MPS Logic:
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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 BSYA 4005 (IV40) . . . 28
1.30 Vac Valve: VVFS BSYA 2855 (FV28) . . . 29
1.31 Vac Valve: VVPG BSYA 2635 (IV26) . . . 29
1.32 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 BSYA 1015 (PC10) . . . 31
2.5 Flowswitch: COLL BSYA 1015 (PC10) . . . 31
2.6 Flowswitch: COLL BSYA 1230 (PC12) . . . 31
2.7 Flowswitch: COLL BSYA 1490 (PC14) . . . 32
2.8 Flowswitch: COLL BSYA 1700 (PC17) . . . 32
2.9 PIC Raw Charge Thresholds: BSYA 1016 . . . 32
2.10 PIC Raw Charge Thresholds: BSYA 1021 . . . 32
2.11 PIC Raw Charge Thresholds: BSYA 1120 . . . 33
2.12 PIC Raw Charge Thresholds: BSYA 1320 . . . 33
2.13 PIC Raw Charge Thresholds: BSYA 1520 . . . 33
2.14 PIC Raw Charge Thresholds: BSYA 1701A . . . 34
2.15 PIC Raw Charge Thresholds: BSYA 1701B . . . 34
2.16 PIC Raw Charge Thresholds: BSYA 1980 . . . 34
2.17 Temperature: A-Line Summary Before SL10 . . . 35
2.18 Vac Valve: VVFS BSYA 1030 (FV10) . . . 35
2.19 Vac Valve: VVPG BSYA 1018 (IV10) . . . 35

3 Ignored when BX01/BX02 Is Off or YG BL211 Is In 36
3.1 Toroid Comparator IM02/IM03 . . . 36

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, TDUND Is In, or YG BL211 Is In 37
4.1 NEH SXR GMD VGC 01 Protection . . . 37

5 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 38
5.1 FEE1 M1S Mirror Beam Energy Upper Limit . . . 38
5.2 FEE1 M1S Mirror State . . . 38

6 Ignored when BX01/BX02 Is Off, BXG Is On, Stopper: BSY D2 Summary Is In, TD11 Is In, or YG BL211 Is In 39
6.1 Temperature:BSY RTD Past D2 Sum . . . 39
6.2 THZ-2 Position . . . 39
6.3 Undulator Beam Energy Lower Limit . . . 39
6.4 VVFS LTU1 102 Position . . . 40
6.5 VVMG LTU1 174 Position . . . 40
6.6 VVMG LTU1 355 Position . . . 40
6.7 VVMG LTU1 670 Position . . . 40
6.8 VVMG LTU1 742 Position . . . 41
6.9 VVMG LTU1 774 Position . . . 41
6.10 VVMG UND1 932 Position . . . 41
6.11 VVMG UND1 968 Position . . . 41
6.12 VVPG DMP1 103 Position . . . 42
6.13 VVPG DMP1 395 Position . . . 42
6.14 VVPG DMP1 700 Position . . . 42

6.15 VVPG LTU1 100 Position . . . 42
6.16 VVPG LTU1 265 Position . . . 43
6.17 VVPG LTU1 435 Position . . . 43
6.18 VVPG LTU1 580 Position . . . 43
6.19 VVPG LTU1 725 Position . . . 43
6.20 VVPG LTU1 757 Position . . . 44
6.21 VVPG LTU1 999 Position . . . 44
6.22 VVPG UND1 1000 Position . . . 44
6.23 VVPG UND1 2500 Position . . . 44
6.24 YAG LTU1 743 Position (PSI Prof Mon) . . . 45

7 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 46
7.1 B4C Position . . . 46
7.2 BCS LION LTU1 404 Threshold . . . 46
7.3 BCS LION LTU1 405 Threshold . . . 46
7.4 BCS LION LTU1 504 Threshold . . . 46
7.5 BCS LION LTU1 505 Threshold . . . 47
7.6 BCS LION LTU1 584 Threshold . . . 47
7.7 BCS LION LTU1 585 Threshold . . . 47
7.8 BCS LION LTU1 716 Threshold . . . 47
7.9 BCS LION LTU1 717 Threshold . . . 48
7.10 BCS LION LTU1 732 Threshold . . . 48
7.11 BCS LION LTU1 733 Threshold . . . 48
7.12 BCS LION LTU1 752 Threshold . . . 48
7.13 BCS LION LTU1 753 Threshold . . . 49
7.14 BCS LION LTU1 765 Threshold . . . 49
7.15 BCS LION LTU1 766 Threshold . . . 49
7.16 BOD UND1 1005 . . . 49
7.17 BOD UND1 1305 . . . 50
7.18 BYD Watchdog . . . 50
7.19 PIC Raw Charge Thresholds: DMP1 698 . . . 50
7.20 PIC Raw Charge Thresholds: DMP1 699 . . . 51
7.21 Stopper: ST1/ST2 Position . . . 51
7.22 VVFS DMP1 107 Position . . . 51
7.23 VVMG DMP1 743 Position . . . 51
7.24 VVMG UND1 1645 Position . . . 52
7.25 VVMG UND1 1655 Position . . . 52
7.26 VVPG DMP1 355 Position . . . 52
7.27 YAG LTU1 743 Position When TDUND Not In (PSI Prof Mon) . . . 53

8 Ignored when BX01/BX02 Is Off, BXG Is On, TD11 Is In, or YG BL211 Is In 54
8.1 BLM/PIC Watchdog BSY0/BSYA . . . 54
8.2 BLM/PIC Watchdog LI30 . . . 54
8.3 BSY GLAST Target . . . 54

8.4 BSY GLAST Target Flow Switch . . . 55
8.5 BSY GLAST Target Klixon . . . 55
8.6 Fast Shutter FV2 Position . . . 55
8.7 Fast Shutter FV2A Position . . . 55
8.8 Flowswitch: COLL BSY0 16 (50PC20) . . . 56
8.9 Flowswitch: COLL BSY0 33 (50PC30) . . . 56
8.10 Flowswitch: COLL BSY0 45 (50PC-45) . . . 56
8.11 Flowswitch: COLL BSY0 59 (PC0119) . . . 56
8.12 Flowswitch: COLL BSY0 65 (PC0145) . . . 57
8.13 Flowswitch: COLL BSY0 67 (PC0155) . . . 57
8.14 Flowswitch: COLL BSY0 69 (PC0165) . . . 57
8.15 Flowswitch: COLL BSY0 71 (PC0175) . . . 57
8.16 Flowswitch: COLL BSY0 73 (PC0185) . . . 58
8.17 Flowswitch: COLL BSY0 75 (PC0195) . . . 58
8.18 KICK BSY0 66 PM1 State (A-Line Kicker) . . . 58
8.19 KICK BSY0 66 PM1 Trigger State (A-Line Kicker) . . . 58
8.20 KICK BSY0 66 PM2 State (A-Line Kicker) . . . 59
8.21 KICK BSY0 66 PM2 Trigger State (A-Line Kicker) . . . 59
8.22 Stopper: BSY D2, 60, 61 DM60 Summary . . . 59
8.23 VVPG BSY0 IV2 Position . . . 62
8.24 VVPG BSY0 IV3 Position . . . 62
8.25 VVPG BSY0 IV4 Position . . . 62

9 Ignored when BX01/BX02 Is On or YG BL211 Is In 63
9.1 BXS Status . . . 63
9.2 Toroid Comparator IM02/IMS1 . . . 63

10 Ignored when BX01/BX02 Is On, BXG Is Off, TD11 Is In, or YG BL211 Is In 64
10.1 BLM/PIC Watchdog LI24 . . . 64

11 Ignored when BXG Is Off or YG BL211 Is In 65
11.1 Wakefield Shield Gun Spectrometer . . . 65

12 Ignored when BXG Is On or YG BL211 Is In 66
12.1 Wakefield Shield Straight Ahead . . . 66

13 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 67
13.1 XCS SB1 VGC 02 Gate Valve Position . . . 67
13.2 XCS SB2 VGC 01 Gate Valve Position . . . 67

14 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 68
14.1 CXI:DG4:VGC:01 Gate Valve Position . . . 68

15 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 **69**
15.1 CXI Configuration 1 Summary . . . 69
15.2 CXI Configuration 2 Summary . . . 70
15.3 CXI Configuration 3 Summary . . . 71
15.4 CXI Configuration 4 Summary . . . 72
15.5 CXI Configuration 5 Summary . . . 74
15.6 CXI Configuration 6 Summary . . . 75
15.7 CXI Configuration 7 Summary . . . 76
15.8 CXI CS-PAD 1 Detector Damage Fault . . . 77
15.9 CXI CS-PAD 2 Detector Damage Fault . . . 77
15.10 CXI KB2 VGC 02 Gate Valve Position . . . 78
15.11 CXI MPS PLC Readiness Status . . . 78
15.12 CXI User Patch Panel 1 Ready . . . 78
15.13 CXI User Patch Panel 2 Ready . . . 78
15.14 CXI:DG1:VGC:01 Gate Valve Open Position . . . 79
15.15 CXI:DG1:VGC:02 Gate Valve Open Position . . . 79
15.16 CXI:DG2:VGC:01 Gate Valve Open Position . . . 79
15.17 CXI:DG2:VGC:02 Gate Valve Open Position . . . 80
15.18 CXI:DS1:VGC:01 Gate Valve Open Position . . . 80
15.19 CXI:KB1:VGC:01 Gate Valve Open Position . . . 80
15.20 CXI:KB1:VGC:02 Gate Valve Open Position . . . 81
15.21 CXI:KB2:VGC:01 Gate Valve Open Position . . . 81
15.22 CXI:SC1:VGC:01 Gate Valve Open Position . . . 81
15.23 CXI:SC1:VGC:02 Gate Valve Open Position . . . 82
15.24 CXI:SC2:VGC:02 Gate Valve Open Position . . . 82
15.25 HF4 LAM VGC 01 Gate Valve Position . . . 82

