U.S. NUCLEAR REGULATORY COMMISSION

TRANSMITTAL OF MEETING HANDOUT MATERIALS FOR IMMEDIATE PLACEMENT IN THE PUBLIC DOMAIN

This form is to be filled out (typed or hand-printed) by the person who announced the meeting (i.e., the person who issued the meeting notice). The completed form, and the attached copy of meeting handout materials, will be sent to the Document Control Desk on the same day of the meeting; under no circumstances will this be done later than the working day after the meeting.
Do not include proprietary materials.

DATE OF MEETING
08/27/2003

The attached document(s), which was/were handed out in this meeting, is/are to be placed in the public domain as soon as possible. The minutes of the meeting will be issued in the near future. Following are administrative details regarding this meeting:

Docket Number(s)	Proj 689
Plant/Facility Name	
TAC Number(s) (if available)	
Reference Meeting Notice	7/17/03
Purpose of Meeting (copy from meeting notice)	Workshop to Discuss the Draft 10 CFR Part 52 Construction Inspection Program Framework Document

NAME OF PERSON WHO ISSUED MEETING NOTICE	TITLE
Thomas Foley	Senior Engineer

OFFICE
NRR

DIVISION
DIPM

BRANCH
IIPB

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PUBLIC

DF01

8/27/03

PUBLIC WORKSHOP ON CIP FRAMEWORK DOCUMENT
U.S. NUCLEAR REGULATORY COMMISSION
NRC AUDITORIUM - TWO WHITE FLINT NORTH
ROCKVILLE, MD
AUGUST 27, 2003

08:30	Registration	All public and NRC
0900	Bring meeting to order	Tom Foley
09:00	Welcome, Introductions Objectives	Stu Richards
09:15	Ground rules	Chip Cameron, Facilitator
09:20	Overview of the Part 52 Licensing Process	Joseph Sebrosky
0945	Participant questions	
10:00	The Framework Document Overview	Jim Isom
10:05	Early Site Permit (IMC 2501)	Tom Foley
10:30	Participant discussion	
11:00	Pre-Combined License Phase (IMC 2502)	Jerry Blake
11:15	Participant discussion	
11:30	Break for Lunch	
12:30	CIPIMS	Carl Konzman
12:45	Participant discussion	
1:00	Construction Phase (IMC 2503)	Joe Sebrosky
2:00	Participant discussion	
3:00	Transition to Operation (IMC 2504)	Jim Isom
3:30	Participant discussion	
4:00	CIP Milestones / Adjourn	Doug Coe

DRAFT 10 CFR PART 52 CONSTRUCTION INSPECTION PROGRAM FRAMEWORK DOCUMENT

Stuart Richards, Chief
Inspection Program Branch
August 27, 2003

Tel: (301) 415-1257
E-mail: SAR@nrc.gov

NRC Presenters and Participants:

- Cindy Carpenter, Deputy Director Division of Inspection Program Management (DIPM), NRR
- Stu Richards, Chief, Inspection Program Branch (IIPB), DIPM
- Doug Coe, Chief, Reactor Inspection Section, IIPB, DIPM
- Tom Foley, IIPB/DIPM, NRR
- Jim Isom, IIPB/DIPM, NRR
- Joe Sebrosky, New, Research and Test Reactors Branch, New Reactor Section
- Jerry Blake, Region II
- Chuck Paulk, Region IV
- Carl Konzman, PMAS, NRR
- Bob Weisman, OGC

NRC Framework Document Organization

- John W. Craig, Associate Director for Inspection and Programs
  - Bruce Boger, Director; Cynthia Carpenter, Deputy; Division of Inspection Program Management
    - Stuart Richards, Chief, Inspection Program Branch
      - Douglas Coe, Chief, Reactor Inspection Section
        - Thomas Foley, James Isom, Lead- Construction Inspection Framework Document
      - James Andersen, Chief, Performance Assessment Section
  - David Matthews, Director; Frank Gillespie, Deputy Director; Division of Regulatory Improvement Programs
    - James Lyons, Program Director, New, Research and Test Reactors
      - Patrick Madden, Chief, Research and Test Reactors Section
      - Laura Dudes, New Reactors Section
        - Joe Sebrosky, Framework Document Support

Framework Document Support
- Jerry Blake, Region II
- Ron Gardner, Region III
- Chuck Paulk, Region IV
- Robert Weisman, OGC
- Carl Konzman, PMAS, NRR

Overview:

- **Purpose of the Meeting:**
  - **Inform our public stakeholders on how the NRC proposes to conduct inspections for the plants built under 10 CFR Part 52 Process**
  - **Answer questions and receive comments from the public on the framework document**

Comments:

- Send written comments to:

  Chief, Rules and Directives Branch,
  Division of Administrative Services,
  Office of Administration, Mail Stop T6-D59,
  U.S. Nuclear Regulatory Commission,
  Washington, D.C. 20555-0001.

- Submitted electronically by the internet to:

  nrcrep@nrc.gov

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Comments:

- Hand-delivered to:

  NRC
  11545 Rockville Pike
  Rockville, Maryland

  (between 7:45 a.m. and 4:15 p.m. on Federal workdays)

Documents

- Draft 10 CFR Part 52 Construction Inspection Program Framework Document
  - Publicly Available Records (PARS) component of NRC's Agencywide Document Access and Management System (ADAMS)
  - ADAMS # ML031400849
  - ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html
- Framework document and workshop handouts available on website:

http://www.nrc.gov/reactors/new-licensing/oversight.html

Construction Inspection Program Framework Document

GROUND RULES

Chip Cameron

Overview of the 10 CFR Part 52 Licensing Process

Joseph Sebrosky

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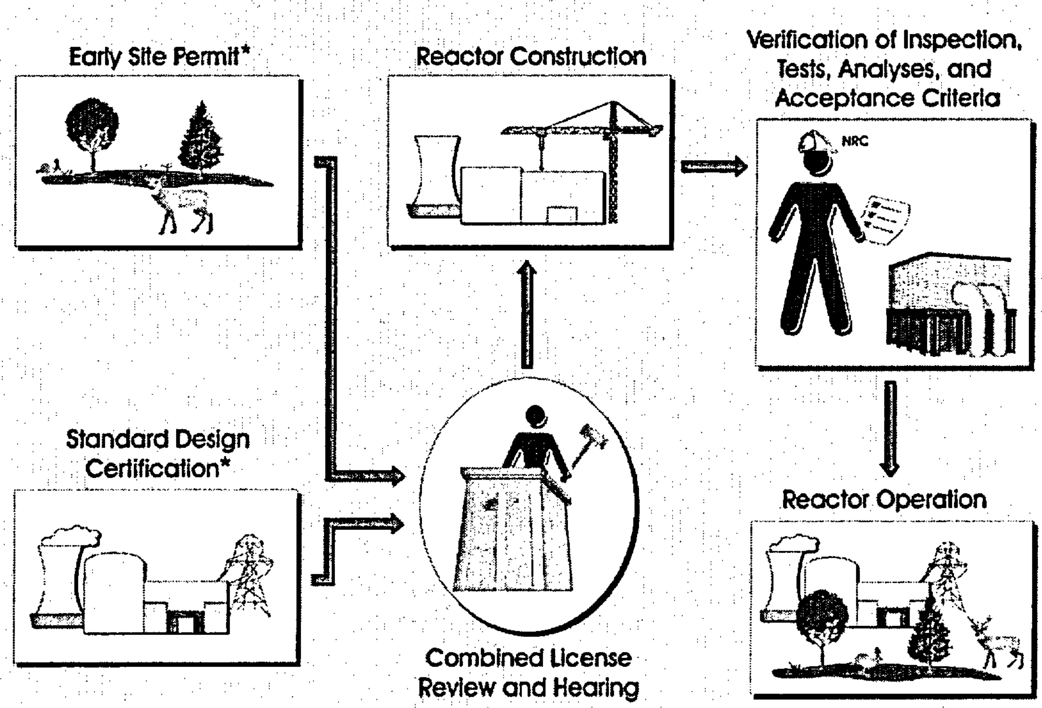
Combined Licenses, Early Site Permits, and Standard Design Certifications



