

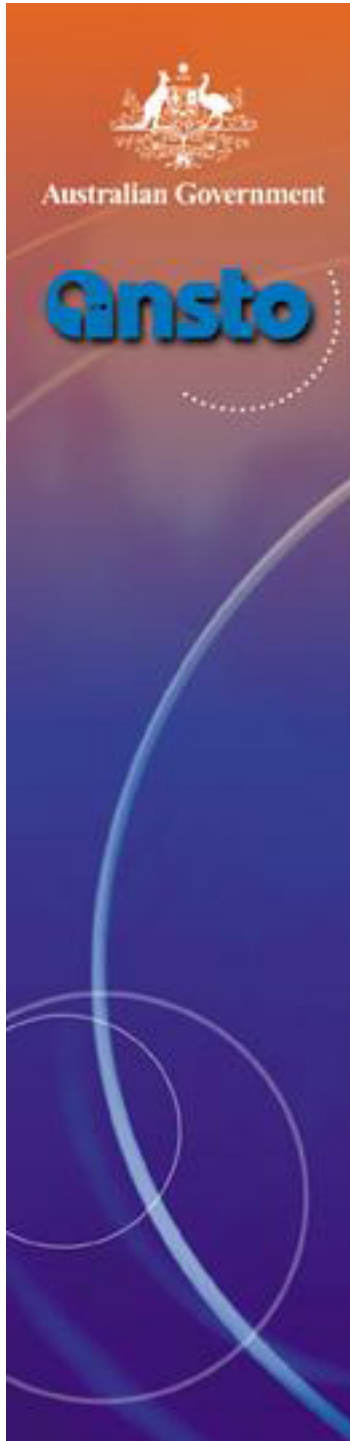


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The HIFAR Safety Analysis Report for Transition and Safe Enclosure

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Contents

- Operational SAR for HIFAR
- Process of updating for transition to Safe Enclosure
 - Hazard ID Workshop
 - Risks
 - Categorisation
- Relation to OLCs



Operational SAR

- HIFAR Safety Document (HSD) originally prepared 1972
- Predated IAEA Safety Series No. 35-G1
- Supplement added in 1983
- Updates in 1997 and 2000 maintained format close to the original
- Checked for completeness against SS 35-G1 at each update

