MPS Logic:
2013-08-02-a

Contents

1 Ignored when A-Line B1/B2 Is Not On AND A-Line Kicker Is Not Enabled, A-Line SL10 Is Closed, BX01/BX02 Is Off, BXG Is On, TD11 Is In, or YG BL211 Is In **20**
1.1 Flowswitch: COLL BSYA 2060 (PC20) . . . 20
1.2 Flowswitch: COLL BSYA 2410 (COLL24H) . . . 20
1.3 Flowswitch: COLL BSYA 2410 (COLL24V) . . . 20
1.4 Flowswitch: COLL BSYA 2410 (PC24) . . . 21
1.5 Flowswitch: COLL BSYA 2600 (PC26) . . . 21
1.6 Flowswitch: COLL BSYA 2990 (PC29) . . . 21
1.7 Flowswitch: COLL BSYA 3710 (C37) . . . 21
1.8 Flowswitch: COLL BSYA 4120 (3C1A) . . . 22
1.9 PIC Raw Charge Thresholds: BSYA 2061 . . . 22
1.10 PIC Raw Charge Thresholds: BSYA 2120 . . . 22
1.11 PIC Raw Charge Thresholds: BSYA 2220 . . . 23
1.12 PIC Raw Charge Thresholds: BSYA 2321 . . . 23
1.13 PIC Raw Charge Thresholds: BSYA 2411 . . . 23
1.14 PIC Raw Charge Thresholds: BSYA 2472 . . . 24
1.15 PIC Raw Charge Thresholds: BSYA 2473 . . . 24
1.16 PIC Raw Charge Thresholds: BSYA 2474 . . . 24
1.17 PIC Raw Charge Thresholds: BSYA 2475 . . . 25
1.18 PIC Raw Charge Thresholds: BSYA 2520 . . . 25
1.19 PIC Raw Charge Thresholds: BSYA 2601 . . . 25
1.20 PIC Raw Charge Thresholds: BSYA 2861 . . . 26
1.21 PIC Raw Charge Thresholds: BSYA 2990 . . . 26
1.22 PIC Raw Charge Thresholds: BSYA 3320 . . . 26
1.23 PIC Raw Charge Thresholds: BSYA 3720 . . . 27
1.24 PIC Raw Charge Thresholds: BSYA 3721 . . . 27
1.25 PIC Raw Charge Thresholds: BSYA 3890 . . . 27
1.26 Stopper BSYA 2275 (ST22) Position . . . 28
1.27 Stopper BSYA 2930 (ST29) Position . . . 28
1.28 Temperature: RTD BSYA PAST SL10 Summary . . . 28
1.29 Vac Valve: VVFS BSYA 2855 (FV28) . . . 28
1.30 Vac Valve: VVPG BSYA 2635 (IV26) . . . 29
1.31 Vac Valve: VVPG ESA0 4195 POSITION (IV41) . . . 29

2 Ignored when A-Line B1/B2 Is Not On AND A-Line Kicker Is Not Enabled, BX01/BX02 Is Off, BXG Is On, TD11 Is In, or YG BL211 Is In **30**
2.1 A-Line SL10 Position . . . 30
2.2 Flowswitch: BPM BSYA 1020 (BPM10) . . . 30
2.3 Flowswitch: BPM BSYA 1240 (BPM12) . . . 31
2.4 Flowswitch: COLL BSY0 16 (50PC20) . . . 31

2.5 Flowswitch: COLL BSY0 33 (50PC30) . . . 31
2.6 Flowswitch: COLL BSY0 45 (50PC-45) . . . 31
2.7 Flowswitch: COLL BSY0 59 (PC0119) . . . 32
2.8 Flowswitch: COLL BSY0 65 (PC0145) . . . 32
2.9 Flowswitch: COLL BSY0 67 (PC0155) . . . 32
2.10 Flowswitch: COLL BSY0 69 (PC0165) . . . 32
2.11 Flowswitch: COLL BSY0 71 (PC0175) . . . 33
2.12 Flowswitch: COLL BSY0 73 (PC0185) . . . 33
2.13 Flowswitch: COLL BSY0 75 (PC0195) . . . 33
2.14 Flowswitch: COLL BSYA 1015 (PC10) . . . 33
2.15 Flowswitch: COLL BSYA 1015 (PC10) . . . 34
2.16 Flowswitch: COLL BSYA 1230 (PC12) . . . 34
2.17 Flowswitch: COLL BSYA 1490 (PC14) . . . 34
2.18 Flowswitch: COLL BSYA 1700 (PC17) . . . 34
2.19 PIC Raw Charge Thresholds: BSYA 1016 . . . 35
2.20 PIC Raw Charge Thresholds: BSYA 1021 . . . 35
2.21 PIC Raw Charge Thresholds: BSYA 1120 . . . 35
2.22 PIC Raw Charge Thresholds: BSYA 1320 . . . 36
2.23 PIC Raw Charge Thresholds: BSYA 1520 . . . 36
2.24 PIC Raw Charge Thresholds: BSYA 1701A . . . 36
2.25 PIC Raw Charge Thresholds: BSYA 1701B . . . 37
2.26 PIC Raw Charge Thresholds: BSYA 1980 . . . 37
2.27 Temperature: A-Line Summary Before SL10 . . . 37
2.28 Vac Valve: VVFS BSYA 1030 (FV10) . . . 37
2.29 Vac Valve: VVPG BSYA 1018 (IV10) . . . 38

3 Ignored when BX01/BX02 Is Off or YG BL211 Is In 39
3.1 Toroid Comparator IM02/IM03 . . . 39

4 Ignored when BX01/BX02 Is Off, BXG Is On, ST1/ST2 Are In, Stopper S2 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, or YG BL211 Is In 40
4.1 SXR Beam Energy Lower Limit . . . 40

5 Ignored when BX01/BX02 Is Off, BXG Is On, ST1/ST2 Are In, Stopper S2 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In 41
5.1 NEH SXR GMD VGC 01 Protection . . . 41

6 Ignored when BX01/BX02 Is Off, BXG Is On, ST1/ST2 Are In, Stopper SH1 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, or YG BL211 Is In 42
6.1 HXR Beam Energy Lower Limit . . . 42

7 Ignored when BX01/BX02 Is Off, BXG Is On, ST1/ST2 Are In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In 43
7.1 FEE1 M1S Mirror Beam Energy Upper Limit . . . 43

8 Ignored when BX01/BX02 Is Off, BXG Is On, Stopper: BSY D2 Summary Is In, TD11 Is In, or YG BL211 Is In **44**
8.1 Temperature:BSY RTD Past D2 Sum . . . 44
8.2 THZ-2 Position . . . 44
8.3 Undulator Beam Energy Lower Limit . . . 44
8.4 VVFS LTU1 102 Position . . . 45
8.5 VVMG LTU1 174 Position . . . 45
8.6 VVMG LTU1 355 Position . . . 45
8.7 VVMG LTU1 670 Position . . . 45
8.8 VVMG LTU1 742 Position . . . 46
8.9 VVMG LTU1 774 Position . . . 46
8.10 VVMG UND1 932 Position . . . 46
8.11 VVMG UND1 968 Position . . . 46
8.12 VVPG DMP1 103 Position . . . 47
8.13 VVPG DMP1 395 Position . . . 47
8.14 VVPG DMP1 700 Position . . . 47
8.15 VVPG LTU1 100 Position . . . 47
8.16 VVPG LTU1 265 Position . . . 48
8.17 VVPG LTU1 435 Position . . . 48
8.18 VVPG LTU1 580 Position . . . 48
8.19 VVPG LTU1 725 Position . . . 48
8.20 VVPG LTU1 757 Position . . . 49
8.21 VVPG LTU1 999 Position . . . 49
8.22 VVPG UND1 1000 Position . . . 49
8.23 VVPG UND1 2500 Position . . . 49

9 Ignored when BX01/BX02 Is Off, BXG Is On, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In **50**
9.1 B4C Position . . . 50
9.2 BCS LION LTU1 404 Threshold . . . 50
9.3 BCS LION LTU1 405 Threshold . . . 50
9.4 BCS LION LTU1 504 Threshold . . . 50
9.5 BCS LION LTU1 505 Threshold . . . 51
9.6 BCS LION LTU1 584 Threshold . . . 51
9.7 BCS LION LTU1 585 Threshold . . . 51
9.8 BCS LION LTU1 716 Threshold . . . 51
9.9 BCS LION LTU1 717 Threshold . . . 52
9.10 BCS LION LTU1 732 Threshold . . . 52
9.11 BCS LION LTU1 733 Threshold . . . 52
9.12 BCS LION LTU1 752 Threshold . . . 52
9.13 BCS LION LTU1 753 Threshold . . . 53
9.14 BCS LION LTU1 765 Threshold . . . 53
9.15 BCS LION LTU1 766 Threshold . . . 53
9.16 BOD UND1 1005 . . . 53
9.17 BOD UND1 1305 . . . 54

9.18 BYD Watchdog . . . 54
9.19 PIC Raw Charge Thresholds: DMP1 698 . . . 54
9.20 PIC Raw Charge Thresholds: DMP1 699 . . . 55
9.21 Stopper: ST1/ST2 Position . . . 55
9.22 VVFS DMP1 107 Position . . . 55
9.23 VVMG DMP1 743 Position . . . 55
9.24 VVMG UND1 1645 Position . . . 56
9.25 VVMG UND1 1655 Position . . . 56
9.26 VVPG DMP1 355 Position . . . 56

10 Ignored when BX01/BX02 Is Off, BXG Is On, TD11 Is In, or YG BL211 Is In 57
10.1 BLM/PIC Watchdog BSY0/BSYA . . . 57
10.2 BLM/PIC Watchdog LI30 . . . 57
10.3 BSY GLAST Target . . . 57
10.4 Fast Shutter FV2 Position . . . 58
10.5 Fast Shutter FV2A Position . . . 58
10.6 KICK BSY0 66 PM1 State (A-Line Kicker) . . . 58
10.7 KICK BSY0 66 PM1 Trigger State (A-Line Kicker) . . . 58
10.8 KICK BSY0 66 PM2 State (A-Line Kicker) . . . 59
10.9 KICK BSY0 66 PM2 Trigger State (A-Line Kicker) . . . 59
10.10 Stopper: BSY D2, 60, 61 DM60 Summary . . . 59
10.11 Vac Valve BSYA 4005 (IV40) . . . 62
10.12 VVPG BSY0 IV2 Position . . . 62
10.13 VVPG BSY0 IV3 Position . . . 62
10.14 VVPG BSY0 IV4 Position . . . 63

11 Ignored when BX01/BX02 Is On or YG BL211 Is In 64
11.1 BXS Status . . . 64
11.2 Toroid Comparator IM02/IMS1 . . . 64

12 Ignored when BX01/BX02 Is On, BXG Is Off, TD11 Is In, or YG BL211 Is In 65
12.1 BLM/PIC Watchdog LI24 . . . 65

13 Ignored when BXG Is Off or YG BL211 Is In 66
13.1 Wakefield Shield Gun Spectrometer . . . 66

14 Ignored when BXG Is On or YG BL211 Is In 67
14.1 Wakefield Shield Straight Ahead . . . 67

15 Ignored when Diag Stopper HFX DG2 Is In, Diag Stopper HFX UM6 Is In, Diag Stopper XCS SB1 Is In, ST1/ST2 Are In, Stopper SH1 Is In, Stopper SH2 Is In, Stopper XRT S5 Is In, TD11 Is In, TDUND Is In, XCS Is Not In Main Line, or YG BL211 Is In 68
15.1 XCS SB1 VGC 02 Gate Valve Position . . . 68
15.2 XCS SB2 VGC 01 Gate Valve Position . . . 68

16 Ignored when Diag Stopper HFX DG2 Is In, Diag Stopper HFX UM6 Is In, ST1/ST2 Are In, Stopper S5B Is In, Stopper SH1 Is In, Stopper SH2 Is In, Stopper XRT S5 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In **69**
16.1 CXI:DG4:VGC:01 Gate Valve Position 69

17 Ignored when Diag Stopper HFX DG2 Is In, Diag Stopper HFX UM6 Is In, ST1/ST2 Are In, Stopper S5B Is In, Stopper SH1 Is In, Stopper SH2 Is In, Stopper XRT S5 Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In **70**
17.1 CXI Configuration 1 Summary 70
17.2 CXI Configuration 2 Summary 71
17.3 CXI Configuration 3 Summary 72
17.4 CXI Configuration 4 Summary 73
17.5 CXI Configuration 5 Summary 75
17.6 CXI Configuration 6 Summary 76
17.7 CXI Configuration 7 Summary 77
17.8 CXI CS-PAD 1 Detector Damage Fault 78
17.9 CXI CS-PAD 2 Detector Damage Fault 78
17.10 CXI KB2 VGC 02 Gate Valve Position 79
17.11 CXI MPS PLC Readiness Status 79
17.12 CXI User Patch Panel 1 Ready 79
17.13 CXI User Patch Panel 2 Ready 79
17.14 CXI:DG1:VGC:01 Gate Valve Open Position 80
17.15 CXI:DG1:VGC:02 Gate Valve Open Position 80
17.16 CXI:DG2:VGC:01 Gate Valve Open Position 80
17.17 CXI:DG2:VGC:02 Gate Valve Open Position 81
17.18 CXI:DS1:VGC:01 Gate Valve Open Position 81
17.19 CXI:KB1:VGC:01 Gate Valve Open Position 81
17.20 CXI:KB1:VGC:02 Gate Valve Open Position 82
17.21 CXI:KB2:VGC:01 Gate Valve Open Position 82
17.22 CXI:SC1:VGC:01 Gate Valve Open Position 82
17.23 CXI:SC1:VGC:02 Gate Valve Open Position 83
17.24 CXI:SC2:VGC:02 Gate Valve Open Position 83

18 Ignored when Diag Stopper HFX DG2 Is In, Diag Stopper HFX UM6 Is In, ST1/ST2 Are In, Stopper SH1 Is In, Stopper SH2 Is In, Stopper XRT S5 Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In **84**
18.1 CXI XRT Laser Reference Mirror Position 84
18.2 HF4 LAM VGC 01 Gate Valve Position 84
18.3 HFA:SND:VGC:01 Gate Valve Open Position 84
18.4 HFX:DIA:VGC:02 Gate Valve Open Position 85
18.5 XRT HXRAY DIA Isolation Valve HXX-DIA-VGC-01 85

19 Ignored when Diag Stopper HFX DG2 Is In, Diag Stopper HFX UM6 Is In, ST1/ST2 Are In, Stopper SH1 Is In, Stopper SH2 Is In, Stopper XRT S5 Is In, TD11 Is In, TDUND Is In, XCS Is Not In Main Line, or YG BL211 Is In **86**

19.1 XCS SB1 Diagnostic Stopper Position . . . 86
19.2 XCS SB1 VGC 01 Gate Valve Position . . . 86

20 Ignored when Diag Stopper HFX DG2 Is In, Diag Stopper HFX UM6 Is In, ST1/ST2 Are In, Stopper SH1 Is In, Stopper SH2 Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In 87
20.1 HFX:DG2:VGC:01 Gate Valve Position . . . 87
20.2 HFX:MON:VGC:01 Gate Valve Position . . . 87
20.3 HFX:MON:VGC:02 Gate Valve Position . . . 87

21 Ignored when Diag Stopper HFX UM6 Is In, M3H Mirror Is Out of Beam, ST1/ST2 Are In, Stopper SH1 Is In, Stopper SH2 Is In, Stopper XRT S6 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In 88
21.1 MEC DV5 VGC 01 Gate Valve Position . . . 88
21.2 MEC HXM VGC 01 Gate Valve Position . . . 88
21.3 MEC XT1 Reference Laser Position . . . 88
21.4 MEC XT1 VGC 01 Gate Valve Position . . . 89
21.5 MEC XT2 VGC 02 Gate Valve Position . . . 89
21.6 MEC XT2 VGC 03 Gate Valve Position . . . 89
21.7 MEC XT2 VGC 04 Gate Valve Position . . . 89
21.8 MEC XT2 VGC 05 Gate Valve Position . . . 90
21.9 MEC XT2 VGC 06 Gate Valve Position . . . 90

22 Ignored when Diag Stopper HFX UM6 Is In, M3H Mirror Is Out of Beam, ST1/ST2 Are In, Stopper SH1 Is In, Stopper SH2 Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In 91
22.1 HXX:HXM:VGC:03 Gate Valve Position . . . 91
22.2 MEC XRT Attenuator Inspection Mirror Position . . . 91

23 Ignored when Diag Stopper HFX UM6 Is In, ST1/ST2 Are In, Stopper SH1 Is In, Stopper SH2 Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In 92
23.1 DG2 Diagnostic Stopper Position . . . 92
23.2 HXX:HXM:VGC:01 Gate Valve Position . . . 92
23.3 HXX:HXM:VGC:02 Gate Valve Position . . . 92
23.4 MEC M3H Mirror and DG2 STP Fault . . . 93
23.5 MEC M3H Mirror Unknown Position Fault . . . 93
23.6 XRT HXRAY LOM Isolation Valve HXX-LOM-VGC-01 . . . 93
23.7 XRT HXRAY MXT Isolation Valve HXX-MXT-VGC-01 . . . 94

24 Ignored when Laser Heater Attenuator Is In 95
24.1 Laser Heater Photodiode Shutter Position . . . 95
24.2 OTRH1 Position When LH Atten Not In . . . 95
24.3 OTRH2 Position When LH Atten Not In . . . 95

25 Ignored when ST1/ST2 Are In, Stopper HFP-MPA-02 Is In, Stopper S1 Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In 96
25.1 NEH AMO Diagnostics Chamber Gate Valve Summary . . . 96

25.2 NEH AMO End Station Ready . . . 96
25.3 NEH AMO High Field Physics Chamber Gate Valve Summary . . . 96

26 Ignored when ST1/ST2 Are In, Stopper S1 Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In 98
26.1 NEH AMO Focusing Optics Entrance Gate Valve KBO-VGC-01 . . . 98
26.2 NEH AMO Focusing Optics Exit Gate Valve KBO-VGC-02 . . . 98
26.3 NEH AMO Laser Reference Mirror Position . . . 98
26.4 NEH1 Camera 1124 Position . . . 99
26.5 NEH1 XTOD S1 Isolation Valve Summary . . . 99

27 Ignored when ST1/ST2 Are In, Stopper S2 Is In, Stopper S2B Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In 100
27.1 NEH SXR Differential Pump Isolation Valve SXR-DFP-VGC-01 . . . 100
27.2 NEH SXR End Station Ready SXR-EXP-MPS-01 . . . 100
27.3 NEH SXR Intensity Monitor Isolation Valve SXR-FLX-VGC-01 . . . 100
27.4 NEH SXR KB Optics Isolation Valve SXR-KBO-VGC-01 . . . 101
27.5 NEH SXR Laser In-coupling Mirror Isolation Valve SXR-LIN-VGC-01 . . . 101

28 Ignored when ST1/ST2 Are In, Stopper S2 Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In 102
28.1 NEH Camera 2124 Position . . . 102
28.2 NEH SXR Collimator 3 Isolation Valve SXR-COL-VGC-01 . . . 102
28.3 NEH SXR Exit Slits Isolation Valve SXR-EXS-VGC-01 . . . 102
28.4 NEH SXR Monochromator Tank Isolation Valve SXR-MON-VGC-01 . . . 103
28.5 NEH SXR Photon Stoppers Isolation Valve SXR-PST-VGC-01 . . . 103
28.6 NEH SXR Transmission Sample System Isolation Valve SXR-TSS-VGC-01 . . . 103
28.7 NEH SXR Zero Order Interlock SXR-MON-MMS-06, SXR-EXS-MMS-01 . . . 104
28.8 NEH1 XTOD S2 Isolation Valve Summary . . . 104

29 Ignored when ST1/ST2 Are In, Stopper SH1 Is In, Stopper SH2 Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In 105
29.1 UM6 Diagnostic Stopper Position . . . 105
29.2 XRT HXRAY UM6 Isolation Valve HXX-UM6-VGC-01 . . . 105
29.3 XRT UM6 Camera Position HXX-UM6-CVP-01 . . . 106

30 Ignored when ST1/ST2 Are In, Stopper SH1 Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In 107
30.1 HX2 UVD VGC 01 Gate Valve Position . . . 107
30.2 HX3 MON VGC 01 Gate Valve Position . . . 107
30.3 NEH1 Camera 124 Position . . . 107
30.4 NEH1 Camera 195 Position . . . 108
30.5 NEH1 XTOD H Isolation Valve Summary . . . 108
30.6 NEH2 HXRAY DVD Isolation Valve HX2-DVD-VGC-01 . . . 108
30.7 NEH3 HXRAY UVD Isolation Valve HX3-UVD-VGC-01 . . . 109

30.8 XPP CS-PAD 1 Detector Damage Fault . . . 109

31 Ignored when ST1/ST2 Are In, Stopper SH1 Is In, TD11 Is In, TDUND Is In, XPP-NH3-POS-00 Beamline Is In, or YG BL211 Is In 110
31.1 NEH3 HXRAY DVD Isolation Valve HX3-DVD-VGC-01 . . . 110

32 Ignored when ST1/ST2 Are In, Stopper SH1 Is In, TD11 Is In, TDUND Is In, XPP-NH3-POS-00 Beamline Is Not In, or YG BL211 Is In 111
32.1 XPP SB2 VGC 01 Gate Valve Position . . . 111

33 Ignored when ST1/ST2 Are In, TD11 Is In, TDUND Is In, or YG BL211 Is In 112
33.1 FEE Camera 1561 Position . . . 112
33.2 FEE Camera 1692 Position . . . 112
33.3 FEE Camera 1953 Position . . . 112
33.4 FEE Camera 2953 Position . . . 113
33.5 FEE Camera 852 Position . . . 113
33.6 FEE Camera 913 Position . . . 113
33.7 FEE Fast Shutter Valve and System Summary . . . 114
33.8 FEE Gas Flow Aperture Summary . . . 114
33.9 FEE Gas Flow Vacuum Isolation Valve Summary . . . 114
33.10 FEE Instrument Vacuum Isolation Valve Summary . . . 114
33.11 FEE XTOD H Isolation Valve Summary . . . 115
33.12 FEE XTOD S1 Isolation Valve Summary . . . 115
33.13 FEE XTOD S2 Isolation Valve Summary . . . 115

34 Ignored when Stopper: BSY D2 Summary Is In or TDUND Is In 116
34.1 SXRSS Watchdog . . . 116

35 Ignored when Stopper: BSY D2 Summary Is In, TD11 Is In, or YG BL211 Is In 117
35.1 BYKIK 120 Hz Abort Trigger . . . 117
35.2 BYKIK 120 Hz Standby Trigger . . . 117
35.3 BYKIK 30 Hz Abort Trigger . . . 117
35.4 BYKIK 30 Hz Standby Trigger . . . 117
35.5 BYKIK Readback Signal . . . 118
35.6 Magnet In Tolerance: BYD1 . . . 118
35.7 Magnet Power: BYD1 . . . 118

36 Ignored when Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In 119
36.1 Magnet In Tolerance: QE31 . . . 119
36.2 Magnet In Tolerance: QUM1 . . . 119
36.3 Magnet In Tolerance: QUM2 . . . 119
36.4 Magnet In Tolerance: QUM3 . . . 119
36.5 Magnet In Tolerance: QUM4 . . . 120
36.6 Magnet Power: QE31 . . . 120
36.7 Magnet Power: QUM1 . . . 120

36.8 Magnet Power: QUM2 . . . 120
36.9 Magnet Power: QUM3 . . . 121
36.10 Magnet Power: QUM4 . . . 121

37 Ignored when TD11 Is In or YG BL211 Is In 122
37.1 Bunch Length Monitor BL21 Position . . . 122
37.2 Flowswitch BSY PC320 . . . 122
37.3 Flowswitch BSY PC90 . . . 122
37.4 Flowswitch BSY RAD LCW Slit 10/30 . . . 122
37.5 Flowswitch CE21 . . . 123
37.6 Hydrogen Recombiner For BSY 1 Collimator . . . 123
37.7 Hydrogen Recombiner For BSY 2 Slit 10/30 . . . 123
37.8 Ion Chamber Gas Flowswitch BSY A . . . 123
37.9 Ion Chamber Gas Flowswitch BSY B . . . 124
37.10 Ion Chamber Gas Flowswitch BSY C . . . 124
37.11 Mirror BL21 Position . . . 124
37.12 PIC Gas Pressure LI24 . . . 124
37.13 PIC HVPS B911 . . . 125
37.14 PIC HVPS B912 . . . 125
37.15 PIC HVPS B913 . . . 125
37.16 PIC Raw Charge Thresholds: LTU1 220 . . . 125
37.17 PIC Raw Charge Thresholds: LTU1 252 . . . 126
37.18 PIC Raw Charge Thresholds: LTU1 280 . . . 126
37.19 PIC Raw Charge Thresholds: LTU1 420 . . . 126
37.20 PIC Raw Charge Thresholds: LTU1 450 . . . 127
37.21 PIC Raw Charge Thresholds: LTU1 480 . . . 127
37.22 PIC Raw Charge Thresholds: LTU1 722 . . . 127
37.23 PIC Raw Charge Thresholds: LTU1 732 . . . 128
37.24 PIC Raw Charge Thresholds: LTU1 762 . . . 128
37.25 PIC Raw Charge Thresholds: LTU1 772 . . . 128
37.26 PIC Trigger Missed (LN28) . . . 129
37.27 PIC Trigger Missed (LN29) . . . 129
37.28 PIC Trigger Missed (LN31) . . . 129
37.29 Profile Monitor BSY0 45 . . . 129
37.30 Temperature: Common Line Summary . . . 130
37.31 Temperature: North Arc Summary . . . 130
37.32 Toroid Chassis IMBC2 . . . 130
37.33 Toroid Comparator IMBC2IN/IMBC2OUT . . . 131

38 Ignored when TD11 Is In, TDUND Is In, or YG BL211 Is In 132
38.1 B4C Protection of ST1/ST2 . . . 132
38.2 BFW 1010 Position . . . 132
38.3 BFW 110 Position . . . 132
38.4 BFW 1110 Position . . . 133
38.5 BFW 1210 Position . . . 133

