

# MEMOP operation

## Part II

PrimeServ Academy Copenhagen

**MAN PrimeServ**



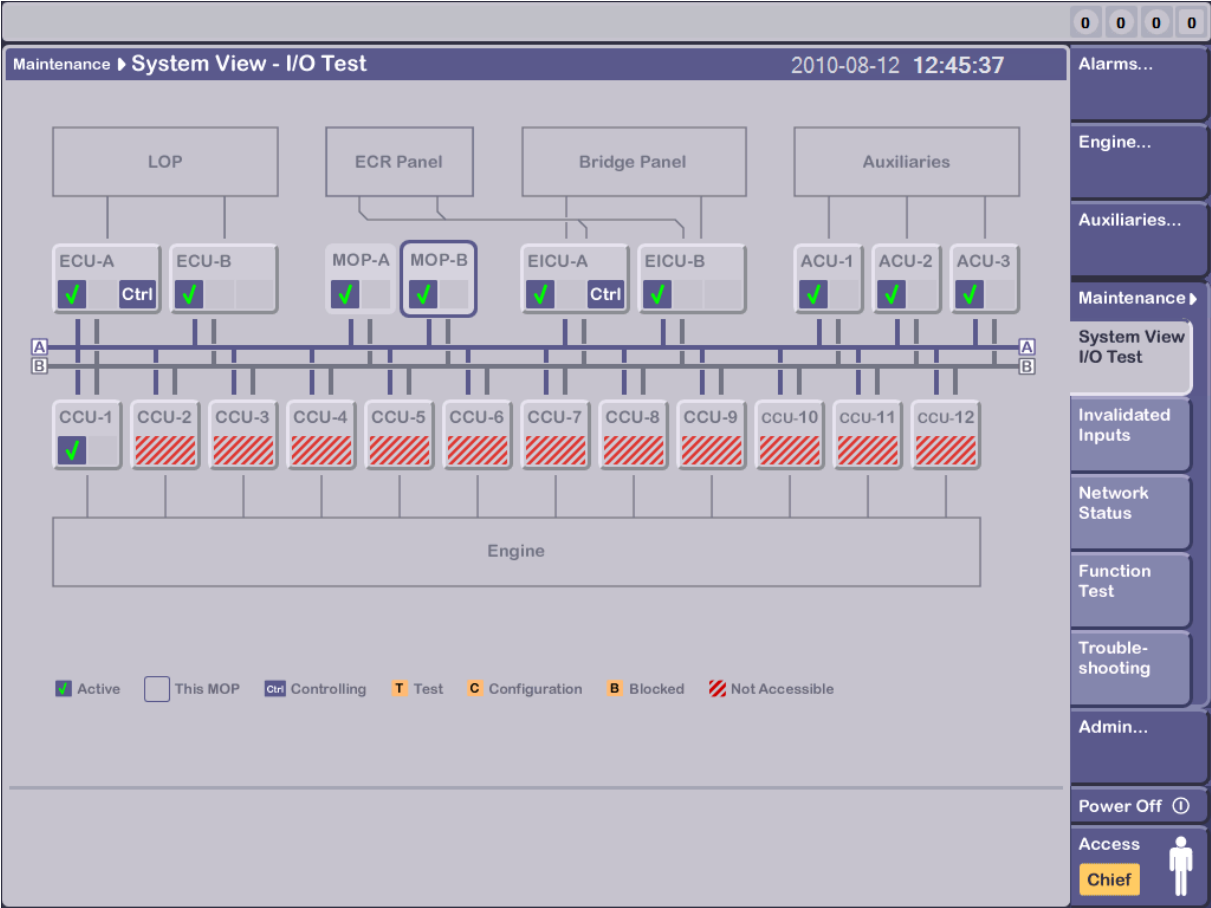
# Learning objectives

## Upon completion of this module you ...

- will be able to recognize the various screens in the MOP's.
- will be able to explain the information displayed in the system.



# Maintenance: system view, I/O test



# Maintenance: system view, I / O test

ECU-A

Suprv. Ch35,8601-A,Scavenge Air Pre Alarm ECUA\_8601-A04 09:04:07 3 4 0 0

Maintenance ▶ System View - I/O Test 2010-08-13 09:04:59 Alarms...

ECU-A

MPC Mode: Normal

Legend: A Analog Input, D Digital Input, A Analog Output, D Digital Output, Invalidated, Not used, Alarm, N/A Not available

#	Info	ID	Description	Process Value	#	Info	ID	Description	Process Value
21	D	2152-A	Local: Increase Limiter	OFF	44	D	4001-B	marker master	False
22	D	2151-A	Local: Stop	ON	45	D	4002-B	marker slave	False
23	D	2114-A	Local: Air Run	OFF	46	D	4003-B	quadrature master	False
24	D	2115-A	Local: Slow Turn	OFF	47	D	4004-B	quadrature slave	False
25	D	2153-A	Local: Take CMD	OFF					
26	A	1006	Local: Speed Set	0.7 RPM					
27									
28									
29									
30					52	D	011501	Lubricator Backup Signa	N/A
31									
32	D	1117-A	Blocked Start Air Distr	OFF					
33									
34	D	2001-A	Shut Down	OFF	61	D	2005-A	Reset Shut Down	ON
35	A	8601-A	Scavenge Air Pressure (	0.00 -	70	A	2184	Governor Index	0.0 %
					71	A	8501	Start Air Pressure	28.5 -
					80	D	1114	Slow Turn Valve	OFF
40	D	4001-A	marker master	False	82	D	1121-A	Main Start Air Valve	OFF
41	D	4002-A	marker slave	False	83	D	2206-A	Slow Down Local Indic	OFF
42	D	4003-A	quadrature master	False	84	D	2154-A	Local Take Command	OFF
43	D	4004-A	quadrature slave	False	85	D	2159-A	Increase Limit Indicati	OFF

Navigation: Maintenance ▶ System View I/O Test, Invalidated Inputs, Network Status, Function Test, Troubleshooting, Admin..., Power Off, Access Chief

# Maintenance: system view, I / O test

ECU-A, Channel-32

The screenshot displays a software interface for testing I/O channels. At the top, it shows the navigation path: Maintenance > System View - I/O Test, along with the date and time: 2010-08-13 09:09:19. Below this, the specific channel being tested is identified as ECU-A, Channel-32.

