JOB ORDER COMPLETION FORM FOR DESIGN CHANGES

(VYDC's, EDCR's, Minor Mod's, and Setpoint Change Requests)

Section 1.

Implementing Cognizant Engineer

Job Order File Number 2000-060 Date JUNE 08, 2001
Initiating Document MM 2000-010 Work Order
DCE DAVID GRIMES / M/SDE ICE DENNIS HUMBERT / PROJ. ENG.
Name (Print) Department Name (Print) Department
Description of Work INSTALL DRYWELL MOISTURE BARRIER

Work Completion Date MAY 15, 2001 (starts 90 day closure clock)

The original completed and signed initiating document (EDCR, VYDC, MM or SPCR, including all attachments) is required to be contained in this Job Order File. Supporting documents (Work Orders, Event Reports, Purchase Orders, and Equivalency Evaluations) must be referenced but need not be in the file because they are processed via their own plant procedures.

Each Job Order File shall have a Table of Contents listing all documents contained in the file. The below lists may be used for that purpose or a separate list may be attached.

List Initiating Document Attachments

ECNs NA
CRs NA
Revisions MM 2000-010 ORIGINAL & MAJOR CHANGE w/ 50.59(a)(1)'s.
Installation(List DCNs) INSTALLATION REQ'MTS.; VSA 22.25 REV. 1
?? Test(List ECNs) COATINGS INSPECTION PLAN
Repair NA
Rework NA
Drawings 5920-12789, 5920-233
Other MINOR CHANGES & MAJOR CHANGE TO MM,
NEED COPY → COATINGS INSPECTION PLAN
Inclusion Verified By/Date Dennis Humbert / 6/22/01

Referenced Documents (list)

Work Orders 00-1840
Equivalency Evaluations NA
Event Reports 2001 0860; 2001 1169; 20011195
Purchase Orders VY011040, VY011538, VY011677, VY11216, VY 11164, VY11556, VY11178
Other
Other

TLO

Special Processes

Special Processes are welding, heat treating and non-destructive testing processes.

If Plant Special Processes are used, they need only be listed by title and revision number. The completed data sheets shall be placed in the JO File

	Title	Rev. #
Welding	NA	
Heat Treating	NA	
NDE	NA	

Verified By/Date NA /

Data Sheet Inclusion Verified By/Date NA /

If Non-VY special process procedures are used they shall be listed by title and revision number and a copy placed in the JO File along with the associated data sheets. VY Engineering review and approval of these non-VY special process procedures shall be documented in the JO File (or reference a generic Job Order File).

	Title	Rev.#
Welding	NA	
Heat Treating	NA	
NDE	NA	
Review and Approval Memo	NA	
GENERIC NPS PROCEDURE J.O. FILE 01-2001-054		

Inclusion Verified By/Date NA /

VY Personnel qualification sheets need not be placed in the JO File but the personnel involved must be listed on the associated data sheets.

Verified By/Date NA /

Non-VY personnel qualification sheets shall be placed in the JO File along with the review documentation of the qualifications if applicable (or reference a generic Job Order File).

Data Sheets & Qualification Documentation **Inclusion Verified By/Date** Dennis Hulbert / 6/22/01

Procurement

List Purchase Orders or the document referencing the P.O. Numbers

VY011040, VY011538, VY011677, VY011216, VY11164, VY11156, VY11778

Verified By/Date Dennis Hulbert / 6/22/0

Follow up

- Ensure that all required documents generated during the course of work are contained in this JO File.

  Verified By/Date Dennis Hulbert 1 6/22/01

- Ensure that documents exempted from inclusion in JO File are properly referenced.

  Verified By/Date Dennis Hulbert 1 6/22/01

- Ensure that any Event Reports associated with the work have been submitted as required by AP 0009.

  Event Reports that address nonconforming conditions associated with the work shall be resolved such that the nonconforming condition(s) does not impact the operability of the subject structure, system, or component.

List ERs 20011169, 20010860, 20011195

Verified By/Date Dennis Hulbert 1 6/08/01

Date installation was completed MAY 14, 2001 (Also record this date in the box at the top of page 1)

Notify TSPC of work completion Performed By/Date Dennis Hulbert 6/22/01

Date forwarded to the DCE 6/25/01 TO PAT MCKENNEY TO FORWARD TO SCOTT GOODWIN TO HAND TO DAVE GRIMES

Section 2.

Design Cognizant Engineer shall:

Notify TSPC of receipt Performed By/Date DF 1 6/27/01

a. Ensure that completed work meets all required codes and standards and that any deviations have been approved and documented in the JO File.
   DEVIATIONS DOCUMENTED IN MM 2000-010 VIA MAJOR CHANGE.

   Verified By/Date DF 1 6/27/01

b. Ensure all documentation in the file has been reviewed and has been found to be accurate, legible, and complete.

   Verified By/Date DF 1 6/27/01

c. Ensure all referenced documentation has been reviewed and has been found to be accurate, legible, and complete.

   Verified By/Date DF 1 6/27/01

d. Submit marked up and new drawings for revision in accordance with AP 6802. Drawings not submitted per AP 6802 (i.e. sketches) may be retained in the JO File if they are not larger than 8.5" X 14."

Verified By/Date D F [illegible] / 6/28/01

e. Ensure that a copy of all marked up and new as-builts are retained in the JO File in a separate folder that includes a copy of the associated VYAPF 6802.02 or .03 as an index.

LPC 1

Inclusion Verified By/Date D F [illegible] / 7/3/01

f. Submit UFSAR revision as required by AP 6036 [SURV9301401]. Change # N/A

g. Issue Interim change to DBD in accordance with AP 6007. Change # N/A

Verified By/Date N/A /

h. Ensure Environmental Qualification records updated.

List EQ DIs N/A

i. Ensure Controlled Documents, such as Fuse Listing, Appendix R Safe Shutdown Capability Analysis, and Fire Hazards Analysis, are updated. Refer to Appendix D of AP 6008 for a listing of Controlled Documents.

LPC 2

Verified By/Date N/A /

j. Ensure EMPAC updated Verified By/Date N/A /

or changes tracked via AP 0028 item # N/A [ER970786]

Verified By/Date N/A /

k. Ensure Stores Supervisor review of obsolete parts performed

Verified By/Date N/A /

or tracked via AP 0028 item # N/A

Verified By/Date N/A /

l. Ensure User Department notified of stock codes that were created or made obsolete as a result of this job [ER 970786].

Verified By/Date N/A /

or tracked via AP 0028 item # N/A

Verified By/Date N/A /

m. Ensure new or revised vendor manuals generated

Verified By/Date N/A /

or the information forwarded to the applicable Department via AP 0028 # N/A
[ER970786]

Verified By/Date N/A /

n. Ensure original Safety Classification Worksheets forwarded to the Technical Support Manager.

List Sheet #'s N/A

Verified By/Date N/A /

o. Ensure affected plant procedures revised and issued.

List of procedure #'s and new revision #'s N/A

Verified By/Date N/A /

Or tracked via 0028 item N/A Verified By/Date N/A /

p. Ensure other Plant Program documents changed or Coordinators notified of required program changes via AP 0028

	0028#			
App. "R"		or Verified By/Date	N/A	/
App. "J"		or Verified By/Date	N/A	/
Fire Protection		or Verified By/Date	N/A	/
Surveillance		or Verified By/Date	N/A	/
ISI		or Verified By/Date	DFG	7/2/01
IST		or Verified By/Date	N/A	/
Maint. Rule		or Verified By/Date	N/A	/
PM's		or Verified By/Date	N/A	/
Other		or Verified By/Date	N/A	/

q. Ensure affected calculations changed and "installed verified" as required by AP 0017.

Verified By/Date N/A /

or Design Engineering notified of changes via AP 0028 # N/A

Verified By/Date N/A /

r. For EDCRs, close out the package as required by WE-100 and completed WE-100 forms retained in JO File.

Verified By/Date N/A /

s. For VYDCs, close out the package as required by AP 6008 and completed forms retained in JO File.

Verified By/Date N/A /

t. For EDCRs and VYDCs; the Design Change reviewed for strengths and weaknesses, suggestions forwarded to the applicable Engineering Manager and a copy of the memo retained in the JO File.

Verified By/Date N/A /

u. Ensure discrepancies noted during this review have been resolved.

Verified By/Date DF [illegible] 17/3/01

v. Ensure duplicate documentation purged from file

Verified By/Date DF [illegible] 17/3/01

w. Forward the completed JO File to the Cognizant Department Manager.

By/Date DF [illegible] 17/3/01

x. Notify TSPC of file transfer to the Cognizant Department Manager.
PER TELECON TO FJB

Performed By DF [illegible] 17/3/01

Section 3.

Cognizant Department Manager or designee shall:

a. Perform a review of the file to verify accuracy, legibility, and completeness by utilizing VYAPF 6022.01 and the plant procedures used to generate the initiating documents as required.

JO file closed (stops 90 day closure clock) By/Date [illegible] 17.5.01

b. Notify the TSPC of file closure. Performed By [illegible] 17.5.01
by E-mail 7.5.01

c. Ensure JO File prepared and transferred to DCC per AP 6806 by the Department Administrative Assistant or Clerk.

Performed By/Date Tawny Currier / 8/21/01

TM/MM CONTROL SHEET (Continued)

[ ] TM [X] MM (Attach VYAPF 0020.08)

DESCRIPTION

Print clearly name of

Originator/Date: David F. Grimes 5/11/01 NO: 2000-010

TM intended to be replaced by a permanent Design Change? YES [ ] NO [ ] NA [X] (If yes, attach marked up-FSAR pages if applicable).

Description of Modification: (Mechanical/Electrical Modification, Safety Function Bypassed, Auto Feature Disabled, Etc.) (Attach VYAPF 0020.04 for all electrical TMs/MMs and VYAPF 0020.05 for all mechanical TMs/MMs): Provide a replacement seal design at the intersection of the drywell shell and the concrete floor at elevation 238'. The drywell shell will be stripped of paint within a full circumferential six inch band + 2"/- 0" measured from the bottom of the existing perimeter keyway and recoated with an approved, Service Level 1, protective coating. Concurrent with these activities an ASME IWE inspection of the shell will be conducted by Project Engineering. This project is being performed as a result of the IWE inspections conducted during RFO 21. These inspections revealed that some pitting was occurring in this area. Research into this issue indicates that the original seal had been removed and an effective reconfiguration of the seal was not performed. Reference VYM 2000/16, Drywell Seal Project Scope Memo and VYM 2000/43, Drywell Protective Coating Qualification Memo. **Major Change: The CZ11 coating failed to bond to the prepared surface and can not be qualified as a Service Level 1 Coating. The coating will be scraped from the area that received the application to remove loose material and create a sound tight substrate for adhesion of the epoxy coating. Vacuum blasting will be used to prepare the area of the shell that interfaces with the seal to prepare for the installation of the seal as detailed on 5920-12789. The seal will still provide the function it was originally designed for in that it will provide a moisture barrier to mitigate water entering the shell to concrete interface. The sealant in direct contact with the prepared steel surface is acceptable based on the manufactures technical literature for surface preparation. Steel in direct contact with grout is protected by the passivating effect of the grout. In areas where CZ 11 remains, added protection is provided by the zinc. The drywell shell will receive an application of Carboline 890 which will not meet Service Level 1 Criteria. The single coat application for one operating cycle has been verified with Carboline Corporation as an acceptable application until a permanent remedy is achieved. Corrective actions for the unqualified coating in this area will be tracked per an AP-0028 for possible repairs during RFO 23. ECCS strainer loadings are calculated in VYC-1677. Review of VYC-1677 documents that based on the size of the installed strainers, paint loading has minimal affect on NPSH. Additionally, VYC-1677 assumes that all the**

when removed?

FOR THIS application.

RECEIVED MAY 11 2001

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affected paint within the zone of influence detaches from the LOCA jet impact and loads on the strainer. Recent BWROG testing has documented that significant amounts of the paint, especially with the VY approach velocities, will settle to the bottom of the torus. Therefore, based on this review of VYC-1677, the addition of this small amount of potentially failed paint will have no impact on the operability of the ECCS suction strainers.

Describe how modification changes component/system operation: This modification will have no effect on component / system operations. The new seal is similar in form, fit and function to the original design.

System Engineering Group input obtained and incorporated in design.

DF [illegible] / 5/11/01
Originator Date

Reason for Change: Current seal configuration does not provide sufficient protection against corrosion of the drywell shell. Reliance on existing paint (primer) for corrosion protection has not proven adequate by itself. An engineered seal and protective coating system applied in accordance with recognized standards will provide an effective moisture barrier at this junction. **Major Change: A protective coating will be applied, but it will not be qualified as a Service Level 1 Coating.**

Describe design requirements (wire size, pipe material, etc.): Embecco 885 Grout - fill for existing keyway, Closed Cell polyethylene tape 3M #481 - bond breaker, Dow Corning 795 building sealant - silicone based elastomer, Carboline inorganic zinc primer, Carbo Zinc 11 SG - primer coat, Carboline 890 - Epoxy top coat. All materials to be Safety Class 2. **Major Change: The coatings have been changed to an unqualified coating. Residual unqualified CZ 11 can remain on the drywell shell after scraping the loose material and restoring the surface to a sound tight substrate consisting of bare steel and tightly adhered CZ11. The shell will be vacuum blasted in the area of the elastomer seal (1 inch wide stripe -0 + 1") to remove the CZ11 and expose the profile that exists on the steel from the previous surface preparation efforts. A single coat of 890 will be applied to the area above the seal.**

Describe any potential hazard presented by the modification (e.g., fire, flooding, rad consequences, etc.) and provide a detailed assessment if appropriate (UND9302TP1): Methanol vapors are evolved during the sealant curing process. Adequate ventilation needs to be provided during the application and curing period (14 days max).Paint vapors addressed per manufacturers instructions. Cleaning solvent vapors will also be emitted.

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TM/MM CONTROL SHEET (Continued)

Indicate the mode(s) of operation for which the TM is acceptable/applicable.

Shutdown _____ Refuel _____ Startup _____ Run _____

Procedures affected: (TMs and MMs) None

Recommendations for new PMs or changes to existing PMs:

None

Other Plant documents and programs affected (MMs only) (drawings, DBD, FSARs, VYEMs, Maintenance Rule, EQ, Appendix R, Setpoint Controls, EMPAC, etc.):
5920-233 - Note added to designate seal detail dwg and minor mod reference
Add seal detail to ISI inspection program
(Note: Reference calculation for ASME XI IWE thinning and screening criteria is VYC-2043).

For TMs intended to be replaced by Design Changes, and all MMs, obtain new equipment EMPAC asset IDs and initiate all safety classifications worksheets per the VYSCM.

For MMs, initiate Drawing Change Notification forms in accordance with AP 6802. DF Bu / 5/11/09
Originator Date

Control Room/TSC Drawings affected (see Appendix A of DP 0029):
None

Review outstanding TMs/MMs and the Design Change List to ensure the cumulative affect of other TMs are factored into the TM/MM.

Comments: This modification will have no affects on pending design changes or temporary modifications.
DF Bu / 5/11/01
Originator Date

All applicable elements of Appendix "A" have been considered and

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addressed.

DFS / 5/11/01
Originator Date

Appendix R Review completed (attach VYAPF 0020.09)

DFS / 5/11/01
Originator Date

Discuss additional training requirements with the affected Dept. Head(s). Training Required? YES [ ] NO [X]

Affected Dept.(s) Project Engineering - ISI

SAFETY CLASSIFICATION OF SYSTEMS, STRUCTURES AND COMPONENTS

[ ] SC-1 [X] SC-2 [ ] SC-3 [ ] SCE [ ] All NNS SSCs

[ ] OQA/Vital Fire

INSTALLATION/RESTORATION REQUIREMENTS:

Prerequisites: (RWP's, Housekeeping, Fire Permit, etc.):
Verify installation began within 30 days after Shift Supervisor approval.
RWP, Housekeeping, Individual Qualification with approved painting procedures. Craft management and craft shall be familiar with VY safety manual and SSPC PA Guide 3: *A Guide to Safety in Paint Application.* (Relative to the use of airless sprayers). Discuss ALARA plans with Radiation Protection. ANI notification is required prior to the start of work. Chemistry approval of solvents, paints and sealants.

Precautions: Training / Personnel qualifications for abrasive blast, Rotopeen and needle gun. Adequate ventilation during coatings applications and seal installation. Ensure Operations is aware of painting and sealant activities and precautions with respect to Standby Gas Treatment. Lead paint may be encountered in seal area.