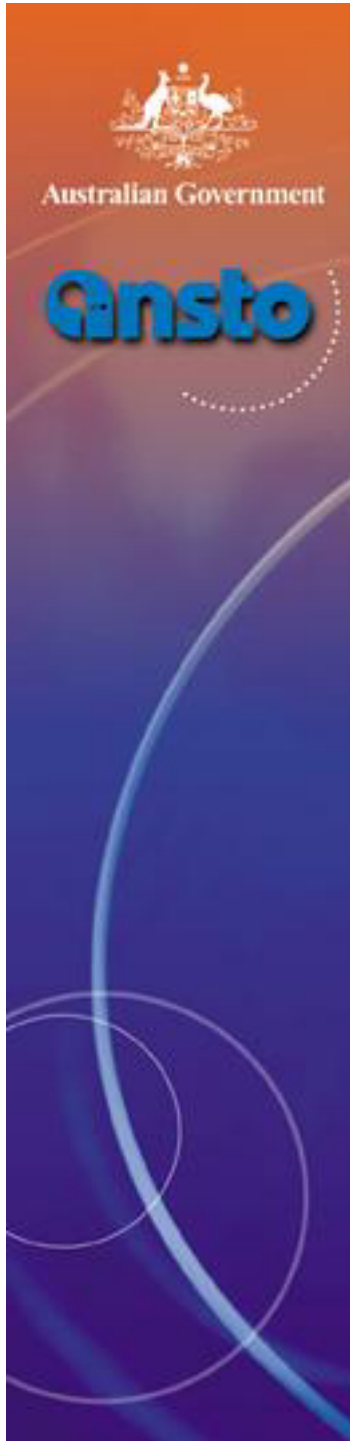


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Format

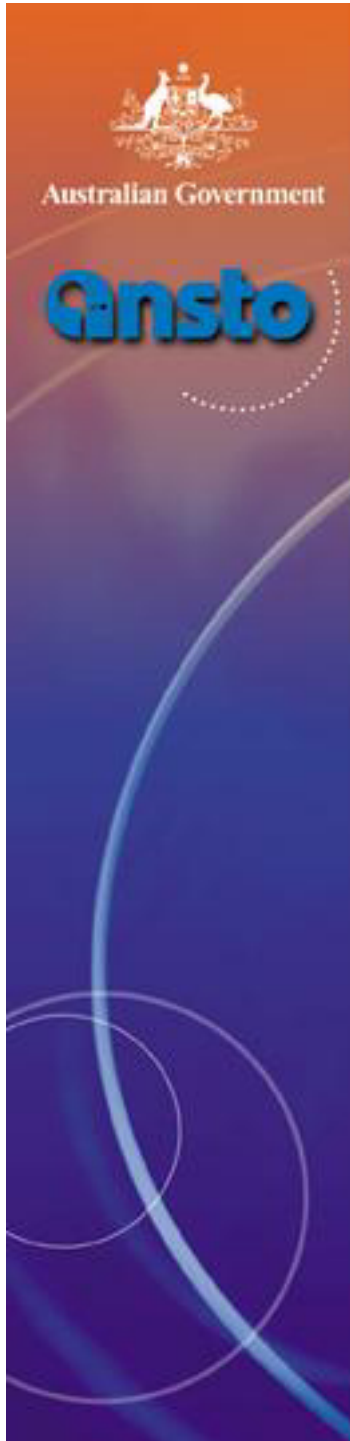
1. DESCRIPTION
2. SITE DESCRIPTION
3. DESCRIPTION OF THE REACTOR
4. REACTOR PHYSICS
5. REACTOR OPERATING CONDITIONS AND PROCEDURES IMPORTANT TO SAFETY
6. RADIOLOGICAL ASPECTS OF NORMAL OPERATION
7. ACCIDENT ANALYSIS
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 - 7.3 Loss of Coolant
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 - 7.8 External Hazards
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 - 7.10 Release of Radioactive Materials
8. ENVIRONMENTAL ASPECTS OF ACCIDENTS
9. SITE EMERGENCY RESPONSE PROCEDURES
10. RELIABILITY AND PERFORMANCE OF THE ENGINEERED SAFETY PROVISIONS
11. THE SAFETY OF HIFAR



Transition

- HIFAR to undergo deferred dismantling
- Will actually have two transitions*:
 - Operation to safe enclosure
 - Safe enclosure to active dismantling
- This transition partly covered by
 - Existing operations licence
 - Things permitted under ops licence (eg things allowed under major shutdown)
 - New Possess or Control licence
 - Pending
 - Will allow preparations for safe enclosure not permitted under ops licence

* Note that the move from safe enclosure to active dismantling is not usually called “transition” in the IAEA terminology



Process of Update for Transition

- Consider each of the accidents listed in the HSD
- Use workshop of experts to
 - Assess whether the accidents were still credible after removal of all fuel and D₂O from the reactor building
 - Consider whether there were additional scenarios that could occur during the PorC Licence period and could result in a significant release.
 - Consider if there were any changed scenarios
- Comparison of the scenarios to determine which of them was the most significant.



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SAR for Safe Enclosure

1. INTRODUCTION
2. SITE DESCRIPTION
3. FACILITY DESCRIPTION
4. OVERALL PLAN
5. REVIEW OF OPERATING EXPERIENCE
6. REVIEW OF OTHER DECOMMISSIONING EXPERIENCE
7. SAFETY MANAGEMENT
8. WASTE MANAGEMENT
9. DOSE ESTIMATES
10. SAFETY ANALYSIS
 - 10.1 Hazard Identification
 - 10.2 Risk management
 - 10.3 Reference Accident
 - 10.4 Safety Analysis for Internal Abnormal Events
 - 10.5 Safety Analysis for External Events
 - 10.6 Analysis of Environmental Impact
 - 10.7 Assessment of Limits and Conditions
 - 10.8 Occupational Health and Safety
 - 10.9 Facility Hazard Categorisation
 - 10.10 Summary
11. CONCLUSIONS
12. ACKNOWLEDGMENTS
13. REFERENCES



