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AUTH. NAME	AUTHOR AFFILIATION
TAYLOR, J.H.	Babcock & Wilcox Co.
RECIP. NAME	RECIPIENT AFFILIATION
WIENS, L.A.	

SUBJECT: Forwards info showing portions of handouts from Duke/NRC/BWFC meeting on 950131 considered proprietary. Affidavit supporting proprietary classification also encl.

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**B&W NUCLEAR TECHNOLOGIES**

50-269/270/287

3315 Old Forest Road  
P.O. Box 10935  
Lynchburg, VA 24506-0935  
Telephone: 804-832-3000  
Telecopy: 804-832-3663

March 14, 1995  
JHT/95-29

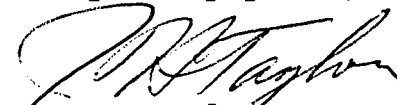
Mr. L. A. Wiens, Senior Project Manager  
Project Directorate II-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Subject: Proprietary Information From Duke/NRC/BWFC Meeting on  
January 31, 1995.

Dear Mr. Wiens:

In the subject meeting, representatives from BWFC provided information that is considered proprietary. The NRC requested that this information be identified so that the minutes of the meeting could be made part of the public domain. In compliance with that request, the attached information shows which portions of the meeting handouts are considered proprietary. An affidavit supporting the proprietary classification and a non proprietary version of the information are attached.

Very truly yours,

  
J. H. Taylor, Manager  
Licensing Services

cc: L. E. Phillips, NRC  
L. I. Kopp, NRC  
F. R. Orr, NRC  
E. D. Kendrick, NRC  
R. B. Borsum

300025

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PDR ADDCK 05000269  
P PDR

ADD

AFFIDAVIT OF JAMES H. TAYLOR

- A. My name is James H. Taylor. I am Manager of Licensing Services for B&W Nuclear Technologies (BWNT). The B&W Fuel Company is administratively responsible to B&W Nuclear Technologies. Therefore, I am authorized to execute this Affidavit.
- B. I am familiar with the criteria applied by BWNT to determine whether certain information of BWNT is proprietary and I am familiar with the procedures established within BWNT to ensure the proper application of these criteria.
- C. In determining whether a BWNT document is to be classified as proprietary information, an initial determination is made by the Unit Manager, who is responsible for originating the document, as to whether it falls within the criteria set forth in Paragraph D hereof. If the information falls within any one of these criteria, it is classified as proprietary by the originating Unit Manager. This initial determination is reviewed by the cognizant Section Manager. If the document is designated as proprietary, it is reviewed again by Licensing personnel and other management within BWNT as designated by the Manager of Licensing Services to assure that the regulatory requirements of 10 CFR Section 2.790 are met.
- D. The following information is provided to demonstrate that the provisions of 10 CFR Section 2.790 of the Commission's regulations have been considered:
- (i) The information has been held in confidence by BWNT. Copies of the document are clearly identified as proprietary. In addition, whenever BWNT transmits the information to a customer, customer's agent, potential customer or regulatory agency, the transmittal requests the recipient to hold the information as proprietary. Also, in order to strictly limit any potential or actual customer's use of proprietary information, the following provision is included in all proposals submitted by BWNT, and an applicable version of the proprietary provision is included in all of B&W's contracts:

AFFIDAVIT OF JAMES H. TAYLOR (Cont'd.)

"Purchaser may retain Company's proposal for use in connection with any contract resulting therefrom, and, for that purpose, make such copies thereof as may be necessary. Any proprietary information concerning Company's or its Supplier's products or manufacturing processes which is so designated by Company or its Suppliers and disclosed to Purchaser incident to the performance of such contract shall remain the property of Company or its Suppliers and is disclosed in confidence, and Purchaser shall not publish or otherwise disclose it to others without the written approval of Company, and no rights, implied or otherwise, are granted to produce or have produced any products or to practice or cause to be practiced any manufacturing processes covered thereby.

Notwithstanding the above, Purchaser may provide the NRC or any other regulatory agency with any such proprietary information as the NRC or such other agency may require; provided, however, that Purchaser shall first give Company written notice of such proposed disclosure and Company shall have the right to amend such proprietary information so as to make it non-proprietary. In the event that Company cannot amend such proprietary information, Purchaser shall, prior to disclosing such information, use its best efforts to obtain a commitment from NRC or such other agency to have such information withheld from public inspection.

Company shall be given the right to participate in pursuit of such confidential treatment."

AFFIDAVIT OF JAMES H. TAYLOR (Cont'd.)