Ch. No	Status	Signal ID	Description
32	D	1117-A	Blocked Start Air Distr

The central part of the interface features a schematic diagram of the channel's wiring. It shows a terminal block labeled J32 with four pins: A, B, C, and D. Pin A is connected to 0V, pin B to a common ground, pin C to a 24V source through a switch, and pin D to a common ground. The signal path is shown as a switch symbol leading to a 'Logic Level' box (displaying 'OFF') and then to a 'Process Value' box (displaying 'OFF').

At the bottom, the 'Channel Setup' section defines the test parameters:

Binary Input	Supervised Contact	9 - 31 V : ON	1.8 - 7.5 V : OFF	< 1.6 V : Failure

On the right side of the interface, there is a vertical menu with various system monitoring and control options: Alarms..., Engine..., Auxiliaries..., Maintenance >, System View I/O Test (highlighted), Invalidated Inputs, Network Status, Function Test, Troubleshooting, Admin..., Power Off, and Access (with a user icon labeled 'Chief').

# Maintenance: system view, I / O test

ECU-A, Channel-35, invalidated

The screenshot shows a software interface for monitoring and testing I/O channels. The main window title is 'Suprv. Ch35,8601-A,Scavenge Air Pre' with a sub-header 'Cut-Out ECUA\_8601-A04' and a timestamp '09:04:07'. The interface is divided into several sections:

- Header:** 'Maintenance System View - I/O Test' with a date and time '2010-08-13 09:06:58'. On the right, there are status indicators: '3' (yellow circle), '4' (red circle), '0', and '1'.
- Channel Information:** A table with columns 'Ch. No', 'Status', 'Signal ID', and 'Description'. Row 1: '35', 'A' with a red lightning bolt icon, '8601-A', 'Scavenge Air Pressure ('.
- Diagram:** A schematic showing a 4-pin connector 'J35' with pins 'A', 'B', 'C', and 'D'. Pin 'A' is connected to '0V', pin 'C' to '+', and pin 'D' to '24V'. An 'A/D' converter block is connected to these pins. An arrow points from the 'Electrical Value' box to the 'Process Value' box.
- Electrical Value:** A red box containing '0.0 mA' and 'Signal Failure'.
- Process Value:** A yellow box containing '0.00 -' and 'Invalidated'.
- Channel Setup:** A section with 'Analog Input' and '4 - 20 mA'.
- Channel State:** Two buttons, 'Valid' and 'Invalid', with the 'Invalid' button highlighted.
- Warning:** A yellow box with the text: 'WARNING! Changing the STATUS of a channel may cause the system to malfunction.'
- Right Panel:** A vertical menu with buttons: 'Alarms...', 'Engine...', 'Auxiliaries...', 'Maintenance System View I/O Test', 'Invalidated Inputs', 'Network Status', 'Function Test', 'Trouble-shooting', 'Admin...', 'Power Off', and 'Access Chief'.



# Maintenance:

## Network status

Maintenance ▶ Network Status
2010-08-12 12:47:33

0 0 0 0

Observer →	MOP		EICU		ECU		ACU			SCU		CCU											
Observed ↓	A	B	A	B	A	B	1	2	3	1	1	2	3	4	5	6	7	8	9	10	11	12	
MOP	A	█	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
EICU	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
ECU	A	✓	✓	✓	✓	█	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
ACU	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
SCU	1	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
CCU	1	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	2	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	3	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	4	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	5	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	6	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!
	7	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!
	8	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!
	9	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!
	10	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!
	11	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!
	12	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!

Cabling Map		MOP		EICU		ECU		ACU			SCU		CCU											
Net	Reconfigs	A	B	A	B	A	B	1	2	3	1	1	2	3	4	5	6	7	8	9	10	11	12	
A	3	✓	A	✓	✓	✓	✓	✓	✓	✓	█	█	█	█	█	█	█	█	█	█	█	█	█	
B	3	✓	B	✓	✓	✓	✓	✓	✓	✓	█	█	█	█	█	█	█	█	█	█	█	█	█	

✓ OK
⬇ This MOP
! No Reply Single Channel
! No Communication

█ Not Accessible
▨ Not Relevant
█ Online but No Information

A Reference
B Cross Connection

Alarms...

Engine...

Auxiliaries...

Maintenance ▶

System View  
I/O Test

Invalidated  
Inputs

Network  
Status

Function  
Test

Trouble-  
shooting

Admin...

Power Off ⓘ

Access

Chief
👤



# Maintenance:

## Network status

! Net A not connected to ECUA
Alarm EICUA\_SNO-ECUA 09:14:29
2 2 0 0

Maintenance ▶ Network Status
2010-08-13 09:14:48

Observer →	MOP		EICU		ECU		ACU			SCU		CCU											
Observed ↓	A	B	A	B	A	B	1	2	3	1	1	2	3	4	5	6	7	8	9	10	11	12	
MOP	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
EICU	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
ECU	A	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
ACU	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
SCU	1	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
CCU	1	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	2	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	3	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	4	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	5	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	6	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	7	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	8	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	9	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	10	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	11	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	12	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	

Cabling Map		MOP		EICU		ECU		ACU			SCU		CCU											
Net	Reconfigs	A	B	A	B	A	B	1	2	3	1	1	2	3	4	5	6	7	8	9	10	11	12	
A	2	✓	A	✓	✓	!	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
B	2	✓	B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

✓ OK
⬇ This MOP
! No Reply Single Channel
! No Communication

⬇ Not Accessible
⬇ Not Relevant
⬆ Online but No Information

A Reference
B Cross Connection

Alarms...

Engine...

Auxiliaries...

Maintenance ▶

System View  
I/O Test

Invalidated  
Inputs

Network  
Status

Function  
Test

Trouble-  
shooting

Admin...

Power Off ⓘ

Access ⓘ  
**Chief**

# Maintenance:

## Network status

! Net A not connected to ECUA
Alarm EICUA\_SNO-ECUA
09:14:29
13
13
0
0

Maintenance ▶ Network Status
2010-08-13 09:16:20

Observer →	MOP		EICU		ECU		ACU			SCU		CCU											
Observed ↓	A	B	A	B	A	B	1	2	3	1	1	2	3	4	5	6	7	8	9	10	11	12	
MOP	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
EICU	A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
ECU	A	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
ACU	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
SCU	1	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
CCU	1	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	2	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	3	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	4	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	5	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	6	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	7	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	8	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	9	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	10	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	11	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	
	12	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	!	

