Procedure for the Use of Beamline Global Online Keys

Procedure # 4103010104-00031, rev. 1

8/30/2006

Supersedes: Rev. 0, 7/7/05

Changes made in this revision:

- Revised section 1.3 Applicability
- Under section 3 removing global online, changed step 1
- Under section 3 removing global online changed step 7
- Under section 3 removing global online, changed step 11
- Removed all specific references to PV's and EPICS screens because this causes problems with Gen 1 vs Gen 2 vs Gen 3 systems in PSS.
- Added figures 1b, 2a, 2b, 2c, 6a, 6b, and changed figure numbers throughout the document to reflect correct figure in the correct procedure description.
- Also removed references to only floor coordinators removing global offline and changed to FC or MCR operators.

Section where used:

AES-UES Floor Coordinators

ASD-OA Main Control Room Operators

Prepared by:

P. Pedergnana, AES-UES

Reviewed by:

G. Markovich, AES-SI

Approved by:

M. Borland, ASD-OA

B. Glagola, AES-UES

N. Moonier, AES-UES

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1 Introduction

1.1 Purpose

This procedure defines the role of Floor Coordinators in turning beamlines Globally Online or taking them Globally Offline, and the role of Main Control Room Operators taking a beamline Globally Offline.

1.2 Scope

This procedure covers the Floor Coordinator's role in turning a beamline Globally Online or Globally Offline, and the Main Control Room Operator's role in turning a beamline Globally Offline.

1.3 Applicability

This procedure applies to all Floor Coordinators and Main Control Room Operators who are involved in changing the Global Online/Offline status of any beamline. Subsequently, this procedure applies to beamlines which have been commissioned and are allowed to operate by APS Management. This procedure only applies for normal operations. It does not apply when the ACIS is under test or validation during scheduled shutdowns or re-validations due to failed equipment. These situations would be covered under the WRQ / CCWP systems policies and procedures.

1.4 References

Storage Ring ACIS Validation Test Procedure, Procedure # 310503-00009

1.5 Type of Procedure

This procedure is a step-by-step procedure.

1.6 Hazard Controls

All appropriate Personnel Protective Equipment (PPE) associated with working on the APS storage ring mezzanine is to be worn while performing the steps of this procedure. This includes safety shoes and safety glasses.

2 Background

The purpose of this procedure is to provide instructions to the Floor Coordinators for placing a beamline Globally Online or Globally Offline, and Main Control Room Operators for placing a beamline Globally Offline.

3 Procedure

The ACIS reacts to front-end shutter status based on the position of the Global Key Switch. The key switch is considered a primary safety device; consequently, a beamline can be taken Globally Offline for any safety-related reason by APS Engineering Support or Accelerator Systems Operations without first obtaining prior permission or submitting a work request. However, once taken Globally Offline, the recording requirements of this procedure should be completed.

Any time that a beamline is required to be Globally Offline it shall be recorded in the Global Online/Offline log. If a beamline is already Globally Offline and another request occurs for it to be Globally Offline the additional request will also be logged. This ensures that the beamline remains in that state until all reasons for being so are removed.

Removing Global Online

1. The Floor Coordinator or Main Control Room Operator will ensure that the Front End shutter cluster (PS2, SS1, SS2) is closed, using the appropriate EPICS screens.

   (See Figures 1a and 1b for examples)

   Alternately, if the “MEZZIE” chassis is installed, this PSS mezzanine status chassis can be used to monitor the status of the front end shutters.

   (See Figures 2a, 2b, and 2c)

2. The Floor Coordinator will remove APS Enable from Station A, or the Main Control Room Operator will remove User Enable from Station A.
3. If the On-Call Floor Coordinator is taking a beamline Globally Offline, they will notify the Main Control Room (MCR) that they, or another designated Floor Coordinator, will

be taking a beamline(s) Globally Offline. MCR personnel will confirm that they are being notified by the On-Call Floor Coordinator.

4. The On-Call Floor Coordinator, other designated Floor Coordinator, or Main Control Room Operator will record which beamline is being taken Globally Offline in the Global Online/Offline log

   - Reason that Global Online is being removed
   - Work Request number (if applicable)
   - ACIS approval to restore Global Online is required (Y/N) Sign and Date

   The On-Call Floor Coordinator, other designated Floor Coordinator, or Main Control Room Operator will note whether or not the beamline will require ACIS approval before Global Online can be restored.

