RGE AND
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Robert C. Mecredy
Vice President
Nuclear Operations

May 21, 2004

Mr. Robert L. Clark
Office of Nuclear Regulatory Regulation
U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555-0001

Subject: Appendix R Summary for the Proposed Control Room Emergency Air Treatment System (CREATS) Modification
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

References: 1. Letter from Robert C. Mecredy (RG&E) to Robert L. Clark (NRC) dated May 21, 2003, License Amendment Request Regarding Revision of Ginna Technical Specification Sections 1.1, 3.3.6, 3.4.16, 3.6.6, 3.7.9, 5.5.10, 5.5.16, and 5.6.7 Resulting From Modification of the Control Room Emergency Air Treatment System and Change in Dose Calculation Methodology to Alternate Source Term.

Dear Mr. Clark:

In a conference call on February 5, 2004 between RG&E and members of your staff, RG&E agreed to provide a summary of the Appendix R review for the proposed CREATS modification. The attachments to this letter contain the requested information and should be docketed as an addendum to Reference 1.

I declare under penalty of perjury under the laws of the United States of America that I am authorized by Rochester Gas and Electric Corporation to submit this documentation and that the foregoing is true and correct.

If you have questions regarding the content of this correspondence please contact Mr. Mike Ruby at (585) 771-3572.

Very truly yours

Executed on May 21, 2004

Robert C. Mecredy

Attachments:

1. CREATS Modification Appendix R/Fire Protection Summary
2. PCR 2003-0037, Revision 1, Appendix R/Fire Protection Conformance Verification
3. PCR 2000-0024, Revision 1, Appendix R/Fire Protection Conformance Verification

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Attachment 1

CREATS Modification
Appendix R/Fire Protection Review Summary

Attachment 1

CREATS Modification
Appendix R/Fire Protection Review Summary

The work scope of the CREATS Modification was broken into four separate work scopes. The different scopes are each represented by a Plant Change Record (PCR). Per Ginna Station procedure EP-3-S-306, Change Impact Evaluation Form, each of these PCRs was evaluated for its impact on Ginna Station processes, programs, procedures and controls using a formal evaluation process. This process determined that two of the PCRs required a formal Appendix R/Fire Protection Conformance Verification, and two did not. These evaluations are summarized below.

PCR 2003-0019

The scope of PCR 2003-0019 will install new supply air and return air ducts and supports within the Control Room Emergency Zone. Scope of the work is limited to the Control Room which contains normal shutdown equipment, and not Appendix R alternative shutdown equipment for control room fires. Additional combustibles are limited to ductwork sealant, which is of a negligible quantity, and two flex joints that are included in the combustible load analysis in the Appendix R review for PCR 2000-0024. All other materials are metal ductwork and supports, and transient combustible loads of scaffold installed during construction. No rated fire barriers are affected by instillation of the duct, and there are no suppression systems in the control room. Therefore, no formal Appendix R/Fire Protection Conformance Verification is required for this PCR.

PCR 2003-0020

The scope of PCR 2003-0020 will install the supply air and return air ducts/pipes between the Control Building Emergency Zone and the Relay Room Annex. The pipes will be located outside the buildings. Two new penetrations through the control room east wall and three new penetrations through the relay room roof are to be installed. A formal Appendix R/Fire Protection Conformance Verification is not required since the penetrations are not in rated walls.

PCR 2003-0037

The scope of PCR 2003-0037 will install electric power, controls and power distribution equipment associated with the new system, the charcoal filter temperature alarm considerations and the new smoke detection system in the

Relay Room Annex. A formal Appendix R/Fire Protection Conformance Verification is required for this PCR, and is included as Attachment 2.

PCR 2000-0024

The scope of PCR 2000-0024 will install the two new trains of CREATS mechanical Heating Ventilation and Air Conditioning (HVAC) components and ductwork in the Relay Room Annex. This work scope also includes providing the charcoal filter units with internal fire suppression capability which is designed to provide adequate fire water system capability to extinguish a potential fire. A formal Appendix R/Fire Protection Conformance Verification is required for this PCR, and is included as Attachment 3.

Attachment 2

PCR 2003-0037, Revision 1
Appendix R/Fire Protection Conformance Verification

Appendix R/Fire Protection Conformance Verification Checklist

Revision 1

PCR #: 2003-0037

TSR #: N/A

EWR #: N/A

Project Name: CREATS I&C/Electrical Scope

Answer all of the following questions. Discuss the basis for acceptance of any "yes" answers (and any "no" answers that are not explicitly obvious) in Section C.

A "yes" answer to any of the questions in Section A or question 18 in Section B requires review by NS&L.

Section A: Appendix R

Does the Modification include:		YES	NO
(1)	Addition, deletion or revision to a safe shutdown component or associated cable? (See DA-EE-2000-066 and Reference 2.3.5, Volume 3)	X	
(2)	Addition, deletion or revision to a safe shutdown support component (i.e. relay, handwheel, motor starter, etc.)? (See DA-EE-2000-066)	X	
(3)	Changes to a safe shutdown system's operational mode (i.e. flow rate, change in normal valve positions, etc.)?		X
(4)	Changes to existing circuit protection or addition of new circuits to safe shutdown power supplies? (See DA-EE-2000-066)	X	
(5)	Changes or addition of non-safe shutdown cable to an enclosure (i.e. raceway, panel, etc.) already occupied by safe shutdown cables? (CRTS Database - See I&C/Electrical Systems Engineering)	X	
(6)	Changes to the circuits of any components whose spurious operation may defeat the function of a safe shutdown system? (See DA-EE-2000-066 and Reference 2.3.5, Volume 3)		X
(7)	Changes to analysis DA-EE-2000-066, "Appendix R Conformance Analysis"		X

