

**Generic Documented Safety Analysis (DSA)  
for Decommissioning Facilities  
at the Idaho Cleanup Project  
May 2007**

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# Review of Hazard Categories

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- ◆ **10 CFR 830 defines hazard categories for nuclear facilities**
  - Hazard Category 1 Potential for significant off-site consequences (reactors)
  - Hazard Category 2 Potential for significant on-site consequences
  - Hazard Category 3 Potential for significant local consequences only
  
- ◆ **DOE-STD-1027-92 provides guidance for categorization**
  - Attachment 1 lists Hazard Category 2 and Hazard Category 3 threshold values for individual radionuclides
  - Facilities that exceed the Hazard Category 3 threshold are considered nuclear facilities and require a Documented Safety Analysis (DSA)

# Overview of Safety Bases

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- ◆ **Hazard Category 2 (HC2)**
  - DSA required per 10 CFR 830
  - May require controls to protect off-site public
  - Generally requires controls to protect on-site workers (Sprinklers, HEPA's)
  - Requires controls to protect facility workers (SMPs)
  
- ◆ **Hazard Category 3 (HC3)**
  - DSA required per 10 CFR 830
  - May require controls to protect on-site workers
  - Requires controls to protect facility workers (SMPs)
  
- ◆ **Less Than Hazard Category 3 (LTHC3)**
  - Does not require a DSA per 10 CFR 830 (Hazard Assessment Document)
  - Requires controls to protect facility workers (SMPs)

# Current Approach at ICP

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- ◆ **Perform deactivation<sup>a</sup> under the existing operating safety basis**
- ◆ **Prepare a new safety basis for decommissioning<sup>b</sup>**
  - If HC2 or HC3, then prepare, approve, and implement a Documented Safety Analysis (DSA)
  - If LTHC3, then prepare, approve, and implement a Hazard Assessment Document

- a. Deactivation – The process of placing a facility in a stable and known condition, including the removal of hazardous and radioactive materials (10 CFR 830, Subpart B, Table 3)
- b. Decommissioning – Those actions taking place after deactivation to retire a facility from service including decontamination and dismantlement (10 CFR 830, Subpart B, Table 3)

# Proposed Approach at ICP

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- ◆ **Perform deactivation under the existing operating safety basis**
- ◆ **Select appropriate path for decommissioning**
  - If HC2, then prepare, approve, and implement a Documented Safety Analysis (DSA)
  - If HC3 or LTHC3, then verify applicability of generic Decommissioning DSA (DSA-217)\*

\* The majority of decommissioning projects at ICP are LTHC3 or HC3

# Justification for a Generic DSA

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- ◆ **Similar planning and work sequence (define work)**
- ◆ **Similar levels and types of hazards (analyze hazards)**
- ◆ **Similar set of controls for like activities (develop controls)**
- ◆ **Similar decommissioning work activities (perform work)**
- ◆ **Same Safety Management Programs (provide feedback)**

# Similar Hazards

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- ◆ **All decommissioning projects have**
  - Varying levels of radioactive material
  - Varying amounts of fissile material
  - Lots of standard industrial hazards
    - Electrical
    - Combustible Material
    - Hot Work
    - Decontamination Chemicals
    - Heavy Loads
    - Moving Vehicles

# Similar Work Sequence

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- ◆ **All decommissioning projects use the following approach**
  - Work Planning (define scope)
  - Characterization (identify hazards)
  - Prepare work packages (identify controls)
  - Perform work (follow controls)
  - Feedback (lessons learned)

# Similar Activities

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- ◆ **All decommissioning projects include the following activities**
  - Shutdown and isolate equipment
  - Dismantle systems, structures and components (SSCs)
  - Package waste
  - Remove and dispose of waste

# Advantages of Generic DSA

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- ◆ **Significantly reduces time and cost to develop, approve, and implement DSA**
- ◆ **Uses a standard set of controls and implementing procedures across multiple projects**
- ◆ **Work crews can be moved more quickly (less re-training)**
- ◆ **Work crews can be moved more safely (using the same controls and procedures minimizes the learning curve for moving to a new facility)**

# Limitations of Generic DSA

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- ◆ **Difficult to cover HC2 facilities**
  - HC2 DSAs may need to be facility specific (e.g., location and form of material, sprinkler capabilities, filtration capabilities)
  - Exception: Facilities with HC3 amount of material that are categorized as HC2 due to criticality can be covered with an additional criticality addendum
- ◆ **ICP plans to apply the generic DSA to HC3 and LTHC3 facilities/projects**
  - Can also cover HC2 due to criticality as discussed above, if necessary
- ◆ **DOE approves the DSA without knowing which facility/project will use it**
  - Cannot be specifically applied until DOE notified
- ◆ **Generic DSA needs a process to verify applicability of generic hazards and controls to each facility/project.**
  - Prepare or update documents identifying hazards (HAD)
  - Prepare a USQD that evaluates the hazards against the generic DSA
  - Notify DOE of the intent to implement the generic DSA
  - DOE authorize (or concur with) implementation of generic DSA for a specific project

# Generic DSA Development

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- ◆ Followed DOE-STD-1120-2005 guidance (similar to DOE-STD-3009 except it combines Chapters 5 – 17 into one Chapter)
- ◆ Selected a range of representative facilities to provide the appropriate breadth of hazards and activities
- ◆ Categorized the hazards into bins (bins match hazard categories defined in DOE-STD-1027-92)
- ◆ Evaluated standardized accidents using a standardized calculation based on MACCS2
- ◆ Identified controls based on the bounding accidents
- ◆ Provided stepout criteria (Applicability Statements) for every control

# Generic DSA Usage

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- ◆ **Not all of the controls may be applicable to each project (controls may be discontinued based on applicability)**
- ◆ **When decommissioning progresses such that the facility may be categorized as LTHC3**
  - Project can continue under generic DSA
  - May elect to complete activities under a LTHC3 HAD

# Conclusion

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- ◆ **DSA-217 is designed to be generically approved for use by a variety of decommissioning projects at ICP**
- ◆ **DSA-217 defines the process to verify its applicability to each facility/project**
- ◆ **DSA-217 will reduce the time and cost required to develop, approve, and implement a safety basis for decommissioning**
- ◆ **Standardized implementing procedures and lessons learned will be used by all projects using DSA-217**
- ◆ **Work crews can be easily and safely moved between projects**
- ◆ **Improves safety by minimizing new controls, procedures, and process and the associated learning curves**