   - If Global Online is being removed as a result of an approved Work Request, confirm whether or not SYSTEMS AFFECTED or SYSTEMS REQUIRED indicate the need for ACIS approval, or communicate with the PSS System Manager.
   - If ACIS approval is required contact Randy Flood (2-1767, 4-1767). ACIS personnel must be notified that their approval is required; an estimated time for this approval needs to be given. In doing so, ACIS representatives can schedule to be available.

5. MCR personnel will release the ACIS Sector Interface Enclosure (ASIE) key to the requestor.

6. The Floor Coordinator or Main Control Room Operator will unlock the ASIE. The enclosure is located on top of the Storage Ring at the downstream end of the relay rack group labeled (S#-1)-BM-AR-RR0 (1, 2, 3, 4) and (S#)-01.

   For example, the ASIE for Sector 34 is located downstream of the relay racks labeled:

   33-BM-AR-RR01 through 33-BM-AR-RR04 and 34-01

   (See Figure 3)

7. The Floor Coordinator or Main Control Room Operator will verify that the beamline (BM or ID) Shutter Summation input (IN) bits on the appropriate I/O block are ON (lit) for both Chain A and Chain B, indicating PS1, SS1, and SS2 are all CLOSED.

   Upper I/O Block: Chain A
   Lower I/O Block: Chain B

   Bending Magnet beamline: Bit 11
   Insertion Device beamline: Bit 14

If either input bit is OFF (not lit), inform the PSS group to determine the cause. (See Figures 4 & 5)

Alternately, if the "MEZZIE" chassis is installed, this PSS mezzanine status chassis can be used to monitor PSS trips to the ACIS and status of the front end shutters. Inform the PSS group if PSS trips are present to determine their cause.

(See Figures 2a, 2b, and 2c)

8. The Floor Coordinator or Main Control Room Operator will take the beamline Globally Offline by turning the Global Online/Offline key to the offline position and remove it from its lock.

   CAUTION: The Floor Coordinator or Main Control Room Operator is to use caution near the test switches within the ASIE. Changing the state of any switch could cause a beam dump.

9. The Floor Coordinator or Main Control Room Operator will close and relock the ASIE.
10. The Floor Coordinator or Main Control Room Operator will return the Global Online key and the ASIE key to MCR personnel. The MCR operator will secure the key in the ACIS online/offline cabinet.
11. The Floor Coordinator or Main Control Room Operator will record this activity in their shift log.

Restoring Global Online

1. The Floor Coordinator will ensure that all Configuration Control Work Permits (CCWP) and/or Work Requests (WR) for the beamline in question have been properly closed. If the beamline was taken offline for work not requiring either a CCWP or WR, the Floor Coordinator will ensure that such work was completed.
2. The Floor Coordinator will ensure that all PSS faults have been reset. The appropriate EPICS PSS Faults screens will display an empty Fault Stack. (See Figure 6a and 6b for examples)
3. The Floor Coordinator will obtain ACIS approval (if required).
4. The Floor Coordinator will record which beamline is being brought Globally Online in the Global Online/Offline log

   - Reason that Global Online is being restored
   - Indicate that Work Request(s) are complete (if applicable)
   - Sign and Date

5. The On-Call Floor Coordinator will request the beamline specific Global Online key from MCR personnel. MCR personnel will verify that the requestor is the On-Call Floor Coordinator. MCR personnel will issue the appropriate Global Online key and the ACIS

Sector Interface Enclosure (ASIE) key to the On-Call Floor Coordinator, or other designated Floor Coordinator.

6. The Floor Coordinator will unlock the ASIE.
7. The Floor Coordinator will verify that the beamline PSS (BM or ID) Trip input (IN) bits on the appropriate I/O block are ON (lit) for both Chain A and Chain B indicating that there are NO MAJOR FAULTS for the beam line.

   Upper I/O Block: Chain A
   Lower I/O Block: Chain B

   Bending Magnet beamline: Bit 12
   Insertion Device beamline: Bit 15

   If either input bit is OFF (not lit) contact the PSS group and do not complete the remaining steps in this procedure. (See Figures 4 & 5).

   Alternately, if the "MEZZIE" chassis is installed, this PSS mezzanine status chassis can be used to monitor PSS trips to the ACIS and status of the front end shutters. Inform the PSS group if PSS trips are present to determine their cause.

   (See Figures 2a, 2b, and 2c)

   CAUTION: If the Beamline is Globally Online and all the ACIS-monitored Front End shutters are closed, the Major faults will be ignored. However, under these conditions and if a shutter is detected open (coming off a closed limit switch for any reason), the ACIS will dump the Storage Ring. Consequently it is prudent to clear all Major faults before going Globally Online.