* or equivalent process

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10 CFR Part 52 Licensing Process

- Stable and predictable licensing process
- Resolve safety and environmental issues before authorizing construction
- Reduce regulatory uncertainty for licensees (COL)
- Enhance safety and reliability through standardization of nuclear plant designs
- Provides for public participation at the design stage and prior to siting and construction of nuclear power plants
- Completion of final design prior to starting construction
- Resolves inspections, tests, analyses and acceptance criteria (ITAAC) prior to authorization of construction

10 CFR Part 52 Licensing Process

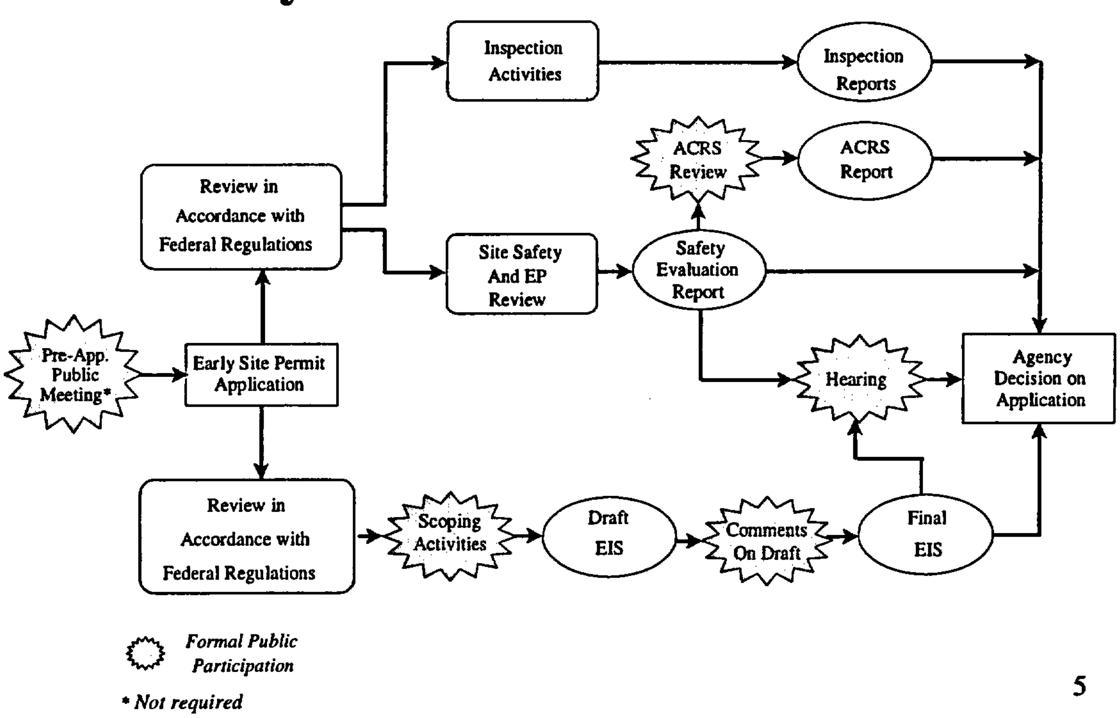
- Framework Document covers the following processes:
  - Early Site Permit
  - Pre Combined License
  - ITAAC phase
  - Preparations for Operations
- Framework Document does not cover the following processes:
  - Design Certification phase
  - Operations Phase (IMC-2515)

10 CFR Part 52 Licensing Process

Early Site Permits

- **An NRC decision that ensures that the proposed site is suitable for construction and operation of a nuclear power plant**
- **Allows an applicant to "bank" a site**
- **Reduces licensing uncertainty**
- **Resolves siting issues before construction**

Early Site Permit Review Process



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10 CFR Part 52 Licensing Process

Combined Licenses

- Combined License (COL) = a combined construction permit and conditional operating license for a nuclear power plant.
- A COL is the fundamental licensing process in Part 52 for reducing the regulatory uncertainty for electric companies building nuclear plants.
- Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) are necessary to ensure that a plant licensed in accordance with 10CFR Part 52 has been properly constructed and will operate safely.

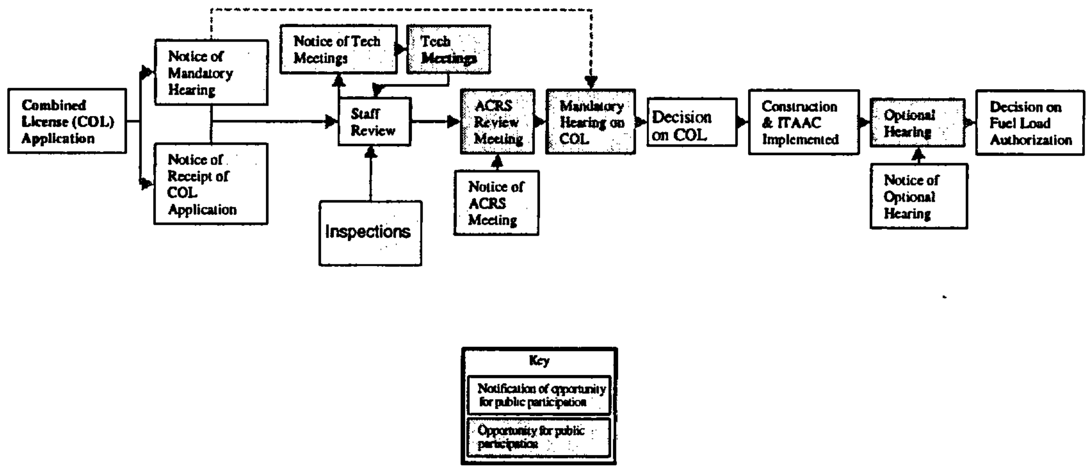
10 CFR Part 52 Licensing Process

AP600 Example ITAAC

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
9.d) The Normal Residual Heat Removal System (RNS) provides heat removal from the in-containment refueling water storage tank (IRWST).	Testing will be performed to confirm that the RNS can provide flow through the RNS heat exchangers when the pump suction is aligned to the IRWST and the discharge is aligned to the IRWST.	Each RNS pump provides at least 925 gpm to the IRWST.

