NRC-NEI DISCUSSION OF NEW REACTOR HEALTH PHYSICS TOPICS

COLA Chapter 11 Issues

COLA Chapter 11 Topics

- Discuss issues raised during February ’07 DCWG
- Radiological Environmental Programs
  - ODCM (process and effluent monitoring and sampling, REMP, SREC)
  - Process Control Program (PCP)
- Design Descriptions
  - Mobile (site specific) systems
    - Demonstrating compliance with RG 1.143
    - Provisions to prevent cross-contamination (IEB 80-10)
    - Provisions to minimize contamination (20.1406)
    - Description level-of-detail
- Meeting dose design objectives
  - Release calculations: site-specific cost benefit analysis

COLA Chapter 11 Topics – Program Terminology

Document	Technical Specifications	SECY-05-0197	SRP/RG 1.206
Process and Effluent Monitoring and Sampling Program		X	*
Radiological Effluents Controls Program (RECP)	X		
Standard Radiological Effluent Controls (SREC)			X
Offsite Dose Calculation Manual (ODCM)	X		X
Radiological Environmental Monitoring Program (REMP)	X		X
Process Control Program (PCP)	X		X

- ODCM Program Description discussed herein will address requirements associated with Process and Effluent Monitoring and Sampling Program, RECP, SREC, and REMP

* Program listed in C.III.1.13.4 but not in C.III.1.11.5

COLA Chapter 11 Issues – Programs – General Approach

- Program description in COLA
  - SRP acceptance criteria
  - RG 1.206
  - Existing plant programs, when available
- Develop complete program, including implementing procedures, by defined milestone to allow NRC staff review before actual implementation – use a License Condition as appropriate
- Implementation milestone defined in COLA FSAR Section 13.4

COLA Chapter 11 Issues – Programs - ODCM

- Program description for ODCM
  - Sampling and analysis requirements
  - Instrumentation requirements
  - Radiological environmental monitoring requirements
- Include as an Appendix to COLA FSAR Chapter 11

COLA Chapter 11 Issues – Programs - ODCM

- Program description for ODCM (continued)
  - Sampling and analysis
    - Periodic sampling and analysis frequencies and types of radiological analyses for liquid waste and gaseous waste of all normal and potential effluent pathways for release of radioactive materials to the environment
    - Release limits

COLA Chapter 11 Issues – Programs - ODCM

- Program description for ODCM (continued)
  - Instrumentation Requirements
    - Number and type of instruments
    - Frequency of routine instrument surveillance
    - Dose limits for gaseous and liquid effluent monitors
      - Ex: The radioactive liquid effluent monitoring instrumentation channels shown in Table [X.X.X] shall be operable with required alarm/trip setpoints set to ensure that the limits of [X.X] are not exceeded
    - Setpoint methodology for actuation of automatic control features initiating actuation of isolation valves, dampers, or diversion valves.

COLA Chapter 11 Issues – Programs - ODCM

- Program description for ODCM (continued)
  - Radiological Environmental Monitoring
    - Methodology and parameters used for calculation of offsite doses resulting from gaseous and liquid effluents and planned discharge flow rates
    - Site specific radiological environmental monitoring program including exposure pathway and/or sample, number of samples and locations (for sites with existing plants), sampling and collection frequency, and type and frequency of analysis.

COLA Chapter 11 Issues – Programs - ODCM

- Examples of items not included in FSAR ODCM program description:
  - Implementing procedures and references
  - Instrumentation setpoints, manufacturers and model numbers
  - Offsite radiological environmental sampling and monitoring locations for COLA sites with no existing plant

COLA Chapter 11 Issues – Programs - ODCM

- Develop complete ODCM approx. one year prior to fuel load and submit to NRC staff
- Consider incorporating new plant ODCM into existing plant ODCM (for GG and NAPS)
- Remove the program requirements document from COL FSAR Chapter 11 Appendix
- Control ODCM per TS administrative requirements

COLA Chapter 11 Issues – Programs - ODCM

- Questions/feedback?

