Advanced Photon Source

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Managing APS Facility Procedures

Changes made in this revision:

- Updated Policy to include information about procedures that are used to implement and maintain controls that are related to the Safety Assessment Document for the Advanced Photon Source (SAD) or the APS Accelerator Safety Envelope (ASE)

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Division Directors

WSE/PSC Safety Manager

Deputy ALDs

Applicability:

Division	Cross-divisional/ facility-wide	ES&H	Safety Interlocks	M&TE	User	Linac	PAR	Booster	Storage Ring
	x								

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Managing APS Facility Procedures

Policy

Each group at the APS shall maintain documented procedures to ensure a safe work environment and reliable and efficient operations.

This policy and associated procedure apply to APS mission/safety critical procedures, namely those that are required to ensure a safe work environment and reliable, efficient operations at the APS.

APS managers shall ensure procedures, for the systems/processes that they are responsible for, are:

- Complete and kept current
- Available to workers who currently use them and to others that might need them in the future
- Maintained in the central APS integrated content management system (ICMS)

The DALD-Operations shall designate Procedure Administrators (PA) who shall manage APS procedures in ICMS:

- Initiate and monitor review workflows
- Ensure approved procedures are posted
- Ensure that document system metadata includes at a minimum an effective date and expiration date or review period for each procedure
- Assist in notifying effected groups that a new or revised procedure is in effect

Typically, facility procedures should be reviewed on a triennial or more frequent basis. Procedures for lockout/tagout (LOTO) must be reviewed on an annual basis.

If a reviewer disapproves a procedure, the document is routed back to the PA and the PA returns it to the author. The author is responsible for addressing any issues and resubmitting the document to the PA for rerouting for approval.

The template used for APS procedures is available through ICMS, document APS_1191216. The native file can be downloaded and used to create an APS procedure.

Authors will identify documents/records generated as a result of performing the procedure (e.g., forms, checklist, work permits, approval/authorizations, etc.) and how they will be controlled (e.g., responsible custodian, location, format/media, and retention requirements - see Managing APS Documents Policy – APS_1273342).

Authors shall include specific control measures (e.g., the particular type and requirements for use of personal protection equipment) for the specific hazards identified in procedures and shall ensure that these measures are included in the appropriate action steps. Hazard controls should be developed in accordance with Work Planning and Control at the

APS – APS_1432773. Generic statements, such as "controls are defined in the ANL Laboratory Management System policies and procedure" should be avoided and only used when specific controls cannot be defined. Safety-related work planning procedures are reviewed by the ESH Coordinators, who shall verify that appropriate specific controls have been included. (Appendix B is a guideline for describing hazard control measures in procedures.)

Procedures that are used to implement and maintain controls that are related to the Safety Assessment Document for the Advanced Photon Source - APS_1188832 (SAD) or the APS Accelerator Safety Envelope - APS_2278796 (ASE) must be screened to ensure effective maintenance of those controls. The minimum set of documents to maintain the controls is required by the APS Accelerator Safety Configuration Management Plan - APS_1693025. These procedures and the expected controls derived from the SAD and ASE are in the APS Accelerator Safety Implementation Matrix - APS_2290186. Any change to procedures in the Matrix that is not deemed an "equivalent" change by the subject matter expert for the system will require a review through the Unreviewed Safety Issue process. An "equivalent change" is defined in Accelerator Safety Program Description - LMS-PDESC-2 as changes where the equipment continues to meet the design requirements, meets all interface requirements and does not impact the safety or design basis (e.g. the assumptions in the SAD). Procedure Administrators will identify these procedures on the procedures title page to ensure that changes are "equivalent" or verify that the procedure has gone through an Unreviewed Safety Issue review and any identified issues are resolved.

Required reviews/approvals

1. Author
2. Author's supervisor – the supervisor's approval is a certification that the procedure will safely meet technical/operational requirements
3. Other case-specific required reviews:

Potentially Impacted System/Equipment	Required review and approval
Personnel safety	Author's Division ESH Coordinator
Accelerator systems	Affected Machine manager(s)
Safety interlocks	Safety Interlock Group Leader and ESH/PSC Safety Manager or designee
Radiation shielding	Accelerator Health Physicists
Measurement and test equipment	QA Representative
User Policy and Procedure	User Administration and Support Group Leader or AES Technical Operations Specialist

Management Approvals

The Deputy ALDs approve this procedure and assign the following management oversight authorities:

Organizational Applicability	Required review and approval/disapproval***
Division, administrative (office-type work principally executed within a Division)	Author's Division manager (Division Director (DD), DDD, or ADD)
Division, technical tasks* (hands-on work principally executed within a Division)	Low and Medium hazard level: Group Leader or Division Manager (DD, DDD, or ADD) or APS-U Assoc. Project Manager or designee High or undetermined hazard level: Author's Division manager or APS-U Assoc. Project Manager
ESH/QA, cross-divisional**	WSE/PSC Safety Manager
Facility Operations, cross-divisional**	DALD-Operations
User Policy and Procedures and Procedures prepared by the User Administration and Support Group	DALD-X-ray Science

* Division Manager includes Division Directors (DD), Associate DDs, and Deputy DDs. Hazard level can be determined using the Argonne AWARE application, see Work Planning and Control at the APS (APS_1432773) for a description of the grading standard. Authors are to provide the appropriate approval requirements to the PA with the submission/updating of technical procedures - if in doubt about the grading, Division Management approval is acceptable in all cases.

** cross-divisional procedures are executed by groups in more than one division and include procedures, like this one, that are to be used across the APS

*** if there is disagreement on a procedure between the author or reviewer and the approver that cannot be resolved, it will be adjudicated by the next level manager of the approver.

Optional reviews

The author and any reviewer should seek the advice of subject matter experts, APS or Argonne safety committees, or APS technical panels particularly for safety critical procedures. Authors should avoid adding reviewers that their inclusion will add little or no value to the vetting or implementation of the procedure.

The author may be in a different organization that the employee(s) that will carry out the procedure – the author may include the worker's supervisor in the workflow approval. The supervisor's approval confirms the acceptance of the responsibilities and that the assignment is appropriate.

References - Source Requirements

Work Planning and Control at the APS (APS_1432773)
Managing APS Documents Policy (APS_1273342)
Control of APS Measuring and Test Equipment (APS_1281549)

Corrections/Opportunities for Improvement

Any user or reviewer of a facility procedure: 1) shall advise a PA if there are errors or omissions in a procedure and 2) is *encouraged* to advise a PA of opportunities for improvement and *shall* advise a PA where safety-affecting procedures are concerned. The PAs will work with the author to address the feedback.

If there is an error or omission in a procedure, the worker should ensure that the work process is executed safely and advise a Procedure Administrator (PA) of the need for correction/amendment.

A PA may make minor corrections without requiring re-review/re-approval of the procedure. A minor change is one that does not have the potential to change the meaning of the procedure and includes changes such as correcting spelling, grammar, or other typographical errors; limited text clarifications; or minor format changes. The PA will verify the change with the author to ensure that the clarification does not alter the meaning. If there is the potential for changing the meaning of the procedure then re-review/re-approval is required. Changes and the reason for changes must be recorded in the procedure's metadata in ICMS.

Procedure

1 Introduction

1.1 Purpose

This procedure defines the process for managing facility procedures to help ensure a safe work environment and reliable, efficient operations at the APS.

1.2 Scope

This procedure:

- Defines the process for establishing and maintaining APS procedures.
- Does not define a process for developing the content of APS procedures.

1.3 Applicability

This procedure need not be followed for work practices that rely on knowledgeable trained worker, provided that the unavailability of the worker will not impact safe, reliable, efficient operations at the APS.

2 Preparation – Prerequisite Actions

Authors draft/update procedures, prior to submitting a procedure to a PA for workflow.

3 Acceptance Criteria

Section 4.2 defines required approvals.

4 Performance - Procedure Action Steps

4.1 Upload procedure and start workflow:

4.1a If the procedure is a **New Procedure:**

1. The author submits the proposed procedure to a PA and assists the PA with identifying ICMS metadata values, including workflow/review requirements.
2. The PA checks the procedure into ICMS.

Or

4.1b If an existing procedure is **undergoing periodic review**:

1. PA notifies an author of the pending expiration of a procedure.
    a. If the author has left APS, the PA will contact the author's manager to determine who will take over as the author.

2. If the PA has not been advised by the author of proposed revisions, the PA checks out the current procedure from ICMS, updates procedure header information and metadata (e.g., last review date, revision number, etc.) and checks the procedure into ICMS (the author will be in the workflow - if the authors seeks a revision they can reject the procedure in workflow and provide updates)

Or

4.1c If the procedure is a **revision** of an existing procedure:

1. The author submits the revised procedure to the PA and assists the PA on updated metadata values and workflow/review requirements.
2. PA checks out the current procedure from ICMS, checks in the new version.

4.2 Required Reviews/Approvals

The PA initiates the approval workflow.

The general sequence of review and approvals is:
1. Author and the technical groups that will carry out the procedure,
2. Safety and QA oversight, and
3. Management endorsement.

