CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9711120150 DOC.DATE: 97/11/03 NOTARIZED: NO DOCKET #
FACIL:50-269 Oconee Nuclear Station, Unit 1, Duke Power Co. 05000269
50-270 Oconee Nuclear Station, Unit 2, Duke Power Co. 05000270
50-287 Oconee Nuclear Station, Unit 3, Duke Power Co. 05000287
72-0004 Oconee ISFSI, 50-269, 50-270 & 50-287, 07200004
AUTH.NAME AUTHOR AFFILIATION
MCCOLLUM,W.R. Duke Power Co.
RECIP.NAME RECIPIENT AFFILIATION
Document Control Branch (Document Control Desk)

SUBJECT: Forwards addl info re NRC Bulletin 96-04, "Chemical, Galvanic,Other Reactions Spent Fuel Storage & Transportation Casks," as requested in 970408 ltr.

DISTRIBUTION CODE: NF11D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 6
TITLE: Bulletin Responses (Part 72 Dockets)

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
	NMSS/SFPO/LA	2	2	NMSS/SFPO/PM	1	1
INTERNAL:	FILE CENTER 01	1	1	NRR/DE/EMCB	1	1
	NRR/DRPM/PECB	1	1	NRR/DRPW/PD33	1	1
	RGN II	1	1			
EXTERNAL:	NRC PDR	1	1			

C A T E G O R Y 1 D O C U M E N T

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

TOTAL NUMBER OF COPIES REQUIRED: LTTR 9 ENCL 9

Duke Power
A Duke Energy Company

Duke Power Company
A Duke Energy Company
Oconee Nuclear Site
P.O. Box 1439
Seneca, SC 29679

(864) 885-3107 OFFICE
(864) 885-3564 FAX

W. R. McCollum, Jr.
Vice President

November 3, 1997

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Subject: Oconee Nuclear Site
Docket Nos. 72-04, 50-269, -270, -287
Bulletin 96-04, "Chemical, Galvanic, or Other Reactions Spent Fuel Storage and Transportation Casks"
Request for Additional Information

In a letter dated August 19, 1996, Duke Energy Corporation (Duke) responded to NRC Bulletin 96-04, "Chemical, Galvanic, or Other Reactions Spent Fuel Storage and Transportation Casks". In a letter dated April 8, 1997, the NRC staff requested additional information from Duke regarding NRC Bulletin 96-04. The additional information is provided in the Attachment.

If there are any further questions about this item, please contact David Nix at (864) 885-3634.

Very truly yours,

W. R. McCollum, Jr.

NF11

120038

cc:

Director, Office of Nuclear Material and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Mr. L. A. Reyes, Regional Administrator
U. S. Nuclear Regulatory Commission, Region II

Mr. D. E. LaBarge, Project Manager
Office of Nuclear Reactor Regulation

Mr. M. A. Scott
Senior Resident Inspector
Oconee Nuclear Site

ATTACHMENT
Response to NRC Bulletin 96-04 RAI

Question #1: Provide justification that sufficient data was obtained from field experience and testing to support the methodology and calculations used in the computer simulation. The justification should support your conclusions for pressurized water reactor fuel storage. In addition, provide the methodology and calculations used in the computer simulation......

Response: Reference 9 requested this same information from VECTRA Technologies, Inc. Duke concurs with the VECTRA response to this Question as provided in References 7 and 8.

Question #2: Provide justification that a sufficient safety margin exists between the amount of hydrogen generated prior to welding and the lower flammability limit......

Response: Reference 9 requested this same information from VECTRA Technologies, Inc. Duke concurs with the VECTRA response to this Question as provided in References 7 and 8.

Question #3: Describe the methods used to monitor and control hydrogen during welding, grinding, or cutting operations associated with loading or unloading activities.

Response:

Hydrogen Monitoring Methods:
Duke is currently evaluating potential methods for monitoring the hydrogen concentration that might exist in the dry storage canister (DSC) vapor space between the DSC shield plug and the water's surface. One of these methods involves a continuous monitoring of the DSC vapor space with an analytical technique using gas thermal conductivity properties to determine the hydrogen and/or oxygen concentration. This evaluation is ongoing and may result in future changes to the hydrogen monitoring method that is used during dry fuel storage operations. Currently, however, Duke Power has the capability of obtaining gas grab samples from the DSC vapor space and analyzing them using gas chromatography. Therefore, Duke Power intends to continue obtaining DSC gas grab samples before and during the

welding/cutting operations in order to evaluate the presence of hydrogen gas in the DSC vapor space using gas chromatography. The frequency of the gas grab samples will be as follows:

DSC Loading:

(1) Since the DSC vapor space does not exist until the initial evacuation of approximately 45 gallons of DSC water, and welding of the inner cover plate normally begins within a few hours (3-4) of this initial evacuation, Duke will obtain and analyze a gas grab sample just before beginning any grinding or the initial welding operation. This will ensure that a flammable concentration of hydrogen does not exist upon the arrival of an ignition source.