16 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 **83**
16.1 CXI XRT Laser Reference Mirror Position . . . 83
16.2 HFA:SND:VGC:01 Gate Valve Open Position . . . 83
16.3 HFX:DIA:VGC:02 Gate Valve Open Position . . . 83
16.4 XRT HXRAY DIA Isolation Valve HXX-DIA-VGC-01 . . . 84

17 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 **85**
17.1 XCS SB1 Diagnostic Stopper Position . . . 85
17.2 XCS SB1 VGC 01 Gate Valve Position . . . 85

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, TD11 Is In, TDUND Is In, or YG BL211 Is In **86**
18.1 HFX:DG2:VGC:01 Gate Valve Position . . . 86
18.2 HFX:MON:VGC:01 Gate Valve Position . . . 86
18.3 HFX:MON:VGC:02 Gate Valve Position . . . 86

19 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 **87**
19.1 MEC DV5 VGC 01 Gate Valve Position . . . 87
19.2 MEC HXM VGC 01 Gate Valve Position . . . 87
19.3 MEC XT1 Reference Laser Position . . . 87
19.4 MEC XT1 VGC 01 Gate Valve Position . . . 88
19.5 MEC XT2 VGC 02 Gate Valve Position . . . 88
19.6 MEC XT2 VGC 03 Gate Valve Position . . . 88
19.7 MEC XT2 VGC 04 Gate Valve Position . . . 88
19.8 MEC XT2 VGC 05 Gate Valve Position . . . 89
19.9 MEC XT2 VGC 06 Gate Valve Position . . . 89

20 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 **90**
20.1 HXX:HXM:VGC:03 Gate Valve Position . . . 90
20.2 MEC XRT Attenuator Inspection Mirror Position . . . 90

21 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 **91**
21.1 DG2 Diagnostic Stopper Position . . . 91
21.2 HXX:HXM:VGC:01 Gate Valve Position . . . 91
21.3 HXX:HXM:VGC:02 Gate Valve Position . . . 91
21.4 MEC M3H Mirror and DG2 STP Fault . . . 92
21.5 MEC M3H Mirror Unknown Position Fault . . . 92
21.6 XRT HXRAY LOM Isolation Valve HXX-LOM-VGC-01 . . . 92
21.7 XRT HXRAY MXT Isolation Valve HXX-MXT-VGC-01 . . . 93

22 Ignored when Laser Heater Attenuator Is In **94**
22.1 Laser Heater Photodiode Shutter Position . . . 94
22.2 OTRH1 Position When LH Atten Not In . . . 94
22.3 OTRH2 Position When LH Atten Not In . . . 94

23 Ignored when ST1/ST2 Are In, Stopper S1 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In **95**
23.1 NEH AMO LAMP Gate Valve VGC 30 Position . . . 95

24 Ignored when ST1/ST2 Are In, Stopper S1 Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In **96**

24.1 NEH AMO Focusing Optics Entrance Gate Valve KBO-VGC-01 96
24.2 NEH AMO Focusing Optics Exit Gate Valve KBO-VGC-02 96
24.3 NEH AMO Laser Reference Mirror Position 96
24.4 NEH1 Camera 1124 Position 97
24.5 NEH1 XTOD S1 Isolation Valve Summary 97

25 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 98
25.1 NEH SXR Differential Pump Isolation Valve SXR-DFP-VGC-01 98
25.2 NEH SXR End Station Ready SXR-EXP-MPS-01 98
25.3 NEH SXR Intensity Monitor Isolation Valve SXR-FLX-VGC-01 98
25.4 NEH SXR KB Optics Isolation Valve SXR-KBO-VGC-01 99
25.5 NEH SXR Laser In-coupling Mirror Isolation Valve SXR-LIN-VGC-01 99

26 Ignored when ST1/ST2 Are In, Stopper S2 Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In 100
26.1 NEH Camera 2124 Position 100
26.2 NEH SXR Collimator 3 Isolation Valve SXR-COL-VGC-01 100
26.3 NEH SXR Exit Slits Isolation Valve SXR-EXS-VGC-01 100
26.4 NEH SXR Monochromator Tank Isolation Valve SXR-MON-VGC-01 101
26.5 NEH SXR Photon Stoppers Isolation Valve SXR-PST-VGC-01 101
26.6 NEH SXR Transmission Sample System Isolation Valve SXR-TSS-VGC-01 101
26.7 NEH SXR Zero Order Interlock SXR-MON-MMS-06, SXR-EXS-MMS-01 102
26.8 NEH1 XTOD S2 Isolation Valve Summary 102

27 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 103
27.1 UM6 Diagnostic Stopper Position 103
27.2 XRT HXRAY UM6 Isolation Valve HXX-UM6-VGC-01 103
27.3 XRT UM6 Camera Position HXX-UM6-CVP-01 104

28 Ignored when ST1/ST2 Are In, Stopper SH1 Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In 105
28.1 HX2 UVD VGC 01 Gate Valve Position 105
28.2 HX3 MON VGC 01 Gate Valve Position 105
28.3 NEH1 Camera 124 Position 105
28.4 NEH1 Camera 195 Position 106
28.5 NEH1 XTOD H Isolation Valve Summary 106
28.6 NEH2 HXRAY DVD Isolation Valve HX2-DVD-VGC-01 106
28.7 NEH3 HXRAY UVD Isolation Valve HX3-UVD-VGC-01 107
28.8 XPP CS-PAD 1 Detector Damage Fault 107

29 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 108
29.1 NEH3 HXRAY DVD Isolation Valve HX3-DVD-VGC-01 108

30 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 **109**
30.1 XPP SB2 VGC 01 Gate Valve Position . . . 109

31 Ignored when ST1/ST2 Are In, TD11 Is In, TDUND Is In, or YG BL211 Is In **110**
31.1 FEE Camera 1561 Position . . . 110
31.2 FEE Camera 1692 Position . . . 110
31.3 FEE Camera 1953 Position . . . 110
31.4 FEE Camera 2953 Position . . . 111
31.5 FEE Camera 852 Position . . . 111
31.6 FEE Camera 913 Position . . . 111
31.7 FEE Fast Shutter Valve and System Summary . . . 112
31.8 FEE Gas Flow Aperture Summary . . . 112
31.9 FEE Gas Flow Vacuum Isolation Valve Summary . . . 112
31.10 FEE Instrument Vacuum Isolation Valve Summary . . . 112
31.11 FEE XTOD H Isolation Valve Summary . . . 113
31.12 FEE XTOD S1 Isolation Valve Summary . . . 113
31.13 FEE XTOD S2 Isolation Valve Summary . . . 113

32 Ignored when Stopper: BSY D2 Summary Is In or TDUND Is In **114**
32.1 SXRSS Grating/M1 GRAT UND1 934 Position . . . 114
32.2 SXRSS M2 MIRR UND1 964 Position . . . 114
32.3 SXRSS M3 MIRR UND1 966 Position . . . 114
32.4 SXRSS Mode State . . . 115
32.5 SXRSS SLIT UND1 962 Position . . . 118
32.6 SXRSS Watchdog . . . 118

33 Ignored when Stopper: BSY D2 Summary Is In, TD11 Is In, or YG BL211 Is In **119**
33.1 BYKIK 120 Hz Abort Trigger . . . 119
33.2 BYKIK 120 Hz Standby Trigger . . . 119
33.3 BYKIK 30 Hz Abort Trigger . . . 119
33.4 BYKIK 30 Hz Standby Trigger . . . 119
33.5 BYKIK Readback Signal . . . 120
33.6 Magnet In Tolerance: BYD1 . . . 120
33.7 Magnet Power: BYD1 . . . 120

34 Ignored when Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In **121**
34.1 B4C Protection of ST1/ST2 . . . 121
34.2 Magnet In Tolerance: QE31 . . . 121
34.3 Magnet In Tolerance: QUM1 . . . 121
34.4 Magnet In Tolerance: QUM2 . . . 122
34.5 Magnet In Tolerance: QUM3 . . . 122
34.6 Magnet In Tolerance: QUM4 . . . 122
34.7 Magnet Power: QE31 . . . 122

34.8 Magnet Power: QUM1 . . . 123
34.9 Magnet Power: QUM2 . . . 123
34.10 Magnet Power: QUM3 . . . 123
34.11 Magnet Power: QUM4 . . . 123

