

ADAMS DOCUMENT SUBMISSION

Single Document

Originated By <b>Kim Gruss</b>	Telephone <b>x8586</b>	Mail Stop <b>013-D13</b>	LAN ID <b>Kag1</b>	Date <b>09/17/02</b>
-----------------------------------	---------------------------	-----------------------------	-----------------------	-------------------------

Document No. \_\_\_\_\_  
 Document Title or Accession No.  
**Email message from Paula Craighead (State of Maine) to Kim Gruss (NRC)  
 re: oxide thickness exemption**

Is this a brief title that can be changed by DPC according to template instructions?  
 Is this an exact title formatted according to template instructions that **should not** be changed by DPC?

Document AVAILABILITY (select one)

Publicly Available  
 (Indicate release date)

Immediate Release  
 Normal Release  
 Delay Release Until

\_\_\_\_\_ Date

Non-Publicly Available

Document SENSITIVITY (select one)

Sensitive  
 Sensitive-Copyright  
 Non-Sensitive  
 Non-Sensitive Copyright

Document SECURITY ACCESS LEVEL (select one)

Document Processing Center = Owner  
 NRC Users = Viewer  
 Limited Document Security (Defined by User)

public = Viewer  
 \_\_\_\_\_ = Viewer  
 \_\_\_\_\_ = Viewer

ADAMS Template No.	RIDS Code (if applicable)	Other Identifiers
--------------------	---------------------------	-------------------

Special Instructions  
**file location**  
**g:\maine yankee\exemptions\HSF oxide thickness**  
**my exemption 1.mlm**

Submitted By	Telephone	Mail Stop	LAN ID	Date submitted to DPC
--------------	-----------	-----------	--------	-----------------------

**From:** "Craighead, Paula" <Paula.Craighead@state.me.us>  
**To:** "KAG1@nrc.gov" <KAG1@nrc.gov>  
**Date:** 09/15/2002 7:27PM  
**Subject:** FW: Oxide thickness exemption

Kim, the following are the questions we can review during tomorrow's call on the new MY exemption request. Dr Chabot will join us on the call.

Regards, Paula

Randy, I realize you may not be able to join us, but if you can the call is 1:30 EST, on Monday. To access the bridge line, please call 1-800-638-8081. The pass code is 6143, then hit the # key.

-----Original Message-----

**From:** George Chabot [mailto:George\_Chabot@uml.edu]  
**Sent:** Sunday, September 15, 2002 7:18 PM  
**To:** Craighead, Paula  
**Subject:** Oxide thickness exemption

Hi, Paula. I have reviewed the material you referred me to as well as some other documentation, including NRC ISG-1 on "Damaged Fuel", ISG 2, "Fuel Retrievability", and ISG-11 Rev. 2, "Cladding Considerations for the Transportation and Storage of Spent Fuel". Following are some comments and questions that occurred to me as I reviewed the materials. It is possible that some of these questions may have already been answered in documentation that I have not seen.

1. According to my reading and understanding of ISG-11, rev. 2, the NRC has eliminated the association between the cladding oxide thickness and the potential for damaged fuel. They have specified maximum temperature (400 degrees C) and maximum changes in temperature (65 degrees C) of fuel cladding that might result from storage and thermal cycling (that might occur during such operations as drying of fuel that is being packaged for dry storage.) While such criteria may be important for avoiding additional damage to fuel cladding, they are not sufficient for purposes of identifying already damaged fuel (see comment 5).

2. ISG-11, Rev. 2 also states that the "applicant should estimate and specify the maximum cladding oxide thickness, and thickness of the hydride layer used in evaluations of fuel rod structural integrity, such as buckling analysis, under hypothetical, credible, accident conditions" and that "the applicant has used a value of cladding oxide thickness that is justified by using oxide thickness measurements, computer codes validated, etc." Have such evaluations/determinations been made by NAC or MY and, if so, have they demonstrated that no fuel damage/cladding failure is expected for any of the fuel not presently identified as damaged?

3. ISG-11 Rev. 2 states that data on the mechanical properties and fracture toughness properties of commercial spent fuel cladding are being reviewed to develop further guidance to assist the applicant in meeting the requirements of 10 CFR 71.55 for transportation. Is it reasonable to assume that the oxide thickness issue will have no bearing on decisions/recommendations pertaining to transportation as far as NRC, DOE, and DOT are concerned?

4. Related to items above, and given the requirement of ISG 2 that the fuel remain retrievable from storage, has the DOE adopted any position as to the importance of oxide layer thickness in reflecting fuel cladding integrity, and is it reasonable to assume that they will adopt the same position as the NRC?

5. Assuming that NRC grants MY the exemption from evaluating oxide

thickness, what means will be used to ensure that damaged fuel (fuel with cladding defects greater than a hairline crack or a pinhole leak, as per definition of ISG-1) is properly identified - e.g., 1. does MY have detailed records of the fuel assemblies that have sustained damage at times, especially early in the operating history, when bad fuel was a problem? 2. is it possible that fuel that has been in storage for many years, and that was not identified as damaged at the time of inclusion in the spent fuel pool, could have sustained damage while in storage?

6. Isg-11 REV. 2 recommends that maximum cladding temperature not exceed 400 degrees C and maximum changes in temperature not exceed 65 degrees C. Does MY have any experience (with materials so far loaded into dry storage) or other evidence to show that external heating that might violate either of these conditions will not be required to dry certain assemblies that have been loaded into their inner containers for dry storage. (In particular I am thinking of elements that have had significant cladding perforations/cracks in the past and have suffered from water logging after reactor shutdown and temporary storage.)

George Chabot  
<mailto:George\_Chabot@uml.edu> George\_Chabot@uml.edu  
Tel: 978-664-5167

CC: "rspeck@kayescholer.com" <rspeck@kayescholer.com>, "George\_Chabot@uml.edu" <George\_Chabot@uml.edu>

**Mail Envelope Properties** (3D851752.15B : 5 : 20827)

**Subject:** FW: Oxide thickness exemption  
**Creation Date:** 09/15/2002 7:28PM  
**From:** "Craighead, Paula" <Paula.Craighead@state.me.us>

**Created By:** Paula.Craighead@state.me.us

**Recipients**

nrc.gov  
twf4\_po.TWFN\_DO  
KAG1 (Kimberly Gruss)

uml.edu  
George\_Chabot CC ('George\_Chabot@uml.edu')

kayescholer.com  
rspeck CC ('rspeck@kayescholer.com')

**Post Office**

twf4\_po.TWFN\_DO

**Route**

nrc.gov  
uml.edu  
kayescholer.com

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
MESSAGE	4391	09/15/02 07:28PM
Part.001	5778	
Mime.822	11567	

**Options**

**Expiration Date:** None  
**Priority:** Standard  
**Reply Requested:** No  
**Return Notification:** None

**Concealed Subject:** No  
**Security:** Standard