10 CFR Part 52 Licensing Process

Combined Licenses



10 CFR Part 52 Licensing Process

Additional Information

- NUREG/BR-0298, "Nuclear Power Plant Licensing Process," provides an overview of the Part 50 and Part 52 licensing processes
- New Reactor Licensing website
  - http://www.nrc.gov/reactors/new-reactor-licensing.html
- NRC has initiated a rulemaking to update and clarify the alternative licensing processes in Part 52
  - Proposed rule Federal Register Notice issued July 3, 2003
  - Comment period end September 16, 2003

10 CFR Part 52 Licensing Process

QUESTIONS/COMMENTS

Framework Document Overview

Jim Isom

Framework Overview:

- Framework Document
  - Updates the work published in 1996
  - Defines how we propose to conduct audits/inspections during
    - ESP Phase
    - Combined License Phase
    - Construction Phase
    - Transition to Operations

Overview:

- Discusses how we will verify ITAAC
- Discusses how we plan to conduct inspections of operational programs
- Discusses what would invalidate an ITAAC Conclusion
- Discusses enforcement

Inspection Manual Chapter 2501
Early Site Permit

Tom Foley

IMC-2501: EARLY SITE PERMIT (ESP)

- This IMC was issued in May of this year in support of expected applications in September of 2003
- Establishes guidance for inspection of activities associated with the ESP application
- Begins with notification of intention to apply
- ESP expires after 20 years or a combined operating license or construction permit is issued

IMC-2501 Objectives

- Verify that the application meets 10 CFR Part 52, in support of NRC's decision relative to an ESP application
- Reduce unnecessary regulatory burden and optimize the efficiency and effectiveness of the docketing process
- Explain to the public the application contents, the licensing process, and opportunities for public participation
- Assure quality is being applied in the process

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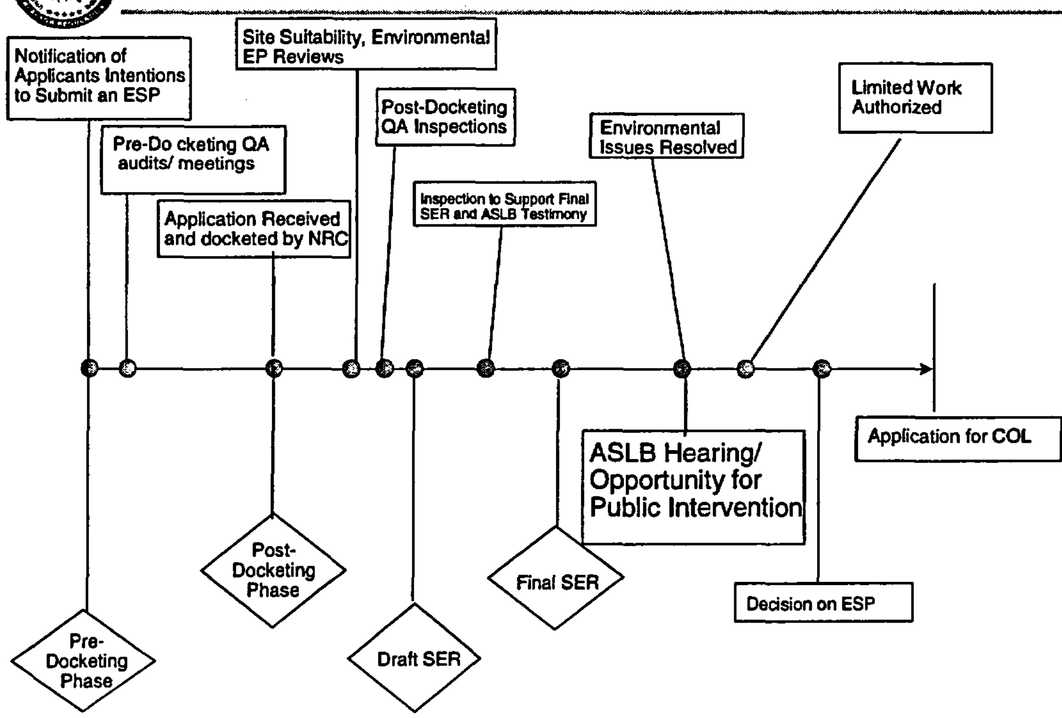
IMC-2501 Timeline



IMC-2501 Pre-Application Phase

- NRC inspectors gathers information regarding the quality of data collected by the applicant
- Meetings arranged to:
  - observe "ology"-data collection methodology
  - discuss acceptable QA controls
  - introduce the local community to the NRC licensing process
  - inform state and local officials

IMC-2501 Post-Application Phase

- Inspections:
  - To ascertain QA controls, to support ASLB testimony, and to input to the SER
  - Led by regional inspectors
  - Technical support provided from NRR
- IMC 2501 provides inspection procedure guidance

IMC-2501 Quality Assurance Measures

- 10 CFR Part 52 does not require a Part 50 Appendix B program at the ESP stage
- 10 CFR 52.39 prohibits revisiting findings made at the ESP stage
- Inspections to assure data obtained is accurate and reliable for future structures, systems and components important to safety
- QA inspections will be consistent with ESP review standard RS-002

IMC-2501 Measures "Equivalent in Substance"

- Methodologies for data collection, analysis and evaluations of geology, hydrology, meteorology, and seismology determinations
- Data integrity, traceability, document control, evaluation, analysis and record storage, if the information would affect the design and construction of future SSCs important to safety.
- Deficiencies in QA controls cited based on lack of assurance of the integrity and reliability of the information without reference to Appendix B.

IMC-2501 Inspection Procedures

- ESP Pre-Docketing Quality Assurance Meeting
- Pre-Docketing Early Site Permit Quality Assurance Controls Inspection
- Early Site Permit Quality Assurance Controls Assessment and Conclusion Post-Docketing Early Site Permit Quality
- Assurance Controls Inspection Geo-Technical Foundation
- Activities procedure Review Participation in ACRS
- Meetings NRC Testimony for ASLB or ASLAB Hearings

IMC-2501 Early Site Permit

QUESTIONS/COMMENTS

Inspection Manual Chapter 2502
Pre-Combined License Phase

Jerry Blake

IMC-2502: Pre-Combined License Phase

- Overview
- Pre-Application QA Reviews
- Application Review
- Construction Inspection Program Information Management System (CIPIMS)

IMC-2502: Overview

Inspection Support Required for:

- Application Review
- SER Preparation
- Mandatory Safety Board Hearing

IMC-2502 Pre-Application QA Reviews

Support of NRR Reviews

- QA Meetings With Announced Applicants
- Review of QA Controls and Implementation
- Meetings with Public and Local Officials

IMC-2502 Application Review Inspections

Possible Areas of Required Inspection

- Engineering Design Verifications
- First-of-a Kind Engineering
- Operational Programs
- Design Acceptance Criteria
- Limited Work Authorizations

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IMC-2502 Application Review Inspections

QUESTIONS/COMMENTS

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Construction Inspection Program Information Management System

Carl Konzman

Information Management

Construction Inspection Program Information Management System

- NRR Project Manager and Regional Project Engineer
- Pre-Application Scheduling and Workload Forecast
- Inspection Information Recording and Retrieval
- Ensure consistent planning and scheduling of both NRR HQ and Regional activities

Information Management

QUESTIONS/COMMENTS

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Inspection Manual Chapter 2503

Construction Phase

Joseph Sebrosky

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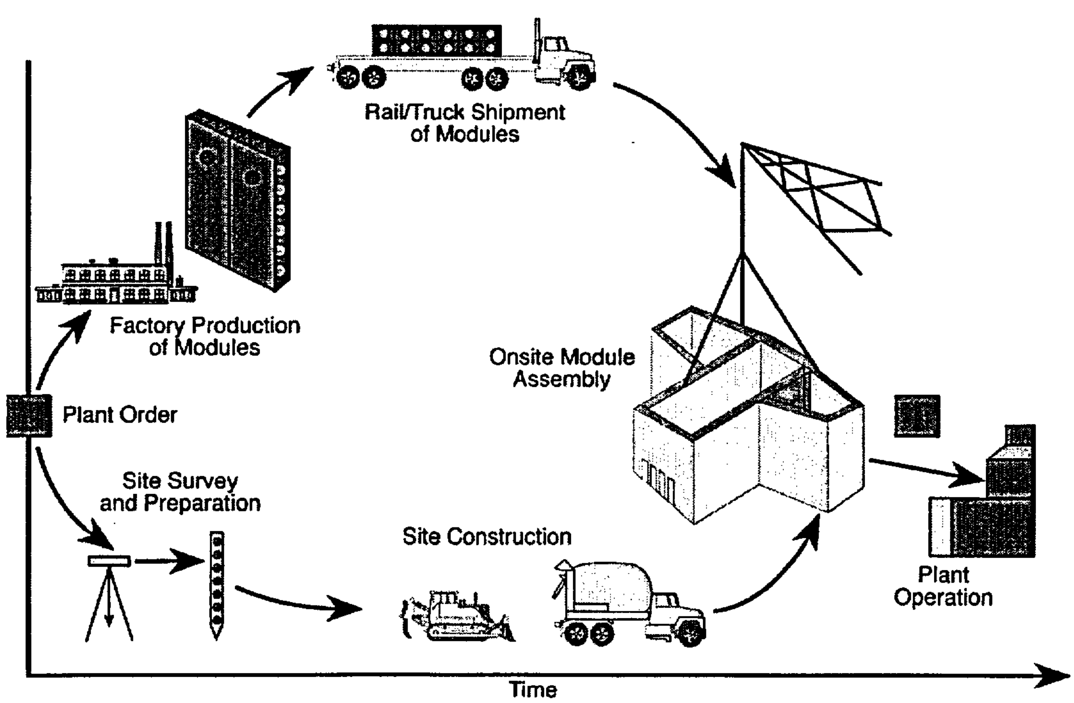
IMC-2503: Construction Phase

