MPS Logic:
2020-01-27-a

Contents

1 Ignored when A-Line Kicker Is Not Enabled, A-Line SL10 Is Closed, TD11 Is In, YAG01 Is In, or YAG02 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) . . . 20
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) . . . 21
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 . . . 22
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 . . . 23
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 . . . 24
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 . . . 25
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 . . . 26
1.24 PIC Raw Charge Thresholds: BSYA 3721 . . . 27
1.25 PIC Raw Charge Thresholds: BSYA 3890 . . . 27
1.26 PIC Trigger Missed (LN42) . . . 27
1.27 Stopper BSYA 2275 (ST22) Position . . . 28
1.28 Stopper BSYA 2930 (ST29) Position . . . 28
1.29 Temperature RTD Summary: A-line Past SL10 . . . 28
1.30 Vac Valve BSYA 4005 (IV40) . . . 28
1.31 Vac Valve: VVFS BSYA 2855 (FV28) . . . 29
1.32 Vac Valve: VVPG BSYA 2635 (IV26) . . . 29
1.33 Vac Valve: VVPG ESA0 4195 POSITION (IV41) . . . 29

2 Ignored when A-Line Kicker Is Not Enabled, TD11 Is In, YAG01 Is In, or YAG02 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 1230 (PC12) . . . 31
2.6 Flowswitch: COLL BSYA 1490 (PC14) . . . 31
2.7 Flowswitch: COLL BSYA 1700 (PC17) . . . 32
2.8 PIC Raw Charge Thresholds: BSYA 1016 . . . 32
2.9 PIC Raw Charge Thresholds: BSYA 1021 . . . 32
2.10 PIC Raw Charge Thresholds: BSYA 1120 . . . 33
2.11 PIC Raw Charge Thresholds: BSYA 1320 . . . 33
2.12 PIC Raw Charge Thresholds: BSYA 1520 . . . 33
2.13 PIC Raw Charge Thresholds: BSYA 1701A . . . 34
2.14 PIC Raw Charge Thresholds: BSYA 1701B . . . 34
2.15 PIC Raw Charge Thresholds: BSYA 1980 . . . 34
2.16 Temperature RTD Summary: A-Line Before SL10 . . . 35
2.17 Vac Valve: VVFS BSYA 1030 (FV10) . . . 35
2.18 Vac Valve: VVPG BSYA 1018 (IV10) . . . 35
2.19 VVPG BSYA 340 Position . . . 35

3 Ignored when BKRCUS Is On, STCLTS Is In, TD11 Is In, YAG01 Is In, or YAG02 Is In 36
3.1 BRCUS1 and BRCUSDC Consistent . . . 36

4 Ignored when BKRCUS Is On, TD11 Is In, YAG01 Is In, or YAG02 Is In 37
4.1 BRCUSDC and BLRCUS On . . . 37

5 Ignored when BRCUSDC Is On, STCLTS Is In, TD11 Is In, YAG01 Is In, or YAG02 Is In 38
5.1 BRCUS1 and BKRCUS Consistent . . . 38

6 Ignored when BRCUSDC Is On, TD11 Is In, YAG01 Is In, or YAG02 Is In 39
6.1 BKRCUS and BLRCUS On . . . 39

7 Ignored when BX01/BX02 Is Off, YAG01 Is In, or YAG02 Is In 40
7.1 Toroid Comparator Dogleg 1 (IM02 vs IM03) . . . 40

8 Ignored when BX01/BX02 Is On, YAG01 Is In, or YAG02 Is In 41
8.1 BXS Status . . . 41
8.2 Toroid Comparator Inj Spectrometer (IM02 vs IMS1) . . . 41

9 Ignored when BXG Is Off or YAG01 Is In 42
9.1 Wakefield Shield Gun Spectrometer . . . 42

10 Ignored when BXG Is On or YAG01 Is In 43
10.1 Wakefield Shield Straight Ahead . . . 43

11 Ignored when Destination HXR, STCLTS Is In, TD11 Is In, TDUNDB Is In, YAG01 Is In, or YAG02 Is In 44
11.1 BLMH13 SXR Threshold I0 . . . 44
11.2 BLMH14 SXR Threshold I0 . . . 44

11.3 BLMH15 SXR Threshold I0 . . . 44
11.4 BLMH16 SXR Threshold I0 . . . 44
11.5 BLMH17 SXR Threshold I0 . . . 45
11.6 BLMH18 SXR Threshold I0 . . . 45
11.7 BLMH19 SXR Threshold I0 . . . 45
11.8 BLMH20 SXR Threshold I0 . . . 45
11.9 BLMH21 SXR Threshold I0 . . . 46
11.10 BLMH22 SXR Threshold I0 . . . 46
11.11 BLMH23 SXR Threshold I0 . . . 46
11.12 BLMH24 SXR Threshold I0 . . . 46
11.13 BLMH25 SXR Threshold I0 . . . 47
11.14 BLMH26 SXR Threshold I0 . . . 47
11.15 BLMH27 SXR Threshold I0 . . . 47
11.16 BLMH28 SXR Threshold I0 . . . 47
11.17 BLMH29 SXR Threshold I0 . . . 48
11.18 BLMH30 SXR Threshold I0 . . . 48
11.19 BLMH31 SXR Threshold I0 . . . 48
11.20 BLMH32 SXR Threshold I0 . . . 48
11.21 BLMH33 SXR Threshold I0 . . . 49
11.22 BLMH34 SXR Threshold I0 . . . 49
11.23 BLMH35 SXR Threshold I0 . . . 49
11.24 BLMH36 SXR Threshold I0 . . . 49
11.25 BLMH37 SXR Threshold I0 . . . 50
11.26 BLMH38 SXR Threshold I0 . . . 50
11.27 BLMH39 SXR Threshold I0 . . . 50
11.28 BLMH40 SXR Threshold I0 . . . 50
11.29 BLMH41 SXR Threshold I0 . . . 51
11.30 BLMH42 SXR Threshold I0 . . . 51
11.31 BLMH43 SXR Threshold I0 . . . 51
11.32 BLMH44 SXR Threshold I0 . . . 51
11.33 BLMH45 SXR Threshold I0 . . . 52
11.34 BLMH46 SXR Threshold I0 . . . 52
11.35 BLMS26 SXR Threshold I0 . . . 52
11.36 BLMS27 SXR Threshold I0 . . . 52
11.37 BLMS28 SXR Threshold I0 . . . 53
11.38 BLMS29 SXR Threshold I0 . . . 53
11.39 BLMS30 SXR Threshold I0 . . . 53
11.40 BLMS31 SXR Threshold I0 . . . 53
11.41 BLMS33 SXR Threshold I0 . . . 54
11.42 BLMS34 SXR Threshold I0 . . . 54
11.43 BLMS35 SXR Threshold I0 . . . 54
11.44 BLMS36 SXR Threshold I0 . . . 54
11.45 BLMS37 SXR Threshold I0 . . . 55
11.46 BLMS38 SXR Threshold I0 . . . 55
11.47 BLMS39 SXR Threshold I0 . . . 55

11.48 BLMS40 SXR Threshold I0 . . . 55
11.49 BLMS41 SXR Threshold I0 . . . 56
11.50 BLMS42 SXR Threshold I0 . . . 56
11.51 BLMS43 SXR Threshold I0 . . . 56
11.52 BLMS44 SXR Threshold I0 . . . 56
11.53 BLMS45 SXR Threshold I0 . . . 57
11.54 BLMS46 SXR Threshold I0 . . . 57
11.55 BLMS47 SXR Threshold I0 . . . 57

12 Ignored when Destination SXR, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, YAG01 Is In, or YAG02 Is In 58
12.1 BLMH13 HXR Threshold I0 . . . 58
12.2 BLMH14 HXR Threshold I0 . . . 58
12.3 BLMH15 HXR Threshold I0 . . . 58
12.4 BLMH16 HXR Threshold I0 . . . 58
12.5 BLMH17 HXR Threshold I0 . . . 59
12.6 BLMH18 HXR Threshold I0 . . . 59
12.7 BLMH19 HXR Threshold I0 . . . 59
12.8 BLMH20 HXR Threshold I0 . . . 59
12.9 BLMH21 HXR Threshold I0 . . . 60
12.10 BLMH22 HXR Threshold I0 . . . 60
12.11 BLMH23 HXR Threshold I0 . . . 60
12.12 BLMH24 HXR Threshold I0 . . . 60
12.13 BLMH25 HXR Threshold I0 . . . 61
12.14 BLMH26 HXR Threshold I0 . . . 61
12.15 BLMH27 HXR Threshold I0 . . . 61
12.16 BLMH28 HXR Threshold I0 . . . 61
12.17 BLMH29 HXR Threshold I0 . . . 62
12.18 BLMH30 HXR Threshold I0 . . . 62
12.19 BLMH31 HXR Threshold I0 . . . 62
12.20 BLMH32 HXR Threshold I0 . . . 62
12.21 BLMH33 HXR Threshold I0 . . . 63
12.22 BLMH34 HXR Threshold I0 . . . 63
12.23 BLMH35 HXR Threshold I0 . . . 63
12.24 BLMH36 HXR Threshold I0 . . . 63
12.25 BLMH37 HXR Threshold I0 . . . 64
12.26 BLMH38 HXR Threshold I0 . . . 64
12.27 BLMH39 HXR Threshold I0 . . . 64
12.28 BLMH40 HXR Threshold I0 . . . 64
12.29 BLMH41 HXR Threshold I0 . . . 65
12.30 BLMH42 HXR Threshold I0 . . . 65
12.31 BLMH43 HXR Threshold I0 . . . 65
12.32 BLMH44 HXR Threshold I0 . . . 65
12.33 BLMH45 HXR Threshold I0 . . . 66
12.34 BLMH46 HXR Threshold I0 . . . 66

12.35 BLMS26 HXR Threshold I0 . . . 66
12.36 BLMS27 HXR Threshold I0 . . . 66
12.37 BLMS28 HXR Threshold I0 . . . 67
12.38 BLMS29 HXR Threshold I0 . . . 67
12.39 BLMS30 HXR Threshold I0 . . . 67
12.40 BLMS31 HXR Threshold I0 . . . 67
12.41 BLMS33 HXR Threshold I0 . . . 68
12.42 BLMS34 HXR Threshold I0 . . . 68
12.43 BLMS35 HXR Threshold I0 . . . 68
12.44 BLMS36 HXR Threshold I0 . . . 68
12.45 BLMS37 HXR Threshold I0 . . . 69
12.46 BLMS38 HXR Threshold I0 . . . 69
12.47 BLMS39 HXR Threshold I0 . . . 69
12.48 BLMS40 HXR Threshold I0 . . . 69
12.49 BLMS41 HXR Threshold I0 . . . 70
12.50 BLMS42 HXR Threshold I0 . . . 70
12.51 BLMS43 HXR Threshold I0 . . . 70
12.52 BLMS44 HXR Threshold I0 . . . 70
12.53 BLMS45 HXR Threshold I0 . . . 71
12.54 BLMS46 HXR Threshold I0 . . . 71
12.55 BLMS47 HXR Threshold I0 . . . 71

13 Ignored when Diag Stopper HFX DG2 Is In, Diag Stopper HFX UM6 Is In, Diag Stopper XCS SB1 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, YAG01 Is In, or YAG02 Is In 72
13.1 XCS SB1 VGC 02 Gate Valve Position . . . 72
13.2 XCS SB2 VGC 01 Gate Valve Position . . . 72

14 Ignored when Diag Stopper HFX DG2 Is In, Diag Stopper HFX UM6 Is 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, YAG01 Is In, or YAG02 Is In 73
14.1 CXI Configuration 1 Summary . . . 73
14.2 CXI Configuration 2 Summary . . . 74
14.3 CXI Configuration 3 Summary . . . 75
14.4 CXI Configuration 4 Summary . . . 77
14.5 CXI Configuration 5 Summary . . . 78
14.6 CXI Configuration 6 Summary . . . 79
14.7 CXI Configuration 7 Summary . . . 80
14.8 CXI KB2 VGC 02 Gate Valve Position . . . 81
14.9 CXI MPS PLC Readiness Status . . . 81
14.10 CXI User Patch Panel 1 Ready . . . 82
14.11 CXI User Patch Panel 2 Ready . . . 82
14.12 CXI:DG1:VGC:01 Gate Valve Open Position . . . 82
14.13 CXI:DG1:VGC:02 Gate Valve Open Position . . . 82
14.14 CXI:DG2:VGC:01 Gate Valve Position . . . 83

14.15 CXI:DG2:VGC:02 Gate Valve Position . . . 83
14.16 CXI:DG4:VGC:01 Gate Valve Position . . . 83
14.17 CXI:DSC:VGC:01 Gate Valve Position . . . 84
14.18 CXI:KB1:VGC:01 Gate Valve Open Position . . . 84
14.19 CXI:KB1:VGC:02 Gate Valve Open Position . . . 84
14.20 CXI:KB2:VGC:01 Gate Valve Open Position . . . 84
14.21 CXI:SC1:VGC:01 Gate Valve Position . . . 85
14.22 CXI:SC3:VGC:01 Be Gate Valve Position - Status from PLC . . . 85
14.23 HF4 LAM VGC 01 Gate Valve Position . . . 85

15 Ignored when Diag Stopper HFX DG2 Is In, Diag Stopper HFX UM6 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, YAG01 Is In, or YAG02 Is In 86
15.1 CXI XRT Laser Reference Mirror Position . . . 86
15.2 HFA:SND:VGC:01 Gate Valve Open Position . . . 86
15.3 HFX:DIA:VGC:02 Gate Valve Open Position . . . 86
15.4 PPS Stopper S5B Position . . . 87
15.5 XCS SB1 Diagnostic Stopper Position . . . 87
15.6 XCS SB1 VGC 01 Gate Valve Position . . . 87
15.7 XRT HXRAY DIA Isolation Valve HXX-DIA-VGC-01 . . . 88

16 Ignored when Diag Stopper HFX DG2 Is In, Diag Stopper HFX UM6 Is In, Stopper SH1 Is In, Stopper SH2 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, YAG01 Is In, or YAG02 Is In 89
16.1 HFX:DG2:VGC:01 Gate Valve Position . . . 89
16.2 HFX:MON:VGC:01 Gate Valve Position . . . 89
16.3 HFX:MON:VGC:02 Gate Valve Position . . . 89
16.4 Stopper XRT S5 Position . . . 90

17 Ignored when Diag Stopper HFX UM6 Is In, Stopper MFX S4.5 Is In, Stopper SH1 Is In, Stopper SH2 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, YAG01 Is In, or YAG02 Is In 91
17.1 MFX MPS Summary - Downstream of Stopper 4.5 . . . 91

18 Ignored when Diag Stopper HFX UM6 Is 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, YAG01 Is In, or YAG02 Is In 92
18.1 MEC DV4 VCG 01 Gate Valve Position . . . 92
18.2 MEC DV5 VGC 01 Gate Valve Position . . . 92
18.3 MEC HXM VGC 01 Gate Valve Position . . . 92
18.4 MEC XT1 Reference Laser Position . . . 93
18.5 MEC XT1 VGC 01 Gate Valve Position . . . 93
18.6 MEC XT2 VGC 02 Gate Valve Position . . . 93
18.7 MEC XT2 VGC 03 Gate Valve Position . . . 93
18.8 MEC XT2 VGC 04 Gate Valve Position . . . 94

18.9 MEC XT2 VGC 05 Gate Valve Position . . . 94
18.10 MEC XT2 VGC 06 Gate Valve Position . . . 94

19 Ignored when Diag Stopper HFX UM6 Is In, Stopper SH1 Is In, Stopper SH2 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, YAG01 Is In, or YAG02 Is In 95
19.1 DG2 Diagnostic Stopper Position . . . 95
19.2 MEC BXL VGC 01 Gate Valve Position . . . 95
19.3 MEC XRT Attenuator Inspection Mirror Position . . . 95
19.4 MFX Gate Valve Summary - Upstream of Stopper 4.5 . . . 96
19.5 Stopper MFX S4.5 Position . . . 96
19.6 Stopper XRT S6 Position . . . 96
19.7 XRT HXRAY LOM Isolation Valve HXX-LOM-VGC-01 . . . 97
19.8 XRT HXRAY MXT Gate Valve HXX:MXT:VGC:01 . . . 97
19.9 XRT HXRAY MXT Gate Valve HXX:MXT:VGC:02 . . . 97
19.10 XRT HXRAY MXT Gate Valve HXX:MXT:VGC:03 . . . 98
19.11 XRT HXRAY MXT Gate Valve HXX:MXT:VGC:05 . . . 98
19.12 XRT-M2 Mirror and DG2 STP Fault . . . 98

20 Ignored when Laser Heater Attenuator Is In 99
20.1 Laser Heater Photodiode Shutter Position . . . 99
20.2 OTRH1 Position When LH Atten Not In . . . 99
20.3 OTRH2 Position When LH Atten Not In . . . 99

21 Ignored when STCLTS Is In, TD11 Is In, TDUNDB Is In, YAG01 Is In, or YAG02 Is In 100
21.1 BYDSS Magnet Power Status . . . 100
21.2 VVFS DMPS 157 POSITION . . . 100
21.3 VVMG DMPS 643 POSITION . . . 100
21.4 VVMG DMPS 681 POSITION . . . 101
21.5 VVPG DMPS 396 POSITION . . . 101
21.6 VVPG DMPS 424 POSITION . . . 101
21.7 VVPG UNDS 1651 POSITION . . . 101
21.8 VVPG UNDS 2177 POSITION . . . 102
21.9 VVPG UNDS 2877 POSITION . . . 102
21.10 VVPG UNDS 3477 POSITION . . . 102
21.11 VVPG UNDS 3577 POSITION . . . 102
21.12 VVPG UNDS 3877 POSITION . . . 103
21.13 VVPG UNDS 4477 POSITION . . . 103
21.14 VVPG UNDS 5198 POSITION . . . 103

22 Ignored when STCLTS Is In, TD11 Is In, YAG01 Is In, or YAG02 Is In 104
22.1 BX31B Current . . . 104
22.2 BX31B Magnet Power Status . . . 104
22.3 BY1B Current . . . 104
22.4 BY1B Magnet Power Status . . . 105
22.5 BYKIKS Current . . . 105

22.6 BYKIKS Magnet Power Status . . . 105
22.7 CEDL13 Temperature . . . 105
22.8 CEDL17 Temperature . . . 106
22.9 CXBP34 Temperature . . . 106
22.10 CYBDL Temperature . . . 106
22.11 CYDL16 Temperature . . . 106
22.12 Merge Magnet Ok . . . 107
22.13 ST34A Temperature . . . 107
22.14 ST34AB Position . . . 107
22.15 ST34B Temperature . . . 107
22.16 TDUNDB Position . . . 108
22.17 VVFS LTUS 109 POSITION . . . 108
22.18 VVMG LTUS 185 POSITION . . . 108
22.19 VVMG LTUS 348 POSITION . . . 108
22.20 VVMG LTUS 451 POSITION . . . 109
22.21 VVMG LTUS 505 POSITION . . . 109
22.22 VVMG LTUS 552 POSITION . . . 109
22.23 VVMG LTUS 656 POSITION . . . 109
22.24 VVMG LTUS 744 POSITION . . . 110
22.25 VVMG LTUS 802 POSITION . . . 110
22.26 VVMG LTUS 827 POSITION . . . 110
22.27 VVPG BSYS 904 POSITION . . . 110
22.28 VVPG LTUS 108 POSITION . . . 111
22.29 VVPG LTUS 272 POSITION . . . 111
22.30 VVPG LTUS 442 POSITION . . . 111
22.31 VVPG LTUS 586 POSITION . . . 111
22.32 VVPG LTUS 726 POSITION . . . 112
22.33 VVPG LTUS 757 POSITION . . . 112

