



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

April 13, 2018

LICENSEE: Tennessee Valley Authority

FACILITY: Browns Ferry Nuclear Plant, Units 1, 2, and 3

SUBJECT: SUMMARY OF MARCH 16, 2018, MEETING WITH TENNESSEE VALLEY AUTHORITY REGARDING A LICENSE AMENDMENT REQUEST TO IMPLEMENT MAXIMUM EXTENDED LOAD LINE LIMIT ANALYSIS PLUS FOR BROWNS FERRY NUCLEAR PLANT (EPID: L-2018-LLA-0048)

On March 16, 2018, a Category 1 public meeting was held among the U.S. Nuclear Regulatory Commission (NRC) staff, representatives of Tennessee Valley Authority (TVA, the licensee), and TVA's contractors (General Electric Hitachi (GEH) and AREVA (now Framatome)) at NRC Headquarters, One White Flint North, 11555 Rockville Pike, Rockville, Maryland. By letter dated February 23, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18079B140), as supplemented by letter dated March 7, 2018 (ADAMS Accession No. ML18067A495), TVA submitted a license amendment request (LAR) for the Browns Ferry Nuclear Plant, Units 1, 2, and 3 (Browns Ferry or BFN). The proposed amendment would allow operation in the expanded Maximum Extended Load Line Limit Analysis Plus (MELLLA+) operating domain. The purpose of the meeting was for TVA to present to the NRC staff its submitted LAR to implement MELLLA+. The meeting notice and agenda dated February 26, 2018, are available in ADAMS under Accession No. ML18057A200. A list of attendees is provided in the enclosure to this meeting summary.

The licensee's presentation slides, copies of which were provided prior to the meeting and attached to the meeting notice, are available under ADAMS Accession No. ML18059A107. During the meeting, the licensee presented a background of MELLLA+ and its benefits for Browns Ferry. The licensee explained that the MELLLA+ licensed flow window would be between 85 percent and 105 percent core flow at the approved extended power uprate (EPU) power levels.

The licensee presented a list of benefits of implementing MELLLA+ for Browns Ferry including (see Slide No. 4) reduction in the number of end of cycle down-powers, fewer control rod manipulations, improved core instability detection algorithm, and increased station capacity factor during the operating cycle. TVA presented its current schedule for the proposed MELLLA+ LAR (see Slide No. 5) that shows completion of this LAR by April of 2020, which is 26 months from the LAR submittal. During the meeting TVA stated that this completion date is based on the comments TVA received during the pre-application meeting. However, the licensee stated that if the review could be completed quickly, it could be possible to implement MELLLA+ at Unit 3 in August 2019. This would require an 18-month review from the submittal date of February 23, 2018.

TVA's presentation included a detailed discussion on the overview of the LAR, information associated with Browns Ferry MELLLA+ LAR Electronic Reading Room and a comparison between Browns Ferry MELLLA+ analyses and Brunswick MELLLA+ analyses, which is currently under review by the NRC staff. The licensee discussed details associated with the following (see Slides 6 to 9):

- Changes in the Browns Ferry Technical Specifications and renewed Facility Operating license
- GEH MELLLA+ Safety Analysis Report (M+SAR)
- AREVA MELLLA+ Safety Analysis Report (AMSAR)
- AREVA fuel related reports

In addition, TVA compared MELLLA+ analyses used for Browns Ferry to analyses that were used for Brunswick (see Slides 15 to 18):

- High energy linebreak
- Containment accident pressure (CAP) credit
- GEH use of thermal hydraulic data that is provided by AREVA
- Use of a minimum core flow value for loss of coolant accident analyses
- Use of statistical data for safety relief valves that support use of a 3 percent setpoint drift value for anticipated transient without scram calculations

The licensee also clarified that no new methodologies are used for MELLLA+ and that the methodologies approved for use in the EPU safety evaluation are only expanded to the MELLLA+ operating domain. Additionally, the licensee noted that CAP credit was not required for this LAR, as it was addressed under EPU. Also the licensee clarified that no fresh AREVA ATRIUM-10 fuel or fresh blended low-enriched uranium fuel will be used when MELLLA+ is implemented.

The NRC staff asked clarifying questions throughout the presentation and provided observations on key issues. The NRC staff and the licensee discussed issues related to the use of GEH Detect and Suppress Solution – Confirmation Density (DSS-CD) for Browns Ferry. The NRC staff asked the licensee to clarify what the basis is for changing the period based detection algorithm's lower period limit (T_{min}) from that in the approved DSS-CD topical report. Also the staff asked the licensee to compare the TVA approach regarding penalties on the safety limit minimum critical power ratio to the approach that was used for Brunswick. Further, the NRC staff and TVA staff discussed holding regulatory audits including a simulator audit at the site and a regulatory audits in Rockville, Maryland.

