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Electrical Power Systems Overview (Redacted)

February 1, 2012

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Introduction

- Purpose
  - Discuss AC & DC electrical power systems design features for the mPower reactor and applicability to the Standard Review Plan (SRP)
- Topics to be discussed
  - Simplified electrical single line diagram
  - AC Power System design & Equipment Layout
  - Standby Diesel Generators layout
  - DC/UPS Power System design & Equipment Layout
  - Island mode operation
  - SRP Applicability
  - NRC Informal Questions (10/11/11)

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Key Single Line

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[CCI per Affidavit 4(a)-(d)]

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Site Plot Plan

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[CCI per Affidavit 4(a)-(d)]

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AC Equip. Layout Transformer Area

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[CCI per Affidavit 4(a)-(d)]

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AC Equip. Layout TI Equip. House

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[CCI per Affidavit 4(a)-(d)]

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RSB Annex Layout 60' EL.

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AC Equip. Layout RSB Annex

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[CCI per Affidavit 4(a)-(d)]

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RSB Annex Layout 90' EL.

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[CCI per Affidavit 4(a)-(d)]

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AC Equip. Layout RSB Annex

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RSB Annex Layout 124' EL.

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[CCI per Affidavit 4(a)-(d)]

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SDGs Layout RSB Annex

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DC/UPS Equip. Layout TI Equip. House

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RSB Annex Layout 60' EL.

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[CCI per Affidavit 4(a)-(d)]

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DC/UPS Equip. Layout RSB Annex

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RSB Annex Layout 90' EL.

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[CCI per Affidavit 4(a)-(d)]

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DC/UPS Equip. Layout RSB Annex

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DC/UPS Equip. CR Air Supply System

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Island Mode Operation

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Island Mode Operation

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SRP Applicability

Section	Title	Remarks
8.1	ELECTRIC POWER - INTRODUCTION	
8.2	OFFSITE POWER SYSTEM	[
8.3.1	AC POWER SYSTEMS (ONSITE)	
8.3.2	DC POWER SYSTEMS (ONSITE)	
8.4	STATION BLACKOUT	]

[CCI per Affidavit 4(a)-(d)]

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GDC Exemptions

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[CCI per Affidavit 4(a)-(d)]

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Response to Informal NRC Questions

Electrical Design Questions to Support Staff Development of DSRS

1. In the event of a Loss of Off-site Power (LOOP) or other anticipated operational occurrences, is onsite AC power planned to be used (in the short term before 72 hrs) to support operation of decay heat removal, RCIPS, or other risk-significant functions? If so, please describe.

Response

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] **[CCI per Affidavit 4(a)-(d)]**

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Response to Informal NRC Questions

2. A B&W presentation dated April 21, 2011, entitled "Design considerations for Fukushima-type Events," identifies Auxiliary Power Units (APUs) located inside reactor building to recharge battery system in the event of an Station Blackout.
   a. Please provide a more detailed functional description of the APUs (type, number, function, the batteries they charge, etc.)
   b. Are they in addition to the standby DGs?

Response

[

] **[CCI per Affidavit 4(a)-(d)]**

Response to Informal NRC Questions

3. What is the total number of standby / backup electrical power generators (e.g., EDGs) that are included in the design, and are any of them considered to be risk significant?

Response

The standard design will be based upon a two unit facility. [

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[CCI per Affidavit 4(a)-(d)]

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Response to Informal NRC Questions

4. Are backup/standby power sources shared between modules/units? If so, please describe.

Response

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[CCI per Affidavit 4(a)-(d)]

Response to Informal NRC Questions

5. Are AC and DC electrical support system components for RTNSS or non-safety-related but risk-significant SSCs (e.g., DHR pump), also designated as RTNSS or non-safety-related but risk significant? Please describe.

Response

The required support systems for RTNSS components are classified appropriately [

] **[CCI per Affidavit 4(a)-(d)]**

Response to Informal NRC Questions

6. The April 21, 2011 B&W presentation also identifies a *"Long duration 'station keeping' 7+ Day battery supply]for plant monitoring/control."* Please provide a more detailed functional description of this equipment

Response

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[CCI per Affidavit 4(a)-(d)]