- Overview
- Inspection sampling techniques
- Sign as you go and NRC ITAAC interim conclusions
- Other Items
  - Treatment of new and significant information
  - Operational program inspections
  - Modular construction

NEW REACTOR CONSTRUCTION PROCESS



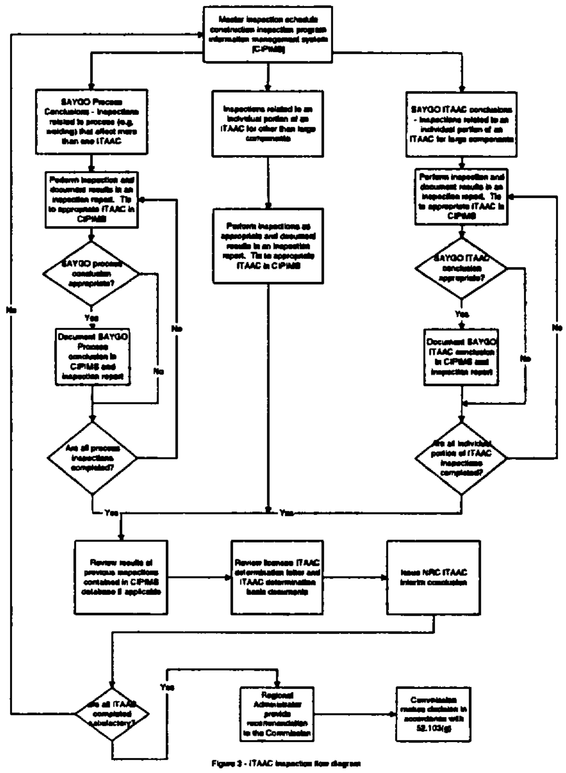
IMC-2503 Overview

- Three types of inspection conclusions related to Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)
  - SAYGO ITAAC for large components
  - SAYGO process for processes which affect multiple ITAAC
  - NRC ITAAC interim conclusions -licensee states and NRC verifies that an ITAAC or portions of an ITAAC have been met

IMC-2503 Sampling Technique

- Staff will not perform direct inspections of all ITAAC
- ITAAC development heavily risk informed on the front end
- Sampling techniques will be used
  - ITAAC sample selection
  - Statistical methods
  - Insights from the PRA
  - Inspection of licensee's QA program
- Will review 100% of licensee's ITAAC determination letters

IMC-2503 - SAYGO and ITAAC interim conclusions



IMC-2503 Other Items

- Treatment of new and significant information
  - 5 examples provided by staff in Appendix D of the document
- Operational programs with ITAAC inspections are part of IMC-2503

IMC 2503 other items

- Commission determination IAW 52.103(g) that license conditions have been met to load fuel
- Staff recommendations based on status of ITAAC
- Staff recommendation to Commission will be results of operational inspection (ORAT)
- Modular construction
  - SAYGO ITAAC, and SAYGO process conclusions for offsite fabrication

IMC-2503: Construction Phase

QUESTIONS/COMMENTS

Inspection Manual Chapter 2504

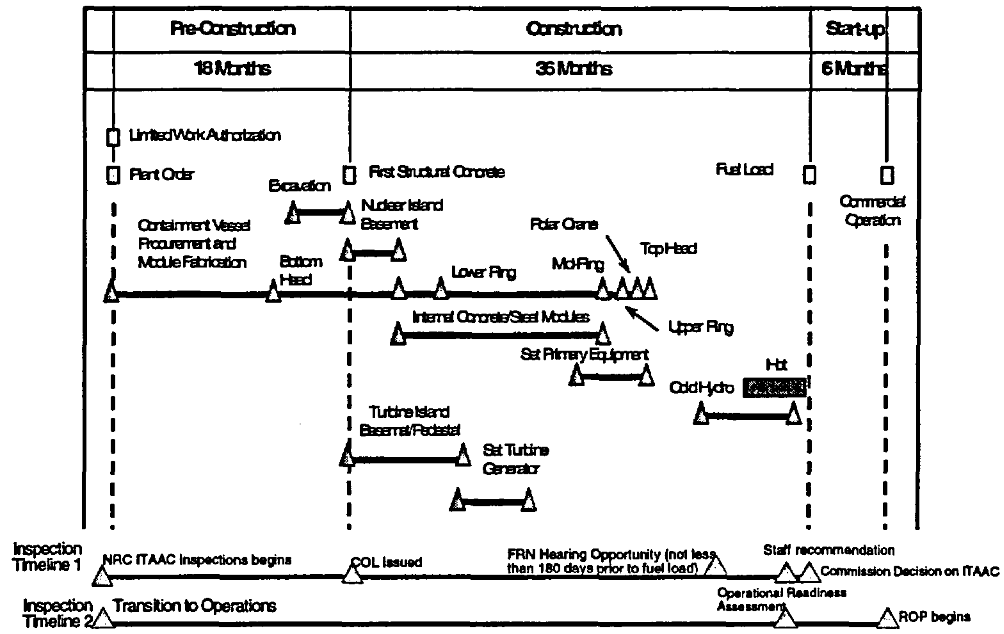
Transition to Operations

Jim Isom

IMC-2504 Transition to Operations

- Covers post fuel load to full power operations
  - Low power physics testing
  - Power ascension testing
  - Transition to ROP
- Guidance from IMC- 2513 and IMC-2514 inspection program

IMC-2503 and 2504 overlap



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IMC-2504 Transition to Operations

QUESTIONS/COMMENTS

Construction Inspection Program

Milestones

Doug Coe

CIP MILESTONES

▪ Draft framework document issued	5/30/03
▪ IMC 2501 ESP issued Rev 1	5/30/03
▪ Conduct Workshop	8/27/03
▪ End of public comment period on draft framework document	9/15/03
▪ Issue Framework document	11/03
▪ IMC 2502, 2503, and 2504 will be completed after the framework document is finalized	CY03-04
▪ 2006 projected time frame for a COL application according to NEI	CY06

NRC FORM 659
(6-2003)

U.S. NUCLEAR REGULATORY COMMISSION

Category
3

NRC PUBLIC MEETING FEEDBACK

Meeting Date: 08/27/2003

Meeting Title: Workshop to Discuss the Draft 10 CFR Part 52 Construction Inspection Framework Document

In order to better serve the public, we need to hear from the meeting participants. Please take a few minutes to fill out this feedback form and return it to NRC.