23 Ignored when Stopper S1 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, YAG01 Is In, or YAG02 Is In 113
23.1 NEH AMO Laser Reference Mirror Position . . . 113
23.2 NEH AMO Valves Ok for Beam - Summary From PLC . . . 113
23.3 NEH1 Camera 1124 Position . . . 113
23.4 NEH1 XTOD S1 Isolation Valve Summary . . . 114

24 Ignored when Stopper S2 Is In, Stopper S2B Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, YAG01 Is In, or YAG02 Is In 115
24.1 NEH SXR Differential Pump Isolation Valve SXR-DFP-VGC-01 . . . 115
24.2 NEH SXR End Station Ready SXR-EXP-MPS-01 . . . 115
24.3 NEH SXR Intensity Monitor Isolation Valve SXR-FLX-VGC-01 . . . 115
24.4 NEH SXR KB Optics Isolation Valve SXR-KBO-VGC-01 . . . 116
24.5 NEH SXR Laser In-coupling Mirror Isolation Valve SXR-LIN-VGC-01 . . . 116

25 Ignored when Stopper S2 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, YAG01 Is In, or YAG02 Is In **117**
25.1 NEH Camera 2124 Position . . . 117
25.2 NEH SXR Collimator 3 Isolation Valve SXR-COL-VGC-01 . . . 117
25.3 NEH SXR Exit Slits Isolation Valve SXR-EXS-VGC-01 . . . 118
25.4 NEH SXR GMD VGC 01 Protection . . . 118
25.5 NEH SXR Monochromator Tank Isolation Valve SXR-MON-VGC-01 . . . 118
25.6 NEH SXR Photon Stoppers Isolation Valve SXR-PST-VGC-01 . . . 119
25.7 NEH SXR Transmission Sample System Isolation Valve SXR-TSS-VGC-01 . . . 119
25.8 NEH SXR Zero Order Interlock SXR-MON-MMS-06, SXR-EXS-MMS-01 . . . 119
25.9 NEH1 XTOD S2 Isolation Valve Summary . . . 120

26 Ignored when Stopper SH1 Is In, Stopper SH2 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, YAG01 Is In, or YAG02 Is In **121**
26.1 UM6 Diagnostic Stopper Position . . . 121
26.2 XRT HXRAY UM6 Isolation Valve HXX-UM6-VGC-01 . . . 121
26.3 XRT UM6 Camera Position HXX-UM6-CVP-01 . . . 122

27 Ignored when Stopper SH1 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, XPP-NH3-POS-00 Beamline Is In, YAG01 Is In, or YAG02 Is In **123**
27.1 NEH3 HXRAY DVD Isolation Valve HX3-DVD-VGC-01 . . . 123

28 Ignored when Stopper SH1 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, XPP-NH3-POS-00 Beamline Is Not In, YAG01 Is In, or YAG02 Is In **124**
28.1 XPP SB2 VGC 01 Gate Valve Position . . . 124
28.2 XPP SB2 VGC 02 Gate Valve Position . . . 124
28.3 XPP SB2 VGC 03 Gate Valve Position . . . 124

29 Ignored when Stopper SH1 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, YAG01 Is In, or YAG02 Is In **125**
29.1 HX2 UVD VGC 01 Gate Valve Position . . . 125
29.2 HX3 MON VGC 01 Gate Valve Position . . . 125
29.3 NEH HXTD Vacuum Valve Summary . . . 125
29.4 NEH1 Camera 124 Position . . . 126
29.5 NEH1 Camera 195 Position . . . 126
29.6 NEH2 HXRAY DVD Isolation Valve HX2-DVD-VGC-01 . . . 126
29.7 NEH3 HXRAY UVD Isolation Valve HX3-UVD-VGC-01 . . . 127

30 Ignored when Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, YAG01 Is In, or YAG02 Is In **128**
30.1 BCS PIC RAW Charge Threshold DMP 997 . . . 128
30.2 BCS PIC RAW Charge Threshold DMP 998 . . . 128
30.3 BLM/PIC Watchdog: Downstream of TDUND . . . 128
30.4 BPM Summary (1-9) - Status From IOC-UND1-BP01 . . . 129
30.5 BPM Summary (10-18) - Status From IOC-UND1-BP02 . . . 129

30.6 BYDSH Current . . . 129
30.7 BYDSH Magnet Power Status . . . 129
30.8 FEE Camera 1692 Position . . . 130
30.9 FEE Camera 1953 Position . . . 130
30.10 FEE Camera 2953 Position . . . 130
30.11 FEE Camera 852 Position Fault - Status From PLC . . . 131
30.12 FEE Camera 913 Position Fault - Status From PLC . . . 131
30.13 FEE Gas System Summary . . . 131
30.14 FEE HXTD Vacuum Valve Summary . . . 131
30.15 FEE M1S Mirror Beam Energy Upper Limit . . . 132
30.16 FEE M1S Mirror State . . . 132
30.17 FEE Spectrometer Crystal - Beam Energy Too Low When Crystal Not Out . . . 132
30.18 FEE Spectrometer Crystal - Pulse Energy Too High When Crystal Not Out . . . 133
30.19 FEE XTOD S1 Isolation Valve Summary . . . 133
30.20 FEE XTOD S2 Isolation Valve Summary . . . 133
30.21 Gas Detector Problem When FEE Spectrometer Crystal Not Out . . . 134
30.22 HXR - Beam Energy Too Low With M1S Out . . . 134
30.23 Magnet In Tolerance: QE31 . . . 134
30.24 Magnet In Tolerance: QUM1 . . . 135
30.25 Magnet In Tolerance: QUM2 . . . 135
30.26 Magnet In Tolerance: QUM3 . . . 135
30.27 Magnet In Tolerance: QUM4 . . . 135
30.28 Magnet Power: QE31 . . . 136
30.29 Magnet Power: QUM1 . . . 136
30.30 Magnet Power: QUM2 . . . 136
30.31 Magnet Power: QUM3 . . . 136
30.32 Magnet Power: QUM4 . . . 137
30.33 OTR01 IN20 541 Position and TDUND Not In . . . 137
30.34 OTR02 IN20 571 Position and TDUND Not In . . . 137
30.35 OTR03 IN20 621 Position and TDUND Not In . . . 138
30.36 OTR04 IN20 711 Position and TDUND Not In . . . 138
30.37 OTR11 LI21 237 Position and TDUND Not In . . . 138
30.38 OTR12 LI21 291 Position and TDUND Not In . . . 139
30.39 OTR21 Position When TDUND Not In . . . 139
30.40 OTR33 Position and TDUND Not In . . . 139
30.41 OTRH1 Position When TDUND Not In . . . 140
30.42 OTRH2 Position When TDUND Not In . . . 140
30.43 VVFS DMPH 157 POSITION . . . 140
30.44 VVMG DMPH 643 POSITION . . . 140
30.45 VVMG DMPH 681 POSITION . . . 141
30.46 VVMG UNDH 1498 POSITION . . . 141
30.47 VVMG UNDH 1698 POSITION . . . 141
30.48 VVMG UNDH 2498 POSITION . . . 141
30.49 VVMG UNDH 2838 POSITION . . . 142
30.50 VVMG UNDH 2843 POSITION . . . 142

30.51 VVMG UNDH 3298 POSITION . . . 142
30.52 VVMG UNDH 3598 POSITION . . . 142
30.53 VVMG UNDH 4098 POSITION . . . 143
30.54 VVMG UNDH 4398 POSITION . . . 143
30.55 VVPG DMPH 396 POSITION . . . 143
30.56 VVPG DMPH 424 POSITION . . . 143
30.57 VVPG UNDH 1288 POSITION . . . 144
30.58 VVPG UNDH 1998 POSITION . . . 144
30.59 VVPG UNDH 2198 POSITION . . . 144
30.60 VVPG UNDH 2798 POSITION . . . 144
30.61 VVPG UNDH 2998 POSITION . . . 145
30.62 VVPG UNDH 3798 POSITION . . . 145
30.63 VVPG UNDH 4598 POSITION . . . 145
30.64 VVPG UNDH 5196 POSITION . . . 145
30.65 YAGPSI Position and TDUND Not In . . . 146

31 Ignored when Stopper: BSY D2 Summary Is In, TD11 Is In, YAG01 Is In, or YAG02 Is In 147
31.1 BCS LION LTU1 404 Threshold . . . 147
31.2 BCS LION LTU1 405 Threshold . . . 147
31.3 BCS LION LTU1 504 Threshold . . . 147
31.4 BCS LION LTU1 505 Threshold . . . 147
31.5 BCS LION LTU1 584 Threshold . . . 148
31.6 BCS LION LTU1 585 Threshold . . . 148
31.7 BCS LION LTU1 716 Threshold . . . 148
31.8 BCS LION LTU1 717 Threshold . . . 148
31.9 BCS LION LTU1 732 Threshold . . . 149
31.10 BCS LION LTU1 733 Threshold . . . 149
31.11 BCS LION LTU1 752 Threshold . . . 149
31.12 BCS LION LTU1 753 Threshold . . . 149
31.13 BCS LION LTU1 765 Threshold . . . 150
31.14 BCS LION LTU1 766 Threshold . . . 150
31.15 BLM Heartbeat: Dechirper LTU1 BLF545 . . . 150
31.16 BLM Pedestal Thresholds: Dechirper LTU1 BLF545 . . . 150
31.17 BLM Raw Charge Thresholds: Dechirper LTU1 BLF545 . . . 151
31.18 BX31 Current . . . 151
31.19 BX31 Magnet Power Status . . . 151
31.20 BYD Watchdog . . . 152
31.21 BYKIK Current . . . 152
31.22 BYKIK Magnet Power Status . . . 152
31.23 CEDL1 Temperature . . . 152
31.24 CEDL3 Temperature . . . 153
31.25 CXQ6 Temperature . . . 153
31.26 CXQT22 Temperature . . . 153
31.27 CYBX32 Temperature . . . 153
31.28 CYBX36 Temperature . . . 154

31.29 LTU Dechirper - Horizontal Gap Too Small . . . 154
31.30 LTU Dechirper - Vertical Gap Too Small . . . 154
31.31 Magnet In Tolerance: BYD1 . . . 155
31.32 Magnet Power: BYD1 . . . 155
31.33 OTR33 Position . . . 155
31.34 PIC HVPS B911 - Location B911-2135 . . . 155
31.35 PIC HVPS B912 - Location B912-2135 . . . 156
31.36 PIC HVPS B913 - Location B913-2135 . . . 156
31.37 PIC Raw Charge Thresholds: LTU1 220 . . . 156
31.38 PIC Raw Charge Thresholds: LTU1 252 . . . 156
31.39 PIC Raw Charge Thresholds: LTU1 280 . . . 157
31.40 PIC Raw Charge Thresholds: LTU1 420 . . . 157
31.41 PIC Raw Charge Thresholds: LTU1 450 . . . 157
31.42 PIC Raw Charge Thresholds: LTU1 480 . . . 158
31.43 PIC Raw Charge Thresholds: LTU1 722 . . . 158
31.44 PIC Trigger Missed (LN28) . . . 158
31.45 PIC Trigger Missed (LN29) . . . 158
31.46 TDUND Flow Switch Fault With TDUND Not Out . . . 159
31.47 TDUND Position . . . 159
31.48 Undulator Beam Energy Lower Limit . . . 159
31.49 VVFS LTUH 102 POSITION . . . 160
31.50 VVMG LTUH 174 POSITION . . . 160
31.51 VVMG LTUH 355 POSITION . . . 160
31.52 VVMG LTUH 505 POSITION . . . 160
31.53 VVMG LTUH 670 POSITION . . . 161
31.54 VVMG LTUH 742 POSITION . . . 161
31.55 VVMG LTUH 774 POSITION . . . 161
31.56 VVPG LTUH 102 POSITION . . . 161
31.57 VVPG LTUH 265 POSITION . . . 162
31.58 VVPG LTUH 435 POSITION . . . 162
31.59 VVPG LTUH 580 POSITION . . . 162
31.60 VVPG LTUH 725 POSITION . . . 162
31.61 VVPG LTUH 757 POSITION . . . 163
31.62 VVPG LTUH 999 POSITION . . . 163
31.63 YAGPSI Position . . . 163

32 Ignored when TD11 Is In, YAG01 Is In, or YAG02 Is In 164
32.1 BLM/PIC Watchdog BSY0/BSYA . . . 164
32.2 BLM/PIC Watchdog LI24 . . . 164
32.3 BLM/PIC Watchdog LI30 . . . 164
32.4 Bunch Length Monitor BL21 Position . . . 165
32.5 CXBP30 Temperature . . . 165
32.6 D2 Summary Position . . . 165
32.7 Dump LI28 5879 Flowswitch . . . 165
32.8 Dump LI28 5879 Klixon . . . 166

32.9 Flowswitch: BSY RAD LCW Slit 10/30 . . . 166
32.10 Flowswitch: CE21 . . . 166
32.11 Flowswitch: COLL LI28-9 . . . 166
32.12 Flowswitch: COLL LI29-1 . . . 167
32.13 Flowswitch: COLL LI29-4 . . . 167
32.14 Flowswitch: COLL LI29-5 . . . 167
32.15 Flowswitch: COLL LI29-9 . . . 167
32.16 Flowswitch: COLL LI30-1 . . . 168
32.17 Flowswitch: COLL LI30-4 . . . 168
32.18 Flowswitch: COLL LI30-5 . . . 168
32.19 HXR Magnet Mode . . . 168
32.20 Hydrogen Recombiner For BSY 1 Collimator . . . 169
32.21 Hydrogen Recombiner For BSY 2 Slit 10/30 . . . 169
32.22 Inconsistent Magnet Mode . . . 169
32.23 Main Manifold Gauge: LI22 Station 5 . . . 169
32.24 Main Manifold Gauge: LI23 Station 5 . . . 170
32.25 Main Manifold Gauge: LI24 Station 5 . . . 170
32.26 Main Manifold Gauge: LI25 Station 5 . . . 170
32.27 Main Manifold Gauge: LI26 Station 5 . . . 170
32.28 Main Manifold Gauge: LI27 Station 5 . . . 171
32.29 Main Manifold Gauge: LI28 Station 5 . . . 171
32.30 Main Manifold Gauge: LI29 Station 5 . . . 171
32.31 Main Manifold Gauge: LI30 Station 5 . . . 171
32.32 OTR LI25 920 Position . . . 172
32.33 OTR21 Position . . . 172
32.34 PIC Gas Pressure LI24 . . . 172
32.35 PIC HVPS BSY 1 - Location B005-3921 . . . 172
32.36 PIC HVPS BSY 2 - Location B005-3921 . . . 173
32.37 PIC HVPS BSY 3 - Location B005-3921 . . . 173
32.38 PIC HVPS BSY 4 - Location B005-3918 . . . 173
32.39 PIC HVPS BSY 5 - Location B005-3918 . . . 173
32.40 PIC HVPS BSY 6 - Location B005-3918 . . . 174
32.41 PIC HVPS LI24 - Location LKF24-0235 . . . 174
32.42 PIC HVPS LI30 - KG30-C1322 . . . 174
32.43 PIC Raw Charge Thresholds: BSYH 762 (PC90) . . . 174
32.44 PIC Raw Charge Thresholds: BSYH 836 (PC119) . . . 175
32.45 PIC Raw Charge Thresholds: CLTS 280 (BLRCUS) . . . 175
32.46 PIC Raw Charge Thresholds: LI24 791 . . . 175
32.47 PIC Raw Charge Thresholds: LI24 811 . . . 176
32.48 PIC Raw Charge Thresholds: LI28 916 . . . 176
32.49 PIC Raw Charge Thresholds: LI29 146 . . . 176
32.50 PIC Raw Charge Thresholds: LI29 446 . . . 177
32.51 PIC Raw Charge Thresholds: LI29 546 . . . 177
32.52 PIC Raw Charge Thresholds: LI29 801 . . . 177
32.53 PIC Raw Charge Thresholds: LI29 956 . . . 178

32.54 PIC Raw Charge Thresholds: LI30 146 . . . 178
32.55 PIC Raw Charge Thresholds: LI30 446 . . . 178
32.56 PIC Raw Charge Thresholds: LI30 546 . . . 179
32.57 PIC Raw Charge Thresholds: LI30 801 . . . 179
32.58 PIC Trigger Missed (LN16) . . . 179
32.59 PIC Trigger Missed (LN22) . . . 179
32.60 PIC Trigger Missed (LN25) . . . 180
32.61 Pulsed Magnet Mode Ok . . . 180
32.62 Scraper Water LI21-9 (Station 22-1) . . . 180
32.63 Scraper Water LI22-9 (Station 23-1) . . . 180
32.64 Scraper Water LI23-9 (Station 24-1) . . . 181
32.65 Scraper Water LI24-9 (Station 25-1) . . . 181
32.66 Scraper Water LI25-9 (Station 26-1) . . . 181
32.67 Scraper Water LI26-9 (Station 27-1) . . . 181
32.68 Scraper Water LI27-9 (Station 28-1) . . . 182
32.69 Scraper Water LI28-9 (Station 29-1) . . . 182
32.70 Scraper Water LI29-9 (Station 30-1) . . . 182
32.71 STCLTS Position . . . 182
32.72 STCLTS Temperature . . . 183
32.73 Stopper LI28 950 and 960 Position . . . 183
32.74 Sub-booster Ready: LI22 . . . 183
32.75 Sub-booster Ready: LI25 . . . 183
32.76 Sub-booster Ready: LI26 . . . 184
32.77 Sub-booster Ready: LI27 . . . 184
32.78 Sub-booster Ready: LI28 . . . 184
32.79 Sub-booster Ready: LI29 . . . 184
32.80 Sub-booster Ready: LI30 . . . 185
32.81 SXR Magnet Mode Ok . . . 185
32.82 Temperature RTD Summary: BSY Common Line . . . 185
32.83 Toroid Chassis LI24 IMBC2 . . . 185
32.84 Toroid Comparator BC2 (IMBC2IN vs IMBC2OUT) . . . 186
32.85 VVFS CLTH 101 Position . . . 186
32.86 VVFS LI21-9 Position (Station 22-1) . . . 186
32.87 VVFS LI22-9 Position (Station 23-1) . . . 187
32.88 VVFS LI23-9 Position (Station 24-1) . . . 187
32.89 VVFS LI24-9 Position (Station 25-1) . . . 187
32.90 VVFS LI25-9 Position (Station 26-1) . . . 187
32.91 VVFS LI26-9 Position (Station 27-1) . . . 188
32.92 VVFS LI27-9 Position (Station 28-1) . . . 188
32.93 VVFS LI28-9 Position (Station 29-1) . . . 188
32.94 VVFS LI29-9 Position (Station 30-1) . . . 188
32.95 VVFS SLTH 130 POSITION . . . 189
32.96 VVFS SLTS 130 POSITION . . . 189
32.97 VVPG BSYH 470 POSITION . . . 189
32.98 VVPG BSYH 541 POSITION . . . 189

32.99 VVPG BSYH 837 POSITION . . . 190
32.100 VVPG CLTH 178 Position . . . 190
32.101 VVPG CLTH 375 Position . . . 190
32.102 VVPG CLTS 372 POSITION . . . 190
32.103 VVPG LI21-9 Position (Station 22-1) . . . 191
32.104 VVPG LI22-9 Position (Station 23-1) . . . 191
32.105 VVPG LI23-9 Position (Station 24-1) . . . 191
32.106 VVPG LI24 710 Position . . . 191
32.107 VVPG LI24 896 Position . . . 192
32.108 VVPG LI25-9 Position (Station 26-1) . . . 192
32.109 VVPG LI26-9 Position (Station 27-1) . . . 192
32.110 VVPG LI27-9 Position (Station 28-1) . . . 192
32.111 VVPG LI28-9 Position (Station 29-1) . . . 193
32.112 VVPG LI29-9 Position (Station 30-1) . . . 193
32.113 VVPG LI30-9 Position (Station 30-9) . . . 193
32.114 VVPG SLTH 115 POSITION . . . 193
32.115 VVPG SLTH 291 POSITION . . . 194
32.116 VVPG SLTS 115 POSITION . . . 194
32.117 VVPG SLTS 581 POSITION . . . 194

