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Your ref: Project Number 740  
Our ref: DCP/NRC1906

May 25, 2007

Subject: AP1000 COL Standard Technical Report Submittal of APP-GW-GLR-120, Revision 0

In support of Combined License application pre-application activities, Westinghouse is submitting Revision 0 of AP1000 Standard Combined License Technical Report Number 120. This report completes and documents, on a generic basis, activities required for COL Information Item 9.5-12 in the AP1000 Design Control Document. Changes to the Design Control Document identified in Technical Report Number 120 are intended to be incorporated into FSARs referencing the AP1000 design certification or incorporated into the design control document by an amendment to the design certification. This report is submitted as part of the NuStart Bellefonte COL Project (NRC Project Number 740). The information included in this report is generic and is expected to apply to all COL applications referencing the AP1000 Design Certification.

The purpose for submittal of this report was explained in a March 8, 2006 letter from NuStart to the U.S. Nuclear Regulatory Commission.

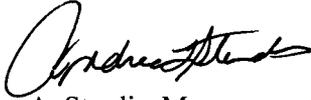
Pursuant to 10 CFR 50.30(b), APP-GW-GLR-120, Revision 0, "Cathodic Protection for Metal Tanks in Contact with the Ground," Technical Report Number 120, is submitted as Enclosure 1 under the attached Oath of Affirmation.

It is expected that when the NRC review of Technical Report Number 120 is complete, COL Information Item 9.5-12 will be considered complete for COL applicants referencing the AP1000 Design Certification.

Questions or requests for additional information related to the content and preparation of this report should be directed to Westinghouse. Please send copies of such questions or requests to the prospective applicants for combined licenses referencing the AP1000 Design Certification. A representative for each applicant is included on the cc: list of this letter.

Westinghouse requests the NRC to provide a schedule for review of this Technical Report within two weeks of its submittal.

Very truly yours,



A. Sterdis, Manager  
Licensing and Customer Interface  
Regulatory Affairs and Standardization

/Attachment

1. "Oath of Affirmation," dated May 25, 2007

/Enclosure

1. APP-GW-GLR-120, Revision 0, "Cathodic Protection for Metal Tanks in Contact with the Ground," Technical Report Number 120, dated May 2007.

cc:	D. Jaffe	- U.S. NRC	1E	1A
	E. Mckenna	- U.S. NRC	1E	1A
	G. Curtis	- TVA	1E	1A
	P. Grendys	- Westinghouse	1E	1A
	P. Hastings	- Duke Power	1E	1A
	C. Ionescu	- Progress Energy	1E	1A
	D. Lindgren	- Westinghouse	1E	1A
	A. Monroe	- SCANA	1E	1A
	M. Moran	- Florida Power & Light	1E	1A
	C. Pierce	- Southern Company	1E	1A
	E. Schmiech	- Westinghouse	1E	1A
	G. Zinke	- NuStart/Entergy	1E	1A
	C. Watson	- Westinghouse	1E	1A

ATTACHMENT 1

“Oath of Affirmation”

ATTACHMENT 1

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of: )  
NuStart Bellefonte COL Project )  
NRC Project Number 740 )

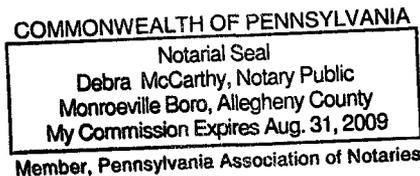
APPLICATION FOR REVIEW OF  
"AP1000 GENERAL COMBINED LICENSE INFORMATION"  
FOR COL APPLICATION PRE-APPLICATION REVIEW

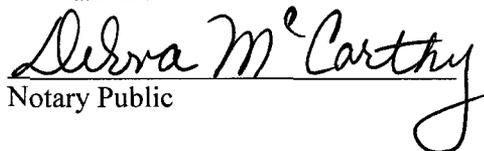
W. E. Cummins, being duly sworn, states that he is Vice President, Regulatory Affairs & Standardization, for Westinghouse Electric Company; that he is authorized on the part of said company to sign and file with the Nuclear Regulatory Commission this document; that all statements made and matters set forth therein are true and correct to the best of his knowledge, information and belief.



W. E. Cummins  
Vice President  
Regulatory Affairs & Standardization

Subscribed and sworn to  
before me this 25<sup>th</sup> day  
of May 2007.



