

PPPL NONCONFORMANCE REPORT NO: 3608 Open Date 02/01/05

Status	9 - Closed NCR	Trend	06-Workmanship/Needs Repair
Department	NSTX	Division	NSTX PROJECT
Source/Org	VENDOR		
Item Dwg/Part#	Switch #3	Procurement #	PE005158-R
		Cost Center	9461-****-X560-41
RAP#	3170	Job Doc #	PE005158-R
		Vendor	FILNOR, INC
RAP Title	NSTX/NCSX D.C. Disconnect and Ground Switch		

HoldTag Applied

**Nonconforming Condition (include requirement(s) violated):**

Switch #3 was tested for operation and does not fully close because the moving assembly is skewed. Switch does not meet design and performance requirements of SPEC. Switch needs to be repaired by vendor.

Lot Size Recd	1	Sample Size Insp	1	<input checked="" type="checkbox"/> Lot Reje...	# Rejected	1
Reported By	Ramakrishnan S	Validated By	Zatz I	Validated Date	01/31/05	

Disposition: Rework\*\_\_ Repair\*\_\_ Use As Is\*\_\_ Return To Vendor\*\_\_ Scrap\*\_\_ Use As Is

SEE ATTACHMENT.

For rework or repair of vendor supplied equipments, fill in information below:				<b>Distribution</b>	
#Hours	\$Est Labor	\$G&A		<b>Cog</b>	Ramakrishnan S
\$Material	\$Burden	\$Total		<b>Insp</b>	Zatz I
				Proj. Doc Control (when closed)	
<b>Disposition By</b>	Ramakrishnan R	<b>Date</b>	05/15/05	QC Files	
<b>Supervisor's Concur</b>	vonHalle A	<b>Date</b>	05/20/05	Malsbury J	
<b>Eng. Dept. Head Concur</b>	Williams M	<b>Date</b>	05/20/05	Boscoe J	
<b>WCO/Other</b>	N/A	<b>Date</b>		Neumeyer C	
				Williams M	
				Ranahan K	
				Lumberger J	
				Reiersen W	
				Tyrrell M	
				Malinowski F	
<b>PQA/QC Mgr Dispos Concur</b>	Zatz I	<b>Date</b>	05/24/05		
<b>QC Field Verification By</b>	N/A	<b>Date</b>			

**Irving J. Zatz**

---

**From:** Subrahmanya Ramakrishnan **Sent:** Tue 5/24/2005 7:51 AM  
**To:** Irving J. Zatz  
**Cc:** Charles L. Neumeyer; Kevin M. Ranahan; Alfred von Halle; Mike Williams  
**Subject:** RE: PP00158-R  
**Attachments:**

Irvin  
Confirmed. Thanks  
Raki

-----Original Message-----

**From:** Irving J. Zatz  
**Sent:** Monday, May 23, 2005 5:35 PM  
**To:** Subrahmanya Ramakrishnan; Joellyn W. Lumberger  
**Cc:** Kevin M. Ranahan; Charles L. Neumeyer; Alfred von Halle; Mike Williams; Lynne H. Yager  
**Subject:** RE: PP00158-R

Raki:

In order to close the NCR for this third switch from Filnor, QA requires a final disposition. This is not explicitly indicated in the disposition attachment you distributed. Based on the feedback I have heard, I presume that the disposition for this third switch is to 'Accept / Use As Is'. Please confirm this by responding to this e-mail, so that QA can close this NCR, which, in turn, will enable accounting to pay for this switch.

Thank you.  
Irving

---

**From:** Subrahmanya Ramakrishnan  
**Sent:** Fri 5/20/2005 10:47 AM  
**To:** Joellyn W. Lumberger  
**Cc:** Kevin M. Ranahan; Charles L. Neumeyer; Alfred von Halle; Mike Williams; Lynne H. Yager; Irving J. Zatz  
**Subject:** PP00158-R

Joellyn  
The vendor can be paid for the third switch. NCR-3608 generated on the switch, has been dispositioned. Please see attached. The signed out original of the NCR has been mailed to Lynne Yager.  
Thanks  
Raki

## **PPPL NONCONFORMANCE REPORT NO: 3608 - DISPOSITION**

May 02 2005 - Filnor Disconnect switches per PO PE005158-R.