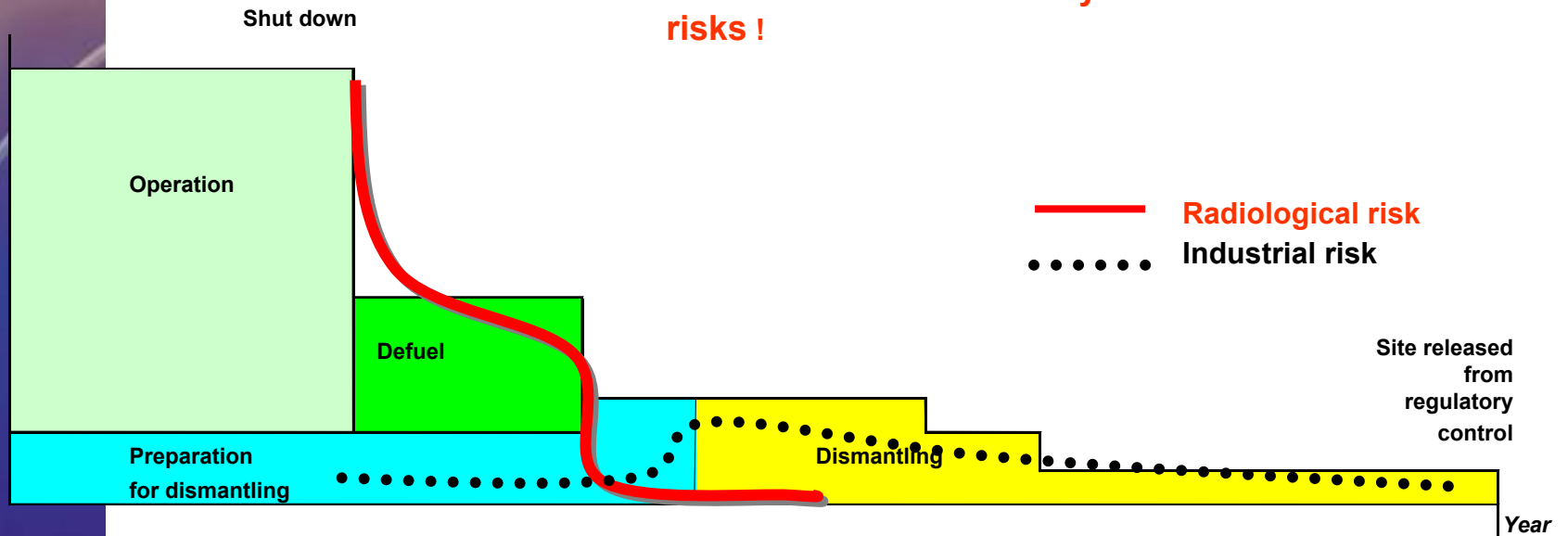
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Risk

Risks During Decommissioning

During decommissioning risk changes from reactor safety and radiological risks to normal Industrial safety risks !





Hazard ID & Consequence Assessment Workshop

- To identify any hazardous scenarios that could occur during the safe storage period and result in significant release
- Guidewords applied were:
 - Corrosion
 - Erosion
 - Service failures – compressed air, water, drainage, electricity, ventilation, CIS, PA system
 - Explosion
 - Fire
 - Human factor
 - External events – bushfire, earthquake, flood, storm, plane strike, artillery missiles
 - Terrorism and sabotage
 - Other – maintenance neglected during safe storage period