- (ii) The following criteria are customarily applied by BWNT in a rational decision process to determine whether the information should be classified as proprietary. Information may be classified as proprietary if one or more of the following criteria are met:
- a. Information reveals cost or price information, commercial strategies, production capabilities, or budget levels of B&W, its customers or suppliers.
  - b. The information reveals data or material concerning BWNT research or development plans or programs of present or potential competitive advantage to BWNT.
  - c. The use of the information by a competitor would decrease his expenditures, in time or resources, in designing, producing or marketing a similar product.
  - d. The information consists of test data or other similar data concerning a process, method or component, the application of which results in a competitive advantage to BWNT.
  - e. The information reveals special aspects of a process, method, component or the like, the exclusive use of which results in a competitive advantage to BWNT.
  - f. The information contains ideas for which patent protection may be sought.

The document(s) listed on Exhibit "A", which is attached hereto and made a part hereof, has been evaluated in accordance with normal BWNT procedures with respect to classification and has been found to contain information which falls within one or

AFFIDAVIT OF JAMES H. TAYLOR (Cont'd.)

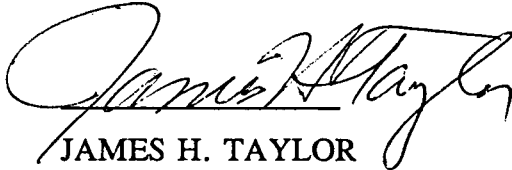
more of the criteria enumerated above. Exhibit "B", which is attached hereto and made a part hereof, specifically identifies the criteria applicable to the document(s) listed in Exhibit "A".

- (iii) The document(s) listed in Exhibit "A", which has been made available to the United States Nuclear Regulatory Commission was made available in confidence with a request that the document(s) and the information contained therein be withheld from public disclosure.
- (iv) The information is not available in the open literature and to the best of our knowledge is not known by Combustion Engineering, EXXON, General Electric, Westinghouse or other current or potential domestic or foreign competitors of B&W Nuclear Technologies.
- (v) Specific information with regard to whether public disclosure of the information is likely to cause harm to the competitive position of BWNT, taking into account the value of the information to BWNT; the amount of effort or money expended by BWNT developing the information; and the ease or difficulty with which the information could be properly duplicated by others is given in Exhibit "B".

E. I have personally reviewed the document(s) listed on Exhibit "A" and have found that it is considered proprietary by BWNT because it contains information which falls within one or more of the criteria enumerated in Paragraph D, and it is information which is customarily held in confidence and protected as proprietary information by BWNT. This report comprises

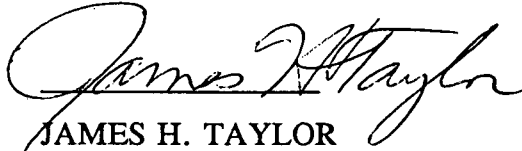
AFFIDAVIT OF JAMES H. TAYLOR (Cont'd.)

information utilized by BWNT in its business which afford BWNT an opportunity to obtain a competitive advantage over those who may wish to know or use the information contained in the document(s).


  
JAMES H. TAYLOR

State of Virginia) ) SS. Lynchburg  
City of Lynchburg)

James H. Taylor, being duly sworn, on his oath deposes and says that he is the person who subscribed his name to the foregoing statement, and that the matters and facts set forth in the statement are true.

  
JAMES H. TAYLOR

Subscribed and sworn before me  
this 14<sup>th</sup> day of March 1995.

  
Notary Public in and for the City  
of Lynchburg, State of Virginia.

My Commission Expires July 31, 1995

**EXHIBITS A & B**

**EXHIBIT A**

1. Mark-B11 Fuel Design Information Presented to NRC on January 31, 1995.
2. Copy of Material Presented to NRC on January 31, 1995 with Applicable Criteria for Proprietary Classification.

**EXHIBIT B**

The above listed document contains information which is considered Proprietary in accordance with Criteria b, c, d and e of the attached affidavit.



# Mk-B11 Design Description

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**Dennis A. Gottuso**  
**Mk-B Product Engineering Mgr.**  
**B&W Fuel Company**