33 Ignored when YAG01 Is In 195
33.1 BXG Status . . . 195
33.2 Toroid Peak Current Monitor IM01 . . . 195
33.3 YAG02 IN20 241 Position . . . 195

34 Ignored when YAG01 Is In or YAG02 Is In 196
34.1 BLM/PIC Watchdog: Upstream of TDUND . . . 196
34.2 BX01/BX02 Status . . . 196
34.3 Flowswitch: CE11 . . . 196
34.4 Flowswitch: TD11 . . . 196
34.5 Main Manifold Gauge: LI21 Station 5 . . . 197
34.6 Mirror BL11 Position . . . 197
34.7 OTR01 IN20 541 Position . . . 197
34.8 OTR02 IN20 571 Position . . . 198
34.9 OTR03 IN20 621 Position . . . 198
34.10 OTR04 IN20 711 Position . . . 198
34.11 OTR11 LI21 237 Position . . . 199
34.12 OTR12 LI21 291 Position . . . 199
34.13 OTRH1 Position . . . 199
34.14 OTRH2 Position . . . 200
34.15 Sub-booster Ready: LI21 . . . 200
34.16 TD11 Position . . . 200
34.17 Toroid Chassis IN20 IM11 . . . 200
34.18 Toroid Chassis IN20 IM12 . . . 201
34.19 Toroid Comparator BC1 (IMBC1IN vs IMBC1OUT) . . . 201

34.20 VVFV IN20 785 Position . . . 201
34.21 VVMG LI21 195 Position . . . 202
34.22 VVPG IN20 435 Position . . . 202
34.23 VVPG IN20 545 Position . . . 202
34.24 VVPG IN20 635 Position . . . 202
34.25 VVPG IN20 915 Position . . . 203
34.26 VVS Circuit Breaker: LI22 . . . 203
34.27 VVS Circuit Breaker: LI24 . . . 203
34.28 VVS Circuit Breaker: LI26 . . . 203
34.29 VVS Circuit Breaker: LI28 . . . 204
34.30 VVS Circuit Breaker: LI30 . . . 204
34.31 YAG03 IN20 351 Position . . . 204
34.32 YAGS1 IN20 921 Position . . . 204
34.33 YAGS2 LI21 995 Position . . . 205

35 Always Evaluated 206
35.1 Backward Beam Stopper (RST1) . . . 206
35.2 Beam Destination: HXR . . . 206
35.3 Beam Destination: SXR . . . 206
35.4 BLM/PIC Watchdog: IN20 . . . 206
35.5 Bypass Recover . . . 207
35.6 Gun RF Peak Power 20-6 . . . 207
35.7 Gun Waveguide Vacuum Summary . . . 207
35.8 IOC-IN20-MP01 MPS Support IOC Heartbeat . . . 207
35.9 Laser Heater Attenuator Position . . . 208
35.10 MCC Emergency Radiation Stopper . . . 208
35.11 Mechanical Shutter Position . . . 208
35.12 Mirror AM01 Position . . . 208
35.13 MPS Beam Permit: BYKIK . . . 209
35.14 MPS Beam Permit: BYKIKS . . . 209
35.15 MPS Beam Permit: Gun RF . . . 209
35.16 MPS Beam Permit: Gun RF HXR . . . 209
35.17 MPS Beam Permit: Gun RF SXR . . . 210
35.18 MPS Beam Permit: Heater Shutter . . . 210
35.19 MPS Beam Permit: Mechanical Shutter . . . 210
35.20 MPS Mechanical Shutter Position . . . 210
35.21 PIC HVPS LI20 - Location LKG-1535 . . . 211
35.22 PIC Raw Charge Thresholds: IN20 185 . . . 211
35.23 PIC Raw Charge Thresholds: IN20 232 . . . 211
35.24 PIC Raw Charge Thresholds: IN20 245 . . . 212
35.25 PIC Raw Charge Thresholds: IN20 665 . . . 212
35.26 PIC Raw Charge Thresholds: IN20 775 . . . 212
35.27 PIC Raw Charge Thresholds: IN20 933 . . . 213
35.28 PIC Trigger Missed (LN11) . . . 213
35.29 Pockels Cell AND Gate 100 . . . 213

35.30 Pockels Cell AND Gate 200 . . . 213
35.31 Rate Request: BYKIK 1 Hz . . . 214
35.32 Rate Request: BYKIK 10 Hz . . . 214
35.33 Rate Request: BYKIK 30 Hz . . . 214
35.34 Rate Request: BYKIK 60 Hz . . . 214
35.35 Rate Request: BYKIK Burst . . . 215
35.36 Rate Request: BYKIK Single Shot . . . 215
35.37 Rate Request: BYKIKS 1 Hz . . . 215
35.38 Rate Request: BYKIKS 10 Hz . . . 215
35.39 Rate Request: BYKIKS 30 Hz . . . 216
35.40 Rate Request: BYKIKS 60 Hz . . . 216
35.41 Rate Request: BYKIKS Burst . . . 216
35.42 Rate Request: BYKIKS Single Shot . . . 216
35.43 Rate Request: Gun RF HXR 1 Hz . . . 217
35.44 Rate Request: Gun RF HXR 10 Hz . . . 217
35.45 Rate Request: Gun RF HXR 30 Hz . . . 217
35.46 Rate Request: Gun RF HXR 60 Hz . . . 217
35.47 Rate Request: Gun RF HXR Burst . . . 218
35.48 Rate Request: Gun RF HXR Single Shot . . . 218
35.49 Rate Request: Gun RF SXR 1 Hz . . . 218
35.50 Rate Request: Gun RF SXR 10 Hz . . . 218
35.51 Rate Request: Gun RF SXR 30 Hz . . . 219
35.52 Rate Request: Gun RF SXR 60 Hz . . . 219
35.53 Rate Request: Gun RF SXR Burst . . . 219
35.54 Rate Request: Gun RF SXR Single Shot . . . 219
35.55 Rate Request: Pockels Cell 1 Hz . . . 220
35.56 Rate Request: Pockels Cell 10 Hz . . . 220
35.57 Rate Request: Pockels Cell 30 Hz . . . 220
35.58 Rate Request: Pockels Cell 60 Hz . . . 220
35.59 Rate Request: Pockels Cell Burst . . . 221
35.60 Rate Request: Pockels Cell Single Shot . . . 221
35.61 VVMG IN20 175 Position . . . 221
35.62 VVPG IN20 155 Position . . . 221
35.63 VVS Circuit Breaker: LI20 . . . 222
35.64 YAG01 IN20 211 Position . . . 222
35.65 YAGG1 IN20 841 Position . . . 222

36 Ignore Logic **223**
36.1 A-Line Kicker Is Not Enabled . . . 223
36.2 A-Line SL10 Is Closed . . . 223
36.3 BKRCUS Is On . . . 223
36.4 BRCUSDC Is Off . . . 223
36.5 BRCUSDC Is On . . . 224
36.6 BX01/BX02 Is Off . . . 224
36.7 BX01/BX02 Is On . . . 224

36.8 BXG Is Off . . . 224
36.9 BXG Is On . . . 225
36.10 Destination HXR . . . 225
36.11 Destination SXR . . . 225
36.12 Diag Stopper HFX DG2 Is In . . . 225
36.13 Diag Stopper HFX UM6 Is In . . . 225
36.14 Diag Stopper XCS SB1 Is In . . . 226
36.15 Laser Heater Attenuator Is In . . . 226
36.16 LTU Dechirper Is Out . . . 226
36.17 STCLTS Is In . . . 226
36.18 Stopper MFX S4.5 Is In . . . 227
36.19 Stopper S1 Is In . . . 227
36.20 Stopper S2 Is In . . . 227
36.21 Stopper S2B Is In . . . 227
36.22 Stopper S5B Is In . . . 227
36.23 Stopper SH1 Is In . . . 228
36.24 Stopper SH2 Is In . . . 228
36.25 Stopper XRT S5 Is In . . . 228
36.26 Stopper XRT S6 Is In . . . 228
36.27 Stopper: BSY D2 Summary Is In . . . 229
36.28 TD11 Is In . . . 229
36.29 TDUND Is In . . . 229
36.30 TDUNDB Is In . . . 229
36.31 XPP-NH3-POS-00 Beamline Is In . . . 229
36.32 XPP-NH3-POS-00 Beamline Is Not In . . . 230
36.33 XRT-M2 Mirror Is Out of Beam . . . 230
36.34 YAG01 Is In . . . 230
36.35 YAG02 Is In . . . 230

1 Ignored when A-Line Kicker Is Not Enabled, A-Line SL10 Is Closed, TD11 Is In, YAG01 Is In, or YAG02 Is In

1.1 Flowswitch: COLL BSYA 2060 (PC20)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Over High Threshold	F	T	0 Hz	0 Hz	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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Over High Threshold	F	T	0 Hz	0 Hz	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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Over High Threshold	F	T	0 Hz	0 Hz	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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Over High Threshold	F	T	0 Hz	0 Hz	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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Over High Threshold	F	T	0 Hz	0 Hz	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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Over High Threshold	F	T	0 Hz	0 Hz	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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Over High Threshold	F	T	0 Hz	0 Hz	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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Over High Threshold	F	T	0 Hz	0 Hz	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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Over High Threshold	F	T	0 Hz	0 Hz	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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Over High Threshold	F	T	0 Hz	0 Hz	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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Over High Threshold	F	T	0 Hz	0 Hz	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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Over High Threshold	F	T	0 Hz	0 Hz	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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Over High Threshold	F	T	0 Hz	0 Hz	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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Over High Threshold	F	T	0 Hz	0 Hz	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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Over High Threshold	F	T	0 Hz	0 Hz	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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Over High Threshold	F	T	0 Hz	0 Hz	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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Over High Threshold	F	T	0 Hz	0 Hz	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 PIC Trigger Missed (LN42)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Missed	F	0 Hz	0 Hz	0 Hz	–	–	–	–
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = PICM_BSYA_2061_NO_TRIG_MISSED

1.27 Stopper BSYA 2275 (ST22) Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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

1.28 Stopper BSYA 2930 (ST29) Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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

1.29 Temperature RTD Summary: A-line Past SL10

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
FAULT	F	0 Hz	0 Hz	0 Hz	–	–	–	–
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = RTD_BSYA_2060_PASTSL10SUM_STATUS

1.30 Vac Valve BSYA 4005 (IV40)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
FAULT	F	0 Hz	0 Hz	0 Hz	–	–	–	–
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = VVPG_BSYA_4005_POSITION_STATE

1.31 Vac Valve: VVFS BSYA 2855 (FV28)

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	0 Hz	0 Hz	0 Hz	–	–	–	–
OPEN	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = VVFS_BSYA_2855_POSITION_STATE

1.32 Vac Valve: VVPG BSYA 2635 (IV26)

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	0 Hz	0 Hz	0 Hz	–	–	–	–
OPEN	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = VVPG_BSYA_2635_POSITION_STATE

1.33 Vac Valve: VVPG ESA0 4195 POSITION (IV41)

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 Kicker Is Not Enabled, TD11 Is In, YAG01 Is In, or YAG02 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	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 1230 (PC12)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
IS_NOT_OK	F	0 Hz	0 Hz	–	–	–	–	–
OK	T	120 Hz	120 Hz	–	–	–	–	–

Where
A = `COLL_BSYA_1230_FLOW_SW_STATE`

2.6 Flowswitch: COLL BSYA 1490 (PC14)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
FAULT	F	0 Hz	0 Hz	0 Hz	–	–	–	–
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = `COLL_BSYA_1490_FLOW_SW_STATE`

2.7 Flowswitch: COLL BSYA 1700 (PC17)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
FAULT	F	0 Hz	0 Hz	0 Hz	–	–	–	–
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = `COLL_BSYA_1700_FLOW_SW_STATE`

2.8 PIC Raw Charge Thresholds: BSYA 1016

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

2.9 PIC Raw Charge Thresholds: BSYA 1021

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

2.10 PIC Raw Charge Thresholds: BSYA 1120

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

2.11 PIC Raw Charge Thresholds: BSYA 1320

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

2.12 PIC Raw Charge Thresholds: BSYA 1520

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

2.13 PIC Raw Charge Thresholds: BSYA 1701A

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

2.14 PIC Raw Charge Thresholds: BSYA 1701B

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

2.15 PIC Raw Charge Thresholds: BSYA 1980

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

2.16 Temperature RTD Summary: A-Line Before SL10

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Faulted	F	0 Hz	0 Hz	–	–	–	–	–
OK	T	120 Hz	120 Hz	–	–	–	–	–

Where
A = `RTD_BSYA_1015_PRESL10SUM_STATUS`

2.17 Vac Valve: VVFS BSYA 1030 (FV10)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	0 Hz	0 Hz	–	–	–	–	–
OPEN	T	120 Hz	120 Hz	–	–	–	–	–

Where
A = `VVFS_BSYA_1030_POSITION_STATE`

2.18 Vac Valve: VVPG BSYA 1018 (IV10)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	0 Hz	0 Hz	–	–	–	–	–
OPEN	T	120 Hz	120 Hz	–	–	–	–	–

Where
A = `VVPG_BSYA_1018_POSITION_STATE`

2.19 VVPG BSYA 340 Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = `VVPG_BSYA_340_OPEN_LIMSW_POSITION`

3 Ignored when BKRCUS Is On, STCLTS Is In, TD11 Is In, YAG01 Is In, or YAG02 Is In

3.1 BRCUS1 and BRCUSDC Consistent

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Faulted	F	F	–	–	–	–	–	–	–
BRCUS1 Not On BRCUSDC On	F	T	0 Hz	0 Hz	0 Hz	–	0 Hz	0 Hz	0 Hz
BRCUS1 On BRCUSDC Not On	T	F	0 Hz	0 Hz	0 Hz	–	0 Hz	0 Hz	0 Hz
BRCUS1 and BRCUSDC On	T	T	–	–	–	–	–	–	–

Where
A = `BEND_CLTS_180_ON_STATE`,
B = `BEND_CLTS_765_ON_STATE`

4 Ignored when BKRCUS Is On, TD11 Is In, YAG01 Is In, or YAG02 Is In

4.1 BRCUSDC and BLRCUS On

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Faulted	F	F	–	–	–	–	–	–	–
BRCUSDC On BLUCUSDC Not On	F	T	0 Hz	0 Hz	0 Hz	–	0 Hz	0 Hz	0 Hz
BRCUSDC Not On BLRCUS On	T	F	0 Hz	0 Hz	0 Hz	–	0 Hz	0 Hz	0 Hz
BLRCUS and BRCUSDC On	T	T	–	–	–	–	–	–	–

Where
A = `BEND_CLTS_180_ON_STATE`,
B = `BEND_CLTS_280_ON_STATE`

5 Ignored when BRCUSDC Is On, STCLTS Is In, TD11 Is In, YAG01 Is In, or YAG02 Is In

5.1 BRCUS1 and BKRCUS Consistent

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Faulted	F	F	–	–	–	–	–	–	–
BRCUS1 Not On BKRCUS On	F	T	0 Hz	0 Hz	0 Hz	–	0 Hz	0 Hz	0 Hz
BRCUS1 On BKRCUS Not On	T	F	0 Hz	0 Hz	0 Hz	–	0 Hz	0 Hz	0 Hz
BRCUS1 and BKRCUS On	T	T	–	–	–	–	–	–	–

Where
A = `KICK_CLTS_185_ON_STATE`,
B = `BEND_CLTS_765_ON_STATE`

6 Ignored when BRCUSDC Is On, TD11 Is In, YAG01 Is In, or YAG02 Is In

6.1 BKRCUS and BLRCUS On

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Faulted	F	F	–	–	–	–	–	–	–
BLRCUS Not On BKRCUS On	F	T	0 Hz	0 Hz	0 Hz	–	0 Hz	0 Hz	0 Hz
BLRCUS On BKRCUS Not On	T	F	0 Hz	0 Hz	0 Hz	–	0 Hz	0 Hz	0 Hz
BLRCUS and BKRCUS On	T	T	–	–	–	–	–	–	–

Where
A = `KICK_CLTS_185_ON_STATE`,
B = `BEND_CLTS_280_ON_STATE`

7 Ignored when BX01/BX02 Is Off, YAG01 Is In, or YAG02 Is In

7.1 Toroid Comparator Dogleg 1 (IM02 vs IM03)

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Downstream > Upstream	F	T	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Upstream > Downstream	T	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `TC203L1_STATE`,
B = `TC203L2_STATE`

8 Ignored when BX01/BX02 Is On, YAG01 Is In, or YAG02 Is In

8.1 BXS Status

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `BEND_IN20_931_OK_STATE`

8.2 Toroid Comparator Inj Spectrometer (IM02 vs IMS1)

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Downstream > Upstream	F	T	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Upstream > Downstream	T	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

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

9 Ignored when BXG Is Off or YAG01 Is In

9.1 Wakefield Shield Gun Spectrometer

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	10 Hz	10 Hz	10 Hz	–	–	–	10 Hz

