

TITLE: PSS Minor Fault Reset Instructions -Version 2

CATEGORY: Operations

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REVIEW PERIOD: Annually

Purpose

The Personnel Safety System (PSS) monitors the state of variables relevant to personnel safety (e.g. station door status, shutter status, water flow to Radiation Safety System components, etc.). When the PSS detects that a variable is not in the correct state, a fault occurs, and the Front End shutter permit is removed. Operators and Floor Coordinators are allowed to reset particular faults under certain conditions.

These instructions cover the documentation and resetting of Minor Faults (i.e. faults listed on a PSS Faults Page as #384 or above). Operators and Floor Coordinators are allowed to attempt a reset of any Minor Fault up to 3 times per shift before contacting SI on-call personnel.

The most common minor faults are as follows:

Door faults: Usually occur during a search-and-secure. Typically the user removes his/her finger from the “Door Close” button before the door is locked, or the door fails to close smoothly due to improper mechanical adjustment. This may also occur when a user opens a manual door without first depressing the “Door Unlock” button on a PSS panel.

Water flow faults: Usually occur when water has been turned off or mechanically interrupted to a Radiation Safety System (RSS) component.

Course of Action

1. Note the name and number of the fault.

- This information can be found on the Beamline-Specific PSS Faults Screen (Figure 1). The Fault Stack shows the number of each fault. The matching name can be found within the comprehensive list of possible faults.

06 BM PSS Faults

Fault ID	Fault Name
<input type="checkbox"/>	32: PSS_CHAINB_DEAD
<input type="checkbox"/>	40: CHAINA_POWER_UP
<input type="checkbox"/>	48: A_PSHDCR-ACTIVE
<input type="checkbox"/>	49: A_OPENDR-ACTIVE
<input type="checkbox"/>	50: PS2_NO_SWITCH-H
<input type="checkbox"/>	51: PS2_BOTH_SWCH-H
<input type="checkbox"/>	52: PS2_HIJUP-H
<input type="checkbox"/>	53: SS1_NO_SWITCH-H
<input type="checkbox"/>	54: SS1_BOTH_SWCH-H
<input type="checkbox"/>	55: SS1_HIJUP-H
<input type="checkbox"/>	56: SS2_NO_SWITCH-H
<input type="checkbox"/>	57: SS2_BOTH_SWCH-H
<input type="checkbox"/>	58: SS2_HIJUP-H
<input type="checkbox"/>	64: PS1_NO_SWITCH
<input type="checkbox"/>	65: PS1_BOTH_SWITCH
<input type="checkbox"/>	66: PS1_HIJUP
<input type="checkbox"/>	67: PS2_NO_SWITCH-S
<input type="checkbox"/>	68: PS2_BOTH_SWCH-S
<input type="checkbox"/>	69: PS2_HIJUP-S
<input type="checkbox"/>	70: SS1_NO_SWITCH-S
<input type="checkbox"/>	71: SS1_BOTH_SWCH-S
<input type="checkbox"/>	72: SS1_HIJUP-S
<input type="checkbox"/>	73: SS2_NO_SWITCH-S
<input type="checkbox"/>	74: SS2_BOTH_SWCH-S
<input type="checkbox"/>	75: SS2_HIJUP-S
<input type="checkbox"/>	80: A_COM1_BLK_FAIL
<input type="checkbox"/>	81: A_COM2_BLK_FAIL
<input type="checkbox"/>	82: A_COM3_BLK_FAIL
<input type="checkbox"/>	96: B_PSHDCR-ACTIVE
<input type="checkbox"/>	97: B_OPENDR-ACTIVE
<input type="checkbox"/>	112: P6BMS1_NO_SWITCH
<input type="checkbox"/>	113: P6BMS1_BOTH_SW
<input type="checkbox"/>	114: P6BMS1_HIJUP
<input type="checkbox"/>	115: P6BMS2_NO_SWITCH
<input type="checkbox"/>	116: P6BMS2_BOTH_SW
<input type="checkbox"/>	117: P6BMS2_HIJUP
<input type="checkbox"/>	384: GLBONLN_TO_0
<input type="checkbox"/>	385: GLBONLN_FB_FAULT
<input type="checkbox"/>	386: PLC_KEY_TO_REM
<input type="checkbox"/>	387: FE_PRESS_TO_0
<input type="checkbox"/>	388: MODE_RES-ACTIVE
<input type="checkbox"/>	392: PLC_FORCED
<input type="checkbox"/>	402: A_PSHDCR-SECD
<input type="checkbox"/>	410: A_DR1_CLSE_FAIL
<input type="checkbox"/>	411: A_DR2_CLSE_FAIL
<input type="checkbox"/>	434: B_PSHDCR-SECD
<input type="checkbox"/>	442: B_DR1_CLSE_FAIL
<input type="checkbox"/>	443: B_DR2_CLSE_FAIL
<input type="checkbox"/>	444: B_DR3_CLSE_FAIL
<input type="checkbox"/>	448: P6B_PRESS_TO_0