Cabling Map		MOP		EICU		ECU		ACU			SCU		CCU											
Net	Reconfigs	A	B	A	B	A	B	1	2	3	1	1	2	3	4	5	6	7	8	9	10	11	12	
A	2	✓	A	✓	✓	!	!	✓	✓	✓	!	!	✓	!	!	!	!	!	!	!	!	!	!	
B	2	✓	B	✓	✓	!	!	✓	✓	✓	!	!	✓	!	!	!	!	!	!	!	!	!	!	

✓ OK
⬇ This MOP
! No Reply Single Channel
! No Communication

⬇ Not Accessible
⬇ Not Relevant

⬆ Online but No Information
A Reference
B Cross Connection

Alarms...

Engine...

Auxiliaries...

Maintenance ▶

System View

I/O Test

Invalidated Inputs

Network Status

Function Test

Trouble-shooting

Admin...

Power Off ⓘ

Access

Chief

# Maintenance:

## Function test HCU

! Hyd. press. deviates from setpoint		Normal	ECUA_5131	12:51:06	10	2	0	0						
Maintenance ▶ Function Test					2010-08-12 12:55:26				Alarms...					
HCU		Tacho		HPS					Engine...					
Cylinder:	1	2	3	4	5	6	7	8	9	10	11	12	Auxiliaries...	
1	Press 'Reboot' to set the CCU in Test Mode			-	OK								Maintenance ▶	
2	Press 'OK' to make an injection			-	OK								System View I/O Test	
3	FIVA Position Feedback, CH-30			15.0 - 19.0 mA	7.1								Invalidated Inputs	
	Fuel Pump Plunger Position, CH-31			8.0 - 20.5 mA	Invalid								Network Status	
	Exhaust Valve Position, CH-34			3.5 - 9.0 mA	3.8								Function Test	
4	Evaluate sound. Press 'OK' to continue			-	OK								Trouble- shooting	
5	Press 'OK' to open Exhaust Valve			-	OK								Admin...	
6	FIVA Position FeedBack, CH-30			3.0 - 7.0 mA	7.1								Power Off ⓘ	
	Fuel Pump Plunger Position, CH-31			3.5 - 10.0 mA	Invalid								Access Chief	
	Exhaust Valve Position, CH-34			10.0 - 20.5 mA	3.8									
7	Evaluate sound. Press 'OK' to continue			-	OK									
8	Press 'Save' (if allowed) to calibrate Fuel Plunger Feedback Sensor			-	Failed									
C. Cyclic Test of Exhaust Valve and/or make single fuel injections														
Start		Action/Message							Status					
1	Press 'Reboot' to set the CCU in Test Mode													
2	Start/Stop of cyclic test of Exhaust Valve and make single injections													
Calibrate Fuel Plunger Feedback Sensor														
ERROR: One or more values are outside measuring range (4-20 mA or +/- 10 V)				WARNING: One or more values are outside reference range				Save	Done	Abort Test				



# Maintenance:

## Function test tacho

The screenshot displays the 'Maintenance Function Test' interface. At the top, it shows the date and time '2010-08-12 13:14:10' and a status bar with four zeros. Below this, there are tabs for 'HCU', 'Tacho', and 'HPS'. The main content is divided into two sections: 'Pre-Start Test' and 'Setting Of Fine Adjust Parameters'. Each section has a 'Start' button and a table with columns for 'Action/Message', 'Reference', and 'Test Value'. The 'Pre-Start Test' section contains six steps, and the 'Setting Of Fine Adjust Parameters' section contains three steps. At the bottom, there is a 'Support' section with a 'Details' button and two numerical values: 'Delta Tacho-B' (0.00) and 'Tacho Alignment Deviation' (0.00). A tip box at the bottom center reads: 'TIP: Press Done when the PMI 0-Diagram is finished.' To the right of the tip are 'Done' and 'Abort Test' buttons. On the far right, there is a vertical sidebar with buttons for 'Alarms...', 'Engine...', 'Auxiliaries...', 'Maintenance', 'System View I/O Test', 'Invalidated Inputs', 'Network Status', 'Function Test', 'Trouble-shooting', 'Admin...', 'Power Off', and 'Access Chief'.

	Action/Message	Reference	Test Value
1	Turn engine to 10 DLG before TDC at Cyl. 1	ACT D:11	
2	Reboot CCUs and LCUs	-	
3	Turn engine in ahead direction to 2 DLG after TDC at Cyl. 1	ACT D:11	
4	Turn engine in ahead direction to 4/ DLG after TDC at Cyl. 1	ACT D:11	
5	Turn engine in ahead direction to 8/ DLG after TDC at Cyl. 1	ACT D:11	
6	Turn engine in ahead direction to 10/ DLG after TDC at Cyl. 1	ACT D:11	

	Action/Message	Reference	Test Value
1	Perform PMI 0-diagram	-	
2	Minimum speed required for valid measuring Delta Tacho B	>55.0 Rpm	
	Delta Tacho-B max measured	-1.00 - 1.00	
3	Enter trig offset ahead and setting of ECS parameters	-	

Support

Details

Delta Tacho-B 0.00

Tacho Alignment Deviation 0.00

1. Perform PMI 0-digram

TIP: Press Done when the PMI 0-Diagram is finished.

Done Abort Test

# Maintenance:

## Function test tacho

Maintenance ▶ Function Test
2010-08-12 13:14:10

HCU
Tacho
HPS

Pre-Start Test

	Action/Message	Reference	Test Value
1	Turn engine to 10 DLG before TDC at Cyl. 1	ACT D:11	
2	Reboot CCUs and LCUs	-	
3	Turn engine in ahead direction to 2 DLG after TDC at Cyl. 1	ACT D:11	
4	Turn engine in ahead direction to 4/ DLG after TDC at Cyl. 1	ACT D:11	
5	Turn engine in ahead direction to 8/ DLG after TDC at Cyl. 1	ACT D:11	
6	Turn engine in ahead direction to 10/ DLG after TDC at Cyl. 1	ACT D:11	

Setting Of Fine Adjust Parameters

	Action/Message	Reference	Test Value
1	Perform PMI 0-diagram	-	
2	Minimum speed required for valid measuring Delta Tacho B	>55.0 Rpm	
	Delta Tacho-B max measured	-1.00 - 1.00	
3	Enter trig offset ahead and setting of ECS parameters	-	

Support

Details

Delta Tacho-B 0.00

Tacho Alignment Deviation 0.00

1. Perform PMI 0-digram

TIP: Press Done when the PMI 0-Diagram is finished.

