

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9811050171 DOC. DATE: 98/11/02 NOTARIZED: NO DOCKET #
 FACIL: 50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylvania 05000387
 50-397 WPPSS Nuclear Project, Unit 2, Washington Public Power 05000397

AUTH. NAME AUTHOR AFFILIATION
 RICKARD, I. C. ABB Combustion Engineering Nuclear Fuel (formerly Combustio
 RICKARD, I. C. ASEA Brown Boveri, Inc.
 RECIP. NAME RECIPIENT AFFILIATION

Records Management Branch (Document Control Desk)

SUBJECT: Part 21 rept re defect discovered in input option for BWR fast transient analysis code BISON-SLAVE. Caused by input option incorrectly described in code user manual. Evaluation shows no current safety problem.

DISTRIBUTION CODE: IE19T COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 5
 TITLE: Part 21 Rept (50 DKT)

NOTES:

05000387

	RECIPIENT		COPIES		RECIPIENT		COPIES	
	ID CODE/NAME		L	T	ID CODE/NAME		L	T
	PD1-2 PD		1	1	PD4-2 PD		1	1
	NERSES, V		1	1	POSLUSNY, C		1	1
INTERNAL:	FILE CENTER 01		1	1	NRR/DRPM/PECB		1	1
	NRR/DRPM/PECB/B		1	1	PDR WARD, M.		1	1
	RES/DET/EIB		1	1	RGN1		1	1
	RGN2		1	1	RGN3		1	1
	RGN4		1	1				
EXTERNAL:	INPO RECORD CTR		1	1	NOAC SILVER, E		1	1
	NRC PDR		1	1	NUDOCS FULL TXT		1	1

NOTES:

1 1

**THIS DOCUMENT
HAS BEEN SCANNED**

NOTE TO ALL "RIDS" RECIPIENTS:
 PLEASE HELP US TO REDUCE WASTE. TO HAVE YOUR NAME OR ORGANIZATION REMOVED FROM DISTRIBUTION LISTS OR REDUCE THE NUMBER OF COPIES RECEIVED BY YOU OR YOUR ORGANIZATION, CONTACT THE DOCUMENT CONTROL DESK (DCD) ON EXTENSION 415-2083

FULL TEXT CONVERSION REQUIRED
 TOTAL NUMBER OF COPIES REQUIRED: LTR 18 ENCL 18



1944

1944



November 2, 1998
LD-98-035

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Subject: Report of a Defect Pursuant to 10 CFR 21 concerning an Input Option in the BWR Fast Transient Analysis Code BISON-SLAVE

The purpose of this letter is to notify the Nuclear Regulatory Commission of a 'defect' as defined in 10 CFR 21, "Reporting of Defects and Noncompliance." The identified 'defect' involves the Operating Limit for the Minimum Critical Power Ratio (MCPR) in Boiling Water Reactors (BWRs) analyzed using the BISON-SLAVE Fast Transient Analysis Code.

The identified 'defect' concerns the incorrect use of an input option in the BISON-SLAVE code. The 'defect' could lead to the establishment of non-conservative MCPR Operating Limits in plant technical specifications.

The Enclosure summarizes the evaluation performed by ABB Combustion Engineering (ABB-CE). If you have any questions, please feel free to contact me or Mr. Virgil Paggen of my staff at (860) 285-4700.

Very truly yours,
COMBUSTION ENGINEERING, INC.

Ian C. Rickard, Director
Nuclear Licensing

1/1

Enclosure: As stated

cc: M. A. Barnoski (ABB-CE)