35 Ignored when TD11 Is In or YG BL211 Is In 124
35.1 Bunch Length Monitor BL21 Position . . . 124
35.2 Flowswitch BSY PC320 . . . 124
35.3 Flowswitch BSY PC90 . . . 124
35.4 Flowswitch BSY RAD LCW Slit 10/30 . . . 124
35.5 Flowswitch CE21 . . . 125
35.6 Hydrogen Recombiner For BSY 1 Collimator . . . 125
35.7 Hydrogen Recombiner For BSY 2 Slit 10/30 . . . 125
35.8 Ion Chamber Gas Flowswitch BSY A . . . 125
35.9 Ion Chamber Gas Flowswitch BSY B . . . 126
35.10 Ion Chamber Gas Flowswitch BSY C . . . 126
35.11 Mirror BL21 Position . . . 126
35.12 PIC Gas Pressure LI24 . . . 126
35.13 PIC HVPS B911 . . . 127
35.14 PIC HVPS B912 . . . 127
35.15 PIC HVPS B913 . . . 127
35.16 PIC Raw Charge Thresholds: LTU1 220 . . . 127
35.17 PIC Raw Charge Thresholds: LTU1 252 . . . 128
35.18 PIC Raw Charge Thresholds: LTU1 280 . . . 128
35.19 PIC Raw Charge Thresholds: LTU1 420 . . . 128
35.20 PIC Raw Charge Thresholds: LTU1 450 . . . 129
35.21 PIC Raw Charge Thresholds: LTU1 480 . . . 129
35.22 PIC Raw Charge Thresholds: LTU1 722 . . . 129
35.23 PIC Raw Charge Thresholds: LTU1 732 . . . 130
35.24 PIC Raw Charge Thresholds: LTU1 762 . . . 130
35.25 PIC Raw Charge Thresholds: LTU1 772 . . . 130
35.26 PIC Trigger Missed (LN28) . . . 131
35.27 PIC Trigger Missed (LN29) . . . 131
35.28 PIC Trigger Missed (LN31) . . . 131
35.29 Profile Monitor BSY0 45 . . . 131
35.30 Temperature: Common Line Summary . . . 133
35.31 Temperature: North Arc Summary . . . 133
35.32 Toroid Chassis IMBC2 . . . 133
35.33 Toroid Comparator IMBC2IN/IMBC2OUT . . . 134

36 Ignored when TD11 Is In, TDUND Is In, or YG BL211 Is In 135
36.1 BFW 1010 Position . . . 135
36.2 BFW 110 Position . . . 135
36.3 BFW 1110 Position . . . 135
36.4 BFW 1210 Position . . . 136

36.5 BFW 1310 Position . . . 136
36.6 BFW 1410 Position . . . 136
36.7 BFW 1510 Position . . . 137
36.8 BFW 1610 Position . . . 137
36.9 BFW 1710 Position . . . 137
36.10 BFW 1810 Position . . . 138
36.11 BFW 1910 Position . . . 138
36.12 BFW 2010 Position . . . 138
36.13 BFW 210 Position . . . 139
36.14 BFW 2110 Position . . . 139
36.15 BFW 2210 Position . . . 139
36.16 BFW 2310 Position . . . 140
36.17 BFW 2410 Position . . . 140
36.18 BFW 2510 Position . . . 140
36.19 BFW 2610 Position . . . 141
36.20 BFW 2710 Position . . . 141
36.21 BFW 2810 Position . . . 141
36.22 BFW 2910 Position . . . 142
36.23 BFW 3010 Position . . . 142
36.24 BFW 310 Position . . . 142
36.25 BFW 3110 Position . . . 143
36.26 BFW 3210 Position . . . 143
36.27 BFW 3310 Position . . . 143
36.28 BFW 410 Position . . . 144
36.29 BFW 510 Position . . . 144
36.30 BFW 610 Position . . . 144
36.31 BFW 710 Position . . . 145
36.32 BFW 810 Position . . . 145
36.33 BFW 910 Position . . . 145
36.34 BFW Inserted Count . . . 145
36.35 BLM Argonne Heartbeat (LN32) . . . 147
36.36 BLM Argonne Heartbeat (LN33) . . . 147
36.37 BLM Argonne Heartbeat (LN35) . . . 147
36.38 BLM Argonne Heartbeat (LN36) . . . 148
36.39 BLM Argonne Heartbeat (LN37) . . . 148
36.40 BLM HVPS LTU1 762 . . . 148
36.41 BLM HVPS UND1 120 . . . 149
36.42 BLM HVPS UND1 1720 . . . 149
36.43 BLM HVPS UND1 2221 . . . 149
36.44 BLM HVPS UND1 2520 . . . 150
36.45 BLM HVPS UND1 3320 . . . 150
36.46 BLM HVPS UND1 920 . . . 150
36.47 BLM Pedestal Threshold: LTU1 722 . . . 151
36.48 BLM Pedestal Threshold: LTU1 732 . . . 151
36.49 BLM Pedestal Threshold: LTU1 762 . . . 151

36.50 BLM Pedestal Threshold: LTU1 772 . . . 152
36.51 BLM Pedestal Thresholds: LTU1 980 . . . 152
36.52 BLM Pedestal Thresholds: UND 1021 . . . 152
36.53 BLM Pedestal Thresholds: UND 1121 . . . 153
36.54 BLM Pedestal Thresholds: UND 120 . . . 153
36.55 BLM Pedestal Thresholds: UND 121 . . . 153
36.56 BLM Pedestal Thresholds: UND 1221 . . . 154
36.57 BLM Pedestal Thresholds: UND 1321 . . . 154
36.58 BLM Pedestal Thresholds: UND 1421 . . . 154
36.59 BLM Pedestal Thresholds: UND 1521 . . . 155
36.60 BLM Pedestal Thresholds: UND 1621 . . . 155
36.61 BLM Pedestal Thresholds: UND 1720 . . . 155
36.62 BLM Pedestal Thresholds: UND 1721 . . . 156
36.63 BLM Pedestal Thresholds: UND 1821 . . . 156
36.64 BLM Pedestal Thresholds: UND 1921 . . . 156
36.65 BLM Pedestal Thresholds: UND 2021 . . . 157
36.66 BLM Pedestal Thresholds: UND 2121 . . . 157
36.67 BLM Pedestal Thresholds: UND 221 . . . 157
36.68 BLM Pedestal Thresholds: UND 2221 . . . 158
36.69 BLM Pedestal Thresholds: UND 2321 . . . 158
36.70 BLM Pedestal Thresholds: UND 2421 . . . 158
36.71 BLM Pedestal Thresholds: UND 2520 . . . 159
36.72 BLM Pedestal Thresholds: UND 2521 . . . 159
36.73 BLM Pedestal Thresholds: UND 2621 . . . 159
36.74 BLM Pedestal Thresholds: UND 2721 . . . 160
36.75 BLM Pedestal Thresholds: UND 2821 . . . 160
36.76 BLM Pedestal Thresholds: UND 2921 . . . 160
36.77 BLM Pedestal Thresholds: UND 3021 . . . 161
36.78 BLM Pedestal Thresholds: UND 3121 . . . 161
36.79 BLM Pedestal Thresholds: UND 321 . . . 161
36.80 BLM Pedestal Thresholds: UND 3221 . . . 162
36.81 BLM Pedestal Thresholds: UND 3320 . . . 162
36.82 BLM Pedestal Thresholds: UND 3321 . . . 162
36.83 BLM Pedestal Thresholds: UND 421 . . . 163
36.84 BLM Pedestal Thresholds: UND 521 . . . 163
36.85 BLM Pedestal Thresholds: UND 621 . . . 163
36.86 BLM Pedestal Thresholds: UND 721 . . . 164
36.87 BLM Pedestal Thresholds: UND 821 . . . 164
36.88 BLM Pedestal Thresholds: UND 920 . . . 164
36.89 BLM Pedestal Thresholds: UND 921 . . . 165
36.90 BLM Pedestal Thresholds: UND BLF1 . . . 165
36.91 BLM Pedestal Thresholds: UND BLF17 . . . 165
36.92 BLM PEP Timing Check (LN30) . . . 166
36.93 BLM PEP Timing Check (LN32) . . . 166
36.94 BLM PEP Timing Check (LN33) . . . 166