(2) Once the grinding or welding operation of the inner cover plate begins, Duke will obtain and analyze gas grab samples on an approximately four hour frequency. This frequency is based on: a) practical considerations in the grab sample analysis turnaround time, and, b) in both previous DSC experience at Oconee and in laboratory test results, the increase in hydrogen concentration within four hours is not significant. After the completion of the inner cover plate welding/grinding, gas grab sampling will be ceased since the DSC vapor space will have been isolated from any ignition source coming from the welding operations.

DSC Unloading:

(1) Subsequent to reflooding the DSC and just prior to cutting the outer cover plate weld, the DSC vapor space will be sampled and analyzed for hydrogen content.

(2) During the cutting operation of the inner and outer cover plate welds, the DSC vapor space will be sampled on a four hour frequency, as described above.

Duke will also utilize hydrogen sniffing during the inner cover plate welding and for both cover plate cutting operations. This current procedure initially utilizes a hand-held detector (TIF Instruments model TIF8800A) that will detect the presence of combustible gases. The TIF8800A is capable of detecting hydrogen gas down to a concentration of 500 ppm, per the manufacturer. This detector is also capable of detecting other combustible gases in addition to hydrogen. If there is any indication of

combustible gases (indicated by "clicks"), the existing procedure requires notification of the on-site industrial safety group to further assess the situation. The safety group utilizes more sophisticated instruments to specify the type of gas and to roughly quantify the amount of gas. This procedure provides assurance that any combustible gas in the area of the welding arc will be detected prior to, and during, the welding operation. Welding/cutting operations will not continue until the combustible gases are no longer detectable.

Hydrogen Control Methods:
Hydrogen can be controlled to an acceptable level by monitoring the DSC gas space. Corrective actions would be initiated if the hydrogen concentration reaches unacceptable levels. Duke will provide hydrogen control by either stopping, or not initiating, any grinding/welding activities if the procedure acceptance criteria for hydrogen are exceeded. Furthermore, corrective actions will be taken such that the DSC vapor space will be force ventilated with either fresh air (from the Spent Fuel Pool Building) or bottled nitrogen. The DSC vapor space will then be sampled and analyzed for hydrogen. If the hydrogen concentration is greater than 0.5% hydrogen, the forced ventilation will be repeated until the DSC vapor space hydrogen concentration is reduced to less than 0.5% hydrogen.

Question #4: Provide the specific hydrogen concentration at which time the procedural steps would implement corrective actions to minimize hazardous conditions.

Response:

Duke agrees with VECTRA (based on ANSI/ISA-S12.13) that a reasonable acceptance criterion, upon which corrective actions should be initiated, is 2.4% hydrogen for the gas samples obtained from the DSC vapor space (Reference 8). Duke Power will incorporate this acceptance criterion into its ISFSI Load and Unload procedures prior to using these procedures.

For the combustible gas sniffing technique, the acceptance criterion is the detection of the presence of any combustible gas, and is cause for the initiation of procedural corrective actions.

References:

1. NRC Bulletin 96-04: Chemical, Galvanic, or Other Reactions in Spent Fuel Storage and Transportation Casks, July 5, 1996.

2. VECTRA Technologies, Inc. Report, Document No. 31-B9604-102, File No. 31-B9604.0102, "An Assessment of Chemical, Galvanic, and Other Reactions in NUHOMS Spent Fuel Storage and Transportation Casks --Part 1-- Cask Operations", Rev. 0, August 16, 1996.

3. Letter from M. S. Tuckman to NRC, "Oconee Nuclear Station Independent Spent Fuel Storage Installation (ISFSI); Docket 72-04 Response to Bulletin 96-04, "Chemical, Galvanic, or Other Reactions in Spent Fuel Storage and Transportation Casks". August 19, 1996.

4. VECTRA Technologies, Inc. Report, Document No. 31-B9604-102, File No. 31-B9604.0102, "An Assessment of Chemical, Galvanic, and Other Reactions in NUHOMS Spent Fuel Storage and Transportation Casks --Part 1-- Cask Operations", Rev. 1, October 18, 1996

5. Letter from NRC to J. W. Hampton, Request for Additional Information -- NRC Bulletin 96-04. "Chemical, Galvanic, or Other Reactions in Spent Fuel Storage and Transportation Casks", April 8, 1997.

6. VECTRA Technologies, Inc. Report, Document No. 31-B9604-103, File No. 31-B9604.0103, "An Assessment of Chemical, Galvanic, and Other Reactions in NUHOMS Spent Fuel Storage and Transportation Casks --Part 2-- Cask Storage and Transportation", Rev. 0, April 30, 1997.

7. VECTRA Technologies, Inc. Report, Document No. 31-B9604-102, File No. 31-B9604.0102, "An Assessment of Chemical, Galvanic, and Other Reactions in NUHOMS Spent Fuel Storage and Transportation Casks --Part 1-- Cask Operations", Revision 2, August 5, 1997.

8. VECTRA Technologies, Inc., Letter 31-B9604-97-002, "Response to NRC RAI on VECTRA Technologies, Inc.'s Response to Bulletin 96-04", August 5, 1997.

9. Letter from NRC to VECTRA Technologies, Inc., Request for Additional Information - NRC Bulletin 96-04, "Chemical, Galvanic, or Other Reactions in Spent Fuel Storage and Transportation Casks", March 2, 1997.