(8)	Any changes to or removal of fire wraps, fire stops or radiant energy shields? (See 21488 series drawings as follows: 21488-0201, sheets 1-3, Battery Room B 21488-0202, sheets 1-4, Intermediate Building 21488-0203, sheets 1-3, Containment 21488-0204, sheets 1-8, Auxiliary Building)	___	X
(9)	Changes to the emergency lighting system including the removal or repositioning of a light and the obstruction of a lights' illumination path?	___	X
(10)	Changes within the plant which limit access and egress to fight fires and/or perform safe shutdown functions?	___	X
(11)	Changes to the Reactor Coolant Pump Oil Collection System?	___	X
(12)	Changes that may compromise the bases of an approved exemption or evaluation from the requirements of Appendix R? Such bases may include low combustible loading, existence of detection and/or suppression, rapid fire brigade response, or the existence of a redundant component outside of the area of concern. (Exemptions and evaluations are found in Reference 2.3.5, Volume 3)	___	X

Section B: Fire Protection

A "yes" answer to any of the following questions requires review by the Corporate Fire Protection Engineer.

Does the modification include:

(13)	Changes to the diesel-driven fire pumps?	___	X
(14)	Changes affecting fire detection systems? These may include changes to:		
	- primary/backup power supplies	___	X
	- detection system control panels	X	___
	- alarm station arrangements	___	X
	- type and arrangement of detectors	X	___

	- wall, ceiling and floor arrangements	___	X
	- ventilation system flow patterns	___	X
	- detection system interlocks	___	X
(15)	Changes affecting fire suppression systems? These may include changes to:		
	- size and arrangement of piping	___	X
	- spray nozzle location and spacing	X	___
	- Halon system concentrations	___	X
	- hose station, hydrant or hose cabinet arrangements	___	X
	- portable fire extinguishers	___	X
	- wall, ceiling or floor arrangements	___	X
	- beam, duct or platform arrangements	___	X
	- system interlocks	___	X
	- alarm actuation systems	X	___
	- primary/backup power supplies	___	X
	- suppression system actuators	___	X
	- room volume and ventilation	___	X
	- discharge head obstructions	___	X
(16)	Addition, deletion or revision to any fire area boundary/barriers including cable, duct, or pipe penetrations, fire dampers and fire doors?	X	___
(17)	Changes to any fire barrier penetration seals or new penetration seals required and are they in accordance with the fire barrier penetration seals program requirements?	X	___
(18)	Changes to or removal of heat spread controllers/fuel spread limiters (i.e. curbs, dikes, drains)?	___	X
(19)	Changes in the fixed combustible loading of a fire area? If yes, calculate the changes which must be made to the Combustible Loading Database (Ref. 2.3.6) using the guidance of Appendix H to this procedure and forward to the Fire Protection System Engineer (attach a copy to this form).	X	___
(20)	Changes to the plant emergency communication system including radio transmission/reception interference due to structural arrangements?	___	X
(21)	Changes including structural obstructions, relocation of safe shutdown equipment and the installation of locks on previously unlocked doors?	___	X

(22) Are changes to the existing fire response pre-plan drawings or fire response pre-plans required as a result of this modification? X ___

Section C: Basis for Acceptance

Provide a brief discussion on the effect of the modification on the Fire Protection Program and on Appendix R compliance. Discussion shall document the basis for acceptability of the change and conclude that the change does not adversely impact the overall Fire Protection Program and overall compliance with Appendix R considerations or impact the ability to achieve and maintain safe shutdown in the event of a fire. Identify by question number and provide the basis for acceptance of the above questions that were answered "yes" or any other significant items found in the review. If Section A(7) is "yes", provide CAI item number(s) tracking the specific changes needed to Appendix R analyses. (Use additional sheets as necessary.)

Section A

Questions 1 and 5:

The new cables that will supply the Control Room Emergency Air Treatment System (CREATS) equipment are fed from Motor Control Centers (MCC's) MCCs C and D, which are listed as safe shutdown equipment. The electrical protection scheme is designed with adequate thermal protection and breaker coordination to ensure that the MCC's are protected against any downstream impact that these circuits may have on the MCC cubicles from which they are fed. The new Control Room HVAC equipment to be supplied by these cables is not considered safe shutdown equipment, so the cable will not be classified as safe shutdown. These cables are being procured and installed Safety Related, maintaining applicable fire ratings (IEEE 383) so that the cables will not impact any associated equipment or cables when installed in trays or cabinets that contain safe shutdown equipment. DA-EE-2000-066, "Appendix R Conformance Analysis", is not impacted by this modification, so will not require revision.

Questions 2 and 4:

Electrical protection components (breakers, overloads) will be modified in the MCC C and D cubicles that feed this new circuit. The new components are designed and installed to maintain electrical protection of the MCCs. An Electrical Factors Analysis has been prepared to demonstrate these protection schemes.

Question 12:

Combustible loading in Battery Room 1A and Battery Room 1B will be increased by this modification. However, the increase in combustible loading involves only a 0.2% increase in Battery Room 1A and only 0.7% increase in Battery Room 1B, which are considered to be very small additions. The revised combustible loading as a result of this modification will not challenge installed passive features which are one hour rated or the basis for the lack of area wide suppression in the Control Room zone and both Battery Rooms. As such, this modification does not adversely affect the basis for the approved exemption requests for Battery Rooms 1A and 1B and the overall fire area Control Complex (CC), where low combustible material loading was credited. Refer to DA-ME-98-004, "Combustible Loading Analysis", sections 9.2.3, 9.2.4 and 9.2.11 for additional discussion. The new cables to be installed will increase the combustible loading in the applicable fire areas/zones, as discussed in Question 19 below.