1. How did you hear about this meeting?

☐ NRC Web Page ☐ NRC Mailing List ☐ Newspaper
☐ Radio/TV ☐ Other ____________

		Yes	No (Please explain below)	Somewhat (Please explain below)
2.	Were you able to find supporting information prior to the meeting?	☐	☐	☐
3.	Did the meeting achieve its stated purpose?	☐	☐	☐
4.	Has this meeting helped you with your understanding of the topic?	☐	☐	☐
5.	Were the meeting starting time, duration, and location reasonably convenient?	☐	☐	☐
6.	Were you given sufficient opportunity to ask questions or express your views?	☐	☐	☐
7.	Are you satisfied overall with the NRC staff who participated in the meeting?	☐	☐	☐

COMMENTS OR SUGGESTIONS:

Thank you for answering these questions.

Continue Comments on the reverse.

OPTIONAL

Name ____________ Organization ____________

Telephone No. ____________ E-Mail ____________ ☐ *Check here if you would like a member of NRC staff to contact you.*

OMB NO. 3150-0197

Expires: 08/30/2004

Please fold on the dotted lines with Business Reply side out, tape the bottom, and mail back to the NRC.

COMMENTS OR SUGGESTIONS: *(Continued)*

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WASHINGTON DC 20277-2904

Construction Inspection Program Framework Document August 27, 2003, AP600 Example

- **Tier 1 Table of Contents**
- **Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) for the Normal Residual Heat Removal System**

TIER 1 MASTER TABLE OF CONTENTS

TIER 1 MASTER TABLE OF CONTENTS (cont.)

TIER 1 MASTER TABLE OF CONTENTS (cont.)

* Underlined sections - title only, no entry for Design Certification.

TIER 1 LIST OF FIGURES

TIER 1 LIST OF FIGURES (cont.)

2.3.6 Normal Residual Heat Removal System

The normal residual heat removal system (RNS) removes heat from the core and reactor coolant system (RCS) and provides RCS low temperature over-pressure (LTOP) protection at reduced RCS pressure and temperature conditions after shutdown. The RNS also provides a means for cooling the in-containment refueling water storage tank (IRWST) during normal plant operation.

The RNS is as shown in Figure 2.3.6-1 and the RNS component locations are as shown in Table 2.3.6-5.

1. The functional arrangement of the RNS is as described in the Design Description of this Section 2.3.6.

2. a) The components identified in Table 2.3.6-1 as ASME Code Section III are designed and constructed in accordance with ASME Code Section III requirements.

   b) The piping identified in Table 2.3.6-2 as ASME Code Section III is designed and constructed in accordance with ASME Code Section III requirements.

3. a) Pressure boundary welds in components identified in Table 2.3.6-1 as ASME Code Section III meet ASME Code Section III requirements.

   b) Pressure boundary welds in piping identified in Table 2.3.6-2 as ASME Code Section III meet ASME Code Section III requirements.

4. a) The components identified in Table 2.3.6-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure.

   b) The piping identified in Table 2.3.6-2 as ASME Code Section III retains its pressure boundary integrity at its design pressure.

5. a) The seismic Category I equipment identified in Table 2.3.6-1 can withstand seismic design basis loads without loss of safety function.

   b) Each of the lines identified in Table 2.3.6-2 for which functional capability is required is designed to withstand combined normal and seismic design basis loads without a loss of its functional capability.

6. Each of the as-built lines identified in Table 2.3.6-2 as designed for leak before break (LBB) meets the LBB criteria, or an evaluation is performed of the protection from the dynamic effects of a rupture of the line.

7. a) The Class 1E equipment identified in Table 2.3.6-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function.

   b) The Class 1E components identified in Table 2.3.6-1 are powered from their respective Class 1E division.

   c) Separation is provided between RNS Class 1E divisions, and between Class 1E divisions and non-Class 1E cable.

8. The RNS provides the following safety-related functions:

   a) The RNS preserves containment integrity by isolation of the RNS lines penetrating the containment.

   b) The RNS provides a flow path for long-term, post-accident makeup to the RCS.

9. The RNS provides the following nonsafety-related functions:

   a) The RNS provides low temperature overpressure protection (LTOP) for the RCS during shutdown operations.

   b) The RNS provides heat removal from the reactor coolant during shutdown operations.

   c) The RNS provides low pressure makeup flow from the in-containment refueling water storage tank (IRWST) to the RCS for scenarios following actuation of the automatic depressurization system (ADS).

   d) The RNS provides heat removal from the in-containment refueling water storage tank.

10. Safety-related displays identified in Table 2.3.6-1 can be retrieved in the main control room (MCR).

11. a) Controls exist in the MCR to cause those remotely operated valves identified in Table 2.3.6-1 to perform active functions.

    b) The valves identified in Table 2.3.6-1 as having protection and safety monitoring system (PMS) control perform active safety functions after receiving a signal from the PMS.

12. a) The motor-operated and check valves identified in Table 2.3.6-1 perform an active safety-related function to change position as indicated in the table.

    b) After loss of motive power, the remotely operated valves identified in Table 2.3.6-1 assume the indicated loss of motive power position.

13. Controls exist in the MCR to cause the pumps identified in Table 2.3.6-3 to perform the listed function.

14. Displays of the RNS parameters identified in Table 2.3.6-3 can be retrieved in the MCR.

Inspections, Tests, Analyses, and Acceptance Criteria

Table 2.3.6-4 specifies the inspections, tests, analyses, and associated acceptance criteria for the RNS.

Table 2.3.6-1

Equipment Name	Tag No.	ASME Code Section III	Seismic Cat. I	Remotely Operated Valve	Class 1E/ Qual. for Harsh Envir.	Safety-Related Display	Control PMS	Active Function	Loss of Motive Power Position
RNS Pump A (Pressure Boundary)	RNS-MP-01A	Yes	Yes	-	-/-	-	-	No	-
RNS Pump B (Pressure Boundary)	RNS-MP-01B	Yes	Yes	-	-/-	-	-	No	-
RNS Heat Exchanger A (Tube Side)	RNS-ME-01A	Yes	Yes	-	-/-	-	-	-	-
RNS Heat Exchanger B (Tube Side)	RNS-ME-01B	Yes	Yes	-	-/-	-	-	-	-
RCS Inner Hot Leg Suction Motor-operated Isolation Valve	RNS-PL-V001A	Yes	Yes	Yes	Yes/Yes	Yes (Valve Position)	Yes	Transfer Closed	As Is
RCS Inner Hot Leg Suction Motor-operated Isolation Valve	RNS-PL-V001B	Yes	Yes	Yes	Yes/Yes	Yes (Valve Position)	Yes	Transfer Closed	As Is
RCS Outer Hot Leg Suction Motor-operated Isolation Valve	RNS-PL-V002A	Yes	Yes	Yes	Yes/Yes	Yes (Valve Position)	Yes	Transfer Closed	As Is
RCS Outer Hot Leg Suction Motor-operated Isolation Valve	RNS-PL-V002B	Yes	Yes	Yes	Yes/Yes	Yes (Valve Position)	Yes	Transfer Closed	As Is

Note: Dash (-) indicates not applicable.

Table 2.3.6-1 (cont.)