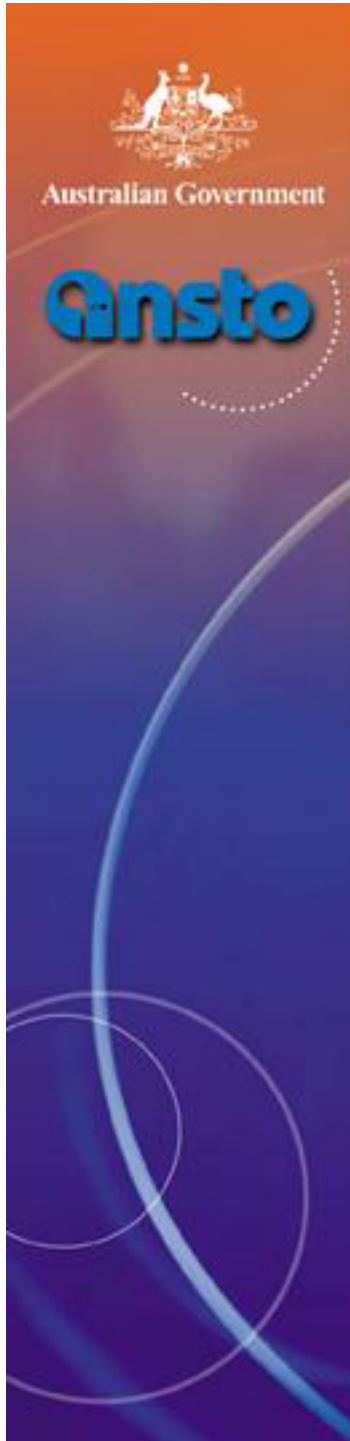


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Workshop Process

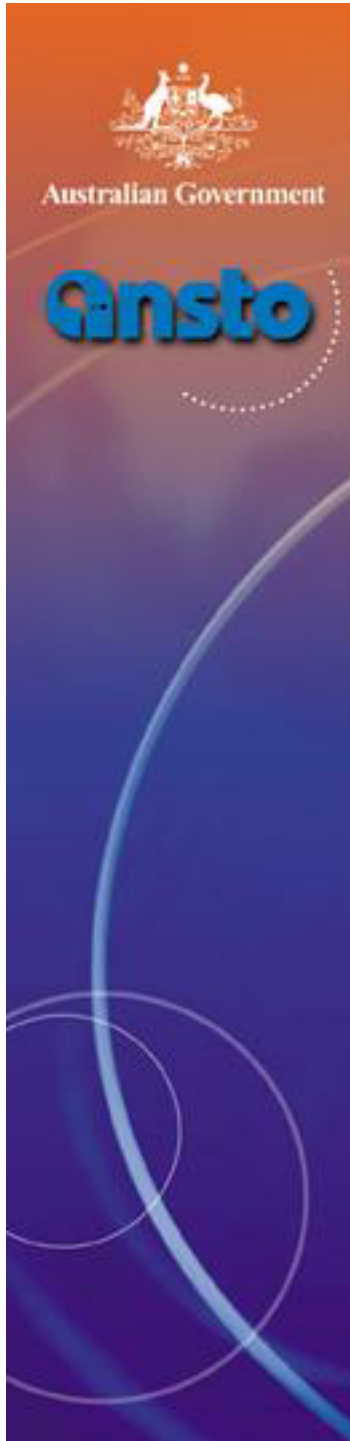
- Used guideword to prompt the discussion
- Identified possible hazardous scenario
- Identified prevention controls – eg, existing controls
- Scenario Credibility – is it credible or not?
- Potential Consequences
- Consequence Controls
- Categorisation (F1 or F2 or F3)/ Reference Accident



Safety Categorisation

- F1 – No potential for significant consequences outside the nuclear facility;
- F2 – Potential for significant consequences outside the nuclear facility, but not outside the site;
- F3 – Potential for significant consequences outside the site.

- Showed categorisation F3 \Rightarrow F1 after fuel and D₂O removal.



OLCs

- Process for OLCs similar to SAR revision
- Consider each OLC for operation
- Assess whether each SL, LC etc is still required for safety after removal of all fuel and D₂O from the reactor building
- Consider whether there were additional SLs or LCs that are required for safety of the facility during the PorC period
 - arising out of the update to the safety assessment



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Update Process

- Generally the SAR update and OLC revision task simple because of
 - Removal of fuel to a spent fuel facility (separately licensed)
 - Removal of D₂O to separate Waste Management facility
 - Removal of most active components eg control absorbers, some rigs
- Some facilities don't have this luxury
 - Full MLD or Sources & Events Analysis required



Conclusion / Questions

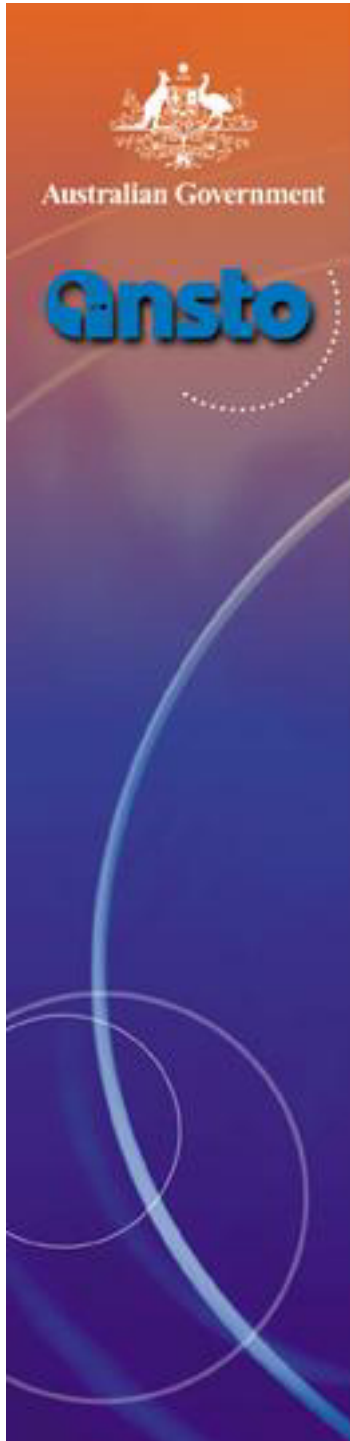
- SAR & OLC Update facilitated by removal of fuel, control absorbers and heavy water to other licensed facilities
- SAR update also facilitated by having comprehensive SAR for operations