Question 14:

With the new Safety Related CREATS equipment, MCC P & MCC N to be installed, new smoke detection shall be installed in the Relay Room Annex. The new smoke detection shall be connected to the new SSC (Satellite Station C), (Simplex Grinnel 4100U Panel]) previously installed per PCR 2000-00048 and is located in the Relay Room. Seven analog addressable smoke detectors, one for each beam pocket, shall be installed. The new detection system zone is identified as Z44. In addition, Common Alarm Bell, FKA, will also be installed for local annunciation. SSC data tables shall be revised for the inclusion of Z44 and FKA. This revision will allow annunciation at SSC and in the Control Room. Z44 detection alarms shall also be visible on FCP2. The detection system will be designed and installed in accordance with the requirements of NFPA 72.

Additional indication will be added to the Auxiliary Benchboard (ABB) in the Control Room to indicate High Temperature in the new CREATS Charcoal Filters. High Temperature switches TAH-5153A/B and TAH-5154A/B will light white lights on the ABB, indicating a potential fire in the Charcoal Filters. An alarm response procedure to be developed will direct operators to verify a high temperature and , if required, connect a fire hose from the exterior yard loop to the charcoal filter's deluge system header in order to extinguish the fire.

Question 15:

An existing fire suppression actuation system is being slightly modified. The fire pull box for the 1G Charcoal Filter Deluge SO2 (PB/1GSO2) on the ABB is being relocated on the ABB (lowered by two inches). A newer model number pull box is being used, but it has a similar appearance and the same operating method. Activation of the suppression system will not be changed by moving and rewiring the pull box.

Since there is a halon suppression system in the Relay Room, all Relay Room breeches will be sealed in accordance with procedure FPS-1 "Fire Barrier Control Procedure" requirements to minimize the potential for halon leakage into adjacent areas, both before and during construction. Kaowool will be used to seal the conduits internally to minimize the leakage in accordance with M-56.1 "Establishment of Temporary Fire Seals" requirements. External conduit seals will be installed in accordance with procedure M-56.3 "Permanent Fire Barrier Penetration Seal Installation/Repair" requirements.

Questions 16 and 17:

All wall and floor penetrations will be repaired to original condition after cable installation per maintenance procedure M-56.3, "Permanent Fire Barrier Penetration Seal Installation/Repair". Breeches of existing or the installation of new penetration seals will be controlled via procedure FPS-1, "Fire Barrier Control Procedure". NOTE: The fire resistance capability of the existing seals or barriers will not be degraded. Existing fire barrier penetrations to be utilized and repaired to existing capability are: A-TRAY-97-P, AH-TRAY-97-P, BA-8-P, A-TRAY-96-P, AH-TRAY-96-P, CR-41-P, CR-148-P, and RR-48C-P.

A new penetration seal (A-363A-P) is being installed in the Auxiliary Building between the Operating Level and the Intermediate Level. This work will also be performed per M-56.3, "Permanent Fire Barrier Penetration Seal Installation/Repair" requirements. The fire barrier is required to be three hour rated for Appendix R considerations. A 12" minimum depth foam seal is specified to be installed to maintain the fire rating of the barrier penetration.

Four new penetration (RR-801-P, RR-802-P, RR-803-P and RR-804-P) will be installed in the barrier wall separating the Relay Room from the Relay Room Annex. This barrier wall is required to provide halon integrity functions. The new seals will be installed and repaired after conduit installation per procedures M-56.3 and FPS-1, and the inside of the conduits will be sealed with kaowool to minimize the potential for halon leakage out of the Relay Room.

Two new penetration (RR-129A-P and RR-129B-P) will be installed in the barrier wall separating the Relay Room from the Relay Room Stairwell. This barrier wall is required to provide halon integrity functions. The new penetration seals will be installed and repaired after conduit installation per procedures M-56.3 and FPS-1, and the inside of the conduits will be sealed with kaowool to minimize the potential for halon leakage out of the Relay Room.

Two new penetrations (RR-69B-P and RR-28-P) will be installed in through the ceiling of Battery Room B into the Relay Room. This work will be performed per M-56.3 requirements. This floor barrier is required to be two hour rated for Appendix R and UFSAR considerations. A minimum seal depth of 8" of foam is specified to be installed. Also, the new conduit will be sealed internally with kaowool to minimize the potential for halon leakage out of the Relay Room.

It should be noted that a small area of fire proofing on the structural steel in Battery Room B required modification to allow the installation of a new conduit support. Fire proofing materials were required to be removed and new material was installed to maintain the existing capability of this passive fire protection feature.

Question 22:

Fire Response plan drawings will need to be updated per the PCR closeout process to add the new fire detection system in the Relay Room Annex, the charcoal filter temperature alarm devices, CREATS equipment, and to add the new MCCs (MCC N and MCC P) to the drawings. These documents will be updated per the PCR closeout process to increase awareness of the fire brigade relating to the new hazards and the new equipment in the Relay Room Annex associated with this modification.

Question 19:

All new cables shall be IEEE-383 Qualified. All new cables will be routed through rigid metal conduits and/or in open top cable tray. Calculations of changes in the fixed combustible loading, of each fire area and fire zone that the new cables will be routed through have been performed and are attached to this evaluation. The increase in fixed combustible loading for the Air Handling Room Zone, Relay Room Zone, Battery Room 1A area, Battery Room 1B area, and Auxiliary Building Mezzanine Floor fire zone, the Control Complex fire area and the Auxiliary Building Basement/Mezzanine Fire Area, results in less than a 1% increase in the actual fire loading for the fire zones and overall fire areas, which will not change the Equivalent Combustible Loading Classifications, and are therefore acceptable. (Refer to the attached pages for calculations.)

