

Advanced Photon Source

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Managing APS Documents Policy

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Prepared by:

J. Toeller, AES

Reviewed by:

AES Division Director

ASD Division Director

XSD Division Director

WSE / PSC Safety Manager

Approved by:

APS Deputy Associate Laboratory Director, Operations

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Managing APS Documents Policy

1 Purpose

This policy sets standards that will ensure important APS documents are retained and are retrievable.

2 Scope

This policy covers APS documents that are required to:

- Maintain a safe work environment;
- Maintain reliable and efficient operations; and
- Record the business and R&D activities of the APS

It ensures the APS complies with document retention requirements of Argonne and the DOE.

In general, if a document is related to the configuration, continuing operation, or institutional memory of the APS, then it shall be archived in an APS-approved repository.

This policy does not cover documents that if not available in an APS-approved repository will have little or no impact or cost to the APS. In general, only the custodian of such a document will need to access it as part of their job at the APS.

3 Definitions

For the purpose of this policy

- *Document*: Information and its supporting media (e.g., paper or electronic)
- *Controlled Document*: A type of document identified by the APS to be managed under a formal procedure that prescribes how the document is created, revised, approved, periodically reapproved, and made available to users to avoid use of obsolete or unapproved versions. (LMS Dictionary)
- *Administrative Document*: Administrative documents record how the APS executes its business operations and managerial functions (e.g., policies, procedures, operations log books, official business communications and agreements, user registrations, beam time proposals and allocations, work authorizations, experiment safety reviews, committee records, etc.). (APS Staff)
- *Engineering Document*: The term engineering document refers to any document, drawing, sketch, file, etc., that is used to describe the design, fabrication, installation, operation, and maintenance of APS technical systems. The term

“drawing” may at times be used for clarity in a specific context, for it is one type of engineering document. (APS Staff)

- *R&D Document*: R&D documents are a product of research activities (e.g., APS technical publications such as Light Source Notes) (APS Staff)
- *APS-Approved Repository*: A place/tool for collecting documents, approved by the APS Deputy Associate Laboratory Director for Operations. Tools typically provide for review/approval (e.g., workflow), revision controls, and accessing readable current versions. (APS Staff)
- *Document Management System (DMS)*: APS document repositories and archiving, search, and retrieval tools including the Electronic Document Control Center and the Component Database.
- *Electronic Document Control Center (eDCC)*: An on-line application that includes the Document Numbering System, a document search tool that allows searches across multiple repositories, and a tool for aggregating and organizing links to documents.
- *Document Numbering System (DNS)*: A tool used to assign a unique number to a document. It also ensures a consistent numbering scheme is used for all APS documents. All new documents placed in APS-approved repositories shall be assigned a document number by the DNS.
- *Component Database (CDB)*: A tool to assist in documenting, organizing, and tracking hardware components used at the APS.

4 Policy

This policy defines requirements that ensure:

- important documents are properly managed;
- a consistent standard for retention and retrieval of documents; and
- APS implements Laboratory and DOE document retention requirements and complies with [LMS-PROC-1, Implementation of Document Control Requirements](#)

If a document is designated as a *controlled document* to meet project or regulatory requirements, it must be maintained in an APS-approved repository.

All safety committee records shall be maintained in DMS/Integrated Content Management System (ICMS).

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5 Administrative and R&D Documents Approved APS business and R&D record repositories:

1. DMS/ICMS;
2. APS Business databases – provided the system can generate a duplicate of the original document;
3. The historical APS Document Control Center (DCC) – for historical documents only;
4. Division-approved hard copy file systems (for legacy documents only).

Documents controlled through an Argonne Laboratory-wide business system (e.g., financial, HR, travel, and procurement records), experiment data, and those published in the open literature need not be managed in a local APS-managed system.

6 Engineering Documents

This section applies to all engineering documents that describe the design, fabrication, installation, and operation of the APS technical systems.

6.1 Approved Repositories for Engineering Documents

APS Engineering documents may be controlled in:

1. APS ICMS
2. Windchill (Creo 3D models)
3. Vault (AutoCAD files)
4. Approved APS databases (e.g., eTravelers and APS Component Database) – provided the system can generate a duplicate of the original document
5. The historical APS Document Control Center (DCC) – for historical documents only
6. APS approved electronic file systems with version control located on centrally managed APS servers. Files other than software or firmware shall be available in a browser viewable format. All files shall have an APS document number and be searchable through the eDCC.
7. Division-approved electronic file systems (for legacy documents only).
Electronic files are to be saved on APS-managed servers.
8. Division-approved hard copy file systems (for legacy documents only).

6.1.1 Windchill (PDMLink)

Windchill is a valid repository, primarily used for Creo 3D models. Windchill provides workflow tools designed specifically for the files it maintains.

