

FIR-NGGC-0009,
NFPA 805 Transient Combustibles and Ignition Source Controls Program



Information Use

DUKE ENERGY PROGRESS
ADMINISTRATIVE PROCEDURE

FIR-NGGC-0009

**NFPA 805 TRANSIENT COMBUSTIBLES AND
IGNITION SOURCE CONTROLS PROGRAM**

REVISION 5

Effective Dates:

01/09/2014
Brunswick

NA
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Harris

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REVISION SUMMARY
PRR 576437 DESCRIPTION
<p>1.0 - Added "Ignition Sources" to the Purpose statement.</p> <p>2.2.6 - Added reference to OAP-033.</p> <p>3.9 - Revised definition to account for the affected unit of multi-unit sites.</p> <p>3.10 - Added "(Storage)" for clarity.</p> <p>9.2.1.1., 9.2.1.2, 9.2.3.1, 9.2.3.2, 9.4.3.1 - Changed to an If/Then statement.</p> <p>9.1.12 - Added section regards control of portable electric heaters.</p> <p>9.2.2.4, 9.2.3.5 - Revised to state, "When provided..." for combustible control drawings contained in the Job Aid.</p> <p>9.4.2.3 - Deleted section as no longer applicable.</p> <p>Various - Various editorial and format changes.</p> <p>Attachment 1 - Corrected 12-A-5PICR1 to 12-A-6-PICR1.</p> <p>Attachment 3 - Populated BNP Combustible Control Zones, changed to Attachment 2.</p> <p>Attachments 2 - 8 - Eliminated former Attachments 2 and 4.</p> <p>Attachment 5 - Added exemption for in-use cribbing, PRR 588378 new Attachment 3.</p> <p>Attachment 7 - Added hyperlink to BNP FPS website, new Attachment 5.</p>

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1.0 PURPOSE

The purpose of this procedure is to establish controls of general housekeeping practices and the control of transient combustibles and ignition sources in the power block (plant). The procedure also provides guidance on the amount of transient combustible materials permitted in all plant areas.

2.0 REFERENCES

2.1 Developmental

1. NFPA 805, Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants, 2001 Edition
2. CAP-NGGC-0200, Corrective Action Program
3. CHE-NGGC-0045, NGG Chemical Control Program
4. HNP-F/PSA-0071, Harris Fire PRA – Fire Ignition Frequency Calculation
5. HNP-M/MECH-1129, Fire Zone of Influence Calculation
6. NFPA 30 Flammable and Combustible Liquids Code
7. NFPA 30B Code for the Manufacture and Storage of Aerosol Products
8. NFPA 704 Standard System for the Identification of the Hazards of Materials for Emergency Response
9. Progress Energy Health and Safety Guidance Document, SAF-SUBS-0024, Flammable and Combustible Liquids
10. SAF-NGGC-2172, Industrial Safety

2.2 Implementing

1. 10 CFR 50.48™ Fire Protection– National Fire Protection Standard NFPA 805
2. NUREG/CR 6850, EPRI/NRC-RES, Fire PRA Methodology for Nuclear Power Facilities
3. EGR-NGGC-0028, Engineering Evaluation
4. FIR-NGGC-0130, NFPA 805 Monitoring

HNP

5. FPP-001, Fire Protection Program Manual

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2.2 Implementing (continued)

BNP

6. 0AP-033, Fire Protection Program Manual

3.0 DEFINITIONS

1. **Approved:** Acceptance, by the Fire Protection Engineering or the Fire Protection Staff. Devices having been tested and accepted for a specific purpose by a nationally recognized testing laboratory shall be deemed to be approved.
2. **Combustible Controlled Zones (Ccz):** Areas designated in the Power Block where specific administrative controls limiting combustibles are applied in support of deterministic or performance based analysis and assumptions. Specifics are described in 3.2.1 and 3.2..1 Non-Intervening Combustible Zone.
 - a. **Non-Intervening Combustible Zone:** Areas designated in the Power Block where unattended transient combustible material is not allowed, except as allowed by section 9.2.2 below.
 - b. **No Storage Locations:** Areas in the Power Block where transient combustible materials are allowed when work is in progress. Transient materials may only be left unattended during breaks and lunches for a single shift only, except as allowed by section 9.2.3 below.
3. **Combustible Liquid:** A liquid having a flash point at or above 100°F (37.8°C):
 - Class II: Flash points at or above 100°F and below 140°F.
 - Class IIIA: Flash points at or above 140°F and below 200°F
 - Class IIIB: Flash points at or above 200°F
4. **Combustible Material:** A material that, in the form in which it is used and under the conditions anticipated will ignite and burn.
5. **Fire Protection Suite (FPS):** The database used in the Fire Protection Program to maintain NFPA 805 program elements.
6. **Flammable Liquid:** A liquid having a flash point below 100°F (37.8°C) and having a vapor pressure not exceeding 40 pounds per square inch (absolute) at 100°F (37.8°C):
 - Class IA: Flash point below 73°F and boiling point below 100°F

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3.0 DEFINITIONS (continued)

