

Brookhaven National Laboratory/ National Synchrotron Light Source II			
Subject:	Insertion Device Controls System Test Report		
Number:	PS-R-ASD-ID-CO-RPT-001	Revision: 1	Effective: 9/1/2017
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Insertion Device: Cell 07 EPU60

Test Date: 8/31/2017

ID Representative: Dean Hidas

Controls Engineer: Qingfu Tang/25463

Overview

This test checklist covers the testing required for the control system of an NSLS-II insertion device. The checklist may be used for site acceptance in the lab and also for post-installation acceptance.

Pre-test setup for site acceptance test in the lab

Confirm with ID group that the following activities have been completed:

- ID is in the lab
- cabling termination, continuity checks and connection
- controls hardware installation into the lab rack racks
- main power and other utility connections

Pre-test setup for post-installation test

Confirm with ID group that the following activities have been completed:

- ID installation in storage ring tunnel
- cabling termination, continuity checks and connection
- controls hardware installation into mezzanine racks
- main power and other utility connections
- machine EPS connections

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Test execution

Execute the test checklist below. Initial and date each step upon completion of the step. Note any and all issues.

Acceptable entries for Result column:

- Enter: OK for tests passed
- Enter: NOT OK for tests that fail and record a DR number in the Task Data/Issues column
- Enter: DONE for tasks completed
- Enter: N/A for steps that are non-applicable. Enter a reason in the Task Data/Issues column

Document any discrepancies in a DR in accordance with PS-QAP-0002, *Discrepancy Reporting*. Record the DR number in the appropriate step on the checklist and the appropriate operation on the ID traveler.

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Insertion Device Control System Installation Test Checklist

Insertion Device Part No:	Serial No:	Cell No:	Beamline:	
Check one:	Pre-Installation Test	Post-Installation Test		
Test Item	Result	Initial/ Life no	Date	Task Data/Issues
Before power on, check following cable connections				
Motor power cable	OK	RL	8/31/2017	
Motor encoder cable (rotary encoder)	OK	RL	8/31/2017	
Linear encoder cable	OK	RL	8/31/2017	
PMAC power and network cable	OK	RL/SS	8/31/2017	
PLC power and network cable	OK	RL	8/31/2017	
Moxa power, network and serial communication cable	N/A			
Turn on rack power and controller power				
PMAC power up	OK	QT/25463	8/31/2017	
PLCs power up	OK	QT/25463	8/31/2017	
Moxa power up	N/A			
Pre-motion check				
Upper beam open gap limit pressed and indicates on display	OK	QT/25463	9/1/2017	
Upper beam close gap limit pressed and indicates on display	OK	QT/25463	9/1/2017	
Lower beam open gap limit pressed and indicates on display	OK	QT/25463	9/1/2017	
Lower beam close gap limit pressed and indicates on display	OK	QT/25463	9/1/2017	
Upper beam open gap kill pressed and indicates on display	OK	QT/25463	9/1/2017	

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Insertion Device Part No:	Serial No:	Cell No:	Beamline:	
Check one:	Pre-Installation Test	Post-Installation Test		
Test Item	Result	Initial/ Life no	Date	Task Data/Issues
Upper beam close gap kill pressed and indicates on display	OK	QT/25463	9/1/2017	
Lower beam open gap kill pressed and indicates on display	OK	QT/25463	9/1/2017	
Lower beam close gap kill pressed and indicates on display	OK	QT/25463	9/1/2017	
Elevation (upstream and downstream or common) upper and lower limits pressed and indicate on display	N/A			Axis does not exist on device
Elevation (upstream and downstream or common) upper and lower kills pressed and indicate on display	N/A			Axis does not exist on device
Top inboard phase limits pressed and indicate on display	OK	QT/25463	9/1/2017	
Top outboard phase limits pressed and indicate on display	OK	QT/25463	9/1/2017	
Bottom inboard phase limits pressed and indicate on display	OK	QT/25463	9/1/2017	
Bottom outboard phase limits pressed and indicate on display	OK	QT/25463	9/1/2017	
Top inboard phase kills pressed and indicate on display	OK	QT/25463	9/1/2017	
Top outboard phase kills pressed and indicate on display	OK	QT/25463	9/1/2017	
Bottom inboard phase kills pressed and indicate on display	OK	QT/25463	9/1/2017	
Bottom outboard phase kills pressed and indicate on display	OK	QT/25463	9/1/2017	