Done  
←

Abort Test

Alarms...

Engine...

Auxiliaries...

Maintenance ▶

System View  
I/O Test

Invalidated Inputs

Network Status

Function Test

Trouble-shooting

Admin...

Power Off ⓘ

Access  
Chief

# Maintenance:

## Function test HPS

Maintenance ▶ Function Test 2010-08-12 13:08:58

HCU Tacho HPS

Pump: 1 2 3

Preparation

Start	Action/Message	Reference	Test Value
1	Start one HPS Start-up Pump in local control	-	OK

Test

Start	Action/Message	Reference	Test Value
1	Set ACU1 into test mode	Test	Normal
2	Order Swash Plate to full ahead	Ahead	
3	Verify Swash Plate feedback (CH-34) and inspect Swash Plate angle visually	19.8-20.0 mA	
	Verify Proportional Valve (CH-30) feedback	19.8-20.0 mA	
4	Order Swash Plate to full astern	Astern	
5	Verify Swash Plate feedback (CH-34) and inspect Swash Plate angle visually	4.0-4.2 mA	
	Verify Proportional Valve (CH-30) feedback	4.0-4.2 mA	
6	Save calibration	-	
7	Start ACU1 in normal mode	Normal	

Reboot in Test Mode or Abort Test

**WARNING!**  
Changing to TEST mode will STOP the MPC from controlling the system.

Reboot Abort Test

Alarms...  
Engine...  
Auxiliaries...  
Maintenance ▶  
System View I/O Test  
Invalidated Inputs  
Network Status  
Function Test  
Troubleshooting  
Admin...  
Power Off ⓘ  
Access Chief

# Maintenance:

## Troubleshooting HCU

Maintenance ▶ Troubleshooting 2010-07-29 13:04:52

Alarms...  
Engine...  
Auxiliaries...  
Maintenance ▶  
System View I/O Test  
Invalidated Inputs  
Network Status  
Function Test  
Troubleshooting  
Admin...  
Power Off ⓘ  
Access Chief

HCY HPS HCU Events HPS Events

Cylinder: 1 2 3 4 5 6 7 8 9 10 11 12

MPC Mode: Normal

Fuel Plunger Position			Exhaust Valve Position		
CH-31	Max. - Min.	Stroke	CH-34	Max. - Min.	Stroke
---	0.0 mA	0.0 mm	3.8 mA		

MPC CCU-1

J34 J70 J31 J30

FIVA Position FB CH-30 7.1 mA

FIVA Valve Control CH-70 N/A

Hyd. Oil 194 Bar

**ATTENTION: Stopped Engine Only!**

**INSTRUCTION: Change CCU Mode to 'Test' to activate.**

Fuel Plunger: Inject Return Exhaust Valve: Open Close Cyclic Test



# Maintenance:

## Troubleshooting HPS

The screenshot displays a maintenance troubleshooting interface for HPS. The top navigation bar includes 'Maintenance > Troubleshooting' and the date/time '2010-07-29 13:06:06'. Below this, there are tabs for 'HCU', 'HPS', 'HCU Events', and 'HPS Events', and a 'Pump:' selector with options 1, 2, and 3.

The main area shows a schematic diagram of the HPS system. Key components and their status are as follows:

- MPC Mode:** Normal
- Prop. Valve Feedback:** CH-30: 7.7 mA, -70 %
- Swash Plate Pos.:** CH-34: ---
- Hyd. Oil Press.:** CH-31: 14.4 mA, 195 Bar
- Inlet Oil Press.:** CH-32: 14.9 mA, 2.7 Bar
- Prop. Valve Amp. OK:** CH-20: ON
- Prop. Valve Amp. SP:** CH-70: N/A
- Prop. Valve Amplifier:** J91, J90
- Sensors/Actuators:** J31, J70, J20, J34, J30, J32

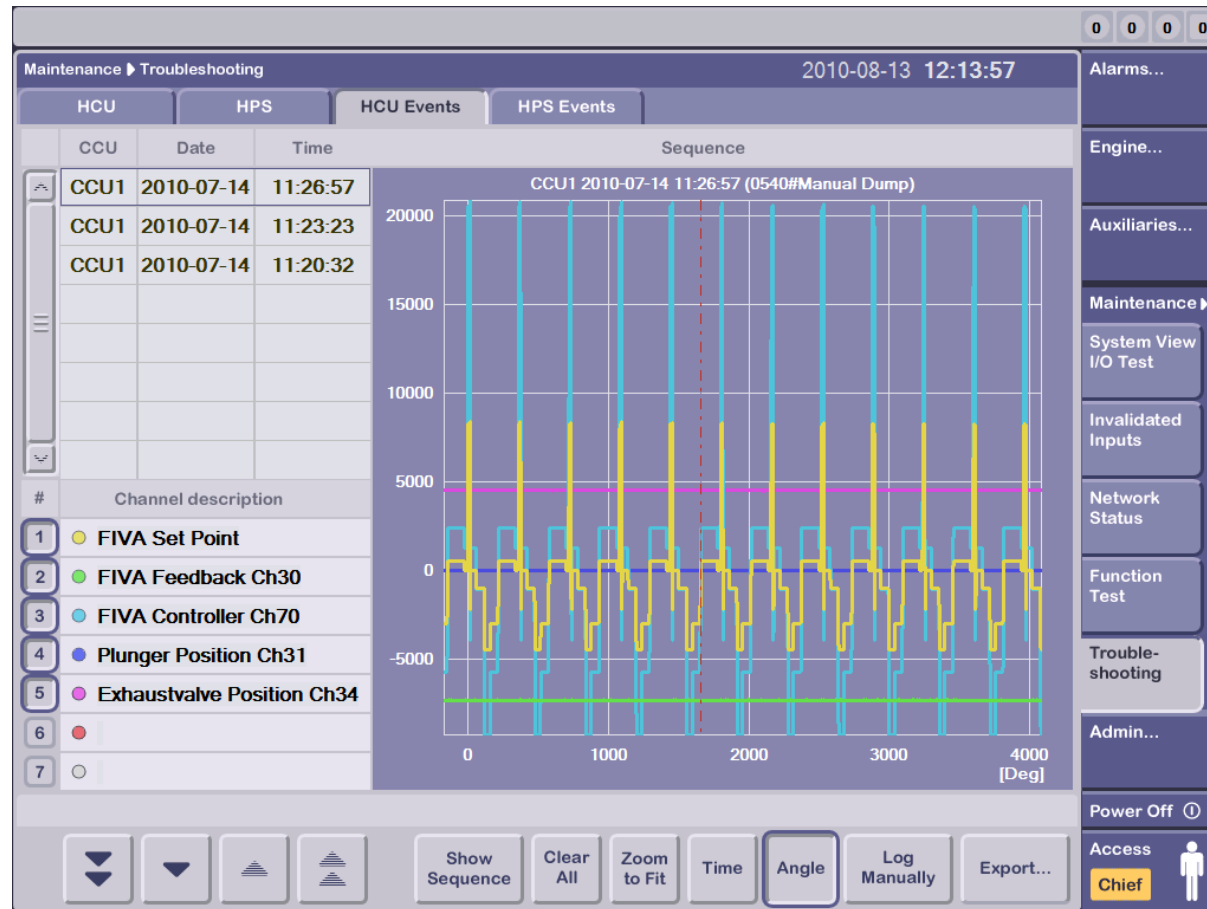
The schematic shows the MPC ACU-1 connected to the Prop. Valve Amplifier and various sensors. A red line indicates a fault or warning on the hydraulic line.