- Class IB: Flash point below 73°F and boiling point at or above 100°F
 - Class IC: Flash point at or above 73°F and below 100°F
7. **Fuel Package:** Aggregate value of combustible materials entered into FPS for approved work.
 8. **Ignition Sources:** Any process or event that is capable of causing a fire or explosion, such as open flames, sparks and hot surfaces.
 9. **Non-Power Operation:** As applied to Fire Areas associated with the affected Unit, when that unit is in Mode 5, 6, or when the core is off-loaded for Pressurized Water Reactor (PWR), and Mode 4, 5 or when the core is off-loaded for Boiling Water Reactors (BWR).
 10. **Permanent Staging (Storage) Locations:** Fire Protection approved areas in the Power Block where placement of flammable or combustible materials is allowed. Compensatory Actions or Transient Combustible Permit are not required for storage in these areas.
 11. **Power Block And Plant:** As defined in plant fire protection program manual.
 12. **Transient Combustibles:** Flammable or combustible material not permanently installed or stored in a Permanent Staging Area.

4.0 RESPONSIBILITIES

4.1 Fire Protection - Operations / Work Control Center / STA

1. Review and approve/reject temporary storage and/or use of transient flammable or combustible material in the Power Block that cannot meet the separation requirements of this procedure, and track the transient material until removed.
2. Determine any Compensatory Actions required if separation criteria cannot be maintained.
3. Ensure that general requirements of this procedure are being maintained. Enter any discrepancies noted into the Corrective Action Process.

4.2 Fire Protection Engineering

1. Monitor and track transient control program performance.
2. Approve permanent staging locations.

4.3 Plant Work Groups

1. Maintain the work area in accordance with the procedure.
 - a. Limit transient combustibles to those necessary for the performance of assigned tasks.
 - b. Communicate with the Operations Fire Protection Coordinator/Work Control Center, as required to assess/understand maximum transient combustibles allowed in the area.
 - c. Assure transient combustibles are stored or removed within the time restrictions imposed by this procedure.
 - d. Ensure separation requirements are being maintained, approved storage is within guidance.
 - e. Ensure applicable compensatory measures are established.

4.4 Nuclear Plant Personnel

1. Reduce or eliminate packaging material prior to the introduction of any item into the Power Block.
2. Promptly place any waste transient combustible packaging material or waste combustible material from work activities in an approved waste container or promptly remove the material from the area.

5.0 PREREQUISITES

N/A

6.0 PRECAUTIONS, LIMITATIONS AND NOTES

N/A

7.0 SPECIAL TOOLS AND EQUIPMENT

N/A

8.0 ACCEPTANCE CRITERIA

N/A

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9.0 INSTRUCTIONS

9.1 General Requirements

1. Maintain the work area neat and clean.
2. Waste, debris, scrap, packing materials, or other combustibles shall be removed from an area immediately following the completion of work or at the end of the shift, whichever comes first.
3. Containers are emptied on a schedule that removes the combustibles prior to exceeding container capacity, but should a specific work activity approach container capacity, notify housekeeping.
4. Keep aisles and doors clear at all times. Tags and signage shall be installed in such a way that does not block normal access/egress paths, safe shutdown walk paths or emergency lights.
5. Stairwells shall not be used for storage of combustible materials, except for approved Permanent Staging Locations.
6. Do not block access to firefighting equipment.
7. Maintain clearance of 18 inches below sprinkler heads.

NOTE

The term "pressure-impregnated" refers to the method of application of the fire retardant chemical.

8. Wood used within the Power Block shall be listed pressure-impregnated or coated with a listed fire-retardant application. Exception: Cribbing timbers 6 in. by 6 in. (15.2 cm by 15.2 cm) or larger shall not be required to be fire-retardant treated.
9. Plastic sheeting materials used in the Power Block shall be fire-retardant types that have passed NFPA 701, Standard Methods of Fire Tests for Flame Propagation of Textiles and Films, large-scale tests, or equivalent.
10. Permanent Staging Locations shall be designated, and limits shall be established on the types and quantities of stored materials.
11. Portable fuel fired heaters shall not be permitted in plant areas containing equipment important to nuclear safety or where there is a potential for radiological releases resulting from a fire.

9.1 General Requirements (continued)

12. Use of portable electric heaters shall be in accordance with the manufactures recommendations, including adequate clearance and separation from combustible materials.
13. Adequate clearance, free of combustible material, shall be maintained around energized electrical equipment. Refer to Section 9.2.1.3 for separation of Combustibles from Plant Equipment and Cabling.
14. Attachment 3 lists exempted materials not considered as transient combustibles under this procedure. Exempted items in Non-Intervening Combustible Areas are limited to those identified in Attachment 3, by an asterisk(*).
15. The following applies to vehicles located in the Power Block buildings:
16. No fluid/fuel leaks
17. A valid fire extinguisher readily accessible
18. Tractor trailer trucks shall not be left unattended in the power block
19. The tractor must be removed if the trailer is to be left unattended
20. Aerosol cans used in the RCA shall be disposed of by placing them in a designated flammable liquid locker.