36.95 BLM PEP Timing Check (LN35) . . . 167
36.96 BLM PEP Timing Check (LN36) . . . 167
36.97 BLM PEP Timing Check (LN37) . . . 167
36.98 BLM Raw Charge Thresholds: LTU1 722 . . . 168
36.99 BLM Raw Charge Thresholds: LTU1 732 . . . 168
36.100 BLM Raw Charge Thresholds: LTU1 762 . . . 168
36.101 BLM Raw Charge Thresholds: LTU1 772 . . . 169
36.102 BLM Raw Charge Thresholds: LTU1 980 . . . 169
36.103 BLM Raw Charge Thresholds: UND 1021 . . . 169
36.104 BLM Raw Charge Thresholds: UND 1121 . . . 170
36.105 BLM Raw Charge Thresholds: UND 120 . . . 170
36.106 BLM Raw Charge Thresholds: UND 121 . . . 170
36.107 BLM Raw Charge Thresholds: UND 1221 . . . 171
36.108 BLM Raw Charge Thresholds: UND 1321 . . . 171
36.109 BLM Raw Charge Thresholds: UND 1421 . . . 171
36.110 BLM Raw Charge Thresholds: UND 1521 . . . 172
36.111 BLM Raw Charge Thresholds: UND 1621 . . . 172
36.112 BLM Raw Charge Thresholds: UND 1720 . . . 172
36.113 BLM Raw Charge Thresholds: UND 1721 . . . 173
36.114 BLM Raw Charge Thresholds: UND 1821 . . . 173
36.115 BLM Raw Charge Thresholds: UND 1921 . . . 173
36.116 BLM Raw Charge Thresholds: UND 2021 . . . 174
36.117 BLM Raw Charge Thresholds: UND 2121 . . . 174
36.118 BLM Raw Charge Thresholds: UND 221 . . . 174
36.119 BLM Raw Charge Thresholds: UND 2221 . . . 175
36.120 BLM Raw Charge Thresholds: UND 2321 . . . 175
36.121 BLM Raw Charge Thresholds: UND 2421 . . . 175
36.122 BLM Raw Charge Thresholds: UND 2520 . . . 176
36.123 BLM Raw Charge Thresholds: UND 2521 . . . 176
36.124 BLM Raw Charge Thresholds: UND 2621 . . . 176
36.125 BLM Raw Charge Thresholds: UND 2721 . . . 177
36.126 BLM Raw Charge Thresholds: UND 2821 . . . 177
36.127 BLM Raw Charge Thresholds: UND 2921 . . . 177
36.128 BLM Raw Charge Thresholds: UND 3021 . . . 178
36.129 BLM Raw Charge Thresholds: UND 3121 . . . 178
36.130 BLM Raw Charge Thresholds: UND 321 . . . 178
36.131 BLM Raw Charge Thresholds: UND 3221 . . . 179
36.132 BLM Raw Charge Thresholds: UND 3320 . . . 179
36.133 BLM Raw Charge Thresholds: UND 3321 . . . 179
36.134 BLM Raw Charge Thresholds: UND 421 . . . 180
36.135 BLM Raw Charge Thresholds: UND 521 . . . 180
36.136 BLM Raw Charge Thresholds: UND 621 . . . 180
36.137 BLM Raw Charge Thresholds: UND 721 . . . 181
36.138 BLM Raw Charge Thresholds: UND 821 . . . 181
36.139 BLM Raw Charge Thresholds: UND 920 . . . 181

36.140 BLM Raw Charge Thresholds: UND 921 . . . 182
36.141 BLM Raw Charge Thresholds: UND BLF1 . . . 182
36.142 BLM Raw Charge Thresholds: UND BLF17 . . . 182
36.143 BLM Timing Check (BLM:UND1:4) . . . 183
36.144 BLM Timing Check (LN30) . . . 183
36.145 BLM Trigger Missed (LN30) . . . 183
36.146 BLM Trigger Missed (LN32) . . . 183
36.147 BLM Trigger Missed (LN33) . . . 184
36.148 BLM Trigger Missed (LN35) . . . 184
36.149 BLM Trigger Missed (LN36) . . . 184
36.150 BLM Trigger Missed (LN37) . . . 184
36.151 BLM/PIC Watchdog: Downstream of TDUND . . . 185
36.152 BPM Summary (1-9) . . . 185
36.153 BPM Summary (10-18) . . . 185
36.154 BPM Summary (19-27) . . . 185
36.155 BPM Summary (28-36) . . . 186
36.156 OTR BL237 Position and TDUND Not In . . . 186
36.157 OTR BL291 Position and TDUND Not In . . . 186
36.158 OTR BL541 Position and TDUND Not In . . . 187
36.159 OTR BL571 Position and TDUND Not In . . . 187
36.160 OTR BL621 Position and TDUND Not In . . . 187
36.161 OTR BL711 Position and TDUND Not In . . . 188
36.162 OTR21 Position When TDUND Not In . . . 188
36.163 OTR22 Position When TDUND Not In . . . 188
36.164 OTR30 Position When TDUND Not In . . . 189
36.165 OTR33 Position When TDUND Not In . . . 189
36.166 OTRH1 Position When TDUND Not In . . . 189
36.167 OTRH2 Position When TDUND Not In . . . 190
36.168 PIC HVPS B921 . . . 190
36.169 PIC Trigger Missed (LN34) . . . 190
36.170 THz Radiator Beryllium Foil . . . 190
36.171 Toroid Comparator (IMUNDI vs IMUNDO) . . . 191
36.172 Toroid Comparator (IMUNDO vs IMDUMP) . . . 191
36.173 Toroid Comparator Power Status (B921) . . . 191

37 Ignored when TDUND Is In 192
37.1 HXRSS Beamline Position . . . 192
37.2 HXRSS Chicane Bend Magnet Power Supply . . . 192
37.3 HXRSS Crystal Position . . . 192
37.4 HXRSS Crystal Valid Position . . . 193
37.5 HXRSS Mode State . . . 193

38 Ignored when YG BL211 Is In 196
38.1 BCS PIC RAW Charge Threshold DMP 997 . . . 196
38.2 BCS PIC RAW Charge Threshold DMP 998 . . . 196

38.3 BLM/PIC Watchdog: IN20 . . . 196
38.4 BLM/PIC Watchdog: Upstream of TDUND . . . 196
38.5 BX01/BX02 Status . . . 197
38.6 BXG Status . . . 197
38.7 COLL Flow Switch LI29-1 . . . 197
38.8 COLL Flow Switch LI29-4 . . . 197
38.9 COLL Flow Switch LI29-5 . . . 198
38.10 COLL Flow Switch LI29-9 . . . 198
38.11 COLL Flow Switch LI30-1 . . . 198
38.12 COLL Flow Switch LI30-4 . . . 198
38.13 COLL Flow Switch LI30-5 . . . 199
38.14 Diag Stopper HFX DG2 Is In . . . 199
38.15 Diag Stopper HFX UM6 Is In . . . 199
38.16 Flowswitch CE11 . . . 199
38.17 Flowswitch TD11 . . . 200
38.18 Flowswitch: COLL Flow Switch LI28-9 . . . 200
38.19 Mirror BL11 Position . . . 200
38.20 OTR BL237 Position . . . 200
38.21 OTR BL291 Position . . . 201
38.22 OTR BL541 Position . . . 201
38.23 OTR BL571 Position . . . 201
38.24 OTR BL621 Position . . . 202
38.25 OTR BL711 Position . . . 202
38.26 OTR LI25 920 Position . . . 202
38.27 OTR21 Position . . . 203
38.28 OTR22 Position . . . 203
38.29 OTR30 Position . . . 203
38.30 OTR33 Position . . . 204
38.31 OTRH1 Position . . . 204
38.32 OTRH2 Position . . . 204
38.33 PIC Raw Charge Thresholds: LI24 791 . . . 205
38.34 PIC Raw Charge Thresholds: LI24 811 . . . 205
38.35 PIC Trigger Missed (LN16) . . . 205
38.36 PPS Stopper S5B Position . . . 206
38.37 Scraper Water LI21-9 (Station 22-1) . . . 206
38.38 Scraper Water LI22-9 (Station 23-1) . . . 206
38.39 Scraper Water LI23-9 (Station 24-1) . . . 206
38.40 Scraper Water LI24-9 (Station 25-1) . . . 207
38.41 Scraper Water LI25-9 (Station 26-1) . . . 207
38.42 Scraper Water LI26-9 (Station 27-1) . . . 207
38.43 Scraper Water LI27-9 (Station 28-1) . . . 207
38.44 Scraper Water LI28-9 (Station 29-1) . . . 208
38.45 Scraper Water LI29-9 (Station 30-1) . . . 208
38.46 Stopper S5B Is In . . . 208
38.47 Stopper XRT S5 Position . . . 208