At the bottom, there is a 'Swash plate position set point' section with an 'ATTENTION: Stopped Engine Only!' warning and an 'INSTRUCTION: Change MPC Mode to 'Test' to activate.' message. Below this are control buttons for 'Current', 'New', and a 'Sat' button with a left arrow.

The right sidebar contains a vertical menu with the following items: Alarms..., Engine..., Auxiliaries..., Maintenance >, System View I/O Test, Invalidated Inputs, Network Status, Function Test, Troubleshooting (highlighted), Admin..., Power Off, and Access Chief.

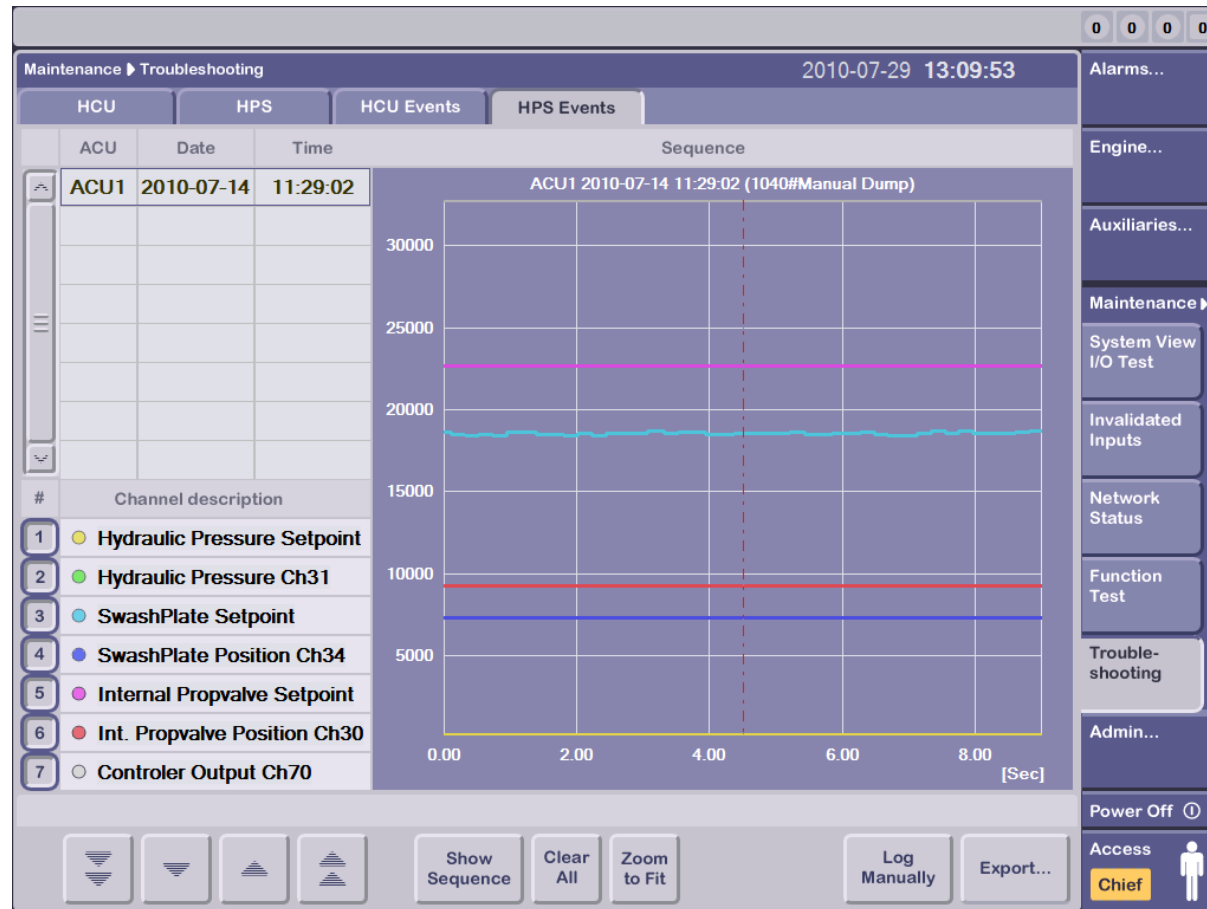
# Maintenance:

## Troubleshooting HCU events



# Maintenance:

## Troubleshooting HPS events



# Maintenance:

## Troubleshooting HPS events

! App. not running on CCU1    Normal    EICUB\_SAR-CCU1    15:52:24    167 (11) 35 0