Circuit Information

Circuit Number	Cable Size	BTU/FT	Reference
C5618, C5619	1-3C-4/0	5195	Per General Cable Quotation # 816256-0 attached
C5626	1-7/C-14	1003	Per attached email from Rockbestos
C5631	1-7/C-14	1003	Per attached email from Rockbestos
C5634	1-7/C-14	1003	Per attached email from Rockbestos
C5635	1-3/C-14	697	Per attached email from Rockbestos
C5638	1-3/C-14	697	Per attached email from Rockbestos
C5642	1-7/C-14	1003	Per attached email from Rockbestos
C5643	1-3/C-14	697	Per attached email from Rockbestos
C5655	1-7/C-14	1003	Per attached email from Rockbestos
C5669	1-7/C-14	1003	Per attached email from Rockbestos
C5671	1-3/C-14	697	Per attached email from Rockbestos
C5673	1-3/C-14	697	Per attached email from Rockbestos
C5674	1-3/C-14	697	Per attached email from Rockbestos
C5678	1-3/C-14	697	Per attached email from Rockbestos
C5679	1-3/C-14	697	Per attached email from Rockbestos
C5692	2-2/C-16	1084	Per attached email from Rockbestos
E0201A	1-2/C-12	840	Per attached email from Rockbestos
E0332	1-2/C-12	840	Per attached email from Rockbestos
R4512	1-2/C-12	840	Per attached email from Rockbestos
R4513	1-2/C-12	840	Per attached email from Rockbestos

All other circuits to be installed for this modification are also installed in conduit or cabinets, and are therefore not included in the cable combustible loading calculation. Per the circuit schedule, these cables are partially in conduit, so only the sections in open tray will be used for these calculations.

The Combustible Loading calculations that follow indicate how much cable is installed in cable Tray in each area of the plant.

Fixed combustible loading calculation for Fire Area

Fire Area: **ABBM**
Fire Area Desc: **Auxiliary Building Basement/Mezzanine**
Flr. Sq. Ft.: **20,160**

Present Total Combustible Load (BTU/Sq. Ft.): **15,404**

Additional Combustible Load:

Circuit	Ft.	BTU/ Ft. Rating	BTU
C5618	10	5195	51,950
C5619	30	5195	155,850

Total combustible loading increase = 207,800 BTU

BTU/Sq. Ft. = 207,800 BTU ÷ 20,160 Sq. Ft. = **10 BTU/Sq. Ft.** added

Percent increase = 10 BTU/Sq. Ft. ÷ 15,404 BTU/Sq. Ft x 100. = **0.07%**

New Combustible Load = 15,404 BTU/Sq. Ft.+ 10 BTU/Sq. Ft = 15,414 BTU/Sq. Ft

Allowable Combustible Loading for this area is 240,000 BTU/Sq. Ft.

Fire Area: **BR1A**
Fire Zone: **BR1A**
Fire Zone/Area Desc: **Battery Room 1A**
Flr. Sq. Ft.: **525**

Present Total Combustible Load (BTU/Sq. Ft.): **65,801**

Additional Combustible Load:

Circuit	Ft.	BTU/ Ft. Rating	BTU
C5618	8	5195	41,560
C5619	8	5195	41,560

Total = 83,120 added

BTU/Sq. Ft. = 83,120 BTU ÷ 525 Sq. Ft. = **158 BTU/Sq. Ft.** added

Percent increase = 158 BTU/Sq. Ft. ÷ 65,801 BTU/Sq. Ft x 100. = **0.2%**

New Combustible Load = 65,801 BTU/Sq. Ft.+ 158 BTU/Sq. Ft = 65,959 BTU/Sq. Ft

Allowable Combustible Loading for this zone/area is 160,000 BTU/Sq. Ft.

Fire Area: BR1B
Fire Zone: BR1B
Fire Zone/Area Desc: Battery Room 1B
Flr. Sq. Ft.: 525

Present Total Combustible Load (BTU/Sq. Ft.): 77,422

Additional Combustible Load:

Circuit	Ft.	BTU/ Ft. Rating	BTU
C5618	25	5195	129,875
C5619	30	5195	155,850
E0332	80	840	67,200

Total = 352,925 added

BTU/Sq. Ft. = 352,925 BTU ÷ 525 Sq. Ft. = **672 BTU/Sq. Ft.** added

Percent increase = 672 BTU/Sq. Ft. ÷ 77,422 BTU/Sq. Ft x 100. = **0.87%**

New Combustible Load = 77,422 BTU/Sq. Ft.+ 672 BTU/Sq. Ft = 78,094 BTU/Sq. Ft

Allowable Combustible Loading for this zone/area is 160,000 BTU/Sq. Ft.

Fire Area: CC
Fire Area Desc: Control Building Complex
Flr. Sq. Ft.: 5,720

Present Total Combustible Load (BTU/Sq. Ft.): 115,470

Additional Combustible Load:

Circuit	Ft.	BTU/FT Rating	BTU
C5618	26	5195	135,070
C5619	26	5195	135,070
C5626	80	1003	80,240
C5631	40	1003	40,120
C5634	80	1003	80,240
C5635	110	697	76,670
C5638	110	697	76,670
C5642	40	1003	40,120
C5643	100	697	69,700
C5655	80	1003	80,240
C5669	40	1003	40,120
C5671	100	697	69,700
C5673	80	697	55,760
C5674	40	697	27,880
C5678	80	697	55,760
C5679	40	697	27,880
C5692	40	1084	43,360
E0201A	70	840	58,800
R4512	50	840	42,000
R4513	20	840	16,800
Detector w/ Base	7	12,000	84,000

| Total combustible loading increase = 1,336,200 BTU

| BTU/Sq. Ft. = 270,140 BTU ÷ 5,720 Sq. Ft. = **233.60 BTU/Sq. Ft.** added

| Percent increase = 233.60 BTU/Sq. Ft. ÷ 115,470 BTU/Sq. Ft x 100. = **0.202%**

| New Combustible Load = 115,470 BTU/Sq. Ft.+ 233.60 BTU/Sq. Ft = 115,703 BTU/Sq. Ft

Allowable Combustible Loading for this area is 160,000 BTU/Sq. Ft.

See combustible loading calculation for Fire zones AHR and RR which are part of Fire area CC for additional review.

