Attachment 11

Peach Bottom Atomic Power Station Units 2 and 3

NRC Docket Nos. 50-277 and 50-278

WCAP-17639, Rev 3, Instrumentation Description for the Peach Bottom Unit 2 Replacement Steam Dryer

Westinghouse Non-Proprietary Class 3

WCAP-17639-NP
Revision 3
Enclosure B.7

February 2014

Instrumentation Description for the Peach Bottom Unit 2 Replacement Steam Dryer

WCAP-17639-NP
Revision 3

Instrumentation Description for the Peach Bottom Unit 2 Replacement Steam Dryer

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RECORD OF REVISIONS

Revision	Description	Completed
0	Original issue	08/17/2012
1	Revised in accordance with customer audit. Due to the extent of revisions, change bars are not used.	8/27/2012
2	Revised in accordance with customer audit. Due to the extent of revisions, change bars are not used.	9/25/2012
3	Revised to incorporate details on new instruments and additional pressure transducer locations.	See EDMS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

Acronym	Definition
DAS	data acquisition system
NRC	U.S. Nuclear Regulatory Commission
OEM	original equipment manufacturer
RAI	request for additional information

Trademark Note:

INCONEL is a registered trademark of the Special Metals Corporation group of companies.

1 INTRODUCTION

Exelon is replacing the original equipment manufacturer (OEM) steam dryers at its Peach Bottom site. The Peach Bottom site has two reactors numbered Unit 2 and Unit 3 that will have their steam dryers replaced with Westinghouse-designed steam dryers.

This document describes the instrumentation to be installed on the Peach Bottom Unit 2 replacement steam dryer (shown in Figure 1-1). This dryer will be the first of the two installed. The Peach Bottom Unit 2 steam dryer will be considered a "Prototype" design consistent with the U.S. Nuclear Regulatory Commision (NRC) document Regulatory Guide 1.20, "Comprehensive Vibration Assessment Program for Reactor Internals During Preoperational and Initial Startup Testing" (Reference 1).

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Figure 1-1 [**]^{a,c}**

2 INSTRUMENTATION OVERVIEW

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3 DATA ACQUISITION AND REDUCTION SYSTEM

Sections 3.1 through 3.6 address subitems (a) through (f) of Section 2.2, item 1, in Regulatory Guide 1.20 (Reference 1). The material is limited to description of direct steam dryer instrumentation.

3.1 INSTRUMENT SPECIFICATIONS

Consistent with the guidance contained in RG 1.20 (Reference 1), this section describes the accelerometer, pressure transducer, and strain gauge being used to instrument the steam dryer. Table 3-1 summarizes the instruments.

Table 3-1 [ ]^{a,c}

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3.2 INSTRUMENT POSITIONS

Regulatory Guide 1.20 requests details on the "transducer positions, which should be sufficient to monitor significant lateral, vertical, and torsional structural motions of major reactor internals components in shell, beam, and rigid body modes of vibration, as well as significant hydraulic responses and those parameters that can be used to confirm the input forcing function" (Reference 1). This section describes the criteria

used to identify locations for the accelerometers, pressure transducers, and strain gauges installed on the steam dryer.

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3.3 ENSURING ACQUISITION OF QUALITY DATA

Regulatory Guide 1.20 requests details on the "precautions being taken to ensure acquisition of quality data (e.g., optimization of signal-to-noise ratio, relationship of recording times to data reduction requirements, choice of instrumentation system)" (Reference 1).

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3.4 ONLINE DATA EVALUATION SYSTEM

Regulatory Guide 1.20 requests details on the "online data evaluation system to provide immediate verification of general data quality" (Reference 1).

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3.5 DETERMINING FREQUENCY, MODAL CONTENT, AND MAXIMUM VALUES

Regulatory Guide 1.20 requests details on the "procedures for determining frequency, modal content, and maximum values of response" (Reference 1).

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3.6 BIAS ERRORS AND RANDOM UNCERTAINTIES

Regulatory Guide 1.20 requests details on "all bias errors (such as model underprediction) and random uncertainties (such as instrumentation error) associated with the instrumentation and data acquisition systems" (Reference 1).

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4 REFERENCES

1. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.20, Revision 3, "Comprehensive Vibration Assessment Program for Reactor Internals During Preoperational and Initial Startup Testing," March 2007.

2. Deleted.

3. WCAP-17609-P, Revision 2, "Peach Bottom Units 2 and 3 Replacement Steam Dryer Structural Evaluation for High-Cycle Acoustic Loads," February 2014. (Westinghouse Proprietary Class 2)