38.48 Stopper XRT S6 Position . . . 209
38.49 TDUND Position . . . 209
38.50 TIU: DPS Temperature: LI30 . . . 209
38.51 TIU: Fast Shutter 2 Position: LI30 . . . 209
38.52 TIU: Fast Shutter 2A Position: LI30 . . . 210
38.53 TIU: LI28 Dump 5879 Flow Switch . . . 210
38.54 TIU: LI28 Dump 5879 Klixon . . . 210
38.55 TIU: Main Manifold Gauge: LI21 Station 5 . . . 210
38.56 TIU: Main Manifold Gauge: LI22 Station 5 . . . 211
38.57 TIU: Main Manifold Gauge: LI23 Station 5 . . . 211
38.58 TIU: Main Manifold Gauge: LI24 Station 5 . . . 211
38.59 TIU: Main Manifold Gauge: LI25 Station 5 . . . 212
38.60 TIU: Main Manifold Gauge: LI26 Station 5 . . . 212
38.61 TIU: Main Manifold Gauge: LI27 Station 5 . . . 212
38.62 TIU: Main Manifold Gauge: LI28 Station 5 . . . 212
38.63 TIU: Main Manifold Gauge: LI29 Station 5 . . . 213
38.64 TIU: Main Manifold Gauge: LI30 Station 5 . . . 213
38.65 TIU: Main Manifold Gauge: LI30 Station 9 . . . 213
38.66 TIU: MCC Emergency Radiation Stopper . . . 214
38.67 TIU: PIC HV Power Supply KG30-C1419 . . . 214
38.68 TIU: Stopper 950 and 960 Position . . . 214
38.69 TIU: Sub-booster Ready: LI21 . . . 214
38.70 TIU: Sub-booster Ready: LI22 . . . 215
38.71 TIU: Sub-booster Ready: LI25 . . . 215
38.72 TIU: Sub-booster Ready: LI26 . . . 215
38.73 TIU: Sub-booster Ready: LI27 . . . 215
38.74 TIU: Sub-booster Ready: LI28 . . . 216
38.75 TIU: Sub-booster Ready: LI29 . . . 216
38.76 TIU: Sub-booster Ready: LI30 . . . 216
38.77 TIU: VVPG LI21-9 Position (Station 22-1) . . . 216
38.78 TIU: VVPG LI22-9 Position (Station 23-1) . . . 217
38.79 TIU: VVPG LI23-9 Position (Station 24-1) . . . 217
38.80 TIU: VVPG LI25-9 Position (Station 26-1) . . . 217
38.81 TIU: VVPG LI26-9 Position (Station 27-1) . . . 217
38.82 TIU: VVPG LI27-9 Position (Station 28-1) . . . 218
38.83 TIU: VVPG LI28-9 Position (Station 29-1) . . . 218
38.84 TIU: VVPG LI29-9 Position (Station 30-1) . . . 218
38.85 TIU: VVPG LI30-9 Position (Station 30-9) . . . 218
38.86 TIU: VVS Circuit Breaker: LI20 . . . 219
38.87 TIU: VVS Circuit Breaker: LI22 . . . 219
38.88 TIU: VVS Circuit Breaker: LI24 . . . 219
38.89 TIU: VVS Circuit Breaker: LI26 . . . 219
38.90 TIU: VVS Circuit Breaker: LI28 . . . 220
38.91 TIU: VVS Circuit Breaker: LI30 . . . 220
38.92 TIU:VVFS LI21-9 Position (Station 22-1) . . . 220

38.93 TIU:VVFS LI22-9 Position (Station 23-1) . . . 220
38.94 TIU:VVFS LI23-9 Position (Station 24-1) . . . 221
38.95 TIU:VVFS LI24-9 Position (Station 25-1) . . . 221
38.96 TIU:VVFS LI25-9 Position (Station 26-1) . . . 221
38.97 TIU:VVFS LI26-9 Position (Station 27-1) . . . 221
38.98 TIU:VVFS LI27-9 Position (Station 28-1) . . . 222
38.99 TIU:VVFS LI28-9 Position (Station 29-1) . . . 222
38.100 TIU:VVFS LI29-9 Position (Station 30-1) . . . 222
38.101 Toroid Chassis IM11 . . . 222
38.102 Toroid Chassis IM12 . . . 223
38.103 Toroid Comparator IMBC1IN/IMBC1OUT . . . 223
38.104 Toroid Peak Current Monitor IM01 . . . 223
38.105 VVFS LI21-9 Position (Station 22-1) . . . 223
38.106 VVFS LI22-9 Position (Station 23-1) . . . 224
38.107 VVFS LI23-9 Position (Station 24-1) . . . 224
38.108 VVFS LI24-9 Position (Station 25-1) . . . 224
38.109 VVFS LI25-9 Position (Station 26-1) . . . 224
38.110 VVFS LI26-9 Position (Station 27-1) . . . 225
38.111 VVFS LI27-9 Position (Station 28-1) . . . 225
38.112 VVFS LI28-9 Position (Station 29-1) . . . 225
38.113 VVFS LI29-9 Position (Station 30-1) . . . 225
38.114 VVMG LI21 195 Position . . . 226
38.115 VVMG LTU1 505 Position . . . 226
38.116 VVPG IN20 435 Position . . . 226
38.117 VVPG IN20 545 Position . . . 226
38.118 VVPG IN20 635 Position . . . 227
38.119 VVPG IN20 915 Position . . . 227
38.120 VVPG LI21-9 Position (Station 22-1) . . . 227
38.121 VVPG LI22-9 Position (Station 23-1) . . . 227
38.122 VVPG LI23-9 Position (Station 24-1) . . . 228
38.123 VVPG LI24 710 Position . . . 228
38.124 VVPG LI24 896 Position . . . 228
38.125 VVPG LI25-9 Position (Station 26-1) . . . 228
38.126 VVPG LI26-9 Position (Station 27-1) . . . 229
38.127 VVPG LI27-9 Position (Station 28-1) . . . 229
38.128 VVPG LI28-9 Position (Station 29-1) . . . 229
38.129 VVPG LI29-9 Position (Station 30-1) . . . 229
38.130 VVPG LI30-9 Position (Station 30-9) . . . 230
38.131 YAG IN20 241 Position . . . 230
38.132 YAG IN20 351 Position . . . 230
38.133 YAG LI21 995 Position . . . 231
38.134 YG BL241 Position . . . 231
38.135 YG BL351 Position . . . 231

39 Always Evaluated **232**

39.1 Backward Beam Stopper (RST1) . . . 232
39.2 Bypass Recover . . . 232
39.3 Gun RF Peak Power 20-6 . . . 232
39.4 Gun Waveguide Vacuum Summary . . . 232
39.5 IMPS IOC Heartbeat . . . 233
39.6 Laser Heater Attenuator Position . . . 233
39.7 Mechanical Shutter Position . . . 233
39.8 Mirror AM01 Position . . . 233
39.9 MPS Beam Permit: BYKIK . . . 234
39.10 MPS Beam Permit: Heater Shutter . . . 234
39.11 MPS Beam Permit: Mechanical Shutter . . . 234
39.12 MPS Beam Permit: Pockels Cell . . . 234
39.13 MPS Mechanical Shutter Position . . . 235
39.14 NEH AMO LAMP Gate Valve VGC 30 Is In Beam . . . 235
39.15 NEH AMO LAMP Gate Valve VGC 30 Is Out of Beam . . . 235
39.16 PIC Raw Charge Thresholds: BSY0 16 . . . 235
39.17 PIC Raw Charge Thresholds: BSY0 33 . . . 236
39.18 PIC Raw Charge Thresholds: BSY0 45 . . . 236
39.19 PIC Raw Charge Thresholds: BSY0 59 . . . 236
39.20 PIC Raw Charge Thresholds: BSY0 78A . . . 237
39.21 PIC Raw Charge Thresholds: BSY0 78B . . . 237
39.22 PIC Raw Charge Thresholds: IN20 185 . . . 237
39.23 PIC Raw Charge Thresholds: IN20 232 . . . 238
39.24 PIC Raw Charge Thresholds: IN20 245 . . . 238
39.25 PIC Raw Charge Thresholds: IN20 665 . . . 238
39.26 PIC Raw Charge Thresholds: IN20 775 . . . 239
39.27 PIC Raw Charge Thresholds: IN20 933 . . . 239
39.28 PIC Raw Charge Thresholds: LI28 916 . . . 239
39.29 PIC Raw Charge Thresholds: LI29 146 . . . 240
39.30 PIC Raw Charge Thresholds: LI29 446 . . . 240
39.31 PIC Raw Charge Thresholds: LI29 546 . . . 240
39.32 PIC Raw Charge Thresholds: LI29 801 . . . 241
39.33 PIC Raw Charge Thresholds: LI29 956 . . . 241
39.34 PIC Raw Charge Thresholds: LI30 146 . . . 241
39.35 PIC Raw Charge Thresholds: LI30 446 . . . 242
39.36 PIC Raw Charge Thresholds: LI30 546 . . . 242
39.37 PIC Raw Charge Thresholds: LI30 801 . . . 242
39.38 PIC Trigger Missed (LN11) . . . 243
39.39 PIC Trigger Missed (LN22) . . . 243
39.40 PIC Trigger Missed (LN25) . . . 243
39.41 Pockels Cell AND Gate 100 . . . 243
39.42 Pockels Cell AND Gate 200 . . . 244
39.43 Rate Request: BYKIK 1 Hz . . . 244
39.44 Rate Request: BYKIK 10 Hz . . . 244
39.45 Rate Request: BYKIK 30 Hz . . . 244

39.46 Rate Request: BYKIK 60 Hz . . . 245
39.47 Rate Request: BYKIK Burst . . . 245
39.48 Rate Request: BYKIK Single Shot . . . 245
39.49 Rate Request: Pockels Cell 1 Hz . . . 245
39.50 Rate Request: Pockels Cell 10 Hz . . . 246
39.51 Rate Request: Pockels Cell 30 Hz . . . 246
39.52 Rate Request: Pockels Cell 60 Hz . . . 246
39.53 Rate Request: Pockels Cell Burst . . . 246
39.54 Rate Request: Pockels Cell Single Shot . . . 247
39.55 TIU: DPS Temperature . . . 247
39.56 VVMG IN20 175 Position . . . 247
39.57 VVPG IN20 155 Position . . . 247
39.58 YAG IN20 211 Position . . . 248
39.59 YAG IN20 841 Position . . . 248
39.60 YAG IN20 921 Position . . . 248