Equipment Name	Tag No.	ASME Code Section III	Seismic Cat. I	Remotely Operated Valve	Class 1E/ Qual. for Harsh Envir.	Safety-Related Display	Control PMS	Active Function	Loss of Motive Power Position
RCS Pressure Boundary Thermal Relief Check Valve	RNS-PL-V003A	Yes	Yes	No	-/-	No	-	Transfer Open/ Transfer Closed	-
RCS Pressure Boundary Thermal Relief Check Valve	RNS-PL-V003B	Yes	Yes	No	-/-	No	-	Transfer Open/ Transfer Closed	-
RNS Discharge Motor-operated Containment Isolation Valve	RNS-PL-V011	Yes	Yes	Yes	Yes/No	Yes (Valve Position)	Yes	Transfer Open/ Transfer Closed	As Is
RNS Discharge Header Containment Isolation Check Valve	RNS-PL-V013	Yes	Yes	No	-/-	No	-	Transfer Closed	-
RNS Discharge RCS Pressure Boundary Check Valve	RNS-PL-V015A	Yes	Yes	No	-/-	No	-	Transfer Closed	-
RNS Discharge RCS Pressure Boundary Check Valve	RNS-PL-V015B	Yes	Yes	No	-/-	No	-	Transfer Closed	-
RNS Discharge RCS Pressure Boundary Check Valve	RNS-PL-V017A	Yes	Yes	No	-/-	No	-	Transfer Closed	-
RNS Discharge RCS Pressure Boundary Check Valve	RNS-PL-V017B	Yes	Yes	No	-/-	No	-	Transfer Closed	-

Note: Dash (-) indicates not applicable.

Table 2.3.6-1 (cont.)

Equipment Name	Tag No.	ASME Code Section III	Seismic Cat. I	Remotely Operated Valve	Class 1E/ Qual. for Harsh Envir.	Safety-Related Display	Control PMS	Active Function	Loss of Motive Power Position
RNS Hot Leg Suction Pressure Relief Valve	RNS-PL-V021	Yes	Yes	No	-/-	No	-	Transfer Open/ Transfer Closed	-
RNS Suction Header Motor-operated Containment Isolation Valve	RNS-PL-V022	Yes	Yes	Yes	Yes/No	Yes (Valve Position)	Yes	Transfer Closed	As Is
RNS Suction from IRWST Motor-operated Isolation Valve	RNS-PL-V023	Yes	Yes	Yes	Yes/Yes	Yes (Valve Position)	Yes	Transfer Closed	As Is
RNS Discharge to IRWST Motor-operated Isolation Valve	RNS-PL-V024	Yes	Yes	Yes	Yes/No	Yes (Valve Position)	Yes	Transfer Closed	As Is
RNS Heat Exchanger A Channel Head Drain Valve	RNS-PL-V046	Yes	Yes	No	-/-	No	-	Transfer Open	-
RNS Return from Chemical and Volume Control System (CVS) Containment Isolation Valve	RNS-PL-V061	Yes	Yes	Yes	Yes/No	Yes (Valve Position)	Yes	Transfer Closed	Closed

Note: Dash (-) indicates not applicable.

Table 2.3.6-2				
Line Name	**Line No.**	**ASME Code Section III**	**Leak Before Break**	**Functional Capability Required**
RNS Suction Lines, from the RCS Hot Leg Connection to the RCS Side of Valves RNS-PL-V002A and RNS-PL-V002B	RNS-BTA-L001 RNS-BTA-L002A RNS-BTA-L002B	Yes Yes Yes	Yes Yes Yes	No No No
RNS Suction Lines, from the RCS Pressure Boundary Valves, RNS-PL-V002A and RNS-PL-V002B, to the RNS pumps	RNS-BBB-L004A RNS-BBB-L004B RNS-BBB-L005 RNS-DBC-L006 RNS-DBC-L007A RNS-DBC-L007B RNS-DBC-L009A RNS-DBC-L009B	Yes	No	No
RNS Suction Line from CVS	RNS-BBB-L061 RNS-BBD-L062	Yes	No	No
RNS Suction Line from IRWST	RNS-BBB-L029	Yes	No	No
RNS Suction Line LTOP Relief	RNS-BBB-L040	Yes	No	No
RNS Discharge Lines, from the RNS Pumps to the RNS Heat Exchangers RNS-ME-01A and RNS-ME-01B	RNS-DBC-L011A RNS-DBC-L011B	Yes	No	No
RNS Discharge Lines, from RNS Heat Exchanger RNS-ME-01A to Containment Isolation Valve RNS-PL-V011	RNS-DBC-L012A RNS-DBC-L014	Yes	No	Yes
RNS Discharge Line, from RNS Heat Exchanger RNS-ME-01B to Common Discharge Header RNS-DBC-L014	RNS-DBC-L012B	Yes	No	No
RNS Discharge Lines, Containment Isolation Valve RNS-PL-V011 to Containment Isolation Valve RNS-PL-V013	RNS-BBB-L016	Yes	No	Yes

Table 2.3.6-2 (cont.)				
Line Name	**Line No.**	**ASME Code Section III**	**Leak Before Break**	**Functional Capability Required**
RNS Discharge Lines, from Containment Isolation Valve RNS-PL-V013 to RCS Pressure Boundary Isolation Valves RNS-PL-V015A and RNS-PL-V015B	RNS-BBC-L017 RNS-BBC-L018A RNS-BBC-L018B	Yes	No	Yes
RNS Discharge Lines, from Direct Vessel Injection (DVI) Line RNS-BBC-L018A to Passive Core Cooling System (PXS) IRWST Return Isolation Valve RNS-PL-V024	RNS-BBC-L020	Yes	No	No
RNS Discharge Lines, from RCS Pressure Boundary Isolation Valves RNS-PL-V015A and RNS-PL-V015B to Reactor Vessel DVI Nozzles	RNS-BTA-L019A RNS-BTA-L019B	Yes	Yes	Yes
RNS Heat Exchanger Bypass	RNS-DBC-L008A RNS-DBC-L008B	Yes	No	No
RNS Suction from Spent Fuel Pool	RNS-DBC-L052	Yes	No	No
RNS Pump Miniflow Return	RNS-DBC-L030A RNS-DBC-L030B	Yes	No	No
RNS Discharge to Spent Fuel Pool	RNS-DBC-L051	Yes	No	No
RNS Discharge to CVS Purification	RNS-DBC-L021	Yes	No	No

Table 2.3.6-3			
Equipment Name	**Tag No.**	**Display**	**Control Function**
RNS Pump 1A (Motor)	RNS-MP-01A	Yes (Run Status)	Start
RNS Pump 1B (Motor)	RNS-MP-01B	Yes (Run Status)	Start
RNS Flow Sensor	RNS-01A	Yes	-
RNS Flow Sensor	RNS-01B	Yes	-

Note: Dash (-) indicates not applicable.

Table 2.3.6-4 Inspections, Tests, Analyses, and Acceptance Criteria		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
1. The functional arrangement of the RNS is as described in the Design Description of this Section 2.3.6.	Inspection of the as-built system will be performed.	The as-built RNS conforms with the functional arrangement described in the Design Description of this Section 2.3.6.
2.a) The components identified in Table 2.3.6-1 as ASME Code Section III are designed and constructed in accordance with ASME Code Section III requirements.	Inspection will be conducted of the as-built components as documented in the ASME design reports.	The ASME Code Section III design reports exist for the as-built components identified in Table 2.3.6-1 as ASME Code Section III.
2.b) The piping identified in Table 2.3.6-2 as ASME Code Section III is designed and constructed in accordance with ASME Code Section III requirements.	Inspection will be conducted of the as-built piping as documented in the ASME design reports.	The ASME Code Section III design reports exist for the as-built piping identified in Table 2.3.6-2 as ASME Code Section III.
3.a) Pressure boundary welds in components identified in Table 2.3.6-1 as ASME Code Section III meet ASME Code Section III requirements.	Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III.	A report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds.
3.b) Pressure boundary welds in piping identified in Table 2.3.6-2 as ASME Code Section III meet ASME Code Section III requirements.	Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III.	A report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds.
4.a) The components identified in Table 2.3.6-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure.	A hydrostatic test ≥1125 psi will be performed on the 900 psi design pressure components required by the ASME Code Section III to be hydrostatically tested.	A report exists and concludes that the results of the hydrostatic test of the components identified in Table 2.3.6-1 as ASME Code Section III conform with the requirements of the ASME Code Section III.