8. The Floor Coordinator will restore Global Online status by turning the Global Online/Offline key to the online position. The key will be captured in place once turned.

   CAUTION: The Floor Coordinator is to use caution near the test switches within the ASIE. Changing the state of any switch could cause a beam dump.

9. The Floor Coordinator will close and relock the ASIE.
10. The Floor Coordinator will give the ASIE key to MCR personnel.
11. The Floor Coordinator will record this activity in the Floor Coordinator shift log.

4 Documentation Action

At the beginning of each User run period, within the Main Control Room an approved list of beamlines requiring Global Online will be placed on the cabinet containing the Global Online keys. Any beamlines to be placed Globally Online subsequent to the start of each run will require

the strict adherence to this procedure. Changing the Global Online/Offline state of any beamline will be recorded in the Global Online/Offline log and the Floor Coordinator Shift Log.

5 Training Requirements

This procedure will be included in the Floor Coordinator Training Manual and Main Control Room Operator Procedures and instruction will be provided by experienced individuals prior to execution.

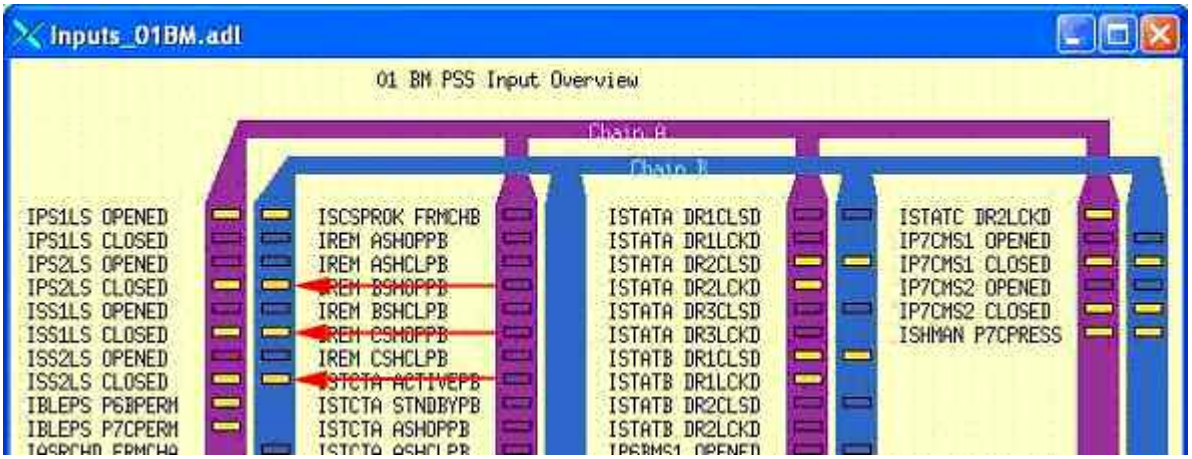

Figure 1a: Example of Generation 1 Systems Inputs EPICS screen, Inputs_(S#)(BM/ID).adl

