
	<b>CB PROCESS/H2S/UTILITY ALARMS DCS Manual</b>				
	Document Title				
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	<b>Section</b>	Process AB	<b>02</b>	<b>TNH-200-103-006</b>	<b>1 of 13</b>
	<b>Area</b>	Common			

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Rev. No.	Effective Date	Revised Page (s)	Description	Prepared by	Checked by	Noted by	Approved by
01			New	DJN	HM	ON	FM
02		3,13 7,8,9,10,11,12	Revision of table and Annex 7 for Patlite® Beacon of Process B, Process H2S and Utility Update New Graphics for Process A, Process B, Process H2S and Utility Alarms	DJN	TY	ME	MK


Prepared by	Checked by	Noted by	Approved by
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## I. General Description

These graphics screens contain tabulation of critical equipment and instruments with their corresponding normal operating values (under Normal Indication column) and current operating values (under Present Indication column). There are a total of 6 ALARM DCS graphic screens used by DCS operators in the Plant.

During abnormal conditions when the Present Indication of the instrument or equipment is not the same with the Normal Indication of the field, the alarm in the DCS will be activated in order to alert the DCS operator and for him/her to make immediate countermeasure. Alarms in the DCS are both audible and visible alarms which are provided by both the DCS-computer unit and the annunciator - Patlite® in the DCS room. The alarms in the DCS room are classified into 5 main groups; Process A alarms, Process B alarms, Process H2S alarms, Utility alarms and Environment alarms. Each of the five alarms have different Patlite® beacon-horn in order for the DCS operator to easily distinguish the source of the alarm. Refer to Table 1-1 for alarms in DCS.

*Table 1-1: Group Alarms in DCS Room*

Alarm Group	Graphic Screen	Alarm Area	DCS Room Alarm			Remarks
			DSC Alarm	Patlite® Beacon*	Horn*	
Process A Alarms	CB PROCESS ALARMS A 102 HPAL	102 (HPAL) 103 (PRE-NTRL, CCD) 104 (NTRL)	Audible Alarm	Green Beacon	Sound 1	Refer to <b>Annex 1</b>
	CB PROCESS ALARMS A 202 HPAL	202 (HPAL) 131 (MULTI-PURPOSE) 108 (FNTRL) 114 (FLOC) 115 (NaOH)	Audible Alarm	Green Beacon	Sound 1	Refer to <b>Annex 2</b>
Process B Alarms	CB PROCESS ALARMS B	105 (De-Zn) 106 (MS) 111 (L/S)	Audible Alarm	Blue Beacon	Sound 2	Refer to <b>Annex 3</b>
Process H2S Alarms	CB PROCESS ALARMS H2S 1	109 (H2S) 209 (H2S) Common (H2S)	Audible Alarm	Orange Beacon	Sound 3	Refer to <b>Annex 4</b>
	CB PROCESS ALARMS H2S 2	Scrubber (H2S) Utility (H2S) Interlock	Audible Alarm	Orange Beacon	Sound 3	Refer to <b>Annex 5</b>
Utility Alarms	CB UTILITY ALARMS	416 (ACID) 422 (METHANOL) 513 (WATER) 521 (AIR) 524 (SUPERNATANT) 525 (NITROGEN) 530 (COOLING WATER)	Audible Alarm	White Beacon	Sound 4	Refer to <b>Annex 6</b>
Environment Alarms	ENVIRONMENT MONITORING	Plant Site environment monitoring instruments	Audible Alarm	Red Beacon	Sound 5	Refer to <b>TNH-200-103-7</b>

Alarm Group	Graphic Screen	Alarm Area	DCS Room Alarm			Remarks
			DSC Alarm	Patlite® Beacon*	Horn*	
Environment Alarms	MS ENVIRONMENT	De-Zn and MS H2S gas detectors	Audible Alarm	Red Beacon	Sound 5	Refer to <b>TNH-200-103-8</b>
	H2S ENVIRONMENT	H2S Plant gas detectors	Audible Alarm	Red Beacon	Sound 5	Refer to <b>TNH-200-103-9</b>

\* Refer to **Annex 7** for Patlite® Beacon and Alarm

These screens are provided with common acknowledge switch and common reset switch to acknowledge and reset alarms in the DCS room and in the field whenever abnormal operation condition occurs. Furthermore, the CB PROCESS ALARMS H2S 2 has 3 additional interlock acknowledge buttons for acknowledging the three interlock items present in the screen.

