

Tuesday, September 17, 2002
1:30 p.m. - 3:30 p.m.

AGENDA

- A. Welcome and introductions
- B. Background: Point Beach, Units 1 and 2, reactor vessels
- C. Reactor vessel evaluation methodologies
- D. End of current life projections and assumptions
- E. Extended life projections and assumptions
- F. Evaluation results submittal
- G. Public comments
- H. Meeting adjournment

Attachment

Point Beach Nuclear Plant, Units 1 and 2

September 4, 2002

MEMORANDUM TO: Samson S. Lee, Chief
License Renewal Section
License Renewal and Environmental Impacts Program
Division of Regulatory Improvement Programs, NRR

FROM: Alvin J. Henry, Project Manager /RA/
License Renewal Section
License Renewal and Environmental Impacts Program
Division of Regulatory Improvement Programs, NRR

SUBJECT: FORTHCOMING MEETING WITH NUCLEAR MANAGEMENT
COMPANY (NMC) TO DISCUSS REACTOR VESSEL EVALUATION
METHODOLOGIES FOR THE POINT BEACH NUCLEAR PLANT,
UNITS 1 and 2, LICENSE RENEWAL

DATE & TIME: Tuesday, September 17, 2002
1:30 p.m. - 3:30 p.m.

LOCATION: U.S. Nuclear Regulatory Commission
Two White Flint North
11545 Rockville Pike, Room T2B1
Rockville, Maryland

PURPOSE: To discuss reactor vessel evaluation methodologies for the Point Beach,
Units 1 and 2, license renewal.

CATEGORY 1:* This is a Category 1 Meeting. The public is invited to observe this
meeting and will have one or more opportunities to communicate with the
NRC after the business portion, but before the meeting is adjourned.

PARTICIPANTS: Participants from the NRC include members of the Office of Nuclear
Reactor Regulation (NRR) and Office of Nuclear Reactor Research
(RES).

NRC/NRR
P.T. Kuo, NRR
S. Coffin, NRR
M. Mitchell, NRR
D. Spaulding, NRR

NRC/RES
R. Tregoning, RES

NMC
R. Newton
J. Knorr
B. Kemp

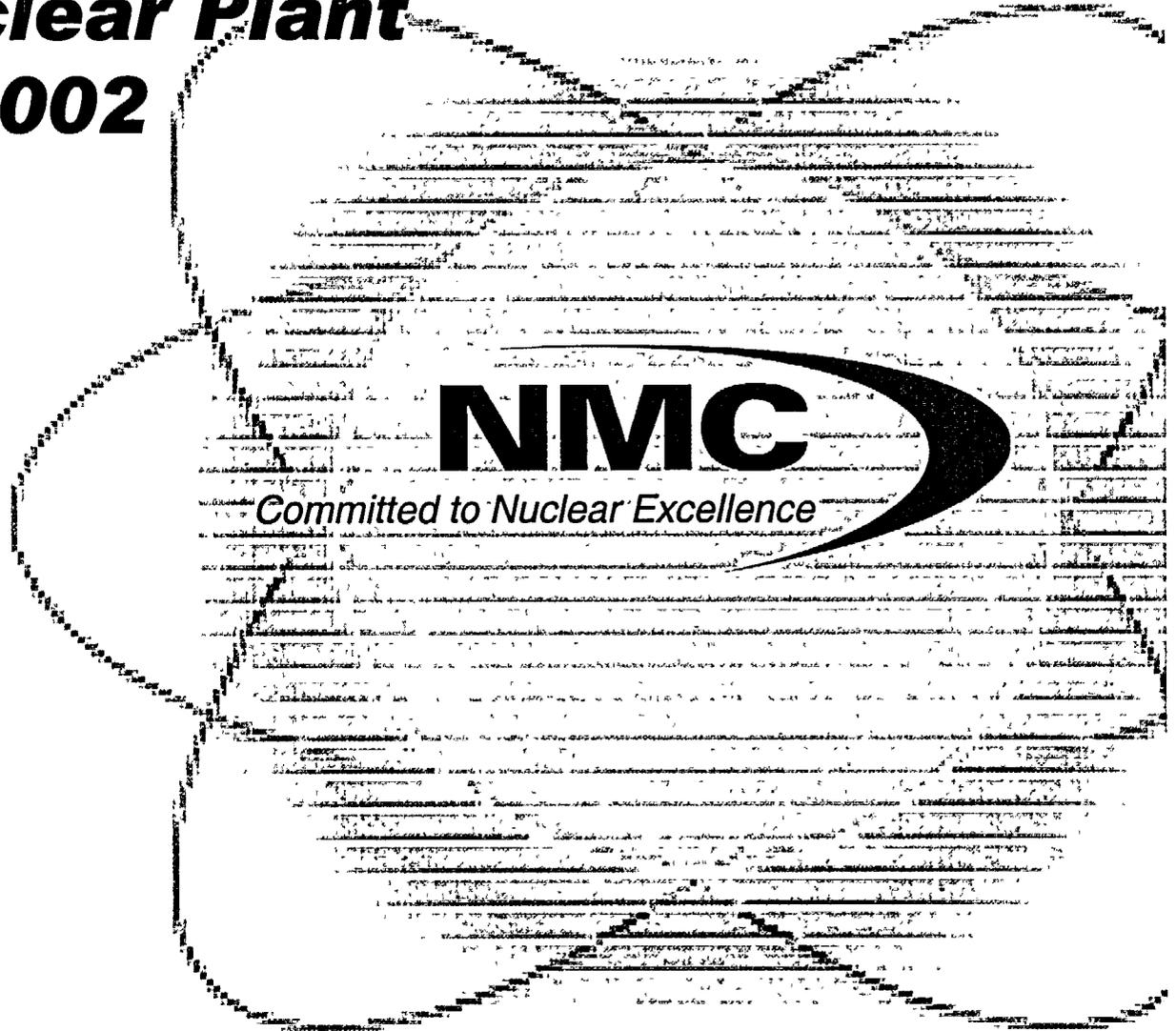
Docket Nos. 50-266 and 50-301
Attachment: Agenda
cc w/att: See next page
MEETING CONTACT: Alvin Henry, NRR
301-415-4014
AJH@nrc.gov