Installation Instructions: The concrete floor within 1 foot of the perimeter edge shall be inspected for cracks and reported to the project engineer. Clean effected area of containment shell in accordance with SSPC SP-1 (solvent clean). Clean keyway to sound tight substrate. Clean effected area of containment shell via grit blast, Rotopeen and/or needle gun to achieve required profile (1-3 mils, SSPC-SP 10, Near-White Blast Cleaning). Other hand tools may be employed as required to achieve an initial SSPC-SP 11 (Power Tool Cleaning to Bare Metal) with final surface preparation conforming to SSPC-SP 10. Profile verification (1 to 3 mils) by QC required. Vacuum to thoroughly remove residuals. Surface shall be dust free prior to application of primer. Notify ISI coordinator to inspect shell of primary containment in accordance with IWE program. Paint (agitated spray application) wall of containment with Carboline

JO FILE

Carbozinc 11 SG primer. Note that the prime coat will be applied to the steel adjacent to the bottom of the keyway, which will be filled with grout. Install grout to within ½ inch of floor level. Cure in accordance with manufacturers direction. Cut and install bond breaker polyethylene tape(2"overlap at joints, Nominal.). Apply and dry tool (no soap) Dow Corning 795 sealant. (1/2 inch thickness max.) Fiberglass screen rub prior to Mist coat and topcoat with Carboline 890 epoxy paint. Paint is to be inspected for holidays and film thickness in accordance with approved procedures. Protective coating shall be installed in accordance with manufactures directions. Apply top bead (1/4 inch nom.) of sealant after seal has set. Epoxy paint may be cut against the top bead of sealant if desired. Mask or otherwise protect adjacent surfaces from paint overspray See Installation Requirements and Coatings Inspection Plan for further details. **Major Change: The Sevice level 1 requirements for the coating have been removed from the scope of work. A single coat of 890 will be applied by brush or roller at a 6 mil DFT (-1, + 2 mils). This coating will extend from the top of the seal and be feathered into the original coating approximately 6 inches above the floor level. The Coatings Inspection Plan no longer applies to this project. The remaining CZ 11 within the seal area can be left in place since it will serve to provide some cathodic protection to the shell. The CZ 11 will be removed from the interface of the shell with the Dow Corning 795 elastomer utilizing vacuum blasting. The vacuum blasting will be performed to expose the profile of the steel surface. The area will be a 1 inch band (-0", +1") for the full circumference of the drywell at the seal to steel interface. The gap allowance for the bond breaker tape ~~has been increased to ½"~~ will be as practical. to allow for the irregular surface of the existing concrete with the intent of making it as tight to the adjacent surfaces as practical. Note: The I&T for this project will be modified from step 7.13 onward. The original I&T will be retained in the JO file for historical purposes. The modified section of the I&T is attached.**

MINOR CHANGE Dan Hulbert 5/11/01

Installation Verification/Testing Requirements: Inspect seal to verify that adherence has been maintained to concrete floor and steel shell. This should be verified after seven days of curing. Note that moisture curing will continue after 7 days and moisture will remain in the drywell after closure and inerting. Painted surfaces shall be inspected for dry film thickness. See attached Coatings Inspection Plan for verification requirements. Notify ISIPC for preservice inpections of seal and protective coatings in accordance with PP 7024, IWE Inservice Inspection Program. **Major Change: Wet film thickness measurements will be taken to verify applied millage. Inspection of the seal will not be performed after 7 days of curing. An as-left condition will be documented under the IWE program as currently planned and inspection will be performed during RFO 23.**

Restoration Instructions (TM only): _____

Restoration Verification/Testing Requirements (TM only): _____

Reviewed By: P.B. [illegible] / 5/11/01

JO FILE

Implementing Dept. Head Date

MM Screening attached (VYAPF 0020.08) [x] YES [ ] NA (TM only)

50.59(a)(1) Screening Evaluation completed and attached [X] YES

Safety Evaluation Required [ ] YES [X] NO Describe when TM will be restored:_____

Approximate date TM will be closed:_____

TM/MM details/safety review/eval performed: S D Goodwin 15-11-01
Originating Dept. Head Date

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ENGINEERING REVIEW:

DE-E/I&C Not Reqd SDR 5/14/01

Additional Reviews Required:

FSD J H Gallagher 5/14/01

System Engineering [X] 5/11/01 Design Engineering [X] for KFB 5-11-01 per telecon

Fire Protection [X] 05/14/01 Appendix J [ ] N/A

ISI [X] 5/14/01 IST [ ] N/A EQ [ ] N/A

Other [ ] N/A

Safety Class power supplies affected? [ ] YES [X] NO

If "YES", Design Engineering assessment of cumulative effects performed? [ ] YES

Review associated MM Screening, 50.59(a)(1) Screening and 50.59(a)(2) Safety Evaluation.

Reviewed By: 5/14/01
Director of Design Engineering Date

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OPERATIONS REVIEW:

Operating Procedures affected, identified [ ] YES [X] NO
Others identified: None affected

Procedures requiring revision prior to TM or MM implementation/ restoration:
None

Additional operational controls necessary:

Installation: None

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TM/MM CONTROL SHEET (Continued)

Restoration: None

Reviewed By: _____ / 5-11-01
Operations Manager (or Designee) Date

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QSS REVIEW: (For Safety Related MMs Only)

_____ / 5/11/01
Quality Services Supervisor Date

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APPROVAL

TM/MM Approved By: _____ / 5-11-01
Originating Dept. Head Date

PORC Review at Meeting #: 2001-033 M.M. Howe Date: 5/11/01

Plant Manager Approval: _____ Date: 5/11/01

Distribution of approved TM/MM:

Implementing Department Head - Original
Training Manager - 1 copy
OQA Manager - 1 copy
PEAA - 2 copies with marked up drawings

_____ for DFG 5/11/01
Originating Dept. Date

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INSTALLATION/RESTORATION: (Restoration for TMs only)
IMPLEMENTOR

Work Order generated? YES [✓] NO [ ] WOR # 00-1840-00

Controls established to ensure required Procedure changes for TMs and MMs will be in place prior to system operation: N/A

List location of all TM tags: N/A

For MMs JO file obtained; JO # 2000-0060

_____ / 5/11/01
Implementing Dept. Date

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SHIFT SUPERVISOR OR DESIGNEE

Notify the PEAA to:

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1. Put copies of the TM/MM in the pending change files
2. Stamp all Control Room drawings identified that are affected by the TM/MM.

_____ / 5/11/01
Shift Supervisor or Designee Review per S.S. Date

Installation Authorized By:

_____ / 5/11/01
Shift Supervisor Date

Copy of TM/MM filed in Control Room book with annotation that it is a copy and the original is in the field for installation.

_____ / 5/11/01
Implementing Dept. Date

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For TM Installation:

Installation verified complete and testing performed, tags installed, original TM returned to Control Room, TM Index updated, FSAR markups submitted, if applicable. PEAA notified of TM installation, and Shift Supervisor notified:

N/A / _____
Implementing Department Date

Post Installation Test Performed, file original (TM) in Control Room.

N/A / _____
Shift Supervisor Date

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For TM Restoration:

TM Restoration Authorization: (Plant Conditions compatible with restoration, verify operating procedures revised and ready for issuance or controls in place to ensure procedures are revised and issued prior to operation)

N/A / _____
Shift Supervisor Date

TM Restoration complete, and verified: (tags removed, testing complete, control sheets .03, .04, and .05 completed, notify Shift Supervisor)

N/A / _____
Implementing Department Date

Notify the PEAA to:

1. remove copies of the TM from the pending change files

JO FILE

2. sign all Control Room drawings that were stamped as a result of the TM.

TM Restoration Complete and Post Retest Performed: (Verify all caution tags, lineup instructions, temp labels removed, and notify Implementation Dept. that post restoration testing is complete, and forward the completed TM to the PEM).

N/A / _____
Shift Supervisor Date

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For MMs:

Installation initiated within 30 days of Shift Supervisor authorization. If not, contact originator prior to installation.

Installation verified complete and testing performed, revised markups copies given to the PEAA if applicable, MM Index updated, Shift Supervisor notified and MM package forwarded to Shift Supervisor.

[signature] / 5/15/01
Implementing Department Date

Post Installation Testing performed and PEAA notified that MM has been installed:

[signature] / 5/15/01
Shift Supervisor Date

Remove the copy of the MM from the Control Room MM Log Book, forward completed original MM to the Implementing Department for JO closeout.

[signature] / 5/15/01
Implementing Department Date

NOTE

Final MM drawing revisions will be distributed and filed in the Control Room and TSC (as applicable) via DP 0029, "Control Room and TSC Design Control Records".

JO FILE

50.59(a)(1) SCREENING EVALUATION

Affected Document Minor Modification 2000-010

Description of Change(s) (List each change that the evaluation supports or reference that provides changes)

Installation of a drywell seal at elevation 238' and perimeter painting of a cicumferential strip approximately 6 +/- inches wide.

Based on a review of the following questions, determine if the proposed activity has the potential to impact safe operation of the facility and requires a 10CFR50.59(a)(2) evaluation. A "YES" answer to any of the questions 2 through 25 requires that a written 10CFR50.59(a)(2) evaluation be performed. Either evaluation may require an FSAR change in accordance with AP 6036 or a TRM change in accordance with AP 0060. These questions need to be answered based on a review of the activity (i.e., procedure change, Temp. Mod., Equivalency Eval., Lineup Deviation, etc.) vs. the requirements of the FSAR or interim FSAR changes, the TRM and Tech. Specs. The originator should provide a response to "NO" answers that are potentially applicable to provide a basis for the conclusion.

FSAR, TRM & Tech. Spec. sections reviewed 5,12.6, 12.2.2.2, 12.3.5

FSAR, TRM & Tech. Spec. sections affected None

*1. Would the activity require a Tech. Spec. change prior to implementation? If "YES" then a Tech. Spec. change must be completed before the activity can commence.

YES NO

2. Would the activity result in a change that would directly or indirectly render a system, structure, or component (SSC) either different in design, or different in function or in method of performing a function (e.g., change manual to automatic, etc.) than that described (written or pictorial) in the FSAR, interim FSAR change or TRM. (Note that pictorial changes that do not effect system design parameters or system operation are not considered to satisfy this criterion; eg: addition of an instrument isolation valve.) YES NO

The seal as described in 5920-233, will be maintained in form, fit and function.

* A yes response to the question indicates that the activity cannot be performed under 50.59. Prior regulator approval is required to perform activities which require a T.S. change.

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3. Would the activity modify any SSC whose configuration can significantly impact a parameter specified in the FSAR or TRM? (For example, a significant change to water level or components within the primary containment can impact the containment net free space which is specified in the FSAR and used in LOCA calculations, EOPs, and the Appendix J Program). YES NO

There is no impact on parameters specified in the FSAR or TRM.

4. Would the activity require changes to any procedural requirements identified in the FSAR, interim FSAR change or TRM? Note that "procedural requirements" includes any specific responsibilities and activity sequences identified, but does not require a 50.59(a)(2) just because the procedure is identified in the FSAR, TRM or T.S.

YES NO

5. Would the activity negatively affect instrument accuracies and response characteristics or render them outside the limits set forth by FSAR accidents and transients.

YES NO

6. Would the activity cause an SSC to operate outside the structure/system/component design or testing limits?

This activity mitigates the effects of corrosion on the shell and therefore, supports the safety function & design intent of primary containment. YES NO

7. Would the activity create additional loads (mechanical or electrical) that are greater than the design capacity of the affected equipment or system or change the sequence in which the loads are applied? (e.g., would diesel loading or sequence be affected?) YES NO

Six inches of unqualified coating material is being removed and Replaced with an unqualified coating. Based on review of VYC-1677, the addition of this small amount of potentially failed paint will have no impact on the operability of ECCS suction strainers.

8. Would the activity result in increased vibration, water hammer, fatigue, corrosion, HELB, thermal cycling, pipe whip, flooding (internal and external), missile effects, fire, heavy loads, or electrical noise such that any SSC is or could be negatively affected? YES NO

This activity is to protect the drywell from corrosion and therefore supports the primary containment safety function.

9. Would the activity have the potential to non-conservatively change environmental conditions or create/delete air flow paths from one EQ

JO FILE

volume to another?

YES NO

10. Would the activity modify interfaces or interaction between SSC's such that any SSC's are negatively affected?

Debris potential has been assessed without negative consequences. YES NO

11. Does the activity (failure modes) have the potential to result in (or increase the probability of) offsite radiological consequences that are greater than those specified in the FSAR?

YES NO

12. Would the activity change or affect any SSC's seismic qualification, EQ equipment qualification, redundancy or separation criteria, Appendix R compliance, ISI/IST Program compliance?
Inspection of this area is included in the ISI program.

YES NO

13. Would the activity introduce potential seismic II over I concerns?

There are no seismic concerns for this activity. YES NO

14. Would the activity modify any system or component whose operation affects the calculations used in the ODCM (e.g., effluent monitors, ventilation flowpaths, etc.)?

YES NO

15. Would the activity negatively affect system/equipment protective features?

YES NO

16. Would the activity significantly increase the frequency of system operation?

YES NO

17. Would the activity introduce testing methods that are not consistent with current system/equipment testing requirements?

Test / Inspection methods are consistent with ISI current practices.

YES NO

18. Would the activity introduce additional credible failure modes or single failures that are not bounded by FSAR assumed failure modes? (Including consideration of analog to digital replacement concerns as discussed in Generic Letter 95-02).

YES NO

19. For radioactive waste systems, would the activity introduce any concerns when using the criteria of IE Circular 80-18, "10CFR50.59

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Safety Evaluations for Changes to Radioactive Waste Treatment Systems" and IE Bulletin 80-10, "Contamination of Nonradioactive System and Resulting Potential for Unmonitored, Uncontrolled Release to Environment" as guidance. YES NO

20. Does the activity involve performing special tests or experiments, as required by AP 6001?

YES NO

21. Does the activity change quality group classifications of any SSC?

YES NO

22. Does the activity involve a maintenance activity where a decision has been made to operate in a configuration that is different than FSAR, interim FSAR change or TRM requirements? YES NO

The seal is not described in the FSAR, the corrosion protection of the drywell is described in Section 12.2.2.2

23. Could the change affect the implementation of the E-Plan (e.g., TSC habitability during any of the accidents as analyzed in the FSAR or interim FSAR change)?

YES NO

24. Would the activity introduce additional possible malfunctions of safety related or non-safety related equipment that could initiate an abnormal operational transient as described in FSAR Section 14.5? (ER 97-1644)

YES NO

25. Are there any other nuclear safety related issues associated with the change that provide cause for a formal safety evaluation to be performed?

YES NO

Additional Comments:

There are no safety related issues that provide cause for a formal safety evalauation.

Safety Review Performed By*: D F Brown / 5/11/01
Date

* personnel performing safety reviews shall be qualified by successful completion of the applicable training.

Safety Evaluation Required [ ] Yes [X] No

Approved By: [signature] / 5.11.01
Department Head Date

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MINOR MODIFICATION (MM) SCREENING EVALUATION

Review the following questions to determine if a proposed change can be accomplished using a Minor Modification. A "YES" answer to any of the following questions indicates that a Minor Modification cannot be used.

1. Does the change have any programmatic implications (EQ, Appendix R, Appendix J, ISI, IST, NPDES, Setpoint Control, etc.) that would indicate that additional Design Control (Design/I&T) is needed? This area is currently part of ISI — YES NO

2. Does the change involve changes to multiple SSC and is the change complex? — YES NO

3. Does the change require extensive calculations or analysis to justify that would indicate that additional design control (Design/I&T) is needed? — YES NO

4. Are there any other attributes (e.g., high cost, multiple contractors, scheduling constraints, etc.) associated with the change that would warrant application of additional design or administrative controls on the change? — YES NO

Screening Performed by* D.F. Jimes 5/11/01

* Review will be performed during MM review.

replied
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MAY 11 2001

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APPENDIX R REVIEW (INS9526_01, ER960433_01)

MM/TM No.: MM 2000-010

Title: Drywell Seal

Plant System Affected: Primary Containment Safety Class: 2

Cognizant: David F. Grimes

Appendix R Review Items to be Considered:
[If any question is answered YES, additional Appendix R specialist review is required. However, if the document is a TM which will be implemented and restored while the plant is in cold shutdown during a single outage, Appendix R specialist review is not required.]

1. Does change involve electrical components or wiring? YES / NO

2. Does change involve Appendix R Safe Shutdown components, including any support system components [Refer to SSCA Appendix E1 and E2 for listings]? YES / NO

3. Will change impact any Appendix R lighting or visibility therefrom? YES / NO

4. Will change impact any Appendix R fire barrier, CFZ, or Suppression zone? YES / NO

5. Will change require revision/update of CWDs? (List below) YES / NO
6.
6. Will change require revision/update of CCLs? (List below) YES / NO

7. Does change impact an Appendix R Safe Shutdown Strategy? YES / NO

8. Will change require an update/modification of Appendix R documentation (including cable list database)? YES / NO

Review Comments:

N/A

CWDs:

CCL:

DFG / 5/11/01

Design Engineering Reviewer (if applicable) Date

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MAY 11 2001

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Comments on MM 2000-010 Related to Potential Impact on ECCS Suction Strainer Debris Loads

The MM introduces some new material into the Drywell, consisting of grout, polyethylene sheeting as a bond breaker, and a silicone sealant, to fill in a gap between the concrete floor at the 238 ft elevation and the drywell shell. This is to replace material previously removed and to restore the moisture barrier to protect drywell integrity against corrosion. These materials are not considered to be a concern from an ECCS suction strainer debris loading perspective. The strainers were sized to accommodate large quantities of fibrous debris and other materials based on a conservative application of BWROG guidelines. For example, rather than use the guidelines to determine a Zone of Influence associated with a jet of water/steam from a LOCA, the sizing was conservatively based on ½ of the material in the drywell. In addition to the insulation material, the sizing also includes accommodations for sludge, rust flakes, and an allowance for qualified coatings directly impinged by water/steam jets. It was also determined during the performance tests of the strainers that, under post-DBA/IBA conditions of recirculation flow, only fiber is collected on the strainers, i.e. heavier material sinks to the bottom of the torus. If it is conservatively assumed that ½ of the polyethylene sheeting is deposited in the torus, its total surface area would be about 12 sq ft, which is significantly less than the surface area of any one of the four strainers.

BC Slejr
9/7/00

How was this determined?

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00-010.01

Per telecon with B Slifer, VYC-1678, the debris loading calculation for the torus is not affected by the materials installed under mmod 2000-010. The maximum debris loading occurs with a pipe break outside of the 238" elevation area and is the bounding condition for the torus loading issue.

DF Grimes 9/12/00

BC Slifer - per telecon 9/12/00
- DFG

JO FILE 00-010-02

MECHANICAL DATA SHEET

DESCRIPTION: Provide a sketch or other suitable description

SEE 5920-12789 FOR SEAL DETAIL AND 5920-233 FOR SEAL LOCATION

Installed By_____ Date_____
Verified By_____ Date_____
Restored By_____ Date_____
Verified By_____ Date_____

JO FILE

MECHANICAL DATA SHEET

DESCRIPTION: Provide a sketch or other suitable description

SEE 5920-12789 FOR SEAL DETAIL AND 5920-233 FOR SEAL LOCATION

Installed By	Darryl Coffman	Date	5-14-01
Verified By		Date	5/14/01
Restored By	NA DH 5/14/01	Date	
Verified By	NA DH 5/14/01	Date	

DOCUMENT CONTROL
ISSUED
ACCOUNTABLE HOLDER

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VYAPF 0020.05 (Sample)
AP 0020 Rev. 21
Page 1 of 1
RT No. 08.L03.207

Installation Requirements for
Minor Mod 2000-010
Drywell Moisture Barrier Replacement

1.0 PURPOSE

The purpose of this procedure is to provide detailed instructions and define technical requirements for the replacement of the seal at the intersection of the drywell liner plate and the concrete floor at elevation 238' and application of a protective coating on the drywell shell to remediate pitting and corrosion.

