cSt	Port HFO Bunker tank FO viscosity (50)
O:	C10863	%	Port HFO Bunker tank FO sulphor content
P:	C10864	%	Port HFO Bunker tank FO water content
Q:	C10865	ppm	Port HFO Bunker tank FO dirt (particles)
R:	C10866	¨<0-100>	Port HFO Bunker tank FO cetan number
S:			
T:			

2.35 Page:0332 MD03** BUNKER TANK FUEL QUALITY (3/3)

A:			
B:	C10880	kJ/kg	MDO Bunker tank FO heat value
C:	C10881	kg/m3	MDO Bunker tank FO density (15)
D:	C10882	cSt	MDO Bunker tank FO viscosity (50)
E:	C10883	%	MDO Bunker tank FO sulphor content
F:	C10884	%	MDO Bunker tank FO water content
G:	C10885	ppm	MDO Bunker tank FO dirt (particles)
H:	C10886	¨<0-100>	MDO Bunker tank FO cetan number
I:			
J:			
K:			
L:			
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.36 Page:0340 MD03** BUNKER TANK SOUNDING SYSTEM (1/5)

A:					
B:					
C:	X10980	deg	L=---	H=---	Ship trim angle (by stern) (input)
D:	Y10980	deg	L=---	H=---	Ship heel angle (by port) (input)
E:					
F:	L10981	m	L=---	H=---	Aft HFO Bunker tank FO level (input)
G:	V10981	cbm	L=---	H=---	Aft HFO Bunker tank FO volum (result)
H:					
I:	D10981	kg/m3	L=---	H=---	Aft HFO Bunker tank FO dens (input)
J:	T10981	degC	L=---	H=---	Aft HFO Bunker tank FO temp (input)
K:	M10981	ton	L=---	H=---	Aft HFO Bunker tank FO mass (result)
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.37 Page:0341 MD03** BUNKER TANK SOUNDING SYSTEM (2/5)

A:					
B:					
C:	X10980	deg	L=---	H=---	Ship trim angle (by stern) (input)
D:	Y10980	deg	L=---	H=---	Ship heel angle (by port) (input)
E:					
F:	L10982	m	L=---	H=---	Port HFO Bunker tank FO level (input)
G:	V10982	cbm	L=---	H=---	Port HFO Bunker tank FO volum (result)
H:					
I:	D10982	kg/m3	L=---	H=---	Port HFO Bunker tank FO dens (input)
J:	T10982	degC	L=---	H=---	Port HFO Bunker tank FO temp (input)
K:	M10982	ton	L=---	H=---	Port HFO Bunker tank FO mass (result)
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.38 Page:0342 MD03** BUNKER TANK SOUNDING SYSTEM (3/5)

A:					
B:					
C:	X10980	deg	L=---	H=---	Ship trim angle (by stern) (input)
D:	Y10980	deg	L=---	H=---	Ship heel angle (by port) (input)
E:					
F:	L10983	m	L=---	H=---	Stbd HFO Bunker tank FO level (input)
G:	V10983	cbm	L=---	H=---	Stbd HFO Bunker tank FO volum (result)
H:					
I:	D10983	kg/m3	L=---	H=---	Stbd HFO Bunker tank FO dens (input)
J:	T10983	degC	L=---	H=---	Stbd HFO Bunker tank FO temp (input)
K:	M10983	ton	L=---	H=---	Stbd HFO Bunker tank FO mass (result)
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.39 Page:0343 MD03** BUNKER TANK SOUNDING SYSTEM (4/5)

A:					
B:					
C:	X10980	deg	L=---	H=---	Ship trim angle (by stern) (input)
D:	Y10980	deg	L=---	H=---	Ship heel angle (by port) (input)
E:					
F:	L10984	m	L=---	H=---	Fwd HFO Bunker tank FO level (input)
G:	V10984	cbm	L=---	H=---	Fwd HFO Bunker tank FO volum (result)
H:					
I:	D10984	kg/m3	L=---	H=---	Fwd HFO Bunker tank FO dens (input)
J:	T10984	degC	L=---	H=---	Fwd HFO Bunker tank FO temp (input)
K:	M10984	ton	L=---	H=---	Fwd HFO Bunker tank FO mass (result)
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.40 Page:0344 MD03** BUNKER TANK SOUNDING SYSTEM (5/5)

A:					
B:					
C:	X10980	deg	L=---	H=---	Ship trim angle (by stern) (input)
D:	Y10980	deg	L=---	H=---	Ship heel angle (by port) (input)
E:					
F:	L10985	m	L=---	H=---	MDO Bunker tank FO level (input)
G:	V10985	cbm	L=---	H=---	MDO Bunker tank FO volum (result)
H:					
I:	D10985	kg/m3	L=---	H=---	MDO Bunker tank FO dens (input)
J:	T10985	degC	L=---	H=---	MDO Bunker tank FO temp (input)
K:	M10985	ton	L=---	H=---	MDO Bunker tank FO mass (result)
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.41 Page:0400 MD04** HFO SETTLING TANK 1

A:					
B:	L00400	m	L=2.0	H=5.8	Settling tank 1 level
C:					
D:	L00402	m	L=---	H=0.8	Settling tank 1 water level
E:	Z00403	%			Settling tank 1 water concentration
F:					
G:	G00405	ton/h			Settling tank 1 transfer inlet flow
H:	G00406	ton/h			Settling tank 1 purif recirc flow
I:	G00407	ton/h			Settling tank 1 outlet flow
J:	G00404	ton/h	L=---	H=0.1	Settling tank 1 overflow
K:					
L:	V00416	<0-1>			Settling tank 1 transfer inlet valve
M:	V00417	<0-1>			Settling tank 1 purif recirc valve
N:	V00415	<0-1>			Settling tank 1 shut off valve
O:					
P:	V00414	<0-1>			Settling tank 1 drain valve
Q:	G00410	ton/h			Settling tank 1 drain flow
R:					
S:	C10909	<1-10>			Settling process time speed up factor
T:					

2.42 Page:0401 MD04** HFO SETTLING TANK 2

A:					
B:	L00440	m	L=2.0	H=5.8	Settling tank 2 level
C:					
D:	L00442	m	L=---	H=0.8	Settling tank 2 water level
E:	Z00443	%			Settling tank 2 water concentration
F:					
G:	G00445	ton/h			Settling tank 2 transfer inlet flow
H:	G00446	ton/h			Settling tank 2 purif recirc flow
I:	G00447	ton/h			Settling tank 2 outlet flow
J:	G00444	ton/h	L=---	H=0.1	Settling tank 2 overflow
K:					
L:	V00456	<0-1>			Settling tank 2 transfer inlet valve
M:	V00457	<0-1>			settling tank 2 purif recirc valve
N:	V00455	<0-1>			Settling tank 2 shut off valve
O:					
P:					
Q:	V00454	<0-1>			Settling tank 2 drain valve
R:	G00450	ton/h			Settling tank 2 drain flow
S:					
T:					

2.43 Page:0402 MD04** MDO SETTLING TANK

A:					
B:	L00480	m	L=2.0	H=5.8	Settling tank 3 level
C:					
D:	L00481	m	L=---	H=0.8	Settling tank 3 water level
E:	Z00480	%			Settling tank 3 water concentration
F:					
G:	G00481	ton/h			Settling tank 3 transfer inlet flow
H:	G00482	ton/h			Settling tank 3 purif recirc flow
I:	G00483	ton/h			Settling tank 3 outlet flow
J:	G00480	ton/h	L=---	H=0.1	Settling tank 3 overflow
K:					
L:	V00482	<0-1>			Settling tank 3 transfer inlet valve
M:	V00483	<0-1>			settling tank 3 purif recirc valve
N:	V00481	<0-1>			Settling tank 3 shut off valve
O:					
P:					
Q:	V00480	<0-1>			Settling tank 3 drain valve
R:	G00484	ton/h			Settling tank 3 drain flow
S:					
T:					

2.44 Page:0410 MD04** HFO SETTLING TANK 1/2 HEATING

A:					
B:	T00401	degC	L=60.0	H=90.0	Settling tank 1 temperature
C:	W00401	cSt	L=---	H=---	Settling tank 1 viscosity
D:					
E:	V00425	%			Settling tank 1 steam valve pos
F:	G00424	kg/h			Settling tank 1 heating steam flow
G:	T00430	degC			Settling tank 1 contr set point
H:	C00431	%/degC			Settling tank 1 contr gain
I:	C00432	%			Settling tank 1 contr bias
J:					
K:					
L:	T00441	degC	L=60.0	H=90.0	Settling tank 2 temperature
M:	W00441	cSt	L=---	H=---	Settling tank 2 viscosity
N:					
O:	V00466	<0-1>			Settling tank 2 heating shut off valve
P:	G00464	kg/h			Settling tank 2 heating steam flow
Q:	T00470	degC			Settling tank 2 contr set point
R:	C00471	%/degC			Settling tank 2 contr gain
S:	C00472	%			Settling tank 2 contr bias
T:					

2.45 Page:0411 MD04** MDO SETTLING TANK HEATING

A:					
B:	T00480	degC	L=40.0	H=70.0	Settling tank 3 temperature
C:	W00480	cSt	L=---	H=---	Settling tank 3 viscosity
D:					
E:	V00489	<0-1>			Settling tank 3 heating shut off valve
F:	G00488	kg/h			Settling tank 3 heating steam flow
G:	T00488	degC			Settling tank 3 contr set point
H:	C00488	%/degC			Settling tank 3 contr gain
I:	C00489	%			Settling tank 3 contr bias
J:					
K:					
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.46 Page:0430 MD03** SETTLING TANK FUEL QUALITY (1/2)

A:			
B:	C10900	kJ/kg	HFO Settling tank 1 FO heat value
C:	C10901	kg/m3	HFO Settling tank 1 FO density (15)
D:	C10902	cSt	HFO Settling tank 1 FO viscosity (50)
E:	C10903	%	HFO Settling tank 1 FO sulphor content
F:	C10904	%	HFO Settling tank 1 FO water content
G:	C10905	ppm	HFO Settling tank 1 FO dirt (particles)
H:	C10906	¨<0-100>	HFO Settling tank 1 FO cetan number
I:			
J:			
K:			
L:	C10910	kJ/kg	HFO Settling tank 2 FO heat value
M:	C10911	kg/m3	HFO Settling tank 2 FO density (15)
N:	C10912	cSt	HFO Settling tank 2 FO viscosity (50)
O:	C10913	%	HFO Settling tank 2 FO sulphor content
P:	C10914	%	HFO Settling tank 2 FO water content
Q:	C10915	ppm	HFO Settling tank 2 FO dirt (particles)
R:	C10916	¨<0-100>	HFO Settling tank 2 FO cetan number
S:			
T:			

2.47 Page:0431 MD03** SETTLING TANK FUEL QUALITY (2/2)

A:			
B:	C10920	kJ/kg	MDO Settling tank FO heat value
C:	C10921	kg/m3	MDO Settling tank FO density (15)
D:	C10922	cSt	MDO Settling tank FO viscosity (50)
E:	C10923	%	MDO Settling tank FO sulphor content
F:	C10924	%	MDO Settling tank FO water content
G:	C10925	ppm	MDO Settling tank FO dirt (particles)
H:	C10926	¨<0-100>	MDO Settling tank FO cetan number
I:			
J:			
K:			
L:			
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.48 Page:0500 MD05** HFO SERVICE TANK - FLOW/LEVEL

A:					
B:					
C:	L00300	m	L=1.8	H=5.8	HFO Service tank level
D:	L00302	m			HFO Service tank water level
E:	G00305	ton/h	L=---	H=0.1	HFO Service tank overflow
F:					
G:	G04076	ton/h			HFO Purifier flow to serv tank
H:	G04074	ton/h			HFO Purifier flow from serv tank
I:					
J:	G00038	ton/h			HFO return flow from ME fuel system
K:	V00326	<0-1>			HFO supply valve to ME
L:	V00327	<0-1>			HFO supply valve to Boiler
M:					
N:	G00040	ton/h			HFO supply flow to ME
O:	T00060	degC			HFO supply line to ME temp
P:					
Q:	V00310	<0-1>			HFO Service tank drain valve
R:	G00304	ton/h			HFO Service tank drain flow
S:					
T:					

2.49 Page:0501 MD05** MDO SERVICE TANK - FLOW / LEVEL

A:					
B:	L00340	m	L=1.5	H=5.8	MDO Service tank level
C:	L00342	m	L=---	H=---	MDO Service tank water level
D:	G00345	ton/h	L=---	H=0.1	MDO Service tank overflow
E:					
F:	V00350	<0-1>			MDO Service tank drain valve
G:	G00344	ton/h			MDO Service tank drain flow
H:					
I:					
J:					
K:	G00041	ton/h			DO supply flow to ME
L:	G00346	ton/h			DO supply flow to DG
M:	G05462	ton/h			DO supply flow to Boiler
N:					
O:					
P:	V00361	<0-1>			DO supply valve to DG 1
Q:	V00362	<0-1>			DO supply valve to DG 2
R:	V00363	<0-1>			DO supply valve to DG 3
S:	V00364	<0-1>			DO supply valve to DG 4
T:					

2.50 Page:0502 MD05** FO SERVICE TANK - HEATING

A:					
B:	T00302	degC	L=60.0	H=90.0	HFO Service tank temp
C:	W00303	cSt			HFO Service tank viscosity
D:					
E:	V00315	%			HFO Serv tank steam valve pos
F:	G00314	kg/h			HFO Serv tank heating steam flow
G:	T00320	degC			HFO Service tank contr set point
H:	C00321	%/degC			HFO Service tank contr gain
I:	C00322	%			HFO Service tank contr bias
J:					
K:					
L:	T00342	degC	L=30.0	H=70.0	MDO Service tank temp
M:	W00343	cSt			MDO Service tank viscosity
N:					
O:	V00355	%			MDO Serv tank steam valve pos
P:	G00354	kg/h			MDO Serv tank heating steam flow
Q:	T00360	degC			MDO Service tank contr set point
R:	C00361	%/degC			MDO Service tank contr gain
S:	C00362	%			MDO Service tank contr bias
T:					

2.51 Page:0503 MD05** FO SERVICE TANK - PURIFIER ROUTING

A:					
B:					
C:	V04066	<0-1>			HFO Purif 1 oil inlet valve
D:	V04082	<0-1>			HFO Purif 1 oil outlet valve
E:					
F:	V04080	<0-1>			HFO Purif 2 oil inlet valve
G:	V04081	<0-1>			HFO Purif 2 oil outlet valve
H:					
I:	V16004	<0-1>			HFO Purif 3 settl tank suction valve
J:	V16005	<0-1>			HFO Purif 3 service t suction valve
K:					
L:					
M:					
N:	V04167	<0-1>	L=---	H=---	DO Purif Service tank suction
O:	V04171	<0-1>	L=---	H=---	DO Purif Service tank discharge
P:	V04166	<0-1>	L=---	H=---	DO Purif Settling tank suction
Q:	V04170	<0-1>	L=---	H=---	DO Purif Settling tank discharge
R:					
S:					
T:					

2.52 Page:0530 MD05** SERVICE TANK FUEL QUALITY

A:			
B:	C10930	kJ/kg	HFO Service tank FO heat value
C:	C10931	kg/m3	HFO Service tank FO density (15 dgrC)
D:	C10932	cSt	HFO Service tank FO viscosity (50 dgrC)
E:	C10933	%	HFO Service tank FO sulphor content
F:	C10934	%	HFO Service tank FO water content
G:	C10935	ppm	HFO Service tank FO dirt (particles)
H:	C10936	¨<0-100>	HFO Service tank FO cetan number
I:			
J:			
K:			
L:	C10940	kJ/kg	MDO Service tank FO heat value
M:	C10941	kg/m3	MDO Service tank FO density (15 dgrC)
N:	C10942	cSt	MDO Service tank FO viscosity (50 dgrC)
O:	C10943	%	MDO Service tank FO sulphor content
P:	C10944	%	MDO Service tank FO water content
Q:	C10945	ppm	MDO Service tank FO dirt (particles)
R:	C10946	¨<0-100>	MDO Service tank FO cetan number
S:			
T:			

2.53 Page:0600 MD06** HFO PURIFIER no 1 - MAIN VARIABLES

A:					
B:					
C:	G04001	kg/h			HFO Purif 1 inlet line flow
D:	G04007	kg/h			HFO Purif 1 outlet line flow
E:	G04004	kg/h			HFO Purif 1 drain flow
F:	Z04018	%	L=0.1	H=0.8	HFO Purif 1 outlet flow water content
G:					
H:	L04001	%			HFO Purif 1 water interface level
I:	M04001	%			HFO Purif 1 bowl dirt content
J:					
K:	R04066	<0-1>			HFO Purif 1 running
L:	X04066	<0-1>			HFO Purif 1 ALCAP control on
M:					
N:					
O:	X04055	<0-1>			HFO Purif 1 bowl open
P:	P04025	bar			HFO Purif 1 outlet pressure
Q:					
R:	C04002	<0-10>			HFO Purif 1 bowl dirt content speed up
S:					
T:					

2.54 Page:0601 MD06** HFO PURIFIER no 1 - FLOW CONTROL

A:					
B:					
C:	R04061	<0-1>			HFO Purif 1 feed pump
D:	V04077	%			HFO Purif 1 flow control valve pos
E:					
F:	G04006	kg/h			HFO Purif 1 suction line flow
G:	T04020	degC			HFO Purif 1 suction flow temp
H:					
I:	G04001	kg/h			HFO Purif 1 inlet line flow
J:	T04021	degC	L=90.0	H=105.0	HFO Purif 1 heater FO outlet temp
K:					
L:	G04008	kg/h			HFO Purif 1 recirc flow
M:	T04022	degC			HFO Purif 1 recirc flow temp
N:					
O:					
P:	G04004	kg/h			HFO Purif 1 drain flow
Q:	V04056	<0-1>			HFO Purif 1 water drain valve
R:					
S:					
T:					

2.55 Page:0602 MD06** HFO PURIFIER no 1 - AUXIL SYSTEMS

A:					
B:	R04062	<0-1>			HFO Purif 1 electric motor start
C:	R04064	<0-1>			HFO Purif 1 electric motor brake on
D:	R04063	<0-1>			HFO Purif 1 emerg/high vibration stop
E:					
F:	R04066	<0-1>			HFO Purif 1 running
G:					
H:	C04001	A	L=---	H=40.0	HFO Purif 1 electic motor current
I:	E04001	kW			HFO Purif 1 electic motor power
J:					
K:					
L:	V04055	<0-1>			HFO Purif 1 water supply valve
M:	V04058	<0-1>			HFO Purif 1 water make up valve
N:	L04041	m	L=0.3	H=0.9	HFO Purif 1 water tank level
O:					
P:	G04041	kg/h	L=---	H=0.1	HFO Purif 1 water tank overflow
Q:					
R:					
S:					
T:					

2.56 Page:0610 MD06** HFO PURIFIER no 1 - TEMP CONTROL

A:					
B:	X04031	<0-1>			HFO Purif 1 temp contr auto switch
C:	Z04032	%			HFO Purif 1 temp contr manual output
D:					
E:	T04030	degC			HFO Purif 1 temp contr set point
F:	T04021	degC	L=90.0	H=105.0	HFO Purif 1 heater FO outlet temp
G:	V04024	%			HFO Purif 1 heater steam valve pos
H:					
I:	G04023	kg/h			HFO Purif 1 heater steam flow
J:	T04020	degC			HFO Purif 1 suction flow temp
K:					
L:					
M:					
N:	X04035	<0-1>			HFO Purif 1 temp contr HW PID select
O:					
P:	C04033	%/degC			HFO Purif 1 temp contr gain
Q:	C04034	sec			HFO Purif 1 temp contr integr time
R:	C04036	sec			HFO Purif 1 temp contr deriv. time
S:					
T:					

2.57 Page:0611 MD06** HFO PURIFIER no 1 - ALCAP CONTROL

A:					
B:	X04066	<0-1>			HFO Purif 1 ALCAP control on
C:	X04065	<0-1>			HFO Purif 1 ALCAP control manual discharge
D:	X04026	<0-7>	L=---	H=1.0	HFO Purif 1 ALCAP trip indicator
E:					
F:	T04001	sec			HFO Purif 1 max time between discharge
G:	T04002	sec			HFO Purif 1 min time between discharge
H:					
I:	Z04019	%			HFO Purif 1 max water content margin
J:	Z04020	%			HFO Purif 1 water content referance
K:	Z04018	%	L=0.1	H=0.8	HFO Purif 1 outlet flow water content
L:					
M:	V04047	<0-1>			HFO Purif 1 closing valve
N:	V04046	<0-1>			HFO Purif 1 opening valve
O:	V04050	<0-1>			HFO Purif 1 displ./cond water
P:	V04051	<0-1>			HFO Purif 1 FO inlet valve
Q:	V04056	<0-1>			HFO Purif 1 water drain valve
R:					
S:					
T:					

2.58 Page:0700 MD07** HFO PURIFIER no 2 - MAIN VARIABLES

A:					
B:					
C:	G24001	kg/h			HFO Purif 2 inlet line flow
D:	G24007	kg/h			HFO Purif 2 outlet line flow
E:	G24004	kg/h			HFO Purif 2 drain flow
F:	Z24018	%	L=0.1	H=0.8	HFO Purif 2 outlet oil water content
G:					
H:	L24001	%			HFO Purif 2 water interface level
I:	M24001	%			HFO Purif 2 bowl dirt content
J:					
K:	R24066	<0-1>			HFO Purif 2 running
L:	X24066	<0-1>			HFO Purif 2 ALCAP control on
M:					
N:					
O:	X24055	<0-1>			HFO Purif 2 bowl open
P:	P24025	bar			HFO Purif 2 outlet pressure
Q:					
R:	C24002	<0-10>			HFO Purif 2 bowl dirt content speed up
S:					
T:					

2.59 Page:0701 MD07** HFO PURIFIER no 2 - FLOW CONTROL

A:					
B:					
C:	R24061	<0-1>			HFO Purif 2 feed pump
D:	V24077	%			HFO Purif 2 flow control valve pos
E:					
F:	G24006	kg/h			HFO Purif 2 suction line flow
G:	T24020	degC			HFO Purif 2 suction flow temp
H:					
I:	G24001	kg/h			HFO Purif 2 inlet line flow
J:	T24021	degC	L=90.0	H=105.0	HFO Purif 2 heater FO outlet temp
K:					
L:	G24008	kg/h			HFO Purif 2 recirc flow
M:	T24022	degC			HFO Purif 2 recirc flow temp
N:					
O:					
P:	G24004	kg/h			HFO Purif 2 drain flow
Q:	V24056	<0-1>			HFO Purif 2 water drain valve
R:					
S:					
T:					

2.60 Page:0702 MD07** HFO PURIFIER no 2 - AUXIL SYSTEMS

A:					
B:	R24062	<0-1>			HFO Purif 2 electric motor start
C:	R24064	<0-1>			HFO Purif 2 electric motor brake on
D:	R24063	<0-1>			HFO Purif 2 emerg./high vibration stop
E:					
F:	R24066	<0-1>			HFO Purif 2 running
G:					
H:	C24001	A	L=---	H=40.0	HFO Purif 2 electric motor current
I:	E24001	kW			HFO Purif 2 electric motor power
J:					
K:					
L:	V24055	<0-1>			HFO Purif 2 water supply valve
M:	V24058	<0-1>			HFO Purif 2 water make up valve
N:	L24041	m	L=0.3	H=0.9	HFO Purif 2 water tank level
O:					
P:	G24041	kg/h	L=---	H=0.1	HFO Purif 2 water tank overflow
Q:					
R:					
S:					
T:					

2.61 Page:0710 MD07** HFO PURIFIER no 2 - TEMP CONTROL

A:					
B:	X24031	<0-1>			HFO Purif 2 temp contr auto switch
C:	Z24032	%			HFO Purif 2 temp contr manual output
D:					
E:	T24030	degC			HFO Purif 2 temp contr set point
F:	T24021	degC	L=90.0	H=105.0	HFO Purif 2 heater FO outlet temp
G:	V24024	%			HFO Purif 2 heater steam valve pos
H:					
I:	G24023	kg/h			HFO Purif 2 heater steam flow
J:	T24020	degC			HFO Purif 2 suction flow temp
K:					
L:					
M:					
N:	X24035	<0-1>			HFO Purif 2 temp contr HW PID select
O:					
P:	C24033	%/degC			HFO Purif 2 temp contr gain
Q:	C24034	sec			HFO Purif 2 temp contr integr time
R:	C24036	sec			HFO Purif 2 temp contr deriv. time
S:					
T:					

2.62 Page:0711 MD07** HFO PURIFIER no 2 - ALCAP CONTROL

A:					
B:	X24066	<0-1>			HFO Purif 2 ALCAP control on
C:	X24065	<0-1>			HFO Purif 2 ALCAP control manual discharge
D:	X24026	<0-7>	L=---	H=1.0	HFO Purif 2 ALCAP trip indicator
E:					
F:	T24001	sec			HFO Purif 2 max time between discharge
G:	T24002	sec			HFO Purif 2 min time between discharge
H:					
I:	Z24019	%			HFO Purif 2 max water content margin
J:	Z24020	%			HFO Purif 2 water content referance
K:	Z24018	%	L=0.1	H=0.8	HFO Purif 2 outlet oil water content
L:					
M:	V24047	<0-1>			HFO Purif 2 closing valve
N:	V24046	<0-1>			HFO Purif 2 opening valve
O:	V24050	<0-1>			HFO Purif 2 displ./cond water
P:	V24051	<0-1>			HFO Purif 2 FO inlet valve
Q:	V24056	<0-1>			HFO Purif 2 water drain valve
R:					
S:					
T:					

2.63 Page:0800 MD08** HFO PURIFIER no 3 - MAIN VARIABLES

A:					
B:	G16020	kg/h			HFO Purif 3 inlet flow
C:	T16020	dgrC			HFO Purif 3 inlet temp
D:	Z16020	%			HFO Purif 3 inlet water content
E:	X16020	ppm			HFO Purif 3 inlet dirt content
F:					
G:	G16022	kg/h			HFO Purif 3 outlet flow (clean)
H:	Z16022	%			HFO Purif 3 outlet water content
I:	X16022	ppm			HFO Purif 3 outlet dirt content
J:					
K:	G16026	kg/h			HFO Purif 3 sludge flow (total)
L:	Z16026	%	L=---	H=70.0	HFO Purif 3 sludge oil content
M:					
N:	G16024	kg/h			HFO Purif 3 sludge flow
O:	G16025	kg/h			HFO Purif 3 shooting flow
P:					
Q:	D16020	kg/cbm			HFO Purif 3 inlet flow density (15 dgrC)
R:	C16021	%			HFO Purif 3 gravity ring setting
S:					
T:					

2.64 Page:0801 MD08** HFO PURIFIER no 3 - FLOW CONTROL

A:			
B:	N16003	%	HFO Purif 3 pump speed setting
C:	N16004	rpm	HFO Purif 3 pump speed
D:	G16004	kg/h	HFO Purif 3 pump flow
E:	E16004	kW	HFO Purif 3 pump power
F:	G16002	kg/h	HFO Purif 3 pump recirc flow
G:	G16003	kg/h	HFO Purif 3 pump direct flow
H:			
I:	N16030	rpm	HFO Purif 3 speed
J:	E16030	kW	HFO Purif 3 power
K:			
L:	G16001	kg/h	HFO Purif 3 suction flow
M:	T16001	dgrC	HFO Purif 3 suction temp
N:	Z16001	%	HFO Purif 3 suction water content
O:	X16001	ppm	HFO Purif 3 suction dirt content
P:	G16060	kg/h	HFO Purif 3 discharge flow
Q:	T16060	dgrC	HFO Purif 3 discharge temp
R:	Z16060	%	HFO Purif 3 discharge water content
S:	X16060	ppm	HFO Purif 3 discharge dirt content
T:			

2.65 Page:0802 MD08** HFO PURIFIER no 3 - AUXIL SYSTEMS

A:					
B:					
C:	L16070	m	L=0.3	H=0.9	HFO Purif 3 water tank level
D:					
E:					
F:	G16070	kg/h			HFO Purif 3 water tank make up flow
G:	G16071	kg/h			HFO Purif 3 water tank outlet flow
H:					
I:	G16072	kg/h	L=---	H=0.1	HFO Purif 3 water tank overflow
J:					
K:					
L:					
M:	G16041	kg/h			HFO Purif 3 flush water flow
N:	G16042	kg/h			HFO Purif 3 operating water flow
O:	G16043	kg/h			HFO Purif 3 make up water flow
P:					
Q:					
R:					
S:					
T:					

2.66 Page:0810 MD08** HFO PURIFIER no 3 - TEMP CONTROL

A:					
B:	X16010	<0-1>			HFO Purif 3 temp contr auto switch
C:	Z16010	%			HFO Purif 3 temp contr manual output
D:					
E:	T16012	degC			HFO Purif 3 temp contr set point
F:	T16011	dgrC	L=90.0	H=105.0	HFO Purif 3 heater outlet temp
G:	V16011	%			HFO Purif 3 heater steam valve pos
H:					
I:	G16011	kg/h			HFO Purif 3 heater steam flow
J:	T16010	dgrC			HFO Purif 3 heater inlet temp
K:					
L:	C16010	%/degC			HFO Purif 3 temp contr gain
M:	C16011	sec			HFO Purif 3 temp contr integr time
N:	C16012	sec			HFO Purif 3 temp contr deriv. time
O:					
P:					
Q:					
R:					
S:					
T:					

2.67 Page:0811 MD08** HFO PURIFIER no 3 - SHOOTING CONTROL

A:					
B:	X16050	<0-1>			HFO Purif 3 ready
C:	X16051	<0-1>			HFO Purif 3 auto control
D:					
E:	X16030	<0-5>			HFO Purif 3 logic state
F:					
G:	X16032	<0-1>			HFO Purif 3 discharge press ok
H:	X16033	<0-1>			HFO Purif 3 water seal lost
I:	X16034	<0-1>			HFO Purif 3 bowl open
J:					
K:	V16041	<0-1>			HFO Purif 3 flush water valve
L:	V16042	<0-1>			HFO Purif 3 operating water valve
M:	V16043	<0-1>			HFO Purif 3 make up water valve
N:	L16020	%			HFO Purif 3 water interface level
O:	M16020	%			HFO Purif 3 bowl dirt content
P:	C16020	<0-10>			HFO Purif 3 bowl dirt content speed up
Q:					
R:	X16052	sec			HFO Purif 3 shoot interval counter
S:	C16052	sec			HFO Purif 3 shoot interval limit
T:					

2.68 Page:0900 MD09** DO PURIFIER SYSTEM (1/3)

A:					
B:	G04101	kg/h			DO Purif inlet flow
C:	G04105	kg/h			DO Purif outlet flow (clean)
D:	G04102	kg/h			DO Purif sludge flow (dirty)
E:	G04103	kg/h			DO Purif drain flow (shooting)
F:	X04111	%			DO Purif gravity ring (100=max diam)
G:					
H:	Z04115	%			DO Purif outlet flow dirt index
I:	Z04116	%	L=---	H=90.0	DO Purif sludge flow oil content
J:					
K:	X04164	<0-2>			DO Purif auto switch
L:	R04160	<0-1>			DO Purif start/stop (centrifuge)
M:	V04146	<0-1>	L=---	H=---	DO Purif make up water valve
N:	V04147	<0-1>	L=---	H=---	DO Purif operating water valve
O:	V04150	<0-1>	L=---	H=---	DO Purif seal/flush water valve
P:	V04151	<0-1>	L=---	H=---	DO Purif FO inlet valve
Q:					
R:	X04155	<0-1>	L=---	H=---	DO Purif bowl open
S:	X04162	<0-6>			DO Purif state (indication)
T:					

2.69 Page:0901 MD09** DO PURIFIER SYSTEM (2/3)

A:					
B:	N04110	%			DO Purif feed pump speed setting
C:	R04161	<0-1>			DO Purif feed pump
D:	E04161	kW			DO Purif feed pump power
E:					
F:	V04157	<0-1>	L=---	H=---	DO Purif bypass feed valve
G:					
H:					
I:	G04106	kg/h			DO Purif suction line flow
J:	T04120	degC			DO Purif suction flow temp
K:					
L:	G04107	kg/h			DO Purif discharge line flow
M:	T04117	degC			DO Purif discharge flow temp
N:					
O:					
P:	N04160	rpm			DO Purifier motor speed
Q:	E04160	kW			DO Purifier motor power
R:	I04160	A			DO Purifier motor current
S:					
T:					

2.70 Page:0902 MD09** DO PURIFIER SYSTEM (3/3)

A:					
B:	C10402	min			DO Purif auto shooting interval
C:					
D:	V04153	<0-1>	L=---	H=---	DO Purif hot flush water supply valve
E:	V04154	<0-1>	L=---	H=---	DO Purif heater steam shut off valve
F:					
G:					
H:	V04152	<0-1>	L=---	H=---	DO Purif water tank make up valve
I:	G04140	kg/h			DO Purif water make up flow
J:	L04141	m	L=0.3	H=0.9	DO Purif water tank level
K:					
L:	G04141	kg/h	L=---	H=0.1	DO Purif water overflow
M:					
N:	L04101	%			DO Purif water interface level
O:	M04101	%			DO Purif bowl dirt content
P:	C04101	<0-10>			DO Purif bowl dirt content speed up
Q:					
R:					
S:					
T:					

2.71 Page:0910 MD09** DO PURIFIER SYSTEM - TEMP CONTROL

A:					
B:	X04131	<0-1>			DO Purif temp contr auto switch
C:	Z04132	%			DO Purif temp contr manual output
D:					
E:	T04130	degC			DO Purif temp contr set point
F:	T04121	degC	L=45.0	H=70.0	DO Purif heater outlet temp
G:	V04124	%			DO Purif heater valve pos
H:					
I:	G04123	kg/h			DO Purif heater steam flow
J:	T04120	degC			DO Purif suction flow temp
K:					
L:					
M:					
N:	X04135	<0-1>			DO Purif temp contr HW PID select
O:					
P:	C04133	%/degC			DO Purif temp contr gain
Q:	C04134	sec			DO Purif temp contr integr time
R:	C04136	sec			DO Purif temp contr deriv. time
S:					
T:					

2.72 Page:1000 MD10** ME FW SYSTEM - MAIN VARIABLES

A:					
B:	P01000	bar			LTFW pump suction pressure
C:	P01001	bar	L=2.1	H=---	LTFW pump discharge pressure
D:	P01002	bar			LTFW/HTFW junction pressure
E:					
F:	P01003	bar			HTFW pump suction pressure
G:	P01004	bar			HTFW pump discharge pressure
H:	P01005	bar	L=2.5	H=---	HTFW press inlet ME
I:	P01006	bar			HTFW press inlet FWC 1/2
J:					
K:	T01013	degC			LTFW temp outlet FWC 1
L:	T01014	degC			LTFW temp outlet FWC 2
M:	T01015	degC	L=26.0	H=36.0	LTFW temp outlet LTFW pumps
N:	T01016	degC			LTFW temp outlet LT/HT junction
O:					
P:	T01017	degC			HTFW temp outlet HTFW pumps
Q:	T01010	degC	L=60.0	H=---	HTFW temp inlet ME
R:	T01011	degC	L=---	H=88.0	HTFW temp outlet ME
S:	T01012	degC			HTFW temp inlet FWC 1/2
T:					

2.73 Page:1001 MD10** ME FW SYSTEM - AUXIL VARIABLES

A:			
B:	T01030	degC	ME AIRC 1 coolw outlet temp
C:	T01031	degC	ME AIRC 2 coolw outlet temp
D:	T01029	degC	ME AIRC 3 coolw outlet temp
E:			
F:	T01032	degC	ME LOC 1 coolw outlet temp
G:	T01033	degC	ME LOC 2 coolw outlet temp
H:			
I:	T01038	degC	ME TBCH LOC coolw outlet temp
J:			
K:	T01036	degC	TG LOC coolw outlet temp
L:	T01035	degC	Air Compr coolw outlet temp
M:	T01039	degC	Air Condition coolw outlet temp
N:	T01037	degC	Stern tube LOC coolw outlet temp
O:			
P:	T01020	degC	HTFW temp outlet Fresh W Generator
Q:			
R:	T01021	degC	HTFW temp inlet ME Preheater
S:	T01022	degC	HTFW temp outlet ME Preheater
T:			

2.74 Page:1002 MD10** ME FW SYSTEM - HTFW FLOWS

A:			
B:	G01050	ton/h	HTFW flow inlet ME
C:	G01051	ton/h	HTFW flow inlet recirc valve
D:	G01052	ton/h	LTFW flow inlet recirc valve
E:			
F:	G01054	ton/h	HTFW flow to FWC 1/2
G:	G01055	ton/h	LTFW flow to FWC 1/2
H:			
I:	G01056	ton/h	LTFW flow inlet FWC 1
J:	G01057	ton/h	LTFW flow inlet FWC 2
K:	G01060	ton/h	LTFW flow bypass FWC 1/2
L:			
M:			
N:			
O:	G01023	ton/h	HTFW flow inlet Fresh W Generator
P:	G01024	ton/h	HTFW flow inlet ME Preheater
Q:			
R:			
S:			
T:			

2.75 Page:1003 MD10** ME FW SYSTEM - HTFW VALVES / PUMPS

A:			
B:			
C:	R01110	<0-1>	Main HTFW pump 1
D:	R01111	<0-1>	Main HTFW pump 2
E:	R01112	<0-1>	Auxl HTFW pump
F:			
G:	V06733	<0-1>	Fresh W Gen FW inlet shut off valve
H:	V06734	<0-1>	Fresh W Gen FW outlet shut off valve
I:	V06735	%	Fresh W Gen FW bypass valve (manual)
J:			
K:	V01140	<0-1>	ME Preheater inlet valve
L:	V01141	<0-1>	ME Preheater bypass valve
M:			
N:	V01142	<0-1>	ME Preheater steam shut off valve
O:	G01143	kg/h	ME Preheater steam flow
P:			
Q:	V01163	<0-1>	HTFW drain valve
R:	V01164	<0-1>	HTFW vent valve
S:	V01113	<0-1>	HTFW recirc bypass valve
T:			

2.76 Page:1004 MD10** ME FW SYSTEM - LTFW FLOWS

A:			
B:			
C:	G01061	ton/h	LTFW pump flow (total)
D:			
E:			
F:	G01070	ton/h	ME AIRC 1 coolw flow
G:	G01071	ton/h	ME AIRC 2 coolw flow
H:	G01069	ton/h	ME AIRC 3 coolw flow
I:			
J:			
K:	G01072	ton/h	ME LOC 1 coolw flow
L:	G01073	ton/h	ME LOC 2 coolw flow
M:			
N:	G01078	ton/h	ME TBCH LOC coolw flow
O:			
P:	G01077	ton/h	Stern tube LOC coolw flow
Q:	G01075	ton/h	Air Compressor coolw flow
R:	G01079	ton/h	Air Conditioning coolw flow
S:			
T:			

2.77 Page:1005 MD10** ME FW SYSTEM - LTFW VALVES / PUMPS

A:					
B:					
C:	R01120	<0-1>			Main LTFW pump 1
D:	R01121	<0-1>			Main LTFW pump 2
E:	R01122	<0-1>			Auxl LTFW pump
F:					
G:	V01123	<0-1>			LTFW FWC 1 shut off valve
H:	V01124	<0-1>			LTFW FWC 2 shut off valve
I:	V01125	<0-1>			LTFW FWC 1/2 bypass valve
J:					
K:	V01130	<0-1>			ME AIRC 1 coolw shut off valve
L:	V01131	<0-1>			ME AIRC 2 coolw shut off valve
M:	V01129	<0-1>			ME AIRC 3 coolw shut off valve
N:					
O:	V01138	<0-1>			ME TBCH LOC coolw shut off valve
P:	V01132	<0-1>			ME LOC 1 coolw shut off valve
Q:	V01133	<0-1>			ME LOC 2 coolw shut off valve
R:					
S:	V01137	<0-1>			Stern tube LOC coolw shut off valve
T:					

2.78 Page:1006 MD10** ME FW SYSTEM - EXPANSION TANK

A:					
B:	L01150	m	L=0.4	H=1.7	ME FW exp tank level
C:					
D:	R01152	<0-1>			ME FW exp tank make up pump
E:	G01153	ton/h			ME FW exp tank make up flow
F:	G01154	ton/h	L=---	H=0.1	ME FW exp tank overflow
G:					
H:					
I:	Z01160	ppm	L=---	H=60.0	ME FW system salinity
J:	Z01161	ppm	L=---	H=30.0	ME FW system oil content
K:					
L:	Z01164	%	L=---	H=5.0	ME FW system gas detector (cyl crack)
M:					
N:	G01165	kg/h			ME FW system FW loss (leak/boil off)
O:					
P:	G01167	ton/h			HTFW drain valve flow
Q:	G01168	ton/h			HTFW vent valve flow
R:					
S:					
T:					

2.79 Page:1010 MD10** ME FW SYSTEM - HTFW CONTROL (1/4)

A:					
B:	X01174	<0-1>			HTFW temp contr auto switch
C:	Z01175	%			HTFW temp contr manual output
D:					
E:	T01171	degC			HTFW temp contr set point
F:	T01172	degC			HTFW temp contr sensor signal
G:	Z01176	%			HTFW temp contr output signal
H:	Z01173	%			HTFW temp contr valve command
I:	V01170	%			HTFW temp contr valve pos
J:					
K:	T01011	degC	L=---	H=88.0	HTFW temp outlet ME
L:	T01010	degC	L=60.0	H=---	HTFW temp inlet ME
M:					
N:					
O:	N01212	%			HTFW temp contr motor speed
P:					
Q:					
R:					
S:					
T:					

2.80 Page:1011 MD10** ME FW SYSTEM - HTFW CONTROL (2/4)

A:			
B:	X01200	<0-1>	HTFW temp contr HW PID select
C:			
D:			
E:	C01201	%/degC	HTFW temp contr gain
F:	C01202	sec	HTFW temp contr integration time
G:	C01203	sec	HTFW temp contr derivation time
H:	C01204	<0-10>	HTFW temp contr derivation range
I:			
J:			
K:	C01205	sec	HTFW temp contr valve tc
L:	C01206	sec	HTFW temp contr sensor tc
M:	X01176	<0-2>	HTFW temp contr valve hyst type
N:			
O:			
P:	X01210	<0-1>	HTFW temp contr motor actuator select
Q:	C01211	%/sec	HTFW temp contr motor constant
R:			
S:			
T:			

2.81 Page:1012 MD10** ME FW SYSTEM - HTFW CONTROL (3/4)

A:					
B:	X11101	<0-1>			HTFW slave contr auto switch
C:	Z11105	%			HTFW slave contr manual output
D:					
E:	T11101	degC			HTFW slave contr set point
F:	T11102	degC			HTFW slave contr sensor signal
G:	Z11106	%			HTFW slave contr output signal
H:	Z11107	%			HTFW slave contr feed forw signal
I:					
J:	Z11104	%			HTFW slave contr valve command
K:	V01170	%			HTFW temp contr valve pos
L:					
M:	T01011	degC	L=---	H=88.0	HTFW temp outlet ME
N:	T01010	degC	L=60.0	H=---	HTFW temp inlet ME
O:					
P:					
Q:					
R:					
S:					
T:					

2.82 Page:1013 MD10** ME FW SYSTEM - HTFW CONTROL (4/4)

A:			
B:	X11100	<0-1>	HTFW control mode (0=single ,1=cascade)
C:			
D:			
E:	C11101	%/degC	HTFW slave contr gain
F:	C11102	sec	HTFW slave contr integration time
G:	C11103	sec	HTFW slave contr derivation time
H:	C11104	<0-10>	HTFW slave contr derivation range
I:			
J:	C11108	sec	HTFW slave contr sensor tc
K:	C11105	%/%	HTFW slave contr feed forw gain
L:	C11106	sec	HTFW slave contr feed forw tc 1
M:	C11107	sec	HTFW slave contr feed forw tc 2
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.83 Page:1014 MD10** ME FW SYSTEM - LTFW CONTROL (1/2)

A:					
B:	X01224	<0-1>			LTFW temp contr auto switch
C:	Z01225	%			LTFW temp contr manual output
D:					
E:	T01221	degC			LTFW temp contr set point
F:	T01222	degC			LTFW temp contr sensor signal
G:	Z01223	%			LTFW temp contr output signal
H:	V01220	%			LTFW temp contr valve pos
I:					
J:					
K:	T01012	degC			HTFW temp inlet FWC 1/2
L:	T01026	degC			LTFW temp outlet FWC 1/2
M:					
N:	T01015	degC	L=26.0	H=36.0	LTFW temp outlet LTFW pumps
O:					
P:					
Q:	N01216	%			LTFW temp contr motor speed
R:					
S:					
T:					

2.84 Page:1015 MD10** ME FW SYSTEM - LTFW CONTROL (2/2)

A:			
B:	X01230	<0-1>	LTFW temp contr HW PID select
C:			
D:			
E:	C01231	%/degC	LTFW temp contr gain
F:	C01232	sec	LTFW temp contr integration time
G:	C01233	sec	LTFW temp contr derivation time
H:	C01234	<0-10>	LTFW temp contr derivation range
I:			
J:	C01235	sec	LTFW temp contr valve tc
K:	C01236	sec	LTFW temp contr sensor tc
L:	X01226	<0-2>	LTFW temp contr valve hyst type
M:			
N:			
O:			
P:			
Q:	X01214	<0-1>	LTFW temp contr motor actuator select
R:	C01215	%/sec	LTFW temp contr motor constant
S:			
T:			

2.85 Page:1016 MD10** ME FW SYSTEM - PREHEATER TEMP CONTROL

A:			
B:	X01181	<0-1>	ME Preheater temp contr auto switch
C:	Z01182	%	ME Preheater temp contr manual output
D:			
E:	T01181	degC	ME Preheater temp contr set point
F:	T01182	degC	ME Preheater temp contr sensor signal
G:	Z01181	%	ME Preheater temp contr output signal
H:	V01180	%	ME Preheater temp contr valve pos
I:			
J:			
K:	C01180	%/degC	ME Preheater temp contr gain
L:	C01181	sec	ME Preheater temp contr integration time
M:	C01182	sec	ME Preheater temp contr derivation time
N:	C01183	<0-10>	ME Preheater temp contr derivation range
O:			
P:	C01184	sec	ME Preheater temp contr valve tc
Q:	C01185	sec	ME Preheater temp contr sensor tc
R:			
S:			
T:			

2.86 Page:1020 MD10** HTFW PUMPS

A:			
B:			
C:			
D:	E01241	kW	HTFW pump 1 power
E:	E01242	kW	HTFW pump 2 power
F:			
G:			
H:	Z01240	%	HTFW pump efficiency (combined)
I:			
J:	N01243	%	HTFW pump speed
K:	G01053	ton/h	HTFW pump flow (total)
L:			
M:			
N:	P01004	bar	HTFW pump discharge pressure
O:	P01003	bar	HTFW pump suction pressure
P:	P01244	bar	HTFW pump cavitation limit
Q:	Z01245	%	HTFW pump cavitation index
R:			
S:			
T:			

2.87 Page:1021 MD10** HTFW PUMP DATA ++

A:					
B:					
C:	X01110	<0-1>			Main HTFW pump 1 overload trip
D:	C01110	kW			Main HTFW pump 1 overload limit
E:	D01110	sec			Main HTFW pump 1 overload delay
F:					
G:					
H:	X01111	<0-1>			Main HTFW pump 2 overload trip
I:	C01111	kW			Main HTFW pump 2 overload limit
J:	D01111	sec			Main HTFW pump 2 overload delay
K:					
L:	X01243	<0-1>			HTFW pump speed setting (test)
M:	C01243	%			HTFW pump speed setting
N:					
O:	K01116	<0-2>			Main HTFW circulation flow area adjust
P:	K01110	ton/h			Main HTFW pump nominal flow
Q:	K01111	bar			Main HTFW pump nominal press rise
R:	K01112	bar			Main HTFW pump nominal press droop
S:	K01113	<0-2>			Main HTFW pump nominal power coeff
T:					

2.88 Page:1022 MD10** LTFW PUMPS

A:					
B:					
C:					
D:	E01251	kW			LTFW pump 1 power
E:	E01252	kW			LTFW pump 2 power
F:					
G:					
H:	Z01250	%			LTFW pump efficiency (combined)
I:					
J:	N01253	%			LTFW pump speed
K:	G01061	ton/h			LTFW pump flow (total)
L:					
M:					
N:	P01001	bar	L=2.1	H=---	LTFW pump discharge pressure
O:	P01000	bar			LTFW pump suction pressure
P:	P01254	bar			LTFW pump cavitation limit
Q:	Z01255	%			LTFW pump cavitation index
R:					
S:					
T:					

2.89 Page:1023 MD10** LTFW PUMP DATA ++

A:			
B:			
C:	X01120	<0-1>	Main LTFW pump 1 overload trip
D:	C01120	kW	Main LTFW pump 1 overload limit
E:	D01120	sec	Main LTFW pump 1 overload delay
F:			
G:			
H:	X01121	<0-1>	Main LTFW pump 2 overload trip
I:	C01121	kW	Main LTFW pump 2 overload limit
J:	D01121	sec	Main LTFW pump 2 overload delay
K:			
L:	X01253	<0-1>	LTFW pump speed setting (test)
M:	C01253	%	LTFW pump speed setting
N:			
O:	K01126	<0-2>	Main LTFW circulation flow area adjust
P:	K01120	ton/h	Main LTFW pump nominal flow
Q:	K01121	bar	Main LTFW pump nominal press rise
R:	K01122	bar	Main LTFW pump nominal press droop
S:	K01123	<0-2>	Main LTFW pump nominal power coeff
T:			

2.90 Page:1030 MD10** CENTRAL FW COOLERS (1/3)

A:			
B:	H01263	kW	FW cooler 1 transfered heat
C:	Z01262	%	FW cooler 1 temp efficiency
D:			
E:			
F:	P01260	bar	FW cooler 1 FW flow diff press
G:	P01261	bar	FW cooler 1 SW flow diff press
H:			
I:			
J:			
K:	Z15011	m2	Main FW cooler 1 heat transfer area
L:	Z15012	kW/m2C	Main FW cooler 1 htc (overall)
M:	Z15013	kW/m2C	Main FW cooler 1 htc (FW side)
N:	Z15014	kW/m2C	Main FW cooler 1 htc (SW side)
O:	Z15015	kW/m2C	Main FW cooler 1 htc (wall metal)
P:			
Q:	C15012	<0-10>	Main FW cooler 1 rel no of plates
R:			
S:			
T:			

2.91 Page:1031 MD10** CENTRAL FW COOLERS (2/3)

A:			
B:	H01267	kW	FW cooler 2 transfered heat
C:	Z01266	%	FW cooler 2 temp efficiency
D:			
E:			
F:	P01264	bar	FW cooler 2 FW flow diff press
G:	P01265	bar	FW cooler 2 SW flow diff press
H:			
I:			
J:			
K:	Z15021	m2	Main FW cooler 2 heat transfer area
L:	Z15022	kW/m2C	Main FW cooler 2 htc (overall)
M:	Z15023	kW/m2C	Main FW cooler 2 htc (FW side)
N:	Z15024	kW/m2C	Main FW cooler 2 htc (SW side)
O:	Z15025	kW/m2C	Main FW cooler 2 htc (wall metal)
P:			
Q:	C15022	<0-10>	Main FW cooler 2 rel no of plates
R:			
S:			
T:			

2.92 Page:1032 MD10** CENTRAL FW COOLERS (3/3)

A:			
B:	C15001	m2	Main FW cooler nom transfer area
C:			
D:	C15005	ton/h	Main FW cooler nominal FW flow
E:	C15006	ton/h	Main FW cooler nominal SW flow
F:	C15002	kW/m2C	Main FW cooler FW side nominal htc
G:	C15003	kW/m2C	Main FW cooler SW side nominal htc
H:	C15004	kW/m2C	Main FW cooler FW/SW wall htc
I:			
J:			
K:			
L:			
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.93 Page:1100 MD11** ME FO SYSTEM - MAIN VARIABLES

A:					
B:	G00026	ton/h			FO flow to Booster pumps
C:	G00027	ton/h			FO flow inlet ME (net flow)
D:					
E:	P00020	bar			FO Booster pump discharge press
F:	P00066	bar			FO Booster pump suction press
G:	P00022	bar			FO pressure outlet ME FO heaters
H:	P00023	bar	L=8.0	H=12.0	FO pressure inlet ME
I:	P00021	bar	L=---	H=1.5	FO filter diff pressure
J:					
K:	T00001	degC			FO temp in Venting tank
L:	W00010	cSt			FO visco in Venting tank
M:	T00002	degC	L=20.0	H=150.0	FO temp inlet ME
N:	W00011	cSt	L=10.0	H=17.0	FO visco inlet ME
O:					
P:	Z00014	%			FO gassing indication
Q:					
R:	V00016	%			ME FO press control valve position
S:	P00017	bar			ME FO press control valve set point
T:					

2.94 Page:1101 MD11** ME FO SYSTEM - HEATING

A:					
B:					
C:	T00005	degC			FO temp outlet ME FO heaters
D:	W00012	cSt			FO visco outlet ME FO heaters
E:					
F:	P00063	bar			Steam reduction valve set point
G:	P00062	bar			Steam pressure inlet control valve
H:					
I:	T00003	degC			ME FO heater 1 outlet temp
J:	G00047	ton/h			ME FO heater 1 flow
K:	G00050	kg/h			ME FO heater 1 steam flow
L:					
M:					
N:	T00004	degC			ME FO heater 2 outlet temp
O:	G00051	ton/h			ME FO heater 2 flow
P:	G00052	kg/h			ME FO heater 2 steam flow
Q:					
R:	V00112	<0-1>			ME FO steam tracing valve
S:	G00064	kg/h			ME FO steam tracing flow
T:					

2.95 Page:1102 MD11** ME FO SYSTEM - BOOSTER PUMPS

A:					
B:	E00128	kW			FO Booster pump 1 power
C:	E00129	kW			FO Booster pump 2 power
D:					
E:	V00105	<0-1>			ME FO heater 1 FO shut off valve
F:	V00106	<0-1>			ME FO heater 2 FO shut off valve
G:					
H:	V00107	<0-1>			ME FO heater 1 steam shut off valve
I:	V00110	<0-1>			ME FO heater 2 steam shut off valve
J:					
K:	V00114	<0-1>			ME FO bypass filter
L:	V00115	<0-1>			ME FO back flush filter
M:					
N:					
O:	V00117	<0-1>			ME FO emerg shut off valve
P:					
Q:					
R:					
S:					
T:					

2.96 Page:1103 MD11** ME FO SYSTEM - SUPPLY PUMPS

A:					
B:	E00138	kW			FO Supply pump 1 power
C:	E00139	kW			FO Supply pump 2 power
D:					
E:	P00024	bar	L=3.0	H=6.0	FO Supply pump pressure
F:	G00025	ton/h			FO Supply pump flow (total)
G:	G00042	ton/h			FO Supply pump recirc flow
H:	T00015	degC			FO Supply pump recirc temp
I:					
J:					
K:	P00018	%			FO supply recirc valve set point
L:	V00018	%			FO supply recirc valve position
M:					
N:	T00043	degC	L=---	H=135.0	FO Supply pump 1 casing temp
O:	T00044	degC	L=---	H=135.0	FO Supply pump 2 casing temp
P:	C00126	degC			FO Supply pump thermal trip limit
Q:					
R:	G00100	ton/h			FO meter flow
S:	M00102	ton			FO meter flow totalizer (0-10000)
T:					

2.97 Page:1104 MD11** ME FO SYSTEM - VENTING TANK

A:					
B:	V00120	<0-1>			ME FO return select valve (1=serv tank)
C:					
D:	G00035	ton/h			FO flow to Venting tank (return)
E:	G00036	ton/h			FO flow to Service tank (return)
F:	G00026	ton/h			FO flow to Booster pumps
G:					
H:					
I:					
J:	L00070	m			FO Venting tank level
K:	P00067	bar			FO Venting tank pressure
L:	Z00065	%			FO Venting tank gas content
M:					
N:					
O:					
P:	V00071	<0-1>			FO drain valve
Q:	G00072	ton/h			FO drain flow
R:					
S:	V00077	%			DO/HFO mixing valve (100 % = DO)
T:					

2.98 Page:1110 MD11** ME FO SYSTEM - VISCO CONTROL (1/2)

A:	X00146	<0-1>			FO visco contr auto switch
B:	Z00147	%			FO visco contr manual output
C:					
D:	W00141	cSt			FO visco contr set point
E:	W00142	cSt			FO visco contr sensor signal
F:	Z00143	%			FO visco contr output signal
G:					
H:	X00176	<0-1>			FO slave contr test (manual set point)
I:	T00165	degC			FO slave contr set point
J:	T00166	degC			FO slave contr sensor signal
K:	Z00167	%			FO slave contr output signal
L:	V00140	%			FO visco contr valve pos
M:					
N:	W00011	cSt	L=10.0	H=17.0	FO visco inlet ME
O:	W00012	cSt			FO visco outlet ME FO heaters
P:	W00010	cSt			FO visco in Venting tank
Q:					
R:					
S:	T00005	degC			FO temp outlet ME FO heaters
T:					