As needed, any reviewer may seek the advice of subject matter experts, APS or Argonne safety committees, or APS technical panels.

If a reviewer disapproves a procedure, it is routed back to the PA, the author is responsible for addressing any issues, and the PA will return to step 4.1 and reroute for approval.

4.2.1 **Author** – verifies that the correct version/revision is in workflow.

4.2.2 **Author's supervisor** (or designee) – certifies that the procedure will safely meet technical/operational requirements or disapproves the procedure.

4.2.3 **Case-Specific Reviews and Approvals**
Each reviewer is verifying that for their subject area that the technical content is correct and/or safety concerns have been adequately addressed. The default will be to route the procedure for the case-specific safety and QA reviews in parallel.

4.2.3.1 **ES&H**
IF the procedure involves activities or changes to any system that provides personnel safety protection and/or describes hazard control measures(e.g.,

LOTO required, hazardous materials handling, use of personal protection equipment, use of high power lasers, etc.).

THEN the procedure is reviewed and approved or disapproved by the responsible **Divisions' ES&H Coordinator or designee**.

4.2.3.2 **Safety Interlocks**

IF the procedure involves either:

Prescribed use, maintenance, modification or testing of the accelerator's Access Control Interlock Systems (ACIS) or beamline Personnel Safety Systems (PSS),

THEN the procedure is reviewed and approved or disapproved by the AES/SI Group Leader, ESH/PSC Safety Manager or designee, AES/ADD, and AES/DD.

4.2.3.3 **Radiation Shielding**

IF the procedure might impact radiation shielding, handling radioactive materials or requiring radiation survey,

THEN the procedure is reviewed and approved or disapproved by the **Accelerator Health Physicists assigned to the APS** or designee.

4.2.3.4 **Accelerator Systems**

IF the procedure entails manipulation (steering, kicking, exciting, etc.) of a charged particle beam or the facilities to manipulate the beam,

THEN the procedure is reviewed and approved or disapproved by the person(s) designated as responsible for the overall performance of the affected accelerators (i.e., **Machine Manager**) or designee:

Affected Device	**Reviewer**
Linac	Linac Manger
LET, PAR	PAR Manager
HET, Synchrotron	Synchrotron Manager
Storage Ring	Storage Ring Manager

4.2.3.5 **APS Measurement and Test Equipment**

IF the procedure involves:

- The use of measurement and test equipment (MTE) for the verification of a Personnel Safety System, Machine Protection System, Radiation Shielding Component, or Radiation Safety System as defined by APS Procedure APS_1685081 "Change Control for Radiation Safety Shielding",
- The use of MTE to accept APS-purchased or APS-built hardware that could impact the ability of the APS to provide beam to the users,
- The use of MTE for mission-critical applications as defined by the author's Group Leader, or
- Calibration procedures for MTE,

THEN the procedure is reviewed and approved or disapproved by an **APS QA Representative (QAR)** or designee. The QAR or designee will ensure, as appropriate, that the procedure under review implements the Control of APS Measuring and Test Equipment (APS_1281549) procedure.

4.2.4.6 **User Policies and Procedures**

IF the procedure applies to users, including APS/Argonne-employee users and non-Argonne employee users,

THEN the procedure is reviewed and approved or disapproved by the User Administration and Support Group Leader or the Technical Operations Specialist.

4.2.5 **Management Approvals**

Facility procedures requires management final approval (approvers as identified in the above policy):

Type of Procedure	Final Approver (Manager or designee)
Division, administrative (office-type work principally executed within a Division)	Author's Division manager (Division Director (DD), DDD, or ADD)
Division, technical (hands-on work principally executed within a Division)	Low and Medium hazard level: Group Leader or Division Manager (DD, DDD, or ADD) or APS-U Assoc. Project Manager or designee High or undetermined hazard level: Author's Division manager or APS-U Assoc. Project Manager
ESH/QA APS-wide/cross-divisional/user	ESH/PSC Safety Manager
Facility Operations APS-wide/cross divisional	DALD-Operations
User Policy and Procedure and Procedures prepared by the User Administration and Support Group	DALD-X-ray Science

4.3 Posting of approved procedure

ICMS will route the procedure to the PA for final review/edit, and the PA may make minor corrections as described in the above policy.

The approved procedure will be available through ICMS and a Permanent URL is linked to the latest version. The PA maintains a list of recently revised procedures in ICMS: APS_1235756. Also, APS personnel can subscribe to a procedure in ICMS and will be automatically notified of revisions of specific procedures.