Link buttons (► and ◄) are provided for CB Process Alarms A 102 HPAL and CB Process Alarms A 202 HPAL and CB Process Alarms H2S 1 and CB Process Alarms H2S 2. Each alarm screen is provided with link buttons to all of the DCS alarm screens and also link button to Graphic Overview screen is also present.

## II. Important Monitoring Items

### 1. Controllers' Description

None

### 2. Instruments' Description

None

### 3. Motors

None

### 4. Actuated Valves

None

### 5. Switches

- 1) 000HS901: DCS Common Acknowledge Switch

The common acknowledge (ACK) switch is used by the DCS operator to acknowledge the alarm and silence the audible alarms/horns in the DCS room and in the field. However, the alarm beacon shall remain lighted until the alarm has been reset.



Figure 2-1: 000HS901 – Common Acknowledge Switch

2) 000HS902: DCS Common Reset Switch

The common reset (RESET) switch is used by the DCS operator to reset all the alarms in the DCS. This switch will only function when the alarm value has been restored to normal.



Figure 2-2: 000HS902 – Common Reset Switch

3) 109HS660: 109INT106 Acknowledge Switch

The 109INT106 acknowledge (ACK) switch is used by the DCS operator to acknowledge the alarm and silence the audible alarms/horns in the DCS room when Process Gas Scrubber (109SR01)-Availability becomes an alarm. Refer to **TNH-209-103 (5) H2S Waste Gas Treatment DCS Manual**.

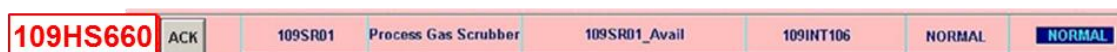


Figure 2-3: 109HS660 – 109INT106 Acknowledge Switch

4) 109HS658: 109INT114 Acknowledge Switch

The 109INT114 acknowledge (ACK) switch is used by the DCS operator to acknowledge the alarm and silence the audible alarms/horns in the DCS room when Sulfur Blowdown Drum (109VE03) level reaches high high. Refer to **TNH-209-103 (4) H2S Purification DCS Manual**.

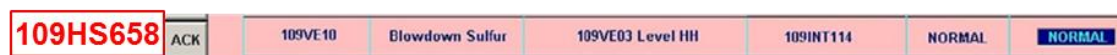


Figure 2-4: 109HS658 – 109INT114 Acknowledge Switch

5) 209HS658: 209INT114 Acknowledge Switch

The 209INT114 acknowledge (ACK) switch is used by the DCS operator to acknowledge the alarm and silence the audible alarms/horns in the DCS room when Sulfur Blowdown Drum (209VE03) level reaches high high. Refer to **TNH-209-103 (4) H2S Purification DCS Manual**.

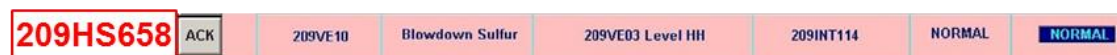



Figure 2-5: 209HS658 – 209INT114 Acknowledge Switch

### III. Interlocks/Controls

None

### IV. Control Sequences

None

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**V. Alarms**

None

**VI. DCS Emergency Shutdown**

None

**VII. Trend Graphs Grouping**

None

**Annex 1: CB PROCESS ALARMS A 102 HPAL DCS Graphics**

Free Memory 4681.32 MB Free Disk(C:) 10887.12 MB 04/22/2015 (Wed) 08:35:08  
H 07:58:48 PVLL 106SU07 106LT009 61 43.200 43.240 % SUPVR

SILENCEALARMDEVICE ALERTSYSTEM STATUSMESSAGESEQ EVENTPREV DISPLAYGRAPHICGROUPTRENDDETAILSYSTEMSUB MENUPRINT000HS901000HS902