40 Ignore Logic **249**
40.1 A-Line B1/B2 Is Not On AND A-Line Kicker Is Not Enabled . . . 249
40.2 A-Line SL10 Is Closed . . . 249
40.3 BX01/BX02 Is Off . . . 249
40.4 BX01/BX02 Is On . . . 250
40.5 BXG Is Off . . . 250
40.6 BXG Is On . . . 250
40.7 Diag Stopper XCS SB1 Is In . . . 250
40.8 Laser Heater Attenuator Is In . . . 251
40.9 M3H Mirror Is In Beam . . . 251
40.10 M3H Mirror Is Out of Beam . . . 251
40.11 ST1/ST2 Are In . . . 251
40.12 Stopper S1 Is In . . . 251
40.13 Stopper S2 Is In . . . 252
40.14 Stopper S2B Is In . . . 252
40.15 Stopper SH1 Is In . . . 252
40.16 Stopper SH2 Is In . . . 252
40.17 Stopper XRT S5 Is In . . . 253
40.18 Stopper XRT S6 Is In . . . 253
40.19 Stopper: BSY D2 Summary Is In . . . 253
40.20 TD11 Is In . . . 253
40.21 TDUND Is In . . . 253
40.22 XCS Is Not In Main Line . . . 254
40.23 XPP-NH3-POS-00 Beamline Is In . . . 254
40.24 XPP-NH3-POS-00 Beamline Is Not In . . . 254
40.25 YG BL211 Is In . . . 254

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 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

1.30 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

1.31 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

1.32 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 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`

2.5 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`

2.6 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`

2.7 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`

2.8 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`

2.9 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`

2.10 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

2.11 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

2.12 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

2.13 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

2.14 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

2.15 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

2.16 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

2.17 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`

2.18 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`

2.19 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, TDUND Is In, or YG BL211 Is In

4.1 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`

5 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

5.1 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`

5.2 FEE1 M1S Mirror State

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

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

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

6.1 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

6.2 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

6.3 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

6.4 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

6.5 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

6.6 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

6.7 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

6.8 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

6.9 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

6.10 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

6.11 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

6.12 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

6.13 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

6.14 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

6.15 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

6.16 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`

6.17 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`

6.18 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`

6.19 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`

6.20 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

6.21 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

6.22 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

6.23 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

6.24 YAG LTU1 743 Position (PSI Prof Mon)

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

Where
A = `YAGS_LTU1_743_OUT_LIMIT_POSITION`,
B = `YAGS_LTU1_743_IN_LIMIT_POSITION`

7 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

7.1 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

7.2 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

7.3 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

7.4 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

7.5 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

7.6 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

7.7 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

7.8 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

7.9 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`

7.10 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`

7.11 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`

7.12 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`

7.13 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`

7.14 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`

7.15 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`

7.16 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`

7.17 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

7.18 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

7.19 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

7.20 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

7.21 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

7.22 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

7.23 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

7.24 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

7.25 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

7.26 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

7.27 YAG LTU1 743 Position When TDUND Not In (PSI Prof Mon)

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

Where
A = `YAGS_LTU1_743_OUT_LIMIT_POSITION`,
B = `YAGS_LTU1_743_IN_LIMIT_POSITION`

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

8.1 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`

8.2 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`

8.3 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`

8.4 BSY GLAST Target Flow Switch

Name	*B*	*A*	PC	MS	BYKIK	LHS
Faulted	F	F	0 Hz	0 Hz	0 Hz	–
Ok	F	T	120 Hz	120 Hz	120 Hz	–
Faulted but Target Out	T	F	120 Hz	120 Hz	120 Hz	–
Ok	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `TRGT_BSY0_70_FLOW_SW_STATE`,
B = `TRGT_BSY0_70_OUT_LIMSW_POSITION`

8.5 BSY GLAST Target Klixon

Name	*B*	*A*	PC	MS	BYKIK	LHS
Faulted	F	F	0 Hz	0 Hz	0 Hz	–
Ok	F	T	120 Hz	120 Hz	120 Hz	–
Faulted but Target Out	T	F	120 Hz	120 Hz	120 Hz	–
Ok	T	T	120 Hz	120 Hz	120 Hz	–

Where
A = `GL_KLIXON_STATE`,
B = `TRGT_BSY0_70_OUT_LIMSW_POSITION`

8.6 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`

8.7 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

8.8 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

8.9 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

8.10 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

8.11 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

8.12 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`

8.13 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`

8.14 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`

8.15 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`

8.16 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`

8.17 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`

8.18 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`

8.19 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

8.20 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

8.21 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

8.22 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	–

8.23 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`

8.24 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`

8.25 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`

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

9.1 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`

9.2 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`

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

10.1 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`

11 Ignored when BXG Is Off or YG BL211 Is In

11.1 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`

12 Ignored when BXG Is On or YG BL211 Is In

12.1 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`

13 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

13.1 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`

13.2 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`

14 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

14.1 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`

15 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

15.1 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	–

15.2 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	–

15.3 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	–

15.4 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	–

15.5 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	–

15.6 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	–

15.7 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	–

15.8 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`

15.9 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`

15.10 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`

15.11 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`

15.12 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`

15.13 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`

15.14 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`

15.15 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`

15.16 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`

15.17 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`

15.18 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`

15.19 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`

15.20 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

15.21 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

15.22 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

15.23 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`

15.24 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`

15.25 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`

16 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

16.1 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`

16.2 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`

16.3 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`

16.4 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

17 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

17.1 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`

17.2 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`

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, TD11 Is In, TDUND Is In, or YG BL211 Is In