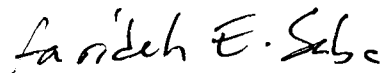
The following action items were developed during the meeting:

Item	Action
1.	TVA will review specific differences between the Brunswick Reload Analysis Report approach and the BFN Representative Reload Analysis Report approach. TVA will provide review results to NRC.

Item	Action
2.	TVA will determine the basis of Period Based Algorithm Time Period Lower Limit (T_{min}). TVA will determine if the T_{min} value associated with the current Browns Ferry Option III stability solution is equivalent to the proposed DSS-CD T_{min} value. TVA will also review DSS-CD Licensing Topical Report basis discussion for T_{min} . In addition, TVA will obtain information from Brunswick personnel with respect to recent NRC conference call regarding T_{min} . TVA will provide review results to NRC.
3.	NRC will review the M+SAR tables of containment analysis input parameters to determine if values for additional input parameters are needed. NRC will inform TVA of the results.
4.	With respect to operator action times assumed in the anticipated transient without scram – instability (ATWS-I) analysis, the NRC requested TVA review these times and determine whether BFN had sufficient margin to reduce these times. NRC stated that reducing these times could help to resolve concerns related to the ATWS-I analyses.

No regulatory decisions were made at the meeting. No members of the public attended the meeting and no Public Meeting Feedback forms were received.

Please direct any inquiries to me at 301-415-1447 or Farideh.Saba@nrc.gov.



Farideh E. Saba, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-259, 50-260, 50-296

Enclosure:
List of Attendees

cc: Listserv

LIST OF ATTENDEES
MARCH 16, 2018, PUBLIC MEETING
WITH TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3
REGARDING MAXIMUM EXTENDED LOAD LINE LIMIT ANALYSIS PLUS
LICENSE AMENDMENT REQUEST

Name	Organization
Farideh Saba	Nuclear Regulatory Commission (NRC)
Andrew Hon	NRC
Ahsan Sallman	NRC
Mathew Panicker	NRC
Brian Tindell	NRC
Joshua Borromeo	NRC
Joe Giitter	NRC
Jennifer Whitman	NRC
William Ruatzen	NRC
Charapani Basavaraju	NRC
Matthew Hamm	NRC
Todd Hilsmeier*	NRC
Kathy Gibson*	NRC
John Hughey*	NRC
Natreon Jordan*	NRC
Gerard Doyle	Tennessee Valley Authority (TVA)
Pete Donahue	TVA
Dan Green	TVA
Gordon Williams	TVA
Greg Storey	TVA
William Baker	TVA
Michael Dick	TVA
Larry King	General Electric Hitachi (GEH)
Mike Cook*	GEH
J. D. Kvaall*	GEH
James Harrison*	GEH
Lander Ibarra*	GEH
Alan Meginnis	Framatome (AREVA)
Scott Tyliniski*	Framatome
Earl Riley*	Framatome
Jordan Harvey*	Framatome
Dan Tinkler*	Framatome

*Participated by phone

SUBJECT: SUMMARY OF MARCH 16, 2018, MEETING WITH TENNESSEE VALLEY
AUTHORITY REGARDING A LICENSE AMENDMENT REQUEST TO
IMPLEMENT MAXIMUM EXTENDED LOAD LINE LIMIT ANALYSIS PLUS FOR
BROWNS FERRY NUCLEAR PLANT (EPID: L-2018-LLA-0048)
DATED APRIL 13, 2018

DISTRIBUTION:

PUBLIC

LPL2-2 Reading File	RidsNrrLABClayton Resource
RidsRgn2MailCenter Resource	RidsACRS_MailCTR Resource
RidsNrrPMBrownsFerry Resource	RidsNrrDss Resource
RidsNrrDorlLpl2-2 Resource	RidsNrrDorl Resource
RidsNrrDssSnpb Resource	RidsNrrDssStsb Resource
RidsNrrDra Resource	RidsNrrDe Resource
RidsNrrDssSrxb Resource	MPanicker, NRR
TWertz, NRR	JBorromeo, NRR
ASallman, NRR	SPeng, NRR
AHon, NRR	DWoodyatt, NRR
JBowen, OEDO	JHughey, NRR
JWhitman, NRR	RGrover, NRR
NHudson, RES	KGibson, RES
JDozier, NRR	DWoodyatt, NRR

ADAMS Accession No. ML181101A101

*** by an email**

OFFICE	DORL/LPL2-2/PM	DORL/LPL2-2/LA	DSS/SRXB/BC(A)*	DORL/LPL2-2/ BC(A)	DORL/LPL2-2/PM
NAME	FSaba	BClayton	JWhitman	BTindell	FSaba
DATE	4/12/18	4/12/18	04/11/2018	4/13/18	4/13/18

OFFICIAL RECORD COPY