### **A. Background:**

Three switches have been received at site. Design problems have been identified in the switches and NCR 3607 & 3608 were generated. Third switch was tested for operation on 01/25/05 and it was found that the left side contact was not fully closing. NCR 3608 was then generated.

It was noticed that the moving assembly was skewed. Randy Fetters of Filnor came to site and tried to adjust the switch. However the switch continued to give problems. Filnor was then contacted to have the problems rectified. Based on the discussions with Filnor, following parts were sent by them to PPPL for installation in the switch # 3.

1. A two-piece bus was sent by Filnor (for each switch) to be installed in the ground side instead of one solid bus. This has been installed.
2. Clamp blocks sent by Filnor to strengthen the structure has been installed.
3. The kick over pins sent by Filnor have been installed.
4. The clip actuators have been changed with those without the "beaks".
5. The top switch assembly and the bottom switch assembly are not symmetrical as in Type SN2255. A balanced assembly is desirable for smooth operation .PPPL has balanced the switch assembly after in-house fabrication of left hand threaded bolts. This has been done in the Switch#3 only.
6. In Switch #3 the whole assembly was realigned by PPPL so that all parts are in good alignment.
7. Even though PPPL has received the actuator from Filnor with double the speed, this has not been installed. PPPL feels that this may not be necessary at this time.

### **B Present Status with Switches at Site:**

All the switches are at present functional. It took considerable effort for PPPL to make them operate satisfactorily at the present time. However this may not last since alignment can change with repeated operations. Following is a summary of the changes that are required:

1. PPPL would change the components in Switches 1&2 and realign the blades also including balancing the assembly.  
Action: Filnor to send the parts i.e. a) Kick over pins .b) Clip actuators, and c) Left hand threaded bolts. PPPL will install them.
2. Filnor to send flexible jumpers for the links. Without this change , alignment gets changed every time the links are disturbed.
3. The present method of installing the Kirk Lock for the Ground switch is not working. If the electrical interlock from this Kirk Lock assembly (in the control circuit) fails, the motor is capable of breaking the kirk lock assembly and close the switch instead of tripping on overload. This is not to be permitted.
4. The manual operation system is to be modified such that we can keep the switch in any of the three positions. Filnor may suggest modifications and supply parts to accomplish this feature for implementation by PPPL.

### **C. Future remaining two Switches**

1. Design should address problems pertaining to:

- a) Alignment
  - b) Issue of mechanical force withstanding capability
  - c) Manual operation
  - d) Exposure of the control cable
  - e) All insulators holes not being used
  - f) Concerns of the long stroke/piston/actuator
  - g) Kirk lock for the ground shall be redesigned to insure that the switch does not close if the kirk locks it out.
2. The switches are to be assembled in a separate frame with insulators. A rigid angle iron frame is desirable.
  3. The links to the switches shall be of flexible design. The design shall be such that any external cabling to the switch , when reconnected during maintenance etc. should not alter the alignment.
  4. The insulator shall be such that all the mounting holes are used.
  5. The Switch assembly is to be balanced (as done by PPPL in the switch 3 at site). The top switch assembly and the bottom switch assembly are not symmetrical as in Type SN2255. A balanced assembly is desirable for smooth operation.
  6. The actuator is to be located in the center of the switch assembly instead of on the side as at present – similar to the construction of the switch furnished by Filnor to PPPL on 11/13/2001 ,Filnor Type SN2255, 5kV, 1200 Amps. (This switch is operating satisfactorily).
  7. All control wiring shall be provided with metallic conduit or grounded metallic barriers within the main switch compartment.
  8. Manual operation system to be modified such that the switch can be kept in all three positions.
  9. PPPL is ready to accommodate any physical size that is needed to accomplish the above.

Approved by

S. Ramakrishnan 05/20/05

C. Neumeyer

M. Williams

