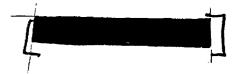
MILLSTONE 2

POOLSIDE EXAMINATIONS OF FAILED FUEL

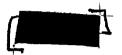
JULY-AUGUST 2004 Final Report



Information in this record was deleted in accordance with the Freedom of Information Act, exemptions

FOIA- 2005 - 0009

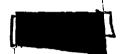
Ell



Poolside Examinations of Falled Fuel Milistone 2

July-August 2004

Final Report



Prepared by:

Reviewed by:

Approved by:

Notice

This document contains information propoletary is the purpose for which it is submitted in confidence and is to be used solely for the purpose for which it is sumished and returned upon request. This document and such information are not to be reproduced, transmitted, disclosed, or used otherwise in whole or in part without the written authorization of

Customer Disclaimer

Important Notice Regarding the Contents and Use of This Document

Please Read Carefully

warrantles and representations concerning
the subject matter of this document are those set forth in the
agreement between
pursuant to which this document is Issued. Accordingly, except as
otherwise expressly provided in such agreement, neither
nor any person acting on its behalf:

 makes any warranty or representation, express or implied, with respect to the accuracy, completeness, or usefulness of the information contained in this document, or that the use of any information, apparatus, method, or process disclosed in this document will not infringe privately owned rights;

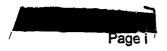
or

b. assumes any liabilities with respect to the use of, or for damages resulting from the use of, any information, apparatus, method, or process disclosed in this document.

The information contained herein is for the sole use of the Customer.

In order to avoid impairment of rights of patents or inventions which may be included in the information contained in this document, the recipient, by its acceptance of this document, agrees not to publish or make public use (in the patent use of the term) of such information until so authorized in writing by or until after six (6) months following termination or expiration of the aforesaid Agreement and any extension thereof, unless expressly provided in the Agreement. No rights or licenses in or to any patents are implied by the furnishing of this document.

Poolside Examinations of Failed Fuel at Millstone 2 – Final Report



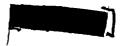
Nature of Changes

Section(s)
Item or Page (s)

Description and Justification

Note:

This is a final document.



This document contains proprietary information and is subject to the restrictions on the first or title page.

TABLE OF CONTENTS

	<u>Page</u>
	INTRODUCTION AND SUMMARY
2.0	BACKGROUND4

Poolside Examinations of Falled Fuel at Millstone 2 – Final Report

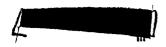
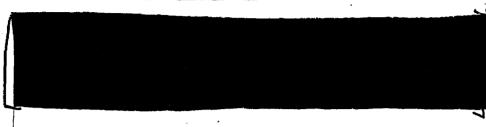
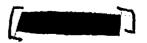


TABLE OF CONTENTS (Cont'd)

List of Appendices

Appendix A Appendix B Appendix C Appendix D Appendix E

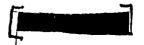






Nomenclature

Acronym	Definition
EOC FA GWd/Mtu IRIS OD PWR SCFM	End of Cycle Fuel Assembly Gigawatt Days/Metric Ton Uranium Individual Rod Inspection System Outside Diameter Pressurizer Water Reactor Standard Cubic Feet/Minute
UT	Ultrasonic Fuel Inspection



1.0 INTRODUCTION AND SUMMARY

During Cycle 15 at Millstone Unit 2, coolant activity increased, indicating the presence of failed fuel. The reactor shut down at EOC-15 for a planned refueling outage in October 2003, and in-mast sipping was performed which identified 11 failed assemblies. Ten 3-cycle assemblies and one 2-cycle assembly were listed as being failed. After the outage, a limited ultrasonic testing campaign was performed by _______ on 8 of the 11 FAs identified in cycle 15 and 1 fuel assembly identified in cycle 14 which identified 10 failed rods in 9 of the failed assemblies.

Because the failed assemblies were on the and the failed rods were located in specific assembly locations, the failure modes were likely to be

Two failed assemblies, however, were not located on the assembly exhibited a single failed rod which was located on the assembly. This did not fit the same failed rod location pattern exhibited by the other fuel assemblies. From the limited amount of information acquired from the examinations performed by the utility during the refueling outage, this failure mode appeared to be

Table 1.1 lists the assemblies and rods that were identified as being failed during the EOC-15 refueling outage and subsequent UT examinations. Reference 1 presented a preliminary assessment of the fuel failures based upon information collected by the utility during the outage. In that assessment, the failure mode of the assemblies that failed on was judged to be due to Unfailed rods in locations adjacent to the failed rods were suspected of having damage due to the same failure

This document contains proprietary information and is subject to the restrictions on the first or title page.

had an

mechanism. Two assemblies that were not located on the

To gather more information about the failed rods and potentially damaged rods that are believed to be present in these assemblies, a limited fuel examination was performed at Millstone Unit 2 in July-August 2004. Two of the nine assemblies that failed on the

were examined along with the two assemblies that failed in an location. Additionally, one assembly that failed in Cycle 14 on the was examined at this time. This report presents the results of the examinations on these five failed assemblies. These examinations confirmed that the assemblies that failed on the Also, adjacent unfailed rods failed as a result of exhibited damage from the same mechanism that caused failure in these assemblies. Assemblies that failed in the most likely experienced as the] locations were not found, but cause of failure. Actual, adjacent to the failed rod in one assembly was documented in the examination. Since the secondary damage in the other rod was similar in location and appearance, is also believed to be a likely failure mode for this assembly.

This document contains proprietary information and is subject to the restrictions on the first or title page.