18.1 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`

18.2 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`

18.3 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`

19 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

19.1 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`

19.2 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`

19.3 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`

19.4 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`

19.5 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`

19.6 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`

19.7 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`

19.8 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`

19.9 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`

20 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

20.1 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`

20.2 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`

21 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

21.1 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

21.2 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

21.3 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

21.4 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`

21.5 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`

21.6 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`

21.7 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

22 Ignored when Laser Heater Attenuator Is In

22.1 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`

22.2 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`

22.3 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`

23 Ignored when ST1/ST2 Are In, Stopper S1 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, or YG BL211 Is In

23.1 NEH AMO LAMP Gate Valve VGC 30 Position

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

Where
A = `AMO_LMP_VGC_30_CLS_DI_POSITION`,
B = `AMO_LMP_VGC_30_OPN_DI_POSITION`

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

24.1 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`

24.2 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`

24.3 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

24.4 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

24.5 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

25 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

25.1 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

25.2 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

25.3 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

25.4 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

25.5 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

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

26.1 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`

26.2 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`

26.3 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

26.4 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

26.5 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

26.6 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

26.7 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

26.8 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

27 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

27.1 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

27.2 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

27.3 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`

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

28.1 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`

28.2 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`

28.3 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

28.4 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

28.5 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

28.6 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

28.7 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

28.8 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

29 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

29.1 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`

30 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

30.1 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`

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

31.1 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`

31.2 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`

31.3 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`

31.4 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`

31.5 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`

31.6 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`

31.7 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`

31.8 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`

31.9 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`

31.10 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`

31.11 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`

31.12 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`

31.13 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`

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

32.1 SXRSS Grating/M1 GRAT UND1 934 Position

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

Where
A = `GRAT_UND1_934_OUT_LIMIT_POSITION`,
B = `GRAT_UND1_934_IN_LIMIT_POSITION`

32.2 SXRSS M2 MIRR UND1 964 Position

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

Where
A = `MIRR_UND1_964_OUT_LIMIT_POSITION`,
B = `MIRR_UND1_964_IN_LIMIT_POSITION`

32.3 SXRSS M3 MIRR UND1 966 Position

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

Where
A = MIRR_UND1_966_OUT_LIMIT_POSITION,
B = MIRR_UND1_966_IN_LIMIT_POSITION

32.4 SXRSS Mode State

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

```
/* Production MPS SXRSS Modes
 *
 * state = 0 : full rate (120 Hz) beam allowed, SXRSS Seeded Mode
 * state = 1 : full rate (120 Hz) beam allowed, SXRSS SASE Mode
 * state = 2 : full rate (120 Hz) beam allowed, Harmonic Mode
 * state = 3 : no beam allowed, SXRSS undefined state
 *
 * Allow beam if SXRSS is ON, Seeded Mode:
 *                              grating/M1 is IN;
 *                              M3 is IN or OUT;
 *                              chicane is ON;
 *                              e- beam position 15.5 < x < 21   [mm]
 *                              e- beam energy   3.35 < E < 5.3 [GeV]
 *                              < 6 upstream undulators IN
 * Allow beam if SXRSS is OFF, SASE Mode:
 *                              grating/M1 is OUT;
 *                              slit is OUT;
 *                              M2 is OUT;
 *                              M3 is OUT;
 *                              e- beam position    -1 < x < 24   [mm]
 * Allow beam if SXRSS is in Harmonic Mode:
 *                              grating/M1 is OUT;
 *                              slit is NOT_IN and NOT_OUT;
 *                              M2 is OUT;
 *                              M3 is OUT;
 *                              chicane is ON;
 *                              e- beam position  2.5 < x < 24   [mm]
 *                              e- beam energy     11 < E        [GeV]
 * Otherwise, do not allow beam.
 *
 * Input Descriptions
 *
 *  Link Node MPS PV Name                Link Node MPS Fault Name
                Desciption
 * ------------------------------
```

```
    ------------------------------
    ---------------------------------------------
 *  BEND:UND1:940:ON_MPS                =  BEND_UND1_940_ON_STATE
                 =  Chicane power supply on
 *  GRAT:UND1:934:IN_LIMIT_MPS          =  GRAT_UND1_934_IN_LIMIT_POSITION
       =  Grating/M1 IN limit switch
 *  GRAT:UND1:934:OUT_LIMIT_MPS         =
    GRAT_UND1_934_OUT_LIMIT_POSITION    =  Grating/M1 OUT limit switch
 *  SLIT:UND1:962:IN_LIMIT_MPS          =  SLIT_UND1_962_IN_LIMIT_POSITION
       =  Slit IN limit switch
 *  SLIT:UND1:962:OUT_LIMIT_MPS         =
    SLIT_UND1_962_OUT_LIMIT_POSITION    =  Slit OUT limit switch
 *  MIRR:UND1:964:IN_LIMIT_MPS          =  MIRR_UND1_964_IN_LIMIT_POSITION
       =  M2 IN limit switch
 *  MIRR:UND1:964:OUT_LIMIT_MPS         =
    MIRR_UND1_964_OUT_LIMIT_POSITION    =  M2 OUT limit switch
 *  MIRR:UND1:966:IN_LIMIT_MPS          =  MIRR_UND1_966_IN_LIMIT_POSITION
       =  M3 IN limit switch
 *  MIRR:UND1:966:OUT_LIMIT_MPS         =
    MIRR_UND1_966_OUT_LIMIT_POSITION    =  M3 OUT limit switch
 *  MPS:UND1:950:SX_HRMNC_ENERGY_MPS =
    MPS_UND1_950_SX_HRMNC_ENERGY_STATE =  e- beam energy safe for
    Harmonic mode
 *  MPS:UND1:950:SX_HRMNC_X_MPS         =  MPS_UND1_950_SX_HRMNC_X_STATE
        =  e- beam position safe for Harmonic mode
 *  MPS:UND1:950:SX_SASE_X_MPS          =  MPS_UND1_950_SX_SASE_X_STATE
         =  e- beam position safe for SASE mode
 *  MPS:UND1:950:SX_SS_ENERGY_MPS       =  MPS_UND1_950_SX_SS_ENERGY_STATE
       =  e- beam energy safe for Seeded mode
 *  MPS:UND1:950:SX_SS_UND_MPS          =  MPS_UND1_950_SX_SS_UND_STATE
         =  Inserted upstream undulators safe for Seeded mode
 *  MPS:UND1:950:SX_SS_X_MPS            =  MPS_UND1_950_SX_SS_X_STATE
           =  e- beam position safe for Seeded mode
 */

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

if (     GRAT_UND1_934_IN_LIMIT_POSITION &&
         (MIRR_UND1_966_IN_LIMIT_POSITION ||
             MIRR_UND1_966_OUT_LIMIT_POSITION) &&
         BEND_UND1_940_ON_STATE &&
         MPS_UND1_950_SX_SS_X_STATE &&
         MPS_UND1_950_SX_SS_ENERGY_STATE &&
         MPS_UND1_950_SX_SS_UND_STATE )
```

```
{
    state = 0; /* SXRSS Seeded Mode, okay to run beam */
}

else if ( GRAT_UND1_934_OUT_LIMIT_POSITION &&
          SLIT_UND1_962_OUT_LIMIT_POSITION &&
          MIRR_UND1_964_OUT_LIMIT_POSITION &&
          MIRR_UND1_966_OUT_LIMIT_POSITION &&
          MPS_UND1_950_SX_SASE_X_STATE )
{
    state = 1; /* SXRSS SASE Mode, okay to run beam */
}

else if ( GRAT_UND1_934_OUT_LIMIT_POSITION &&
          !SLIT_UND1_962_IN_LIMIT_POSITION && !
              SLIT_UND1_962_OUT_LIMIT_POSITION &&
          MIRR_UND1_964_OUT_LIMIT_POSITION &&
          MIRR_UND1_966_OUT_LIMIT_POSITION &&
          BEND_UND1_940_ON_STATE &&
          MPS_UND1_950_SX_HRMNC_X_STATE &&
          MPS_UND1_950_SX_HRMNC_ENERGY_STATE )
{
    state = 2; /* SXRSS Harmonic Mode, okay to run beam */
}

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

Name	State	PC	MS	BYKIK	LHS
SXRSS Seeded Mode	0	120 Hz	120 Hz	120 Hz	–
SXRSS SASE Mode	1	120 Hz	120 Hz	120 Hz	–
SXRSS Harmonic Mode	2	120 Hz	120 Hz	120 Hz	–
SXRSS Undefined State	3	0 Hz	0 Hz	0 Hz	–

32.5 SXRSS SLIT UND1 962 Position

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

Where
A = `SLIT_UND1_962_OUT_LIMIT_POSITION`,
B = `SLIT_UND1_962_IN_LIMIT_POSITION`

32.6 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`

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

33.1 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`

33.2 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`

33.3 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`

33.4 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

33.5 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

33.6 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

33.7 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

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

34.1 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`

34.2 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`

34.3 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`

34.4 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

34.5 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

34.6 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

34.7 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

34.8 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

34.9 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

34.10 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

34.11 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

35 Ignored when TD11 Is In or YG BL211 Is In

35.1 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

35.2 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

35.3 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

35.4 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

35.5 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

35.6 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

35.7 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

35.8 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

35.9 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

35.10 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

35.11 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

35.12 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

35.13 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

35.14 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

35.15 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

35.16 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

35.17 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

35.18 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

35.19 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

35.20 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

35.21 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

35.22 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

35.23 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

35.24 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

35.25 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

35.26 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`

35.27 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`

35.28 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`

35.29 Profile Monitor BSY0 45

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

```
/* BSY PR45 Profile Monitor
 *
 * state = 0 : PR45 BROKEN, 0 Hz fault
 * state = 1 : PR45 MOVING, 0 Hz fault
 * state = 2 : PR45 OUT, 120 Hz beam allowed
 * state = 3 : PR45 IN and D2-or-TDUND IN, 10 Hz beam allowed
 * state = 4 : PR45 IN but neither D2 nor TDUND IN, 0 Hz fault
 * Input Descriptions
```

```
 *
 *   Link Node MPS PV Name                    Link Node MPS Fault Name
                  Desciption
 * ---------------------------------
     ---------------------------------
     ------------------------------------------------
 *   PROF:BSY0:45:OUT_LIMIT_MPS          =   PROF_BSY0_45_OUT_LIMIT_POSITION
         =  PR45 OUT limit switch
 *   PROF:BSY0:45:IN_LIMIT_MPS           =   PROF_BSY0_45_IN_LIMIT_POSITION
         =  PR45 IN limit switch
 *   DUMP:LTU1:970:TDUND_IN_MPS          =   TDUND_IN_POSITION
                     =  TDUND IN
 *   STPR:BSY0:88:IN_LIMSW_A_MPS         =
     STPR_BSY0_88_IN_LIMSW_A_POSITION    =   D2 IN
 *
 */

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

if ( PROF_BSY0_45_OUT_LIMIT_POSITION && PROF_BSY0_45_IN_LIMIT_POSITION
    )
{
        state = 0;
}

else if ( !PROF_BSY0_45_OUT_LIMIT_POSITION && !
    PROF_BSY0_45_IN_LIMIT_POSITION )
{
        state = 1;
}

else if ( PROF_BSY0_45_OUT_LIMIT_POSITION )
{
        state = 2;
}

else if ( PROF_BSY0_45_IN_LIMIT_POSITION && ( TDUND_IN_POSITION ||
    STPR_BSY0_88_IN_LIMSW_A_POSITION ) )
{
        state = 3;
}