Fault Stack

385	10:19:37
387	1 / 27 / 2006
66	
66	
66	
66	
66	
66	
66	
66	
66	

Fault Legend

- Major Fault (Red square)
- Serious Fault (Purple square)
- Minor Fault (Yellow square)
- No Fault (White square)

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Figure 1: Path to Beamline-Specific PSS Faults Screen

2. If a fault is latched, the rectangle to the left of the fault number is filled in. A latched fault cannot be reset until the condition which caused the fault has been corrected (e.g. water flow has been restored, air pressure has been restored, etc.).

- In Figure 2, 17-BM has two latched faults: #112 and #448. The purple rectangle indicates that #112 is a Serious Fault, which is outside the scope of this procedure. The yellow rectangle indicates that #448 is a Minor Fault, latched.
- In Figure 2, 13-ID has one fault shown in the fault stack, #387. The fault does not have its rectangle filled in. Fault #387 is a Minor Fault, not latched, and could be reset. (As noted on page 1, faults #384 and above are Minor Faults).

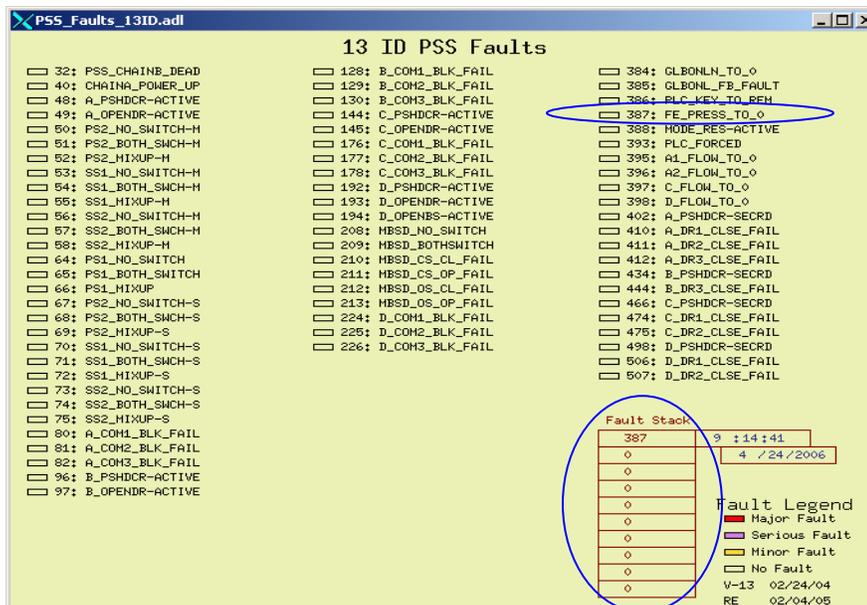
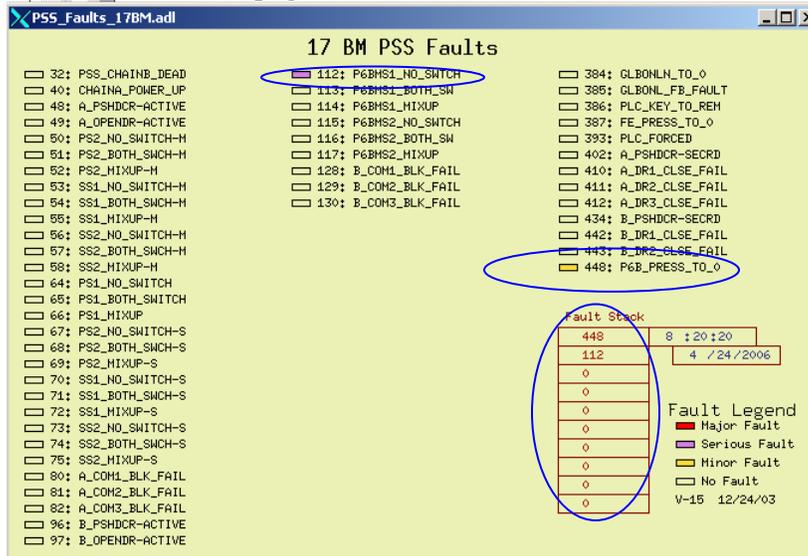


Figure 2: Beamline Specific PSS Faults Screens showing latched and unlatched faults

3. Go to the affected beamline, and discuss with the user what may have caused the fault. This information is important if troubleshooting or follow-up maintenance by AES Division personnel is required.