2.99 Page:1111 MD11** ME FO SYSTEM - VISCO CONTROL (2/2)

A:			
B:			
C:	X00153	<0-1>	FO control mode (0=single ,1=cascade)
D:	X00152	<0-1>	FO visco contr HW PID select
E:			
F:	C00155	%/cSt	FO visco contr gain
G:	C00156	sec	FO visco contr integration time
H:	C00157	sec	FO visco contr derivation time
I:	C00160	<0-10>	FO visco contr derivation range
J:			
K:	C00170	%/degC	FO slave contr gain
L:	C00171	sec	FO slave contr integration time
M:	C00172	sec	FO slave contr derivation time
N:	C00173	<0-10>	FO slave contr derivation range
O:			
P:			
Q:	C00161	sec	FO visco contr valve tc
R:	C00162	sec	FO visco contr sensor tc
S:	C00174	sec	FO slave contr sensor tc
T:			

2.100 Page:1120 MD11** ME FO SYSTEM - FO HEATERS

A:			
B:	V00107	<0-1>	ME FO heater 1 steam shut off valve
C:	G00050	kg/h	ME FO heater 1 steam flow
D:	P00053	bar	ME FO heater 1 steam pressure
E:	H00047	kW	ME FO heater 1 heat
F:	T00006	degC	ME FO heater 1 metal temp (mean)
G:	T00003	degC	ME FO heater 1 outlet temp
H:	P00056	bar	ME FO heater 1 FO pressure drop
I:			
J:			
K:			
L:	V00110	<0-1>	ME FO heater 2 steam shut off valve
M:	G00052	kg/h	ME FO heater 2 steam flow
N:	P00054	bar	ME FO heater 2 steam pressure
O:	H00051	kW	ME FO heater 2 heat
P:	T00007	degC	ME FO heater 2 metal temp (mean)
Q:	T00004	degC	ME FO heater 2 outlet temp
R:	P00057	bar	ME FO heater 2 FO pressure drop
S:			
T:			

2.101 Page:1130 MD11** ME FO SYSTEM - FUEL OIL DATA (1/2)

A:			
B:	X10970	<0-3>	Fuel select (0,1,2,3)=(Aut,Man,MDO,HFO)
C:			
D:	T10960	degC	ME inlet FO temperature
E:	W10960	cSt	ME inlet FO viscosity
F:	D10960	kg/m3	ME inlet FO density
G:	P10960	bar	ME inlet FO pressure
H:			
I:	C10960	kJ/kg	ME inlet FO heat value
J:	C10961	kg/m3	ME inlet FO density (at 15 dgrC)
K:	C10962	cSt	ME inlet FO viscosity (at 50 dgrC)
L:	C10963	%	ME inlet FO sulphor content
M:	C10964	%	ME inlet FO water content
N:	C10965	ppm	ME inlet FO dirt (particles)
O:	C10966	¨<0-100>	ME inlet FO cetan number
P:			
Q:	C10971	degC	Nominal inlet MDO temperature
R:	C10972	degC	Nominal inlet HFO temperature
S:	C10973	bar	Nominal inlet FO pressure
T:			

2.102 Page:1131 MD11** ME FO SYSTEM - FUEL OIL DATA (2/2)

A:			
B:			
C:	C10950	kJ/kg	Venting tank FO heat value
D:	C10951	kg/m3	Venting tank FO density (at 15 dgrC)
E:	C10952	cSt	Venting tank FO viscosity (at 50 dgrC)
F:	C10953	%	Venting tank FO sulphor content
G:	C10954	%	Venting tank FO water content
H:	C10955	ppm	Venting tank FO dirt (particles)
I:	C10956	¨<0-100>	Venting tank FO cetan number
J:			
K:			
L:			
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.103 Page:1200 MD12** ME LO SYSTEM - MAIN VARIABLES

A:					
B:	P01300	bar			Main LO pump discharge press
C:	P01301	bar			Main LO press outlet LO coolers
D:	P01304	bar	L=---	H=1.0	Main LO filter diff press
E:	P01303	bar	L=3.4	H=---	Main LO supply pressure
F:	P01302	bar	L=10.0	H=---	Cross head LO supply pressure
G:					
H:	T01345	degC			Main LO temp inlet LOC
I:	T01346	degC			Main LO temp outlet LOC 1
J:	T01347	degC			Main LO temp outlet LOC 2
K:	T01350	degC	L=40.0	H=50.0	Main LO temp inlet ME
L:	T01351	degC			Main LO temp outlet ME
M:					
N:	G01320	ton/h			Main LOC 1 inlet flow
O:	G01321	ton/h			Main LOC 2 inlet flow
P:	G01322	ton/h			Main LOC bypass flow
Q:					
R:	G01312	ton/h			Main LO flow to pistons/main bearings
S:	G01311	ton/h			Main LO flow to crossh/crank lubrication
T:					

2.104 Page:1201 MD12** ME LO SYSTEM - VALVES/PUMPS

A:			
B:			
C:	R01360	<0-1>	Main LO pump 1
D:	R01361	<0-1>	Main LO pump 2
E:			
F:	V01362	<0-1>	Main LO bypass filter
G:	V01363	<0-1>	Main LO flush back filter
H:			
I:	V01364	<0-1>	Main LOC 1 LO shut off valve
J:	V01365	<0-1>	Main LOC 2 LO shut off valve
K:	V01366	<0-1>	Main LOC LO bypass valve
L:			
M:	R01365	<0-1>	Cross head LO pump 1
N:	R01366	<0-1>	Cross head LO pump 2
O:			
P:			
Q:	V01367	<0-1>	ME piston/bearing LO supply valve
R:	V01368	<0-1>	ME cross head LO supply valve
S:			
T:			

2.105 Page:1202 MD12** ME LO SYSTEM - LO SERVICE TANK

A:					
B:	L01340	m	L=0.8	H=1.8	Main LO Service tank level
C:	T01344	degC	L=35.0	H=---	Main LO Service tank temp
D:					
E:	Z01342	ppm	L=---	H=200.0	Main LO contamination
F:					
G:					
H:	G01353	ton/h	L=---	H=0.1	Main LO Service tank overflow
I:	G01354	ton/h			Main LO make up flow
J:	R01355	<0-1>			Main LO make up pump
K:					
L:					
M:	V01400	<0-1>			ME LO Purif supply valve
N:	V01401	<0-1>			ME LO Purif return valve
O:					
P:	G01402	ton/h			ME LO Purif supply flow
Q:	G01403	ton/h			ME LO Purif return flow
R:	T01404	degC			ME LO Purif return temp
S:					
T:					

2.106 Page:1205 MD12** ME LO SYSTEM - CYL LUBRICATION

A:					
B:					
C:	L01500	m	L=0.5	H=1.8	ME Cyl LO day tank level
D:					
E:					
F:	R01504	<0-1>			ME Cyl LO day tank make up pump
G:	G01502	kg/h			ME Cyl LO day tank make up flow
H:					
I:	G01501	kg/h	L=---	H=2.0	ME Cyl LO day tank overflow
J:					
K:	G01503	kg/h			ME Cyl LO consumption (total)
L:					
M:					
N:	X01500	TBN	L=---	H=---	Cyl oil TBN number (mgKOH/g) (0-100)
O:					
P:					
Q:					
R:					
S:					
T:					

2.107 Page:1210 MD12** ME LO SYSTEM - LO TEMP CONTROL (1/2)

A:					
B:	X01414	<0-1>			Main LO temp contr auto switch
C:	Z01415	%			Main LO temp contr manual output
D:					
E:	T01411	degC			Main LO temp contr set point
F:	T01412	degC			Main LO temp contr sensor signal
G:	Z01413	%			Main LO temp contr output signal
H:	V01410	%			Main LO temp contr valve pos
I:					
J:	T01350	degC	L=40.0	H=50.0	Main LO temp inlet ME
K:	T01351	degC			Main LO temp outlet ME
L:					
M:					
N:	T01346	degC			Main LO temp outlet LOC 1
O:	T01347	degC			Main LO temp outlet LOC 2
P:					
Q:					
R:					
S:					
T:					

2.108 Page:1211 MD12** ME LO SYSTEM - LO TEMP CONTROL (2/2)

A:			
B:	X01420	<0-1>	Main LO temp contr HW PID select
C:			
D:	C01421	%/degC	Main LO temp contr gain
E:	C01422	sec	Main LO temp contr integration time
F:	C01423	sec	Main LO temp contr derivation time
G:	C01424	<0-10>	Main LO temp contr derivation range
H:			
I:			
J:	C01425	sec	Main LO temp contr valve tc
K:	C01426	sec	Main LO temp contr sensor tc
L:			
M:			
N:	X01416	<0-2>	Main LO temp contr valve hyst type
O:	X01417	<0-2>	Main LO temp contr valve chara
P:			
Q:			
R:			
S:			
T:			

2.109 Page:1220 MD12** MAIN LO PUMPS

A:			
B:			
C:	R01360	<0-1>	Main LO pump 1
D:	R01361	<0-1>	Main LO pump 2
E:			
F:	E01374	kW	Main LO pump 1 power
G:	E01375	kW	Main LO pump 2 power
H:			
I:	Z01373	%	Main LO pump efficiency
J:			
K:			
L:	N01372	%	Main LO pump speed
M:	G01307	ton/h	Main LO pump flow (total)
N:	P01300	bar	Main LO pump discharge press
O:			
P:			
Q:			
R:			
S:			
T:			

2.110 Page:1221 MD12** MAIN LO PUMP DATA ++

A:			
B:			
C:	X01360	<0-1>	Main LO pump 1 overload trip
D:	C01360	kW	Main LO pump 1 overload limit
E:	D01360	sec	Main LO pump 1 overload delay
F:			
G:			
H:	X01361	<0-1>	Main LO pump 2 overload trip
I:	C01361	kW	Main LO pump 2 overload limit
J:	D01361	sec	Main LO pump 2 overload delay
K:			
L:			
M:			
N:			
O:	K01366	<0-2>	Main LO circulation flow area adjust
P:	K01360	ton/h	Main LO pump nominal flow
Q:	K01361	bar	Main LO pump nominal press rise
R:	K01362	bar	Main LO pump nominal press droop
S:	K01363	<0-2>	Main LO pump nominal power coeff
T:			

2.111 Page:1222 MD12** CROSS HEAD LO PUMPS

A:			
B:			
C:	R01365	<0-1>	Cross head LO pump 1
D:	R01366	<0-1>	Cross head LO pump 2
E:			
F:	E01365	kW	Cross head LO pump 1 power
G:	E01366	kW	Cross head LO pump 2 power
H:			
I:	Z01365	%	Cross head LO pump efficiency
J:			
K:			
L:	N01365	%	Cross head LO pump speed
M:	G01365	ton/h	Cross head LO pump flow (total)
N:	P01365	bar	Cross head LO pump discharge press
O:			
P:			
Q:			
R:			
S:			
T:			

2.112 Page:1223 MD12** CROSS HEAD LO PUMP DATA

A:			
B:			
C:	X01365	<0-1>	Cross head LO pump 1 overload trip
D:	C01365	kW	Cross head LO pump 1 overload limit
E:	D01365	sec	Cross head LO pump 1 overload delay
F:			
G:			
H:	X01366	<0-1>	Cross head LO pump 2 overload trip
I:	C01366	kW	Cross head LO pump 2 overload limit
J:	D01366	sec	Cross head LO pump 2 overload delay
K:			
L:			
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.113 Page:1230 MD12** MAIN LO COOLERS (1/3)

A:			
B:			
C:	Z01332	%	Main LO cooler 1 temp efficiency
D:	H01334	kW	Main LO cooler 1 transfered heat
E:			
F:	P01330	bar	Main LO cooler 1 LO diff press
G:	P01063	bar	Main LO cooler 1 FW diff press
H:			
I:			
J:			
K:	Z12011	m2	Main LO cooler 1 heat transfer area
L:	Z12012	kW/m2C	Main LO cooler 1 htc (overall)
M:	Z12013	kW/m2C	Main LO cooler 1 htc (LO side)
N:	Z12014	kW/m2C	Main LO cooler 1 htc (FW side)
O:	Z12015	kW/m2C	Main LO cooler 1 htc (wall metal)
P:			
Q:	C12012	<0-10>	Main LO cooler 1 rel no of plates
R:			
S:			
T:			

2.114 Page:1231 MD12** MAIN LO COOLERS (2/3)

A:			
B:			
C:	Z01333	%	Main LO cooler 2 temp efficiency
D:	H01335	kW	Main LO cooler 2 transfered heat
E:			
F:	P01331	bar	Main LO cooler 2 LO diff press
G:	P01064	bar	Main LO cooler 2 FW diff press
H:			
I:			
J:			
K:	Z12021	m2	Main LO cooler 2 heat transfer area
L:	Z12022	kW/m2C	Main LO cooler 2 htc (overall)
M:	Z12023	kW/m2C	Main LO cooler 2 htc (LO side)
N:	Z12024	kW/m2C	Main LO cooler 2 htc (FW side)
O:	Z12025	kW/m2C	Main LO cooler 2 htc (wall metal)
P:			
Q:	C12022	<0-10>	Main LO cooler 2 rel no of plates
R:			
S:			
T:			

2.115 Page:1232 MD12** MAIN LO COOLERS (3/3)

A:					
B:	C12001	m2			Main LO cooler nom transfer area
C:					
D:	C12005	ton/h			Main LO cooler nominal LO flow
E:	C12006	ton/h			Main LO cooler nominal FW flow
F:	C12002	kW/m2C			Main LO cooler LO side nominal htc
G:	C12003	kW/m2C			Main LO cooler FW side nominal htc
H:	C12004	kW/m2C			Main LO cooler LO/FW wall htc
I:					
J:					
K:					
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.116 Page:1300 MD13** ME TURBOCHARGER no 1 (1/2)

A:					
B:	N13010	rpm	L=---	H=10000.0	ME TBCH 1 speed
C:					
D:	T13010	degC			ME TBCH 1 compressor inlet temp
E:	T13011	degC	L=---	H=230.0	ME TBCH 1 compressor outlet temp
F:	P13011	bara			ME TBCH 1 compressor outlet pressure
G:	G13010	ton/h			ME TBCH 1 compressor air flow
H:	E13010	kW			ME TBCH 1 compressor shaft power
I:	Z13010	%			ME TBCH 1 compressor efficiency
J:					
K:	T13015	degC	L=---	H=515.0	ME TBCH 1 turbine inlet temp
L:	T13016	degC	L=---	H=470.0	ME TBCH 1 turbine outlet temp
M:	P13015	bara			ME TBCH 1 turbine inlet pressure
N:	P13016	bara			ME TBCH 1 turbine outlet pressure
O:					
P:	G13015	ton/h			ME TBCH 1 turbine exhaust flow
Q:	E13015	kW			ME TBCH 1 turbine shaft power
R:	Z13015	%			ME TBCH 1 turbine efficiency
S:					
T:					

2.117 Page:1301 MD13** ME TURBOCHARGER no 1 (2/2)

A:					
B:	P13010	bara			ME TBCH 1 air filter inlet press
C:	P13013	bara			ME TBCH 1 compressor suction press
D:					
E:	P13012	mmWC	L=---	H=220.0	ME TBCH 1 air filter diff press
F:					
G:					
H:					
I:					
J:					
K:	V13017	<0-1>			ME TBCH 1 shut off dampers (exh/air)
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.118 Page:1302 MD13** ME TURBOCHARGER no 2 (1/2)

A:					
B:	N13020	rpm	L=---	H=10000.0	ME TBCH 2 speed
C:					
D:	T13020	degC			ME TBCH 2 compressor inlet temp
E:	T13021	degC	L=---	H=230.0	ME TBCH 2 compressor outlet temp
F:	P13021	bar			ME TBCH 2 compressor outlet pressure
G:	G13020	ton/h			ME TBCH 2 compressor air flow
H:	E13020	kW			ME TBCH 2 compressor shaft power
I:	Z13020	%			ME TBCH 2 compressor efficiency
J:					
K:	T13025	degC	L=---	H=515.0	ME TBCH 2 turbine inlet temp
L:	T13026	degC	L=---	H=470.0	ME TBCH 2 turbine outlet temp
M:	P13025	bara			ME TBCH 2 turbine inlet pressure
N:	P13026	bara			ME TBCH 2 turbine outlet pressure
O:					
P:	G13025	ton/h			ME TBCH 2 turbine exhaust flow
Q:	E13025	kW			ME TBCH 2 turbine shaft power
R:	Z13025	%			ME TBCH 2 turbine efficiency
S:					
T:					

2.119 Page:1303 MD13** ME TURBOCHARGER no 2 (2/2)

A:					
B:	P13020	bara			ME TBCH 2 air filter inlet press
C:	P13023	bara			ME TBCH 2 compressor suction press
D:					
E:	P13022	mmWC	L=---	H=220.0	ME TBCH 2 air filter diff press
F:					
G:					
H:					
I:					
J:					
K:	V13027	<0-1>			ME TBCH 2 shut off dampers (exh/air)
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.120 Page:1304 MD13** ME TURBOCHARGER no 3 (1/2)

A:					
B:	N13030	rpm	L=---	H=10000.0	ME TBCH 3 speed
C:					
D:	T13030	degC			ME TBCH 3 compressor inlet temp
E:	T13031	degC	L=---	H=230.0	ME TBCH 3 compressor outlet temp
F:	P13031	bara			ME TBCH 3 compressor outlet pressure
G:	G13030	ton/h			ME TBCH 3 compressor air flow
H:	E13030	kW			ME TBCH 3 compressor shaft power
I:	Z13030	%			ME TBCH 3 compressor efficiency
J:					
K:	T13035	degC	L=---	H=515.0	ME TBCH 3 turbine inlet temp
L:	T13036	degC	L=---	H=470.0	ME TBCH 3 turbine outlet temp
M:	P13035	bara			ME TBCH 3 turbine inlet pressure
N:	P13036	bara			ME TBCH 3 turbine outlet pressure
O:					
P:	G13035	ton/h			ME TBCH 3 turbine exhaust flow
Q:	E13035	kW			ME TBCH 3 turbine shaft power
R:	Z13035	%			ME TBCH 3 turbine efficiency
S:					
T:					

2.121 Page:1305 MD13** ME TURBOCHARGER no 3 (2/2)

A:					
B:	P13030	bara			ME TBCH 3 air filter inlet press
C:	P13033	bara			ME TBCH 3 compressor suction press
D:					
E:	P13032	mmWC	L=---	H=220.0	ME TBCH 3 air filter diff press
F:					
G:					
H:					
I:					
J:					
K:	V13037	<0-1>			ME TBCH 3 shut off dampers (exh/air)
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.122 Page:1306 MD13** ME AIR/EXH. RECEIVERS (1/2)

A:					
B:	P13070	bar	L=---	H=2.5	ME Air Receiver pressure
C:	T13070	degC			ME Air Receiver temp (mean)
D:	G13070	ton/h			ME Air Receiver inlet flow
E:					
F:	P13080	bar			ME Exh Receiver pressure
G:	T13080	degC			ME Exh Receiver temp (mean)
H:	G13080	ton/h			ME Exh Receiver inlet flow
I:					
J:					
K:	P13090	bar			ME exhaust duct pressure (to stack)
L:	P13092	mmWC			ME exhaust duct diff pressure (overall)
M:					
N:	G13090	ton/h			ME exhaust duct flow (to stack)
O:	T13090	degC			ME exhaust duct temp (to stack)
P:					
Q:	V13071	<0-1>			ME Air Receiver safety valve
R:	G13071	ton/h			ME Air Receiver safety valve flow
S:	C13071	bar			ME Air Receiver safety valve sp
T:					

2.123 Page:1307 MD13** ME AIR/EXH. RECEIVERS (2/2)

A:					
B:					
C:	X13080	<0-1>	L=---	H=---	ME Exh Receiver fire
D:					
E:	Z13080	%			ME Exh Receiver oil residue
F:					
G:	C13080	%			ME Exh Receiver oil res. limit (fire)
H:	C13081	dgrC			ME Exh Receiver exh temp limit (fire)
I:					
J:					
K:					
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.124 Page:1310 MD13** ME AUXILIARY AIR BLOWERS (1/2)

A:			
B:	X13001	<0-1>	ME Auxiliary Blower auto control
C:	E13001	kW	ME Auxiliary Blower total power
D:			
E:			
F:	R13018	<0-1>	ME Auxiliary Blower 1 run
G:	G13018	ton/h	ME Auxiliary Blower 1 flow
H:	E13018	kW	ME Auxiliary Blower 1 power
I:			
J:			
K:	R13028	<0-1>	ME Auxiliary Blower 2 run
L:	G13028	ton/h	ME Auxiliary Blower 2 flow
M:	E13028	kW	ME Auxiliary Blower 2 power
N:			
O:			
P:	R13038	<0-1>	ME Auxiliary Blower 3 run
Q:	G13038	ton/h	ME Auxiliary Blower 3 flow
R:	E13038	kW	ME Auxiliary Blower 3 power
S:			
T:			

2.125 Page:1311 MD13** ME AUXILIARY AIR BLOWERS (2/2)

A:					
B:					
C:	C13091	bar			ME Auxiliary Blower start pressure
D:	C13092	bar			ME Auxiliary Blower stop pressure
E:					
F:	C13093	sec			ME Auxiliary Blower start time
G:	C13094	sec			ME Auxiliary Blower stop time
H:	C13095	sec			ME Auxiliary Blower idle time
I:					
J:					
K:					
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.126 Page:1315 MD13** ME TBCH SEQUENCING (option)

A:					
B:	X13101	<0-1>			ME TBCH sequencing control (future)
C:					
D:	V13027	<0-1>			ME TBCH 2 shut off dampers (exh/air)
E:	V13037	<0-1>			ME TBCH 3 shut off dampers (exh/air)
F:					
G:	C13101	rpm			ME TBCH 2 : engine speed low (stop)
H:	C13102	rpm			ME TBCH 2 : engine speed high (start)
I:	C13103	bar			ME TBCH 2 : scav air press low (stop)
J:	C13104	bar			ME TBCH 2 : scav air press high (start)
K:	C13105	rpm			ME TBCH 3 : engine speed low (stop)
L:	C13106	rpm			ME TBCH 3 : engine speed high (start)
M:	C13107	bar			ME TBCH 3 : scav air press low (stop)
N:	C13108	bar			ME TBCH 3 : scav air press high (start)
O:					
P:	N02015	rpm	L=---	H=106.0	ME speed
Q:	E02005	MW	L=---	H=53.5	ME shaft power
R:	P13070	bar	L=---	H=2.5	ME Air Receiver pressure
S:	G02012	g/kWh			ME Fuel Oil consumption (specific)
T:					

2.127 Page:1320 MD13** ME AIR COOLERS (common)

A:					
B:	C13031	m2			ME Air cooler nom transfer area
C:					
D:	C13035	ton/h			ME Air cooler nominal air flow
E:	C13036	ton/h			ME Air cooler nominal wtr flow
F:	C13032	kW/m2C			ME Air cooler air side nominal htc
G:	C13033	kW/m2C			ME Air cooler wtr side nominal htc
H:	C13034	kW/m2C			ME Air cooler air/wtr wall htc
I:					
J:					
K:	C13020	kg/s			ME Air cooler wash nom spray flow
L:	C13021	bar			ME Air cooler wash min serv air press
M:	C13022	rpm			ME Air cooler wash min ME rpm
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.128 Page:1321 MD13** ME AIR COOLER no 1 (1/2)

A:					
B:	P13040	mmWC	L=---	H=450.0	ME TBCH 1 Airc diff pressure
C:					
D:	H13041	kW			ME TBCH 1 Air cooler heat
E:	Z13046	%			ME TBCH 1 Air cooler temp efficieny
F:	T13041	degC			ME TBCH 1 Airc air inlet temp
G:	T13042	degC	L=25.0	H=65.0	ME TBCH 1 Airc air outlet temp
H:	T13045	degC			ME TBCH 1 Airc CW inlet temp
I:	T13046	degC	L=---	H=57.0	ME TBCH 1 Airc CW outlet temp
J:					
K:	Z13041	m2			ME TBCH 1 Airc heat transfer area
L:	Z13042	kW/m2C			ME TBCH 1 Airc htc (overall)
M:	Z13043	kW/m2C			ME TBCH 1 Airc htc (air side)
N:	Z13044	kW/m2C			ME TBCH 1 Airc htc (wtr side)
O:	Z13045	kW/m2C			ME TBCH 1 Airc htc (wall metal)
P:					
Q:	C13041	<0-10>			ME TBCH 1 Airc size factor
R:					
S:					
T:					

2.129 Page:1322 MD13** ME AIR COOLER no 1 (2/2)

A:					
B:	G13041	kg/h			ME TBCH 1 Airc water drain (demister)
C:	L13040	%	L=---	H=40.0	ME TBCH 1 Airc water level (demister)
D:					
E:	X13040	kg/h			ME TBCH 1 Airc free water inlet ME
F:	Z13040	%			ME TBCH 1 Airc air humidity inlet ME
G:					
H:	X13041	<0-1>			ME TBCH 1 Air cooler wash command
I:	X13042	<0-1>			ME TBCH 1 Air cooler wash state
J:	X13043	<0-1>			ME TBCH 1 Air cooler wash ready
K:					
L:	G13042	kg/h			ME TBCH 1 Airc washing water flow
M:					
N:	G13043	kg/h			ME TBCH 1 Airc cooling water leakage
O:					
P:					
Q:					
R:					
S:					
T:					

2.130 Page:1323 MD13** ME AIR COOLER no 2 (1/2)

A:					
B:	P13050	mmWC	L=---	H=450.0	ME TBCH 2 Airc diff pressure
C:					
D:	H13051	kW			ME TBCH 2 Air cooler heat
E:	Z13056	%			ME TBCH 2 Air cooler temp efficieny
F:	T13051	degC			ME TBCH 2 Airc air inlet temp
G:	T13052	degC	L=25.0	H=65.0	ME TBCH 2 Airc air outlet temp
H:	T13055	degC			ME TBCH 2 Airc CW inlet temp
I:	T13056	degC	L=---	H=57.0	ME TBCH 2 Airc CW outlet temp
J:					
K:	Z13051	m2			ME TBCH 2 Airc heat transfer area
L:	Z13052	kW/m2C			ME TBCH 2 Airc htc (overall)
M:	Z13053	kW/m2C			ME TBCH 2 Airc htc (air side)
N:	Z13054	kW/m2C			ME TBCH 2 Airc htc (wtr side)
O:	Z13055	kW/m2C			ME TBCH 2 Airc htc (wall metal)
P:					
Q:	C13051	<0-10>			ME TBCH 2 Airc size factor
R:					
S:					
T:					

2.131 Page:1324 MD13** ME AIR COOLER no 2 (2/2)

A:					
B:	G13051	kg/h			ME TBCH 2 Airc water drain (demister)
C:	L13050	%	L=---	H=40.0	ME TBCH 2 Airc water level (demister)
D:					
E:	X13050	kg/h			ME TBCH 2 Airc free water inlet ME
F:	Z13050	%			ME TBCH 2 Airc air humidity inlet ME
G:					
H:	X13051	<0-1>			ME TBCH 2 Air cooler wash command
I:	X13052	<0-1>			ME TBCH 2 Air cooler wash state
J:	X13053	<0-1>			ME TBCH 2 Air cooler wash ready
K:					
L:	G13052	kg/h			ME TBCH 2 Airc washing water flow
M:					
N:	G13053	kg/h			ME TBCH 2 Airc cooling water leakage
O:					
P:					
Q:					
R:					
S:					
T:					

2.132 Page:1325 MD13** ME AIR COOLER no 3 (1/2)

A:					
B:	P13060	mmWC	L=---	H=450.0	ME TBCH 3 Airc diff pressure
C:					
D:	H13061	kW			ME TBCH 3 Air cooler heat
E:	Z13066	%			ME TBCH 3 Air cooler temp efffiency
F:	T13061	degC			ME TBCH 3 Airc air inlet temp
G:	T13062	degC	L=25.0	H=65.0	ME TBCH 3 Airc air outlet temp
H:	T13065	degC			ME TBCH 3 Airc CW inlet temp
I:	T13066	degC	L=---	H=57.0	ME TBCH 3 Airc CW outlet temp
J:					
K:	Z13061	m2			ME TBCH 3 Airc heat transfer area
L:	Z13062	kW/m2C			ME TBCH 3 Airc htc (overall)
M:	Z13063	kW/m2C			ME TBCH 3 Airc htc (air side)
N:	Z13064	kW/m2C			ME TBCH 3 Airc htc (wtr side)
O:	Z13065	kW/m2C			ME TBCH 3 Airc htc (wall metal)
P:					
Q:	C13061	<0-10>			ME TBCH 3 Airc size factor
R:					
S:					
T:					

2.133 Page:1326 MD13** ME AIR COOLER no 3 (2/2)

A:					
B:	G13061	kg/h			ME TBCH 3 Airc water drain (demister)
C:	L13060	%	L=---	H=40.0	ME TBCH 3 Airc water level (demister)
D:					
E:	X13060	kg/h			ME TBCH 3 Airc free water inlet ME
F:	Z13060	%			ME TBCH 3 Airc air humidity inlet ME
G:					
H:	X13061	<0-1>			ME TBCH 3 Air cooler wash command
I:	X13062	<0-1>			ME TBCH 3 Air cooler wash state
J:	X13063	<0-1>			ME TBCH 3 Air cooler wash ready
K:					
L:	G13062	kg/h			ME TBCH 3 Airc washing water flow
M:					
N:	G13063	kg/h			ME TBCH 3 Airc cooling water leakage
O:					
P:					
Q:					
R:					
S:					
T:					

2.134 Page:1400 MD14** ME TBCH LO SERVICE TANK

A:					
B:	L14010	m	L=0.6	H=1.4	ME TBCH LO Service tank level
C:	T14010	degC			ME TBCH LO Service tank temp
D:	G14010	ton/h	L=---	H=0.1	ME TBCH LO Service tank overflow
E:					
F:	R14011	<0-1>			ME TBCH LO Service tank make up pump
G:	G14011	ton/h			ME TBCH LO Service tank make up flow
H:					
I:	V14013	<0-1>			ME TBCH LO Service tank drain valve
J:	G14013	ton/h			ME TBCH LO Service tank drain flow
K:					
L:					
M:	G14012	ton/h			ME TBCH LO Service tank return flow
N:	T14012	degC			ME TBCH LO Service tank return temp
O:					
P:					
Q:					
R:					
S:					
T:					

2.135 Page:1401 MD14** ME TBCH LO SUPPLY PUMPS

A:					
B:					
C:	R14021	<0-1>			ME TBCH LO supply pump 1
D:	G14021	ton/h			ME TBCH LO supply pump 1 flow
E:	E14021	kW			ME TBCH LO supply pump 1 power
F:					
G:	R14022	<0-1>			ME TBCH LO supply pump 2
H:	G14022	ton/h			ME TBCH LO supply pump 2 flow
I:	E14022	kW			ME TBCH LO supply pump 2 power
J:					
K:					
L:	P14020	bar			ME TBCH LO supply pump pressure
M:	G14020	ton/h			ME TBCH LO supply pump flow
N:	T14020	degC			ME TBCH LO supply pump temp
O:					
P:	P14040	bar	L=---	H=0.5	ME TBCH LO filter diff pressure
Q:					
R:	V14041	<0-1>			ME TBCH LO filter 1
S:	V14042	<0-1>			ME TBCH LO filter 2
T:					

2.136 Page:1402 MD14** ME TBCH LO COOLER (1/2)

A:					
B:					
C:	V14031	<0-1>			ME TBCH LO cooler shut off valve
D:	V14032	<0-1>			ME TBCH LO cooler bypass shut off valve
E:					
F:	G14030	ton/h			ME TBCH LO cooler flow
G:	G14031	ton/h			ME TBCH LO cooler bypass flow
H:	T14031	degC			ME TBCH LO cooler outlet temp
I:	H14031	kW			ME TBCH LO cooler heat transfer
J:					
K:	G14034	ton/h			ME TBCH LO cooler JW flow
L:	T14034	degC			ME TBCH LO cooler JW inlet temp
M:	T14035	degC			ME TBCH LO cooler JW outlet temp
N:					
O:	V14030	%			ME TBCH LO cooler bypass valve
P:					
Q:	P14050	bar	L=3.0	H=---	ME TBCH LO supply line pressure
R:	T14050	degC	L=50.0	H=75.0	ME TBCH LO supply line temp
S:					
T:					

2.137 Page:1403 MD14** ME TBCH LO COOLER (2/2)

A:					
B:					
C:	Z14013	kW/m2C			ME TBCH cooler htc (LO side)
D:	Z14014	kW/m2C			ME TBCH cooler htc (FW side)
E:	Z14015	kW/m2C			ME TBCH cooler htc (wall metal)
F:	Z14011	m2			ME TBCH cooler heat transfer area
G:	Z14012	kW/m2C			ME TBCH cooler htc (overall)
H:					
I:	C14005	kg/s			ME TBCH cooler nominal LO flow
J:	C14006	kg/s			ME TBCH cooler nominal FW flow
K:	C14002	kW/m2C			ME TBCH cooler LO side nominal htc
L:	C14003	kW/m2C			ME TBCH cooler FW side nominal htc
M:	C14004	kW/m2C			ME TBCH cooler LO/FW wall htc
N:					
O:					
P:	C14011	<0-10>			ME TBCH cooler size factor
Q:					
R:					
S:					
T:					

2.138 Page:1405 MD14** ME TBCH CASING COOLING (1/2)

A:					
B:	V13112	<0-1>			ME TBCH 1 cooling water shut off valve
C:	G13112	ton/h			ME TBCH 1 cooling water flow
D:	T13112	degC	L=---	H=92.0	ME TBCH 1 cooling water outlet temp
E:	H13112	kW	L=---	H=---	ME TBCH 1 cooling heat
F:					
G:	V13122	<0-1>			ME TBCH 2 cooling water shut off valve
H:	G13122	ton/h			ME TBCH 2 cooling water flow
I:	T13122	degC	L=---	H=92.0	ME TBCH 2 cooling water outlet temp
J:	H13122	kW	L=---	H=---	ME TBCH 2 cooling heat
K:					
L:	V13132	<0-1>			ME TBCH 3 cooling water shut off valve
M:	G13132	ton/h			ME TBCH 3 cooling water flow
N:	T13132	degC	L=---	H=92.0	ME TBCH 3 cooling water outlet temp
O:	H13132	kW	L=---	H=---	ME TBCH 3 cooling heat
P:					
Q:					
R:					
S:					
T:					

2.139 Page:1406 MD14** ME TBCH CASING COOLING (2/2)

A:			
B:			
C:	P14055	bar	ME TBCH coolw supply line pressure
D:	T14055	degC	ME TBCH coolw supply line temp
E:			
F:	G14056	ton/h	ME TBCH coolw return flow
G:	T14056	degC	ME TBCH coolw return temp
H:			
I:			
J:			
K:			
L:			
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.140 Page:1410 MD14** ME TBCH LO TEMP CONTROL

A:			
B:	X14061	<0-1>	ME TBCH LO temp contr auto switch
C:	Z14065	%	ME TBCH LO temp contr manual output
D:			
E:	T14061	degC	ME TBCH LO temp contr set point
F:	T14062	degC	ME TBCH LO temp contr sensor signal
G:	Z14063	%	ME TBCH LO temp contr output signal
H:	V14060	%	ME TBCH LO temp contr valve pos
I:			
J:			
K:	C14061	%/degC	ME TBCH LO temp contr gain
L:	C14062	sec	ME TBCH LO temp contr integration time
M:	C14063	sec	ME TBCH LO temp contr derivation time
N:	C14064	<0-10>	ME TBCH LO temp contr derivation range
O:			
P:	C14065	sec	ME TBCH LO temp contr valve tc
Q:	C14066	sec	ME TBCH LO temp contr sensor tc
R:			
S:			
T:			

2.141 Page:1411 MD14** ME TBCH no 1 WASHING

A:					
B:					
C:	X13011	<0-1>			ME TBCH 1 compressor wash command
D:	X13012	<0-1>			ME TBCH 1 compressor wash state
E:	X13013	<0-1>			ME TBCH 1 compressor wash ready
F:					
G:					
H:	X13015	<0-1>			ME TBCH 1 turbine wash command
I:	X13016	<0-1>			ME TBCH 1 turbine wash state
J:	X13017	<0-1>			ME TBCH 1 turbine wash ready
K:					
L:	T13015	degC	L=---	H=515.0	ME TBCH 1 turbine inlet temp
M:	Z13012	%	L=---	H=60.0	ME TBCH 1 vibration
N:	Z13013	%			ME TBCH 1 surge index
O:	N13010	rpm	L=---	H=10000.0	ME TBCH 1 speed
P:					
Q:					
R:					
S:					
T:					

2.142 Page:1412 MD14** ME TBCH no 2 WASHING

A:					
B:					
C:	X13021	<0-1>			ME TBCH 2 compressor wash command
D:	X13022	<0-1>			ME TBCH 2 compressor wash state
E:	X13023	<0-1>			ME TBCH 2 compressor wash ready
F:					
G:					
H:	X13025	<0-1>			ME TBCH 2 turbine wash command
I:	X13026	<0-1>			ME TBCH 2 turbine wash state
J:	X13027	<0-1>			ME TBCH 2 turbine wash ready
K:					
L:	T13025	degC	L=---	H=515.0	ME TBCH 2 turbine inlet temp
M:	Z13022	%	L=---	H=60.0	ME TBCH 2 vibration
N:	Z13023	%			ME TBCH 2 surge index
O:	N13020	rpm	L=---	H=10000.0	ME TBCH 2 speed
P:					
Q:					
R:					
S:					
T:					

2.143 Page:1413 MD14** ME TBCH no 3 WASHING

A:					
B:					
C:	X13031	<0-1>			ME TBCH 3 compressor wash command
D:	X13032	<0-1>			ME TBCH 3 compressor wash state
E:	X13033	<0-1>			ME TBCH 3 compressor wash ready
F:					
G:					
H:	X13035	<0-1>			ME TBCH 3 turbine wash command
I:	X13036	<0-1>			ME TBCH 3 turbine wash state
J:	X13037	<0-1>			ME TBCH 3 turbine wash ready
K:					
L:	T13035	degC	L=---	H=515.0	ME TBCH 3 turbine inlet temp
M:	Z13032	%	L=---	H=60.0	ME TBCH 3 vibration
N:	Z13033	%			ME TBCH 3 surge index
O:	N13030	rpm	L=---	H=10000.0	ME TBCH 3 speed
P:					
Q:					
R:					
S:					
T:					

2.144 Page:1414 MD14** ME TBCH WASHING READY LIMITS

A:			
B:			
C:			
D:	C13024	rpm	ME TBCH compr wash min speed
E:			
F:	C13025	rpm	ME TBCH turb wash min speed
G:	C13027	degC	ME TBCH turb wash max inlet exh temp
H:	C13028	degC	ME TBCH turb wash min outlet exh temp
I:			
J:			
K:	K13027	degC	ME TBCH turb wash damage : start
L:	K13028	degC	ME TBCH turb wash damage : full
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.145 Page:1420 MD14** ME TBCH BEARINGS

A:					
B:	V13110	<0-1>			ME TBCH 1 bearing LO shut off valve
C:	P13110	bar			ME TBCH 1 bearing LO pressure
D:	G13110	ton/h			ME TBCH 1 bearing LO flow
E:	T13110	degC	L=---	H=110.0	ME TBCH 1 bearing LO outlet temp
F:					
G:	V13120	<0-1>			ME TBCH 2 bearing LO shut off valve
H:	P13120	bar			ME TBCH 2 bearing LO pressure
I:	G13120	ton/h			ME TBCH 2 bearing LO flow
J:	T13120	degC	L=---	H=110.0	ME TBCH 2 bearing LO outlet temp
K:					
L:	V13130	<0-1>			ME TBCH 3 bearing LO shut off valve
M:	P13130	bar			ME TBCH 3 bearing LO pressure
N:	G13130	ton/h			ME TBCH 3 bearing LO flow
O:	T13130	degC	L=---	H=110.0	ME TBCH 3 bearing LO outlet temp
P:					
Q:					
R:					
S:					
T:					

2.146 Page:1700 MD17** LO PURIFIER SUPPLY (1/2)

A:			
B:	G04208	kg/h	LO Purif 1 ME serv. tank suction flow
C:	G04209	kg/h	LO Purif 1 Purifier tank suction flow
D:	T04220	degC	LO Purif 1 suction flow temp
E:	Z04220	ppm	LO Purif 1 suction flow dirt content
F:	G04218	kg/h	LO Purif 1 ME serv. tank return flow
G:	G04219	kg/h	LO Purif 1 Purifier tank return flow
H:	T04217	degC	LO Purif 1 discharge flow temp
I:	Z04217	ppm	LO Purif 1 discharge flow dirt content
J:			
K:			
L:	G24208	kg/h	LO Purif 2 ME serv. tank suction flow
M:	G24209	kg/h	LO Purif 2 Purifier tank suction flow
N:	T24220	degC	LO Purif 2 suction flow temp
O:	Z24220	ppm	LO Purif 2 suction flow dirt content
P:	G24218	kg/h	LO Purif 2 ME serv. tank return flow
Q:	G24219	kg/h	LO Purif 2 Purifier tank return flow
R:	T24217	degC	LO Purif 2 discharge flow temp
S:	Z24217	ppm	LO Purif 2 discharge flow dirt content
T:			

2.147 Page:1701 MD17** LO PURIFIER SUPPLY (2/2)

A:					
B:					
C:	G04271	kg/h			LO Purifier ME serv tank suction flow
D:	T04271	degC			LO Purifier ME serv tank suction temp
E:	Z04271	ppm			LO Purifier ME serv tank suction dirt
F:	G04272	kg/h			LO Purifier ME serv tank return flow
G:	T04272	degC			LO Purifier ME serv tank return temp
H:	Z04272	ppm			LO Purifier ME serv tank return dirt
I:					
J:	C04266	kg/cbm			LO Purifier tank density (40 dgrC)
K:	L04266	m	L=---	H=3.9	LO Purifier tank level
L:	T04266	degC			LO Purifier tank temp
M:	Z04266	ppm	L=---	H=---	LO Purifier tank dirt content
N:	G04266	kg/h	L=---	H=0.1	LO Purifier tank overflow
O:					
P:	L04270	m	L=---	H=3.9	LO Storage tank level
Q:	T04270	degC			LO Storage tank temp
R:	Z04270	ppm			LO Storage tank dirt content
S:					
T:	C04270	ppm			Clean LO dirt (particle) content

2.148 Page:1702 MD17** LO PURIFIER no 1 (1/3)

A:					
B:	G04201	kg/h			LO Purif 1 inlet flow
C:	G04205	kg/h			LO Purif 1 outlet flow (clean)
D:	G04202	kg/h			LO Purif 1 sludge flow (dirty)
E:	G04203	kg/h			LO Purif 1 drain flow (shooting)
F:	X04211	%			LO Purif 1 gravity ring (100=max diam)
G:					
H:	Z04213	%			LO Purif 1 cleaning efficiency
I:	Z04214	ppm			LO Purif 1 outlet flow dirt content
J:	Z04216	%	L=---	H=90.0	LO Purif 1 sludge flow oil content
K:	X04264	<0-2>			LO Purif 1 auto switch
L:	R04260	<0-1>			LO Purif 1 start/stop (centrifuge)
M:	V04246	<0-1>			LO Purif 1 make up water valve
N:	V04247	<0-1>			LO Purif 1 operating water valve
O:	V04250	<0-1>			LO Purif 1 seal/flush water valve
P:	V04251	<0-1>			LO Purif 1 LO inlet valve
Q:					
R:	X04255	<0-1>	L=---	H=---	LO Purif 1 powl open
S:	X04262	<0-6>			LO Purif 1 state (indication)
T:					

2.149 Page:1703 MD17** LO PURIFIER no 1 (2/3)

A:					
B:					
C:	R04261	<0-1>			LO Purif 1 feed pump
D:	E04261	kW			LO Purif 1 feed pump power
E:	N04261	%			LO Purif 1 feed pump speed setting
F:	V04257	<0-1>			LO Purif 1 bypass feed valve
G:					
H:	G04206	kg/h			LO Purif 1 suction flow
I:	T04220	degC			LO Purif 1 suction flow temp
J:	Z04220	ppm			LO Purif 1 suction flow dirt content
K:					
L:	G04207	kg/h			LO Purif 1 discharge flow
M:	T04217	degC			LO Purif 1 discharge flow temp
N:	Z04217	ppm			LO Purif 1 discharge flow dirt content
O:					
P:	N04260	rpm			LO Purif 1 motor speed
Q:	E04260	kW			LO Purif 1 motor power
R:	I04260	A			LO Purif 1 motor current
S:					
T:					

2.150 Page:1704 MD17** LO PURIFIER no 1 (3/3)

A:					
B:	C10401	min			LO Purif 1 auto shooting interval
C:					
D:	V04253	<0-1>			LO Purif 1 hot flush water supply valve
E:	V04254	<0-1>	L=---	H=---	LO Purif 1 heater steam shut off valve
F:					
G:					
H:	V04252	<0-1>			LO Purif 1 water tank make up valve
I:	G04240	kg/h			LO Purif 1 water make up flow
J:	L04241	m	L=0.3	H=0.9	LO Purif 1 water tank level
K:	G04241	kg/h	L=---	H=0.1	LO Purif 1 water overflow
L:					
M:					
N:	L04201	%			LO Purif 1 water interface level
O:	M04201	%			LO Purif 1 bowl dirt content
P:	C04201	<0-10>			LO Purif 1 bowl dirt content speed up
Q:					
R:					
S:					
T:					

2.151 Page:1705 MD17** LO PURIFIER no 2 (1/3)

A:					
B:	G24201	kg/h			LO Purif 2 inlet flow
C:	G24205	kg/h			LO Purif 2 outlet flow (clean)
D:	G24202	kg/h			LO Purif 2 sludge flow (dirty)
E:	G24203	kg/h			LO Purif 2 drain flow (shooting)
F:	X24211	%			LO Purif 2 gravity ring (100=max diam)
G:					
H:	Z24213	%			LO Purif 2 cleaning efficiency
I:	Z24214	ppm			LO Purif 2 outlet flow dirt content
J:	Z24216	%	L=---	H=90.0	LO Purif 2 sludge flow oil content
K:	X24264	<0-2>			LO Purif 2 auto switch
L:	R24260	<0-1>			LO Purif 2 start/stop (centrifuge)
M:	V24246	<0-1>			LO Purif 2 make up water valve
N:	V24247	<0-1>			LO Purif 2 operating water valve
O:	V24250	<0-1>			LO Purif 2 seal/flush water valve
P:	V24251	<0-1>			LO Purif 2 LO inlet valve
Q:					
R:	X24255	<0-1>	L=---	H=---	LO Purif 2 powl open
S:	X24262	<0-6>			LO Purif 2 state (indication)
T:					

2.152 Page:1706 MD17** LO PURIFIER no 2 (2/3)

A:					
B:					
C:	R24261	<0-1>			LO Purif 2 feed pump
D:	E24261	kW			LO Purif 2 feed pump power
E:	N24261	%			LO Purif 2 feed pump speed setting
F:	V24257	<0-1>			LO Purif 2 bypass feed valve
G:					
H:	G24206	kg/h			LO Purif 2 suction flow
I:	T24220	degC			LO Purif 2 suction flow temp
J:	Z24220	ppm			LO Purif 2 suction flow dirt content
K:					
L:	G24207	kg/h			LO Purif 2 discharge flow
M:	T24217	degC			LO Purif 2 discharge flow temp
N:	Z24217	ppm			LO Purif 2 discharge flow dirt content
O:					
P:	N24260	rpm			LO Purif 2 motor speed
Q:	E24260	kW			LO Purif 2 motor power
R:	I24260	A			LO Purif 2 motor current
S:					
T:					

2.153 Page:1707 MD17** LO PURIFIER no 2 (3/3)

A:					
B:	C10403	min			LO Purif 2 auto shooting interval
C:					
D:	V24253	<0-1>			LO Purif 2 hot flush water supply valve
E:	V24254	<0-1>	L=---	H=---	LO Purif 2 heater steam shut off valve
F:					
G:					
H:	V24252	<0-1>	L=---	H=---	LO Purif 2 water tank make up valve
I:	G24240	kg/h			LO Purif 2 water make up flow
J:	L24241	m	L=0.3	H=0.9	LO Purif 2 water tank level
K:	G24241	kg/h	L=---	H=0.1	LO Purif 2 water overflow
L:					
M:					
N:	L24201	%			LO Purif 2 water interface level
O:	M24201	%			LO Purif 2 bowl dirt content
P:	C24201	<0-10>			LO Purif 2 bowl dirt content speed up
Q:					
R:					
S:					
T:					

2.154 Page:1710 MD17** LO PURIFIER no 1 TEMP CONTROL

A:					
B:	X04231	<0-1>			LO Purif 1 temp contr auto switch
C:	Z04232	%			LO Purif 1 temp contr manual output
D:					
E:	T04230	degC			LO Purif 1 temp contr set point
F:	T04221	degC	L=80.0	H=95.0	LO Purif 1 heater outlet temp
G:	V04224	%			LO Purif 1 heater valve pos
H:					
I:	G04223	kg/h			LO Purif 1 heater steam flow
J:	T04220	degC			LO Purif 1 suction flow temp
K:					
L:					
M:					
N:	X04235	<0-1>			LO Purif 1 temp contr HW PID select
O:					
P:	C04233	%/degC			LO Purif 1 temp contr gain
Q:	C04234	sec			LO Purif 1 temp contr integr time
R:	C04236	sec			LO Purif 1 temp contr deriv. time
S:					
T:					

2.155 Page:1711 MD17** LO PURIFIER no 2 TEMP CONTROL

A:					
B:	X24231	<0-1>			LO Purif 2 temp contr auto switch
C:	Z24232	%			LO Purif 2 temp contr manual output
D:					
E:	T24230	degC			LO Purif 2 temp contr set point
F:	T24221	degC	L=80.0	H=95.0	LO Purif 2 heater outlet temp
G:	V24224	%			LO Purif 2 heater valve pos
H:					
I:	G24223	kg/h			LO Purif 2 heater steam flow
J:	T24220	degC			LO Purif 2 suction flow temp
K:					
L:					
M:					
N:	X24235	<0-1>			LO Purif 2 temp contr HW PID select
O:					
P:	C24233	%/degC			LO Purif 2 temp contr gain
Q:	C24234	sec			LO Purif 2 temp contr integr time
R:	C24236	sec			LO Purif 2 temp contr deriv. time
S:					
T:					

2.156 Page:1900 MD19** ME CONTROL SYSTEM - LOCAL (1/2)

A:					
B:	X01997	<0-1>			ME Speed Governor local control
C:					
D:	N01990	rpm			ME Speed Governor set point (remote)
E:	N01991	rpm			ME Speed Governor set point (local)
F:					
G:	Z01991	<0-10>			ME load indicator (FL position)
H:	E02005	MW	L=---	H=53.5	ME shaft power
I:	N02015	rpm	L=---	H=106.0	ME speed
J:					
K:	X02407	<0-1>			ME cam position com (1=astern)
L:	X02408	<0-1>			ME cam position (1=astern)
M:					
N:	X02417	<0-1>			ME start air valve
O:	X02420	<0-1>			ME start air slow turning
P:	X02473	<0-1>			ME fuel link stop command (governor)
Q:					
R:	X02412	<0-1>			ME turning gear
S:	E02412	kW			ME turning gear power
T:					

2.157 Page:1901 MD19** ME CONTROL SYSTEM - LOCAL (2/2)

A:					
B:					
C:	X01990	<0-1>			ME Fuel control lever disengaged
D:	X01991	<0-1>			ME Fuel control lever engaged
E:					
F:	Z01990	<0-10>			ME Fuel control lever position
G:					
H:					
I:	X11991	<0-1>			ME Stop lever in run position
J:	X11990	<0-1>			ME Stop lever in stop position
K:	X01985	<0-1>			ME Reversing lever start ahead pos
L:	X01986	<0-1>			ME Reversing lever run ahead pos
M:	X01987	<0-1>			ME Reversing lever remote control pos
N:	X01988	<0-1>			ME Reversing lever run astern pos
O:	X01989	<0-1>			ME Reversing lever start astern pos
P:					
Q:	X02010	%			ME fuel link position
R:	N02015	rpm	L=---	H=106.0	ME speed
S:	P04421	bar			ME start air supply press
T:					

2.158 Page:1902 MD19** ME FUEL PUMP / FUEL LINKAGE PROFILE

A:					
B:					
C:					
D:					
E:	C20260	%			ME fuel pump stroke at 0 % FL pos
F:	C20261	%			ME fuel pump stroke at 10 % FL pos
G:	C20262	%			ME fuel pump stroke at 20 % FL pos
H:	C20263	%			ME fuel pump stroke at 30 % FL pos
I:	C20264	%			ME fuel pump stroke at 40 % FL pos
J:	C20265	%			ME fuel pump stroke at 50 % FL pos
K:	C20266	%			ME fuel pump stroke at 60 % FL pos
L:	C20267	%			ME fuel pump stroke at 70 % FL pos
M:	C20268	%			ME fuel pump stroke at 80 % FL pos
N:	C20269	%			ME fuel pump stroke at 90 % FL pos
O:	C20270	%			ME fuel pump stroke at 100 % FL pos
P:					
Q:					
R:					
S:					
T:					

2.159 Page:1903 MD19** ME GOVERNOR SCAV AIR LIMIT PROFILE

A:			
B:	C20310	bar	ME scav air pressure P0
C:	C20311	bar	ME scav air pressure P1
D:	C20312	bar	ME scav air pressure P2
E:	C20313	bar	ME scav air pressure P3
F:	C20314	bar	ME scav air pressure P4
G:	C20315	bar	ME scav air pressure P5
H:	C20316	bar	ME scav air pressure P6
I:	C20317	bar	ME scav air pressure P7
J:			
K:			
L:	C20320	%	Max governor command at P0
M:	C20321	%	Max governor command at P1
N:	C20322	%	Max governor command at P2
O:	C20323	%	Max governor command at P3
P:	C20324	%	Max governor command at P4
Q:	C20325	%	Max governor command at P5
R:	C20326	%	Max governor command at P6
S:	C20327	%	Max governor command at P7
T:			

2.160 Page:1904 MD19** ME GOVERNOR TORQUE LIMIT PROFILE

A:			
B:	C20330	rpm	ME speed N0
C:	C20331	rpm	ME speed N1
D:	C20332	rpm	ME speed N2
E:	C20333	rpm	ME speed N3
F:	C20334	rpm	ME speed N4
G:	C20335	rpm	ME speed N5
H:	C20336	rpm	ME speed N6
I:	C20337	rpm	ME speed N7
J:			
K:			
L:	C20340	%	Max governor command at N0
M:	C20341	%	Max governor command at N1
N:	C20342	%	Max governor command at N2
O:	C20343	%	Max governor command at N3
P:	C20344	%	Max governor command at N4
Q:	C20345	%	Max governor command at N5
R:	C20346	%	Max governor command at N6
S:	C20347	%	Max governor command at N7
T:			

2.161 Page:1910 MD19** ME SPEED GOVERNOR CONSTANTS (1/2)

A:			
B:			
C:	C01970	%/%	AC speed Governor gain
D:	C01971	sec	AC speed Governor integration time
E:	C01972	sec	AC speed Governor derivation time
F:			
G:	C01975	rpm	AC start air off speed
H:	C01976	sec	AC start air on time limit
I:	C01977	sec	AC brake air on time limit
J:			
K:	C01978	rpm	AC max reversing speed (normal)
L:	C01979	rpm	AC max reversing speed (emrun)
M:			
N:	C01919	rpm	Max speed if slow down
O:	C01918	rpm	Max speed set point (ultimate)
P:			
Q:	N01918	rpm	Max speed (Chief limit) ahead
R:	N01919	rpm	Max speed (Chief limit) astern
S:			
T:			

2.162 Page:1911 MD19** ME SPEED GOVERNOR CONSTANTS (2/2)

A:			
B:	Z01910	%	ME fuel link output limit (active)
C:			
D:	X20301	%	ME scav air press governor limit
E:	X20302	%	ME speed (torque) governor limit
F:			
G:			
H:			
I:			
J:	C07550	rpm	Acceleration (P1) : high speed command
K:	C07551	rpm/s	Acceleration (P2) : up rate - low
L:	C07552	rpm/s	Acceleration (P3) : down rate - low
M:	C07553	rpm/s	Acceleration (P4) : up rate - high
N:	C07554	rpm/s	Acceleration (P5) : down rate - high
O:			
P:			
Q:			
R:			
S:			
T:			