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 DUKE POWER 

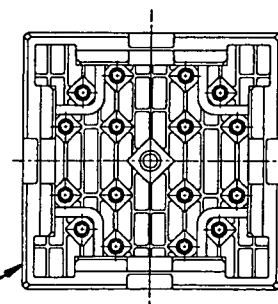
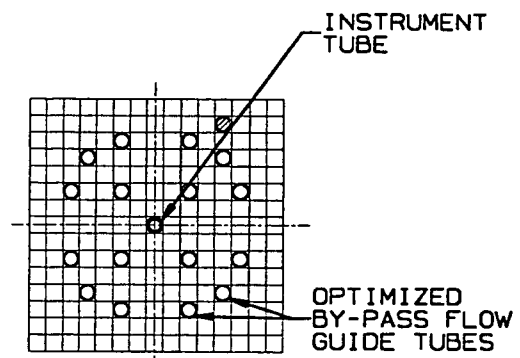
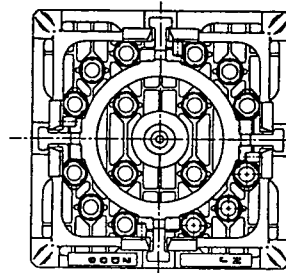
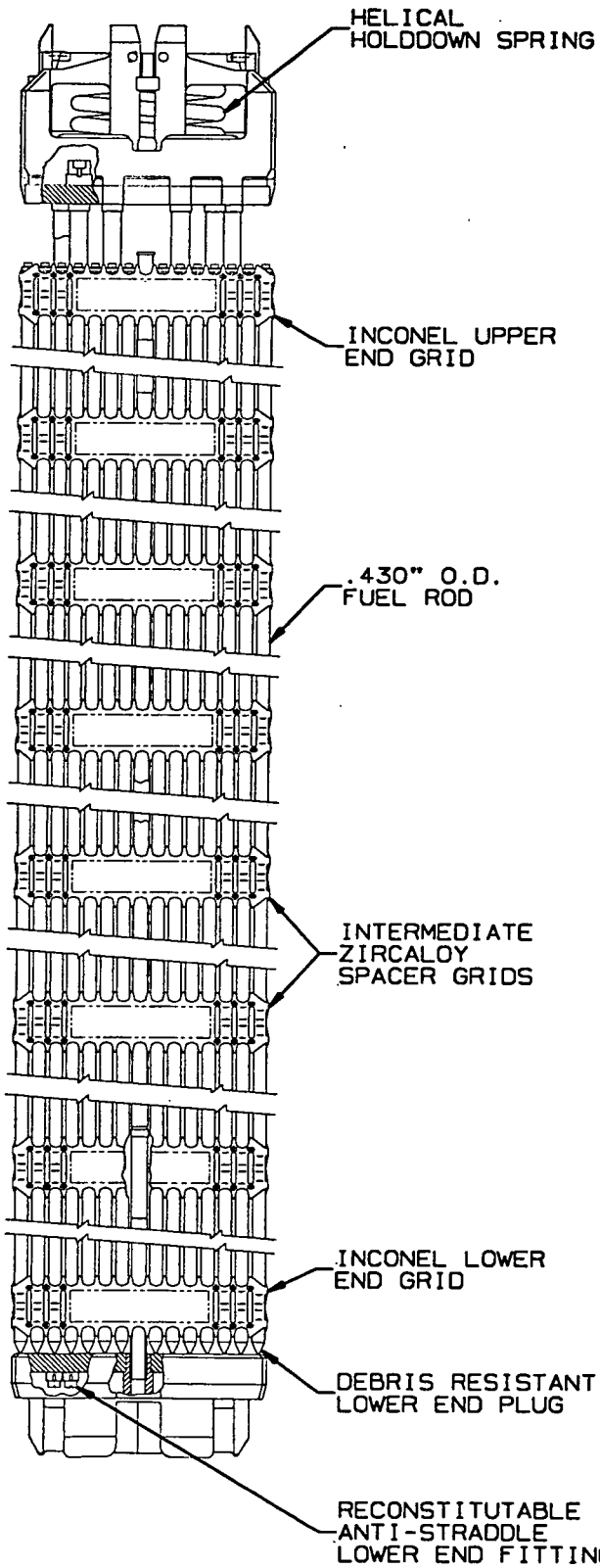
 **B&W FUEL  
COMPANY**

