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*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

03/20/2002

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)	<u>50-269, 50-270, 50-287</u>
Plant/Facility Name	<u>OCONEE NUCLEAR STATION, UNITS 1, 2 AND 3</u>
TAC Number(s) (if available)	<u>MB3205, MB3206, MB3207</u>
Reference Meeting Notice	<u>3/6/02</u>
Purpose of Meeting (copy from meeting notice)	<u>TO DISCUSS 10/15/01 SUBMITTAL CONCERNING</u> <u>HIGH ENERGY LINE BREAKS OUTSIDE REACTOR</u> <u>BUILDING</u>

NAME OF PERSON WHO ISSUED MEETING NOTICE

L. N. OLSHAN

TITLE

PROJECT MANAGER

OFFICE

NRR

DIVISION

DLPM

BRANCH

PD II-1

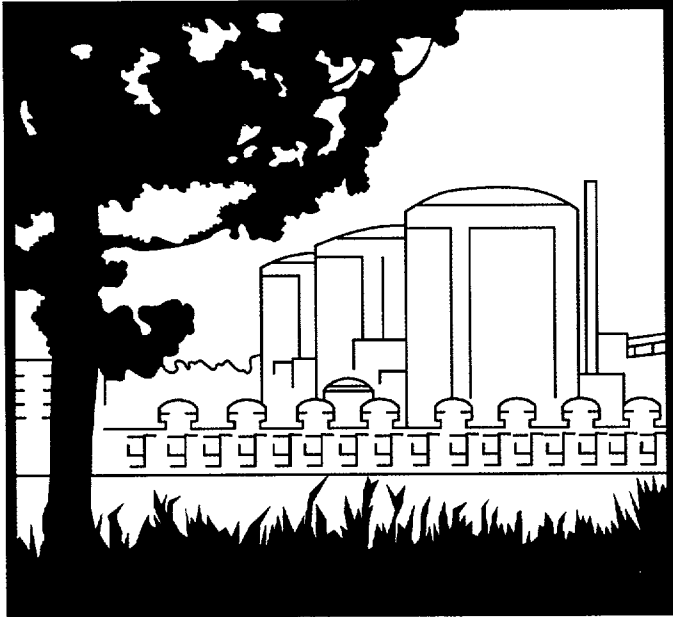
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DF01



# *High Energy Line Break (HELB)*



*HELB Methodology  
Meeting*

*March 20, 2002*

# **PURPOSE**

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## ■ Objectives:

- Discuss NRC comments and concerns on HELB Methodology letter dated October 15, 2001
- Gain NRC concurrence with overall project direction
  - Avoid significant rework



# ***High Energy Line Break (HELB) Project***

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- **1998 assessment identified issues with the original High Energy Line Break (HELB) analysis**
- **Project initiated to update the original HELB work. This initiative was communicated to Region II management during a January 26, 1999, management meeting**
- **Primary objective of project is to revalidate and update the HELB study completed in 1973 for current plant configuration**

# ***High Energy Line Break (HELB) Project (Continued)***

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- **Significant technical and regulatory advances in pipe rupture postulation and protection requirements have occurred since ONS was designed and built**
- **Updated position on various issues pertaining to pipe rupture requirements outside containment**
- **Break/Crack locations established considering the following:**
  - **Original break/crack locations established in accordance with Giambusso Letter**
  - **New HELB project modifies break/crack locations based on methodology communicated to NRC in letter dated October 15, 2001**

# **ONS HELB METHODOLOGY**

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- Break locations based on Giambusso Letter requirements including the errata sheet sent in January, 1973, with the following revisions:
  - Elimination of arbitrary intermediate pipe breaks in seismically analyzed pipes using GL 87-11
  - Break locations of non-seismic piping at each pipe fitting (e.g. elbow, tee, cross, flange, and non-standard fitting), welded attachment, and valve

