INSTRUMENT READINESS PLAN (IRP)

FOR THE

NSLS–II 19-ID (NYX) BEAMLINE, FRONT END AND INSERTION DEVICE

NOVEMBER 2016

NSLSII-19ID-PLN-001

PREPARED BY

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FOR THE

U.S. DEPARTMENT OF ENERGY
OFFICE OF SCIENCE BASIC ENERGY SCIENCE
UNDER CONTRACT DE–SC0012704

BROOKHAVEN
NATIONAL LABORATORY

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REVIEWED BY:

A. Ackerman, Instrument Readiness Coordinator

APPROVED AS A PLAN TO ACHIEVE READINESS BY:

21-Oct-2016

A. Broadbent, IRR Technical Authority (Beamline)

10/24/2016

T. Shaftan, IRR Technical Authority (FE & ID)

CONCURRENCE BY:

R. Lee, ESH Manager

APPROVED – IRP HAS BEEN FULLY IMPLEMENTED AND INSTRUMENT IS READY FOR COMMISSIONING:

A. Broadbent, IRR Technical Authority (Beamline)

T. Shaftan, IRR Technical Authority (FE & ID)

CONCURRENCE BY:

R. Lee, ESH Manager

REVISION HISTORY

REVISION	DESCRIPTION	LIST OF REVIEWERS	DATE
1	First Issue	See completed tables	November 2016

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ATTACHMENTS

1.0 INTRODUCTION

1.1 Purpose and Scope

The purpose of this Instrument Readiness Plan (IRP) is to establish the readiness criteria required to declare the NSLS-II 19-ID (New York State Biology Center Microdiffraction [NYX]) Beamline, Front End and Insertion Device ready for commissioning. The scope of this IRP includes the 19-ID Beamline, Front End, Insertion Device and End Station Diagnostics, and was prepared in accordance with the *Instrument Readiness Review Procedure* (PS-C-ESH-PRC-001). Experimental equipment that is installed and operational in the End Station will be included in the scope of this plan.

This IRP will be used as a tool for planning and certifying readiness. The completion of this IRP requires that all procedures, documentation and hardware listed in the plan are completed, tested, and where required, independently certified. In addition, Staff and Users that will be involved in commissioning shall be trained and qualified to conduct their work safely, securely and in an environmentally sound manner.

1.2 19-ID Beamline

The 19-ID Beamline is an in-vacuum undulator (IVU) beamline at NSLS II to perform X-ray microdiffraction protein crystallography experiments for the structural biologists of the New York Structural Biology Center and NSLS II general users. The energy range is 6.5 to 17.5 keV and the delivered spot size is 5-50 um. The monochrometer has novel asymmetrically cut Si(111) crystals to optimize high energy resolution and resides in the 19-ID C hutch with a white beam transport pipe between the A and C hutches, both lead lined (no B hutch exists at present, for a future endstation). The focused beam is delivered to the experimental apparatus located in the 19-ID D hutch. The credited controls include shielding and personnel protection system (PPS) interlocks, in accordance with the *NSLS-II Accelerator Safety Envelope (ASE)* (PS-C-ESH-ROASE-001).

1.3 Instrument Readiness Review (IRR)

As part of the verification of readiness for commissioning, an IRR is required in accordance with the *Instrument Readiness Review Procedure* (PS-C-ESH-PRC-001). An independent IRR Team will use the readiness criteria developed as part of this IRP to verify that the 19-ID Beamline, Front End and Insertion Device are ready for commissioning in accordance with the appropriate Commissioning Plans. Pre-start and post-start findings will be identified by the team.

1.4 Authorization to Proceed with Commissioning

The completion of this IRP, together with closure of any pre-start findings from the IRR, is used as the basis for the NSLS-II Director to authorize the start of commissioning of the 19-ID Beamline, Front End and Insertion Device.