2.0 DISCUSSION

2.1 A 50.59(a)(1) screening has been performed and is included with Minor Mod 2000-010. There are no nuclear safety related issues associated with the installation portion of this modification that would require a 50.59(a)(2) Safety Evaluation to be performed.

2.2 Work Order 00-01840-00 has been written for implementation of this minor mod.

2.3 The steps in these installation requirements are presented in the anticipated order of completion. Some steps may be performed out of sequence or concurrently with other steps with the prior approval of VY Project or Design Engineering.

2.4 When the liner has been stripped of paint in the 6" +/- wide band above the bottom of the existing perimeter keyway, an ASME IWE inspection ~~shall be performed by Project Engineering.~~ An inspection for cracks in the concrete floor within 12" of the perimeter shall also be performed by Project or Design Engineering. Design engineering shall be contacted to disposition any findings.

Need data sheets for this inspection.

2.5 The seal shall be inspected to verify adherence to both the concrete floor and the steel liner plate after a minimum seven days of curing. Painted surfaces shall be inspected for dry film thickness in accordance with the attached Coatings Inspection Plan.

2.6 A mockup of the drywell shell surface preparation and the painting shall be performed at the NPS fabshop prior to the start of RFO 22.

2.7 Vermont Yankee Project Engineering is responsible for the implementation of this design change.

2.8 NPS is responsible for the installation of this minor mod with inspections performed by NPS QC. Quality oversight may be provided by VYQA.

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2.9 A self-contained vacuum blasting system will be used to remove the existing coating on the shell and provide the surface prep for the new coatings. This will minimize the potential for airborne contamination and dust. Protection against airborne contamination shall be per the requirements of RP.

2.10 A vapor control plan will be used to minimize the methanol fumes that are emitted from the Dow Corning sealant, the fumes from the cleaning solvents and the fumes from the Carboline paint products. Chemistry and RP will be involved in the development and implementation of the vapor control plan. ~~Coppus air-driven ventilators with no moving parts will be used to remove fumes from the drywell.~~

MINOR CHANGE
SDL 4-25-01
04-25-01

3.0 REFERENCES

3.1 Codes and Standards

3.1.1 SSPC-SP-1, Steel Structures Painting Council, Surface Preparation Specification No. 1, "Solvent Cleaning".

3.1.2 SSPC-SP-10, Steel Structures Painting Council, Surface Preparation Specification No. 10, "Near-White Blast Cleaning".

3.1.3 SSPC-SP-11, Steel Structures Painting Council, Surface Preparation Specification No. 11, "Power Tool Cleaning to Bare Metal".

3.1.4 SSPC-Vis-1, Steel Structures Painting Council, Visual Inspection Specification No. 1, "Pictorial Surface Preparation Standards for Painting Steel Surfaces".

3.1.5 ASTM 5144, "Standard Guide for the Use of Protective Coatings in Nuclear Power Plants."

3.1.6 ASTM D4537-91, "Standard Guide for Establishing Procedures to Qualify and Certify Inspection Personnel for Coatings Work in Nuclear Facilities"

3.1.7 EPRI TR-109937 "Guideline on Nuclear Safety Related Coatings."

3.1.8 Coatings Inspection Plan (attached) – Drywell Elevation 238'.

3.1.9 ASME Section XI, 1992 – Winter Addenda 92A

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3.2 Procedures and Documents

Note: All Procedures shall be the latest approved revision.

3.2.1	MM 2000-010 and all applicable drawings and attachments
3.2.2	AP 0019 Control of Temporary and/or Portable Materials
3.2.3	AP 0020 Control of Temporary and Minor Modifications
3.2.4	AP 0021 Work Orders
3.2.5	AP 0042 Plant Fire Prevention
3.2.6	AP 0052 Pre-Job Briefing
3.2.7	AP 0070 ASME Section XI Repair and Replacement Program
3.2.8	AP 0549 Lead Practices and Metals Monitoring
3.2.9	AP 0619 Chemical Control/Hazard Communication Program
3.2.10	AP 6024 Plant Housekeeping & Foreign Material Exclusion
3.2.11	AP 6025 Quality Control/Independent Inspection
3.2.12	Vermont Yankee Safety Manual
3.2.13	PP-1001 NPS Project Procedure for Qualification and Certification of Inspection, Examination and Test Personnel
3.2.14	PP-1002 NPS Project Procedure for Quality Inspection
3.2.15	PP-0201 NPS Project Procedure for Qualification and Training of Personnel
3.2.16	PP-0951N NPS Project Procedure for Certification of NDE Personnel and Visual Inspection Personnel
3.2.17	PP-1701 NPS Project Procedure Quality Assurance Records
3.2.18	PP-0959P NPS Project Procedure for Service Level 1 Painting and Protective Coating Application
3.2.19	PP-0582C NPS Project Procedure for Installation of Hilti Bolts, Grouting and Core Drill Operations.
3.2.20	PP-7024 Containment Inservice Inspection Program

4.0 APPARATUS

4.1 Vermont Yankee shall supply tools, equipment and materials required for the seal replacement.

4.2 NPS shall supply the qualified personnel to complete the modification.

4.3 Tolerances shall be as stated on the installation drawings.

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5.0 PRECAUTIONS

5.1 All steps shall be performed sequentially unless otherwise noted or unless a sequence change has been approved by the VY Design or Project Eng.

5.2 If an unexpected action results during performance of the procedure, do not proceed with uncertainty. The user must exercise judgement, experience and training to: 1) Place the system or component in a safe condition so as to preclude a potential transient, equipment damage, or personal injury, 2) notify the VY!CE and 3) notify the Shift Supervisor of the situation if it impacts plant equipment.

5.3 Ensure all work areas are well lit and stagings are built in accordance with the requirements of the Safety Manual and AP 0019. Ensure temporary/portable materials are properly controlled per AP 0019.

5.4 Conformance to the VY Safety Manual is mandatory and shall be monitored.

5.5 Ensure all persons working with hazardous materials are aware of MSDS requirements.

5.6 Ensure that the vapor control plan has been established with Chemistry and RP personnel. It is recommended that the drywell be continuously sampled for flammable vapors during the painting and sealing activities.

5.7 Ensure that the painting safety issue of airless sprayers has been reviewed and understood.

5.8 Ensure the VY Shift Supervisor is notified prior to beginning work activities.

5.9 Ensure the VY Shift Engineer is notified prior to the introduction of combustibles or flammables (i.e. paint, solvent, sealant) into plant areas.

5.10 All precautions have been read, understood and discussed at the pre-job briefing.

NPSCS [signature] Darryl Coffman DATE 05-01-01

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6.0 PREREQUISITES

6.1 Verify Minor Mod 2000-010 has been approved by the Vermont Yankee Plant Manager.

VYICE E. J. Tainter DATE 04-27-01

6.2 Verify Work Order 00-01840-00 has been released for implementation.

VYICE E. J. Tainter DATE 05-01-01

6.3 Verify all chemicals required for this modification have been approved for use on site and in the drywell.

VYICE E. J. Tainter DATE 04-27-01

6.4 Verify that a flammable storage cabinet has been set up in the drywell ante room for storage of paint, solvent and sealant.

VYICE E. J. Tainter DATE 04-27-01

6.5 Verify all construction personnel associated with the implementation of this minor mod have been properly indoctrinated and qualified.

NPSCS Darryl Coffman DATE 05-01-01

6.6 Ensure that a pre-job briefing has been completed with all personnel involved in the repair activities.

NPSCS Darryl Coffman DATE 05-01-01

6.7 Verify that the shell plate mockups have been performed and accepted by VY engineering.

VYICE E. J. Tainter DATE 05-01-01

6.8 Verify that the IWE inspections required for this MM have been coordinated with the IWE Coordinator.

VYICE E. J. Tainter DATE 05-01-01

6.9 Verify that housekeeping requirements per AP 6024 and any additional requirements stipulated by the Shift Supervisor have been established.

NPSCS Darryl Coffman DATE 05-01-01

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6.10 Perform a visual survey of the work areas for existing damage.

NPSCS [signature] Darryl Clifford DATE 04-30-01

VYICE [signature] E. J. Tainter DATE 05-01-01

6.11 Notify the VYICE of the intent to begin work as delineated in this procedure.

NPSCS [signature] DATE 05-02-01

6.12 Notify VYQA of the intent to begin work as delineated in this procedure.

VYICE [signature] E. J. Tainter DATE 05-02-01

6.13 Notify the ANI of the intent to begin work as delineated in this procedure.

VYICE [signature] E. J. Tainter DATE 05-02-01

7.0 INSTALLATION

7.1 Verify that Minor Mod 2000-010 has been released for installation and signed by the VY Shift Supervisor.

VYICE [signature] E. J. Tainter DATE 05-02-01

7.2 Verify that all vapor and dust control equipment has been staged and is operational.

VYICE [signature] DATE 5/03/01

7.3 Inspect the concrete floor area within 12" of the perimeter for cracks.

VYICE [signature] * DATE 5/01/01

* ER 20010860 GENERATED, CANCELED AND RESPONSE TO ANOMOLIES DISPOSITIONED VIA e-mail FROM DAVE GRIMES DATED 5/01/01 ATTACHED

7.4 Clean the keyway to sound, tight substrate using a power wire brush or other mechanical means to remove paint and other deleterious materials.

NPSCS [signature] DATE 5/7/01

VYICE [signature] E. J. Tainter DATE 05-07-01

NOTE: The Coatings Inspection Plan shall be followed during the preparation and application of the protective coatings.

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7.5 Clean the affected area of the containment shell in accordance with SSPC-SP-1, Solvent Cleaning.

NPSCS Raymond M Bowers DATE 05-03-01

7.6 Notify the IWE Coordinator to inspect the shell of the primary containment in accordance with PP 7024.

VYICE E. J. Taintor DATE 05-02-01

HOLD POINT

7.6.1 IWE inspection completed and documented in accordance with PP 7024.

IWE Coordinator for Ralph Connell per DCG DATE 05-06-01

E. J. Taintor

7.7 Remove the existing paint from the affected area of the containment shell in accordance with AP 0549 and RP direction. Vacuum blasting, roto-peen and/or needle gun may be used to achieve the required profile of 1-3 mils in accordance with SSPC-SP-10. Other hand tools may be used as required to achieve an initial SSPC-SP-11 finish with final surface prep conforming to SSPC-SP-10. Document per NPS Procedure PP-0959P requirements.

NPSCS DATE 5-09-01

7.8 QC shall verify the required profile of 1 to 3 mils has been achieved in accordance with SSPC-SP-10.

See attached E-mail for Rust Grade areas

NPSQC DATE 5-10-01

05-10-01 5-10-01

7.9 Vacuum clean the affected area of the containment shell and the keyway to remove all dirt, dust and debris created by the surface prep. Ensure the surface is dust free prior to the application of the primer.

NPSCS DATE 5-09-01

7.10 Notify the IWE Coordinator to inspect the shell of the primary containment in accordance with PP 7024.

VYICE E. J. Taintor DATE 05-09-01

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MAY 10 2001

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HOLD POINT

7.10.1 IWE inspection completed and documented in accordance with PP 7024.

IWE Coordinator E.I. Tainter for Ralph Connell per discussion DATE 05-09-01

CAUTION: ~~**VERIFY WITH OPS THAT THE MODE SWITCH IS IN SHUTDOWN AND SBGTS IS TAGGED OUT OF SERVICE PRIOR TO PERFORMING PAINTING AND SEALING ACTIVITIES.**~~ Ensure that Operations is aware of painting and sealant activities and precautions with respect to SBGT. L/T 04-25 SDL 4-25-0

VYICE [signature] DATE 5/09/01

7.11 Contact the Shift Engineer to ensure that **NO** hot work will be performed in the drywell prior to performing painting and sealing activities.

VYICE [signature] DATE 5/09/01

MINOR CHANGE SDL 4-25-01 L/T 04-25-01

7.11a See sheet 8A for additional steps to establish the required ventilation lineup prior to beginning coating activities.

7.12 Apply Carbozinc 11 SG primer to the full circumferential 6" +/- wide band of the containment shell directly above the keyway down to the steel concrete interface in accordance with the Coatings Inspection Plan and the manufacturers instructions. Primer must be continuously agitated during application. **DO NOT OVERSPRAY ON EXISTING PAINTED SURFACES.** Record environmental conditions and application data per NPS Procedure PP-0959P requirements.

NPSCS [signature] DATE 05-10-01

NPSQC N/A * DATE N/A

* Carbozinc 11 coating failed to adhere properly L/T 05-10-01

7.13 Install Embeco 885 grout in the keyway in accordance with the manufacturers instructions and drawing 5920-12789. Sil-Pro bonding agent may be used in lieu of the 24-hour pre-soak prior to grout placement. Curing compound may be used to eliminate the need to keep the grout wet while curing. Record data per NPS Procedure PP-0582C requirements.

Major Change as documented and approved in Major Change to Minor Mod 2000-010 L/T 05-11-01 PORC Mtg 2001-053

NPSCS Raymond M. Barnes DATE 5-12-01 1500 HRS

NPSQC [signature] DATE 5-12-01

Updated RECEIVED mtg 9 MAY 11 2001

Replaced RECEIVED mtg 3 APR 26 2001

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Minor Change
E/T 05-01-01
DFG 5-1-01

7.11a Establish localized ventilation utilizing charcoal filter elements in the dedicated 5k HEPA units.

VYICE Denis Humbert DATE 5/09/01

OR

7.11b Request Operations establish/verify the following lineup. This provides a ventilation flowpath from the drywell, through the Torus, and out through the Reactor Building exhaust.

Minor Change #5 includes changes incorporated with Minor Change #3. E/T 05-01-01

Equipment	Position
SB-16-19-8 (AC-8)	OPEN
SB-16-19-9 (AC-9)	OPEN
SB-16-19-10 (AC-10)	OPEN
SB-16-19-7B (AC-7B)	OPEN
SB-16-19-7 (AC-7)	OPEN
SB-16-19-6 (SGT-6)	OPEN
SB-16-19-6A (AC-6A)	OPEN
SB-16-19-7A (AC-7A)	OPEN
V16-19-5A	GAGGED OPEN
V16-19-5D	GAGGED OPEN
RTF-5	OPERATING

VYICE Not required E/T E.J. Tainter DATE 05-09-01

7.11c Ensure that the Torus access covers are installed, or temporary covers are installed. Ensure that they are labeled to prevent inadvertent opening of the covers.

VYICE Not required E/T E.J. Tainter DATE 05-09-01

Minor Change
E/T 05-01-01
DFG 5-1-01

7.18a Notify Operations that the coating activities in the Drywell are completed and that the ventilation lineup previously established may be secured or modified to meet plant conditions.

VYICE Denis Humbert DATE 5/14/01

7.18b If temporary Torus access covers were installed, remove at this time. Ensure that any labels installed on the covers are removed.

VYICE NA - NO COVERS INSTALLED DATE 5/13/01
Denis Humbert

Replaced RECEIVED mc#5 MAY - 1 2001

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updated RECEIVED mc#9 MAY 11 2001

L/T 04-16-01

7.14 Cut and install the polyethylene ~~sheet~~ Tape bond breaker in accordance with drawing 5920-12789. Polyethylene ~~sheet~~ Tape may be installed after the grout has cured for a minimum of 6 hours. The gap tolerance at the edges of the ~~sheet~~ Tape shall be ~~1/8" maximum.~~ as practicable. The ~~sheet~~ Tape shall not extend radially past the edges of the grout.

Major Change L/T 05-01-01

NPSCS _____ DATE 5-13-01

NPSQC _____ DATE 5-13-01

7.15 Install the Dow Corning 795 Sealant in accordance with the manufacturers instructions and drawing 5920-12789.

NPSCS _____ DATE 5-13-01

Major Change L/T 05-11-01

NPSQC _____ DATE 5-13-01

7.1~~6~~8 Install the top ¼" min. bead of Dow Corning 795 Sealant in accordance with the manufacturers instructions and drawing 5920-12789 after the sealant applied in the previous step has set.

NPSCS _____ DATE 5-1301

NPSQC _____ DATE 5-13-01

Major Change 05-11-01 L/T

7.1~~7~~6 Tape off and mask surfaces adjacent to the areas that will be painted.

NPSCS Raymond M. Barner DATE 5/13/01

NOTE: ENSURE THAT THE SEAL DOES NOT GET PAINTED IN THE FOLLOWING STEP.

Major Change L/T 05-11-01

7.1~~8~~7 Apply ~~the mist coat and topcoat of~~ a single coat of Carboline 890 epoxy paint to the full circumferential 6" +/- wide band of the containment shell directly above the keyway in accordance with ~~the Coatings Inspection Plan and~~ the manufacturers instructions. ~~Record data per NPS Procedure PP-0959P requirements.~~ Application will be by brush or roller to a DFT of 6 mil (+2 mils, -1 mil)

Major Change L/T 05-11-01

NPSCS Raymond M. Barner DATE 5/13/01

~~NPSQC _____ DATE _____~~

MINOR CHANGE SDL 4-25-01 L/T 04-25-01

7.1~~8~~7a SEE SHEET 8A FOR ADDITIONAL STEPS FOR SECURING VENTILATION.

8.0 INSTALLATION VERIFICATION/TESTING REQUIREMENTS

8.1 Inspect the seal to verify that adherence has been maintained to the concrete floor and the steel shell. ~~This should be verified after Dow Corning 795 sealant has cured for 7 days.~~

Major Change 4/7 05-11-01

~~NOTE: Contact M/S Design Engineering if the 7 day cure time can not be achieved prior to drywell closure.~~

VYICE Dennis Hubert DATE 5/13/01

NPSQC [illegible] DATE 5-13-01

~~8.2 Verify that all inspections have been performed on all painted surfaces in accordance with the Coatings Inspection Plan and PP-0959P.~~

Major Change 4/7 05-11-01

~~NPSQC _____ DATE _____~~

9.0 INSTALLATION INSPECTION/ACCEPTANCE

9.1 Verify drawings are complete and in the as-built condition.

VYICE Dennis Hubert DATE 5/14/01

9.2 Verify the installation is correct in accordance with the approved drawings.

VYICE Dennis Hubert DATE 5/14/01

NPSQC [illegible] DATE 5-14-01

9.3 Notify the IWE Coordinator to perform a pre-service baseline inspection of the seal and the protective coating in accordance with PP 7024.