38.6 BFW 1310 Position . . . 133
38.7 BFW 1410 Position . . . 134
38.8 BFW 1510 Position . . . 134
38.9 BFW 1610 Position . . . 134
38.10 BFW 1710 Position . . . 135
38.11 BFW 1810 Position . . . 135
38.12 BFW 1910 Position . . . 135
38.13 BFW 2010 Position . . . 136
38.14 BFW 210 Position . . . 136
38.15 BFW 2110 Position . . . 136
38.16 BFW 2210 Position . . . 137
38.17 BFW 2310 Position . . . 137
38.18 BFW 2410 Position . . . 137
38.19 BFW 2510 Position . . . 138
38.20 BFW 2610 Position . . . 138
38.21 BFW 2710 Position . . . 138
38.22 BFW 2810 Position . . . 139
38.23 BFW 2910 Position . . . 139
38.24 BFW 3010 Position . . . 139
38.25 BFW 310 Position . . . 140
38.26 BFW 3110 Position . . . 140
38.27 BFW 3210 Position . . . 140
38.28 BFW 3310 Position . . . 141
38.29 BFW 410 Position . . . 141
38.30 BFW 510 Position . . . 141
38.31 BFW 610 Position . . . 142
38.32 BFW 710 Position . . . 142
38.33 BFW 810 Position . . . 142
38.34 BFW 910 Position . . . 143
38.35 BFW Inserted Count . . . 143
38.36 BLM Argonne Heartbeat (LN32) . . . 144
38.37 BLM Argonne Heartbeat (LN33) . . . 145
38.38 BLM Argonne Heartbeat (LN35) . . . 145
38.39 BLM Argonne Heartbeat (LN36) . . . 145
38.40 BLM Argonne Heartbeat (LN37) . . . 146
38.41 BLM HVPS LTU1 762 . . . 146
38.42 BLM HVPS UND1 120 . . . 146
38.43 BLM HVPS UND1 1720 . . . 147
38.44 BLM HVPS UND1 2221 . . . 147
38.45 BLM HVPS UND1 2520 . . . 147
38.46 BLM HVPS UND1 3320 . . . 148
38.47 BLM HVPS UND1 920 . . . 148
38.48 BLM Pedestal Threshold: LTU1 722 . . . 148
38.49 BLM Pedestal Threshold: LTU1 732 . . . 149
38.50 BLM Pedestal Threshold: LTU1 762 . . . 149

38.51 BLM Pedestal Threshold: LTU1 772 . . . 149
38.52 BLM Pedestal Thresholds: LTU1 980 . . . 150
38.53 BLM Pedestal Thresholds: UND 1021 . . . 150
38.54 BLM Pedestal Thresholds: UND 1121 . . . 150
38.55 BLM Pedestal Thresholds: UND 120 . . . 151
38.56 BLM Pedestal Thresholds: UND 121 . . . 151
38.57 BLM Pedestal Thresholds: UND 1221 . . . 151
38.58 BLM Pedestal Thresholds: UND 1321 . . . 152
38.59 BLM Pedestal Thresholds: UND 1421 . . . 152
38.60 BLM Pedestal Thresholds: UND 1521 . . . 152
38.61 BLM Pedestal Thresholds: UND 1621 . . . 153
38.62 BLM Pedestal Thresholds: UND 1720 . . . 153
38.63 BLM Pedestal Thresholds: UND 1721 . . . 153
38.64 BLM Pedestal Thresholds: UND 1821 . . . 154
38.65 BLM Pedestal Thresholds: UND 1921 . . . 154
38.66 BLM Pedestal Thresholds: UND 2021 . . . 154
38.67 BLM Pedestal Thresholds: UND 2121 . . . 155
38.68 BLM Pedestal Thresholds: UND 221 . . . 155
38.69 BLM Pedestal Thresholds: UND 2221 . . . 155
38.70 BLM Pedestal Thresholds: UND 2321 . . . 156
38.71 BLM Pedestal Thresholds: UND 2421 . . . 156
38.72 BLM Pedestal Thresholds: UND 2520 . . . 156
38.73 BLM Pedestal Thresholds: UND 2521 . . . 157
38.74 BLM Pedestal Thresholds: UND 2621 . . . 157
38.75 BLM Pedestal Thresholds: UND 2721 . . . 157
38.76 BLM Pedestal Thresholds: UND 2821 . . . 158
38.77 BLM Pedestal Thresholds: UND 2921 . . . 158
38.78 BLM Pedestal Thresholds: UND 3021 . . . 158
38.79 BLM Pedestal Thresholds: UND 3121 . . . 159
38.80 BLM Pedestal Thresholds: UND 321 . . . 159
38.81 BLM Pedestal Thresholds: UND 3221 . . . 159
38.82 BLM Pedestal Thresholds: UND 3320 . . . 160
38.83 BLM Pedestal Thresholds: UND 3321 . . . 160
38.84 BLM Pedestal Thresholds: UND 421 . . . 160
38.85 BLM Pedestal Thresholds: UND 521 . . . 161
38.86 BLM Pedestal Thresholds: UND 621 . . . 161
38.87 BLM Pedestal Thresholds: UND 721 . . . 161
38.88 BLM Pedestal Thresholds: UND 821 . . . 162
38.89 BLM Pedestal Thresholds: UND 920 . . . 162
38.90 BLM Pedestal Thresholds: UND 921 . . . 162
38.91 BLM Pedestal Thresholds: UND BLF1 . . . 163
38.92 BLM Pedestal Thresholds: UND BLF17 . . . 163
38.93 BLM PEP Timing Check (LN30) . . . 163
38.94 BLM PEP Timing Check (LN32) . . . 164
38.95 BLM PEP Timing Check (LN33) . . . 164

38.96 BLM PEP Timing Check (LN35) . . . 164
38.97 BLM PEP Timing Check (LN36) . . . 165
38.98 BLM PEP Timing Check (LN37) . . . 165
38.99 BLM Raw Charge Thresholds: LTU1 722 . . . 165
38.100 BLM Raw Charge Thresholds: LTU1 732 . . . 166
38.101 BLM Raw Charge Thresholds: LTU1 762 . . . 166
38.102 BLM Raw Charge Thresholds: LTU1 772 . . . 166
38.103 BLM Raw Charge Thresholds: LTU1 980 . . . 167
38.104 BLM Raw Charge Thresholds: UND 1021 . . . 167
38.105 BLM Raw Charge Thresholds: UND 1121 . . . 167
38.106 BLM Raw Charge Thresholds: UND 120 . . . 168
38.107 BLM Raw Charge Thresholds: UND 121 . . . 168
38.108 BLM Raw Charge Thresholds: UND 1221 . . . 168
38.109 BLM Raw Charge Thresholds: UND 1321 . . . 169
38.110 BLM Raw Charge Thresholds: UND 1421 . . . 169
38.111 BLM Raw Charge Thresholds: UND 1521 . . . 169
38.112 BLM Raw Charge Thresholds: UND 1621 . . . 170
38.113 BLM Raw Charge Thresholds: UND 1720 . . . 170
38.114 BLM Raw Charge Thresholds: UND 1721 . . . 170
38.115 BLM Raw Charge Thresholds: UND 1821 . . . 171
38.116 BLM Raw Charge Thresholds: UND 1921 . . . 171
38.117 BLM Raw Charge Thresholds: UND 2021 . . . 171
38.118 BLM Raw Charge Thresholds: UND 2121 . . . 172
38.119 BLM Raw Charge Thresholds: UND 221 . . . 172
38.120 BLM Raw Charge Thresholds: UND 2221 . . . 172
38.121 BLM Raw Charge Thresholds: UND 2321 . . . 173
38.122 BLM Raw Charge Thresholds: UND 2421 . . . 173
38.123 BLM Raw Charge Thresholds: UND 2520 . . . 173
38.124 BLM Raw Charge Thresholds: UND 2521 . . . 174
38.125 BLM Raw Charge Thresholds: UND 2621 . . . 174
38.126 BLM Raw Charge Thresholds: UND 2721 . . . 174
38.127 BLM Raw Charge Thresholds: UND 2821 . . . 175
38.128 BLM Raw Charge Thresholds: UND 2921 . . . 175
38.129 BLM Raw Charge Thresholds: UND 3021 . . . 175
38.130 BLM Raw Charge Thresholds: UND 3121 . . . 176
38.131 BLM Raw Charge Thresholds: UND 321 . . . 176
38.132 BLM Raw Charge Thresholds: UND 3221 . . . 176
38.133 BLM Raw Charge Thresholds: UND 3320 . . . 177
38.134 BLM Raw Charge Thresholds: UND 3321 . . . 177
38.135 BLM Raw Charge Thresholds: UND 421 . . . 177
38.136 BLM Raw Charge Thresholds: UND 521 . . . 178
38.137 BLM Raw Charge Thresholds: UND 621 . . . 178
38.138 BLM Raw Charge Thresholds: UND 721 . . . 178
38.139 BLM Raw Charge Thresholds: UND 821 . . . 179
38.140 BLM Raw Charge Thresholds: UND 920 . . . 179

38.141 BLM Raw Charge Thresholds: UND 921 . . . 179
38.142 BLM Raw Charge Thresholds: UND BLF1 . . . 180
38.143 BLM Raw Charge Thresholds: UND BLF17 . . . 180
38.144 BLM Timing Check (BLM:UND1:4) . . . 180
38.145 BLM Timing Check (LN30) . . . 181
38.146 BLM Trigger Missed (LN30) . . . 181
38.147 BLM Trigger Missed (LN32) . . . 181
38.148 BLM Trigger Missed (LN33) . . . 181
38.149 BLM Trigger Missed (LN35) . . . 182
38.150 BLM Trigger Missed (LN36) . . . 182
38.151 BLM Trigger Missed (LN37) . . . 182
38.152 BLM/PIC Watchdog: Downstream of TDUND . . . 182
38.153 BPM Summary (1-9) . . . 183
38.154 BPM Summary (10-18) . . . 183
38.155 BPM Summary (19-27) . . . 183
38.156 BPM Summary (28-36) . . . 183
38.157 OTR BL237 Position and TDUND Not In . . . 184
38.158 OTR BL291 Position and TDUND Not In . . . 184
38.159 OTR BL541 Position and TDUND Not In . . . 184
38.160 OTR BL571 Position and TDUND Not In . . . 185
38.161 OTR BL621 Position and TDUND Not In . . . 185
38.162 OTR BL711 Position and TDUND Not In . . . 185
38.163 OTR21 Position When TDUND Not In . . . 186
38.164 OTR22 Position When TDUND Not In . . . 186
38.165 OTR30 Position When TDUND Not In . . . 186
38.166 OTR33 Position When TDUND Not In . . . 187
38.167 OTRH1 Position When TDUND Not In . . . 187
38.168 OTRH2 Position When TDUND Not In . . . 187
38.169 PIC HVPS B921 . . . 188
38.170 PIC Trigger Missed (LN34) . . . 188
38.171 THz Radiator Beryllium Foil . . . 188
38.172 Toroid Comparator (IMUNDI vs IMUNDO) . . . 188
38.173 Toroid Comparator (IMUNDO vs IMDUMP) . . . 189
38.174 Toroid Comparator Power Status (B921) . . . 189

39 Ignored when TDUND Is In 190
39.1 HXRSS Beamline Position . . . 190
39.2 HXRSS Chicane Bend Magnet Power Supply . . . 190
39.3 HXRSS Crystal Position . . . 190
39.4 HXRSS Crystal Valid Position . . . 191
39.5 HXRSS Mode State . . . 191

40 Ignored when YG BL211 Is In 194
40.1 BCS PIC RAW Charge Threshold DMP 997 . . . 194
40.2 BCS PIC RAW Charge Threshold DMP 998 . . . 194

40.3 BLM/PIC Watchdog: IN20 . . . 194
40.4 BLM/PIC Watchdog: Upstream of TDUND . . . 194
40.5 BX01/BX02 Status . . . 195
40.6 BXG Status . . . 195
40.7 COLL Flow Switch LI29-1 . . . 195
40.8 COLL Flow Switch LI29-4 . . . 195
40.9 COLL Flow Switch LI29-5 . . . 196
40.10 COLL Flow Switch LI29-9 . . . 196
40.11 COLL Flow Switch LI30-1 . . . 196
40.12 COLL Flow Switch LI30-4 . . . 196
40.13 COLL Flow Switch LI30-5 . . . 197
40.14 Diag Stopper HFX DG2 Is In . . . 197
40.15 Diag Stopper HFX UM6 Is In . . . 197
40.16 Flowswitch CE11 . . . 197
40.17 Flowswitch TD11 . . . 198
40.18 Flowswitch: COLL Flow Switch LI28-9 . . . 198
40.19 Mirror BL11 Position . . . 198
40.20 OTR BL237 Position . . . 198
40.21 OTR BL291 Position . . . 199
40.22 OTR BL541 Position . . . 199
40.23 OTR BL571 Position . . . 199
40.24 OTR BL621 Position . . . 200
40.25 OTR BL711 Position . . . 200
40.26 OTR LI25 920 Position . . . 200
40.27 OTR21 Position . . . 201
40.28 OTR22 Position . . . 201
40.29 OTR30 Position . . . 201
40.30 OTR33 Position . . . 202
40.31 OTRH1 Position . . . 202
40.32 OTRH2 Position . . . 202
40.33 PIC Raw Charge Thresholds: LI24 791 . . . 203
40.34 PIC Raw Charge Thresholds: LI24 811 . . . 203
40.35 PIC Trigger Missed (LN16) . . . 203
40.36 PPS Stopper S5B Position . . . 204
40.37 Scraper Water LI21-9 (Station 22-1) . . . 204
40.38 Scraper Water LI22-9 (Station 23-1) . . . 204
40.39 Scraper Water LI23-9 (Station 24-1) . . . 204
40.40 Scraper Water LI24-9 (Station 25-1) . . . 205
40.41 Scraper Water LI25-9 (Station 26-1) . . . 205
40.42 Scraper Water LI26-9 (Station 27-1) . . . 205
40.43 Scraper Water LI27-9 (Station 28-1) . . . 205
40.44 Scraper Water LI28-9 (Station 29-1) . . . 206
40.45 Scraper Water LI29-9 (Station 30-1) . . . 206
40.46 Stopper S5B Is In . . . 206
40.47 Stopper XRT S5 Position . . . 206

40.48 Stopper XRT S6 Position . . . 207
40.49 TDUND Position . . . 207
40.50 TIU: DPS Temperature: LI30 . . . 207
40.51 TIU: Fast Shutter 2 Position: LI30 . . . 207
40.52 TIU: Fast Shutter 2A Position: LI30 . . . 208
40.53 TIU: LI28 Dump 5879 Flow Switch . . . 208
40.54 TIU: LI28 Dump 5879 Klixon . . . 208
40.55 TIU: Main Manifold Gauge: LI21 Station 5 . . . 208
40.56 TIU: Main Manifold Gauge: LI22 Station 5 . . . 209
40.57 TIU: Main Manifold Gauge: LI23 Station 5 . . . 209
40.58 TIU: Main Manifold Gauge: LI24 Station 5 . . . 209
40.59 TIU: Main Manifold Gauge: LI25 Station 5 . . . 210
40.60 TIU: Main Manifold Gauge: LI26 Station 5 . . . 210
40.61 TIU: Main Manifold Gauge: LI27 Station 5 . . . 210
40.62 TIU: Main Manifold Gauge: LI28 Station 5 . . . 210
40.63 TIU: Main Manifold Gauge: LI29 Station 5 . . . 211
40.64 TIU: Main Manifold Gauge: LI30 Station 5 . . . 211
40.65 TIU: Main Manifold Gauge: LI30 Station 9 . . . 211
40.66 TIU: MCC Emergency Radiation Stopper . . . 212
40.67 TIU: PIC HV Power Supply KG30-C1419 . . . 212
40.68 TIU: Stopper 950 and 960 Position . . . 212
40.69 TIU: Sub-booster Ready: LI21 . . . 212
40.70 TIU: Sub-booster Ready: LI22 . . . 213
40.71 TIU: Sub-booster Ready: LI25 . . . 213
40.72 TIU: Sub-booster Ready: LI26 . . . 213
40.73 TIU: Sub-booster Ready: LI27 . . . 213
40.74 TIU: Sub-booster Ready: LI28 . . . 214
40.75 TIU: Sub-booster Ready: LI29 . . . 214
40.76 TIU: Sub-booster Ready: LI30 . . . 214
40.77 TIU: VVPG LI21-9 Position (Station 22-1) . . . 214
40.78 TIU: VVPG LI22-9 Position (Station 23-1) . . . 215
40.79 TIU: VVPG LI23-9 Position (Station 24-1) . . . 215
40.80 TIU: VVPG LI25-9 Position (Station 26-1) . . . 215
40.81 TIU: VVPG LI26-9 Position (Station 27-1) . . . 215
40.82 TIU: VVPG LI27-9 Position (Station 28-1) . . . 216
40.83 TIU: VVPG LI28-9 Position (Station 29-1) . . . 216
40.84 TIU: VVPG LI29-9 Position (Station 30-1) . . . 216
40.85 TIU: VVPG LI30-9 Position (Station 30-9) . . . 216
40.86 TIU: VVS Circuit Breaker: LI20 . . . 217
40.87 TIU: VVS Circuit Breaker: LI22 . . . 217
40.88 TIU: VVS Circuit Breaker: LI24 . . . 217
40.89 TIU: VVS Circuit Breaker: LI26 . . . 217
40.90 TIU: VVS Circuit Breaker: LI28 . . . 218
40.91 TIU: VVS Circuit Breaker: LI30 . . . 218
40.92 TIU:VVFS LI21-9 Position (Station 22-1) . . . 218

40.93 TIU:VVFS LI22-9 Position (Station 23-1) . . . 218
40.94 TIU:VVFS LI23-9 Position (Station 24-1) . . . 219
40.95 TIU:VVFS LI24-9 Position (Station 25-1) . . . 219
40.96 TIU:VVFS LI25-9 Position (Station 26-1) . . . 219
40.97 TIU:VVFS LI26-9 Position (Station 27-1) . . . 219
40.98 TIU:VVFS LI27-9 Position (Station 28-1) . . . 220
40.99 TIU:VVFS LI28-9 Position (Station 29-1) . . . 220
40.100 TIU:VVFS LI29-9 Position (Station 30-1) . . . 220
40.101 Toroid Chassis IM11 . . . 220
40.102 Toroid Chassis IM12 . . . 221
40.103 Toroid Comparator IMBC1IN/IMBC1OUT . . . 221
40.104 Toroid Peak Current Monitor IM01 . . . 221
40.105 VVFS LI21-9 Position (Station 22-1) . . . 221
40.106 VVFS LI22-9 Position (Station 23-1) . . . 222
40.107 VVFS LI23-9 Position (Station 24-1) . . . 222
40.108 VVFS LI24-9 Position (Station 25-1) . . . 222
40.109 VVFS LI25-9 Position (Station 26-1) . . . 222
40.110 VVFS LI26-9 Position (Station 27-1) . . . 223
40.111 VVFS LI27-9 Position (Station 28-1) . . . 223
40.112 VVFS LI28-9 Position (Station 29-1) . . . 223
40.113 VVFS LI29-9 Position (Station 30-1) . . . 223
40.114 VVMG LI21 195 Position . . . 224
40.115 VVMG LTU1 505 Position . . . 224
40.116 VVPG IN20 435 Position . . . 224
40.117 VVPG IN20 545 Position . . . 224
40.118 VVPG IN20 635 Position . . . 225
40.119 VVPG IN20 915 Position . . . 225
40.120 VVPG LI21-9 Position (Station 22-1) . . . 225
40.121 VVPG LI22-9 Position (Station 23-1) . . . 225
40.122 VVPG LI23-9 Position (Station 24-1) . . . 226
40.123 VVPG LI24 710 Position . . . 226
40.124 VVPG LI24 896 Position . . . 226
40.125 VVPG LI25-9 Position (Station 26-1) . . . 226
40.126 VVPG LI26-9 Position (Station 27-1) . . . 227
40.127 VVPG LI27-9 Position (Station 28-1) . . . 227
40.128 VVPG LI28-9 Position (Station 29-1) . . . 227
40.129 VVPG LI29-9 Position (Station 30-1) . . . 227
40.130 VVPG LI30-9 Position (Station 30-9) . . . 228
40.131 YAG IN20 241 Position . . . 228
40.132 YAG IN20 351 Position . . . 228
40.133 YAG LI21 995 Position . . . 229
40.134 YG BL241 Position . . . 229
40.135 YG BL351 Position . . . 229

41 Always Evaluated **230**

41.1 Backward Beam Stopper (RST1) . . . 230
41.2 Bypass Recover . . . 230
41.3 Gun RF Peak Power 20-6 . . . 230
41.4 Gun Waveguide Vacuum Summary . . . 230
41.5 IMPS IOC Heartbeat . . . 231
41.6 Laser Heater Attenuator Position . . . 231
41.7 Mechanical Shutter Position . . . 231
41.8 Mirror AM01 Position . . . 231
41.9 MPS Beam Permit: BYKIK . . . 232
41.10 MPS Beam Permit: Heater Shutter . . . 232
41.11 MPS Beam Permit: Mechanical Shutter . . . 232
41.12 MPS Beam Permit: Pockels Cell . . . 232
41.13 MPS Mechanical Shutter Position . . . 233
41.14 PIC Raw Charge Thresholds: BSY0 16 . . . 233
41.15 PIC Raw Charge Thresholds: BSY0 33 . . . 233
41.16 PIC Raw Charge Thresholds: BSY0 45 . . . 234
41.17 PIC Raw Charge Thresholds: BSY0 59 . . . 234
41.18 PIC Raw Charge Thresholds: BSY0 78A . . . 234
41.19 PIC Raw Charge Thresholds: BSY0 78B . . . 235
41.20 PIC Raw Charge Thresholds: IN20 185 . . . 235
41.21 PIC Raw Charge Thresholds: IN20 232 . . . 235
41.22 PIC Raw Charge Thresholds: IN20 245 . . . 236
41.23 PIC Raw Charge Thresholds: IN20 665 . . . 236
41.24 PIC Raw Charge Thresholds: IN20 775 . . . 236
41.25 PIC Raw Charge Thresholds: IN20 933 . . . 237
41.26 PIC Raw Charge Thresholds: LI28 916 . . . 237
41.27 PIC Raw Charge Thresholds: LI29 146 . . . 237
41.28 PIC Raw Charge Thresholds: LI29 446 . . . 238
41.29 PIC Raw Charge Thresholds: LI29 546 . . . 238
41.30 PIC Raw Charge Thresholds: LI29 801 . . . 238
41.31 PIC Raw Charge Thresholds: LI29 956 . . . 239
41.32 PIC Raw Charge Thresholds: LI30 146 . . . 239
41.33 PIC Raw Charge Thresholds: LI30 446 . . . 239
41.34 PIC Raw Charge Thresholds: LI30 546 . . . 240
41.35 PIC Raw Charge Thresholds: LI30 801 . . . 240
41.36 PIC Trigger Missed (LN11) . . . 240
41.37 PIC Trigger Missed (LN22) . . . 240
41.38 PIC Trigger Missed (LN25) . . . 241
41.39 Pockels Cell AND Gate 100 . . . 241
41.40 Pockels Cell AND Gate 200 . . . 241
41.41 Rate Request: BYKIK 1 Hz . . . 241
41.42 Rate Request: BYKIK 10 Hz . . . 242
41.43 Rate Request: BYKIK 30 Hz . . . 242
41.44 Rate Request: BYKIK 60 Hz . . . 242
41.45 Rate Request: BYKIK Burst . . . 242

41.46 Rate Request: BYKIK Single Shot . . . 243
41.47 Rate Request: Pockels Cell 1 Hz . . . 243
41.48 Rate Request: Pockels Cell 10 Hz . . . 243
41.49 Rate Request: Pockels Cell 30 Hz . . . 243
41.50 Rate Request: Pockels Cell 60 Hz . . . 244
41.51 Rate Request: Pockels Cell Burst . . . 244
41.52 Rate Request: Pockels Cell Single Shot . . . 244
41.53 TIU: DPS Temperature . . . 244
41.54 VVMG IN20 175 Position . . . 245
41.55 VVPG IN20 155 Position . . . 245
41.56 YAG IN20 211 Position . . . 245
41.57 YAG IN20 841 Position . . . 245
41.58 YAG IN20 921 Position . . . 246

42 Ignore Logic **247**
42.1 A-Line B1/B2 Is Not On AND A-Line Kicker Is Not Enabled . . . 247
42.2 A-Line SL10 Is Closed . . . 247
42.3 BX01/BX02 Is Off . . . 247
42.4 BX01/BX02 Is On . . . 248
42.5 BXG Is Off . . . 248
42.6 BXG Is On . . . 248
42.7 Diag Stopper XCS SB1 Is In . . . 248
42.8 Laser Heater Attenuator Is In . . . 249
42.9 M3H Mirror Is In Beam . . . 249
42.10 M3H Mirror Is Out of Beam . . . 249
42.11 ST1/ST2 Are In . . . 249
42.12 Stopper HFP-MPA-02 Is In . . . 249
42.13 Stopper S1 Is In . . . 250
42.14 Stopper S2 Is In . . . 250
42.15 Stopper S2B Is In . . . 250
42.16 Stopper SH1 Is In . . . 250
42.17 Stopper SH2 Is In . . . 251
42.18 Stopper XRT S5 Is In . . . 251
42.19 Stopper XRT S6 Is In . . . 251
42.20 Stopper: BSY D2 Summary Is In . . . 251
42.21 TD11 Is In . . . 251
42.22 TDUND Is In . . . 252
42.23 XCS Is Not In Main Line . . . 252
42.24 XPP-NH3-POS-00 Beamline Is In . . . 252
42.25 XPP-NH3-POS-00 Beamline Is Not In . . . 252
42.26 YG BL211 Is In . . . 253

1 Ignored when A-Line B1/B2 Is Not On AND A-Line Kicker Is Not Enabled, A-Line SL10 Is Closed, BX01/BX02 Is Off, BXG Is On, TD11 Is In, or YG BL211 Is In

1.1 Flowswitch: COLL BSYA 2060 (PC20)

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `COLL_BSYA_2060_FLOW_SW_STATE`

1.2 Flowswitch: COLL BSYA 2410 (COLL24H)

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `COLL_BSYA_2470_H_FLOW_SW_STATE`

1.3 Flowswitch: COLL BSYA 2410 (COLL24V)

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `COLL_BSYA_2470_V_FLOW_SW_STATE`

1.4 Flowswitch: COLL BSYA 2410 (PC24)

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = COLL_BSYA_2410_FLOW_SW_STATE

1.5 Flowswitch: COLL BSYA 2600 (PC26)

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = COLL_BSYA_2600_FLOW_SW_STATE

1.6 Flowswitch: COLL BSYA 2990 (PC29)

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = COLL_BSYA_2990_FLOW_SW_STATE

1.7 Flowswitch: COLL BSYA 3710 (C37)

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = COLL_BSYA_3710_FLOW_SW_STATE

1.8 Flowswitch: COLL BSYA 4120 (3C1A)

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = COLL_ESA0_4120_FLOW_SW_STATE