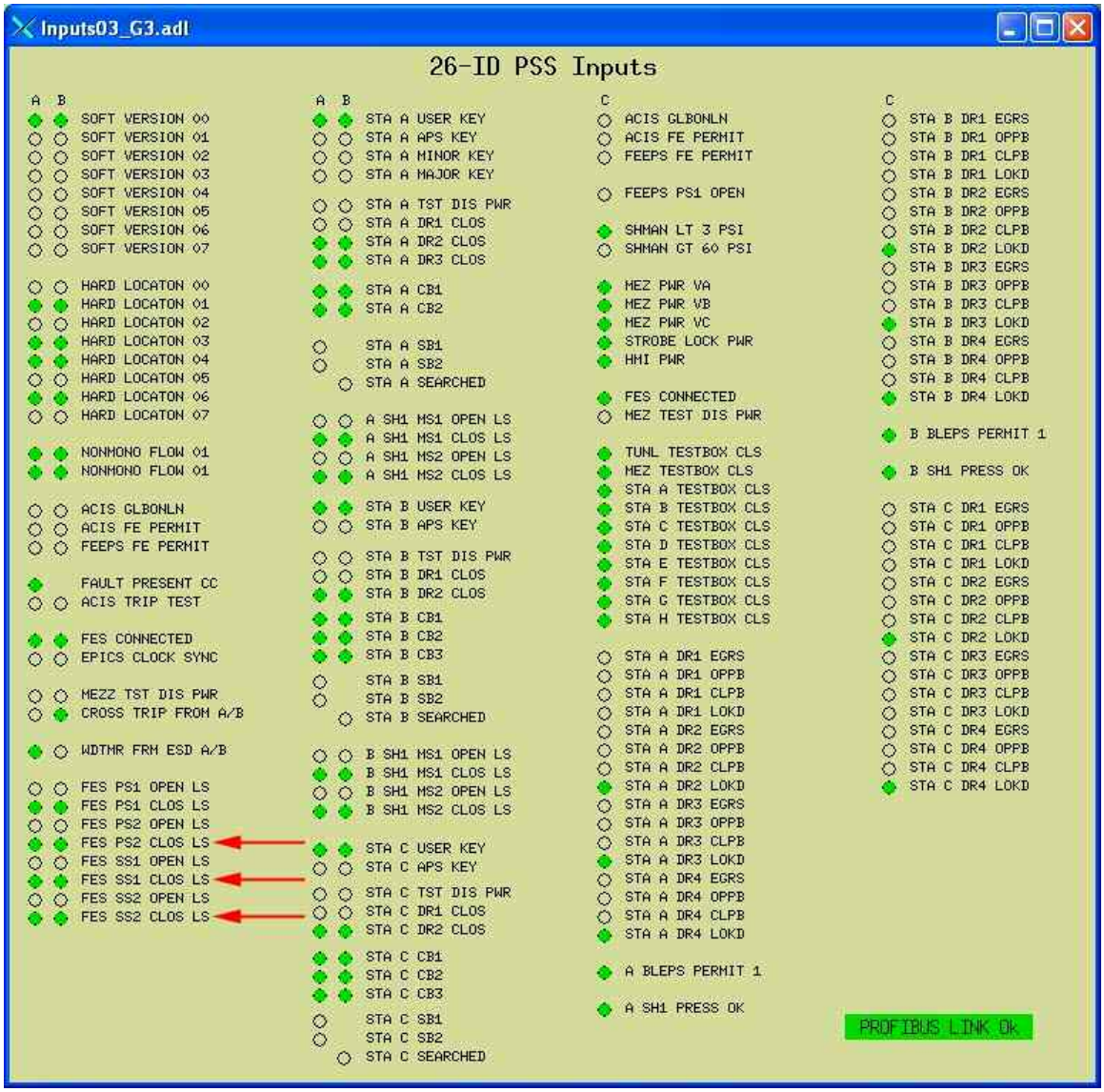

Figure 1b: Example of Generation 3 Systems Inputs EPICS screen, Inputs(SS)_G3.adl

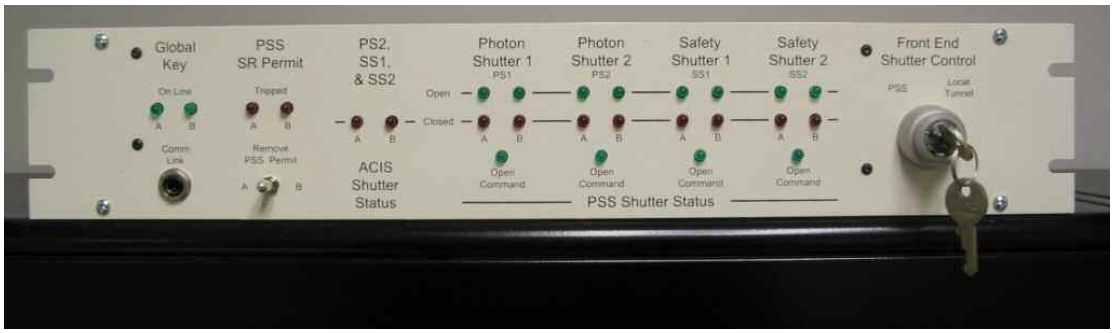

Figure 2a: Mezzanine PSS Test Chassis (MEZZIE)