Where
A = `WL_BL231_IN_STATE`

10 Ignored when BXG Is On or YAG01 Is In

10.1 Wakefield Shield Straight Ahead

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `WL_BL231_OUT_STATE`

11 Ignored when Destination HXR, STCLTS Is In, TD11 Is In, TDUNDB Is In, YAG01 Is In, or YAG02 Is In

11.1 BLMH13 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_1375_I0_THRESHOLD

11.2 BLMH14 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_1475_I0_THRESHOLD

11.3 BLMH15 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_1575_I0_THRESHOLD

11.4 BLMH16 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_1675_I0_THRESHOLD

11.5 BLMH17 SXR Threshold I0

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_1775_I0_THRESHOLD

11.6 BLMH18 SXR Threshold I0

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_1875_I0_THRESHOLD

11.7 BLMH19 SXR Threshold I0

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_1975_I0_THRESHOLD

11.8 BLMH20 SXR Threshold I0

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_2075_I0_THRESHOLD

11.9 BLMH21 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_2175_I0_THRESHOLD

11.10 BLMH22 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_2275_I0_THRESHOLD

11.11 BLMH23 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_2375_I0_THRESHOLD

11.12 BLMH24 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_2475_I0_THRESHOLD

11.13 BLMH25 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_2575_I0_THRESHOLD

11.14 BLMH26 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_2675_I0_THRESHOLD

11.15 BLMH27 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_2775_I0_THRESHOLD

11.16 BLMH28 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_2875_I0_THRESHOLD

11.17 BLMH29 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_2975_I0_THRESHOLD

11.18 BLMH30 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_3075_I0_THRESHOLD

11.19 BLMH31 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_3175_I0_THRESHOLD

11.20 BLMH32 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_3275_I0_THRESHOLD

11.21 BLMH33 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_3375_I0_THRESHOLD

11.22 BLMH34 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_3475_I0_THRESHOLD

11.23 BLMH35 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_3575_I0_THRESHOLD

11.24 BLMH36 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_3675_I0_THRESHOLD

11.25 BLMH37 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_3775_I0_THRESHOLD

11.26 BLMH38 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_3875_I0_THRESHOLD

11.27 BLMH39 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_3975_I0_THRESHOLD

11.28 BLMH40 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_4075_I0_THRESHOLD

11.29 BLMH41 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_4175_I0_THRESHOLD

11.30 BLMH42 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_4275_I0_THRESHOLD

11.31 BLMH43 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_4375_I0_THRESHOLD

11.32 BLMH44 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_4475_I0_THRESHOLD

11.33 BLMH45 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_4575_I0_THRESHOLD

11.34 BLMH46 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDH_4675_I0_THRESHOLD

11.35 BLMS26 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDS_2610_I0_THRESHOLD

11.36 BLMS27 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDS_2710_I0_THRESHOLD

11.37 BLMS28 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDS_2810_I0_THRESHOLD

11.38 BLMS29 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDS_2910_I0_THRESHOLD

11.39 BLMS30 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDS_3010_I0_THRESHOLD

11.40 BLMS31 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDS_3110_I0_THRESHOLD

11.41 BLMS33 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDS_3310_I0_THRESHOLD

11.42 BLMS34 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDS_3410_I0_THRESHOLD

11.43 BLMS35 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDS_3510_I0_THRESHOLD

11.44 BLMS36 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDS_3610_I0_THRESHOLD

11.45 BLMS37 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDS_3710_I0_THRESHOLD

11.46 BLMS38 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDS_3810_I0_THRESHOLD

11.47 BLMS39 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDS_3910_I0_THRESHOLD

11.48 BLMS40 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDS_4010_I0_THRESHOLD

11.49 BLMS41 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDS_4110_I0_THRESHOLD

11.50 BLMS42 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDS_4210_I0_THRESHOLD

11.51 BLMS43 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDS_4310_I0_THRESHOLD

11.52 BLMS44 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDS_4410_I0_THRESHOLD

11.53 BLMS45 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDS_4510_I0_THRESHOLD

11.54 BLMS46 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDS_4610_I0_THRESHOLD

11.55 BLMS47 SXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = CBLM_UNDS_4710_I0_THRESHOLD

12 Ignored when Destination SXR, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, YAG01 Is In, or YAG02 Is In

12.1 BLMH13 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `CBLM_UNDH_1375_I0_THRESHOLD`

12.2 BLMH14 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `CBLM_UNDH_1475_I0_THRESHOLD`

12.3 BLMH15 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `CBLM_UNDH_1575_I0_THRESHOLD`

12.4 BLMH16 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_1675_I0_THRESHOLD

12.5 BLMH17 HXR Threshold I0

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_1775_I0_THRESHOLD

12.6 BLMH18 HXR Threshold I0

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_1875_I0_THRESHOLD

12.7 BLMH19 HXR Threshold I0

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_1975_I0_THRESHOLD

12.8 BLMH20 HXR Threshold I0

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_2075_I0_THRESHOLD

12.9 BLMH21 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_2175_I0_THRESHOLD

12.10 BLMH22 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_2275_I0_THRESHOLD

12.11 BLMH23 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_2375_I0_THRESHOLD

12.12 BLMH24 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_2475_I0_THRESHOLD

12.13 BLMH25 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_2575_I0_THRESHOLD

12.14 BLMH26 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_2675_I0_THRESHOLD

12.15 BLMH27 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_2775_I0_THRESHOLD

12.16 BLMH28 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_2875_I0_THRESHOLD

12.17 BLMH29 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_2975_I0_THRESHOLD

12.18 BLMH30 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_3075_I0_THRESHOLD

12.19 BLMH31 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_3175_I0_THRESHOLD

12.20 BLMH32 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_3275_I0_THRESHOLD

12.21 BLMH33 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_3375_I0_THRESHOLD

12.22 BLMH34 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_3475_I0_THRESHOLD

12.23 BLMH35 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_3575_I0_THRESHOLD

12.24 BLMH36 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_3675_I0_THRESHOLD

12.25 BLMH37 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_3775_I0_THRESHOLD

12.26 BLMH38 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_3875_I0_THRESHOLD

12.27 BLMH39 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_3975_I0_THRESHOLD

12.28 BLMH40 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_4075_I0_THRESHOLD

12.29 BLMH41 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_4175_I0_THRESHOLD

12.30 BLMH42 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_4275_I0_THRESHOLD

12.31 BLMH43 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_4375_I0_THRESHOLD

12.32 BLMH44 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_4475_I0_THRESHOLD

12.33 BLMH45 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_4575_I0_THRESHOLD

12.34 BLMH46 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDH_4675_I0_THRESHOLD

12.35 BLMS26 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDS_2610_I0_THRESHOLD

12.36 BLMS27 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDS_2710_I0_THRESHOLD

12.37 BLMS28 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDS_2810_I0_THRESHOLD

12.38 BLMS29 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDS_2910_I0_THRESHOLD

12.39 BLMS30 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDS_3010_I0_THRESHOLD

12.40 BLMS31 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDS_3110_I0_THRESHOLD

12.41 BLMS33 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDS_3310_I0_THRESHOLD

12.42 BLMS34 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDS_3410_I0_THRESHOLD

12.43 BLMS35 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDS_3510_I0_THRESHOLD

12.44 BLMS36 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDS_3610_I0_THRESHOLD

12.45 BLMS37 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDS_3710_I0_THRESHOLD

12.46 BLMS38 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDS_3810_I0_THRESHOLD

12.47 BLMS39 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDS_3910_I0_THRESHOLD

12.48 BLMS40 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDS_4010_I0_THRESHOLD

12.49 BLMS41 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDS_4110_I0_THRESHOLD

12.50 BLMS42 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDS_4210_I0_THRESHOLD

12.51 BLMS43 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDS_4310_I0_THRESHOLD

12.52 BLMS44 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDS_4410_I0_THRESHOLD

12.53 BLMS45 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDS_4510_I0_THRESHOLD

12.54 BLMS46 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDS_4610_I0_THRESHOLD

12.55 BLMS47 HXR Threshold I0

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CBLM_UNDS_4710_I0_THRESHOLD

13 Ignored when Diag Stopper HFX DG2 Is In, Diag Stopper HFX UM6 Is In, Diag Stopper XCS SB1 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, YAG01 Is In, or YAG02 Is In

13.1 XCS SB1 VGC 02 Gate Valve Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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, 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, YAG01 Is In, or YAG02 Is In

14.1 CXI Configuration 1 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 evalCXIConfigOne = -1;
{
        if ( CXI_MPS_CFG_1_CONFID ) /* EPS PLC asserts we are in config
            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_SC1_VGC_02_OPN_DI_POSITION) )
                {
                        evalCXIConfigOne = 0;
                }
                else
                {
                        evalCXIConfigOne = 1;
                }
        }
}
```

```
switch( evalCXIConfigOne )
{
        case 0: state = 0; break;
        case 1: state = 1; break;
        default: state = 2; break;
}
}
```

Name	State	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Config 1 Fault	0	–	–	0 Hz	–	0 Hz	–	–
Config 1 Ok	1	–	–	120 Hz	–	120 Hz	–	–
Not In Config 1	2	–	–	120 Hz	–	120 Hz	–	–

14.2 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 ) /* EPS PLC asserts we are in config
            2 */
        {
                /* Evaluate inputs to identify if we're in beam dump
                    state for Cfg 2 */
                if (    (! CXI_DG1_MMS_03_A_POSITION) ||
                        (! CXI_SC1_VGC_02_OPN_DI_POSITION) || /* If the
                            valve is not open, trip */
                        (       (! CXI_DIA_ATTEN_OK_POSITION) && /* DIA
                            attenuation */
                                (! (    CXI_DG1_MMS_08_B_POSITION &&
                                                CXI_DG1_MMS_08_B_POSITION
                                                    &&
```

```
                                                        CXI_DG2_MMS_08_B_POSITION
                                                              &&
                                                        CXI_DG2_MMS_09_B_POSITION
                                                              &&
                                                        CXI_DG2_MMS_10_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;
        case 1: state = 1; break;
        default: state = 2; break;
}
}
```

Name	State	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Faulted	0	–	–	0 Hz	–	0 Hz	–	–
Ok	1	–	–	120 Hz	–	120 Hz	–	–
Not In Config 2	2	–	–	120 Hz	–	120 Hz	–	–

14.3 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 ) /* EPS PLC asserts we are in config
            3 */
        {
                /* Evaluate inputs to identify if we're in beam dump
                   state for Cfg 3 */
                if ((! CXI_DG1_MMS_03_A_POSITION) ||
                (! CXI_SC1_VGC_02_OPN_DI_POSITION) )
                {
                        evalCXIConfigThree = 0;
                }
                else
                {
                        evalCXIConfigThree = 1;
                }
        }
}

switch( evalCXIConfigThree )
{
        case 0: state = 0; break;
        case 1: state = 1; break;
        default: state = 2; break;
}
}
```

Name	State	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Faulted	0	–	–	0 Hz	–	0 Hz	–	–
Ok	1	–	–	120 Hz	–	120 Hz	–	–
Not in Config 3	2	–	–	120 Hz	–	120 Hz	–	–

14.4 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 ) /* EPS PLC asserts we are in config
            4 */
        {
                /* Evaluate inputs to identify if we're in beam dump
                   state for Cfg 4 */
                if ((! CXI_DG1_MMS_03_A_POSITION) ||
                (! CXI_SC1_VGC_02_OPN_DI_POSITION) )
                {
                        evalCXIConfigFour = 0;
                }
                else
                {
                        evalCXIConfigFour = 1;
                }
        }
}

switch( evalCXIConfigFour )
{
        case 0: state = 0; break;
        case 1: state = 1; break;
        default: state = 2; break;
}
}
```

Name	State	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Faulted	0	–	–	0 Hz	–	0 Hz	–	–
Ok	1	–	–	120 Hz	–	120 Hz	–	–
Not In Config 4	2	–	–	120 Hz	–	120 Hz	–	–

14.5 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 ) /* EPS PLC asserts we are in config
            5 */
        {
                /* Evaluate inputs to identify if we're in beam dump
                   state for Cfg 5 */
                if ((! CXI_DG1_MMS_03_A_POSITION) ||
                (! CXI_SC1_VGC_02_OPN_DI_POSITION) )
                {
                        evalCXIConfigFive = 0;
                }
                else
                {
                        evalCXIConfigFive = 1;
                }
        }
}

switch( evalCXIConfigFive )
{
        case 0: state = 0; break;
        case 1: state = 1; break;
        default: state = 2; break;
```

```
}
}
```

Name	State	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Faulted	0	–	–	0 Hz	–	0 Hz	–	–
Ok	1	–	–	120 Hz	–	120 Hz	–	–
Not In Config 5	2	–	–	120 Hz	–	120 Hz	–	–

14.6 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 ) /* EPS PLC asserts we are in config
            6 */
        {
                /* Evaluate inputs to identify if we're in beam dump
                   state for Cfg 6 */
                if ((! CXI_DG1_MMS_03_A_POSITION) ||
                        (! CXI_DG2_MMS_06_B_POSITION) ||
                (! CXI_SC2_VGC_02_OPN_DI_POSITION) )
                {
                        evalCXIConfigSix = 0;
                }
                else
                {
                        evalCXIConfigSix = 1;
                }
        }
}

switch( evalCXIConfigSix )
```

```
{
        case 0: state = 0; break;
        case 1: state = 1; break;
        default: state = 2; break;
}
}
```

Name	State	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Faulted	0	–	–	0 Hz	–	0 Hz	–	–
Ok	1	–	–	120 Hz	–	120 Hz	–	–
Not In Config 6	2	–	–	120 Hz	–	120 Hz	–	–

14.7 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 ) /* EPS PLC asserts we are in config
            7 */
        {
                /* Evaluate inputs to identify if we're in beam dump
                   state for Cfg 7 */
                if ((! CXI_DG1_MMS_03_A_POSITION)        ||
                        (! CXI_SC1_VGC_02_OPN_DI_POSITION) ||
                (! CXI_SC2_VGC_02_OPN_DI_POSITION) )
                {
                        evalCXIConfigSeven = 0;
                }
                else
                {
                        evalCXIConfigSeven = 1;
                }
```