9.2 Transient Combustible Controls In The Power Block

9.2.1 General Use of Transient Combustibles

1. **IF** the material is to be used during a shift and left unattended only during breaks and lunches and removed at the end of the shift, **THEN** no transient combustible tracking is required.
2. **IF** the material is to remain in the power block unattended beyond the work shift, and is not exempted by Attachment 3, Exempted Combustible Materials, **THEN** a transient combustible permit is required for the material with the following compensatory actions:

Fuel Package	Compensatory Action
<3 Million BTUs	No Fire Watch Required
3-6 Million BTUs	Hourly Fire Watch
>6 Million BTUs	Continuous Fire Watch

9.2.1 General Use of Transient Combustibles (continued)

Individual fuel packages should be separated by a minimum of 20 feet (edge-to-edge) within a single fire area. Where separation of individual fuel packages is not achieved, then the material shall be considered one fuel package. BTU values for typical combustible materials are listed in Attachment 4.

3. Material not exempted by Attachment 3, Exempted Combustible Materials, shall be separated from energized equipment, vertical and horizontal conduit and cable trays by an adequate distance as described below. If separation distances cannot be maintained, and the material will be left unattended beyond the work shift, provide an hourly fire watch.

Fuel Package	Separation Distances
<3 Million BTUs	3'-0" horizontal, 6'-0" vertical
3-6 Million BTUs	6'-0" horizontal, 8'-0" vertical
>6 Million BTUs	Review w/ Fire Protection Engineering

9.2.2 Use of Transient Combustibles in Non-Intervening Combustible Zones

1. Transient materials may not be left unattended in Non-Intervening Combustible Zones. No material may remain after work is completed or left unattended, including breaks and lunch, without a transient combustible permit and a Continuous Fire Watch.
2. Exempted items in Non-Intervening Combustible Areas are identified in Attachment 3, by an asterisk(*).
3. Non-Intervening Combustible Zones are listed in Attachments 1 and 2.
4. When provided, see job aid for drawings showing Non-Intervening Combustible Zones, see job aid ([HNP-Combustible Control Zones](#))

9.2.3 Use of Transient Combustibles in No Storage Locations

1. **IF** the material is to be used during a shift and left unattended only during breaks and lunches and removed at the end of the shift, **THEN** no transient combustible permit is required.
2. **IF** material is to remain in the No Storage Area unattended beyond breaks and lunches, **THEN** a transient combustible permit and an Hourly Fire Watch are required.
3. Material must be separated by an adequate distance as described in 9.2.1.3. If separation distances cannot be maintained, the material is not exempted by Attachment 3 and will be left unattended beyond the work shift, then a Continuous Fire Watch is required.

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9.2.3 Use of Transient Combustibles in No Storage Locations (continued)

4. No Storage Locations are listed in Attachment 1 and 2.
5. When provided, Fire Protection Engineering shall maintain drawings showing No Storage Locations, see job aid (HNP-Combustible Control Zones) .

9.3 Permanent Staging Locations

NOTE

The Fire PRA uses weighting factors for storage which are associated with the amount of combustible material typically stored in specific fire compartments.

Permanent Staging Locations and amounts of combustibles have been analyzed and approved by Fire Protection Engineering. New areas and changes to existing areas may be approved by Engineering Evaluation in accordance with EGR-NGGC-0028 or other approved methods. Fire Protection Engineering shall maintain a list of approved permanent staging areas in the plant, see job aid (HNP-Permanent Staging Locations) .

9.4 Flammable / Combustible Liquids Controls In The Power Block

9.4.1 General Use of Flammable/Combustible Liquids

1. Combustible liquids, including high flashpoint lubricating oils, shall be kept from coming in contact with hot pipes and surfaces, including insulated pipes and surfaces.
2. Any flammable or combustible liquids accidentally spilled shall be promptly cleaned up and materials disposed of properly (particularly oil spills on insulation materials). Proper disposal methods (in self-closing metal safety containers) shall be utilized to prevent spontaneous combustion of liquid soaked rags and/or materials. Refer to CHE-NGGC-0045, for spill reporting requirements.

9.4.2 Storage of Flammable/Combustible Liquids and Aerosols

The following requirements shall apply to the storage of flammable or combustible liquids and aerosols, unless a specific written exemption has been granted by Fire Protection Engineering and documented on a transient combustible permit:

1. Only approved flammable or combustible liquid storage cabinets, portable tanks, container drums, and safety cans shall be used for the storage of flammable or combustible liquids and aerosols.
2. All storage containers shall be labeled in accordance with CHE-NGGC-0045.

9.4.2 Storage of Flammable/Combustible Liquids and Aerosols (continued)

3. Glass containers for transporting flammable liquids are permitted only when required for material quality reasons. Allowable glass container size is as follows:

Flammable Liquids			Combustible Liquids	
Class IA	Class IB	Class IC	Class II	Class III
1 pint	1 quart	1 gallon	1 gallon	5 gallon

4. Glass containers may be used by the Chemistry Unit in lab areas.
5. When not in use, containers, safety cans, and aerosol cans, containing flammable or combustible liquids, should be stored in approved storage cabinets.
6. The quantity of flammable liquids in safety cans located outside a storage cabinet in any one fire area of a building shall not exceed 2 gallons for Class 1A flammable liquids, or 5 gallons for all other flammable liquids or one safety can.
7. No more than 60 gallons of flammable or combustible liquids shall be stored in any one cabinet; and, no more than 660 gallons shall be stored in any one portable tank.
8. No more than three storage cabinets shall be located in any one fire area, except that an additional cabinet or group of not more than three cabinets may be located in the same fire area if separated from any other cabinets or group of cabinets by at least 100 feet.
9. The quantity of combustible liquids in safety cans located outside a storage cabinet in any one fire area of a building shall not exceed 10 gallons or two safety cans.
10. The quantity of combustible liquids in safety cans located outside a storage cabinet in any one fire area of a building shall not exceed 10 gallons or two safety cans.
11. The quantity of combustible liquids in drums located in any one fire area shall not exceed 120 gallons.
12. No more than one portable tank containing flammable or combustible liquids shall be located in any one fire area.