Fire Area/Fire Zone CT Cable Tunnel will have no change in combustible loading, as cable for this modification in the Cable Tunnel will be installed in conduit.

Fixed combustible loading calculation for Fire Zone

Fire Area: **CC - Control Building Complex**
Fire Zone: **AHR**
Fire Zone Desc: **Air Handling Room**
Flr. Sq. Ft.: **1,055**

Present Total Combustible Load (BTU/Sq. Ft.): **119,850**

Additional Combustible Load:

Circuit	Ft.	BTU/ Ft. Rating	BTU
C5618	26	5195	135,070
C5619	26	5195	135,070

Total = 270,140 BTU added

BTU/Sq. Ft. = 270,140 BTU ÷ 1,055 Sq. Ft. = **256 BTU/Sq. Ft.** added

Percent increase = 256 BTU/Sq. Ft. ÷ 119,850 BTU/Sq. Ft x 100. = **0.2%**

New Combustible Load = 119,850 BTU/Sq. Ft.+ 256 BTU/Sq. Ft = 120,106 BTU/Sq. Ft

Allowable Combustible Loading for this area is 160,000 BTU/Sq. Ft.

Fire Area: CC
Fire Zone: RR
Fire Zone Desc: Relay Room (Includes MUX room and Annex)
Flr. Sq. Ft.: 2,565

Present Total Combustible Load (BTU/Sq. Ft.): 176,500

Additional Combustible Load:

Circuit	Ft.	BTU/FT Rating	BTU
C5626	80	1003	80,240
C5631	40	1003	40,120
C5634	80	1003	80,240
C5635	110	697	76,670
C5638	110	697	76,670
C5642	40	1003	40,120
C5643	100	697	69,700
C5655	80	1003	80,240
C5669	40	1003	40,120
C5671	100	697	69,700
C5673	80	697	55,760
C5674	40	697	27,880
C5678	80	697	55,760
C5679	40	697	27,880
C5692	40	1084	43,360
E0201A	70	840	58,800
R4512	50	840	42,000
R4513	20	840	16,800
Detector w/ Base	7	12,000	84,000

Total = **1,066,060** BTU added

BTU/Sq. Ft. = 1,066,060 BTU ÷ 2,565 Sq. Ft. = **415.62 BTU/Sq. Ft.**

Percent increase = 415.62 BTU/Sq. Ft. ÷ 176,500 BTU/Sq. Ft. = **.235%**

New Combustible Load = 176,500 BTU/Sq. Ft.+ 415.62 BTU/Sq. Ft = 176,915 BTU/Sq. Ft

Allowable Combustible Loading for this area is 160,000 BTU/Sq. Ft.

Additional loading is considered to be very negligible increase. Features such as halon suppression capability and manual water suppression capability mitigate the impact of this minor increase in combustible loading. Fire zone combustible loading classification remains High.

Note: Calculations for the Control Room fire zone are not required since all cabling to be installed is located in conduits and closed metal cabinets.

Fire Area: ABBM
Fire Zone: ABM
Fire Zone Desc: Auxiliary Building Mezzanine Floor
Flr. Sq. Ft.: 10,570

Present Total Combustible Load (BTU/Sq. Ft.): 23,226

Additional Combustible Load:

Circuit	Ft.	BTU/ Ft. Rating	BTU
C5618	10	5195	51,950
C5619	30	5195	155,850

Total = 207,800 added

BTU/Sq. Ft. = 207,800 BTU ÷ 10,570 Sq. Ft. = **20 BTU/Sq. Ft.** added

Percent increase = 20 BTU/Sq. Ft. ÷ 23,226 BTU/Sq. Ft x 100. = **0.1%**

New Combustible Load = 23,226 BTU/Sq. Ft.+ 20 BTU/Sq. Ft = 23,246 BTU/Sq. Ft

Allowable Combustible Loading for this area is 240,000 BTU/Sq. Ft.

The impact of the additional combustible material, which is very small, does not result in a classification change for any of the fire zones or fire areas affected by the modification.

It can therefore be concluded that this modification does not adversely impact the overall Fire Protection Program and overall compliance with Appendix R considerations or impact the ability to achieve and maintain safe shutdown in the event of a fire.

Additional loading is considered to be a very negligible increase. Features such as halon suppression capability and manual water suppression capability mitigate the impact of this minor increase in combustible loading. Fire zone combustible loading classification remains High

Section D: Signatures

Prepared by: _____ Date: 5/20/04
Assigned Engineer

Reviewed by: _____ Date: 5/20/04
Fire Protection System Engineer

Reviewed by: _____ Date: 5-20-04
Nuclear Safety and Licensing Team Engineer

PCR 2003-0037 Rev. 1
Appendix R Review

Attachment 1 P 1/3

Doug Martin
03/29/04 02:49 PM

To: Doug Martin/NOG/RG&E@RG&E
cc:
Subject: FW: Heat of Combustion

----- Forwarded by Gerry Bischoping/NOG/RG&E on 03/19/04 11:33 AM -----

"Moran, Peter" <Peter.Moran@R-SCC.com>
03/19/04 11:11 AM

To: "Gerald Bischoping (Gerry_bischoping@rge.com)" <Gerry_bischoping@rge.com>
cc:
Subject: FW: Heat of Combustion

Gerry,

Here is the combustible load info that you were looking for.

Peter D. Moran
Rockbestos Surprenant Cable Corp
Northeast District Sales Manager
(978) 549-7743

-----Original Message-----
From: Robinson, Peter
Sent: Thursday, March 18, 2004 2:59 PM
To: Moran, Peter
Cc: Soulliere, Doug
Subject: Heat of Combustion

The heat of combustion numbers you requested are listed below.

C520020 2/C #12 AWG OD 0.40": 840 BTU/ft

I460020 2/C #16 AWG OD 0.32": 542 BTU/ft.