```
        }
}

switch( evalCXIConfigSeven )
{
        case 0: state = 0; break;
        case 1: state = 1; break;
        default: state = 2; break;
}
}
```

Name	State	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Faulted	0	–	–	0 Hz	–	0 Hz	–	–
Ok	1	–	–	120 Hz	–	120 Hz	–	–
Not In Config 7	2	–	–	120 Hz	–	120 Hz	–	–

14.8 CXI KB2 VGC 02 Gate Valve Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Moving	F	F	–	–	0 Hz	–	0 Hz	–	–
Open	F	T	–	–	120 Hz	–	120 Hz	–	–
Closed	T	F	–	–	120 Hz	–	120 Hz	–	–
Broken	T	T	–	–	0 Hz	–	0 Hz	–	–

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

14.9 CXI MPS PLC Readiness Status

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
PLC Not OK	F	–	–	0 Hz	–	0 Hz	–	–
PLC OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `CXI_MPS_PLC_01_OK_STATUS`

14.10 CXI User Patch Panel 1 Ready

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Ready	F	–	–	0 Hz	–	0 Hz	–	–
Ready	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `CXI_USR_01_MPSFAULT_STATUS`

14.11 CXI User Patch Panel 2 Ready

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Ready	F	–	–	0 Hz	–	0 Hz	–	–
Ready	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `CXI_USR_02_MPSFAULT_STATUS`

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

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	–	–	0 Hz	–	0 Hz	–	–
Open	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `CXI_DG1_VGC_01_OPN_DI_POSITION`

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

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	–	–	0 Hz	–	0 Hz	–	–
Open	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `CXI_DG1_VGC_02_OPN_DI_POSITION`

14.14 CXI:DG2:VGC:01 Gate Valve Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Moving	F	F	–	–	0 Hz	–	0 Hz	–	–
Open	F	T	–	–	120 Hz	–	120 Hz	–	–
Closed	T	F	–	–	120 Hz	–	120 Hz	–	–
Broken	T	T	–	–	0 Hz	–	0 Hz	–	–

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

14.15 CXI:DG2:VGC:02 Gate Valve Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Moving	F	F	–	–	0 Hz	–	0 Hz	–	–
Open	F	T	–	–	120 Hz	–	120 Hz	–	–
Closed	T	F	–	–	120 Hz	–	120 Hz	–	–
Broken	T	T	–	–	0 Hz	–	0 Hz	–	–

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

14.16 CXI:DG4:VGC:01 Gate Valve Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Moving	F	F	–	–	0 Hz	–	0 Hz	–	–
Open	F	T	–	–	120 Hz	–	120 Hz	–	–
Closed	T	F	–	–	120 Hz	–	120 Hz	–	–
Broken	T	T	–	–	0 Hz	–	0 Hz	–	–

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

14.17 CXI:DSC:VGC:01 Gate Valve Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Moving	F	F	–	–	0 Hz	–	0 Hz	–	–
Open	F	T	–	–	120 Hz	–	120 Hz	–	–
Closed	T	F	–	–	120 Hz	–	120 Hz	–	–
Broken	T	T	–	–	0 Hz	–	0 Hz	–	–

Where
A = `CXI_DSC_VGC_01_OPN_DI_POSITION`,
B = `CXI_DSC_VGC_01_CLS_DI_POSITION`

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

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	–	–	0 Hz	–	0 Hz	–	–
Open	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `CXI_KB1_VGC_01_OPN_DI_POSITION`

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

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	–	–	0 Hz	–	0 Hz	–	–
Open	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `CXI_KB1_VGC_02_OPN_DI_POSITION`

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

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	–	–	0 Hz	–	0 Hz	–	–
Open	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CXI_KB2_VGC_01_OPN_DI_POSITION

14.21 CXI:SC1:VGC:01 Gate Valve Position

Name	B	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Moving	F	F	–	–	0 Hz	–	0 Hz	–	–
Open	F	T	–	–	120 Hz	–	120 Hz	–	–
Closed	T	F	–	–	120 Hz	–	120 Hz	–	–
Broken	T	T	–	–	0 Hz	–	0 Hz	–	–

Where
A = CXI_SC1_VGC_01_OPN_DI_POSITION,
B = CXI_SC1_VGC_01_CLS_DI_POSITION

14.22 CXI:SC3:VGC:01 Be Gate Valve Position - Status from PLC

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Moving or Broken	F	–	–	0 Hz	–	0 Hz	–	–
Open or Closed	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = CXI_SC3_VGC_01_OPN_DI_POSITION

14.23 HF4 LAM VGC 01 Gate Valve Position

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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

15 Ignored when Diag Stopper HFX DG2 Is In, Diag Stopper HFX UM6 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, YAG01 Is In, or YAG02 Is In

15.1 CXI XRT Laser Reference Mirror Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Mirror In Beam	F	–	–	0 Hz	–	0 Hz	–	–
Mirror Out of Beam	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `XRT_DIA_MMS_01_B_POSITION`

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

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

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

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

15.4 PPS Stopper S5B Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

15.5 XCS SB1 Diagnostic Stopper Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

15.6 XCS SB1 VGC 01 Gate Valve Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

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

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

16 Ignored when Diag Stopper HFX DG2 Is In, Diag Stopper HFX UM6 Is In, Stopper SH1 Is In, Stopper SH2 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, YAG01 Is In, or YAG02 Is In

16.1 HFX:DG2:VGC:01 Gate Valve Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

16.2 HFX:MON:VGC:01 Gate Valve Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

16.3 HFX:MON:VGC:02 Gate Valve Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

16.4 Stopper XRT S5 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = `STPR_XRT1_1_S5OUT_POSITION`,
B = `STPR_XRT1_1_S5IN_POSITION`

17 Ignored when Diag Stopper HFX UM6 Is In, Stopper MFX S4.5 Is In, Stopper SH1 Is In, Stopper SH2 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, YAG01 Is In, or YAG02 Is In

17.1 MFX MPS Summary - Downstream of Stopper 4.5

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Ok	F	–	–	0 Hz	–	0 Hz	–	–
Ok	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `MFX_MPS_1_SUM_STATE`

18 Ignored when Diag Stopper HFX UM6 Is 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, YAG01 Is In, or YAG02 Is In

18.1 MEC DV4 VCG 01 Gate Valve Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not open	F	–	–	0 Hz	–	0 Hz	–	–
Open	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `MEC_DV4_VGC_01_OPN_DI_POSITION`

18.2 MEC DV5 VGC 01 Gate Valve Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	–	–	0 Hz	–	0 Hz	–	–
Open	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `MEC_DV5_VGC_01_OPN_DI_POSITION`

18.3 MEC HXM VGC 01 Gate Valve Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	–	–	0 Hz	–	0 Hz	–	–
Open	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `MEC_HXM_VGC_01_OPN_DI_POSITION`

18.4 MEC XT1 Reference Laser Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Out	F	–	–	0 Hz	–	0 Hz	–	–
Out	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `MEC_XT1_MMS_01_B_POSITION`

18.5 MEC XT1 VGC 01 Gate Valve Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	–	–	0 Hz	–	0 Hz	–	–
Open	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `MEC_XT1_VGC_01_OPN_DI_POSITION`

18.6 MEC XT2 VGC 02 Gate Valve Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	–	–	0 Hz	–	0 Hz	–	–
Open	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `MEC_XT2_VGC_02_OPN_DI_POSITION`

18.7 MEC XT2 VGC 03 Gate Valve Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	–	–	0 Hz	–	0 Hz	–	–
Open	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `MEC_XT2_VGC_03_OPN_DI_POSITION`

18.8 MEC XT2 VGC 04 Gate Valve Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	–	–	0 Hz	–	0 Hz	–	–
Open	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `MEC_XT2_VGC_04_OPN_DI_POSITION`

18.9 MEC XT2 VGC 05 Gate Valve Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Moving	F	F	–	–	0 Hz	–	0 Hz	–	–
Open	F	T	–	–	120 Hz	–	120 Hz	–	–
Closed	T	F	–	–	120 Hz	–	120 Hz	–	–
Broken	T	T	–	–	0 Hz	–	0 Hz	–	–

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

18.10 MEC XT2 VGC 06 Gate Valve Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	–	–	0 Hz	–	0 Hz	–	–
Open	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `MEC_XT2_VGC_06_OPN_DI_POSITION`

19 Ignored when Diag Stopper HFX UM6 Is In, Stopper SH1 Is In, Stopper SH2 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, YAG01 Is In, or YAG02 Is In

19.1 DG2 Diagnostic Stopper Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

19.2 MEC BXL VGC 01 Gate Valve Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	–	–	0 Hz	–	0 Hz	–	–
Open	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `MEC_BXL_VGC_01_OPN_DI_POSITION`

19.3 MEC XRT Attenuator Inspection Mirror Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Mirror Not Out	F	–	–	0 Hz	–	0 Hz	–	–
Mirror Out	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `MEC_HXM_MMS_04_B_POSITION`

19.4 MFX Gate Valve Summary - Upstream of Stopper 4.5

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not All Out	F	–	–	0 Hz	–	0 Hz	–	–
All Out	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `MFX_XRT_VGC_OUT_SUM_STATE`

19.5 Stopper MFX S4.5 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = `STPR_XRT_1_S45OUT_STATE`,
B = `STPR_XRT_1_S45IN_STATE`

19.6 Stopper XRT S6 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

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

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

19.8 XRT HXRAY MXT Gate Valve HXX:MXT:VGC:01

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = `HXX_MXT_VGC_01_OPN_DI_POSITION`

19.9 XRT HXRAY MXT Gate Valve HXX:MXT:VGC:02

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = `HXX_MXT_VGC_02_OPN_DI_POSITION`

19.10 XRT HXRAY MXT Gate Valve HXX:MXT:VGC:03

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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_03_CLS_DI_POSITION`,
B = `HXX_MXT_VGC_03_OPN_DI_POSITION`

19.11 XRT HXRAY MXT Gate Valve HXX:MXT:VGC:05

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = `HXX_MXT_VGC_05_OPN_DI_POSITION`

19.12 XRT-M2 Mirror and DG2 STP Fault

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	G
In Transit: DG2 STP Not In Beam, XRT-M2 Mirror Not Out	F	F	0 Hz	0 Hz	0 Hz	–	–	
In Transit: DG2 STP Not In Beam, XRT-M2 Mirror Out	F	T	120 Hz	120 Hz	120 Hz	–	–	
Safe: DG2 STP In Beam, XRT-M2 Mirror Not Out	T	F	120 Hz	120 Hz	120 Hz	–	–	
Safe: DG2 STP In Beam, XRT-M2 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`

20 Ignored when Laser Heater Attenuator Is In

20.1 Laser Heater Photodiode Shutter Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

20.2 OTRH1 Position When LH Atten Not In

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

20.3 OTRH2 Position When LH Atten Not In

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

21 Ignored when STCLTS Is In, TD11 Is In, TDUNDB Is In, YAG01 Is In, or YAG02 Is In

21.1 BYDSS Magnet Power Status

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Inconsistent	F	F	–	–	–	–	–	0 Hz	0 Hz
On	F	T	–	–	–	–	–	120 Hz	120 Hz
Off	T	F	–	–	–	–	–	0 Hz	0 Hz
Inconsistent	T	T	–	–	–	–	–	0 Hz	0 Hz

Where
A = `BEND_DMPS_395_ON_STATE`,
B = `BEND_DMPS_395_OFF_STATE`

21.2 VVFS DMPS 157 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `VVFS_DMPS_157_POSITION_STATE`

21.3 VVMG DMPS 643 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `VVMG_DMPS_643_POSITION_STATE`

21.4 VVMG DMPS 681 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `VVMG_DMPS_681_POSITION_STATE`

21.5 VVPG DMPS 396 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `VVPG_DMPS_396_POSITION_STATE`

21.6 VVPG DMPS 424 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `VVPG_DMPS_424_POSITION_STATE`

21.7 VVPG UNDS 1651 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `VVPG_UNDS_1651_POSITION_STATE`

21.8 VVPG UNDS 2177 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = VVPG_UNDS_2177_POSITION_STATE

21.9 VVPG UNDS 2877 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = VVPG_UNDS_2877_POSITION_STATE

21.10 VVPG UNDS 3477 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = VVPG_UNDS_3477_POSITION_STATE

21.11 VVPG UNDS 3577 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = VVPG_UNDS_3577_POSITION_STATE

21.12 VVPG UNDS 3877 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `VVPG_UNDS_3877_POSITION_STATE`

21.13 VVPG UNDS 4477 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `VVPG_UNDS_4477_POSITION_STATE`

21.14 VVPG UNDS 5198 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `VVPG_UNDS_5198_POSITION_STATE`

22 Ignored when STCLTS Is In, TD11 Is In, YAG01 Is In, or YAG02 Is In

22.1 BX31B Current

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = BEND_LTUS_175_CURRENT_THRESHOLD

22.2 BX31B Magnet Power Status

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Inconsistent	F	F	–	–	–	–	–	0 Hz	0 Hz
On	F	T	–	–	–	–	–	120 Hz	120 Hz
Off	T	F	–	–	–	–	–	0 Hz	0 Hz
Inconsistent	T	T	–	–	–	–	–	0 Hz	0 Hz

Where
A = BEND_LTUS_175_ON_STATE,
B = BEND_LTUS_175_OFF_STATE

22.3 BY1B Current

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = BEND_LTUS_525_CURRENT_THRESHOLD

22.4 BY1B Magnet Power Status

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Inconsistent	F	F	–	–	–	–	–	0 Hz	0 Hz
On	F	T	–	–	–	–	–	120 Hz	120 Hz
Off	T	F	–	–	–	–	–	0 Hz	0 Hz
Inconsistent	T	T	–	–	–	–	–	0 Hz	0 Hz

Where
A = BEND_LTUS_525_ON_STATE,
B = BEND_LTUS_525_OFF_STATE

22.5 BYKIKS Current

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = KICK_LTUS_350_CURRENT_THRESHOLD

22.6 BYKIKS Magnet Power Status

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Inconsistent	F	F	–	–	–	–	–	0 Hz	0 Hz
On	F	T	–	–	–	–	–	120 Hz	120 Hz
Off	T	F	–	–	–	–	–	0 Hz	0 Hz
Inconsistent	T	T	–	–	–	–	–	0 Hz	0 Hz

Where
A = KICK_LTUS_350_ON_STATE,
B = KICK_LTUS_350_OFF_STATE

22.7 CEDL13 Temperature

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
FAULT	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = COLL_LTUS_235_TEMP_STATE

22.8 CEDL17 Temperature

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
FAULT	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = COLL_LTUS_372_TEMP_STATE

22.9 CXBP34 Temperature

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
FAULT	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = COLL_BSYS_859_TEMP_STATE

22.10 CYBDL Temperature

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
FAULT	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = COLL_LTUS_116_TEMP_STATE

22.11 CYDL16 Temperature

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
FAULT	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = COLL_LTUS_345_TEMP_STATE

22.12 Merge Magnet Ok

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Faulted	F	F	–	–	–	–	–	–	–
BRCUS1 Current Wrong	F	T	0 Hz	0 Hz	0 Hz	–	0 Hz	0 Hz	0 Hz
Not Faulted	T	F	–	–	–	–	–	–	–
Pulsed Mode Ok	T	T	–	–	–	–	–	–	–

Where
A = `BEND_CLTS_765_ON_STATE`,
B = `BEND_CLTS_765_CURRENT_THRESHOLD`

22.13 ST34A Temperature

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
FAULT	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `STPR_BSYS_891_TEMP_STATE`

22.14 ST34AB Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Moving	F	F	–	–	–	–	–	0 Hz	0 Hz
Out	F	T	–	–	–	–	–	120 Hz	120 Hz
In	T	F	–	–	–	–	–	0 Hz	0 Hz
Broken	T	T	–	–	–	–	–	0 Hz	0 Hz

Where
A = `STPR_BSYS_891_OUT_LIMIT_POSITION`,
B = `STPR_BSYS_891_IN_LIMIT_POSITION`

22.15 ST34B Temperature

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
FAULT	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = STPR_BSYS_897_TEMP_STATE

22.16 TDUNDB Position

Name	B	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Moving	F	F	–	–	–	–	–	0 Hz	0 Hz
Out	F	T	–	–	–	–	–	120 Hz	120 Hz
In	T	F	–	–	–	–	–	10 Hz	10 Hz
Broken	T	T	–	–	–	–	–	0 Hz	0 Hz

Where
A = DUMP_LTUS_972_OUT_LIMIT_POSITION,
B = DUMP_LTUS_972_IN_LIMIT_POSITION

22.17 VVFS LTUS 109 POSITION

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = VVFS_LTUS_109_POSITION_STATE

22.18 VVMG LTUS 185 POSITION

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = VVMG_LTUS_185_POSITION_STATE

22.19 VVMG LTUS 348 POSITION

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = VVMG_LTUS_348_POSITION_STATE

22.20 VVMG LTUS 451 POSITION

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = VVMG_LTUS_451_POSITION_STATE

22.21 VVMG LTUS 505 POSITION

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = VVMG_LTUS_505_POSITION_STATE

22.22 VVMG LTUS 552 POSITION

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = VVMG_LTUS_552_POSITION_STATE

22.23 VVMG LTUS 656 POSITION

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = VVMG_LTUS_656_POSITION_STATE

22.24 VVMG LTUS 744 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `VVMG_LTUS_744_POSITION_STATE`

22.25 VVMG LTUS 802 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `VVMG_LTUS_802_POSITION_STATE`

22.26 VVMG LTUS 827 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `VVMG_LTUS_827_POSITION_STATE`

22.27 VVPG BSYS 904 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `VVPG_BSYS_904_POSITION_STATE`

22.28 VVPG LTUS 108 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `VVPG_LTUS_108_POSITION_STATE`

22.29 VVPG LTUS 272 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `VVPG_LTUS_272_POSITION_STATE`

22.30 VVPG LTUS 442 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `VVPG_LTUS_442_POSITION_STATE`

22.31 VVPG LTUS 586 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `VVPG_LTUS_586_POSITION_STATE`

22.32 VVPG LTUS 726 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `VVPG_LTUS_726_POSITION_STATE`

22.33 VVPG LTUS 757 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `VVPG_LTUS_757_POSITION_STATE`

23 Ignored when Stopper S1 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, YAG01 Is In, or YAG02 Is In

23.1 NEH AMO Laser Reference Mirror Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Out	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Out	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = SAS_MMM_01_B_POSITION

23.2 NEH AMO Valves Ok for Beam - Summary From PLC

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Ok	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = AMO_MPS_VAC_OK_SUM_STATE

23.3 NEH1 Camera 1124 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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

23.4 NEH1 XTOD S1 Isolation Valve Summary

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Faulted	F	0 Hz	0 Hz	0 Hz	–	–	–	–
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = `VMPS_NEH_703_ISOL_S1_STATE`

24 Ignored when Stopper S2 Is In, Stopper S2B Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, YAG01 Is In, or YAG02 Is In

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

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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

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

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Ready	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Ready	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = SXR_EXP_MPS_01_STATE

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

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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

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

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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

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

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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

25 Ignored when Stopper S2 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, YAG01 Is In, or YAG02 Is In

25.1 NEH Camera 2124 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

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

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

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

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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

25.4 NEH SXR GMD VGC 01 Protection

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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

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

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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

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

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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

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

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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

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

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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

25.9 NEH1 XTOD S2 Isolation Valve Summary

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Faulted	F	0 Hz	0 Hz	0 Hz	–	–	–	–
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = `VMPS_NEH_703_ISOL_S2_STATE`

26 Ignored when Stopper SH1 Is In, Stopper SH2 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, YAG01 Is In, or YAG02 Is In

26.1 UM6 Diagnostic Stopper Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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

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

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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

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

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

27 Ignored when Stopper SH1 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, XPP-NH3-POS-00 Beamline Is In, YAG01 Is In, or YAG02 Is In

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

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

28 Ignored when Stopper SH1 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, XPP-NH3-POS-00 Beamline Is Not In, YAG01 Is In, or YAG02 Is In

28.1 XPP SB2 VGC 01 Gate Valve Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

28.2 XPP SB2 VGC 02 Gate Valve Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = `XPP_SB2_VGC_02_OPN_DI_POSITION`

28.3 XPP SB2 VGC 03 Gate Valve Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = `XPP_SB2_VGC_03_OPN_DI_POSITION`

29 Ignored when Stopper SH1 Is In, Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, YAG01 Is In, or YAG02 Is In

29.1 HX2 UVD VGC 01 Gate Valve Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

29.2 HX3 MON VGC 01 Gate Valve Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

29.3 NEH HXTD Vacuum Valve Summary

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not All Open	F	0 Hz	0 Hz	0 Hz	–	–	–	–
All Open	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = `VMPS_NEH1_HXTD_SUM_FAULT`

29.4 NEH1 Camera 124 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

29.5 NEH1 Camera 195 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

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

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

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

