CNWRA *A center of excellence in earth sciences and engineering* ™

A Division of Southwest Research Institute®
6220 Culebra Road • San Antonio, Texas, U.S.A. 78228-5166
(210) 522-5160 • Fax (210) 522-5155

October 6, 2005
Contract No. NRC–02–02–012
Account No. 20.06002.01.322

U.S. Nuclear Regulatory Commission
ATTN: Mrs. Deborah A. DeMarco
Division of High-Level Waste Repository Safety
Two White Flint North
11545 Rockville Pike
Mail Stop T8 A23
Washington, DC 20555

Subject: Programmatic review of a paper for publication in the Corrosion 2006 Proceedings; AI 06002.01.322.514

Dear Mrs. DeMarco:

Enclosed is the following paper with form 390A submitted for NRC programmatic review.

Surface Analysis of Alloy 22 Under Conditions That Promote Stress Corrosion Cracking
authored by D.S. Dunn, Y.-M. Pan, K.T. Chiang, and G.A. Cragnolino

This paper describes the results of the surface analysis of oxide films on Alloy 22 using X-ray photoelectron spectroscopy. The purpose of this work is to provide a mechanistic understanding of compositional changes in the oxide film on Alloy 22 under conditions conducive to stress corrosion cracking. The thin, protective oxide films on Alloy 22, when formed in air or in chloride solutions, contain significant concentrations of chromium. Oxides formed in solutions with chloride and bicarbonate are thicker and have substantially reduced chromium concentrations. The change in the thickness and composition of the oxide film corresponds to the conditions where stress corrosion cracking of Alloy 22 has been observed. Although some of the information included in this paper has been included in CNWRA 2005-02, the analysis of oxides formed under conditions where stress corrosion cracking is possible has not been previously reviewed by the NRC.

The document transmitted herewith contains sensitive unclassified information.
When separated from enclosures, this document is decontrolled.

Washington Office • Twinbrook Metro Plaza #210
12300 Twinbrook Parkway • Rockville, Maryland 20852-1606

Please advise me of the results of your programmatic review. If you have any questions regarding this paper, please contact Darrell Dunn at (210) 522-6090 or me at (210) 522-5185. Your cooperation in this matter is appreciated.

Sincerely,

Sitakanta Mohanty

Sitakanta Mohanty
Assistant Director
Engineering and Systems Assessment

SM:DD:jg

cc:
W. Reamer
B. Meehan
E. Whitt
L. Kokajko
E. Collins
M. Bailey
K. Stablein
A. Campbell
J. Guttmann
F. Brown
T. McCartin
D. Brooks
J. Rubenstone
A. Csontos
D. Galvin
W. Patrick
B. Sagar
K. Chiang
D. Dunn
Y.-M. Pan
X. He
P. Shukla
L. Yang
O. Pensado

Ltr only
GED Directors
GED Managers
L. Gutierrez
P. Maldonado
Record Copy B, IQS

The document transmitted herewith contains sensitive unclassified information.
When separated from enclosures, this document is decontrolled.

NRC Form 390A
(1-1997)
NRCMD 3.9

U.S. NUCLEAR REGULATORY COMMISSION

RELEASE TO PUBLISH UNCLASSIFIED NRC CONTRACTOR SPEECHES, PAPERS, AND JOURNAL ARTICLES

(Please type or print)

1. TITLE (State in full as it appears on the speech, paper, or journal article)

Surface Analysis of Alloy 22 Under Conditions that Promote Stress Corrosion Cracking

2. AUTHOR(s)

D.S. Dunn, Y.-M. Pan, K.T. Chiang, and G.A. Cragnolino

3. NAME OF CONFERENCE, LOCATION, AND DATE(s)

Corrosion 2006 61st Annual Conference & Exposition, San Diego, CA, March 12-16, 2006

4. NAME OF PUBLICATION

Proceedings of the Corrosion 2006 Conference

5. NAME AND ADDRESS OF THE PUBLISHER	TELEPHONE NUMBER OF THE PUBLISHER
NACE International *1440 South Creek Drive* Houston, TX 77084-4906	(281) 228-6200 (281) 228-6300 (Fax)
6. CONTRACTOR NAME AND COMPLETE MAILING ADDRESS (Include ZIP code)	TELEPHONE NUMBER OF THE CONTRACTOR
Center for Nuclear Waste Regulatory Analyses Southwest Research Institute 6220 Culebra Road San Antonio, TX 78238	(210) 522-5185

YES	NO	7. CERTIFICATION *(ANSWER ALL QUESTIONS)*		
	X	A. COPYRIGHTED MATERIAL – Does this speech, paper, or journal article contain copyrighted material? If yes, attach a letter of release from the source that holds the copyright.		
	X	B. PATENT CLEARANCE – Does this speech, paper, or journal article require patent clearance? If yes, the NRC Patent Counsel must signify clearance by signing below.		
		NRC PATENT COUNSEL *(Type or Print Name)*	SIGNATURE	DATE
X		C. REFERENCE AVAILABILITY – Is all material referenced in this speech, paper, or journal article available to the public either through a public library, the Government Printing Office, the National Technical Information Service, or the NRC Public Document Room? If no, list below the specific availability of each referenced document.		
		SPECIFIC AVAILABILITY		
X		D. METRIC UNIT CONVERSION – Does this speech, paper, or journal article contain measurement and weight values? If yes, all must be converted to the International System of Units, followed by the English units in brackets, pursuant to the NRC Policy Statement *implementing the Omnibus Trade and Competitiveness* Act of 1988, Executive Order 12770, July 25, 1991.		

8. AUTHORIZATION

The signatures of the NRC project manager and the contractor official certify that the NRC contractor speech, paper, or journal article is authorized by NRC, that it has undergone appropriate peer review for technical content and for material that might compromise commercial proprietary rights, and that it does not contain classified, sensitive unclassified, or nonpublic information. (NRC MD 3.9, Part II(A)(1)(d))

A. CONTRACTOR AUTHORIZING OFFICIAL *(Type or print name)*	SIGNATURE	DATE
Sitakanta Mohanty	Sitakanta Mohanty	
B. NRC RESPONSIBLE PROJECT MANAGER *(Type or print name)*	OFFICE/DIVISION	MAIL STOP

TELEPHONE NUMBER	E-MAIL I.D.	Did you place the speech, paper, or journal article in the PDR? YES _____ NO _____

SIGNATURE	DATE