# Mark-B Products

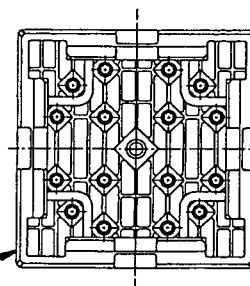
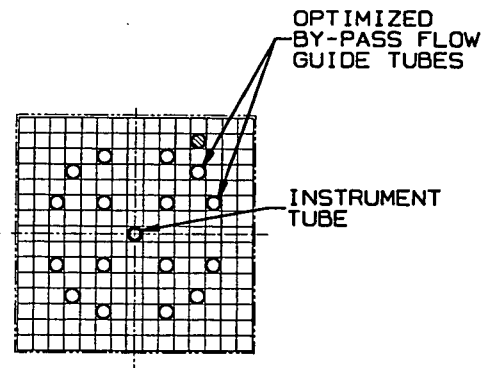
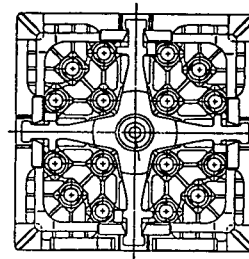
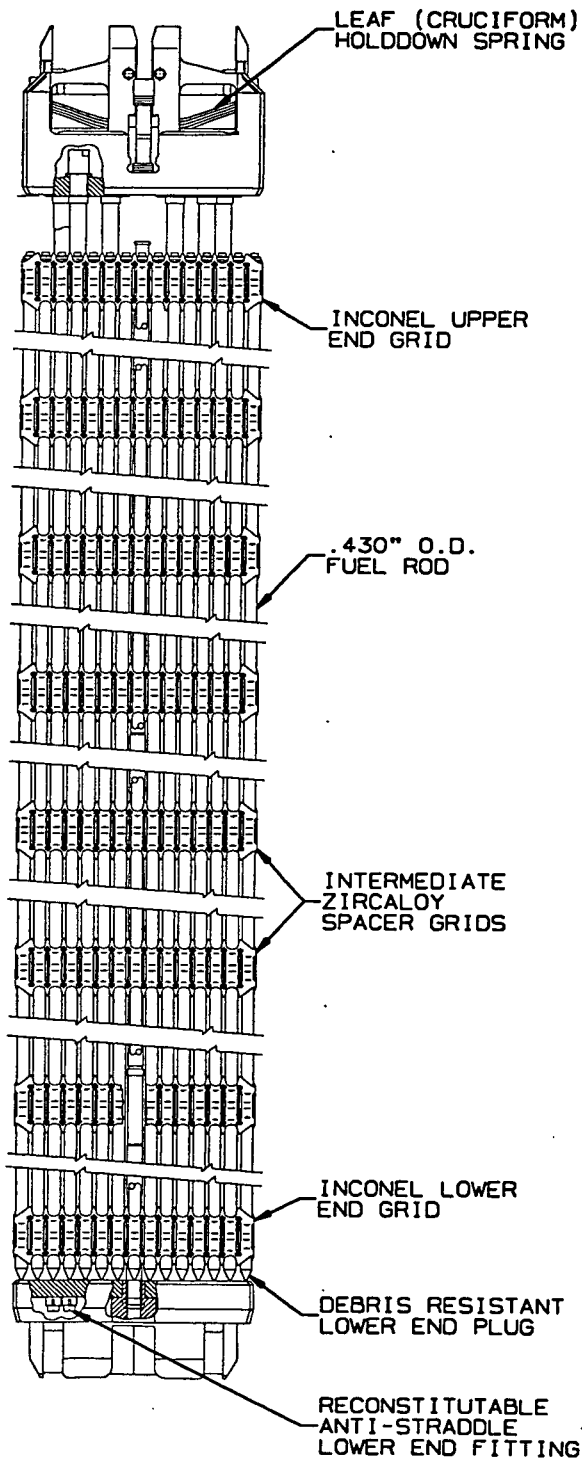
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- **Mark-B9 fuel assembly**
  - 0.430" O.D. B9 fuel rod
  - Helical hold down spring
- **Mark-B10 fuel assembly**
  - 0.430" O.D. B9 fuel rod
  - Cruciform hold down spring
- **Mark-B10T fuel assembly**
  - 0.430" O.D. B10 fuel rod
  - Cruciform hold down spring
  - Increased uranium loading

# MARK-B9 FUEL ASSEMBLY



# MARK-B10 FUEL ASSEMBLY



# Mark-B Products

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## New Fuel Assembly Design Objectives