1.9 PIC Raw Charge Thresholds: BSYA 2061

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICM_BSYA_2061_LOSSL_THRESHOLD,
B = PICM_BSYA_2061_LOSSH_THRESHOLD

1.10 PIC Raw Charge Thresholds: BSYA 2120

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICM_BSYA_2120_LOSSL_THRESHOLD,
B = PICM_BSYA_2120_LOSSH_THRESHOLD

1.11 PIC Raw Charge Thresholds: BSYA 2220

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_BSYA_2220_LOSSL_THRESHOLD`,
B = `PICM_BSYA_2220_LOSSH_THRESHOLD`

1.12 PIC Raw Charge Thresholds: BSYA 2321

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_BSYA_2321_LOSSL_THRESHOLD`,
B = `PICM_BSYA_2321_LOSSH_THRESHOLD`

1.13 PIC Raw Charge Thresholds: BSYA 2411

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_BSYA_2411_LOSSL_THRESHOLD`,
B = `PICM_BSYA_2411_LOSSH_THRESHOLD`

1.14 PIC Raw Charge Thresholds: BSYA 2472

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_BSYA_2472_LOSSL_THRESHOLD`,
B = `PICM_BSYA_2472_LOSSH_THRESHOLD`

1.15 PIC Raw Charge Thresholds: BSYA 2473

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_BSYA_2473_LOSSL_THRESHOLD`,
B = `PICM_BSYA_2473_LOSSH_THRESHOLD`

1.16 PIC Raw Charge Thresholds: BSYA 2474

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_BSYA_2474_LOSSL_THRESHOLD`,
B = `PICM_BSYA_2474_LOSSH_THRESHOLD`

1.17 PIC Raw Charge Thresholds: BSYA 2475

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_BSYA_2475_LOSSL_THRESHOLD`,
B = `PICM_BSYA_2475_LOSSH_THRESHOLD`

1.18 PIC Raw Charge Thresholds: BSYA 2520

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_BSYA_2520_LOSSL_THRESHOLD`,
B = `PICM_BSYA_2520_LOSSH_THRESHOLD`

1.19 PIC Raw Charge Thresholds: BSYA 2601

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_BSYA_2601_LOSSL_THRESHOLD`,
B = `PICM_BSYA_2601_LOSSH_THRESHOLD`

1.20 PIC Raw Charge Thresholds: BSYA 2861

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_BSYA_2861_LOSSL_THRESHOLD`,
B = `PICM_BSYA_2861_LOSSH_THRESHOLD`

1.21 PIC Raw Charge Thresholds: BSYA 2990

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_BSYA_2990_LOSSL_THRESHOLD`,
B = `PICM_BSYA_2990_LOSSH_THRESHOLD`

1.22 PIC Raw Charge Thresholds: BSYA 3320

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_BSYA_3320_LOSSL_THRESHOLD`,
B = `PICM_BSYA_3320_LOSSH_THRESHOLD`

1.23 PIC Raw Charge Thresholds: BSYA 3720

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICM_BSYA_3720_LOSSL_THRESHOLD,
B = PICM_BSYA_3720_LOSSH_THRESHOLD

1.24 PIC Raw Charge Thresholds: BSYA 3721

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICM_BSYA_3721_LOSSL_THRESHOLD,
B = PICM_BSYA_3721_LOSSH_THRESHOLD

1.25 PIC Raw Charge Thresholds: BSYA 3890

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICM_BSYA_3890_LOSSL_THRESHOLD,
B = PICM_BSYA_3890_LOSSH_THRESHOLD

1.26 Stopper BSYA 2275 (ST22) Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
MOVING	F	F	0 Hz	0 Hz	0 Hz	–
OUT	F	T	120 Hz	120 Hz	120 Hz	–
IN	T	F	0 Hz	0 Hz	0 Hz	–
BROKEN	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = STPR_BSYA_2275_ST22_OUT_LIM_STATE,
B = STPR_BSYA_2275_ST22_IN_LIM_STATE

1.27 Stopper BSYA 2930 (ST29) Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
MOVING	F	F	0 Hz	0 Hz	0 Hz	–
OUT	F	T	120 Hz	120 Hz	120 Hz	–
IN	T	F	0 Hz	0 Hz	0 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = STPR_BSYA_2930_ST29_OUT_LIM_STATE,
B = STPR_BSYA_2930_ST29_IN_LIM_STATE

1.28 Temperature: RTD BSYA PAST SL10 Summary

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = RTD_BSYA_2060_PASTSL10SUM_STATUS

1.29 Vac Valve: VVFS BSYA 2855 (FV28)

Name	*A*	PC	MS	BYKIK	LHS
NOT_OPEN	F	0 Hz	0 Hz	0 Hz	–
OPEN	T	120 Hz	120 Hz	120 Hz	–

Where
A = VVFS_BSYA_2855_POSITION_STATE

1.30 Vac Valve: VVPG BSYA 2635 (IV26)

Name	A	PC	MS	BYKIK	LHS
NOT_OPEN	F	0 Hz	0 Hz	0 Hz	–
OPEN	T	120 Hz	120 Hz	120 Hz	–

Where
A = VVPG_BSYA_2635_POSITION_STATE

1.31 Vac Valve: VVPG ESA0 4195 POSITION (IV41)

Name	A	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = VVPG_ESA0_4195_POSITION_STATE

2 Ignored when A-Line B1/B2 Is Not On AND A-Line Kicker Is Not Enabled, BX01/BX02 Is Off, BXG Is On, TD11 Is In, or YG BL211 Is In

2.1 A-Line SL10 Position

The following code assigns the truth table's state number to the `unsigned int` variable `state`.

```
state = (unsigned int) -1;

if ( SLIT_BSYA_2010_SL10_FB_IN_STATE &&
        SLIT_BSYA_2010_SL10_FT_IN_STATE &&
        SLIT_BSYA_2010_SL10_RB_IN_STATE &&
        SLIT_BSYA_2010_SL10_RT_IN_STATE )
{
    state = 0; /* SL10 is Closed */
}

else
{
    state = 1; /* SL10 is Not Closed */
}
```

Name	State	PC	MS	BYKIK	LHS
Closed	0	120 Hz	120 Hz	120 Hz	–
Not_Closed	1	120 Hz	120 Hz	120 Hz	–

2.2 Flowswitch: BPM BSYA 1020 (BPM10)

Name	*A*	PC	MS	BYKIK	LHS
IS_NOT_OK	F	0 Hz	0 Hz	–	–
OK	T	120 Hz	120 Hz	–	–

Where
A = `BPM_BSYA_1020_FLOW_SW_STATE`

2.3 Flowswitch: BPM BSYA 1240 (BPM12)

Name	*A*	PC	MS	BYKIK	LHS
IS_NOT_OK	F	0 Hz	0 Hz	–	–
OK	T	120 Hz	120 Hz	–	–

Where
A = `BPM_BSYA_1240_FLOW_SW_STATE`

2.4 Flowswitch: COLL BSY0 16 (50PC20)

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `COLL_BSY0_16_FLOW_SW_STATE`

2.5 Flowswitch: COLL BSY0 33 (50PC30)

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `COLL_BSY0_33_FLOW_SW_STATE`

2.6 Flowswitch: COLL BSY0 45 (50PC-45)

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `COLL_BSY0_45_FLOW_SW_STATE`

2.7 Flowswitch: COLL BSY0 59 (PC0119)

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = COLL_BSY0_59_FLOW_SW_STATE

2.8 Flowswitch: COLL BSY0 65 (PC0145)

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = COLL_BSY0_65_FLOW_SW_STATE

2.9 Flowswitch: COLL BSY0 67 (PC0155)

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = COLL_BSY0_67_FLOW_SW_STATE

2.10 Flowswitch: COLL BSY0 69 (PC0165)

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = COLL_BSY0_69_FLOW_SW_STATE

2.11 Flowswitch: COLL BSY0 71 (PC0175)

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `COLL_BSY0_71_FLOW_SW_STATE`

2.12 Flowswitch: COLL BSY0 73 (PC0185)

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `COLL_BSY0_73_FLOW_SW_STATE`

2.13 Flowswitch: COLL BSY0 75 (PC0195)

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `COLL_BSY0_75_FLOW_SW_STATE`

2.14 Flowswitch: COLL BSYA 1015 (PC10)

Name	*A*	PC	MS	BYKIK	LHS
IS_NOT_OK	F	0 Hz	0 Hz	–	–
OK	T	120 Hz	120 Hz	–	–

Where
A = `COLL_BSYA_1015_FLOW_SW_STATE`

2.15 Flowswitch: COLL BSYA 1015 (PC10)

Name	*A*	PC	MS	BYKIK	LHS
IS_NOT_OK	F	0 Hz	0 Hz	–	–
OK	T	120 Hz	120 Hz	–	–

Where
A = COLL_BSYA_1015_FLOW_SW_STATE

2.16 Flowswitch: COLL BSYA 1230 (PC12)

Name	*A*	PC	MS	BYKIK	LHS
IS_NOT_OK	F	0 Hz	0 Hz	–	–
OK	T	120 Hz	120 Hz	–	–

Where
A = COLL_BSYA_1230_FLOW_SW_STATE

2.17 Flowswitch: COLL BSYA 1490 (PC14)

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = COLL_BSYA_1490_FLOW_SW_STATE

2.18 Flowswitch: COLL BSYA 1700 (PC17)

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = COLL_BSYA_1700_FLOW_SW_STATE

2.19 PIC Raw Charge Thresholds: BSYA 1016

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	–	–
Over High Threshold	F	T	0 Hz	0 Hz	–	–
Under Low Threshold	T	F	0 Hz	0 Hz	–	–
OK	T	T	120 Hz	120 Hz	–	–

Where
A = PICM_BSYA_1016_LOSSL_THRESHOLD,
B = PICM_BSYA_1016_LOSSH_THRESHOLD

2.20 PIC Raw Charge Thresholds: BSYA 1021

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	–	–
Over High Threshold	F	T	0 Hz	0 Hz	–	–
Under Low Threshold	T	F	0 Hz	0 Hz	–	–
OK	T	T	120 Hz	120 Hz	–	–

Where
A = PICM_BSYA_1021_LOSSL_THRESHOLD,
B = PICM_BSYA_1021_LOSSH_THRESHOLD

2.21 PIC Raw Charge Thresholds: BSYA 1120

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	–	–
Over High Threshold	F	T	0 Hz	0 Hz	–	–
Under Low Threshold	T	F	0 Hz	0 Hz	–	–
OK	T	T	120 Hz	120 Hz	–	–

Where
A = PICM_BSYA_1120_LOSSL_THRESHOLD,
B = PICM_BSYA_1120_LOSSH_THRESHOLD

2.22 PIC Raw Charge Thresholds: BSYA 1320

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	–	–
Over High Threshold	F	T	0 Hz	0 Hz	–	–
Under Low Threshold	T	F	0 Hz	0 Hz	–	–
OK	T	T	120 Hz	120 Hz	–	–

Where
A = PICM_BSYA_1320_LOSSL_THRESHOLD,
B = PICM_BSYA_1320_LOSSH_THRESHOLD

2.23 PIC Raw Charge Thresholds: BSYA 1520

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	–	–
Over High Threshold	F	T	0 Hz	0 Hz	–	–
Under Low Threshold	T	F	0 Hz	0 Hz	–	–
OK	T	T	120 Hz	120 Hz	–	–

Where
A = PICM_BSYA_1520_LOSSL_THRESHOLD,
B = PICM_BSYA_1520_LOSSH_THRESHOLD

2.24 PIC Raw Charge Thresholds: BSYA 1701A

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	–	–
Over High Threshold	F	T	0 Hz	0 Hz	–	–
Under Low Threshold	T	F	0 Hz	0 Hz	–	–
OK	T	T	120 Hz	120 Hz	–	–

Where
A = PICM_BSYA_1701A_LOSSL_THRESHOLD,
B = PICM_BSYA_1701A_LOSSH_THRESHOLD

2.25 PIC Raw Charge Thresholds: BSYA 1701B

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	–	–
Over High Threshold	F	T	0 Hz	0 Hz	–	–
Under Low Threshold	T	F	0 Hz	0 Hz	–	–
OK	T	T	120 Hz	120 Hz	–	–

Where
A = PICM_BSYA_1701B_LOSSL_THRESHOLD,
B = PICM_BSYA_1701B_LOSSH_THRESHOLD

2.26 PIC Raw Charge Thresholds: BSYA 1980

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	–	–
Over High Threshold	F	T	0 Hz	0 Hz	–	–
Under Low Threshold	T	F	0 Hz	0 Hz	–	–
OK	T	T	120 Hz	120 Hz	–	–

Where
A = PICM_BSYA_1980_LOSSL_THRESHOLD,
B = PICM_BSYA_1980_LOSSH_THRESHOLD

2.27 Temperature: A-Line Summary Before SL10

Name	*A*	PC	MS	BYKIK	LHS
Faulted	F	0 Hz	0 Hz	–	–
OK	T	120 Hz	120 Hz	–	–

Where
A = RTD_BSYA_1015_PRESL10SUM_STATUS

2.28 Vac Valve: VVFS BSYA 1030 (FV10)

Name	*A*	PC	MS	BYKIK	LHS
NOT_OPEN	F	0 Hz	0 Hz	–	–
OPEN	T	120 Hz	120 Hz	–	–

Where
A = VVFS_BSYA_1030_POSITION_STATE

2.29 Vac Valve: VVPG BSYA 1018 (IV10)

Name	A	PC	MS	BYKIK	LHS
NOT_OPEN	F	0 Hz	0 Hz	–	–
OPEN	T	120 Hz	120 Hz	–	–

Where
A = VVPG_BSYA_1018_POSITION_STATE

3 Ignored when BX01/BX02 Is Off or YG BL211 Is In

3.1 Toroid Comparator IM02/IM03

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Downstream > Upstream	F	T	0 Hz	0 Hz	0 Hz	–
Upstream > Downstream	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = TC203L1_STATE,
B = TC203L2_STATE

4 Ignored when BX01/BX02 Is Off, BXG Is On, ST1/ST2 Are In, Stopper S2 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, or YG BL211 Is In

4.1 SXR Beam Energy Lower Limit

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BEND_DMP1_400_INTOL_BMIN2_STATE`

5 Ignored when BX01/BX02 Is Off, BXG Is On, ST1/ST2 Are In, Stopper S2 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In

5.1 NEH SXR GMD VGC 01 Protection

Name	*B*	*A*	PC	MS	BYKIK	LHS
In Transit: SXR GMD VGC 01 In Motion	F	F	0 Hz	0 Hz	0 Hz	–
Safe: SXR GMD VGC 01 Open	F	T	120 Hz	120 Hz	120 Hz	–
Closed: SXR GMD VGC 01 Closed	T	F	0 Hz	0 Hz	0 Hz	–
Error: SXR GMD VGC 01 Open and Closed	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `SXR_GMD_VGC_01_OPN_DI_POSITION`,
B = `SXR_GMD_VGC_01_CLS_DI_POSITION`

6 Ignored when BX01/BX02 Is Off, BXG Is On, ST1/ST2 Are In, Stopper SH1 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, or YG BL211 Is In

6.1 HXR Beam Energy Lower Limit

Name	A	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BEND_DMP1_400_INTOL_BMIN2_STATE`

7 Ignored when BX01/BX02 Is Off, BXG Is On, ST1/ST2 Are In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In

7.1 FEE1 M1S Mirror Beam Energy Upper Limit

Name	*C*	*B*	*A*	PC	MS	BYKIK	LHS
Fault	F	F	F	0 Hz	0 Hz	0 Hz	–
Limit switch inconsistent	F	F	T	0 Hz	0 Hz	0 Hz	–
Limit switch inconsistent	F	T	F	0 Hz	0 Hz	0 Hz	–
OK	F	T	T	120 Hz	120 Hz	120 Hz	–
OK	T	F	F	120 Hz	120 Hz	120 Hz	–
Energy safe but limit switch inconsistent	T	F	T	120 Hz	120 Hz	120 Hz	–
Energy safe but limit switch inconsistent	T	T	F	120 Hz	120 Hz	120 Hz	–
OK	T	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MIRR_FEE1_1560_OUT_LIMIT1_POSITION`,
B = `MIRR_FEE1_1560_OUT_LIMIT2_POSITION`,
C = `MIRR_FEE1_1560_ENERGY_STATE`

8 Ignored when BX01/BX02 Is Off, BXG Is On, Stopper: BSY D2 Summary Is In, TD11 Is In, or YG BL211 Is In

8.1 Temperature:BSY RTD Past D2 Sum

Name	*A*	PC	MS	BYKIK	LHS
Faulted	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = RTD_BSY0_89_PASTD2SUM_STATUS

8.2 THZ-2 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	0 Hz	0 Hz	0 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = THZR_LTU1_741_OUT_LIMSW_POSITION,
B = THZR_LTU1_741_IN_LIMSW_POSITION

8.3 Undulator Beam Energy Lower Limit

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = BEND_DMP1_400_INTOL_BMIN_STATE

8.4 VVFS LTU1 102 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VACFS_LTU1_102_STATE

8.5 VVMG LTU1 174 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VACV_LTU1_174_STATE

8.6 VVMG LTU1 355 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VACV_LTU1_355_STATE

8.7 VVMG LTU1 670 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VVPG_0670_STATE

8.8 VVMG LTU1 742 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VVPG_0742_STATE

8.9 VVMG LTU1 774 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VVPG_0774_STATE

8.10 VVMG UND1 932 Position

Name	*A*	PC	MS	BYKIK	LHS
NOT_OUT	F	0 Hz	0 Hz	0 Hz	–
OUT	T	120 Hz	120 Hz	120 Hz	–

Where
A = VVMG_UND1_932_OUT_LIMIT_POSITION

8.11 VVMG UND1 968 Position

Name	*A*	PC	MS	BYKIK	LHS
NOT_OUT	F	0 Hz	0 Hz	0 Hz	–
OUT	T	120 Hz	120 Hz	120 Hz	–

Where
A = VVMG_UND1_968_OUT_LIMIT_POSITION

8.12 VVPG DMP1 103 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VACV_DMP_100_STATE

8.13 VVPG DMP1 395 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VACV_DMP_395_STATE

8.14 VVPG DMP1 700 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VACV_DMP_700_STATE

8.15 VVPG LTU1 100 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VACV_LTU1_100_STATE

8.16 VVPG LTU1 265 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = `VACV_LTU1_265_STATE`

8.17 VVPG LTU1 435 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = `VVPG_0435_STATE`

8.18 VVPG LTU1 580 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = `VVPG_0580_STATE`

8.19 VVPG LTU1 725 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = `VVPG_0725_STATE`

8.20 VVPG LTU1 757 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VVPG_0757_STATE

8.21 VVPG LTU1 999 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VVPG_0999_STATE

8.22 VVPG UND1 1000 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VACV_LTU0_1000_OPEN_STATE

8.23 VVPG UND1 2500 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VACV_UND_2500_STATE

9 Ignored when BX01/BX02 Is Off, BXG Is On, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In

9.1 B4C Position

Name	*A*	PC	MS	BYKIK	LHS
NOT_OUT	F	0 Hz	0 Hz	0 Hz	–
OUT	T	120 Hz	120 Hz	120 Hz	–

Where
A = YAG_DMP1_500_FLT2_OUT_POSITION

9.2 BCS LION LTU1 404 Threshold

Name	*A*	PC	MS	BYKIK	LHS
Exceeded	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = LION404_STATE

9.3 BCS LION LTU1 405 Threshold

Name	*A*	PC	MS	BYKIK	LHS
Exceeded	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = LION405_STATE

9.4 BCS LION LTU1 504 Threshold

Name	*A*	PC	MS	BYKIK	LHS
Exceeded	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = LION504_STATE

9.5 BCS LION LTU1 505 Threshold

Name	A	PC	MS	BYKIK	LHS
Exceeded	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = LION505_STATE

9.6 BCS LION LTU1 584 Threshold

Name	A	PC	MS	BYKIK	LHS
Exceeded	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = LION584_STATE

9.7 BCS LION LTU1 585 Threshold

Name	A	PC	MS	BYKIK	LHS
Exceeded	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = LION585_STATE

9.8 BCS LION LTU1 716 Threshold

Name	A	PC	MS	BYKIK	LHS
Exceeded	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = LION716_STATE

9.9 BCS LION LTU1 717 Threshold

Name	A	PC	MS	BYKIK	LHS
Exceeded	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `LION717_STATE`

9.10 BCS LION LTU1 732 Threshold

Name	A	PC	MS	BYKIK	LHS
Exceeded	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `LION732_STATE`

9.11 BCS LION LTU1 733 Threshold

Name	A	PC	MS	BYKIK	LHS
Exceeded	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `LION733_STATE`

9.12 BCS LION LTU1 752 Threshold

Name	A	PC	MS	BYKIK	LHS
Exceeded	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `LION752_STATE`

9.13 BCS LION LTU1 753 Threshold

Name	*A*	PC	MS	BYKIK	LHS
Exceeded	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `LION753_STATE`

9.14 BCS LION LTU1 765 Threshold

Name	*A*	PC	MS	BYKIK	LHS
Exceeded	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `LION765_STATE`

9.15 BCS LION LTU1 766 Threshold

Name	*A*	PC	MS	BYKIK	LHS
Exceeded	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `LION766_STATE`

9.16 BOD UND1 1005

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `BOD_UND1_1005_OUT_LIMIT_POSITION`,
B = `BOD_UND1_1005_IN_LIMIT_POSITION`

9.17 BOD UND1 1305

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BOD_UND1_1305_OUT_LIMIT_POSITION,
B = BOD_UND1_1305_IN_LIMIT_POSITION

9.18 BYD Watchdog

Name	*A*	PC	MS	BYKIK	LHS
NOT_OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = BEND_DMP1_400_BACT_WDOG_STATE

9.19 PIC Raw Charge Thresholds: DMP1 698

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICS_DMP1_100_LOSSL_THRESHOLD,
B = PICS_DMP1_100_LOSSH_THRESHOLD

9.20 PIC Raw Charge Thresholds: DMP1 699

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICS_DMP2_200_LOSSL_THRESHOLD,
B = PICS_DMP2_200_LOSSH_THRESHOLD

9.21 Stopper: ST1/ST2 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	0 Hz	0 Hz	0 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = STPR_FEE1_1_ST1ST2OUT_POSITION,
B = STPR_FEE1_1_ST1ST2IN_POSITION

9.22 VVFS DMP1 107 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = VVFS_DMP1_107_OPEN_LMTSW_STATE

9.23 VVMG DMP1 743 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = VVMG_DMP1_743_POSITION_STATE

9.24 VVMG UND1 1645 Position

Name	A	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VVMG_UND1_1645_OPEN_LMTSW_STATE

9.25 VVMG UND1 1655 Position

Name	A	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VVMG_UND1_1655_OPEN_LMTSW_STATE

9.26 VVPG DMP1 355 Position

Name	B	A	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Open	F	T	120 Hz	120 Hz	120 Hz	–
Closed	T	F	0 Hz	0 Hz	0 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = VVPG_DMP1_355_OPENSTATUS_STATE,
B = VVPG_DMP1_355_CLOSEDSTATUS_STATE

10 Ignored when BX01/BX02 Is Off, BXG Is On, TD11 Is In, or YG BL211 Is In

10.1 BLM/PIC Watchdog BSY0/BSYA

Name	*A*	PC	MS	BYKIK	LHS
Faulted	F	0 Hz	0 Hz	0 Hz	–
Ok	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MPS_BSY0_1_PICBLM_WD_STATUS`

10.2 BLM/PIC Watchdog LI30

Name	*A*	PC	MS	BYKIK	LHS
Faulted	F	0 Hz	0 Hz	0 Hz	–
Ok	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MPS_LI30_1_PICBLM_WD_STATUS`

10.3 BSY GLAST Target

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
In	F	T	120 Hz	120 Hz	120 Hz	–
Out	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `TRGT_BSY0_70_IN_LIMSW_POSITION`,
B = `TRGT_BSY0_70_OUT_LIMSW_POSITION`

10.4 Fast Shutter FV2 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = FAST_SHUTTER_FV2_OK_OPEN_STATE

10.5 Fast Shutter FV2A Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = FAST_SHUTTER_FV2A_OK_OPEN_STATE

10.6 KICK BSY0 66 PM1 State (A-Line Kicker)

Name	*B*	*A*	PC	MS	BYKIK	LHS
Inconsistent	F	F	0 Hz	0 Hz	0 Hz	–
Is_OFF	F	T	120 Hz	120 Hz	120 Hz	–
Is_ON	T	F	120 Hz	120 Hz	120 Hz	–
Inconsistent	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = KICK_BSY0_66_PM1_OFF_STATUS,
B = KICK_BSY0_66_PM1_ON_STATUS

10.7 KICK BSY0 66 PM1 Trigger State (A-Line Kicker)

Name	*B*	*A*	PC	MS	BYKIK	LHS
Inconsistent	F	F	0 Hz	0 Hz	0 Hz	–
Is_Triggered	F	T	120 Hz	120 Hz	120 Hz	–
Is_Trig_Disabled	T	F	120 Hz	120 Hz	120 Hz	–
Inconsistent	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = KICK_BSY0_66_PM1_TRIG_ENB_STATUS,
B = KICK_BSY0_66_PM1_TRIG_LOCK_STATUS

10.8 KICK BSY0 66 PM2 State (A-Line Kicker)

Name	B	A	PC	MS	BYKIK	LHS
Inconsistent	F	F	0 Hz	0 Hz	0 Hz	–
Is_OFF	F	T	120 Hz	120 Hz	120 Hz	–
Is_ON	T	F	120 Hz	120 Hz	120 Hz	–
Inconsistent	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = KICK_BSY0_66_PM2_OFF_STATUS,
B = KICK_BSY0_66_PM2_ON_STATUS

10.9 KICK BSY0 66 PM2 Trigger State (A-Line Kicker)

Name	B	A	PC	MS	BYKIK	LHS
Inconsistent	F	F	0 Hz	0 Hz	0 Hz	–
Is_Triggered	F	T	120 Hz	120 Hz	120 Hz	–
Is_Trig_Disabled	T	F	120 Hz	120 Hz	120 Hz	–
Inconsistent	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = KICK_BSY0_66_PM2_TRIG_ENB_STATUS,
B = KICK_BSY0_66_PM2_TRIG_LOCK_STATUS