VYICE Dennis Hubert DATE 5/14/01

IWE Coordinator [illegible] DATE 5/14/01

9.4 Verify the work area is free of construction damage.

VYICE Dennis Hubert DATE 5/14/01

9.5 Verify all temporary equipment has been removed.

VYICE Dennis Hubert DATE 5/14/01

updated RECEIVED mcf MAY 11 2001

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9.6 Verify any non-conforming areas are resolved or identified.

VYICE _____ DATE 5/14/01

10.0 FINAL CONDITIONS

10.1 Clear any white tags that were hung as a result of performing this Minor Mod.

VYICE _____ DATE 5/14/01

10.2 Verify a housekeeping closeout inspection per AP 6024 has been completed.

VYICE _____ DATE 5/14/01

10.3 Notify the VY Shift Supervisor that the installation is complete.

VYICE _____ DATE 5/14/01

JO FILE

Coatings Inspection Plan - Drywell Elev 238'

Minor Modification 2000-010

A. Prior to the start of work

1. Coating Materials

   a. Age of Materials – less than 12 months.

   b. Proper Identity – Material ID and batch number legible and recorded.

   c. Storage Conditions – protected from direct sunlight and temperature extremes (40 to 100 degrees F)

2. Abrasive Materials – clean, dry, free from oils

3. Touch-up Materials – same as originally applied (prep SP-1 and SP-11)

4. Thinners Solvents and Cleaners – Carboline Thinner 21, Thinner 26

5. Equipment

   a. Environmental Conditions – substrate 5 degrees above dew point (min), ASTM E 337 temp., dew point and Relative Humidity at start of work and every 4 hours thereafter.

   b. Spray Equipment – Agitated pressure pot for CZ 11 SG, touch-up by brush for areas of less than 1 square foot, avoid rebrushing.

   c. Mixing Equipment – Power mixers in accordance with manufactures instructions.

   d. Blotter Test – at start of work and every 4 hours thereafter, air is to be free from contaminants.

   e. Inspection Instruments – wet/dry psychrometer, - calibrated
   magneteic surface thermometer, - calibrated
   profile comparator, - ~~calibrated~~
   ~~anchor pattern profile chips,~~
   ~~replica tape~~.
   Comparator mfg to 1976 master verified condition as "new"
   SSPC-Vis 1-89 Surface Preparation Standard

Minor Chan
E/1 04-28-
DFG 4/28/0

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APR 26 2001

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00-010.03

Minor Change
L/T 04-28-01
DFG 4/22/01

Magnetic Dry Film Thickness Gage - calibrated
~~Holiday detection methods~~

6. Surface Inspection - by the applicator, must determine that the surface is acceptable.

B. Surface Preparation

1. Cleaning (oil and grease etc.) — SSPC-SP-1 Remove contaminants with solvent cleaning. Turn and replace rags frequently

2. Blast Cleaning

   a. Blasting — SSPC-SP-10, Near-White Blast Cleaning and SSPC-Vis 1-89

   b. Profile — ASTM D-4417 — 1-3 mils

* minor change: See attached email DF Grimes to E. Tamto 5/9/ for Rust Grade D areas

c. General – No blasting when coating or curing, over contaminated surfaces or with rustback.

DFG 5/9/01
L/T 05-09-01

3. Recirculated Shot and Grit – Check for oil contamination via immersion test, start of work and 4 hr intervals. Discard if oil is detected, reblast areas cleaned since previous check.

4. Removal of Dust and Blast Products – dust free surface shall be maintained.

5. Environmental Conditions

L/T 04-18-01
MIN. PA 4/18/01

Minor Chang

   a. Substrate Temperature – 5 degrees MIN. above dew point.

   b. Dew Point - ASTM E-377 Temp. and dew point taken at start of work and 4 hr intervals.

6. Protection of Surfaces and Equipment

C. Coating Inspection (Basecoat)

1. Mixing of Coating – Unopened Containers, mix in accordance with manufactures instructions. Note: Carboline CZ-11 SG requires agitation during application.

updated
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MAY - 9 2001

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APR 28 2001

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2. Environmental Conditions – Temp, Dew point and Relative Humidity within limits and substrate range 50 – 100 degrees. * Minor change ; See attached email DFGrace To Ed Painter Dated 5/9/01

3. Application – Primer - Carboline CZ 11 SG * 3 mils DFT DFGrace 5/9/01 L/1 05-09-01

   a. Number of Coats (1)

   b. All surfaces

   c. Drying time - @60 – 80 degrees 45 minutes at 50% Relative Humidity or greater.

   d. Forced curing – as applicable, as approved

   e. Touch-up – as specified and as a result of QC Inspection. No greater than 1 sf.

   f. Cure time prior to application of topcoat – per manufactures instructions and based of temperature and relative humidity.

4. Applied Coating * Minor change, see above for rust Grade D surfaces DFGrace 5/9/01 L/1 05-09-01

   a. Dry Film Thickness – 3 mils, SSPC-PA 2, Tolerance -10%, + 20% on runs and sags, 5 samples, evenly spaced per 100 square feet of surface (min). 5 SAMPLES FOR EACH APPLICATION. | Minor Changes KCB 2/21/01 TRO 2/21/01

   b. Film Imperfections – Correction of major runs, sags, drips, overspray, loss of adhesion, blistering, peeling, inadequate cure or substrate rusting.

   c. Film Discontinuities – Mark holidays, repair, reinspect.

D. Coating Inspection (Topcoat)

1. Mixing of Coating – Unopened Containers, mix in accordance with manufactures instructions.

2. Environmental Conditions – Temp, Dew pt and Relative Humidity within limits and substrate range 50 – 100 degrees.

3. Application – Topcoat – Carboline 890 epoxy 5 mils DFT

   a. Number of Coats (2), (1) Mist (after initial fiberglass screen rub and dust removal of CZ 11 SG) (1) Full, 5mils

   b. All surfaces

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c. Drying time - @60 – 80 degrees Recoat 4-8 hours 50% Relative Humidity, Final Cure 24 – 48 hours

d. Forced curing – as applicable, as approved

e. Touch-up – as specified and as a result of QC Inspection.

4. Applied Coating

a. Dry Film Thickness – 5 mils, SSPC-PA 2, Tolerance -10%, + 20% on runs and sags, 5 samples, evenly spaced per 100 square feet of surface (min). 5 SAMPLES FOR EACH APPLICATION.

MINOR CHANGES KCB 2/21/01 TRB 2/21/01

b. Film Imperfections – Correction of major runs, sags, drips, overspray, loss of adhesion, blistering, peeling, inadequate cure or substrate rusting.

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FEB 22 2001

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NPS ENERGY SERVICES
PRE JOB BRIEF

PROJECT: MOISTURE BARRIER SEAL WORK PACKAGE #: 00-01840-20

SAFETY CLASS (YES) ✓ (NO) ____ DATE: 4-26-01 CLASS DURATION: 4 HRS

Pre Job Brief reviewed by VYICE (MM / TM / EDCR / VYDC only): Dennis Hamlett (VYICE)

WORK PACKAGE REVIEW:

1.) Prior to conducting the Pre-Job Briefing, the Work Group will review the Work Package and participate in a field walkdown, whenever possible, and become familiar with the work scope, drawings and field conditions involved in the tasks. The assigned members of the Work Group will note any concerns or questions which need to be addressed at the Pre-Job Briefing.

Debra M. Campagna
Foreman

BRIEFING TOPICS:

1.) Review the STAR principle

DBC
Instructor

2.) Identify who will be involved and the tasks they will perform

DBC
Instructor

3.) Review work practices that will be used such as FME, Fire Protection Control Permits, Hot Work permits, Secondary Containment Penetration Breach Requests, Confined Space Entries, Chemical Use Permits, MSDS Sheets. Identify to the work crew the equipment in the work area that is sensitive and may have operational consequences if bumped, jarred or made contact with.

DBC
Instructor

4.) Review the AP 0140 Tagging boundaries and explain how they safely isolate the work area

DBC
Instructor

5.) Identify the RWP to be used and any Rad Pro Department requirements

DBC
Instructor

JO FILE

Work Package # 00-01840-00

6.) Identify any Security Department concerns and interface.

Instructor

7.) Identify and discuss the safety requirements for each task.

Instructor

8.) Discuss the function of the modification and how the new system will work.

Instructor

9.) Review the work package drawings with the work group to further clarify the function of the system modifications being performed. Review parts, materials and their location.

Instructor

10.) Discuss the sequence of the major work evolutions. Emphasize the need for workers to contact their supervision when the original job scope changes.

Instructor

11.) Discuss the Q.C. Hold Points included in the Work Package.

Instructor

12.) Identify the testing requirements and related steps in the Work Package.

Instructor

JO FILE

Work Package # _____

13.) **Review the "Three Point Verification" Principle – i.e. before performing a work step, ensure that the work step instructions, drawing information, and as-found field conditions match.**

_____ DBC
Instructor

14.) **Identify any special tools required to perform the work.**

_____ DBC
Instructor

15.) **Review high risk tasks and error likely situations.** JO FILE

_____ DBC
Instructor

SEE ATTACHED SIGN IN SHEETS. DC 05-01-01

PERSONS IN ATTENDANCE NAME (PRINTED)		SIGNATURE	SOCIAL SECURITY NUMBER
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

COMMENTS:

PROJECT SUPERINDENT / DESIGNEE: _____

Pre-Job Briefing
Attendance Sheet
MM # 2000 – 010
04-26-01 AM

Name	Signature	Dept./Group	Slot #	SS #
DEBRA M. CAMPAGNA	Debra M. Campagna	NPS / PAINTER	810	008-48-5135
DEVON McPHERSON	[illegible]	NPS / PAINTER	1777	056-80-4345
DONALD G. SPRAGUE	[illegible]	NPS PAINTER	1483	546-76-5835
CHARLES A. McNALLY	Charles A. McNally	N.P.S / PAINTER	939	026-48-9787
TOM JAMESON	[illegible]	NPS / painter	1418	007-74-7922
DARRYL COFFMAN	[illegible]	NPS / STAFF	686	216-96-5308
Edward J. Tainter	[illegible]	GTS / Proj. Eng	924	032-36-8354

JO FILE

Pre-Job Briefing
Attendance Sheet
MM # 2000 – 010
04-26-01 PM

Name	Signature	Dept./Group	Slot #_	SS #
Remi MORRISSETTE	Remi Morrissette	RP	208	002-34-1646
DENNIS HUMBERT	Dennis Humbert	PE	652	274-52-4736
Duane Hensel	[illegible]	RP	125	281 703 944
Alex PALLANY	[illegible]	Syst. Eng	585	007-54-7074
Michael Conrad	Michael Conrad	Painter	1899	547-33-4117
PAT Buckley	[illegible]	RP/Nomaco	1801	474-62-5833
Nick CARISTO	Nick Caristo	RP	95	048 325303
Ken Rainville	[illegible]	Painter	1008	010-58-8695
Andy Nally	Andy Nally	Painter	1661	022-48-6665
DARRYL COFFMAN	[illegible]	DZNPS STAFF	686	216-96-5308
Jim O Connor	[illegible]	QA	528	492-46-5789
Shawn LEARY	[illegible]	RP	1373	419-11-0997
Robert Allsop	Robert Allsop	NPS	614	016403865
RICHARD J AUBUCHON	[illegible]	NPS	1907	308-64-7808
Alan A. Gomes	Alan A. Gomes	NPS	1654	028-42-4159
Leonard L Carey	[illegible]	NPS	1366	309-62-1535
Dave Hatch	[illegible]	RP	1491	001386480

JO FILE

Drywell Seal Project

PRE-JOB BRIEFING

A. RESPONSIBILITY/AUTHORITY

1. Person in Charge:

   a. **Ed Taintor ICE; x-5912; pager 742-9057**
   b. **Dennis Humbert; nights; x-5616; pager 742-9107**
   c. **Darryl Coffman; NPS Painting Sup.; pager 742-9053**

B. JOB SCOPE

1. Restoration of the original DW Seal configuration

   a. Identify the equipment involved including train, labels, and other identifications.

      1. **EMPAC Asset No. DRYWELL**
         a. **DW Shell**
         b. **DW concrete floor**

   b. Identify the location of the work/equipment

      1. **DW 238' elevation**

   c. Identify the safety class of the work/equipment

      1. **Safety Class 2**

C. COMMUNICATIONS

1. Personnel Involved or Affected:

   a. Personnel Involved

      1. **VY Mechanical Design Engineering**
      2. **VY Project Engineering**
      3. **VY RP**
      4. **VY ALARA**
      5. **NPS Painters**
      6. **NPS ALARA**
      7. **NPS QC**
      8. **VY QC**

   b. Affected Departments

      1. **RP**
      2. **ALARA**
      3. **Maintenance**
      4. **I&C**
      5. **OPS**
      6. **NPS**

   c. Discuss 3 part communication.

JO FILE

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2. Lines of Communication:

a. Identify the communication paths to the affected personnel and the person in charge.

b. Identify the personnel who must be informed of conditions on equipment status during the performance of the task.

1. ICE
2. NPS Painting Superviser

c. Discuss communication equipment.

1. Gaitronics
2. Pagers
3. Phones

3. Turnover Requirements:

a. Discuss turnover expectation and need for additional briefings.

1. Major Outage Project/Area Shiftly Update
2. Craft Turnovers "on-line"

D. ADMINISTRATIVE CONTROLS

1. Foreign Material Exclusion (FME)

a. Address FME boundaries and special work controls.

1. Downcomers to Torus (FME Zone)
2. Subpile room (RP Access Control)

b. Extent of the FME brief should be based on the potential risk associated with foreign material intrusion.

1. Blast Shields posted as FME zone.

2. Permits and Requirements Applicable to Task Being Performed:

a. Tagging Orders, Temporary Modifications, RWP, Hot Work or Fire Permits, Security Postings.

1) Consideration should be given to the qualification of the party receiving the brief. It will be necessary to provide a more detailed brief if the party receiving the brief is not qualified on a particular task (i.e. not AP 0140 qualified). (ER96-0649)

a. Non-permit Confined Space

JO FILE

*OOS - out of service

Precursors compiled from references [6,15,16,17,20,23,27,29,37,42,46,47]

Bolded items tend to be more prevalent than other precursors.

b. Lead Worker Training Required
c. RWP No. 01-00109

c. Safety requirements applicable to job (plant & personnel).

1. JSA No. 22.25

c. Any special conditions that will be incumbered.

1) Area radiological conditions, etc.

As specified by ALARA/RP during RWP Brief.

2) Security requirements.

None.

3) Special equipment.

Prep and application equipment.

4) Parts availability.

Spares and repair parts staged in DW Anteroom.

d. Management Expectations

1) Review management expectations for performance of task.

STAR

E. PROCEDURE/JOB SEQUENCE

1. Purpose and Intent:

a. Why procedure is being performed.

Correct identified ASME Section XI, IWE deficiency.

b. What procedure will accomplish.

Restore original design configuration.

2. Precautions and Limitations:

a. Special precautions associated with task.

1. Lead exposure controls.
2. Heat stress concerns.
3. Vapor exposure concerns.
4. Radiological exposure concerns.

JO FILE

*OOS - out of service

Precursors compiled from references [6,15,16,17,20,23,27,29,37,42,46,47]

Bolded items tend to be more prevalent than other precursors.

b. Review applicable portion of procedure with person(s) who will be performing the task.

1. **Task specific Briefs have been conducted with project participants.**

3. Expected Duration of Task.

a. 10 Days, 4 hours

4. Sequence of Job:

a. Discuss major steps and required sequence such as:

1) Area setup (RP)

DW Mobilization to begin 04-30
Surface Prep to begin 05-02
IWE Examination 05-06
Coatings applications to begin 05-06

2) As-Found data

As found examination 05-02

3) Equipment removal

Demob to begin 05-12

4) Required stroke

N/A

5) Post-work test

As left examination 05-12

F. SAFETY MARGINS

1. Expected Results:

a. Review expected indications, alarms, and plant response to task performance.

1. **Stop work and assess hazards**

2. Conditions/Limits for Stopping Task:

a. Define specific conditions or limits at which the task should be halted. (Consider unexpected results).

1. **Safety concerns**
2. **RP exposure alarms**
3. **Lead exposure indications**

JO FILE

*OOS - out of service

Precursors compiled from references [6,15,16,17,20,23,27,29,37,42,46,47]

Bolded items tend to be more prevalent than other precursors.

4. **Hazardous fume exposure indications**

b. Ensure that all personnel involved in the task are aware of these conditions or limits.

G. CONTINGENCY PLANS FOR UNEXPECTED RESULTS

1. Reviewed Contingency Plan:

a. Describe actions necessary to place equipment in safe condition.

1. **Close valves**
2. **Turn off compressor**

b. Discuss who will be responsible for performing these actions.

1. **Painters**
2. **Foremen**
3. **General Foremen**

c. Discuss who will determine/identify that contingency actions are required.

1. **ICE**
2. **NPS Painting Supervisor**
3. **ALARA Engineer**
4. **RP Supervisor**

H. LESSONS LEARNED

1. In-House:

a. Discuss any pertinent information from previous performance at this or similar tasks.

1. **Torus Coating Project; RFO-20**

2. Industry:

a. Discuss lessons learned from industry events from performance of similar tasks.

1. **INPO Operating Experience Examples**

3. STAR Techniques:

a. Reinforce use of Stop, Think, Act, Review (STAR) techniques.

I. EVENT PREVENTION

1. Review task demands.

JO FILE

*OOS - out of service

Precursors compiled from references [6,15,16,17,20,23,27,29,37,42,46,47]

Bolded items tend to be more prevalent than other precursors.

2. Determine work environment for error precursors.

3. Identify individuals capabilities.

4. Review possible human nature problems.

5. Identify any tools that would help prevent errors.

J. OUTLINES AND ATTENDANCE SHEETS

1. The use of pre-job brief content outline and attendance sheets to provide consistency between briefs is encouraged.

JO FILE

*OOS - out of service

Precursors compiled from references [6,15,16,17,20,23,27,29,37,42,46,47]

Bolded items tend to be more prevalent than other precursors.