* Commission's Policy Statement on "Enhancing Public Participation in NRC Meetings," 67 *Federal Register* 36920, May 28, 2002

MEMORANDUM TO: Samson S. Lee, Chief
License Renewal Section

Reactor Vessel Evaluation Methodologies

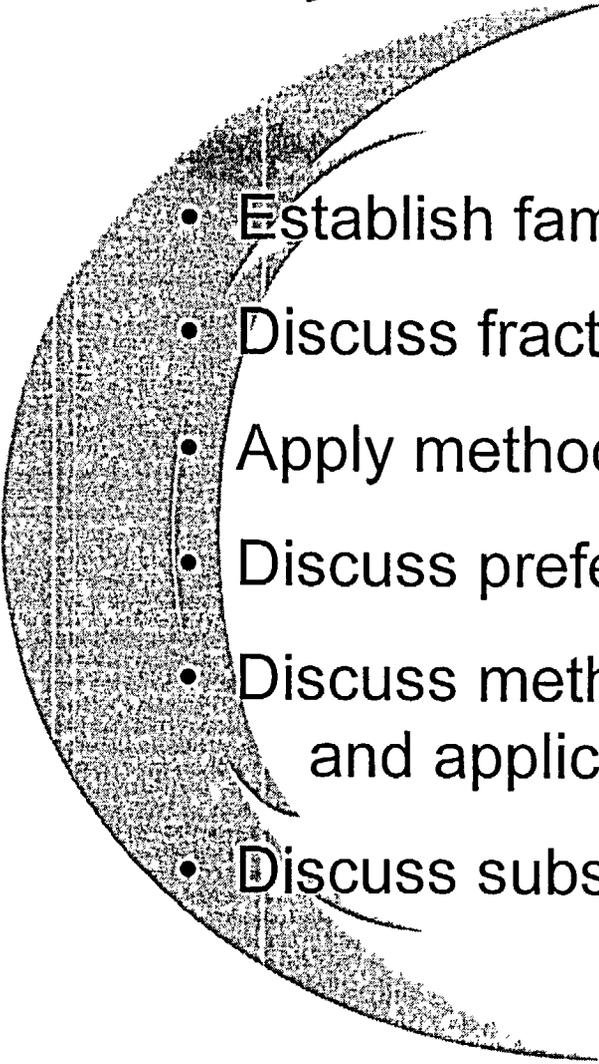
Point Beach Nuclear Plant
September 17, 2002