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Insertion Device Part No:	Serial No:	Cell No:	Beamline:	
Check one:	Pre-Installation Test	Post-Installation Test		
Test Item	Result	Initial/ Life no	Date	Task Data/Issues
Gap close limit pressed and indicates on display	OK	QT/25463	9/1/2017	
Gap close kill pressed and indicates on display	OK	QT/25463	9/1/2017	
Gap closed EPS switch pressed and indicates on display	N/A			
Gap open EPS switch pressed and indicates on display	N/A			
Bottom upstream home switch pressed and indicates on display	N/A			No display on the CSS GUI
Top upstream home switch pressed and indicates on display	N/A			No display on the CSS GUI
Bottom downstream home switch pressed and indicates on display	N/A			No display on the CSS GUI
Top downstream home switch pressed and indicates on display	N/A			No display on the CSS GUI
Elevation (upstream and downstream or common) home switch(es) pressed and indicate on display	N/A			Axis does not exist on device
Top inboard phase home pressed and indicate on display	N/A			Axis does not exist on device
Top outboard phase home pressed and indicate on display	N/A			Axis does not exist on device
Bottom inboard phase home pressed and indicate on display	N/A			Axis does not exist on device
Bottom outboard phase home pressed and indicate on display	N/A			Axis does not exist on device
Emergency stop pressed and indicates on display	OK	QT/25463	9/1/2017	
Emergency stop pressed and indicates on amplifiers	OK	QT/25463	9/1/2017	
Check all linear and rotary encoders reading out	OK	QT/25463	9/1/2017	
Check (set) linear encoder offset	OK	QT/25463	9/1/2017	

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Insertion Device Part No:	Serial No:	Cell No:	Beamline:
Check one:	Pre-Installation Test	Post-Installation Test	
Test Item	Result	Initial/ Life no	Date
Record encoder offset of upstream bottom girder encoder	N/A		
Record encoder offset of upstream top girder encoder	N/A		
Record encoder offset of downstream bottom girder encoder	N/A		
Record encoder offset of downstream top girder encoder	N/A		
Record encoder offset of upstream elevation encoder	N/A		
Record encoder offset of downstream elevation encoder	N/A		
Record encoder offset of elevation encoder	N/A		
Record encoder offset of top inboard phase encoder	N/A		
Record encoder offset of top outboard phase encoder	N/A		
Record encoder offset of bottom inboard phase encoder	N/A		
Record encoder offset of bottom outboard phase encoder	N/A		
Motion test (from existing IOC or Delta Tau software)			
Enable amplifiers	OK	QT/25463	9/1/2017
Gap open/close by Synchronous mode	OK	QT/25463	9/1/2017
Elevation axis control functions	N/A		Axis does not exist on device
Motions stop correctly when emergency stop pressed	OK	QT/25463	9/1/2017
Motions cannot start when emergency stop pressed	OK	QT/25463	9/1/2017
Phase motion by Synchronous mode	OK	QT/25463	9/1/2017
IOC migration and full motion range test			
Assign PMAC IP address	OK	QT/25463	9/1/2017
Assign PLC IP address	N/A		
Assign Moxa IP address	N/A		
Displays installed for control room use	OK	QT/25463	8/28/2017
IOCs ported to central IOC servers	OK	QT/25463	8/28/2017

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Check one:	Pre-Installation Test	Post-Installation Test		
Test Item	Result	Initial/ Life no	Date	Task Data/Issues
IOC connects and all motion-related PVs readout	OK	QT/25463	9/1/2017	
Upper and Lower Limit and Kill switches all read correctly on control room displays	OK	QT/25463	10/17/2017	-Lim: 13628.8 -Kill: 13516.40 +Lim: 100992.60 +kill: 101273.40
Elevation limit and kill switches read correctly on control room displays	N/A			
Phase limit and kill switches read correctly on control room displays	OK	QT/25463	10/18/2017	Ti-Bo: -Lim: -29659.8 -Kill: -29797.4 +Lim: 29606.8 +kill: 29763.4 To-Bi: -Lim: -29622.8 -Kill: -29800.0 +Lim: 29608.2 +kill: 29676.4 Anti-Ti-Bo: -Lim: -29618.6 -Kill: -29770.6 +Lim: 29630.4 +kill: 29800.0 Anti-To-Bi: -Lim: -29599.4 -Kill: -29660.4 +Lim: 29667.6 +kill: 29800.0
Gap control functions tested from control room	OK	QT/25463	10/17/2017	
Gap control functions in the full range from Lower limit switch all the way to upper limit switch	OK	QT/25463	10/17/2017	
Elevation control functions tested from control room	N/A			
Phase control functions tested from control room	OK	QT/25463	10/17/2017	
External EPS switches read correctly open and closed gap in the control room	N/A			In separated test report
MPS functional test				
MPS power up and ready	OK	YT/22416	9/5/2017	
MPS IOC configured on central server	OK	YT/22416	9/5/2017	
MPS controls operational from control room	OK	QT/25463	10/18/2017	

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Check one:	Pre-Installation Test	Post-Installation Test					
Test Item	Result	Initial/ Life no	Date	Task Data/Issues			
PLC functional test							
PLC IOC configured on central server							
Temperature sensors reading correctly on control room displays							
	N/A						
	N/A						

Prepared by:

10/20/2017

X *Qingfu Tang*

Signed by: Tang, Qingfu

Concurred by:

X *[Signature]*

Cognizant Scientist *Dawn Hrus*