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9.4.2 Storage of Flammable/Combustible Liquids and Aerosols (continued)

13. Portable tanks shall be closed and an approved emergency relief vent in place for the protection against overpressure and potential rupture during fire exposure.
14. Transfer of flammable and combustible liquids from one tank or container to another container shall be separated from other operations in the building by adequate distance or by construction having adequate fire resistance.
15. Pressurized gas shall not be used to transfer flammable or combustible liquids.
16. Containers with over 30 gallons of flammable or combustible liquids shall not be stacked one upon another.
17. **NO** SMOKING signs shall be posted in areas where flammable liquids are stored. Signs are not required in buildings where smoking is prohibited.
18. Original DOT Approved shipping containers may be used for storage of flammable or combustible liquids and aerosols.

9.4.3 Use of Flammable/Combustible Liquids and Aerosols

The following requirements shall apply to the use of flammable or combustible liquids and aerosols, unless a specific written exemption has been granted by Fire Protection Engineering and documented on a transient combustible permit:

1. **IF** any flammable or combustible liquid is to remain inside power block buildings longer than one shift, **THEN** it must be stored in an approved cabinet.
2. Flammable or combustible liquids shall only be used when contained in an approved container.
3. Flammable or combustible liquids placed in an approved container shall be labeled as to its contents and the requirements of NFPA 704 and CHE-NGGC-0045.
4. Dispensing of flammable or combustible liquids from metal containers shall be by approved pump or self-closing valve.
5. Metal containers and portable metal tanks used for flammable or combustible liquids shall be electrically grounded during transfer of liquids.
6. When transferring flammable liquids, a grounding strap shall be connected between the containers involved whenever the possibility of electrical sparking exists.

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9.4.3 Use of Flammable/Combustible Liquids and Aerosols (continued)

7. When left unattended no more than 2 gallons for Class 1A flammable liquids or 5 gallons for all other flammable liquids or one safety can, shall be located in any one fire area.
8. When left unattended no more than 10 gallons of combustible liquids or two safety cans shall be located in any one fire area.
9. When left unattended no more than 10 aerosol containers shall be located outside a storage cabinet in any one fire area of a building.
10. Use of flammable or combustible liquids will be such that leakage of the liquid is controlled and accidental spills are prevented.
11. Any flammable or combustible liquids accidentally spilled shall be cleaned up and materials disposed of promptly. Proper disposal methods (in self closing metal safety containers) shall be utilized to prevent spontaneous combustion of liquid soaked rags and/or materials.

9.4.4 Drain Cans

Drain cans may be used where combustible liquids are present during maintenance activities or when equipment is operating and there is a need for a collecting container. If a drain can is used, the following restrictions apply:

1. For maintenance activities, the maintenance work crew is responsible for removing the drain can and properly disposing of the combustible liquid.
2. For operating equipment, the drain can shall be checked by an operator on a periodic basis to ensure the container does not over flow.
3. When a drain can is removed, the contents shall be properly stored or disposed of at the time of removal.

9.4.5 Storage Cabinets

1. Storage cabinets shall be approved, located and inspected in accordance with CHE-NGGC-0045.
2. Each Storage Cabinet shall be structurally intact. To be considered structurally intact, all of the following must be met:
 - The metal shell is in good condition without rust and holes.
 - The vent/drain plugs are in place and tightly secured.
 - The door hardware is in good operating order.

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9.4.5 Storage Cabinets (continued)

- The doors are latched shut with cabinet latch (**NOT** hasp and lock).
 - The cabinet is clearly marked in conspicuous lettering “FLAMMABLE/COMBUSTIBLE – KEEP FIRE AWAY”, or similar wording.
 - No material is stored on top of the cabinet.
 - The area surrounding the cabinet is clean and free of obstructions to fire fighting access.
 - The total capacity of the storage cabinet is not exceeded.
3. Each Storage Cabinet shall have a fixed label designating the following:
- Cabinet Number
 - Maximum Storage Capacity
 - Location (Building, column, room, etc.)
 - Responsible Organization (Operations, Maintenance, Chemistry & Environmental, Radiation Protection, etc.)

9.5 Non-Power Operations

1. When the plant is in Non-Power Operations as defined in section 3.9:
- a. The No Storage Locations and Non-Intervening Combustible Area requirements are suspended.
 - b. The requirements of Sections 9.2 and 9.3 are not required if regularly scheduled Hourly Fire Watches patrol the area for all areas of the power block with the exception of Containment.
 - c. The requirements of Sections 9.2 and 9.3 are not required for the Containment building if a roving Continuous Fire Watch patrol has been established.
 - d. All other sections of this procedure and other plant procedures remain in effect during Non-Power Operations.