Maintenance ▶ Troubleshooting    2013-07-04 16:27:42    Alarms

HCU			HPS			Insulation		
Unit ID	Insulation [kOhm]	Noise Pulse Counter	Unit ID	Insulation [kOhm]	Noise Pulse Counter	Unit ID	Insulation [kOhm]	Noise Pulse Counter
ACU1	120	0	CCU1	120	0			
ACU2	120	0	CCU2	120	0			
ACU3	120	0	CCU3	120	0			
ECUA	120	0	CCU4	120	0			
ECUB	120	0	CCU5	120	0			
EICUA	120	0	CCU6	120	0			
EICUB	120	0	CCU7	120	0			
			CCU8	120	0			
			CCU9	120	0			
			CCU10	120	0			
			CCU11	120	0			
			CCU12	120	0			

Engine

Auxiliaries

Maintenance

System View

I/O Test

Invalidated Inputs

Network Status

Function Test

Trouble-Shooting

Admin

Power Off ⓘ

Chief ⓘ

# Admin:

## Version

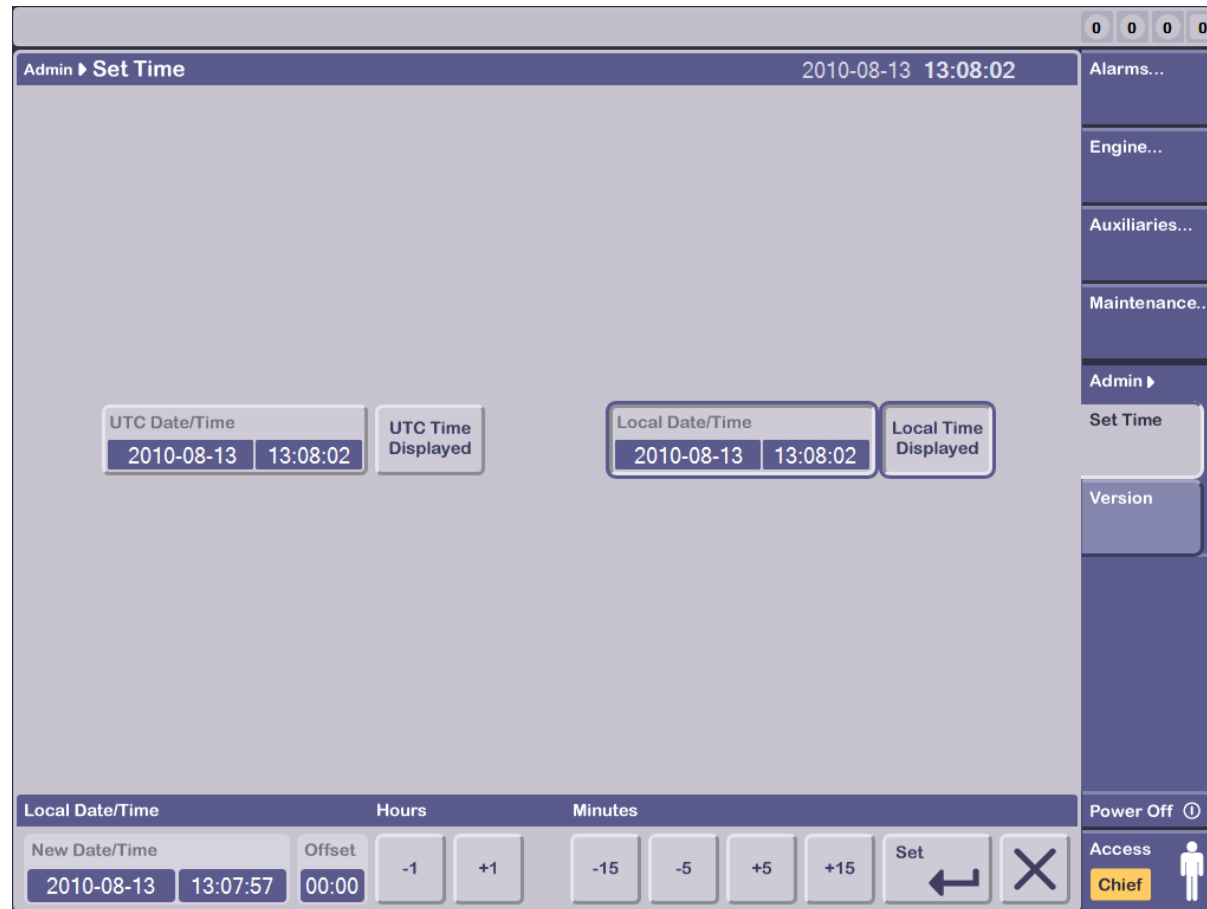
The screenshot displays the 'Admin Version' interface. At the top, the title bar shows 'Admin Version' and the date/time '2010-08-13 12:28:26'. Below this, there are several input fields for system identification: Product Name & Version (ME-ECS-SW-0905-6.16), Engine Group No. (Simulator), IMO No. (Sim 8), Engine Builder (MD-CPH), and Eng. No. (8). The main data area is a table with two sections: 'Controller Unit' and 'Parameters Check Sums'. The table has columns for ID, Addr., Type, User, Chief, Service, Design, IMO Design, and IMO Chief. The data rows are as follows:

Controller Unit			Parameters Check Sums					
ID	Addr.	Type	User	Chief	Service	Design	IMO Design	IMO Chief
ACU1	224	ACU	0	132	17757	3580	0	0
ACU2	225	ACU	0	131	17757	3582	0	0
ACU3	226	ACU	0	131	17690	3584	0	0
AXU1	222	AXU	0	8	4400	0	0	0
CCU1	240	CCU	0	2	27943	62776	16685	15472
ECUA	208	ECU	0	7406	91064	53613	43433	19852
ECUB	209	ECU	0	7408	91276	53613	43433	19852
EICUA	192	EICU	0	387	93308	496	0	0
EICUB	193	EICU	0	386	93365	496	0	0
ESU	223	EngSim	0	0	10508	0	0	0

At the bottom of the interface, there are buttons for 'Refresh' and 'Export...'. On the right side, there is a vertical navigation menu with options: Alarms..., Engine..., Auxiliaries..., Maintenance..., Admin (selected), Set Time, Version, Power Off, and Access (with a user icon and 'Chief' label).