2.163 Page:1912 MD19** ME MANEUVERING LEVER PROFILE - FPP

A:			
B:	Z07542	%	Control lever pos - Bridge
C:	Z07543	%	Control lever pos - ECR
D:	Z07540	%	Control lever pos - active
E:			
F:	Z07545	rpm	Control lever speed command
G:			
H:	C01980	rpm	AC critical speed setpoint (low)
I:	C01981	rpm	AC critical speed setpoint (high)
J:			
K:	C07530	rpm	Sea mode - min speed (AHD/AST)
L:	C07531	rpm	Sea mode - idle speed (AHD)
M:	C07532	rpm	Sea mode - full speed (AHD)
N:	C07533	rpm	Sea mode - idle speed (AST)
O:	C07534	rpm	Sea mode - full speed (AST)
P:	C07535	rpm	Man mode - min speed (AHD/AST)
Q:	C07536	rpm	Man mode - idle speed (AHD)
R:	C07537	rpm	Man mode - full speed (AHD)
S:	C07538	rpm	Man mode - idle speed (AST)
T:	C07539	rpm	Man mode - full speed (AST)

2.164 Page:1913 MD19** ME THERMAL SPEED LIMITATION PROGRAM

A:			
B:	Z01985	<1-10>	AC thermal speed up factor (simulator)
C:			
D:	C01985	rpm	AC thermal program speed 1 (N1)
E:	C01986	rpm	AC thermal program speed 2 (N2)
F:	C01987	rpm	AC thermal program speed 3 (N3)
G:	C01988	rpm	AC thermal program speed 4 (N4)
H:	C01989	rpm	AC thermal program speed 5 (N5)
I:			
J:	C01990	min	AC thermal program time 1 (N1/N2)
K:	C01991	min	AC thermal program time 2 (N2/N3)
L:	C01992	min	AC thermal program time 3 (N3/N4)
M:	C01993	min	AC thermal program time 4 (N4/N5)
N:			
O:	C01997	<0-2>	AC thermal override at manoeuvring
P:	C01994	<1-10>	AC thermal speed up at manoeuvring
Q:	C01995	<1-10>	AC thermal speed up at reduction
R:	C01996	<1-10>	AC thermal speed up at slow down
S:			
T:			

2.165 Page:1915 MD19** ME START INHIBIT PROGRAM (1/2)

A:			
B:	X11940	<0-1>	ME not ready for start
C:			
D:	X11941	<0-1>	ME JW temperature low
E:	X11942	<0-1>	ME LO temperature low
F:	X11943	<0-1>	ME FO pressure low
G:	X11944	<0-1>	ME FO viscosity high
H:	X11945	<0-1>	ME not lubricated
I:	X11946	<0-1>	ME not slow turned
J:			
K:	C11941	degC	ME JW temperature low
L:	C11942	degC	ME LO temperature low
M:	C11943	bar	ME FO pressure low
N:	C11944	cSt	ME FO viscosity high
O:	C11945	%	ME not lubricated
P:	C11946	sec	ME not slow turned
Q:			
R:	Z11945	%	ME liners lubrication index (0=dry)
S:	Z11946	sec	ME stand still counter
T:			

2.166 Page:1916 MD19** ME START INHIBIT PROGRAM (2/2)

A:			
B:			
C:	X11950	<0-1>	AC start inhibit if not ready
D:	X11951	<0-3>	AC start inhibit if blowers not run
E:			
F:	X07526	<0-1>	ME ready for start (ECR light)
G:			
H:			
I:			
J:			
K:			
L:			
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.167 Page:1917 MD19** ME CYL LUBRICATION (1/2)

A:			
B:	N01380	rpm	ME cyl prelubri speed sp
C:	T01380	sec	ME cyl prelubri time (on)
D:	T01381	sec	ME cyl prelubri time (off)
E:			
F:	N01390	rpm	ME cyl lubricator shaft speed
G:	E01390	kW	ME cyl lubricator drive power
H:			
I:	X01395	<0-1>	ME cyl emerg lubri motor active
J:	N01395	%	ME cyl emerg lubri motor speed sp
K:			
L:	C01380	%	ME cyl lubri control: low engine power
M:	C01381	%	ME cyl lubri control: hig engine power
N:	C01382	rpm	ME cyl lubri control: low drive speed
O:	C01383	rpm	ME cyl lubri control: hig drive speed
P:			
Q:	C01384	<0-2>	ME cyl lubri control: power rate gain
R:	C01385	sec	ME cyl lubri control: power rate tc
S:	C01386	<0-2>	ME cyl lubri control: speed adjust
T:			

2.168 Page:1918 MD19** ME CYL LUBRICATION (2/2)

A:					
B:					
C:					
D:					
E:	G11017	kg/h	L=0.3	H=---	ME Cyl 1 cylinder oil flow
F:	G11027	kg/h	L=0.3	H=---	ME Cyl 2 cylinder oil flow
G:	G11037	kg/h	L=0.3	H=---	ME Cyl 3 cylinder oil flow
H:	G11047	kg/h	L=0.3	H=---	ME Cyl 4 cylinder oil flow
I:	G11057	kg/h	L=0.3	H=---	ME Cyl 5 cylinder oil flow
J:	G11067	kg/h	L=0.3	H=---	ME Cyl 6 cylinder oil flow
K:	G11217	kg/h	L=0.3	H=---	ME Cyl 7 cylinder oil flow
L:	G11227	kg/h	L=0.3	H=---	ME Cyl 8 cylinder oil flow
M:	G11237	kg/h	L=0.3	H=---	ME Cyl 9 cylinder oil flow
N:	G11247	kg/h	L=0.3	H=---	ME Cyl 10 cylinder oil flow
O:	G11257	kg/h	L=0.3	H=---	ME Cyl 11 cylinder oil flow
P:	G11267	kg/h	L=0.3	H=---	ME Cyl 12 cylinder oil flow
Q:					
R:					
S:					
T:					

2.169 Page:1920 MD19** ME SAFETY SYSTEM

A:					
B:					
C:	X02444	<0-2>	L=---	H=1.0	AUTOCHIEF : SHUT DOWN
D:	X02445	<0-2>	L=---	H=1.0	AUTOCHIEF : SLOW DOWN
E:	X02446	<0-2>	L=---	H=1.0	AUTOCHIEF : FAIL
F:					
G:	Z01960	sec			ME SHUT DOWN delay time (display)
H:	Z01961	sec			ME SLOW DOWN delay time (display)
I:					
J:					
K:					
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.170 Page:1921 MD19** ME SHUT DOWN SIGNALS (1/2)

A:					
B:	Z20001	bar	L=3.0	H=---	SHU1-1: Main LO pressure signal 1
C:	C20001	bar			SHU1-1: Main LO pressure limit
D:	D20001	sec			SHU1-1: Main LO pressure shutd delay
E:	T20001	sec			SHU1-1: Main LO pressure filter
F:					
G:	Z20002	bar	L=2.7	H=---	SHU1-2: Main LO pressure signal 2
H:	C20002	bar			SHU1-2: Main LO pressure limit
I:	D20002	sec			SHU1-2: Main LO pressure shutd delay
J:	T20002	sec			SHU1-2: Main LO pressure filter
K:					
L:	Z20011	bar	L=2.4	H=---	SHU2-1: ME JW pressure signal 1
M:	C20011	bar			SHU2-1: ME JW pressure limit
N:	D20011	sec			SHU2-1: ME JW pressure shutd delay
O:	T20011	sec			SHU2-1: ME JW pressure filter
P:					
Q:	Z20021	kg/s	L=2.0	H=---	SHU3-1: ME piston LO flow signal
R:	C20021	kg/s			SHU3-1: ME piston LO flow limit
S:	D20021	sec			SHU3-1: ME piston LO flow shutd delay
T:	T20021	sec			SHU3-1: ME piston LO flow filter

2.171 Page:1922 MD19** ME SHUT DOWN SIGNALS (2/2)

A:					
B:	Z20031	bar	L=4.5	H=---	SHU4-1: ME exh v air spring p signal 1
C:	C20031	bar			SHU4-1: ME exh v air spring p limit
D:	D20031	sec			SHU4-1: ME exh v air spring p shutd delay
E:	T20031	sec			SHU4-1: ME exh v air spring p filter
F:					
G:	Z20032	bar	L=4.5	H=---	SHU4-2: ME exh v air spring p signal 2
H:	C20032	bar			SHU4-2: ME exh v air spring p limit
I:	D20032	sec			SHU4-2: ME exh v air spring p shutd delay
J:	T20032	sec			SHU4-2: ME exh v air spring p filter
K:					
L:	Z20041	rpm	L=---	H=110.0	SHU5-1: ME speed signal 1
M:	C20041	rpm			SHU5-1: ME speed limit
N:	D20041	sec			SHU5-1: ME speed shutd delay
O:	T20041	sec			SHU5-1: ME speed signal filter
P:					
Q:	Z20042	rpm	L=---	H=110.0	SHU5-2: ME speed signal 2
R:	C20042	rpm			SHU5-2: ME speed limit
S:	D20042	sec			SHU5-2: ME speed shutd delay
T:	T20042	sec			SHU5-2: ME speed signal filter

2.172 Page:1923 MD19** ME SLOW DOWN SIGNALS (1/5)

A:					
B:	Z20051	bar	L=3.2	H=---	SLO1-1: Main LO pressure signal 3
C:	C20051	bar			SLO1-1: Main LO pressure limit
D:	D20051	sec			SLO1-1: Main LO pressure slowd delay
E:	T20051	sec			SLO1-1: Main LO pressure filter
F:					
G:	Z20052	bar	L=9.0	H=---	SLO1-2: Cross head LO pressure signal
H:	C20052	bar			SLO1-2: Cross head LO pressure limit
I:	D20052	sec			SLO1-2: Cross head LO pressure slowd delay
J:	T20052	sec			SLO1-2: Cross head LO pressure filter
K:					
L:	Z20061	bar	L=2.5	H=---	SLO2-1: ME JW pressure signal 2
M:	C20061	bar			SLO2-1: ME JW pressure limit
N:	D20061	sec			SLO2-1: ME JW pressure shutd delay
O:	T20061	sec			SLO2-1: ME JW pressure filter
P:					
Q:	Z20062	degC	L=---	H=95.0	SLO2-2: ME JW cyl outl temp signal
R:	C20062	degC			SLO2-2: ME JW cyl outl temp limit
S:	D20062	sec			SLO2-2: ME JW cyl outl temp slowd delay
T:	T20062	sec			SLO2-2: ME JW cyl outl temp filter

2.173 Page:1924 MD19** ME SLOW DOWN SIGNALS (2/5)

A:					
B:	Z20071	degC	L=---	H=85.0	SLO3-1: ME piston LO outlet temp signal
C:	C20071	degC			SLO3-1: ME piston LO outlet temp limit
D:	D20071	sec			SLO3-1: ME piston LO outlet temp slowd delay
E:	T20071	sec			SLO3-1: ME piston LO outlet temp filter
F:					
G:	Z20082	degC	L=---	H=520.0	SLO4-1: ME cyl exh outl temp signal
H:	C20082	degC			SLO4-1: ME cyl exh outl temp limit
I:	D20082	sec			SLO4-1: ME cyl exh outl temp slowd delay
J:	T20082	sec			SLO4-1: ME cyl exh outl temp filter
K:					
L:	Z20083	degC	L=---	H=70.0	SLO4-2: ME cyl exh dev temp signal
M:	C20083	degC			SLO4-2: ME cyl exh dev temp limit
N:	D20083	sec			SLO4-2: ME cyl exh dev temp slowd delay
O:	T20083	sec			SLO4-2: ME cyl exh dev temp filter
P:					
Q:	Z20081	degC	L=---	H=530.0	SLO4-3: TBCH exh inlet temp signal
R:	C20081	degC			SLO4-3: TBCH exh inlet temp limit
S:	D20081	sec			SLO4-3: TBCH exh inlet temp slowd delay
T:	T20081	sec			SLO4-3: TBCH exh inlet temp filter

2.174 Page:1925 MD19** ME SLOW DOWN SIGNALS (3/5)

A:					
B:	Z20091	bar	L=6.0	H=---	SLO5-1: ME exh v air spring p signal 3
C:	C20091	bar			SLO5-1: ME exh v air spring p limit
D:	D20091	sec			SLO5-1: ME exh v air spring p slowd delay
E:	T20091	sec			SLO5-1: ME exh v air spring p filter
F:					
G:	Z20092	degC	L=---	H=55.0	SLO5-2: ME LO inlet temp signal
H:	C20092	degC			SLO5-2: ME LO inlet temp limit
I:	D20092	sec			SLO5-2: ME LO inlet temp slowd delay
J:	T20092	sec			SLO5-2: ME LO inlet temp signal filter
K:					
L:	Z20093	degC	L=---	H=65.0	SLO5-3: ME thrust LO outl temp signal
M:	C20093	degC			SLO5-3: ME thrust LO outl temp limit
N:	D20093	sec			SLO5-3: ME thrust LO outl temp slowd delay
O:	T20093	sec			SLO5-3: ME thrust LO outl temp filter
P:					
Q:	Z20094	%	L=---	H=60.0	SLO5-4: ME oil mist signal
R:	C20094	%			SLO5-4: ME oil mist limit
S:	D20094	sec			SLO5-4: ME oil mist slowd delay
T:	T20094	sec			SLO5-4: ME oil mist filter

2.175 Page:1926 MD19** ME SLOW DOWN SIGNALS (4/5)

A:					
B:	Z20095	degC	L=---	H=120.0	SLO5-5: TBCH bearing LO temp signal
C:	C20095	degC			SLO5-5: TBCH bearing LO temp limit
D:	D20095	sec			SLO5-5: TBCH bearing LO temp slowd delay
E:	T20095	sec			SLO5-5: TBCH bearing LO temp filter
F:					
G:	Z20096	degC	L=---	H=94.0	SLO5-6: TBCH casing JW temp signal
H:	C20096	degC			SLO5-6: TBCH casing JW temp limit
I:	D20096	sec			SLO5-6: TBCH casing JW temp slowd delay
J:	T20096	sec			SLO5-6: TBCH casing JW temp filter
K:					
L:	Z20097	kg/h	L=0.3	H=---	SLO5-7: ME cyl oil flow signal
M:	C20097	kg/h			SLO5-7: ME cyl oil flow limit
N:	D20097	sec			SLO5-7: ME cyl oil flow slowd delay
O:	T20097	sec			SLO5-7: ME cyl oil flow filter
P:					
Q:	Z20098	degC	L=---	H=70.0	SLO5-8: ME Airc outlet temp signal
R:	C20098	degC			SLO5-8: ME Airc outlet temp limit
S:	D20098	sec			SLO5-8: ME Airc outlet temp slowd delay
T:	T20098	sec			SLO5-8: ME Airc outlet temp filter

2.176 Page:1927 MD19** ME SLOW DOWN SIGNALS (5/5)

A:					
B:	Z20099	degC	L=---	H=120.0	SLO5-9: ME piston scav air t signal
C:	C20099	degC			SLO5-9: ME piston scav air t limit
D:	D20099	sec			SLO5-9: ME piston scav air t slowd delay
E:	T20099	sec			SLO5-9: ME piston scav air t filter
F:					
G:					
H:					
I:					
J:					
K:					
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.177 Page:1930 MD104** VARIABLE INJECTION TIMING - VIT

A:					
B:	X20100	<0-2>			VIT control auto mode (off/on/fail)
C:	X20101	<0-1>			VIT control manual mode
D:	X20102	<0-1>			VIT control NOx reduction mode
E:					
F:	X20110	deg			VIT angle (injection start) (final)
G:					
H:	X20115	deg			VIT angle 1 (fuel link)
I:	X20116	deg			VIT angle 2 (scav air press)
J:	X20117	deg			VIT angle 3 (NOx reduction)
K:	X20111	deg			VIT angle 4 (Fuel Quality Setting)
L:					
M:	C20110	deg			VIT angle 5 (offset)
N:					
O:	C20111	deg			VIT angle preset value (if VIT off)
P:					
Q:	X20190	<0-2>	L=---	H=1.0	VIT/VEC control fail (auto speed red)
R:	C20191	rpm			VIT/VEC control fail max speed ahead
S:	C20192	rpm			VIT/VEC control fail max speed astern
T:					

2.178 Page:1931 MD104** VARIABLE EXH. VALVE CLOSING - VEC

A:					
B:					
C:	X20200	<0-2>			VEC control auto mode (off/on/fail)
D:	X20201	<0-1>			VEC control manual mode
E:					
F:	X20210	deg			VEC angle (exh v close delay) (final)
G:					
H:	X20211	deg			VEC angle (control)
I:					
J:					
K:	C20210	deg			VEC angle (offset)
L:	C20211	deg			VEC angle (preset value if VEC off)
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.179 Page:1932 MD104** VIT CONTROL PROFILE 1

A:			
B:			
C:	X20115	deg	VIT angle 1 (fuel link)
D:			
E:			
F:	C20120	deg	VIT delay at 10 % fuel link pos
G:	C20121	deg	VIT delay at 20 % fuel link pos
H:	C20122	deg	VIT delay at 30 % fuel link pos
I:	C20123	deg	VIT delay at 40 % fuel link pos
J:	C20124	deg	VIT delay at 50 % fuel link pos
K:	C20125	deg	VIT delay at 60 % fuel link pos
L:	C20126	deg	VIT delay at 70 % fuel link pos
M:	C20127	deg	VIT delay at 80 % fuel link pos
N:	C20128	deg	VIT delay at 90 % fuel link pos
O:	C20129	deg	VIT delay at 100 % fuel link pos
P:			
Q:			
R:			
S:			
T:			

2.180 Page:1933 MD104** VIT CONTROL PROFILE 2

A:			
B:			
C:	X20116	deg	VIT angle 2 (scav air press)
D:			
E:			
F:	C20130	deg	VIT delay at 0.250 bar scav air press
G:	C20131	deg	VIT delay at 0.500 bar scav air press
H:	C20132	deg	VIT delay at 0.750 bar scav air press
I:	C20133	deg	VIT delay at 1.000 bar scav air press
J:	C20134	deg	VIT delay at 1.250 bar scav air press
K:	C20135	deg	VIT delay at 1.500 bar scav air press
L:	C20136	deg	VIT delay at 1.750 bar scav air press
M:	C20137	deg	VIT delay at 2.000 bar scav air press
N:	C20138	deg	VIT delay at 2.250 bar scav air press
O:	C20139	deg	VIT delay at 2.500 bar scav air press
P:			
Q:			
R:			
S:			
T:			

2.181 Page:1934 MD104** VIT CONTROL PROFILE 3

A:			
B:			
C:	X20117	deg	VIT angle 3 (NOx reduction)
D:			
E:			
F:	C20140	deg	VIT delay at 0.250 bar scav air press
G:	C20141	deg	VIT delay at 0.500 bar scav air press
H:	C20142	deg	VIT delay at 0.750 bar scav air press
I:	C20143	deg	VIT delay at 1.000 bar scav air press
J:	C20144	deg	VIT delay at 1.250 bar scav air press
K:	C20145	deg	VIT delay at 1.500 bar scav air press
L:	C20146	deg	VIT delay at 1.750 bar scav air press
M:	C20147	deg	VIT delay at 2.000 bar scav air press
N:	C20148	deg	VIT delay at 2.250 bar scav air press
O:	C20149	deg	VIT delay at 2.500 bar scav air press
P:			
Q:			
R:			
S:			
T:			

2.182 Page:1935 MD104** VEC CONTROL PROFILE

A:			
B:			
C:	X20211	deg	VEC angle (control)
D:			
E:			
F:	C20220	deg	VEC delay at 0.250 bar scav air press
G:	C20221	deg	VEC delay at 0.500 bar scav air press
H:	C20222	deg	VEC delay at 0.750 bar scav air press
I:	C20223	deg	VEC delay at 1.000 bar scav air press
J:	C20224	deg	VEC delay at 1.250 bar scav air press
K:	C20225	deg	VEC delay at 1.500 bar scav air press
L:	C20226	deg	VEC delay at 1.750 bar scav air press
M:	C20227	deg	VEC delay at 2.000 bar scav air press
N:	C20228	deg	VEC delay at 2.250 bar scav air press
O:	C20229	deg	VEC delay at 2.500 bar scav air press
P:			
Q:			
R:			
S:			
T:			

2.183 Page:1940 MD104** ME CPP CONTROL (1/2)

A:					
B:	X14180	<0-1>			Controllable Pitch Propeller (0=FP,1=CP)
C:					
D:	N14160	rpm			ME CPP speed command (final)
E:	X14160	%			ME CPP pitch command (final)
F:					
G:	C14166	<0-10>			ME CPP pitch rate factor - Man mode
H:	C14167	<0-10>			ME CPP pitch rate factor - Sea mode
I:					
J:	C14160	%			ME CPP pitch high
K:	C14161	%/sec			ME CPP pitch incr limit - low
L:	C14162	%/sec			ME CPP pitch decr limit - low
M:	C14163	%/sec			ME CPP pitch incr limit - high
N:	C14164	%/sec			ME CPP pitch decr limit - high
O:					
P:	P03701	bar	L=20.0	H=50.0	Prop servo oil press
Q:	R03740	<0-1>			Prop servo oil pump 1
R:	R03741	<0-1>			Prop servo oil pump 2
S:					
T:					

2.184 Page:1941 MD104** ME CPP CONTROL (2/2)

A:			
B:	X14190	<0-1>	ME PCB controller off
C:			
D:	X14170	%	ME PCB contr pitch cut back
E:	X14171	%	ME PCB contr fuel link limit
F:	C14171	%/sec	ME PCB contr gain
G:	C14172	sec	ME PCB contr integration time
H:	C14173	sec	ME PCB contr fuel link limit tc
I:	C14174	%	ME PCB contr max pitch cut back
J:			
K:	C14176	%	ME PCB fuel link limit - idle speed
L:	C14177	%	ME PCB fuel link limit - full speed
M:			
N:	C14180	rpm	ME CPP starting speed
O:	C14181	rpm/s	ME CPP starting speed rate
P:	C14182	<0-50>	ME CPP thermal program speed up
Q:			
R:	X03762	P/D	Propeller pitch ratio
S:	N03761	rpm	Propeller speed
T:	N06312	knot	Ship speed

2.185 Page:1942 MD104** ME CPP COMBINATOR PROFILE - MAN (1/2)

A:			
B:			
C:	K14101	%	Pitch command at +100 % - Man mode
D:	K14102	%	Pitch command at + 80 % - Man mode
E:	K14103	%	Pitch command at + 60 % - Man mode
F:	K14104	%	Pitch command at + 40 % - Man mode
G:	K14105	%	Pitch command at + 20 % - Man mode
H:	K14106	%	Pitch command at 00 % - Man mode
I:	K14107	%	Pitch command at - 20 % - Man mode
J:	K14108	%	Pitch command at - 40 % - Man mode
K:	K14109	%	Pitch command at - 60 % - Man mode
L:	K14110	%	Pitch command at - 80 % - Man mode
M:	K14111	%	Pitch command at -100 % - Man mode
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.186 Page:1943 MD104** ME CPP COMBINATOR PROFILE - MAN (2/2)

A:			
B:			
C:	K14121	rpm	Speed command at +100 % - Man mode
D:	K14122	rpm	Speed command at + 80 % - Man mode
E:	K14123	rpm	Speed command at + 60 % - Man mode
F:	K14124	rpm	Speed command at + 40 % - Man mode
G:	K14125	rpm	Speed command at + 20 % - Man mode
H:	K14126	rpm	Speed command at 00 % - Man mode
I:	K14127	rpm	Speed command at - 20 % - Man mode
J:	K14128	rpm	Speed command at - 40 % - Man mode
K:	K14129	rpm	Speed command at - 60 % - Man mode
L:	K14130	rpm	Speed command at - 80 % - Man mode
M:	K14131	rpm	Speed command at -100 % - Man mode
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.187 Page:1944 MD104** ME CPP COMBINATOR PROFILE - SEA (1/2)

A:			
B:			
C:	K14141	%	Pitch command at +100 % - Sea mode
D:	K14142	%	Pitch command at + 80 % - Sea mode
E:	K14143	%	Pitch command at + 60 % - Sea mode
F:	K14144	%	Pitch command at + 40 % - Sea mode
G:	K14145	%	Pitch command at + 20 % - Sea mode
H:	K14146	%	Pitch command at 00 % - Sea mode
I:	K14147	%	Pitch command at - 20 % - Sea mode
J:	K14148	%	Pitch command at - 40 % - Sea mode
K:	K14149	%	Pitch command at - 60 % - Sea mode
L:	K14150	%	Pitch command at - 80 % - Sea mode
M:	K14151	%	Pitch command at -100 % - Sea mode
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.188 Page:1945 MD104** ME CPP COMBINATOR PROFILE - SEA (2/2)

A:			
B:			
C:	K14161	rpm	Speed command at +100 % - Sea mode
D:	K14162	rpm	Speed command at + 80 % - Sea mode
E:	K14163	rpm	Speed command at + 60 % - Sea mode
F:	K14164	rpm	Speed command at + 40 % - Sea mode
G:	K14165	rpm	Speed command at + 20 % - Sea mode
H:	K14166	rpm	Speed command at 00 % - Sea mode
I:	K14167	rpm	Speed command at - 20 % - Sea mode
J:	K14168	rpm	Speed command at - 40 % - Sea mode
K:	K14169	rpm	Speed command at - 60 % - Sea mode
L:	K14170	rpm	Speed command at - 80 % - Sea mode
M:	K14171	rpm	Speed command at -100 % - Sea mode
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.189 Page:1950 MD104** ME REMOTE CONTROL (1/2)

A:					
B:	Z02400	%			Control lever pos (ec/br)
C:					
D:	N02401	rpm			ME speed command (final)
E:	N02015	rpm	L=---	H=106.0	ME speed
F:					
G:	X07526	<0-1>			ME ready for start (ECR light)
H:	X07538	<0-1>			ME slow turning
I:	X07539	<0-1>			ME cylinder pre/post lubrication
J:					
K:	X07534	<0-1>			ME control : Sea Mode
L:	X07535	<0-1>			ME control : Maneuvering Mode
M:	X07536	<0-1>			ME variable inj timing (VIT/FQS)
N:	X07537	<0-1>			ME variable exh valve closing (VEC)
O:					
P:	Z02422	<0-1>			AUTOCHIEF command : CAM AHEAD
Q:	Z02423	<0-1>			AUTOCHIEF command : CAM ASTERN
R:	Z02424	<0-1>			AUTOCHIEF command : FUEL STOP
S:	Z02425	<0-1>			AUTOCHIEF command : START AIR ON
T:					

2.190 Page:1951 MD104** ME REMOTE CONTROL (2/2)

A:	X07531	<0-1>			ME emergency stop (ECR)
B:					
C:	X02430	%			AUTOCHIEF : RPM/PITCH COM (actual)
D:	X02431	%			AUTOCHIEF : RPM/PITCH COM (limit)
E:	X02432	%			AUTOCHIEF : FUEL LINK COM (actual)
F:	X02433	%			AUTOCHIEF : FUEL LINK COM (limit)
G:	X02434	%			AUTOCHIEF : THERMAL INDEX
H:					
I:	Z02436	<0-1>			AUTOCHIEF : rpm decrease
J:	Z02437	<0-1>			AUTOCHIEF : rpm increase
K:					
L:	Z02440	<0-1>			AUTOCHIEF : scav air limit (load red)
M:	Z02441	<0-1>			AUTOCHIEF : torque limit (load red)
N:	Z02435	<0-1>			AUTOCHIEF : thermal program limitation
O:					
P:					
Q:					
R:	X02421	<0-7>			AUTOCHIEF STATE indication
S:					
T:					

2.191 Page:1952 MD104** ME EMERGENCY TELEGRAPH (ECR)

A:			
B:	X07500	<0-2>	Responsibility transfer : BRIDGE
C:	X07501	<0-2>	Responsibility transfer : ECR
D:	X07502	<0-2>	Responsibility transfer : LOCAL
E:			
F:	X07503	<0-2>	Stand by telegraph : ECR STAND BY
G:			
H:	Y07510	<0-2>	Emergency telegraph : MAX AHEAD
I:	X07510	<0-2>	Emergency telegraph : FULL AHEAD
J:	X07511	<0-2>	Emergency telegraph : HALF AHEAD
K:	X07512	<0-2>	Emergency telegraph : SLOW AHEAD
L:	X07513	<0-2>	Emergency telegraph : DEADS AHEAD
M:	X07514	<0-2>	Emergency telegraph : STOP
N:	X07515	<0-2>	Emergency telegraph : DEADS ASTERN
O:	X07516	<0-2>	Emergency telegraph : SLOW ASTERN
P:	X07517	<0-2>	Emergency telegraph : HALF ASTERN
Q:	X07520	<0-2>	Emergency telegraph : FULL ASTERN
R:	Y07520	<0-2>	Emergency telegraph : MAX ASTERN
S:			
T:			

2.192 Page:1953 MD20** ME EMERGENCY TELEGRAPH (LOCAL)

A:					
B:	X07500	<0-2>			Responsibility transfer : BRIDGE
C:	X07501	<0-2>			Responsibility transfer : ECR
D:	X02406	<0-1>			Local fuel link control
E:					
F:	X07503	<0-2>			Stand by telegraph : ECR STAND BY
G:					
H:	Y08510	<0-2>	L=---	H=---	Emergency Telegraph : MAX AHEAD
I:	X08510	<0-2>	L=---	H=---	Emergency Telegraph : FULL AHEAD
J:	X08511	<0-2>	L=---	H=---	Emergency Telegraph : HALF AHEAD
K:	X08512	<0-2>	L=---	H=---	Emergency Telegraph : SLOW AHEAD
L:	X08513	<0-2>	L=---	H=---	Emergency Telegraph : DEADS AHEAD
M:	X08514	<0-2>	L=---	H=---	Emergency Telegraph : STOP
N:	X08515	<0-2>	L=---	H=---	Emergency Telegraph : DEADS ASTERN
O:	X08516	<0-2>	L=---	H=---	Emergency Telegraph : SLOW ASTERN
P:	X08517	<0-2>	L=---	H=---	Emergency Telegraph : HALF ASTERN
Q:	X08520	<0-2>	L=---	H=---	Emergency Telegraph : FULL ASTERN
R:	Y08520	<0-2>	L=---	H=---	Emergency Telegraph : MAX ASTERN
S:					
T:					

2.193 Page:1960 MD104** WATCH CALLING SYSTEM - ECR/CABIN

A:			
B:			
C:	Y07083	<0-2>	ECR Watch : Chief Engineer
D:	Y07084	<0-2>	ECR Watch : Sec. Engineer
E:	Y07085	<0-2>	ECR Watch : Third Engineer
F:	Y07080	<0-2>	ECR Watch : alarm
G:	Y07081	<0-1>	ECR Watch : buzzer
H:	Y07082	<0-1>	ECR Watch : buzzer reset
I:			
J:			
K:			
L:			
M:	Z07083	<0-2>	Cabin Watch : Chief Engineer
N:	Z07084	<0-2>	Cabin Watch : Sec. Engineer
O:	Z07085	<0-2>	Cabin Watch : Third Engineer
P:	Z07080	<0-2>	Cabin Watch : alarm
Q:	Z07081	<0-1>	Cabin Watch : buzzer
R:	Z07082	<0-1>	Cabin Watch : buzzer reset
S:			
T:			

2.194 Page:2000 MD20** ME POWER SYSTEM - MAIN VARIABLES

A:					
B:	N02015	rpm	L=---	H=106.0	ME speed
C:					
D:	E02005	MW	L=---	H=53.5	ME shaft power
E:	Q02004	kNm			ME shaft torque
F:	E02003	kW	L=---	H=---	ME cam shaft drive power
G:	E02004	kW	L=---	H=---	ME bearing friction power
H:					
I:	E02000	MW			ME Mean indicated power
J:	E02001	MW			ME Mean effective power
K:	Z01991	<0-10>			ME load indicator (FL position)
L:					
M:	G02011	ton/h			ME Fuel Oil consumption
N:	G02012	g/kWh			ME Fuel Oil consumption (specific)
O:					
P:	P02002	bar			ME Mean indicated pressure
Q:	P02003	bar			ME Mean effective pressure
R:	P02004	bar			ME Mean effective pressure (overall)
S:					
T:					

2.195 Page:2001 MD20** ME VIBRATIONS

A:					
B:					
C:	Z02480	%			ME resonance index
D:	Z02481	%	L=---	H=60.0	ME vibration index (general)
E:					
F:	Z03764	%	L=---	H=60.0	Propeller/hull vibration
G:					
H:	C02480	rpm			ME critical speed range (low end)
I:	C02481	rpm			ME critical speed range (high end)
J:					
K:					
L:					
M:					
N:					
O:					
P:					
Q:	C02482	kNm			ME nom vibration torque (dither)
R:	C02483	<0-2>			ME vibration indicator scaling
S:					
T:					

2.196 Page:2002 MD20** ME EXHAUST GAS ANALYSIS

A:					
B:					
C:	Z02013	%	L=---	H=80.0	ME Exhaust gas smoke content
D:					
E:					
F:	Z02014	g/kWh	L=---	H=25.0	ME Exhaust gas NOx generation
G:	Z02015	g/kWh	L=---	H=---	ME Exhaust gas SOx generation
H:	Z01976	g/kWh			ME Exhaust gas HC generation
I:	Z01977	g/kWh			ME Exhaust gas CO generation
J:	Z01972	g/kWh			ME Exhaust gas CO2 generation
K:	Z01974	kg/Nm			ME Exhaust gas NOx emission
L:	Z01975	kg/Nm			ME Exhaust gas SOx emission
M:	Z01978	kg/Nm			ME Exhaust gas HC emission
N:	Z01979	kg/Nm			ME Exhaust gas CO emission
O:	Z01973	kg/Nm			ME Exhaust gas CO2 emission
P:					
Q:					
R:					
S:					
T:					

2.197 Page:2003 MD20** ME HP FO LEAKAGE DETECTION

A:			
B:			
C:	L11000	%	ME FO leakage detector level
D:	G11000	kg/h	ME FO leakage detector inlet flow
E:			
F:	X11001	<0-1>	ME FO leakage alarm indication
G:	X11002	<0-1>	ME FO leakage fire indication
H:			
I:	C11001	%	ME FO leakage detector alarm limit
J:	C11002	%	ME FO leakage detector fire limit
K:			
L:			
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.198 Page:2010 MD20** ME CYL MEAN INDICATED PRESSURE

A:			
B:			
C:			
D:			
E:	P11012	bar	ME Cyl 1 indicated mean pressure
F:	P11022	bar	ME Cyl 2 indicated mean pressure
G:	P11032	bar	ME Cyl 3 indicated mean pressure
H:	P11042	bar	ME Cyl 4 indicated mean pressure
I:	P11052	bar	ME Cyl 5 indicated mean pressure
J:	P11062	bar	ME Cyl 6 indicated mean pressure
K:	P11212	bar	ME Cyl 7 indicated mean pressure
L:	P11222	bar	ME Cyl 8 indicated mean pressure
M:	P11232	bar	ME Cyl 9 indicated mean pressure
N:	P11242	bar	ME Cyl 10 indicated mean pressure
O:	P11252	bar	ME Cyl 11 indicated mean pressure
P:	P11262	bar	ME Cyl 12 indicated mean pressure
Q:			
R:			
S:			
T:			

2.199 Page:2011 MD20** ME CYL COMPRESION PRESSURE

A:			
B:			
C:			
D:			
E:	P18012	bara	ME Cyl 1 compression press (TDC)
F:	P18022	bara	ME Cyl 2 compression press (TDC)
G:	P18032	bara	ME Cyl 3 compression press (TDC)
H:	P18042	bara	ME Cyl 4 compression press (TDC)
I:	P18052	bara	ME Cyl 5 compression press (TDC)
J:	P18062	bara	ME Cyl 6 compression press (TDC)
K:	P18212	bara	ME Cyl 7 compression press (TDC)
L:	P18222	bara	ME Cyl 8 compression press (TDC)
M:	P18232	bara	ME Cyl 9 compression press (TDC)
N:	P18242	bara	ME Cyl 10 compression press (TDC)
O:	P18252	bara	ME Cyl 11 compression press (TDC)
P:	P18262	bara	ME Cyl 12 compression press (TDC)
Q:			
R:			
S:			
T:			

2.200 Page:2012 MD20** ME CYL MAX PRESSURE

A:					
B:					
C:					
D:					
E:	P18013	bara	L=---	H=190.0	ME Cyl 1 max pressure
F:	P18023	bara	L=---	H=190.0	ME Cyl 2 max pressure
G:	P18033	bara	L=---	H=190.0	ME Cyl 3 max pressure
H:	P18043	bara	L=---	H=190.0	ME Cyl 4 max pressure
I:	P18053	bara	L=---	H=190.0	ME Cyl 5 max pressure
J:	P18063	bara	L=---	H=190.0	ME Cyl 6 max pressure
K:	P18213	bara	L=---	H=190.0	ME Cyl 7 max pressure
L:	P18223	bara	L=---	H=190.0	ME Cyl 8 max pressure
M:	P18233	bara	L=---	H=190.0	ME Cyl 9 max pressure
N:	P18243	bara	L=---	H=190.0	ME Cyl 10 max pressure
O:	P18253	bara	L=---	H=190.0	ME Cyl 11 max pressure
P:	P18263	bara	L=---	H=190.0	ME Cyl 12 max pressure
Q:					
R:					
S:					
T:					

2.201 Page:2013 MD20** ME CYL EXHAUST TEMP

A:					
B:					
C:					
D:					
E:	T11018	degC	L=---	H=480.0	ME Cyl 1 exh outlet temp (sensor)
F:	T11028	degC	L=---	H=480.0	ME Cyl 2 exh outlet temp (sensor)
G:	T11038	degC	L=---	H=480.0	ME Cyl 3 exh outlet temp (sensor)
H:	T11048	degC	L=---	H=480.0	ME Cyl 4 exh outlet temp (sensor)
I:	T11058	degC	L=---	H=480.0	ME Cyl 5 exh outlet temp (sensor)
J:	T11068	degC	L=---	H=480.0	ME Cyl 6 exh outlet temp (sensor)
K:	T11218	degC	L=---	H=480.0	ME Cyl 7 exh outlet temp (sensor)
L:	T11228	degC	L=---	H=480.0	ME Cyl 8 exh outlet temp (sensor)
M:	T11238	degC	L=---	H=480.0	ME Cyl 9 exh outlet temp (sensor)
N:	T11248	degC	L=---	H=480.0	ME Cyl 10 exh outlet temp (sensor)
O:	T11258	degC	L=---	H=480.0	ME Cyl 11 exh outlet temp (sensor)
P:	T11268	degC	L=---	H=480.0	ME Cyl 12 exh outlet temp (sensor)
Q:					
R:					
S:					
T:					

2.202 Page:2014 MD20** ME CYL EXHAUST TEMP DEV

A:					
B:					
C:					
D:					
E:	T11019	degC	L=-40.0	H=40.0	ME Cyl 1 exh temp deviation
F:	T11029	degC	L=-40.0	H=40.0	ME Cyl 2 exh temp deviation
G:	T11039	degC	L=-40.0	H=40.0	ME Cyl 3 exh temp deviation
H:	T11049	degC	L=-40.0	H=40.0	ME Cyl 4 exh temp deviation
I:	T11059	degC	L=-40.0	H=40.0	ME Cyl 5 exh temp deviation
J:	T11069	degC	L=-40.0	H=40.0	ME Cyl 6 exh temp deviation
K:	T11219	degC	L=-40.0	H=40.0	ME Cyl 7 exh temp deviation
L:	T11229	degC	L=-40.0	H=40.0	ME Cyl 8 exh temp deviation
M:	T11239	degC	L=-40.0	H=40.0	ME Cyl 9 exh temp deviation
N:	T11249	degC	L=-40.0	H=40.0	ME Cyl 10 exh temp deviation
O:	T11259	degC	L=-40.0	H=40.0	ME Cyl 11 exh temp deviation
P:	T11269	degC	L=-40.0	H=40.0	ME Cyl 12 exh temp deviation
Q:					
R:					
S:					
T:					

2.203 Page:2020 MD20** ME CYL PISTON COOLING

A:					
B:					
C:					
D:					
E:	G11016	kg/s	L=1.0	H=---	ME Cyl 1 piston LO flow
F:	G11026	kg/s	L=1.0	H=---	ME Cyl 2 piston LO flow
G:	G11036	kg/s	L=1.0	H=---	ME Cyl 3 piston LO flow
H:	G11046	kg/s	L=1.0	H=---	ME Cyl 4 piston LO flow
I:	G11056	kg/s	L=1.0	H=---	ME Cyl 5 piston LO flow
J:	G11066	kg/s	L=1.0	H=---	ME Cyl 6 piston LO flow
K:	G11216	kg/s	L=1.0	H=---	ME Cyl 7 piston LO flow
L:	G11226	kg/s	L=1.0	H=---	ME Cyl 8 piston LO flow
M:	G11236	kg/s	L=1.0	H=---	ME Cyl 9 piston LO flow
N:	G11246	kg/s	L=1.0	H=---	ME Cyl 10 piston LO flow
O:	G11256	kg/s	L=1.0	H=---	ME Cyl 11 piston LO flow
P:	G11266	kg/s	L=1.0	H=---	ME Cyl 12 piston LO flow
Q:					
R:					
S:					
T:					

2.204 Page:2021 MD20** ME CYL LINER COOLING

A:			
B:			
C:			
D:			
E:	G11015	kg/s	ME Cyl 1 liner JW flow
F:	G11025	kg/s	ME Cyl 2 liner JW flow
G:	G11035	kg/s	ME Cyl 3 liner JW flow
H:	G11045	kg/s	ME Cyl 4 liner JW flow
I:	G11055	kg/s	ME Cyl 5 liner JW flow
J:	G11065	kg/s	ME Cyl 6 liner JW flow
K:	G11215	kg/s	ME Cyl 7 liner JW flow
L:	G11225	kg/s	ME Cyl 8 liner JW flow
M:	G11235	kg/s	ME Cyl 9 liner JW flow
N:	G11245	kg/s	ME Cyl 10 liner JW flow
O:	G11255	kg/s	ME Cyl 11 liner JW flow
P:	G11265	kg/s	ME Cyl 12 liner JW flow
Q:			
R:			
S:			
T:			

2.205 Page:2022 MD20** ME CYL LINER TEMP (1)

A:					
B:					
C:					
D:					
E:	T11016	degC	L=---	H=290.0	ME Cyl 1 liner metal temp (upper)
F:	T11026	degC	L=---	H=290.0	ME Cyl 2 liner metal temp (upper)
G:	T11036	degC	L=---	H=290.0	ME Cyl 3 liner metal temp (upper)
H:	T11046	degC	L=---	H=290.0	ME Cyl 4 liner metal temp (upper)
I:	T11056	degC	L=---	H=290.0	ME Cyl 5 liner metal temp (upper)
J:	T11066	degC	L=---	H=290.0	ME Cyl 6 liner metal temp (upper)
K:	T11216	degC	L=---	H=290.0	ME Cyl 7 liner metal temp (upper)
L:	T11226	degC	L=---	H=290.0	ME Cyl 8 liner metal temp (upper)
M:	T11236	degC	L=---	H=290.0	ME Cyl 9 liner metal temp (upper)
N:	T11246	degC	L=---	H=290.0	ME Cyl 10 liner metal temp (upper)
O:	T11256	degC	L=---	H=290.0	ME Cyl 11 liner metal temp (upper)
P:	T11266	degC	L=---	H=290.0	ME Cyl 12 liner metal temp (upper)
Q:					
R:					
S:					
T:					

2.206 Page:2023 MD20** ME POWER SYSTEM - CYL LINER TEMP (2)

A:					
B:					
C:					
D:					
E:	T11015	degC	L=110.0	H=240.0	ME Cyl 1 liner metal temp (lower)
F:	T11025	degC	L=110.0	H=240.0	ME Cyl 2 liner metal temp (lower)
G:	T11035	degC	L=110.0	H=240.0	ME Cyl 3 liner metal temp (lower)
H:	T11045	degC	L=110.0	H=240.0	ME Cyl 4 liner metal temp (lower)
I:	T11055	degC	L=110.0	H=240.0	ME Cyl 5 liner metal temp (lower)
J:	T11065	degC	L=110.0	H=240.0	ME Cyl 6 liner metal temp (lower)
K:	T11215	degC	L=110.0	H=240.0	ME Cyl 7 liner metal temp (lower)
L:	T11225	degC	L=110.0	H=240.0	ME Cyl 8 liner metal temp (lower)
M:	T11235	degC	L=110.0	H=240.0	ME Cyl 9 liner metal temp (lower)
N:	T11245	degC	L=110.0	H=240.0	ME Cyl 10 liner metal temp (lower)
O:	T11255	degC	L=110.0	H=240.0	ME Cyl 11 liner metal temp (lower)
P:	T11265	degC	L=110.0	H=240.0	ME Cyl 12 liner metal temp (lower)
Q:					
R:					
S:					
T:					

2.207 Page:2024 MD20** ME POWER SYSTEM - CYL PISTON TEMP

A:			
B:			
C:			
D:			
E:	T11010	degC	ME Cyl 1 piston metal temp (mean)
F:	T11020	degC	ME Cyl 2 piston metal temp (mean)
G:	T11030	degC	ME Cyl 3 piston metal temp (mean)
H:	T11040	degC	ME Cyl 4 piston metal temp (mean)
I:	T11050	degC	ME Cyl 5 piston metal temp (mean)
J:	T11060	degC	ME Cyl 6 piston metal temp (mean)
K:	T11210	degC	ME Cyl 7 piston metal temp (mean)
L:	T11220	degC	ME Cyl 8 piston metal temp (mean)
M:	T11230	degC	ME Cyl 9 piston metal temp (mean)
N:	T11240	degC	ME Cyl 10 piston metal temp (mean)
O:	T11250	degC	ME Cyl 11 piston metal temp (mean)
P:	T11260	degC	ME Cyl 12 piston metal temp (mean)
Q:			
R:			
S:			
T:			

2.208 Page:2030 MD20** ME CYL DESIGN DATA (test)

A:			
B:			
C:			
D:	C10010	<1-25>	Nom cyl overall compr ratio - cyl 1
E:	C10011	<1-10>	Nom piston rod/crank ratio - cyl 1
F:	C10015	deg	Nom exhaust valve open time - cyl 1
G:	C10016	deg	Nom exhaust valve close time - cyl 1
H:	C10017	deg	Nom air port open/close time - cyl 1
I:			
J:			
K:			
L:			
M:			
N:	C10020	<1-25>	Nom cyl overall compr ratio - cyl 2/12
O:	C10021	<1-10>	Nom piston rod/crank ratio - cyl 2/12
P:	C10025	deg	Nom exhaust valve open time - cyl 2/12
Q:	C10026	deg	Nom exhaust valve close time - cyl 2/12
R:	C10027	deg	Nom air port open/close time - cyl 2/12
S:			
T:			

2.209 Page:2040 MD20** ME WATER BRAKE (engine test)

A:			
B:	X02080	<0-1>	Water brake active (ME test)
C:			
D:	Z02080	%	Water brake load setting (input)
E:	Q02080	%	Water brake torque
F:			
G:	X02085	<0-1>	Water brake power control on/off
H:	Z02085	%	Water brake power set point
I:	E02085	%	Water brake power
J:			
K:	Q02088	kNm	Water brake shaft torque
L:	E02088	kW	Water brake shaft power
M:	N02088	rpm	Water brake shaft speed
N:			
O:	Z01991	<0-10>	ME load indicator (FL position)
P:	C02088	<0-2>	Water brake torque chara (0,1,2)
Q:	C02087	%	Water brake torque limit
R:			
S:	C02085	<0-2>	Water brake power contr gain constant
T:			

2.210 Page:2100 MD21** ME CYLINDER no 1 CONDITION (1/4)

A:			
B:	E11011	kW	ME Cyl 1 effective power
C:	E11012	kW	ME Cyl 1 indicated power
D:			
E:	Q11011	kNm	ME Cyl 1 effective torque
F:			
G:	P11011	bar	ME Cyl 1 effective mean pressure
H:	P11012	bar	ME Cyl 1 indicated mean pressure
I:			
J:	X11011	%	ME Cyl 1 injection plunger stroke (eff)
K:	M11019	g	ME Cyl 1 injected fuel mass/stroke
L:			
M:	H11011	kW	ME Cyl 1 heat in fuel
N:	H11012	kW	ME Cyl 1 heat to exhaust
O:	H11013	kW	ME Cyl 1 heat to water
P:	H11014	kW	ME Cyl 1 heat to oil
Q:			
R:			
S:			
T:			

2.211 Page:2101 MD21** ME CYLINDER no 1 CONDITION (2/4)

A:					
B:	G11010	kg/h			ME Cyl 1 fuel flow
C:	G11012	kg/s			ME Cyl 1 air flow
D:	G11013	kg/s			ME Cyl 1 exh flow
E:					
F:	G11015	kg/s			ME Cyl 1 liner JW flow
G:	G11016	kg/s	L=1.0	H=---	ME Cyl 1 piston LO flow
H:					
I:	T11011	degC			ME Cyl 1 exh outlet temp
J:	T11018	degC	L=---	H=480.0	ME Cyl 1 exh outlet temp (sensor)
K:					
L:	T11013	degC	L=---	H=90.0	ME Cyl 1 liner JW outlet temp
M:	T11014	degC	L=---	H=80.0	ME Cyl 1 piston LO outlet temp
N:					
O:					
P:	T11015	degC	L=110.0	H=240.0	ME Cyl 1 liner metal temp (lower)
Q:	T11016	degC	L=---	H=290.0	ME Cyl 1 liner metal temp (upper)
R:	T11017	degC	L=---	H=340.0	ME Cyl 1 cover metal temp (mean)
S:	T11010	degC			ME Cyl 1 piston metal temp (mean)
T:					

2.212 Page:2102 MD21** ME CYLINDER no 1 CONDITION (3/4)

A:					
B:	V18117	<0-1>			ME Cyl 1 residue blow off valve
C:	G18117	kg/h			ME Cyl 1 residue blow off flow
D:	Z18117	%			ME Cyl 1 residue (soft)
E:	Z18118	%			ME Cyl 1 residue (hard)
F:					
G:	G18118	kg/h			ME Cyl 1 piston rod gland drain flow
H:					
I:					
J:	V11017	%			ME Cyl 1 cylinder oil setting
K:	G11017	kg/h	L=0.3	H=---	ME Cyl 1 cylinder oil flow
L:					
M:					
N:	M11011	kg/h			ME Cyl 1 liner residue generation
O:					
P:					
Q:					
R:					
S:					
T:					

2.213 Page:2103 MD21** ME CYLINDER no 1 CONDITION (4/4)

A:					
B:	V18010	<0-1>			ME Cyl 1 indication cock
C:					
D:	X18110	<0-1>			ME Cyl 1 fuel pump trip
E:	X18111	<0-1>			ME Cyl 1 fuel pump manual cut off
F:					
G:	V18111	<0-1>			ME Cyl 1 fuel circ inlet valve
H:	V18112	<0-1>			ME Cyl 1 fuel circ outlet valve
I:	G18112	kg/h			ME Cyl 1 fuel circ flow
J:					
K:	V18115	<0-1>			ME Cyl 1 liner JW inlet valve
L:	V18116	<0-1>			ME Cyl 1 liner JW outlet valve
M:					
N:	V18114	<0-1>			ME Cyl 1 liner JW drain valve
O:	G18114	kg/s			ME Cyl 1 liner JW drain flow
P:					
Q:	C18114	<0-2>			ME Cyl 1 liner JW throttle orifice
R:					
S:					
T:					

2.214 Page:2110 MD21** ME CYLINDER no 1 COMB. PROCESS (1/2)

A:					
B:	P18011	bara			ME Cyl 1 suction pressure
C:	T18011	degC	L=---	H=80.0	ME Cyl 1 suction temp
D:	P18012	bara			ME Cyl 1 compression press (TDC)
E:	T18012	degC			ME Cyl 1 compression temp (TDC)
F:					
G:	P18013	bara	L=---	H=190.0	ME Cyl 1 max pressure
H:	P18014	bara			ME Cyl 1 pressure at ignition
I:	P18015	bara			ME Cyl 1 pressure at exh v open
J:					
K:	X18011	deg			ME Cyl 1 time of max pressure
L:	X18012	deg			ME Cyl 1 time of ignition
M:					
N:	X18013	deg			ME Cyl 1 time of injection
O:	X18014	deg			ME Cyl 1 length of injection
P:	X18016	deg			ME Cyl 1 ignition delay
Q:					
R:	C18015	deg			ME Cyl 1 fuel pump suction v open adjust
S:	C18016	deg			ME Cyl 1 fuel pump spill v open adjust
T:					

2.215 Page:2111 MD21** ME CYLINDER no 1 COMB. PROCESS (2/2)

A:					
B:					
C:	X18019	deg			ME Cyl 1 test angle (-180,180)
D:	P18019	bara			ME Cyl 1 test pressure (result)
E:					
F:	V18013	deg			ME Cyl 1 exh valve open time
G:	V18014	deg			ME Cyl 1 exh valve close time
H:					
I:	V18011	deg			ME Cyl 1 air port open time
J:	V18012	deg			ME Cyl 1 air port close time
K:					
L:	Z18012	<1-20>			ME Cyl 1 effective compr. ratio
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.216 Page:2112 MD21** ME CYLINDER no 1 PISTON RINGS (1/2)

A:					
B:					
C:					
D:	Z17011	<0-1>	L=---	H=1.0	ME Cyl 1 piston ring alarm
E:					
F:	X17011	%			ME Cyl 1 piston ring 1 sealing
G:	X17012	%			ME Cyl 1 piston ring 2 sealing
H:	X17013	%			ME Cyl 1 piston ring 3 sealing
I:	X17014	%			ME Cyl 1 piston ring 4 sealing
J:	X17015	%			ME Cyl 1 piston ring 5 sealing
K:	N17011	%			ME Cyl 1 piston ring 1 movement
L:	N17012	%			ME Cyl 1 piston ring 2 movement
M:	N17013	%			ME Cyl 1 piston ring 3 movement
N:	N17014	%			ME Cyl 1 piston ring 4 movement
O:	N17015	%			ME Cyl 1 piston ring 5 movement
P:					
Q:					
R:					
S:					
T:					

2.217 Page:2113 MD21** ME CYLINDER no 1 PISTON RINGS (2/2)

A:					
B:	Z11011	%			ME Cyl 1 lubrication flow index
C:	Z11012	%			ME Cyl 1 lubrication acid index
D:					
E:	Z11010	%			ME Cyl 1 piston ring move index
F:	Z11013	%			ME Cyl 1 move red : wrong cyl lube flow
G:	Z11014	%			ME Cyl 1 move red : wrong cyl lube TBN
H:	Z11015	%			ME Cyl 1 move red : poor atomizing
I:	Z11016	%			ME Cyl 1 move red : late injection
J:	Z11017	%			ME Cyl 1 move red : liner crack
K:	Z11018	%			ME Cyl 1 move red : water in scav air
L:	Z11019	%			ME Cyl 1 move red : high piston temp
M:					
N:	V11017	%			ME Cyl 1 cylinder oil setting
O:	M11011	kg/h			ME Cyl 1 liner residue generation
P:	C10963	%			ME inlet FO sulphor content
Q:	C10960	kJ/kg			ME inlet FO heat value
R:					
S:	X01500	TBN	L=---	H=---	Cyl oil TBN number (mgKOH/g) (0-100)
T:					

2.218 Page:2200 MD22** ME CYLINDER no 2 CONDITION (1/4)

A:			
B:	E11021	kW	ME Cyl 2 effective power
C:	E11022	kW	ME Cyl 2 indicated power
D:			
E:	Q11021	kNm	ME Cyl 2 effective torque
F:			
G:	P11021	bar	ME Cyl 2 effective mean pressure
H:	P11022	bar	ME Cyl 2 indicated mean pressure
I:			
J:	X11021	%	ME Cyl 2 injection plunger stroke (eff)
K:	M11029	g	ME Cyl 2 injected fuel mass/stroke
L:			
M:	H11021	kW	ME Cyl 2 heat in fuel
N:	H11022	kW	ME Cyl 2 heat to exhaust
O:	H11023	kW	ME Cyl 2 heat to water
P:	H11024	kW	ME Cyl 2 heat to oil
Q:			
R:			
S:			
T:			

2.219 Page:2201 MD22** ME CYLINDER no 2 CONDITION (2/4)

A:					
B:	G11020	kg/h			ME Cyl 2 fuel flow
C:	G11022	kg/s			ME Cyl 2 air flow
D:	G11023	kg/s			ME Cyl 2 exh flow
E:					
F:	G11025	kg/s			ME Cyl 2 liner JW flow
G:	G11026	kg/s	L=1.0	H=---	ME Cyl 2 piston LO flow
H:					
I:	T11021	degC			ME Cyl 2 exh outlet temp
J:	T11028	degC	L=---	H=480.0	ME Cyl 2 exh outlet temp (sensor)
K:					
L:	T11023	degC	L=---	H=90.0	ME Cyl 2 liner JW outlet temp
M:	T11024	degC	L=---	H=80.0	ME Cyl 2 piston LO outlet temp
N:					
O:					
P:	T11025	degC	L=110.0	H=240.0	ME Cyl 2 liner metal temp (lower)
Q:	T11026	degC	L=---	H=290.0	ME Cyl 2 liner metal temp (upper)
R:	T11027	degC	L=---	H=340.0	ME Cyl 2 cover metal temp (mean)
S:	T11020	degC			ME Cyl 2 piston metal temp (mean)
T:					