CB ALARMS A (202 HPAL)CB ALARMS B (MS)CB ALARMS (H2S 1)CB ALARMS (H2S 2)CB ALARMS (UTILITY)ENVIRONMENT MONITORINGMS ENVIRONMENTH2S ENVIRONMENTCENTRAL BUILDING ACKRESETGraphics Overview

CB PROCESS ALARMS A 102 HPAL

AREA	EQUIPMENT	SERVICE NAME	TAG NAME	NORMAL INDICATION	PRESENT INDICATION
101 (ORE)	101DW01	Drum Washer	Inlet Water Valve Opening	101FIC181	OP > NN 20.0 4.0 NORMAL
	101TH01F(10TK01)	Ore Thickener Torque	101PH101	PV < H 400 24.1 NORMAL	
	102AG01(102TK01)	HPAL Feed Storage Tank AG	Run Status	102XB001	RUN
	102PU31A/32AB/33A	LT Heater Feed Pump	102XB003		
			102XB103		
			102XB004	NOT ALL STOP	
			102XB104		
			102XB107		
	102PU02AB/03AB	MT Heater Feed Pump	102XB005		
			102XB006	NOT ALL STOP	
			102XB007		
			102XB008		
			102PU02A Current	102I005	PV (+/- 11.1) MAV 0.0 0.0
102 (HPAL)	102PU04AB/05AB/06AB	HT Heater Feed Pump	102I007	PV (+/- 11.1) MAV 0.0 0.0	
			102XB009		
			102XB010		
			102XB011	NOT ALL STOP	
			102XB012		
	102HX01	LT Heater	Level Deviation HI	102LIC002	PV < SP+DEVH 5.0 3.0
		Level Deviation LO	PV > SP-DEVLO 5.0 3.0		
	102HX02	MT Heater	Level Deviation HI	102LIC004	PV < SP+DEVH 8.0 5.0
		Level Deviation LO	PV > SP-DEVLO 8.0 5.0		
	102HX03	HT Heater	Level Deviation HI	102LIC005	PV < SP+DEVH 5.0 16.0
103 (PRE NRTL)	102HX01	LT Heater	Diff Press Between LT & LP	102PD090	PV < H 50.0 -0.2
	102HX02	MT Heater	Diff Press Between MT & MP	102PD091	PV < H 100.0 5.2
	102HX03	HT Heater	Diff Press Between HT & HP	102PD092	PV < H 100.0 10.0
		Pressure	102PIC006	PV < H 82838 9.2	
	AC Feed Pump AB	102PU07A Run Status	102XB431	NOT ALL STOP	
		102PU07B Run Status	102XB432		
	102PU07AB	AC Feed Pump A	Diaphragm A Temperature	102T1403A	PV < H 75.0 28.0
		Diaphragm B Temperature	102T1403B	PV < H 75.0 28.0	
		Diaphragm C Temperature	102T1403C	PV < H 75.0 28.0	
		Panel Fault	102XA410	NORMAL	
104 (NRTL)	102PU10AB	Sulfuric Acid Feed Pump AB	Main Alarm	102XA409	NORMAL
			Diaphragm A Temperature	102T1453A	PV < H 75.0 28.0
			Diaphragm B Temperature	102T1453B	PV < H 75.0 28.0
			Diaphragm C Temperature	102T1453C	PV < H 75.0 28.0
			Panel Fault	102XA414	NORMAL
	104PU01AB	Acid Feed Pump	Main Alarm	102XA413	NORMAL
			102PU10A Run Status	102XB022	NOT ALL STOP
			102PU10B Run Status	102XB023	
			Comp 1A Acid Feed Flow	102F007	PV > L 111.0 0.0
			Comp 1B Acid Feed Flow	102F009	PV > L 100.0 0.0