10.0 RECORDS

N/A

HNP COMBUSTIBLE CONTROL ZONES

Fire Area	Fire Zone	Room Numbers	CCZ Type	Description
1-A-BAL-A	1-A-2-MP	A661	Non-Intervening Combustible Zone	Misc Equip Rm RAB 216 ≈31-36/ E-G
1-A-BAL-A	1-A-3-MP	A461	Non-Intervening Combustible Zone	M-Pen Area RAB 236≈31-36/E-FW
1-A-BAL-A	1-A-3-COR	A458	Non-Intervening Combustible Zone	Access Corr. – RAB 236≈13-15/ E-G
1-A-BAL-A	1-A-3-PB	A459	Non-Intervening Combustible Zone	Pump Area – RAB 236 ≈ 15 / B-C
1-A-BAL-B	1-A-4-CHLR	A104	Non-Intervening Combustible Zone	Chiller Room- RAB 261 ≈ 28-31 / B-E
1-A-BAL-B	1-A-4-CHLR	A104	Non-Intervening Combustible Zone	Chiller Room- RAB 261 ≈ 18-39 / B-E
1-A-BAL-B	1-A-4-COMB	126A	Non-Intervening Combustible Zone	Misc Equip Area- RAB 261 ≈ 41-42/ E
1-A-BAL-B	1-A-4-COME	A128C	Non-Intervening Combustible Zone	Equip. Area – RAB 261 ≈ 42-43 / GX
12-A-CR	12-A-6-RT1	A370, A371	No Storage	Relay/Termination Room – RAB 305
12-A-6-CRC1	12-A-6-ARP1	A384	No Storage	ARP Room – RAB 305
12-A-6-CRC1	12-A-6-PICR1	A387	No Storage	PIC Room – RAB 305
12-A-6-CRC1	12-A-6-RCC1	A374	No Storage	Rod Drive Set Room – 305' RAB
1-A-BAL-A	1-A-2-MP	A661	No Storage	Misc Equip Rm RAB 216 ≈31-36/ E-G
1-A-BAL-A	1-A-2-PT	A663, A664, A665	No Storage	Service Water Pipe Tunnel 216' RAB
1-A-BAL-J	1-A-5-BATN	A250	No Storage	Battery Room Non-Safety – 286' RAB
1-A-ACP	1-A-ACP	A256	No Storage	ACP Room – RAB 286
1-A-BAL-A	1-A-4-TA	A101	No Storage	CST Area 261' RAB, Col 8/12-B/G
1-A-BAL-A	1-A-3-MP	A461	No Storage	M-Pen Area RAB 236
1-A-BAL-A	1-A-3-PB	A459	No Storage	Pump Area – RAB 236
1-A-BAL-A	1-A-3-COMB	A475	No Storage	Misc Equip Area- RAB 236
1-A-BAL-A	1-A-3-COME	ALL	No Storage	Misc Equip Area – RAB 236
1-A-BAL-A	1-A-3-COMI	A509	No Storage	RAB 236 Corridor
1-A-BAL-B	1-A-4-COR	ALL	No Storage	Corridor – RAB 261
1-A-BAL-B	1-A-4-COMB	A126A	No Storage	Chlr. Surge RAB 261' COL 41/43-B/C
1-A-BAL-B	1-A-4-COMB	A128A	No Storage	Chlr. Surge RAB 261' Col 41/43-C/E
1-A-BAL-B	1-A-4-COME	ALL	No Storage	Access Aisle – RAB 261
1-A-BAL-C	1-A-5-HVB	A257A	No Storage	H&V & Elect Room- RAB 286
1-A-BAL-G	1-A-BAL-G	A463, A463A	No Storage	1C-CSIP-SAB Transfer Switch Room
1-A-BAL-H	1-A-BAL-H	A465, A465A	No Storage	1C-CSIP-SAB Charging Pump Room

HNP COMBUSTIBLE CONTROL ZONES

Fire Area	Fire Zone	Room Numbers	CCZ Type	Description
1-A-BAL-J	1-A-5-HVA	A246A	No Storage	H&V & Elect Room- RAB 286
1-A-BATA	1-A-BATA	A249	No Storage	Battery Room A – 286' RAB
1-A-BATB	1-A-BATB	A255	No Storage	Battery Room B – 286' RAB
1-A-CSRA	1-A-CSRA	A273 & A275	No Storage	Cable Spread Room A – 286' RAB
1-A-CSR B	1-A-CSR B	A274A	No Storage	Cable Spread Room B – 286' RAB
1-A-EPA	1-A-EPA	A102	No Storage	A Elect Pen Room – RAB 261
1-A-EPB	1-A-EPB	A110	No Storage	B Elect Pen Room – RAB 261
1-A-SWGRA	1-A-SWGRA	A251	No Storage	Switchgear Room A – 286' RAB
1-A-SWGRB	1-A-SWGRB	A252	No Storage	Switchgear Room B – 286' RAB
1-C	1-C	R101, R102, R103	No Storage	Containment Building All Elevations
5-W-BAL	5-W-4-SWG1	W173	No Storage	WPB Switchgear Room 1 – 276'
5-W-BAL	5-W-4-SWG2	W174	No Storage	WPB Switchgear Room 2 – 276'