2.0 INSTRUMENT READINESS PLAN

2.1 Readiness Criteria

Readiness criteria are provided in Attachments A through D. The criteria were developed by the Instrument Readiness Coordinator (IRC) and Readiness Team members, using the *General Readiness Criteria* provided in Attachment A and the *Instrument Readiness Guide* provided in Attachment C of the *Instrument Readiness Review Procedure* (PS-C-ESH-PRC-001).

The readiness criteria are grouped into the following categories:

- Pillar I – Documentation
- Pillar II – Hardware
- Pillar III – Personnel
- Completion of IRR Pre–Start Findings

3.0 IRP IMPLEMENTATION

3.1 Readiness Team

A Readiness Team will be appointed by the NSLS-II Director in accordance with the *Instrument Readiness Review Procedure* (PS-C-ESH-PRC-001). The Readiness Team members that have responsibility for completing the IRP are listed as the Responsible Person in the Attachments.

3.2 Achieving Readiness – Responsibilities

The Readiness Team members are responsible for ensuring that their specific readiness criteria are achieved.

The Lead Beamline Scientist is responsible for certifying that all of the readiness criteria associated with the Beamline is achieved.

The Insertion Devices Group Leader and the Mechanical Engineering Group Leader are responsible for certifying that all of the readiness criteria associated with the subject Front End and Insertion Device are achieved.

3.3 Execution of the IRP

The Readiness Team members shall execute this IRP by preparing, installing, documenting, or training (as appropriate), the specific scope of work (readiness criteria) assigned to them as listed in the Attachments. The Readiness Team members shall develop, compile or assemble the documented evidence that clearly demonstrates that the readiness criteria have been met. This evidence shall be listed on the Attachments.

3.4 Certifying Readiness

Upon completion of the readiness criteria, the Readiness Team members will certify that the criteria for which they are responsible for are complete by signing the Attachments in the appropriate section. The Attachments shall not be signed until the readiness criteria have been fully achieved.

For completion of the IRR pre-start findings, if identified, the IRR Technical Authorities and the ESH Manager will certify that all IRR pre-start findings relative to the 19-ID Beamline, Front End and Insertion Device have been completed, and that the associated ATS Actions have been closed by signing Attachment D in the appropriate section. The Independent Verifier will concur that these actions have been adequately completed and closed by signing Attachment D in the appropriate section.

4.0 REFERENCES

4.1 PS-C-ESH-PRC-001, *Instrument Readiness Review Procedure*

4.2 PS-C-ESH-ROASE-001, *NSLS-II Accelerator Safety Envelope (ASE)*

ATTACHMENT A – PILLAR I DOCUMENTATION

19-ID BEAMLINE, FRONT END AND INSERTION DEVICE

	READINESS CRITERIA	RESPONSIBLE PERSON	ACTIONS	DOCUMENTED EVIDENCE	CERTIFICATION OF READINESS*
PILLAR I DOCUMENTATION (PLANNING & PROCEDURES)	**Functional Description** An overview presentation is prepared that defines the scope of the IRR and includes the following FE, ID and Beamline specific information: – Primary capabilities – Physical layout and location (includes Beamline location on the experiment floor) – Design reviews and performance parameters – Source characteristics – Photon beam performance goals – Radiation Safety Committee reviews – Self-identified pre-start findings – Description and status for each item listed in this Instrument Readiness Plan	Joe Lidestri Lead Beamline Scientist	• Develop the presentation described for the Beamline	• Presentation • Functional Description Document	Signature:
		G. Fries Accelerator Division Liaison Engineer	• Develop the presentation described for the FE and ID	• Presentation	Signature:
	Beamline, FE & ID Design Beamline components are designed in accordance with PS-QAP-0412, *Design Reviews* and PS-C-QAS-PRC-010, *Engineering Design by Others*.	Joe Lidestri Lead Beamline Scientist	• Complete Engineering Design Reviews for the Beamline, FE and ID that address thermal management, mechanical support, configuration control, and vacuum	Beamline: • Internal and contractor supplied design review documents and reports	Signature:
		S. Sharma Mechanical Engineering Group Leader		FE and ID: • Requirements, Specifications, and Interface report (RSI) • Internal design review documents	Signature: 11/2/16
		T. Tanabe Insertion Devices Group Leader			Signature: 11/8/16

*Signature certifies that the readiness criteria are met. The Responsible Person shall not sign prior to completion.