**Annex 2: CB PROCESS ALARMS A 202 HPAL DCS Graphics**

Free Memory 4449.31 MB Free Disk(C:) 10880.55 MB 04/22/2015 (Wed) 10:14:33

10:11:47 BADPV FR 106SR02 TO 106FN01AB 106ETC502 61 SUPVR

SILENCE	ALARM	DEVICE ALERT	SYSTEM STATUS	MESSAGE	SEQ EVENT	PREV DISPLAY	GRAPHIC	GROUP	TREND	DETAIL	SYSTEM CONF	SUB MENU	PRINT
CB ALARMS A (102 HPAL)				CB ALARMS B (MS)	CB ALARMS (H2S 1)	CB ALARMS (H2S 2)	CB ALARMS (UTILITY)	ENVIRONMENT MONITORING	MS ENVIRONMENT	ENVIRONMENT	000HS901		
CB PROCESS ALARMS A 202 HPAL										CENTRAL BUILDING		000HS902	
										ACK	RESET	Overview	

AREA	EQUIPMENT	SERVICE NAME	TAG NAME	NORMAL INDICATION	PRESENT INDICATION	AREA	EQUIPMENT	SERVICE NAME	TAG NAME	NORMAL INDICATION	PRESENT INDICATION		
201 (ORE)	201DW01	Drum Washer	Inlet Water Valve Opening	201FIC181	OP > NN 50.0	NORMAL	202 (HPAL)	202AC01	Autoclave	Comp 7 Level	202LIC008	PV < H 919.0	8.1
	101TH01F(10TK01)	Ore Thickener Torque	Thickener Rake Torque	101PH101	PV < H 400	0.0		Pressure	202PI010	PV < H 4800.0	-8.1		
	202AG01(202TK01)	HPAL Feed Storage Tank AG	Run Status	202XB001	RUN	0.0		Steam Header Pressure	202PD009	PV < H 5226.0	0.0		
	202PU31AB/32AB	LT Heater Feed Pump	202PU31A Run Status	202XB003		0.0		HP Air Pressure	202PD033	PV > L 4800.0	0.0		
			202PU32A Run Status	202XB103		0.0		Over Pressure	202PDIC056	PV > NN 6000.0	0.0		
			202PU31B Run Status	202XB004	NOT ALL STOP	0.0		Lube Oil Pressure	202PA061	NORMAL	0.0		
			202PU32B Run Status	202XB104		0.0		AC Agitator A	Seal Pressure	202PI011	PV > L 6400.0	0.0	
			202PU33A Run Status	202XB107		0.0			Run Status	202XB015	RUN	0.0	
	202PU02AB/03AB	MT Heater Feed Pump	202PU02A Run Status	202XB005		0.0			Lube Oil Pressure	202PA062	NORMAL	0.0	
			202PU03A Run Status	202XB006	NOT ALL STOP	0.0		AC Agitator B	Seal Pressure	202PI321	PV > L 6400.0	0.0	
			202PU02B Run Status	202XB007		0.0			Run Status	202XB016	RUN	0.0	
			202PU03B Run Status	202XB008		0.0			Lube Oil Pressure	202PA063	NORMAL	0.0	
			202PU02A Current	202I0005	PV (+/-) 11.1	MAV 0.0		0.0	AC Agitator C	Seal Pressure	202PI331	PV > L 6400.0	0.0
	202PU02B Current	202I0007	PV (+/-) 11.1	MAV 0.0	0.0	Run Status		202XB017		RUN	0.0		
	202PU04AB/05AB/06AB	HT Heater Feed Pump	202PU04A Run Status	202XB009		0.0		Lube Oil Pressure		202PA064	NORMAL	0.0	
			202PU05A Run Status	202XB010		0.0		AC Agitator D	Seal Pressure	202PI341	PV > L 6400.0	0.0	
			202PU06A Run Status	202XB011	NOT ALL STOP	0.0			Run Status	202XB018	RUN	0.0	
			202PU04B Run Status	202XB012		0.0			Lube Oil Pressure	202PA065	NORMAL	0.0	
			202PU05B Run Status	202XB013		0.0			Seal Pressure	202PI351	PV > L 6400.0	0.0	
	202PU06B Run Status	202XB014		0.0	Run Status	202XB019			RUN	0.0			
	202HX01	LT Heater	Level Deviation HI	202LIC002	PV < SP+DEVH 100.0	0.0		AC Agitator E	Lube Oil Pressure	202PA066	NORMAL	0.0	