- For example, did a door fault occur during a search-and-secure or while the station was already taking beam? Was the user adjusting a water valve when a water fault occurred?

4. Using the PSS Minor Fault key, attempt to reset the fault. Fault reset key banks are located on a 15U PSS panel for the relevant beamline, most commonly the panel for Station-A (Figure 3). When there is a minor fault, the “Minor Fault” light blinks. When the fault has been reset, the light stops blinking and remains lit.

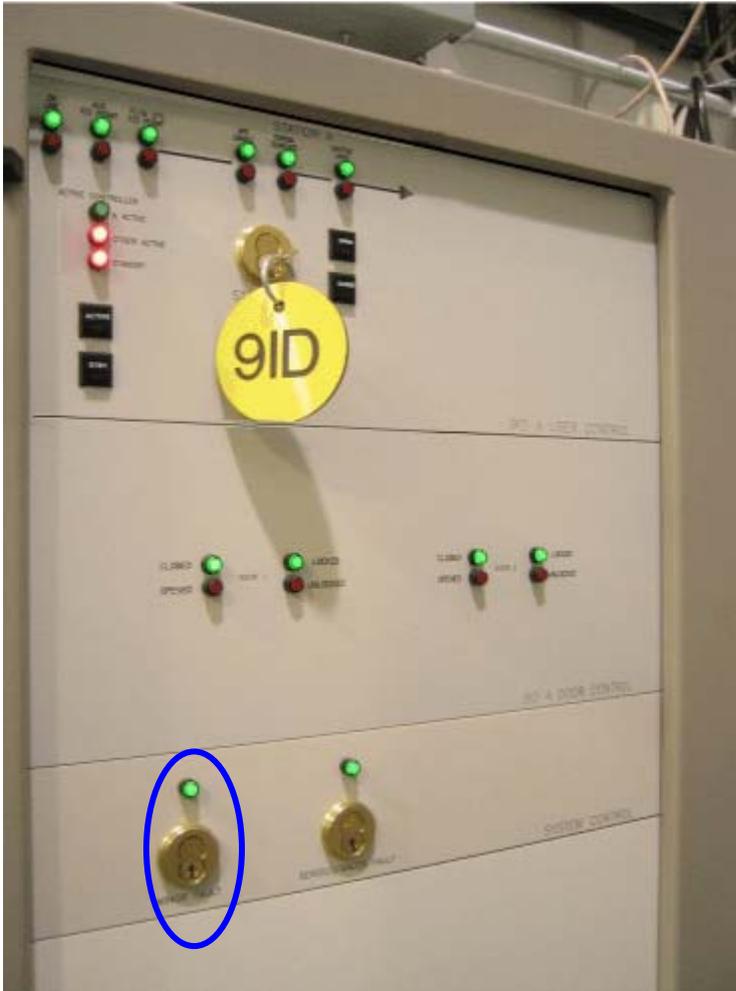


Figure 3: 15U PSS Panel with key banks for resetting PSS faults

5. If the fault resets, stay at the beamline until the user has successfully taken beam into the desired station.

6. If the fault does not reset or occurs more than 3 times per shift, contact the SI on-call engineer. He/She can provide advice as to whether the fault can continue to be reset or whether call-ins are necessary.

- File an RMD report even if you continue to reset the fault; follow-up by AES Division personnel during business hours will be required.
- If call-ins are necessary, notify the on-call Floor Coordinator. The entire PSS system is under Configuration Control, and any work will require a CCWP.

7. Document the occurrence in the appropriate shift log. Include the fault number and name, time, beamline, and whether the fault reset without difficulty or required further action.

Special Case: Door Fault

1. It may be necessary to remind the user to keep his/her finger on the “Door Close” button until the door has closed and locked.

2. If the door appears to bounce upon closing, the PSS door switches or the door mechanics may need to be adjusted. Both kinds of work require a CCWP, possibly followed by a Health Physics Type-C survey.

- If the problem is intermittent, the beamline may continue to run until normal business hours, possibly with additional resets (as with all Minor Faults, SI on-call personnel should be notified if more than 3 resets are necessary).
- If the problem is persistent and inhibits beamline operation, notify the on-call Floor Coordinator to initiate the necessary call-ins.

