

# PSS Gen-1 Review Items

## February 15, 2006

### Design & Operational Safety Compliance Questions

	Item	Comment/Question	Responses	Response Rating
1.	ANL ESH 5.16.5.3 para. 9. “When an interlock system has been tripped, it must be possible...only by manually resetting...faults”	PSS Chain B does not latch faults. This is linked to item 9.	This should be done, but implemented in a way that limits “cascading of faults” in 2 <sup>nd</sup> PSS Chain.	1
2.	ANL ESH: 5.16.5.2 para. 3 & DOE G 420.2B Guidance: 3a-2-iii. Emergency Shutoff Devices: “No control will be installed at any radiological area exit that would prevent rapid evacuation of personnel under emergency conditions.”	Is there a compliance issue here with the pneumatic doors? They are very slow to open. See 29CFR 1910.37 on SIG website.	With respect to fire protection, the stations are considered to be like equipment cabinets. This means a lower level of fire protection is required. Specifically; administrative control. Policy States “..no one is allowed inside a station with the doors closed at anytime..” 2 <sup>nd</sup> Level of protection are the E-Stops & Emergency Egress Box. Note: A fire protection review of the APS station was conducted in ~1997 with no findings or comments about emergency egress issues.  Hawkins to write memo stating how we are in compliance.	3 → 4
3.	DOE G 420.2B Guidance: 3.a.1-iiib. “Critical Device Command & Control systems should be independent of the monitoring systems”	In the present design the safety system is used to routinely operate the front-end and beamline shutters, not just enabling their operation. Alarm/trip states are not used to routinely operate shutters	The terms “command & control monitoring system” are currently being discussed by ANL/APS & BNL. It is clear thus far that at BNL “Command & Control Systems” means the Interlock system while “monitoring system” means simply a data logging system. Thus, given the wide interpretation of these terms, keeping command functionality in the PSS G1 is consistent with this DOE Guidance.  Hawkins to write memo stating response	3 → 4
4.	DOE G 420.2B Guidance: 3a-2 para 4 & ANL ESH 5.16.5.3 para 8. Signage reflecting station status	PSS does not currently provide signage reflecting station status at each entrance. Previously, credit has been given for information at 15u’s & door control boxes for station status and entry is prohibited.	This should be done. An initial installation is being planned for 30ID.	2
5.	DOE G 420.2B Guidance: 3a-	Currently, loss of power and	The extent to which PSS G1 complies	3 → 2

	1,i & ANL ESH 5.16.5.3 para 7. PSS must fail safe under loss of power, open circuits and shorts to ground.	opens, fail safe, shorts to common generally cause fuses to blow thus the subsequent loss of power causes PSS to fail safe. Single point shorts to ground. Do not trip the PSS G1.	with this requirement should be reviewed in more detail. Roy Emerson will review NEC code for compliance to grounding rules.	
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6.	ANL ESH 5.16.5.3 para 2. *Computer-based systems..solid state...unsafe...check between loops. Trip PSS Chains A & B	How are “unsafe states” due to solid state failures detected and mitigated?	The intent of this requirement is being investigated by APS/Safety of Tom Barkalow. First reading is this is more concerned with “unsafe states..” due to solid state failure modes. The Watch Dog Timer signals for each PSS chain detect some type of solid state process failures. This concern is not mitigated by cross tripping of outputs.  Hawkins memo = WDT and cross tripping capture some “unsafe states”.	3 → 4
7.	ANL ESH 5.16.5.3 para 5. Switches or sensors must be inaccessible from the “safe” side of the access point.	PSS door switches are effectively inaccessible because of mounting elevation and door cover.	According to APS Safety Tom Barkalow “inaccessible...” includes protect places that are not easily accessed.	4
8		Cross-trip PSS Chains A & B	This should be done.	2
9		Change Chain B to Ladder Logic	Review SAD Wording. This should be done.	2 → 1
10	ANL ESH 5.16.5.8	Provide record that shows the adequacy of the PSS search and secure process.	Process to hide mannequin in white beam stations.	2

**Response Rating Key**

1 = Should be done ASAP

2 = Should be done but not ASAP

3 = Might be done but needs more review/information/or variance

4 = Not necessary or already being provided.