Discussion Topics

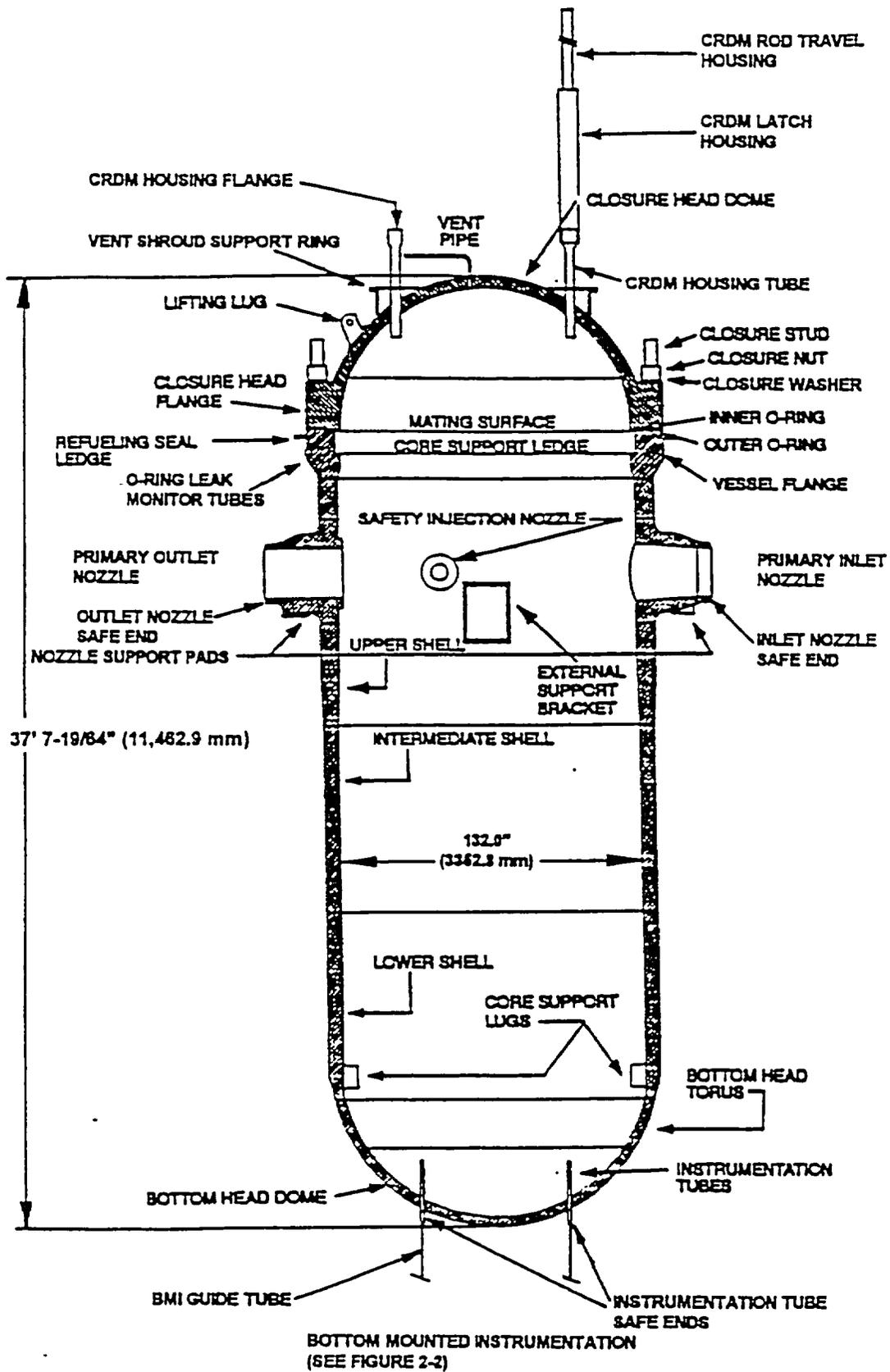
- Meeting Purposes
- Units 1 and 2 Reactor Vessel Background
- Reactor Vessel Evaluation Methodologies
- Nominal Extended Life Evaluation / Assumptions
- Extended Life Evaluation / Assumptions
- Evaluation Results Submittal – Preferred Methodology
- Open Discussion
- Closing Remarks