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Moving	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Closed	F	T	0 Hz	0 Hz	0 Hz	–	–	–	–
Open	T	F	120 Hz	120 Hz	120 Hz	–	–	–	–
Broken	T	T	0 Hz	0 Hz	0 Hz	–	–	–	–

Where
A = HX3_UVD_VGC_01_CLS_DI_STATE,
B = HX3_UVD_VGC_01_OPN_DI_STATE

30 Ignored when Stopper: BSY D2 Summary Is In, TD11 Is In, TDUND Is In, YAG01 Is In, or YAG02 Is In

30.1 BCS PIC RAW Charge Threshold DMP 997

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Exceeded	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `PIC997_STATE`

30.2 BCS PIC RAW Charge Threshold DMP 998

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Exceeded	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `PIC998_STATE`

30.3 BLM/PIC Watchdog: Downstream of TDUND

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Faulted	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `MPS_MCC0_2_PICBLM_WD_STATUS`

30.4 BPM Summary (1-9) - Status From IOC-UND1-BP01

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Faulted	F	–	0 Hz	0 Hz	–	0 Hz	–	–
OK	T	–	120 Hz	120 Hz	–	120 Hz	–	–

Where
A = `IOC_UNDH_BP01_MPSSTAT_STATE`

30.5 BPM Summary (10-18) - Status From IOC-UND1-BP02

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Faulted	F	–	0 Hz	0 Hz	–	0 Hz	–	–
OK	T	–	120 Hz	120 Hz	–	120 Hz	–	–

Where
A = `IOC_UNDH_BP02_MPSSTAT_STATE`

30.6 BYDSH Current

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `BEND_DMPH_395_CURRENT_THRESHOLD`

30.7 BYDSH Magnet Power Status

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Inconsistent	F	F	–	–	0 Hz	–	0 Hz	–	–
On	F	T	–	–	120 Hz	–	120 Hz	–	–
Off	T	F	–	–	0 Hz	–	0 Hz	–	–
Inconsistent	T	T	–	–	0 Hz	–	0 Hz	–	–

Where
A = BEND_DMPH_395_ON_STATE,
B = BEND_DMPH_395_OFF_STATE

30.8 FEE Camera 1692 Position

Name	B	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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

30.9 FEE Camera 1953 Position

Name	B	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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

30.10 FEE Camera 2953 Position

Name	B	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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

30.11 FEE Camera 852 Position Fault - Status From PLC

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Ok	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = `CAMR_FEE1_852_STATUS_FAULT`

30.12 FEE Camera 913 Position Fault - Status From PLC

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Ok	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = `CAMR_FEE1_913_STATUS_FAULT`

30.13 FEE Gas System Summary

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Ok	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = `VMPS_FEE1_GAS_SUM_FAULT`

30.14 FEE HXTD Vacuum Valve Summary

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not All Open	F	0 Hz	0 Hz	0 Hz	–	–	–	–
All Open	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = `VMPS_FEE1_HXTD_SUM_FAULT`

30.15 FEE M1S Mirror Beam Energy Upper Limit

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Mirror Out	F	T	120 Hz	120 Hz	120 Hz	–	–	–	–
Energy Ok	T	F	120 Hz	120 Hz	120 Hz	–	–	–	–
Mirror Out and Energy Ok	T	T	120 Hz	120 Hz	120 Hz	–	–	–	–

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

30.16 FEE M1S Mirror State

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Out	F	F	120 Hz	120 Hz	120 Hz	–	–	–	–
Inconsistent	F	T	0 Hz	0 Hz	0 Hz	–	–	–	–
Inconsistent	T	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Out	T	T	120 Hz	120 Hz	120 Hz	–	–	–	–

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

30.17 FEE Spectrometer Crystal - Beam Energy Too Low When Crystal Not Out

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Energy Ok	F	T	120 Hz	120 Hz	120 Hz	–	–	–	–
Crystal Out	T	F	120 Hz	120 Hz	120 Hz	–	–	–	–
Crystal Out and Energy Ok	T	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = `XTAL_FEE1_441_ENERGY_STATE`,
B = `XTAL_FEE1_441_OUT_LIMSW_POSITION`

30.18 FEE Spectrometer Crystal - Pulse Energy Too High When Crystal Not Out

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Pulse Energy Ok	F	T	120 Hz	120 Hz	120 Hz	–	–	–	–
Crystal Out	T	F	120 Hz	120 Hz	120 Hz	–	–	–	–
Crystal Out and Pulse Energy Ok	T	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = `XTAL_FEE1_441_PULSEENERGY_THRESHOLD`,
B = `XTAL_FEE1_441_OUT_LIMSW_POSITION`

30.19 FEE XTOD S1 Isolation Valve Summary

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	0 Hz	0 Hz	0 Hz	–	–	–	–
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = `VMPS_FEE1_703_ISOL_S1_FAULT`

30.20 FEE XTOD S2 Isolation Valve Summary

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	0 Hz	0 Hz	0 Hz	–	–	–	–
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = `VMPS_FEE1_703_ISOL_S2_FAULT`

30.21 Gas Detector Problem When FEE Spectrometer Crystal Not Out

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Gas Detector Ok	F	T	120 Hz	120 Hz	120 Hz	–	–	–	–
Crystal Out	T	F	120 Hz	120 Hz	120 Hz	–	–	–	–
Crystal Out and Gas Detector Ok	T	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = `GDET_FEE1_1_CAL_OK_STATE`,
B = `XTAL_FEE1_441_OUT_LIMSW_POSITION`

30.22 HXR - Beam Energy Too Low With M1S Out

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Ok	F	F	120 Hz	120 Hz	120 Hz	–	–	–	–
Ok	F	T	120 Hz	120 Hz	120 Hz	–	–	–	–
Ok	T	F	120 Hz	120 Hz	120 Hz	–	–	–	–
Fault	T	T	0 Hz	0 Hz	0 Hz	–	–	–	–

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

30.23 Magnet In Tolerance: QE31

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
No	F	–	–	0 Hz	–	0 Hz	–	–
Yes	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `QUAD_LTU1_720_INTOL_STATUS`

30.24 Magnet In Tolerance: QUM1

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
No	F	–	–	0 Hz	–	0 Hz	–	–
Yes	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = QUAD_LTU1_820_INTOL_STATUS

30.25 Magnet In Tolerance: QUM2

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
No	F	–	–	0 Hz	–	0 Hz	–	–
Yes	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = QUAD_LTU1_840_INTOL_STATUS

30.26 Magnet In Tolerance: QUM3

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
No	F	–	–	0 Hz	–	0 Hz	–	–
Yes	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = QUAD_LTU1_860_INTOL_STATUS

30.27 Magnet In Tolerance: QUM4

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
No	F	–	–	0 Hz	–	0 Hz	–	–
Yes	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = QUAD_LTU1_880_INTOL_STATUS

30.28 Magnet Power: QE31

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Off	F	–	–	0 Hz	–	0 Hz	–	–
On	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = QUAD_LTU1_720_STATE_STATUS

30.29 Magnet Power: QUM1

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Off	F	–	–	0 Hz	–	0 Hz	–	–
On	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = QUAD_LTU1_820_STATE_STATUS

30.30 Magnet Power: QUM2

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Off	F	–	–	0 Hz	–	0 Hz	–	–
On	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = QUAD_LTU1_840_STATE_STATUS

30.31 Magnet Power: QUM3

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Off	F	–	–	0 Hz	–	0 Hz	–	–
On	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = QUAD_LTU1_860_STATE_STATUS

30.32 Magnet Power: QUM4

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Off	F	–	–	0 Hz	–	0 Hz	–	–
On	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = QUAD_LTU1_880_STATE_STATUS

30.33 OTR01 IN20 541 Position and TDUND Not In

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = OTRS_IN20_541_OUT_LMTSW_STATE,
B = OTRS_IN20_541_IN_LMTSW_STATE

30.34 OTR02 IN20 571 Position and TDUND Not In

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = OTRS_IN20_571_OUT_LMTSW_STATE,
B = OTRS_IN20_571_IN_LMTSW_STATE

30.35 OTR03 IN20 621 Position and TDUND Not In

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = `OTRS_IN20_621_OUT_LMTSW_STATE`,
B = `OTRS_IN20_621_IN_LMTSW_STATE`

30.36 OTR04 IN20 711 Position and TDUND Not In

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = `OTRS_IN20_711_OUT_LMTSW_STATE`,
B = `OTRS_IN20_711_IN_LMTSW_STATE`

30.37 OTR11 LI21 237 Position and TDUND Not In

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = `OTRS_LI21_237_OUT_LMTSW_STATE`,
B = `OTRS_LI21_237_IN_LMTSW_STATE`

30.38 OTR12 LI21 291 Position and TDUND Not In

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = `OTRS_LI21_291_OUT_LMTSW_STATE`,
B = `OTRS_LI21_291_IN_LMTSW_STATE`

30.39 OTR21 Position When TDUND Not In

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = `OTRS_LI24_807_OUT_LMTSW_STATE`,
B = `OTRS_LI24_807_IN_LMTSW_STATE`

30.40 OTR33 Position and TDUND Not In

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Moving	F	F	–	–	0 Hz	–	0 Hz	–	–
Out	F	T	–	–	120 Hz	–	120 Hz	–	–
In	T	F	–	–	0 Hz	–	0 Hz	–	–
Broken	T	T	–	–	0 Hz	–	0 Hz	–	–

Where
A = `OTRS_LTUH_745_OUT_LIMIT_POSITION`,
B = `OTRS_LTUH_745_IN_LIMIT_POSITION`

30.41 OTRH1 Position When TDUND Not In

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = `OTRH1_OUT_LIMIT_STATE`,
B = `OTRH1_IN_LIMIT_STATE`

30.42 OTRH2 Position When TDUND Not In

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = `OTRH2_OUT_LIMIT_STATE`,
B = `OTRH2_IN_LIMIT_STATE`

30.43 VVFS DMPH 157 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVFS_DMPH_157_POSITION_STATE`

30.44 VVMG DMPH 643 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = VVMG_DMPH_643_POSITION_STATE

30.45 VVMG DMPH 681 POSITION

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = VVMG_DMPH_681_POSITION_STATE

30.46 VVMG UNDH 1498 POSITION

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = VVMG_UNDH_1498_POSITION_STATE

30.47 VVMG UNDH 1698 POSITION

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = VVMG_UNDH_1698_POSITION_STATE

30.48 VVMG UNDH 2498 POSITION

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = VVMG_UNDH_2498_POSITION_STATE

30.49 VVMG UNDH 2838 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVMG_UNDH_2838_POSITION_STATE`

30.50 VVMG UNDH 2843 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVMG_UNDH_2843_POSITION_STATE`

30.51 VVMG UNDH 3298 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVMG_UNDH_3298_POSITION_STATE`

30.52 VVMG UNDH 3598 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVMG_UNDH_3598_POSITION_STATE`

30.53 VVMG UNDH 4098 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVMG_UNDH_4098_POSITION_STATE`

30.54 VVMG UNDH 4398 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVMG_UNDH_4398_POSITION_STATE`

30.55 VVPG DMPH 396 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVPG_DMPH_396_POSITION_STATE`

30.56 VVPG DMPH 424 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVPG_DMPH_424_POSITION_STATE`

30.57 VVPG UNDH 1288 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVPG_UNDH_1288_POSITION_STATE`

30.58 VVPG UNDH 1998 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVPG_UNDH_1998_POSITION_STATE`

30.59 VVPG UNDH 2198 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVPG_UNDH_2198_POSITION_STATE`

30.60 VVPG UNDH 2798 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVPG_UNDH_2798_POSITION_STATE`

30.61 VVPG UNDH 2998 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = VVPG_UNDH_2998_POSITION_STATE

30.62 VVPG UNDH 3798 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = VVPG_UNDH_3798_POSITION_STATE

30.63 VVPG UNDH 4598 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = VVPG_UNDH_4598_POSITION_STATE

30.64 VVPG UNDH 5196 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = VVPG_UNDH_5196_POSITION_STATE

30.65 YAGPSI Position and TDUND Not In

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Moving	F	F	–	–	0 Hz	–	0 Hz	–	–
Out	F	T	–	–	120 Hz	–	120 Hz	–	–
In	T	F	–	–	0 Hz	–	0 Hz	–	–
Broken	T	T	–	–	0 Hz	–	0 Hz	–	–

Where
A = `YAGS_LTUH_743_OUT_LIMIT_POSITION`,
B = `YAGS_LTUH_743_IN_LIMIT_POSITION`

31 Ignored when Stopper: BSY D2 Summary Is In, TD11 Is In, YAG01 Is In, or YAG02 Is In

31.1 BCS LION LTU1 404 Threshold

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Exceeded	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `LION404_STATE`

31.2 BCS LION LTU1 405 Threshold

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Exceeded	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `LION405_STATE`

31.3 BCS LION LTU1 504 Threshold

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Exceeded	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `LION504_STATE`

31.4 BCS LION LTU1 505 Threshold

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Exceeded	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = LION505_STATE

31.5 BCS LION LTU1 584 Threshold

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Exceeded	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = LION584_STATE

31.6 BCS LION LTU1 585 Threshold

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Exceeded	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = LION585_STATE

31.7 BCS LION LTU1 716 Threshold

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Exceeded	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = LION716_STATE

31.8 BCS LION LTU1 717 Threshold

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Exceeded	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = LION717_STATE

31.9 BCS LION LTU1 732 Threshold

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Exceeded	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `LION732_STATE`

31.10 BCS LION LTU1 733 Threshold

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Exceeded	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `LION733_STATE`

31.11 BCS LION LTU1 752 Threshold

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Exceeded	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `LION752_STATE`

31.12 BCS LION LTU1 753 Threshold

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Exceeded	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `LION753_STATE`

31.13 BCS LION LTU1 765 Threshold

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Exceeded	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `LION765_STATE`

31.14 BCS LION LTU1 766 Threshold

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Exceeded	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `LION766_STATE`

31.15 BLM Heartbeat: Dechirper LTU1 BLF545

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	–	0 Hz	0 Hz	–	0 Hz	–	–
Over High Threshold	F	T	–	0 Hz	0 Hz	–	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_LTUH_BLF545_TEST_L_THRESHOLD`,
B = `BLM_LTUH_BLF545_TEST_H_THRESHOLD`

31.16 BLM Pedestal Thresholds: Dechirper LTU1 BLF545

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	–	0 Hz	0 Hz	–	0 Hz	–	–
Over High Threshold	F	T	–	0 Hz	0 Hz	–	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_LTUH_BLF545_PED_L_THRESHOLD,
B = BLM_LTUH_BLF545_PED_H_THRESHOLD

31.17 BLM Raw Charge Thresholds: Dechirper LTU1 BLF545

Name	B	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	–	0 Hz	0 Hz	–	0 Hz	–	–
Over High Threshold	F	T	–	0 Hz	0 Hz	–	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_LTUH_BLF545_LOSS_L_THRESHOLD,
B = BLM_LTUH_BLF545_LOSS_H_THRESHOLD

31.18 BX31 Current

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = BEND_LTUH_220_CURRENT_THRESHOLD

31.19 BX31 Magnet Power Status

Name	B	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Inconsistent	F	F	–	–	0 Hz	–	0 Hz	–	–
On	F	T	–	–	120 Hz	–	120 Hz	–	–
Off	T	F	–	–	0 Hz	–	0 Hz	–	–
Inconsistent	T	T	–	–	0 Hz	–	0 Hz	–	–

Where
A = BEND_LTUH_220_ON_STATE,
B = BEND_LTUH_220_OFF_STATE

31.20 BYD Watchdog

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

31.21 BYKIK Current

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `KICK_LTUH_320_CURRENT_THRESHOLD`

31.22 BYKIK Magnet Power Status

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Inconsistent	F	F	–	–	0 Hz	–	0 Hz	–	–
On	F	T	–	–	120 Hz	–	120 Hz	–	–
Off	T	F	–	–	0 Hz	–	0 Hz	–	–
Inconsistent	T	T	–	–	0 Hz	–	0 Hz	–	–

Where
A = `KICK_LTUH_320_ON_STATE`,
B = `KICK_LTUH_320_OFF_STATE`

31.23 CEDL1 Temperature

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
FAULT	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `COLL_LTUH_253_TEMP_STATE`

31.24 CEDL3 Temperature

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
FAULT	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `COLL_LTUH_452_TEMP_STATE`

31.25 CXQ6 Temperature

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
FAULT	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `COLL_BSYH_892_TEMP_STATE`

31.26 CXQT22 Temperature

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
FAULT	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `COLL_LTUH_393_TEMP_STATE`

31.27 CYBX32 Temperature

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
FAULT	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `COLL_LTUH_276_TEMP_STATE`

31.28 CYBX36 Temperature

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
FAULT	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `COLL_LTUH_475_TEMP_STATE`

31.29 LTU Dechirper - Horizontal Gap Too Small

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Both ends gap too small	F	F	–	–	0 Hz	–	0 Hz	–	–
Downstream end gap too small	F	T	–	–	0 Hz	–	0 Hz	–	–
Upstream end gap too small	T	F	–	–	0 Hz	–	0 Hz	–	–
Gap ok	T	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `DCHP_LTUH_555_GAP_LIMSW_NEGZ_POSITION`,
B = `DCHP_LTUH_555_GAP_LIMSW_POSZ_POSITION`

31.30 LTU Dechirper - Vertical Gap Too Small

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Both ends gap too small	F	F	–	–	0 Hz	–	0 Hz	–	–
Downstream end gap too small	F	T	–	–	0 Hz	–	0 Hz	–	–
Upstream end gap too small	T	F	–	–	0 Hz	–	0 Hz	–	–
Gap ok	T	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `DCHP_LTUH_545_GAP_LIMSW_NEGZ_POSITION`,
B = `DCHP_LTUH_545_GAP_LIMSW_POSZ_POSITION`

31.31 Magnet In Tolerance: BYD1

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
No	F	–	–	0 Hz	–	0 Hz	–	–
Yes	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `BEND_DMP1_400_INTOL_STATUS`

31.32 Magnet Power: BYD1

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Off	F	–	–	0 Hz	–	0 Hz	–	–
On	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `BEND_DMP1_400_STATE_STATUS`

31.33 OTR33 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Moving	F	F	–	–	0 Hz	–	0 Hz	–	–
Out	F	T	–	–	120 Hz	–	120 Hz	–	–
In	T	F	–	–	10 Hz	–	10 Hz	–	–
Broken	T	T	–	–	0 Hz	–	0 Hz	–	–

Where
A = `OTRS_LTUH_745_OUT_LIMIT_POSITION`,
B = `OTRS_LTUH_745_IN_LIMIT_POSITION`

31.34 PIC HVPS B911 - Location B911-2135

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not On	F	–	–	0 Hz	–	0 Hz	–	–
On	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `PICM_LTUH_B911_HV_PWR_STATE`

31.35 PIC HVPS B912 - Location B912-2135

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not On	F	–	–	0 Hz	–	0 Hz	–	–
On	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `PICM_LTUH_B912_HV_PWR_STATE`

31.36 PIC HVPS B913 - Location B913-2135

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not On	F	–	–	0 Hz	–	0 Hz	–	–
On	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `PICM_LTUH_B913_HV_PWR_STATE`

31.37 PIC Raw Charge Thresholds: LTU1 220

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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_LTUH_220_LOSSL_THRESHOLD`,
B = `PICM_LTUH_220_LOSSH_THRESHOLD`

31.38 PIC Raw Charge Thresholds: LTU1 252

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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_LTUH_253_LOSSL_THRESHOLD,
B = PICM_LTUH_253_LOSSH_THRESHOLD

31.39 PIC Raw Charge Thresholds: LTU1 280

Name	B	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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_LTUH_280_LOSSL_THRESHOLD,
B = PICM_LTUH_280_LOSSH_THRESHOLD

31.40 PIC Raw Charge Thresholds: LTU1 420

Name	B	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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_LTUH_420_LOSSL_THRESHOLD,
B = PICM_LTUH_420_LOSSH_THRESHOLD

31.41 PIC Raw Charge Thresholds: LTU1 450

Name	B	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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_LTUH_452_LOSSL_THRESHOLD,
B = PICM_LTUH_452_LOSSH_THRESHOLD

31.42 PIC Raw Charge Thresholds: LTU1 480

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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_LTUH_480_LOSSL_THRESHOLD`,
B = `PICM_LTUH_480_LOSSH_THRESHOLD`

31.43 PIC Raw Charge Thresholds: LTU1 722

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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_LTUH_722_LOSSL_THRESHOLD`,
B = `PICM_LTUH_722_LOSSH_THRESHOLD`

31.44 PIC Trigger Missed (LN28)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Missed	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `PICM_LTUH_220_NO_TRIG_MISSED`

31.45 PIC Trigger Missed (LN29)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Missed	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = PICM_LTUH_480_NO_TRIG_MISSED

31.46 TDUND Flow Switch Fault With TDUND Not Out

Name	B	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Ok	F	T	120 Hz	120 Hz	120 Hz	–	–	–	–
Ok, TDUND Out	T	F	120 Hz	120 Hz	120 Hz	–	–	–	–
Ok	T	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = DUMP_LTUH_970_FLOW_SW_STATE,
B = DUMP_LTUH_970_OUT_LIMIT_POSITION

31.47 TDUND Position

Name	B	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = DUMP_LTUH_970_OUT_LIMIT_POSITION,
B = DUMP_LTUH_970_IN_LIMIT_POSITION

31.48 Undulator Beam Energy Lower Limit

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
FAULT	F	0 Hz	0 Hz	0 Hz	–	–	–	–
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = BEND_DMP1_400_INTOL_BMIN_STATE

31.49 VVFS LTUH 102 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVFS_LTUH_102_POSITION_STATE`

31.50 VVMG LTUH 174 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVMG_LTUH_174_POSITION_STATE`

31.51 VVMG LTUH 355 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVMG_LTUH_355_POSITION_STATE`

31.52 VVMG LTUH 505 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVMG_LTUH_505_POSITION_STATE`

31.53 VVMG LTUH 670 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVMG_LTUH_670_POSITION_STATE`

31.54 VVMG LTUH 742 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVMG_LTUH_742_POSITION_STATE`

31.55 VVMG LTUH 774 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVMG_LTUH_774_POSITION_STATE`

31.56 VVPG LTUH 102 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVPG_LTUH_102_POSITION_STATE`

31.57 VVPG LTUH 265 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVPG_LTUH_265_POSITION_STATE`

31.58 VVPG LTUH 435 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVPG_LTUH_435_POSITION_STATE`

31.59 VVPG LTUH 580 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVPG_LTUH_580_POSITION_STATE`

31.60 VVPG LTUH 725 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVPG_LTUH_725_POSITION_STATE`

31.61 VVPG LTUH 757 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVPG_LTUH_757_POSITION_STATE`

31.62 VVPG LTUH 999 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVPG_LTUH_999_POSITION_STATE`