Pete

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Gerry Bischoping
04/05/04 07:17 AM

To: Doug Martin/NOG/RG&E@RG&E
cc:
Subject: RE: cable heat of combustion rating

----- Forwarded by Gerry Bischoping/NOG/RG&E on 04/05/04 07:17 AM -----

"Soulliere, Doug" <Doug.Soulliere@R-SCC.com>
04/02/04 04:14 PM

To: "'Gerry_Bischoping@rge.com'" <Gerry_Bischoping@rge.com>
cc: "Moran, Peter" <Peter.Moran@R-SCC.com>
Subject: RE: cable heat of combustion rating

Hi Gerry,
Please see attached email for your BTU information.

Thanks,
Doug

-----Original Message-----
From: Gerry_Bischoping@rge.com [mailto:Gerry_Bischoping@rge.com]
Sent: Thursday, April 01, 2004 2:33 PM
To: Moran, Peter
Cc: Soulliere, Doug; Doug_Martin@rge.com
Subject: RE: cable heat of combustion rating

Peter,

Thanks for the update. We can use that information as soon as it is available. We have to list it on our design drawings for an upcoming modification. We can not issue the drawings until we fill in all the blanks.

Gerry

----- Message from "Greiner, Lee" <lee.greiner@r-scc.com> on Fri, 2 Apr 2004 16:14:04 -0500 -----

To: "Soulliere, Doug"
<Doug.Soulliere@R-SCC.com>

Subject RE: infor

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:

All in BTU/ft.

> -----Original Message-----
> From: Soulliere, Doug
> Sent: Thursday, April 01, 2004 10:11 AM
> To: Greiner, Lee
> Subject: infor
>
> Hi Lee,
> Rochester Gas is looking for heat of combustion for the following items:
> C530030, 3/c 14 Firewall [Greiner, Lee] 697
>
>
> C530070, 7/c 14 Firewall [Greiner, Lee] 1003
>
>
> P620064, 3/c 6 Firewall [Greiner, Lee] 2060
>
> They've placed an order yesterday for the two stock items.
>
> Please supply data.
>
> Thanks,
> Doug

Attachment 3

PCR 2000-0024, Revision 1
Appendix R/Fire Protection Conformance Verification

Appendix R/Fire Protection Conformance Verification Checklist

PCR #: 2000-0024 Rev 1

TSR #: NA

EWR #: NA

Project Name: **Control Room HVAC Replacement - CREATS and Emergency Cooling System Installation**

Answer all of the following questions. Discuss the basis for acceptance of any "yes" answers (and any "no" answers that are not explicitly obvious) in Section C.

A "yes" answer to any of the questions in Section A or question 18 in Section B requires review by NS&L.

Section A: Appendix R

Does the Modification include:	YES	NO
(1) Addition, deletion or revision to a safe shutdown component or associated cable? (See DA-EE-2000-066 and Reference 2.3.5, Volume 3)	___	X
(2) Addition, deletion or revision to a safe shutdown support component (i.e. relay, handwheel, motor starter, etc.)? (See DA-EE-2000-066)	___	X
(3) Changes to a safe shutdown system's operational mode (i.e. flow rate, change in normal valve positions, etc.)?	___	X
(4) Changes to existing circuit protection or addition of new circuits to safe shutdown power supplies? (See DA-EE-2000-066)	___	X.
(5) Changes or addition of non-safe shutdown cable to an enclosure (i.e. raceway, panel, etc.) already occupied by safe shutdown cables? (CRTS Database - See I&C/Electrical Systems Engineering)	___	X
(6) Changes to the circuits of any components whose spurious operation may defeat the function of a safe shutdown system? (See DA-EE-2000-066 and Reference 2.3.5, Volume 3)	___	X

Section A: Appendix R (Continued)		YES	NO
(7)	Changes to analysis DA-EE-2000-066, "Appendix R Conformance Analysis"	____	X
(8)	Any changes to or removal of fire wraps, fire stops or radiant energy shields? (See 21488 series drawings as follows: 21488-0201, sheets 1-3, Battery Room B 21488-0202, sheets 1-4, Intermediate Building 21488-0203, sheets 1-3, Containment 21488-0204, sheets 1-8, Auxiliary Building)	____	X
(9)	Changes to the emergency lighting system including the removal or repositioning of a light and the obstruction of a lights' illumination path?	____	X
(10)	Changes within the plant which limit access and egress to fight fires and/or perform safe shutdown functions?	____	X
(11)	Changes to the Reactor Coolant Pump Oil Collection System?	____	X
(12)	Changes that may compromise the bases of an approved exemption or evaluation from the requirements of Appendix R? Such bases may include low combustible loading, existence of detection and/or suppression, rapid fire brigade response, or the existence of a redundant component outside of the area of concern. (Exemptions and evaluations are found in Reference 2.3.5, Volume 3)	____	X

Section B: Fire Protection

A "yes" answer to any of the following questions requires review by the Fire Protection System Engineer.

Does the modification include:	YES	NO
(13) Changes to the diesel-driven fire pumps?	____	X
(14) Changes affecting fire detection systems? These may include changes to:		
- primary/backup power supplies	____	X
- detection system control panels	X	____
- alarm station arrangements	____	X
- type and arrangement of detectors	____	X
- wall, ceiling and floor arrangements	____	X
- ventilation system flow patterns	____	X
- detection system interlocks	____	X
(15) Changes affecting fire suppression systems? These may include changes to:		
- size and arrangement of piping	X	____
- spray nozzle location and spacing	X	____
- Halon system concentrations	____	X
- hose station, hydrant or hose cabinet arrangements	____	X
- portable fire extinguishers	____	X
- wall, ceiling or floor arrangements	____	X
- beam, duct or platform arrangements	____	X
- system interlocks	____	X
- alarm actuation systems	____	X
- primary/backup power supplies	____	X
- suppression system actuators	____	X
- room volume and ventilation	____	X
- discharge head obstructions	____	X
(16) Addition, deletion or revision to any fire area boundary/barriers including cable, duct, or pipe penetrations, fire dampers and fire doors?	X	____
(17) Changes to any fire barrier penetration seals or new penetration seals required and are they in accordance with the fire barrier penetration seals program requirements?	____	X