BNP COMBUSTIBLE CONTROL ZONES

Fire Area	Fire Zone	Room Numbers	CCZ Type	Description
CB-1	CB-01A	NA	No Storage	Unit 1 Cable Access Way (North East Rattle Space)'23' Elevation
CB-1	CB-01B	NA	No Storage	Unit 1 Cable Access Way (North West Rattle Space)'23' Elevation
CB-2	CB-02A	NA	No Storage	Unit 2 Cable Access Way (South East Rattle Space)'23' Elevation
CB-2	CB-02B	NA	No Storage	Unit 2 Cable Access Way (South West Rattle Space)'23' Elevation
CB-23E	CB-05	NA	No Storage	Unit 1 Cable Spreading Room'23' Elevation
CB-23E	CB-06	NA	No Storage	Unit 2 Cable Spreading Room'23' Elevation
CB-23E	CB-14	NA	No Storage	Unit 1 Computer Room North'49' Elevation
CB-23E	CB-15	NA	No Storage	Unit 2 Computer Room South'49' Elevation
CB-23E	CB-16	NA	No Storage	Auxiliary Operator Briefing Room
CB-23E	CB-17	NA	No Storage	Operator Break Room
CB-23E	CB-18	NA	No Storage	Ladies Washroom
CB-23E	CB-22	NA	No Storage	Mens Washroom
CB-23E	CB-23	NA	No Storage	Control Room'49' Elevation
DG-8	DG-08	NA	Non-Intervening Combustible Zone	E7 Switchgear Room, 23ft
RB1-1	RB1-01A	NA	No Storage	Reactor Building Southwest Core Spray, minus 17ft
RB1-1	RB1-01B	NA	No Storage	Reactor Building Northwest Core Spray, minus 17ft
RB1-1	RB1-01C	NA	No Storage	Reactor Building Northeast RHR Room, minus 17ft
RB1-1	RB1-01D	NA	No Storage	Reactor Building Southeast RHR Room, minus 17ft
RB1-1	RB1-01E	NA	No Storage	Reactor Building Northeast RHR Heat Exchanger, 20ft
RB1-1	RB1-01F	NA	No Storage	Reactor Building Southeast RHR Heat Exchanger, 20ft
RB1-1	RB1-01G(EC)	NA	Non-Intervening Combustible Zone	Reactor Building East Central, 20ft
RB1-1	RB1-01G(NC)	NA	No Storage	Reactor Building North Central, 20ft
RB1-1	RB1-01G(SW)	NA	Non-Intervening Combustible Zone	Reactor Building Southwest Corner, 20ft
RB1-1	RB1-01H(EC)	NA	Non-Intervening Combustible Zone	Reactor Building East Central, 50ft
RB1-1	RB1-01H(NC)	NA	No Storage	Reactor Building North Central, 50ft
RB1-1	RB1-01H(NE)	NA	No Storage	Reactor Building Northeast Corner, 50ft
RB1-1	RB1-01H(NW)	NA	No Storage	Reactor Building Northwest Corner, 50ft
RB1-1	RB1-01H(SE)	NA	No Storage	Reactor Building Southeast Corner, 50ft
RB1-1	RB1-01H(SW)	NA	No Storage	Reactor Building Southwest Corner, 50ft
RB1-1	RB1-01H(WC)	NA	No Storage	Reactor Building West Central, 50ft

BNP COMBUSTIBLE CONTROL ZONES

Fire Area	Fire Zone	Room Numbers	CCZ Type	Description
RB1-1	RB1-01I	NA	No Storage	Reactor Building RWCU Access Room, 77ft
RB1-1	RB1-01J	NA	No Storage	Reactor Building West, 80ft
RB1-1	RB1-01K	NA	No Storage	Reactor Building East, 80ft
RB1-1	RB1-01N	NA	Non-Intervening Combustible Zone	Reactor Building HPCI Roof Mezzanine, 5ft
RB1-1	RB1-01O	NA	Non-Intervening Combustible Zone	Reactor Building ECCS Tunnel Roof, 36ft
RB1-1	RB1-05	NA	No Storage	Reactor Building HP Field Office, Decontamination Room, 20ft
RB1-1	RB1-07	NA	Non-Intervening Combustible Zone	Reactor Building Drywell Entry, 20ft
RB1-1	RB1-12	NA	No Storage	Reactor Building RWCU Backwash Tank Room, 77ft
RB1-1	RB1-13	NA	No Storage	Reactor Building CRD Repair Room, 80ft East
RB1-1	RB1-20	NA	No Storage	Reactor Building RWCU Valve Room, 77ft
RB1-1	RB1-21	NA	No Storage	Reactor Building Resin Storage Room, 80ft East
RB2-1	RB2-01A	NA	No Storage	Reactor Building Southwest Core Spray, minus 17ft
RB2-1	RB2-01B	NA	No Storage	Reactor Building Northwest Core Spray, minus 17ft
RB2-1	RB2-01C	NA	No Storage	Reactor Building Northeast RHR Room, minus 17ft
RB2-1	RB2-01D	NA	No Storage	Reactor Building Southeast RHR Room, minus 17ft
RB2-1	RB2-01G(EC)	NA	Non-Intervening Combustible Zone	Reactor Building East Central, 20ft
RB2-1	RB2-01G(NC)	NA	No Storage	Reactor Building North Central, 20ft
RB2-1	RB2-01G(SE)	NA	No Storage	Reactor Building Southeast Corner, 20ft
RB2-1	RB2-01H(EC)	NA	Non-Intervening Combustible Zone	Reactor Building East Central, 50ft
RB2-1	RB2-01H(NC)	NA	No Storage	Reactor Building North Central, 50ft
RB2-1	RB2-01H(NE)	NA	No Storage	Reactor Building Northeast Corner, 50ft
RB2-1	RB2-01H(NW)	NA	No Storage	Reactor Building Northwest Corner, 50ft
RB2-1	RB2-01H(SE)	NA	No Storage	Reactor Building Southeast Corner, 50ft
RB2-1	RB2-01H(SW)	NA	No Storage	Reactor Building Southwest Corner, 50ft
RB2-1	RB2-01H(WC)	NA	No Storage	Reactor Building West Central, 50ft
RB2-1	RB2-01I	NA	No Storage	Reactor Building RWCU Access Room, 77ft
RB2-1	RB2-01J	NA	No Storage	Reactor Building West, 80ft
RB2-1	RB2-01K	NA	No Storage	Reactor Building East, 80ft
RB2-1	RB2-01N	NA	Non-Intervening Combustible Zone	Reactor Building HPCI Roof Mezzanine, 5ft
RB2-1	RB2-01O	NA	Non-Intervening Combustible Zone	Reactor Building ECCS Tunnel Roof, 36ft