31.63 YAGPSI Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Moving	F	F	–	–	0 Hz	–	0 Hz	–	–
Out	F	T	–	–	120 Hz	–	120 Hz	–	–
In	T	F	–	–	10 Hz	–	10 Hz	–	–
Broken	T	T	–	–	0 Hz	–	0 Hz	–	–

Where
A = `YAGS_LTUH_743_OUT_LIMIT_POSITION`,
B = `YAGS_LTUH_743_IN_LIMIT_POSITION`

32 Ignored when TD11 Is In, YAG01 Is In, or YAG02 Is In

32.1 BLM/PIC Watchdog BSY0/BSYA

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Faulted	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Ok	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `MPS_BSY0_1_PICBLM_WD_STATUS`

32.2 BLM/PIC Watchdog LI24

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Faulted	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Ok	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `MPS_LI24_1_PICBLM_WD_STATUS`

32.3 BLM/PIC Watchdog LI30

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Faulted	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Ok	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `MPS_LI30_1_PICBLM_WD_STATUS`

32.4 Bunch Length Monitor BL21 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = `BL22_OUT_STATE`,
B = `BL22_IN_STATE`

32.5 CXBP30 Temperature

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
FAULT	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `COLL_SLTS_428_TEMP_STATE`

32.6 D2 Summary Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Moving	F	F	–	–	0 Hz	–	0 Hz	–	–
Out	F	T	–	–	120 Hz	–	120 Hz	–	–
In	T	F	–	–	0 Hz	–	120 Hz	–	–
Broken	T	T	–	–	0 Hz	–	0 Hz	–	–

Where
A = `STPR_BSYH_847_OUT_LIMIT_POSITION`,
B = `STPR_BSYH_847_IN_LIMIT_POSITION`

32.7 Dump LI28 5879 Flowswitch

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
No Flow	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Flow OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = DUMP_5879_FLOW_SW_STATE

32.8 Dump LI28 5879 Klixon

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not OK	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = DUMP_5879_KLIXON_OK_STATE

32.9 Flowswitch: BSY RAD LCW Slit 10/30

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Ok	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = HTEXCH2_STATE

32.10 Flowswitch: CE21

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = COL_805_FLOSW_STATE

32.11 Flowswitch: COLL LI28-9

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
No Flow	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Flow OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = FLOW_SW_28_9_STATE

32.12 Flowswitch: COLL LI29-1

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
No Flow	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Flow OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `FLOW_SW_29_1_STATE`

32.13 Flowswitch: COLL LI29-4

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
No Flow	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Flow OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `FLOW_SW_29_4_STATE`

32.14 Flowswitch: COLL LI29-5

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
No Flow	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Flow OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `FLOW_SW_29_5_STATE`

32.15 Flowswitch: COLL LI29-9

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
No Flow	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Flow OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `FLOW_SW_29_9_STATE`

32.16 Flowswitch: COLL LI30-1

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
No Flow	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Flow OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = FLOW_SW_30_1_STATE

32.17 Flowswitch: COLL LI30-4

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
No Flow	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Flow OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = FLOW_SW_30_4_STATE

32.18 Flowswitch: COLL LI30-5

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
No Flow	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Flow OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = FLOW_SW_30_5_STATE

32.19 HXR Magnet Mode

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Faulted	F	F	–	–	–	–	–	–	–
Not Faulted	F	T	–	–	–	–	–	–	–
Not Faulted	T	F	–	–	–	–	–	–	–
HXR Mode	T	T	–	–	–	–	–	–	–

Where
A = BEND_CLTS_180_OFF_STATE,
B = KICK_CLTS_185_OFF_STATE

32.20 Hydrogen Recombiner For BSY 1 Collimator

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Ok	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = HYDRECM1_STATE

32.21 Hydrogen Recombiner For BSY 2 Slit 10/30

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Ok	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = HYDRECM2_STATE

32.22 Inconsistent Magnet Mode

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Faulted	F	F	–	–	–	–	–	–	–
Not Faulted	F	T	–	–	–	–	–	–	–
Not Faulted	T	F	–	–	–	–	–	–	–
Both On	T	T	0 Hz	0 Hz	0 Hz	–	0 Hz	0 Hz	0 Hz

Where
A = BEND_CLTS_180_ON_STATE,
B = KICK_CLTS_185_ON_STATE

32.23 Main Manifold Gauge: LI22 Station 5

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not OK	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = MPS_MM_GAUGE_OK_LI22_STATE

32.24 Main Manifold Gauge: LI23 Station 5

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not OK	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = MPS_MM_GAUGE_OK_LI23_STATE

32.25 Main Manifold Gauge: LI24 Station 5

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not OK	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = MPS_MM_GAUGE_OK_LI24_STATE

32.26 Main Manifold Gauge: LI25 Station 5

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not OK	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = MPS_MM_GAUGE_OK_LI25_STATE

32.27 Main Manifold Gauge: LI26 Station 5

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not OK	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = MPS_MM_GAUGE_OK_LI26_STATE

32.28 Main Manifold Gauge: LI27 Station 5

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not OK	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `MPS_MM_GAUGE_OK_LI27_STATE`

32.29 Main Manifold Gauge: LI28 Station 5

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not OK	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `MPS_MM_GAUGE_OK_LI28_STATE`

32.30 Main Manifold Gauge: LI29 Station 5

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not OK	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `MPS_MM_GAUGE_OK_STATE`

32.31 Main Manifold Gauge: LI30 Station 5

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not OK	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `MPS_MM_GAUGE_30_5_OK_STATE`

32.32 OTR LI25 920 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = `OTR_TCAV_OUT_STATE`,
B = `OTR_TCAV_IN_STATE`

32.33 OTR21 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = `OTRS_LI24_807_OUT_LMTSW_STATE`,
B = `OTRS_LI24_807_IN_LMTSW_STATE`

32.34 PIC Gas Pressure LI24

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `PIC_GAS_PRESS_STATE`

32.35 PIC HVPS BSY 1 - Location B005-3921

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not On	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
On	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = PICM_BSY0_1_HV_PWR_STATE

32.36 PIC HVPS BSY 2 - Location B005-3921

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not On	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
On	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = PICM_BSY0_2_HV_PWR_STATE

32.37 PIC HVPS BSY 3 - Location B005-3921

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not On	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
On	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = PICM_BSY0_3_HV_PWR_STATE

32.38 PIC HVPS BSY 4 - Location B005-3918

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not On	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
On	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = PICM_BSY0_4_HV_PWR_STATE

32.39 PIC HVPS BSY 5 - Location B005-3918

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not On	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
On	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = PICM_BSY0_5_HV_PWR_STATE

32.40 PIC HVPS BSY 6 - Location B005-3918

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not On	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
On	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = PICM_BSY0_6_HV_PWR_STATE

32.41 PIC HVPS LI24 - Location LKF24-0235

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not On	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
On	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = PICM_LI24_1_HV_PWR_STATE

32.42 PIC HVPS LI30 - KG30-C1322

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not On	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
On	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = PICM_LI30_1_HV_PWR_STATE

32.43 PIC Raw Charge Thresholds: BSYH 762 (PC90)

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Over High Threshold	F	T	0 Hz	0 Hz	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_BSYH_762_LOSSL_THRESHOLD,
B = PICM_BSYH_762_LOSSH_THRESHOLD

32.44 PIC Raw Charge Thresholds: BSYH 836 (PC119)

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Over High Threshold	F	T	0 Hz	0 Hz	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_BSYH_836_LOSSL_THRESHOLD`,
B = `PICM_BSYH_836_LOSSH_THRESHOLD`

32.45 PIC Raw Charge Thresholds: CLTS 280 (BLRCUS)

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

Where
A = `PICM_CLTS_280_LOSSL_THRESHOLD`,
B = `PICM_CLTS_280_LOSSH_THRESHOLD`

32.46 PIC Raw Charge Thresholds: LI24 791

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

Where
A = `PICM_LI24_791_LOSSL_THRESHOLD`,
B = `PICM_LI24_791_LOSSH_THRESHOLD`

32.47 PIC Raw Charge Thresholds: LI24 811

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

Where
A = `PICM_LI24_811_LOSSL_THRESHOLD`,
B = `PICM_LI24_811_LOSSH_THRESHOLD`

32.48 PIC Raw Charge Thresholds: LI28 916

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

Where
A = `PICM_LI28_916_LOSSL_THRESHOLD`,
B = `PICM_LI28_916_LOSSH_THRESHOLD`

32.49 PIC Raw Charge Thresholds: LI29 146

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

Where
A = `PICM_LI29_146_LOSSL_THRESHOLD`,
B = `PICM_LI29_146_LOSSH_THRESHOLD`

32.50 PIC Raw Charge Thresholds: LI29 446

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

Where
A = PICM_LI29_446_LOSSL_THRESHOLD,
B = PICM_LI29_446_LOSSH_THRESHOLD

32.51 PIC Raw Charge Thresholds: LI29 546

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

Where
A = PICM_LI29_546_LOSSL_THRESHOLD,
B = PICM_LI29_546_LOSSH_THRESHOLD

32.52 PIC Raw Charge Thresholds: LI29 801

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

Where
A = PICM_LI29_801_LOSSL_THRESHOLD,
B = PICM_LI29_801_LOSSH_THRESHOLD

32.53 PIC Raw Charge Thresholds: LI29 956

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

Where
A = `PICM_LI29_956_LOSSL_THRESHOLD`,
B = `PICM_LI29_956_LOSSH_THRESHOLD`

32.54 PIC Raw Charge Thresholds: LI30 146

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

Where
A = `PICM_LI30_146_LOSSL_THRESHOLD`,
B = `PICM_LI30_146_LOSSH_THRESHOLD`

32.55 PIC Raw Charge Thresholds: LI30 446

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

Where
A = `PICM_LI30_446_LOSSL_THRESHOLD`,
B = `PICM_LI30_446_LOSSH_THRESHOLD`

32.56 PIC Raw Charge Thresholds: LI30 546

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

Where
A = PICM_LI30_546_LOSSL_THRESHOLD,
B = PICM_LI30_546_LOSSH_THRESHOLD

32.57 PIC Raw Charge Thresholds: LI30 801

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

Where
A = PICM_LI30_801_LOSSL_THRESHOLD,
B = PICM_LI30_801_LOSSH_THRESHOLD

32.58 PIC Trigger Missed (LN16)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Missed	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = PICM_LI24_791_NO_TRIG_MISSED

32.59 PIC Trigger Missed (LN22)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Missed	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = PICM_LI28_916_NO_TRIG_MISSED

32.60 PIC Trigger Missed (LN25)

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Missed	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = PICM_BSY0_16_NO_TRIG_MISSED

32.61 Pulsed Magnet Mode Ok

Name	B	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Faulted	F	F	–	–	–	–	–	–	–
BKRCUS Current Wrong	F	T	0 Hz	0 Hz	0 Hz	–	0 Hz	0 Hz	0 Hz
Not Faulted	T	F	–	–	–	–	–	–	–
Pulsed Mode Ok	T	T	–	–	–	–	–	–	–

Where
A = KICK_CLTS_185_ON_STATE,
B = KICK_CLTS_185_CURRENT_THRESHOLD

32.62 Scraper Water LI21-9 (Station 22-1)

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not OK	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = MPS_SCRAPPER_FLOW_OK_LI22_STATE

32.63 Scraper Water LI22-9 (Station 23-1)

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not OK	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = MPS_SCRAPPER_FLOW_OK_LI23_STATE

32.64 Scraper Water LI23-9 (Station 24-1)

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not OK	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = MPS_SCRAPPER_FLOW_OK_LI24_STATE

32.65 Scraper Water LI24-9 (Station 25-1)

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not OK	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = MPS_SCRAPPER_FLOW_OK_LI25_STATE

32.66 Scraper Water LI25-9 (Station 26-1)

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not OK	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = MPS_SCRAPPER_FLOW_OK_LI26_STATE

32.67 Scraper Water LI26-9 (Station 27-1)

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not OK	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = MPS_SCRAPPER_FLOW_OK_LI27_STATE

32.68 Scraper Water LI27-9 (Station 28-1)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not OK	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = MPS_SCRAPPER_FLOW_OK_LI28_STATE

32.69 Scraper Water LI28-9 (Station 29-1)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not OK	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = MPS_SCRAPPER_FLOW_OK_LI29_STATE

32.70 Scraper Water LI29-9 (Station 30-1)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not OK	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = MPS_SCRAPPER_FLOW_OK_LI30_STATE

32.71 STCLTS Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Moving	F	F	–	–	–	–	–	0 Hz	0 Hz
Out	F	T	–	–	–	–	–	120 Hz	120 Hz
In	T	F	–	–	–	–	–	10 Hz	0 Hz
Broken	T	T	–	–	–	–	–	0 Hz	0 Hz

Where
A = STPP_CLTS_585_OUT_LIMIT_POSITION,
B = STPR_CLTS_585_IN_LIMIT_POSITION

32.72 STCLTS Temperature

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
FAULT	F	–	–	–	–	–	0 Hz	0 Hz
OK	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `STPR_CLTS_585_TEMP_STATE`

32.73 Stopper LI28 950 and 960 Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Out	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Out	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `BASII_STOPPER_OUT_STATE`

32.74 Sub-booster Ready: LI22

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Ready	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Ready	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `MPS_SBST_OK_READY_LI22_STATE`

32.75 Sub-booster Ready: LI25

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Ready	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Ready	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `MPS_SBST_OK_READY_LI25_STATE`

32.76 Sub-booster Ready: LI26

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Ready	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Ready	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `MPS_SBST_OK_READY_LI26_STATE`

32.77 Sub-booster Ready: LI27

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Ready	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Ready	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `MPS_SBST_OK_READY_LI27_STATE`

32.78 Sub-booster Ready: LI28

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Ready	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Ready	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `MPS_SBST_OK_READY_LI28_STATE`

32.79 Sub-booster Ready: LI29

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Ready	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Ready	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `MPS_SBST_OK_READY_LI29_STATE`

32.80 Sub-booster Ready: LI30

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Ready	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Ready	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = MPS_SBST_OK_READY_LI30_STATE

32.81 SXR Magnet Mode Ok

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Faulted	F	F	–	–	–	–	–	–	–
BRCUSDC Current Wrong	F	T	0 Hz	0 Hz	0 Hz	–	0 Hz	0 Hz	0 Hz
Not Faulted	T	F	–	–	–	–	–	–	–
SXR Mode Ok	T	T	–	–	–	–	–	–	–

Where
A = BEND_CLTS_180_ON_STATE,
B = BEND_CLTS_180_CURRENT_THRESHOLD

32.82 Temperature RTD Summary: BSY Common Line

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Faulted	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = RTD_BSY0_16_CLINESUM_STATUS

32.83 Toroid Chassis LI24 IMBC2

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = CHASIMB2_STATE

32.84 Toroid Comparator BC2 (IMBC2IN vs IMBC2OUT)

Name	B	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Downstream > Upstream	F	T	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Upstream > Downstream	T	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = TCBC2L1_STATE,
B = TCBC2L2_STATE

32.85 VVFS CLTH 101 Position

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	–	–	0 Hz	–	0 Hz	–	–
Open	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = VVFS_CLTH_101_OPEN_LIMSW_POSITION

32.86 VVFS LI21-9 Position (Station 22-1)

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = FAST_VLV_OPEN_LI22_STATE

32.87 VVFS LI22-9 Position (Station 23-1)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `FAST_VLV_OPEN_LI23_STATE`

32.88 VVFS LI23-9 Position (Station 24-1)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `FAST_VLV_OPEN_LI24_STATE`

32.89 VVFS LI24-9 Position (Station 25-1)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `FAST_VLV_OPEN_LI25_STATE`

32.90 VVFS LI25-9 Position (Station 26-1)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `FAST_VLV_OPEN_LI26_STATE`

32.91 VVFS LI26-9 Position (Station 27-1)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `FAST_VLV_OPEN_LI27_STATE`

32.92 VVFS LI27-9 Position (Station 28-1)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `FAST_VLV_OPEN_LI28_STATE`

32.93 VVFS LI28-9 Position (Station 29-1)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `FAST_VLV_OPEN_LI29_STATE`

32.94 VVFS LI29-9 Position (Station 30-1)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `FAST_VLV_OPEN_LI30_STATE`

32.95 VVFS SLTH 130 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVFS_SLTH_130_POSITION_STATE`

32.96 VVFS SLTS 130 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `VVFS_SLTS_130_POSITION_STATE`

32.97 VVPG BSYH 470 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVPG_BSYH_470_POSITION_STATE`

32.98 VVPG BSYH 541 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVPG_BSYH_541_POSITION_STATE`

32.99 VVPG BSYH 837 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = VVPG_BSYH_837_POSITION_STATE

32.100 VVPG CLTH 178 Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	–	–	0 Hz	–	0 Hz	–	–
Open	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = VVPG_CLTH_178_OPEN_LIMSW_POSITION

32.101 VVPG CLTH 375 Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	–	–	0 Hz	–	0 Hz	–	–
Open	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = VVPG_CLTH_375_OPEN_LIMSW_POSITION

32.102 VVPG CLTS 372 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = VVPG_CLTS_372_POSITION_STATE

32.103 VVPG LI21-9 Position (Station 22-1)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = SLOW_VLV_OPEN_LI22_STATE

32.104 VVPG LI22-9 Position (Station 23-1)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = SLOW_VLV_OPEN_LI23_STATE

32.105 VVPG LI23-9 Position (Station 24-1)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = SLOW_VLV_OPEN_LI24_STATE

32.106 VVPG LI24 710 Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Out	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Out	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = VV21_STATE

32.107 VVPG LI24 896 Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Out	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Out	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = VV22_STATE

32.108 VVPG LI25-9 Position (Station 26-1)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = SLOW_VLV_OPEN_LI26_STATE

32.109 VVPG LI26-9 Position (Station 27-1)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = SLOW_VLV_OPEN_LI27_STATE

32.110 VVPG LI27-9 Position (Station 28-1)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = SLOW_VLV_OPEN_LI28_STATE

32.111 VVPG LI28-9 Position (Station 29-1)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = SLOW_VLV_OPEN_LI29_STATE

32.112 VVPG LI29-9 Position (Station 30-1)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = SLOW_VLV_OPEN_LI30_STATE

32.113 VVPG LI30-9 Position (Station 30-9)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Open	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Open	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = SLOW_VLV_30_9_OK_OPEN_STATE

32.114 VVPG SLTH 115 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = VVPG_SLTH_115_POSITION_STATE

32.115 VVPG SLTH 291 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	0 Hz	–	0 Hz	–	–
OPEN	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `VVPG_SLTH_291_POSITION_STATE`

32.116 VVPG SLTS 115 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `VVPG_SLTS_115_POSITION_STATE`

32.117 VVPG SLTS 581 POSITION

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
NOT_OPEN	F	–	–	–	–	–	0 Hz	0 Hz
OPEN	T	–	–	–	–	–	120 Hz	120 Hz

Where
A = `VVPG_SLTS_581_POSITION_STATE`

33 Ignored when YAG01 Is In

33.1 BXG Status

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Off	F	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz
On	T	F	10 Hz	10 Hz	10 Hz	–	–	–	10 Hz
Broken	T	T	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz

Where
A = `BEND_IN20_231_OFF_STATE`,
B = `BEND_IN20_231_OK_STATE`

33.2 Toroid Peak Current Monitor IM01

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `TR_BL215_STATE`

33.3 YAG02 IN20 241 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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_IN20_241_OUT_LMTSW_STATE`,
B = `YAGS_IN20_241_IN_LMTSW_STATE`

34 Ignored when YAG01 Is In or YAG02 Is In

34.1 BLM/PIC Watchdog: Upstream of TDUND

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Faulted	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `MPS_MCC0_1_PICBLM_WD_STATUS`

34.2 BX01/BX02 Status

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Off	F	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz
On	T	F	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz
Broken	T	T	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz

Where
A = `BEND_IN20_751_OFF_STATE`,