DAY & ZIMMERMANN NPS, INC.
QUALITY DEPARTMENT FIELD WORK PACKAGE CLOSE-OUT CHECKLIST
(for VYDC and MM closeout)

Work Order #: **00-001840-000** VYDC/MM #: **MM 2000-010**

Reviewer: Tim Kindelberger Date: 05/23/01

ITEM #	ATTRIBUTE	INITIAL N/A when not applicable
1.	Work Order is complete and signed off as required for turnover.	TK.
2.	Installation & Test procedure or Installation Instructions are complete up to the point of turnover to the ICE.	TK.
3.	Supporting documentation is complete, NCR's, CR's, ER'sand SR's are listed on the applicable data sheets.	N/A TK.
4.	Copies of NCR's and SR's are included in the package.	N/A TK.
5.	NPS Inspection Checklists are complete and included in the turnover package.	N/A TK.
6.	Nondestructive Examination Reports are included in the turnover package, completed properly and are listed on the applicable Weld Control Records.	N/A TK.
7.	Material Issue Tickets are included in the turnover package.	TK.
8.	As-build drawings and sketches are complete and signed off by NPS Engineering and NPS Quality Control.	N/A TK.

COMMENTS/REMARKS: Major Change to mm deleted requirements of obtaining/installing a Service Level 1 coating system. Inspection requirements and documents deminished greatly by this major Change. TK 05/23/01

(PP-0503G-J, Rev. 1)

JO FILE

W.O. #00-1840-000
MM#2000-010

DZNPS

Reported By
Darryl Coffman
Supervisor

DRYWELL MOISTURE BARRIER PAINT LOG

CONDITIONS WHILE INSTALLING / CURING CARBOGARD 890 TOPCOAT

Ambient Conditions	NAME	Date	Time
W/B 60.3 D/B 72.8 R/H 48% D/P 52° Surf. Temp. 74°	Denis Hubert	5/13/01	1117

Ambient Conditions	NAME	Date	Time
W/B 60.2 D/B 73.6 R/H 47% D/P 52° Surf. Temp. 74°	Denis Hubert	5/13/01	1555

Ambient Conditions	NAME	Date	Time
W/B 60.8 D/B 73.0 R/H 50% D/P 53° Surf. Temp. 74°	Denis Hubert	5/13/01	1900

Ambient Conditions	NAME	Date	Time
W/B D/B R/H D/P Surf. Temp.			

Ambient Conditions	NAME	Date	Time
W/B D/B R/H D/P Surf. Temp.			

JO FILE

W.O. #00-1840-000
MM#2000-010

LEAVE THESE IN PKG. FOR HISTORICAL DATA FOR FUTURE WORK. Hubert

Reported By
Darryl Coffman
Supervisor

DRYWELL BARRIER

Ambient Conditions	NAME	Date	Time
W/B 74°	E.J. TAINTOR	5/03/01	1630
D/B 90°			
R/H 47%			
D/P 67°			
Surf. Temp.			

Ambient Conditions	NAME	Date	Time
W/B 70.6	Dennis Hubert	5/03/01	2220 HRS.
D/B 93.3			
R/H 30%			
D/P 58°			
Surf. Temp. 84°F			

Ambient Conditions	NAME	Date	Time
W/B 71.1	Dennis Hubert	5/04/01	0220 HRS.
D/B 88.6			
R/H 43%			
D/P 62°			
Surf. Temp.			

Ambient Conditions	NAME	Date	Time
W/B 71.9°	Dennis Humbert	05-04-01	05:15 hrs.
D/B 92.4°			
R/H 37%			
D/P 62°			
Surf. Temp. 97°			

Ambient Conditions	NAME	Date	Time
W/B 74.4°	E. J. Taintor	05-04-01	07:45 hrs
D/B 103.4°			
R/H ~~60%~~ 25%			
D/P 60°			
Surf. Temp. 84°			

JO FILE

W.O. #00-1840-000
MM#2000-010

DZNPS

Reported By
Darryl Coffman
Supervisor

DRYWELL MOISTURE BARRIER PAINT LOG

Ambient Conditions	NAME	Date	Time
W/B 103.5° D/B 83.5° R/H 43% D/P 77° Surf. Temp.	E. J. Taintor E/Taint	05-04-01	12:05

Ambient Conditions	NAME	Date	Time
W/B 72.8 D/B 97 R/H 31% D/P 61° Surf. Temp.	Dennis Hubert	5/04/01	1830

Ambient Conditions	NAME	Date	Time
W/B 77.4 D/B 84.8 R/H 71% D/P 74° Surf. Temp.	Dennis Hubert	5/04/01	2230

Ambient Conditions	NAME	Date	Time
W/B 67.9 D/B 83.4 R/H ~~78%~~ 43% E/T 05-05-01 D/P 76° Surf. Temp.	Dennis Hubert	5/05/01	0230

Ambient Conditions	NAME	Date	Time
W/B 67.2° D/B 80.0° R/H 50% D/P 60° Surf. Temp. 80°	E. J. Taintor E/Taint	05-05-01	06:52

JO FILE

W.O. #00-1840-000
MM#2000-010

DZNPS

Reported By
Darryl Coffman
Supervisor

DRYWELL MOISTURE BARRIER PAINT LOG

Ambient Conditions	NAME	Date	Time
W/B 80.7° D/B 82.8° R/H 88% D/P 80° Surf. Temp.	J. Taintor	05-05-01	10:55

Ambient Conditions	NAME	Date	Time
W/B 64.2 D/B 79.5 R/H 42% D/P 54° Surf. Temp.	Denis Hubert	5/05/01	1900 HRS.

Ambient Conditions	NAME	Date	Time
W/B 62.2 D/B 78.2 R/H 39% D/P 51° Surf. Temp. 78 ~~70~~° F	Denis Hubert	5/05/01	2345

Ambient Conditions	NAME	Date	Time
W/B 61.1 D/B 78.0 R/H 36% D/P 49° Surf. Temp. 78°	Denis Hubert	5/06/01	0425

Ambient Conditions	NAME	Date	Time
W/B 63.3° D/B 79.1° R/H 40% D/P 53° Surf. Temp. 78°	E. J. Taintor	05-06-01	09:00

JO FILE

W.O. #00-1840-000
MM#2000-010

DZNPS

Reported By
Darryl Coffman
Supervisor

DRYWELL MOISTURE BARRIER PAINT LOG

Ambient Conditions	NAME	Date	Time
W/B 58.1° D/B 78.6° R/H 31% D/P 46° Surf. Temp. 78°	E. J. Taintor	05-06-01	14:50

Ambient Conditions	NAME	Date	Time
W/B 61.3° D/B 78.9° R/H 35% D/P 49° Surf. Temp. 78°	DENNIS HUMBERT	5/06/01	1930

Ambient Conditions	NAME	Date	Time
W/B 61.4° D/B 77.1 R/H 40% D/P 51° Surf. Temp. 79°	Denis Humbert	5/07/01	0143

Ambient Conditions	NAME	Date	Time
W/B 61.3° D/B 78.9° R/H 34% D/P 48° Surf. Temp. 79°	E. J. Taintor	05-07-01	05:45

Ambient Conditions	NAME	Date	Time
W/B 61.6° D/B 76.9° R/H 42% D/P 52° Surf. Temp. 80°	E. J. Taintor	05-07-01	08:30

JO FILE

W.O. #00-1840-000
MM#2000-010

DZNPS

Reported By
Darryl Coffman
Supervisor

DRYWELL MOISTURE BARRIER PAINT LOG

Ambient Conditions	NAME	Date	Time
W/B 61.6°	E. J. Taintor	05-07-01	14:20
D/B 75.5°			
R/H 44%			
D/P 57°			
Surf. Temp. 79°			

Ambient Conditions	NAME	Date	Time
W/B 62.2	DENNIS HUMBERT DH	5/07/01	2005
D/B 75.5			
R/H 45%			
D/P 53°			
Surf. Temp. 79°			

Ambient Conditions	NAME	Date	Time
W/B 57.0	DENNIS HUMBERT DH	5/08/01	0010
D/B 71.5			
R/H 45%			
D/P 39°			
Surf. Temp. 79°			

Ambient Conditions	NAME	Date	Time
W/B 58.8	Dennis Humbert	5/08/01	0410
D/B 72.3			
R/H 43%			
D/P 48°			
Surf. Temp. 79°			

Ambient Conditions	NAME	Date	Time
W/B 61.1°	E. J. Taintor	05-08-01	10:35
D/B 73.2°			
R/H 50%			
D/P 53°			
Surf. Temp. 78°			

JO FILE

W.O. #00-1840-000
MM#2000-010

DZNPS

Reported By
Darryl Coffman
Supervisor

DRYWELL MOISTURE BARRIER PAINT LOG

Ambient Conditions	NAME	Date	Time
W/B 62.5° D/B 74.1° R/H 54% D/P 56° Surf. Temp. 78°	E. J. Taintor	05-08-01	12:20

Ambient Conditions	NAME	Date	Time
W/B 61.1° D/B 73.5° R/H 50% D/P 54° Surf. Temp. 78°	E. J. Taintor	05-08-01	12:50

Ambient Conditions	NAME	Date	Time
W/B 64.3° D/B 73.3° R/H 61% D/P 59° Surf. Temp. 78°	E. J. Taintor	05-08-01	13:50

Ambient Conditions	NAME	Date	Time
W/B 60.8° D/B 73.4° R/H 50% D/P 53° Surf. Temp.	E. J. Taintor	05-08-01	15:15

Ambient Conditions	NAME	Date	Time
W/B 59.3 D/B 72.4 R/H 47% D/P 50° Surf. Temp.	Denis Hulbert	5/09/01	0200

JO FILE

W.O. #00-1840-000
MM#2000-010

DZNPS

Reported By
Darryl Coffman
Supervisor

DRYWELL MOISTURE BARRIER PAINT LOG

Ambient Conditions	NAME	Date	Time
W/B 57.0 D/B 68.5 R/H 48% D/P 48° Surf. Temp. 74°	Denis Hubert	5/09	0545

Ambient Conditions	NAME	Date	Time
W/B 57.0° D/B 68.5° R/H 51% D/P 50° Surf. Temp. 74°	E/Tait	05-09-01	06:25

Ambient Conditions	NAME	Date	Time
W/B 62° D/B 74° R/H 47% D/P 54° Surf. Temp. 74°	E. J. Taintor E/Tait	05-09-01	08:30

Ambient Conditions	NAME	Date	Time
W/B 60.4° D/B 72.9° R/H 46% D/P 51° Surf. Temp. 74°	E. J. Taintor E/Tait	05-09-01	14:00

Ambient Conditions	NAME	Date	Time
W/B 61.1 D/B 72.0 R/H 53% D/P 54° Surf. Temp.	Denis Hubert	5/09/01	1808

JO FILE

W.O. #00-1840-000
MM#2000-010

DZNPS

Reported By
Darryl Coffman
Supervisor

DRYWELL MOISTURE BARRIER PAINT LOG

Ambient Conditions	NAME	Date	Time
W/B 62.4 D/B 72.9 R/H 55% D/P 56° Surf. Temp. 74°	Dein Hubert	5/09/01	2200

Ambient Conditions	NAME	Date	Time
W/B 61.2 D/B 70.6 R/H 58% D/P 55° Surf. Temp. 74°	Dein Hubert	5/10/01	0115

Ambient Conditions	NAME	Date	Time
W/B 60 D/B 71.5 R/H D/P Surf. Temp.	Dein Hubert	5/10/01	0700

Ambient Conditions	NAME	Date	Time
W/B 63 D/B 75 R/H D/P Surf. Temp.	Dein Hubert	5/10/01	1000

Ambient Conditions	NAME	Date	Time
W/B 61.5 D/B 74.8 R/H D/P Surf. Temp.	Dein Hubert	5/10/01	1840

JO FILE

Exhibit A
PP-0582C, Rev. 0

GROUT PLACEMENT CHECKLIST

Work Order No.:**00-01840-00**	Bldg./Location **Drywell, Elev. 238'**		Sheet 1 of 1
Equipment No.:		Design Drawings:**5920-12789**	
Originated By: **RL Bergstrom**	Date:**1/7/01**	Reviewed By: [signature]	Date: 1/9/01
Grout Batch No.: 16101780P1		P.O. No. or Stock Code No.: 2000099430	
Expiration Date: 8-31-02	Placement Method: Plastic____ Flowable X Fluid____		

The following row of data is only applicable to Fluid grout applications:

Grout Wgt:**N/A**	Water Wgt: **N/A**	Flow Time: **N/A**	MTE: **N/A**	Cal Due: **N/A**

INSTALLATION ATTRIBUTES	Craft Initial and Date	QC Initial and Date
Concrete surfaces sound, roughened, contact surfaces cleanliness, forms installed	DC 05-11-01	LAB 05-11-01
Saturation: N/A Date: 5-11-01 Time: 18:30	DC 05-12-01	LAB 05-12-01
Temperature of concrete/contact surfaces Is between 45 and 95 degrees F. MTE: CAL DUE DATE:	N/A	N/A
Temperature of mixing water is between 32 and 100 degrees F. MTE: CAL DUE DATE:	N/A	N/A
Temperature of grout mixture is between 45 and 70 degrees F, grout free of moisture pickup. *	N/A	N/A
Grout Placement: Date: 05-12-01 Time: 04:00	DC 05-12-01	LAB 05-12-01
Curing Method: (Check Applicable Box) ☑ Moist Rag for 6 hours ☑ Curing Compound	DC 05-12-01	LAB 05-12-01
Form removal/cutback/finishing configuration Date: Time:	N/A	N/A
Post placement inspection exposed grout surface(s) free of defects Date: Time:	N/A	N/A
Grout Loaded Date: Time:	N/A	N/A

Remarks: Will be using Sil-Pro bonding agent to reduce pre-soak. DBC 05-11-01

* Grout & water were staged in an area with an ambient temp consistenly keep at ≈ 65° to 70°F. The grout is not consider a structural fix, but merely a keyway fill. If grout mixture did fall outside the temp range at placement it would not have a safety related effect on the installation. Temp verification is N/A TK. 05/12/01

JO FILE

DOCUMENTATION CLOSEOUT

Job Supervisor: Raymond M. Barnes	Date: 5/23/01
Quality Control: [signature]	Date: 05/23/01

(PP-0582C-A, Rev. 0)

Note: Minor Mod inspection requirements did not require verification of grout installation. QC inspection was performed as an inhancement to assure satisfactory performance of installation. TK. 05/12/01

Journeyman Painter Qualification for Application of Coatings to Steel Surfaces

NAME: Gerald L Laine	DATE: 4-14-01
VERMONT YANKEE NUCLEAR STATION	NPS ENERGY SERVICES
COATING SYSTEM: CZ-11	MANUFACTURER: CARBOLINE

TYPE OF APPLICATION EQUIPMENT: CONVENTIONAL SPRAY

COMMENTS:

READINGS	WET		DRY	
Flat Side:			3.5 mils	2.5 mils
			3.0 mils	3.1 mils
			3.0 mils	3.5 mils
			3.0 mils	2.5 mils
Complex Side:			2.5	2.5 mils
Pipe				
"H" Beam			3.0 mils	2.5 mils
"T" Bar				
Plate:				

Description of Finished Surface: ASTM 4228 TEST STANDARD 1 TO 3.5 mil SURFACE PROFILE ON STEEL SURFACE

Date: 4-14-01 AND 4-15-01
Material CARBOLINE. CZ 11
DFT Range: 3 mils DRY

THE ABOVE APPLICANT HAS BEEN QUALIFIED AS A JOURNEYMAN PAINTER FOR THE APPLICATION OF THE ABOVE COATINGS FOR THE SURFACE INDICATED ON SAFETY RELATED AREAS OF NUCLEAR FACITLITES.

QUALIFYING AGENT: PAINTER:

QUALIFYING AGENT: E.J. Taintor

DATE:

JO FILE

Journeyman Painter Qualification for Application of Coatings to Steel Surfaces

NAME: ANDREW NALLY	DATE: 4-14-01
VERMONT YANKEE NUCLEAR STATION	NPS ENERGY SERVICES
COATING SYSTEM: CZ-11	MANUFACTURER: CARBOLINE

TYPE OF APPLICATION EQUIPMENT: CONVENTIONAL SPRAY

COMMENTS:

READINGS	WET		DRY	
Flat Side:			3.0 mils	3.0 mils
			3.1 mils	3.0 mils
			2.5 mils	2.5 mils
			3.5 mils	3.0 mils
Complex Side:				
Pipe			3.0 mils	3.0 mils
"H" Beam				
"T" Bar			2.5 mils	3.0 mils
Plate:				

Description of Finished Surface: ASTM 4228 TEST STANDARD 1 TO 3.5 mil SURFACE PROFILE

Date: 4-15-01
Material CARBOLINE CZ11
DFT Range: 3 mils DRY

THE ABOVE APPLICANT HAS BEEN QUALIFIED AS A JOURNEYMAN PAINTER FOR THE APPLICATION OF THE ABOVE COATINGS FOR THE SURFACE INDICATED ON SAFETY RELATED AREAS OF NUCLEAR FACITLITES.

QUALIFYING AGENT: PAINTER:

QUALIFYING AGENT: E.J. Tainter

DATE:

JO FILE

Journeyman Painter Qualification for Application of Coatings to Steel Surfaces

NAME: Tom Jameson	DATE: 4-14-01
VERMONT YANKEE NUCLEAR STATION	NPS ENERGY SERVICES
COATING SYSTEM: CZ-11	MANUFACTURER: CARBOLINE

TYPE OF APPLICATION EQUIPMENT: CONVENTIONAL SPRAY

COMMENTS:

READINGS	WET		DRY	
Flat Side:			3.0 mils	3.0 mils
			2.5 mils	3.5 mils
			4.0 mils	3.0 mils
			3.0 mils	2.5 mils
Complex Side:				
Pipe			3.0 mils	3.0 mils
"H" Beam				
"T" Bar				
Plate:				

Description of Finished Surface: ASTM 4228 TEST STANDARD 1 TO 3.5 mil SURFACE PROFILE.

Date: 4-15-01
Material CARBOLINE CZ 11
DFT Range: 3 mils Dry

THE ABOVE APPLICANT HAS BEEN QUALIFIED AS A JOURNEYMAN PAINTER FOR THE APPLICATION OF THE ABOVE COATINGS FOR THE SURFACE INDICATED ON SAFETY RELATED AREAS OF NUCLEAR FACITLITES.