The primary identifier of files in Windchill is the full path name to the file. The file name will be fields 5 and 6 of the DNS document number (Collection ID and Document ID) Note that since released documents from Windchill are transferred to ICMS, the file

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name must be unique across APS. A more intuitive name may be assigned as the document title.

6.1.2 Vault

AutoDesk Vault is a valid repository, primarily used for AutoDesk products (e.g., AutoCad, Inventor, etc.). AutoDesk Vault provides workflow tools designed specifically for the files it maintains.

The primary identifier of files in Vault is the full path name to the file. The file name will be Fields 5 and 6 of the DNS document number (Collection ID and Document ID)). Note that since released documents from Vault are transferred to ICMS, the file name must be unique across APS. A more intuitive name may be assigned as the document title.

6.1.3 ICMS

ICMS is a valid repository for any engineering document. It has the advantage of automatically providing a viewable format for many types of source documents. There may or may not be a workflow required to revise documents in ICMS

The primary identifier of files in ICMS is the Content ID, which is guaranteed to be unique. Additionally, all new documents placed in the ICMS will also have a unique DNS document number.

6.1.4 Historical APS Document Control Center (DCC)

The Historical Document Control Center is a valid repository for historical documents only. It is a centralized location that houses paper documents, drawings and electronic media via video, compact disks, and floppy disks. This system provides the historical records of the APS including the reasons for change, the contributor, and the document's current status. This system is for reference only to aid in searching for historical documents that have not been updated to the new eDCC with new DNS Numbers.

6.1.5 APS approved electronic file systems with version control located on centrally managed APS servers

Revision controlled electronic file systems are approved repositories for software, firmware, and files created by computer aided design software that are not routed through the Design and Drafting group (e.g., OrCAD, PSpice, etc.) Revision control software (e.g., cvs, subversion, etc.) will be used to create a repository of revisions. The group should describe a directory structure and tag name convention for use with the RCS. Files must be searchable by the eDCC. Files other than software or firmware must be available in a browser viewable format.

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6.1.6 APS Component Database (CDB)

The APS Component Database is an approved repository for component specific documents such as manuals and vendor sheets. Records (e.g., survey data, QA data, etc.) may not be stored in the CDB.

6.1.7 eTravelers

eTravelers are maintained in their own database that is an approved repository for the eTravelers and the records created by the eTravelers.

6.1.8 Division-approved electronic file systems

Division-approved electronic file systems are permitted for legacy documents only. They shall have the following characteristics:

- Located on centrally managed APS servers.
- Have an identified owner who is responsible for upkeep of the system.
- New documents shall not be kept in these systems.
- The group-shared file system must be accessible through the eDCC.
- The file system must be identified as an engineering document repository to the IT group to ensure proper backup procedures are in place.
- Be read-only files. Any revisions to these files will need to be placed in an approved repository. A link to the revised document in the approved repository shall be placed in the electronic file system in place of the actual file.

6.1.9 Division-approved hard copy file systems

Division-approved hard copy file systems are permitted for legacy documentation only. They should have the following characteristics:

- Have an identified owner who is responsible for upkeep of the system.
- If the file system contains sensitive information or PII, the documents should be secured, e.g., in a locked file cabinet or office.
- New documents should not be kept in these systems.

6.2 Storage and Retrieval of Electrical Drawings and Electronic Design and Programmable Device files

Electrical Drawings and Electronic Design and Programmable Device files including:

- Documents (data sheets, quotes, design requirements, bill of materials, block diagrams, etc.)
- Electrical drawings
- Mechanical drawings not routed through Design and Drafting
- Printed Circuit Board (PCB) fabrication related files (e.g., Gerber file, drill file, etc.)
- Printed Circuit Board (PCB) design schematic files (e.g., OrCAD .dsn or .net)
- Programmable Device related files (e.g., code, configuration file, pinout file, etc.)

Requirements:

- The tools used to create electrical drawings, documents, schematics, block diagrams, PCB layouts, code, etc. will be managed at the Group level.
- All documentation, including native files, shall be maintained in an approved repository (Windchill, Vault, ICMS, or an APS-approved electronic file systems with version control located on centrally managed APS servers).
 - Once approved, an RCS becomes an approved Repository.
- All documentation shall be searchable and retrievable through the DMS.
 - Viewable files (schematics, ladder logic, etc.) stored in an RCS shall be viewable without the need to log in to the RCS and in a common format (i.e., PDF).
 - **Note:** these may be included as part of a larger zipped file as long as the DMS user can access and view them
- If source code is stored in ICMS, any related viewable documents shall be accessible and viewable in a common format (i.e., PDF).
 - **Note:** these may be included as part of a larger zipped file as long as the DMS user can access and view them.
- File (Projects) stored in an RCS will require a DNS number.
- Where title blocks are used, the DNS number shall be included.
 - Best practice: The DNS number should be included on all documents.
- Legacy documents (in electronic format) shall be stored on an approved drive and searchable and retrievable through the DMS

7 Controlled Document

Controlled documents must be under formal revision control and have an approval process for new releases and revisions. Controlled engineering documents must be stored in a content management system that supports these requirements, e.g., ICMS, Vault, Windchill.