ATTACHMENT A – PILLAR I DOCUMENTATION

19-ID BEAMLINE, FRONT END AND INSERTION DEVICE

	READINESS CRITERIA	RESPONSIBLE PERSON	ACTIONS	DOCUMENTED EVIDENCE	CERTIFICATION OF READINESS*
PILLAR I DOCUMENTATION (PLANNING & PROCEDURES)	**Radiation Safety Components Design** Radiation Safety Components for the Beamline and FE designed in accordance with NSLS-II requirements, PS-QAP-0412, *Design Reviews* and PS-C-QAS-PRC-010, *Engineering Design by Others*.	Joe Lidestri Lead Beamline Scientist	• Complete requirements analysis and design of radiation safety components for the Beamline	• Internal design review documents and reports • RSC Report	Signature:
		C. Amundsen Mechanical Engineer	• Complete requirements analysis and design of radiation safety components for the FE	• Internal design review documents • RSC Report	Signature:
	Top-Off Safety System (TOSS) FE has been analyzed for Top-Off Safety in accordance with PS-C-ASD-PRC-183, *Approval of New and Modified NSLS-II Beamline Front Ends for Top Off Safety.*	R. Fliller Coordinator for Top Off Safety	• Complete TOSS analysis	• TOSS Analysis Report • Updated FE layout drawings • Updated *Beamlines Approved for Top-Off Operations* list	Signature:
	Ray Traces Bremsstrahlung and Synchrotron Ray Traces generated in accordance with PS-C-XFD-PRC-008, *Synchrotron and Bremsstrahlung Ray Trace Procedure*.	Joe Lidestri Lead Beamline Scientist	• Prepare the Ray Traces for the Beamline	• Approved Primary Bremsstrahlung Ray Traces • Approved Maximum Synchrotron Ray Traces	Signature:
		C. Amundsen Mechanical Engineer	• Prepare the Ray Traces for the FE	• Primary Bremsstrahlung Ray Traces • Maximum Synchrotron Ray Traces	Signature:

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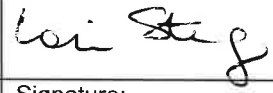
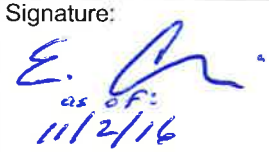
ATTACHMENT A – PILLAR I DOCUMENTATION

19-ID BEAMLINE, FRONT END AND INSERTION DEVICE

	READINESS CRITERIA	RESPONSIBLE PERSON	ACTIONS	DOCUMENTED EVIDENCE	CERTIFICATION OF READINESS*
PILLAR I DOCUMENTATION (PLANNING & PROCEDURES)	**Secondary Radiation Scatter Analysis** Secondary Bremsstrahlung and Synchrotron scatter is analyzed in accordance with LT-C-ESH-STD-001, *Guidelines for the NSLS-II Beamline Radiation Shielding Design.*	M. Benmerrouche Health Physics	• Complete FLUKA analysis • Complete STAC8 analysis	• BNL Technical Note Report	Signature: 
	National Environmental Protection Act (NEPA) Evaluation NEPA requirements evaluation completed.	L. Stiegler ESH Operations Group Leader	• Complete a NEPA evaluation	• NEPA Evaluation Report	Signature: 
	Unreviewed Safety Issue (USI) Evaluations/ Screenings Authorization basis hazard identification is managed through USI evaluation/screening.	S. Moss Authorization Basis Manager	• Verify that the SAD and ASE accurately cover the hazards associated with the subject Beamline, FE and ID; including temporary systems	• SAD and ASE USI screenings/evaluations • Applicable waivers	Signature: 
	Resolution of Open Action Tracking System (ATS) Actions Instrument specific action items from previous internal and external oversight groups (e.g., RSC, Design Reviews, etc.) are addressed. Previous IRR action items are addressed.	J. Zipper QA Engineer	• ATS action items for the instrument are satisfied. • ATS action items from previous IRRs are evaluated for impact to the instrument	• ATS System	Signature:  11/7/16
		E. Cheswick QA Engineer	• ATS action items for the FE and ID shown as closed with supporting evidence	• ATS System	Signature:  as of: 11/2/16