Section B: Fire Protection (Continued)		YES	NO
(18)	Changes to or removal of heat spread controllers/fuel spread limiters (i.e. curbs, dikes, drains)?	____	X
(19)	Changes in the fixed combustible loading of a fire area? If yes, calculate the changes which must be made to the Combustible Loading Database (Ref. 2.3.6) using the guidance of Appendix H to this procedure and forward to the Fire Protection System Engineer (attach a copy to this form).	X	____
(20)	Changes to the plant emergency communication system including radio transmission/reception interference due to structural arrangements?	____	X
(21)	Changes including structural obstructions, relocation of safe shutdown equipment and the installation of locks on previously unlocked doors?	____	X
(22)	Are changes to the existing fire response pre-plan drawings or fire response pre-plans required as a result of this modification?	X	____

Section C: Basis for Acceptance

Ginna commitments require that two new trains of a Control Room Emergency Air Treatment System (CREATS) be installed to provide clean filtered air to the control room during emergency and post accident conditions. This work is divided into four separate work scopes (ie: PCR's) to accomplish this task. The work is broken down such that: PCR 2003-0019 will install new supply air and return air ducts and supports in the Control Room Emergency Zone; PCR 2003-0020 will install the supply air and return air ducts between the Control Building emergency zone and the Relay Room Annex; PCR 2003-0037 will install all electric power and controls associated with the new system; and PCR 2000-0024 which installs the two new trains of CREATS mechanical components in the Relay Room Annex. Each individual PCR will perform an Appendix R/Fire protection Conformance Verification as required for that specified scope of work in accordance with the Change Impact Evaluation (CIE) process.

This revision 1 of the conformance verification applies to the PCR 2000-0024, revision 1, work scope only.and does not include any electrical power cabling and or control cabling considerations. Revision 0 of the PCR and the Appendix R/Fire Protection Conformance Verification documents the installation of spare electrical cable which was previously

added during the 2002 outage and is to be utilized under the PCR 2003-0037 work scope. As previously stated an Appendix R conformance verification is being performed under PCR 2003-0037 to document the additional installation of electrical power, control cabling, charcoal filter temperature alarm considerations and the new detection system in the Relay room Annex. Emergency lighting in the Relay Room Annex will not be affected. Existing emergency lights are for life safety only and are not planned to be obstructed by the proposed modifications.

Item 1 - The installation of the new CREATS system is not required for safe shutdown considerations. The system is designed to provide clean filtered air to the control room during emergency and post accident conditions.

Item 12 - The proposed PCR modification will not adversely impact the basis for the NRC approved exemption request associated with the lack of area wide suppression for the Control room fire zone. DA-ME-2000-064, Evaluation of Fire Zone Relay Room, was previously prepared to evaluate the addition of the Relay room annex to the overall fire area CC which includes the Control room fire zone. The basis for the conclusions of this analysis is being revised as a result of this modification since the Relay room annex will contain additional combustible loading as a result of the installation of the new charcoal filter units, but the conclusions of the analysis remain valid due to the installation of charcoal filter systems temperature alarms and the capability of attaching water supply connections to extinguish a potential charcoal filter fire. Also, the addition of a new early warning detection system in the Relay room annex further mitigates the affect of installing additional combustible materials in the Relay room annex. The revision of this analysis is planned as part of the modification closeout process.

Item 14 - This question was answered yes since the scope of this modification will add the two charcoal filter units that will be provided with high temperature alarm indication capability and a new detection system in the Relay room annex will be installed. These features will be provided under the scope of PCR 2003-0037.

Item 15 - This question was answered yes since the scope of this modification will add the two charcoal filter units that are provided with an internal fire suppression system for the purposes of extinguishing a potential charcoal filter fire. The internal piping is designed with exterior fire hose connection capability in the event a source of fire water is needed. Vendor supplied calculations document that the suppression system to be installed meets ASME AG-1 code requirements for a flow rate of 3.2 gpm per ft3 of carbon in the filter units. The capability of the yard loop to support this demand is also documented in this vendor supplied calculation.

Item 16 - The proposed PCR modification to install two new trains of CREATS in the Relay Room Annex will require breaching the metal siding wall barrier between the Relay Room and the Relay Room Annex for equipment installations. Although the siding is not considered a rated fire barrier it

serves as a barrier to minimize the leakage of halon from the installed suppression system in the Relay Room if the system were to actuate in order to maintain the system concentration. Prior to breaching the siding, the halon system will be declared inoperable, disabled and a fire watch will be posted as required by the fire protection program, and as directed by plant procedures, since the design concentration in the Relay room would most likely be affected. All breaches in the siding will be restored where required in accordance with procedure FPS-1, "Fire Barrier Control Procedure", requirements and repairs will be implemented to minimize the potential for halon leakage through this barrier. Since the wall will be restored to perform its original function this is considered acceptable.

The lack of a fire rated barrier between the Relay room annex and the Relay room does not present a significant reduction in overall fire protection features. Both rooms are part of the overall fire area CC and early warning detection systems are installed in the Relay room and will be installed in the Relay room annex as part of the overall upgrade of the CREATS system.

It should be noted that smoke dampers are not planned to be installed inside the ductwork leaving the Relay room annex and entering the Control room to minimize the potential for smoke to be spread into the Control room via the CREATS system ductwork. However, isolation dampers with minimal leakage specifications and far superior construction when compared to fire protection type smoke dampers are planned to be installed to appropriately address this potential.