Special Case: DIW Water Fault

When you encounter water faults, it may become apparent that there are two (2) versions of PSS systems used on the APS Beamlines. The older beamlines utilize Version 1.5 and the newer beamlines (i.e. 4-ID, 23-ID, 26-ID, and 30-ID) utilize Version 3.0

When performing a Minor Fault reset on a Version 1.5 Insertion Device (ID) beamline, it is necessary to reset the associated LOVE controller, which monitors water flow to RSS components and trips when the flow is below the minimum set-point as well as the Minor Fault Key reset on the appropriate beamline 15U PSS cabinet.

The LOVE controllers for RSS components are located on the Storage Ring Mezzanine inside locked control cabinets (Figure 4). Key #ES101 opens the PSS cabinet, while key #ES102 opens the FEEPS cabinet.

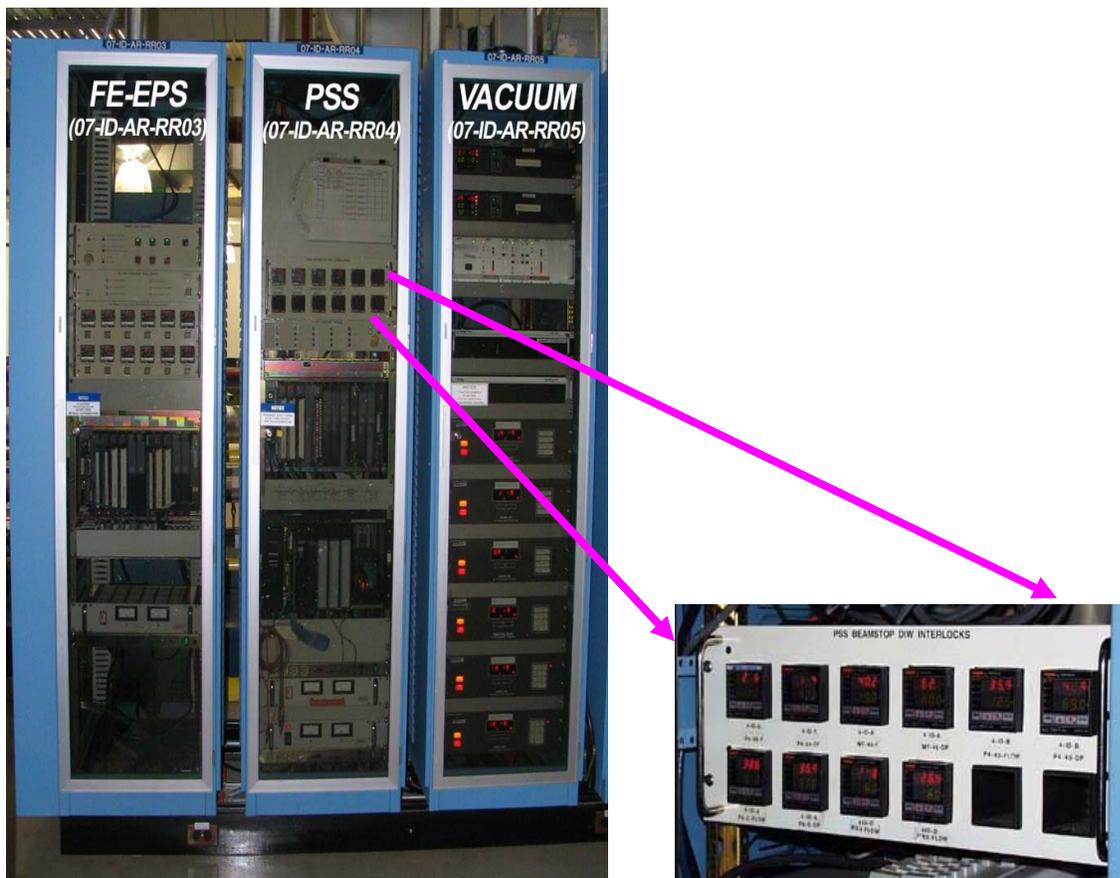


Figure 4: LOVE Controllers inside the beamline PSS control cabinet

1. When a LOVE Controller is in an alarm state, the Alarm Lamp flashes. To perform a reset, press the “Index” and “Down Arrow” buttons simultaneously for 5 seconds (Figure 5).



Figure 5: LOVE Controllers.