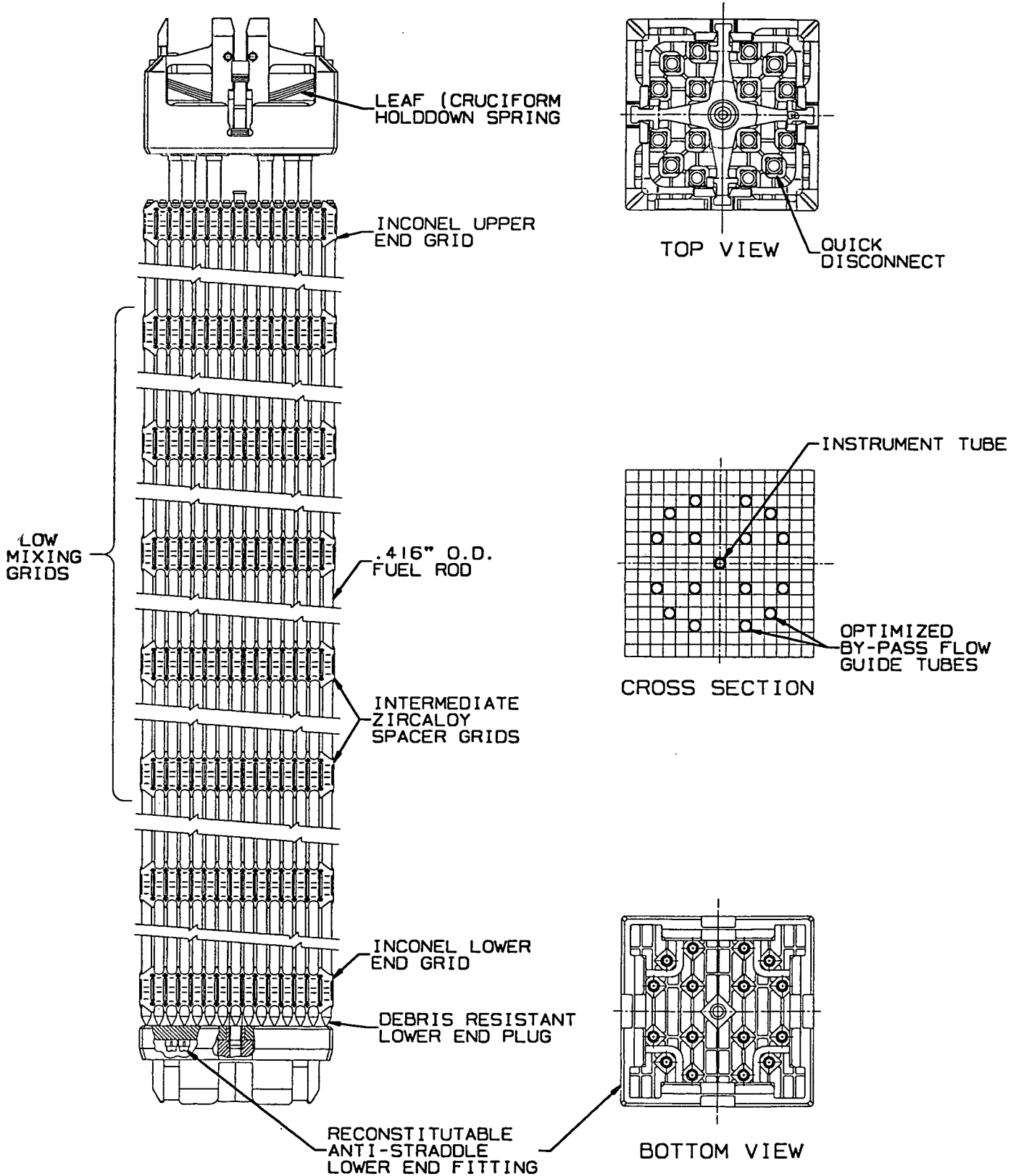
- Lower fuel costs
- Enhanced thermal-hydraulic performance
  - Increase in peaking margin
  - Increase in DNB margin
- Quick disconnect UEF

# Mark-B Products

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- **Mark-B11 fuel assembly**
  - **0.416" O.D. B11 fuel rod**
  - **Integral flow diverter spacer grid**
  - **Quick disconnect UEF**
  - **Cruciform hold down spring**