B = `BEND_IN20_751_OK_STATE`

34.3 Flowswitch: CE11

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `COLL_LI21_235_OPEN_STATE`

34.4 Flowswitch: TD11

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = FS_BL305_STATE

34.5 Main Manifold Gauge: LI21 Station 5

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not OK	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = MPS_MM_GAUGE_OK_LI21_STATE

34.6 Mirror BL11 Position

Name	B	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = MIR_BL11_OUT_STATE,
B = MIR_BL11_IN_STATE

34.7 OTR01 IN20 541 Position

Name	B	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = OTRS_IN20_541_OUT_LMTSW_STATE,
B = OTRS_IN20_541_IN_LMTSW_STATE

34.8 OTR02 IN20 571 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = `OTRS_IN20_571_OUT_LMTSW_STATE`,
B = `OTRS_IN20_571_IN_LMTSW_STATE`

34.9 OTR03 IN20 621 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = `OTRS_IN20_621_OUT_LMTSW_STATE`,
B = `OTRS_IN20_621_IN_LMTSW_STATE`

34.10 OTR04 IN20 711 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = `OTRS_IN20_711_OUT_LMTSW_STATE`,
B = `OTRS_IN20_711_IN_LMTSW_STATE`

34.11 OTR11 LI21 237 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = `OTRS_LI21_237_OUT_LMTSW_STATE`,
B = `OTRS_LI21_237_IN_LMTSW_STATE`

34.12 OTR12 LI21 291 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = `OTRS_LI21_291_OUT_LMTSW_STATE`,
B = `OTRS_LI21_291_IN_LMTSW_STATE`

34.13 OTRH1 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = `OTRH1_OUT_LIMIT_STATE`,
B = `OTRH1_IN_LIMIT_STATE`

34.14 OTRH2 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = `OTRH2_OUT_LIMIT_STATE`,
B = `OTRH2_IN_LIMIT_STATE`

34.15 Sub-booster Ready: LI21

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Ready	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Ready	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `MPS_SBST_OK_READY_LI21_STATE`

34.16 TD11 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Moving	F	F	0 Hz	0 Hz	–	–	–	–	–
Out	F	T	120 Hz	120 Hz	–	–	–	–	–
In	T	F	120 Hz	120 Hz	–	–	–	–	–
Broken	T	T	0 Hz	0 Hz	–	–	–	–	–

Where
A = `TD11_OUT_LIMIT_STATE`,
B = `TD11_IN_LIMIT_STATE`

34.17 Toroid Chassis IN20 IM11

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = CHASIM11_STATE

34.18 Toroid Chassis IN20 IM12

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = CHASIM12_STATE

34.19 Toroid Comparator BC1 (IMBC1IN vs IMBC1OUT)

Name	B	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Broken	F	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Downstream - Upstream > 50 pC	F	T	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Upstream - Downstream > 200 pC	T	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = TCBC1L1_STATE,
B = TCBC1L2_STATE

34.20 VVFV IN20 785 Position

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Out	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Out	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = VVFV_IN20_785_OPEN_LMTSW_POSITION

34.21 VVMG LI21 195 Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Out	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Out	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `VV_BL195_STATE`

34.22 VVPG IN20 435 Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Out	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Out	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `VV_BL435_STATE`

34.23 VVPG IN20 545 Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Out	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Out	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `VV_BL545_STATE`

34.24 VVPG IN20 635 Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Out	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Out	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `VV_BL635_STATE`

34.25 VVPG IN20 915 Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Out	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Out	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = VV_IS915_STATE

34.26 VVS Circuit Breaker: LI22

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not On	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
On	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = VVS_BRKR_OK_READY_LI22_STATE

34.27 VVS Circuit Breaker: LI24

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not On	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
On	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = VVS_BRKR_OK_READY_LI24_STATE

34.28 VVS Circuit Breaker: LI26

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not On	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
On	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = VVS_BRKR_OK_READY_LI26_STATE

34.29 VVS Circuit Breaker: LI28

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not On	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
On	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = VVS_BRKR_OK_READY_LI28_STATE

34.30 VVS Circuit Breaker: LI30

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not On	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
On	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = VVS_BRKR_OK_READY_LI30_STATE

34.31 YAG03 IN20 351 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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_IN20_351_OUT_LMTSW_STATE,
B = YAGS_IN20_351_IN_LMTSW_STATE

34.32 YAGS1 IN20 921 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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_IN20_921_OUT_LMTSW_STATE,
B = YAGS_IN20_921_IN_LMTSW_STATE

34.33 YAGS2 LI21 995 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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_LI21_995_OUT_LMTSW_STATE,
B = YAGS_LI21_995_IN_LMTSW_STATE

35 Always Evaluated

35.1 Backward Beam Stopper (RST1)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Out	F	0 Hz	0 Hz	0 Hz	–	–	–	–
Out	T	120 Hz	120 Hz	120 Hz	–	–	–	–

Where
A = `ST_BL551_STATE`

35.2 Beam Destination: HXR

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not True	F	–	–	–	–	–	–	–
True	T	–	–	–	–	–	–	–

Where
A = `LP_DESTINATION_HXR`

35.3 Beam Destination: SXR

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not True	F	–	–	–	–	–	–	–
True	T	–	–	–	–	–	–	–

Where
A = `LP_DESTINATION_SXR`

35.4 BLM/PIC Watchdog: IN20

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Faulted	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `MPS_IN20_1_PICBLM_WD_STATUS`

35.5 Bypass Recover

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Recovering	F	0 Hz	0 Hz	0 Hz	0 Hz	0 Hz	0 Hz	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	120 Hz	120 Hz	120 Hz	120 Hz

Where
A = `LP_BYPASS_RECOVER`

35.6 Gun RF Peak Power 20-6

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
OK	F	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz
Fault	T	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz

Where
A = `FLT_20_6_TRP_STATE`

35.7 Gun Waveguide Vacuum Summary

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Out	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Out	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `WGVACGUN_STATE`

35.8 IOC-IN20-MP01 MPS Support IOC Heartbeat

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Fault	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `MN_HEART_STATE`

35.9 Laser Heater Attenuator Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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`

35.10 MCC Emergency Radiation Stopper

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not OK	F	–	–	0 Hz	–	0 Hz	–	–
OK	T	–	–	120 Hz	–	120 Hz	–	–

Where
A = `EMG_RAD_STOP_STATE`

35.11 Mechanical Shutter Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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 = `MPS_IN20_200_MSHT1_OUT_FAULT`,
B = `MPS_IN20_200_MSHT1_IN_FAULT`

35.12 Mirror AM01 Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Out	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Out	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = MR_BL191_STATE

35.13 MPS Beam Permit: BYKIK

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Permitted	F	–	–	0 Hz	–	–	–	–
Permitted	T	–	–	120 Hz	–	–	–	–

Where
A = LP_ALLOWS_BEAM_BYKIK

35.14 MPS Beam Permit: BYKIKS

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Permitted	F	–	–	–	–	–	–	0 Hz
Permitted	T	–	–	–	–	–	–	120 Hz

Where
A = LP_ALLOWS_BEAM_BYKIKS

35.15 MPS Beam Permit: Gun RF

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Permitted	F	0 Hz	–	–	–	–	–	–
Permitted	T	120 Hz	–	–	–	–	–	–

Where
A = LP_ALLOWS_BEAM_POCKELS_CELL

35.16 MPS Beam Permit: Gun RF HXR

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Permitted	F	–	–	–	–	0 Hz	–	–
Permitted	T	–	–	–	–	120 Hz	–	–

Where
A = LP_ALLOWS_BEAM_GUN_HXR

35.17 MPS Beam Permit: Gun RF SXR

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Permitted	F	–	–	–	–	–	0 Hz	–
Permitted	T	–	–	–	–	–	120 Hz	–

Where
A = LP_ALLOWS_BEAM_GUN_SXR

35.18 MPS Beam Permit: Heater Shutter

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Permitted	F	–	–	–	0 Hz	–	–	–
Permitted	T	–	–	–	120 Hz	–	–	–

Where
A = LP_ALLOWS_BEAM_LH_SHUT

35.19 MPS Beam Permit: Mechanical Shutter

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Permitted	F	–	0 Hz	–	–	–	–	–
Permitted	T	–	120 Hz	–	–	–	–	–

Where
A = LP_ALLOWS_BEAM_MECH_SHUT

35.20 MPS Mechanical Shutter Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
OK	F	120 Hz	120 Hz	120 Hz	–	–	–	–
Readback Does Not Match	T	0 Hz	0 Hz	0 Hz	–	–	–	–

Where
A = SHFLT_STATE

35.21 PIC HVPS LI20 - Location LKG-1535

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not On	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
On	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = PICM_LI20_1_HV_PWR_STATE

35.22 PIC Raw Charge Thresholds: IN20 185

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

Where
A = PICM_IN20_185_LOSSL_THRESHOLD,
B = PICM_IN20_185_LOSSH_THRESHOLD

35.23 PIC Raw Charge Thresholds: IN20 232

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

Where
A = PICM_IN20_232_LOSSL_THRESHOLD,
B = PICM_IN20_232_LOSSH_THRESHOLD

35.24 PIC Raw Charge Thresholds: IN20 245

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

Where
A = `PICM_IN20_245_LOSSL_THRESHOLD`,
B = `PICM_IN20_245_LOSSH_THRESHOLD`

35.25 PIC Raw Charge Thresholds: IN20 665

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

Where
A = `PICM_IN20_665_LOSSL_THRESHOLD`,
B = `PICM_IN20_665_LOSSH_THRESHOLD`

35.26 PIC Raw Charge Thresholds: IN20 775

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

Where
A = `PICM_IN20_775_LOSSL_THRESHOLD`,
B = `PICM_IN20_775_LOSSH_THRESHOLD`

35.27 PIC Raw Charge Thresholds: IN20 933

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

Where
A = `PICM_IN20_933_LOSSL_THRESHOLD`,
B = `PICM_IN20_933_LOSSH_THRESHOLD`

35.28 PIC Trigger Missed (LN11)

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Missed	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
OK	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `PICM_IN20_665_NO_TRIG_MISSED`

35.29 Pockels Cell AND Gate 100

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Bypassed	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Active	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `MPS_IN20_100_ANDALLACTV_STATE`

35.30 Pockels Cell AND Gate 200

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Bypassed	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Active	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `MPS_IN20_200_ANDALLACTV_STATE`

35.31 Rate Request: BYKIK 1 Hz

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	120 Hz	–	–	–	–
Requested	T	–	–	1 Hz	–	–	–	–

Where
A = `LP_MAX_RATE_BYKIK_1_HZ`

35.32 Rate Request: BYKIK 10 Hz

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	120 Hz	–	–	–	–
Requested	T	–	–	10 Hz	–	–	–	–

Where
A = `LP_MAX_RATE_BYKIK_10_HZ`

35.33 Rate Request: BYKIK 30 Hz

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	120 Hz	–	–	–	–
Requested	T	–	–	30 Hz	–	–	–	–

Where
A = `LP_MAX_RATE_BYKIK_30_HZ`

35.34 Rate Request: BYKIK 60 Hz

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	120 Hz	–	–	–	–
Requested	T	–	–	60 Hz	–	–	–	–

Where
A = `LP_MAX_RATE_BYKIK_60_HZ`

35.35 Rate Request: BYKIK Burst

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	120 Hz	–	–	–	–
Requested	T	–	–	Burst Mode	–	–	–	–

Where
A = LP_MAX_RATE_BYKIK_BURST

35.36 Rate Request: BYKIK Single Shot

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	120 Hz	–	–	–	–
Requested	T	–	–	Single Shot	–	–	–	–

Where
A = LP_MAX_RATE_BYKIK_SINGLE_SHOT

35.37 Rate Request: BYKIKS 1 Hz

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	–	–	–	–	120 Hz
Requested	T	–	–	–	–	–	–	1 Hz

Where
A = LP_MAX_RATE_BYKIKS_1_HZ

35.38 Rate Request: BYKIKS 10 Hz

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	–	–	–	–	120 Hz
Requested	T	–	–	–	–	–	–	10 Hz

Where
A = LP_MAX_RATE_BYKIKS_10_HZ

35.39 Rate Request: BYKIKS 30 Hz

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	–	–	–	–	120 Hz
Requested	T	–	–	–	–	–	–	30 Hz

Where
A = `LP_MAX_RATE_BYKIKS_30_HZ`

35.40 Rate Request: BYKIKS 60 Hz

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	–	–	–	–	120 Hz
Requested	T	–	–	–	–	–	–	60 Hz

Where
A = `LP_MAX_RATE_BYKIKS_60_HZ`

35.41 Rate Request: BYKIKS Burst

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	–	–	–	–	120 Hz
Requested	T	–	–	–	–	–	–	Burst Mode

Where
A = `LP_MAX_RATE_BYKIKS_BURST`

35.42 Rate Request: BYKIKS Single Shot

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	–	–	–	–	120 Hz
Requested	T	–	–	–	–	–	–	Single Shot

Where
A = `LP_MAX_RATE_BYKIKS_SINGLE_SHOT`

35.43 Rate Request: Gun RF HXR 1 Hz

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	–	–	120 Hz	–	–
Requested	T	–	–	–	–	1 Hz	–	–

Where
A = LP_MAX_RATE_GUN_HXR_1_HZ

35.44 Rate Request: Gun RF HXR 10 Hz

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	–	–	120 Hz	–	–
Requested	T	–	–	–	–	10 Hz	–	–

Where
A = LP_MAX_RATE_GUN_HXR_10_HZ

35.45 Rate Request: Gun RF HXR 30 Hz

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	–	–	120 Hz	–	–
Requested	T	–	–	–	–	30 Hz	–	–

Where
A = LP_MAX_RATE_GUN_HXR_30_HZ

35.46 Rate Request: Gun RF HXR 60 Hz

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	–	–	120 Hz	–	–
Requested	T	–	–	–	–	60 Hz	–	–

Where
A = LP_MAX_RATE_GUN_HXR_60_HZ

35.47 Rate Request: Gun RF HXR Burst

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	–	–	120 Hz	–	–
Requested	T	–	–	–	–	Burst Mode	–	–

Where
A = LP_MAX_RATE_GUN_HXR_BURST

35.48 Rate Request: Gun RF HXR Single Shot

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	–	–	120 Hz	–	–
Requested	T	–	–	–	–	Single Shot	–	–

Where
A = LP_MAX_RATE_GUN_HXR_SINGLE_SHOT

35.49 Rate Request: Gun RF SXR 1 Hz

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	–	–	–	120 Hz	–
Requested	T	–	–	–	–	–	1 Hz	–

Where
A = LP_MAX_RATE_GUN_SXR_1_HZ

35.50 Rate Request: Gun RF SXR 10 Hz

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	–	–	–	120 Hz	–
Requested	T	–	–	–	–	–	10 Hz	–

Where
A = LP_MAX_RATE_GUN_SXR_10_HZ

35.51 Rate Request: Gun RF SXR 30 Hz

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	–	–	–	120 Hz	–
Requested	T	–	–	–	–	–	30 Hz	–

Where
A = LP_MAX_RATE_GUN_SXR_30_HZ

35.52 Rate Request: Gun RF SXR 60 Hz

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	–	–	–	120 Hz	–
Requested	T	–	–	–	–	–	60 Hz	–

Where
A = LP_MAX_RATE_GUN_SXR_60_HZ

35.53 Rate Request: Gun RF SXR Burst

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	–	–	–	120 Hz	–
Requested	T	–	–	–	–	–	Burst Mode	–

Where
A = LP_MAX_RATE_GUN_SXR_BURST

35.54 Rate Request: Gun RF SXR Single Shot

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	–	–	–	–	–	120 Hz	–
Requested	T	–	–	–	–	–	Single Shot	–

Where
A = LP_MAX_RATE_GUN_SXR_SINGLE_SHOT

35.55 Rate Request: Pockels Cell 1 Hz

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	120 Hz	–	–	–	–	–	–
Requested	T	1 Hz	–	–	–	–	–	–

Where
A = LP_MAX_RATE_PC_1_HZ

35.56 Rate Request: Pockels Cell 10 Hz

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	120 Hz	–	–	–	–	–	–
Requested	T	10 Hz	–	–	–	–	–	–

Where
A = LP_MAX_RATE_PC_10_HZ

35.57 Rate Request: Pockels Cell 30 Hz

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	120 Hz	–	–	–	–	–	–
Requested	T	30 Hz	–	–	–	–	–	–

Where
A = LP_MAX_RATE_PC_30_HZ

35.58 Rate Request: Pockels Cell 60 Hz

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	120 Hz	–	–	–	–	–	–
Requested	T	60 Hz	–	–	–	–	–	–

Where
A = LP_MAX_RATE_PC_60_HZ

35.59 Rate Request: Pockels Cell Burst

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	120 Hz	–	–	–	–	–	–
Requested	T	Burst Mode	–	–	–	–	–	–

Where
A = `LP_MAX_RATE_PC_BURST`

35.60 Rate Request: Pockels Cell Single Shot

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Requested	F	120 Hz	–	–	–	–	–	–
Requested	T	Single Shot	–	–	–	–	–	–

Where
A = `LP_MAX_RATE_PC_SINGLE_SHOT`

35.61 VVMG IN20 175 Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Out	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Out	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `VV_BL175_STATE`

35.62 VVPG IN20 155 Position

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not Out	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
Out	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `VV_BL155_STATE`

35.63 VVS Circuit Breaker: LI20

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not On	F	0 Hz	0 Hz	0 Hz	–	–	–	0 Hz
On	T	120 Hz	120 Hz	120 Hz	–	–	–	120 Hz

Where
A = `VVS_BRKR_OK_READY_LI20_STATE`

35.64 YAG01 IN20 211 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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_IN20_211_OUT_LMTSW_STATE`,
B = `YAGS_IN20_211_IN_LMTSW_STATE`

35.65 YAGG1 IN20 841 Position

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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_IN20_841_OUT_LMTSW_STATE`,
B = `YAGS_IN20_841_IN_LMTSW_STATE`

36 Ignore Logic

36.1 A-Line Kicker Is Not Enabled

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Is Not Enabled	F	F	–	–	–	–	–	–	–

Where
A = KICK_BSY0_66_PM1_TRIG_ENB_STATUS,
B = KICK_BSY0_66_PM2_TRIG_ENB_STATUS

36.2 A-Line SL10 Is Closed

Name	*D*	*C*	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
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

36.3 BKRCUS Is On

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
On	T	–	–	–	–	–	–	–

Where
A = KICK_CLTS_185_ON_STATE

36.4 BRCUSDC Is Off

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Off	T	–	–	–	–	–	–	–

Where
A = BEND_CLTS_180_OFF_STATE

36.5 BRCUSDC Is On

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
On	T	–	–	–	–	–	–	–

Where
A = BEND_CLTS_180_ON_STATE

36.6 BX01/BX02 Is Off

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Off	F	T	–	–	–	–	–	–	–

Where
A = BEND_IN20_751_OFF_STATE,
B = BEND_IN20_751_OK_STATE

36.7 BX01/BX02 Is On

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
On	T	F	–	–	–	–	–	–	–

Where
A = BEND_IN20_751_OFF_STATE,
B = BEND_IN20_751_OK_STATE

36.8 BXG Is Off

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Off	F	T	–	–	–	–	–	–	–

Where
A = BEND_IN20_231_OFF_STATE,
B = BEND_IN20_231_OK_STATE

36.9 BXG Is On

Name	*B*	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
On	T	F	–	–	–	–	–	–	–

Where
A = BEND_IN20_231_OFF_STATE,
B = BEND_IN20_231_OK_STATE

36.10 Destination HXR

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
HXR	T	–	–	–	–	–	–	–

Where
A = LP_DESTINATION_HXR

36.11 Destination SXR

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
SXR	T	–	–	–	–	–	–	–

Where
A = LP_DESTINATION_SXR

36.12 Diag Stopper HFX DG2 Is In

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
In	T	–	–	–	–	–	–	–

Where
A = HFX_DG2_STP_01_IN_DI_POSITION

36.13 Diag Stopper HFX UM6 Is In

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
In	T	–	–	–	–	–	–	–

Where
A = HFX_UM6_STP_01_IN_DI_POSITION

36.14 Diag Stopper XCS SB1 Is In

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
In	T	–	–	–	–	–	–	–

Where
A = XCS_SB1_STP_01_CLS_DI_POSITION

36.15 Laser Heater Attenuator Is In

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
In	T	–	–	–	–	–	–	–

Where
A = LHATTEN_IN_LIMIT_STATE

36.16 LTU Dechirper Is Out

Name	D	C	B	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Out	T	T	T	T	–	–	–	–	–	–	–

Where
A = DCHP_LTUH_545_OUT_LIMSW_NEGY_POSITION,
B = DCHP_LTUH_545_OUT_LIMSW_POSY_POSITION,
C = DCHP_LTUH_555_OUT_LIMSW_NEGX_POSITION,
D = DCHP_LTUH_555_OUT_LIMSW_POSX_POSITION

36.17 STCLTS Is In

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
In	T	–	–	–	–	–	–	–

Where
A = STPR_CLTS_585_IN_LIMIT_POSITION

36.18 Stopper MFX S4.5 Is In

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Is In	T	–	–	–	–	–	–	–

Where
A = STPR_XRT_1_S45IN_STATE

36.19 Stopper S1 Is In

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Is In	T	–	–	–	–	–	–	–

Where
A = STPR_FEE1_1_S1IN_POSITION

36.20 Stopper S2 Is In

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
In	T	–	–	–	–	–	–	–

Where
A = STPR_FEE1_1_S2IN_STATE

36.21 Stopper S2B Is In

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
In	T	–	–	–	–	–	–	–

Where
A = STPR_FEE1_1_S2BIN_STATE

36.22 Stopper S5B Is In

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
In	T	–	–	–	–	–	–	–

Where
A = STPR_FEH1_5_S5BIN_POSITION

36.23 Stopper SH1 Is In

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
In	T	–	–	–	–	–	–	–

Where
A = STPR_FEE1_1_SH1IN_STATE

36.24 Stopper SH2 Is In

Name	B	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
In	T	F	–	–	–	–	–	–	–

Where
A = STPR_XRT1_1_SH2OUT_STATE,
B = STPR_XRT1_1_SH2IN_STATE

36.25 Stopper XRT S5 Is In

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
In	T	–	–	–	–	–	–	–

Where
A = STPR_XRT1_1_S5IN_POSITION

36.26 Stopper XRT S6 Is In

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
In	T	–	–	–	–	–	–	–

Where
A = STPR_XRT1_1_S6IN_POSITION

36.27 Stopper: BSY D2 Summary Is In

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
In	T	–	–	–	–	–	–	–

Where
A = STPR_BSYH_847_IN_LIMIT_POSITION

36.28 TD11 Is In

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
In	T	–	–	–	–	–	–	–

Where
A = TD11_IN_LIMIT_STATE

36.29 TDUND Is In

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
In	T	–	–	–	–	–	–	–

Where
A = DUMP_LTUH_970_IN_LIMIT_POSITION

36.30 TDUNDB Is In

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
In	T	–	–	–	–	–	–	–

Where
A = DUMP_LTUS_972_IN_LIMIT_POSITION

36.31 XPP-NH3-POS-00 Beamline Is In

Name	*A*	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
In	T	–	–	–	–	–	–	–

Where
A = XPP_NH3_POS_00_IN_STATE

36.32 XPP-NH3-POS-00 Beamline Is Not In

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
Not_IN	F	–	–	–	–	–	–	–

Where
A = XPP_NH3_POS_00_IN_STATE

36.33 XRT-M2 Mirror Is Out of Beam

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
IS_OUT	T	–	–	–	–	–	–	–

Where
A = HXX_HXM_MMS_01_B_POSITION

36.34 YAG01 Is In

Name	B	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
In	T	F	–	–	–	–	–	–	–

Where
A = YAGS_IN20_211_OUT_LMTSW_STATE,
B = YAGS_IN20_211_IN_LMTSW_STATE

36.35 YAG02 Is In

Name	A	GUNL	MS	BYKIK	LHS	GUNH	GUNS	BYKIKS
In	T	–	–	–	–	–	–	–

Where
A = YAGS_IN20_241_IN_LMTSW_STATE