1. The one on the right is the newer model.

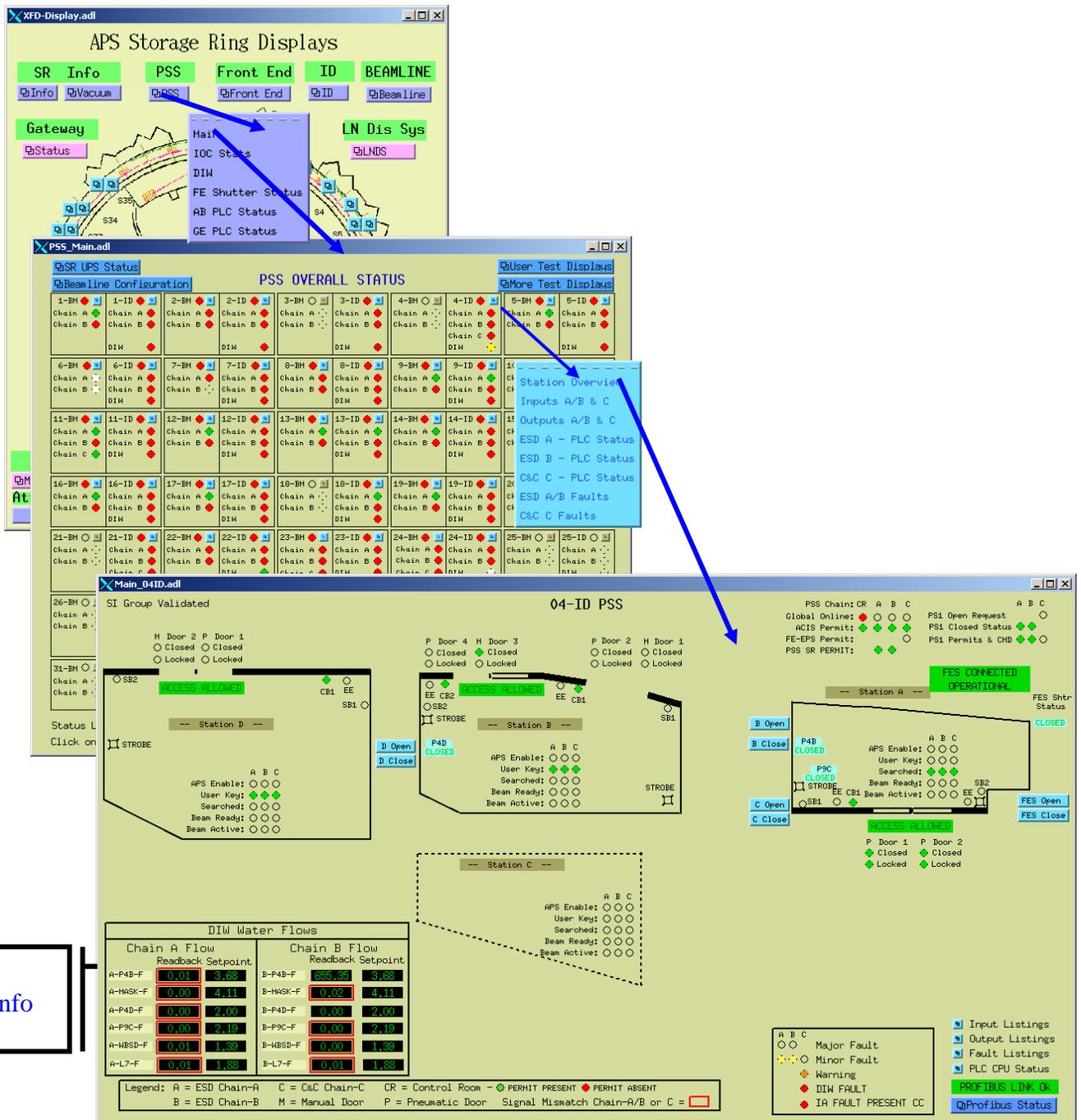
Note the amber Alarm Lamp, which flashes when the controller is in alarm. The “Index” and “Down Arrow” buttons, which must be pressed for 5 seconds to reset the alarm, are circled in yellow.

2. If the Alarm Lamp stops flashing, the alarm has been successfully reset.

3. If the alarm cannot be reset, notify ME on-call personnel, the SI Group on-call Engineer, and the on-call Floor Coordinator. A call-in may be required.

4. When a reset of a water fault for an ID beamline with Version 3.0 PSS System is required, you will note that the PSS EPICS screens are different than the Version 1.5 screens and there are **NO** LOVE Controllers. Version 3.0 utilizes Allen-Bradley Analog Modules and visual readout of water flows and set points must be viewed on PSS EPICS screens and/or the local beamline PSS “TouchScreen” Panels.

- The EPICS screens for 4-ID beamline are illustrated below in Figure 6.



Note:
DIW Info

Figure 6: 4-ID (PSS Version 3.0) EPICS Path to DIW Information