	202HX02	MT Heater	Level Deviation LO	202LIC004	PV > SP+DEVH 5.0	0.0			Seal Pressure	202PI361	PV > L 6400.0	0.0	
	202HX03	HT Heater	Level Deviation HI	202LIC005	PV < SP+DEVH 7.0	0.0			Run Status	202XB020	RUN	0.0	
	202HX01	LT Heater	Level Deviation LO	202LIC006	PV > SP+DEVH 5.0	0.0		AC Agitator F	Lube Oil Pressure	202PA067	NORMAL	0.0	
	202HX02	MT Heater	Level Deviation HI	202LIC007	PV < SP+DEVH 5.0	0.0			Seal Pressure	202PI371	PV > L 6400.0	0.0	
	202HX03	HT Heater	Level Deviation LO	202LIC008	PV > SP+DEVH 5.0	0.0			Run Status	202XB021	RUN	0.0	
	202HX01	LT Heater	Diff Press Between LT & LP	202PD090	PV < H 1000	0.0		AC AG Seal Water	Pressure	202F180	PV < H 40.0	0.0	
202HX02	MT Heater	Diff Press Between MT & MP	202PD091	PV < H 1000	0.0	Flow	202F181		PV < L 280.0	0.0			
202HX03	HT Heater	Diff Press Between HT & HP	202PD092	PV < H 1000	0.0	202VE01	HP Flush Vessel	Pressure Between Rupture Disks	202PA018	NORMAL	0.0		
202PU07AB	AC Feed Pump AB	Pressure	202PIC006	PV < H 6400.0	0.0			Level	202LA030	NORMAL	0.0		
		202PU07A Run Status	202XB431	NOT ALL STOP	0.0		202VE02	MP Flush Vessel	Pressure Between Rupture Disks	202PA020	NORMAL	0.0	
		202PU07B Run Status	202XB432		0.0				Level	202LA032	NORMAL	0.0	
		Diaphragm A Temperature	202T1403A	PV < H 75.0	30.0				202VE03	LP Flush Vessel	Pressure Between Rupture Disks	202PA034	NORMAL
		Diaphragm B Temperature	202T1403B	PV < H 75.0	30.0	Level	202LA034	NORMAL			0.0		
Diaphragm C Temperature	202T1403C	PV < H 75.0	30.0	202PU08AB	HPAL Gas Scrubber Seal Tank Discharge PumpAB	202PU08A Run Status	202XB034	NOT ALL STOP			0.0		
202PU07AB	AC Feed Pump A	Diaphragm A Temperature	202T1453A	PV < H 80.0	30.0	202PU08B Run Status	202XB035		0.0				
		Diaphragm B Temperature	202T1453B	PV < H 75.0	30.0	202PU15AB	Heater Feed Seal Water	Seal Water Flow Rate	202F180	PV < H 30.0	0.0		
		Diaphragm C Temperature	202T1453C	PV < H 75.0	30.0	202AC01 Acid	Total Acid Flow	Flow Deviation HI or LO	202F181	NORMAL	0.0		
		Panel Fault	202XA410	NORMAL	0.0								
		Main Alarm	202XA409	NORMAL	0.0								
202PU10AB	Sulfuric Acid Feed Pump AB	Diaphragm A Temperature	202T1453A	PV < H 80.0	30.0								
		Diaphragm B Temperature	202T1453B	PV < H 75.0	30.0								
		Diaphragm C Temperature	202T1453C	PV < H 75.0	30.0								
		Panel Fault	202XA414	NORMAL	0.0								
		Main Alarm	202XA413	NORMAL	0.0								
202PU10A Run Status	202XB022	NOT ALL STOP	0.0										
202PU10B Run Status	202XB023		0.0										
Comp 1A Acid Feed Flow	202F1007	PV > L 100.0	0.0										
Comp 1B Acid Feed Flow	202F1039	PV > L 110.0	0.0										
Comp 1A Acid Feed Pressure	202PI023	PV > L 380.0	0.0										
Comp 1B Acid Feed Pressure	202PI037	PV > L 380.0	0.0										





**Annex 4: CB PROCESS ALARMS H2S 1 DCS Graphics**

Free Memory 4425.11 MB Free Disk(C:) 10880.20 MB 04/22/2015 (Wed) 10:16:39  
10:11:47 BADPV FR 106SR02 TO 106FN01AB 106FTC502 G1 SUPVR