Table 2.3.6-4 (cont.) Inspections, Tests, Analyses, and Acceptance Criteria		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
4.b) The piping identified in Table 2.3.6-2 as ASME Code Section III retains its pressure boundary integrity at its design pressure.	A hydrostatic test ≥1125 psi will be performed on the 900 psi design pressure piping required by the ASME Code Section III to be hydrostatically tested.	A report exists and concludes that the results of the hydrostatic test of the piping identified in Table 2.3.6-2 as ASME Code Section III conform with the requirements of the ASME Code Section III.
5.a) The seismic Category I equipment identified in Table 2.3.6-1 can withstand seismic design basis loads without loss of safety function.	i) Inspection will be performed to verify that the seismic Category I equipment identified in Table 2.3.6-1 is located on the Nuclear Island. ii) Type tests, analyses, or a combination of type tests and analyses of seismic Category I equipment will be performed. iii) Inspection will be performed for the existence of a report verifying that the as-installed equipment including anchorage is seismically bounded by the tested or analyzed conditions.	i) The seismic Category I equipment identified in Table 2.3.6-1 is located on the Nuclear Island. ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis loads without loss of safety function. iii) A report exists and concludes that the as-installed equipment including anchorage is seismically bounded by the tested or analyzed conditions.
5.b) Each of the lines identified in Table 2.3.6-2 for which functional capability is required is designed to withstand combined normal and seismic design basis loads without a loss of its functional capability.	Inspection will be performed for the existence of a report verifying that the as-built piping meets the requirements for functional capability.	A report exists and concludes that each of the as-built lines identified in Table 2.3.6-2 for which functional capability is required meets the requirements for functional capability.
6. Each of the as-built lines identified in Table 2.3.6-2 as designed for LBB meets the LBB criteria, or an evaluation is performed of the protection from the dynamic effects of a rupture of the line.	Inspection will be performed for the existence of an LBB evaluation report or an evaluation report on the protection from dynamic effects of a pipe break. Tier 1 Material, Section 3.3, Nuclear Island Buildings, contains the design descriptions and inspections, tests, analyses, and acceptance criteria for protection from the dynamic effects of pipe rupture.	An LBB evaluation report exists and concludes that the LBB acceptance criteria are met by the as-built RCS piping and piping materials, or a pipe break evaluation report exists and concludes that protection from the dynamic effects of a line break is provided.

Table 2.3.6-4 (cont.) Inspections, Tests, Analyses, and Acceptance Criteria		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
7.a) The Class 1E equipment identified in Tables 2.3.6-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function.	Type tests, analyses, or a combination of type tests and analyses will be performed on Class 1E equipment located in a harsh environment.	A report exists and concludes that the Class 1E equipment identified in Table 2.3.6-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function.
7.b) The Class 1E components identified in Table 2.3.6-1 are powered from their respective Class 1E division.	Testing will be performed on the RNS by providing a simulated test signal in each Class 1E division.	A simulated test signal exists at the Class 1E equipment identified in Table 2.3.6-1 when the assigned Class 1E division is provided the test signal.
7.c) Separation is provided between RNS Class 1E divisions, and between Class 1E divisions and non-Class 1E cable.	See Tier 1 Material, Section 3.3, Nuclear Island Buildings.	See Tier 1 Material, Section 3.3, Nuclear Island Buildings.
8.a) The RNS preserves containment integrity by isolation of the RNS lines penetrating the containment.	See Tier 1 Material, subsection 2.2.1, Containment System.	See Tier 1 Material, subsection 2.2.1, Containment System.
8.b) The RNS provides a flow path for long-term, post-accident makeup to the RCS.	See item 1 in this table.	See item 1 in this table.
9.a) The RNS provides LTOP for the RCS during shutdown operations.	i) Inspections will be conducted on the low temperature overpressure protection relief valve to confirm that the capacity of the vendor code plate rating is greater than or equal to system relief requirements. ii) Testing and analysis in accordance with the ASME Code Section III will be performed to determine set pressure.	i) The rated capacity recorded on the valve vendor code plate is not less than 555 gpm. ii) A report exists and concludes that the relief valve opens at a pressure such that the relief capacity is not less than 555 gpm at a pressure of 621 psig.

Table 2.3.6-4 (cont.) Inspections, Tests, Analyses, and Acceptance Criteria		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
9.b) The RNS provides heat removal from the reactor coolant during shutdown operations.	i) Inspection will be performed for the existence of a report that determines the heat removal capability of the RNS heat exchangers.	i) A report exists and concludes that the product of the overall heat transfer coefficient and the effective heat transfer area, UA, of each RNS heat exchanger is greater than or equal to 2.0 million Btu/hr-°F.
	ii) Testing will be performed to confirm that the RNS can provide flow through the RNS heat exchangers when the pump suction is aligned to the RCS hot leg and the discharge is aligned to both PXS DVI lines with the RCS at atmospheric pressure.	ii) Each RNS pump provides at least 900 gpm net flow to the RCS when the hot leg water level is at an elevation 15.5 inches ±2 inches above the bottom of the hot leg.
	iii) Inspection will be performed of the reactor coolant loop piping.	iii) The RCS cold legs piping centerline is 17.5 inches ± 2 inches above the hot legs piping centerline.
	iv) Inspection will be performed of the RNS pump suction piping.	iv) The RNS pump suction piping from the hot leg to the pump suction piping low point does not form a local high point (defined as an upward slope with a vertical rise greater than 3 inches).
	v) Inspection will be performed of the RNS pump suction nozzle connection to the RCS hot leg.	v) The RNS suction line connected to the RCS is constructed from 20-inch Schedule 160 pipe.
9.c) The RNS provides low pressure makeup flow from the IRWST to the RCS for scenarios following actuation of the ADS.	Testing will be performed to confirm that the RNS can provide low pressure makeup flow from the IRWST to the RCS when the pump suction is aligned to the IRWST and the discharge is aligned to both PXS DVI lines with RCS at atmospheric pressure.	Each RNS pump provides at least 925 gpm net flow to the RCS when the water level above the bottom of the IRWST is 4 feet ± 12 inches.

Table 2.3.6-4 (cont.) Inspections, Tests, Analyses, and Acceptance Criteria		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
9.d) The RNS provides heat removal from the in-containment refueling water storage tank (IRWST).	Testing will be performed to confirm that the RNS can provide flow through the RNS heat exchangers when the pump suction is aligned to the IRWST and the discharge is aligned to the IRWST.	Each RNS pump provides at least 925 gpm to the IRWST.
10. Safety-related displays identified in Table 2.3.6-1 can be retrieved in the MCR.	Inspection will be performed for retrievability of the safety-related displays in the MCR.	Safety-related displays identified in Table 2.3.6-1 can be retrieved in the MCR.
11.a) Controls exist in the MCR to cause those remotely operated valves identified in Table 2.3.6-1 to perform active functions.	Stroke testing will be performed on the remotely operated valves identified in Table 2.3.6-1 using the controls in the MCR.	Controls in the MCR operate to cause those remotely operated valves identified in Table 2.3.6-1 to perform active functions.
11.b) The valves identified in Table 2.3.6-1 as having PMS control perform active safety functions after receiving a signal from the PMS.	Testing will be performed using real or simulated signals into the PMS.	The valves identified in Table 2.3.6-1 as having PMS control perform the active function identified in the table after receiving a signal from the PMS.