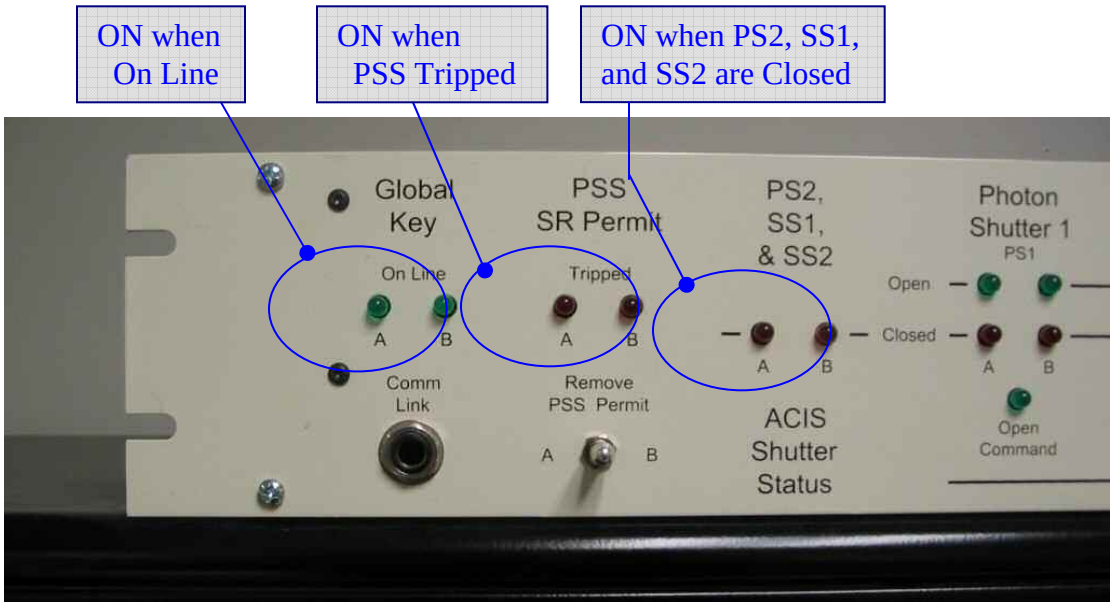

Figure 2b: MEZZIE Panel, ACIS LEDs

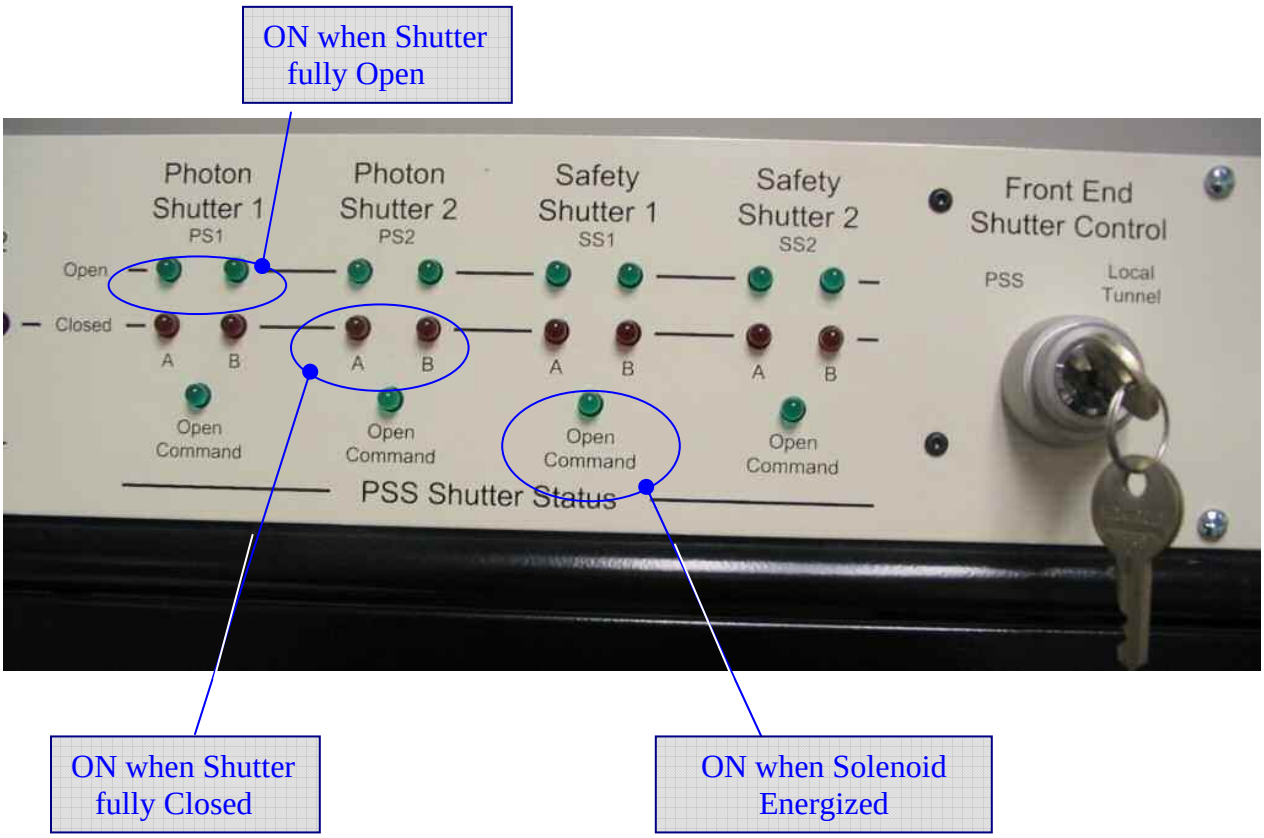

Figure 2c: MEZZIE Panel, PSS LEDs