# Admin:

## Set time



# Alarms:

## Alarm list

The screenshot displays an alarm management interface. At the top, a status bar shows a green bar for 'Startup Pump Ctrl Failed' (Normal), a yellow bar for 'HCU Oil Leakage' (Alarm), and a red bar for 'Startup Pump Ctrl Failed' (Normal). The interface includes a table of active alarms, a right-hand navigation menu, and a bottom control bar.

Ack	Description	Status	ID	Time
!	HCU Oil Leakage	Alarm	CCU1_0227	12:45:41
!	Startup Pump Ctrl Failed	Normal	ACU1_070210	12:43:59
✓	GROUP: Standby pump started	Alarm	GROUP-SPS-ECU	12:32:50
✓	— Standby pump started	Alarm	ECUA_510212	12:32:50
✓	— Standby pump started	Alarm	ECUB_510212	12:32:50

Right-hand navigation menu:

- Alarms ▾
- Alarm List
- Event Log
- Manual Cut-Out List
- Channel List
- Engine...
- Auxiliaries...
- Maintenance...
- Admin...
- Power Off ⓘ
- Access ⓘ

Bottom control bar:

- ✓Ack.
- ✓All
- Cut Out
- + / -
- Line/of 3 / 5
- Filter icon
- Down arrow
- Up arrow
- Info

# Alarms:

## Alarm list

The screenshot displays an alarm management interface. At the top, a summary bar shows a warning icon, the text 'Startup Pump Ctrl Failed', the status 'Normal', ID 'ACU1\_070210', time '12:43:59', and counts '2', '3', '1', '0'. Below this is the 'Alarms Alarm List' section, which is a table with columns for Ack, Description, Status, ID, and Time. The table lists three alarms: 'HCU Oil Leakage' (Alarm, CCU1\_0227, 12:45:41), 'Startup Pump Ctrl Failed' (Normal, ACU1\_070210, 12:43:59), and 'GROUP: Standby pump started' (Alarm, GROUP-SPS-ECU, 12:32:50). The 'GROUP: Standby pump started' alarm is selected, and its details are shown in the 'Info' section below. The details include a description, cause, effect, and action. The cause lists 'HPS electric driven start-up pump failure, or Hydraulic leakage'. The effect is 'Engine may not start due to low hydraulic pressure'. The action includes a check procedure and a note to switch the master pump from 'Auxiliaries' to 'Hydraulic System'. On the right side of the interface, there is a vertical menu with buttons for 'Alarms', 'Alarm List', 'Event Log', 'Manual Cut-Out List', 'Channel List', 'Engine...', 'Auxiliaries...', 'Maintenance...', 'Admin...', 'Power Off', and 'Access'. At the bottom, there is a control bar with buttons for 'Ack.', 'All', 'Out Out', a '+' sign, 'Line/of 3 3', and several navigation icons.

Ack	Description	Status	ID	Time
!	HCU Oil Leakage	Alarm	CCU1_0227	12:45:41
!	Startup Pump Ctrl Failed	Normal	ACU1_070210	12:43:59
✓	GROUP: Standby pump started	Alarm	GROUP-SPS-ECU	12:32:50

**Info**  
GROUP: Standby pump started - GROUP-SPS-ECU

**Description:** The Standby startup pump has been started

**Cause:** Master start-up cannot build hydraulic pressure within time limits or cannot maintain hydraulic pressure, because of:  
- HPS electric driven start-up pump failure, or  
- Hydraulic leakage

**Effect:** Engine may not start due to low hydraulic pressure

**Action:** Check:  
- If both start-up pumps are running  
- Local pressure gauge on start-up pumps  
- For hydraulic leakages

If hydraulic pressure can be maintained when both pumps are running, switch master pump: 'Auxiliaries' -> 'Hydraulic System'



# Alarms:

## Event log

! Startup Pump Ctrl Failed				Normal	ACU1_070210	12:43:59	1	3	1	0
Alarms ▾ Event Log <span style="float: right;">2010-08-13 12:58:50</span>										
ID: Unit_Tag	Date	Time	Description	Status	MCo	ACo	Ack			
<i>CCU1_0227</i>	<i>2010-08-13</i>	<i>12:58:17,62</i>	<i>HCU Oil Leakage</i>	<i>Alarm</i>			<i>X</i>			
ACU1_0210	2010-08-13	12:49:21,16	Blower 1 Ctrl Failed	Normal	X		X			
ACU1_0210	2010-08-13	12:48:56,25	Blower 1 Ctrl Failed	Normal	X					
ACU1_0210	2010-08-13	12:48:30,36	Blower 1 Ctrl Failed	Normal						
ACU1_0210	2010-08-13	12:48:25,33	Blower 1 Ctrl Failed	Alarm						
ECUA_8601-A04	2010-08-13	12:48:21,76	Suprv. Ch35,8601-A,Scavenge Air Pre	Normal			X			
ECUB_8601-B04	2010-08-13	12:48:17,10	Suprv. Ch35,8601-B,Scavenge Air Pre	Normal			X			
ECUB_02012240	2010-08-13	12:48:15,43	No Valid Pscav Sensor Available	Normal			X			
ECUA_02012240	2010-08-13	12:48:12,35	No Valid Pscav Sensor Available	Normal			X			
ECUB_02012240	2010-08-13	12:48:04,13	No Valid Pscav Sensor Available	Normal						
ECUA_02012240	2010-08-13	12:48:04,06	No Valid Pscav Sensor Available	Normal						
ECUB_8601-B04	2010-08-13	12:48:03,27	Suprv. Ch35,8601-B,Scavenge Air Pre	Normal						
ECUA_8601-A04	2010-08-13	12:48:03,26	Suprv. Ch35,8601-A,Scavenge Air Pre	Normal						
ECUA_02012240	2010-08-13	12:47:23,03	No Valid Pscav Sensor Available	Alarm						
ECUB_02012240	2010-08-13	12:47:22,10	No Valid Pscav Sensor Available	Alarm						
ECUB_8601-B04	2010-08-13	12:47:17,77	Suprv. Ch35,8601-B,Scavenge Air Pre	Alarm						
ECUA_8601-A04	2010-08-13	12:47:17,75	Suprv. Ch35,8601-A,Scavenge Air Pre	Alarm						
CCU1_0227	2010-08-13	12:45:41,67	HCU Oil Leakage	Alarm						
ACU1_070210	2010-08-13	12:44:10,53	Startup Pump Ctrl Failed	Normal						
ACU1_070210	2010-08-13	12:43:59,53	Startup Pump Ctrl Failed	Alarm						

Unit/Tag Filter

Time Span Filter

Go to Date/Time

Export...