2.220 Page:2202 MD22** ME CYLINDER no 2 CONDITION (3/4)

A:					
B:	V18127	<0-1>			ME Cyl 2 residue blow off valve
C:	G18127	kg/h			ME Cyl 2 residue blow off flow
D:	Z18127	%			ME Cyl 2 residue (soft)
E:	Z18128	%			ME Cyl 2 residue (hard)
F:					
G:	G18128	kg/h			ME Cyl 2 piston rod gland drain flow
H:					
I:					
J:	V11027	%			ME Cyl 2 cylinder oil setting
K:	G11027	kg/h	L=0.3	H=---	ME Cyl 2 cylinder oil flow
L:					
M:					
N:	M11021	kg/h			ME Cyl 2 liner residue generation
O:					
P:					
Q:					
R:					
S:					
T:					

2.221 Page:2203 MD22** ME CYLINDER no 2 CONDITION (4/4)

A:					
B:	V18020	<0-1>			ME Cyl 2 indication cock
C:					
D:	X18120	<0-1>			ME Cyl 2 fuel pump trip
E:	X18121	<0-1>			ME Cyl 2 fuel pump manual cut off
F:					
G:	V18121	<0-1>			ME Cyl 2 fuel circ inlet valve
H:	V18122	<0-1>			ME Cyl 2 fuel circ outlet valve
I:	G18122	kg/h			ME Cyl 2 fuel circ flow
J:					
K:	V18125	<0-1>			ME Cyl 2 liner JW inlet valve
L:	V18126	<0-1>			ME Cyl 2 liner JW outlet valve
M:					
N:	V18124	<0-1>			ME Cyl 2 liner JW drain valve
O:	G18124	kg/s			ME Cyl 2 liner JW drain flow
P:					
Q:	C18124	<0-2>			ME Cyl 2 liner JW throttle orifice
R:					
S:					
T:					

2.222 Page:2210 MD22** ME CYLINDER no 2 COMB. PROCESS (1/2)

A:					
B:	P18021	bara			ME Cyl 2 suction pressure
C:	T18021	degC	L=---	H=80.0	ME Cyl 2 suction temp
D:	P18022	bara			ME Cyl 2 compression press (TDC)
E:	T18022	degC			ME Cyl 2 compression temp (TDC)
F:					
G:	P18023	bara	L=---	H=190.0	ME Cyl 2 max pressure
H:	P18024	bara			ME Cyl 2 pressure at ignition
I:	P18025	bara			ME Cyl 2 pressure at exh v open
J:					
K:	X18021	deg			ME Cyl 2 time of max pressure
L:	X18022	deg			ME Cyl 2 time of ignition
M:					
N:	X18023	deg			ME Cyl 2 time of injection
O:	X18024	deg			ME Cyl 2 length of injection
P:	X18026	deg			ME Cyl 2 ignition delay
Q:					
R:	C18025	deg			ME Cyl 2 fuel pump suction v open adjust
S:	C18026	deg			ME Cyl 2 fuel pump spill v open adjust
T:					

2.223 Page:2211 MD22** ME CYLINDER no 2 COMB. PROCESS (2/2)

A:					
B:					
C:	X18029	deg			ME Cyl 2 test angle (-180,180)
D:	P18029	bara			ME Cyl 2 test pressure (result)
E:					
F:	V18023	deg			ME Cyl 2 exh valve open time
G:	V18024	deg			ME Cyl 2 exh valve close time
H:					
I:	V18021	deg			ME Cyl 2 air port open time
J:	V18022	deg			ME Cyl 2 air port close time
K:					
L:	Z18022	<1-20>			ME Cyl 2 effective compr. ratio
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.224 Page:2212 MD22** ME CYLINDER no 2 PISTON RINGS

A:					
B:					
C:					
D:	Z17021	<0-1>	L=---	H=1.0	ME Cyl 2 piston ring alarm
E:					
F:	X17021	%			ME Cyl 2 piston ring 1 sealing
G:	X17022	%			ME Cyl 2 piston ring 2 sealing
H:	X17023	%			ME Cyl 2 piston ring 3 sealing
I:	X17024	%			ME Cyl 2 piston ring 4 sealing
J:	X17025	%			ME Cyl 2 piston ring 5 sealing
K:	N17021	%			ME Cyl 2 piston ring 1 movement
L:	N17022	%			ME Cyl 2 piston ring 2 movement
M:	N17023	%			ME Cyl 2 piston ring 3 movement
N:	N17024	%			ME Cyl 2 piston ring 4 movement
O:	N17025	%			ME Cyl 2 piston ring 5 movement
P:					
Q:					
R:					
S:					
T:					

2.225 Page:2300 MD23** ME CYLINDER no 3 CONDITION (1/4)

A:					
B:	E11031	kW			ME Cyl 3 effective power
C:	E11032	kW			ME Cyl 3 indicated power
D:					
E:	Q11031	kNm			ME Cyl 3 effective torque
F:					
G:	P11031	bar			ME Cyl 3 effective mean pressure
H:	P11032	bar			ME Cyl 3 indicated mean pressure
I:					
J:	X11031	%			ME Cyl 3 injection plunger stroke (eff)
K:	M11039	g			ME Cyl 3 injected fuel mass/stroke
L:					
M:	H11031	kW			ME Cyl 3 heat in fuel
N:	H11032	kW			ME Cyl 3 heat to exhaust
O:	H11033	kW			ME Cyl 3 heat to water
P:	H11034	kW			ME Cyl 3 heat to oil
Q:					
R:					
S:					
T:					

2.226 Page:2301 MD23** ME CYLINDER no 3 CONDITION (2/4)

A:					
B:	G11030	kg/h			ME Cyl 3 fuel flow
C:	G11032	kg/s			ME Cyl 3 air flow
D:	G11033	kg/s			ME Cyl 3 exh flow
E:					
F:	G11035	kg/s			ME Cyl 3 liner JW flow
G:	G11036	kg/s	L=1.0	H=---	ME Cyl 3 piston LO flow
H:					
I:	T11031	degC			ME Cyl 3 exh outlet temp
J:	T11038	degC	L=---	H=480.0	ME Cyl 3 exh outlet temp (sensor)
K:					
L:	T11033	degC	L=---	H=90.0	ME Cyl 3 liner JW outlet temp
M:	T11034	degC	L=---	H=80.0	ME Cyl 3 piston LO outlet temp
N:					
O:					
P:	T11035	degC	L=110.0	H=240.0	ME Cyl 3 liner metal temp (lower)
Q:	T11036	degC	L=---	H=290.0	ME Cyl 3 liner metal temp (upper)
R:	T11037	degC	L=---	H=340.0	ME Cyl 3 cover metal temp (mean)
S:	T11030	degC			ME Cyl 3 piston metal temp (mean)
T:					

2.227 Page:2302 MD23** ME CYLINDER no 3 CONDITION (3/4)

A:					
B:	V18137	<0-1>			ME Cyl 3 residue blow off valve
C:	G18137	kg/h			ME Cyl 3 residue blow off flow
D:	Z18137	%			ME Cyl 3 residue (soft)
E:	Z18138	%			ME Cyl 3 residue (hard)
F:					
G:	G18138	kg/h			ME Cyl 3 piston rod gland drain flow
H:					
I:					
J:	V11037	%			ME Cyl 3 cylinder oil setting
K:	G11037	kg/h	L=0.3	H=---	ME Cyl 3 cylinder oil flow
L:					
M:					
N:	M11031	kg/h			ME Cyl 3 liner residue generation
O:					
P:					
Q:					
R:					
S:					
T:					

2.228 Page:2303 MD23** ME CYLINDER no 3 CONDITION (4/4)

A:			
B:	V18030	<0-1>	ME Cyl 3 indication cock
C:			
D:	X18130	<0-1>	ME Cyl 3 fuel pump trip
E:	X18131	<0-1>	ME Cyl 3 fuel pump manual cut off
F:			
G:	V18131	<0-1>	ME Cyl 3 fuel circ inlet valve
H:	V18132	<0-1>	ME Cyl 3 fuel circ outlet valve
I:	G18132	kg/h	ME Cyl 3 fuel circ flow
J:			
K:	V18135	<0-1>	ME Cyl 3 liner JW inlet valve
L:	V18136	<0-1>	ME Cyl 3 liner JW outlet valve
M:			
N:	V18134	<0-1>	ME Cyl 3 liner JW drain valve
O:	G18134	kg/s	ME Cyl 3 liner JW drain flow
P:			
Q:	C18134	<0-2>	ME Cyl 3 liner JW throttle orifice
R:			
S:			
T:			

2.229 Page:2310 MD23** ME CYLINDER no 3 COMB. PROCESS (1/2)

A:					
B:	P18031	bara			ME Cyl 3 suction pressure
C:	T18031	degC	L=---	H=80.0	ME Cyl 3 suction temp
D:	P18032	bara			ME Cyl 3 compression press (TDC)
E:	T18032	degC			ME Cyl 3 compression temp (TDC)
F:					
G:	P18033	bara	L=---	H=190.0	ME Cyl 3 max pressure
H:	P18034	bara			ME Cyl 3 pressure at ignition
I:	P18035	bara			ME Cyl 3 pressure at exh v open
J:					
K:	X18031	deg			ME Cyl 3 time of max pressure
L:	X18032	deg			ME Cyl 3 time of ignition
M:					
N:	X18033	deg			ME Cyl 3 time of injection
O:	X18034	deg			ME Cyl 3 length of injection
P:	X18036	deg			ME Cyl 3 ignition delay
Q:					
R:	C18035	deg			ME Cyl 3 fuel pump suction v open adjust
S:	C18036	deg			ME Cyl 3 fuel pump spill v open adjust
T:					

2.230 Page:2311 MD23** ME CYLINDER no 3 COMB. PROCESS (2/2)

A:			
B:			
C:	X18039	deg	ME Cyl 3 test angle (-180,180)
D:	P18039	bara	ME Cyl 3 test pressure (result)
E:			
F:	V18033	deg	ME Cyl 3 exh valve open time
G:	V18034	deg	ME Cyl 3 exh valve close time
H:			
I:	V18031	deg	ME Cyl 3 air port open time
J:	V18032	deg	ME Cyl 3 air port close time
K:			
L:	Z18032	<1-20>	ME Cyl 3 effective compr. ratio
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.231 Page:2312 MD23** ME CYLINDER no 3 PISTON RINGS

A:					
B:					
C:					
D:	Z17031	<0-1>	L=---	H=1.0	ME Cyl 3 piston ring alarm
E:					
F:	X17031	%			ME Cyl 3 piston ring 1 sealing
G:	X17032	%			ME Cyl 3 piston ring 2 sealing
H:	X17033	%			ME Cyl 3 piston ring 3 sealing
I:	X17034	%			ME Cyl 3 piston ring 4 sealing
J:	X17035	%			ME Cyl 3 piston ring 5 sealing
K:	N17031	%			ME Cyl 3 piston ring 1 movement
L:	N17032	%			ME Cyl 3 piston ring 2 movement
M:	N17033	%			ME Cyl 3 piston ring 3 movement
N:	N17034	%			ME Cyl 3 piston ring 4 movement
O:	N17035	%			ME Cyl 3 piston ring 5 movement
P:					
Q:					
R:					
S:					
T:					

2.232 Page:2400 MD24** ME CYLINDER no 4 CONDITION (1/4)

A:			
B:	E11041	kW	ME Cyl 4 effective power
C:	E11042	kW	ME Cyl 4 indicated power
D:			
E:	Q11041	kNm	ME Cyl 4 effective torque
F:			
G:	P11041	bar	ME Cyl 4 effective mean pressure
H:	P11042	bar	ME Cyl 4 indicated mean pressure
I:			
J:	X11041	%	ME Cyl 4 injection plunger stroke (eff)
K:	M11049	g	ME Cyl 4 injected fuel mass/stroke
L:			
M:	H11041	kW	ME Cyl 4 heat in fuel
N:	H11042	kW	ME Cyl 4 heat to exhaust
O:	H11043	kW	ME Cyl 4 heat to water
P:	H11044	kW	ME Cyl 4 heat to oil
Q:			
R:			
S:			
T:			

2.233 Page:2401 MD24** ME CYLINDER no 4 CONDITION (2/4)

A:					
B:	G11040	kg/h			ME Cyl 4 fuel flow
C:	G11042	kg/s			ME Cyl 4 air flow
D:	G11043	kg/s			ME Cyl 4 exh flow
E:					
F:	G11045	kg/s			ME Cyl 4 liner JW flow
G:	G11046	kg/s	L=1.0	H=---	ME Cyl 4 piston LO flow
H:					
I:	T11041	degC			ME Cyl 4 exh outlet temp
J:	T11048	degC	L=---	H=480.0	ME Cyl 4 exh outlet temp (sensor)
K:					
L:	T11043	degC	L=---	H=90.0	ME Cyl 4 liner JW outlet temp
M:	T11044	degC	L=---	H=80.0	ME Cyl 4 piston LO outlet temp
N:					
O:					
P:	T11045	degC	L=110.0	H=240.0	ME Cyl 4 liner metal temp (lower)
Q:	T11046	degC	L=---	H=290.0	ME Cyl 4 liner metal temp (upper)
R:	T11047	degC	L=---	H=340.0	ME Cyl 4 cover metal temp (mean)
S:	T11040	degC			ME Cyl 4 piston metal temp (mean)
T:					

2.234 Page:2402 MD24** ME CYLINDER no 4 CONDITION (3/4)

A:					
B:	V18147	<0-1>			ME Cyl 4 residue blow off valve
C:	G18147	kg/h			ME Cyl 4 residue blow off flow
D:	Z18147	%			ME Cyl 4 residue (soft)
E:	Z18148	%			ME Cyl 4 residue (hard)
F:					
G:	G18148	kg/h			ME Cyl 4 piston rod gland drain flow
H:					
I:					
J:	V11047	%			ME Cyl 4 cylinder oil setting
K:	G11047	kg/h	L=0.3	H=---	ME Cyl 4 cylinder oil flow
L:					
M:					
N:	M11041	kg/h			ME Cyl 4 liner residue generation
O:					
P:					
Q:					
R:					
S:					
T:					

2.235 Page:2403 MD24** ME CYLINDER no 4 CONDITION (4/4)

A:					
B:	V18040	<0-1>			ME Cyl 4 indication cock
C:					
D:	X18140	<0-1>			ME Cyl 4 fuel pump trip
E:	X18141	<0-1>			ME Cyl 4 fuel pump manual cut off
F:					
G:	V18141	<0-1>			ME Cyl 4 fuel circ inlet valve
H:	V18142	<0-1>			ME Cyl 4 fuel circ outlet valve
I:	G18142	kg/h			ME Cyl 4 fuel circ flow
J:					
K:	V18145	<0-1>			ME Cyl 4 liner JW inlet valve
L:	V18146	<0-1>			ME Cyl 4 liner JW outlet valve
M:					
N:	V18144	<0-1>			ME Cyl 4 liner JW drain valve
O:	G18144	kg/s			ME Cyl 4 liner JW drain flow
P:					
Q:	C18144	<0-2>			ME Cyl 4 liner JW throttle orifice
R:					
S:					
T:					

2.236 Page:2410 MD24** ME CYLINDER no 4 COMB. PROCESS (1/2)

A:					
B:	P18041	bara			ME Cyl 4 suction pressure
C:	T18041	degC	L=---	H=80.0	ME Cyl 4 suction temp
D:	P18042	bara			ME Cyl 4 compression press (TDC)
E:	T18042	degC			ME Cyl 4 compression temp (TDC)
F:					
G:	P18043	bara	L=---	H=190.0	ME Cyl 4 max pressure
H:	P18044	bara			ME Cyl 4 pressure at ignition
I:	P18045	bara			ME Cyl 4 pressure at exh v open
J:					
K:	X18041	deg			ME Cyl 4 time of max pressure
L:	X18042	deg			ME Cyl 4 time of ignition
M:					
N:	X18043	deg			ME Cyl 4 time of injection
O:	X18044	deg			ME Cyl 4 length of injection
P:	X18046	deg			ME Cyl 4 ignition delay
Q:					
R:	C18045	deg			ME Cyl 4 fuel pump suction v open adjust
S:	C18046	deg			ME Cyl 4 fuel pump spill v open adjust
T:					

2.237 Page:2411 MD24** ME CYLINDER no 4 COMB. PROCESS (2/2)

A:					
B:					
C:	X18049	deg			ME Cyl 4 test angle (-180,180)
D:	P18049	bara			ME Cyl 4 test pressure (result)
E:					
F:	V18043	deg			ME Cyl 4 exh valve open time
G:	V18044	deg			ME Cyl 4 exh valve close time
H:					
I:	V18041	deg			ME Cyl 4 air port open time
J:	V18042	deg			ME Cyl 4 air port close time
K:					
L:	Z18042	<1-20>			ME Cyl 4 effective compr. ratio
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.238 Page:2412 MD24** ME CYLINDER no 4 PISTON RINGS

A:					
B:					
C:					
D:	Z17041	<0-1>	L=---	H=1.0	ME Cyl 4 piston ring alarm
E:					
F:	X17041	%			ME Cyl 4 piston ring 1 sealing
G:	X17042	%			ME Cyl 4 piston ring 2 sealing
H:	X17043	%			ME Cyl 4 piston ring 3 sealing
I:	X17044	%			ME Cyl 4 piston ring 4 sealing
J:	X17045	%			ME Cyl 4 piston ring 5 sealing
K:	N17041	%			ME Cyl 4 piston ring 1 movement
L:	N17042	%			ME Cyl 4 piston ring 2 movement
M:	N17043	%			ME Cyl 4 piston ring 3 movement
N:	N17044	%			ME Cyl 4 piston ring 4 movement
O:	N17045	%			ME Cyl 4 piston ring 5 movement
P:					
Q:					
R:					
S:					
T:					

2.239 Page:2500 MD25** ME CYLINDER no 5 CONDITION (1/4)

A:					
B:	E11051	kW			ME Cyl 5 effective power
C:	E11052	kW			ME Cyl 5 indicated power
D:					
E:	Q11051	kNm			ME Cyl 5 effective torque
F:					
G:	P11051	bar			ME Cyl 5 effective mean pressure
H:	P11052	bar			ME Cyl 5 indicated mean pressure
I:					
J:	X11051	%			ME Cyl 5 injection plunger stroke (eff)
K:	M11059	g			ME Cyl 5 injected fuel mass/stroke
L:					
M:	H11051	kW			ME Cyl 5 heat in fuel
N:	H11052	kW			ME Cyl 5 heat to exhaust
O:	H11053	kW			ME Cyl 5 heat to water
P:	H11054	kW			ME Cyl 5 heat to oil
Q:					
R:					
S:					
T:					

2.240 Page:2501 MD25** ME CYLINDER no 5 CONDITION (2/4)

A:					
B:	G11050	kg/h			ME Cyl 5 fuel flow
C:	G11052	kg/s			ME Cyl 5 air flow
D:	G11053	kg/s			ME Cyl 5 exh flow
E:					
F:	G11055	kg/s			ME Cyl 5 liner JW flow
G:	G11056	kg/s	L=1.0	H=---	ME Cyl 5 piston LO flow
H:					
I:	T11051	degC			ME Cyl 5 exh outlet temp
J:	T11058	degC	L=---	H=480.0	ME Cyl 5 exh outlet temp (sensor)
K:					
L:	T11053	degC	L=---	H=90.0	ME Cyl 5 liner JW outlet temp
M:	T11054	degC	L=---	H=80.0	ME Cyl 5 piston LO outlet temp
N:					
O:					
P:	T11055	degC	L=110.0	H=240.0	ME Cyl 5 liner metal temp (lower)
Q:	T11056	degC	L=---	H=290.0	ME Cyl 5 liner metal temp (upper)
R:	T11057	degC	L=---	H=340.0	ME Cyl 5 cover metal temp (mean)
S:	T11050	degC			ME Cyl 5 piston metal temp (mean)
T:					

2.241 Page:2502 MD25** ME CYLINDER no 5 CONDITION (3/4)

A:					
B:	V18157	<0-1>			ME Cyl 5 residue blow off valve
C:	G18157	kg/h			ME Cyl 5 residue blow off flow
D:	Z18157	%			ME Cyl 5 residue (soft)
E:	Z18158	%			ME Cyl 5 residue (hard)
F:					
G:	G18158	kg/h			ME Cyl 5 piston rod gland drain flow
H:					
I:					
J:	V11057	%			ME Cyl 5 cylinder oil setting
K:	G11057	kg/h	L=0.3	H=---	ME Cyl 5 cylinder oil flow
L:					
M:					
N:	M11051	kg/h			ME Cyl 5 liner residue generation
O:					
P:					
Q:					
R:					
S:					
T:					

2.242 Page:2503 MD25** ME CYLINDER no 5 CONDITION (4/4)

A:					
B:	V18050	<0-1>			ME Cyl 5 indication cock
C:					
D:	X18150	<0-1>			ME Cyl 5 fuel pump trip
E:	X18151	<0-1>			ME Cyl 5 fuel pump manual cut off
F:					
G:	V18151	<0-1>			ME Cyl 5 fuel circ inlet valve
H:	V18152	<0-1>			ME Cyl 5 fuel circ outlet valve
I:	G18152	kg/h			ME Cyl 5 fuel circ flow
J:					
K:	V18155	<0-1>			ME Cyl 5 liner JW inlet valve
L:	V18156	<0-1>			ME Cyl 5 liner JW outlet valve
M:					
N:	V18154	<0-1>			ME Cyl 5 liner JW drain valve
O:	G18154	kg/s			ME Cyl 5 liner JW drain flow
P:					
Q:	C18154	<0-2>			ME Cyl 5 liner JW throttle orifice
R:					
S:					
T:					

2.243 Page:2510 MD25** ME CYLINDER no 5 COMB. PROCESS (1/2)

A:					
B:	P18051	bara			ME Cyl 5 suction pressure
C:	T18051	degC	L=---	H=80.0	ME Cyl 5 suction temp
D:	P18052	bara			ME Cyl 5 compression press (TDC)
E:	T18052	degC			ME Cyl 5 compression temp (TDC)
F:					
G:	P18053	bara	L=---	H=190.0	ME Cyl 5 max pressure
H:	P18054	bara			ME Cyl 5 pressure at ignition
I:	P18055	bara			ME Cyl 5 pressure at exh v open
J:					
K:	X18051	deg			ME Cyl 5 time of max pressure
L:	X18052	deg			ME Cyl 5 time of ignition
M:					
N:	X18053	deg			ME Cyl 5 time of injection
O:	X18054	deg			ME Cyl 5 length of injection
P:	X18056	deg			ME Cyl 5 ignition delay
Q:					
R:	C18055	deg			ME Cyl 5 fuel pump suction v open adjust
S:	C18056	deg			ME Cyl 5 fuel pump spill v open adjust
T:					

2.244 Page:2511 MD25** ME CYLINDER no 5 COMB. PROCESS (2/2)

A:			
B:			
C:	X18059	deg	ME Cyl 5 test angle (-180,180)
D:	P18059	bara	ME Cyl 5 test pressure (result)
E:			
F:	V18053	deg	ME Cyl 5 exh valve open time
G:	V18054	deg	ME Cyl 5 exh valve close time
H:			
I:	V18051	deg	ME Cyl 5 air port open time
J:	V18052	deg	ME Cyl 5 air port close time
K:			
L:	Z18052	<1-20>	ME Cyl 5 effective compr. ratio
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.245 Page:2512 MD25** ME CYLINDER no 5 PISTON RINGS

A:					
B:					
C:					
D:	Z17051	<0-1>	L=---	H=1.0	ME Cyl 5 piston ring alarm
E:					
F:	X17051	%			ME Cyl 5 piston ring 1 sealing
G:	X17052	%			ME Cyl 5 piston ring 2 sealing
H:	X17053	%			ME Cyl 5 piston ring 3 sealing
I:	X17054	%			ME Cyl 5 piston ring 4 sealing
J:	X17055	%			ME Cyl 5 piston ring 5 sealing
K:	N17051	%			ME Cyl 5 piston ring 1 movement
L:	N17052	%			ME Cyl 5 piston ring 2 movement
M:	N17053	%			ME Cyl 5 piston ring 3 movement
N:	N17054	%			ME Cyl 5 piston ring 4 movement
O:	N17055	%			ME Cyl 5 piston ring 5 movement
P:					
Q:					
R:					
S:					
T:					

2.246 Page:2600 MD26** ME CYLINDER no 6 CONDITION (1/4)

A:			
B:	E11061	kW	ME Cyl 6 effective power
C:	E11062	kW	ME Cyl 6 indicated power
D:			
E:	Q11061	kNm	ME Cyl 6 effective torque
F:			
G:	P11061	bar	ME Cyl 6 effective mean pressure
H:	P11062	bar	ME Cyl 6 indicated mean pressure
I:			
J:	X11061	%	ME Cyl 6 injection plunger stroke (eff)
K:	M11069	g	ME Cyl 6 injected fuel mass/stroke
L:			
M:	H11061	kW	ME Cyl 6 heat in fuel
N:	H11062	kW	ME Cyl 6 heat to exhaust
O:	H11063	kW	ME Cyl 6 heat to water
P:	H11064	kW	ME Cyl 6 heat to oil
Q:			
R:			
S:			
T:			

2.247 Page:2601 MD26** ME CYLINDER no 6 CONDITION (2/4)

A:					
B:	G11060	kg/h			ME Cyl 6 fuel flow
C:	G11062	kg/s			ME Cyl 6 air flow
D:	G11063	kg/s			ME Cyl 6 exh flow
E:					
F:	G11065	kg/s			ME Cyl 6 liner JW flow
G:	G11066	kg/s	L=1.0	H=---	ME Cyl 6 piston LO flow
H:					
I:	T11061	degC			ME Cyl 6 exh outlet temp
J:	T11068	degC	L=---	H=480.0	ME Cyl 6 exh outlet temp (sensor)
K:					
L:	T11063	degC	L=---	H=90.0	ME Cyl 6 liner JW outlet temp
M:	T11064	degC	L=---	H=80.0	ME Cyl 6 piston LO outlet temp
N:					
O:					
P:	T11065	degC	L=110.0	H=240.0	ME Cyl 6 liner metal temp (lower)
Q:	T11066	degC	L=---	H=290.0	ME Cyl 6 liner metal temp (upper)
R:	T11067	degC	L=---	H=340.0	ME Cyl 6 cover metal temp (mean)
S:	T11060	degC			ME Cyl 6 piston metal temp (mean)
T:					

2.248 Page:2602 MD26** ME CYLINDER no 6 CONDITION (3/4)

A:					
B:	V18167	<0-1>			ME Cyl 6 residue blow off valve
C:	G18167	kg/h			ME Cyl 6 residue blow off flow
D:	Z18167	%			ME Cyl 6 residue (soft)
E:	Z18168	%			ME Cyl 6 residue (hard)
F:					
G:	G18168	kg/h			ME Cyl 6 piston rod gland drain flow
H:					
I:					
J:	V11067	%			ME Cyl 6 cylinder oil setting
K:	G11067	kg/h	L=0.3	H=---	ME Cyl 6 cylinder oil flow
L:					
M:					
N:	M11061	kg/h			ME Cyl 6 liner residue generation
O:					
P:					
Q:					
R:					
S:					
T:					

2.249 Page:2603 MD26** ME CYLINDER no 6 CONDITION (4/4)

A:					
B:	V18060	<0-1>			ME Cyl 6 indication cock
C:					
D:	X18160	<0-1>			ME Cyl 6 fuel pump trip
E:	X18161	<0-1>			ME Cyl 6 fuel pump manual cut off
F:					
G:	V18161	<0-1>			ME Cyl 6 fuel circ inlet valve
H:	V18162	<0-1>			ME Cyl 6 fuel circ outlet valve
I:	G18162	kg/h			ME Cyl 6 fuel circ flow
J:					
K:	V18165	<0-1>			ME Cyl 6 liner JW inlet valve
L:	V18166	<0-1>			ME Cyl 6 liner JW outlet valve
M:					
N:	V18164	<0-1>			ME Cyl 6 liner JW drain valve
O:	G18164	kg/s			ME Cyl 6 liner JW drain flow
P:					
Q:	C18164	<0-2>			ME Cyl 6 liner JW throttle orifice
R:					
S:					
T:					

2.250 Page:2610 MD26** ME CYLINDER no 6 COMB. PROCESS (1/2)

A:					
B:	P18061	bara			ME Cyl 6 suction pressure
C:	T18061	degC	L=---	H=80.0	ME Cyl 6 suction temp
D:	P18062	bara			ME Cyl 6 compression press (TDC)
E:	T18062	degC			ME Cyl 6 compression temp (TDC)
F:					
G:	P18063	bara	L=---	H=190.0	ME Cyl 6 max pressure
H:	P18064	bara			ME Cyl 6 pressure at ignition
I:	P18065	bara			ME Cyl 6 pressure at exh v open
J:					
K:	X18061	deg			ME Cyl 6 time of max pressure
L:	X18062	deg			ME Cyl 6 time of ignition
M:					
N:	X18063	deg			ME Cyl 6 time of injection
O:	X18064	deg			ME Cyl 6 length of injection
P:	X18066	deg			ME Cyl 6 ignition delay
Q:					
R:	C18065	deg			ME Cyl 6 fuel pump suction v open adjust
S:	C18066	deg			ME Cyl 6 fuel pump spill v open adjust
T:					

2.251 Page:2611 MD26** ME CYLINDER no 6 COMB. PROCESS (2/2)

A:					
B:					
C:	X18069	deg			ME Cyl 6 test angle (-180,180)
D:	P18069	bara			ME Cyl 6 test pressure (result)
E:					
F:	V18063	deg			ME Cyl 6 exh valve open time
G:	V18064	deg			ME Cyl 6 exh valve close time
H:					
I:	V18061	deg			ME Cyl 6 air port open time
J:	V18062	deg			ME Cyl 6 air port close time
K:					
L:	Z18062	<1-20>			ME Cyl 6 effective compr. ratio
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.252 Page:2612 MD26** ME CYLINDER no 6 PISTON RINGS

A:					
B:					
C:					
D:	Z17061	<0-1>	L=---	H=1.0	ME Cyl 6 piston ring alarm
E:					
F:	X17061	%			ME Cyl 6 piston ring 1 sealing
G:	X17062	%			ME Cyl 6 piston ring 2 sealing
H:	X17063	%			ME Cyl 6 piston ring 3 sealing
I:	X17064	%			ME Cyl 6 piston ring 4 sealing
J:	X17065	%			ME Cyl 6 piston ring 5 sealing
K:	N17061	%			ME Cyl 6 piston ring 1 movement
L:	N17062	%			ME Cyl 6 piston ring 2 movement
M:	N17063	%			ME Cyl 6 piston ring 3 movement
N:	N17064	%			ME Cyl 6 piston ring 4 movement
O:	N17065	%			ME Cyl 6 piston ring 5 movement
P:					
Q:					
R:					
S:					
T:					

2.253 Page:2700 MD27** ME CYLINDER no 7 CONDITION (1/4)

A:					
B:	E11211	kW			ME Cyl 7 effective power
C:	E11212	kW			ME Cyl 7 indicated power
D:					
E:	Q11211	kNm			ME Cyl 7 effective torque
F:					
G:	P11211	bar			ME Cyl 7 effective mean pressure
H:	P11212	bar			ME Cyl 7 indicated mean pressure
I:					
J:	X11211	%			ME Cyl 7 injection plunger stroke (eff)
K:	M11219	g			ME Cyl 7 injected fuel mass/stroke
L:					
M:	H11211	kW			ME Cyl 7 heat in fuel
N:	H11212	kW			ME Cyl 7 heat to exhaust
O:	H11213	kW			ME Cyl 7 heat to water
P:	H11214	kW			ME Cyl 7 heat to oil
Q:					
R:					
S:					
T:					

2.254 Page:2701 MD27** ME CYLINDER no 7 CONDITION (2/4)

A:					
B:	G11210	kg/h			ME Cyl 7 fuel flow
C:	G11212	kg/s			ME Cyl 7 air flow
D:	G11213	kg/s			ME Cyl 7 exh flow
E:					
F:	G11215	kg/s			ME Cyl 7 liner JW flow
G:	G11216	kg/s	L=1.0	H=---	ME Cyl 7 piston LO flow
H:					
I:	T11211	degC			ME Cyl 7 exh outlet temp
J:	T11218	degC	L=---	H=480.0	ME Cyl 7 exh outlet temp (sensor)
K:					
L:	T11213	degC	L=---	H=90.0	ME Cyl 7 liner JW outlet temp
M:	T11214	degC	L=---	H=80.0	ME Cyl 7 piston LO outlet temp
N:					
O:					
P:	T11215	degC	L=110.0	H=240.0	ME Cyl 7 liner metal temp (lower)
Q:	T11216	degC	L=---	H=290.0	ME Cyl 7 liner metal temp (upper)
R:	T11217	degC	L=---	H=340.0	ME Cyl 7 cover metal temp (mean)
S:	T11210	degC			ME Cyl 7 piston metal temp (mean)
T:					

2.255 Page:2702 MD27** ME CYLINDER no 7 CONDITION (3/4)

A:					
B:	V18317	<0-1>			ME Cyl 7 residue blow off valve
C:	G18317	kg/h			ME Cyl 7 residue blow off flow
D:	Z18317	%			ME Cyl 7 residue (soft)
E:	Z18318	%			ME Cyl 7 residue (hard)
F:					
G:	G18318	kg/h			ME Cyl 7 piston rod gland drain flow
H:					
I:					
J:	V11217	%			ME Cyl 7 cylinder oil setting
K:	G11217	kg/h	L=0.3	H=---	ME Cyl 7 cylinder oil flow
L:					
M:					
N:	M11211	kg/h			ME Cyl 7 liner residue generation
O:					
P:					
Q:					
R:					
S:					
T:					

2.256 Page:2703 MD27** ME CYLINDER no 7 CONDITION (4/4)

A:			
B:	V18210	<0-1>	ME Cyl 7 indication cock
C:			
D:	X18310	<0-1>	ME Cyl 7 fuel pump trip
E:	X18311	<0-1>	ME Cyl 7 fuel pump manual cut off
F:			
G:	V18311	<0-1>	ME Cyl 7 fuel circ inlet valve
H:	V18312	<0-1>	ME Cyl 7 fuel circ outlet valve
I:	G18312	kg/h	ME Cyl 7 fuel circ flow
J:			
K:	V18315	<0-1>	ME Cyl 7 liner JW inlet valve
L:	V18316	<0-1>	ME Cyl 7 liner JW outlet valve
M:			
N:	V18314	<0-1>	ME Cyl 7 liner JW drain valve
O:	G18314	kg/s	ME Cyl 7 liner JW drain flow
P:			
Q:	C18314	<0-2>	ME Cyl 7 liner JW throttle orifice
R:			
S:			
T:			

2.257 Page:2710 MD27** ME CYLINDER no 7 COMB. PROCESS (1/2)

A:					
B:	P18211	bara			ME Cyl 7 suction pressure
C:	T18211	degC	L=---	H=80.0	ME Cyl 7 suction temp
D:	P18212	bara			ME Cyl 7 compression press (TDC)
E:	T18212	degC			ME Cyl 7 compression temp (TDC)
F:					
G:	P18213	bara	L=---	H=190.0	ME Cyl 7 max pressure
H:	P18214	bara			ME Cyl 7 pressure at ignition
I:	P18215	bara			ME Cyl 7 pressure at exh v open
J:					
K:	X18211	deg			ME Cyl 7 time of max pressure
L:	X18212	deg			ME Cyl 7 time of ignition
M:					
N:	X18213	deg			ME Cyl 7 time of injection
O:	X18214	deg			ME Cyl 7 length of injection
P:	X18216	deg			ME Cyl 7 ignition delay
Q:					
R:	C18215	deg			ME Cyl 7 fuel pump suction v open adjust
S:	C18216	deg			ME Cyl 7 fuel pump spill v open adjust
T:					

2.258 Page:2711 MD27** ME CYLINDER no 7 COMB. PROCESS (2/2)

A:			
B:			
C:	X18219	deg	ME Cyl 7 test angle (-180,180)
D:	P18219	bara	ME Cyl 7 test pressure (result)
E:			
F:	V18213	deg	ME Cyl 7 exh valve open time
G:	V18214	deg	ME Cyl 7 exh valve close time
H:			
I:	V18211	deg	ME Cyl 7 air port open time
J:	V18212	deg	ME Cyl 7 air port close time
K:			
L:	Z18212	<1-20>	ME Cyl 7 effective compr. ratio
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.259 Page:2712 MD27** ME CYLINDER no 7 PISTON RINGS

A:					
B:					
C:					
D:	Z17211	<0-1>	L=---	H=1.0	ME Cyl 7 piston ring alarm
E:					
F:	X17211	%			ME Cyl 7 piston ring 1 sealing
G:	X17212	%			ME Cyl 7 piston ring 2 sealing
H:	X17213	%			ME Cyl 7 piston ring 3 sealing
I:	X17214	%			ME Cyl 7 piston ring 4 sealing
J:	X17215	%			ME Cyl 7 piston ring 5 sealing
K:	N17211	%			ME Cyl 7 piston ring 1 movement
L:	N17212	%			ME Cyl 7 piston ring 2 movement
M:	N17213	%			ME Cyl 7 piston ring 3 movement
N:	N17214	%			ME Cyl 7 piston ring 4 movement
O:	N17215	%			ME Cyl 7 piston ring 5 movement
P:					
Q:					
R:					
S:					
T:					

2.260 Page:2800 MD28** ME CYLINDER no 8 CONDITION (1/4)

A:			
B:	E11221	kW	ME Cyl 8 effective power
C:	E11222	kW	ME Cyl 8 indicated power
D:			
E:	Q11221	kNm	ME Cyl 8 effective torque
F:			
G:	P11221	bar	ME Cyl 8 effective mean pressure
H:	P11222	bar	ME Cyl 8 indicated mean pressure
I:			
J:	X11221	%	ME Cyl 8 injection plunger stroke (eff)
K:	M11229	g	ME Cyl 8 injected fuel mass/stroke
L:			
M:	H11221	kW	ME Cyl 8 heat in fuel
N:	H11222	kW	ME Cyl 8 heat to exhaust
O:	H11223	kW	ME Cyl 8 heat to water
P:	H11224	kW	ME Cyl 8 heat to oil
Q:			
R:			
S:			
T:			

2.261 Page:2801 MD28** ME CYLINDER no 8 CONDITION (2/4)

A:					
B:	G11220	kg/h			ME Cyl 8 fuel flow
C:	G11222	kg/s			ME Cyl 8 air flow
D:	G11223	kg/s			ME Cyl 8 exh flow
E:					
F:	G11225	kg/s			ME Cyl 8 liner JW flow
G:	G11226	kg/s	L=1.0	H=---	ME Cyl 8 piston LO flow
H:					
I:	T11221	degC			ME Cyl 8 exh outlet temp
J:	T11228	degC	L=---	H=480.0	ME Cyl 8 exh outlet temp (sensor)
K:					
L:	T11223	degC	L=---	H=90.0	ME Cyl 8 liner JW outlet temp
M:	T11224	degC	L=---	H=80.0	ME Cyl 8 piston LO outlet temp
N:					
O:					
P:	T11225	degC	L=110.0	H=240.0	ME Cyl 8 liner metal temp (lower)
Q:	T11226	degC	L=---	H=290.0	ME Cyl 8 liner metal temp (upper)
R:	T11227	degC	L=---	H=340.0	ME Cyl 8 cover metal temp (mean)
S:	T11220	degC			ME Cyl 8 piston metal temp (mean)
T:					

2.262 Page:2802 MD28** ME CYLINDER no 8 CONDITION (3/4)

A:					
B:	V18327	<0-1>			ME Cyl 8 residue blow off valve
C:	G18327	kg/h			ME Cyl 8 residue blow off flow
D:	Z18327	%			ME Cyl 8 residue (soft)
E:	Z18328	%			ME Cyl 8 residue (hard)
F:					
G:	G18328	kg/h			ME Cyl 8 piston rod gland drain flow
H:					
I:					
J:	V11227	%			ME Cyl 8 cylinder oil setting
K:	G11227	kg/h	L=0.3	H=---	ME Cyl 8 cylinder oil flow
L:					
M:					
N:	M11221	kg/h			ME Cyl 8 liner residue generation
O:					
P:					
Q:					
R:					
S:					
T:					

2.263 Page:2803 MD28** ME CYLINDER no 8 CONDITION (4/4)

A:					
B:	V18220	<0-1>			ME Cyl 8 indication cock
C:					
D:	X18320	<0-1>			ME Cyl 8 fuel pump trip
E:	X18321	<0-1>			ME Cyl 8 fuel pump manual cut off
F:					
G:	V18321	<0-1>			ME Cyl 8 fuel circ inlet valve
H:	V18322	<0-1>			ME Cyl 8 fuel circ outlet valve
I:	G18322	kg/h			ME Cyl 8 fuel circ flow
J:					
K:	V18325	<0-1>			ME Cyl 8 liner JW inlet valve
L:	V18326	<0-1>			ME Cyl 8 liner JW outlet valve
M:					
N:	V18324	<0-1>			ME Cyl 8 liner JW drain valve
O:	G18324	kg/s			ME Cyl 8 liner JW drain flow
P:					
Q:	C18324	<0-2>			ME Cyl 8 liner JW throttle orifice
R:					
S:					
T:					

2.264 Page:2810 MD28** ME CYLINDER no 8 COMB. PROCESS (1/2)

A:					
B:	P18221	bara			ME Cyl 8 suction pressure
C:	T18221	degC	L=---	H=80.0	ME Cyl 8 suction temp
D:	P18222	bara			ME Cyl 8 compression press (TDC)
E:	T18222	degC			ME Cyl 8 compression temp (TDC)
F:					
G:	P18223	bara	L=---	H=190.0	ME Cyl 8 max pressure
H:	P18224	bara			ME Cyl 8 pressure at ignition
I:	P18225	bara			ME Cyl 8 pressure at exh v open
J:					
K:	X18221	deg			ME Cyl 8 time of max pressure
L:	X18222	deg			ME Cyl 8 time of ignition
M:					
N:	X18223	deg			ME Cyl 8 time of injection
O:	X18224	deg			ME Cyl 8 length of injection
P:	X18226	deg			ME Cyl 8 ignition delay
Q:					
R:	C18225	deg			ME Cyl 8 fuel pump suction v open adjust
S:	C18226	deg			ME Cyl 8 fuel pump spill v open adjust
T:					

2.265 Page:2811 MD28** ME CYLINDER no 8 COMB. PROCESS (2/2)

A:					
B:					
C:	X18229	deg			ME Cyl 8 test angle (-180,180)
D:	P18229	bara			ME Cyl 8 test pressure (result)
E:					
F:	V18223	deg			ME Cyl 8 exh valve open time
G:	V18224	deg			ME Cyl 8 exh valve close time
H:					
I:	V18221	deg			ME Cyl 8 air port open time
J:	V18222	deg			ME Cyl 8 air port close time
K:					
L:	Z18222	<1-20>			ME Cyl 8 effective compr. ratio
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.266 Page:2812 MD28** ME CYLINDER no 8 PISTON RINGS

A:					
B:					
C:					
D:	Z17221	<0-1>	L=---	H=1.0	ME Cyl 8 piston ring alarm
E:					
F:	X17221	%			ME Cyl 8 piston ring 1 sealing
G:	X17222	%			ME Cyl 8 piston ring 2 sealing
H:	X17223	%			ME Cyl 8 piston ring 3 sealing
I:	X17224	%			ME Cyl 8 piston ring 4 sealing
J:	X17225	%			ME Cyl 8 piston ring 5 sealing
K:	N17221	%			ME Cyl 8 piston ring 1 movement
L:	N17222	%			ME Cyl 8 piston ring 2 movement
M:	N17223	%			ME Cyl 8 piston ring 3 movement
N:	N17224	%			ME Cyl 8 piston ring 4 movement
O:	N17225	%			ME Cyl 8 piston ring 5 movement
P:					
Q:					
R:					
S:					
T:					

2.267 Page:2900 MD29** ME CYLINDER no 9 CONDITION (1/4)

A:					
B:	E11231	kW			ME Cyl 9 effective power
C:	E11232	kW			ME Cyl 9 indicated power
D:					
E:	Q11231	kNm			ME Cyl 9 effective torque
F:					
G:	P11231	bar			ME Cyl 9 effective mean pressure
H:	P11232	bar			ME Cyl 9 indicated mean pressure
I:					
J:	X11231	%			ME Cyl 9 injection plunger stroke (eff)
K:	M11239	g			ME Cyl 9 injected fuel mass/stroke
L:					
M:	H11231	kW			ME Cyl 9 heat in fuel
N:	H11232	kW			ME Cyl 9 heat to exhaust
O:	H11233	kW			ME Cyl 9 heat to water
P:	H11234	kW			ME Cyl 9 heat to oil
Q:					
R:					
S:					
T:					

2.268 Page:2901 MD29** ME CYLINDER no 9 CONDITION (2/4)

A:					
B:	G11230	kg/h			ME Cyl 9 fuel flow
C:	G11232	kg/s			ME Cyl 9 air flow
D:	G11233	kg/s			ME Cyl 9 exh flow
E:					
F:	G11235	kg/s			ME Cyl 9 liner JW flow
G:	G11236	kg/s	L=1.0	H=---	ME Cyl 9 piston LO flow
H:					
I:	T11231	degC			ME Cyl 9 exh outlet temp
J:	T11238	degC	L=---	H=480.0	ME Cyl 9 exh outlet temp (sensor)
K:					
L:	T11233	degC	L=---	H=90.0	ME Cyl 9 liner JW outlet temp
M:	T11234	degC	L=---	H=80.0	ME Cyl 9 piston LO outlet temp
N:					
O:					
P:	T11235	degC	L=110.0	H=240.0	ME Cyl 9 liner metal temp (lower)
Q:	T11236	degC	L=---	H=290.0	ME Cyl 9 liner metal temp (upper)
R:	T11237	degC	L=---	H=340.0	ME Cyl 9 cover metal temp (mean)
S:	T11230	degC			ME Cyl 9 piston metal temp (mean)
T:					

2.269 Page:2902 MD29** ME CYLINDER no 9 CONDITION (3/4)

A:					
B:	V18337	<0-1>			ME Cyl 9 residue blow off valve
C:	G18337	kg/h			ME Cyl 9 residue blow off flow
D:	Z18337	%			ME Cyl 9 residue (soft)
E:	Z18338	%			ME Cyl 9 residue (hard)
F:					
G:	G18338	kg/h			ME Cyl 9 piston rod gland drain flow
H:					
I:					
J:	V11237	%			ME Cyl 9 cylinder oil setting
K:	G11237	kg/h	L=0.3	H=---	ME Cyl 9 cylinder oil flow
L:					
M:					
N:	M11231	kg/h			ME Cyl 9 liner residue generation
O:					
P:					
Q:					
R:					
S:					
T:					

2.270 Page:2903 MD29** ME CYLINDER no 9 CONDITION (4/4)

A:			
B:	V18230	<0-1>	ME Cyl 9 indication cock
C:			
D:	X18330	<0-1>	ME Cyl 9 fuel pump trip
E:	X18331	<0-1>	ME Cyl 9 fuel pump manual cut off
F:			
G:	V18331	<0-1>	ME Cyl 9 fuel circ inlet valve
H:	V18332	<0-1>	ME Cyl 9 fuel circ outlet valve
I:	G18332	kg/h	ME Cyl 9 fuel circ flow
J:			
K:	V18335	<0-1>	ME Cyl 9 liner JW inlet valve
L:	V18336	<0-1>	ME Cyl 9 liner JW outlet valve
M:			
N:	V18334	<0-1>	ME Cyl 9 liner JW drain valve
O:	G18334	kg/s	ME Cyl 9 liner JW drain flow
P:			
Q:	C18334	<0-2>	ME Cyl 9 liner JW throttle orifice
R:			
S:			
T:			

2.271 Page:2910 MD29** ME CYLINDER no 9 COMB. PROCESS (1/2)

A:					
B:	P18231	bara			ME Cyl 9 suction pressure
C:	T18231	degC	L=---	H=80.0	ME Cyl 9 suction temp
D:	P18232	bara			ME Cyl 9 compression press (TDC)
E:	T18232	degC			ME Cyl 9 compression temp (TDC)
F:					
G:	P18233	bara	L=---	H=190.0	ME Cyl 9 max pressure
H:	P18234	bara			ME Cyl 9 pressure at ignition
I:	P18235	bara			ME Cyl 9 pressure at exh v open
J:					
K:	X18231	deg			ME Cyl 9 time of max pressure
L:	X18232	deg			ME Cyl 9 time of ignition
M:					
N:	X18233	deg			ME Cyl 9 time of injection
O:	X18234	deg			ME Cyl 9 length of injection
P:	X18236	deg			ME Cyl 9 ignition delay
Q:					
R:	C18235	deg			ME Cyl 9 fuel pump suction v open adjust
S:	C18236	deg			ME Cyl 9 fuel pump spill v open adjust
T:					

2.272 Page:2911 MD29** ME CYLINDER no 9 COMB. PROCESS (2/2)

A:			
B:			
C:	X18239	deg	ME Cyl 9 test angle (-180,180)
D:	P18239	bara	ME Cyl 9 test pressure (result)
E:			
F:	V18233	deg	ME Cyl 9 exh valve open time
G:	V18234	deg	ME Cyl 9 exh valve close time
H:			
I:	V18231	deg	ME Cyl 9 air port open time
J:	V18232	deg	ME Cyl 9 air port close time
K:			
L:	Z18232	<1-20>	ME Cyl 9 effective compr. ratio
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.273 Page:2912 MD29** ME CYLINDER no 9 PISTON RINGS

A:					
B:					
C:					
D:	Z17231	<0-1>	L=---	H=1.0	ME Cyl 9 piston ring alarm
E:					
F:	X17231	%			ME Cyl 9 piston ring 1 sealing
G:	X17232	%			ME Cyl 9 piston ring 2 sealing
H:	X17233	%			ME Cyl 9 piston ring 3 sealing
I:	X17234	%			ME Cyl 9 piston ring 4 sealing
J:	X17235	%			ME Cyl 9 piston ring 5 sealing
K:	N17231	%			ME Cyl 9 piston ring 1 movement
L:	N17232	%			ME Cyl 9 piston ring 2 movement
M:	N17233	%			ME Cyl 9 piston ring 3 movement
N:	N17234	%			ME Cyl 9 piston ring 4 movement
O:	N17235	%			ME Cyl 9 piston ring 5 movement
P:					
Q:					
R:					
S:					
T:					

2.274 Page:3000 MD30** ME CYLINDER no 10 CONDITION (1/4)

A:			
B:	E11241	kW	ME Cyl 10 effective power
C:	E11242	kW	ME Cyl 10 indicated power
D:			
E:	Q11241	kNm	ME Cyl 10 effective torque
F:			
G:	P11241	bar	ME Cyl 10 effective mean pressure
H:	P11242	bar	ME Cyl 10 indicated mean pressure
I:			
J:	X11241	%	ME Cyl 10 injection plunger stroke (eff)
K:	M11249	g	ME Cyl 10 injected fuel mass/stroke
L:			
M:	H11241	kW	ME Cyl 10 heat in fuel
N:	H11242	kW	ME Cyl 10 heat to exhaust
O:	H11243	kW	ME Cyl 10 heat to water
P:	H11244	kW	ME Cyl 10 heat to oil
Q:			
R:			
S:			
T:			

2.275 Page:3001 MD30** ME CYLINDER no 10 CONDITION (2/4)

A:					
B:	G11240	kg/h			ME Cyl 10 fuel flow
C:	G11242	kg/s			ME Cyl 10 air flow
D:	G11243	kg/s			ME Cyl 10 exh flow
E:					
F:	G11245	kg/s			ME Cyl 10 liner JW flow
G:	G11246	kg/s	L=1.0	H=---	ME Cyl 10 piston LO flow
H:					
I:	T11241	degC			ME Cyl 10 exh outlet temp
J:	T11248	degC	L=---	H=480.0	ME Cyl 10 exh outlet temp (sensor)
K:					
L:	T11243	degC	L=---	H=90.0	ME Cyl 10 liner JW outlet temp
M:	T11244	degC	L=---	H=80.0	ME Cyl 10 piston LO outlet temp
N:					
O:					
P:	T11245	degC	L=110.0	H=240.0	ME Cyl 10 liner metal temp (lower)
Q:	T11246	degC	L=---	H=290.0	ME Cyl 10 liner metal temp (upper)
R:	T11247	degC	L=---	H=340.0	ME Cyl 10 cover metal temp (mean)
S:	T11240	degC			ME Cyl 10 piston metal temp (mean)
T:					

2.276 Page:3002 MD30** ME CYLINDER no 10 CONDITION (3/4)

A:					
B:	V18347	<0-1>			ME Cyl 10 residue blow off valve
C:	G18347	kg/h			ME Cyl 10 residue blow off flow
D:	Z18347	%			ME Cyl 10 residue (soft)
E:	Z18348	%			ME Cyl 10 residue (hard)
F:					
G:	G18348	kg/h			ME Cyl 10 piston rod gland drain flow
H:					
I:					
J:	V11247	%			ME Cyl 10 cylinder oil setting
K:	G11247	kg/h	L=0.3	H=---	ME Cyl 10 cylinder oil flow
L:					
M:					
N:	M11241	kg/h			ME Cyl 10 liner residue generation
O:					
P:					
Q:					
R:					
S:					
T:					

2.277 Page:3003 MD30** ME CYLINDER no 10 CONDITION (4/4)

A:			
B:	V18240	<0-1>	ME Cyl 10 indication cock
C:			
D:	X18340	<0-1>	ME Cyl 10 fuel pump trip
E:	X18341	<0-1>	ME Cyl 10 fuel pump manual cut off
F:			
G:	V18341	<0-1>	ME Cyl 10 fuel circ inlet valve
H:	V18342	<0-1>	ME Cyl 10 fuel circ outlet valve
I:	G18342	kg/h	ME Cyl 10 fuel circ flow
J:			
K:	V18345	<0-1>	ME Cyl 10 liner JW inlet valve
L:	V18346	<0-1>	ME Cyl 10 liner JW outlet valve
M:			
N:	V18344	<0-1>	ME Cyl 10 liner JW drain valve
O:	G18344	kg/s	ME Cyl 10 liner JW drain flow
P:			
Q:	C18344	<0-2>	ME Cyl 10 liner JW throttle orifice
R:			
S:			
T:			

2.278 Page:3010 MD30** ME CYLINDER no 10 COMB. PROCESS (1/2)

A:					
B:	P18241	bara			ME Cyl 10 suction pressure
C:	T18241	degC	L=---	H=80.0	ME Cyl 10 suction temp
D:	P18242	bara			ME Cyl 10 compression press (TDC)
E:	T18242	degC			ME Cyl 10 compression temp (TDC)
F:					
G:	P18243	bara	L=---	H=190.0	ME Cyl 10 max pressure
H:	P18244	bara			ME Cyl 10 pressure at ignition
I:	P18245	bara			ME Cyl 10 pressure at exh v open
J:					
K:	X18241	deg			ME Cyl 10 time of max pressure
L:	X18242	deg			ME Cyl 10 time of ignition
M:					
N:	X18243	deg			ME Cyl 10 time of injection
O:	X18244	deg			ME Cyl 10 length of injection
P:	X18246	deg			ME Cyl 10 ignition delay
Q:					
R:	C18245	deg			ME Cyl 10 fuel pump suction v open adjust
S:	C18246	deg			ME Cyl 10 fuel pump spill v open adjust
T:					

2.279 Page:3011 MD30** ME CYLINDER no 10 COMB. PROCESS (2/2)

A:					
B:					
C:	X18249	deg			ME Cyl 10 test angle (-180,180)
D:	P18249	bara			ME Cyl 10 test pressure (result)
E:					
F:	V18243	deg			ME Cyl 10 exh valve open time
G:	V18244	deg			ME Cyl 10 exh valve close time
H:					
I:	V18241	deg			ME Cyl 10 air port open time
J:	V18242	deg			ME Cyl 10 air port close time
K:					
L:	Z18242	<1-20>			ME Cyl 10 effective compr. ratio
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.280 Page:3012 MD30** ME CYLINDER no 10 PISTON RINGS

A:					
B:					
C:					
D:	Z17241	<0-1>	L=---	H=1.0	ME Cyl 10 piston ring alarm
E:					
F:	X17241	%			ME Cyl 10 piston ring 1 sealing
G:	X17242	%			ME Cyl 10 piston ring 2 sealing
H:	X17243	%			ME Cyl 10 piston ring 3 sealing
I:	X17244	%			ME Cyl 10 piston ring 4 sealing
J:	X17245	%			ME Cyl 10 piston ring 5 sealing
K:	N17241	%			ME Cyl 10 piston ring 1 movement
L:	N17242	%			ME Cyl 10 piston ring 2 movement
M:	N17243	%			ME Cyl 10 piston ring 3 movement
N:	N17244	%			ME Cyl 10 piston ring 4 movement
O:	N17245	%			ME Cyl 10 piston ring 5 movement
P:					
Q:					
R:					
S:					
T:					