Figure 3: ACIS/PSS Interface Cabinet

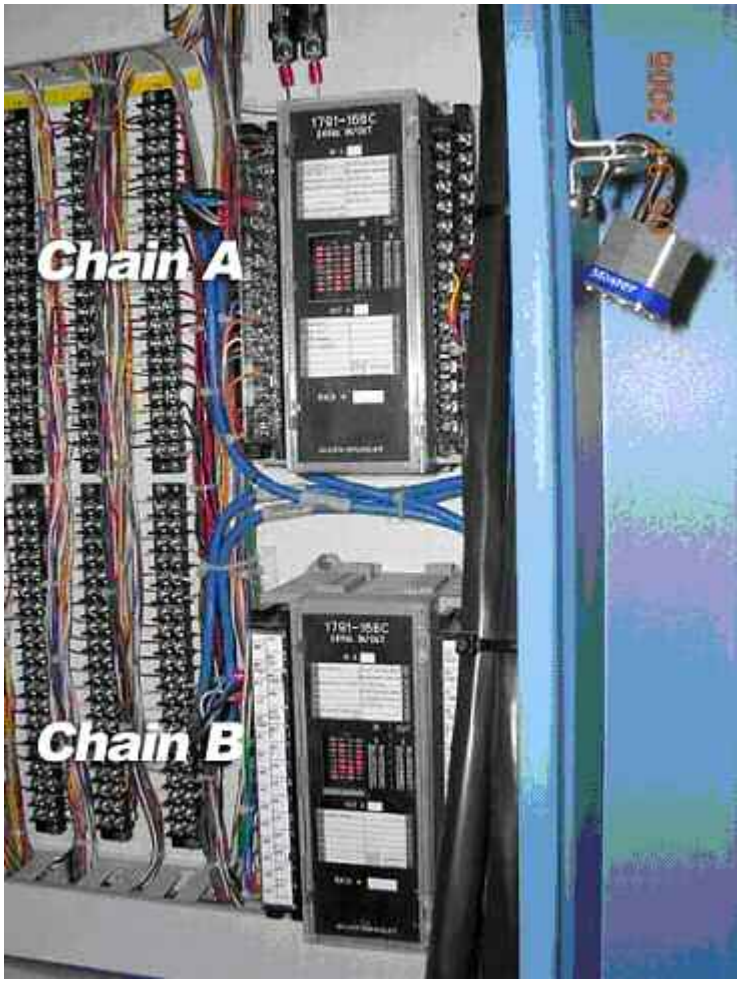

Figure 4: Inside the ACIS/PSS Interface Cabinet

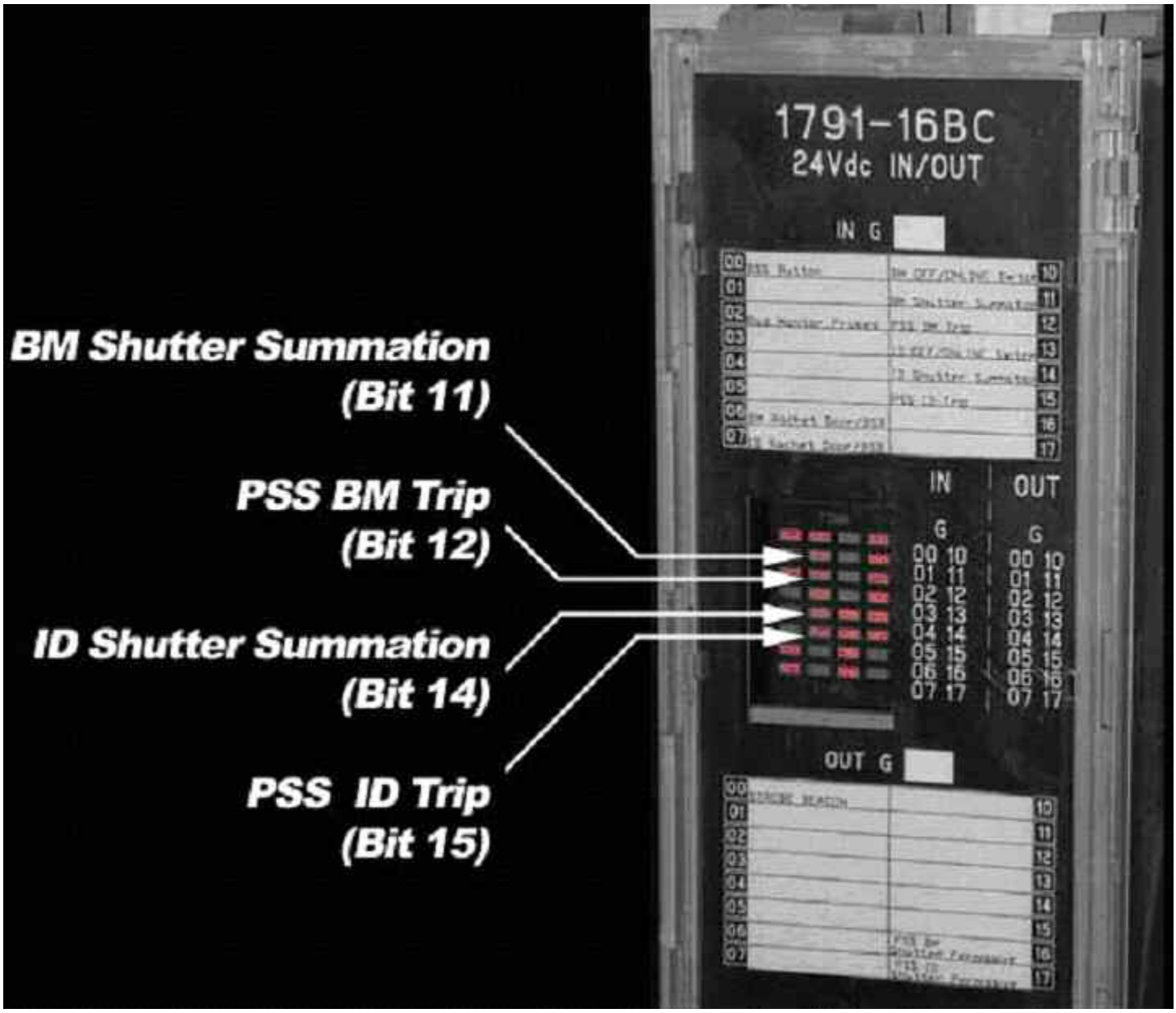