Table 2.3.6-4 (cont.) Inspections, Tests, Analyses, and Acceptance Criteria		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
12.a) The motor-operated and check valves identified in Table 2.3.6-1 perform an active safety-related function to change position as indicated in the table.	i) Tests or type tests of motor-operated valves will be performed that demonstrate the capability of the valve to operate under its design conditions.	i) A test report exists and concludes that each motor-operated valve changes position as indicated in Table 2.3.6-1 under design conditions.
	ii) Inspection will be performed for the existence of a report verifying that the as-installed motor-operated valves are bounded by the tested conditions.	ii) A report exists and concludes that the as-installed motor-operated valves are bounded by the tested conditions.
	iii) Tests of the as-installed motor-operated valves will be performed under preoperational flow, differential pressure and temperature conditions.	iii) Each motor-operated valve changes position as indicated in Table 2.1.2-1 under preoperational test conditions.
	iv) Exercise testing of the check valves active safety functions identified in Table 2.3.6-1 will be performed under preoperational test pressure, temperature and fluid flow conditions.	iv) Each check valve changes position as indicated in Table 2.3.6-1.
12.b) After loss of motive power, the remotely operated valves identified in Table 2.3.6-1 assume the indicated loss of motive power position.	Testing of the installed valves will be performed under the conditions of loss of motive power.	Upon loss of motive power, each remotely operated valve identified in Table 2.3.6-1 assumes the indicated loss of motive power position.
13. Controls exist in the MCR to cause the pumps identified in Table 2.3.6-3 to perform the listed function.	Testing will be performed to actuate the pumps identified in Table 2.3.6-3 using controls in the MCR.	Controls in the MCR cause pumps identified in Table 2.3.6-3 to perform the listed action.
14. Displays of the RNS parameters identified in Table 2.3.6-3 can be retrieved in the MCR.	Inspection will be performed for retrievability in the MCR of the displays identified in Table 2.3.6-3.	Displays of the RNS parameters identified in Table 2.3.6-3 are retrieved in the MCR.

Table 2.3.6-5		
Component Name	**Tag No.**	**Component Location**
RNS Pump A	RNS-MP-01A	Auxiliary Building
RNS Pump B	RNS-MP-01B	Auxiliary Building
RNS Heat Exchanger A	RNS-ME-01A	Auxiliary Building
RNS Heat Exchanger B	RNS-ME-01B	Auxiliary Building

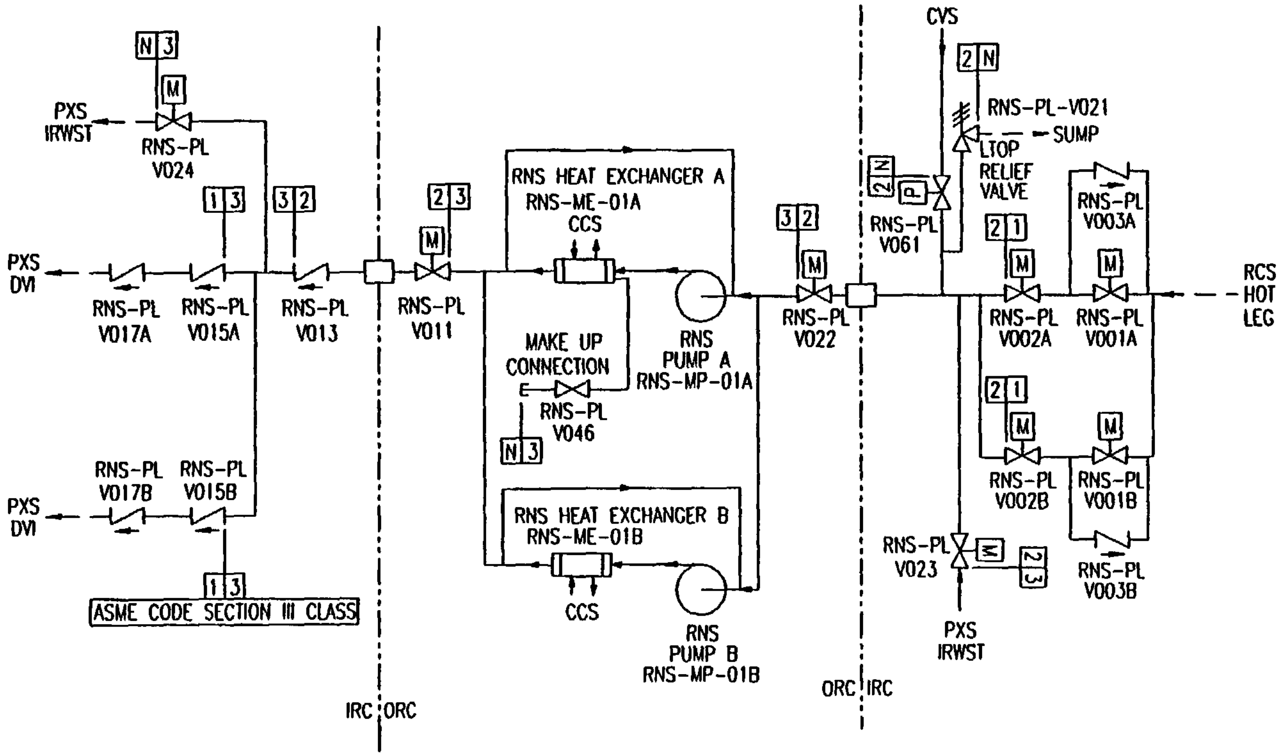

Figure 2.3.6-1
Normal Residual Heat Removal System

NEI Input – August 20, 2003

<u>Discussion Questions for NRC Aug. 27 Workshop on CIP Framework Guidance</u>

1. What does NRC envision that engineering design verification will entail? The industry perspective is presented on pp. 11-14 of our Nov. 2001 white paper.[1]

2. What will the NRC staff's ITAAC verification documentation and 52.99 notices look like? Will 52.99 notices delineate which conclusions and bases are directly material to the ITAAC conclusion and thus subject to challenge in the post construction hearing?

3. What are the staff's comments/questions on, or does the staff agree with the description of the 52.103 (ITAAC hearing) process provided in the industry's Nov. 2001 white paper?

4. What is the regulatory "gap" that NRC is concerned about on p. 24 of the Framework Doc between the time an ITAAC is completed and the 52.103g finding?

5. What aspects of IMC-2504, Preparations for Operations, does the staff envision would begin up to 18 months prior to COL issuance?

6. What are the staff's expectations regarding coordination of inspection activities with applicant/licensee construction schedules? Please discuss expectations regarding access to real time schedules or frequency of schedule updates to be provided. Does the staff envision a joint, integrated, perhaps web-based, construction and inspection schedule to be maintained by licensee and NRC schedulers?

7. Please describe the CIPIMS pilot project mentioned on p. 26 of the CIP Framework Doc.

8. What is the purpose of SAYGO ITAAC conclusions and how do they differ from NRC staff ("interim") ITAAC conclusions?

9. It is expected that a licensee letter will trigger NRC staff ITAAC verification and ("interim") ITAAC conclusions. What will trigger a SAYGO ITAAC conclusion?

10. Please describe the steps envisioned by the staff leading to the 52.103(a) notice of hearing. The industry perspective on this is on p. 25 of the NEI white paper.

11. Page 19 of the CIP Framework Doc says the staff will perform an "independent review" [of ITAAC completion status]. By this, does the staff mean that they will <u>confirm</u> that NRC has received an ITAAC determination letter for each ITAAC and that the staff <u>has agreed</u> that all ITAAC have been met?

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[1] Note that we have previously agreed with the staff that third sentence of the third full paragraph of the NEI white paper is incorrect and should instead read as follows: "To increase the confidence that the design can be constructed expeditiously without major engineering or licensing iterations, detailed design information, *e.g.*, specifications and construction drawings, is expected to be essentially complete and available to the NRC staff by the time of COL <u>application</u> or shortly thereafter, and NRC engineering design verification should be completed before or shortly after the <u>COL is issued</u>."