It should also be noted that the temperature alarm devices to be installed under PCR 2003-0037 are designed such that the associated fan would be automatically tripped and dampers isolated to minimize the potential for smoke spread into the Control room.

Item 19 - Although, the new CREATS system is primarily made of stainless steel it will internally contain charcoal, flexible silicone rubber joints and the ducts will be insulated. The proposed ductwork insulation is Owens Corning Fiberglass which is considered fire retardant and will contribute negligible combustible loading and therefore will not be included in the combustible loading analysis. The charcoal to be installed inside the plenums will increase the amount of fixed combustible loading in the Relay room fire zone and the overall fire area. Based on vendor system drawings 1500 pounds of charcoal for each train of CREATS (3000 pounds total) will be added to the combustible loading in the Relay room annex. The flexible silicone rubber to be installed on the fans and plenum connections will also increase the amount of fixed combustible loading in the Relay room fire zone and the overall fire area. A conservatively estimated 10 pounds of rubber material will be added to the combustible loading in the room. The new combustible loading has been calculated and documented on the attached combustible loading worksheet. The increase is conservatively considered to be 38,700,000 BTU's

of charcoal and 194,000 BTU's of silicone rubber.

Additionally, rubber material inside the Control room, located above the suspended ceiling, was evaluated and included. These materials are associated with ductwork flex joints that are required to be installed to ensure that equipment noise is not transferred into the Control room by the operating fan equipment.

These increases do not change the fire classification for the overall Fire Area or the individual Fire Zones which are currently medium, low and high respectively.

Although the Relay room Fire Zone is classified as high, the increase in combustible loading is considered acceptable based on fire protection features discussed below :

Each train is designed with temperature monitoring installed in the plenums to detect a fire which will alarm in the control room. Each train will contain a connection to an internal suppression system to which a fire hose can be connected from an exterior yard hydrant. Additionally, PCR 2000-0037 includes detection in the Relay Room Annex which currently does not exist.

Based on the above information the additional combustible loading is considered acceptable since additional fire protection features are provided to minimize the potential for these additional hazards to effect existing plant equipment in the Relay room.

It should also be noted that the Relay room is also provided with three (3) backup water suppression systems which essentially provide protection for 1/3 rd of the room area by each suppression system. Also, manual suppression system capability via hose reels are available outside the Relay room if needed.

Item 22 - The proposed PCR modification to install two new trains of CREATS in the Relay Room Annex will require changes to the existing fire response plan procedures and pre-plan drawings. The Fire Response Plan procedure FRP-19.0 will be revised to identify the new hazards and the new fire protection features to be added that are associated with the CREATS modification. The Fire Response Plan drawing for the Control Building, 33013-2559 and 33013-2567 will be revised to reflect the equipment and features to be installed in the Relay Room Annex. These changes are part of the modification completion process and will be tracked under the Document Update Form (Procedure EP-3-P-0172) and the modification closeout process.

Based on the above information, it can be concluded that the proposed change does not adversely impact the overall Fire Protection Program and overall compliance with Appendix R considerations or impact the ability to achieve and maintain safe shutdown in

the event of a fire.

Section D: Signatures

Prepared by: _____ Date: 4/23/04
Assigned Engineer

Reviewed by: _____ Date: 4/23/04
Fire Protection System Engineer

Reviewed by: N/A _____ Date: _____
Nuclear Safety and Licensing Team Engineer

RG&E GINNA STATION

COMBUSTIBLE LOADING WORKSHEET

1.	Plant Record ID (i.e., EWR, TSR, PCR):	2000-0024
2.	Revision Number:	1
3.	Plant Designation (Fire Area/Fire Zone):	CC / RR
4.	Current Combustible Loading (BTU/ft^2) and classification:	
	a. Fire Area/Classification	115470 / Medium
	b. Fire Zone/Classification	176,500 / High
5.	Floor Area (ft^2):	
	a. Fire Area	5720
	b. Fire Zone	2565
6.	Combustible Type (i.e., Cable, Wood, Plastic, etc.):	Charcoal / Rubber
7.	Quantity of Combustible (Numerical Value Only):	3000 / 10
8.	Units of Measure (i.e., Gallons, Feet, Pounds, etc.):	Lbs / Lbs
9.	Heat of Combustion (BTU/Unit):	12900 / 19400
10.	Total added BTUs (multiply item 7 by item 9):	38,700,000 / 194,000
11.	Total added Combustible Loading (BTU/ft^2):	
	a. Fire Area	6766 / 34
	b. Fire Zone	15088 / 76
12.	New Combustible Loading (BTU/ft^2):	
	a. Fire Area/Classification	122,270 / Medium
	b. Fire Zone/Classification	191,664 / High

RG&E GINNA STATION

COMBUSTIBLE LOADING WORKSHEET

13.	Plant Record ID (i.e., EWR, TSR, PCR):	2000-0024
14.	Revision Number:	1
15.	Plant Designation (Fire Area/Fire Zone):	CC / CR
16.	Current Combustible Loading (BTU/ft^2) and classification:	
	a. Fire Area/Classification	115470 / Medium
	b. Fire Zone/Classification	38,725 / Low
17.	Floor Area (ft^2):	
	a. Fire Area	5720
	b. Fire Zone	2100
18.	Combustible Type (i.e., Cable, Wood, Plastic, etc.):	Rubber
19.	Quantity of Combustible (Numerical Value Only):	21
20.	Units of Measure (i.e., Gallons, Feet, Pounds, etc.):	Lbs
21.	Heat of Combustion (BTU/Unit):	19400
22.	Total added BTU (multiply item 7 by item 9):	407,400
23.	Total added Combustible Loading (BTU/ft^2):	
	a. Fire Area	71.22
	b. Fire Zone	194
24.	New Combustible Loading (BTU/ft^2):	
	a. Fire Area/Classification	115541.22 / Medium
	b. Fire Zone/Classification	38919 / Low