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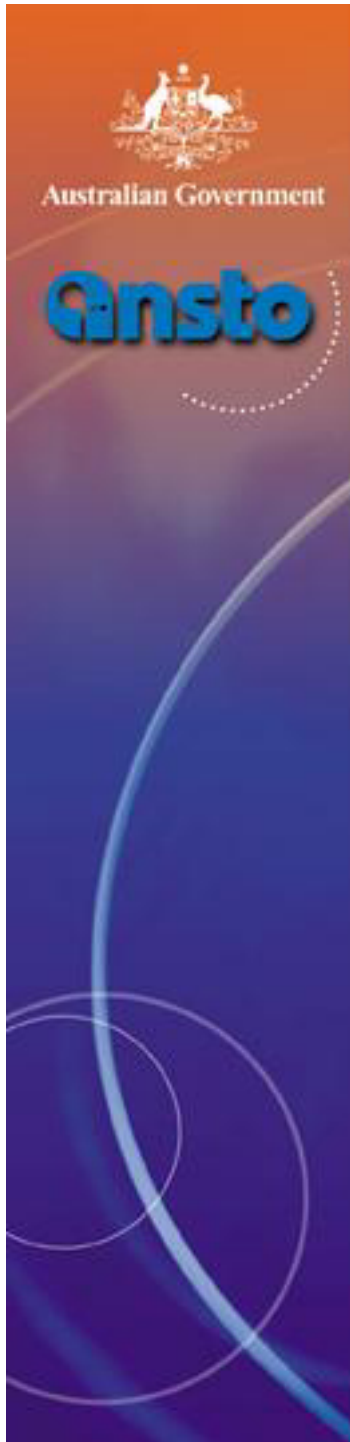
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Additional Information



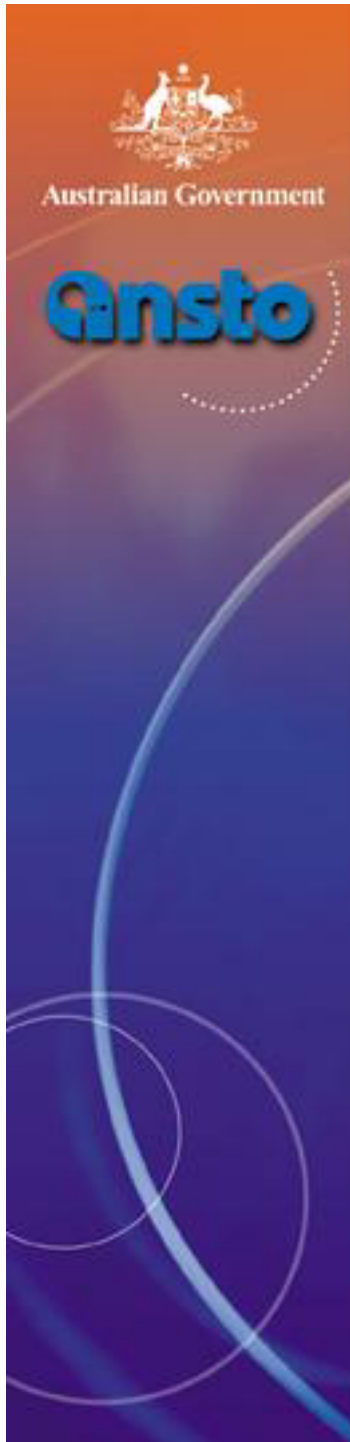
External Oversight

- **ARPANSA licences for each phase**
 - **Public process prior to decisions on new licences.**
- **Commonwealth Minister of Environment approval for phase C (decommissioning and dismantlement)**
- **International expert advice and reviews**



Licence Types for a Reactor

- Prepare a site
- Construct
- Possess or Control
- Operate
- Decommission



Expressed Ruling

- Operating licence can only be used for undertaking activities associated with operations
- Although refurbishment is allowed, refurbishment so as to change or remove function of a ESP is not allowed



Philosophy

- Philosophy on what constitutes decommissioning:
 - Removal of significantly activated components
 - Tasks that will generate significant quantities of waste.