COLA Chapter 11 Issues – Programs - PCP

- Program description for the Process Control Program (PCP)
  - 10 CFR §61.55 and §61.56
  - 10 CFR §20.2006
  - 10 CFR §20, Appendix G
  - RG 1.206
  - SRP 11.4
  - Existing plant PCPs, when available

COLA Chapter 11 Issues – Programs - PCP

- Program description for the PCP (continued)
  - Include requirements for:
    - Using vendor processes or services
    - Liquid content in waste
      - Ex: Less than 0.5% FSL by waste volume per container or less than 1.0% FSL if a high integrity container (HIC) is used
    - Spent resins and filter media
    - Waste characterization
    - Solidification acceptance criteria
    - Waste sampling

COLA Chapter 11 Issues – Programs - PCP

- Program description for the PCP (Continued)
  - Include as an appendix to COLA FSAR Chapter 11
  - Develop complete PCP (including implementing procedures) approx. one year prior to fuel load and submit program to NRC staff
  - Consider incorporating new plant PCP into existing plant PCP, when available (e.g. Entergy has one PCP for GG, ANO1, ANO2, RBS, WF3)
  - Remove the program requirements document from COL FSAR Chapter 11 Appendix

COLA Chapter 11 Issues – Design Descriptions

- Mobile (site-specific) systems
  - Demonstrate compliance with RG 1.143
    - Applicable codes and standards
    - Material for pressure retaining components
    - Seismic design for building and equipment
    - Measures to prevent cross-contamination
    - Features to reduce contamination
    - Pressure testing requirements
    - Ongoing inspection and testing

COLA Chapter 11 Issues – Design Descriptions Example from ESBWR DCD Rev 3

Table 11.2-1

Equipment Codes (from Table 1, RG 1.143)

Component	Design and Construction	Materials[1]	Welding	Inspection and Testing
Pressure Vessels and Tanks (>15 psig)	ASME Code BPVC Div. 1 or Div.2	ASME Code Section II	ASME Code Section IX	ASME Code Section VIII, Div. 1 or Div.2
Atmospheric Tanks	API 650	ASME Code[3] Section II	ASME Code Section IX	API 650
0-15 psig Tanks	API 620	ASME Code[3] Section II	ASME Code Section IX	API 620
Heat Exchangers	TEMA STD, 8th Edition ; ASME Code BPVC Section VIII, Div. 1 or Div. 2	ASTM B359-98 or ASME Code Section II	ASME Code Section IX	ASME Code Section VIII, Div. 1 or Div. 2
Piping and Valves	ANSI/ASME B31.3[5, 6]	ASME Code Section II[7]	ASME Code Section IX	ANSI/ASME B31.3
Pumps	API 610; API 674; API 675; ASME BPVC Section VIII, Div.1 or Div.2	ASTM A571-84 (1997) or ASME Code Section II	ASME Code Section IX	ASME BPVC Code[2] Section III, Class 3
Flexible Hoses and Hose Connections for MRWP[4]	ANSI/ANS-40.37	ANSI/ANS-40.37	ANSI/ANS-40.37	ANSI/ANS-40.37

COLA Chapter 11 Issues – Design Descriptions

- Mobile Systems – specify provisions to prevent cross contamination (IEB 80-10)
  - Design features for mobile systems
    - Define the interconnections for mobile systems
    - Mobile systems hose connections will meet ANSI/ANS-40.37 (RG 1.143)
    - Avoid interconnections with potable and sanitary water systems
  - Operational controls for mobile systems (COLA required procedure):
    - "Prior to installing a mobile liquid radwaste system, a routine sampling/analysis or monitoring program will be implemented for non-radioactive systems that could possibly become radioactive through interfaces with the installed mobile systems due to leakage, valving errors or other operating conditions in order to promptly identify any contaminating events which could lead to unmonitored, uncontrolled liquid or gaseous releases to the environment. This program will be implemented during the duration that the mobile system is installed."

COLA Chapter 11 Issues – Design Descriptions

- Mobile Systems – specify provisions to minimize contamination (20.1406)
  - Industry and NRC developing guidance
  - Afternoon discussion

COLA Chapter 11 Issues – Design Descriptions

- Mobile (site-specific) systems – COLA design description level-of-detail
  - Define design and operational specifications
  - System/component capacities and minimum DFs
  - Provide process flow diagrams (no P&IDs)
    - Sources of flow
    - Bypass routes to non-radioactive systems
    - Key components
    - Key instrumentation
    - System interfaces
    - Sampling points
    - Discharge paths

COLA Chapter 11 Issues – Design Descriptions

- Release calculations: site-specific cost benefit analysis
  - Reference to RG 1.110 in guidance documents should be dropped (NEI comments on SRP and DG-1145)
  - Compliance with RG 1.143 is an adequate alternative