Meeting Purposes

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- Establish familiarity with PBNP reactor vessels
 - Discuss fracture toughness evaluation methodologies
 - Apply methodologies to PBNP reactor vessels
 - Discuss preferred methodology
 - Discuss method of obtaining NRC approval of methodology and application to the PBNP reactor vessels
 - Discuss subsequent schedule of activities

Unit 1 and Unit 2 Reactor Vessels

- PBNP Reactor Pressure Vessel Schematic
- Unit 1
 - Manufactured by Babcock and Wilcox (B&W)
 - Per 1965 Edition Section III ASME Code
- Unit 2
 - Manufactured initially by B&W, completed by Combustion Engineering
 - Per 1968 Edition Section III ASME code through Winter 1968 Addenda
- General Information
 - Categorized as a standard Westinghouse 132 inch ID two loop reactor vessel
 - Reactor Vessel Shell Plate (Unit 1) SA-302, Gr. B
 - Shell Forging (Unit 2) A-508 Class II
 - Nozzle Shell & Nozzle Forgings A-508 Class II
 - Cladding, Stainless Weld Rod Type 304 Equivalent
 - Thermal Shield and Internals A-240, Type 304
 - Insulation SS-SS Foil - SS



Point Beach Reactor Pressure Vessel Schematic



Point Beach Background

	Unit 1	Unit 2
Construction Permit	7-19-1967	7-25-1968
Operating License		
Fuel Load		11-16-1971
1% Power		5-25-1972
20% Power		7-28-1972
Full Power	10-5-1970	3-8-1973
+40 Year License	+40	+40
Calorimetric Power Increase	Under Review	Under Review
Core Power Increase	Future	Future
License Expiration	10-5-2010	3-8-2013
+20 Year Extended Operation	+20	+20
	10-5-2030	3-8-2033

- 1. Current NRC approved methodology**
 - 10 CFR 50.61 (RG 1.99 Rev 2)

- 2. Approach endorsed in B&W-2308**
 - Initial RT_{T0} established using fracture toughness data
 - Charpy shift used to account for irradiation effects

- 3. NRC approved Kewaunee Master Curve approach**

- 4. Direct measurement Master Curve approach**



Nominal Extended Life Projections / Assumptions

1999 Evaluation

Unit 1

Unit 2

Limiting Location

I/L Circ. Weld

I/L Circ Weld

EFPY

48⁽¹⁾

48⁽¹⁾

Surface Fluence (10^{19} n/cm²)

3.38⁽¹⁾

3.42⁽¹⁾

Copper Content (%)

0.23

0.26

Nickel Content (%)

0.59

0.60

Initial Ref. NDT Temperature (°F)

10

-5

RT_{PTS} Temperature (°F)

287⁽²⁾

301⁽²⁾

Assumptions:

- (1) Current power level, current operating configuration
- (2) Methodology using Regulatory Guide 1.99 Rev 1



Extended Life Evaluation / Assumptions

2002 Unit 2 Evaluations

	<u>EOL</u>	<u>EOLE</u>	<u>EOLE</u>	<u>EOLE</u>	<u>EOLE</u>
Methodology	1	1	2	3	4
EFY	34	53	53	53	53
Surface Fluence (10^{19} n/cm ²)	3.13	5.085	5.085	5.085	5.085
Initial Ref. NDT Temperature (°F)	-5	-5	-30	-38	--
RT _{PTS} Temperature (°F)	298	316	284	252	229

Assumptions:

Limiting Location I/L Circ Weld

Copper Content (%) 0.261

Nickel Content (%) 0.602

Power level increases, removal of hafnium neutron suppression assemblies

Evaluation Results Submittal

NIMC

Committed to Nuclear Excellence

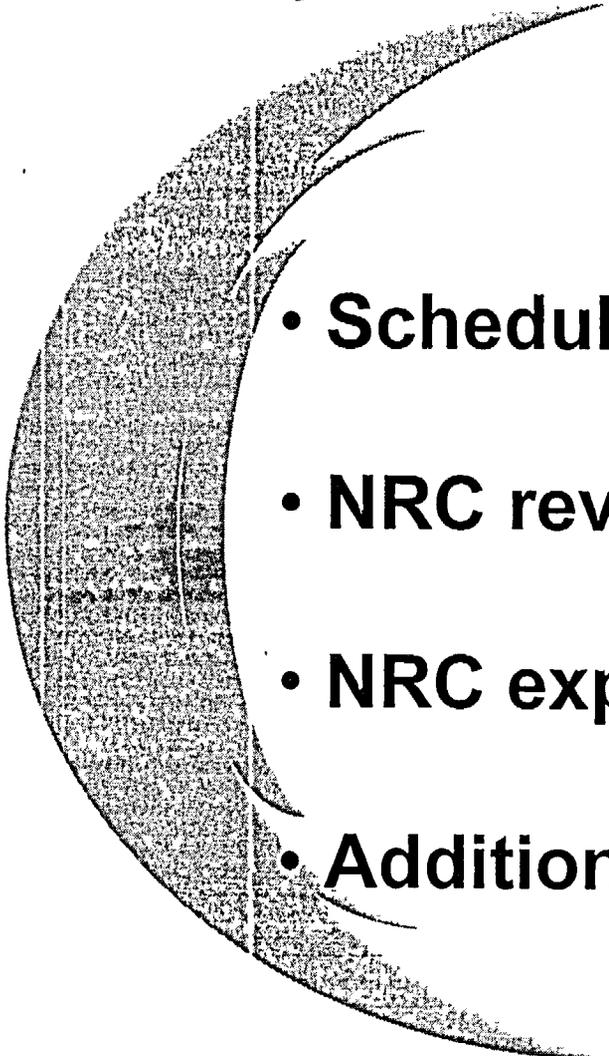
- **Preferred Methodology**

- Method 2: B&W-2308 approach
- Meets PTS screening criteria for extended operation
- Uses B&W methodology which has been submitted to the NRC for review and approval
- PBNP would become lead plant for methodology

- **PBNP Reactor Vessels Submittal Would Include:**

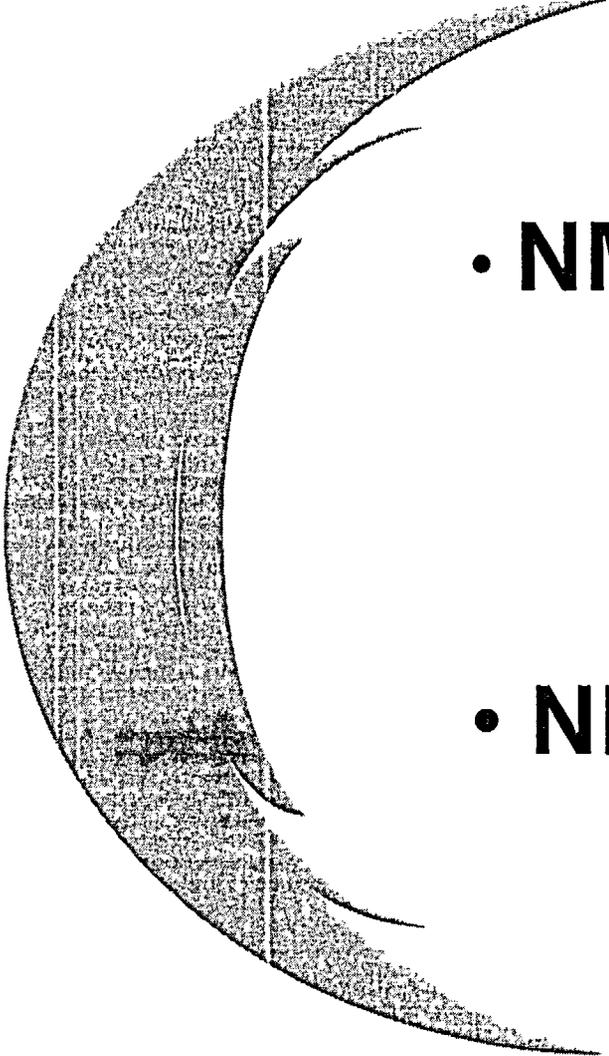
- Preferred methodology and plant specific results
- Extended operation assumptions for both units
- Surveillance capsule program for both units
- Approval for generic methodology and plant specific results
- Approval could be referenced for extended operation

Open Discussion

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- **Schedule of submittal**
 - **NRC review time period**
 - **NRC expectations for lead plant submittal**
 - **Additional discussion items**

Closing Remarks



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- A large, decorative graphic on the left side of the slide. It is a thick, curved shape, resembling a large letter 'C' or a partial circle. The interior of the curve is filled with a dense, stippled or textured pattern, giving it a three-dimensional appearance. The outer edge is smooth and follows the curve of the shape.
- **NMC Remarks**
 - **NRC Remarks**