  
Notary Public

ENCLOSURE 1

APP-GW-GLR-120, Revision 0

Cathodic Protection for Metal Tanks in Contact with the Ground

Technical Report Number 120

**AP1000 DOCUMENT COVER SHEET**

TDC: Permanent File: APY  
RFS#: RFS ITEM #:

AP1000 DOCUMENT NO. <b>APP-GW-GLR-120</b>	REVISION NO. <b>0</b>	Pages <i>Page 1 of 5</i>	ASSIGNED TO <b>W-C. Watson</b>
ALTERNATE DOCUMENT NUMBER: TR 120		<i>PRG 5/24/07</i>	WORK BREAKDOWN #:
ORIGINATING ORGANIZATION: AP1000			
TITLE: <b>Cathodic Protection for Metal Tanks in Contact with the Ground</b>			

ATTACHMENTS: N/A	DCP #/REV. INCORPORATED IN THIS DOCUMENT REVISION: N/A	
CALCULATION/ANALYSIS REFERENCE: N/A		
ELECTRONIC FILENAME APP-GW-GLR-120 R0.DOC	ELECTRONIC FILE FORMAT Microsoft Word	ELECTRONIC FILE DESCRIPTION

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LEGAL REVIEW <i>JOSEPH C. SPADALONE</i>	SIGNATURE/DATE <i>[Signature]</i> 5/24/07
PATENT REVIEW	SIGNATURE/DATE <i>[Signature]</i> 5/24/07

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ORIGINATOR C. Watson	SIGNATURE/DATE <i>Charles Watson</i> 5/22/07	
REVIEWERS M. Demaglio	SIGNATURE/DATE <i>[Signature]</i> 5/22/07	
VERIFIER D. Lindgren	SIGNATURE/DATE <i>D. Lindgren</i> 5/23/07	VERIFICATION METHOD <b>PAGE BY PAGE REVIEW</b>
AP1000 RESPONSIBLE MANAGER M. Corletti	SIGNATURE/DATE <i>M. M. Corletti</i> 5/23/07	APPROVAL DATE

\* Approval of the responsible manager signifies that document is complete, all required reviews are complete, electronic file is attached and document is released for use.

# **AP1000 Standard Combined License Technical Report**

## **Cathodic Protection for Metal Tanks in Contact with the Ground**

### **Technical Report 120**

#### **Revision 0**

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## INTRODUCTION

The document closes COL Information Item 9.5-12 of the AP1000 Design Control Document (DCD) (Reference 1). This COL Information Item requires the Combined License applicants that reference the AP1000 certified design in reference to the Standby Diesel Fuel Oil System (DOS) to address the site-specific need for cathodic protection in accordance with NACE Standard RP0169 (Reference 2) for external metal surfaces of metal tanks in contact with the ground. It also calls for Combined License applicants referencing the AP1000 certified design to address site-specific factors in the fuel oil storage tank installation specification to reduce the effects of sun heat input into the stored fuel, the diesel fuel specifications grade and the fuel properties consistent with manufacturers' recommendations, and address measures to protect against fuel degradation by a program of fuel sampling and testing.

As described in DCD Subsections 9.5.4.2.2.1 and 9.5.4.2.2.5 and shown in DCD Figure 1.2-2, there are two above-ground diesel fuel oil storage tanks that are located outdoors. The tanks are painted internally and externally for corrosion protection. Each tank is contained in a separate concrete floored and walled diked area and has no direct contact with the soil, and they are designed to minimize the intrusion of groundwater and rainwater into the tank bottom and foundation interface.

## TECHNICAL BACKGROUND

The NACE standard specified in COL Item 9.5-12 applies to underground tanks. Because the AP1000 fuel oil tanks are above ground, this standard is not applicable, and the COL Item is more appropriately addressed by API-651.

The American Petroleum Institute (API) Recommended Design Practice 651 provides design considerations for "Cathodic Protection of Aboveground Petroleum Storage Tanks" (Reference 3). Section 5.3.3 of this document discusses the merits of the fuel storage tanks supported by continuous concrete cushion. The following excerpts were taken from API 651 in reference to cathodic protection.

A properly designed concrete tank pad constructed on stable, properly prepared subsoil may be effective in eliminating intrusion of groundwater, soil-side corrosion, and the need for cathodic protection.