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ATTACHMENT A – PILLAR I DOCUMENTATION

19-ID BEAMLINE, FRONT END AND INSERTION DEVICE

	READINESS CRITERIA	RESPONSIBLE PERSON	ACTIONS	DOCUMENTED EVIDENCE	CERTIFICATION OF READINESS*
PILLAR I DOCUMENTATION (PLANNING & PROCEDURES)	**Procedures** Procedures needed for safe, secure, and environmentally sound commissioning have been developed, reviewed, validated (where applicable), and approved. Existing procedures are verified as sufficient for new hazards introduced by this Beamline, FE and ID, if any.	K. Rubino Procedure Support	• Develop any system specific procedures • Verify that existing procedure are sufficient for any new hazards introduced	• ID LOTO Procedure • 19-ID Radiological Interlock Test Checklist • Search and Secure Sketch	Signature: K Rubino
	Commissioning Plans Commissioning plans have been generated for the Beamline and FEs and IDs to address the task sequence required for technical commissioning (safe photon transport).	Joe Lidestri Lead Beamline Scientist	• Prepare a Beamline Commissioning Plan to define technical objectives and operational readiness requirements	• Approved Beamline Commissioning Plan	Signature:
		T. Shaftan Accelerator Coordination Group Leader	• Verify that NSLS-II Insertion Device and Front End Commissioning Sequence (PS-C-ASD-PRC-166) adequately covers commissioning for the FE and ID	• NSLS-II Insertion Device and Front End Commissioning Sequence (PS-C-ASD-PRC-166)	Signature:

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ATTACHMENT A – PILLAR I DOCUMENTATION

19-ID BEAMLINE, FRONT END AND INSERTION DEVICE

	READINESS CRITERIA	RESPONSIBLE PERSON	ACTIONS	DOCUMENTED EVIDENCE	CERTIFICATION OF READINESS*
PILLAR I DOCUMENTATION (PLANNING & PROCEDURES)	**Radiation Survey Procedures** A survey procedure has been generated for the Beamline in accordance with PS-C-XFD-PRC-004, *NSLS-II Beamlines Radiation Safety Commissioning Plan* and the existing NSLS-II Insertion Devices and Front End Radiation Survey Plan (PS-C-ESH-PRC-061) has been reviewed and updated as necessary for the FE and ID.	M. Benmerrouche Radiation Physicist	• Prepare the Radiation Survey Procedure for the Beamline	• Approved Beamline Radiation Survey Procedure	Signature: 
		M. Benmerrouche Radiation Physicist	• Verify that the NSLS-II Insertion Devices and Front End Radiation Survey Plan (PS-C-ESH-PRC-061) adequately covers commissioning for the FE and ID	• NSLS-II Insertion Devices and Front End Radiation Survey Plan (PS-C-ESH-PRC-061)	Signature: 
	Proposal Allocation Safety & Scheduling (PASS) The instrument is active within PASS with approvals to proceed with Technical Commissioning.	Joe Lidestri Lead Beamline Scientist	• Assure that PASS is configured to administer the instrument	• Defined resource within PASS • Submitted Technical commissioning proposal • Submitted Safety Approval Form	Signature: 

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ATTACHMENT B – PILLAR II HARDWARE