Figure 5: I/O Block denoting input bits

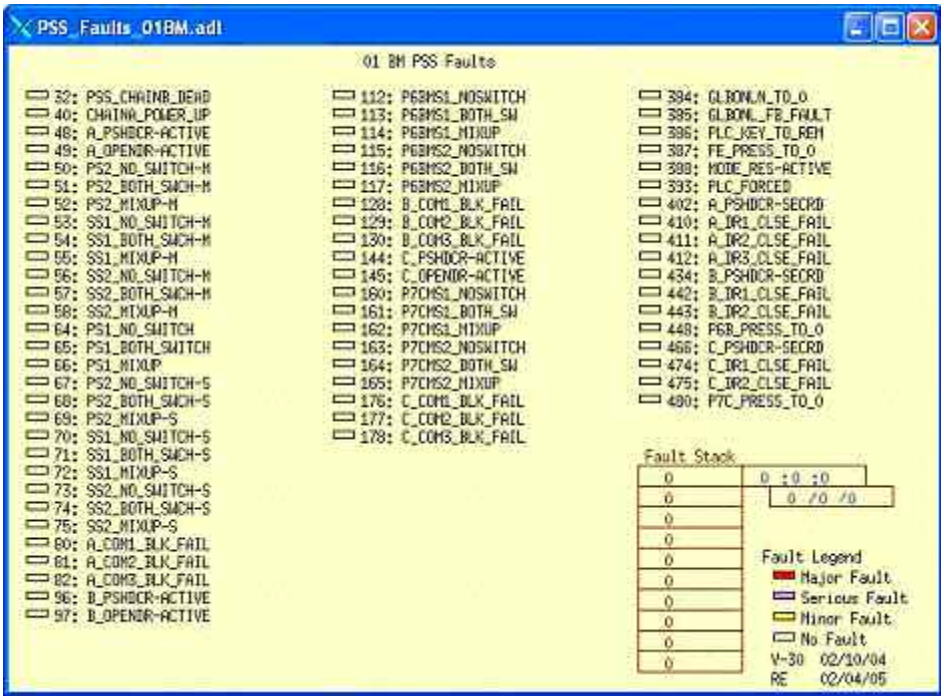

Figure 6a: Example of Generation 1 Systems PSS Fault Stack EPICS screen, PSS_Faults_(S#)(BM/ID).adl