Although corrosion from the soil may be prevented by a concrete pad, there may still be a collection of moisture between the tank bottom and the pad due to condensation, blowing rain or snow, or flooding due to inadequate drainage. Corrosion may occur due to this moisture accumulation. Cathodic protection is generally not considered an effective way to combat this corrosion.

Due to numerous complex factors that can affect the corrosion of a tank bottom underside in the presence of concrete, prediction of the propensity of corrosion in this case is extremely difficult. Thus, care should be observed with tanks on concrete pads since cathodic protection most likely will not help reduce any corrosion that might occur.

Due to the aforementioned information, cathodic protection for the above -ground diesel fuel oil storage tanks is not required.

Per the Diesel Fuel Oil System Specification Document (Reference 4), the tank exteriors shall be protected from ambient outdoor weather conditions causing metal corrosion with an epoxy-urethane paint system. The paint color shall be selected to minimize radiant sunlight heat transmission to the tank oil stored fuel volume.

This paint will provide the necessary protection to limit the effects of sun heat input into the stored fuel.

## **REGULATORY IMPACT**

The changes to the DCD presented in this report do not represent an adverse change to the design function or to how design functions are performed or controlled. The changes to the DCD do not involve revising or replacing a DCD-described evaluation methodology nor involve a test or experiment not described in the DCD. The DCD change does not require a license amendment per the criteria of VIII. B. 5.b. of Appendix D to 10 CFR Part 52.

The DCD change does not affect resolution of a severe accident issue and does not require a license amendment based on the criteria of VIII. B. 5.c of Appendix D to 10 CFR Part 52.

The closure of the COL Information Item will not alter barriers or alarms that control access to protected areas of the plant. The closure of the COL Information Item will not alter requirements for security personnel. Therefore, the closure of the COL Information Item does not have an adverse impact on the security assessment of the AP1000.

## **REFERENCES**

1. APP-GW-GL-700, AP1000 Design Control Document, Revision 15.
2. NACE Standard RP0169-2002, Item No. 21001, Control of External Corrosion on Underground or Submerged Metallic Piping Systems.
3. API-651, Cathodic Protection of Aboveground Petroleum Storage Tanks, Third Edition, January 2007.
4. APP-DOS-M3-001, Revision A, Standby Diesel Fuel Oil System Specification Document, May 2006.

## **DCD MARK-UP**

Tier 2, Section 9.5.4.7 will signify the closing of the associated COL Information Item. The references for section 9.5 will change to include this Technical Report.

## **TIER 2**

## CHAPTER 9 AUXILIARY SYSTEMS

### 9.5.4.7 Combined License Information

1. **The Combine License information requested in this subsection has been completely addressed in APP-GW-GLR-120, (Reference 24), and the applicable changes are incorporated into the DCD. No additional work is required.**

**The following words represent the original Combined Operating License Information Item commitment, which has been addressed as discussed above.**

Combined License applicants referencing the AP1000 certified design will address the site-specific need for cathodic protection in accordance with NACE Standard RP-01-69 for external metal surfaces of metal tanks in contact with the ground.

2. **The Combine License information requested in this subsection has been partially addressed in APP-GW-GLR-120, (Reference 24), and the applicable changes are incorporated into the DCD. No additional work is required to address the information requested in this subsection as delineated in the following paragraph:**

**The epoxy-urethane paint color selected for the exterior of the Stanby Diesel Fuel Oil Storage Tanks shall be selected to minimize radiant sunlight heat transmission to the tank oil stored fuel volume.**

**The following activities are to be addressed by the Combined License applicant:**

**Address the diesel fuel specifications grade and the fuel properties consistent with manufacturers' recommendations and the measures to protect against fuel degradation by a program of fuel sampling and testing.**

**The following words represent the original Combined Operating License Information Item commitment, which has been addressed as discussed above.**

Combined License applicants referencing the AP1000 certified design will address site-specific factors in the fuel oil storage tank installation specification to reduce the effects of sun heat input into the stored fuel, the diesel fuel specifications grade and the fuel properties consistent with manufacturers' recommendations, and will address measures to protect against fuel degradation by a program of fuel sampling and testing.

### 9.5.5 References

24. **APP-GW-GLR-120, "Cathodic Protection for Metal Tanks in Contact with the Ground," Westinghouse Electric Company LLC.**