SILENCE ALARM DEVICE ALERT SYSTEM STATUS MESSAGE SEQ EVENT PREV DISPLAY GRAPHIC GROUP TREND DETAIL SYSTEM CONF SUB MENU PRINT

000HS901 000HS902

CB ALARMS A (102 HPAL) CB ALARMS A (202 HPAL) CB ALARMS B (MS) CB ALARMS (H2S 2) CB ALARMS (UTILITY) ENVIRONMENT MONITORING MS ENVIRONMENT H2S ENVIRONMENT CENTRAL BUILDING ACK RESET Graphics Overview

**CB PROCESS ALARMS H2S 1**

AREA	EQUIPMENT	SERVICE NAME	TAG NAME	NORMAL INDICATION	PRESENT INDICATION
109(H2S)	109PU03AB Make Up Pump	109PU03A Run Status	109XB292	ALL STOP	STOP
	109PU03B Run Status	109XB293			STOP
	109HX12AB Sulfur Cooler	Outlet Temperature	109TI020	PV < H 160.0	30.0
		Discharge Flow Rate	109FIC041	PV > L 0.0	0.0
	109PU12AB Sulfur Recirculation Pump	109PU12A Run Status	109XB040		STOP
		109PU12B Run Status	109XB041	NOT ALL STOP	STOP
		Differential Pressure	109PD022	PV < H 70.0	8.3
		Pressure	109PI104	PV < H 1000.0	492.0
	109VE01 H2S Reactor	Pressure	109PI105	PV < H 1000.0	494.8
		Differential Pressure	109PD105	PV < H 200.0	140.2
		Temperature	109TI124	PV < H 450.0	82.0
		Temperature	109TI117	PV > L 445.0	445.0
		Temperature	109TI115	PV < H 500.0	445.0
		Temperature	109TI112	PV < H 500.0	129.5
		Level	109LIC122	PV < H 60.0	60.0
		Differential Pressure	109PD1546B	PV < H 25.0	3.2
	109QC01 Quench Column	Differential Pressure	109PD1546A	PV < H 45.0	2.7
		Pressure	109PI547	PV < H 900.0	394.6
		Temperature	109TI132A	PV < H 200.0	73.3
		Temperature	109TI129A	PV < H 200.0	73.2
COMMON(H2S)	109HX11AB H2S Gas Cooler	Temperature	109TI129B	PV < H 200.0	73.3
		Outlet Pressure	109PI210	PV < H 60.0	23.0
		Differential Pressure	109PD1211	PV < H 60.0	60.0
		109HX11A Outlet Temperature	109TI206	PV < H 60.0	30.2
	109VE02 Knockout Drum	Outlet Pressure	109PI301	PV < H 60.0	30.0
		Differential Pressure	109PD1401	PV < H 10.0	0.1
	109TK01 Sulfur Melter	Level	109LI019	PV < H 92.8	84.0
	109AG01AB Sulfur Melter Agitator	109AG01A Run Status	109XB546	RUN	STOP
		109AG01B Run Status	109XB547	RUN	STOP
	109PU02AB Dirty Sulfur Pump	109PU02A Run Status	109XB017		STOP
		109PU02B Run Status	109XB018	NOT ALL STOP	STOP
	109TK02 Dirty Sulfur Tank	Level	109LI024	PV > L 48.8	78.4
	109AG02 Dirty Sulfur Tank Agitator	Run Status	109XB016	RUN	STOP
	109FT01AB Sulfur Filter	109FT01A Differential Pressure	109PD030	PV < H 310.0	5.0
		109FT01B Differential Pressure	109PD1280	PV < H 220.0	7.0
	109TK03 Clean Sulfur Tank	Temperature	109TI001	PV > L 130.0	130.0
		Level	109LI291	PV < H 80.0	55.5
	109TK01 Sulfur Melter	H2 Flow Rate	109FA143	ALARM	NORMAL
	109TK02 Dirty Sulfur Tank	H2 Flow Rate	109FA144	ALARM	NORMAL
	109TK03 Clean Sulfur Tank	H2 Flow Rate	109FA290	ALARM	NORMAL
	109TK04 Precast Tank	H2 Flow Rate	109FA251	ALARM	ALARM