19-ID BEAMLINE, FRONT END AND INSERTION DEVICE

	READINESS CRITERIA	RESPONSIBLE PERSON	ACTIONS	DOCUMENTED EVIDENCE	CERTIFICATION OF READINESS*
PILLAR II SAFETY CRITICAL HARDWARE (INSTALLATION)	**Radiation Safety Components: Installation** Radiation Safety Components, including Top Off components are installed in accordance with the Traveler.	Joe Lidestri Lead Beamline Scientist	• Generate and execute Traveler	Beamline: • Completed Traveler	Signature:
		C. Amundsen Mechanical Engineer	• Generate and execute Top Level Traveler	FE: • Completed Traveler	Signature:
		L. Doom Accelerator Coordination	• Generate and execute Top-Off Traveler	• Completed Traveler	Signature:
	Radiation Safety Components: Configuration Control A Radiation Safety Component Checklist template is generated in accordance with PS-C-ESH-PRC-025, *NSLS-II Radiation Safety Component Inspection Procedure.*	Joe Lidestri Lead Beamline Scientist	• Develop Radiation Safety Component Checklist	• Approved beamline specific Radiation Safety Component Checklist	Signature:
		L. Doom Accelerator Coordination Group Engineer	• Verify that the existing FE Radiation Safety Component checklist includes the subject FE and ID	• Approved Storage Ring Radiation Safety Component Checklist Template	Signature:

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ATTACHMENT B – PILLAR II HARDWARE

19-ID BEAMLINE, FRONT END AND INSERTION DEVICE

	READINESS CRITERIA	RESPONSIBLE PERSON	ACTIONS	DOCUMENTED EVIDENCE	CERTIFICATION OF READINESS*
PILLAR II SAFETY CRITICAL HARDWARE (INSTALLATION)	**Area Radiation Monitors (ARMs)** ARMs are installed in accordance with PS-C-ESH-ARN-SPC-001, *NSLS-II Area Radiation Monitor (ARM) System Description* and PS-C-ESH-STD-002, *Technical Basis Document for Interlocked Area Monitors Placement Outside the Accelerator and Beamlines Enclosures.*	M. Benmerrouche ARM Technical Authority	• Install, calibrate, and test (EPICS integration) ARMs • Certify (PPS)	• ARM Layout Drawing • ARM calibration certificates • ARM EPICS Interface Integration Test Sheet • ARM PPS Test checklist	Signature:
	Personnel Protection System (PPS) Interlocks: Installed and Certified Hardware/Software installed in accordance with PS-C-XFD-SPC-PPS-001, *Beamline Personnel Protection System (BLPPS) and Front End Personnel Protection System (FEPPS) Design Description.*	G. Ganetis Electrical Engineering Group Leader	• Generate system schematics and logic diagrams • Install PPS components • Certify PPS	• Overall PPS Checklist • Executed Beamline Radiological Interlock Certification Checklist	Signature:
	O2 Sensors: **Install** Oxygen sensors and alarms required to alert personnel to oxygen deficiency hazard (ODH) conditions installed in accordance with the design drawing.	S. LaMarra ODH Technical Authority	• Generate design drawing • Generate and execute Traveler	• Design drawing • Completed Traveler	Signature:

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ATTACHMENT B – PILLAR II HARDWARE

19-ID BEAMLINE, FRONT END AND INSERTION DEVICE

	READINESS CRITERIA	RESPONSIBLE PERSON	ACTIONS	DOCUMENTED EVIDENCE	CERTIFICATION OF READINESS*
PILLAR II SAFETY CRITICAL HARDWARE (INSTALLATION)	**O2 Sensors:** **Certify** ODH monitoring system has been certified in accordance with PS-C-XFD-PRC-005, *Beamline Enclosures and Cryogen Fill Station ODH Monitoring and Alarm System Certification and Inspection.*	B. Heneveld ESH Engineer	• Perform certification	• Certification Report	Signature: 
	Hutch Structures Hutch structures installed with adequate provision for life safety issues (egress and fall protection) in accordance with NX-C-XFD-SOW-HU-002, "*NSLS-II Steel Beamline Shielding Enclosures Statement of Work*" and NX-C-XFD-SPC-HU-002, "*NSLS-II Steel Beamline Shielding Enclosures Technical Specifications.*"	E. Haas Beamline Engineer	• Generate and execute Traveler for inspection	• Completed Traveler	Signature: Edwin Haas 10/26/2016
	Electrical Power SBMS electrical power distribution requirements are satisfied. SBMS Electrical Equipment Inspection (EEI) requirements are satisfied.	A. Boerner Electrical Distribution Engineer	• Generate and approve one-line drawings • Complete system electrical inspection • Complete needed EEI inspections	• Approved AC Power one–line drawings • EEI database entries	Signature:  11/7/16