2.281 Page:3100 MD31** ME CYLINDER no 11 CONDITION (1/4)

A:					
B:	E11251	kW			ME Cyl 11 effective power
C:	E11252	kW			ME Cyl 11 indicated power
D:					
E:	Q11251	kNm			ME Cyl 11 effective torque
F:					
G:	P11251	bar			ME Cyl 11 effective mean pressure
H:	P11252	bar			ME Cyl 11 indicated mean pressure
I:					
J:	X11251	%			ME Cyl 11 injection plunger stroke (eff)
K:	M11259	g			ME Cyl 11 injected fuel mass/stroke
L:					
M:	H11251	kW			ME Cyl 11 heat in fuel
N:	H11252	kW			ME Cyl 11 heat to exhaust
O:	H11253	kW			ME Cyl 11 heat to water
P:	H11254	kW			ME Cyl 11 heat to oil
Q:					
R:					
S:					
T:					

2.282 Page:3101 MD31** ME CYLINDER no 11 CONDITION (2/4)

A:					
B:	G11250	kg/h			ME Cyl 11 fuel flow
C:	G11252	kg/s			ME Cyl 11 air flow
D:	G11253	kg/s			ME Cyl 11 exh flow
E:					
F:	G11255	kg/s			ME Cyl 11 liner JW flow
G:	G11256	kg/s	L=1.0	H=---	ME Cyl 11 piston LO flow
H:					
I:	T11251	degC			ME Cyl 11 exh outlet temp
J:	T11258	degC	L=---	H=480.0	ME Cyl 11 exh outlet temp (sensor)
K:					
L:	T11253	degC	L=---	H=90.0	ME Cyl 11 liner JW outlet temp
M:	T11254	degC	L=---	H=80.0	ME Cyl 11 piston LO outlet temp
N:					
O:					
P:	T11255	degC	L=110.0	H=240.0	ME Cyl 11 liner metal temp (lower)
Q:	T11256	degC	L=---	H=290.0	ME Cyl 11 liner metal temp (upper)
R:	T11257	degC	L=---	H=340.0	ME Cyl 11 cover metal temp (mean)
S:	T11250	degC			ME Cyl 11 piston metal temp (mean)
T:					

2.283 Page:3102 MD31** ME CYLINDER no 11 CONDITION (3/4)

A:					
B:	V18357	<0-1>			ME Cyl 11 residue blow off valve
C:	G18357	kg/h			ME Cyl 11 residue blow off flow
D:	Z18357	%			ME Cyl 11 residue (soft)
E:	Z18358	%			ME Cyl 11 residue (hard)
F:					
G:	G18358	kg/h			ME Cyl 11 piston rod gland drain flow
H:					
I:					
J:	V11257	%			ME Cyl 11 cylinder oil setting
K:	G11257	kg/h	L=0.3	H=---	ME Cyl 11 cylinder oil flow
L:					
M:					
N:	M11251	kg/h			ME Cyl 11 liner residue generation
O:					
P:					
Q:					
R:					
S:					
T:					

2.284 Page:3103 MD31** ME CYLINDER no 11 CONDITION (4/4)

A:			
B:	V18250	<0-1>	ME Cyl 11 indication cock
C:			
D:	X18350	<0-1>	ME Cyl 11 fuel pump trip
E:	X18351	<0-1>	ME Cyl 11 fuel pump manual cut off
F:			
G:	V18351	<0-1>	ME Cyl 11 fuel circ inlet valve
H:	V18352	<0-1>	ME Cyl 11 fuel circ outlet valve
I:	G18352	kg/h	ME Cyl 11 fuel circ flow
J:			
K:	V18355	<0-1>	ME Cyl 11 liner JW inlet valve
L:	V18356	<0-1>	ME Cyl 11 liner JW outlet valve
M:			
N:	V18354	<0-1>	ME Cyl 11 liner JW drain valve
O:	G18354	kg/s	ME Cyl 11 liner JW drain flow
P:			
Q:	C18354	<0-2>	ME Cyl 11 liner JW throttle orifice
R:			
S:			
T:			

2.285 Page:3110 MD31** ME CYLINDER no 11 COMB. PROCESS (1/2)

A:					
B:	P18251	bara			ME Cyl 11 suction pressure
C:	T18251	degC	L=---	H=80.0	ME Cyl 11 suction temp
D:	P18252	bara			ME Cyl 11 compression press (TDC)
E:	T18252	degC			ME Cyl 11 compression temp (TDC)
F:					
G:	P18253	bara	L=---	H=190.0	ME Cyl 11 max pressure
H:	P18254	bara			ME Cyl 11 pressure at ignition
I:	P18255	bara			ME Cyl 11 pressure at exh v open
J:					
K:	X18251	deg			ME Cyl 11 time of max pressure
L:	X18252	deg			ME Cyl 11 time of ignition
M:					
N:	X18253	deg			ME Cyl 11 time of injection
O:	X18254	deg			ME Cyl 11 length of injection
P:	X18256	deg			ME Cyl 11 ignition delay
Q:					
R:	C18255	deg			ME Cyl 11 fuel pump suction v open adjust
S:	C18256	deg			ME Cyl 11 fuel pump spill v open adjust
T:					

2.286 Page:3111 MD31** ME CYLINDER no 11 COMB. PROCESS (2/2)

A:			
B:			
C:	X18259	deg	ME Cyl 11 test angle (-180,180)
D:	P18259	bara	ME Cyl 11 test pressure (result)
E:			
F:	V18253	deg	ME Cyl 11 exh valve open time
G:	V18254	deg	ME Cyl 11 exh valve close time
H:			
I:	V18251	deg	ME Cyl 11 air port open time
J:	V18252	deg	ME Cyl 11 air port close time
K:			
L:	Z18252	<1-20>	ME Cyl 11 effective compr. ratio
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.287 Page:3112 MD31** ME CYLINDER no 11 PISTON RINGS

A:					
B:					
C:					
D:	Z17251	<0-1>	L=---	H=1.0	ME Cyl 11 piston ring alarm
E:					
F:	X17251	%			ME Cyl 11 piston ring 1 sealing
G:	X17252	%			ME Cyl 11 piston ring 2 sealing
H:	X17253	%			ME Cyl 11 piston ring 3 sealing
I:	X17254	%			ME Cyl 11 piston ring 4 sealing
J:	X17255	%			ME Cyl 11 piston ring 5 sealing
K:	N17251	%			ME Cyl 11 piston ring 1 movement
L:	N17252	%			ME Cyl 11 piston ring 2 movement
M:	N17253	%			ME Cyl 11 piston ring 3 movement
N:	N17254	%			ME Cyl 11 piston ring 4 movement
O:	N17255	%			ME Cyl 11 piston ring 5 movement
P:					
Q:					
R:					
S:					
T:					

2.288 Page:3200 MD32** ME CYLINDER no 12 CONDITION (1/4)

A:			
B:	E11261	kW	ME Cyl 12 effective power
C:	E11262	kW	ME Cyl 12 indicated power
D:			
E:	Q11261	kNm	ME Cyl 12 effective torque
F:			
G:	P11261	bar	ME Cyl 12 effective mean pressure
H:	P11262	bar	ME Cyl 12 indicated mean pressure
I:			
J:	X11261	%	ME Cyl 12 injection plunger stroke (eff)
K:	M11269	g	ME Cyl 12 injected fuel mass/stroke
L:			
M:	H11261	kW	ME Cyl 12 heat in fuel
N:	H11262	kW	ME Cyl 12 heat to exhaust
O:	H11263	kW	ME Cyl 12 heat to water
P:	H11264	kW	ME Cyl 12 heat to oil
Q:			
R:			
S:			
T:			

2.289 Page:3201 MD32** ME CYLINDER no 12 CONDITION (2/4)

A:					
B:	G11260	kg/h			ME Cyl 12 fuel flow
C:	G11262	kg/s			ME Cyl 12 air flow
D:	G11263	kg/s			ME Cyl 12 exh flow
E:					
F:	G11265	kg/s			ME Cyl 12 liner JW flow
G:	G11266	kg/s	L=1.0	H=---	ME Cyl 12 piston LO flow
H:					
I:	T11261	degC			ME Cyl 12 exh outlet temp
J:	T11268	degC	L=---	H=480.0	ME Cyl 12 exh outlet temp (sensor)
K:					
L:	T11263	degC	L=---	H=90.0	ME Cyl 12 liner JW outlet temp
M:	T11264	degC	L=---	H=80.0	ME Cyl 12 piston LO outlet temp
N:					
O:					
P:	T11265	degC	L=110.0	H=240.0	ME Cyl 12 liner metal temp (lower)
Q:	T11266	degC	L=---	H=290.0	ME Cyl 12 liner metal temp (upper)
R:	T11267	degC	L=---	H=340.0	ME Cyl 12 cover metal temp (mean)
S:	T11260	degC			ME Cyl 12 piston metal temp (mean)
T:					

2.290 Page:3202 MD32** ME CYLINDER no 12 CONDITION (3/4)

A:					
B:	V18367	<0-1>			ME Cyl 12 residue blow off valve
C:	G18367	kg/h			ME Cyl 12 residue blow off flow
D:	Z18367	%			ME Cyl 12 residue (soft)
E:	Z18368	%			ME Cyl 12 residue (hard)
F:					
G:	G18368	kg/h			ME Cyl 12 piston rod gland drain flow
H:					
I:					
J:	V11267	%			ME Cyl 12 cylinder oil setting
K:	G11267	kg/h	L=0.3	H=---	ME Cyl 12 cylinder oil flow
L:					
M:					
N:	M11261	kg/h			ME Cyl 12 liner residue generation
O:					
P:					
Q:					
R:					
S:					
T:					

2.291 Page:3203 MD32** ME CYLINDER no 12 CONDITION (4/4)

A:					
B:	V18260	<0-1>			ME Cyl 12 indication cock
C:					
D:	X18360	<0-1>			ME Cyl 12 fuel pump trip
E:	X18361	<0-1>			ME Cyl 12 fuel pump manual cut off
F:					
G:	V18361	<0-1>			ME Cyl 12 fuel circ inlet valve
H:	V18362	<0-1>			ME Cyl 12 fuel circ outlet valve
I:	G18362	kg/h			ME Cyl 12 fuel circ flow
J:					
K:	V18365	<0-1>			ME Cyl 12 liner JW inlet valve
L:	V18366	<0-1>			ME Cyl 12 liner JW outlet valve
M:					
N:	V18364	<0-1>			ME Cyl 12 liner JW drain valve
O:	G18364	kg/s			ME Cyl 12 liner JW drain flow
P:					
Q:	C18364	<0-2>			ME Cyl 12 liner JW throttle orifice
R:					
S:					
T:					

2.292 Page:3210 MD32** ME CYLINDER no 12 COMB. PROCESS (1/2)

A:					
B:	P18261	bara			ME Cyl 12 suction pressure
C:	T18261	degC	L=---	H=80.0	ME Cyl 12 suction temp
D:	P18262	bara			ME Cyl 12 compression press (TDC)
E:	T18262	degC			ME Cyl 12 compression temp (TDC)
F:					
G:	P18263	bara	L=---	H=190.0	ME Cyl 12 max pressure
H:	P18264	bara			ME Cyl 12 pressure at ignition
I:	P18265	bara			ME Cyl 12 pressure at exh v open
J:					
K:	X18261	deg			ME Cyl 12 time of max pressure
L:	X18262	deg			ME Cyl 12 time of ignition
M:					
N:	X18263	deg			ME Cyl 12 time of injection
O:	X18264	deg			ME Cyl 12 length of injection
P:	X18266	deg			ME Cyl 12 ignition delay
Q:					
R:	C18265	deg			ME Cyl 12 fuel pump suction v open adjust
S:	C18266	deg			ME Cyl 12 fuel pump spill v open adjust
T:					

2.293 Page:3211 MD32** ME CYLINDER no 12 COMB. PROCESS (2/2)

A:					
B:					
C:	X18269	deg			ME Cyl 12 test angle (-180,180)
D:	P18269	bara			ME Cyl 12 test pressure (result)
E:					
F:	V18263	deg			ME Cyl 12 exh valve open time
G:	V18264	deg			ME Cyl 12 exh valve close time
H:					
I:	V18261	deg			ME Cyl 12 air port open time
J:	V18262	deg			ME Cyl 12 air port close time
K:					
L:	Z18262	<1-20>			ME Cyl 12 effective compr. ratio
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.294 Page:3212 MD32** ME CYLINDER no 12 PISTON RINGS

A:					
B:					
C:					
D:	Z17261	<0-1>	L=---	H=1.0	ME Cyl 12 piston ring alarm
E:					
F:	X17261	%			ME Cyl 12 piston ring 1 sealing
G:	X17262	%			ME Cyl 12 piston ring 2 sealing
H:	X17263	%			ME Cyl 12 piston ring 3 sealing
I:	X17264	%			ME Cyl 12 piston ring 4 sealing
J:	X17265	%			ME Cyl 12 piston ring 5 sealing
K:	N17261	%			ME Cyl 12 piston ring 1 movement
L:	N17262	%			ME Cyl 12 piston ring 2 movement
M:	N17263	%			ME Cyl 12 piston ring 3 movement
N:	N17264	%			ME Cyl 12 piston ring 4 movement
O:	N17265	%			ME Cyl 12 piston ring 5 movement
P:					
Q:					
R:					
S:					
T:					

2.295 Page:3300 MD33** ME PISTON RING MONITOR (1/3)

A:			
B:			
C:			
D:	X17100	<0-12>	ME Cylinder display selector
E:			
F:	X17001	%	ME Cyl piston ring 1 sealing
G:	X17002	%	ME Cyl piston ring 2 sealing
H:	X17003	%	ME Cyl piston ring 3 sealing
I:	X17004	%	ME Cyl piston ring 4 sealing
J:	X17005	%	ME Cyl piston ring 5 sealing
K:	N17001	%	ME Cyl piston ring 1 movement
L:	N17002	%	ME Cyl piston ring 2 movement
M:	N17003	%	ME Cyl piston ring 3 movement
N:	N17004	%	ME Cyl piston ring 4 movement
O:	N17005	%	ME Cyl piston ring 5 movement
P:			
Q:	X17090	<0-1>	ME Cyl piston ring reset (new rings)
R:	X17098	<0-1>	ME Cyl scav air box clean (all)
S:			
T:			

2.296 Page:3301 MD33** ME PISTON RING MONITOR (2/3)

A:			
B:	C17015	%	ME piston ring movement low (alarm)
C:	C17016	%	ME piston ring sealing low (alarm)
D:			
E:	Z17010	<0-1>	ME Cyl 1 piston ring alarm enable
F:	Z17020	<0-1>	ME Cyl 2 piston ring alarm enable
G:	Z17030	<0-1>	ME Cyl 3 piston ring alarm enable
H:	Z17040	<0-1>	ME Cyl 4 piston ring alarm enable
I:	Z17050	<0-1>	ME Cyl 5 piston ring alarm enable
J:	Z17060	<0-1>	ME Cyl 6 piston ring alarm enable
K:	Z17210	<0-1>	ME Cyl 7 piston ring alarm enable
L:	Z17220	<0-1>	ME Cyl 8 piston ring alarm enable
M:	Z17230	<0-1>	ME Cyl 9 piston ring alarm enable
N:	Z17240	<0-1>	ME Cyl 10 piston ring alarm enable
O:	Z17250	<0-1>	ME Cyl 11 piston ring alarm enable
P:	Z17260	<0-1>	ME Cyl 12 piston ring alarm enable
Q:			
R:			
S:			
T:			

2.297 Page:3302 MD33** ME PISTON RING MONITOR (3/3)

A:			
B:			
C:	X17000	<0-1>	ME piston ring auto wear
D:	C17000	<0-60>	ME piston ring wear time factor
E:			
F:	C17010	%	ME piston ring movement high (no wear)
G:	C17011	%	ME piston ring sealing high (no leak)
H:			
I:	C17012	%	ME piston ring movement low low (wear)
J:			
K:			
L:			
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.298 Page:3800 MD38** ME BEARING SYSTEM - MAIN BEARINGS

A:					
B:					
C:	T12050	degC	L=---	H=75.0	ME Thrust bearing temp (sensor)
D:					
E:	T12051	degC	L=---	H=85.0	ME Main bearing 1 temp (sensor)
F:	T12052	degC	L=---	H=85.0	ME Main bearing 2 temp (sensor)
G:	T12053	degC	L=---	H=85.0	ME Main bearing 3 temp (sensor)
H:	T12054	degC	L=---	H=85.0	ME Main bearing 4 temp (sensor)
I:	T12055	degC	L=---	H=85.0	ME Main bearing 5 temp (sensor)
J:	T12056	degC	L=---	H=85.0	ME Main bearing 6 temp (sensor)
K:	T12057	degC	L=---	H=85.0	ME Main bearing 7 temp (sensor)
L:	T12058	degC	L=---	H=85.0	ME Main bearing 8 temp (sensor)
M:	T12059	degC	L=---	H=85.0	ME Main bearing 9 temp (sensor)
N:	T12060	degC	L=---	H=85.0	ME Main bearing 10 temp (sensor)
O:	T12061	degC	L=---	H=85.0	ME Main bearing 11 temp (sensor)
P:	T12062	degC	L=---	H=85.0	ME Main bearing 12 temp (sensor)
Q:	T12063	degC	L=---	H=85.0	ME Main bearing 13 temp (sensor)
R:					
S:	T12049	degC	L=---	H=60.0	ME Thrust bearing LO outl temp (sensor)
T:					

2.299 Page:3801 MD38** ME BEARING SYSTEM - CRANK BEARINGS

A:					
B:					
C:					
D:					
E:	T12151	degC	L=---	H=85.0	ME Crank pin bearing 1 temp (sensor)
F:	T12152	degC	L=---	H=85.0	ME Crank pin bearing 2 temp (sensor)
G:	T12153	degC	L=---	H=85.0	ME Crank pin bearing 3 temp (sensor)
H:	T12154	degC	L=---	H=85.0	ME Crank pin bearing 4 temp (sensor)
I:	T12155	degC	L=---	H=85.0	ME Crank pin bearing 5 temp (sensor)
J:	T12156	degC	L=---	H=85.0	ME Crank pin bearing 6 temp (sensor)
K:	T12157	degC	L=---	H=85.0	ME Crank pin bearing 7 temp (sensor)
L:	T12158	degC	L=---	H=85.0	ME Crank pin bearing 8 temp (sensor)
M:	T12159	degC	L=---	H=85.0	ME Crank pin bearing 9 temp (sensor)
N:	T12160	degC	L=---	H=85.0	ME Crank pin bearing 10 temp (sensor)
O:	T12161	degC	L=---	H=85.0	ME Crank pin bearing 11 temp (sensor)
P:	T12162	degC	L=---	H=85.0	ME Crank pin bearing 12 temp (sensor)
Q:					
R:					
S:					
T:					

2.300 Page:3802 MD38** ME BEARING SYSTEM - CROSSH BEARINGS

A:					
B:					
C:					
D:					
E:	T12251	degC	L=---	H=90.0	ME Cross head bearing 1 temp (sensor)
F:	T12252	degC	L=---	H=90.0	ME Cross head bearing 2 temp (sensor)
G:	T12253	degC	L=---	H=90.0	ME Cross head bearing 3 temp (sensor)
H:	T12254	degC	L=---	H=90.0	ME Cross head bearing 4 temp (sensor)
I:	T12255	degC	L=---	H=90.0	ME Cross head bearing 5 temp (sensor)
J:	T12256	degC	L=---	H=90.0	ME Cross head bearing 6 temp (sensor)
K:	T12257	degC	L=---	H=90.0	ME Cross head bearing 7 temp (sensor)
L:	T12258	degC	L=---	H=90.0	ME Cross head bearing 8 temp (sensor)
M:	T12259	degC	L=---	H=90.0	ME Cross head bearing 9 temp (sensor)
N:	T12260	degC	L=---	H=90.0	ME Cross head bearing 10 temp (sensor)
O:	T12261	degC	L=---	H=90.0	ME Cross head bearing 11 temp (sensor)
P:	T12262	degC	L=---	H=90.0	ME Cross head bearing 12 temp (sensor)
Q:					
R:					
S:					
T:					

2.301 Page:3810 MD38** ME BEARING SYSTEM - OIL MIST DETECTOR

A:					
B:	C12050	%			ME Crank case oil mist warning limit
C:					
D:					
E:	Z12051	%	L=---	H=40.0	ME Crank case 1 oil mist (sensor)
F:	Z12052	%	L=---	H=40.0	ME Crank case 2 oil mist (sensor)
G:	Z12053	%	L=---	H=40.0	ME Crank case 3 oil mist (sensor)
H:	Z12054	%	L=---	H=40.0	ME Crank case 4 oil mist (sensor)
I:	Z12055	%	L=---	H=40.0	ME Crank case 5 oil mist (sensor)
J:	Z12056	%	L=---	H=40.0	ME Crank case 6 oil mist (sensor)
K:	Z12057	%	L=---	H=40.0	ME Crank case 7 oil mist (sensor)
L:	Z12058	%	L=---	H=40.0	ME Crank case 8 oil mist (sensor)
M:	Z12059	%	L=---	H=40.0	ME Crank case 9 oil mist (sensor)
N:	Z12060	%	L=---	H=40.0	ME Crank case 10 oil mist (sensor)
O:	Z12061	%	L=---	H=40.0	ME Crank case 11 oil mist (sensor)
P:	Z12062	%	L=---	H=40.0	ME Crank case 12 oil mist (sensor)
Q:					
R:					
S:					
T:					

2.302 Page:3900 MD39** ME BEARING SYSTEM - MAIN BEARINGS

A:			
B:			
C:	T12070	degC	ME Thrust bearing temp (local)
D:			
E:	T12071	degC	ME Main bearing 1 temp (local)
F:	T12072	degC	ME Main bearing 2 temp (local)
G:	T12073	degC	ME Main bearing 3 temp (local)
H:	T12074	degC	ME Main bearing 4 temp (local)
I:	T12075	degC	ME Main bearing 5 temp (local)
J:	T12076	degC	ME Main bearing 6 temp (local)
K:	T12077	degC	ME Main bearing 7 temp (local)
L:	T12078	degC	ME Main bearing 8 temp (local)
M:	T12079	degC	ME Main bearing 9 temp (local)
N:	T12080	degC	ME Main bearing 10 temp (local)
O:	T12081	degC	ME Main bearing 11 temp (local)
P:	T12082	degC	ME Main bearing 12 temp (local)
Q:	T12083	degC	ME Main bearing 13 temp (local)
R:			
S:	T12069	degC	ME Thrust bearing LO outlet temp (local)
T:			

2.303 Page:3901 MD39** ME BEARING SYSTEM - CRANK BEARINGS

A:			
B:			
C:			
D:			
E:	T12171	degC	ME Crank pin bearing 1 temp (local)
F:	T12172	degC	ME Crank pin bearing 2 temp (local)
G:	T12173	degC	ME Crank pin bearing 3 temp (local)
H:	T12174	degC	ME Crank pin bearing 4 temp (local)
I:	T12175	degC	ME Crank pin bearing 5 temp (local)
J:	T12176	degC	ME Crank pin bearing 6 temp (local)
K:	T12177	degC	ME Crank pin bearing 7 temp (local)
L:	T12178	degC	ME Crank pin bearing 8 temp (local)
M:	T12179	degC	ME Crank pin bearing 9 temp (local)
N:	T12180	degC	ME Crank pin bearing 10 temp (local)
O:	T12181	degC	ME Crank pin bearing 11 temp (local)
P:	T12182	degC	ME Crank pin bearing 12 temp (local)
Q:			
R:			
S:			
T:			

2.304 Page:3902 MD39** ME BEARING SYSTEM - CROSSH BEARINGS

A:			
B:			
C:			
D:			
E:	T12271	degC	ME Cross head bearing 1 temp (local)
F:	T12272	degC	ME Cross head bearing 2 temp (local)
G:	T12273	degC	ME Cross head bearing 3 temp (local)
H:	T12274	degC	ME Cross head bearing 4 temp (local)
I:	T12275	degC	ME Cross head bearing 5 temp (local)
J:	T12276	degC	ME Cross head bearing 6 temp (local)
K:	T12277	degC	ME Cross head bearing 7 temp (local)
L:	T12278	degC	ME Cross head bearing 8 temp (local)
M:	T12279	degC	ME Cross head bearing 9 temp (local)
N:	T12280	degC	ME Cross head bearing 10 temp (local)
O:	T12281	degC	ME Cross head bearing 11 temp (local)
P:	T12282	degC	ME Cross head bearing 12 temp (local)
Q:			
R:			
S:			
T:			

2.305 Page:3910 MD39** ME BEARING SYSTEM - OIL MIST DETECTOR

A:					
B:					
C:					
D:					
E:	Z12071	%			ME Crank case 1 oil mist (local)
F:	Z12072	%			ME Crank case 2 oil mist (local)
G:	Z12073	%			ME Crank case 3 oil mist (local)
H:	Z12074	%			ME Crank case 4 oil mist (local)
I:	Z12075	%			ME Crank case 5 oil mist (local)
J:	Z12076	%			ME Crank case 6 oil mist (local)
K:	Z12077	%			ME Crank case 7 oil mist (local)
L:	Z12078	%			ME Crank case 8 oil mist (local)
M:	Z12079	%			ME Crank case 9 oil mist (local)
N:	Z12080	%			ME Crank case 10 oil mist (local)
O:	Z12081	%			ME Crank case 11 oil mist (local)
P:	Z12082	%			ME Crank case 12 oil mist (local)
Q:					
R:					
S:					
T:					

2.306 Page:4000 MD40** AIR VENTILATION SYSTEM (1/3)

A:					
B:	T00760	degC			Ambient Air temperature
C:					
D:	T00762	degC	L=---	H=40.0	Control Room air temp
E:	T00761	degC	L=2.0	H=48.0	Engine Room air temp
F:	P00761	mmWC	L=-70.0	H=30.0	Engine Room air pressure
G:					
H:					
I:	E14200	kW			Air ventilation fan power (total)
J:					
K:	E14211	kW			ER air supply fan 1 power
L:	E14221	kW			ER air supply fan 2 power
M:	E14231	kW			ER air exhaust fan 1 power
N:	E14241	kW			ER air exhaust fan 2 power
O:					
P:	E14251	kW			ECR air supply fan power
Q:					
R:	E14281	kW			Accommodation air supply fan 1 power
S:	E14282	kW			Accommodation air supply fan 2 power
T:					

2.307 Page:4001 MD40** AIR VENTILATION SYSTEM (2/3)

A:			
B:	R14210	<0-1>	ER air supply fan 1 low speed
C:	R14211	<0-1>	ER air supply fan 1 high speed
D:	G14211	kg/s	ER air supply fan 1 flow
E:	E14211	kW	ER air supply fan 1 power
F:			
G:	R14220	<0-1>	ER air supply fan 2 low speed
H:	R14221	<0-1>	ER air supply fan 2 high speed
I:	G14221	kg/s	ER air supply fan 2 flow
J:	E14221	kW	ER air supply fan 2 power
K:	X14230	<0-1>	ER air exhaust fan 1 reverse
L:	R14230	<0-1>	ER air exhaust fan 1 low speed
M:	R14231	<0-1>	ER air exhaust fan 1 high speed
N:	G14231	kg/s	ER air exhaust fan 1 flow
O:	E14231	kW	ER air exhaust fan 1 power
P:	X14240	<0-1>	ER air exhaust fan 2 reverse
Q:	R14240	<0-1>	ER air exhaust fan 2 low speed
R:	R14241	<0-1>	ER air exhaust fan 2 high speed
S:	G14241	kg/s	ER air exhaust fan 2 flow
T:	E14241	kW	ER air exhaust fan 2 power

2.308 Page:4002 MD40** AIR VENTILATION SYSTEMS (3/3)

A:			
B:			
C:	R14251	<0-1>	ECR air supply fan
D:	E14251	kW	ECR air supply fan power
E:			
F:	R14261	<0-1>	Purif room air supply fan
G:	E14261	kW	Purif room air supply fan power
H:			
I:	R14271	<0-1>	Sewage treatment room air fan
J:	E14271	kW	Sewage treatment room air fan power
K:			
L:	R14281	<0-1>	Accommodation air supply fan 1
M:	E14281	kW	Accommodation air supply fan 1 power
N:	R14282	<0-1>	Accommodation air supply fan 2
O:	E14282	kW	Accommodation air supply fan 2 power
P:			
Q:	R14291	<0-1>	Cargo holds air supply fans
R:	E14291	kW	Cargo holds air supply fans power
S:			
T:			

2.309 Page:4100 MD41** AIR CONDITIONING PLANT (1/7)

A:			
B:	G15601	kg/h	Fresh air inlet flow
C:	T15601	degC	Fresh air inlet temperature
D:	R15601	%	Fresh air inlet humidity
E:	X15601	g/kg	Fresh air inlet water content
F:			
G:	V15602	%	Recirc damper postition
H:	G15602	kg/h	Recirc air flow
I:			
J:			
K:	G15603	kg/h	Return air flow
L:	T15603	degC	Return air temperature
M:	R15603	%	Return air humidity
N:	X15603	g/kg	Return air water content (vapor)
O:	D15603	g/kg	Return air water content (mist)
P:	T15605	degC	Recirc mix air temperature
Q:	R15605	%	Recirc mix air humidity
R:	X15605	g/kg	Recirc mix air water content (vapor)
S:	D15605	g/kg	Recirc mix air water content (mist)
T:	G15606	kg/h	Recirc mix air water mist flow

2.310 Page:4101 MD41** AIR CONDITIONING PLANT (2/7)

A:			
B:	T15610	degC	Preheater air temperature
C:	R15610	%	Preheater air humidity
D:	X15610	g/kg	Preheater air water content (vapor)
E:	D15610	g/kg	Preheater air water content (mist)
F:	G15610	kg/h	Preheater air flow
G:			
H:	Q15611	kW	Preheater steam heat
I:	V15611	%	Preheater steam control valve pos
J:			
K:	T15614	degC	Humidifier air temperature
L:	R15614	%	Humidifier air humidity
M:	X15614	g/kg	Humidifier air water content (vapor)
N:	D15614	g/kg	Humidifier air water content (mist)
O:	G15614	kg/h	Humidifier air water mist flow
P:			
Q:	T15615	degC	Humidifier spray water inlet temp
R:	T15617	degC	Humidifier spray water return temp
S:			
T:	Z15614	%	Humidifier efficiency

2.311 Page:4102 MD41** AIR CONDITIONING PLANT (3/7)

A:			
B:	L15616	%	Spray tank water level
C:	T15616	degC	Spray tank water temp
D:	G15616	kg/h	Spray tank water circ pump flow
E:			
F:	G15619	kg/h	Spray tank water make up flow
G:	V15617	%	Spray tank water control valve pos
H:			
I:			
J:			
K:	R15616	<0-1>	Spray tank water circ pump
L:	E15616	kW	Spray tank water circ pump power
M:	P15616	bar	Spray tank water circ pump press
N:	G15616	kg/h	Spray tank water circ pump flow
O:			
P:	G15618	kg/h	Spray tank heater steam flow
Q:	Q15618	kW	Spray tank heater steam heat
R:	V15618	%	Spray tank heater steam control valve pos
S:	V15619	<0-1>	Spray tank heater steam shut off valve
T:			

2.312 Page:4103 MD41** AIR CONDITIONING PLANT (4/7)

A:			
B:	G15624	kg/h	Air cooler air flow
C:	T15624	degC	Air cooler air temperature
D:	R15624	%	Air cooler air humidity
E:	X15624	g/kg	Air cooler air water content (vapor)
F:	G15625	kg/h	Air cooler air water drain flow
G:	Q15625	kW	Air cooler heat transfer
H:			
I:	R15625	<0-1>	Refrig compressor
J:	E15625	kW	Refrig compressor power
K:			
L:	V15624	%	Refrig evaporator control valve
M:			
N:	V15625	<0-1>	Refrig condenser coolw shut off
O:	V15626	<0-1>	Refrig condenser refr liquid shut off
P:			
Q:			
R:			
S:			
T:			

2.313 Page:4104 MD41** AIR CONDITIONING PLANT (5/7)

A:					
B:					
C:	R15630	<0-1>			Air fan
D:	G15630	kg/h			Air fan flow
E:	E15630	kW			Air fan power
F:	T15635	degC			Air fan inlet air temp
G:	R15635	%			Air fan inlet air humidity
H:	X15635	g/kg			Air fan inlet air water content (vapor)
I:	D15635	g/kg			Air fan inlet air water content (mist)
J:	G15635	kg/h			Air fan inlet air water mist flow
K:	T15640	degC			Final heater air temperature
L:	R15640	%			Final heater air humidity
M:	X15640	g/kg			Final heater air water content (vapor)
N:	D15640	g/kg			Final heater air water content (mist)
O:					
P:	G15641	kg/h			Final heater steam flow
Q:	Q15641	kW			Final heater steam heat
R:					
S:	V15641	%			Final heater steam control valve pos
T:					

2.314 Page:4105 MD41** AIR CONDITIONING PLANT (6/7)

A:					
B:	T15650	degC	L=---	H=40.0	Eng contr room air temperature
C:	R15650	%	L=30.0	H=80.0	Eng contr room air humidity
D:	X15650	g/kg			Eng contr room air water content (vapor)
E:	D15650	g/kg			Eng contr room air water content (mist)
F:					
G:	V15651	%			Eng contr room air vane position
H:	G15650	kg/h			Eng contr room air flow
I:					
J:					
K:	Q15651	kW			Eng contr room heat load (input)
L:	Q15652	kW			Eng contr room heat loss (surroundings)
M:	Q15653	kW			Eng contr room heat load (net)
N:					
O:					
P:	X15651	g/kg			Eng contr room water load (input)
Q:	G15651	kg/h			Eng contr room water load
R:					
S:	C15650	<0-2>			Eng contr room heat loss constant
T:					

2.315 Page:4106 MD41** AIR CONDITIONING PLANT (7/7)

A:					
B:	T15660	degC	L=---	H=30.0	Accommodation air temperature
C:	R15660	%	L=30.0	H=80.0	Accommodation air humidity
D:	X15660	g/kg			Accommodation air water content (vapor)
E:	D15660	g/kg			Accommodation air water content (mist)
F:					
G:	V15661	%			Accommodation air vane position
H:	G15660	kg/h			Accommodation air flow
I:					
J:					
K:	Q15661	kW			Accommodation heat load (input)
L:	Q15662	kW			Accommodation heat loss (surroundings)
M:	Q15663	kW			Accommodation heat load (net)
N:					
O:					
P:	X15661	g/kg			Accommodation water load (input)
Q:	G15661	kg/h			Accommodation water load
R:					
S:	C15660	<0-2>			Accommodation heat loss constant
T:					

2.316 Page:4110 MD41** AIR COND - MASTER CONTROL (1/2)

A:			
B:	X15750	<0-1>	Final heater temp contr auto
C:			
D:	T15750	degC	Final heater temp contr set point
E:	T15751	degC	Final heater temp contr sensor signal
F:	Z15750	%	Final heater temp contr output signal
G:	C15750	%/degC	Final heater temp contr gain
H:	C15751	sec	Final heater temp contr integration time
I:	C15752	sec	Final heater temp contr derivation time
J:	C15753	sec	Final heater temp contr sensor tc
K:			
L:	X15760	<0-1>	Final air humidity contr auto
M:			
N:	R15760	%	Final air humidity contr set point
O:	R15761	%	Final air humidity contr sensor signal
P:	Z15760	%	Final air humidity contr output signal
Q:	C15760	%/%	Final air humidity contr gain
R:	C15761	sec	Final air humidity contr integration time
S:	C15762	sec	Final air humidity contr derivation time
T:	C15763	sec	Final air humidity contr sensor tc

2.317 Page:4111 MD41** AIR COND - MASTER CONTROL (2/2)

A:			
B:			
C:	C15780	degC	Preheater temp low
D:	C15781	degC	Preheater temp high
E:			
F:	C15786	degC	Air cooler temp low
G:	C15787	degC	Air cooler temp high
H:			
I:	C15782	degC	Spray tank temp low
J:	C15783	degC	Spray tank temp high
K:	C15784	%	Spray tank level low
L:	C15785	%	Spray tank level high
M:			
N:	C15790	degC	Final heater temp nominal value
O:	C15791	%	Final air humidity nominal value
P:			
Q:			
R:	C15779	<0-1>	Air Cond summer/winter mix enable
S:	C15778	%	Air Cond mixed operation damper pos
T:			

2.318 Page:4112 MD41** AIR COND - SLAVE CONTROL (1/2)

A:			
B:	X15710	<0-1>	Preheater temp contr auto
C:	X15711	<0-1>	Preheater temp contr remote sp
D:			
E:	T15710	degC	Preheater temp contr set point
F:	T15711	degC	Preheater temp contr sensor signal
G:	Z15710	%	Preheater temp contr output signal
H:	C15710	%/degC	Preheater temp contr gain
I:	C15711	sec	Preheater temp contr integration time
J:			
K:			
L:	X15740	<0-1>	Air cooler temp contr auto
M:	X15741	<0-1>	Air cooler temp contr remote sp
N:			
O:	T15740	degC	Air cooler temp contr set point
P:	T15741	degC	Air cooler temp contr sensor signal
Q:	Z15740	%	Air cooler temp contr output signal
R:	C15740	%/degC	Air cooler temp contr gain
S:	C15741	sec	Air cooler temp contr integration time
T:			

2.319 Page:4113 MD41** AIR COND - SLAVE CONTROL (2/2)

A:			
B:	X15720	<0-1>	Spray tank water temp contr auto
C:	X15721	<0-1>	Spray tank water temp contr remote sp
D:			
E:	T15720	degC	Spray tank water temp contr set point
F:	T15721	degC	Spray tank water temp contr sensor signal
G:	Z15720	%	Spray tank water temp contr output signal
H:	C15720	%/degC	Spray tank water temp contr gain
I:	C15721	sec	Spray tank water temp contr integration time
J:			
K:			
L:	X15730	<0-1>	Spray tank water level contr auto
M:	X15731	<0-1>	Spray tank water level contr remote sp
N:			
O:	L15730	%	Spray tank water level contr set point
P:	L15731	%	Spray tank water level contr sensor signal
Q:	Z15730	%	Spray tank water level contr output signal
R:	C15730	%/%	Spray tank water level contr gain
S:	C15731	sec	Spray tank water level contr integration time
T:			

2.320 Page:4120 MD41** AIR COND - MISCELLANEOUS

A:			
B:			
C:	E15670	kW	Air Conditioning plant el power
D:	Q15670	kW	Air Conditioning plant air heating
E:	Q15671	kW	Air Conditioning plant air cooling
F:			
G:			
H:			
I:			
J:			
K:			
L:			
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.321 Page:4500 MD45** SEWAGE TREATMENT PLANT (1/4)

A:			
B:	V15901	%	Black Water inlet setting
C:	Z15901	<0-1>	Black Water inlet pulsation
D:	G15901	kg/h	Black Water inlet flow
E:	B15901	mg/l	Black Water biochemical oxygen demand
F:			
G:	V15902	%	Grey Water inlet setting
H:	Z15902	<0-1>	Grey Water inlet pulsation
I:	G15902	kg/h	Grey Water inlet flow
J:			
K:	B15902	mg/l	Grey Water biochemical oxygen demand
L:	S15902	mg/l	Grey Water suspended solids
M:	N15902	1/100ml	Grey Water coliform bacteria
N:	X15902	ppm	Grey Water chlorine content
O:			
P:	C15901	kg/h	Design capasity (black water)
Q:			
R:	C15900	<1-100>	Sewage plant time speed up ratio
S:	C15902	<1-100>	Sewage chemical processing tc
T:			

2.322 Page:4501 MD45** SEWAGE TREATMENT PLANT (2/4)

A:			
B:	L15910	m	Aeration tank level
C:			
D:	G15911	kg/h	Aeration tank top air lift flow
E:	G15912	kg/h	Aeration tank btm air lift flow
F:	G15913	kg/h	Aeration tank cross over flow
G:			
H:	B15910	mg/l	Aeration tank biochemical oxygen demand
I:	S15910	mg/l	Aeration tank suspended solids
J:			
K:			
L:			
M:			
N:	C15910	cbm	Aeration tank volum
O:			
P:			
Q:			
R:			
S:			
T:			

2.323 Page:4502 MD45** SEWAGE TREATMENT PLANT (3/4)

A:					
B:					
C:	L15920	m			Settling tank level
D:	G15925	kg/h			Settling tank clean outlet flow
E:					
F:	B15920	mg/l			Settling tank biochemical oxygen demand
G:	S15920	mg/l			Settling tank suspended solids
H:	N15920	1/100ml			Settling tank coliform bacteria
I:					
J:					
K:					
L:					
M:					
N:	C15920	cbm			Settling tank volum
O:					
P:					
Q:					
R:					
S:					
T:					

2.324 Page:4503 MD45** SEWAGE TREATMENT PLANT (4/4)

A:					
B:					
C:	L15930	m	L=---	H=---	Chlorination tank level
D:	G15930	kg/h			Chlorination tank clean outlet flow
E:					
F:	B15930	mg/l			Chlorination tank biochemical ox.demand
G:	S15930	mg/l			Chlorination tank suspended solids
H:	N15930	1/100ml			Chlorination tank coliform bacteria
I:	X15930	ppm			Chlorination tank chlorine content
J:					
K:	G15931	kg/h	L=---	H=0.5	Chlorination tank emerg overflow
L:					
M:	X15935	%			Chlorination dispenser charge
N:	C15935	<0-2>			Chlorination tablets chlorine strength
O:					
P:					
Q:	C15930	cbm	L=---	H=---	Chlorination tank volum
R:					
S:					
T:					

2.325 Page:4510 MD45** SEWAGE TREATMENT PLANT CONTROL (1/2)

A:					
B:	R15940	<0-1>			Effluent pump
C:	G15940	kg/h			Effluent pump flow
D:	E15940	kW			Effluent pump power
E:					
F:	B15960	mg/l	L=---	H=50.0	Overboard flow biochemical oxygen demand
G:	S15960	mg/l	L=---	H=50.0	Overboard flow suspended solids
H:	N15960	1/100ml	L=---	H=250.0	Overboard flow coliform bacteria
I:	X15960	ppm	L=---	H=4.0	Overboard flow chlorine content
J:					
K:	X15950	<0-1>			UV radiation unit on
L:	V15960	%			UV radiation unit flow control valve
M:	G15960	kg/h			UV radiation unit flow
N:					
O:	C15960	m			UV radiation unit auto bypass level
P:	C15945	m			Effluent pump auto start level
Q:	C15946	m			Effluent pump auto stop level
R:	C15940	kg/h			Effluent pump nominal flow
S:	C15947	m			Settling tank overflow level
T:					

2.326 Page:4511 MD45** SEWAGE TREATMENT PLANT CONTROL (2/2)

A:			
B:			
C:	R15946	<0-1>	Sewage sludge pump
D:	G15946	kg/h	Sewage sludge pump flow
E:	E15946	kW	Sewage sludge pump power
F:			
G:	K15940	kg/h	Sewage sludge pump nom. flow
H:			
I:			
J:	X15946	<0-1>	Sewage sludge pump auto start/stop
K:	K15941	m	Sewage sludge tank level low (start)
L:	K15942	m	Sewage sludge tank level high (stop)
M:	K15943	m	Settling tank level low (stop)
N:	K15944	m	Sttling tank level high (start)
O:			
P:	R15941	<0-1>	Air compressor
Q:	G15941	nm3/h	Air compressor flow
R:	E15941	kW	Air compressor power
S:			
T:			

2.327 Page:4600 MD46** SEWAGE SLUDGE TANK

A:					
B:	L15830	m	L=---	H=1.8	Sewage sludge tank level
C:	T15830	degC			Sewage sludge tank temperature
D:	X15830	%			Sewage sludge tank water content
E:	H15830	kJ/kg			Sewage sludge tank heat value (dry)
F:					
G:	G15830	kg/h			Sewage sludge tank inlet flow (manual)
H:	G15831	kg/h			Sewage sludge tank inlet flow (auto)
I:	X15831	%			Sewage sludge tank inlet water content
J:	H15831	kJ/kg			Sewage sludge tank inlet heat value
K:					
L:	V15832	<0-1>			Sewage sludge tank outlet valve
M:	G15832	kg/h			Sewage sludge tank outlet flow
N:					
O:	G15834	kg/h	L=---	H=0.1	Sewage sludge tank overflow
P:					
Q:	C15830	kg			Sewage sludge tank max mass
R:	C15831	m			Sewage sludge tank max level
S:					
T:					

2.328 Page:4601 MD46** SLUDGE FEED PUMPS

A:			
B:	P15835	bar	Oil sludge feed pump press
C:	G15835	kg/h	Oil sludge feed pump flow
D:	E15835	kW	Oil sludge feed pump power
E:			
F:	P15833	bar	Sewage sludge feed pump press
G:	G15833	kg/h	Sewage sludge feed pump flow
H:	E15833	kW	Sewage sludge feed pump power
I:			
J:	K15830	<0-10>	Sewage /mixing tank time speed-up factor
K:	X15835	<0-1>	Oil sludge feed pump auto
L:	K15833	m	Oil sludge tank level low (stop)
M:	K15834	m	Oil sludge tank level high (start)
N:	K15835	m	Sludge mixing tank level low (start)
O:	K15836	m	Sludge mixing tank level high (stop)
P:	X15833	<0-1>	Sewage sludge feed pump auto
Q:	K15831	m	Sewage sludge tank level low (stop)
R:	K15832	m	Sewage sludge tank level high (start)
S:	K15837	m	Sludge mixing tank level low (start)
T:	K15838	m	Sludge mixing tank level high (stop)

2.329 Page:4602 MD46** SLUDGE MIXING TANK (1/3)

A:					
B:	L15840	m	L=---	H=2.3	Sludge mixing tank level
C:	L15841	m			Sludge mixing tank level (water)
D:	T15840	degC	L=---	H=90.0	Sludge mixing tank temperature
E:	X15840	%			Sludge mixing tank water content
F:	H15840	kJ/kg			Sludge mixing tank heat value (dry)
G:					
H:	T15841	degC			Oil sludge feed flow temperature
I:	X15841	%			Oil sludge feed flow water content
J:	H15841	kJ/kg			Oil sludge feed flow heat value (dry)
K:					
L:	T15842	degC			Sewage sludge feed flow temperature
M:	X15842	%			Sewage sludge feed flow water content
N:	H15842	kJ/kg			Sewage sludge feed flow heat value (dry)
O:					
P:	C15840	kg			Sludge mixing tank max mass (full)
Q:	C15841	m			Sludge mixing tank max level (full)
R:	C15842	<0-1>			Sludge mixing tank settling constant
S:					
T:					

2.330 Page:4603 MD46** SLUDGE MIXING TANK (2/3)

A:			
B:	P15845	bar	Sludge circulation pump press
C:	G15845	kg/h	Sludge circulation pump flow
D:	E15845	kW	Sludge circulation pump power
E:			
F:	C15845	kg/h	Sludge circulation pump nom flow
G:	C15846	bar	Sludge circulation pump max press
H:			
I:			
J:			
K:	P15850	bar	Sludge supply pressure
L:	G15850	kg/h	Sludge supply flow
M:	G15852	kg/h	Sludge return flow
N:	G15853	kg/h	Sludge bypass flow
O:			
P:	P15854	%	Sludge supply pressure adjust
Q:	V15854	%	Sludge bypass control valve
R:	C15854	%/bar	Sludge bypass control valve gain
S:	C15855	%	Sludge bypass control valve bias
T:			

2.331 Page:4604 MD46** SLUDGE MIXING TANK (3/3)

A:					
B:	P15890	bar			Sludge mixing tank steam supply press
C:	V15890	<0-1>			Sludge mixing tank steam supply valve
D:					
E:	T15890	degC			Sludge mixing tank temp set point
F:					
G:	C15890	%/degC			Sludge mixing tank control gain
H:	C15891	%			Sludge mixing tank control bias
I:					
J:					
K:	G15890	kg/h			Sludge mixing tank steam flow
L:	E15890	kW			Sludge mixing tank steam heat
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.332 Page:4606 MD46** INCINERATOR - FURNACE

A:					
B:					
C:	T15860	degC	L=---	H=1200.0	Incinerator furnace temperature
D:	P15860	mmWC	L=-30.0	H=10.0	Incinerator furnace pressure
E:	X15860	%			Incinerator furnace oxygen content
F:					
G:	E15861	kW			Incinerator energy to furnace
H:	E15862	kW			Incinerator energy in fuel oil
I:	E15863	kW			Incinerator energy in sludge
J:	E15864	kW			Incinerator energy in solid waste
K:					
L:	Q15860	kW			Incinerator heat released (total)
M:	H15860	kJ/kg			Incinerator mean fuel heat value
N:					
O:	V15863	<0-1>			Incinerator hatch open
P:	M15863	kg			Incinerator solid waste charge
Q:	H15863	kJ/kg			Incinerator solid waste heat value
R:	G15863	kg/h			Incinerator solid waste combustion flow
S:	C15863	<1-50>			Incinerator solid waste speed up factor
T:					

2.333 Page:4607 MD46** INCINERATOR - BURNERS/FLUE GAS FAN

A:					
B:	G15865	kg/h			Incinerator flue gas flow
C:	T15865	degC	L=---	H=380.0	Incinerator flue gas temp
D:	V15865	%			Incinerator flue gas damper
E:	E15865	kW			Incinerator flue gas fan power
F:					
G:	V15860	%			Incinerator combustion air damper
H:	G15860	kg/h			Incinerator combustion air flow
I:	G15861	kg/h			Incinerator casing cool air flow
J:					
K:	N15856	rpm			Diesel burner oil pump speed
L:	P15856	bar			Diesel burner nozzle pressure
M:	G15856	kg/h			Diesel burner flow
N:	C15857	kg/h			Diesel burner max flow
O:					
P:	V15853	%			Sludge burner control valve
Q:	G15851	kg/h			Sludge burner flow
R:					
S:					
T:					

2.334 Page:4610 MD46** INCINERATOR - CONTROL (1/3)

A:			
B:	X15880	<0-1>	Incinerator auto combustion control
C:			
D:	T15881	degC	Incinerator furnace temp set point
E:	P15881	mmWC	Incinerator furnace pressure set point
F:			
G:	X15881	%	Diesel burner flow command
H:	X15882	%	Sludge burner flow command
I:	X15883	%	Combustion air damper command
J:			
K:	C15881	sec	Diesel control integration time
L:	C15882	sec	Sludge control integration time
M:	C15884	sec	Oxygen control integration time
N:	C15883	sec	Press control integration time
O:			
P:	C15885	%	Min furnace combustion oxygen
Q:	C15886	%	Max furnace combustion oxygen
R:			
S:	T15885	degC	High flue gas temperature (reduce)
T:			

2.335 Page:4611 MD46** INCINERATOR - CONTROL (2/3)

A:			
B:	X15875	<0-1>	Incinerator auto start/stop control
C:	X15876	<0-1>	Incinerator ready for auto control
D:	X15877	<0-1>	Incinerator burner fail
E:			
F:	X15871	<0-1>	Sludge burner on
G:	X15870	<0-1>	Diesel burner on
H:	X15872	<0-1>	Diesel burner igniter on
I:			
J:			
K:	S15872	<0-11>	Sludge burner control state
L:	S15871	<0-11>	Diesel burner control state
M:			
N:	Z15873	<0-1>	Incinerator flame
O:	X15873	<0-1>	Incinerator flame detector
P:			
Q:	V15871	<0-1>	Sludge burner atomizing steam valve
R:	V15872	<0-1>	Sludge burner atomizing steam shut off
S:			
T:			

2.336 Page:4612 MD46** INCINERATOR - CONTROL (3/3)

A:			
B:	T15874	bar	Incin : atomizing pressure low
C:	T15871	degC	Incin : sludge temp low (not ready)
D:	T15872	m	Incin : sludge level low (stop)
E:	T15873	m	Incin : sludge level high (start)
F:			
G:	T15875	degC	Incin : furnace cold (flue fan stop ok)
H:	T15876	degC	Incin : furnace hot (sludge start ok)
I:			
J:			
K:	C15873	sec	Incin : comb air fan post purge time
L:	C15872	sec	Incin : flue gas fan post purge time
M:	C15871	sec	Incin : flue gas fan pre purge time
N:	C15874	sec	Incin : sludge pump pre run time
O:			
P:			
Q:			
R:			
S:			
T:			

2.337 Page:4615 MD46** INCINERATOR - TRIP SYSTEM

A:					
B:					
C:	X15878	<0-1>	L=---	H=1.0	Incinerator trip
D:	X15879	<0-5>			Incinerator trip code
E:	Y15878	<0-1>			Incinerator trip inhibit
F:					
G:	C15876	degC			Incin trip limit : flue gas temp high
H:	C15877	degC			Incin trip limit : furnace temp high
I:	C15878	bar			Incin trip limit : atomizing press low
J:					
K:					
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.338 Page:4630 MD46** INCINERATOR - MISCELLANEOUS

A:			
B:			
C:			
D:	C15832	kg/h	Sewage sludge feed pump nom flow
E:	C15833	bar	Sewage sludge feed pump max press
F:	C15835	kg/h	Oil sludge feed pump nom flow
G:	C15836	bar	Oil sludge feed pump max press
H:			
I:	C15856	bar	Diesel burner max pressure
J:	C15857	kg/h	Diesel burner max flow
K:			
L:	K15881	%	Ignition oil command setting
M:	K15882	%	Ignition sludge command setting
N:	K15883	%	Ignition comb air command setting
O:			
P:	K15861	kJ/kg	Mean heat value : food waste
Q:	K15862	kJ/kg	Mean heat value : paper waste
R:	K15863	kJ/kg	Mean heat value : plastics waste
S:			
T:			

2.339 Page:5000 MD50** CATHODIC PROTECTION SYSTEM (1/2)

A:					
B:					
C:	X15001	%			Corrosion protection index
D:					
E:	V15001	mV			Mean hull steel potensial
F:	V15002	mV			Mean zinc reference potensial
G:	V15003	mV			Mean titanium anode potensial
H:					
I:	I15010	A			DC current from hull/prop/rudder (total)
J:					
K:	I15011	A			DC current to anode no 1 (fore stbd)
L:	I15012	A			DC current to anode no 2 (fore port)
M:	I15013	A			DC current to anode no 3 (aft stbd)
N:	I15014	A			DC current to anode no 4 (aft port)
O:					
P:	I15015	A			DC current from hull
Q:	I15016	A			DC current from propeller
R:	I15017	A			DC current from rudder
S:					
T:					

2.340 Page:5001 MD50** CATHODIC PROTECTION SYSTEM (2/2)

A:					
B:					
C:	X15020	<0-1>			ICCP control unit power on
D:	E15020	kW			ICCP control unit power
E:					
F:	X15030	<0-1>	L=---	H=1.0	ICCP alarm
G:	X15031	<0-1>			ICCP alarm : high hull potensial
H:	X15032	<0-1>			ICCP alarm : power unit fail
I:	X15035	<0-1>			ICCP alarm reset
J:					
K:					
L:	V15050	mV			ICCP control set point
M:	C15050	A/ohm			ICCP control gain
N:	C15051	A			ICCP control bias
O:					
P:	V15060	V			ICCP control output voltage
Q:	I15060	A			ICCP control output current
R:	C15060	V			ICCP control max DC voltage
S:	C15061	A			ICCP control max DC current
T:					

2.341 Page:5100 MD51** MARINE GROWTH PROTECTION SYSTEM (1/3)

A:					
B:					
C:	G15101	ton/h			MGPS unit inlet SW flow
D:	T15101	degC			MGPS unit inlet SW temp
E:	X15101	%			MGPS unit inlet SW salinity
F:	V15101	<0-1>			MGPS unit inlet SW valve
G:					
H:	T15102	degC			MGPS unit temperature
I:	X15102	ppm			MGPS unit hypochlorite
J:					
K:	X15116	ppm	L=0.7	H=2.0	Main SW line hypochlorite
L:					
M:					
N:	X15111	ppm			Stbd high sea chest line hypochlorite
O:	X15112	ppm			Stbd low sea chest line hypochlorite
P:	X15113	ppm			Port high sea chest line hypochlorite
Q:	X15114	ppm			Port low sea chest line hypochlorite
R:					
S:					
T:					

2.342 Page:5101 MD51** MARINE GROWTH PROTECTION SYSTEM (2/3)

A:			
B:	V15111	<0-1>	MGPS unit hypochlorite valve 1
C:	V15112	<0-1>	MGPS unit hypochlorite valve 2
D:	V15113	<0-1>	MGPS unit hypochlorite valve 3
E:	V15114	<0-1>	MGPS unit hypochlorite valve 4
F:			
G:	G15111	ton/h	MGPS unit hypochlorite flow 1
H:	G15112	ton/h	MGPS unit hypochlorite flow 2
I:	G15113	ton/h	MGPS unit hypochlorite flow 3
J:	G15114	ton/h	MGPS unit hypochlorite flow 4
K:			
L:	V15121	<0-1>	Hypochlorite injection nozzle group 1
M:	V15122	<0-1>	Hypochlorite injection nozzle group 2
N:	V15123	<0-1>	Hypochlorite injection nozzle group 3
O:	V15124	<0-1>	Hypochlorite injection nozzle group 4
P:			
Q:			
R:			
S:			
T:			