BNP COMBUSTIBLE CONTROL ZONES

Fire Area	Fire Zone	Room Numbers	CCZ Type	Description
RB2-1	RB2-04	NA	No Storage	Reactor Building MSIV Pit, 50ft
RB2-1	RB2-05	NA	No Storage	Reactor Building HP Field Office, Decontamination Room, 20ft
RB2-1	RB2-09	NA	No Storage	Reactor Building Elevator Shaft
RB2-1	RB2-10	NA	No Storage	Reactor Building RWCU Pump and Heat Exchanger Room, 50ft
RB2-1	RB2-12	NA	No Storage	Reactor Building RWCU Backwash Tank Room, 77ft
RB2-1	RB2-13	NA	No Storage	Reactor Building CRD Repair Room, 80ft East
RB2-1	RB2-18	NA	No Storage	Reactor Building Supply Room, 98ft
RB2-1	RB2-18GA	NA	No Storage	Reactor Building Platform, 98ft
RB2-1	RB2-19	NA	No Storage	Reactor Building Clothing Change room, 98ft
RB2-1	RB2-20	NA	No Storage	Reactor Building Resin Storage Room, 80ft East
RB2-1	RB2-21	NA	No Storage	Reactor Building RWCU Valve Room, 77ft
RB2-6	RB2-06	NA	No Storage	Reactor Building ECCS Mini Steam Tunnel, 20ft

EXEMPTED COMBUSTIBLE MATERIALS

NOTE

Items denoted below by an Asterisk (*) and Bolded are exempted in Non-Intervening Combustible Areas.

- *** Fiberglass ladders (with associated rope(s))**
- *** Signs, Postings, Permits, Cautions Tags, Clearance Tags, Warnings**
- *** Tape, Ty-wraps, and other similar attachment or incidental items**
- *** Drip Bags and spill containment materials including tubing**
- *** Non-combustible carts with rubber/plastic wheels**
- *** Step-off Pad with 2 PPE containers**
- *** Work site barriers (rope/tape) and signs**
- *** Camera configurations and associated remote telemetry monitoring cable(s)**
- *** Safety Barrier Netting (unrolled/installed)**
- *** Combustibles in closed metal containers such as cabinets, tool boxes, gang boxes, metal drums necessary for work performance**
- Procedures located in the area to support the use of plant equipment
- Operator notebooks
- Portable Electric Heaters (120V or less)
- Portable Air Compressors
- Portable HEPA Units (w/ <10ft of Hose)
- Computers, test equipment and leads, limited to single PC or equal amounts of smaller test devices and leads
- Vacuum cleaners, floor polishers
- HP Portable Radiation Monitors
- Welding Machines including wheels
- Power cords on portable equipment (extended)
- Extension cords/cable, or welding leads (extended)
- Portable Power Supply Buggies
- Housekeeping/cleaning supplies (e.g., floor signs, mops, buckets, towels, brooms, oil absorbent pads) in use and removed from normal storage location
- Plastic sleeving and spill blockers
- Rubber mats (unrolled) on concrete
- Flammable or combustible material while being transported or when stored in a metal container with a tight fitting lid or any UL Listed or Factory Mutual (FM) approved storage cabinet
- Combustibles in metal receptacles equipped w/ self-closing or self-extinguishing type lids
- Incidental combustible item(s) in quantities $\leq 105,000$ BTUs
- In-Use Wood Cribbing (fire retardant treated, or as allowed under section 9.1.8)
- Wooden insulation blocks used for cable as part of plant design.