Table 1 indicates which repositories support the above workflows.

Table 1. Work Flows and Revision Tracking Capabilities per Repository Type

Repository	Staff-controlled / Revision Tracking (Not a controlled document)	Controlled Document (A formal change procedure including an approval workflow and Revision Tracking)
APS-approved electronic file systems with revision control located on centrally managed APS servers.	X	
ICMS	X	X
Vault		X
Windchill		X

8 The Electronic Document Control Center (eDCC)

The Electronic Document Control Center is the hub of the Document Management System. The eDCC issues unique document numbers for all documents placed in approved repositories. Document numbers are comprised of six fields separated by a dash: Field 1 – Field 2 – Field 3 – Field 4 – Field 5 – Field 6

Example document name: APS-DRW-VAC-LIN-A001-100100

Field 1: Project - APS (APS Operations), APSU (APS Upgrade), etc.

Field 2: Document Type - DWG (drawing), RPT (report) etc.

Field 3: System - Description of the system to which the document will apply, e.g., VAC (Vacuum), (BLS) Beamline/Frontend, MAG (magnet)

Field 4: Machine Location - Specific machine location where the document applies, e.g., LINAC, PAR, Storage Ring, etc.

Field 5: Sequential Collection ID - A unique sequential number designating a drawing package or collection. This number is assigned by the DNS.

Each Collection ID is assigned a non-unique descriptive label by the user, i.e., “Design Reviews”

Field 6: Document ID - A user-defined alphanumeric or numeric, depending upon document collection needs. Similar to an LDN (logical drawing number).

The Document ID must be unique within a collection.

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The eDCC also provides single point document search and retrieval capabilities across multiple repositories and a “Container” tool that allows individual users to organize links to documents from various repositories into a single folder/file structure. These Containers can be set for public or private view.

9 Responsibility for Document Validity

The contributor (staff person responsible for the documents) of any collection defined in the eDCC is fully responsible for ensuring that each eDCC entry is completely accurate and points to a valid (and viewable) document that is the intended document and revision.

10 Requirements for Document Repositories for Controlled Documents

A system requirements description shall be established for each APS-approved document repository that stores controlled documents to define the repository-specific controls to:

- Approve documents;
- Review and update as necessary and re-approve documents;
- Ensure that changes and the current revision status of documents are identified;
- Ensure that relevant versions of applicable documents are available at point of use;
- Ensure that documents remain legible and readily identifiable; and
- Prevent the unintended use of out-of-date documents and apply suitable identification to them if they are retained for any purpose.

(These controls are based on the ISO 9001 standard and Argonne document management requirements.)

System requirements descriptions shall be:

- In the form of the example given in Table 2.
- Managed by the APS Policy and Procedure administrators
- They must be approved by the APS Deputy Associate Laboratory Director for Operations
- They will be maintained in the ICMS with the following metadata attributes:

Field	Value
Document type	Specification
Title	<system> Document Repository Requirements, e.g. ICMS Document Repository Requirements
Security Group	APS
Secure To	APSShare/PPAdmin
Comments/keywords	<system>, <division name, if appropriate>, e.g. Vault, AES

The AES Division Director will maintain descriptions for ICMS, the Oracle database, DCC, Windchill, and Vault.

Any group requesting a new Division-approved controlled document repository will provide this system description to the APS Policy and Procedure administrators who will enter into ICMS and submit for approval.

Table 2. Sample Repository Control Document for ICMS

Repository: **ICMS** Date: 1 July 2011
 Prepared by: Steve Davey Approved by: W. G. Ruzicka

1. Indexing	Unique ID for each document automatically assigned on check-in and multiple field metadata
2. Legible Format	- .pdf default - native files saved, refinery automatically converts native files to .pdfs.
3. Current Version	Persistent URL available for most recent revision
4. Identification of Out-of-date Versions	The default URL is the persistent URL to the most recent version. Revisions available through version-specific: 1) URLs or 2) links available through the Content Information page for each document
5. Update/Version Control	Check-in and check-out with each revision being automatically saved

6. Revision/Change Control	<ul style="list-style-type: none">- read/write permissions specified for each document- revision history captured- workflow available- revisions and revision history automatically saved and identified with a revision number when updated file is checked-in and released
7. Retention	Manual
8. Review & Approval	<ol style="list-style-type: none">1. If review is required, workflow approval is available2. If review not required, approved upon submission

11 References - Source Requirements

Argonne [LMS-PROC-1, Implementation of Document Control Requirements](#)

12 Corrections, 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>