⏴

⏵

⏶

⏷

⏸

⏹

Info

Power Off ⓘ

Access

# Alarms:

Event log - filter

The screenshot displays an industrial alarm management interface. At the top, a status bar shows an alarm: "Startup Pump Ctrl Failed" with status "Normal", unit tag "ACU1\_070210", and time "12:43:59". Below this is the "Alarms Event Log" for "2010-08-13 13:01:01".

ID: Unit_Tag	Date	Time	Description	Status	MCo	ACo	Ack
CCU1_0227	2010-08-13	12:58:17,62	HCU Oil Leakage	Alarm			X
ACU1_0210	2010-08-13	12:49:21,16	Blower 1 Ctrl Failed	Normal	X		X
ACU1_0210	2010-08-13	12:48:56,25	Blower 1 Ctrl Failed	Normal	X		
ACU1_0210	2010-08-13	12:48:30,36	Blower 1 Ctrl Failed	Normal			
ACU1_070210	2010-08-13	12:44:10,53	Startup Pump Ctrl Failed	Normal			
ACU1_070210	2010-08-13	12:43:59,53	Startup Pump Ctrl Failed	Alarm			

A "Unit/Tag Filter" keyboard is overlaid on the table, showing "Unit: ACU1" and "Tag: 0210". The keyboard includes numeric keys, letters, and function keys like "Fetch Selected", "Clear", "Apply", and "BS".

On the right side, a sidebar contains navigation buttons: "Alarms List", "Event Log", "Manual Cut-Out List", "Channel List", "Engine...", "Auxiliaries...", "Maintenance...", "Admin...", "Power Off", and "Access".

At the bottom, a control bar includes buttons for "Unit/Tag Filter", "Time Span Filter", "Go to Date/Time", "Export...", and navigation arrows.

# Alarms:

## Manual cut - out list

Startup Pump Ctrl Failed      Cut-Out ACU1\_070210      12:43:59      3 0 7 0

Alarms Manual Cut-Out List      2010-08-13 13:04:34

ID	Date	Time	Description	Status	Limit	Current
ECUA_1117-A04	2010-08-13	13:04:19	Suprv. Ch32,1117-A,Blocked Start Ai	Normal	-	-
ACU2_0706	2010-08-13	13:03:37	Hydraulic leakage	Alarm	-	-
CCU1_0227	2010-08-13	13:02:50	HCU Oil Leakage	Normal	-	-
ACU1_070210	2010-08-13	13:02:43	Startup Pump Ctrl Failed	Normal	-	-
ECUA_510212	2010-08-13	13:02:39	Standby pump started	Alarm	-	-
ECUB_510212	2010-08-13	13:02:27	Standby pump started	Alarm	-	-
ACU1_0210	2010-08-13	12:48:56	Blower 1 Ctrl Failed	Normal	-	-

Alarms List

Event Log

Manual Cut-Out List

Channel List

Engine...

Auxiliaries...

Maintenance...

Admin...

Power Off ⓘ

Access ⓘ

Reactivate

Line/of ... 7

Info

# Alarms:

## Channel list



0 0 0 0

Alarms Channel List 2010-08-13 13:07:10

ID	Date	Time	Description	Status	MCo	ACo	Ack
ACU1_010110	2010-08-13	12:43:01	No Commands from ECU A	Normal			X
ACU1_010111	2010-08-13	12:43:01	No Commands from ECU B	Normal			X
ACU1_0210	2010-08-13	13:06:08	Blower 1 Ctrl Failed	Normal			X
ACU1_070119	2010-08-13	12:31:03	Pump ctrl failure	Normal			X
ACU1_07013604	2010-08-13	12:32:04	PV_AMP Amp. Current Supervision	Normal			X
ACU1_07013605	2010-08-13	12:32:04	PV_AMP Amp. thermal protect. act.	Normal			X
ACU1_070210	2010-08-13	13:06:30	Startup Pump Ctrl Failed	Normal			X
ACU1_0708	2010-08-13	12:31:03	Hydraulic leakage (shutdown level)	Normal			X
ACU1_0724	2010-08-13	12:31:03	Double pipe press. high	Normal			X
ACU1_0725	2010-08-13	12:31:03	Double pipe press. low	Normal			X
ACU1_1109-A04	2010-08-13	12:30:57	Suprv. Ch23,1109-A,Turning gear dis	Normal			X
ACU1_1110-A04	2010-08-13	12:30:57	Suprv. Ch22,1110-A,Turning gear eng	Normal			X
ACU1_1111-A04	2010-08-13	12:30:57	Suprv. Ch21,1111-A,Main start valve	Normal			X
ACU1_1112-A04	2010-08-13	12:30:57	Suprv. Ch24,1112-A,Main start valve	Normal			X
ACU1_1116-A04	2010-08-13	12:30:57	Suprv. Ch25,1116-A,Start air dist I	Normal			X
ACU1_1201-104	2010-08-13	12:43:21	Suprv. Ch31,1201-1,Hydraulic Pressu	Normal			X
ACU1_1202-A03	2010-08-13	12:30:59	Suprv. Ch80,1202-A,System bypass op	Normal			X
ACU1_1204-104	2010-08-13	12:43:21	Suprv. Ch32,1204-1,Lube oil pressur	Normal			X
ACU1_123604	2010-08-13	12:30:57	Suprv. Ch27,1236,Hyd. leak shutdown	Normal			X
ACU1_1238-104	2010-08-13	12:30:59	Suprv. Ch30,1238-1,Prop. Valve Feed	Normal			X
ACU1_8501-A04	2010-08-13	12:30:58	Suprv. Ch37,8501-A,Starting air pre	Normal			X

Alarms Channel List

Alarm List

Event Log

Manual Cut-Out List

Channel List

Engine...

Auxiliaries...

Maintenance...

Admin...

Power Off ⓘ

Access ⓘ

Chief ⓘ

Line/of  
... 553

Info

Out-Out

Reactivate

# Disclaimer

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