# **ONS HELB METHODOLOGY**

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- Crack locations based on Giambusso Letter requirements including the errata sheet sent in January, 1973, with the following revisions:
  - Elimination of critical cracks in seismically analyzed pipes based on one-half the break stress threshold. Giambusso provides break stress threshold
  - Crack locations of non-seismic piping at each pipe fitting (e.g. elbow, tee, cross, flange, and non-standard fitting), welded attachment, and valve

# ASSUMPTIONS

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- HELB Methodology Letter dated October 15, 2001
  - Duke and NRC agree on three of ten assumptions
  - More discussion is warranted related to Pre-TMI versus Post-TMI requirements



# **ASSUMPTIONS**

## ***(continued)***

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### ■ Pre-TMI Requirements

- HELB criteria provided by Giambusso Letter and errata dated 1973
- ONS HELB licensing basis established by MDS Report No. OS-73.2
- HELB licensing basis accepted by NRC in SER for Units 2 and 3 dated 7/6/73

# **ASSUMPTIONS**

## **(continued)**

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### ■ Post-TMI Requirements

- Post-TMI HELB Requirements
  - Limited to Emergency Feedwater impacts
  - MSLB and FWLB resulting in a ruptured Steam Generator Boundary
- Standard Review Plan 3.6.1 describes HELB design
- Standard Review Plan maintains HELB licensing basis for “Giambusso” plants

# **ASSUMPTIONS**

## ***(continued)***

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- Assumption #1-ONS Plant initial state is considered to be full power operations
- Assumption #2-The Jet Impingement Cone Geometry & Effective Length postulated in accordance with NUREG/CR-2913, “Two Phase Jet Loads”
- Assumption #3-SRP 3.6.1 requires postulated break at all High Energy/Moderate Energy Separation valves. If stresses are reasonably known at these locations, then a break is postulated based on the actual stress value compared to the Pipe Break Stress Threshold

# ASSUMPTIONS (continued)

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- Assumption #4 - A Loss of Offsite Power (LOOP) is not being postulated with every HELB
  - LOOP not postulated in original ONS HELB report
  - Revised ONS HELB will postulate LOOP for Main Steam and Main Feedwater line breaks

# **ASSUMPTIONS**

## ***(continued)***

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- **Assumption #5-Safe shutdown for ONS is defined as mode 3 with an average reactor coolant temperature  $\geq 525^{\circ}\text{F}$ , Shutdown margin maintained  $> 1\%\Delta k/k$** 
  - The definition was not given in the Giambusso Letter
  - Definition is consistent with ONS UFSAR

# **ASSUMPTIONS** *(continued)*

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- **Assumption #6-After safe shutdown has been achieved, the ability to achieve long term decay heat removal will be verified. Long term decay heat removal is considered to be normal decay heat removal via the Low Pressure Injection (LPI) system or secondary side cooling via the steam generator(s)**

### **■ Assumption #7 – Non-seismic equipment may be credited for HELB mitigation**

- Consistent with ONS Design Basis
- Seismic events not postulated to occur concurrent with HELB

# **ASSUMPTIONS**

## ***(continued)***

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- Assumptions #8 – Single active failures are postulated for achieving and maintaining safe shutdown. However, single active failures are not postulated for plant cooldown. Single failures are not postulated for establishing long term decay heat removal
  - Consistent with ONS Design Basis
  - Meets the intent of Giambusso Letter



# **ASSUMPTIONS**

## ***(continued)***

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- Assumption #9 – The Standby Shutdown Facility (SSF) will be included as a mitigation strategy for HELB mitigation
  - ONS recognizes this is a licensing basis change for the SSF and HELB

# **ASSUMPTIONS**

## ***(continued)***

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- **Assumption #10 – The Alternate units’ EFW systems via the cross-connects is included as a mitigation strategy**
  - **The original HELB report required the installation of the cross-connects to mitigate certain HELBs in the turbine building**
  - **The cross-connects were reviewed and approved by the NRC**
  - **Accessibility issues will be addressed when use of the cross-connects is needed**

- Outstanding Technical Issues
- Closure
  - Additional correspondence
  - Documentation
- Schedule
  - Project schedule milestones related to NRC review