



U.S.NRC

UNITED STATES NUCLEAR REGULATORY COMMISSION

Protecting People and the Environment

Presentation to the 573rd ACRS Meeting

**ISG-013: “Assessing the Consequences of an Accidental Release of
Radioactive Materials from Liquid Waste Tanks”**

&

**ISG-014: “Assessing Groundwater Flow and Transport of
Accidental Radiological Releases”**

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Introduction (1/2)

- ISG-013 Purpose (SRP 11.2, BTP 11-6, and SRP 2.4.13)
 - Justify the selected tank and tank radioactivity inventory
 - Evaluate tank, tank location, and facility design features that may mitigate the impact of a release
 - Conduct a radiological assessment of the postulated failure of a tank containing liquid waste on surface and ground water
 - Assign TS for maximum radioactivity inventory in tank
 - If facility design or site fail acceptance SRP criteria, applicant can:
 - > upgrade the tank and tank room designs, or
 - > reduce TS limits on tank's maximum radioactivity inventory

- ISG-014 Purpose (SRP 2.4.12, SRP 2.4.13, and RG 1.206)
 - To clarify FSAR 2.4.12&13 radiological consequence analysis in groundwater in order to more efficiently meet regulatory requirements.
 - To reconcile the inconsistencies between the existing guides
 - To provide practical guidance in reviewing:
 - * Base hydrologic condition
 - * Pathways and receptor
 - * Hydrogeologic characterization
 - * Groundwater modeling

- Why are these ISGs needed?
 - Guidance difficult to implement based on experience in reviewing ESP/COL applications
 - Current guidance is internally inconsistent between SRP Sections 2.4.12 & 2.4.13 and SRP 11.2 & BTP 11-6
 - Clarify technical guidance and regulatory requirements in applying SRP Section 11.2 with BTP 11-6 and SRP Sections 2.4.12 and 2.4.13 for the review of associated FSAR sections
 - Reconcile differences in existing guides to facilitate applicant's efforts in responding to regulatory requirements and guidance
 - Facilitate and expedite the staff's review of related FSAR sections of ESP/COL applications

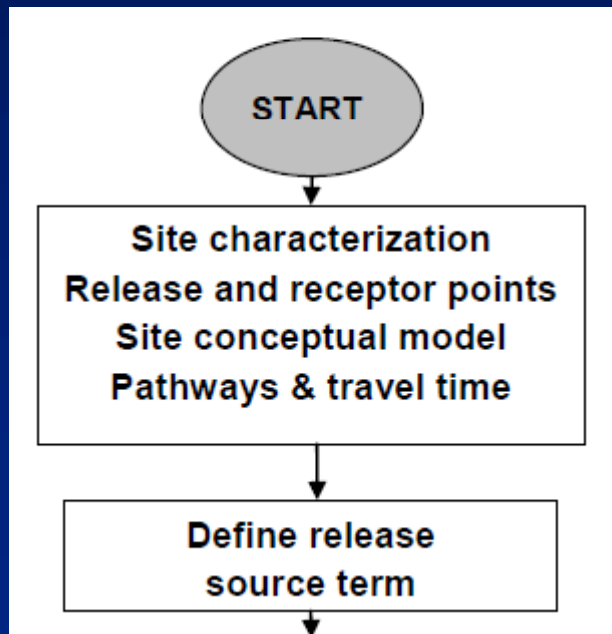
Regulatory Basis

- **Regulatory Basis**
 - 10 CFR 52.79, as it relates to equipment used to control releases
 - 10 CFR 50.34a, as it relates to equipment used to control releases
 - 10 CFR 50.36a, as it relates to technical specifications
 - GCD 60 and 61 (Part 50, App. A), as they relate to the control of releases
 - 10 CFR 100.20 (c)(3), as it relates to establish on-site hydrogeologic characters
- **Regulatory Guidance**
 - SRP Section 11.2 & BTP 11-6 for release scenario and source term
 - SRP Sections 2.4.12 & 2.4.13 for ground water flow and transport
 - RG 1.206 Sections 11.2, 2.4.12, & 2.4.13, as guidance to COL applicants
 - RG 1.143, as it relates to the design features of LWMS
 - RG 1.113 and NUREG/CR-3332, as they relate to modeling aquatic dispersion
 - NUREG/CR-6805, as it relates to the development of conceptual site models
- **SRP 11.2 and BTP 11-6 Acceptance Criteria Adopted from:**
 - 10 CFR Part 20, App. B , Table 2, Col, 2 effluent concentration limits, *or*
 - 10 CFR Part 20 limit of 100 mrem for non-drinking water pathways