10.10 Stopper: BSY D2, 60, 61 DM60 Summary

The following code assigns the truth table's state number to the `unsigned int` variable `state`.

```
/*
 * state = 0 : full rate (120 Hz) beam allowed, ALL OUT
 * state = 1 : full rate (120 Hz) beam allowed, ALL IN
 * state = 2 : do not allow beam, Moving or Inconsistant
*/
```

```
/* Initialize to a guard value */
state = (unsigned int) -1;

/*
 * Stopper: BSY D2, 60, 61 DM60 Summary
 * Status given from PPS Stopper chassis very close to limit switches
    and CNTRL and passed to MPS via
 * opto's to insure fasts possible response. BTM60 has been documented
    to move at 200 msec from OUT to IN
 * Allow beam if ALL OUT
 * Allow beam if ALL IN
 * Otherwise, do not allow beam, Moving or Inconsistant
 */


/* Input Descriptions
*    INPUT_NAME                                                    ,
   FAULT_NAME (low)      , OK_NAME           , DESC
*       STPR_BSY0_89_IN_LIMSW_A_POSITION          , "IS_NOT_IN"
            , "IS_IN"      , "ST60 IN LIMSW CHAN A"
*       STPR_BSY0_89_IN_LIMSW_B_POSITION          , "IS_NOT_IN"
            , "IS_IN"      , "ST60 IN LIMSW CHAN B"
*       STPR_BSY0_89_OUT_LIMSW_A_POSITION         , "IS_NOT_OUT"
           , "IS_OUT"     , "ST60 OUT LIMSW CHAN A"
*       STPR_BSY0_89_OUT_LIMSW_B_POSITION         , "IS_NOT_OUT"
           , "IS_OUT"     , "ST60 OUT LIMSW CHAN B"
*       STPR_BSY0_90_IN_LIMSW_A_POSITION          , "IS_NOT_IN"
            , "IS_IN"      , "ST61 IN LIMSW CHAN A"
*       STPR_BSY0_90_IN_LIMSW_B_POSITION          , "IS_NOT_IN"
            , "IS_IN"      , "ST61 IN LIMSW CHAN B"
*       STPR_BSY0_90_OUT_LIMSW_A_POSITION         , "IS_NOT_OUT"
           , "IS_OUT"     , "ST61 OUT LIMSW CHAN A"
*       STPR_BSY0_90_OUT_LIMSW_B_POSITION         , "IS_NOT_OUT"
           , "IS_OUT"     , "ST61 OUT LIMSW CHAN B"
*       STPR_BSY0_88_IN_LIMSW_A_POSITION          , "IS_NOT_IN"
            , "IS_IN"      , "D2 IN LIMSW CHAN A"
*       STPR_BSY0_88_IN_LIMSW_B_POSITION          , "IS_NOT_IN"
            , "IS_IN"      , "D2 IN LIMSW CHAN B"
*       STPR_BSY0_88_OUT_LIMSW_A_POSITION         , "IS_NOT_OUT"
           , "IS_OUT"     , "D2 OUT LIMSW CHAN A"
*       BTM_BSY0_89_IN_LIMSW_A_POSITION           , "IS_NOT_IN"
            , "IS_IN"      , "BTM60 IN LIMSW CHAN A"
*       BTM_BSY0_89_IN_LIMSW_B_POSITION       , "IS_NOT_IN"         , "
   IS_IN"       , "BTM60 IN LIMSW CHAN B"
*       BTM_BSY0_89_OUT_LIMSW_A_POSITION          , "IS_NOT_OUT"
```

```
              , "IS_OUT"       , "BTM60 OUT LIMSW CHAN A"
*         BTM_BSY0_89_OUT_CNTRL_A_PPS_CNTRL          , "IS_NOT_OUT_RQ"
            , "IS_OUT_RQ" , "BTM60 OUT SOLN CNTRL CHAN A"
*         BTM_BSY0_89_OUT_CNTRL_B_PPS_CNTRL          , "IS_NOT_OUT_RQ"
            , "IS_OUT_RQ" , "BTM60 OUT SOLN CNTRL CHAN B2"
*
*/

if ( STPR_BSY0_89_OUT_LIMSW_A_POSITION &&
    STPR_BSY0_89_OUT_LIMSW_B_POSITION &&
            STPR_BSY0_90_OUT_LIMSW_A_POSITION &&
                STPR_BSY0_90_OUT_LIMSW_B_POSITION &&
            STPR_BSY0_88_OUT_LIMSW_A_POSITION &&
                BTM_BSY0_89_OUT_LIMSW_A_POSITION &&
            BTM_BSY0_89_OUT_CNTRL_A_PPS_CNTRL &&
                BTM_BSY0_89_OUT_CNTRL_B_PPS_CNTRL &&
            !( STPR_BSY0_89_IN_LIMSW_A_POSITION ||
                STPR_BSY0_89_IN_LIMSW_B_POSITION ||
               STPR_BSY0_90_IN_LIMSW_A_POSITION ||
                    STPR_BSY0_90_IN_LIMSW_B_POSITION ||
               STPR_BSY0_88_IN_LIMSW_A_POSITION ||
                    STPR_BSY0_88_IN_LIMSW_B_POSITION ||
               BTM_BSY0_89_IN_LIMSW_A_POSITION ||
                    BTM_BSY0_89_IN_LIMSW_B_POSITION ) )
{
     state = 0; /* ALL OUT, and NOT IN, okay to run beam */
}

else if ( STPR_BSY0_89_IN_LIMSW_A_POSITION  &&
    STPR_BSY0_89_IN_LIMSW_B_POSITION &&
              STPR_BSY0_90_IN_LIMSW_A_POSITION &&
                  STPR_BSY0_90_IN_LIMSW_B_POSITION &&
              STPR_BSY0_88_IN_LIMSW_A_POSITION &&
                  STPR_BSY0_88_IN_LIMSW_B_POSITION &&
              BTM_BSY0_89_IN_LIMSW_A_POSITION &&
                  BTM_BSY0_89_IN_LIMSW_B_POSITION  &&
              !(STPR_BSY0_89_OUT_LIMSW_A_POSITION ||
                  STPR_BSY0_89_OUT_LIMSW_B_POSITION ||
                STPR_BSY0_90_OUT_LIMSW_A_POSITION ||
                    STPR_BSY0_90_OUT_LIMSW_B_POSITION ||
                STPR_BSY0_88_OUT_LIMSW_A_POSITION ||
                    BTM_BSY0_89_OUT_LIMSW_A_POSITION   ||
                BTM_BSY0_89_OUT_CNTRL_A_PPS_CNTRL ||
                    BTM_BSY0_89_OUT_CNTRL_B_PPS_CNTRL ) )
{
```

```
    state = 1; /* ALL IN and NOT OUT okay to run beam */
}

else
{
    state = 2; /* do not allow beam, Moving or Inconsistent */
}
```

Name	State	PC	MS	BYKIK	LHS
IS_OUT	0	120 Hz	120 Hz	120 Hz	–
IS_IN	1	120 Hz	120 Hz	120 Hz	–
Moving or Inconsistent	2	0 Hz	0 Hz	0 Hz	–

10.11 Vac Valve BSYA 4005 (IV40)

Name	*A*	PC	MS	BYKIK	LHS
FAULT	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `VVPG_BSYA_4005_POSITION_STATE`

10.12 VVPG BSY0 IV2 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = `IV2_OPEN_STATE`

10.13 VVPG BSY0 IV3 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = `IV3_OPEN_STATE`

10.14 VVPG BSY0 IV4 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = `IV4_OPEN_STATE`

11 Ignored when BX01/BX02 Is On or YG BL211 Is In

11.1 BXS Status

Name	*A*	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BEND_IN20_931_OK_STATE`

11.2 Toroid Comparator IM02/IMS1

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Downstream > Upstream	F	T	0 Hz	0 Hz	0 Hz	–
Upstream > Downstream	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `TC2S1L1_STATE`,
B = `TC2S1L2_STATE`

12 Ignored when BX01/BX02 Is On, BXG Is Off, TD11 Is In, or YG BL211 Is In

12.1 BLM/PIC Watchdog LI24

Name	*A*	PC	MS	BYKIK	LHS
Faulted	F	0 Hz	0 Hz	0 Hz	–
Ok	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MPS_LI24_1_PICBLM_WD_STATUS`

13 Ignored when BXG Is Off or YG BL211 Is In

13.1 Wakefield Shield Gun Spectrometer

Name	*A*	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
OK	T	10 Hz	10 Hz	10 Hz	–

Where
A = `WL_BL231_IN_STATE`

14 Ignored when BXG Is On or YG BL211 Is In

14.1 Wakefield Shield Straight Ahead

Name	A	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `WL_BL231_OUT_STATE`

15 Ignored when Diag Stopper HFX DG2 Is In, Diag Stopper HFX UM6 Is In, Diag Stopper XCS SB1 Is In, ST1/ST2 Are In, Stopper SH1 Is In, Stopper SH2 Is In, Stopper XRT S5 Is In, TD11 Is In, TDUND Is In, XCS Is Not In Main Line, or YG BL211 Is In

15.1 XCS SB1 VGC 02 Gate Valve Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Open	F	T	120 Hz	120 Hz	120 Hz	–
Closed	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `XCS_SB1_VGC_02_OPN_DI_POSITION`,
B = `XCS_SB1_VGC_02_CLS_DI_POSITION`

15.2 XCS SB2 VGC 01 Gate Valve Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Open	F	T	120 Hz	120 Hz	120 Hz	–
Closed	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `XCS_SB2_VGC_01_OPN_DI_POSITION`,
B = `XCS_SB2_VGC_01_CLS_DI_POSITION`

16 Ignored when Diag Stopper HFX DG2 Is In, Diag Stopper HFX UM6 Is In, ST1/ST2 Are In, Stopper S5B Is In, Stopper SH1 Is In, Stopper SH2 Is In, Stopper XRT S5 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In

16.1 CXI:DG4:VGC:01 Gate Valve Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Open	F	T	120 Hz	120 Hz	120 Hz	–
Closed	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `CXI_DG4_VGC_01_OPN_DI_POSITION`,
B = `CXI_DG4_VGC_01_CLS_DI_POSITION`

17 Ignored when Diag Stopper HFX DG2 Is In, Diag Stopper HFX UM6 Is In, ST1/ST2 Are In, Stopper S5B Is In, Stopper SH1 Is In, Stopper SH2 Is In, Stopper XRT S5 Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In

17.1 CXI Configuration 1 Summary

The following code assigns the truth table's state number to the `unsigned int` variable `state`.

```
state = (unsigned int) -1; /* Initialize to an unlikely state number */
{
    /*
     state = 0 beam dump
     state = 1 beam allowed
     state = 2 other, beam allowed
     */
     int evalCXIConfigOne = -1;
    {
        if ( CXI_MPS_CFG_1_CONFID )    /* PLC asserts we are in Cfg 1 */
        {
            /* Evaluate inputs to identify if we're in beam dump state
               for Cfg 1*/
            if ( (! CXI_DG1_MMS_03_A_POSITION) ||
                 (! CXI_DG2_MMS_06_B_POSITION) ||
                 (! CXI_DS1_MMS_07_B_POSITION)     )
            {
                evalCXIConfigOne = 0;
            }
            else
            {
                evalCXIConfigOne = 1;
            }
        }
    }

    switch( evalCXIConfigOne )
    {
        case 0:  state = 0; break; /* In this Cfg, we are     in the
           state that requires beam dump */
```

```
        case 1:  state = 1; break; /* In this Cfg, we are NOT in the
            state that requires beam dump */
        default: state = 2; break; /* Default, assume we are NOT in the
            state that requires beam dump */
    }

}
```

Name	State	PC	MS	BYKIK	LHS
Config 1 Fault	0	0 Hz	0 Hz	0 Hz	–
Config 1 Ok	1	120 Hz	120 Hz	120 Hz	–
Not In Config 1	2	120 Hz	120 Hz	120 Hz	–

17.2 CXI Configuration 2 Summary

The following code assigns the truth table's state number to the `unsigned int` variable `state`.

```
/*
state = 0 beam dump
state = 1 beam allowed
state = 2 other, beam allowed
*/

/* Initialize to a guard value */
state = (unsigned int) -1;

 int evalCXIConfigTwo = -1;
{
    if ( CXI_MPS_CFG_2_CONFID )    /* PLC asserts we are in Cfg 2 */
    {
        /* Evaluate inputs to identify if we're in beam dump state for
            Cfg 2*/
        if ( (! CXI_DG1_MMS_03_A_POSITION) ||
             (! CXI_DG2_MMS_06_B_POSITION) ||
             (! CXI_DS1_MMS_07_B_POSITION) ||
             ( (! CXI_DIA_ATTEN_OK_POSITION) &&
               (! ( CXI_DG1_MMS_08_B_POSITION &&
                CXI_KB1_MMS_12_B_POSITION &&
                CXI_DG2_MMS_08_B_POSITION &&
                CXI_DG3_MMS_09_B_POSITION &&
                CXI_DG2_MMS_10_B_POSITION &&
                CXI_DG3_MMS_03_B_POSITION &&
```

```
                    CXI_DG3_MMS_05_B_POSITION &&
                    CXI_DG4_MMS_05_B_POSITION &&
                    CXI_DG4_MMS_03_B_POSITION     )) ) )

        {
            evalCXIConfigTwo= 0;
        }
        else
        {
            evalCXIConfigTwo= 1;
        }
    }
}

switch( evalCXIConfigTwo )
{
    case 0:  state = 0; break; /* In this Cfg, we are     in the state
       that requires beam dump */
    case 1:  state = 1; break; /* In this Cfg, we are NOT in the state
       that requires beam dump */
    default: state = 2; break; /* Default, assume we are NOT in the
       state that requires beam dump */
}
```

Name	State	PC	MS	BYKIK	LHS
Faulted	0	0 Hz	0 Hz	0 Hz	–
Ok	1	120 Hz	120 Hz	120 Hz	–
Not In Config 2	2	120 Hz	120 Hz	120 Hz	–

17.3 CXI Configuration 3 Summary

The following code assigns the truth table's state number to the `unsigned int` variable `state`.

```
/*
state = 0 beam dump
state = 1 beam allowed
state = 2 other, beam allowed
*/

/* Initialize to a guard value */
state = (unsigned int) -1;
```

```
 int evalCXIConfigThree = -1;
{
    if ( CXI_MPS_CFG_3_CONFID )    /* PLC asserts we are in Cfg 3 */
    {
        /* Evaluate inputs to identify if we're in beam dump state for
           Cfg 1*/
        if ( (! CXI_DG1_MMS_03_A_POSITION) ||
             (! CXI_DS1_MMS_07_B_POSITION)     )
        {
            evalCXIConfigThree = 0;
        }
        else
        {
            evalCXIConfigThree = 1;
        }
    }
}


switch( evalCXIConfigThree )
{
    case 0:  state = 0; break; /* In this Cfg, we are     in the state
       that requires beam dump */
    case 1:  state = 1; break; /* In this Cfg, we are NOT in the state
       that requires beam dump */
    default: state = 2; break; /* Default, assume we are NOT in the
       state that requires beam dump */
}
```

Name	State	PC	MS	BYKIK	LHS
Faulted	0	0 Hz	0 Hz	0 Hz	–
Ok	1	120 Hz	120 Hz	120 Hz	–
Not in Config 3	2	120 Hz	120 Hz	120 Hz	–

17.4 CXI Configuration 4 Summary

The following code assigns the truth table's state number to the `unsigned int` variable `state`.

```
/*
state = 0 beam dump
state = 1 beam allowed
```

```
state = 2 other, beam allowed
*/

/* Initialize to a guard value */
state = (unsigned int) -1;

 int evalCXIConfigFour = -1;
{
    if ( CXI_MPS_CFG_4_CONFID )    /* PLC asserts we are in Cfg 4 */
    {
        /* Evaluate inputs to identify if we're in beam dump state for
           Cfg 4*/
        if ( (! CXI_DG1_MMS_03_A_POSITION) ||
             (! CXI_DG2_MMS_06_B_POSITION) ||
             (! CXI_DSD_MMS_07_B_POSITION) ||
             (! CXI_DS1_MMS_07_B_POSITION)     )
        {
            evalCXIConfigFour = 0;
        }
        else
        {
            evalCXIConfigFour = 1;
        }
    }
}


switch( evalCXIConfigFour )
{
    case 0:  state = 0; break; /* In this Cfg, we are     in the state
       that requires beam dump */
    case 1:  state = 1; break; /* In this Cfg, we are NOT in the state
       that requires beam dump */
    default: state = 2; break; /* Default, assume we are NOT in the
       state that requires beam dump */
}
```

Name	State	PC	MS	BYKIK	LHS
Faulted	0	0 Hz	0 Hz	0 Hz	–
Ok	1	120 Hz	120 Hz	120 Hz	–
Not In Config 4	2	120 Hz	120 Hz	120 Hz	–

17.5 CXI Configuration 5 Summary

The following code assigns the truth table's state number to the `unsigned int` variable `state`.

```
/*
state = 0 beam dump
state = 1 beam allowed
state = 2 other, beam allowed
*/

/* Initialize to a guard value */
state = (unsigned int) -1;

 int evalCXIConfigFive = -1;
{
        if ( CXI_MPS_CFG_5_CONFID )    /* PLC asserts we are in Cfg 5 */
        {
                /* Evaluate inputs to identify if we're in beam dump
                   state for Cfg 5*/
                if ( (! CXI_DG1_MMS_03_A_POSITION) ||
                     (! CXI_DG2_MMS_06_B_POSITION) ||
                     (! CXI_DSU_MMS_07_B_POSITION)     )
                {
                        evalCXIConfigFive = 0;
                }
                else
                {
                        evalCXIConfigFive = 1;
                }
        }
}

switch( evalCXIConfigFive )
{
        case 0:  state = 0; break; /* In this Cfg, we are     in the
           state that requires beam dump */
        case 1:  state = 1; break; /* In this Cfg, we are NOT in the
           state that requires beam dump */
        default: state = 2; break; /* Default, assume we are NOT in the
            state that requires beam dump */
}
```

Name	State	PC	MS	BYKIK	LHS
Faulted	0	0 Hz	0 Hz	0 Hz	–
Ok	1	120 Hz	120 Hz	120 Hz	–
Not In Config 5	2	120 Hz	120 Hz	120 Hz	–

17.6 CXI Configuration 6 Summary

The following code assigns the truth table's state number to the `unsigned int` variable `state`.

```
/*
state = 0 beam dump
state = 1 beam allowed
state = 2 other, beam allowed
*/

/* Initialize to a guard value */
state = (unsigned int) -1;

 int evalCXIConfigSix = -1;
{
        if ( CXI_MPS_CFG_6_CONFID )    /* PLC asserts we are in Cfg 6 */
        {
                /* Evaluate inputs to identify if we're in beam dump
                   state for Cfg 1*/
                if ( (! CXI_DG1_MMS_03_A_POSITION) ||
                     (! CXI_DS2_MMS_07_B_POSITION) ||
                     (! CXI_DG2_MMS_06_B_POSITION)     )
                {
                        evalCXIConfigSix = 0;
                }
                else
                {
                        evalCXIConfigSix = 1;
                }
        }
}


switch( evalCXIConfigSix )
{
        case 0:  state = 0; break; /* In this Cfg, we are     in the
           state that requires beam dump */
```

```
        case 1:  state = 1; break; /* In this Cfg, we are NOT in the
            state that requires beam dump */
        default: state = 2; break; /* Default, assume we are NOT in the
            state that requires beam dump */
}
```

Name	State	PC	MS	BYKIK	LHS
Faulted	0	0 Hz	0 Hz	0 Hz	–
Ok	1	120 Hz	120 Hz	120 Hz	–
Not In Config 6	2	120 Hz	120 Hz	120 Hz	–

17.7 CXI Configuration 7 Summary

The following code assigns the truth table's state number to the `unsigned int` variable `state`.

```
/*
state = 0 beam dump
state = 1 beam allowed
state = 2 other, beam allowed
*/

/* Initialize to a guard value */
state = (unsigned int) -1;


 int evalCXIConfigSeven = -1;
{
        if ( CXI_MPS_CFG_7_CONFID )    /* PLC asserts we are in Cfg 7 */
        {
                /* Evaluate inputs to identify if we're in beam dump
                   state for Cfg 1*/
                if ( (! CXI_DG1_MMS_03_A_POSITION) ||
                     (! CXI_DS2_MMS_07_B_POSITION) ||
                     (! CXI_DS1_MMS_07_B_POSITION)     )
                {
                        evalCXIConfigSeven = 0;
                }
                else
                {
                        evalCXIConfigSeven = 1;
                }
        }
```

```
}

switch( evalCXIConfigSeven )
{
        case 0:  state = 0; break; /* In this Cfg, we are     in the
           state that requires beam dump */
        case 1:  state = 1; break; /* In this Cfg, we are NOT in the
           state that requires beam dump */
        default: state = 2; break; /* Default, assume we are NOT in the
            state that requires beam dump */
}
```

Name	State	PC	MS	BYKIK	LHS
Faulted	0	0 Hz	0 Hz	0 Hz	–
Ok	1	120 Hz	120 Hz	120 Hz	–
Not In Config 7	2	120 Hz	120 Hz	120 Hz	–

17.8 CXI CS-PAD 1 Detector Damage Fault

Name	*A*	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
No Fault	T	120 Hz	120 Hz	120 Hz	–

Where
A = `CXI_DET_01_MPSFAULT_STATUS`

17.9 CXI CS-PAD 2 Detector Damage Fault

Name	*A*	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
No Fault	T	120 Hz	120 Hz	120 Hz	–

Where
A = `CXI_DET_02_MPSFAULT_STATUS`

17.10 CXI KB2 VGC 02 Gate Valve Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Open	F	T	120 Hz	120 Hz	120 Hz	–
Closed	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `CXI_KB2_VGC_02_OPN_DI_POSITION`,
B = `CXI_KB2_VGC_02_CLS_DI_POSITION`

17.11 CXI MPS PLC Readiness Status

Name	*A*	PC	MS	BYKIK	LHS
PLC Not OK	F	0 Hz	0 Hz	0 Hz	–
PLC OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `CXI_MPS_PLC_01_OK_STATUS`

17.12 CXI User Patch Panel 1 Ready

Name	*A*	PC	MS	BYKIK	LHS
Not Ready	F	0 Hz	0 Hz	0 Hz	–
Ready	T	120 Hz	120 Hz	120 Hz	–

Where
A = `CXI_USR_01_MPSFAULT_STATUS`

17.13 CXI User Patch Panel 2 Ready

Name	*A*	PC	MS	BYKIK	LHS
Not Ready	F	0 Hz	0 Hz	0 Hz	–
Ready	T	120 Hz	120 Hz	120 Hz	–

Where
A = `CXI_USR_02_MPSFAULT_STATUS`

17.14 CXI:DG1:VGC:01 Gate Valve Open Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = `CXI_DG1_VGC_01_OPN_DI_POSITION`

17.15 CXI:DG1:VGC:02 Gate Valve Open Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = `CXI_DG1_VGC_02_OPN_DI_POSITION`

17.16 CXI:DG2:VGC:01 Gate Valve Open Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Open	F	T	120 Hz	120 Hz	120 Hz	–
Closed	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `CXI_DG2_VGC_01_OPN_DI_POSITION`,
B = `CXI_DG2_VGC_01_CLS_DI_POSITION`

17.17 CXI:DG2:VGC:02 Gate Valve Open Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Open	F	T	120 Hz	120 Hz	120 Hz	–
Closed	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `CXI_DG2_VGC_02_OPN_DI_POSITION`,
B = `CXI_DG2_VCG_02_CLS_DI_POSITION`

17.18 CXI:DS1:VGC:01 Gate Valve Open Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Open	F	T	120 Hz	120 Hz	120 Hz	–
Closed	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `CXI_DS1_VGC_01_OPN_DI_POSITION`,
B = `CXI_DS1_VCG_01_CLS_DI_POSITION`

17.19 CXI:KB1:VGC:01 Gate Valve Open Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = `CXI_KB1_VGC_01_OPN_DI_POSITION`

17.20 CXI:KB1:VGC:02 Gate Valve Open Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = CXI_KB1_VGC_02_OPN_DI_POSITION

17.21 CXI:KB2:VGC:01 Gate Valve Open Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = CXI_KB2_VGC_01_OPN_DI_POSITION

17.22 CXI:SC1:VGC:01 Gate Valve Open Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Open	F	T	120 Hz	120 Hz	120 Hz	–
Closed	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = CXI_SC1_VGC_01_OPN_DI_POSITION,
B = CXI_SC1_VGC_01_CLS_DI_POSITION

17.23 CXI:SC1:VGC:02 Gate Valve Open Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = `CXI_SC1_VGC_02_OPN_DI_POSITION`

17.24 CXI:SC2:VGC:02 Gate Valve Open Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = `CXI_SC2_VGC_02_OPN_DI_POSITION`

18 Ignored when Diag Stopper HFX DG2 Is In, Diag Stopper HFX UM6 Is In, ST1/ST2 Are In, Stopper SH1 Is In, Stopper SH2 Is In, Stopper XRT S5 Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In

18.1 CXI XRT Laser Reference Mirror Position

Name	*A*	PC	MS	BYKIK	LHS
Mirror In Beam	F	0 Hz	0 Hz	0 Hz	–
Mirror Out of Beam	T	120 Hz	120 Hz	120 Hz	–

Where
A = `XRT_DIA_MMS_01_B_POSITION`

18.2 HF4 LAM VGC 01 Gate Valve Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = `HF4_LAM_VGC_01_OPN_DI_POSITION`

18.3 HFA:SND:VGC:01 Gate Valve Open Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = `HFA_SND_VGC_01_OPN_DI_POSITION`

18.4 HFX:DIA:VGC:02 Gate Valve Open Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = HFX_DIA_VGC_02_OPN_DI_POSITION

18.5 XRT HXRAY DIA Isolation Valve HXX-DIA-VGC-01

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Closed	F	T	0 Hz	0 Hz	0 Hz	–
Open	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = HXX_DIA_VGC_01_CLS_DI_STATE,
B = HXX_DIA_VGC_01_OPN_DI_STATE

19 Ignored when Diag Stopper HFX DG2 Is In, Diag Stopper HFX UM6 Is In, ST1/ST2 Are In, Stopper SH1 Is In, Stopper SH2 Is In, Stopper XRT S5 Is In, TD11 Is In, TDUND Is In, XCS Is Not In Main Line, or YG BL211 Is In

19.1 XCS SB1 Diagnostic Stopper Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `XCS_SB1_STP_01_OPN_DI_POSITION`,
B = `XCS_SB1_STP_01_CLS_DI_POSITION`

19.2 XCS SB1 VGC 01 Gate Valve Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Open	F	T	120 Hz	120 Hz	120 Hz	–
Closed	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `XCS_SB1_VGC_01_OPN_DI_POSITION`,
B = `XCS_SB1_VGC_01_CLS_DI_POSITION`

20 Ignored when Diag Stopper HFX DG2 Is In, Diag Stopper HFX UM6 Is In, ST1/ST2 Are In, Stopper SH1 Is In, Stopper SH2 Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In