2.343 Page:5102 MD51** MARINE GROWTH PROTECTION SYSTEM (3/3)

A:					
B:					
C:	X15120	<0-1>			MGPS control unit power on
D:	E15120	kW			MGPS control unit power
E:					
F:	X15130	<0-1>	L=---	H=1.0	MGPS alarm
G:	X15131	<0-1>			MGPS alarm : overheat shut off
H:	X15132	<0-1>			MGPS alarm : power unit fail
I:	X15135	<0-1>			MGPS alarm reset
J:					
K:	I15150	A			MGPS control unit set point
L:	I15160	A			MGPS control unit current
M:	V15160	V			MGPS control unit voltage
N:					
O:	C15150	V/A			MGPS control unit gain
P:	C15151	V			MGPS control nominal voltage
Q:	C15152	A			MGPS control nominal current
R:	C15153	V			MGPS control maximal voltage
S:	C15154	A			MGPS control maximal current
T:					

2.344 Page:5300 MD53** PROPELLER SERVO OIL SYSTEM (1/3)

A:					
B:	X14180	<0-1>			Controllable Pitch Propeller (0=FP,1=CP)
C:					
D:	P03701	bar	L=20.0	H=50.0	Prop servo oil press
E:	T03701	degC	L=---	H=75.0	Prop servo oil temp
F:	P03702	bar			Prop servo oil press inlet cooler
G:					
H:	G03706	ton/h			Prop servo oil flow inlet filter
I:	G03704	ton/h			Prop servo oil flow inlet press cnt v
J:	G03705	ton/h			Prop servo oil flow inlet pitch cnt v
K:					
L:	V03742	<0-1>			Prop servo oil filter 1
M:	V03743	<0-1>			Prop servo oil filter 2
N:	P03703	bar	L=---	H=1.5	Prop servo oil filter diff press
O:					
P:	L03712	%	L=30.0	H=90.0	Prop servo oil tank level
Q:	R03744	<0-1>			Prop servo oil tank make-up pump
R:	G03711	ton/h			Prop servo oil tank make-up flow
S:	G03722	ton/h	L=---	H=0.1	Prop servo oil tank overflow (to bilge)
T:					

2.345 Page:5301 MD53** PROPELLER SERVO OIL SYSTEM (2/3)

A:					
B:	T03713	degC	L=---	H=50.0	Prop servo oil tank temp
C:	T03734	degC			Prop servo oil temp inlet cooler
D:	T03721	degC			Prop servo oil temp outlet cooler
E:					
F:	T03715	degC			Prop servo oil temp contr set point
G:	V03714	%			Prop servo oil temp contr valve pos
H:	C03716	%/degC			Prop servo oil temp contr gain
I:	C03717	%			Prop servo oil temp contr bias
J:					
K:	G03707	ton/h			Prop servo oil flow inlet cooler
L:	G03710	ton/h			Prop servo oil flow bypass cooler
M:					
N:					
O:	V03733	<0-1>			Prop servo oil coolw shut off valve
P:	G03730	ton/h			Prop servo oil flow outlet LO cooler
Q:	T03731	degC			Prop servo oil temp inlet cooler
R:	T03732	degC			Prop servo oil temp outlet cooler
S:					
T:					

2.346 Page:5302 MD53** PROPELLER SERVO OIL SYSTEM (3/3)

A:			
B:	P03700	bar	Prop servo oil press outlet pumps
C:			
D:	R03740	<0-1>	Prop servo oil pump 1
E:	R03741	<0-1>	Prop servo oil pump 2
F:	X03740	<0-1>	Prop servo oil pump 1 auto s/s
G:	X03741	<0-1>	Prop servo oil pump 2 auto s/s
H:			
I:	E03740	kW	Prop servo oil pump 1 power
J:	E03741	kW	Prop servo oil pump 2 power
K:	C03740	bar	Prop servo oil pump 1 low press (start)
L:	C03741	bar	Prop servo oil pump 1 hig press (stop)
M:	C03742	bar	Prop servo oil pump 2 low press (start)
N:	C03743	bar	Prop servo oil pump 2 hig press (stop)
O:			
P:	P03725	bar	Prop servo oil press contr set point
Q:	V03724	%	Prop servo oil press contr valve pos
R:	C03726	%/bar	Prop servo oil press contr gain
S:	C03727	%	Prop servo oil press contr bias
T:			

2.347 Page:5310 MD53** PROPELLER PITCH LOCAL CONTROL

A:					
B:					
C:	X03767	<0-1>			Propeller pitch local control
D:	Z03770	%			Propeller pitch local command
E:					
F:	E03760	MW			Propeller power
G:	N03761	rpm			Propeller speed
H:	X03762	P/D			Propeller pitch ratio
I:	Q03763	kNm			Propeller torque
J:	Q03764	kN			Propeller thrust
K:	Z03766	%			Propeller efficiency
L:					
M:	Z03764	%	L=---	H=60.0	Propeller/hull vibration
N:					
O:					
P:	C03750	sec			Prop servo nom positioning speed
Q:					
R:					
S:					
T:					

2.348 Page:5400 MD54** STERN TUBE SYSTEM - GRAVITY TANKS

A:					
B:					
C:	E03560	kW			Stern Tube LO pump 1 power
D:	E03561	kW			Stern Tube LO pump 2 power
E:					
F:	C03550	%			Stern Tube LO pump start (low level)
G:	C03551	%			Stern Tube LO pump stop (high level)
H:					
I:	V03563	<0-1>			Stern Tube grav tank inlet (0,1)=(L,H)
J:	V03564	<0-1>			Stern Tube grav tank outlet (0,1)=(L,H)
K:	L03452	%	L=40.0	H=---	Stern Tube high grav tank level
L:	T03455	degC			Stern Tube high grav tank temp
M:	G03471	kg/h			Stern Tube high grav tank inlet flow
N:	G03472	kg/h			Stern Tube high grav tank outlet flow
O:	G03473	kg/h			Stern Tube high grav tank overflow
P:	L03451	%	L=40.0	H=---	Stern Tube low grav tank level
Q:	T03454	degC			Stern Tube low grav tank temp
R:	G03466	kg/h			Stern Tube low grav tank inlet flow
S:	G03467	kg/h			Stern Tube low grav tank outlet flow
T:	G03470	kg/h			Stern Tube low grav tank overflow

2.349 Page:5401 MD54** STERN TUBE SYSTEM - BEARINGS

A:	X03565	<0-1>	L=---	H=1.0	Stern Tube serious damage
B:					
C:	T03552	degC	L=---	H=60.0	Stern Tube fore bearing temp
D:	T03553	degC	L=---	H=60.0	Stern Tube aft bearing temp
E:					
F:	P03464	mWC			Stern Tube LO inlet press
G:	P03465	mWC	L=1.0	H=8.0	Stern Tube LO/SW diff press
H:	G03554	kg/h			Stern Tube LO leakage (oil pollution)
I:					
J:	T03456	degC			Stern Tube LO inlet temp
K:	T03457	degC			Stern Tube LO outlet temp
L:	G03550	kg/h			Stern Tube LO inlet flow
M:	G03551	kg/h			Stern Tube LO return flow
N:					
O:	L03450	%	L=30.0	H=90.0	Stern Tube LO sump level
P:	Z03555	%	L=---	H=30.0	Stern Tube LO contamination
Q:					
R:	R03562	<0-1>			Stern Tube LO sump make up pump
S:	G03475	kg/h			Stern Tube LO sump make up flow
T:	G03476	kg/h	L=---	H=10.0	Stern Tube LO sump overflow (to bilge)

2.350 Page:5402 MD54** STERN TUBE SYSTEM - LO COOLER

A:					
B:	T03453	degC	L=---	H=60.0	Stern Tube LO sump temp
C:					
D:	P03463	bar			Stern Tube LOC LO inlet press
E:	P03462	bar			Stern Tube LOC LO outlet press
F:					
G:	G03477	kg/h			Stern Tube LOC LO inlet flow
H:	T03460	degC			Stern Tube LOC LO outlet temp
I:					
J:	V03571	<0-1>			Stern Tube LOC CW inlet valve
K:	G03570	ton/h			Stern Tube LOC CW inlet flow
L:	T03461	degC			Stern Tube LOC CW outlet temp
M:					
N:					
O:	V03572	<0-1>			Stern Tube LO discharge valve
P:	G03474	kg/h			Stern Tube LO discharge flow (to spill)
Q:					
R:					
S:	C03566	degC			Stern Tube serious damage limit
T:					

2.351 Page:5600 MD56** SHIP PROPULSION SYSTEM - POWER

A:					
B:	N06312	knot			Ship speed
C:					
D:	G06326	kg/h			Total ME FO flow
E:	G06327	kg/h			Total DG FO flow (net)
F:					
G:	M06333	ton			Ship load (static)
H:	X06334	%			Ship load (static)
I:	X06335	m			Ship trim (static)
J:	X06336	deg			Ship heel (static)
K:					
L:	N03761	rpm			Propeller speed
M:	E03760	MW			Propeller power
N:	Q03764	kN			Propeller thrust
O:	Z03766	%			Propeller efficiency
P:	Z03764	%	L=---	H=60.0	Propeller/hull vibration
Q:					
R:	E06325	kg/Nm			Overall propulsion efficiency
S:					
T:					

2.352 Page:5601 MD56** SHIP PROPULSION SYSTEM - FORCES

A:					
B:	N06312	knot			Ship speed
C:					
D:	Q06330	kN			Propeller thrust (total)
E:	Q06331	kN			Hull drag force (total)
F:					
G:	N00766	m/sec			Wind force (speed)
H:	X00767	deg			Wind direction (0-360 dgr)
I:					
J:	Z00770	Beauf			Sea condition (waves)
K:					
L:					
M:	X00770	m			Mean wave height
N:	X00771	m			Mean wave length
O:	T00770	sec			Mean wave periode
P:	D00771	deg			Mean wave encounter angle
Q:	T00771	sec			Mean wave encounter periode
R:					
S:					
T:					

2.353 Page:5602 MD56** SHIP PROPULSION SYSTEM - BOW THRUSTER

A:					
B:	R06270	<0-1>			Bow thruster s/s
C:					
D:	X06279	%			Bow thruster pitch
E:	Q06279	kN			Bow thruster force (lateral)
F:	E06279	kW			Bow thruster motor power
G:	I06279	A			Bow thruster motor current
H:	V06279	V			Bow thruster motor voltage
I:					
J:	X06868	<0-1>			Pchief Alert mode (bow thruster mode)
K:	Z06271	<0-1>			Bow thruster control local (ECR)
L:	Z06272	<0-1>			Bow thruster control remote (ECR)
M:					
N:	R06272	<0-1>			Bow thruster ready (ECR)
O:	R06271	<0-1>			Bow thruster ready (BRD)
P:	X06277	%			Bow thruster pitch command (HW-BRD)
Q:	X06278	%			Bow thruster pitch command
R:					
S:	C06279	kW			Bow thruster size (nom power)
T:	C06278	%			Bow thruster pitch limit (start)

2.354 Page:5630 MD56** PROPELLER/HULL ADAPTION (sea margin)

A:					
B:					
C:					
D:	C02070	<0-2>			ME sea margin factor (prop/hull adjust)
E:					
F:	C02071	kW			Nom propulsion power (computed)
G:	C02072	m			Nom propeller diameter (computed)
H:	C02073	P/D			Nom propeller pitch ratio (computed)
I:					
J:					
K:	E02005	MW	L=---	H=53.5	ME shaft power
L:	N02015	rpm	L=---	H=106.0	ME speed
M:					
N:	N06312	knot			Ship speed
O:					
P:					
Q:					
R:					
S:					
T:					

2.355 Page:5640 MD56** PROPELLER/HULL (study 1)

A:			
B:	X07008	<0-1>	Fixed ship speed
C:	N07008	knot	Fixed ship speed (test input)
D:	X07009	<0-1>	Fixed prop speed
E:	N07009	rpm	Fixed prop speed (test input)
F:			
G:	X03772	%	Propeller pitch setting (test)
H:	X03768	m	Propeller pitch
I:	X03762	P/D	Propeller pitch ratio
J:			
K:	X03773	%	Propeller diameter setting (test)
L:	X03774	m	Propeller diameter
M:			
N:	Z03766	%	Propeller efficiency
O:	C03766	%	Propeller efficiency (nominal)
P:			
Q:	N03761	rpm	Propeller speed
R:	E03760	MW	Propeller power
S:	Q03764	kN	Propeller thrust
T:			

2.356 Page:5641 MD56** PROPELLER/HULL (study 2)

A:			
B:	X02090	<0-1>	Torque generator active (prop/hull test)
C:			
D:	Q02090	kNm	Torque generator shaft torque
E:			
F:	N02090	knot	Ship speed test contr set point
G:	Z02090	knot	Ship speed test contr feed back
H:	N02091	knot	Ship speed test contr deviation
I:	Z02091	%	Ship speed test contr output signal
J:			
K:	C02090	%/knot	Ship speed test contr gain
L:	C02091	sec	Ship speed test contr integration time
M:	C02093	<0-50>	Ship speed test contr speed up factor
N:			
O:	C02092	kNm	Torque generator capasity
P:			
Q:	N03761	rpm	Propeller speed
R:	E03760	MW	Propeller power
S:	Q03764	kN	Propeller thrust
T:			

2.357 Page:5700 MD57** SHIP LOAD CONDITION (1/3)

A:					
B:	M06316	ton			Ship load (deadweigth)
C:	X06320	%			Ship load (relative)
D:					
E:	X06323	m			Ship draft (mean)
F:	X06321	m			Ship trim (by stern)
G:	X06322	deg			Ship heel (by port)
H:					
I:	M15591	ton			Fwd Stbd : weight of containers
J:	M15592	ton			Fwd Port : weight of containers
K:	M15593	ton			Mid Stbd : weight of containers
L:	M15594	ton			Mid Port : weight of containers
M:	M15595	ton			Aft Stbd : weight of containers
N:	M15596	ton			Aft Port : weight of containers
O:					
P:	M06354	ton			Total Cargo
Q:	M06355	ton			Total Bunker
R:	M06356	ton			Total Ballast
S:					
T:					

2.358 Page:5701 MD57** SHIP LOAD CONDITION (2/3)

A:					
B:	M06340	ton			Aft HFO Bunker tank content
C:	M06341	ton			Port HFO Bunker tank content
D:	M06342	ton			Stbd HFO Bunker tank content
E:	M06343	ton			Fore HFO Bunker tank content
F:	M06335	ton			MDO Bunker tank content
G:	M06336	ton			MDO Overflow tank content
H:	M06337	ton			HFO Overflow tank content
I:	M06360	ton			Spill oil tank content
J:					
K:	M00400	ton	L=---	H=---	Settling tank 1 content
L:	M00440	ton	L=---	H=---	Settling tank 2 content
M:	M00480	m	L=---	H=---	Settling tank 3 content
N:	M00300	m	L=---	H=---	HFO Service tank content
O:	M00340	m	L=---	H=---	MDO Service tank content
P:	M04270	ton	L=---	H=---	LO Storage tank content
Q:	M04266	ton			LO Purifier tank content
R:					
S:	M06680	ton			Distilled Water tank content
T:					

2.359 Page:5702 MD57** SHIP LOAD CONDITION (3/3)

A:			
B:			
C:	M15210	ton	Stbd WB tank no 1 content (total)
D:	M15220	ton	Stbd WB tank no 2 content (total)
E:	M15230	ton	Stbd WB tank no 3 content (total)
F:	M15240	ton	Stbd WB tank no 4 content (total)
G:	M15250	ton	Stbd WB tank no 5 content (total)
H:	M15260	ton	Stbd WB tank no 6 content (total)
I:			
J:	M15310	ton	Port WB tank no 1 content (total)
K:	M15320	ton	Port WB tank no 2 content (total)
L:	M15330	ton	Port WB tank no 3 content (total)
M:	M15340	ton	Port WB tank no 4 content (total)
N:	M15350	ton	Port WB tank no 5 content (total)
O:	M15360	ton	Port WB tank no 6 content (total)
P:			
Q:			
R:			
S:			
T:			

2.360 Page:5710 MD57** SHIP LOADIND/UNLOADING (1/2)

A:			
B:	X15590	<0-1>	Loading/unloading active
C:			
D:	C15591	¨<0-100>	Loading time speed up factor
E:			
F:	C15592	<0-1>	1=load/unload if moored only
G:			
H:	C15590	ton	Nominal (mean) container weight
I:			
J:			
K:	N15581	no	Fwd Stbd : no of containers (actual)
L:	N15591	no	Fwd Stbd : no of containers (target)
M:	R15591	no/min	Fwd Stbd : rate of loading (units/min)
N:	M15591	ton	Fwd Stbd : weight of containers
O:			
P:	N15582	no	Fwd Port : no of containers (actual)
Q:	N15592	no	Fwd Port : no of containers (target)
R:	R15592	1/min	Fwd Port : rate of loading (units/min)
S:	M15592	ton	Fwd Port : weight of containers
T:			

2.361 Page:5711 MD57** SHIP LOADIND/UNLOADING (2/2)

A:					
B:	N15583	no			Mid Stbd : no of containers (actual)
C:	N15593	no			Mid Stbd : no of containers (target)
D:	R15593	no/min			Mid Stbd : rate of loading (units/min)
E:	M15593	ton			Mid Stbd : weight of containers
F:					
G:	N15584	no			Mid Port : no of containers (actual)
H:	N15594	no			Mid Port : no of containers (target)
I:	R15594	no/min			Mid Port : rate of loading (units/min)
J:	M15594	ton			Mid Port : weight of containers
K:					
L:	N15585	no			Aft Stbd : no of containers (actual)
M:	N15595	no			Aft Stbd : no of containers (target)
N:	R15595	no/min			Aft Stbd : rate of loading (units/min)
O:	M15595	ton			Aft Stbd : weight of containers
P:					
Q:	N15586	no			Aft Port : no of containers (actual)
R:	N15596	no			Aft Port : no of containers (target)
S:	R15596	no/min			Aft Port : rate of loading (units/min)
T:	M15596	ton			Aft Port : weight of containers

2.362 Page:5800 MD58** STEERING GEAR SYSTEM (1/4)

A:					
B:	P15801	bar			Steering Gear pump 1 discharge press
C:	P15802	bar			Steering Gear pump 2 discharge press
D:	P15803	bar			Steering Gear pump 1 press setpoint
E:	P15804	bar			Steering Gear pump 2 press setpoint
F:					
G:	P15805	bar			Steering Gear P1 chamber press
H:	P15806	bar			Steering Gear S1 chamber press
I:	P15807	bar			Steering Gear S2 chamber press
J:	P15808	bar			Steering Gear P2 chamber press
K:					
L:	P15809	bar	L=---	H=1.5	Steering Gear oil filter 1 diff press
M:	P15810	bar	L=---	H=1.5	Steering Gear oil filter 2 diff press
N:					
O:					
P:	P15821	bar			Steering Gear P1 to S1 rlf valve o press
Q:	P15822	bar			Steering Gear S1 to P1 rlf valve o press
R:	P15823	bar			Steering Gear P2 to S2 rlf valve o press
S:	P15824	bar			Steering Gear S2 to P2 rlf valve o press
T:					

2.363 Page:5801 MD58** STEERING GEAR SYSTEM (2/4)

A:					
B:	G15801	ton/h			Steering Gear pump 1 oil flow
C:	G15802	ton/h			Steering Gear pump 2 oil flow
D:	G15803	ton/h			Steering Gear filter 1 oil flow
E:	G15804	ton/h			Steering Gear filter 2 oil flow
F:					
G:	G15805	ton/h			Steering Gear pump 1 flow to S chambers
H:	G15806	ton/h			Steering Gear pump 1 flow to P chambers
I:					
J:	G15807	ton/h			Steering Gear pump 2 flow to P chambers
K:	G15808	ton/h			Steering Gear pump 2 flow to S chambers
L:					
M:					
N:	E06276	kW			Steering Gear servo pump 1 power
O:	E06277	kW			Steering Gear servo pump 2 power
P:					
Q:	T15801	degC	L=---	H=50.0	Steering Gear oil sump 1 temp
R:	T15802	degC	L=---	H=50.0	Steering Gear oil sump 2 temp
S:					
T:					

2.364 Page:5802 MD58** STEERING GEAR SYSTEM (3/4)

A:					
B:	L15801	%	L=50.0	H=95.0	Steering Gear exp tank 1 level
C:	L15802	%	L=50.0	H=95.0	Steering Gear exp tank 2 level
D:	L15803	%	L=50.0	H=---	Steering Gear oil sump 1 level
E:	L15804	%	L=50.0	H=---	Steering Gear oil sump 2 level
F:					
G:	L15810	%			Steering Gear stby start level switch
H:	L15811	%			Steering Gear stop pump1 level switch
I:	L15812	%			Steering Gear stop pump2 level switch
J:					
K:					
L:	X15802	deg			Steering Gear contr - start hysteresis
M:	X15803	deg			Steering Gear contr - stop hysteresis
N:					
O:					
P:	X15801	<0-1>			Steering Gear Safematic valve
Q:					
R:	V15801	%			Steering Gear 1 press control valve pos
S:	V15802	%			Steering Gear 2 press control valve pos
T:					

2.365 Page:5803 MD58** STEERING GEAR SYSTEM (4/4)

A:	V15803	<0-1>	Steering Gear 1 P shut off valve
B:	V15804	<0-1>	Steering Gear 1 S shut off valve
C:	V15805	<0-1>	Steering Gear 2 P shut off valve
D:	V15806	<0-1>	Steering Gear 2 S shut off valve
E:			
F:	V15807	<0-1>	Steering Gear 1 bypass valve
G:	V15808	<0-1>	Steering Gear 2 bypass valve
H:			
I:	V15809	<0-1>	Steering Gear 1 S to P relief valve
J:	V15810	<0-1>	Steering Gear 1 P to S relief valve
K:	V15811	<0-1>	Steering Gear 2 P to S relief valve
L:	V15812	<0-1>	Steering Gear 2 S to P relief valve
M:			
N:	V15813	<0-1>	Steering Gear oil sump 1 drain valve
O:	V15814	<0-1>	Steering Gear oil sump 2 drain valve
P:	V15815	<0-1>	Steering Gear exp tank 1 drain valve
Q:	V15816	<0-1>	Steering Gear exp tank 2 drain valve
R:	V15817	<0-1>	Steering Gear exp tank 1 shut off valve
S:	V15818	<0-1>	Steering Gear exp tank 2 shut off valve
T:	V15819	<0-1>	Steering Gear exp tank make up valve

2.366 Page:5810 MD58** SHIP COURSE CONTROL (1/2)

A:			
B:	N06312	knot	Ship speed
C:	X06314	nm	Ship position
D:			
E:	X06300	<0-2>	Auto Pilot on/off
F:			
G:	X06306	deg	Ship course sp (0-360)
H:	X06310	deg	Ship course (0-360)
I:			
J:			
K:	X06304	deg	Rudder command
L:	X06305	deg	Rudder position
M:			
N:	R06311	deg/min	Turning rate
O:	R06312	<-1,1>	Turning rate (L/R)
P:			
Q:	X06318	<0-1>	Emergency rudder control - Stbd (local)
R:	X06319	<0-1>	Emergency rudder control - Port (local)
S:			
T:			

2.367 Page:5811 MD58** SHIP COURSE CONTROL (2/2)

A:			
B:			
C:	C06301	-	Auto Pilot course gain
D:	C06302	-	Auto Pilot rate gain
E:	C06303	deg	Auto Pilot course deadband
F:			
G:			
H:			
I:			
J:			
K:			
L:			
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.368 Page:5900 MD59** FIRE EXTINGUISHING SYSTEM (1/2)

A:					
B:	Z00570	<0-2>	L=---	H=1.0	Fire Detection Engine area (2=fatal)
C:	Z00568	<0-2>	L=---	H=1.0	Fire Detection Accomm area (2=fatal)
D:	Z00567	<0-2>	L=---	H=1.0	Fire Detection Cargo area (2=fatal)
E:					
F:	Z00578	<0-1>			Fire alarm horn reset (sound off)
G:	Z00579	<0-1>			CO2 alarm horn reset (sound off)
H:					
I:	X00580	<0-1>			CO2 door switch
J:	X00581	<0-1>			CO2 direct release command
K:	X31001	<0-1>	L=---	H=---	Emerg shut off group A : ME/DG
L:	X31002	<0-1>	L=---	H=---	Emerg shut off group A : DO/FO/LO pumps
M:	X31003	<0-1>	L=---	H=---	Emerg shut off group A : Fuel oil tanks
N:	X31004	<0-1>	L=---	H=---	Emerg shut off group A : ER ventilation
O:	X31010	<0-1>	L=---	H=---	Emerg shut off group B : Accommodation
P:	X31015	<0-1>	L=---	H=---	Emerg shut off group C : Cargo holds fans
Q:					
R:	C00580	sec			CO2 release relay
S:	C00581	sec			Fire damage time limit (fatal)
T:					

2.369 Page:5901 MD59** FIRE EXTINGUISHING SYSTEM (2/2)

A:					
B:	R00720	<0-1>			SW Emergency Fire pump
C:					
D:	R00710	<0-1>			SW Main Fire pump 1
E:	R00709	<0-1>			SW Main Fire pump 2
F:					
G:	V00714	<0-1>			SW Fire line supply valve
H:	P00712	bar			SW Fire line pressure
I:	G00713	ton/h			SW Fire line flow
J:					
K:	V00715	<0-1>			SW Fire line water canon 1 (deck)
L:	V00716	<0-1>			SW Fire line water canon 2 (deck)
M:	V00717	<0-1>			SW Fire line water canon 3 (deck)
N:	V00718	<0-1>			SW Fire line water canon 4 (deck)
O:					
P:					
Q:	V00705	<0-1>			Bottum Sea Chest inlet valve
R:					
S:					
T:					

2.370 Page:6000 MD60** START AIR RECEIVER SYSTEM (1/2)

A:					
B:	P04300	bar	L=12.0	H=32.0	Start Air Receiver 1 pressure
C:	G04316	kg/h			Start Air Receiver 1 inlet flow
D:	V04460	<0-1>			Start Air Receiver 1 inlet valve
E:	V04462	<0-1>			Start Air Receiver 1 outlet valve
F:					
G:	P04301	bar	L=12.0	H=32.0	Start Air Receiver 2 pressure
H:	G04317	kg/h			Start Air Receiver 2 inlet flow
I:	V04461	<0-1>			Start Air Receiver 2 inlet valve
J:	V04463	<0-1>			Start Air Receiver 2 outlet valve
K:					
L:	P04302	bar			Start Air Rec inlet line press
M:	P04303	bar			Start Air Rec outlet line press
N:	G04427	kg/h			Start air leakage (basic)
O:					
P:	P04425	bar	L=10.0	H=---	DG 1 start air supply press
Q:	P04426	bar	L=10.0	H=---	DG 2 start air supply press
R:	P04427	bar	L=10.0	H=---	DG 3 start air supply press
S:	P04428	bar	L=10.0	H=---	DG 4 start air supply press
T:					

2.371 Page:6001 MD60** START AIR RECEIVER SYSTEM (2/2)

A:					
B:					
C:					
D:					
E:					
F:	Z04312	%	L=---	H=50.0	Start Air Receiver 1 water content
G:	V04447	<0-1>			Start Air Receiver 1 drain valve
H:	V04446	<0-1>	L=---	H=1.0	Start Air Receiver 1 safety valve
I:	G04361	kg/h			Start Air Receiver 1 drain (air) flow
J:	G04370	kg/h			Start Air Receiver 1 safety v flow
K:	Z04313	%	L=---	H=50.0	Start Air Receiver 2 water content
L:	V04451	<0-1>			Start Air Receiver 2 drain valve
M:	V04450	<0-1>	L=---	H=1.0	Start Air Receiver 2 safety valve
N:	G04362	kg/h			Start Air Receiver 2 drain (air) flow
O:	G04371	kg/h			Start Air Receiver 2 safety v flow
P:					
Q:					
R:					
S:					
T:					

2.372 Page:6002 MD60** SERV AIR RECEIVER SYSTEM

A:					
B:	P04306	bar	L=7.0	H=9.0	Serv Air Receiver pressure
C:					
D:	V04452	<0-1>			Serv Air Receiver make up valve
E:	G04323	kg/h			Serv Air Receiver make up flow
F:					
G:	V04464	<0-1>			Serv Air Receiver inlet valve
H:	V04465	<0-1>			Serv Air Receiver outlet valve
I:					
J:					
K:	Z04314	%	L=---	H=50.0	Serv Air Receiver water content
L:	V04455	<0-1>			Serv Air Receiver drain valve
M:	V04454	<0-1>	L=---	H=1.0	Serv Air Receiver safety valve
N:	G04363	kg/h			Serv Air Receiver drain (air) flow
O:	G04372	kg/h			Serv Air Receiver safety v flow
P:					
Q:	C04411	bar			Serv Air press control valve set point
R:	V04410	%			Serv Air press control valve pos
S:					
T:					

2.373 Page:6003 MD60** START AIR COMPRESSOR 1

A:					
B:	X10241	<0-2>			Start Air Compr 1 auto
C:	X04503	<0-2>	L=---	H=1.0	Start Air Compr 1 trip indication
D:	R04470	<0-1>			Start Air Compr 1 start/stop
E:	E04470	kW			Start Air Compr 1 el power
F:					
G:	G04320	kg/h			Start Air Compr 1 air flow
H:					
I:	P04335	bar	L=1.5	H=---	Start Air Compr 1 LO inlet press
J:					
K:					
L:	V04440	<0-1>			Start Air Compr 1 coolw shut off v
M:	G04325	ton/h			Start Air Compr 1 coolw flow
N:	T04331	degC			Start Air Compr 1 coolw outlet temp
O:	T04342	degC	L=---	H=90.0	Start Air Compr 1 air outlet temp
P:					
Q:	V04441	<0-1>			Start Air Compr 1 Airc drain valve
R:	G04355	kg/h			Start Air Compr 1 Airc drain (air) flow
S:	Z04350	%	L=---	H=80.0	Start Air Compr 1 Airc water content
T:					

2.374 Page:6004 MD60** START AIR COMPRESSOR 2

A:					
B:	X10243	<0-2>			Start Air Compr 2 auto
C:	X04504	<0-2>	L=---	H=1.0	Start Air Compr 2 trip indication
D:	R04471	<0-1>			Start Air Compr 2 start/stop
E:	E04471	kW			Start Air Compr 2 el power
F:					
G:	G04321	kg/h			Start Air Compr 2 air flow
H:					
I:	P04336	bar	L=1.5	H=---	Start Air Compr 2 LO inlet press
J:					
K:					
L:	V04442	<0-1>			Start Air Compr 2 coolw shut off v
M:	G04326	ton/h			Start Air Compr 2 coolw flow
N:	T04332	degC			Start Air Compr 2 coolw outlet temp
O:	T04343	degC	L=---	H=90.0	Start Air Compr 2 air outlet temp
P:					
Q:	V04443	<0-1>			Start Air Compr 2 Airc drain valve
R:	G04356	kg/h			Start Air Compr 2 Airc drain (air) flow
S:	Z04351	%	L=---	H=80.0	Start Air Compr 2 Airc water content
T:					

2.375 Page:6005 MD60** TOPPING UP AIR COMPRESSOR

A:					
B:	X10247	<0-2>			Start Air Compr 3 auto
C:	X04380	<0-2>	L=---	H=1.0	Start Air Compr 3 trip indication
D:	R04380	<0-1>			Start Air Compr 3 start/stop
E:	E04380	kW			Start Air Compr 3 el power
F:					
G:	G04380	kg/h			Start Air Compr 3 air flow
H:					
I:	P04380	bar	L=1.5	H=---	Start Air Compr 3 LO inlet press
J:					
K:					
L:	V04381	<0-1>			Start Air Compr 3 coolw shut off v
M:	G04381	ton/h			Start Air Compr 3 coolw flow
N:	T04381	degC			Start Air Compr 3 coolw outlet temp
O:	T04380	degC	L=---	H=90.0	Start Air Compr 3 air outlet temp
P:					
Q:	V04382	<0-1>			Start Air Compr 3 Airc drain valve
R:	G04382	kg/h			Start Air Compr 3 Airc drain (air) flow
S:	Z04382	%	L=---	H=80.0	Start Air Compr 3 Airc water content
T:					

2.376 Page:6006 MD60** SERVICE AIR COMPRESSOR

A:					
B:	X10245	<0-2>			Serv Air Compr auto
C:	X04505	<0-2>	L=---	H=1.0	Serv Air Compr trip indication
D:	R04472	<0-1>			Serv Air Compr start/stop
E:	E04472	kW			Serv Air Compr el power
F:					
G:	G04322	kg/h			Serv Air Compr flow
H:					
I:	P04337	bar	L=1.5	H=---	Serv Air Compr LO inlet press
J:					
K:					
L:	V04444	<0-1>			Serv Air Compr coolw shut off valve
M:	G04327	ton/h			Serv Air Compr coolw flow
N:	T04333	degC			Serv Air Compr coolw outlet temp
O:	T04344	degC	L=---	H=90.0	Serv Air Compr air outlet temp
P:					
Q:	V04445	<0-1>			Serv Air Compr Airc drain valve
R:	G04357	kg/h			Serv Air Compr Airc drain (air) flow
S:	Z04352	%	L=---	H=80.0	Serv Air Compr Airc water content
T:					

2.377 Page:6007 MD60** EMERGENCY AIR COMPRESSOR

A:					
B:					
C:	R04388	<0-1>			Emerg Air Compr start/stop
D:	E04388	kW			Emerg Air Compr el power
E:	G04388	kg/h			Emerg Air Compr air flow
F:					
G:					
H:					
I:					
J:					
K:					
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.378 Page:6010 MD60** CONTROL AIR SYSTEM

A:					
B:					
C:	V04311	<0-1>			Start Air Rec 1 HP control air supply
D:	V04312	<0-1>			Start Air Rec 2 HP control air supply
E:					
F:	P04313	bar	L=10.0	H=---	HP control air pressure (start/rev)
G:	P04314	bar	L=6.5	H=---	Air spring air pressure (exh.valves)
H:					
I:	V04313	<0-1>			HP control air inlet shut off valve
J:	V04314	<0-1>			HP control air stand by supply valve
K:					
L:	P04312	bar	L=5.0	H=---	LP control air press (safety supply)
M:	P04311	bar	L=6.0	H=10.0	LP control air press (normal supply)
N:					
O:	P04308	bar			Service air supply line pressure
P:	Z04458	%	L=---	H=40.0	Control Air filter/dryer water content
Q:					
R:	G04430	kg/h			Control air flow
S:	G04431	kg/h			Service air flow (deck/misc)
T:					

2.379 Page:6011 MD60** RECEIVER SAFETY VALVE DATA

A:			
B:			
C:			
D:	C04400	bar	Start Air Rec 1 safety v open press
E:	C04401	bar	Start Air Rec 1 safety v close press
F:			
G:	C04402	bar	Start Air Rec 2 safety v open press
H:	C04403	bar	Start Air Rec 2 safety v close press
I:			
J:			
K:	C04404	bar	Serv Air safety valve open press
L:	C04405	bar	Serv Air safety valve close press
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.380 Page:6020 MD60** AIR COMPRESSOR LOGIC DATA (1/3)

A:			
B:	K04480	bar	Start Air Compr 1 start limit
C:	K04481	bar	Start Air Compr 1 stop limit
D:	K04482	degC	Start Air Compr 1 trip limit (air temp)
E:	K04472	bar	Start Air Compr 1 trip limit (LO press)
F:	K04483	bar	Start Air Compr 2 start limit
G:	K04484	bar	Start Air Compr 2 stop limit
H:	K04485	degC	Start Air Compr 2 trip limit (air temp)
I:	K04475	bar	Start Air Compr 2 trip limit (LO press)
J:			
K:	K04380	bar	Start Air Compr 3 start limit
L:	K04381	bar	Start Air Compr 3 stop limit
M:	K04382	degC	Start Air Compr 3 trip limit (air temp)
N:	K04372	bar	Start Air Compr 3 trip limit (LO press)
O:			
P:	K04486	bar	Serv Air Compr start limit
Q:	K04487	bar	Serv Air Compr stop limit
R:	K04488	degC	Serv Air Compr trip limit (air temp)
S:	K04478	bar	Serv Air Compr trip limit (LO press)
T:			

2.381 Page:6021 MD60** AIR COMPRESSOR LOGIC DATA (2/3)

A:			
B:			
C:			
D:	K04492	bar	Air Compr 1/2 start limit (prior 1)
E:	K04493	bar	Air Compr 1/2 start limit (prior 2)
F:	K04494	bar	Air Compr 1/2 stop limit (prior 1)
G:	K04495	bar	Air Compr 1/2 stop limit (prior 2)
H:			
I:			
J:			
K:			
L:			
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.382 Page:6022 MD60** AIR COMPRESSOR LOGIC DATA (3/3)

A:			
B:			
C:	X04480	<0-1>	Start Air Compr 1 auto drain
D:	C04480	sec	Start Air Compr 1 drain interval
E:	C04481	sec	Start Air Compr 1 drain time
F:			
G:	X04483	<0-1>	Start Air Compr 2 auto drain
H:	C04483	sec	Start Air Compr 2 drain interval
I:	C04484	sec	Start Air Compr 2 drain time
J:			
K:	X04381	<0-1>	Start Air Compr 3 auto drain
L:	C04380	sec	Start Air Compr 3 drain interval
M:	C04381	sec	Start Air Compr 3 drain time
N:			
O:			
P:	X04486	<0-1>	Serv Air Compr auto drain
Q:	C04486	sec	Serv Air Compr drain interval
R:	C04487	sec	Serv Air Compr drain time
S:			
T:			

2.383 Page:6100 MD61** FRESH WATER GENERATOR - EJECTOR SYSTEM

A:					
B:	E06720	kW			Ejector pump power
C:	V06721	<0-1>			Ejector pump suction valve
D:	V06732	<0-1>			Ejector pump overboard valve
E:	P06660	bar	L=4.0	H=---	Ejector pump discharge pressure
F:					
G:	G06643	ton/h			Ejector pump flow (total)
H:					
I:	G06647	ton/h			Ejector drive flow (total)
J:	G06650	ton/h			Ejector discharge flow (total)
K:					
L:	G06651	ton/h			Ejector brine flow
M:	Z06655	%			Ejector brine flow salinity
N:	T06656	degC			Ejector brine flow temperature
O:					
P:	G06652	kg/h			Ejector suction flow
Q:	Z06653	%			Ejector suction flow air content
R:					
S:	Z06712	%			Ejector pump SW inlet salinity
T:					

2.384 Page:6101 MD61** FRESH WATER GENERATOR - SW FEED

A:					
B:	V06731	<0-1>			Vacuum breaker valve (air inlet)
C:					
D:	V06722	<0-1>			Fresh W Gen heater feed shut off valve
E:	V06723	<0-1>			Fresh W Gen heater drain valve
F:					
G:	G06644	ton/h			Fresh W Gen feed line flow
H:	C06724	<0-2>			Fresh W Gen feed orifice size
I:					
J:					
K:	G06645	ton/h			Fresh W Gen heater feed flow
L:	G06646	ton/h			Fresh W Gen heater drain flow
M:					
N:					
O:					
P:	L06648	%	L=10.0	H=95.0	Fresh W Gen chemical tank level
Q:	V06648	<0-1>			Fresh W Gen chemical feed valve
R:	G06648	kg/h			Fresh W Gen chemical feed flow
S:					
T:					

2.385 Page:6102 MD61** FRESH WATER GENERATOR - HEATING

A:					
B:	V06733	<0-1>			Fresh W Gen FW inlet shut off valve
C:	V06734	<0-1>			Fresh W Gen FW outlet shut off valve
D:	V06735	%			Fresh W Gen FW bypass valve (manual)
E:					
F:	G06700	ton/h			Fresh W Gen bypass flow (manual)
G:	G06702	ton/h			Fresh W Gen heating flow
H:					
I:	T06703	degC			Fresh W Gen heating flow inlet temp
J:	T06704	degC	L=40.0	H=---	Fresh W Gen heating flow outlet temp
K:	T06701	degC			Fresh W Gen heating flow return temp
L:					
M:	E06713	kW			Fresh W Gen heater heat transfer
N:					
O:	L06670	%			Fresh W Gen heater brine level
P:	G06654	ton/h			Fresh W Gen boiling flow (vapor)
Q:					
R:	V06767	<0-1>			Fresh W Gen heater vent valve
S:					
T:					

2.386 Page:6103 MD61** FRESH WATER GENERATOR - COOLING

A:					
B:	V06736	<0-1>			Fresh W Gen cooling shut off valve
C:	V06737	%			Fresh W Gen cooling flow adjust valve
D:	G06706	ton/h			Fresh W Gen cooling flow
E:					
F:	T06707	degC			Fresh W Gen cooling flow inlet temp
G:	T06710	degC	L=---	H=100.0	Fresh W Gen cooling flow outlet temp
H:					
I:	V06768	<0-1>			Fresh W Gen cooler vent valve
J:					
K:	E06714	kW			Fresh W Gen cooler heat transfer
L:					
M:	L06671	%	L=---	H=90.0	Fresh W Gen cooler distillate level
N:	T06673	degC			Fresh W Gen cooler distillate temp
O:	Z06672	ppm			Fresh W Gen cooler distillate salinity
P:					
Q:	P06661	bara	L=---	H=0.5	Fresh W Gen pressure (total)
R:					
S:					
T:					

2.387 Page:6104 MD61** FRESH WATER GENERATOR - DISTILLATE

A:					
B:	G06640	ton/h			Produced fresh water flow
C:	M06657	ton			Produced fresh water flow (total)
D:	Z06674	ppm	L=---	H=15.0	Produced fresh water flow salinity
E:					
F:	E06725	kW			Distillate pump power
G:	P06664	bar			Distillate pump discharge pressure
H:					
I:	G06642	ton/h			Distillate flow from Fresh W Gen
J:	G06641	ton/h			Distillate recirc to Fresh W Gen
K:					
L:					
M:	X06676	<0-2>			Salinity control auto select
N:	C06675	ppm			Salinity control recirc limit (stop)
O:	C06677	ppm			Salinity control recirc limit (start)
P:					
Q:	V06727	<0-1>			Distillate discharge valve
R:	V06726	<0-1>			Distillate recirc valve
S:					
T:					

2.388 Page:6105 MD61** FRESH WATER GENERATOR - LOAD CONTROL

A:					
B:					
C:	X06747	<0-1>			Evap load control on/off
D:	V06730	<0-1>			Evap load control valve (air inlet)
E:					
F:					
G:	C06745	bara			Evap load control press limit (start)
H:	C06746	bara			Evap load control press limit (stop)
I:					
J:					
K:	P06661	bara	L=---	H=0.5	Fresh W Gen pressure (total)
L:	P06663	bara			Fresh W Gen pressure (air)
M:					
N:					
O:	G06701	ton/h			Fresh W Gen bypass flow (auto)
P:	V06701	%			Fresh W Gen FW bypass valve (auto)
Q:	C06702	%/degC			Fresh W Gen FW bypass valve gain
R:	T06702	degC			Fresh W Gen FW bypass valve temp sp
S:					
T:					

2.389 Page:6120 MD61** DISTILLED WATER TANK

A:					
B:					
C:	L06680	m	L=0.4	H=4.8	Distilled Water tank level
D:	G06680	t/h	L=---	H=0.1	Distilled Water tank overflow
E:					
F:	G06681	t/h			Distilled Water tank inlet flow
G:	V06681	<0-1>			Distilled Water tank inlet valve
H:					
I:	V06682	<0-1>			Distilled Water supply valve
J:	V06683	<0-1>			Distilled Water boiler valve
K:	G06682	t/h			Distilled Water flow to Misc Consumers
L:	G06683	t/h			Distilled Water flow to Boiler system
M:					
N:	R06680	<0-1>			Distilled Water transfer pump
O:	E06680	kW			Distilled Water transfer pump power
P:					
Q:	C06682	t/h			Distilled Water consumption setting
R:					
S:					
T:					

2.390 Page:6200 MD62** BILGE WELL SYSTEM - LEVELS

A:					
B:	L06400	m	L=---	H=0.5	Aft ER Bilge well level
C:	Z06401	%			Aft ER Bilge well oil content
D:	G06402	ton/h			Aft ER Bilge well outlet flow
E:	V06403	<0-1>			Aft ER Bilge well suction valve
F:					
G:	L06405	m	L=---	H=0.5	Fwd ER Bilge well level
H:	Z06407	%			Fwd ER Bilge well oil content
I:	G06410	ton/h			Fwd ER Bilge well outlet flow
J:	V06411	<0-1>			Fwd ER Bilge well suction valve
K:					
L:	L06414	m	L=---	H=0.5	Port CH Bilge well level
M:	Z06415	%			Port CH Bilge well oil content
N:	G06416	ton/h			Port CH Bilge well outlet flow
O:	V06417	<0-1>			Port CH Bilge well suction valve
P:					
Q:	L06422	m	L=---	H=0.5	Stbd CH Bilge well level
R:	Z06423	%			Stbd CH Bilge well oil content
S:	G06424	ton/h			Stbd CH Bilge well outlet flow
T:	V06425	<0-1>			Stbd CH Bilge well suction valve

2.391 Page:6201 MD62** OIL SLUDGE TANK

A:					
B:	L06432	m	L=---	H=1.5	Oil sludge tank level (total)
C:	L06427	m			Oil sludge tank level (oil only)
D:	L06433	m			Oil sludge tank oil/wtr interface
E:	G06434	ton/h			Oil sludge tank overflow
F:	G06435	ton/h			Oil sludge tank influx (wtr)
G:	G06436	ton/h			Oil sludge tank influx (oil)
H:	G06430	ton/h			Oil sludge tank outlet flow
I:	V06431	<0-1>			Oil sludge tank suction valve
J:					
K:	G06456	ton/h			Bilge Sep sludge return flow
L:	Z06462	%			Bilge Sep sludge flow oil content
M:					
N:	G06450	ton/h			Bilge pump 1 flow (piston pump)
O:	G06449	ton/h			Bilge pump 2 flow (centrifugal pump)
P:	V06441	<0-1>			Incinerator plant supply valve
Q:	G06441	ton/h			Incinerator plant supply flow
R:					
S:	V06448	<0-1>			Sludge to shore valve
T:	X06449	<0-1>			Sludge pipe shore connection

2.392 Page:6300 MD63** BILGE SEPARATOR (1/3)

A:					
B:					
C:	X06471	<0-1>			Bilge Sep auto switch
D:	V06472	<0-1>			Bilge Sep overboard valve
E:	V06473	<0-1>			Bilge Sep recirc valve
F:	V06474	<0-1>			Bilge Sep sludge valve
G:	V06479	<0-1>			Bilge Sep bypass valve
H:	V06494	<0-1>			Bilge Sep overboard stop valve
I:	V06495	<0-1>			Bilge Sep manual circulation valve
J:					
K:	G06452	ton/h			Bilge Sep overboard flow
L:	G06451	ton/h			Bilge Sep water tank inlet flow
M:	G06453	ton/h			Bilge Sep inlet flow
N:	G06454	ton/h			Bilge Sep outlet flow
O:	G06455	ton/h			Bilge Sep sludge flow
P:					
Q:	Z06463	ppm	L=---	H=15.0	Bilge Sep outlet flow oil content (sens)
R:	Z06460	%			Bilge Sep inlet flow oil content
S:	Z06462	%			Bilge Sep sludge flow oil content
T:					

2.393 Page:6301 MD63** BILGE SEPARATOR (2/3)

A:					
B:					
C:	X06471	<0-1>			Bilge Sep auto switch
D:					
E:					
F:	X06475	<0-1>			Bilge Sep heater switch
G:	E06467	kW			Bilge Sep heater power
H:					
I:	T06466	degC	L=65.0	H=95.0	Bilge Sep oil/water settling temp
J:	L06465	%	L=---	H=40.0	Bilge Sep oil/water interface level
K:	C06464	ppm			Bilge Sep recirc ppm limit
L:					
M:	R06470	<0-1>			Bilge pump 1 (piston)
N:	G06470	ton/h			Bilge pump 1 flow
O:	E06470	kW			Bilge pump 1 power
P:	X06477	<0-1>			Bilge pump 1 auto switch
Q:	L06488	m			Bilge pump 1 start limit
R:	L06489	m			Bilge pump 1 stop limit
S:					
T:					

2.394 Page:6302 MD63** BILGE SEPARATOR (3/3)

A:					
B:	R06469	<0-1>			Bilge pump 2 (centrifugal)
C:					
D:	G06469	ton/h			Bilge pump 2 flow
E:	E06469	kW			Bilge pump 2 power
F:	G06467	ton/h			Bilge pump 2 flow to separator
G:	G06468	ton/h			Bilge pump 2 flow to tank
H:					
I:	V06490	<0-1>			Bilge Water tank filling valve
J:	G06490	ton/h			Bilge Water tank filling flow
K:	L06490	m	L=---	H=1.8	Bilge Water tank level
L:	Z06491	%			Bilge Water tank oil content
M:					
N:	V06493	<0-1>			Bilge Water tank outlet valve
O:	G06492	ton/h			Bilge Water tank outlet flow
P:					
Q:	V06494	<0-1>			Bilge Sep overboard stop valve
R:	V06495	<0-1>			Bilge Sep manual circulation valve
S:					
T:					

2.395 Page:6400 MD64** REFRIG SYSTEM - COMPRESSOR 1

A:					
B:					
C:	X06524	<0-4>	L=---	H=1.0	Refrig Compr 1 trip indication
D:	X06525	<0-1>			Refrig Compr 1 start
E:	X06526	<0-1>			Refrig Compr 1 auto control
F:	N06525	rpm			Refrig Compr 1 speed
G:	E06525	kW	L=---	H=40.0	Refrig Compr 1 motor power
H:					
I:	Z06527	%			Refrig Compr 1 capacity setting
J:					
K:	P06528	bar	L=---	H=---	Refrig Compr 1 suction press
L:	P06529	bar			Refrig Compr 1 discharge press
M:	T06532	degC	L=---	H=130.0	Refrig Compr 1 discharge temp
N:	G06526	kg/h			Refrig Compr 1 discharge flow
O:					
P:	Z06534	%			Refrig Compr 1 efficiency (overall)
Q:					
R:	L06522	%			Refrig Compr 1 LO sump level
S:	V06522	<0-1>			Refrig Compr 1 LO make up valve
T:					

2.396 Page:6401 MD64** REFRIG SYSTEM - COMPRESSOR 2

A:					
B:					
C:	X16524	<0-4>	L=---	H=---	Refrig Compr 2 trip indication
D:	X16525	<0-1>			Refrig Compr 2 start
E:	X16526	<0-1>			Refrig Compr 2 auto control
F:	N16525	rpm			Refrig Compr 2 speed
G:	E16525	kW	L=---	H=40.0	Refrig Compr 2 motor power
H:					
I:	Z16527	%			Refrig Compr 2 capacity setting
J:					
K:	P16528	bar	L=---	H=---	Refrig Compr 2 suction press
L:	P16529	bar			Refrig Compr 2 discharge press
M:	T16532	degC	L=---	H=130.0	Refrig Compr 2 discharge temp
N:	G16526	kg/h			Refrig Compr 2 discharge flow
O:					
P:	Z16534	%			Refrig Compr 2 efficiency (overall)
Q:					
R:	L16522	%			Refrig Compr 2 LO sump level
S:	V16522	<0-1>			Refrig Compr 2 LO make up valve
T:					

2.397 Page:6402 MD64** REFRIG SYSTEM - CONDENSER/RECEIVER

A:					
B:	P06500	bar	L=---	H=16.0	Refrig Condenser pressure
C:	L06501	%	L=---	H=60.0	Refrig Condenser level
D:	T06502	degC			Refrig Condenser temp
E:	G06503	kg/h			Refrig Condenser flow
F:					
G:	L06542	%	L=10.0	H=90.0	Refrig Receiver level
H:					
I:	V06544	<0-1>			Refrig Receiver outlet valve
J:	V06542	<0-1>			Refrig Receiver outlet auto valve
K:					
L:	V06548	<0-1>			Refrig liquid make up valve
M:	G06548	kg/h			Refrig liquid make up flow
N:	C06548	kg/h			Refrig liquid make up flow const
O:					
P:					
Q:					
R:					
S:					
T:					

2.398 Page:6403 MD64** REFRIG SYSTEM - EVAPORATOR 1

A:					
B:	T06554	degC	L=-22.0	H=-15.0	Refrig Room 1 air temp
C:					
D:	Z06522	%			Refrig Room 1 evaporator exp valve bias
E:	V06521	%			Refrig Room 1 evaporator exp valve pos
F:	T06516	degC			Refrig Room 1 evaporator vapor superheat
G:	Z06515	%			Refrig Room 1 evaporator vapor drop cont
H:					
I:	P06518	bar			Refrig Room 1 evaporator press set point
J:	V06518	%			Refrig Room 1 evaporator press cnt valve
K:	P06511	bar			Refrig Room 1 evaporator pressure
L:	T06514	degC			Refrig Room 1 evaporator vapor temp
M:					
N:	G06513	kg/h			Refrig Room 1 evaporator liquid flow
O:	L06512	%	L=---	H=50.0	Refrig Room 1 evaporator liquid content
P:	H06520	kW			Refrig Room 1 evaporator heat
Q:	Z06517	%			Refrig Room 1 evaporator surface ice
R:					
S:	C06510	<0-5>			Refrig Room 1 evaporator size factor
T:					

2.399 Page:6404 MD64** REFRIG SYSTEM - EVAPORATOR 2

A:					
B:	T16554	degC	L=1.5	H=4.5	Refrig Room 2 air temp
C:					
D:	Z16522	%			Refrig Room 2 evaporator exp valve bias
E:	V16521	%			Refrig Room 2 evaporator exp valve pos
F:	T16516	degC			Refrig Room 2 evaporator vapor superheat
G:	Z16515	%			Refrig Room 2 evaporator vapor drop cont
H:					
I:	P16518	bar			Refrig Room 2 evaporator press set point
J:	V16518	%			Refrig Room 2 evaporator press cnt valve
K:	P16511	bar			Refrig Room 2 evaporator pressure
L:	T16514	degC			Refrig Room 2 evaporator vapor temp
M:					
N:	G16513	kg/h			Refrig Room 2 evaporator liquid flow
O:	L16512	%	L=---	H=50.0	Refrig Room 2 evaporator liquid cont
P:	H16520	kW			Refrig Room 2 evaporator heat
Q:	Z16517	%			Refrig Room 2 evaporator surface ice
R:					
S:	C16510	<0-5>			Refrig Room 2 evaporator size factor
T:					

2.400 Page:6405 MD64** REFRIG SYSTEM - EVAPORATOR 3

A:					
B:	T26554	degC	L=5.5	H=8.5	Refrig Room 3 air temp
C:					
D:	Z26522	%			Refrig Room 3 evaporator exp valve bias
E:	V26521	%			Refrig Room 3 evaporator exp valve pos
F:	T26516	degC			Refrig Room 3 evaporator vapor superheat
G:	Z26515	%			Refrig Room 3 evaporator vapor drop cont
H:					
I:	P26518	bar			Refrig Room 3 evaporator press set point
J:	V26518	%			Refrig Room 3 evaporator press cnt valve
K:	P26511	bar			Refrig Room 3 evaporator pressure
L:	T26514	degC			Refrig Room 3 evaporator vapor temp
M:					
N:	G26513	kg/h			Refrig Room 3 evaporator liquid flow
O:	L26512	%	L=---	H=50.0	Refrig Room 3 evaporator liquid cont
P:	H26520	kW			Refrig Room 3 evaporator heat
Q:	Z26517	%			Refrig Room 3 evaporator surface ice
R:					
S:	C26510	<0-5>			Refrig Room 3 evaporator size factor
T:					

2.401 Page:6407 MD64** REFRIG SYSTEM - SW SUPPLY

A:					
B:					
C:	X06604	<0-1>			Refrig Syst SW supply isola
D:	T06603	degC			Refrig Syst SW supply temp
E:					
F:					
G:	R06576	<0-1>			Refrig Syst SW supply pump 1
H:	R06577	<0-1>			Refrig Syst SW supply pump 2
I:					
J:	V06605	%			Refrig Cond SW flow valve pos
K:	G06606	ton/h			Refrig Cond SW flow
L:	T06504	degC	L=---	H=40.0	Refrig Cond SW outlet temp
M:					
N:	P06510	bar			Refrig Cond SW diff pressure
O:					
P:					
Q:					
R:					
S:					
T:					