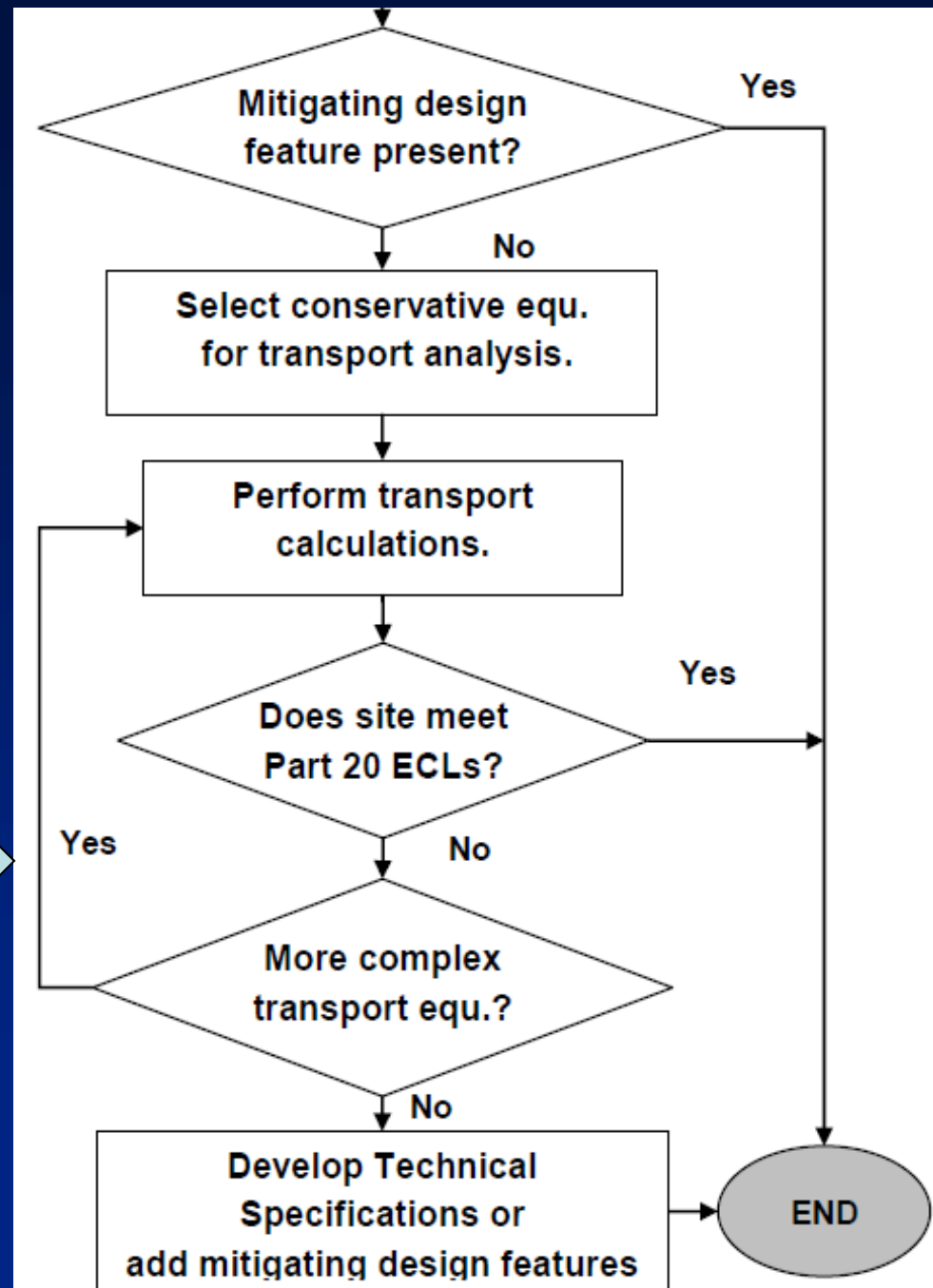
ISG-013 Interim Guidance

- ❑ Proposed ISG-013 clarifies guidance on:
 - Selection of system tank(s) and failure mechanisms
 - Credit for passive and durable mitigating design features
 - Conditions that envelope site characteristics
 - Application of assumptions and level of conservatism
 - Development of radioactive source term for tank(s)
 - Radioactivity transport in ground or surface water
 - Release pathways and offsite exposure scenarios
 - Acceptance criteria and exposure pathways
 - Tank specifications on max radioactivity concentration levels
 - Language used in SER evaluation findings

ISG-014: Radiological Consequence Analysis in Groundwater



* ECL: Effluent Concentration Limits



ISG-014 Topics

- Clarify the review areas and review interfaces in SRP 2.4.12&13
- Reconcile the differences between SRP Sections 2.4.13 and 11.2, and clarify the conservatism in defining a base hydrologic condition
- Provide the guideline for choosing the potential receptor locations
- Credit for mitigating design features in SRP 2.4.13 consequence analysis
- Propose practical guidance to meet the requirement of on-site hydrogeology measurements specified in 10 CFR 100.20(c)(3)
- Provide guidance for developing conceptual site models, and groundwater flow models.
- Recommend a hieratical approach for :
 - Radiological consequence analysis in FSAR 2.4.13
 - Determining species for transport parameter (K_d) sampling, and
 - Groundwater flow modeling



Resolution and Applicability

- Final Resolution:
 - Reviewing and evaluation of ACRS, public, and industry comments on ISG-013 and ISG-014
 - Finalization of ISG-013 and ISG-014 with incorporation of ACRS, public, and industry comments
 - Updating SRP Sections 2.4.12, 2.4.13, and 11.2, and BTP 11-6 given final issuance of ISG-013 and ISG-014 (as directed by NRO in updating infrastructure documents)
- Applicability to Part 52 COL Applicants:
 - Revised guidance will be applicable to all COL/ESP license applications submitted after the formal issuance ISG-013 and ISG-014

QUESTIONS ?