20.1 HFX:DG2:VGC:01 Gate Valve Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = `HFX_DG2_VGC_01_OPN_DI_POSITION`

20.2 HFX:MON:VGC:01 Gate Valve Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = `HFX_MON_VGC_01_OPN_DI_POSITION`

20.3 HFX:MON:VGC:02 Gate Valve Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = `HFX_MON_VGC_02_OPN_DI_POSITION`

21 Ignored when Diag Stopper HFX UM6 Is In, M3H Mirror Is Out of Beam, ST1/ST2 Are In, Stopper SH1 Is In, Stopper SH2 Is In, Stopper XRT S6 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In

21.1 MEC DV5 VGC 01 Gate Valve Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MEC_DV5_VGC_01_OPN_DI_POSITION`

21.2 MEC HXM VGC 01 Gate Valve Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MEC_HXM_VGC_01_OPN_DI_POSITION`

21.3 MEC XT1 Reference Laser Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MEC_XT1_MMS_01_B_POSITION`

21.4 MEC XT1 VGC 01 Gate Valve Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MEC_XT1_VGC_01_OPN_DI_POSITION`

21.5 MEC XT2 VGC 02 Gate Valve Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MEC_XT2_VGC_02_OPN_DI_POSITION`

21.6 MEC XT2 VGC 03 Gate Valve Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MEC_XT2_VGC_03_OPN_DI_POSITION`

21.7 MEC XT2 VGC 04 Gate Valve Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MEC_XT2_VGC_04_OPN_DI_POSITION`

21.8 MEC XT2 VGC 05 Gate Valve Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Open	F	T	120 Hz	120 Hz	120 Hz	–
Closed	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `MEC_XT2_VGC_05_OPN_DI_POSITION`,
B = `MEC_XT2_VGC_05_CLS_DI_POSITION`

21.9 MEC XT2 VGC 06 Gate Valve Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MEC_XT2_VGC_06_OPN_DI_POSITION`

22 Ignored when Diag Stopper HFX UM6 Is In, M3H Mirror Is Out of Beam, ST1/ST2 Are In, Stopper SH1 Is In, Stopper SH2 Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In

22.1 HXX:HXM:VGC:03 Gate Valve Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = `HXX_HXM_VGC_03_OPN_DI_POSITION`

22.2 MEC XRT Attenuator Inspection Mirror Position

Name	*A*	PC	MS	BYKIK	LHS
Mirror Not Out	F	0 Hz	0 Hz	0 Hz	–
Mirror Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MEC_HXM_MMS_04_B_POSITION`

23 Ignored when Diag Stopper HFX UM6 Is In, ST1/ST2 Are In, Stopper SH1 Is In, Stopper SH2 Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In

23.1 DG2 Diagnostic Stopper Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
In	F	T	–	–	–	–
Out	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `HFX_DG2_STP_01_IN_DI_POSITION`,
B = `HFX_DG2_STP_01_OUT_DI_POSITION`

23.2 HXX:HXM:VGC:01 Gate Valve Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = `HXX_HXM_VGC_01_OPN_DI_POSITION`

23.3 HXX:HXM:VGC:02 Gate Valve Position

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = `HXX_HXM_VGC_02_OPN_DI_POSITION`

23.4 MEC M3H Mirror and DG2 STP Fault

Name	*B*	*A*	PC	MS	BYKIK	LHS
In Transit: DG2 STP Not In Beam, M3H Mirror Not Out	F	F	0 Hz	0 Hz	0 Hz	–
In Transit: DG2 STP Not In Beam, M3H Mirror Out	F	T	120 Hz	120 Hz	120 Hz	–
Safe: DG2 STP In Beam, M3H Mirror Not Out	T	F	120 Hz	120 Hz	120 Hz	–
Safe: DG2 STP In Beam, M3H Mirror Out	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `HXX_HXM_MMS_01_B_POSITION`,
B = `HFX_DG2_STP_01_IN_DI_POSITION`

23.5 MEC M3H Mirror Unknown Position Fault

Name	*B*	*A*	PC	MS	BYKIK	LHS
In Transit: M3H Mirror Neither In Nor Out	F	F	120 Hz	120 Hz	120 Hz	–
Out: M3H Mirror Out of Beam	F	T	120 Hz	120 Hz	120 Hz	–
In: M3H Mirror In Beam	T	F	120 Hz	120 Hz	120 Hz	–
Broken: M3H Mirror Both In And Out	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `HXX_HXM_MMS_01_B_POSITION`,
B = `HXX_HXM_MMS_01_INBEAM_POSITION`

23.6 XRT HXRAY LOM Isolation Valve HXX-LOM-VGC-01

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Closed	F	T	0 Hz	0 Hz	0 Hz	–
Open	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `HXX_LOM_VGC_01_CLS_DI_STATE`,
B = `HXX_LOM_VGC_01_OPN_DI_STATE`

23.7 XRT HXRAY MXT Isolation Valve HXX-MXT-VGC-01

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Closed	F	T	0 Hz	0 Hz	0 Hz	–
Open	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `HXX_MXT_VGC_01_CLS_DI_STATE`,
B = `HXX_MXT_VGC_01_OPN_DI_STATE`

24 Ignored when Laser Heater Attenuator Is In

24.1 Laser Heater Photodiode Shutter Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	–	–	–	0 Hz
Out	F	T	–	–	–	0 Hz
In	T	F	–	–	–	120 Hz
Broken	T	T	–	–	–	0 Hz

Where
A = LHPHD_OUT_LIMIT_STATE,
B = LHPHD_IN_LIMIT_STATE

24.2 OTRH1 Position When LH Atten Not In

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	–	–	–	0 Hz
Out	F	T	–	–	–	120 Hz
In	T	F	–	–	–	0 Hz
Broken	T	T	–	–	–	0 Hz

Where
A = OTRH1_OUT_LIMIT_STATE,
B = OTRH1_IN_LIMIT_STATE

24.3 OTRH2 Position When LH Atten Not In

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	–	–	–	0 Hz
Out	F	T	–	–	–	120 Hz
In	T	F	–	–	–	0 Hz
Broken	T	T	–	–	–	0 Hz

Where
A = OTRH2_OUT_LIMIT_STATE,
B = OTRH2_IN_LIMIT_STATE

25 Ignored when ST1/ST2 Are In, Stopper HFP-MPA-02 Is In, Stopper S1 Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In

25.1 NEH AMO Diagnostics Chamber Gate Valve Summary

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Closed	F	T	0 Hz	0 Hz	0 Hz	–
Open	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `AMO_DIA_VGC_02A_POSITION`,
B = `AMO_DIA_VGC_02B_POSITION`

25.2 NEH AMO End Station Ready

Name	*A*	PC	MS	BYKIK	LHS
NOT_READY	F	0 Hz	0 Hz	0 Hz	–
READY	T	120 Hz	120 Hz	120 Hz	–

Where
A = `AMO_EXP_MPS_01_STATE`

25.3 NEH AMO High Field Physics Chamber Gate Valve Summary

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Closed	F	T	0 Hz	0 Hz	0 Hz	–
Open	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = AMO_HFP_VGC_02A_POSITION,
B = AMO_HFP_VGC_02B_POSITION

26 Ignored when ST1/ST2 Are In, Stopper S1 Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In

26.1 NEH AMO Focusing Optics Entrance Gate Valve KBO-VGC-01

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Closed	F	T	0 Hz	0 Hz	0 Hz	–
Open	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `AMO_KBO_VGC_01A_POSITION`,
B = `AMO_KBO_VGC_01B_POSITION`

26.2 NEH AMO Focusing Optics Exit Gate Valve KBO-VGC-02

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Closed	F	T	0 Hz	0 Hz	0 Hz	–
Open	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `AMO_KBO_VGC_02A_POSITION`,
B = `AMO_KBO_VGC_02B_POSITION`

26.3 NEH AMO Laser Reference Mirror Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = SAS_MMM_01_B_POSITION

26.4 NEH1 Camera 1124 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = CAMR_NEH1_1124_OUT_STATE,
B = CAMR_NEH1_1124_IN_STATE

26.5 NEH1 XTOD S1 Isolation Valve Summary

Name	*A*	PC	MS	BYKIK	LHS
Faulted	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = VMPS_NEH_703_ISOL_S1_STATE

27 Ignored when ST1/ST2 Are In, Stopper S2 Is In, Stopper S2B Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In

27.1 NEH SXR Differential Pump Isolation Valve SXR-DFP-VGC-01

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Closed	F	T	0 Hz	0 Hz	0 Hz	–
Open	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = SXR_DFP_VGC_01_CLS_DI_STATE,
B = SXR_DFP_VGC_01_OPN_DI_STATE

27.2 NEH SXR End Station Ready SXR-EXP-MPS-01

Name	*A*	PC	MS	BYKIK	LHS
Not Ready	F	0 Hz	0 Hz	0 Hz	–
Ready	T	120 Hz	120 Hz	120 Hz	–

Where
A = SXR_EXP_MPS_01_STATE

27.3 NEH SXR Intensity Monitor Isolation Valve SXR-FLX-VGC-01

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Closed	F	T	0 Hz	0 Hz	0 Hz	–
Open	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = SXR_FLX_VGC_01_CLS_DI_STATE,
B = SXR_FLX_VGC_01_OPN_DI_STATE

27.4 NEH SXR KB Optics Isolation Valve SXR-KBO-VGC-01

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Closed	F	T	0 Hz	0 Hz	0 Hz	–
Open	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = SXR_KBO_VGC_01_CLS_DI_STATE,
B = SXR_KBO_VGC_01_OPN_DI_STATE

27.5 NEH SXR Laser In-coupling Mirror Isolation Valve SXR-LIN-VGC-01

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Closed	F	T	0 Hz	0 Hz	0 Hz	–
Open	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = SXR_LIN_VGC_01_CLS_DI_STATE,
B = SXR_LIN_VGC_01_OPN_DI_STATE

28 Ignored when ST1/ST2 Are In, Stopper S2 Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In

28.1 NEH Camera 2124 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `CAMR_NEH1_2124_OUT_STATE`,
B = `CAMR_NEH1_2124_IN_STATE`

28.2 NEH SXR Collimator 3 Isolation Valve SXR-COL-VGC-01

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Closed	F	T	0 Hz	0 Hz	0 Hz	–
Open	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `SXR_COL_VGC_01_CLS_DI_STATE`,
B = `SXR_COL_VGC_01_OPN_DI_STATE`

28.3 NEH SXR Exit Slits Isolation Valve SXR-EXS-VGC-01

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Closed	F	T	0 Hz	0 Hz	0 Hz	–
Open	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = SXR_EXS_VGC_01_CLS_DI_STATE,
B = SXR_EXS_VGC_01_OPN_DI_STATE

28.4 NEH SXR Monochromator Tank Isolation Valve SXR-MON-VGC-01

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Closed	F	T	0 Hz	0 Hz	0 Hz	–
Open	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = SXR_MON_VGC_01_CLS_DI_STATE,
B = SXR_MON_VGC_01_OPN_DI_STATE

28.5 NEH SXR Photon Stoppers Isolation Valve SXR-PST-VGC-01

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Closed	F	T	0 Hz	0 Hz	0 Hz	–
Open	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = SXR_PST_VGC_01_CLS_DI_STATE,
B = SXR_PST_VGC_01_OPN_DI_STATE

28.6 NEH SXR Transmission Sample System Isolation Valve SXR-TSS-VGC-01

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Closed	F	T	0 Hz	0 Hz	0 Hz	–
Open	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = SXR_TSS_VGC_01_CLS_DI_STATE,
B = SXR_TSS_VGC_01_OPN_DI_STATE

28.7 NEH SXR Zero Order Interlock SXR-MON-MMS-06, SXR-EXS-MMS-01

Name	*B*	*A*	PC	MS	BYKIK	LHS
Slits Not Open, No Zero Order	F	F	120 Hz	120 Hz	120 Hz	–
Slits Not Open, Zero Order Fault	F	T	0 Hz	0 Hz	0 Hz	–
Slits Open, No Zero Order	T	F	120 Hz	120 Hz	120 Hz	–
Slits Open, Zero Order	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = SXR_MON_MMS_06_B_STATE,
B = SXR_EXS_MMS_01_B_STATE

28.8 NEH1 XTOD S2 Isolation Valve Summary

Name	*A*	PC	MS	BYKIK	LHS
Faulted	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = VMPS_NEH_703_ISOL_S2_STATE

29 Ignored when ST1/ST2 Are In, Stopper SH1 Is In, Stopper SH2 Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In

29.1 UM6 Diagnostic Stopper Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
In	F	T	–	–	–	–
Out	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = HFX_UM6_STP_01_IN_DI_POSITION,
B = HFX_UM6_STP_01_OUT_DI_POSITION

29.2 XRT HXRAY UM6 Isolation Valve HXX-UM6-VGC-01

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Closed	F	T	0 Hz	0 Hz	0 Hz	–
Open	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = HXX_UM6_VGC_01_CLS_DI_STATE,
B = HXX_UM6_VGC_01_OPN_DI_STATE

29.3 XRT UM6 Camera Position HXX-UM6-CVP-01

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = HXX_UM6_CVP_01_B_STATE,
B = HXX_UM6_CVP_01_A_STATE

30 Ignored when ST1/ST2 Are In, Stopper SH1 Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In

30.1 HX2 UVD VGC 01 Gate Valve Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Open	F	T	120 Hz	120 Hz	120 Hz	–
Closed	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `HX2_SB1_VGC_01_OPN_DI_STATE`,
B = `HX2_SB1_VGC_01_CLS_DI_STATE`

30.2 HX3 MON VGC 01 Gate Valve Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Open	F	T	120 Hz	120 Hz	120 Hz	–
Closed	T	F	0 Hz	0 Hz	0 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `HX3_MON_VGC_01_OPN_DI_POSITION`,
B = `HX3_MON_VGC_01_CLS_DI_POSITION`

30.3 NEH1 Camera 124 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = CAMR_NEH1_124_OUT_STATE,
B = CAMR_NEH1_124_IN_STATE

30.4 NEH1 Camera 195 Position

Name	B	A	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = CAMR_NEH1_195_OUT_STATE,
B = CAMR_NEH1_195_IN_STATE

30.5 NEH1 XTOD H Isolation Valve Summary

Name	A	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = VMPS_NEH_703_ISOL_H_STATE

30.6 NEH2 HXRAY DVD Isolation Valve HX2-DVD-VGC-01

Name	B	A	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Closed	F	T	0 Hz	0 Hz	0 Hz	–
Open	T	F	120 Hz	120 Hz	120 Hz	–
Fault	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = HX2_DVD_VGC_01_CLS_DI_STATE,
B = HX2_DVD_VGC_01_OPN_DI_STATE

30.7 NEH3 HXRAY UVD Isolation Valve HX3-UVD-VGC-01

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Closed	F	T	0 Hz	0 Hz	0 Hz	–
Open	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = HX3_UVD_VGC_01_CLS_DI_STATE,
B = HX3_UVD_VGC_01_OPN_DI_STATE

30.8 XPP CS-PAD 1 Detector Damage Fault

Name	*A*	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
No Fault	T	120 Hz	120 Hz	120 Hz	–

Where
A = XPP_DET_01_MPSFAULT_STATUS

31 Ignored when ST1/ST2 Are In, Stopper SH1 Is In, TD11 Is In, TDUND Is In, XPP-NH3-POS-00 Beamline Is In, or YG BL211 Is In

31.1 NEH3 HXRAY DVD Isolation Valve HX3-DVD-VGC-01

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Closed	F	T	0 Hz	0 Hz	0 Hz	–
Open	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `HX3_DVD_VGC_01_CLS_DI_STATE`,
B = `HX3_DVD_VGC_01_OPN_DI_STATE`

32 Ignored when ST1/ST2 Are In, Stopper SH1 Is In, TD11 Is In, TDUND Is In, XPP-NH3-POS-00 Beamline Is Not In, or YG BL211 Is In

32.1 XPP SB2 VGC 01 Gate Valve Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Open	F	T	120 Hz	120 Hz	120 Hz	–
Closed	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `XPP_SB2_VGC_01_OPN_DI_POSITION`,
B = `XPP_SB2_VGC_01_CLS_DI_POSITION`

33 Ignored when ST1/ST2 Are In, TD11 Is In, TDUND Is In, or YG BL211 Is In

33.1 FEE Camera 1561 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `CAMR_FEE1_1561_OUT_STATE`,
B = `CAMR_FEE1_1561_IN_STATE`

33.2 FEE Camera 1692 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `CAMR_FEE1_1692_OUT_STATE`,
B = `CAMR_FEE1_1692_IN_STATE`

33.3 FEE Camera 1953 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `CAMR_FEE1_1953_OUT_STATE`,
B = `CAMR_FEE1_1953_IN_STATE`

33.4 FEE Camera 2953 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `CAMR_FEE1_2953_OUT_STATE`,
B = `CAMR_FEE1_2953_IN_STATE`

33.5 FEE Camera 852 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `CAMR_FEE1_852_OUT_STATE`,
B = `CAMR_FEE1_852_IN_STATE`

33.6 FEE Camera 913 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `CAMR_FEE1_913_OUT_STATE`,
B = `CAMR_FEE1_913_IN_STATE`

33.7 FEE Fast Shutter Valve and System Summary

Name	*A*	PC	MS	BYKIK	LHS
Not All Out And Ready	F	0 Hz	0 Hz	0 Hz	–
All Out And Ready	T	120 Hz	120 Hz	120 Hz	–

Where
A = `VMPS_FEE1_E101_FSHR_FAULT`

33.8 FEE Gas Flow Aperture Summary

Name	*A*	PC	MS	BYKIK	LHS
Not All Out Or In	F	0 Hz	0 Hz	0 Hz	–
All Out Or In	T	120 Hz	120 Hz	120 Hz	–

Where
A = `VMPS_FEE1_E202_APRT_FAULT`

33.9 FEE Gas Flow Vacuum Isolation Valve Summary

Name	*A*	PC	MS	BYKIK	LHS
Not All Out	F	0 Hz	0 Hz	0 Hz	–
All Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = `VMPS_FEE1_E202_ISOV_FAULT`

33.10 FEE Instrument Vacuum Isolation Valve Summary

Name	*A*	PC	MS	BYKIK	LHS
Not All Out	F	0 Hz	0 Hz	0 Hz	–
All Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = `VMPS_FEE1_E101_ISOL_FAULT`

33.11 FEE XTOD H Isolation Valve Summary

Name	*A*	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `VMPS_FEE1_703_ISOL_H_FAULT`

33.12 FEE XTOD S1 Isolation Valve Summary

Name	*A*	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `VMPS_FEE1_703_ISOL_S1_FAULT`

33.13 FEE XTOD S2 Isolation Valve Summary

Name	*A*	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `VMPS_FEE1_703_ISOL_S2_FAULT`

34 Ignored when Stopper: BSY D2 Summary Is In or TDUND Is In

34.1 SXRSS Watchdog

Name	A	PC	MS	BYKIK	LHS
NOT_OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MPS_UND1_950_SXRSS_WDOG_STATE`

35 Ignored when Stopper: BSY D2 Summary Is In, TD11 Is In, or YG BL211 Is In

35.1 BYKIK 120 Hz Abort Trigger

Name	*A*	PC	MS	BYKIK	LHS
Missed Trigger	F	0 Hz	0 Hz	0 Hz	–
Stable	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BYKIK_120HZ_ABRT_TRIG_MISSED`

35.2 BYKIK 120 Hz Standby Trigger

Name	*A*	PC	MS	BYKIK	LHS
Missed Trigger	F	0 Hz	0 Hz	0 Hz	–
Stable	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BYKIK_120HZ_STBY_TRIG_MISSED`

35.3 BYKIK 30 Hz Abort Trigger

Name	*A*	PC	MS	BYKIK	LHS
Missed Trigger	F	0 Hz	0 Hz	0 Hz	–
Stable	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BYKIK_30HZ_ABRT_TRIG_MISSED`

35.4 BYKIK 30 Hz Standby Trigger

Name	*A*	PC	MS	BYKIK	LHS
Missed Trigger	F	0 Hz	0 Hz	0 Hz	–
Stable	T	120 Hz	120 Hz	120 Hz	–

Where
A = BYKIK_30HZ_STBY_TRIG_MISSED

35.5 BYKIK Readback Signal

Name	B	A	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BYKIK_THRESHOLD_UNDER_FAULT,
B = BYKIK_THRESHOLD_OVER_FAULT

35.6 Magnet In Tolerance: BYD1

Name	A	PC	MS	BYKIK	LHS
No	F	0 Hz	0 Hz	0 Hz	–
Yes	T	120 Hz	120 Hz	120 Hz	–

Where
A = BEND_DMP1_400_INTOL_STATUS

35.7 Magnet Power: BYD1

Name	A	PC	MS	BYKIK	LHS
Off	F	0 Hz	0 Hz	0 Hz	–
On	T	120 Hz	120 Hz	120 Hz	–

Where
A = BEND_DMP1_400_STATE_STATUS

36 Ignored when Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In

36.1 Magnet In Tolerance: QE31

Name	A	PC	MS	BYKIK	LHS
No	F	0 Hz	0 Hz	0 Hz	–
Yes	T	120 Hz	120 Hz	120 Hz	–

Where
A = QUAD_LTU1_720_INTOL_STATUS

36.2 Magnet In Tolerance: QUM1

Name	A	PC	MS	BYKIK	LHS
No	F	0 Hz	0 Hz	0 Hz	–
Yes	T	120 Hz	120 Hz	120 Hz	–

Where
A = QUAD_LTU1_820_INTOL_STATUS

36.3 Magnet In Tolerance: QUM2

Name	A	PC	MS	BYKIK	LHS
No	F	0 Hz	0 Hz	0 Hz	–
Yes	T	120 Hz	120 Hz	120 Hz	–

Where
A = QUAD_LTU1_840_INTOL_STATUS

36.4 Magnet In Tolerance: QUM3

Name	A	PC	MS	BYKIK	LHS
No	F	0 Hz	0 Hz	0 Hz	–
Yes	T	120 Hz	120 Hz	120 Hz	–

Where
A = QUAD_LTU1_860_INTOL_STATUS

36.5 Magnet In Tolerance: QUM4

Name	A	PC	MS	BYKIK	LHS
No	F	0 Hz	0 Hz	0 Hz	–
Yes	T	120 Hz	120 Hz	120 Hz	–

Where
A = QUAD_LTU1_880_INTOL_STATUS

36.6 Magnet Power: QE31

Name	A	PC	MS	BYKIK	LHS
Off	F	0 Hz	0 Hz	0 Hz	–
On	T	120 Hz	120 Hz	120 Hz	–

Where
A = QUAD_LTU1_720_STATE_STATUS

36.7 Magnet Power: QUM1

Name	A	PC	MS	BYKIK	LHS
Off	F	0 Hz	0 Hz	0 Hz	–
On	T	120 Hz	120 Hz	120 Hz	–

Where
A = QUAD_LTU1_820_STATE_STATUS

36.8 Magnet Power: QUM2

Name	A	PC	MS	BYKIK	LHS
Off	F	0 Hz	0 Hz	0 Hz	–
On	T	120 Hz	120 Hz	120 Hz	–

Where
A = QUAD_LTU1_840_STATE_STATUS

36.9 Magnet Power: QUM3

Name	*A*	PC	MS	BYKIK	LHS
Off	F	0 Hz	0 Hz	0 Hz	–
On	T	120 Hz	120 Hz	120 Hz	–

Where
A = `QUAD_LTU1_860_STATE_STATUS`

36.10 Magnet Power: QUM4

Name	*A*	PC	MS	BYKIK	LHS
Off	F	0 Hz	0 Hz	0 Hz	–
On	T	120 Hz	120 Hz	120 Hz	–

Where
A = `QUAD_LTU1_880_STATE_STATUS`

37 Ignored when TD11 Is In or YG BL211 Is In

37.1 Bunch Length Monitor BL21 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BL22_OUT_STATE,
B = BL22_IN_STATE

37.2 Flowswitch BSY PC320

Name	*A*	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
Ok	T	120 Hz	120 Hz	120 Hz	–

Where
A = PC320_FS_STATE

37.3 Flowswitch BSY PC90

Name	*A*	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
Ok	T	120 Hz	120 Hz	120 Hz	–

Where
A = PC90_FS_STATE

37.4 Flowswitch BSY RAD LCW Slit 10/30

Name	*A*	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
Ok	T	120 Hz	120 Hz	120 Hz	–

Where
A = HTEXCH2_STATE

37.5 Flowswitch CE21

Name	A	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = COL_805_FLOSW_STATE

37.6 Hydrogen Recombiner For BSY 1 Collimator

Name	A	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
Ok	T	120 Hz	120 Hz	120 Hz	–

Where
A = HYDRECM1_STATE

37.7 Hydrogen Recombiner For BSY 2 Slit 10/30

Name	A	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
Ok	T	120 Hz	120 Hz	120 Hz	–

Where
A = HYDRECM2_STATE

37.8 Ion Chamber Gas Flowswitch BSY A

Name	A	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
Ok	T	120 Hz	120 Hz	120 Hz	–

Where
A = A_IC_GAS_STATE

37.9 Ion Chamber Gas Flowswitch BSY B

Name	A	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
Ok	T	120 Hz	120 Hz	120 Hz	–

Where
A = B_IC_GAS_STATE

37.10 Ion Chamber Gas Flowswitch BSY C

Name	A	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
Ok	T	120 Hz	120 Hz	120 Hz	–

Where
A = C_IC_GAS_STATE

37.11 Mirror BL21 Position

Name	B	A	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BL22_OUT_STATE,
B = BL22_IN_STATE

37.12 PIC Gas Pressure LI24

Name	A	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = PIC_GAS_PRESS_STATE

37.13 PIC HVPS B911

Name	A	PC	MS	BYKIK	LHS
Off	F	0 Hz	0 Hz	0 Hz	–
On	T	120 Hz	120 Hz	120 Hz	–

Where
A = PIC_HV_ON_B911_STATE

37.14 PIC HVPS B912

Name	A	PC	MS	BYKIK	LHS
Off	F	0 Hz	0 Hz	0 Hz	–
On	T	120 Hz	120 Hz	120 Hz	–

Where
A = PIC_HV_ON_B912_STATE

37.15 PIC HVPS B913

Name	A	PC	MS	BYKIK	LHS
Off	F	0 Hz	0 Hz	0 Hz	–
On	T	120 Hz	120 Hz	120 Hz	–

Where
A = PIC_HV_ON_B913_STATE

37.16 PIC Raw Charge Thresholds: LTU1 220

Name	B	A	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICS_LTU1_220_LOSSL_THRESHOLD,
B = PICS_LTU1_220_LOSSH_THRESHOLD

37.17 PIC Raw Charge Thresholds: LTU1 252

Name	B	A	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICS_LTU1_252_LOSSL_THRESHOLD,
B = PICS_LTU1_252_LOSSH_THRESHOLD