else
{
```

```
        state = 4;
}
```

Name	State	PC	MS	BYKIK	LHS
Broken	0	0 Hz	0 Hz	0 Hz	–
Moving	1	0 Hz	0 Hz	0 Hz	–
Out	2	120 Hz	120 Hz	120 Hz	–
In and D2 or TDUND In	3	10 Hz	10 Hz	10 Hz	–
In but D2 and TDUND Not In	4	0 Hz	0 Hz	0 Hz	–

35.30 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`

35.31 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`

35.32 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`

35.33 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

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

36.1 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

36.2 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

36.3 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

36.4 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

36.5 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

36.6 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

36.7 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

36.8 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

36.9 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

36.10 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

36.11 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

36.12 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

36.13 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

36.14 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

36.15 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

36.16 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

36.17 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

36.18 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

36.19 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

36.20 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

36.21 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

36.22 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

36.23 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

36.24 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

36.25 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

36.26 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

36.27 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

36.28 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

36.29 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

36.30 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

36.31 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`

36.32 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`

36.33 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`

36.34 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	–

36.35 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`

36.36 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`

36.37 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

36.38 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

36.39 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

36.40 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

36.41 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

36.42 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

36.43 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

36.44 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

36.45 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

36.46 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

36.47 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`

36.48 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`

36.49 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`

36.50 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`

36.51 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`

36.52 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`

36.53 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

36.54 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

36.55 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

36.56 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`

36.57 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`

36.58 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`

36.59 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`

36.60 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`

36.61 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`

36.62 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`

36.63 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`

36.64 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`

36.65 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

36.66 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

36.67 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

36.68 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

36.69 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

36.70 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

36.71 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

36.72 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

36.73 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

36.74 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

36.75 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

36.76 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

36.77 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`

36.78 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`

36.79 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`

36.80 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

36.81 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

36.82 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

36.83 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

36.84 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

36.85 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

36.86 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

36.87 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

36.88 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

36.89 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

36.90 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

36.91 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

36.92 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

36.93 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

36.94 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

36.95 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

36.96 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

36.97 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

36.98 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`

36.99 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`

36.100 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`

36.101 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`

36.102 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`

36.103 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`

36.104 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

36.105 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

36.106 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

36.107 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

36.108 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

36.109 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

36.110 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

36.111 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

36.112 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

36.113 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

36.114 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

36.115 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

36.116 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

36.117 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

36.118 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

36.119 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`

36.120 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`

36.121 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`

36.122 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

36.123 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

36.124 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

36.125 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

36.126 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

36.127 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

36.128 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

36.129 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

36.130 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

36.131 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

36.132 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

36.133 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

36.134 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`

36.135 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`

36.136 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`

36.137 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

36.138 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

36.139 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

36.140 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

36.141 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

36.142 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

36.143 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`

36.144 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`

36.145 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`

36.146 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

36.147 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

36.148 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

36.149 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

36.150 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

36.151 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`

36.152 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`

36.153 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`

36.154 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`

36.155 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

36.156 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 = OT_BL237_OUT_LIMIT_STATE,
B = OT_BL237_IN_LIMIT_STATE

36.157 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 = OT_BL291_OUT_LIMIT_STATE,
B = OT_BL291_IN_LIMIT_STATE

36.158 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 = `OT_BL541_OUT_LIMIT_STATE`,
B = `OT_BL541_IN_LIMIT_STATE`

36.159 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`

36.160 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`

36.161 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`

36.162 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`

36.163 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`

36.164 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

36.165 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

36.166 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

36.167 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`

36.168 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`

36.169 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`

36.170 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

36.171 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

36.172 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

36.173 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

37 Ignored when TDUND Is In

37.1 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`

37.2 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`

37.3 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`

37.4 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`

37.5 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	–

38 Ignored when YG BL211 Is In

38.1 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`

38.2 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`

38.3 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`

38.4 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`

38.5 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

38.6 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

38.7 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

38.8 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

38.9 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

38.10 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

38.11 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

38.12 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

38.13 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

38.14 Diag Stopper HFX DG2 Is In

Name	*A*	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = HFX_DG2_STP_01_IN_DI_POSITION

38.15 Diag Stopper HFX UM6 Is In

Name	*A*	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = HFX_UM6_STP_01_IN_DI_POSITION

38.16 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

38.17 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`

38.18 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`

38.19 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`

38.20 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

38.21 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

38.22 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

38.23 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

38.24 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

38.25 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

38.26 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

38.27 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`

38.28 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`

38.29 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`

38.30 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`

38.31 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`

38.32 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`

38.33 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

38.34 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

38.35 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

38.36 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`

38.37 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`

38.38 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`

38.39 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`

38.40 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

38.41 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

38.42 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

38.43 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

38.44 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

38.45 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

38.46 Stopper S5B Is In

Name	*A*	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = STPR_FEH1_5_S5BIN_POSITION

38.47 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

38.48 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`

38.49 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`

38.50 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`

38.51 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

38.52 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

38.53 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

38.54 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

38.55 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

38.56 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

38.57 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

38.58 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

38.59 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`

38.60 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`

38.61 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`

38.62 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

38.63 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

38.64 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

38.65 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

38.66 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`

38.67 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`

38.68 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`

38.69 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`

38.70 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`

38.71 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`

38.72 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`

38.73 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`

38.74 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`

38.75 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`

38.76 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`

38.77 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`

38.78 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

38.79 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

38.80 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

38.81 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

38.82 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

38.83 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

38.84 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

38.85 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

38.86 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

38.87 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

38.88 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

38.89 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

38.90 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

38.91 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

38.92 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

38.93 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

38.94 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`

38.95 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`

38.96 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`

38.97 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`

38.98 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

38.99 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

38.100 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

38.101 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

38.102 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

38.103 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

38.104 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

38.105 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

38.106 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

38.107 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

38.108 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

38.109 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

38.110 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

38.111 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

38.112 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

38.113 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

38.114 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

38.115 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

38.116 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

38.117 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

38.118 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`

38.119 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`

38.120 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`

38.121 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`

38.122 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

38.123 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

38.124 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

38.125 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

38.126 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

38.127 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

38.128 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

38.129 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

38.130 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

38.131 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

38.132 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

38.133 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`

38.134 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`

38.135 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`

39 Always Evaluated

39.1 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`

39.2 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`

39.3 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`

39.4 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`

39.5 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`

39.6 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`

39.7 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`

39.8 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

39.9 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

39.10 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

39.11 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

39.12 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

39.13 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

39.14 NEH AMO LAMP Gate Valve VGC 30 Is In Beam

Name	*A*	PC	MS	BYKIK	LHS
In beam	T	–	–	–	–

Where
A = AMO_LMP_VGC_30_CLS_DI_POSITION

39.15 NEH AMO LAMP Gate Valve VGC 30 Is Out of Beam

Name	*A*	PC	MS	BYKIK	LHS
Out of beam	T	–	–	–	–

Where
A = AMO_LMP_VGC_30_OPN_DI_POSITION

39.16 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

39.17 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`

39.18 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`

39.19 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`

39.20 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`

39.21 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`

39.22 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`

39.23 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

39.24 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

39.25 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

39.26 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

39.27 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

39.28 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

39.29 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`

39.30 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`

39.31 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`

39.32 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

39.33 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

39.34 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

39.35 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

39.36 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

39.37 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

39.38 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

39.39 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

39.40 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

39.41 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

39.42 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

39.43 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

39.44 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

39.45 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

39.46 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

39.47 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

39.48 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

39.49 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

39.50 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

39.51 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

39.52 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

39.53 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

39.54 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`

39.55 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`

39.56 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`

39.57 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`

39.58 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

39.59 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

39.60 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

40 Ignore Logic

40.1 A-Line B1/B2 Is Not On AND A-Line Kicker Is Not Enabled

Name	*D*	*C*	*B*	*A*	PC	MS	BYKIK	LHS
Is Not On	T	T	F	F	–	–	–	–

Where
A = KICK_BSY0_66_PM1_TRIG_ENB_STATUS,
B = KICK_BSY0_66_PM2_TRIG_ENB_STATUS,
C = BEND_BSYA_140_PS_OFF_A_STATE,
D = BEND_BSYA_140_PS_OFF_B_STATE

40.2 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

40.3 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

40.4 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

40.5 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

40.6 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

40.7 Diag Stopper XCS SB1 Is In

Name	*A*	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = XCS_SB1_STP_01_CLS_DI_POSITION

40.8 Laser Heater Attenuator Is In

Name	*A*	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = LHATTEN_IN_LIMIT_STATE

40.9 M3H Mirror Is In Beam

Name	*A*	PC	MS	BYKIK	LHS
Is_IN	T	–	–	–	–

Where
A = HXX_HXM_MMS_01_INBEAM_POSITION

40.10 M3H Mirror Is Out of Beam

Name	*A*	PC	MS	BYKIK	LHS
IS_OUT	T	–	–	–	–

Where
A = HXX_HXM_MMS_01_B_POSITION

40.11 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

40.12 Stopper S1 Is In

Name	*A*	PC	MS	BYKIK	LHS
Is In	T	–	–	–	–

Where
A = STPR_FEE1_1_S1IN_POSITION

40.13 Stopper S2 Is In

Name	A	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = STPR_FEE1_1_S2IN_STATE

40.14 Stopper S2B Is In

Name	A	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = STPR_FEE1_1_S2BIN_STATE

40.15 Stopper SH1 Is In

Name	A	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = STPR_FEE1_1_SH1IN_STATE

40.16 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

40.17 Stopper XRT S5 Is In

Name	*A*	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = STPR_XRT1_1_S5IN_POSITION

40.18 Stopper XRT S6 Is In

Name	*A*	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = STPR_XRT1_1_S6IN_POSITION

40.19 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

40.20 TD11 Is In

Name	*A*	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = TD11_IN_LIMIT_STATE

40.21 TDUND Is In

Name	*A*	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = TDUND_IN_POSITION

40.22 XCS Is Not In Main Line

Name	A	PC	MS	BYKIK	LHS
Not in	F	–	–	–	–

Where
A = XCS_SB_POS_HARD_POSITION

40.23 XPP-NH3-POS-00 Beamline Is In

Name	A	PC	MS	BYKIK	LHS
In	T	–	–	–	–

Where
A = XPP_NH3_POS_00_IN_STATE

40.24 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

40.25 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