# MARK-B11 FUEL ASSEMBLY



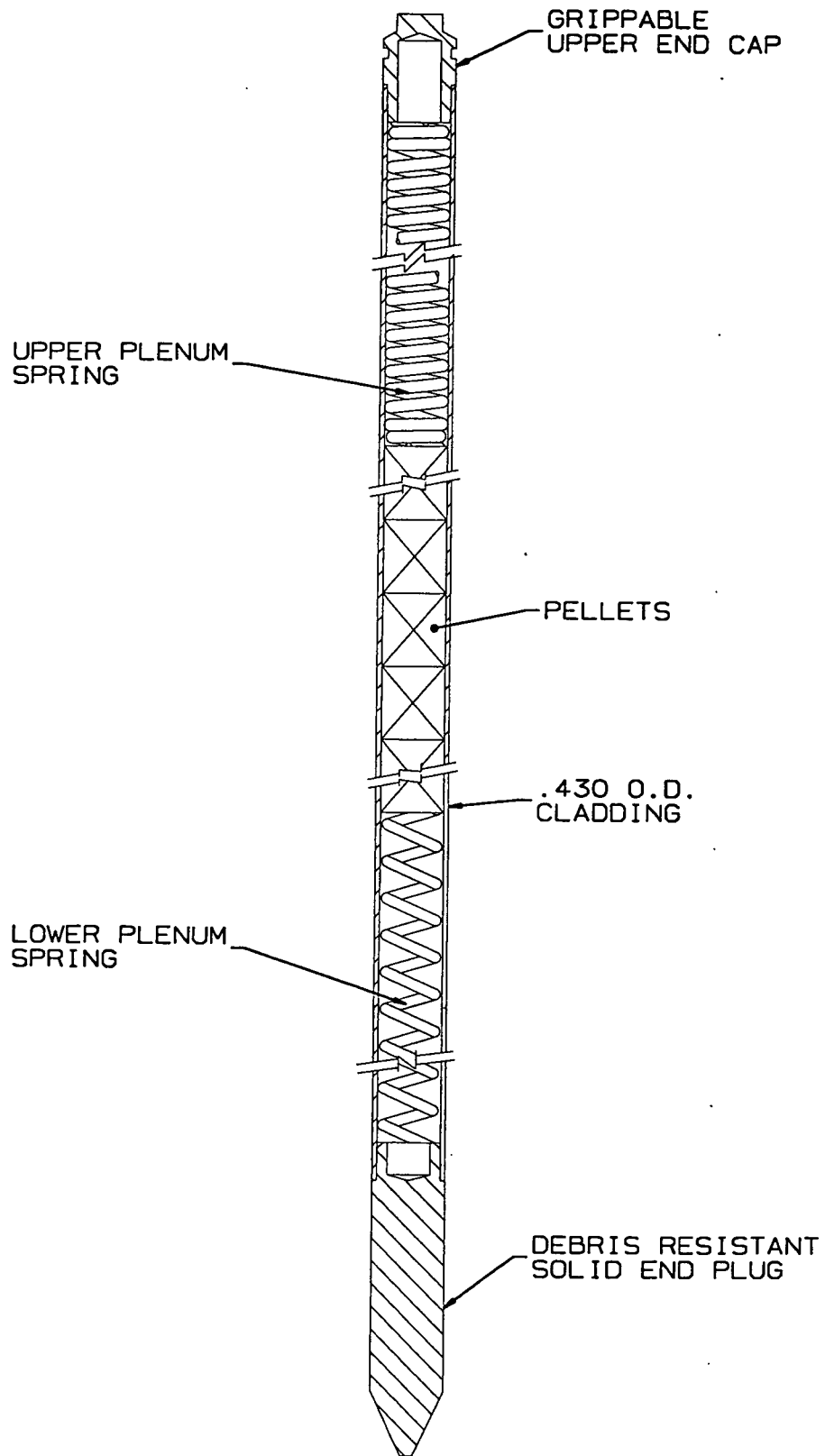
# Mark-B Fuel Rod Comparision

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