37.18 PIC Raw Charge Thresholds: LTU1 280

Name	B	A	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICS_LTU1_280_LOSSL_THRESHOLD,
B = PICS_LTU1_280_LOSSH_THRESHOLD

37.19 PIC Raw Charge Thresholds: LTU1 420

Name	B	A	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICS_LTU1_420_LOSSL_THRESHOLD,
B = PICS_LTU1_420_LOSSH_THRESHOLD

37.20 PIC Raw Charge Thresholds: LTU1 450

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICS_LTU1_450_LOSSL_THRESHOLD,
B = PICS_LTU1_450_LOSSH_THRESHOLD

37.21 PIC Raw Charge Thresholds: LTU1 480

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICS_LTU1_480_LOSSL_THRESHOLD,
B = PICS_LTU1_480_LOSSH_THRESHOLD

37.22 PIC Raw Charge Thresholds: LTU1 722

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICS_LTU1_722_LOSSL_THRESHOLD,
B = PICS_LTU1_722_LOSSH_THRESHOLD

37.23 PIC Raw Charge Thresholds: LTU1 732

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICM_LTU1_732_LOSSL_THRESHOLD,
B = PICM_LTU1_732_LOSSH_THRESHOLD

37.24 PIC Raw Charge Thresholds: LTU1 762

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICS_LTU1_762_LOSSL_THRESHOLD,
B = PICS_LTU1_762_LOSSH_THRESHOLD

37.25 PIC Raw Charge Thresholds: LTU1 772

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICS_LTU1_772_LOSSL_THRESHOLD,
B = PICS_LTU1_772_LOSSH_THRESHOLD

37.26 PIC Trigger Missed (LN28)

Name	*A*	PC	MS	BYKIK	LHS
Missed	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICS_LTU1_220_NO_TRIG_MISSED

37.27 PIC Trigger Missed (LN29)

Name	*A*	PC	MS	BYKIK	LHS
Missed	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICS_LTU1_480_NO_TRIG_MISSED

37.28 PIC Trigger Missed (LN31)

Name	*A*	PC	MS	BYKIK	LHS
Missed	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICS_LTU1_762_NO_TRIG_MISSED

37.29 Profile Monitor BSY0 45

Name	*C*	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	F	T	120 Hz	120 Hz	120 Hz	–
In and TDUND Not In	F	T	F	0 Hz	0 Hz	0 Hz	–
Broken	F	T	T	0 Hz	0 Hz	0 Hz	–
OUT and TDUND OUT	T	F	F	120 Hz	120 Hz	120 Hz	–
OUT and TDUND IN	T	F	T	120 Hz	120 Hz	120 Hz	–
In and TDUND In	T	T	F	10 Hz	10 Hz	10 Hz	–

Where
A = PROF_BSY0_45_OUT_LIMIT_POSITION,
B = PROF_BSY0_45_IN_LIMIT_POSITION,
C = TDUND_IN_POSITION

37.30 Temperature: Common Line Summary

Name	A	PC	MS	BYKIK	LHS
Faulted	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = RTD_BSY0_16_CLINESUM_STATUS

37.31 Temperature: North Arc Summary

Name	A	PC	MS	BYKIK	LHS
Faulted	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = RTD_BSYN_64_NARCSUM_STATUS

37.32 Toroid Chassis IMBC2

Name	A	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = CHASIMB2_STATE

37.33 Toroid Comparator IMBC2IN/IMBC2OUT

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Downstream > Upstream	F	T	0 Hz	0 Hz	0 Hz	–
Upstream > Downstream	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = TCBC2L1_STATE,
B = TCBC2L2_STATE

38 Ignored when TD11 Is In, TDUND Is In, or YG BL211 Is In

38.1 B4C Protection of ST1/ST2

Name	*B*	*A*	PC	MS	BYKIK	LHS
Unprotected	F	F	0 Hz	0 Hz	0 Hz	–
OK	F	T	120 Hz	120 Hz	120 Hz	–
Protected	T	F	120 Hz	120 Hz	120 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `STPR_FEE1_1_ST1ST2OUT_POSITION`,
B = `YAG_DMP1_500_FLT2_IN_POSITION`

38.2 BFW 1010 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `BFW_UND1_1010_OUT_STATE`,
B = `BFW_UND1_1010_IN_STATE`

38.3 BFW 110 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `BFW_UND1_110_OUT_STATE`,
B = `BFW_UND1_110_IN_STATE`

38.4 BFW 1110 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_1110_OUT_STATE,
B = BFW_UND1_1110_IN_STATE

38.5 BFW 1210 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_1210_OUT_STATE,
B = BFW_UND1_1210_IN_STATE

38.6 BFW 1310 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_1310_OUT_STATE,
B = BFW_UND1_1310_IN_STATE

38.7 BFW 1410 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_1410_OUT_STATE,
B = BFW_UND1_1410_IN_STATE

38.8 BFW 1510 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_1510_OUT_STATE,
B = BFW_UND1_1510_IN_STATE

38.9 BFW 1610 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_1610_OUT_STATE,
B = BFW_UND1_1610_IN_STATE

38.10 BFW 1710 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_1710_OUT_STATE,
B = BFW_UND1_1710_IN_STATE

38.11 BFW 1810 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_1810_OUT_STATE,
B = BFW_UND1_1810_IN_STATE

38.12 BFW 1910 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_1910_OUT_STATE,
B = BFW_UND1_1910_IN_STATE

38.13 BFW 2010 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_2010_OUT_STATE,
B = BFW_UND1_2010_IN_STATE

38.14 BFW 210 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_210_OUT_STATE,
B = BFW_UND1_210_IN_STATE

38.15 BFW 2110 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_2110_OUT_STATE,
B = BFW_UND1_2110_IN_STATE

38.16 BFW 2210 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_2210_OUT_STATE,
B = BFW_UND1_2210_IN_STATE

38.17 BFW 2310 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_2310_OUT_STATE,
B = BFW_UND1_2310_IN_STATE

38.18 BFW 2410 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_2410_OUT_STATE,
B = BFW_UND1_2410_IN_STATE

38.19 BFW 2510 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_2510_OUT_STATE,
B = BFW_UND1_2510_IN_STATE

38.20 BFW 2610 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_2610_OUT_STATE,
B = BFW_UND1_2610_IN_STATE

38.21 BFW 2710 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_2710_OUT_STATE,
B = BFW_UND1_2710_IN_STATE

38.22 BFW 2810 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_2810_OUT_STATE,
B = BFW_UND1_2810_IN_STATE

38.23 BFW 2910 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_2910_OUT_STATE,
B = BFW_UND1_2910_IN_STATE

38.24 BFW 3010 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_3010_OUT_STATE,
B = BFW_UND1_3010_IN_STATE

38.25 BFW 310 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_310_OUT_STATE,
B = BFW_UND1_310_IN_STATE

38.26 BFW 3110 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_3110_OUT_STATE,
B = BFW_UND1_3110_IN_STATE

38.27 BFW 3210 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_3210_OUT_STATE,
B = BFW_UND1_3210_IN_STATE

38.28 BFW 3310 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_3310_OUT_STATE,
B = BFW_UND1_3310_IN_STATE

38.29 BFW 410 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_410_OUT_STATE,
B = BFW_UND1_410_IN_STATE

38.30 BFW 510 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_510_OUT_STATE,
B = BFW_UND1_510_IN_STATE

38.31 BFW 610 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_610_OUT_STATE,
B = BFW_UND1_610_IN_STATE

38.32 BFW 710 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_710_OUT_STATE,
B = BFW_UND1_710_IN_STATE

38.33 BFW 810 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BFW_UND1_810_OUT_STATE,
B = BFW_UND1_810_IN_STATE

38.34 BFW 910 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `BFW_UND1_910_OUT_STATE`,
B = `BFW_UND1_910_IN_STATE`

38.35 BFW Inserted Count

The following code assigns the truth table's state number to the `unsigned int` variable `state`.

```
unsigned int beamFinderWireInCount = 0;

/* "BFW UND1 XXX" is IN when BFW_UND1_XXX_OUT_STATE == 0 */
if (!( BFW_UND1_110_OUT_STATE)) { beamFinderWireInCount++; }
if (!( BFW_UND1_210_OUT_STATE)) { beamFinderWireInCount++; }
if (!( BFW_UND1_310_OUT_STATE)) { beamFinderWireInCount++; }
if (!( BFW_UND1_410_OUT_STATE)) { beamFinderWireInCount++; }
if (!( BFW_UND1_510_OUT_STATE)) { beamFinderWireInCount++; }
if (!( BFW_UND1_610_OUT_STATE)) { beamFinderWireInCount++; }
if (!( BFW_UND1_710_OUT_STATE)) { beamFinderWireInCount++; }
if (!( BFW_UND1_810_OUT_STATE)) { beamFinderWireInCount++; }
if (!( BFW_UND1_910_OUT_STATE)) { beamFinderWireInCount++; }
if (!(BFW_UND1_1010_OUT_STATE)) { beamFinderWireInCount++; }
if (!(BFW_UND1_1110_OUT_STATE)) { beamFinderWireInCount++; }
if (!(BFW_UND1_1210_OUT_STATE)) { beamFinderWireInCount++; }
if (!(BFW_UND1_1310_OUT_STATE)) { beamFinderWireInCount++; }
if (!(BFW_UND1_1410_OUT_STATE)) { beamFinderWireInCount++; }
if (!(BFW_UND1_1510_OUT_STATE)) { beamFinderWireInCount++; }
if (!(BFW_UND1_1610_OUT_STATE)) { beamFinderWireInCount++; }
if (!(BFW_UND1_1710_OUT_STATE)) { beamFinderWireInCount++; }
if (!(BFW_UND1_1810_OUT_STATE)) { beamFinderWireInCount++; }
if (!(BFW_UND1_1910_OUT_STATE)) { beamFinderWireInCount++; }
if (!(BFW_UND1_2010_OUT_STATE)) { beamFinderWireInCount++; }
if (!(BFW_UND1_2110_OUT_STATE)) { beamFinderWireInCount++; }
if (!(BFW_UND1_2210_OUT_STATE)) { beamFinderWireInCount++; }
if (!(BFW_UND1_2310_OUT_STATE)) { beamFinderWireInCount++; }
if (!(BFW_UND1_2410_OUT_STATE)) { beamFinderWireInCount++; }
```

```
if (!(BFW_UND1_2510_OUT_STATE)) { beamFinderWireInCount++; }
if (!(BFW_UND1_2610_OUT_STATE)) { beamFinderWireInCount++; }
if (!(BFW_UND1_2710_OUT_STATE)) { beamFinderWireInCount++; }
if (!(BFW_UND1_2810_OUT_STATE)) { beamFinderWireInCount++; }
if (!(BFW_UND1_2910_OUT_STATE)) { beamFinderWireInCount++; }
if (!(BFW_UND1_3010_OUT_STATE)) { beamFinderWireInCount++; }
if (!(BFW_UND1_3110_OUT_STATE)) { beamFinderWireInCount++; }
if (!(BFW_UND1_3210_OUT_STATE)) { beamFinderWireInCount++; }
if (!(BFW_UND1_3310_OUT_STATE)) { beamFinderWireInCount++; }

switch(beamFinderWireInCount)
{
    case 0:  state = 0; break; /* No BFWs in */
    case 1:  state = 1; break; /* One BFW in */
    default: state = 2; break; /* More than one BFW in */
}
```

Name	State	PC	MS	BYKIK	LHS
No BFWs In	0	120 Hz	120 Hz	120 Hz	–
One BFW In	1	10 Hz	10 Hz	10 Hz	–
More Than One BFW In	2	0 Hz	0 Hz	0 Hz	–

38.36 BLM Argonne Heartbeat (LN32)

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_120_TEST_L_THRESHOLD`,
B = `BLM_UND1_120_TEST_H_THRESHOLD`

38.37 BLM Argonne Heartbeat (LN33)

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_920_TEST_L_THRESHOLD,
B = BLM_UND1_920_TEST_H_THRESHOLD

38.38 BLM Argonne Heartbeat (LN35)

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_1720_TEST_L_THRESHOLD,
B = BLM_UND1_1720_TEST_H_THRESHOLD

38.39 BLM Argonne Heartbeat (LN36)

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_2520_QTL_THRESHOLD,
B = BLM_2520_QTH_THRESHOLD

38.40 BLM Argonne Heartbeat (LN37)

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_3320_TEST_L_THRESHOLD,
B = BLM_UND1_3320_TEST_H_THRESHOLD

38.41 BLM HVPS LTU1 762

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = HVPS_LTU1_762_LOW_FAULT,
B = HVPS_LTU1_762_HIGH_FAULT

38.42 BLM HVPS UND1 120

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = HVPS_UND1_120_LOW_FAULT,
B = HVPS_UND1_120_HIGH_FAULT

38.43 BLM HVPS UND1 1720

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = HVPS_UND1_1720_LOW_FAULT,
B = HVPS_UND1_1720_HIGH_FAULT

38.44 BLM HVPS UND1 2221

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = HVPS_UND1_2221_LOW_FAULT,
B = HVPS_UND1_2221_HIGH_FAULT

38.45 BLM HVPS UND1 2520

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = HVPS_UND1_2520_LOW_FAULT,
B = HVPS_UND1_2520_HIGH_FAULT

38.46 BLM HVPS UND1 3320

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = HVPS_UND1_3320_LOW_FAULT,
B = HVPS_UND1_3320_HIGH_FAULT

38.47 BLM HVPS UND1 920

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = HVPS_UND1_920_LOW_FAULT,
B = HVPS_UND1_920_HIGH_FAULT

38.48 BLM Pedestal Threshold: LTU1 722

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_LTU1_722_PED_L_THRESHOLD,
B = BLM_LTU1_722_PED_H_THRESHOLD

38.49 BLM Pedestal Threshold: LTU1 732

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_LTU1_732_PED_L_THRESHOLD`,
B = `BLM_LTU1_732_PED_H_THRESHOLD`

38.50 BLM Pedestal Threshold: LTU1 762

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_LTU1_762_PED_L_THRESHOLD`,
B = `BLM_LTU1_762_PED_H_THRESHOLD`

38.51 BLM Pedestal Threshold: LTU1 772

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_LTU1_772_PED_L_THRESHOLD`,
B = `BLM_LTU1_772_PED_H_THRESHOLD`

38.52 BLM Pedestal Thresholds: LTU1 980

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_LTU1_980_PED_L_THRESHOLD`,
B = `BLM_LTU1_980_PED_H_THRESHOLD`

38.53 BLM Pedestal Thresholds: UND 1021

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_1021_PED_L_THRESHOLD`,
B = `BLM_UND1_1021_PED_H_THRESHOLD`

38.54 BLM Pedestal Thresholds: UND 1121

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_1121_PED_L_THRESHOLD`,
B = `BLM_UND1_1121_PED_H_THRESHOLD`

38.55 BLM Pedestal Thresholds: UND 120

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_120_PED_L_THRESHOLD,
B = BLM_UND1_120_PED_H_THRESHOLD

38.56 BLM Pedestal Thresholds: UND 121

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_121_PED_L_THRESHOLD,
B = BLM_UND1_121_PED_H_THRESHOLD

38.57 BLM Pedestal Thresholds: UND 1221

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_1221_PED_L_THRESHOLD,
B = BLM_UND1_1221_PED_H_THRESHOLD

38.58 BLM Pedestal Thresholds: UND 1321

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_1321_PED_L_THRESHOLD`,
B = `BLM_UND1_1321_PED_H_THRESHOLD`

38.59 BLM Pedestal Thresholds: UND 1421

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_1421_PED_L_THRESHOLD`,
B = `BLM_UND1_1421_PED_H_THRESHOLD`

38.60 BLM Pedestal Thresholds: UND 1521

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_1521_PED_L_THRESHOLD`,
B = `BLM_UND1_1521_PED_H_THRESHOLD`

38.61 BLM Pedestal Thresholds: UND 1621

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_1621_PED_L_THRESHOLD`,
B = `BLM_UND1_1621_PED_H_THRESHOLD`

38.62 BLM Pedestal Thresholds: UND 1720

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_1720_PED_L_THRESHOLD`,
B = `BLM_UND1_1720_PED_H_THRESHOLD`

38.63 BLM Pedestal Thresholds: UND 1721

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_1721_PED_L_THRESHOLD`,
B = `BLM_UND1_1721_PED_H_THRESHOLD`

38.64 BLM Pedestal Thresholds: UND 1821

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_1821_PED_L_THRESHOLD`,
B = `BLM_UND1_1821_PED_H_THRESHOLD`

38.65 BLM Pedestal Thresholds: UND 1921

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_1921_PED_L_THRESHOLD`,
B = `BLM_UND1_1921_PED_H_THRESHOLD`

38.66 BLM Pedestal Thresholds: UND 2021

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_2021_PED_L_THRESHOLD`,
B = `BLM_UND1_2021_PED_H_THRESHOLD`

38.67 BLM Pedestal Thresholds: UND 2121

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_2121_PED_L_THRESHOLD,
B = BLM_UND1_2121_PED_H_THRESHOLD

38.68 BLM Pedestal Thresholds: UND 221

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_221_PED_L_THRESHOLD,
B = BLM_UND1_221_PED_H_THRESHOLD

38.69 BLM Pedestal Thresholds: UND 2221

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_2220_QBLL_THRESHOLD,
B = BLM_2220_QBLH_THRESHOLD

38.70 BLM Pedestal Thresholds: UND 2321

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_2320_QBLL_THRESHOLD,
B = BLM_2320_QBLH_THRESHOLD

38.71 BLM Pedestal Thresholds: UND 2421

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_2420_QBLL_THRESHOLD,
B = BLM_2420_QBLH_THRESHOLD

38.72 BLM Pedestal Thresholds: UND 2520

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_2520_QBLL_THRESHOLD,
B = BLM_2520_QBLH_THRESHOLD

38.73 BLM Pedestal Thresholds: UND 2521

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_2521_PED_L_THRESHOLD,
B = BLM_UND1_2521_PED_H_THRESHOLD

38.74 BLM Pedestal Thresholds: UND 2621

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_2620_QBLL_THRESHOLD,
B = BLM_2620_QBLH_THRESHOLD

38.75 BLM Pedestal Thresholds: UND 2721

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_2720_QBLL_THRESHOLD,
B = BLM_2720_QBLH_THRESHOLD

38.76 BLM Pedestal Thresholds: UND 2821

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_2820_QBLL_THRESHOLD,
B = BLM_2820_QBLH_THRESHOLD

38.77 BLM Pedestal Thresholds: UND 2921

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_2920_QBLL_THRESHOLD,
B = BLM_2920_QBLH_THRESHOLD

38.78 BLM Pedestal Thresholds: UND 3021

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_3021_PED_L_THRESHOLD,
B = BLM_UND1_3021_PED_H_THRESHOLD

38.79 BLM Pedestal Thresholds: UND 3121

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_3121_PED_L_THRESHOLD`,
B = `BLM_UND1_3121_PED_H_THRESHOLD`

38.80 BLM Pedestal Thresholds: UND 321

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_321_PED_L_THRESHOLD`,
B = `BLM_UND1_321_PED_H_THRESHOLD`

38.81 BLM Pedestal Thresholds: UND 3221

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_3221_PED_L_THRESHOLD`,
B = `BLM_UND1_3221_PED_H_THRESHOLD`

38.82 BLM Pedestal Thresholds: UND 3320

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_3320_PED_L_THRESHOLD,
B = BLM_UND1_3320_PED_H_THRESHOLD

38.83 BLM Pedestal Thresholds: UND 3321

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_3321_PED_L_THRESHOLD,
B = BLM_UND1_3321_PED_H_THRESHOLD

38.84 BLM Pedestal Thresholds: UND 421

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_421_PED_L_THRESHOLD,
B = BLM_UND1_421_PED_H_THRESHOLD

38.85 BLM Pedestal Thresholds: UND 521

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_521_PED_L_THRESHOLD,
B = BLM_UND1_521_PED_H_THRESHOLD

38.86 BLM Pedestal Thresholds: UND 621

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_621_PED_L_THRESHOLD,
B = BLM_UND1_621_PED_H_THRESHOLD

38.87 BLM Pedestal Thresholds: UND 721

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_721_PED_L_THRESHOLD,
B = BLM_UND1_721_PED_H_THRESHOLD

38.88 BLM Pedestal Thresholds: UND 821

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_821_PED_L_THRESHOLD,
B = BLM_UND1_821_PED_H_THRESHOLD

38.89 BLM Pedestal Thresholds: UND 920

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_920_PED_L_THRESHOLD,
B = BLM_UND1_920_PED_H_THRESHOLD

38.90 BLM Pedestal Thresholds: UND 921

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_921_PED_L_THRESHOLD,
B = BLM_UND1_921_PED_H_THRESHOLD

38.91 BLM Pedestal Thresholds: UND BLF1

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_BLF1_PED_L_THRESHOLD`,
B = `BLM_UND1_BLF1_PED_H_THRESHOLD`

38.92 BLM Pedestal Thresholds: UND BLF17

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_BLF17_PED_L_THRESHOLD`,
B = `BLM_UND1_BLF17_PED_H_THRESHOLD`

38.93 BLM PEP Timing Check (LN30)

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_LTU1_722_TEST_L_THRESHOLD`,
B = `BLM_LTU1_722_TEST_H_THRESHOLD`

38.94 BLM PEP Timing Check (LN32)

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_LTU1_762_TEST_L_THRESHOLD,
B = BLM_LTU1_762_TEST_H_THRESHOLD

38.95 BLM PEP Timing Check (LN33)

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_621_TEST_L_THRESHOLD,
B = BLM_UND1_621_TEST_H_THRESHOLD

38.96 BLM PEP Timing Check (LN35)

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_1421_TEST_L_THRESHOLD,
B = BLM_UND1_1421_TEST_H_THRESHOLD

38.97 BLM PEP Timing Check (LN36)

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_2220_QTL_THRESHOLD,
B = BLM_2220_QTH_THRESHOLD

38.98 BLM PEP Timing Check (LN37)

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_3021_TEST_L_THRESHOLD,
B = BLM_UND1_3021_TEST_H_THRESHOLD

38.99 BLM Raw Charge Thresholds: LTU1 722

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_LTU1_722_LOSS_L_THRESHOLD,
B = BLM_LTU1_722_LOSS_H_THRESHOLD

38.100 BLM Raw Charge Thresholds: LTU1 732

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_LTU1_732_LOSS_L_THRESHOLD`,
B = `BLM_LTU1_732_LOSS_H_THRESHOLD`

38.101 BLM Raw Charge Thresholds: LTU1 762

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_LTU1_762_LOSS_L_THRESHOLD`,
B = `BLM_LTU1_762_LOSS_H_THRESHOLD`

38.102 BLM Raw Charge Thresholds: LTU1 772

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_LTU1_772_LOSS_L_THRESHOLD`,
B = `BLM_LTU1_772_LOSS_H_THRESHOLD`

38.103 BLM Raw Charge Thresholds: LTU1 980

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_LTU1_980_LOSS_L_THRESHOLD`,
B = `BLM_LTU1_980_LOSS_H_THRESHOLD`

38.104 BLM Raw Charge Thresholds: UND 1021

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_1021_LOSS_L_THRESHOLD`,
B = `BLM_UND1_1021_LOSS_H_THRESHOLD`

38.105 BLM Raw Charge Thresholds: UND 1121

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_1121_LOSS_L_THRESHOLD`,
B = `BLM_UND1_1121_LOSS_H_THRESHOLD`

38.106 BLM Raw Charge Thresholds: UND 120

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_120_LOSS_L_THRESHOLD`,
B = `BLM_UND1_120_LOSS_H_THRESHOLD`

38.107 BLM Raw Charge Thresholds: UND 121

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_121_LOSS_L_THRESHOLD`,
B = `BLM_UND1_121_LOSS_H_THRESHOLD`

38.108 BLM Raw Charge Thresholds: UND 1221

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_1221_LOSS_L_THRESHOLD`,
B = `BLM_UND1_1221_LOSS_H_THRESHOLD`

38.109 BLM Raw Charge Thresholds: UND 1321

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_1321_LOSS_L_THRESHOLD,
B = BLM_UND1_1321_LOSS_H_THRESHOLD

38.110 BLM Raw Charge Thresholds: UND 1421

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_1421_LOSS_L_THRESHOLD,
B = BLM_UND1_1421_LOSS_H_THRESHOLD

38.111 BLM Raw Charge Thresholds: UND 1521

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_1521_LOSS_L_THRESHOLD,
B = BLM_UND1_1521_LOSS_H_THRESHOLD

38.112 BLM Raw Charge Thresholds: UND 1621

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_1621_LOSS_L_THRESHOLD,
B = BLM_UND1_1621_LOSS_H_THRESHOLD

38.113 BLM Raw Charge Thresholds: UND 1720

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_1720_LOSS_L_THRESHOLD,
B = BLM_UND1_1720_LOSS_H_THRESHOLD

38.114 BLM Raw Charge Thresholds: UND 1721

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_1721_LOSS_L_THRESHOLD,
B = BLM_UND1_1721_LOSS_H_THRESHOLD

38.115 BLM Raw Charge Thresholds: UND 1821

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_1821_LOSS_L_THRESHOLD,
B = BLM_UND1_1821_LOSS_H_THRESHOLD

38.116 BLM Raw Charge Thresholds: UND 1921

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_1921_LOSS_L_THRESHOLD,
B = BLM_UND1_1921_LOSS_H_THRESHOLD

38.117 BLM Raw Charge Thresholds: UND 2021

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_2021_LOSS_L_THRESHOLD,
B = BLM_UND1_2021_LOSS_H_THRESHOLD

38.118 BLM Raw Charge Thresholds: UND 2121

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_2121_LOSS_L_THRESHOLD,
B = BLM_UND1_2121_LOSS_H_THRESHOLD

38.119 BLM Raw Charge Thresholds: UND 221

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_221_LOSS_L_THRESHOLD,
B = BLM_UND1_221_LOSS_H_THRESHOLD

38.120 BLM Raw Charge Thresholds: UND 2221

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_2220_QBL_THRESHOLD,
B = BLM_2220_QBH_THRESHOLD

38.121 BLM Raw Charge Thresholds: UND 2321

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_2320_QBL_THRESHOLD,
B = BLM_2320_QBH_THRESHOLD

38.122 BLM Raw Charge Thresholds: UND 2421

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_2420_QBL_THRESHOLD,
B = BLM_2420_QBH_THRESHOLD

38.123 BLM Raw Charge Thresholds: UND 2520

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_2520_QBL_THRESHOLD,
B = BLM_2520_QBH_THRESHOLD

38.124 BLM Raw Charge Thresholds: UND 2521

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_2521_LOSS_L_THRESHOLD,
B = BLM_UND1_2521_LOSS_H_THRESHOLD