AREA	EQUIPMENT	SERVICE NAME	TAG NAME	NORMAL INDICATION	PRESENT INDICATION
209 (H2S)	209PU03AB Make Up Pump	209PU03A Run Status	209XB294	ALL STOP	STOP
	209PU03B Run Status	209XB295			STOP
	209HX12AB Sulfur Cooler	Outlet Temperature	209TI020	PV < H 160.0	28.5
		Discharge Flow Rate	209FIC041	PV > L 0.0	0.0
	209PU12AB Sulfur Recirculation Pump	209PU12A Run Status	209XB040		STOP
		209PU12B Run Status	209XB041	NOT ALL STOP	STOP
		Differential Pressure	209PD022	PV < H 0.0	-3.9
		Pressure	209PI104	PV < H 1010.0	248.7
	209VE01 H2S Reactor	Pressure	209PI105	PV < H 1010.0	248.7
		Differential Pressure	209PD105	PV < H 150.0	100.2
		Temperature	209TI124	PV < H 450.0	30.8
		Temperature	209TI117	PV < H 450.0	445.0
		Temperature	209TI115	PV < H 500.0	445.0
		Temperature	209TI112	PV < H 500.0	28.7
		Level	209LIC122	PV < H 60.0	60.0
		Differential Pressure	209PD1546B	PV < H 25.0	0.5
	209QC01 Quench Column	Differential Pressure	209PD1546A	PV < H 50.0	0.0
		Pressure	209PI547	PV < H 900.0	4.1
		Temperature	209TI132A	PV < H 200.0	0.0
		Temperature	209TI129A	PV < H 200.0	101.0
Common (H2S)	209HX11AB H2S Gas Cooler	Temperature	209TI129B	PV < H 200.0	105.2
		Outlet Pressure	209PI210	PV < H 60.0	23.0
		Differential Pressure	209PD1211	PV < H 60.0	2.0
		209HX11A Outlet Temperature	209TI206	PV < H 60.0	32.3
	209VE02 Knockout Drum	Outlet Pressure	209PI301	PV < H 60.0	30.0
		Differential Pressure	209PD1401	PV < H 8.0	7.1
	421VE12 Hydrogen Buffer Vessel	Pressure	421PI028	PV > L 2.1	2.5
	421VE12 Hydrogen Buffer Vessel	H2 Valve	421HV011	OPEN	STOP
	Common Header	Pressure	109PIC399A	PV < H 550.0	550.0
		Pressure	109PIC399	PV > LL 0.0	-1.0
		Pressure	109PIC398B	PV < H 550.0	550.0
		Pressure	109PIC399	PV > LL 0.0	-1.0
		Differential Pressure	109PD1398	PV < H 8.0	0.2
		Product Gas Average Concentration	109AI304A	PV > L 0.0	0.0



**Annex 6: CB UTILITY ALARMS DCS Graphics**

Free Memory 4654.04 MB Free Disk(C:) 10886.58 MB 04/22/2015 (Wed) 08:37:13  
H 07:58:48 PVLL 106SU07 106LI009 61 43.200 43.240 % SUPVR

SILENCE ALARM DEVICE ALERT SYSTEM STATUS MESSAGE SEQ EVENT PREV DISPLAY GRAPHIC GROUP TREND DETAIL SYSTEM CONF SUB MENU PRINT

000HS901 000HS902

CB ALARMS A (102 HPAL) CB ALARMS A (202 HPAL) CB ALARMS B (MS) CB ALARMS (H2S 1) CB ALARMS (H2S 2) ENVIRONMENT MONITORING MS ENVIRONMENT H2S ENVIRONMENT CENTRAL BUILDING ACK RESET Graphics Overview