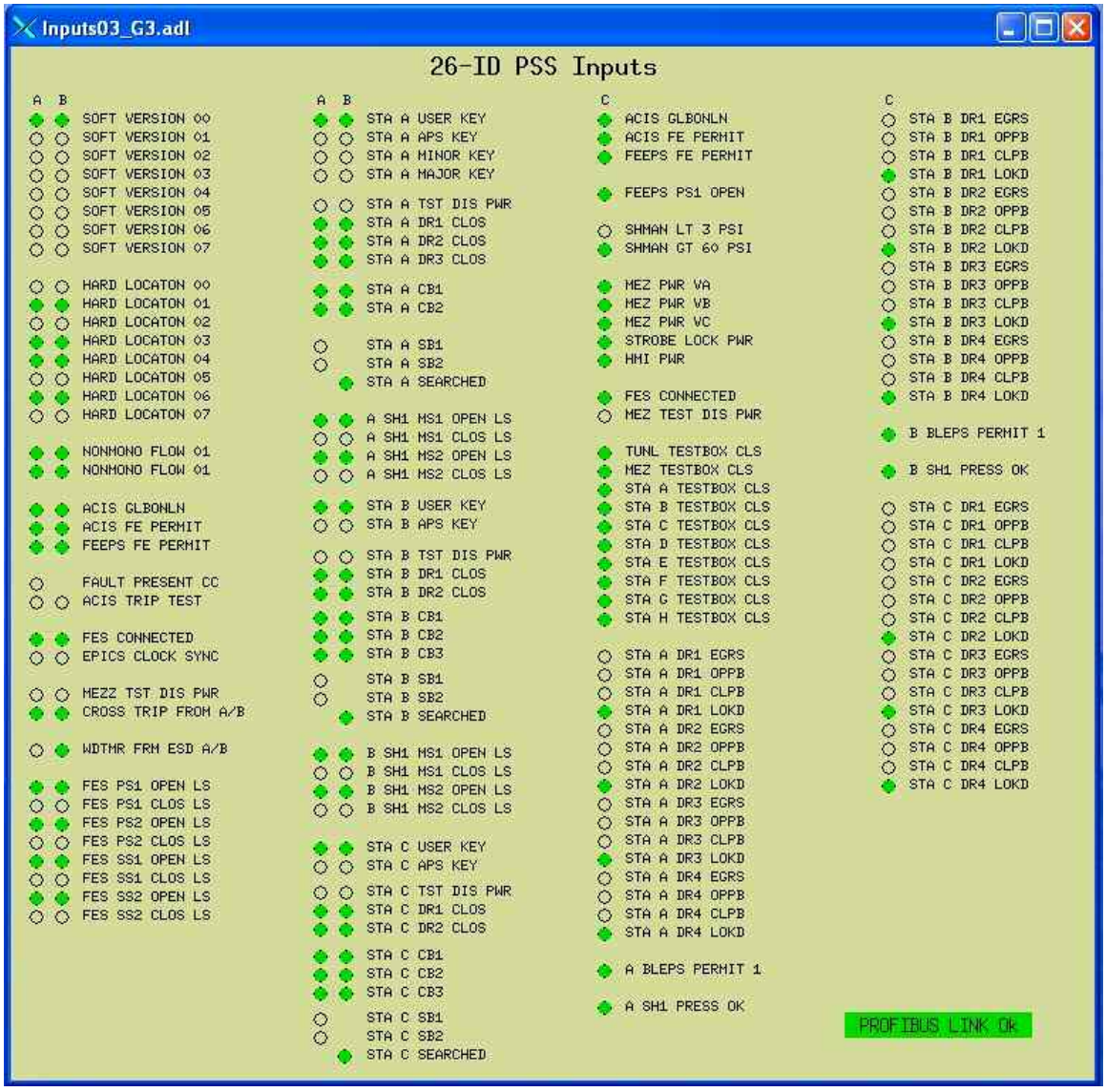

Figure 6b: Example of Generation 3 Systems PSS Fault Stack EPICS screen, PSS_Faults_(S#)(BM/ID)_(A/B/C).adl