Je19

9811050171 981102
PDR ADOCK 05000387
S PDR

6-4-1 PT21C

ABB Combustion Engineering Nuclear Systems

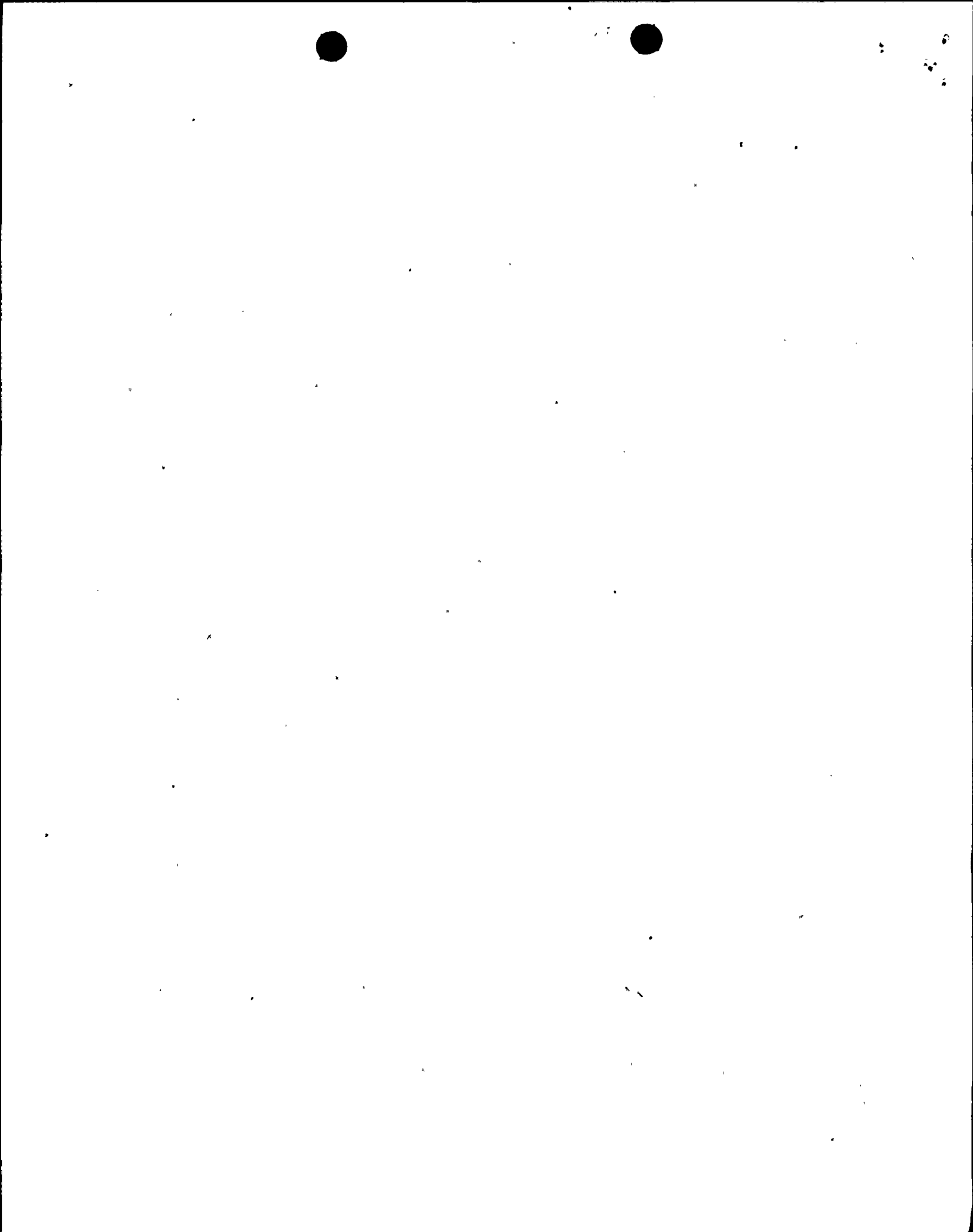


ABB Combustion Engineering Nuclear Power 10 CFR 21 Report of a Defect or Failure to Comply

The following information is provided pursuant to the requirements identified in 10 CFR 21.21(c)(4):

(i) Name and address of the individuals informing the Commission:

Ian C. Rickard, Director
Nuclear Licensing
Combustion Engineering, Inc.
2000 Day Hill Road
Windsor, CT 06095-0500

(ii) Identification of the facility, the activity, or the basic component supplied or such facility or such activity within the United States which fails to comply or contains a defect:

The activity for which this report is being filed is the establishment of non-conservative MCPR Operating Limits for the Washington Public Power Supply System Nuclear Project Unit 2 nuclear power plant during Cycle 14 operation.

(iii) Identification of the firm constructing the facility or supplying the basic component which fails to comply or contains a defect:

Combustion Engineering, Inc.
2000 Day Hill Road
Windsor, CT 06095-0500

(iv) Nature of the defect or failure to comply and the safety hazard which is created or could be created by such defect or failure to comply:

The defect identified involves an input option to the BISON-SLAVE Fast Transient Analysis Code that was incorrectly described in the code's user manual. It is important to note the distinction that the program coding itself is correct; it is the description provided in the user's manual that specifies the incorrect use of a particular code option. The incorrect description leads an analyst to use an incorrect option when modeling the radial power distribution. The way the description is written, one would conclude that the option used would provide the desired time-independent relative bundle power. In actuality, the option used leads to an undesired time-dependent relative bundle power. This difference in how the relative radial bundle power is modeled has the potential to lead to calculation of non-conservative MCPR Operating Limits in some situations.

(v) *The date on which the information of such defect or failure to comply was obtained:*

ABB-CE determined on November 2, 1998 that a 'defect' as defined by 10CFR21.3(d) existed.