38.125 BLM Raw Charge Thresholds: UND 2621

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_2620_QBL_THRESHOLD,
B = BLM_2620_QBH_THRESHOLD

38.126 BLM Raw Charge Thresholds: UND 2721

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_2720_QBL_THRESHOLD,
B = BLM_2720_QBH_THRESHOLD

38.127 BLM Raw Charge Thresholds: UND 2821

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_2820_QBL_THRESHOLD,
B = BLM_2820_QBH_THRESHOLD

38.128 BLM Raw Charge Thresholds: UND 2921

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_2920_QBL_THRESHOLD,
B = BLM_2920_QBH_THRESHOLD

38.129 BLM Raw Charge Thresholds: UND 3021

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_3021_LOSS_L_THRESHOLD,
B = BLM_UND1_3021_LOSS_H_THRESHOLD

38.130 BLM Raw Charge Thresholds: UND 3121

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_3121_LOSS_L_THRESHOLD,
B = BLM_UND1_3121_LOSS_H_THRESHOLD

38.131 BLM Raw Charge Thresholds: UND 321

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_321_LOSS_L_THRESHOLD,
B = BLM_UND1_321_LOSS_H_THRESHOLD

38.132 BLM Raw Charge Thresholds: UND 3221

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_3221_LOSS_L_THRESHOLD,
B = BLM_UND1_3221_LOSS_H_THRESHOLD

38.133 BLM Raw Charge Thresholds: UND 3320

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_3320_LOSS_L_THRESHOLD,
B = BLM_UND1_3320_LOSS_H_THRESHOLD

38.134 BLM Raw Charge Thresholds: UND 3321

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_3321_LOSS_L_THRESHOLD,
B = BLM_UND1_3321_LOSS_H_THRESHOLD

38.135 BLM Raw Charge Thresholds: UND 421

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_421_LOSS_L_THRESHOLD,
B = BLM_UND1_421_LOSS_H_THRESHOLD

38.136 BLM Raw Charge Thresholds: UND 521

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_521_LOSS_L_THRESHOLD`,
B = `BLM_UND1_521_LOSS_H_THRESHOLD`

38.137 BLM Raw Charge Thresholds: UND 621

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_621_LOSS_L_THRESHOLD`,
B = `BLM_UND1_621_LOSS_H_THRESHOLD`

38.138 BLM Raw Charge Thresholds: UND 721

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_721_LOSS_L_THRESHOLD`,
B = `BLM_UND1_721_LOSS_H_THRESHOLD`

38.139 BLM Raw Charge Thresholds: UND 821

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_821_LOSS_L_THRESHOLD,
B = BLM_UND1_821_LOSS_H_THRESHOLD

38.140 BLM Raw Charge Thresholds: UND 920

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_920_LOSS_L_THRESHOLD,
B = BLM_UND1_920_LOSS_H_THRESHOLD

38.141 BLM Raw Charge Thresholds: UND 921

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_921_LOSS_L_THRESHOLD,
B = BLM_UND1_921_LOSS_H_THRESHOLD

38.142 BLM Raw Charge Thresholds: UND BLF1

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_BLF1_LOSS_L_THRESHOLD`,
B = `BLM_UND1_BLF1_LOSS_H_THRESHOLD`

38.143 BLM Raw Charge Thresholds: UND BLF17

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_BLF17_LOSS_L_THRESHOLD`,
B = `BLM_UND1_BLF17_LOSS_H_THRESHOLD`

38.144 BLM Timing Check (BLM:UND1:4)

Name	*B*	*A*	PC	MS	BYKIK	LHS
Bad Timing	F	F	0 Hz	0 Hz	0 Hz	–
Bad Timing High	F	T	0 Hz	0 Hz	0 Hz	–
Bad Timing Low	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_4_TIMING_L_THRESHOLD`,
B = `BLM_UND1_4_TIMING_H_THRESHOLD`

38.145 BLM Timing Check (LN30)

Name	*B*	*A*	PC	MS	BYKIK	LHS
Bad Timing	F	F	0 Hz	0 Hz	0 Hz	–
Bad Timing High	F	T	0 Hz	0 Hz	0 Hz	–
Bad Timing Low	T	F	0 Hz	0 Hz	0 Hz	–
All OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_4_TIMING_L_THRESHOLD`,
B = `BLM_UND1_4_TIMING_H_THRESHOLD`

38.146 BLM Trigger Missed (LN30)

Name	*A*	PC	MS	BYKIK	LHS
Missed	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_LTU1_722_NO_TRIG_MISSED`

38.147 BLM Trigger Missed (LN32)

Name	*A*	PC	MS	BYKIK	LHS
Missed	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_LTU1_762_NO_TRIG_MISSED`

38.148 BLM Trigger Missed (LN33)

Name	*A*	PC	MS	BYKIK	LHS
Missed	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BLM_UND1_6_NO_TRIG_MISSED`

38.149 BLM Trigger Missed (LN35)

Name	A	PC	MS	BYKIK	LHS
Missed	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_14_NO_TRIG_MISSED

38.150 BLM Trigger Missed (LN36)

Name	A	PC	MS	BYKIK	LHS
Missed	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_TRIG_MISSED

38.151 BLM Trigger Missed (LN37)

Name	A	PC	MS	BYKIK	LHS
Missed	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = BLM_UND1_30_NO_TRIG_MISSED

38.152 BLM/PIC Watchdog: Downstream of TDUND

Name	A	PC	MS	BYKIK	LHS
Faulted	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = MPS_MCC0_2_PICBLM_WD_STATUS

38.153 BPM Summary (1-9)

Name	*A*	PC	MS	BYKIK	LHS
Faulted	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BPM_SUM1_STATE`

38.154 BPM Summary (10-18)

Name	*A*	PC	MS	BYKIK	LHS
Faulted	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BPM_SUM2_STATE`

38.155 BPM Summary (19-27)

Name	*A*	PC	MS	BYKIK	LHS
Faulted	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BPM_SUM3_STATE`

38.156 BPM Summary (28-36)

Name	*A*	PC	MS	BYKIK	LHS
Faulted	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BPM_SUM4_STATE`

38.157 OTR BL237 Position and TDUND Not In

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	0 Hz	0 Hz	0 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = OTR_BL237_OUT_LIMIT_STATE,
B = OTR_BL237_IN_LIMIT_STATE

38.158 OTR BL291 Position and TDUND Not In

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	0 Hz	0 Hz	0 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = OTR_BL291_OUT_LIMIT_STATE,
B = OTR_BL291_IN_LIMIT_STATE

38.159 OTR BL541 Position and TDUND Not In

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	0 Hz	0 Hz	0 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = OTR_BL541_OUT_LIMIT_STATE,
B = OTR_BL541_IN_LIMIT_STATE

38.160 OTR BL571 Position and TDUND Not In

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	0 Hz	0 Hz	0 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = OT_BL571_OUT_LIMIT_STATE,
B = OT_BL571_IN_LIMIT_STATE

38.161 OTR BL621 Position and TDUND Not In

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	0 Hz	0 Hz	0 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = OT_BL621_OUT_LIMIT_STATE,
B = OT_BL621_IN_LIMIT_STATE

38.162 OTR BL711 Position and TDUND Not In

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	0 Hz	0 Hz	0 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = OT_BL711_OUT_LIMIT_STATE,
B = OT_BL711_IN_LIMIT_STATE

38.163 OTR21 Position When TDUND Not In

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	0 Hz	0 Hz	0 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `OTR21_OUT_STATE`,
B = `OTR21_IN_STATE`

38.164 OTR22 Position When TDUND Not In

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	0 Hz	0 Hz	0 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `OTR22_OUT_STATE`,
B = `OTR22_IN_STATE`

38.165 OTR30 Position When TDUND Not In

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	0 Hz	0 Hz	0 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `OTR30_0449_OUT_STATE`,
B = `OTR30_0449_IN_STATE`

38.166 OTR33 Position When TDUND Not In

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	0 Hz	0 Hz	0 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `OTR33_0745_OUT_STATE`,
B = `OTR33_0745_IN_STATE`

38.167 OTRH1 Position When TDUND Not In

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	0 Hz	0 Hz	0 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `OTRH1_OUT_LIMIT_STATE`,
B = `OTRH1_IN_LIMIT_STATE`

38.168 OTRH2 Position When TDUND Not In

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	0 Hz	0 Hz	0 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `OTRH2_OUT_LIMIT_STATE`,
B = `OTRH2_IN_LIMIT_STATE`

38.169 PIC HVPS B921

Name	*A*	PC	MS	BYKIK	LHS
Off	F	0 Hz	0 Hz	0 Hz	–
On	T	120 Hz	120 Hz	120 Hz	–

Where
A = PIC_HV_ON_B921_STATE

38.170 PIC Trigger Missed (LN34)

Name	*A*	PC	MS	BYKIK	LHS
Missed	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICS_DMP1_100_NO_TRIG_MISSED

38.171 THz Radiator Beryllium Foil

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = THZR_DMP1_350_OUT_LIMIT_POSITION,
B = THZR_DMP1_350_IN_LIMIT_POSITION

38.172 Toroid Comparator (IMUNDI vs IMUNDO)

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
3E8 ppb Gain	F	T	0 Hz	0 Hz	0 Hz	–
3E8 ppb Loss	T	F	0 Hz	0 Hz	0 Hz	–
Under 3E8 ppb Loss	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = IMUNDI_COMP_L1_STATE,
B = IMUNDI_COMP_L2_STATE

38.173 Toroid Comparator (IMUNDO vs IMDUMP)

Name	B	A	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
3E8 ppb Gain	F	T	0 Hz	0 Hz	0 Hz	–
3E8 ppb Loss	T	F	0 Hz	0 Hz	0 Hz	–
Under 3E8 ppb Loss	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = IMUNDO_COMP_L1_STATE,
B = IMUNDO_COMP_L2_STATE

38.174 Toroid Comparator Power Status (B921)

Name	A	PC	MS	BYKIK	LHS
Powered Off	F	0 Hz	0 Hz	0 Hz	–
Powered On	T	120 Hz	120 Hz	120 Hz	–

Where
A = COMP_STAT_ON_STATE

39 Ignored when TDUND Is In

39.1 HXRSS Beamline Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `BMLN_UND1_1650_OUT_LMTSW_STATE`,
B = `BMLN_UND1_1650_IN_LMTSW_STATE`

39.2 HXRSS Chicane Bend Magnet Power Supply

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
ON	F	T	120 Hz	120 Hz	120 Hz	–
OFF	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `BEND_UND1_1640_ON_STATE`,
B = `BEND_UND1_1640_OFF_STATE`

39.3 HXRSS Crystal Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `XTAL_UND1_1650_OUT_LMTSW_STATE`,
B = `XTAL_UND1_1650_IN_ENCDR_STATE`

39.4 HXRSS Crystal Valid Position

Name	*A*	PC	MS	BYKIK	LHS
Not Valid	F	0 Hz	0 Hz	0 Hz	–
Valid	T	120 Hz	120 Hz	120 Hz	–

Where
A = `XTAL_UND1_1650_POSITIONSTAT_STATE`

39.5 HXRSS Mode State

The following code assigns the truth table's state number to the `unsigned int` variable `state`.

```
/*
 * state = 0 : full rate (120 Hz) beam allowed, HXRSS Seeded Mode
 * state = 1 : full rate (120 Hz) beam allowed, HXRSS SASE Mode
 * state = 2 : full rate (120 Hz) beam allowed, HXRSS Phase Shifter
    Mode
 * state = 3 : no beam allowed, HXRSS undefined state
*/

/* Initialize to a guard value */
state = (unsigned int) -1;

/*
 * Allow beam if HXRSS is ON, Seeded Mode: the raft is in;
 *                            the magnet is on in and tolerance;
 *                            the photon energy is OK;
 *                            the crystal is IN
 * Allow beam if HXRSS is OFF, SASE Mode: the raft is out;
 *                             the magnet is off;
 *                             the crystal is out
 * Allow beam if HXRSS is in Phase Shifter Mode: the raft is in;
 *                             the magnet is in ANY state;
 *                             the crystal is out
 * Otherwise, do not allow beam.
 */


/* Input Descriptions
*
```

```
* BEND_DMP1_400_INTOL_BRANGE_STATE= HXRSS Beam Energy OK when 10 GeV <
    E < 15 GeV
* XTAL_UND1_1650_OUT_LMTSW_STATE    = Crystal OUT Limit Switch
* XTAL_UND1_1650_IN_ENCDR_STATE      = Crystal IN Limit Switch, from
    encoder
* BMLN_UND1_1650_IN_LMTSW_STATE      = HXRSS Raft IN Limit Switch
* BMLN_UND1_1650_OUT_LMTSW_STATE    = HXRSS Raft OUT Limit Switch
* BEND_UND1_1640_INTOL_BMIN_STATE    = HXRSS Chicane Bend INTOL, greater
    than +0.6 kG-m
* BEND_UND1_1640_OFF_STATE                = HXRSS Chicane Bend String is
    OFF
* BEND_UND1_1640_ON_STATE                 = HXRSS Chicane Bend String is
    ON
*
*/

if ( BMLN_UND1_1650_IN_LMTSW_STATE &&
           BEND_UND1_1640_INTOL_BMIN_STATE &&
           BEND_UND1_1640_ON_STATE &&
           BEND_DMP1_400_INTOL_BRANGE_STATE &&
           ( XTAL_UND1_1650_IN_ENCDR_STATE   ) )
{
    state = 0; /* HXRSS ON, HXRSS Seeded Mode, okay to run beam */
}

else if ( BMLN_UND1_1650_OUT_LMTSW_STATE &&
           BEND_UND1_1640_OFF_STATE &&
           XTAL_UND1_1650_OUT_LMTSW_STATE )
{
    state = 1; /* HXRSS OFF,SASE Mode, okay to run beam */
}

else if ( BMLN_UND1_1650_IN_LMTSW_STATE &&
           XTAL_UND1_1650_OUT_LMTSW_STATE )
{
    state = 2; /* HXRSS in Phase Shifter Mode, okay to run beam */
}

else
{
    state = 3; /* HXRSS Undefined State, no beam allowed */
}
```

Name	State	PC	MS	BYKIK	LHS
HXRSS Seeded Mode	0	120 Hz	120 Hz	120 Hz	–
HXRSS SASE Mode	1	120 Hz	120 Hz	120 Hz	–
HXRSS Phase Shifter Mode	2	120 Hz	120 Hz	120 Hz	–
HXRSS Undefined State	3	0 Hz	0 Hz	0 Hz	–

40 Ignored when YG BL211 Is In

40.1 BCS PIC RAW Charge Threshold DMP 997

Name	*A*	PC	MS	BYKIK	LHS
Exceeded	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PIC997_STATE`

40.2 BCS PIC RAW Charge Threshold DMP 998

Name	*A*	PC	MS	BYKIK	LHS
Exceeded	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PIC998_STATE`

40.3 BLM/PIC Watchdog: IN20

Name	*A*	PC	MS	BYKIK	LHS
Faulted	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MPS_IN20_1_PICBLM_WD_STATUS`

40.4 BLM/PIC Watchdog: Upstream of TDUND

Name	*A*	PC	MS	BYKIK	LHS
Faulted	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MPS_MCC0_1_PICBLM_WD_STATUS`

40.5 BX01/BX02 Status

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Off	F	T	120 Hz	120 Hz	120 Hz	–
On	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BEND_IN20_751_OFF_STATE,
B = BEND_IN20_751_OK_STATE

40.6 BXG Status

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Off	F	T	120 Hz	120 Hz	120 Hz	–
On	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = BEND_IN20_231_OFF_STATE,
B = BEND_IN20_231_OK_STATE

40.7 COLL Flow Switch LI29-1

Name	*A*	PC	MS	BYKIK	LHS
No Flow	F	0 Hz	0 Hz	0 Hz	–
Flow OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = FLOW_SW_29_1_STATE

40.8 COLL Flow Switch LI29-4

Name	*A*	PC	MS	BYKIK	LHS
No Flow	F	0 Hz	0 Hz	0 Hz	–
Flow OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = FLOW_SW_29_4_STATE

40.9 COLL Flow Switch LI29-5

Name	A	PC	MS	BYKIK	LHS
No Flow	F	0 Hz	0 Hz	0 Hz	–
Flow OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = FLOW_SW_29_5_STATE

40.10 COLL Flow Switch LI29-9

Name	A	PC	MS	BYKIK	LHS
No Flow	F	0 Hz	0 Hz	0 Hz	–
Flow OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = FLOW_SW_29_9_STATE

40.11 COLL Flow Switch LI30-1

Name	A	PC	MS	BYKIK	LHS
No Flow	F	0 Hz	0 Hz	0 Hz	–
Flow OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = FLOW_SW_30_1_STATE

40.12 COLL Flow Switch LI30-4

Name	A	PC	MS	BYKIK	LHS
No Flow	F	0 Hz	0 Hz	0 Hz	–
Flow OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = FLOW_SW_30_4_STATE

40.13 COLL Flow Switch LI30-5

Name	*A*	PC	MS	BYKIK	LHS
No Flow	F	0 Hz	0 Hz	0 Hz	–
Flow OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = FLOW_SW_30_5_STATE

40.14 Diag Stopper HFX DG2 Is In

Name	*A*	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = HFX_DG2_STP_01_IN_DI_POSITION

40.15 Diag Stopper HFX UM6 Is In

Name	*A*	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = HFX_UM6_STP_01_IN_DI_POSITION

40.16 Flowswitch CE11

Name	*A*	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = COLL_LI21_235_OPEN_STATE

40.17 Flowswitch TD11

Name	*A*	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `FS_BL305_STATE`

40.18 Flowswitch: COLL Flow Switch LI28-9

Name	*A*	PC	MS	BYKIK	LHS
No Flow	F	0 Hz	0 Hz	0 Hz	–
Flow OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `FLOW_SW_28_9_STATE`

40.19 Mirror BL11 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `MIR_BL11_OUT_STATE`,
B = `MIR_BL11_IN_STATE`

40.20 OTR BL237 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = OT_BL237_OUT_LIMIT_STATE,
B = OT_BL237_IN_LIMIT_STATE

40.21 OTR BL291 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = OT_BL291_OUT_LIMIT_STATE,
B = OT_BL291_IN_LIMIT_STATE

40.22 OTR BL541 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = OT_BL541_OUT_LIMIT_STATE,
B = OT_BL541_IN_LIMIT_STATE

40.23 OTR BL571 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = OT_BL571_OUT_LIMIT_STATE,
B = OT_BL571_IN_LIMIT_STATE

40.24 OTR BL621 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = OT_BL621_OUT_LIMIT_STATE,
B = OT_BL621_IN_LIMIT_STATE

40.25 OTR BL711 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = OT_BL711_OUT_LIMIT_STATE,
B = OT_BL711_IN_LIMIT_STATE

40.26 OTR LI25 920 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = OTR_TCAV_OUT_STATE,
B = OTR_TCAV_IN_STATE

40.27 OTR21 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `OTR21_OUT_STATE`,
B = `OTR21_IN_STATE`

40.28 OTR22 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `OTR22_OUT_STATE`,
B = `OTR22_IN_STATE`

40.29 OTR30 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `OTR30_0449_OUT_STATE`,
B = `OTR30_0449_IN_STATE`

40.30 OTR33 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `OTR33_0745_OUT_STATE`,
B = `OTR33_0745_IN_STATE`

40.31 OTRH1 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `OTRH1_OUT_LIMIT_STATE`,
B = `OTRH1_IN_LIMIT_STATE`

40.32 OTRH2 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `OTRH2_OUT_LIMIT_STATE`,
B = `OTRH2_IN_LIMIT_STATE`

40.33 PIC Raw Charge Thresholds: LI24 791

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICM_LI24_791_LOSSL_THRESHOLD,
B = PICM_LI24_791_LOSSH_THRESHOLD

40.34 PIC Raw Charge Thresholds: LI24 811

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICM_LI24_811_LOSSL_THRESHOLD,
B = PICM_LI24_811_LOSSH_THRESHOLD

40.35 PIC Trigger Missed (LN16)

Name	*A*	PC	MS	BYKIK	LHS
Missed	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICM_LI24_791_NO_TRIG_MISSED

40.36 PPS Stopper S5B Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
In	F	T	–	–	–	–
Out	T	F	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `STPR_FEH1_5_S5BIN_POSITION`,
B = `STPR_FEH1_5_S5BOUT_POSITION`

40.37 Scraper Water LI21-9 (Station 22-1)

Name	*A*	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MPS_SCRAPPER_FLOW_OK_LI22_STATE`

40.38 Scraper Water LI22-9 (Station 23-1)

Name	*A*	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MPS_SCRAPPER_FLOW_OK_LI23_STATE`

40.39 Scraper Water LI23-9 (Station 24-1)

Name	*A*	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MPS_SCRAPPER_FLOW_OK_LI24_STATE`

40.40 Scraper Water LI24-9 (Station 25-1)

Name	A	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = MPS_SCRAPPER_FLOW_OK_LI25_STATE

40.41 Scraper Water LI25-9 (Station 26-1)

Name	A	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = MPS_SCRAPPER_FLOW_OK_LI26_STATE

40.42 Scraper Water LI26-9 (Station 27-1)

Name	A	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = MPS_SCRAPPER_FLOW_OK_LI27_STATE

40.43 Scraper Water LI27-9 (Station 28-1)

Name	A	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = MPS_SCRAPPER_FLOW_OK_LI28_STATE

40.44 Scraper Water LI28-9 (Station 29-1)

Name	*A*	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = MPS_SCRAPPER_FLOW_OK_LI29_STATE

40.45 Scraper Water LI29-9 (Station 30-1)

Name	*A*	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = MPS_SCRAPPER_FLOW_OK_LI30_STATE

40.46 Stopper S5B Is In

Name	*A*	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = STPR_FEH1_5_S5BIN_POSITION

40.47 Stopper XRT S5 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Moving	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = STPR_XRT1_1_S5OUT_POSITION,
B = STPR_XRT1_1_S5IN_POSITION

40.48 Stopper XRT S6 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
In	F	T	120 Hz	120 Hz	120 Hz	–
Out	T	F	120 Hz	120 Hz	120 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = STPR_XRT1_1_S6IN_POSITION,
B = STPR_XRT1_1_S6OUT_POSITION

40.49 TDUND Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = TDUND_OUT_POSITION,
B = TDUND_IN_POSITION

40.50 TIU: DPS Temperature: LI30

Name	*A*	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = DPS_TEMP_STATE

40.51 TIU: Fast Shutter 2 Position: LI30

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = FAST_SHUTTER_FV2_OK_OPEN_STATE

40.52 TIU: Fast Shutter 2A Position: LI30

Name	A	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = FAST_SHUTTER_FV2A_OK_OPEN_STATE

40.53 TIU: LI28 Dump 5879 Flow Switch

Name	A	PC	MS	BYKIK	LHS
No Flow	F	0 Hz	0 Hz	0 Hz	–
Flow OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = DUMP_5879_FLOW_SW_STATE

40.54 TIU: LI28 Dump 5879 Klixon

Name	A	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = DUMP_5879_KLIXON_OK_STATE

40.55 TIU: Main Manifold Gauge: LI21 Station 5

Name	A	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = MPS_MM_GAUGE_OK_LI21_STATE

40.56 TIU: Main Manifold Gauge: LI22 Station 5

Name	A	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = MPS_MM_GAUGE_OK_LI22_STATE

40.57 TIU: Main Manifold Gauge: LI23 Station 5

Name	A	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = MPS_MM_GAUGE_OK_LI23_STATE

40.58 TIU: Main Manifold Gauge: LI24 Station 5

Name	A	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = MPS_MM_GAUGE_OK_LI24_STATE

40.59 TIU: Main Manifold Gauge: LI25 Station 5

Name	*A*	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MPS_MM_GAUGE_OK_LI25_STATE`

40.60 TIU: Main Manifold Gauge: LI26 Station 5

Name	*A*	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MPS_MM_GAUGE_OK_LI26_STATE`

40.61 TIU: Main Manifold Gauge: LI27 Station 5

Name	*A*	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MPS_MM_GAUGE_OK_LI27_STATE`

40.62 TIU: Main Manifold Gauge: LI28 Station 5

Name	*A*	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = MPS_MM_GAUGE_OK_LI28_STATE

40.63 TIU: Main Manifold Gauge: LI29 Station 5

Name	A	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = MPS_MM_GAUGE_OK_STATE

40.64 TIU: Main Manifold Gauge: LI30 Station 5

Name	A	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = MPS_MM_GAUGE_30_5_OK_STATE

40.65 TIU: Main Manifold Gauge: LI30 Station 9

Name	A	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = MPS_MM_GAUGE_30_9_OK_STATE

40.66 TIU: MCC Emergency Radiation Stopper

Name	*A*	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `EMG_RAD_STOP_STATE`

40.67 TIU: PIC HV Power Supply KG30-C1419

Name	*A*	PC	MS	BYKIK	LHS
Not OK	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PIC_HV_PS_OK_LI30_STATE`

40.68 TIU: Stopper 950 and 960 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = `BASII_STOPPER_OUT_STATE`

40.69 TIU: Sub-booster Ready: LI21

Name	*A*	PC	MS	BYKIK	LHS
Not Ready	F	0 Hz	0 Hz	0 Hz	–
Ready	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MPS_SBST_OK_READY_LI21_STATE`

40.70 TIU: Sub-booster Ready: LI22

Name	*A*	PC	MS	BYKIK	LHS
Not Ready	F	0 Hz	0 Hz	0 Hz	–
Ready	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MPS_SBST_OK_READY_LI22_STATE`

40.71 TIU: Sub-booster Ready: LI25

Name	*A*	PC	MS	BYKIK	LHS
Not Ready	F	0 Hz	0 Hz	0 Hz	–
Ready	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MPS_SBST_OK_READY_LI25_STATE`

40.72 TIU: Sub-booster Ready: LI26

Name	*A*	PC	MS	BYKIK	LHS
Not Ready	F	0 Hz	0 Hz	0 Hz	–
Ready	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MPS_SBST_OK_READY_LI26_STATE`

40.73 TIU: Sub-booster Ready: LI27

Name	*A*	PC	MS	BYKIK	LHS
Not Ready	F	0 Hz	0 Hz	0 Hz	–
Ready	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MPS_SBST_OK_READY_LI27_STATE`

40.74 TIU: Sub-booster Ready: LI28

Name	*A*	PC	MS	BYKIK	LHS
Not Ready	F	0 Hz	0 Hz	0 Hz	–
Ready	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MPS_SBST_OK_READY_LI28_STATE`