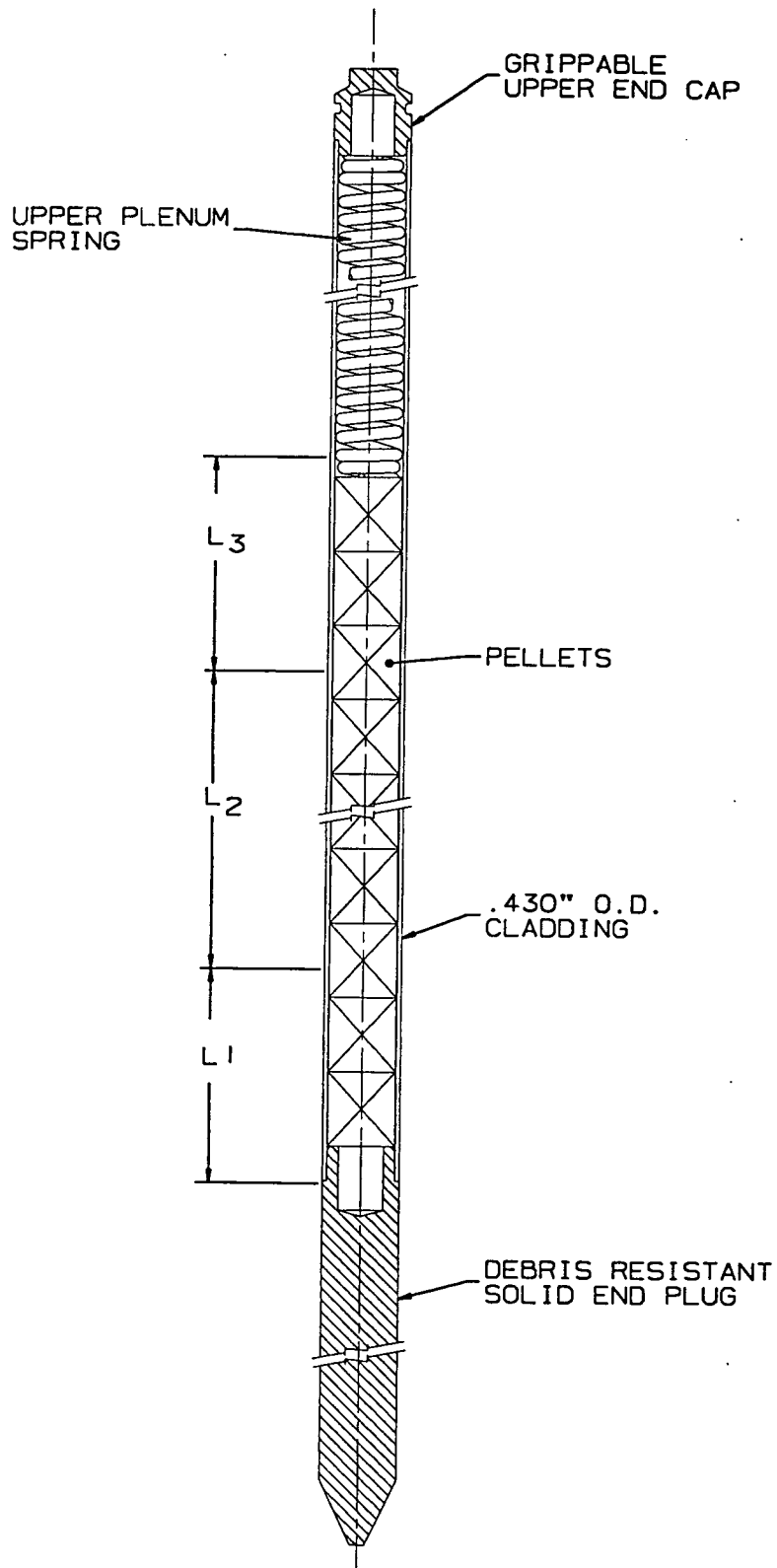
- **B9 axial blanket fuel rod**
  - **Currently operating in Mark-B10 fuel assembly in Oconee 2, Cycle 15**
  
