Electronic Radiation Safety Work Control Forms at SLAC

Zoe Van Hoover, SLAC AD Safety Officer
2012 Workshop on Accelerator Operations
Radiation Safety Work Control Form (RSWCF) Purpose

Configuration Control of Credited Radiation Safety Systems is internally required by SLAC, in order to comply with DOE Order 420.2C

- SLAC Guidelines For Operations
- Radiation Safety Systems Technical Basis Document

Credited Radiation Safety Items:
- Personnel Protection System (PPS)
- Beam Containment System (BCS)
- Shielding
- Accelerator Housing Integrity
Radiation Safety Work Control Form (RSWCF) is an administrative tool used to document and guide a process:

- Define Scope of Work
- Determine appropriate controls
  - Requirements before starting work (control radiological hazards during work)
  - Checkout requirements after work
- Execute work within controls
- Delineate end of work, bringing Radiation Safety Credited Controls back into active service after work and checkout/certification is complete
Many people from multiple work groups participate in the planning, approval, and execution of work on credited radiological controls:

- Work Requestor
- Person Responsible (for executing work)
- Area Manager
- Radiation Physicist (representing Radiation Safety Officer)
- AD Safety Officer (ADSO)
- Engineering Operator in Charge (EOIC)
- Safety Systems Engineers & Technicians

RSWCF process must be understood and followed by all participants

- Ensure work is only performed under the correct controls
- Ensure Radiation Safety Credited Controls are returned to active service only when they are in a safe and certified configuration
Paper forms were kept in a binder in the Main Control Room.

Advantages:
- Track record of use (20+ years, 3500+ RSWCFs)
- Robust against computer outages
- Flexible

Disadvantages:
- Only available for reference/editing in the control room
- No searchable record or history logging
- No enforcement of correct workflow
- Not linked to other work planning tools
- Readability
- Wastes paper
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RSWCFs: The New Way

Electronic forms are managed within a web browser.

Advantages:
- Available from any web browser
  - remote viewing
  - electronic signature
- Searchable record of all forms
- History logging of each form
- Enforces correct workflow
- Linked to existing electronic trouble reporting and tracking system
- Linked to electronic log
- Readable
- Flexible

Disadvantages:
- New system: learning curve for users
- Vulnerable to computer outages

Electronic Radiation Safety Work Control Forms at SLAC
Electronic Radiation Safety Work Control Forms at SLAC
RSWCF Workflow: Work Not Approved

Help for RSWCF

- Section 1:
  - Work to be Done
  - Description of work to be done
  - Person Responsible
  - Area

- Completed by any user
- RSWCF # assigned
- Work Not Approved

- Section 1:
  - Area Manager released

- Section 2:
  - BAS
  - ADSO requirements before work starts
  - Description of requirements before starting work

- Sections 2 and 3 visible
- Completed by ADSO or EOIC

- Section 3:
  - ADSO work requirements boxes
  - ADSO work requirements fields

- DROP can be completed by ADSO or EOIC
- Work Not Approved

- Section 2:
  - ADSO Approval
  - Rad Physica Approval
  - Requirements Before Work Completed
    (if required for this form)

- Completed by ADSO or EOIC
- Completed by RP, ADSO, or EOIC

- Completed by EOIC

- RSWCF STATUS

- Work Not Approved
RSWCF Workflow: Sections 1 and 2

Section 1: Description of Work

- **Work to be Done**
  - Repair or Replace
  - Install
  - Remove
  - Reinstall
  - Bypass
  - Unbypass
  - Trouble-Shoot

- **Description of work to be done**
  - Install Bugger Plugs to ST1 and ST2 cables to make up in Status during downtime work.
  - New action: pull wires to turn off YIM signs in BTH. Dump FEE (see attachment)

Person Responsible: Murphy, James Matthew

Area: FEE

PPS Zone: DNP (EBD)

Job: [select]

Area Manager Released: Burrows, Kathleen K  02/10/2011 14:48:46 (Kamalan)

Group: [Select]

Section 2: Requirements before work starts (ADSO, RP, and EOIC completes this section)

- **BAS**
  - BSY BAS
  - CID BAS
  - Clamping Rings BAS
  - ESA BAS
  - GTF BAS
  - General BAS
  - LCLS FEE BAS
  - LINAC East
  - LINAC West BAS
  - Position Vault BAS

- **Check here if ADSO requirements are needed before work starts**

ADSO Requirements Before Starting Work (Check all required boxes)

- BAS change
- FFS
- RFRO
- Operations
- Other
- ADSO

Description of requirements before starting work

disable BTH stoppers; C2, ST00, ST01

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ADSO Approval: Miller, Paul  03/10/2011 16:39:04

Radiation Physics Approval: Mac, Stan  03/10/2011 16:05:15

Requirements before work completed (section 2) EOIC: Gibbs, Matthew Lyde  03/10/2011 17:20:40

RSWCF Status

Work Approved
RSWCF: Work Approved & Work Complete

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RSWCF Workflow: Sections 3 and 4

Section 4: Signoff Indicating Readiness for Beam

Beam Requirements

Beam requirements in section 4 are complete or are not required, ADSO review to close

FOIC Closure Approval

Section 5: Attachments

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RSWCF: Review to Close & Closed

Section 4: Beam Requirements
May be completed by ADSO or EOIC
(Filing out this field is not required if there is no need to run beam with form open)

Ready for Beam
Completed by ADSO or EOIC

Ready for Beam
Closed
Completed by EOIC

RSWCF STATUS
Drop

Work Approved (the first time)

Review to close

Review to close

RSWCF STATUS

Review to Close
Electronic RSWCF Requirements

- Accessible yet secure
- History – Audit trail
- Documentation Configuration Control
- Work Flow
- Electronic Signature
- Error Handling
- Read-Only Version
- Timeout
- Integration with CATER (Comprehensive Accelerator Tool for Enhancing Reliability)
- Extensive checkout before releasing into production
- Web-based tool for reporting and tracking problems and scheduling maintenance
- Oracle database
- Developed using Oracle Application Express (APEX)
Problem Description

DVR in MCC is making a clicking noise like a relay flipping on and off repeatedly. This seems to correspond with the top left quadrant video picture on the monitor next to the DVR losing and regaining its signal. The other signals from the DVR to that monitor seem fine.

Jobs
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Radiation Safety Work Control Forms
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Solutions
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Attachments and Files
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Beamlost Time
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Facilities FAMIS Information
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Electronic RSWCF Introduction Timeline

- 2010: In-house development and testing
  - First round of development
  - Preliminary testing and feedback from operations group
  - Second round of development
  - Sept-Oct: ADSO and Maintenance Office testing
  - Nov: Created formal checkout procedure
  - Dec: Executed final checkout
- January 2011: Released for 2-Mile LINAC Facility
- May 2012: Released for SPEAR Facility

- Over 450 Electronic RSWCFs processed since introduction
Future Projects

- Expand for use in additional Facilities:
  - NLCTA (Next Linear Collider Test Accelerator)
  - SSRL and LCLS Experimental Facilities

- E-mail integration

- Additional CATER integration with electronic logbook