2.402 Page:6408 MD64** REFRIG SYSTEM - MISCELLANEOUS

A:			
B:			
C:	Z06551	<1-50>	Refrig cargo temp speed up
D:			
E:	Z06552	<1-50>	Refrig LO consumption speed up
F:			
G:	X06626	<0-1>	Ice build up ok
H:	Z06627	%	Ice build up rate
I:			
J:	X06633	<0-2>	Refrig evap defrost command
K:			
L:			
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.403 Page:6410 MD64** REFRIG SYSTEM - COMPRESSOR 1 DATA (1/2)

A:			
B:	C06526	bar	Refrig Compr 1 suction press low (decr)
C:	C06527	bar	Refrig Compr 1 suction press high (incr)
D:			
E:	C06539	sec	Refrig Compr 1 suction press tc
F:	C06535	sec	Refrig Compr 1 capacity incr/decr tc
G:	C06536	sec	Refrig Compr 1 starting (unloading) time
H:	C06537	sec	Refrig Compr 1 max unloaded run time
I:	C06538	sec	Refrig Compr 1 restart blocking time
J:			
K:			
L:	C06521	%	Refrig Compr 1 LO press (level) low
M:	C06522	bar	Refrig Compr 1 discharge pressure high
N:	C06523	bar	Refrig Compr 1 suction pressure lo-lo
O:	C06524	kW	Refrig Compr 1 electric load high
P:			
Q:			
R:			
S:			
T:			

2.404 Page:6411 MD64** REFRIG SYSTEM - COMPRESSOR 1 DATA (2/2)

A:			
B:			
C:	C06525	<0-3>	Refrig Compr 1 control logic spec
D:			
E:			
F:	C06530	%	Refrig Compr 1 stage 0 capacity
G:	C06531	%	Refrig Compr 1 stage 1 capacity
H:	C06532	%	Refrig Compr 1 stage 2 capacity
I:	C06533	%	Refrig Compr 1 stage 3 capacity
J:			
K:	C06534	<0-2>	Refrig Compr 1 efficiency adjust
L:			
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.405 Page:6412 MD64** REFRIG SYSTEM - COMPRESSOR 2 DATA (1/2)

A:			
B:	C16526	bar	Refrig Compr 2 suction press low (decr)
C:	C16527	bar	Refrig Compr 2 suction press high (incr)
D:			
E:	C16539	sec	Refrig Compr 2 suction press tc
F:	C16535	sec	Refrig Compr 2 capacity incr/decr tc
G:	C16536	sec	Refrig Compr 2 starting (unloading) time
H:	C16537	sec	Refrig Compr 2 max unloaded run time
I:	C16538	sec	Refrig Compr 2 restart blocking time
J:			
K:			
L:	C16521	%	Refrig Compr 2 LO press (level) low
M:	C16522	bar	Refrig Compr 2 discharge pressure high
N:	C16523	bar	Refrig Compr 2 suction pressure lo-lo
O:	C16524	kW	Refrig Compr 2 electric load high
P:			
Q:			
R:			
S:			
T:			

2.406 Page:6413 MD64** REFRIG SYSTEM - COMPRESSOR 2 DATA (2/2)

A:			
B:			
C:	C16525	<0-3>	Refrig Compr 2 control logic spec
D:			
E:			
F:	C16530	%	Refrig Compr 2 stage 0 capacity
G:	C16531	%	Refrig Compr 2 stage 1 capacity
H:	C16532	%	Refrig Compr 2 stage 2 capacity
I:	C16533	%	Refrig Compr 2 stage 3 capacity
J:			
K:	C16534	<0-2>	Refrig Compr 2 efficiency adjust
L:			
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.407 Page:6415 MD64** REFRIG SYSTEM - TEMPERATURE CONTROL

A:			
B:	X06615	<0-1>	Refrig Room 1 air temp contr auto
C:	T06614	degC	Refrig Room 1 air temp contr set point
D:	C06622	degC	Refrig Room 1 air temp contr hysteresis
E:	C06623	sec	Refrig Room 1 air temp contr sensor tc
F:			
G:	X16615	<0-1>	Refrig Room 2 air temp contr auto
H:	T16614	degC	Refrig Room 2 air temp contr set point
I:	C16622	degC	Refrig Room 2 air temp contr hysteresis
J:	C16623	sec	Refrig Room 2 air temp contr sensor tc
K:			
L:	X26615	<0-1>	Refrig Room 3 air temp contr auto
M:	T26614	degC	Refrig Room 3 air temp contr set point
N:	C26622	degC	Refrig Room 3 air temp contr hysteresis
O:	C26623	sec	Refrig Room 3 air temp contr sensor tc
P:			
Q:			
R:			
S:			
T:			

2.408 Page:6420 MD64** REFRIG SYSTEM - CARGO CONDITIONS

A:					
B:					
C:	Z06555	%			Refrig Room 1 heat load setting
D:	H06556	kW			Refrig Room 1 heat load (extra)
E:					
F:	M06552	ton			Refrig Room 1 cargo mass
G:	T06553	degC			Refrig Room 1 cargo temp
H:	T06554	degC	L=-22.0	H=-15.0	Refrig Room 1 air temp
I:	C06560	<0-5>			Refrig Room 1 overall htc factor
J:					
K:	M16552	ton			Refrig Room 2 cargo mass
L:	T16553	degC			Refrig Room 2 cargo temp
M:	T16554	degC	L=1.5	H=4.5	Refrig Room 2 air temp
N:	C16560	<0-5>			Refrig Room 2 overall htc factor
O:					
P:	M26552	ton			Refrig Room 3 cargo mass
Q:	T26553	degC			Refrig Room 3 cargo temp
R:	T26554	degC	L=5.5	H=8.5	Refrig Room 3 air temp
S:	C26560	<0-5>			Refrig Room 3 overall htc factor
T:					

2.409 Page:6430 MD64** REFRIG SYSTEM - PERFORMANCE

A:					
B:					
C:					
D:	E06525	kW	L=---	H=40.0	Refrig Compr 1 motor power
E:	E16525	kW	L=---	H=40.0	Refrig Compr 2 motor power
F:					
G:					
H:	H06520	kW			Refrig Room 1 evaporator heat
I:	H16520	kW			Refrig Room 2 evaporator heat
J:	H26520	kW			Refrig Room 3 evaporator heat
K:					
L:	H06505	kW			Refrig Cond transfered heat
M:					
N:					
O:					
P:	E06560	kW			Refrig Room 1 air fan power
Q:	E16560	kW			Refrig Room 2 air fan power
R:	E26560	kW			Refrig Room 3 air fan power
S:					
T:					

2.410 Page:7000 MD70** ELECTRIC POWER PLANT - MAIN VARIABLES

A:					
B:	V06140	V	L=410.0	H=460.0	Main bus bar 1 voltage
C:	F06141	Hz	L=56.0	H=64.0	Main bus bar 1 frequency
D:	V06144	V	L=410.0	H=460.0	Main bus bar 2 voltage
E:	F06145	Hz	L=56.0	H=64.0	Main bus bar 2 frequency
F:					
G:	I06003	A	L=---	H=3600.0	DG 1 current
H:	I06023	A	L=---	H=3600.0	DG 2 current
I:	I36003	A	L=---	H=2500.0	DG 3 current
J:	I46003	A	L=---	H=2500.0	DG 4 current
K:					
L:	E06000	kW	L=---	H=2310.0	DG 1 active load
M:	E06020	kW	L=---	H=2310.0	DG 2 active load
N:	E36000	kW	L=---	H=1510.0	DG 3 active load
O:	E46000	kW	L=---	H=1510.0	DG 4 active load
P:	E06001	kVAr			DG 1 reactive load
Q:	E06021	kVAr			DG 2 reactive load
R:	E36001	kVAr			DG 3 reactive load
S:	E46001	kVAr			DG 4 reactive load
T:					

2.411 Page:7001 MD70** ELECTRIC POWER PLANT - DG 1

A:	V06140	V	L=410.0	H=460.0	Main bus bar 1 voltage
B:	F06141	Hz	L=56.0	H=64.0	Main bus bar 1 frequency
C:					
D:	X06014	<0-5>	L=---	H=1.0	DG 1 circuit breaker trip
E:	X06013	<0-1>	L=---	H=---	DG 1 circuit breaker
F:					
G:	X06010	<0-1>			DG 1 raise speed command
H:	X06011	<0-1>			DG 1 lower speed command
I:					
J:	E06000	kW	L=---	H=2310.0	DG 1 active load
K:	E06001	kVAr			DG 1 reactive load
L:	I06003	A	L=---	H=3600.0	DG 1 current
M:	V06002	V			DG 1 voltage
N:	F06004	Hz			DG 1 frequency
O:	X06012	deg			DG 1 phase indication
P:					
Q:	X06016	<0-1>	L=---	H=---	DG 1 excitation switch
R:	Z06017	%			DG 1 excitation setting
S:	I06015	A			DG 1 excitation current
T:					

2.412 Page:7002 MD70** ELECTRIC POWER PLANT - DG 2

A:	V06140	V	L=410.0	H=460.0	Main bus bar 1 voltage
B:	F06141	Hz	L=56.0	H=64.0	Main bus bar 1 frequency
C:					
D:	X06034	<0-5>	L=---	H=1.0	DG 2 circuit breaker trip
E:	X06033	<0-1>	L=---	H=---	DG 2 circuit breaker
F:					
G:	X06030	<0-1>			DG 2 raise speed command
H:	X06031	<0-1>			DG 2 lower speed command
I:					
J:	E06020	kW	L=---	H=2310.0	DG 2 active load
K:	E06021	kVAr			DG 2 reactive load
L:	I06023	A	L=---	H=3600.0	DG 2 current
M:	V06022	V			DG 2 voltage
N:	F06024	Hz			DG 2 frequency
O:	X06032	deg			DG 2 phase indication
P:					
Q:	X06036	<0-1>	L=---	H=---	DG 2 excitation switch
R:	Z06037	%			DG 2 excitation setting
S:	I06035	A			DG 2 excitation current
T:					

2.413 Page:7003 MD70** ELECTRIC POWER PLANT - DG 3

A:	V06140	V	L=410.0	H=460.0	Main bus bar 1 voltage
B:	F06141	Hz	L=56.0	H=64.0	Main bus bar 1 frequency
C:					
D:	X36014	<0-5>	L=---	H=1.0	DG 3 circuit breaker trip
E:	X36013	<0-1>	L=---	H=---	DG 3 circuit breaker
F:					
G:	X36010	<0-1>			DG 3 raise speed command
H:	X36011	<0-1>			DG 3 lower speed command
I:					
J:	E36000	kW	L=---	H=1510.0	DG 3 active load
K:	E36001	kVAr			DG 3 reactive load
L:	I36003	A	L=---	H=2500.0	DG 3 current
M:	V36002	V			DG 3 voltage
N:	F36004	Hz			DG 3 frequency
O:	X36012	deg			DG 3 phase indication
P:					
Q:	X36016	<0-1>	L=---	H=---	DG 3 excitation switch
R:	Z36017	%			DG 3 excitation setting
S:	I36015	A			DG 3 excitation current
T:					

2.414 Page:7004 MD70** ELECTRIC POWER PLANT - DG 4

A:	V06144	V	L=410.0	H=460.0	Main bus bar 2 voltage
B:	F06145	Hz	L=56.0	H=64.0	Main bus bar 2 frequency
C:					
D:	X46014	<0-5>	L=---	H=1.0	DG 4 circuit breaker trip
E:	X46013	<0-1>	L=---	H=---	DG 4 circuit breaker
F:					
G:	X46010	<0-1>			DG 4 raise speed command
H:	X46011	<0-1>			DG 4 lower speed command
I:					
J:	E46000	kW	L=---	H=1510.0	DG 4 active load
K:	E46001	kVAr			DG 4 reactive load
L:	I46003	A	L=---	H=2500.0	DG 4 current
M:	V46002	V			DG 4 voltage
N:	F46004	Hz			DG 4 frequency
O:	X46012	deg			DG 4 phase indication
P:					
Q:	X46016	<0-1>	L=---	H=---	DG 4 excitation switch
R:	Z46017	%			DG 4 excitation setting
S:	I46015	A			DG 4 excitation current
T:					

2.415 Page:7005 MD70** EMERGENCY GENERATOR

A:					
B:					
C:	X06134	<0-1>	L=---	H=---	Emerg Gen circuit breaker
D:	F06137	Hz			Emerg Gen frequency
E:	E06130	kW	L=---	H=240.0	Emerg Gen power
F:	V06136	V			Emerg Gen voltage
G:	I06138	A	L=---	H=240.0	Emerg Gen current
H:					
I:	N06990	rpm			Emerg Gen speed set point
J:					
K:	X06990	<0-3>			Emerg Gen starter state
L:	C06992	sec			Emerg Gen starter run time (max)
M:	C06993	sec			Emerg Gen starter off time (recover)
N:	C06994	<0-10>			Emerg Gen starter max trials
O:					
P:	C06991	sec			Emerg Gen max idle run time
Q:					
R:					
S:					
T:					

2.416 Page:7006 MD70** SHORE CONNECTION

A:					
B:					
C:					
D:	X06160	<0-1>			Shore connection circuit breaker
E:	X06161	<0-1>			Shore connection cable
F:	X06162	<0-1>			Shore connection phase wrong way
G:	X06167	<0-1>			Shore connection phase twist (input)
H:					
I:	E06163	kW	L=-100.0	H=800.0	Shore connection power
J:	X06166	<0-2>	L=---	H=1.0	Shore connection trip
K:					
L:	E06156	kW			Shore connection power limit (high)
M:	E06157	kW			Shore connection power limit (low)
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.417 Page:7007 MD70** SEMIAUTO SYNCHRONIZATION

A:			
B:	X06901	<0-1>	SemiAuto generator select
C:	X06904	<0-1>	SemiAuto ready light
D:	X06902	<0-1>	SemiAuto connect command
E:	X06903	<0-1>	SemiAuto disconn command
F:			
G:			
H:			
I:	F06905	Hz	SemiAuto ready low freq limit
J:	F06906	Hz	SemiAuto ready high freq limit
K:			
L:	F06907	Hz	SemiAuto conn. low freq limit
M:	F06908	Hz	SemiAuto conn. high freq limit
N:			
O:	X06909	sec	SemiAuto synchro time limit
P:			
Q:			
R:			
S:			
T:			

2.418 Page:7008 MD70** EXTERNAL ELECTRIC LOAD (1/2)

A:			
B:	E10437	kW	Pchief total power available
C:	E10440	kW	Pchief total power used
D:	E10441	kW	Pchief total power reserve
E:			
F:	X06090	<0-1>	General load connect (test)
G:	E06090	kW	General load power
H:	C06091	kW/sec	General load rate
I:	C06092	kW	General load target
J:			
K:	E06094	kW	General load adjust (+/- input)
L:			
M:	X06096	<0-1>	Load pulser active (WWC/AVC test)
N:	C06096	kW	Load pulser amplitude
O:	C06097	sec	Load pulser periode
P:	T06097	sec	Load pulser timer
Q:			
R:			
S:			
T:			

2.419 Page:7009 MD70** EXERNAL ELECTRIC LOAD (2/2)

A:			
B:			
C:	E06279	kW	Bow thruster motor power
D:	I06279	A	Bow thruster motor current
E:			
F:	E06280	kW	Deck machinery power
G:	I06280	A	Deck machinery current
H:			
I:	I06289	A	Bow thruster/Deck machinery supply
J:			
K:	E06088	kW	Accommodation load (Galley++)
L:	E06089	kW	Reefer Container load
M:			
N:	E06095	kW	Extra load 1 (instructor)
O:	E06096	kW	Extra load 2 (instructor)
P:			
Q:			
R:			
S:			
T:			

2.420 Page:7010 MD70** POWER CHIEF - GENERATOR LOGIC (1/4)

A:					
B:	X06220	<0-2>	L=---	H=---	DG 1 Auto control
C:	X06221	<0-2>			DG 1 Ready
D:	X06223	<0-8>			DG 1 Connect state (indication)
E:	X06254	<0-7>			DG 1 Driver state (indication)
F:					
G:	X06224	<0-2>	L=---	H=---	DG 2 Auto control
H:	X06225	<0-2>			DG 2 Ready
I:	X06227	<0-8>			DG 2 Connect state (indication)
J:	X06255	<0-7>			DG 2 Driver state (indication)
K:					
L:	X36220	<0-2>	L=---	H=---	DG 3 Auto control
M:	X36221	<0-2>			DG 3 Ready
N:	X36223	<0-8>			DG 3 Connect state (indication)
O:	X36254	<0-7>			DG 3 Driver state (indication)
P:					
Q:	X46220	<0-2>	L=---	H=---	DG 4 Auto control
R:	X46221	<0-2>			DG 4 Ready
S:	X46223	<0-8>			DG 4 Connect state (indication)
T:	X46254	<0-7>			DG 4 Driver state (indication)

2.421 Page:7011 MD70** POWER CHIEF - GENERATOR LOGIC (2/4)

A:					
B:	X06250	<0-1>	L=---	H=1.0	Pchief non ess. load trip
C:					
D:	X06861	<0-1>			Pchief high power (pump start inhibit)
E:					
F:	E10437	kW			Pchief total power available
G:	E10440	kW			Pchief total power used
H:	E10441	kW			Pchief total power reserve
I:					
J:	C10442	kW			Pchief total power reserve limit
K:					
L:					
M:					
N:	X06245	<0-3>			Pchief control mode (1,2,3)=(E,O,C)
O:	X06246	<0-1>			Pchief control mode (1=frequency)
P:					
Q:	X10412	<0-1>			Pchief control state (0=slow,1=fast)
R:	X06247	<0-1>			Pchief start/stop request
S:					
T:					

2.422 Page:7012 MD70** POWER CHIEF - GENERATOR LOGIC (3/4)

A:			
B:	X06868	<0-1>	Pchief Alert mode (bow thruster mode)
C:			
D:	C10423	%	Pchief high slave load
E:	C10424	%	Pchief low slave load
F:	C10427	%	Pchief high group load (optim)
G:	C10430	%	Pchief low group load (optim)
H:	C10432	%	Pchief high singl load (optim)
I:	C10434	%	Pchief low singl load (optim)
J:			
K:	C10425	%	Pchief high group load (equal)
L:	C10426	%	Pchief low group load (equal)
M:	C10431	%	Pchief high singl load (equal)
N:	C10433	%	Pchief low singl load (equal)
O:			
P:			
Q:			
R:			
S:			
T:			

2.423 Page:7013 MD70** POWER CHIEF - GENERATOR LOGIC (4/4)

A:			
B:			
C:	C10410	min	Pchief gen max idle run time
D:	C10411	min	Pchief gen load cycle periode
E:			
F:	C10420	sec	Pchief start/stop request time delay
G:			
H:	C10421	sec	Pchief connect blocking time
I:	C10422	sec	Pchief disconnect blocking time
J:	C10409	sec	Pchief prior lights reset time
K:	C10417	%	Pchief freq. control gain
L:	C10418	%	Pchief slave control gain
M:	C10419	%	Pchief group control gain
N:			
O:	C06985	sec	Emerg Gen stby start delay
P:	C06981	sec	DG 1 stby start delay
Q:	C06982	sec	DG 2 stby start delay
R:	C06983	sec	DG 4 stby start delay
S:	C06984	sec	DG 4 stby start delay
T:			

2.424 Page:7015 MD70** POWER CHIEF - GENERATOR BALANCE

A:					
B:	E06002	%	L=---	H=---	DG 1 active load (rel)
C:	E06022	%	L=---	H=---	DG 2 active load (rel)
D:	E36002	%	L=---	H=---	DG 3 active load (rel)
E:	E46002	%	L=---	H=---	DG 4 active load (rel)
F:					
G:	E06003	%			DG 1 reactive load (rel)
H:	E06023	%			DG 2 reactive load (rel)
I:	E36003	%			DG 3 reactive load (rel)
J:	E46003	%			DG 4 reactive load (rel)
K:					
L:	Z06003	<-1,1>			DG 1 power factor
M:	Z06023	<-1,1>			DG 2 power factor
N:	Z36003	<-1,1>			DG 3 power factor
O:	Z46003	<-1,1>			DG 4 power factor
P:					
Q:					
R:					
S:					
T:					

2.425 Page:7016 MD70** POWER CHIEF - GENERATOR S/S LIMITS

A:			
B:	E10481	kW	Pchief display DG1: power
C:	Z10481	%	Pchief display DG1: power (rel)
D:	A10481	%	Pchief display DG1: stop request limit
E:	B10481	%	Pchief display DG1: start request limit
F:			
G:	E10482	kW	Pchief display DG2: power
H:	Z10482	%	Pchief display DG2: power (rel)
I:	A10482	%	Pchief display DG2: stop request limit
J:	B10482	%	Pchief display DG2: start request limit
K:			
L:	E10483	kW	Pchief display DG3: power
M:	Z10483	%	Pchief display DG3: power (rel)
N:	A10483	%	Pchief display DG3: min throttle limit
O:	B10483	%	Pchief display DG3: max throttle limit
P:			
Q:	E10484	kW	Pchief display DG4: power
R:	Z10484	%	Pchief display DG4: power (rel)
S:	A10484	%	Pchief display DG4: stop request limit
T:	B10484	%	Pchief display DG4: start request limit

2.426 Page:7020 MD70** POWER CHIEF - PUMP CONTROL DATA (1/2)

A:			
B:	P10301	bar	Main LTFW pump start limit (dp)
C:	P10302	bar	Main HTFW pump start limit (dp)
D:	P10300	bar	Main SW pump start limit (dp)
E:	P10305	bar	Main LO pump start limit
F:	P10309	bar	TBCH LO pump start limit
G:	P10308	bar	Crossh LO pump start limit
H:			
I:	P10303	bar	FO Booster pump start limit
J:	P10304	bar	FO Supply pump start limit
K:			
L:	K04480	bar	Start Air Compr 1 start limit
M:	K04481	bar	Start Air Compr 1 stop limit
N:	K04483	bar	Start Air Compr 2 start limit
O:	K04484	bar	Start Air Compr 2 stop limit
P:	K04380	bar	Start Air Compr 3 start limit
Q:	K04381	bar	Start Air Compr 3 stop limit
R:			
S:	K04486	bar	Serv Air Compr start limit
T:	K04487	bar	Serv Air Compr stop limit

2.427 Page:7021 MD70** POWER CHIEF - PUMP CONTROL DATA (2/2)

A:					
B:	X10331	<0-1>	L=---	H=---	Main LTFW pump Auto-cycle
C:	X10332	<0-1>	L=---	H=---	Main HTFW pump Auto-cycle
D:	X10330	<0-1>	L=---	H=---	Main SW pump Auto-cycle
E:					
F:	X10333	<0-1>	L=---	H=---	FO booster pump Auto-cycle
G:	X10334	<0-1>	L=---	H=---	FO supply pump Auto-cycle
H:	X10342	<0-1>	L=---	H=---	TBCH LO pump Auto-cycle
I:	X10335	<0-1>	L=---	H=---	Main LO pump Auto-cycle
J:					
K:					
L:	C10357	min			Pump Auto-cycle time interval
M:					
N:					
O:					
P:	C10353	sec			Time delay fast black-out group
Q:	C10354	sec			Time delay medi black-out group
R:	C10355	sec			Time delay slow black-out group
S:					
T:					

2.428 Page:7030 MD70** PUMP SPEED CONTROL - STATIC CONVERTER

A:					
B:	X06171	<0-1>			Static Converter active switch
C:	Z06170	%			Static Converter set point
D:	F06172	Hz			Static Converter frequency
E:	E06172	kW			Static Converter power
F:					
G:	E00610	kW			Main SW pump 1 power
H:	E00611	kW			Main SW pump 2 power
I:	G00602	ton/h			Main SW pump flow (total)
J:	P00632	bar	L=1.6	H=---	Main SW line supply pressure
K:					
L:	E01251	kW			LTFW pump 1 power
M:	E01252	kW			LTFW pump 2 power
N:	G01061	ton/h			LTFW pump flow (total)
O:	P01001	bar	L=2.1	H=---	LTFW pump discharge pressure
P:					
Q:	E01241	kW			HTFW pump 1 power
R:	E01242	kW			HTFW pump 2 power
S:	G01053	ton/h			HTFW pump flow (total)
T:	P01005	bar	L=2.5	H=---	HTFW press inlet ME

2.429 Page:7100 MD71** DIESELGENERATOR 1 - POWER

A:					
B:	X03160	<0-5>	L=---	H=1.0	DG 1 trip indication
C:	X03157	<0-1>			DG 1 start / stop
D:	X03103	%			DG 1 fuel link pos
E:					
F:	N03100	rpm	L=---	H=760.0	DG 1 speed
G:	E03102	kW			DG 1 shaft power
H:	Q03101	%			DG 1 shaft torque (indicated)
I:					
J:					
K:	N03056	krpm			DG 1 TBCH speed
L:					
M:	P03053	bar			DG 1 TBCH air pressure
N:	G03052	kg/h			DG 1 TBCH air flow
O:					
P:	T03130	degC	L=---	H=85.0	DG 1 bearing temp fwd
Q:	T03131	degC	L=---	H=85.0	DG 1 bearing temp aft
R:					
S:					
T:					

2.430 Page:7101 MD71** DIESELGENERATOR 1 - FW SYSTEM

A:					
B:	T03020	degC	L=---	H=88.0	DG 1 FW temp outlet DG
C:	T03017	degC			DG 1 FW temp inlet DG
D:	T03016	degC			DG 1 FW temp inlet AIRC
E:	T03015	degC			DG 1 FW temp inlet LOC
F:	T03014	degC			DG 1 FW temp outlet FWC
G:					
H:	P03010	bar			DG 1 FW press outlet pump
I:	P03011	bar			DG 1 FW press outlet LOC
J:	P03012	bar	L=0.7	H=---	DG 1 FW press inlet DG
K:	P03013	bar			DG 1 FW press outlet DG
L:					
M:	G03024	ton/h			DG 1 FW flow inlet DG
N:	G03022	ton/h			DG 1 FW flow inlet FWC
O:	G03023	ton/h			DG 1 FW flow bypass FWC
P:					
Q:	L03026	%	L=30.0	H=90.0	DG 1 FW exp tank level
R:	V03140	<0-1>			DG 1 FW exp tank make up valve
S:	G03025	ton/h			DG 1 FW exp tank make up flow
T:					

2.431 Page:7102 MD71** DIESELGENERATOR 1 - LO SYSTEM

A:					
B:	X03155	<0-1>			DG 1 LO priming pump auto
C:					
D:	L03045	%	L=30.0	H=90.0	DG 1 LO sump level
E:	T03036	degC			DG 1 LO temp in sump
F:	T03037	degC	L=---	H=75.0	DG 1 LO temp inlet DG
G:					
H:	P03030	bar			DG 1 LO press inlet LOC
I:	P03031	bar			DG 1 LO press inlet filter
J:	P03032	bar	L=1.4	H=---	DG 1 LO press inlet DG
K:	G03042	ton/h			DG 1 LO flow inlet LOC
L:					
M:	V03144	<0-1>			DG 1 LO filter 1
N:	V03145	<0-1>			DG 1 LO filter 2
O:	P03033	bar			DG 1 LO filter diff press
P:	V03141	<0-1>			DG 1 LO make up valve
Q:	G03043	ton/h			DG 1 LO make up flow
R:	V03142	<0-1>			DG 1 LO discharge valve (to spill tank)
S:	G03044	ton/h			DG 1 LO discharge flow (to spill)
T:					

2.432 Page:7103 MD71** DIESELGENERATOR 1 - FO SYSTEM

A:					
B:					
C:	P03064	bar			DG 1 FO press outlet pump
D:	P03065	bar			DG 1 FO press inlet DG
E:					
F:	G03072	kg/h			DG 1 FO flow inlet DG
G:	G03070	kg/h			DG 1 FO supply flow
H:	G03071	kg/h			DG 1 FO return flow
I:					
J:	V03150	<0-1>			DG 1 FO shut off valve
K:					
L:	V03151	<0-1>			DG 1 FO filter 1
M:	V03152	<0-1>			DG 1 FO filter 2
N:	P03066	bar	L=---	H=1.0	DG 1 FO filter diff press
O:					
P:	V03149	<0-1>			DG 1 HFO/DO select valve (1=HFO)
Q:					
R:					
S:					
T:					

2.433 Page:7104 MD71** DIESELGENERATOR 1 - AIR/EX SYSTEM

A:					
B:					
C:					
D:	E03102	kW			DG 1 shaft power
E:					
F:	T03050	degC			DG 1 air temp outlet TBCH
G:	T03051	degC	L=---	H=100.0	DG 1 air temp outlet AIRC
H:					
I:	T03057	degC	L=---	H=610.0	DG 1 exhaust temp inlet TBCH
J:	T03060	degC	L=---	H=520.0	DG 1 exhaust temp outlet TBCH
K:					
L:	T03081	degC	L=---	H=550.0	DG 1 exhaust temp cyl 1
M:	T03082	degC	L=---	H=550.0	DG 1 exhaust temp cyl 2
N:	T03083	degC	L=---	H=550.0	DG 1 exhaust temp cyl 3
O:	T03084	degC	L=---	H=550.0	DG 1 exhaust temp cyl 4
P:	T03085	degC	L=---	H=550.0	DG 1 exhaust temp cyl 5
Q:	T03086	degC	L=---	H=550.0	DG 1 exhaust temp cyl 6
R:	T03087	degC	L=---	H=550.0	DG 1 exhaust temp cyl 7
S:	T03088	degC	L=---	H=550.0	DG 1 exhaust temp cyl 8
T:					

2.434 Page:7105 MD71** DIESELGENERATOR 1 - SW SYSTEM

A:			
B:			
C:	P03000	bar	DG 1 SW press inlet FWC
D:	P03001	bar	DG 1 SW press outlet FWC
E:			
F:	G03003	ton/h	DG 1 SW flow
G:	T03004	degC	DG 1 SW temp inlet FWC
H:	T03002	degC	DG 1 SW temp outlet FWC
I:			
J:	V03005	<0-1>	DG 1 SW inlet valve
K:	V03006	<0-1>	DG 1 SW outlet valve
L:			
M:			
N:			
O:	P03007	bar	DG 1 FWC SW diff press
P:			
Q:			
R:			
S:			
T:			

2.435 Page:7110 MD71** DIESELGENERATOR 1 - GOVERNOR

A:					
B:	X03103	%			DG 1 fuel link pos
C:					
D:	N03100	rpm	L=---	H=760.0	DG 1 speed
E:	E03102	kW			DG 1 shaft power
F:	C01901	rpm			DG 1 speed contr set point (basic)
G:	N03160	rpm			DG 1 speed contr set point (active)
H:					
I:	C03164	%			DG 1 speed contr droop setting
J:	C03163	%			DG 1 speed contr max output limit
K:	C03162	%			DG 1 speed contr compensating lever
L:	C01902	%			DG 1 speed contr compensation valve
M:	C03161	%/%			DG 1 speed contr gain
N:	C03165	sec			DG 1 speed contr integration time
O:	C03160	Hz			DG 1 speed contr speed droop
P:	C03168	%/%			DG 1 speed contr current feed forw gain
Q:	C03166	%/sec			DG 1 speed contr sp incr/decr constant
R:	C03167	msec			DG 1 speed contr actuator time constant
S:					
T:					

2.436 Page:7112 MD71** DIESELGENERATOR 1 - TEMP CONTROLLER

A:					
B:					
C:	T03020	degC	L=---	H=88.0	DG 1 FW temp outlet DG
D:	T03017	degC			DG 1 FW temp inlet DG
E:					
F:	V03120	%			DG 1 FW temp contr pos
G:	G03022	ton/h			DG 1 FW flow inlet FWC
H:	G03023	ton/h			DG 1 FW flow bypass FWC
I:					
J:	E03102	kW			DG 1 shaft power
K:					
L:					
M:					
N:	T03120	degC			DG 1 FW temp contr set point
O:	T03121	degC			DG 1 FW temp contr deviation
P:	C03122	%/degC			DG 1 FW temp contr gain
Q:	C03123	%			DG 1 FW temp contr bias
R:					
S:					
T:					

2.437 Page:7115 MD71** DIESELGENERATOR 1 - SAFETY SYSTEM

A:					
B:					
C:	X03160	<0-5>	L=---	H=1.0	DG 1 trip indication
D:					
E:					
F:	C13001	rpm			DG 1 trip limit - Overspeed
G:	C13002	bar			DG 1 trip limit - LO press
H:	C13003	degC			DG 1 trip limit - LO temp
I:	C13004	degC			DG 1 trip limit - FW temp
J:	C13005	degC			DG 1 trip limit - Exhaust temp
K:					
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.438 Page:7120 MD71** DG 1 - VOLTAGE CONTROLLER (1/2)

A:					
B:					
C:	V03170	%			DG 1 AVC set point (adjust)
D:	V03171	V			DG 1 AVC set point (basic)
E:	V03173	V			DG 1 AVC set point (active)
F:	X03170	<0-1>			DG 1 AVC auto switch
G:	Z03170	%			DG 1 AVC output signal
H:					
I:	I03180	A			DG 1 AVC excitation current
J:					
K:	C03170	V			DG 1 AVC voltage droop
L:	C03171	%/V			DG 1 AVC voltage gain
M:	C03173	%/kA			DG 1 AVC current ff gain
N:	C03172	sec			DG 1 AVC integration time
O:	C03183	sec			DG 1 AVC output signal damping
P:					
Q:	V06002	V			DG 1 voltage
R:	F06004	Hz			DG 1 frequency
S:	I06003	A	L=---	H=3600.0	DG 1 current
T:					

2.439 Page:7121 MD71** DG 1 - VOLTAGE CONTROLLER (2/2)

A:					
B:					
C:	X03180	<0-1>			DG 1 AVC excitation on
D:					
E:	X03185	<0-1>			DG 1 AVC auto excitation
F:	C03181	Hz			DG 1 AVC auto excitation off freq
G:	C03182	Hz			DG 1 AVC auto excitation on freq
H:					
I:	C03186	Gauss			DG 1 AVC excitation bias
J:	C03187	Gauss			DG 1 AVC excitation range
K:	C03184	V			DG 1 AVC voltage adjust - min
L:	C03185	V			DG 1 AVC voltage adjust - max
M:					
N:					
O:					
P:	C03188	msec			DG 1 AVC voltage sensor tc
Q:	C03189	msec			DG 1 AVC current sensor tc
R:					
S:					
T:					

2.440 Page:7122 MD71** DG 1 - CIRCUIT BREAKER SET POINTS

A:					
B:					
C:	X06014	<0-5>	L=---	H=1.0	DG 1 circuit breaker trip
D:	X06013	<0-1>	L=---	H=---	DG 1 circuit breaker
E:					
F:	C13500	A			DG 1 cbr trip limit - fast overload
G:	C13501	A			DG 1 cbr trip limit - slow overload
H:	C13502	A			DG 1 cbr trip limit - reverse power
I:	C13503	V			DG 1 cbr trip limit - low voltage
J:	C13504	Hz			DG 1 cbr trip limit - low frequency
K:	C13505	A			DG 1 cbr trip limit - non ess load 1
L:	K13505	A			DG 1 cbr trip limit - non ess load 2
M:					
N:	C13506	sec			DG 1 cbr fast overload trip tc
O:	C13507	sec			DG 1 cbr slow overload trip tc
P:	C13508	sec			DG 1 cbr reverse power trip tc
Q:	C13509	sec			DG 1 cbr non ess load trip tc
R:					
S:					
T:					

2.441 Page:7125 MD71** DG 1 - SPECIALIST VARIABLES

A:					
B:					
C:	V06006	V			DG 1 electromotif force (emf)
D:	V06007	V			DG 1 reactive voltage drop
E:	D06006	deg			DG 1 rotor phase angle
F:					
G:	E06007	kW			DG 1 max power (at pull out)
H:	I06007	A			DG 1 max current (at pull out)
I:	D06007	deg			DG 1 max current angle (at pull out)
J:					
K:	I06008	A			DG 1 short circuit current
L:	I06009	A			DG 1 no exitation current
M:					
N:	C06007	<0-2>			DG 1 syncronous reactanse (pu)
O:					
P:					
Q:					
R:					
S:					
T:					

2.442 Page:7200 MD72** DIESELGENERATOR 2 - POWER

A:					
B:	X03360	<0-5>	L=---	H=1.0	DG 2 trip indication
C:	X03357	<0-1>			DG 2 start / stop
D:	X03303	%			DG 2 fuel link pos
E:					
F:	N03300	rpm	L=---	H=760.0	DG 2 speed
G:	E03302	kW			DG 2 shaft power
H:	Q03301	%			DG 2 shaft torque (indicated)
I:					
J:					
K:	N03256	krpm			DG 2 TBCH speed
L:					
M:	P03253	bar			DG 2 TBCH air pressure
N:	G03252	kg/h			DG 2 TBCH air flow
O:					
P:	T03330	degC	L=---	H=85.0	DG 2 bearing temp fwd
Q:	T03331	degC	L=---	H=85.0	DG 2 bearing temp aft
R:					
S:					
T:					

2.443 Page:7201 MD72** DIESELGENERATOR 2 - FW SYSTEM

A:					
B:	T03220	degC	L=---	H=88.0	DG 2 FW temp outlet DG
C:	T03217	degC			DG 2 FW temp inlet DG
D:	T03216	degC			DG 2 FW temp inlet AIRC
E:	T03215	degC			DG 2 FW temp inlet LOC
F:	T03214	degC			DG 2 FW temp outlet FWC
G:					
H:	P03210	bar			DG 2 FW press outlet pump
I:	P03211	bar			DG 2 FW press outlet LOC
J:	P03212	bar	L=0.7	H=---	DG 2 FW press inlet DG
K:	P03213	bar			DG 2 FW press outlet DG
L:					
M:	G03224	ton/h			DG 2 FW flow inlet DG
N:	G03222	ton/h			DG 2 FW flow inlet FWC
O:	G03223	ton/h			DG 2 FW flow bypass FWC
P:					
Q:	L03226	%	L=30.0	H=90.0	DG 2 FW exp tank level
R:	V03340	<0-1>			DG 2 FW exp tank make up valve
S:	G03225	ton/h			DG 2 FW exp tank make up flow
T:					

2.444 Page:7202 MD72** DIESELGENERATOR 2 - LO SYSTEM

A:					
B:	X03355	<0-1>			DG 2 LO priming pump auto
C:					
D:	L03245	%	L=30.0	H=90.0	DG 2 LO sump level
E:	T03236	degC			DG 2 LO temp in sump
F:	T03237	degC	L=---	H=75.0	DG 2 LO temp inlet DG
G:					
H:	P03230	bar			DG 2 LO press inlet LOC
I:	P03231	bar			DG 2 LO press inlet filter
J:	P03232	bar	L=1.4	H=---	DG 2 LO press inlet DG
K:	G03242	ton/h			DG 2 LO flow inlet LOC
L:					
M:	V03344	<0-1>			DG 2 LO filter 1
N:	V03345	<0-1>			DG 2 LO filter 2
O:	P03233	bar			DG 2 LO filter diff press
P:	V03341	<0-1>			DG 2 LO make up valve
Q:	G03243	ton/h			DG 2 LO make up flow
R:	V03342	<0-1>			DG 2 LO discharge valve (to spill tank)
S:	G03244	ton/h			DG 2 LO discharge flow (to spill)
T:					

2.445 Page:7203 MD72** DIESELGENERATOR 2 - FO SYSTEM

A:					
B:					
C:	P03264	bar			DG 2 FO press outlet pump
D:	P03265	bar			DG 2 FO press inlet DG
E:					
F:	G03272	kg/h			DG 2 FO flow inlet DG
G:	G03270	kg/h			DG 2 FO flow from serv tank
H:	G03271	kg/h			DG 2 FO flow return serv tank
I:					
J:	V03350	<0-1>			DG 2 FO shut off valve
K:					
L:	V03351	<0-1>			DG 2 FO filter 1
M:	V03352	<0-1>			DG 2 FO filter 2
N:	P03266	bar	L=---	H=1.0	DG 2 FO filter diff press
O:					
P:	V03349	<0-1>			DG 2 HFO/DO select valve (1=HFO)
Q:					
R:					
S:					
T:					

2.446 Page:7204 MD72** DIESELGENERATOR 2 - AIR/EX SYSTEM

A:					
B:					
C:					
D:	E03302	kW			DG 2 shaft power
E:					
F:	T03250	degC			DG 2 AIR temp outlet TBCH
G:	T03251	degC	L=---	H=100.0	DG 2 AIR temp outlet AIRC
H:					
I:	T03257	degC	L=---	H=610.0	DG 2 exhaust temp inlet TBCH
J:	T03260	degC	L=---	H=520.0	DG 2 exhaust temp outlet TBCH
K:					
L:	T03281	degC	L=---	H=550.0	DG 2 exhaust temp cyl 1
M:	T03282	degC	L=---	H=550.0	DG 2 exhaust temp cyl 2
N:	T03283	degC	L=---	H=550.0	DG 2 exhaust temp cyl 3
O:	T03284	degC	L=---	H=550.0	DG 2 exhaust temp cyl 4
P:	T03285	degC	L=---	H=550.0	DG 2 exhaust temp cyl 5
Q:	T03286	degC	L=---	H=550.0	DG 2 exhaust temp cyl 6
R:	T03287	degC	L=---	H=550.0	DG 2 exhaust temp cyl 7
S:	T03288	degC	L=---	H=550.0	DG 2 exhaust temp cyl 8
T:					

2.447 Page:7205 MD72** DIESELGENERATOR 2 - SW SYSTEM

A:					
B:					
C:	P03200	bar			DG 2 SW press inlet FWC
D:	P03201	bar			DG 2 SW press outlet FWC
E:					
F:	G03203	ton/h			DG 2 SW flow
G:	T03204	degC			DG 2 SW temp inlet FWC
H:	T03202	degC			DG 2 SW temp outlet FWC
I:					
J:	V03205	<0-1>			DG 2 SW inlet valve
K:	V03206	<0-1>			DG 2 SW outlet valve
L:					
M:					
N:					
O:	P03207	bar			DG 2 FWC SW diff press
P:					
Q:					
R:					
S:					
T:					

2.448 Page:7210 MD72** DIESELGENERATOR 2 - GOVERNOR

A:					
B:	X03303	%			DG 2 fuel link pos
C:					
D:	N03300	rpm	L=---	H=760.0	DG 2 speed
E:	E03302	kW			DG 2 shaft power
F:	C01903	rpm			DG 2 speed contr set point (basic)
G:	N03360	rpm			DG 2 speed contr set point (active)
H:					
I:	C03364	%			DG 2 speed contr droop setting
J:	C03363	%			DG 2 speed contr max output limit
K:	C03362	%			DG 2 speed contr compensating lever
L:	C01904	%			DG 2 speed contr compensation valve
M:	C03361	%/%			DG 2 speed contr gain
N:	C03365	sec			DG 2 speed contr integration time
O:	C03360	Hz			DG 2 speed contr speed droop
P:	C03368	%/%			DG 2 speed contr current feed forw gain
Q:	C03366	%/sec			DG 2 speed contr sp incr/decr constant
R:	C03367	msec			DG 2 speed contr actuator time constant
S:					
T:					

2.449 Page:7212 MD72** DIESELGENERATOR 2 - TEMP CONTROLLER

A:					
B:					
C:	T03220	degC	L=---	H=88.0	DG 2 FW temp outlet DG
D:	T03217	degC			DG 2 FW temp inlet DG
E:					
F:	V03320	%			DG 2 FW temp contr pos
G:	G03222	ton/h			DG 2 FW flow inlet FWC
H:	G03223	ton/h			DG 2 FW flow bypass FWC
I:					
J:	E03302	kW			DG 2 shaft power
K:					
L:					
M:					
N:	T03320	degC			DG 2 FW temp contr set point
O:	T03321	degC			DG 2 FW temp contr deviation
P:	C03322	%/degC		DG 2 FW temp contr gain	
Q:	C03323	%			DG 2 FW temp contr bias
R:					
S:					
T:					

2.450 Page:7215 MD72** DIESELGENERATOR 2 - SAFETY SYSTEM

A:					
B:					
C:	X03360	<0-5>	L=---	H=1.0	DG 2 trip indication
D:					
E:					
F:	C13201	rpm			DG 2 trip limit - Overspeed
G:	C13202	bar			DG 2 trip limit - LO press
H:	C13203	degC			DG 2 trip limit - LO temp
I:	C13204	degC			DG 2 trip limit - FW temp
J:	C13205	degC			DG 2 trip limit - Exhaust temp
K:					
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.451 Page:7220 MD72** DG 2 - VOLTAGE CONTROL (1/2)

A:					
B:					
C:	V03370	%			DG 2 AVC set point (adjust)
D:	V03371	V			DG 2 AVC set point (basic)
E:	V03373	V			DG 2 AVC set point (active)
F:	X03370	<0-1>			DG 2 AVC auto switch
G:	Z03370	%			DG 2 AVC output signal
H:					
I:	I03380	A			DG 2 AVC excitation current
J:					
K:	C03370	V			DG 2 AVC voltage droop
L:	C03371	%/V			DG 2 AVC voltage gain
M:	C03373	%/kA			DG 2 AVC current ff gain
N:	C03372	sec			DG 2 AVC integration time
O:	C03383	sec			DG 2 AVC output signal damping
P:					
Q:	V06022	V			DG 2 voltage
R:	F06024	Hz			DG 2 frequency
S:	I06023	A	L=---	H=3600.0	DG 2 current
T:					

2.452 Page:7221 MD72** DG 2 - VOLTAGE CONTROL (2/2)

A:					
B:					
C:	X03380	<0-1>			DG 2 AVC excitation on
D:					
E:	X03385	<0-1>			DG 2 AVC auto excitation
F:	C03381	Hz			DG 2 AVC auto excitation off freq
G:	C03382	Hz			DG 2 AVC auto excitation on freq
H:					
I:	C03386	Gauss			DG 2 AVC excitation bias
J:	C03387	Gauss			DG 2 AVC excitation range
K:	C03384	V			DG 2 AVC voltage adjust - min
L:	C03385	V			DG 2 AVC voltage adjust - max
M:					
N:					
O:					
P:	C03388	msec			DG 2 AVC voltage sensor tc
Q:	C03389	msec			DG 2 AVC current sensor tc
R:					
S:					
T:					

2.453 Page:7222 MD72** DG 2 - CIRCUIT BREAKER SET POINTS

A:					
B:					
C:	X06034	<0-5>	L=---	H=1.0	DG 2 circuit breaker trip
D:	X06033	<0-1>	L=---	H=---	DG 2 circuit breaker
E:					
F:	C13600	A			DG 2 cbr trip limit - fast overload
G:	C13601	A			DG 2 cbr trip limit - slow overload
H:	C13602	A			DG 2 cbr trip limit - reverse power
I:	C13603	V			DG 2 cbr trip limit - low voltage
J:	C13604	Hz			DG 2 cbr trip limit - low freq
K:	C13605	A			DG 2 cbr trip limit - non ess load 1
L:	K13605	A			DG 2 cbr trip limit - non ess load 2
M:					
N:	C13606	sec			DG 2 cbr fast overload trip tc
O:	C13607	sec			DG 2 cbr slow overload trip tc
P:	C13608	sec			DG 2 cbr reverse power trip tc
Q:	C13609	sec			DG 2 cbr non ess load trip tc
R:					
S:					
T:					

2.454 Page:7225 MD72** DG 2 - SPECIALIST VARIABLES

A:			
B:			
C:	V06026	V	DG 2 electromotif force (emf)
D:	V06027	V	DG 2 reactive voltage drop
E:	D06026	deg	DG 2 rotor phase angle
F:			
G:	E06027	kW	DG 2 max power (at pull out)
H:	I06027	A	DG 2 max current (at pull out)
I:	D06027	deg	DG 2 max current angle (at pull out)
J:			
K:	I06028	A	DG 2 short circuit current
L:	I06029	A	DG 2 no exitation current
M:			
N:	C06027	<0-2>	DG 2 syncronous reactanse (pu)
O:			
P:			
Q:			
R:			
S:			
T:			

2.455 Page:7300 MD73** DIESELGENERATOR 3 - POWER

A:					
B:	X33160	<0-5>	L=---	H=1.0	DG 3 trip indication
C:	X33157	<0-1>			DG 3 start / stop
D:	X33103	%			DG 3 fuel link pos
E:					
F:	N33100	rpm	L=---	H=760.0	DG 3 speed
G:	E33102	kW			DG 3 shaft power
H:	Q33101	%			DG 3 shaft torque (indicated)
I:					
J:					
K:	N33056	krpm			DG 3 TBCH speed
L:					
M:	P33053	bar			DG 3 TBCH air pressure
N:	G33052	kg/h			DG 3 TBCH air flow
O:					
P:	T33130	degC	L=---	H=85.0	DG 3 bearing temp fwd
Q:	T33131	degC	L=---	H=85.0	DG 3 bearing temp aft
R:					
S:					
T:					

2.456 Page:7301 MD73** DIESELGENERATOR 3 - FW SYSTEM

A:					
B:	T33020	degC	L=---	H=88.0	DG 3 FW temp outlet DG
C:	T33017	degC			DG 3 FW temp inlet DG
D:	T33016	degC			DG 3 FW temp inlet AIRC
E:	T33015	degC			DG 3 FW temp inlet LOC
F:	T33014	degC			DG 3 FW temp outlet FWC
G:					
H:	P33010	bar			DG 3 FW press outlet pump
I:	P33011	bar			DG 3 FW press outlet LOC
J:	P33012	bar	L=0.7	H=---	DG 3 FW press inlet DG
K:	P33013	bar			DG 3 FW press outlet DG
L:					
M:	G33024	ton/h			DG 3 FW flow inlet DG
N:	G33022	ton/h			DG 3 FW flow inlet FWC
O:	G33023	ton/h			DG 3 FW flow bypass FWC
P:					
Q:	L33026	%	L=30.0	H=90.0	DG 3 FW EXP tank level
R:	V33140	<0-1>			DG 3 FW exp tank make up valve
S:	G33025	ton/h			DG 3 FW exp tank make up flow
T:					

2.457 Page:7302 MD73** DIESELGENERATOR 3 - LO SYSTEM

A:					
B:	X33155	<0-1>			DG 3 LO priming pump auto
C:					
D:	L33045	%	L=30.0	H=90.0	DG 3 LO sump level
E:	T33036	degC			DG 3 LO temp in sump
F:	T33037	degC	L=---	H=75.0	DG 3 LO temp inlet DG
G:					
H:	P33030	bar			DG 3 LO press inlet LOC
I:	P33031	bar			DG 3 LO press inlet filter
J:	P33032	bar	L=1.4	H=---	DG 3 LO press inlet DG
K:	G33042	ton/h			DG 3 LO flow inlet LOC
L:					
M:	V33144	<0-1>			DG 3 LO filter 1
N:	V33145	<0-1>			DG 3 LO filter 2
O:	P33033	bar			DG 3 LO filter diff press
P:	V33141	<0-1>			DG 3 LO make up valve
Q:	G33043	ton/h			DG 3 LO make up flow
R:	V33142	<0-1>			DG 3 LO discharge valve (to spill tank)
S:	G33044	ton/h			DG 3 LO discharge flow (to spill)
T:					

2.458 Page:7303 MD73** DIESELGENERATOR 3 - FO SYSTEM

A:					
B:					
C:	P33064	bar			DG 3 FO press outlet pump
D:	P33065	bar			DG 3 FO press inlet DG
E:					
F:	G33072	kg/h			DG 3 FO flow inlet DG
G:	G33070	kg/h			DG 3 FO flow from serv tank
H:	G33071	kg/h			DG 3 FO flow return serv tank
I:					
J:	V33150	<0-1>			DG 3 FO shut off valve
K:					
L:	V33151	<0-1>			DG 3 FO filter 1
M:	V33152	<0-1>			DG 3 FO filter 2
N:	P33066	bar	L=---	H=1.0	DG 3 FO filter diff press
O:					
P:	V33149	<0-1>			DG 3 HFO/DO select valve (1=HFO)
Q:					
R:					
S:					
T:					

2.459 Page:7304 MD73** DIESELGENERATOR 3 - AIR/EX SYSTEM

A:					
B:					
C:					
D:	E33102	kW			DG 3 shaft power
E:					
F:	T33050	degC			DG 3 air temp outlet TBCH
G:	T33051	degC	L=---	H=100.0	DG 3 air temp outlet AIRC
H:					
I:	T33057	degC	L=---	H=610.0	DG 3 exhaust temp inlet TBCH
J:	T33060	degC	L=---	H=520.0	DG 3 exhaust temp outlet TBCH
K:					
L:					
M:	T33081	degC	L=---	H=580.0	DG 3 exhaust temp cyl 1
N:	T33082	degC	L=---	H=580.0	DG 3 exhaust temp cyl 2
O:	T33083	degC	L=---	H=580.0	DG 3 exhaust temp cyl 3
P:	T33084	degC	L=---	H=580.0	DG 3 exhaust temp cyl 4
Q:	T33085	degC	L=---	H=580.0	DG 3 exhaust temp cyl 5
R:					
S:					
T:					

2.460 Page:7305 MD73** DIESELGENERATOR 3 - SW SYSTEM

A:			
B:			
C:	P33000	bar	DG 3 SW press inlet FWC
D:	P33001	bar	DG 3 SW press outlet FWC
E:			
F:	G33003	ton/h	DG 3 SW flow
G:	T33004	degC	DG 3 SW temp inlet FWC
H:	T33002	degC	DG 3 SW temp outlet FWC
I:			
J:	V33005	<0-1>	DG 3 SW inlet valve
K:	V33006	<0-1>	DG 3 SW outlet valve
L:			
M:			
N:			
O:	P33007	bar	DG 3 FWC SW diff press
P:			
Q:			
R:			
S:			
T:			

2.461 Page:7310 MD73** DIESELGENERATOR 3 - GOVERNOR

A:					
B:	X33103	%			DG 3 fuel link pos
C:					
D:	N33100	rpm	L=---	H=760.0	DG 3 speed
E:	E33102	kW			DG 3 shaft power
F:	C31901	rpm			DG 3 speed contr set point (basic)
G:	N33160	rpm			DG 3 speed contr set point (active)
H:					
I:	C33164	%			DG 3 speed contr droop setting
J:	C33163	%			DG 3 speed contr max output limit
K:	C33162	%			DG 3 speed contr compensating lever
L:	C31902	%			DG 3 speed contr compensation valve
M:	C33161	%/%			DG 3 speed contr gain
N:	C33165	sec			DG 3 speed contr integration time
O:	C33160	Hz			DG 3 speed contr speed droop
P:	C33168	%/%			DG 3 speed contr current feed forw gain
Q:	C33166	%/sec			DG 3 speed contr sp incr/decr constant
R:	C33167	msec			DG 3 speed contr actuator time constant
S:					
T:					

2.462 Page:7312 MD73** DIESELGENERATOR 3 - TEMP CONTROLLER

A:					
B:					
C:	T33020	degC	L=---	H=88.0	DG 3 FW temp outlet DG
D:	T33017	degC			DG 3 FW temp inlet DG
E:					
F:	V33120	%			DG 3 FW temp contr pos
G:	G33022	ton/h			DG 3 FW flow inlet FWC
H:	G33023	ton/h			DG 3 FW flow bypass FWC
I:					
J:	E33102	kW			DG 3 shaft power
K:					
L:					
M:					
N:	T33120	degC			DG 3 FW temp contr set point
O:	T33121	degC			DG 3 FW temp contr deviation
P:	C33122	%/degC		DG 3 FW temp contr gain	
Q:	C33123	%			DG 3 FW temp contr bias
R:					
S:					
T:					

2.463 Page:7315 MD73** DIESELGENERATOR 3 - SAFETY SYSTEM

A:					
B:					
C:	X33160	<0-5>	L=---	H=1.0	DG 3 trip indication
D:					
E:					
F:	C33001	rpm			DG 3 trip limit - Overspeed
G:	C33002	bar			DG 3 trip limit - LO press
H:	C33003	degC			DG 3 trip limit - LO temp
I:	C33004	degC			DG 3 trip limit - FW temp
J:	C33005	degC			DG 3 trip limit - Exhaust temp
K:					
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.464 Page:7320 MD73** DG 3 - VOLTAGE CONTROLLER (1/2)

A:					
B:					
C:	V33170	%			DG 3 AVC set point (adjust)
D:	V33171	V			DG 3 AVC set point (basic)
E:	V33173	V			DG 3 AVC set point (active)
F:	X33170	<0-1>			DG 3 AVC auto switch
G:	Z33170	%			DG 3 AVC output signal
H:					
I:	I33180	A			DG 3 AVC excitation current
J:					
K:	C33170	V			DG 3 AVC voltage droop
L:	C33171	%/V			DG 3 AVC voltage gain
M:	C33173	%/kA			DG 3 AVC current feed forward gain
N:	C33172	sec			DG 3 AVC integration time
O:	C33183	sec			DG 3 AVC output signal damping
P:					
Q:	V36002	V			DG 3 voltage
R:	F36004	Hz			DG 3 frequency
S:	I36003	A	L=---	H=2500.0	DG 3 current
T:					