TRANSIENT COMBUSTIBLE REFERENCE TABLE

Description	Weight	BTU/LB & FT ³
Acetone	1 lb	13,300
Acetylene (Gas)	1 ft ³	1,500
Alcohol	1 lb	12,800
Blue Matting	0.2 lb/ ft ²	12,000
Cardboard B10 Drum	5 lbs each	7,900
Charcoal 55 Gallon Drum of Dry	235 lbs	14,500
Cords Drop and Extension	.175 lb/ft	21,000
Cotton (PCs)	1 lb	9,500
Electric Cable 10/3 SOW	.28 lb/ft	21,000
Electric Cable 10/3 Type XLPI	.19 lb/ft	21,000
Electric Cable 10/4 SO	.155 lb/ft	21,000
Electric Cable 10/4 SOW	.35 lb/ft	21,000
Electric Cable 12/3 SO	.175 lb/ft	21,000
Electric Cable 12/4 SOW	.21 lb/ft	21,000
Electric Cable 14/3 SO	.136 lb/ft	21,000
Electric Cable 4/4 Type W	.585 lb/ft	21,000
Electric Cable 6/4 Type W 480V drop cord	.566 lb/ft	21,000
Electric Cable 8/4 Type W	.52 lb/ft	21,000
Electric Cable #16/32	.25 lb/ft	21,000
Electric Cable #2/3 Type K	.448 lb/ft	21,000
Electric Cable #3/4 Type W	1.495 lb	21,000
Ethyl Ether	1 lb	22,000
FYQUEL 220 MSDS sheet 275	1 lb	1,100
Gasoline (Flammable Liquid)	1 lb	19,900
Herculite	.017 lb/ ft ²	21,000
Hose ¾" Red Rubber	.4 lb/ft	21,000
Hose 1" Red Rubber	.5 lb/ft	21,000
Hose Clear HEPA Hose	.08 lb/ft or 2 lb per 25 foot	21,000
Hose Orange or Black HEPA	.4 lb/ft or 10 lb per 25 foot	21,000
Hydraulic Oil	1 lb	20,400
Hydrogen (Gas)	1 ft ³	325
Kerosene (Combustible Liquid)	1 lb	19,900
Liquids Combustible Flash point greater than 100 degrees F.	1 lb	20,000

TRANSIENT COMBUSTIBLE REFERENCE TABLE

Description	Weight	BTU/LB & CUBIC FT
Liquids Flammable Flash point less than 100 degrees F.	1 lb	20,000
Lubricating Oil, SA 40	1 lb	20,400
Lumber (Pine)	1 lb	8,500
Man Lifts (oil)	70 lbs	20,400
Nylon Lift Straps 1" x 6'	.80 lbs	21,000
Nylon Lift Straps 1" x 4'	.62 lbs	21,000
Nylon Lift Straps 2"x 10'	4.77 lbs	21,000
Nylon Lift Straps 2" x 20'	5.11 lbs	21,000
Paper	1 lb	7,900
Paint	1 lb	21,000
Plastic for HP Tents	.017 lb/ft	21,000
Propane (Gas)	1 ft ³	2,500
Rad Rope (Spool)	.03 lb/ft	21,000
Ray Wall (UV Shield)	per piece	7,000
Rubber Mats	1lb/ ft ²	12,000
Safety Harness w/lanyard	5 lb	21,000
Tygon Tube	.1 lb/ft	21,000
Welding Leads	.1 lb/ft	21,000
Wood	1 lb	8,500

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ATTACHMENT 5

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FIRE PROTECTION SUITE - TRANSIENT MANAGER

The Fire Protection Suite (FPS) is a web-based application and the Transient Manager [™] is utilized for Combustible Tracking in the Power Block or Plant. A hardcopy printout of the Transient Combustible Permit, Attachment 6 (or facsimile) may be used for approvals, and entered into FPS when available. Only those “open or active” manually generated permits (Attachment 6) need be entered into FPS when it becomes initially available or returned to service in the future. Also, manually generated permits may be discarded once entered into FPS, or the task is closed / complete.

<http://fps.nexus-tech.com/hnp/>

<http://fps.nexus-tech.com/bnp/>

TM allows fire protection engineers to track both fixed and transient combustible loading by fire zone and fire area. They take into account the type and quantities of material available within the area.

The Transient Manager tracks Transient Combustible Loading, creates and tracks the Transient Permits, and generates various reports.

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TRANSIENT COMBUSTIBLE PERMIT

PERMIT NO. _____

Requestor / Responsible Person _____ Phone _____

Date Issued _____ Estimated Duration _____ ESR, WR/JO _____
(Not to exceed 6 months)

Location: Unit _____ Building _____ Fire Area _____ Fire Zone _____ Elev. _____
Reason for Storage/Use _____

Is Fuel Package Separated from other Fuel Packages by a Minimum of 20 feet within a Single
Fire Area? Yes ☐ No ☐

Type of Material	Quantity	BTU/LB BTU/FT3	Line Total BTU
Sum Total BTU			

General Transient Combustibles: ☐

Transient Combustible in Non-Intervening
Combustible Zones (Non-Exempt Items): ☐

Transient Combustible in No Storage Locations: ☐

Fire Watch: ☐ None ☐ Hourly-Roving ☐ Continuous

Comments/Special Provisions: _____

Approved By: _____ Date _____
Fire Protection Coordinator or Designee