QUALIFYING AGENT: [signature]

PAINTER: Signature on file with DZNPS Doc. Control T.K. 06/05/01

QUALIFYING AGENT: E/Tant/ E. J. Tainter

DATE:

JO FILE

Journeyman Painter Qualification for Application of Coatings to Steel Surfaces

NAME: DONALD G. SPRAGUE	DATE: 4-14-01
VERMONT YANKEE NUCLEAR STATION	NPS ENERGY SERVICES
COATING SYSTEM: CZ-11	MANUFACTURER: CARBOLINE

TYPE OF APPLICATION EQUIPMENT: CONVENTIONAL SPRAY

COMMENTS:

READINGS	WET		DRY	
Flat Side:			3.5 mils	2.5 mils
			3.5 mils	3.0 mils
			3.0 mils	3.0 mils
			2.0 mils	3.0 mils
Complex Side:				
Pipe			2.5 mils	3.0 mils
"H" Beam				
"T" Bar				
Plate:				

Description of Finished Surface: ASTM 4228 TEST STANDARD 1 TO 3.5 MIL SURFACE PROFILE ON STEEL SURFACE.

Date: 4-15-01
Material CARBOLINE CZ 11
DFT Range: 3 mils Dry

THE ABOVE APPLICANT HAS BEEN QUALIFIED AS A JOURNEYMAN PAINTER FOR THE APPLICATION OF THE ABOVE COATINGS FOR THE SURFACE INDICATED ON SAFETY RELATED AREAS OF NUCLEAR FACITLITES.

QUALIFYING AGENT: [signature] PAINTER: Signature on file with D2 NPS Doc. Control TK 06/05/01

QUALIFYING AGENT: E. J. Tainter

DATE:

JO FILE

Journeyman Painter Qualification for Application of Coatings to Steel Surfaces

NAME: GERALD LAINE	DATE: 05-01-01
VERMONT YANKEE NUCLEAR STATION	NPS ENERGY SERVICES
COATING SYSTEM: 890	MANUFACTURER: CARBOLINE

TYPE OF APPLICATION EQUIPMENT: CONVENTIONAL SPRAY

COMMENTS:

READINGS	WET		DRY	
Flat Side:	8.0	8.0	5.0	5.0
	8.0	8.0	5.0	5.0
	8.0	8.0	5.0	5.0
Complex Side:				
Pipe	8.0	8.0	5.0	5.0
"H" Beam				
"T" Bar				
Plate:				

Description of Finished Surface: ASTM 4228 TEST STANDARD WITH ZINC PRIMER.

Date:

Material 890 CARBOLINE

DFT Range: 5 MILS DRY

THE ABOVE APPLICANT HAS BEEN QUALIFIED AS A JOURNEYMAN PAINTER FOR THE APPLICATION OF THE ABOVE COATINGS FOR THE SURFACE INDICATED ON SAFETY RELATED AREAS OF NUCLEAR FACITLITES.

QUALIFYING AGENT: PAINTER:

QUALIFYING AGENT: E.J. Painter Gerald Laine

DATE:

JO FILE

Journeyman Painter Qualification for Application of Coatings to Steel Surfaces

NAME: ANDREW NALLY	DATE: 4-23-01
VERMONT YANKEE NUCLEAR STATION	NPS ENERGY SERVICES
COATING SYSTEM: 890	MANUFACTURER: CARBOLINE

TYPE OF APPLICATION EQUIPMENT: BRUSH AND ROLLER APP.

COMMENTS: THE DRY FILM THICKNESS INCLUDES ZINC PRIMER

READINGS	WET		DRY	
Flat Side:	5.0	6.0	7.0	8.0
	6.0	5.0	8.0	7.0
	6.0	6.0	8.0	8.0
	6.0	6.0	8.0	8.0
Complex Side:				
Pipe				
"H" Beam	6.0	6.0	8.0	8.0
"T" Bar				
Plate:				

Description of Finished Surface: ASTM 4228 TEST STANDARD COATED WITH CZ11

Date: 4-24-01

Material 890 CARBOLINE

DFT Range: 5 mils DRY 890 WITH CZ11 3 mils FOR A TOTAL OF 8 mils

THE ABOVE APPLICANT HAS BEEN QUALIFIED AS A JOURNEYMAN PAINTER FOR THE APPLICATION OF THE ABOVE COATINGS FOR THE SURFACE INDICATED ON SAFETY RELATED AREAS OF NUCLEAR FACITLITES.

QUALIFYING AGENT: [signature] PAINTER: [signature]

QUALIFYING AGENT: [signature] E.J. Painter

DATE:

JO FILE

Journeyman Painter Qualification for Application of Coatings to Steel Surfaces

NAME: ANDREW NALLY	DATE: 05-01-01
VERMONT YANKEE NUCLEAR STATION	NPS ENERGY SERVICES
COATING SYSTEM: 890	MANUFACTURER: CARBOLINE

TYPE OF APPLICATION EQUIPMENT: CONVENTIONAL SPRAY

COMMENTS:

READINGS	WET		DRY	
Flat Side:	8.0	8.0	5.0	5.0
	8.0	8.0	5.0	5.0
	8.0	8.0	5.0	5.0
	8.0	8.0	5.0	5.0
Complex Side:				
Pipe				
"H" Beam	8.0	8.0	5.0	5.0
"T" Bar				
Plate:				

Description of Finished Surface: ASTM TEST STANDARD 4228 WITH ZINC COATING.

Date:

Material 890 CARBOLINE

DFT Range: 5 mils DRY

THE ABOVE APPLICANT HAS BEEN QUALIFIED AS A JOURNEYMAN PAINTER FOR THE APPLICATION OF THE ABOVE COATINGS FOR THE SURFACE INDICATED ON SAFETY RELATED AREAS OF NUCLEAR FACITLITES.

QUALIFYING AGENT: PAINTER:

QUALIFYING AGENT: E.J. Taintor

DATE:

JO FILE

Journeyman Painter Qualification for Application of Coatings to Steel Surfaces

NAME: DON SPRAGUE	DATE: 4-20-01
VERMONT YANKEE NUCLEAR STATION	NPS ENERGY SERVICES
COATING SYSTEM: 890	MANUFACTURER: CARBOLINE

TYPE OF APPLICATION EQUIPMENT:

COMMENTS: BRUSH AND ROLLER APP.
THE DRY FILM THICKNESS INCLUDES ZINC PRIMER

READINGS	WET		DRY	
Flat Side:	4.0 mils	6.0 mils	6.0 mils	8.0 mils
	5.0 mils	6.0 mils	7.0 mils	8.0 mils
	5.0 mils	5.5 mils	7.0 mils	7.5 mils
	5.5 mils	4.0 mils	7.5 mils	6.0 mils
Complex Side:				
Pipe	5.0 mils	5.5 mils	7.0 mils	7.5 mils
"H" Beam				
"T" Bar				
Plate:				

Description of Finished Surface: ASTM 4228 TEST STANDARD COATED WITH CZ11

Date: 4-21-01
Material CARBOLINE 890
DFT Range: 5 mils DRY 890 WITH CZ11 3 mils DRY FOR TOTAL OF 8 mils.

THE ABOVE APPLICANT HAS BEEN QUALIFIED AS A JOURNEYMAN PAINTER FOR THE APPLICATION OF THE ABOVE COATINGS FOR THE SURFACE INDICATED ON SAFETY RELATED AREAS OF NUCLEAR FACITLITES.

QUALIFYING AGENT: D. J. C.

PAINTER: Signature on File with DZNPS Doc. Control

QUALIFYING AGENT: E/Tait/ E.J. Taiatos

TR. 06/05/01

DATE:

JO FILE

Journeyman Painter Qualification for Application of Coatings to Steel Surfaces

NAME: AL GOMES	DATE: 4-20-01
VERMONT YANKEE NUCLEAR STATION	NPS ENERGY SERVICES
COATING SYSTEM: 890	MANUFACTURER: CARBOLINE

TYPE OF APPLICATION EQUIPMENT:

COMMENTS: BRUSH AND ROLLER APP
THE DRY FILM THICKNESS INCLUDES ZINC PRIMER

READINGS	WET		DRY	
Flat Side:	5.0	4.0	7.0 mils	6.0 mils
	6.0	6.0	8.0 mils	8.0 mils
	5.0	5.0	7.0 mils	7.0 mils
	5.0	5.0	7.0 mils	7.0 mils
Complex Side:				
Pipe				
"H" Beam	5.0	5.0	7.0 mils	7.0 mils
"T" Bar				
Plate:				

Description of Finished Surface: ASTM 4228 TEST STANDARD COATED WITH CZ 11

Date: 4-21-01
Material CARBOLINE 890
DFT Range: 5 mils DRY 890 WITH CZ11 3 mils DRY FOR TOTAL OF 8 mils

THE ABOVE APPLICANT HAS BEEN QUALIFIED AS A JOURNEYMAN PAINTER FOR THE APPLICATION OF THE ABOVE COATINGS FOR THE SURFACE INDICATED ON SAFETY RELATED AREAS OF NUCLEAR FACITLITES.

QUALIFYING AGENT: [signature] PAINTER:

QUALIFYING AGENT: E. J. Tainter Alan A. Gomes

DATE:

JO FILE

Journeyman Painter Qualification for Application of Coatings to Steel Surfaces

NAME: GERALD LAINE	DATE: 4-20-01
VERMONT YANKEE NUCLEAR STATION	NPS ENERGY SERVICES
COATING SYSTEM: 890	MANUFACTURER: CARBOLINE

TYPE OF APPLICATION EQUIPMENT:

COMMENTS: BRUSH AND ROLLER APP.
THE DRY FILM THICKNESS INCLUDES THE ZINC PRIMER

READINGS	WET		DRY	
Flat Side:	5.0 mils	5.0 mils	7.0 mils	7.0 mils
	4.5 mils	5.0 mils	6.5 mils	7.0 mils
	5.0 mils	5.0 mils	7.0 mils	7.0 mils
	6.0 mils	5.0 mils	8.0 mils	7.0 mils
Complex Side:				
Pipe				
"H" Beam	5.0 mils	5.0 mils	7.0 mils	7.0 mils
"T" Bar				
Plate:				

Description of Finished Surface: ASTM 4228 TEST STANDARD COATED WITH CZ11

Date: 4-21-01
Material 890 CARBOLINE
DFT Range: 5 mils DRY 890 WITH CZ11 3 mils DRY FOR A TOTAL OF 8 mils.

THE ABOVE APPLICANT HAS BEEN QUALIFIED AS A JOURNEYMAN PAINTER FOR THE APPLICATION OF THE ABOVE COATINGS FOR THE SURFACE INDICATED ON SAFETY RELATED AREAS OF NUCLEAR FACITLITES.

QUALIFYING AGENT: PAINTER:

QUALIFYING AGENT: E.J. Taintor

DATE:

JO FILE

Journeyman Painter Qualification for Application of Coatings to Steel Surfaces

NAME: TOM JAMESON	DATE: 4-23-01
VERMONT YANKEE NUCLEAR STATION	NPS ENERGY SERVICES
COATING SYSTEM: 890	MANUFACTURER: CARBOLINE

TYPE OF APPLICATION EQUIPMENT: BRUSH AND ROLLER APP.

COMMENTS: THE DRY FILM THICKNESS INCLUDES ZINC PRIMER

READINGS	WET		DRY	
Flat Side:	5.0	5.0	7.0	7.0
	6.0	6.0	8.0	8.0
	6.0	7.0	8.0	9.0
	5.0	6.0	7.0	8.0
Complex Side:				
Pipe				
"H" Beam				
"T" Bar	5.0	4.5	7.0	6.5
Plate:				

Description of Finished Surface: ASTM 4228 TEST STANDARD COATED WITH CZ 11

Date: 4-24-01

Material 890 CARBOLINE

DFT Range: 5 mils DRY 890 WITH CZ 11 3 mils FOR A TOTAL OF 8 mils

THE ABOVE APPLICANT HAS BEEN QUALIFIED AS A JOURNEYMAN PAINTER FOR THE APPLICATION OF THE ABOVE COATINGS FOR THE SURFACE INDICATED ON SAFETY RELATED AREAS OF NUCLEAR FACITLITES.

QUALIFYING AGENT: [signature]

PAINTER: Signature on file with DZNPS Doc. Control TK 06/05/01

QUALIFYING AGENT: E.J. Taintor

DATE:

JO FILE

Journeyman Painter Qualification for Application of Coatings to Steel Surfaces

NAME: RON AUBUCHON	DATE: 4-23-01
VERMONT YANKEE NUCLEAR STATION	NPS ENERGY SERVICES
COATING SYSTEM: 890	MANUFACTURER: CARBOLINE

TYPE OF APPLICATION EQUIPMENT: BRUSH AND ROLLER APP.

COMMENTS: THE DRY FILM THICKNESS INCLUDES ZINC PRIMER

READINGS	WET		DRY	
Flat Side:	5.0	5.0	7.0	7.0
	5.0	6.0	7.0	8.0
	6.0	6.0	8.0	8.0
	6.0	5.0	8.0	7.0
Complex Side:				
Pipe				
"H" Beam				
"T" Bar				
Plate:				

Description of Finished Surface: ASTM 4228 TEST STANDARD COATED WITH CZ 11

Date: 4-24-01

Material CARBOLINE 890

DFT Range: 5 mils DRY 890 WITH CZ11 3 mils DRY FOR A TOTAL OF 8 mils

THE ABOVE APPLICANT HAS BEEN QUALIFIED AS A JOURNEYMAN PAINTER FOR THE APPLICATION OF THE ABOVE COATINGS FOR THE SURFACE INDICATED ON SAFETY RELATED AREAS OF NUCLEAR FACITLITES.

QUALIFYING AGENT: [signature] PAINTER: [signature]

QUALIFYING AGENT: E. J. Taintor

DATE:

JO FILE

Journeyman Painter Qualification for Application of Coatings to Steel Surfaces

NAME: Rohan McPherson	DATE: 4-23-01
VERMONT YANKEE NUCLEAR STATION	NPS ENERGY SERVICES
COATING SYSTEM: 890	MANUFACTURER: CARBOLINE

TYPE OF APPLICATION EQUIPMENT: Brush and Roller App.

COMMENTS: The Dry Film Thickness includes the Zinc primer

READINGS	WET		DRY	
Flat Side:	6.0	6.0	8.0	8.0
	6.0	7.0	8.0	9.0
	5.0	6.0	7.0	8.0
	5.0	6.0	7.0	8.0
Complex Side:				
Pipe				
"H" Beam	6.0	5.0	8.0	7.0
"T" Bar				
Plate:				

Description of Finished Surface: ASTM 4228 Test Standard coated with CZ 11

Date: 4-24-01

Material 890 Carboline

DFT Range: 5 mils Dry 890 with CZ 11 3 mils for a total of 8 mils

THE ABOVE APPLICANT HAS BEEN QUALIFIED AS A JOURNEYMAN PAINTER FOR THE APPLICATION OF THE ABOVE COATINGS FOR THE SURFACE INDICATED ON SAFETY RELATED AREAS OF NUCLEAR FACITLITES.

QUALIFYING AGENT: [signature]

PAINTER: Signature on file with DZNPS ~~to~~ Doc. Control TK 06/05/01

QUALIFYING AGENT: [signature] E. J. Tainter

DATE:

JO FILE

SURFACE PREPARATION/APPLICATION INSPECTION TRAINING CERTIFICATE

THIS IS TO CERTIFY THAT DARRYL COFFMAN

HAS ATTENDED A TRAINING SESSION AS A MEMBER OF THE

APPLICATOR/INSPECTION TEAM OF DAY & ZIMMERMAN N.P.S.

THE MATERIALS AND APPLICATION TECHNIQUES ADDRESSED DURING

THIS SESSION DEALT WITH THE FOLLOWING INFORMATION:

SUBSTRATE	SURFACE PREPARATION	MATERIALS APPLIED	METHOD OF APPLICATION
STEEL	SSPC-SP10	CZ 11	AIRLESS SPRAY
CONCRETE		890	BRUSH & ROLL

CARBOLINE REPRESENTATIVE

To File

CARBOLINE 314 644 8883 07/02/01 TUE 13:23 FAX 314 644 8883 002

P78

J.O. FILE

[redacted]

QUALIFICATIONS

Fifteen (15) years of skill and knowledge consisting of coating valves, pumps, heat exchangers, steam generator feed pumps, RCP pumps, impellers, structural steel sandblasting, coating waterboxes, amertaps and condensers.

Seven years (7) years of supervisory experience.
Level 1 Coatings Applicator approved by N.E.S. at Calvert Cliffs Nuclear Plant.
Mechanical supervisor over turbine condensers inspections/cleaning, feedwater heater modifications and hydrogen seal cooler cleaning/testing.

PROFESSIONAL EXPERIENCE

Diablo Canyon Nuclear Power Plant
Shift Lead Supervisor **August to Present**

Overseeing Main Feedwater Pump speed controls, Main Transformer replacement, Salt Water systems concrete repairs, tunnel cleaning support, Scaffolding, RCP maintenance, Steam Generator maintenance, containment Rigging Crew, Snubber program and Seismic Gap Restoration in Turbine and Aux. Building.

Perry Nuclear Power Plant
NPS Energy Services, Inc. **2/99 to 6/99**

Responsible for the opening, inspections, and repairs of condensers, turbine lube oil cooler, and feedwater heaters. Performed tube plugging activities in low pressure condenser and in feedwater heaters. Supervised welders in performing internal repairs to feedwater heater. Supervised craft performing inspections/cleaning/testing of hydrogen seal coolers.

D. E. Karn Plant
NPS Energy Services, Inc. **11/98 to 1/99**

Responsible for foundations of P. A. Fans and for Feeders from coal chutes to pulverizers; also supervised various stages of scaffolding in and around the plant. Purchasing of tools and materials for the outage.

J. H. Campbell Generating Station
NPS Energy Services, Inc. **7/98 to 11/98**

Lead supervisor on second shift responsible for removal of boiler panels, asbestos removal from areas around boiler and mud drums. The placement of new panels or tubes in boiler and replacement of expansion joints.