**CB UTILITY ALARMS**

AREA	EQUIPMENT	SERVICE NAME	TAG NAME	NORMAL INDICATION	PRESENT INDICATION	
416 (Acid)	416TK01	Acid Tank No.1	Level	PV < HH 95.0 PV < H 85.0 PV > L 10.5	84.8	
	416TK02	Acid Tank No.2	Level	PV < HH 95.0 PV < H 85.0 PV > L 10.5	83.9	
	416TK03	Acid Tank No.3	Level	PV < HH 95.0 PV < H 85.0 PV > L 10.5	83.2	
422 (Methanol)	422TK01	Methanol Tank	Level	PV < HH 99.7 PV < H 93.0 PV > L 4.9	86.1	
	422TK01	Methanol Tank	O2 Concentration	PV < H 8.0	1.4	
	511DM01	Intake Pond	Level	PV > L 20.0	66.2	
	513PD02A/B	Clarified Water Pond	Level	PV > L 20.0	86.5	
513(Water)	513PU01ABC	Clarified Water Pump	Discharge Pressure	513P001	PV > HH 2000 607.5 NORMAL	
	513TK01	Filtered Water Tank	Level	513L003	PV > L 20.0 76.9	
	513PU02ABC	Filtrated Water Pump	Discharge Pressure	513P002	PV > HH 2000 726.9 NORMAL	
	513PU02ABC	Filtrated Water Pump	Discharge Pressure	513P004	PV > HH 2000 422.8	
	513PU03ABC	HP Grand Water Pump	Discharge Pressure	513P006	PV > HH 2000 1811.1 NORMAL	
	513PU03ABC	HP Grand Water Pump	Discharge Stainer Diff Pressure	513PD005	PV < H 50.0 0.2	
	701TK01	Demi Water Tank	Level	701LT110	PV > L 20.0 80.0	
	701PU01AB	Demi Water Pump	Discharge Pressure	701PT120	PV > HH 0.2 0.0 NORMAL	
	521VE01	Plant Air Reservoir	Pressure	521P001	PV > L 400.0 811.0	
	521VE02	Instrument Air Reservoir	Pressure	521P002	PV > L 500.0 812.0	
521 (Air)	521CP01ABCD	521CP01A Trip Indication	521XB103	RUN	RUN	
		521CP01B Trip Indication	521XB123	RUN	RUN	
		521CP01C Trip Indication	521XB143	RUN	RUN	
		521CP01D Trip Indication	521XB163	RUN	RUN	
524(Supernatant)	524PD01	Decant Pond	Level	524LIC001	PV < H 0.0 102.1	
	525NG01	N2 Generator	Common Trip	525XA284	NORMAL	NORMAL
525(Nitrogen)	525NG01	N2 Generator	Common Alarm	525XA283	NORMAL	NORMAL
	525VE01AB	Nitrogen Gas Reservoir	Pressure	525P001	PV > L 750.0 875.6	
530(Cooling Water)	530CT31	Cooling Tower for MS	Run Status	530XB004	RUN	STOP
	530PU31ABC	Cooling Water Pump ABC	530PU31A Run Status	530XB001	STOP	STOP
			530PU31B Run Status	530XB002	NOT ALL STOP	STOP
			530PU31C Run Status	530XB003	RUN	STOP
202 (HPAL)	115TK02	NaOH Storage Tank	Level	115L002	PV > L 25.0 59.2	
	115TK04A	48%NaOH STORAGE TANK No. 1	Level	115L006	PV < HH 0.0 PV < H 0.0 PV > L 0.0 PV > LL 0.0	0.0
115 (48%NaOH)	115TK04B	48%NaOH STORAGE TANK No. 2	Level	115L007	PV < HH 0.0 PV < H 0.0 PV > L 0.0 PV > LL 0.0	0.0
	115KBS100	NaOH	NaOH START UP SEQUENCE	NORMAL	NORMAL	
	115KBS200	48%NaOH	NaOH DILUTION 48% TO 25% SEQUENCE	NORMAL	NORMAL	

Annex 7: DCS Room Annunciator Patlite® Beacon and Horn



**Process A  
Patlite® Beacon  
and Horn**



**Environment  
Patlite® Beacon  
and Horn**

**Process B  
Patlite® Beacon  
and Horn**



**Utility  
Patlite® Beacon  
and Horn**

**Process H2S  
Patlite® Beacon  
and Horn**