2.465 Page:7321 MD73** DG 3 - VOLTAGE CONTROLLER (2/2)

A:			
B:			
C:	X33180	<0-1>	DG 3 AVC excitation on
D:			
E:	X33185	<0-1>	DG 3 AVC auto excitation
F:	C33181	Hz	DG 3 AVC auto excitation off freq
G:	C33182	Hz	DG 3 AVC auto excitation on freq
H:			
I:	C33186	Gauss	DG 3 AVC excitation bias
J:	C33187	Gauss	DG 3 AVC excitation range
K:	C33184	V	DG 3 AVC voltage adjust - min
L:	C33185	V	DG 3 AVC voltage adjust - max
M:			
N:			
O:			
P:	C33188	msec	DG 3 AVC voltage sensor tc
Q:	C33189	msec	DG 3 AVC current sensor tc
R:			
S:			
T:			

2.466 Page:7322 MD73** DG 3 - CIRCUIT BREAKER SET POINTS

A:					
B:					
C:	X36014	<0-5>	L=---	H=1.0	DG 3 circuit breaker trip
D:	X36013	<0-1>	L=---	H=---	DG 3 circuit breaker
E:					
F:	C33500	A			DG 3 trip limit - fast overload
G:	C33501	A			DG 3 trip limit - slow overload
H:	C33502	A			DG 3 trip limit - reverse power
I:	C33503	V			DG 3 trip limit - low voltage
J:	C33504	Hz			DG 3 trip limit - low freq
K:	C33505	A			DG 3 trip limit - non ess load 1
L:	K33505	A			DG 3 trip limit - non ess load 2
M:					
N:	C33506	sec			DG 3 cbr fast overload trip tc
O:	C33507	sec			DG 3 cbr slow overload trip tc
P:	C33508	sec			DG 3 cbr reverse power trip tc
Q:	C33509	sec			DG 3 cbr non ess load trip tc
R:					
S:					
T:					

2.467 Page:7325 MD73** DG 3 - SPECIALIST VARIABLES

A:					
B:					
C:	V36006	V			DG 3 electromotif force (emf)
D:	V36007	V			DG 3 reactive voltage drop
E:	D36006	deg			DG 3 rotor phase angle
F:					
G:	E36007	kW			DG 3 max power (at pull out)
H:	I36007	A			DG 3 max current (at pull out)
I:	D36007	deg			DG 3 max current angle (at pull out)
J:					
K:	I36008	A			DG 3 short circuit current
L:	I36009	A			DG 3 no exitation current
M:					
N:	C36007	<0-2>			DG 3 syncronous reactanse (pu)
O:					
P:					
Q:					
R:					
S:					
T:					

2.468 Page:7400 MD74** DIESELGENERATOR 4 - POWER

A:					
B:	X43160	<0-5>	L=---	H=1.0	DG 4 trip indication
C:	X43157	<0-1>			DG 4 start / stop
D:	X43103	%			DG 4 fuel link pos
E:					
F:	N43100	rpm	L=---	H=760.0	DG 4 speed
G:	E43102	kW			DG 4 shaft power
H:	Q43101	%			DG 4 shaft torque (indicated)
I:					
J:					
K:	N43056	krpm			DG 4 TBCH speed
L:					
M:	P43053	bar			DG 4 TBCH air pressure
N:	G43052	kg/h			DG 4 TBCH air flow
O:					
P:	T43130	degC	L=---	H=85.0	DG 4 bearing temp fwd
Q:	T43131	degC	L=---	H=85.0	DG 4 bearing temp aft
R:					
S:					
T:					

2.469 Page:7401 MD74** DIESELGENERATOR 4 - FW SYSTEM

A:					
B:	T43020	degC	L=---	H=88.0	DG 4 FW temp outlet DG
C:	T43017	degC			DG 4 FW temp inlet DG
D:	T43016	degC			DG 4 FW temp inlet AIRC
E:	T43015	degC			DG 4 FW temp inlet LOC
F:	T43014	degC			DG 4 FW temp outlet FWC
G:					
H:	P43010	bar			DG 4 FW press outlet pump
I:	P43011	bar			DG 4 FW press outlet LOC
J:	P43012	bar	L=0.7	H=---	DG 4 FW press inlet DG
K:	P43013	bar			DG 4 FW press outlet DG
L:					
M:	G43024	ton/h			DG 4 FW flow inlet DG
N:	G43022	ton/h			DG 4 FW flow inlet FWC
O:	G43023	ton/h			DG 4 FW flow bypass FWC
P:					
Q:	L43026	%	L=30.0	H=90.0	DG 4 FW exp tank level
R:	V43140	<0-1>			DG 4 FW exp tank make up valve
S:	G43025	ton/h			DG 4 FW exp tank make up flow
T:					

2.470 Page:7402 MD74** DIESELGENERATOR 4 - LO SYSTEM

A:					
B:	X43155	<0-1>			DG 4 LO priming pump auto
C:					
D:	L43045	%	L=30.0	H=90.0	DG 4 LO sump level
E:	T43036	degC			DG 4 LO temp in sump
F:	T43037	degC	L=---	H=75.0	DG 4 LO temp inlet DG
G:					
H:	P43030	bar			DG 4 LO press inlet LOC
I:	P43031	bar			DG 4 LO press inlet filter
J:	P43032	bar	L=1.4	H=---	DG 4 LO press inlet DG
K:	G43042	ton/h			DG 4 LO flow inlet LOC
L:					
M:	V43144	<0-1>			DG 4 LO filter 1
N:	V43145	<0-1>			DG 4 LO filter 2
O:	P43033	bar			DG 4 LO filter diff press
P:	V43141	<0-1>			DG 4 LO make up valve
Q:	G43043	ton/h			DG 4 LO make up flow
R:	V43142	<0-1>			DG 4 LO discharge valve (to spill tank)
S:	G43044	ton/h			DG 4 LO discharge flow (to spill)
T:					

2.471 Page:7403 MD74** DIESELGENERATOR 4 - FO SYSTEM

A:					
B:					
C:	P43064	bar			DG 4 FO press outlet pump
D:	P43065	bar			DG 4 FO press inlet DG
E:					
F:	G43072	kg/h			DG 4 FO flow inlet DG
G:	G43070	kg/h			DG 4 FO flow from serv tank
H:	G43071	kg/h			DG 4 FO flow return serv tank
I:					
J:	V43150	<0-1>			DG 4 FO shut off valve
K:					
L:	V43151	<0-1>			DG 4 FO filter 1
M:	V43152	<0-1>			DG 4 FO filter 2
N:	P43066	bar	L=---	H=1.0	DG 4 FO filter diff press
O:					
P:	V43149	<0-1>			DG 4 HFO/DO select valve (1= HFO)
Q:					
R:					
S:					
T:					

2.472 Page:7404 MD74** DIESELGENERATOR 4 - AIR/EX SYSTEM

A:					
B:					
C:					
D:	E43102	kW			DG 4 shaft power
E:					
F:	T43050	degC			DG 4 air temp outlet TBCH
G:	T43051	degC	L=---	H=100.0	DG 4 air temp outlet AIRC
H:					
I:	T43057	degC	L=---	H=610.0	DG 4 exhaust temp inlet TBCH
J:	T43060	degC	L=---	H=520.0	DG 4 exhaust temp outlet TBCH
K:					
L:					
M:	T43081	degC	L=---	H=580.0	DG 4 exhaust temp cyl 1
N:	T43082	degC	L=---	H=580.0	DG 4 exhaust temp cyl 2
O:	T43083	degC	L=---	H=580.0	DG 4 exhaust temp cyl 3
P:	T43084	degC	L=---	H=580.0	DG 4 exhaust temp cyl 4
Q:	T43085	degC	L=---	H=580.0	DG 4 exhaust temp cyl 5
R:					
S:					
T:					

2.473 Page:7405 MD74** DIESELGENERATOR 4 - SW SYSTEM

A:					
B:					
C:	P43000	bar			DG 4 SW press inlet FWC
D:	P43001	bar			DG 4 SW press outlet FWC
E:					
F:	G43003	ton/h			DG 4 SW flow
G:	T43004	degC			DG 4 SW temp inlet FWC
H:	T43002	degC			DG 4 SW temp outlet FWC
I:					
J:	V43005	<0-1>			DG 4 SW inlet valve
K:	V43006	<0-1>			DG 4 SW outlet valve
L:					
M:					
N:					
O:	P43007	bar			DG 4 FWC SW diff press
P:					
Q:					
R:					
S:					
T:					

2.474 Page:7410 MD74** DIESELGENERATOR 4 - GOVERNOR

A:					
B:	X43103	%			DG 4 fuel link pos
C:					
D:	N43100	rpm	L=---	H=760.0	DG 4 speed
E:	E43102	kW			DG 4 shaft power
F:	C41901	rpm			DG 4 speed contr set point (basic)
G:	N43160	rpm			DG 4 speed contr set point (active)
H:					
I:	C43164	%			DG 4 speed contr droop setting
J:	C43163	%			DG 4 speed contr max output limit
K:	C43162	%			DG 4 speed contr compensating lever
L:	C41902	%			DG 4 speed contr compensation valve
M:	C43161	%/%			DG 4 speed contr gain
N:	C43165	sec			DG 4 speed contr integration time
O:	C43160	Hz			DG 4 speed contr speed droop
P:	C43168	%/%			DG 4 speed contr current feed forw gain
Q:	C43166	%/sec			DG 4 speed contr sp incr/decr constant
R:	C43167	msec			DG 4 speed contr actuator time constant
S:					
T:					

2.475 Page:7412 MD74** DIESELGENERATOR 4 - TEMP CONTROLLER

A:					
B:					
C:	T43020	degC	L=---	H=88.0	DG 4 FW temp outlet DG
D:	T43017	degC			DG 4 FW temp inlet DG
E:					
F:	V43120	%			DG 4 FW temp contr pos
G:	G43022	ton/h			DG 4 FW flow inlet FWC
H:	G43023	ton/h			DG 4 FW flow bypass FWC
I:					
J:	E43102	kW			DG 4 shaft power
K:					
L:					
M:					
N:	T43120	degC			DG 4 FW temp contr set point
O:	T43121	degC			DG 4 FW temp contr deviation
P:	C43122	%/degC		DG 4 FW temp contr gain	
Q:	C43123	%			DG 4 FW temp contr bias
R:					
S:					
T:					

2.476 Page:7415 MD74** DIESELGENERATOR 4 - SAFETY SYSTEM

A:					
B:					
C:	X43160	<0-5>	L=---	H=1.0	DG 4 trip indication
D:					
E:					
F:	C43001	rpm			DG 4 trip limit - Overspeed
G:	C43002	bar			DG 4 trip limit - LO press
H:	C43003	degC			DG 4 trip limit - LO temp
I:	C43004	degC			DG 4 trip limit - FW temp
J:	C43005	degC			DG 4 trip limit - Exhaust temp
K:					
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.477 Page:7420 MD74** DG 4 - VOLTAGE CONTROLLER (1/2)

A:					
B:					
C:	V43170	%			DG 4 AVC set point (adjust)
D:	V43171	V			DG 4 AVC set point (basic)
E:	V43173	V			DG 4 AVC set point (active)
F:	X43170	<0-1>			DG 4 AVC auto switch
G:	Z43170	%			DG 4 AVC output signal
H:					
I:	I43180	A			DG 4 AVC excitation current
J:					
K:	C43170	V			DG 4 AVC voltage droop
L:	C43171	%/V			DG 4 AVC voltage gain
M:	C43173	%/kA			DG 4 AVC current feed forward gain
N:	C43172	sec			DG 4 AVC integration time
O:	C43183	sec			DG 4 AVC output signal damping
P:					
Q:	V46002	V			DG 4 voltage
R:	F46004	Hz			DG 4 frequency
S:	I46003	A	L=---	H=2500.0	DG 4 current
T:					

2.478 Page:7421 MD74** DG 4 - VOLTAGE CONTROLLER (2/2)

A:					
B:					
C:	X43180	<0-1>			DG 4 AVC excitation on
D:					
E:	X43185	<0-1>			DG 4 AVC auto excitation
F:	C43181	Hz			DG 4 AVC auto excitation off freq
G:	C43182	Hz			DG 4 AVC auto excitation on freq
H:					
I:	C43186	Gauss			DG 4 AVC excitation bias
J:	C43187	Gauss			DG 4 AVC excitation range
K:	C43184	V			DG 4 AVC voltage adjust - min
L:	C43185	V			DG 4 AVC voltage adjust - max
M:					
N:					
O:					
P:	C43188	msec			DG 4 AVC voltage sensor tc
Q:	C43189	msec			DG 4 AVC current sensor tc
R:					
S:					
T:					

2.479 Page:7422 MD74** DG 4 - CIRCUIT BREAKER SET POINTS

A:					
B:					
C:	X46014	<0-5>	L=---	H=1.0	DG 4 circuit breaker trip
D:	X46013	<0-1>	L=---	H=---	DG 4 circuit breaker
E:					
F:	C43500	A			DG 4 trip limit - fast overload
G:	C43501	A			DG 4 trip limit - slow overload
H:	C43502	A			DG 4 trip limit - reverse power
I:	C43503	V			DG 4 trip limit - low voltage
J:	C43504	Hz			DG 4 trip limit - low freq
K:	C43505	A			DG 4 trip limit - non ess load 1
L:	K43505	A			DG 4 trip limit - non ess load 2
M:					
N:	C43506	sec			DG 4 cbr fast overload trip tc
O:	C43507	sec			DG 4 cbr slow overload trip tc
P:	C43508	sec			DG 4 cbr reverse power trip tc
Q:	C43509	sec			DG 4 cbr non ess load trip tc
R:					
S:					
T:					

2.480 Page:7425 MD74** DG 4 - SPECIALIST VARIABLES

A:			
B:			
C:	V46006	V	DG 4 electromotif force (emf)
D:	V46007	V	DG 4 reactive voltage drop
E:	D46006	deg	DG 4 rotor phase angle
F:			
G:	E46007	kW	DG 4 max power (at pull out)
H:	I46007	A	DG 4 max current (at pull out)
I:	D46007	deg	DG 4 max current angle (at pull out)
J:			
K:	I46008	A	DG 4 short circuit current
L:	I46009	A	DG 4 no exitation current
M:			
N:	C46007	<0-2>	DG 4 syncronous reactanse (pu)
O:			
P:			
Q:			
R:			
S:			
T:			

2.481 Page:7500 MD75** NON ESSENTIAL LOAD BUS BAR

A:			
B:			
C:	X06168	<0-1>	Non essential bus bar circ breaker
D:	E06190	kW	Non essential bus bar load
E:			
F:	X06920	<0-1>	Circuit breaker - Eng room fans
G:	X06921	<0-1>	Circuit breaker - Accommodation
H:	X06922	<0-1>	Circuit breaker - Cargo Hold fans
I:	X06923	<0-1>	Circuit breaker - Purifier Room fan
J:	X06924	<0-1>	Circuit breaker - Air Conditioning
K:	X06925	<0-1>	Circuit breaker - Sewage Treatment
L:	X06926	<0-1>	Circuit breaker - ICCP/MGPS
M:	X06927	<0-1>	Circuit breaker - Galley supply
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.482 Page:7501 MD75** NON ESS LOAD TRIP SPECIFICATION

A:			
B:			
C:			
D:	C06930	<0-1>	Non ess bus bar breaker trip enable
E:			
F:	C06920	<0-1>	Non ess trip ok - Eng room fans
G:	C06921	<0-1>	Non ess trip ok - Accommodation
H:	C06922	<0-1>	Non ess trip ok - Cargo Hold fans
I:	C06923	<0-1>	Non ess trip ok - Purifier Room fan
J:	C06924	<0-1>	Non ess trip ok - Air Conditioning
K:	C06925	<0-1>	Non ess trip ok - Sewage Treatment
L:	C06926	<0-1>	Non ess trip ok - ICCP/MGPS
M:	C06927	<0-1>	Non ess trip ok - Galley supply
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.483 Page:7502 MD75** LIGHTING BUS BAR

A:			
B:	X06169	<0-1>	Lighting bus circuit breaker
C:			
D:	X06180	<0-1>	Lighting trans 1 inlet switch
E:	X06181	<0-1>	Lighting trans 1 outlet switch
F:	X06182	<0-1>	Lighting trans 2 inlet switch
G:	X06183	<0-1>	Lighting trans 2 outlet switch
H:			
I:			
J:			
K:	X06187	<0-1>	Accom lighting switch
L:	X06189	<0-1>	Eng R lighting switch
M:	X06188	<0-1>	Deck lighting switch
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.484 Page:7600 MD76** REEFER CONTAINER SYSTEM

A:			
B:			
C:	V15550	V	Reefer bus bar voltage
D:	F15550	V	Reefer bus bar frequency
E:			
F:	E15550	kW	Reefer bus bar power (active)
G:	E15551	kVAr	Reefer bus bar power (reactive)
H:	I15550	A	Reefer bus bar current
I:	X15551	<0-1>	Reefer bus bar current cos phi
J:			
K:	E15510	kW	Reefer Group 1 power (active)
L:	E15520	kW	Reefer Group 2 power (active)
M:	E15530	kW	Reefer Group 3 power (active)
N:	E15540	kW	Reefer Group 4 power (active)
O:			
P:	T15510	degC	Reefer Group 1 mean reefer cargo temp
Q:	T15520	degC	Reefer Group 2 mean reefer cargo temp
R:	T15530	degC	Reefer Group 3 mean reefer cargo temp
S:	T15540	degC	Reefer Group 4 mean reefer cargo temp
T:			

2.485 Page:7601 MD76** REEFER GROUP no 1

A:					
B:	N15510	no			Reefer Group 1 no of reefers (actual)
C:	N15511	no			Reefer Group 1 no of reefers (target)
D:	R15511	no/min			Reefer Group 1 connection rate
E:					
F:	V15510	V	L=190.0	H=---	Reefer Group 1 voltage
G:	I15510	A	L=---	H=---	Reefer Group 1 current
H:	E15510	kW			Reefer Group 1 power (active)
I:	E15511	kVAr			Reefer Group 1 power (reactive)
J:	X15511	<0-1>			Reefer Group 1 current cos phi
K:	T15510	degC			Reefer Group 1 mean reefer cargo temp
L:	T15512	degC			Reefer Group 1 reefer temp set point
M:	C15512	1/deg			Reefer Group 1 reefer temp cntr gain
N:	C15513	degC			Reefer Group 1 high temp alarm limit
O:					
P:	X15517	<0-1>			Reefer Group 1 circuit breaker trip
Q:	C15517	A			Reefer Group 1 current high (trip limit)
R:	C15518	V			Reefer Group 1 voltage low (trip limit)
S:					
T:	C15511	no			Reefer Group 1 no of reefer sockets

2.486 Page:7602 MD76** REEFER GROUP no 2

A:					
B:	N15520	no			Reefer Group 2 no of reefers (actual)
C:	N15521	no			Reefer Group 2 no of reefers (target)
D:	R15521	no/min			Reefer Group 2 connection rate
E:					
F:	V15520	V	L=190.0	H=---	Reefer Group 2 voltage
G:	I15520	A	L=---	H=---	Reefer Group 2 current
H:	E15520	kW			Reefer Group 2 power (active)
I:	E15521	kVAr			Reefer Group 2 power (reactive)
J:	X15521	<0-1>			Reefer Group 2 current cos phi
K:	T15520	degC			Reefer Group 2 mean reefer cargo temp
L:	T15522	degC			Reefer Group 2 reefer temp set point
M:	C15522	1/deg			Reefer Group 2 reefer temp cntr gain
N:	C15523	degC			Reefer Group 2 high temp alarm limit
O:					
P:	X15527	<0-1>			Reefer Group 2 circuit breaker trip
Q:	C15527	A			Reefer Group 2 current high (trip limit)
R:	C15528	V			Reefer Group 2 voltage low (trip limit)
S:					
T:	C15521	no			Reefer Group 2 no of reefer sockets

2.487 Page:7603 MD76** REEFER GROUP no 3

A:					
B:	N15530	no			Reefer Group 3 no of reefers (actual)
C:	N15531	no			Reefer Group 3 no of reefers (target)
D:	R15531	no/min			Reefer Group 3 connection rate
E:					
F:	V15530	V	L=190.0	H=---	Reefer Group 3 voltage
G:	I15530	A	L=---	H=---	Reefer Group 3 current
H:	E15530	kW			Reefer Group 3 power (active)
I:	E15531	kVAr			Reefer Group 3 power (reactive)
J:	X15531	<0-1>			Reefer Group 3 current cos phi
K:	T15530	degC			Reefer Group 3 mean reefer cargo temp
L:	T15532	degC			Reefer Group 3 reefer temp set point
M:	C15532	1/deg			Reefer Group 3 reefer temp cntr gain
N:	C15533	degC			Reefer Group 3 high temp alarm limit
O:					
P:	X15537	<0-1>			Reefer Group 3 circuit breaker trip
Q:	C15537	A			Reefer Group 3 current high (trip limit)
R:	C15538	V			Reefer Group 3 voltage low (trip limit)
S:					
T:	C15531	no			Reefer Group 3 no of reefer sockets

2.488 Page:7604 MD76** REEFER GROUP no 4

A:					
B:	N15540	no			Reefer Group 4 no of reefers (actual)
C:	N15541	no			Reefer Group 4 no of reefers (target)
D:	R15541	no/min			Reefer Group 4 connection rate
E:					
F:	V15540	V	L=190.0	H=---	Reefer Group 4 voltage
G:	I15540	A	L=---	H=---	Reefer Group 4 current
H:	E15540	kW			Reefer Group 4 power (active)
I:	E15541	kVAr			Reefer Group 4 power (reactive)
J:	X15541	<0-1>			Reefer Group 4 current cos phi
K:	T15540	degC			Reefer Group 4 mean reefer cargo temp
L:	T15542	degC			Reefer Group 4 reefer temp set point
M:	C15542	1/deg			Reefer Group 4 reefer temp cntr gain
N:	C15543	degC			Reefer Group 4 high temp alarm limit
O:					
P:	X15547	<0-1>			Reefer Group 4 circuit breaker trip
Q:	C15547	A			Reefer Group 4 current high (trip limit)
R:	C15548	V			Reefer Group 4 voltage low (trip limit)
S:					
T:	C15541	no			Reefer Group 4 no of reefer sockets

2.489 Page:7605 MD76** REEFER GROUPS - Common data

A:					
B:	C15501	¨<0-100>			Reefer temp time speed up factor
C:					
D:	C15502	no/min			Reefer power incr rate after power on
E:					
F:	T15501	degC			Reefer loading temp
G:	T15502	degC			Reefer min cargo temp
H:	T15503	degC			Reefer max cargo temp
I:					
J:	E15500	kW			Nominal power per reefer container
K:					
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.490 Page:7610 MD76** REEFER POWER TRANSFORMER no 1

A:					
B:	E15560	kW			Reefer Trafo 1 inlet power (active)
C:	E15561	kVAr			Reefer Trafo 1 inlet power (reactive)
D:	I15560	A	L=---	H=---	Reefer Trafo 1 inlet current
E:	X15561	<0-1>			Reefer Trafo 1 inlet current cos phi
F:	V15560	V			Reefer Trafo 1 outlet voltage
G:					
H:	Z15560	%			Reefer Trafo 1 efficiency
I:					
J:					
K:	X15566	<0-1>			Reefer Trafo 1 circuit breaker
L:					
M:	X15567	<0-1>	L=---	H=1.0	Reefer Trafo 1 circuit breaker trip
N:	C15567	A			Reefer Trafo 1 current high (trip limit)
O:	C15568	V			Reefer Trafo 1 voltage low (trip limit)
P:	C15569	sec			Reefer Trafo 1 current trip tc
Q:					
R:					
S:					
T:					

2.491 Page:7611 MD76** REEFER POWER TRANSFORMER no 2

A:					
B:	E15570	kW			Reefer Trafo 2 inlet power (active)
C:	E15571	kVAr			Reefer Trafo 2 inlet power (reactive)
D:	I15570	A	L=---	H=---	Reefer Trafo 2 inlet current
E:	X15571	<0-1>			Reefer Trafo 2 inlet current cos phi
F:	V15570	V			Reefer Trafo 2 outlet voltage
G:					
H:	Z15570	%			Reefer Trafo 2 efficiency
I:					
J:					
K:	X15576	<0-1>			Reefer Trafo 2 circuit breaker
L:					
M:	X15577	<0-1>	L=---	H=1.0	Reefer Trafo 2 circuit breaker trip
N:	C15577	A			Reefer Trafo 2 current high (trip limit)
O:	C15578	V			Reefer Trafo 2 voltage low (trip limit)
P:	C15579	sec			Reefer Trafo 2 current trip tc
Q:					
R:					
S:					
T:					

2.492 Page:7615 MD76** REEFER SEQUENCIAL LOAD SHEDDER

A:			
B:	X15580	<0-1>	Sequencial load shedder reset
C:			
D:	X15586	<0-1>	Main Breaker 1 load shed indication
E:	X15587	<0-1>	Main Breaker 2 load shed indication
F:	X15581	<0-1>	Reefer Group 1 load shed indication
G:	X15582	<0-1>	Reefer Group 2 load shed indication
H:	X15583	<0-1>	Reefer Group 3 load shed indication
I:	X15584	<0-1>	Reefer Group 4 load shed indication
J:			
K:			
L:	C15580	sec	Shedder sequence time
M:	C15581	<0-2>	Shedder spec: 0=group ,1=main ,2=all
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.493 Page:7900 MD79** DC24V EMERGENCY BUS

A:					
B:					
C:	X14420	<0-1>			Battery charger AC supply breaker
D:					
E:	X14431	<0-1>			DC24V Emerg light control breaker
F:					
G:	I14430	A			DC24V Emerg supply current (total)
H:					
I:	V14431	V	L=22.0	H=---	DC24V Emerg contr bus voltage
J:	I14431	A			DC24V Emerg contr bus current
K:	V14432	V			DC24V Emerg light bus voltage
L:	I14432	A			DC24V Emerg light bus current
M:					
N:	C14431	A			DC24V Emerg contr bus base load
O:	C14432	A			DC24V Emerg light bus base load
P:					
Q:					
R:					
S:					
T:					

2.494 Page:7901 MD79** 24V EMERGENCY BATTERY (1/2)

A:					
B:	C14400	<0-200>			Battery time speed up factor
C:					
D:	V14401	V	L=24.0	H=32.0	Battery voltage
E:	I14401	A			Battery inlet courrent (net)
F:	L14400	%			Battery electrolyte level (mean)
G:	D14400	g/cm3			Battery electrolyte density (mean)
H:	T14401	degC	L=---	H=45.0	Battery electrolyte temperature
I:	M14401	%			Battery electrode lead sulphate (mass)
J:	S14401	%			Battery electrode sulphation index
K:	V14402	V			Battery electrochemcal potensial
L:	R14402	mohm			Battery resistance (charge)
M:	R14403	mohm			Battery resistance (discharge)
N:	I14402	A			Battery self discharge current
O:	H14402	W			Battery heat dissipation
P:					
Q:	Q14401	Ah			Battery charge degree (abs)
R:	Q14402	%			Battery charge degree (rel)
S:					
T:					

2.495 Page:7902 MD79** 24V EMERGENCY BATTERY (2/2)

A:			
B:			
C:	C14401	Ah	Battery nom. charge capasity
D:	C14402	A	Battery nom. charge current
E:	C14403	A	Battery nom. self discharge current
F:			
G:	C14405	W/deg	Battery ambient heat transfer coeff
H:			
I:			
J:			
K:			
L:			
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.496 Page:7910 MD79** 24V EMERG BATTERY CHARGER (1/2)

A:			
B:	X14420	<0-1>	Battery charger AC supply breaker
C:			
D:	X14410	<0-1>	Battery charger on switch
E:	X14411	<0-2>	Battery charger auto control
F:	X14412	<0-1>	Battery charger manual control
G:			
H:	Y14411	<0-1>	Battery charger mode 1 : high current
I:	Y14412	<0-1>	Battery charger mode 2 : equalize mode
J:	Y14413	<0-1>	Battery charger mode 3 : float mode
K:	V14410	V	Battery charger voltage set point
L:	I14410	A	Battery charger output current
M:			
N:	E14412	kW	Battery charger AC power consumption
O:			
P:	C14410	V	Battery charger float mode voltage sp
Q:	C14411	V	Battery charger equal mode voltage sp
R:	C14412	V	Battery charger manu mode voltage sp
S:	C14413	V	Battery charger high mode voltage sp
T:	C14415	mV/degC	Battery charger temp compensation

2.497 Page:7911 MD79** 24V EMERG BATTERY CHARGER (2/2)

A:					
B:					
C:					
D:	T14411	min			Battery charger timer
E:					
F:	C14420	V			Battery charger transfer to high mode
G:	C14421	A			Battery charger transfer equal to float
H:					
I:	C14422	min			Battery charger high mode : min time
J:	C14423	min			Battery charger high mode : max time
K:	C14424	min			Battery charger equal mode : min time
L:	C14425	min			Battery charger equal mode : max time
M:	C14426	min			Battery charger float mode : min time
N:					
O:					
P:	C14427	degC			Battery charger high temp cutout limit
Q:					
R:					
S:					
T:					

2.498 Page:7920 MD79** BATTERY CELL ELECTROLYTE LEVELS

A:					
B:	L14401	%			Battery electrolyte level - cell 1
C:	L14402	%			Battery electrolyte level - cell 2
D:	L14403	%			Battery electrolyte level - cell 3
E:	L14404	%			Battery electrolyte level - cell 4
F:	L14405	%			Battery electrolyte level - cell 5
G:	L14406	%			Battery electrolyte level - cell 6
H:	L14407	%			Battery electrolyte level - cell 7
I:	L14408	%			Battery electrolyte level - cell 8
J:	L14409	%			Battery electrolyte level - cell 9
K:	L14410	%			Battery electrolyte level - cell 10
L:	L14411	%			Battery electrolyte level - cell 11
M:	L14412	%			Battery electrolyte level - cell 12
N:					
O:					
P:	X14401	<0-1>	L=---	H=---	Battery distilled water make up
Q:					
R:					
S:					
T:					

2.499 Page:7921 MD79** BATTERY CELL ELECTROLYTE DENSITIES

A:			
B:	D14401	g/cm3	Battery electrolyte density - cell 1
C:	D14402	g/cm3	Battery electrolyte density - cell 2
D:	D14403	g/cm3	Battery electrolyte density - cell 3
E:	D14404	g/cm3	Battery electrolyte density - cell 4
F:	D14405	g/cm3	Battery electrolyte density - cell 5
G:	D14406	g/cm3	Battery electrolyte density - cell 6
H:	D14407	g/cm3	Battery electrolyte density - cell 7
I:	D14408	g/cm3	Battery electrolyte density - cell 8
J:	D14409	g/cm3	Battery electrolyte density - cell 9
K:	D14410	g/cm3	Battery electrolyte density - cell 10
L:	D14411	g/cm3	Battery electrolyte density - cell 11
M:	D14412	g/cm3	Battery electrolyte density - cell 12
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.500 Page:8000 MD80** STEAM PLANT - MAIN VARIABLES (1/2)

A:					
B:	P05522	bar	L=---	H=---	Main line steam pressure
C:	V05521	<0-1>			Main line steam shut off valve
D:					
E:	P05411	bar	L=6.0	H=8.3	Boiler steam pressure
F:	L05410	mm	L=-150.0	H=150.0	Boiler water level
G:	T05400	degC			Boiler water temperature
H:					
I:	G04601	kg/h			TG steam supply line flow
J:	V04601	<0-1>			TG steam supply line valve
K:	G05474	kg/h			Process steam flow
L:	V05475	<0-1>			Process steam supply valve
M:					
N:	G05470	kg/h			Deck steam flow
O:	V05470	%			Deck steam load valve
P:					
Q:	G05472	kg/h			Accommodation steam flow
R:	V05479	%			Accommodation steam load valve
S:					
T:					

2.501 Page:8001 MD80** STEAM PLANT - MAIN VARIABLES (2/2)

A:					
B:	R05511	<0-1>			Boiler feedw pump 1
C:	R05512	<0-1>			Boiler feedw pump 2
D:					
E:	G05520	kg/h			Boiler steam flow
F:	G05513	kg/h			Boiler feedw flow
G:	P05510	bar	L=---	H=---	Boiler feedw pump discharge press
H:					
I:	T05515	degC	L=---	H=---	Boiler feedw temp (inlet boiler)
J:					
K:	V05526	<0-1>			Boiler safety valve
L:	G05525	kg/h			Boiler safety valve flow
M:					
N:	V05524	<0-1>			Boiler vent valve
O:	G05523	kg/h			Boiler vent valve flow
P:					
Q:	V05530	<0-1>			Boiler drain valve
R:	G05527	kg/h			Boiler drain valve flow
S:					
T:					

2.502 Page:8002 MD80** STEAM PLANT - FEEDW SUPPLY

A:					
B:	L05543	m	L=0.5	H=2.8	Feed water tank level
C:	T05542	degC	L=---	H=---	Feed water tank temperature
D:					
E:	V05510	<0-1>			Feed water tank outlet valve
F:	V05541	<0-1>			Feed water tank make up valve
G:	G05540	kg/h			Feed water tank make up flow
H:	G05537	kg/h	L=---	H=0.1	Feed water tank overflow
I:					
J:					
K:	G05544	kg/h			Return flow from steam condenser
L:	T05544	degC			Return temp from steam condenser
M:					
N:	G05546	kg/h			Return flow from misc. consumers
O:	T05547	degC			Return temp from misc. consumers
P:					
Q:					
R:					
S:					
T:					

2.503 Page:8010 MD80** STEAM PLANT - LEVEL CONTROL (1/2)

A:			
B:			
C:	X05233	<0-1>	Boiler level contr auto switch
D:	Z05234	%	Boiler level contr manual output
E:			
F:	L05230	mm	Boiler level contr set point
G:	L05231	mm	Boiler level contr input signal
H:	Z05252	%	Boiler level contr feed forw signal
I:	Z05232	%	Boiler level contr output signal
J:			
K:	V05514	%	Boiler feedw contr valve pos
L:			
M:			
N:	G05513	kg/h	Boiler feedw flow
O:	G05520	kg/h	Boiler steam flow
P:			
Q:			
R:			
S:			
T:			

2.504 Page:8011 MD80** STEAM PLANT - LEVEL CONTROL (2/2)

A:			
B:	X05235	<0-1>	Boiler level contr HW PID select
C:			
D:			
E:	C05242	%/mm	Boiler level contr gain
F:	C05243	sec	Boiler level contr integration time
G:	C05244	sec	Boiler level contr derivation time
H:	C05245	<0-10>	Boiler level contr derivation range
I:			
J:	C05241	%/kg/s	Boiler level contr feed forw constant
K:			
L:	C05247	sec	Boiler level contr sensor tc
M:	C05246	sec	Boiler level contr feedw valve tc
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.505 Page:8020 MD80** STEAM PLANT - PUMP CONTROL DATA

A:					
B:					
C:	X05511	<0-1>			Boiler feedw pump 1 auto
D:	X05512	<0-1>			Boiler feedw pump 2 auto
E:					
F:	C05510	mm			Feedw pump auto stop (high level)
G:	C05511	mm			Feedw pump auto start (low level)
H:	C05512	bar			Feedw pump auto stop (high press)
I:	C05513	bar			Feedw pump auto start (low press)
J:					
K:	X05378	<0-1>			Water circ pump 1 auto
L:	X05379	<0-1>			Water circ pump 2 auto
M:					
N:	C05370	kg/h			Water circ auto start (low flow)
O:					
P:					
Q:					
R:					
S:					
T:					

2.506 Page:8030 MD80** PURIFIER STEAM SUPPLY SYSTEM

A:					
B:	P05247	bar			Purifier steam reduction valve set point
C:	V05247	%			Purifier steam reduction valve
D:					
E:	P05250	bar	L=2.0	H=---	Purifier steam supply pressure
F:					
G:					
H:	G04023	kg/h			HFO Purif 1 heater steam flow
I:	G24023	kg/h			HFO Purif 2 heater steam flow
J:	G16011	kg/h			HFO Purif 3 heater steam flow
K:	G04223	kg/h			LO Purif 1 heater steam flow
L:	G24223	kg/h			LO Purif 2 heater steam flow
M:					
N:	G04123	kg/h			DO Purif heater steam flow
O:					
P:	G05250	kg/h			Purifier steam supply flow (total)
Q:					
R:					
S:					
T:					

2.507 Page:8100 MD81** OIL FIRED BOILER - MAIN VARIABLES

A:					
B:	P05411	bar	L=6.0	H=8.3	Boiler steam pressure
C:	L05410	mm	L=-150.0	H=150.0	Boiler water level
D:	T05400	degC			Boiler water temperature
E:					
F:	G05520	kg/h			Boiler steam flow
G:	G05513	kg/h			Boiler feedw flow
H:					
I:	G05440	kg/h			Burner fuel oil flow
J:	G05441	kg/h			Burner comb air flow
K:					
L:	T05401	degC			Boiler furnace temperature
M:	T05402	degC	L=---	H=600.0	Boiler flue gas temperature
N:	G05403	kg/h			Boiler flue gas flow
O:					
P:	Z05403	%	L=---	H=80.0	Boiler flue gas smoke content
Q:					
R:					
S:					
T:					

2.508 Page:8101 MD81** OIL FIRED BOILER - FUEL OIL SUPPLY

A:					
B:	V05427	<0-1>			Boiler FO selection valve (supply) (1=HFO)
C:					
D:	T05420	degC			Boiler HFO supply temperature
E:					
F:					
G:	R05426	<0-1>			Boiler FO supply line pump
H:					
I:	P05424	bar	L=---	H=---	Boiler FO supply line pressure
J:	G05423	kg/h			Boiler FO supply line flow
K:	T05422	degC			Boiler FO supply line temperature
L:					
M:	V05431	%			Boiler FO recirc valve pos
N:	G05430	kg/h			Boiler FO recirc valve flow
O:					
P:					
Q:	Z05425	<0-1>			Boiler FO supply line heating
R:					
S:					
T:					

2.509 Page:8102 MD81** OIL FIRED BOILER - BURNER MANAGEMENT

A:					
B:	X05450	<0-4>	L=---	H=1.0	Boiler trip indication
C:					
D:	Z05434	<0-1>			Burner FO heater on
E:					
F:	X05445	<0-1>	L=---	H=---	Burner control : Ready
G:	X05444	<0-1>			Burner control : Auto
H:	X05446	<0-1>			Burner control : Start/stop command
I:					
J:	X05451	<0-3>			Burner logic : State indication
K:	X05452	<0-1>	L=---	H=---	Burner logic : Purge on
L:	X05453	<0-1>	L=---	H=---	Burner logic : Air on
M:	X05454	<0-1>	L=---	H=---	Burner logic : Oil on
N:	X05455	<0-1>	L=---	H=---	Burner logic : Ignit on
O:	X05456	<0-1>	L=---	H=---	Burner logic : Flame on
P:					
Q:	R05435	<0-1>	L=---	H=---	Burner FO pump run (indication)
R:	R05436	<0-1>	L=---	H=---	Burner air fan run (indication)
S:					
T:					

2.510 Page:8110 MD81** OIL FIRED BOILER - MASTER CONTROL (1/2)

A:			
B:	X05550	<0-1>	Boiler master contr auto switch
C:	Z05551	%	Boiler master contr manual output
D:			
E:	P05553	bar	Boiler master press set point
F:	P05554	bar	Boiler master sensor signal
G:	Z05555	%	Boiler master output signal
H:	Z05557	%	Boiler master steam flow ff signal
I:			
J:			
K:	Z05567	%	Boiler master contr air ratio
L:			
M:	V05575	%	Boiler oil control valve position
N:	V05576	%	Boiler air damper position
O:			
P:			
Q:			
R:			
S:			
T:			

2.511 Page:8111 MD81** OIL FIRED BOILER - MASTER CONTROL (2/2)

A:			
B:	X05552	<0-1>	Boiler master contr HW PID select
C:			
D:			
E:	C05562	%/bar	Boiler master contr gain
F:	C05563	sec	Boiler master contr integration time
G:	C05564	sec	Boiler master contr derivation time
H:	C05565	<0-10>	Boiler master contr derivation range
I:			
J:			
K:	C05560	%/kg/s	Boiler master steam flow ff constant
L:	C05556	sec	Boiler master ff impulse filter tc
M:			
N:			
O:	C05566	sec	Boiler master contr sensor tc
P:			
Q:			
R:			
S:			
T:			

2.512 Page:8112 MD81** OIL FIRED BOILER - MISCELLANEOUS DATA

A:			
B:	C05571	bar	Burner stop press limit
C:	C05570	bar	Burner start press limit
D:			
E:	C05572	degC	Burner ready HFO temp limit
F:			
G:			
H:			
I:	C05573	bar	Boiler safety valve open press limit
J:	C05574	bar	Boiler safety valve close press limit
K:			
L:			
M:	C05453	bar	Boiler trip limit: hi-hi pressure
N:	C05452	mm	Boiler trip limit:i-hi level
O:	C05451	mm	Boiler trip limit: lo-lo level
P:			
Q:			
R:			
S:			
T:			

2.513 Page:8200 MD82** EXHAUST BOILER - MAIN VARIABLES

A:					
B:	G05306	ton/h			Exhaust boiler inlet flow
C:	G05307	ton/h			Exhaust boiler bypass flow
D:	V05310	%			Exhaust damper position
E:					
F:	T05302	degC	L=---	H=500.0	Exhaust temp inlet Exhaust Boiler
G:	T05314	degC			Exhaust temp after Superheater
H:	T05315	degC			Exhaust temp after Evaporator 1
I:	T05316	degC			Exhaust temp after Evaporator 2
J:	T05317	degC	L=---	H=---	Exhaust temp after Economizer
K:	T05320	degC	L=130.0	H=400.0	Exhaust temp after Boiler (inlet stack)
L:					
M:	T05324	degC			Steam temp inlet Superheater
N:	T05323	degC	L=---	H=400.0	Steam temp outlet Superheater
O:	G05324	kg/h			Steam flow inlet Superheater
P:					
Q:	T05325	degC			Feedw temp inlet Economizer
R:	T05322	degC	L=---	H=---	Feedw temp outlet Economizer
S:	G05326	kg/h			Feedw flow outlet Economizer
T:					

2.514 Page:8201 MD82** EXHAUST BOILER - AUXIL VARIABLES

A:			
B:			
C:	V05374	<0-1>	Exhaust Boiler SH drain valve
D:	G05371	kg/h	Exhaust Boiler SH drain flow
E:			
F:	Z05374	%	Exhaust Boiler SH water index
G:			
H:	C05374	<0-10>	Exhaust Boiler SH water time factor
I:			
J:			
K:			
L:			
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.515 Page:8207 MD82** EXHAUST BOILER - ISOLATION (test)

A:					
B:	X07035	<0-1>			Ex. Boil isolation
C:					
D:	C05303	ton/h			Exhaust flow inlet Ex. Boiler at isola
E:	C05304	degC			Exhaust temp inlet Ex. Boiler at isola
F:					
G:					
H:	C05330	<0-2>			Heat area (size) adjust - Superheater
I:	C05331	<0-2>			Heat area (size) adjust - Evaporator
J:	C05332	<0-2>			Heat area (size) adjust - Economizer
K:					
L:					
M:					
N:					
O:					
P:					
Q:					
R:					
S:					
T:					

2.516 Page:8210 MD82** EXHAUST BOILER - PRESSURE CONTROL (1/2)

A:					
B:	X05351	<0-1>			Exhaust Boiler contr auto switch
C:	Z05352	%			Exhaust Boiler contr manual output
D:					
E:	P05350	bar			Exhaust Boiler contr set point
F:	P05354	bar			Exhaust Boiler contr input signal
G:	Z05364	%			Exhaust Boiler contr feed forw signal
H:	Z05355	%			Exhaust Boiler contr output signal
I:					
J:	V05310	%			Exhaust damper position
K:	P05411	bar	L=6.0	H=8.3	Boiler steam pressure
L:					
M:					
N:	G05306	ton/h			Exhaust boiler inlet flow
O:	G05307	ton/h			Exhaust boiler bypass flow
P:					
Q:					
R:					
S:					
T:					

2.517 Page:8211 MD82** EXHAUST BOILER - PRESSURE CONTROL (2/2)

A:			
B:	X05353	<0-1>	Exhaust Boiler contr HW PID select
C:			
D:			
E:	C05356	%/bar	Exhaust Boiler contr gain
F:	C05357	sec	Exhaust Boiler contr integration time
G:	C05360	sec	Exhaust Boiler contr derivation time
H:	C05361	<0-10>	Exhaust Boiler contr derivation range
I:			
J:			
K:	C05364	%/kg/s	Exhaust Boiler contr feed forw gain
L:	C05365	sec	Exhaust Boiler contr feed forw tc 1
M:	C05366	sec	Exhaust Boiler contr feed forw tc 2
N:	C05363	sec	Exhaust Boiler contr sensor tc
O:	C05362	sec	Exhaust Boiler contr valve tc
P:	X05364	<0-2>	Exhaust Boiler contr valve hyst type
Q:	X05368	%	Exhaust Boiler contr valve hyst value
R:	X05365	<0-2>	Exhaust Boiler contr valve chara
S:			
T:			

2.518 Page:8220 MD82** EXHAUST BOILER - SOOTBLOWING

A:					
B:	P05321	mmWC	L=---	H=350.0	Exhaust boiler pressure drop
C:					
D:	T05302	degC	L=---	H=500.0	Exhaust temp inlet Exhaust Boiler
E:					
F:	T05340	degC	L=---	H=500.0	Exhaust Boiler SH metal temp
G:	T05337	degC			Exhaust Boiler EVA metal temp (sect 1)
H:	T05338	degC			Exhaust Boiler EVA metal temp (sect 2)
I:	T05341	degC	L=---	H=---	Exhaust Boiler ECO metal temp
J:					
K:	T05317	degC	L=---	H=---	Exhaust temp after Economizer
L:					
M:	X05377	<0-1>			Exhaust Boiler sootblowing steam on/off
N:	V05375	<0-1>			Exhaust Boiler sootblowing steam valve
O:	G05370	kg/h			Exhaust Boiler sootblowing steam flow
P:					
Q:					
R:					
S:					
T:					

2.519 Page:8221 MD82** EXHAUST BOILER - HEAT TRANSFER

A:			
B:			
C:	H05334	kW	Total heat transfer in Exhaust Boiler
D:			
E:			
F:	H05330	kW	Transfered heat - Superheater
G:	H05331	kW	Transfered heat - Evaporator Sect 1
H:	H05332	kW	Transfered heat - Evaporator Sect 2
I:	H05333	kW	Transfered heat - Economizer
J:			
K:			
L:			
M:			
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.520 Page:9000 MD90** EXTERNAL CONDITIONS

A:			
B:			
C:	X07015	<0-3>	Ship load (0,1,2,3)=(M,P,F,E)
D:	X06317	%	Ship load (pot meter input)
E:	X06334	%	Ship load (static)
F:			
G:	N00766	m/sec	Wind force (speed)
H:	X00767	deg	Wind direction (0-360 dgr)
I:	Z00770	Beauf	Sea condition (waves)
J:			
K:	T00760	degC	Ambient Air temperature
L:	X00760	%	Ambient Air humidity
M:	P00760	mbar	Ambient Air pressure
N:	T00757	degC	Ambient SW temperature
O:	Z00757	%	Ambient SW salinity
P:			
Q:	X07014	<0-3>	Ice condition (hull forces)
R:			
S:	X06315	m	Sea water depth
T:			

2.521 Page:9001 MD90** PROCESS DYNAMICS

A:			
B:			
C:	X07020	<0-1>	Emerg Run 1 (ME/DG)
D:	X07021	<0-1>	Emerg Run 2 (TG/boiler)
E:	X07022	<0-1>	Emerg Run 3 (el/fire/misc)
F:			
G:	X07023	<0-1>	Fixed Process 1 (air)
H:	X07024	<0-1>	Fixed Process 2 (steam)
I:	X07025	<0-1>	Fixed Process 3 (level/temp)
J:			
K:	X07004	<0-2>	Level Response (steady,slow,fast)
L:	X07006	<0-2>	Process Dynamics (norm,fast,v fast)
M:			
N:	X07003	<0-3>	Ship Dynamics (norm,fast,v fast)
O:	X07005	<0-1>	Stop Ship (mooring condition)
P:			
Q:			
R:			
S:			
T:			

2.522 Page:9002 MD90** EXTERNAL ELECTRIC/AIR/STEAM LOADS

A:			
B:	X07032	<0-1>	Electric isolation
C:	E06153	kW	Bus bar load at isolation
D:			
E:	X07012	<0-3>	Deck cranes (unsteady)
F:			
G:	X06080	<0-1>	Extra load - bus bar 1 (on/off)
H:	E06080	kW	Extra load - bas bar 1
I:	C06081	kW/sec	Extra load - bus bar 1 (rate)
J:	C06082	kW	Extra load - bus bar 1 (max)
K:			
L:	X06083	<0-1>	Extra load - bus bar 2 (on/off)
M:	E06083	kW	Extra load - bus bar 2
N:	C06084	kW/sec	Extra load - bus bar 2 (rate)
O:	C06085	kW	Extra load - bus bar 2 (max)
P:			
Q:	V07002	%	Deck Service Air
R:	V07001	%	Deck Steam
S:	V07000	%	Accommodation Steam
T:			

2.523 Page:9003 MD90** MISCELLANEOUS SETTINGS

A:					
B:					
C:	C06201	<0-2>			AC440 Earth leakage light display value
D:	C06202	<0-2>			AC220 Earth leakage light display value
E:	C06203	<0-2>			DC24V Earth leakage light display value
F:					
G:					
H:					
I:	C07001	<0-1>			HW: ECR control lever disable
J:	C07002	<0-1>			HW: BRD control lever disable
K:	C07003	<0-1>			HW: Local Control Console disable
L:					
M:					
N:					
O:	C07010	<0-2>			Drain valve color display logic (0,1,2)
P:	C07020	<0-2>			Tank level weather disturbance factor
Q:					
R:	C06400	m			Bilge well level short circuit limit
S:					
T:					

2.524 Page:9006 MD90** DIRECT LEVEL ADJUST

A:					
B:	L00301	m			HFO Service tank level (steady)
C:	L00341	m			MDO Service tank level (steady)
D:					
E:	L01151	m			ME FW exp tank level (steady)
F:					
G:	L01341	m			Main LO Service tank level (steady)
H:	L14011	m	L=---	H=---	ME TBCH LO Service tank level (steady)
I:	L06406	m			Fwd ER Bilge well level (steady)
J:					
K:	L05411	mm			Boiler water level (steady)
L:					
M:					
N:	L03046	%			DG 1 LO sump level (steady)
O:	L03246	%			DG 2 LO sump level (steady)
P:	L33046	%			DG 3 LO sump level (steady)
Q:	L43046	%			DG 4 LO sump level (steady)
R:					
S:					
T:					

2.525 Page:9008 MD90** TRIP STATE SURVEY

A:					
B:	X02413	<0-8>	L=---	H=1.0	ME serious damage
C:	X01642	<0-3>	L=---	H=1.0	ME TBCH 1 serious damage
D:	X01643	<0-3>	L=---	H=1.0	ME TBCH 2 serious damage
E:	X01644	<0-3>	L=---	H=---	ME TBCH 3 serious damage
F:					
G:	X04503	<0-2>	L=---	H=1.0	Start Air Compr 1 trip indication
H:	X04504	<0-2>	L=---	H=1.0	Start Air Compr 2 trip indication
I:	X04505	<0-2>	L=---	H=1.0	Serv Air Compr trip indication
J:					
K:	X06014	<0-5>	L=---	H=1.0	DG 1 circuit breaker trip
L:	X06034	<0-5>	L=---	H=1.0	DG 2 circuit breaker trip
M:	X36014	<0-5>	L=---	H=1.0	DG 3 circuit breaker trip
N:	X46014	<0-5>	L=---	H=1.0	DG 4 circuit breaker trip
O:					
P:	X03160	<0-5>	L=---	H=1.0	DG 1 trip indication
Q:	X03360	<0-5>	L=---	H=1.0	DG 2 trip indication
R:	X33160	<0-5>	L=---	H=1.0	DG 3 trip indication
S:	X43160	<0-5>	L=---	H=1.0	DG 4 trip indication
T:					

2.526 Page:9010 MD110** ME BRIDGE CONTROL (1/3)

A:					
B:					
C:	X07540	<0-2>	L=---	H=---	Responsibility transfer : BRIDGE
D:	X07541	<0-2>	L=---	H=---	Responsibility transfer : ECR
E:					
F:	Y07028	<0-1>			Bridge Telegraph System Enabled
G:					
H:	Y07550	<0-2>	L=---	H=---	Emergency Telegraph : MAX AHEAD
I:	X07550	<0-2>	L=---	H=---	Emergency Telegraph : FULL AHEAD
J:	X07551	<0-2>	L=---	H=---	Emergency Telegraph : HALF AHEAD
K:	X07552	<0-2>	L=---	H=---	Emergency Telegraph : SLOW AHEAD
L:	X07553	<0-2>	L=---	H=---	Emergency Telegraph : DEADS AHEAD
M:	X07554	<0-2>	L=---	H=---	Emergency Telegraph : STOP
N:	X07555	<0-2>	L=---	H=---	Emergency Telegraph : DEADS ASTERN
O:	X07556	<0-2>	L=---	H=---	Emergency Telegraph : SLOW ASTERN
P:	X07557	<0-2>	L=---	H=---	Emergency Telegraph : HALF ASTERN
Q:	X07560	<0-2>	L=---	H=---	Emergency Telegraph : FULL ASTERN
R:	Y07560	<0-2>	L=---	H=---	Emergency Telegraph : MAX ASTERN
S:					
T:					

2.527 Page:9011 MD110** ME BRIDGE CONTROL (2/3)

A:					
B:	Z02426	%			Control lever pos (bridge/instr)
C:	Z02427	%			Control lever pos (bridge/nsim)
D:					
E:	N02401	rpm			ME speed command (final)
F:					
G:					
H:	Z07534	<0-1>	L=---	H=---	ME control : Sea Mode
I:	Z07535	<0-1>	L=---	H=---	ME control : Maneuvering Mode
J:					
K:	Z07536	<0-1>	L=---	H=---	ME variable inj timing (VIT/FQS)
L:	Z07537	<0-1>	L=---	H=---	ME variable exh valve closing (VEC)
M:					
N:	Z07538	<0-1>	L=---	H=---	ME slow turning
O:	Z07539	<0-1>	L=---	H=---	ME cylinder pre/post lubrication
P:					
Q:	X07531	<0-1>			ME emergency stop (ECR)
R:					
S:					
T:					

2.528 Page:9015 MD110** WATCH CALLING SYSTEM - BRIDGE

A:			
B:			
C:	X07083	<0-2>	BRD Watch : Chief Engineer
D:	X07084	<0-2>	BRD Watch : Sec. Engineer
E:	X07085	<0-2>	BRD Watch : Third Engineer
F:	X07080	<0-2>	BRD Watch : alarm
G:	X07081	<0-1>	BRD Watch : buzzer
H:	X07082	<0-1>	BRD Watch : buzzer reset
I:			
J:			
K:	Y07029	<0-1>	Watch Calling System Enabled
L:			
M:	R07090	<0-1>	General Alarm Relay set/reset
N:			
O:			
P:			
Q:			
R:			
S:			
T:			

2.529 Page:9040 MD90** AUTO PULSAR SYSTEM

A:					
B:	X07600	<0-1>	L=---	H=---	Pulsar system active
C:					
D:	X07601	<0-1>			Include : ME speed command (ECR lever)
E:					
F:	X07611	<0-1>			Include : SW temp control
G:	X07603	<0-1>			Include : LTFW temp control
H:	X07602	<0-1>			Include : HTFW temp control
I:	X07604	<0-1>			Include : LO temp control
J:					
K:	X07605	<0-1>			Include : FO visco control
L:					
M:	X07606	<0-1>			Include : HFO purif control
N:	X07607	<0-1>			Include : LO purif control
O:	X07610	<0-1>			Include : DO purif control
P:					
Q:	X07612	<0-1>			Include : Boiler load valve (deck steam)
R:	X07613	<0-1>			Include : Boiler press control
S:	X07614	<0-1>			Include : Boiler level control
T:					

2.530 Page:9300 MD93** SCENARIO - FREE TAGS

A:	X93001	---	FREE TAG
B:	X93002	---	FREE TAG
C:	X93003	---	FREE TAG
D:	X93004	---	FREE TAG
E:	X93005	---	FREE TAG
F:	X93006	---	FREE TAG
G:	X93007	---	FREE TAG
H:	X93008	---	FREE TAG
I:	X93009	---	FREE TAG
J:	X93010	---	FREE TAG
K:	X93011	---	FREE TAG
L:	X93012	---	FREE TAG
M:	X93013	---	FREE TAG
N:	X93014	---	FREE TAG
O:	X93015	---	FREE TAG
P:	X93016	---	FREE TAG
Q:	X93017	---	FREE TAG
R:	X93018	---	FREE TAG
S:	X93019	---	FREE TAG
T:	X93020	---	FREE TAG