J.O. FILE

Palisades Nuclear Power Plant
NPS Energy Services, Inc. 3/98 to 5/98

Responsible for supervision of various stages of scaffolding, mechanical projects, and limited coatings work, estimated various post-outage work and cost tracking.

Salem Nuclear Power Plant
NPS Energy Services, Inc. 9/97 to 3/98

Responsible for the supervision of the Unit 1 Containment, inclusive of resurfacing the floors, steam generators shield walls, containment fan cooler units and structural steel at 130', 100' and 78' elevations. Responsible for cost tracking of all design change packages and interfacing with projects and control department concerning management of budget releases.

Washington DC
Elkins Construction 6/97 to 7/97

Supervised and estimated work in various buildings in the Washington, DC metropolitan area.

Sino-Squarengen Venture in Martinsburg, WV
Somerset Steel Erectors 6/97

Supervised spray painting of overhead steel in a airplane hanger.

Calvert Cliffs Nuclear Power Plant
United Nuclear Services 4/97 to 5/97

Supervised two shifts of painters applying non-skid on walkways, using a blast-tract to sandblast a profile on floor for a safety vehicle parking area on the turbine deck. Additional, responsibilities included estimating various painting projects.

Calvert Cliffs Nuclear Power Plant
Fluor Contractors International, Inc. 3/97 to 4/97

Successfully supervised thirty-seven painters during power outage within 55 day deadline. Workload consisted of sandblasting and coating intake areas, containment liner and various maintenance locations in and around the turbine building. Responsible for managing saltwater piping and the painting of newly installed accumulator tanks.

Calvert Cliffs Nuclear Power Plant
Bechtel construction, Inc. 1/96 to 2/96

Supervised the filling of blank panels and painting in the Main Control Room.

Washington, DC
Oklahoma Fixtures 2/96 to 3/96

Responsible for paint spraying of acrylic urethane on cabinets for major department store client, inclusive of supervision of all phases of painting.

Fairfax County, VA
Peter Michell, Inc. 5/95 to 12/95

Supervised and estimated application of self-level coatings on floors for Lorton Waste Water Treatment facility. Also, responsible for applying Tenemech on all structural steel at the Prince Willian County Waste Water facility, during restoration program. Managed the Springfield Metro project at Franconia Road

J.O. File

Calvert Cliffs Nuclear Power Plant
U.E. & C. Catalytic 2/95 to 5/95

Responsible for the supervision of the sandblasting of the acid trenches, sandblasting and spraying the diesel exhaust, and painting eight transformers.

Calvert Cliffs Nuclear Power Plant
Bechtel Construction, Inc. 4/94 to 2/95

Supervised all painting work on interior and exterior of new diesel building.

Calvert Cliffs Nuclear Power Plant
U.E. & C. Catalytic 5/91 to 4/94

Responsibilities included the supervision of the plant restoration, consisting of self-leveling floors, repainting walls, pipes, hangers, pumps and machinery.

Washington, DC
Edward Minte, Inc. 6/90 to 5/91

Supervised the drywall finishing and the painting of three floors in the U. S. Post Office.

Calvert Cliffs Nuclear Power Plant
Williams Power 3/90 to 6/90

Responsible for the application of self-leveling epoxy on the floors of the material processing facility. Also, supervised the operation of the "Blast -Track", machine.

Washington, DC
L. A. Mangnum, Inc. 6/89 to 3/90

Responsible for the paint restoration of six Safeway grocery stores.

Washington, DC
Giant Food Construction 10/87 to 6/89

Managed the store remodeling for stores in the Washington, DC/Baltimore, Maryland area.

Huntington, MD
Robert D. Sapp, Inc. 10/84 to 10/87

Residential and commercial painting.

Clinton, MD
Prince George's Contractors, Inc. 7/82 to 10/87

Assisted an engineer and estimator at a asphalt company, while attending school.

EDUCATION

Southern Senior High School
Maryland Drafting Institute
Painters Local 1773
N.E.S. Levels I & II
Containment Applications
Belzona Technical Consultant

Work Order: 00-001840-000 SIR No: 00-68935 Requester: BASSETT, KERRY
Date Reqd : 04/27/2001 Project No: 6714-2130
Asset : DRYWELL 000
Account No: 6714.2130.4415.5301
Notes: BASSETT, KERRY

1 0000510014 COATING, CARBO ZINC
COATING, CARBO-ZINC, 11 SG GREEN 0300, WITH ZINCNT FILLER COLOR 0904 (1 GAL. KIT = .75 GAL CZ 11 SG AND 14.6# ZINC FILLER.) VY CHEM CONTROL # 19

Issue Qty	Location	Row/Bin	On Hand	Disbursed
25.00 KT	00000008	FC CAB	25.00	7
		FC CAB-981697800	0.00	

Deborah M. Cayo

HEAT# N/A LOT# N/A Safety Class: 1/E EQ: N FP: N DI:

LOT #	EXPIRATION	LOT QTY	SERIAL NO	PO #
63419	30-NOV-01	24.00		VY011040
63564		1.00		VY011040

2 0000510015 COATING, EPOXY
COATING, CARBOLINE 890 GRAY C705, (2 GAL KIT = 1 GAL PART A C705 AND 1 GAL PART B 0908.) VY CHEM CONTROL# 17 & 18

Issue Qty	Location	Row/Bin	On Hand	Disbursed
13.00 KT	00000008	FC CAB	13.00	6
		FC CAB-981697800	0.00	

HEAT# N/A LOT# N/A Safety Class: 1/E EQ: N FP: N DI:

LOT #	EXPIRATION	LOT QTY	SERIAL NO	PO #
63415	31-DEC-03	13.00		VY011040

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Issued By ECB Received By Deborah M. Cayo Date 5/13/89

JO FILE

Work Order: 00-001840-000 SIR No: 00-68935 Requester: BASSETT, KERRY
Date Reqd : 04/27/2001 Project No: 6714-2130
Asset : DRYWELL 000
Account No: 6714.2130.4415.5301
Notes: BASSETT, KERRY

1 0000511020 COATING, THINNER
COATING, THINNER, #21, CLEAR 0910, 5 GALLON CONTAINER
VY CHEMICAL CONTROL# 1297

Issue Qty	Location	Row/Bin	On Hand	Disbursed
2.00 Ea	00000007	HAZMAT	2.00	_____

HEAT# _____ LOT# _____ Safety Class: 1/E EQ: N FP: N DI:

LOT #	EXPIRATION	LOT QTY	SERIAL NO	PO #
63418	31-AUG-03	2.00		VY011040

2 2000120021 COMPOUND, CURING
COMPOUND, CURING, 5-GAL CONTAINER, USED IN COMBINATION WITH EBECCO 885 GROUT, VY CHEM CONTROL# 2460,
APPROX 1 YEAR IF STORED IN ORIGINAL, UNOPENED CONTAINERS

Issue Qty	Location	Row/Bin	On Hand	Disbursed
1.00 Ea	00000007	HAZMAT BLD	2.00	___/___

HEAT# _____ LOT# _____ Safety Class: NNS EQ: N FP: N DI:

LOT #	EXPIRATION	LOT QTY	SERIAL NO	PO #
64551		2.00		VY011538

FOR INFORMATION ONLY

JO FILE

Issued By _____ Received By _____ Date _____

12 Jun 2001 08:29:21 Warehouse Issue Ticket No: 01-99106

Work Order: 00-001840-000 SIR No: 00-68935 Requester: BASSETT, KERRY
Date Reqd : 04/27/2001 Project No: 6714-2130
Asset : DRYWELL 000
Account No: 6714.2130.4415.5301
Notes: BASSETT, KERRY

1 0000510020 COATING, THINNER
COATING, THINNER, #26, CLEAR 0910, 5 GALLON
CONTAINER. VY CHEM CONTROL # 25

Issue Qty	Location	Row/Bin	On Hand	Disbursed
2.00 EA	00000008	FC CAB	2.00	2
		FC CAB-981697800	0.00	

HEAT# N/A LOT# N/A Safety Class: 1/E EQ: N FP: N DI:

LOT #	EXPIRATION	LOT QTY	SERIAL NO	PO #
63417	31-DEC-03	2.00		VY011040

2 0000510021 COATING, THINNER
COATING, THINNER, #2, CLEAR 0910, 5 GALLON
CONTAINER, VY CHEM CONTROL # 23

Issue Qty	Location	Row/Bin	On Hand	Disbursed
2.00 EA	00000008	FC CAB	2.00	2
		FC CAB-981697800	0.00	

HEAT# N/A LOT# N/A Safety Class: 1/E EQ: N FP: N DI:

LOT #	EXPIRATION	LOT QTY	SERIAL NO	PO #
63416	30-NOV-03	2.00		VY011040

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JO FILE

Issued By [illegible] Received By Debra M. Cye Date 6-12-01

Work Order: 00-001840-000 SIR No: 00-68935 Requester: BASSETT, KERRY
Date Reqd : 04/27/2001 Project No: 6714-2130
Asset : DRYWELL 000
Account No: 6714.2130.4415.5301
Notes: BASSETT, KERRY

1 0000511020 COATING, THINNER
COATING, THINNER, #21, CLEAR 0910, 5 GALLON CONTAINER
VY CHEMICAL CONTROL# 1297

Issue Qty	Location	Row/Bin	On Hand	Disbursed
2.00 Ea	00000007	HAZMAT	2.00	

HEAT# N/A LOT# N/A Safety Class: 1/E EQ: N FP: N DI:

LOT #	EXPIRATION	LOT QTY	SERIAL NO	PO #
63418	31-AUG-03	2.00		VY011040

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JO FILE

Issued By [illegible] Received By [illegible] Date 6-12-01

Work Order: 00-001840-000 SIR No: 00-68935 Requester: BASSETT, KERRY
Date Reqd : 04/27/2001 Project No: 6714-2130
Asset : DRYWELL 000
Account No: 6714.2130.4415.5301
Notes: BASSETT, KERRY

QC Verified
RJT 5/11/01

5 2000099430 GROUT, FIRE PENTRATION
GROUT, FIRE PENETRATION, MASTER BUILDERS EMBECO,
VY CHEMICAL CONTROL. # 753 * SEE NOTES PAGE 8 *
SHELF LIFE ITEM*

Issue Qty	Location	Row/Bin	On Hand	Disbursed
4.00 EA	00000008	SWHSE	15.00	4
		SWHSE-961520300	0.00	
		SWHSE-971601400	0.00	
		SWHSE-981705300	0.00	
		SWHSE-981747400	0.00	

HEAT# _____ LOT# _____ Safety Class: SC2 EQ: N FP: Y DI:

LOT #	EXPIRATION	LOT QTY	SERIAL NO	PO #
62988	31-AUG-01	3.00		VY010553
64743	31-AUG-02	12.00		VY011677

FOR INFORMATION ONLY

JO FILE

Issued By _____ Received By _____ Date _____

12 May 2001 14:58:41 Warehouse Issue Ticket No: 01-98474

Work Order: 00-001840-000 SIR No: 01-71170 Requester: WORDEN, CHRIS
Date Reqd : 04/27/2001 Project No: 6714-2130
Asset : DRYWELL 000
Account No: 6714.2130.4415.5301
Notes: BASSETT, KERRY

1 0000511266 TAPE, SEALANT
TAPE, SEALANT, 1" WIDE, 36 YARD ROLL LENGTH, BLACK

Issue Qty	Location	Row/Bin	On Hand	Disburse
12.00 Ea	00000001	E6H1	35.00	12

HEAT# N/A LOT# N/A Safety Class: SC2 EQ: N FP: N DI

LOT #	EXPIRATION	LOT QTY	SERIAL NO	PO #
64589		35.00		VY011567

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JO FILE

Issued By Ron Page Received By Debra Mangan Date 5/12/01

Work Order: 00-001840-000 SIR No: 00-68935 Requester: BASSETT, KERRY
Date Reqd : 04/27/2001 Project No: 6714-2130
Asset : DRYWELL 000
Account No: 6714.2130.4415.5301
Notes: BASSETT, KERRY

1 0000507502 VALVE, BALL
VALVE, BALL. 2", STAINLESS STEEL.

Issue Qty	Location	Row/Bin	On Hand	Disbursed
2.00 EA	00000001	Y12D1	2.00	
		Y12D1-961468215	0.00	

HEAT# _____ LOT# _____ Safety Class: SC2 EQ: N FP: N DI: N

LOT #	EXPIRATION	LOT QTY	SERIAL NO	PO #
64162		2.00		VY011207

2 2000010106 SEALANT, SILICONE
SEALANT, SILICONE, DOW CORNING, TYPE 795, GRAY, 20 OZ. E-Z PAK FOIL SAUSAGE, VY CONTROL #2459,

Issue Qty	Location	Row/Bin	On Hand	Disbursed
50.00 Ea	00000001	I14G1	64.00	32

5/12/01 32 Ea DMC

HEAT# N/A LOT# 743071 Safety Class: 2/0 EQ: N FP: N DI: N

LOT #	EXPIRATION	LOT QTY	SERIAL NO	PO #
64060	10-FEB-02	64.00		VY011216

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JO FILE

Issued By R&P Received By _____ Date 5/12/01

Work Order: 00-001840-000 SIR No: 00-68935 Requester: BASSETT, KERRY
Date Reqd : 04/27/2001 Project No: 6714-2130
Asset : DRYWELL 000
Account No: 6714.2130.4415.5301
Notes: BASSETT, KERRY

3 2000010107 SEALANT, SILICONE
SEALANT, SILICONE, DOW CORNING, TYPE 795, GRAY, 10.3 OZ. DISPOSABLE PLASTIC CARTRIDGE, VY CONTROL #2459

Issue Qty	Location	Row/Bin	On Hand	Disbursed
24.00 Ea	00000001	I14G1	35.00	12 WR 16

HEAT# N/A LOT# 740542 Safety Class: 2/0 EQ: N FP: N DI:

LOT #	EXPIRATION	LOT QTY	SERIAL NO	PO #
64061	18-FEB-02	35.00		VY011216

JO FILE

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STORES

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Issued By EQB Received By Debra M. Cg Date 5/13/01

MEMORANDUM

To: J.O. File 2000-060 **Date**: June 22, 2001

From: Dennis Humbert / Dennis Humbert **Project Engineering**

Subject: Sil-Pro Material Used in Drywell Seal Job, MM 2000-010

The Sil-Pro bonding agent that was specified to be used in the Installation Instructions, step 7.13, page 8 of 11, did not have an issue ticket with the material, and therefore no issue ticket was placed in this J.O. File for this material.

The Sil-Pro used was from stock material that was stored in the NPS Laborer's gang box. The material was assumed to have been purchased by the construction contractor for another job. The original container is not available to record lot or batch number of the material.

JO FILE

Lead Air Sampling Protocol for Drywell Seal Work Job
Revision 1

Initial Sampling:

BZA's will be placed on the worker that is expected to receive the highest exposure of each crew. (2 samples)

BZA's will be placed on one other worker of each crew. (2 samples)

Two low volume general area lead air samples will taken in the area of both work groups on the 238' level of the Drywell. (2 samples)

Two additional general area low volume lead air samples will be placed on the Drywell 252' grating directly above the work groups. (2 samples)

One low volume air sampler will be run outside the Drywell as a blank. (1 sample)

This is a total of 9 samples.

Procedure:

1. **Change all these samples out after the first 2 hours of work.**
2. **Log them and handle them per AP-0549.**
3. **Transport them to the chemistry lab ASAP.**
4. **Chemistry shall analyze the samples when they are delivered. The sample results are needed as quickly as possible.**
5. **Chemistry will deliver the results to Remi Morrissette or Doug Bruce for evaluation of the lead levels.**
6. **We will continue to sample until the lead work is complete.**
   - **The low volume samples will be changed out shiftly**
   - **The workers should keep their BZA's for the entire shift**
7. **After initial sampling we will have a total of 18 to 20 samples each shift for a period of three days.**

JO FILE

Corrosion of the low part of the drywell is effectively prevented by the following methods:

1. The ambient temperature of the drywell is maintained between 135°F and 165°F by forced draft air cooling units which continually circulate the air in the drywell. These units are, in turn, cooled by the Reactor Building Closed Cooling Water System and the moisture is removed from the air. Consequently, the steel plating surfaces will remain dry, thus minimizing any corrosive action.

2. The lower portion of the drywell interior and exterior surfaces are protected from any contact with the atmosphere by complete concrete encasement. This effectively prevents any corrosive action on the plates in that area.

3. All interior and exterior drywell surfaces which are exposed to the atmosphere are protected from corrosion by application of a corrosion resistant coating material.

There is a remote possibility that the height of ground water during a given period could exceed the elevation of the extreme lower portion of the drywell. Nevertheless, it is not considered possible for this ground water to reach the steel plating, assuming a crack in the foundation concrete. The bases for this conclusion are as follows:

1. The monolithic foundation concrete structure is greater than 18 feet thick below the drywell and is divided into three separate pours in the horizontal plane. It is considered almost impossible for a crack to propagate completely through any given pour because of the thicknesses involved and the bedrock foundation. Even if this were to occur, it is not considered possible for any given crack to propagate beyond the joint between pours.

2. Water-stop material is used at all foundation concrete joints between pours, both in the horizontal and vertical planes. This design assures that water will not propagate along any given joint in the concrete.

The possible effects of a given thermal gradient through the foundation concrete have been considered. Based on the concrete thicknesses and possible temperature differentials, it is not considered possible for any thermal gradients to exist which would damage or otherwise affect the structural

occur from the condenser (based on methodology in SRP 15.4.9). The leakage path was assumed to be out of the turbine hall and into the Control Room intake.

The total 30-day thyroid and whole body gamma doses excluding main steam isolation valve leakage have been calculated to be 8.8 rem and 0.10 rem, respectively. The 30-day thyroid and whole body gamma doses from main steam isolation valve leakage have been calculated to be 18 rem and 0.002 rem, respectively. The above calculated doses to the Control Room occupants are within the limits specified in Criterion 19 to 10CFR Part 50.

14.9.1.6 Materials Within the Containment

No material within the primary containment will fail by decomposition or corrosion and affect vital systems. The GE program for determining the effect of hydrogen evolution by radiolysis is discussed in Appendix B of the FSAR. See also Section 5.2.