- **B10 axial blanket fuel rod**
  - **Integral to Mark-B10T fuel assembly**
  - **Planned for Oconee 3, Cycle 16 (July, 1995)**
  
- **B11 axial blanket fuel rod**
  - **Integral to Mark-B11 fuel assembly**
  - **Lead assemblies planned for Oconee 1, Cycle 17 (November, 1995)**



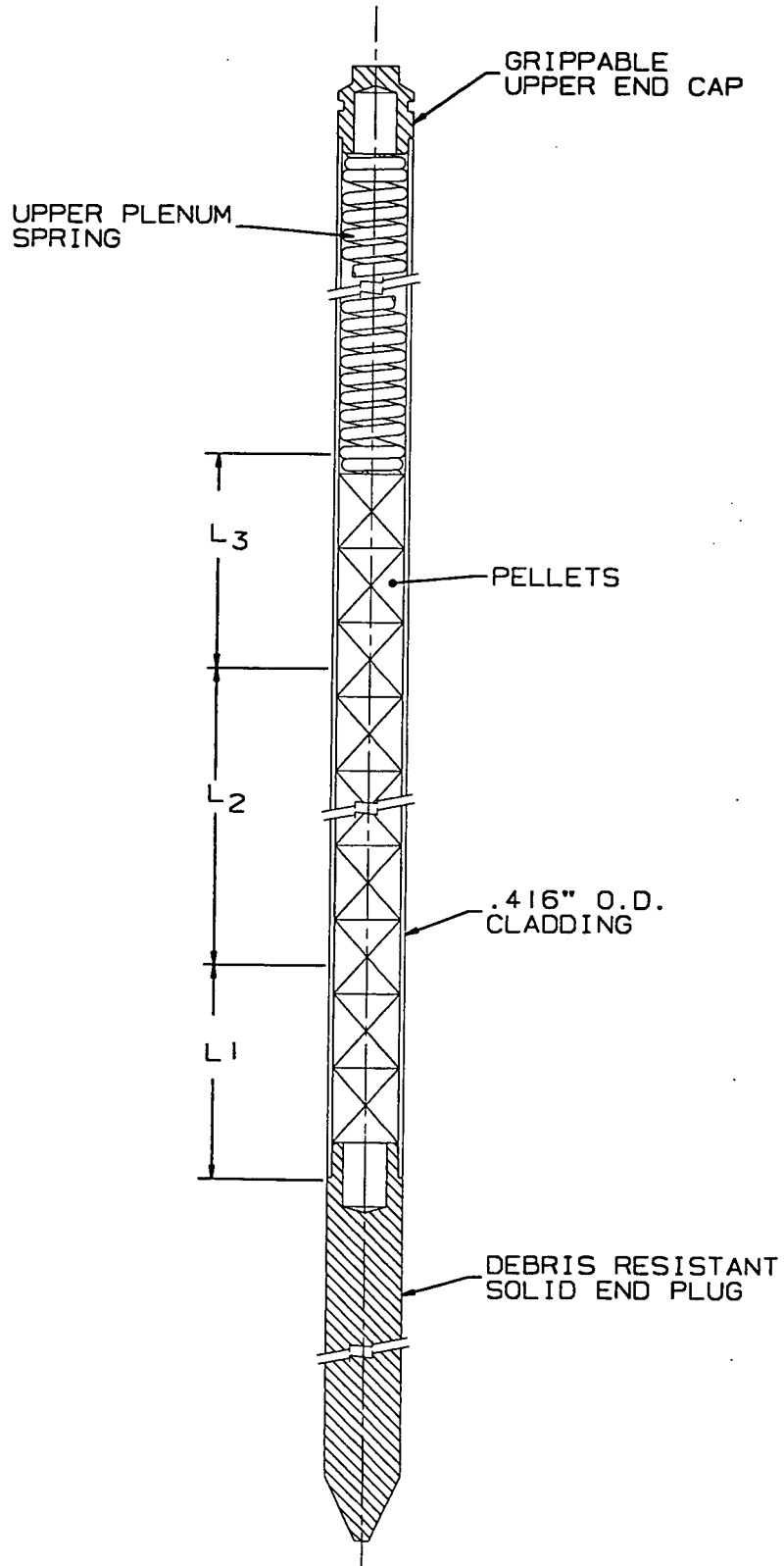
# B-9 FUEL ROD



# B10 FUEL ROD



# B11 FUEL ROD



# Comparison of Mk-B Fuel Rods

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[b,c,d,e]

# Comparison of Mk-B Fuel Rods

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[b,c,d,e]

# Comparison of Mk-B Fuel Rods

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[b,c,d,e]

# Comparison of Mk-B Fuel Rods

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[b,c,d,e]



# Fuel Assembly Comparison

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[b,c,d,e]





# Fuel Assembly Materials

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[b,c,d,e]



# B&W Fundamentals Maintained

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[b,c,d,e]

**John A. Klingenfus**  
**BWNT**

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# **LOCA Analyses**

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 **DUKE POWER**

**BW** B&W FUEL  
COMPANY

# LOCA Analyses

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- LOCA methods
- LOCA analyses
- LTA LOCA LHR limits

# Mark-B11 LTA LOCA Limits

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- **Methods Topical Reports**
  - RELAP5/MOD2-B&W -  
"BWNT LOCA" BAW10192, Rev 0
    - Submitted to NRC 2/94
    - All codes used have SERs
  - CRAFT2/THETA1-B -  
"B&Ws ECCS Evaluation Model"  
BAW10104, Rev 5
    - Approved

# Mark-B11 LTA LOCA Limits

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[b, c, d, e]

# Mark-B11 LTA LOCA Limits

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[b,c,d,e]

# Mark-B11 LTA LOCA Limits

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[b,c,d,e]



# Mark-B11 LTA LL Calculation

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[b,c,d,e]

# Mark-B11 LOCA Limits

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[b , c , d , e ]

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# **Non-LOCA Safety Analysis To Support Implementation of Mk-B11 LTAs and Full Cores**

- **O1C17 Reload with LTAs will be evaluated to ensure that the current licensing basis remains valid**
  - Key Safety Analysis Physics Parameters
  - Technical Specifications
  - Limits in the COLR
  - No problem expected
  
- **The Steady-State Thermal/Hydraulic Analysis to ensure acceptable DNBRs in the LTAs is also applicable to the Chapter 15 Transients**

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# **Non-LOCA Safety Analysis To Support Implementation of Mk-B11 LTAs and Full Cores (continued)**

- **Duke will be submitting a Topical Report on Non-LOCA Transient Analysis in the 3rd quarter of 1996 (DPC-NE-3005)**
  - Update FSAR Chapter 15 (20 years old)
  - Using approved RETRAN/VIPRE models (some model improvements)
  - Desire NRC input on the scope of the Topical Report
  - NRC approval will be needed to support O3C19 core design with Mk-B11 fuel (18 month NRC review period)

# Mark-B11 Test Program

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**Mike Aldrich**

**B&W Fuel Company**

**Thermal & Performance Analysis**

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# Test Program Overview

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[b, c, d, e]

# Pressure Drop

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[b,c,d,e]

# Life and Wear

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[b,c,d,e]



# Flow Induced Vibration

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[b,c,d,e]

# Critical Heat Flux

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[b,c,d,e]

**DUKE POWER**

**BW** B&W FUEL  
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# Laser Doppler Velocimeter

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[b,c,d,e]

# Fuel Assembly Mechanical

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[b, c, d, e]

DUKE POWER

**BW** B&W FUEL  
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# Fuel Assembly Mechanical (Continued)

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[b,c,d,e]

# Current Testing Schedule

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[b,c,d,e]