(vi) *In the case of a basic component which contains a defect or fails to comply, the number and location of all such components in use at, supplied for, or being supplied for one or more facilities or activities subject to the regulations in this part:*

The BISON-SLAVE computer code is a proprietary ABB Atom program used by ABB-CE for performing BWR safety analyses for U.S. customers. The 'defect' applies to reload fuel assemblies currently in operation at WNP-2 and lead-use fuel assemblies in Susquehanna Unit 1.

(vii) *The corrective action which has been, is being, or will be taken; the name of the individual or organization responsible for the action; and the length of time that has been or will be taken to complete the action:*

An evaluation of the 'defect' has been performed by ABB-CE. The results of that evaluation show that there is currently no safety problem for either WNP-2 or Susquehanna Unit 1. That is, the established MCPR Operating Limits currently in plant technical specifications provide adequate protection. However, certain MCPR Operating Limits after 5,000 MWd/MTU burnup for WNP-2 Cycle 14 will have to be increased slightly (0.01 to 0.02 OLMCPR units) to accommodate the 'defect' for operation later in life. WNP-2 currently projects that they will reach 5,000 MWd/MTU in early 1999. WNP-2 has been notified of the necessary changes to their MCPR Operating Limits as of the date of this letter.

The analyses supporting the established MCPR Operating Limits for Susquehanna Unit 1 are not adversely impacted by the 'defect'. Consequently, no compensatory action is required for Susquehanna Unit 1.

The BISON-SLAVE computer code user's documentation has been revised to correct the error and all ABB-CE users have been notified.

(viii) *Any advice related to the defect or failure to comply about the facility, activity, or basic component that has been, is being, or will be given to purchasers or licensees:*

As mentioned above, the Supply System (WNP-2) and PP&L (Susquehanna Unit 1) have been notified of the 'defect'. The Supply System has also been provided with revised Operating Limit MCPR results applicable to plant operation greater than 5,000 MWd/MTU.

100-1000

DCD

11/02/1998

U.S. Nuclear Regulatory Commission Operations Center Event Report

Page 1

General Information or Other (PAR)

Event # 34985

Rep Org: ABB COMBUSTION ENGINEERING		Notification Date / Time: 11/02/1998 14:19 (EST)	
Supplier: ABB COMBUSTION ENGINEERING		Event Date / Time: 11/02/1998 14:00 (EST)	
Last Modification: 11/02/1998			
Region: 1	Docket #:		
City: WINDSOR	Agreement State: No		
County: HARTFORD	License #:		
State: CT			
NRC Notified by: VIRGIL PAGGEN	Notifications:	CLIFFORD ANDERSON	R1
HQ Ops Officer: FANGIE JONES		CHARLES CAIN	R4
Emergency Class: Non Emergency		VERN HODGE	NRR
10 CFR Section:			
21.21	UNSPECIFIED PARAGRAPH		

10 CFR PART 21 REPORT

There was a defect discovered in an input option for the BWR Fast Transient Analysis Code BISON-SLAVE. The defect could lead to the establishment of non-conservative Minimum Critical Power Ratio (MCPR) Operating Limits in certain Boiling Water Reactor plant technical specifications. The input option error in the BISON-SLAVE code is not applicable to analysis performed for Pressurized Water Reactors.

The defect identified involves an input option that was incorrectly described in the code's user manual and not in the program coding itself. The incorrect description leads an analyst to use an incorrect option when modeling the radial power distribution which leads to the calculation of non-conservative MCPR Operating Limits in some situations.

An evaluation of the defect by ABB-CE has shown that there is currently no safety problem for either of the involved reactors, Washington Public Power Supply System Project Unit-2 or Pennsylvania Power and Light Susquehanna Unit-1.



Handwritten scribble or mark in the top right corner.

NRC Event # 34985

**Nuclear Licensing
ABB Combustion Engineering
Windsor, Connecticut**

TELECOPY To: NRC Operations Center **Date:** 02 NOV 1998

Subject: 10 CFR 21 Report concerning the BISON-SLAVE Code

From: Virgil Paggen **FAX:** 860-285-5203 **Phone:** 860-285-4700

This is Page 1 with three (3) pages to follow.

The purpose of this FAX is to forward the subject report concerning a defect discovered in an input option for the BWR Fast Transient Analysis Code BISON-SLAVE. The defect could lead to the establishment of non-conservative Minimum Critical Power Ration Operating Limits in certain BWR plant technical specifications.

An evaluation of the defect by ABB-CE has shown that there is currently no safety problem for either of the involved reactors, Washington Public Power Supply System Project Unit 2 or Pennsylvania Power and Light Susquehanna Unit 1. The input option error in the BISON-SLAVE code is not applicable to analyses performed for Pressurized Water Reactors.

Further information concerning this 10 CFR 21 report is provided in the attached.

You are requested to confirm receipt of this FAX by calling Virgil Paggen at 860-285-4700.

Virgil Paggen