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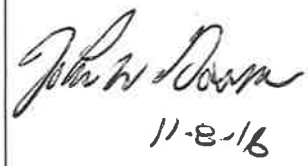
ATTACHMENT B – PILLAR II HARDWARE

19-ID BEAMLINE, FRONT END AND INSERTION DEVICE

	READINESS CRITERIA	RESPONSIBLE PERSON	ACTIONS	DOCUMENTED EVIDENCE	CERTIFICATION OF READINESS*
PILLAR II SAFETY CRITICAL HARDWARE (INSTALLATION)	**Utilities** Permanent utility systems are installed and tested (i.e., Compressed Air, DI Water, Gaseous Nitrogen, Process Chilled Water) in accordance with design drawings.	J. Gosman Mechanical Utilities Group Leader	• Generate system schematics • Perform pressure test	• Approved system schematics • System pressure testing reports	Signature:  11-8-16

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ATTACHMENT B – PILLAR II HARDWARE

19-ID BEAMLINE, FRONT END AND INSERTION DEVICE

	READINESS CRITERIA	RESPONSIBLE PERSON	ACTIONS	DOCUMENTED EVIDENCE	CERTIFICATION OF READINESS*
PILLAR II OTHER HARDWARE (INSTALLATION)	**Other FE Components, Photon Transport Components, Optics, and Diagnostics** FE and photon transport components that are not radiation safety components are installed and tested in accordance with the Travelers. Diagnostic equipment needed to begin technical commissioning is installed and tested.	Joe Lidestri Lead Beamline Scientist	• Generate and execute Traveler • Complete acceptance inspections	Beamline: • Completed Traveler • Acceptance inspection documentation, as needed	Signature:
		C. Amundsen Mechanical Engineer	• Generate Traveler and drawing • Execute Traveler • Perform pressure test	FE and ID: • Completed Traveler • System pressure testing reports	Signature: FE: ID:
	Equipment Protection System (EPS) Interlocks Hardware/Software installed and tested in accordance with the Traveler.	R. Kadyrov Controls Infrastructure Group Leader	• Generate and execute Traveler • Verify EPICS integration • Test system performance	Beamline: • Test Report • Completed Traveler	Signature:
	Front End Equipment Protection System (FEEPS) (Phase 2 Installation needed for beamline operation) Hardware/Software installed and tested in accordance with the traveler.	G. Ganetis Electrical Engineering Group Leader	• Verify integration • Test system performance	• Test Report Phase 2 Installation	Signature:

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ATTACHMENT B – PILLAR II HARDWARE

19-ID BEAMLINE, FRONT END AND INSERTION DEVICE

	READINESS CRITERIA	RESPONSIBLE PERSON	ACTIONS	DOCUMENTED EVIDENCE	CERTIFICATION OF READINESS*
PILLAR II OTHER HARDWARE (INSTALLATION)	**Controls** Hardware/Software installed and tested in accordance with NSLS-II requirements.	X. Yang NYSBC Controls Engineer	• Test system performance • Complete integral testing	Beamline: • Performance and integral testing documentation	Signature:
		D. Padrazo Deputy Instrumentation Group Leader	• Test system performance • Complete integral testing	FE: • Performance and integral testing documentation	Signature:
		H. Bassan Controls Group Engineer	• Test system performance • Complete integral testing	ID: • Performance and integral testing documentation	Signature:
	Vacuum Vacuum hardware has been installed and tested in accordance with the Traveler and has the capability of achieving full vacuum needed during commissioning.	R. Todd Vacuum Engineer	• Generate and execute Top Level Traveler • Identify overpressure devices • Test system performance	Beamline: • Completed Top Level Traveler • Test Report	Signature:
		C. Hetzel Vacuum Group Leader	• Generate and execute Top Level Traveler • Identify overpressure devices • Test system performance	FE and ID: • Completed Top Level Traveler • Test Report	Signature:

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ATTACHMENT C – PILLAR III PERSONNEL

19-ID BEAMLINE, FRONT END AND INSERTION DEVICE

	READINESS CRITERIA	RESPONSIBLE PERSON	ACTIONS	DOCUMENTED EVIDENCE	CERTIFICATION OF READINESS*
PILLAR III PERSONNEL	**Lead Beamline Scientist (LBS) / Cognizant Space Manager (CSM)** LBS and CSM personnel are assigned and Trained/Qualified.	B. Lein Training Group Leader	• Assign JTA for LBS and CSM	• BTMS record	Signature:
	Authorized Beamline Staff Sufficient personnel to begin commissioning are assigned and Trained/Qualified.	B. Lein Training Group Leader	• Assign JTA	• BTMS record	Signature: Bruce Lein
	Support Staff Other, non-beamline dedicated personnel needed to begin commissioning (e.g., Beamline Engineers and Controls Personnel) are assigned and Trained/Qualified for the Beamline and FE/ID.	B. Lein Training Group Leader	• Assign JTA	• BTMS record	Signature: Bruce Lein
	Lead Operators, Scientific Operators & FLOCOS (Accelerator Division) Trained/Qualified to: – Execute the Beamline Enable procedure – Perform roles assigned in any Beamline-specific procedures – Perform tasks related to FE and ID commissioning	B. Lein Training Group Leader	• Train Operators	• BTMS record	Signature: Bruce Lein

* READINESS CERTIFICATION	**J. Lidestri - Lead Beamline Scientist**	**Signature:**
* READINESS CERTIFICATION	**S. Sharma - Mechanical Engineering Group Leader**	**Signature:** S. Sharma 11/2/16
* READINESS CERTIFICATION	**T. Tanabe - Insertion Devices Group Leader**	**Signature:** Tadayuki Tanabe 11/8/16

*Signature certifies that the readiness criteria are met. The Responsible Person shall not sign prior to completion.

ATTACHMENT D – COMPLETION OF IRR PRE–START FINDINGS

19-ID BEAMLINE, FRONT END AND INSERTION DEVICE

	READINESS CRITERIA	RESPONSIBLE PERSON	DOCUMENTED EVIDENCE	CERTIFICATION OF READINESS*
IRR PRE–START FINDINGS	**Actions Complete** All actions associated with the 19-ID Beamline, FE and ID IRR pre-start findings are completed and the ATS Actions are closed.	A. Broadbent IRR Technical Authority (Beamline)	• ATS	Signature:
		T. Shaftan IRR Technical Authority (FE & ID)	• ATS	Signature:
	Actions Closed All actions associated with the 19-ID Beamline, FE and ID IRR pre-start findings have been verified complete and the ATS Condition is closed. (ATS Condition No. _____)	R. Lee ESH Manager	Beamline: • ATS	Signature:
	All actions associated with the 19-ID Beamline, FE and ID IRR pre-start findings have been verified complete and the ATS Condition is closed. (ATS Condition No. _____)		FE: • ATS	Signature:
	Actions Verified Actions associated with the 19-ID Beamline, FE and ID IRR pre-start findings have been satisfactorily completed.	M. Hauptmann Independent Verifier	Beamline: • ATS	Signature:
	Actions associated with the 19-ID Beamline, FE and ID IRR pre-start findings have been satisfactorily completed.		FE: • ATS	Signature:
	No Pre-Start Findings Identified No pre-start findings have been identified by the Review Team and therefore the previous lines do not require sign-off.	R. Lee ESH Manager	• IRR Preliminary Report	Signature:
		M. Hauptmann Independent Verifier	• IRR Preliminary Report	Signature:

– END –

*Signature certifies that the readiness criteria are met. The Responsible Person shall not sign prior to completion.