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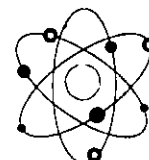
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TITLE: ELECTRIC HYDROGEN RECOMBINER

VENDOR: WESTINGHOUSE ELECTRIC CORP.

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12803-013-1001 / TAB 1 ELECTRIC HYDROGEN RECOMBINER TECHNICAL MANUAL		
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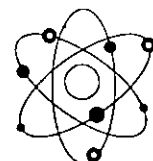
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CALVERT CLIFFS NUCLEAR POWER PLANT

UNIT ONE AND TWO

OI-41A

HYDROGEN RECOMBINERS

REVISION 10

SAFETY RELATED

CONTINUOUS USE

Approval Authority: M. V. Seckens

Effective Date: 6/8/00

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1.0 PURPOSE

- A. The purpose of this procedure is to provide instructions to Operations for operating the hydrogen recombiners.

2.0 APPLICABILITY/SCOPE

- A. This procedure will cover the operational aspects of the hydrogen recombiners including startup and shutdown.

3.0 REFERENCES AND DEFINITIONS

3.1 DEVELOPMENTAL REFERENCES

- A. Drawings

- 1. 1E-76 (61076) Sheet 38, Electric Hydrogen Recombiners Wiring Schematic Unit-1
- 2. 2E-76 (63076) Sheet 38, Electric Hydrogen Recombiners Wiring Schematic Unit-2

- B. Codes and Standards

- 1. NONE.

- C. Technical Manuals

- 1. 12-803-13, Electric Hydrogen Recombiner (Westinghouse).

3.2 PERFORMANCE REFERENCES

None

3.3 DEFINITIONS

None

4.0 PREREQUISITES

- A. Prerequisites will vary depending on which section of the procedure is being performed. Prerequisites for each section will be listed as Initial Conditions at the beginning of the applicable section.

5.0 PRECAUTIONS

- A. Maximum power to a hydrogen recombiner is limited to 75 KW.

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6.0 PERFORMANCE**6.1** HYDROGEN RECOMBINER STARTUP (11, 12, 21, 22)**A.** Initial Conditions

1. It is desired to place hydrogen recombiners in service for testing **OR** post accident conditions.

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B. Procedure

1. **ENSURE** the desired hydrogen recombiner heater control potentiometer is set at 000:
 - 11 H₂ RECOMBINER, 1-HS-7501
 - 12 H₂ RECOMBINER, 1-HS-7506
 - 21 H₂ RECOMBINER, 2-HS-7501
 - 22 H₂ RECOMBINER, 2-HS-7506
2. **IF** starting the hydrogen recombiner due to an accident, **THEN PERFORM** the following:
 - a. **OBTAIN** pre-accident Containment temperature from shift log readings.
 - b. **OBTAIN** current Containment pressure reading.
 - c. Using Figure 1, **DETERMINE** the required power (KW).
 - d. **PLACE** the desired hydrogen recombiner(s) ON/OFF handswitch(es) in ON:
 - 11 H₂ RECOMBINER, 1-HS-7502
 - 12 H₂ RECOMBINER, 1-HS-7507
 - 21 H₂ RECOMBINER, 2-HS-7502
 - 22 H₂ RECOMBINER, 2-HS-7507

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6.1.B.2 Procedure (Continued)**CAUTION**

Maximum power to a hydrogen recombiner is limited to 75 KW.

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- e. **RAISE** the applicable hydrogen recombiner power to the level determined in Step 2.c, by adjusting its Heater Control Potentiometer:
- 11 H₂ RECOMBINER, 1-HS-7501
 - 12 H₂ RECOMBINER, 1-HS-7506
 - 21 H₂ RECOMBINER, 2-HS-7501
 - 22 H₂ RECOMBINER, 2-HS-7506
- f. **MONITOR** the hydrogen recombiner(s) placed in service for proper operation by checking each applicable power meter (wattmeter) indicates the value determined in Step 2.c:
- 11 H₂ RECOMBINER, 1-XI-7501
 - 12 H₂ RECOMBINER, 1-XI-7506
 - 21 H₂ RECOMBINER, 2-XI-7501
 - 22 H₂ RECOMBINER, 2-XI-7506

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6.1.B Procedure (Continued)

3. **IF** starting the hydrogen recombiner for testing,
THEN PERFORM the following:
- a. **IF** containment access is established,
THEN ENSURE precautions have been taken to ensure the area around the H₂ recombiner to be started is clear for approximately five feet and marked as a heat hazard.
- b. **PLACE** the desired hydrogen recombiner(s) ON/OFF handswitch(es) in ON:
- 11 H₂ RECOMBINER, 1-HS-7502
 - 12 H₂ RECOMBINER, 1-HS-7507
 - 21 H₂ RECOMBINER, 2-HS-7502
 - 22 H₂ RECOMBINER, 2-HS-7507

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CAUTION

Maximum power to a hydrogen recombiner is limited to 75 KW.

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- c. **RAISE** the applicable hydrogen recombiner power to the desired level:
- 11 H₂ RECOMBINER, 1-HS-7501
 - 12 H₂ RECOMBINER, 1-HS-7506
 - 21 H₂ RECOMBINER, 2-HS-7501
 - 22 H₂ RECOMBINER, 2-HS-7506
- d. **MONITOR** the hydrogen recombiner(s) placed in service for proper operation by checking each applicable power meter (wattmeter) indicates the desired value:
- 11 H₂ RECOMBINER, 1-XI-7501
 - 12 H₂ RECOMBINER, 1-XI-7506
 - 21 H₂ RECOMBINER, 2-XI-7501
 - 22 H₂ RECOMBINER, 2-XI-7506

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****** END ******

6.2 HYDROGEN RECOMBINER SHUTDOWN (11, 12, 21, 22)**A. Initial Conditions**

1. Hydrogen recombiner operation is no longer required.

B. Procedure

1. **REDUCE** the setpoint of each Heater Control Potentiometer (1C10,2C10) for each hydrogen recombiner to be secured to 000:

- 11 H₂ RECOMBINER, 1-HS-7501
- 12 H₂ RECOMBINER, 1-HS-7506
- 21 H₂ RECOMBINER, 2-HS-7501
- 22 H₂ RECOMBINER, 2-HS-7506

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2. **PLACE** the desired hydrogen recombiner(s) ON/OFF handswitch(es) in OFF:

- 11 H₂ RECOMBINER, 1-HS-7502
- 12 H₂ RECOMBINER, 1-HS-7507
- 21 H₂ RECOMBINER, 2-HS-7502
- 22 H₂ RECOMBINER, 2-HS-7507

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****** END ******

7.0 POST PERFORMANCE ACTIVITIES

None

8.0 BASES

None

9.0 RECORDS

- A. Records generated by this procedure shall be transferred to Records Management **PER** PR-3-100, Records Management.

10.0 ATTACHMENTS

- 1. FIGURE 1, HYDROGEN RECOMBINER POWER CORRECTION FACTOR

HYDROGEN RECOMBINER POWER CORRECTION FACTOR

REQUIRED POWER (KW) VS CONTAINMENT PRESSURE