5 Closeout - Post Performance Activity

The procedure becomes effective upon release in ICMS. During the procedure release process, the PA will assess impact of the change and any documents that will not be in compliance upon procedure release, the PA will get approval from the procedure approver to an agreed upon time for any non-compliant procedures to be implemented or to agree with the newly released procedure.

If during the execution of a procedure there are errors, omissions, or opportunities for improvement identified, the worker should advise a PA of the need for correction/amendment.

6 Documents and Records

The documents/records listed below will be created in the execution of this procedure and must be retained as indicated.

Description of Document/Record	Custodian	Storage Location and Medium	Retention Requirement
APS Policies and Procedures	APS Policy/Procedure Administrator	APS' Integrated Content Management System (ICMS) in digital format	PERM DOE ADM 16, Rev. 5, 1.1 PERM Permanent. Cut off at the end of each fiscal year. Transfer to inactive storage after 5 years. Transfer to NARA in 5 year blocks when most recent record is 25 years old. Permanent record.

7 Appendices

Appendix A – APS Procedures Standard Format
Appendix B – Guidelines for Describing Hazard Control Measures

8 Feedback and Improvement

If you are using this procedure and have comments or suggested improvements for it, please go to the APS Policies and Procedures Comment Form* to submit your input to a Procedure Administrator. If you are reviewing this procedure in workflow, your input must be entered in the comment box when you approve or reject the procedure.

Instructions for execution-time modifications to a policy/procedure can be found in the following document: Field Modification of APS Policy/Procedure (APS_1408152).

* https://www.aps.anl.gov/Document-Central/APS-Policies-and-Procedures-Comment-Form

Appendix A - APS Procedures Standard Organization

The template for APS procedures is available as ICMS document APS_1191216. The native file can be downloaded and used to format an APS procedure.

Listed below are the contents of an APS standard procedure. Not all procedures require each of these sections. If a procedure does not need an element, do not include it.

1. **Coversheet**
   A simple descriptive title to identify the applicable system, equipment, process, or activity and one that differentiates the procedure from other procedures

2. **Revision Status**
   A clear summary of changes

3. **Table of Contents**

4. **Introduction**
   a. Purpose – goal to be achieved by performing the procedure
   b. Scope – activities covered, or not covered, by the procedure
   c. Applicability – conditions that require the procedure

5. **References – Requirements Sources**

6. **Hazards – Precautions and Limitation**
   a. Inform the user of hazardous conditions and their potential effect
   b. Delineated precautions that affect the entire procedure or occur at more than one point in the procedure

7. **Preparation – Prerequisite Actions**
   a. Planning/coordination (e.g., training, pre-job meeting, etc.)
   b. Identification of documents that will be needed at job site
   c. Special tools that will be required
   d. Field preparations (e.g., LOTO)
   e. Identify approvals and notifications that must be provided before initiating the procedure

8. **Acceptance Criteria**
   Basis for determining whether an activity has succeeded of failed

9. **Performance - Procedure Actions Steps**

10. Closeout – Post-performance Activity

Test and restoration of systems to desired configuration

11. Documents and Records

Identify documents and records created by the execution of the procedure, who is responsible for the document/record, and how they are managed/controlled:

Description of Document/Record	Custodian	Storage Location and Medium	Retention Requirement

12. Appendices

a. Include forms, tables, figures, and check lists that are too large to be incorporated in the procedure action steps.
b. Reference appendices in the text of the procedure.

Appendix B - Guideline for Describing Hazard Control Measures

The following are acceptable for specifying hazard controls:

1. Include an action step to initiate the hazard control immediately preceding the action step involving the hazard. (For example: insert an action step of "don nitrile gloves" immediately before a step involving handling an item in a solvent solution.)
2. Include warnings and cautions in the procedure to attract attention to information that is essential to safe performance. Do not embed action steps in warnings or cautions. Warnings alert users to potential hazards to personnel. Cautions alert users to potential hazards to products or equipment.
3. Write precautions and limitations to inform users of hazardous conditions and their potential effects and include these in the Hazard Control – Precautions and Limitations section of the procedure. This section should not include user actions but may include hazards that may be present in more than one point in the procedure. Precautions (a) alert procedure users to actions and conditions that represent potential hazards to personnel or possible damage to equipment or (b) establish abnormal conditions. Limitations define boundaries that are not to be exceeded. (For example the Hazard Controls section can describe personal protective equipment or other hazard controls required for the tasks or areas that the tasks are to be performed within.)
4. Include a list in the Hazard Control – Precautions and Limitations section identifying hazard controls and explicit personnel protective equipment needed for the work to be performed.