40.75 TIU: Sub-booster Ready: LI29

Name	*A*	PC	MS	BYKIK	LHS
Not Ready	F	0 Hz	0 Hz	0 Hz	–
Ready	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MPS_SBST_OK_READY_LI29_STATE`

40.76 TIU: Sub-booster Ready: LI30

Name	*A*	PC	MS	BYKIK	LHS
Not Ready	F	0 Hz	0 Hz	0 Hz	–
Ready	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MPS_SBST_OK_READY_LI30_STATE`

40.77 TIU: VVPG LI21-9 Position (Station 22-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = `SLOW_VLV_OPEN_LI22_STATE`

40.78 TIU: VVPG LI22-9 Position (Station 23-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = SLOW_VLV_OPEN_LI23_STATE

40.79 TIU: VVPG LI23-9 Position (Station 24-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = SLOW_VLV_OPEN_LI24_STATE

40.80 TIU: VVPG LI25-9 Position (Station 26-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = SLOW_VLV_OPEN_LI26_STATE

40.81 TIU: VVPG LI26-9 Position (Station 27-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = SLOW_VLV_OPEN_LI27_STATE

40.82 TIU: VVPG LI27-9 Position (Station 28-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = SLOW_VLV_OPEN_LI28_STATE

40.83 TIU: VVPG LI28-9 Position (Station 29-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = SLOW_VLV_OPEN_LI29_STATE

40.84 TIU: VVPG LI29-9 Position (Station 30-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = SLOW_VLV_OPEN_LI30_STATE

40.85 TIU: VVPG LI30-9 Position (Station 30-9)

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = SLOW_VLV_30_9_OK_OPEN_STATE

40.86 TIU: VVS Circuit Breaker: LI20

Name	*A*	PC	MS	BYKIK	LHS
Not On	F	0 Hz	0 Hz	0 Hz	–
On	T	120 Hz	120 Hz	120 Hz	–

Where
A = VVS_BRKR_OK_READY_LI20_STATE

40.87 TIU: VVS Circuit Breaker: LI22

Name	*A*	PC	MS	BYKIK	LHS
Not On	F	0 Hz	0 Hz	0 Hz	–
On	T	120 Hz	120 Hz	120 Hz	–

Where
A = VVS_BRKR_OK_READY_LI22_STATE

40.88 TIU: VVS Circuit Breaker: LI24

Name	*A*	PC	MS	BYKIK	LHS
Not On	F	0 Hz	0 Hz	0 Hz	–
On	T	120 Hz	120 Hz	120 Hz	–

Where
A = VVS_BRKR_OK_READY_LI24_STATE

40.89 TIU: VVS Circuit Breaker: LI26

Name	*A*	PC	MS	BYKIK	LHS
Not On	F	0 Hz	0 Hz	0 Hz	–
On	T	120 Hz	120 Hz	120 Hz	–

Where
A = VVS_BRKR_OK_READY_LI26_STATE

40.90 TIU: VVS Circuit Breaker: LI28

Name	*A*	PC	MS	BYKIK	LHS
Not On	F	0 Hz	0 Hz	0 Hz	–
On	T	120 Hz	120 Hz	120 Hz	–

Where
A = VVS_BRKR_OK_READY_LI28_STATE

40.91 TIU: VVS Circuit Breaker: LI30

Name	*A*	PC	MS	BYKIK	LHS
Not On	F	0 Hz	0 Hz	0 Hz	–
On	T	120 Hz	120 Hz	120 Hz	–

Where
A = VVS_BRKR_OK_READY_LI30_STATE

40.92 TIU:VVFS LI21-9 Position (Station 22-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = FAST_VLV_OPEN_LI22_STATE

40.93 TIU:VVFS LI22-9 Position (Station 23-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = FAST_VLV_OPEN_LI23_STATE

40.94 TIU:VVFS LI23-9 Position (Station 24-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = FAST_VLV_OPEN_LI24_STATE

40.95 TIU:VVFS LI24-9 Position (Station 25-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = FAST_VLV_OPEN_LI25_STATE

40.96 TIU:VVFS LI25-9 Position (Station 26-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = FAST_VLV_OPEN_LI26_STATE

40.97 TIU:VVFS LI26-9 Position (Station 27-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = FAST_VLV_OPEN_LI27_STATE

40.98 TIU:VVFS LI27-9 Position (Station 28-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = FAST_VLV_OPEN_LI28_STATE

40.99 TIU:VVFS LI28-9 Position (Station 29-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = FAST_VLV_OPEN_LI29_STATE

40.100 TIU:VVFS LI29-9 Position (Station 30-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Open	F	0 Hz	0 Hz	0 Hz	–
Open	T	120 Hz	120 Hz	120 Hz	–

Where
A = FAST_VLV_OPEN_LI30_STATE

40.101 Toroid Chassis IM11

Name	*A*	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = CHASIM11_STATE

40.102 Toroid Chassis IM12

Name	*A*	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `CHASIM12_STATE`

40.103 Toroid Comparator IMBC1IN/IMBC1OUT

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Downstream > Upstream	F	T	0 Hz	0 Hz	0 Hz	–
Upstream > Downstream	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `TCBC1L1_STATE`,
B = `TCBC1L2_STATE`

40.104 Toroid Peak Current Monitor IM01

Name	*A*	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `TR_BL215_STATE`

40.105 VVFS LI21-9 Position (Station 22-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = `FAST_VLV_OPEN_LI22_STATE`

40.106 VVFS LI22-9 Position (Station 23-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = FAST_VLV_OPEN_LI23_STATE

40.107 VVFS LI23-9 Position (Station 24-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = FAST_VLV_OPEN_LI24_STATE

40.108 VVFS LI24-9 Position (Station 25-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = FAST_VLV_OPEN_LI25_STATE

40.109 VVFS LI25-9 Position (Station 26-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = FAST_VLV_OPEN_LI26_STATE

40.110 VVFS LI26-9 Position (Station 27-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = FAST_VLV_OPEN_LI27_STATE

40.111 VVFS LI27-9 Position (Station 28-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = FAST_VLV_OPEN_LI28_STATE

40.112 VVFS LI28-9 Position (Station 29-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = FAST_VLV_OPEN_LI29_STATE

40.113 VVFS LI29-9 Position (Station 30-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = FAST_VLV_OPEN_LI30_STATE

40.114 VVMG LI21 195 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VV_BL195_STATE

40.115 VVMG LTU1 505 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VVPG_0505_STATE

40.116 VVPG IN20 435 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VV_BL435_STATE

40.117 VVPG IN20 545 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VV_BL545_STATE

40.118 VVPG IN20 635 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VV_BL635_STATE

40.119 VVPG IN20 915 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VV_IS915_STATE

40.120 VVPG LI21-9 Position (Station 22-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = SLOW_VLV_OPEN_LI22_STATE

40.121 VVPG LI22-9 Position (Station 23-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = SLOW_VLV_OPEN_LI23_STATE

40.122 VVPG LI23-9 Position (Station 24-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = SLOW_VLV_OPEN_LI24_STATE

40.123 VVPG LI24 710 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VV21_STATE

40.124 VVPG LI24 896 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = VV22_STATE

40.125 VVPG LI25-9 Position (Station 26-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = SLOW_VLV_OPEN_LI26_STATE

40.126 VVPG LI26-9 Position (Station 27-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = SLOW_VLV_OPEN_LI27_STATE

40.127 VVPG LI27-9 Position (Station 28-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = SLOW_VLV_OPEN_LI28_STATE

40.128 VVPG LI28-9 Position (Station 29-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = SLOW_VLV_OPEN_LI29_STATE

40.129 VVPG LI29-9 Position (Station 30-1)

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = SLOW_VLV_OPEN_LI30_STATE

40.130 VVPG LI30-9 Position (Station 30-9)

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = SLOW_VLV_30_9_OK_OPEN_STATE

40.131 YAG IN20 241 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = YG_BL241_OUT_LIMIT_STATE,
B = YG_BL241_IN_LIMIT_STATE

40.132 YAG IN20 351 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = YG_BL351_OUT_LIMIT_STATE,
B = YG_BL351_IN_LIMIT_STATE

40.133 YAG LI21 995 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `YG_IS995_OUT_LIMIT_STATE`,
B = `YG_IS995_IN_LIMIT_STATE`

40.134 YG BL241 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `YG_BL241_OUT_LIMIT_STATE`,
B = `YG_BL241_IN_LIMIT_STATE`

40.135 YG BL351 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `YG_BL351_OUT_LIMIT_STATE`,
B = `YG_BL351_IN_LIMIT_STATE`

41 Always Evaluated

41.1 Backward Beam Stopper (RST1)

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = `ST_BL551_STATE`

41.2 Bypass Recover

Name	*A*	PC	MS	BYKIK	LHS
Recovering	F	0 Hz	0 Hz	0 Hz	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	120 Hz

Where
A = `LP_BYPASS_RECOVER`

41.3 Gun RF Peak Power 20-6

Name	*A*	PC	MS	BYKIK	LHS
OK	F	120 Hz	120 Hz	120 Hz	–
Fault	T	0 Hz	0 Hz	0 Hz	–

Where
A = `FLT_20_6_TRP_STATE`

41.4 Gun Waveguide Vacuum Summary

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = `WGVACGUN_STATE`

41.5 IMPS IOC Heartbeat

Name	*A*	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = `MN_HEART_STATE`

41.6 Laser Heater Attenuator Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	–	–	–	0 Hz
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	–	–	–	0 Hz

Where
A = `LHATTEN_OUT_LIMIT_STATE`,
B = `LHATTEN_IN_LIMIT_STATE`

41.7 Mechanical Shutter Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	–	0 Hz	–
Out	F	T	–	–	–	–
In	T	F	–	–	–	–
Broken	T	T	0 Hz	–	0 Hz	–

Where
A = `MPS_IN20_200_MSHT1_OUT_FAULT`,
B = `MPS_IN20_200_MSHT1_IN_FAULT`

41.8 Mirror AM01 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = MR_BL191_STATE

41.9 MPS Beam Permit: BYKIK

Name	A	PC	MS	BYKIK	LHS
Not Permitted	F	–	–	0 Hz	–
Permitted	T	–	–	120 Hz	–

Where
A = LP_ALLOWS_BEAM_BYKIK

41.10 MPS Beam Permit: Heater Shutter

Name	A	PC	MS	BYKIK	LHS
Not Permitted	F	–	–	–	0 Hz
Permitted	T	–	–	–	120 Hz

Where
A = LP_ALLOWS_BEAM_LH_SHUT

41.11 MPS Beam Permit: Mechanical Shutter

Name	A	PC	MS	BYKIK	LHS
Not Permitted	F	–	0 Hz	–	–
Permitted	T	–	120 Hz	–	–

Where
A = LP_ALLOWS_BEAM_MECH_SHUT

41.12 MPS Beam Permit: Pockels Cell

Name	A	PC	MS	BYKIK	LHS
Not Permitted	F	0 Hz	–	–	–
Permitted	T	120 Hz	–	–	–

Where
A = LP_ALLOWS_BEAM_POCKELS_CELL

41.13 MPS Mechanical Shutter Position

Name	*A*	PC	MS	BYKIK	LHS
OK	F	120 Hz	120 Hz	120 Hz	–
Readback Does Not Match	T	0 Hz	0 Hz	0 Hz	–

Where
A = SHFLT_STATE

41.14 PIC Raw Charge Thresholds: BSY0 16

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICM_BSY0_16_LOSSL_THRESHOLD,
B = PICM_BSY0_16_LOSSH_THRESHOLD

41.15 PIC Raw Charge Thresholds: BSY0 33

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICM_BSY0_33_LOSSL_THRESHOLD,
B = PICM_BSY0_33_LOSSH_THRESHOLD

41.16 PIC Raw Charge Thresholds: BSY0 45

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICM_BSY0_45_LOSSL_THRESHOLD,
B = PICM_BSY0_45_LOSSH_THRESHOLD

41.17 PIC Raw Charge Thresholds: BSY0 59

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICM_BSY0_59_LOSSL_THRESHOLD,
B = PICM_BSY0_59_LOSSH_THRESHOLD

41.18 PIC Raw Charge Thresholds: BSY0 78A

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICM_BSY0_78A_LOSSL_THRESHOLD,
B = PICM_BSY0_78A_LOSSH_THRESHOLD

41.19 PIC Raw Charge Thresholds: BSY0 78B

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_BSY0_78B_LOSSL_THRESHOLD`,
B = `PICM_BSY0_78B_LOSSH_THRESHOLD`

41.20 PIC Raw Charge Thresholds: IN20 185

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_IN20_185_LOSSL_THRESHOLD`,
B = `PICM_IN20_185_LOSSH_THRESHOLD`

41.21 PIC Raw Charge Thresholds: IN20 232

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_IN20_232_LOSSL_THRESHOLD`,
B = `PICM_IN20_232_LOSSH_THRESHOLD`

41.22 PIC Raw Charge Thresholds: IN20 245

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICM_IN20_245_LOSSL_THRESHOLD,
B = PICM_IN20_245_LOSSH_THRESHOLD

41.23 PIC Raw Charge Thresholds: IN20 665

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICM_IN20_665_LOSSL_THRESHOLD,
B = PICM_IN20_665_LOSSH_THRESHOLD

41.24 PIC Raw Charge Thresholds: IN20 775

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICM_IN20_775_LOSSL_THRESHOLD,
B = PICM_IN20_775_LOSSH_THRESHOLD

41.25 PIC Raw Charge Thresholds: IN20 933

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_IN20_933_LOSSL_THRESHOLD`,
B = `PICM_IN20_933_LOSSH_THRESHOLD`

41.26 PIC Raw Charge Thresholds: LI28 916

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_LI28_916_LOSSL_THRESHOLD`,
B = `PICM_LI28_916_LOSSH_THRESHOLD`

41.27 PIC Raw Charge Thresholds: LI29 146

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_LI29_146_LOSSL_THRESHOLD`,
B = `PICM_LI29_146_LOSSH_THRESHOLD`

41.28 PIC Raw Charge Thresholds: LI29 446

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_LI29_446_LOSSL_THRESHOLD`,
B = `PICM_LI29_446_LOSSH_THRESHOLD`

41.29 PIC Raw Charge Thresholds: LI29 546

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_LI29_546_LOSSL_THRESHOLD`,
B = `PICM_LI29_546_LOSSH_THRESHOLD`

41.30 PIC Raw Charge Thresholds: LI29 801

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_LI29_801_LOSSL_THRESHOLD`,
B = `PICM_LI29_801_LOSSH_THRESHOLD`

41.31 PIC Raw Charge Thresholds: LI29 956

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_LI29_956_LOSSL_THRESHOLD`,
B = `PICM_LI29_956_LOSSH_THRESHOLD`

41.32 PIC Raw Charge Thresholds: LI30 146

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_LI30_146_LOSSL_THRESHOLD`,
B = `PICM_LI30_146_LOSSH_THRESHOLD`

41.33 PIC Raw Charge Thresholds: LI30 446

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `PICM_LI30_446_LOSSL_THRESHOLD`,
B = `PICM_LI30_446_LOSSH_THRESHOLD`

41.34 PIC Raw Charge Thresholds: LI30 546

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICM_LI30_546_LOSSL_THRESHOLD,
B = PICM_LI30_546_LOSSH_THRESHOLD

41.35 PIC Raw Charge Thresholds: LI30 801

Name	*B*	*A*	PC	MS	BYKIK	LHS
Broken	F	F	0 Hz	0 Hz	0 Hz	–
Over High Threshold	F	T	0 Hz	0 Hz	0 Hz	–
Under Low Threshold	T	F	0 Hz	0 Hz	0 Hz	–
OK	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICM_LI30_801_LOSSL_THRESHOLD,
B = PICM_LI30_801_LOSSH_THRESHOLD

41.36 PIC Trigger Missed (LN11)

Name	*A*	PC	MS	BYKIK	LHS
Missed	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICM_IN20_665_NO_TRIG_MISSED

41.37 PIC Trigger Missed (LN22)

Name	*A*	PC	MS	BYKIK	LHS
Missed	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICM_LI28_916_NO_TRIG_MISSED

41.38 PIC Trigger Missed (LN25)

Name	A	PC	MS	BYKIK	LHS
Missed	F	0 Hz	0 Hz	0 Hz	–
OK	T	120 Hz	120 Hz	120 Hz	–

Where
A = PICM_BSY0_16_NO_TRIG_MISSED

41.39 Pockels Cell AND Gate 100

Name	A	PC	MS	BYKIK	LHS
Bypassed	F	0 Hz	0 Hz	0 Hz	–
Active	T	120 Hz	120 Hz	120 Hz	–

Where
A = MPS_IN20_100_ANDALLACTV_STATE

41.40 Pockels Cell AND Gate 200

Name	A	PC	MS	BYKIK	LHS
Bypassed	F	0 Hz	0 Hz	0 Hz	–
Active	T	120 Hz	120 Hz	120 Hz	–

Where
A = MPS_IN20_200_ANDALLACTV_STATE

41.41 Rate Request: BYKIK 1 Hz

Name	A	PC	MS	BYKIK	LHS
Not Requested	F	–	–	120 Hz	–
Requested	T	–	–	1 Hz	–

Where
A = LP_MAX_RATE_BYKIK_1_HZ

41.42 Rate Request: BYKIK 10 Hz

Name	*A*	PC	MS	BYKIK	LHS
Not Requested	F	–	–	120 Hz	–
Requested	T	–	–	10 Hz	–

Where
A = LP_MAX_RATE_BYKIK_10_HZ

41.43 Rate Request: BYKIK 30 Hz

Name	*A*	PC	MS	BYKIK	LHS
Not Requested	F	–	–	120 Hz	–
Requested	T	–	–	30 Hz	–

Where
A = LP_MAX_RATE_BYKIK_30_HZ

41.44 Rate Request: BYKIK 60 Hz

Name	*A*	PC	MS	BYKIK	LHS
Not Requested	F	–	–	120 Hz	–
Requested	T	–	–	60 Hz	–

Where
A = LP_MAX_RATE_BYKIK_60_HZ

41.45 Rate Request: BYKIK Burst

Name	*A*	PC	MS	BYKIK	LHS
Not Requested	F	–	–	120 Hz	–
Requested	T	–	–	Burst Mode	–

Where
A = LP_MAX_RATE_BYKIK_BURST

41.46 Rate Request: BYKIK Single Shot

Name	*A*	PC	MS	BYKIK	LHS
Not Requested	F	–	–	120 Hz	–
Requested	T	–	–	Single Shot	–

Where
A = LP_MAX_RATE_BYKIK_SINGLE_SHOT

41.47 Rate Request: Pockels Cell 1 Hz

Name	*A*	PC	MS	BYKIK	LHS
Not Requested	F	120 Hz	–	–	–
Requested	T	1 Hz	–	–	–

Where
A = LP_MAX_RATE_PC_1_HZ

41.48 Rate Request: Pockels Cell 10 Hz

Name	*A*	PC	MS	BYKIK	LHS
Not Requested	F	120 Hz	–	–	–
Requested	T	10 Hz	–	–	–

Where
A = LP_MAX_RATE_PC_10_HZ

41.49 Rate Request: Pockels Cell 30 Hz

Name	*A*	PC	MS	BYKIK	LHS
Not Requested	F	120 Hz	–	–	–
Requested	T	30 Hz	–	–	–

Where
A = LP_MAX_RATE_PC_30_HZ

41.50 Rate Request: Pockels Cell 60 Hz

Name	*A*	PC	MS	BYKIK	LHS
Not Requested	F	120 Hz	–	–	–
Requested	T	60 Hz	–	–	–

Where
A = LP_MAX_RATE_PC_60_HZ

41.51 Rate Request: Pockels Cell Burst

Name	*A*	PC	MS	BYKIK	LHS
Not Requested	F	120 Hz	–	–	–
Requested	T	Burst Mode	–	–	–

Where
A = LP_MAX_RATE_PC_BURST

41.52 Rate Request: Pockels Cell Single Shot

Name	*A*	PC	MS	BYKIK	LHS
Not Requested	F	120 Hz	–	–	–
Requested	T	Single Shot	–	–	–

Where
A = LP_MAX_RATE_PC_SINGLE_SHOT

41.53 TIU: DPS Temperature

Name	*A*	PC	MS	BYKIK	LHS
Fault	F	0 Hz	0 Hz	0 Hz	–
Ok	T	120 Hz	120 Hz	120 Hz	–

Where
A = DPS_TEMP_STATE

41.54 VVMG IN20 175 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = `VV_BL175_STATE`

41.55 VVPG IN20 155 Position

Name	*A*	PC	MS	BYKIK	LHS
Not Out	F	0 Hz	0 Hz	0 Hz	–
Out	T	120 Hz	120 Hz	120 Hz	–

Where
A = `VV_BL155_STATE`

41.56 YAG IN20 211 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = `YG_BL211_OUT_LIMIT_STATE`,
B = `YG_BL211_IN_LIMIT_STATE`

41.57 YAG IN20 841 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = YG_GS841_OUT_LIMIT_STATE,
B = YG_GS841_IN_LIMIT_STATE

41.58 YAG IN20 921 Position

Name	*B*	*A*	PC	MS	BYKIK	LHS
Moving	F	F	0 Hz	0 Hz	0 Hz	–
Out	F	T	120 Hz	120 Hz	120 Hz	–
In	T	F	10 Hz	10 Hz	10 Hz	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–

Where
A = YG_IS921_OUT_LIMIT_STATE,
B = YG_IS921_IN_LIMIT_STATE

42 Ignore Logic

42.1 A-Line B1/B2 Is Not On AND A-Line Kicker Is Not Enabled

Name	*C*	*B*	*A*	PC	MS	BYKIK	LHS
Is Not On	F	F	F	–	–	–	–

Where
A = BEND_BSYA_140_B1_2_PS_ON_STATE,
B = KICK_BSY0_66_PM1_TRIG_ENB_STATUS,
C = KICK_BSY0_66_PM2_TRIG_ENB_STATUS

42.2 A-Line SL10 Is Closed

Name	*D*	*C*	*B*	*A*	PC	MS	BYKIK	LHS
Closed	T	T	T	T	–	–	–	–

Where
A = SLIT_BSYA_2010_SL10_FB_IN_STATE,
B = SLIT_BSYA_2010_SL10_FT_IN_STATE,
C = SLIT_BSYA_2010_SL10_RB_IN_STATE,
D = SLIT_BSYA_2010_SL10_RT_IN_STATE

42.3 BX01/BX02 Is Off

Name	*B*	*A*	PC	MS	BYKIK	LHS
Off	F	T	–	–	–	–

Where
A = BEND_IN20_751_OFF_STATE,
B = BEND_IN20_751_OK_STATE

42.4 BX01/BX02 Is On

Name	*B*	*A*	PC	MS	BYKIK	LHS
On	T	F	–	–	–	–

Where
A = BEND_IN20_751_OFF_STATE,
B = BEND_IN20_751_OK_STATE

42.5 BXG Is Off

Name	*B*	*A*	PC	MS	BYKIK	LHS
Off	F	T	–	–	–	–

Where
A = BEND_IN20_231_OFF_STATE,
B = BEND_IN20_231_OK_STATE

42.6 BXG Is On

Name	*B*	*A*	PC	MS	BYKIK	LHS
On	T	F	–	–	–	–

Where
A = BEND_IN20_231_OFF_STATE,
B = BEND_IN20_231_OK_STATE

42.7 Diag Stopper XCS SB1 Is In

Name	*A*	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = XCS_SB1_STP_01_CLS_DI_POSITION

42.8 Laser Heater Attenuator Is In

Name	*A*	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = LHATTEN_IN_LIMIT_STATE

42.9 M3H Mirror Is In Beam

Name	*A*	PC	MS	BYKIK	LHS
Is_IN	T	–	–	–	–

Where
A = HXX_HXM_MMS_01_INBEAM_POSITION

42.10 M3H Mirror Is Out of Beam

Name	*A*	PC	MS	BYKIK	LHS
IS_OUT	T	–	–	–	–

Where
A = HXX_HXM_MMS_01_B_POSITION

42.11 ST1/ST2 Are In

Name	*B*	*A*	PC	MS	BYKIK	LHS
In	T	F	–	–	–	–

Where
A = STPR_FEE1_1_ST1ST2OUT_POSITION,
B = STPR_FEE1_1_ST1ST2IN_POSITION

42.12 Stopper HFP-MPA-02 Is In

Name	*B*	*A*	PC	MS	BYKIK	LHS
In	T	F	–	–	–	–

Where
A = AMO_HFP_MPA_02B_POSITION,
B = AMO_HFP_MPA_02A_POSITION

42.13 Stopper S1 Is In

Name	A	PC	MS	BYKIK	LHS
Is In	T	–	–	–	–

Where
A = STPR_FEE1_1_S1IN_POSITION

42.14 Stopper S2 Is In

Name	A	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = STPR_FEE1_1_S2IN_STATE

42.15 Stopper S2B Is In

Name	A	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = STPR_FEE1_1_S2BIN_STATE

42.16 Stopper SH1 Is In

Name	A	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = STPR_FEE1_1_SH1IN_STATE

42.17 Stopper SH2 Is In

Name	*B*	*A*	PC	MS	BYKIK	LHS
In	T	F	–	–	–	–

Where
A = STPR_XRT1_1_SH2OUT_STATE,
B = STPR_XRT1_1_SH2IN_STATE

42.18 Stopper XRT S5 Is In

Name	*A*	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = STPR_XRT1_1_S5IN_POSITION

42.19 Stopper XRT S6 Is In

Name	*A*	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = STPR_XRT1_1_S6IN_POSITION

42.20 Stopper: BSY D2 Summary Is In

Name	*B*	*A*	PC	MS	BYKIK	LHS
In	T	T	–	–	–	–

Where
A = STPR_BSY0_88_IN_LIMSW_A_POSITION,
B = STPR_BSY0_88_IN_LIMSW_B_POSITION

42.21 TD11 Is In

Name	*A*	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = TD11_IN_LIMIT_STATE

42.22 TDUND Is In

Name	A	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = TDUND_IN_POSITION

42.23 XCS Is Not In Main Line

Name	A	PC	MS	BYKIK	LHS
Not in	F	–	–	–	–

Where
A = XCS_SB_POS_HARD_POSITION

42.24 XPP-NH3-POS-00 Beamline Is In

Name	A	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = XPP_NH3_POS_00_IN_STATE

42.25 XPP-NH3-POS-00 Beamline Is Not In

Name	A	PC	MS	BYKIK	LHS
Not_IN	F	–	–	–	–

Where
A = XPP_NH3_POS_00_IN_STATE

42.26 YG BL211 Is In

Name	*B*	*A*	PC	MS	BYKIK	LHS
In	T	F	–	–	–	–

Where
A = YG_BL211_OUT_LIMIT_STATE,
B = YG_BL211_IN_LIMIT_STATE