The interior pressure boundary surfaces of the drywell and torus were originally prime coated during construction with an inorganic zinc paint primer that will withstand the accident environment without failure (Carboline CZ-11). This coating was radiation and DBA tested at Oak Ridge National Laboratory (ORNL Log Book No. A 7562; 11-29-6 and Log Book No. A 9675, A10-13-33) and tolerated radiation doses of 1E9 rads without failure. The drywell primer was topcoated with a Keeler & Long epoxy (No. 7475). The torus primer was topcoated with a Keeler & Long phenolic paint (No. 7230).

During RFO 20, 1998, the immersion area of the torus was steel grit blasted and recoated with an inorganic zinc paint (Carboline CZ-11SG) and a belly-band of phenolic paint (Carboline 368WG) was applied from approximately one foot above and one foot below normal water level to prevent tiger striping.[1] The coating system used is a qualified Nuclear Service Level 1 coating in accordance with ANSI 101.2-1972 and was applied under an approved quality assurance program to ensure compliance with ANSI N101.4-1972.[2]

In response to NRC Bulletins 79-01 and 79-01B, an extensive re-evaluation of post-accident radiation fields and equipment qualifications has been performed, was submitted for review and was approved (References Y, Z, A1 and H1).

14.9.1.7 Conclusion

All the necessary safety-related systems and equipment are capable of performing their intended functions in the presence of either the design basis radiation sources or postulated TID-14844 sources without exceeding the limits of 10CFR100.

---

[1] EDCR 97-423, "RHR and CS Strainer Replacement."

[2] KTA-Tator, Inc., "Technical Evaluation of New Coating Systems Suppression Chamber and Vent Header, Revision 2," April 30, 1998.

JO FILE

LEVEL I
NUCLEAR COATING SYSTEM

SYSTEM	PRODUCT	GENERIC TYPE	DRY FILM THICKNESS	VOLUME SOLIDS	COVERAGE
Primer	Carbo Zinc 11 SG	Inorganic Zinc	3 mils	86% total zinc in dry film	333 ft.^{2}
Topcoat	Carboline 890	Epoxy	5 mils	75%	240 ft.^{2}

DESCRIPTION: A two coat inorganic zinc/epoxy system for new construction steel. A mist coat/full coat application of 890 may be required to prevent "bubbling" over zinc.

FEATURES

- Excellent Corrosion protection
- High solids
- 890 available in Rapid Tint System

BENEFITS

- Protects steel from corrosion during construction.
- Complies with VOC regulations, fewer solvent fumes.
- Available in wide range of colors with no minimum order requirements. Fast delivery.

TEST DATA

TEST	METHOD	CONDITION	RESULTS
Design Basis Accident (DBA)	ANSI N101.2-1972 ASTM D3911-89	300°F/48 PSIG 302°F/11 days (ORNL)	Acceptable Acceptable
Radiation Tolerance	ANSI N5.12-1974 ASTM D4082-83	(CZ-11 SG) 1×10^9 rads (890) 1.01×10^9 rads	Acceptable
Decontamination	ANSI N5.12-1974 ASTM D4256-83	Per test method and ORNL procedures (890)	99.96%
Chemical Resistance	ANSI N5.12-1974 ASTM D3912-80	5 day immersion	Acceptable except for nitric acid and potassium permanganate
Taber Abrasion	ANSI N5.12-1974 Fed STD 141 Method 6192	1000 cycles 1000g weight CS-17 wheel (890)	85 mg loss
Elcometer Adhesion	ANSI N5.12-1974 ASTM D4541-85	Per test method	350 PSI
Fire Evaluation	ANSI N101.2-1972 ASTM E-84	Per test method	Flame Spread less than 25

0086313.AM

JO FILE

00-010.06

product data sheet

carboline®

CARBO ZINC® 11 SG

VOC PLUS

SELECTION DATA

GENERIC TYPE: Self curing, solvent based, inorganic zinc silicate.

GENERAL PROPERTIES: An inorganic zinc rich primer that protects steel galvanically, eliminating sub-film corrosion.

- Excellent corrosion and weathering protection
- High zinc loading per square foot
- Meets Class "B" slip coefficient and creep testing criteria for use on faying surfaces
- Very good resistance to salting
- Meets nuclear requirements for level one areas
- Complies with FDA criteria in gray color
- Available in an ASTM D520, Type 2 zinc version

RECOMMENDED USES: As a prime coat for abrasive blasted steel where inorganic zinc is specified. Provides excellent protection for power plants, bridges, chemical plants, refineries, paper mills, coastal and offshore exposures and for interiors of storage tanks containing fuels and organic solvents.

NOT RECOMMENDED FOR: Exposure to acids or alkalies without a suitable topcoat or for application over rust inhibitors.

TYPICAL CHEMICAL RESISTANCE:

Exposure	Immersion	Splash & Spillage	Fumes
Acids	NR	Very Good*	Excellent*
Alkalies	NR	Very Good*	Excellent*
Solvents	Excellent	Excellent	Excellent
Salt	Excellent	Excellent	Excellent
Water	Excellent	Excellent	Excellent

*With suitable topcoat.

TEMPERATURE RESISTANCE: (Non-immersion)

Untopcoated:

Continuous:	750°F	(399°C)
Non-Continuous:	800°F	(427°C)

With recommended silicone topcoats:

Continuous:	1000°F	(538°C)
Non-Continuous:	1200°F	(649°C)

SUBSTRATES: Apply over properly prepared steel.

COMPATIBLE COATINGS: May be topcoated with epoxies, phenolics, acrylics, silicones, vinyls, chlorinated rubbers or others as recommended. Do not topcoat with alkyds.

NOTE: Under certain conditions a mist coat is required to minimize topcoat bubbling.

Oct 97 Replaces June 97

SPECIFICATION DATA

0231

THEORETICAL SOLIDS CONTENT OF MIXED MATERIAL:

	By Weight
CARBO ZINC 11 SG	79 ± 2%
Total zinc in dry film	85% minimum

VOLATILE ORGANIC CONTENT (VOC):
The following are nominal values as tested per EPA Method 24:
As supplied: 4.01 lbs/gal (481 g/l)
Thinned:

Thinner	oz/gal	lbs/gal	g/l
21	16	4.28	513
26	15	4.37	524

RECOMMENDED DRY FILM THICKNESS PER COAT:
2.0-3.0 mils (50-75 microns)

Dry film thickness in excess of 6 mils (150 microns) per coat is not recommended.

THEORETICAL COVERAGE PER MIXED GALLON:*
1000 mil ft² (24.5 m²/l at 25 microns)
333 ft² at 3 mils (8.2 m²/l at 75 microns)

*As measured per NACE 6A181. Material losses during mixing and application will vary and must be taken into consideration when estimating job requirements.

STORAGE CONDITIONS: Store indoors.
Temperature: 40-100°F (4-38°C) Humidity: 0-90%

SHELF LIFE: When stored indoors at 75°F (24°C).

CARBO ZINC 11 SG Base	12 months
Zinc Filler	24 months
Special Zinc Filler (ASTM D520, Type 2)	24 months

COLOR: Green (0300) and Gray (0700)

GLOSS: Matte

ORDERING INFORMATION

Prices may be obtained from your Carboline Sales Representative or Carboline Customer Service.

APPROXIMATE SHIPPING WEIGHT:

	1 Gal Kit	5 Gal Kit
CARBO ZINC 11 SG Base	23 lbs (10 kg)	113 lbs (51 kg)
Thinner 26	9 lbs (4 kg)	42 lbs (19 kg)
Thinner 21	9 lbs (4 kg)	42 lbs (19 kg)

FLASH POINT: (Setaflash)

CARBO ZINC 11 SG Base	55°F	(13°C)
Thinner 26	95°F	(35°C)
Thinner 21	54°F	(12°C)

To the best of our knowledge the technical data contained herein are true and accurate at the date of issuance and are subject to change without prior notice. User must contact Carboline Company to verify correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility for coverage, performance or injuries resulting from use. Liability, if any, is limited to replacement of products. Prices and cost data, if shown, are subject to change without prior notice. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY CARBOLINE, EXPRESS OR IMPLIED, STATUTORY, BY OPERATION F LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

JO FILE

APPLICATION INSTRUCTIONS
CARBO ZINC® 11 SG

These instructions are not intended to show product recommendations for specific service. They are issued as an aid in determining correct surface preparation, mixing instructions and application procedure. It is assumed that the proper product recommendations have been made. These instructions should be followed closely to obtain the maximum service from the materials.

SURFACE PREPARATION: Remove all oil or grease from the surface to be coated with Thinner 2 or Carboline Surface Cleaner 3 (refer to Surface Cleaner 3 Instructions) in accordance with SSPC-SP 1.

STEEL:
Immersion Service: Abrasive blast to a Near White Metal Finish in accordance with SSPC-SP 10 and obtain a 1-3 mil (25-75 micron) blast profile. Welds must be continuous and ground smooth.

Non-Immersion Service: Abrasive blast to a Commercial Finish in accordance with SSPC-SP 6 and obtain a 1-3 mil (25-75 micron) blast profile.

MIXING: Power mix base, then combine and power mix as follows:

	1 Gal Kit	5 Gal Kit
CARBO ZINC 11 SG Base	1 gal (partially filled)	5 gal (partially filled)
Zinc Filler or Special Zinc Filler	14.6 lbs	73 lbs

Sift zinc filler slowly into premixed base with continuous agitation. Mix until free of lumps. Pour mixture through a 30 mesh screen. DO NOT MIX PARTIAL KITS. Keep material under mild agitation during application.

THINNING: May be thinned up to 15 oz/gal with Thinner 26. In cool weather, below 60°F (16°C), may be thinned up to 15 oz/gal with Thinner 21.

Use of thinners other than those supplied or approved by Carboline may adversely affect product performance and will void product warranty whether express or implied.

POT LIFE: Pot life ends when material becomes too thick to use.

Material Temperature	Time
60°F (16°C)	12 hours
75°F (24°C)	8 hours
90°F (32°C)	4 hours

APPLICATION CONDITIONS:

	Material	Surface	Ambient	Humidity
Normal	40-95°F (40-35°C)	40-110°F (4-43°C)	40-95°F (4-35°C)	40-90%
Minimum	0°F (-18°C)	0°F (-18°C)	0°F (-18°C)	30%
Maximum	130°F (54°C)	200°F (93°C)	130°F (54°C)	95%

Do not apply when the surface temperature is less than 5°F or 3°C above the dew point.

Special thinning and application techniques may be required above or below normal conditions.

SPRAY: The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco. Agitate the mixed material continuously during application. If spraying stops for more than 10 minutes, recirculate the material remaining in the spray line.

Conventional: Agitated pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, 50' maximum material hose .070" I.D. fluid tip and appropriate air cap.

Airless:

Pump Ratio:	30:1 (min)*
GPM Output:	3.0 (min.)
Material Hose:	3/8" I.D. (min.)
Tip Size:	.019-.023"
Output psi:	1500-2000
Filter Size:	60 mesh

*Teflon packings are recommended and are available from the pump manufacturer.

BRUSH: For touch up of areas less than one square foot only. Use medium bristle brush. Avoid excessive rebrushing.

ROLLER: Application by roller is not recommended.

DRYING TIMES: These times are based on a 2-3 mil (50-75 micron) dry film thickness and a 50% Relative Humidity or higher. Lower humidity will require longer cure times. Higher film thickness, low humidity or insufficient ventilation will lengthen cure times.

Surface Temperature	Handle	Topcoat	Immersion Service
0°F (-18°C)	4 hours	7 days	NR
40°F (4°C)	1 hour	48 hours	72 hours
60°F (16°C)	45 min.	24 hours	48 hours
80°F (27°C)	45 min.	18 hours	18 hours
100°F (38°C)	15 min.	16 hours	14 hours

For shop applications or tank linings, if the relative humidity is low, the curing time can be reduced by raising the Relative Humidity by steam or a water spray on the coated surface after an initial dry time of 1 hour at 75°F (24°C).

NOTES:
1. Any salting that appears on the zinc surface as a result of prolonged weathering exposure must be removed prior to the application of additional coatings.
2. Loose zinc dust must be removed from the cured film by rubbing with fiberglass screen wire if:
   a) the Carbo Zinc 11 SG is to be used without a topcoat in immersion service and "zinc pickup" could be detrimental, or
   b) when "dry spray/overspray" is evident on the cured film and a topcoat will be applied.

VENTILATION & SAFETY: WARNING: VAPORS MAY CAUSE EXPLOSION. When used as a tank lining or in enclosed areas, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. In addition to ensuring proper ventilation, fresh air respirators or fresh air hoods must be used by all application personnel. Where flammable solvents exist, explosion-proof lighting must be used. Hypersensitive persons should wear clean, protective clothing, gloves and/or protective cream on face, hands and all exposed areas.

CLEANUP: Use Thinner 21 or isopropyl alcohol.

CAUTION: READ AND FOLLOW ALL CAUTION STATEMENTS ON THIS PRODUCT DATA SHEET AND ON THE MATERIAL SAFETY DATA SHEET FOR THIS PRODUCT.

Oct 97 Replaces June 97

CAUTION: CONTAINS FLAMMABLE SOLVENTS. KEEP AWAY FROM SPARKS AND OPEN FLAMES. IN CONFINED AREAS WORKMEN MUST WEAR FRESH AIRLINE RESPIRATORS. HYPERSENSITIVE PERSONS SHOULD WEAR GLOVES OR USE PROTECTIVE CREAM. ALL ELECTRIC EQUIPMENT AND INSTALLATIONS SHOULD BE MADE AND GROUNDED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE. IN AREAS WHERE EXPLOSION HAZARDS EXIST, WORKMEN SHOULD BE REQUIRED TO USE NONFERROUS TOOLS AND TO WEAR CONDUCTIVE AND NONSPARKING SHOES.

carboline
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JO FILE

Protection and Repair

Cementitious Grouts

EMBECO® 885

High precision, nonshrink, metallic aggregate grout with extended working time

Description

EMBECO® 885 grout is high precision, nonshrink, metallic aggregate grout with extended working time. It is ideally suited for grouting machines or plates requiring optimum toughness and precision load-bearing support, including machine bases subject to thermal movement. EMBECO® 885 grout meets the requirements of ASTM C 1107 and the Army Corp of Engineers CRD C 621, Grades B and C, at a highly fluid consistency over a temperature range of 45 to 90°F (7 to 32°C).

Recommended for

- Precision nonshrink grouting of:
  - Machinery and equipment
  - Paper machine soleplates, including hooded dryer sections
  - Turbines, generators and centrifugal compressors
  - Rolling, stamping, drawing and finishing mills for the steel and aluminum industries
- Grouting anchor bolts, reinforcing bars and dowel rods
- Applications requiring high strength and impact-resistance
- Applications requiring nonshrink grout to achieve maximum bearing for optimum load transfer
- Application requiring a metallic grout to be pumped

Features/Benefits

- Meets ASTM C 1107 and CRD C 621, Grades B and C requirements at a highly fluid consistency over a temperature range of 45 to 90°F (7 to 32°C) over a 30 minute working time
- High fluidity and extended working time ensure proper placement under a variety of application conditions
- Hardens free of bleeding, segregation or settlement shrinkage
- Has a high tolerance to thermal movement of machinery and equipment, as well as other effects of heating/cooling and wetting/drying
- The high quality, well-graded blend of metallic and quartz aggregate provides high strength, impact resistance and optimum toughness under dynamic and repetitive load conditions

Packaging/Estimating

EMBECO® 885 grout is packaged in 55 lb (25 kg) moisture-resistant bags. It is also available in 3,300 lb (1,500 kg) bulk bags.

One 55 lb (25 kg) bag of EMBECO 885 grout mixed with approximately 10 lb (4.5 kg) or 1.2 U.S. gal (4.5 L) of water yields approximately 0.43 ft³ (0.012 m³) of grout.

Note: The water requirement may vary due to mixing efficiency and other variables.

Performance Data

The following data was developed under controlled laboratory conditions. Reasonable variations from these results can be expected.

Typical Compressive Strengths (ASTM C 109, Modified)

	Consistency					
	Plastic[1]		Flowable[2]		Fluid[3]	
	psi	MPa	psi	MPa	psi	MPa
1 day	5,000	34	5,000	34	4,000	28
3 days	7,000	48	6,000	41	5,000	34
7 days	9,000	62	8,000	55	7,000	48
28 days	11,000	76	10,000	69	9,000	62

Volume Change (ASTM C 1090)

	% Change	Requirement per ASTM C 1107, %
1 day	0.05	0.0 - 0.30
3 days	0.05	0.0 - 0.30
14 days	0.06	0.0 - 0.30
28 days	0.07	0.0 - 0.30

Setting Time (ASTM C 191)

	Consistency		
	Plastic[1]	Flowable[2]	Fluid[3]
Initial Set (Hr.:Min.)	3:30	5:00	5:30
Final Set (Hr.:Min.)	4:30	6:00	7:00

Flexural Strength (ASTM C 78)*

	psi	MPa
3 days	880	6.1
7 days	1,050	7.2
28 days	1,150	7.9

Modulus of Elasticity (ASTM C 469, Modified)*

	psi	MPa
3 days	3.16×10^6	2.18×10^4
7 days	3.50×10^6	2.41×10^4
28 days	3.69×10^6	2.54×10^4

Coefficient of Thermal Expansion (ASTM C 531)*

6.5×10^{-6} in./in./°F (11.7×10^{-6} mm/mm/°C)

Split Tensile and Tensile Strength (ASTM C 496 and ASTM C 190)*

	Split Tensile		Tensile	
	psi	MPa	psi	MPa
3 days	350	2.4	300	2.1
7 days	490	3.4	400	2.8
28 days	520	3.6	500	3.4

[1] 100-125% flow on flow table per ASTM C 230

[2] 125-145% flow on flow table per ASTM C 230

[3] 25 to 30 seconds through flow cone per ASTM C 939

*Test conducted at a fluid consistency

Typical Ultimate Tensile and Shear Loads Anchor Bolt Tests (ASTM E 488)*

	Ultimate Tensile Load		Ultimate Shear Load	
	lb	kg	lb	kg
1-1/4 in. Bolts - 9 in. embedment in a 2-1/2 in diameter hole	49,500	22,500	27,500	12,500
7/8 in. Bolts - 6 in. embedment in a 1-3/4 in diameter hole	24,000	10,910	9,550	4,340
1/2 in. Bolts - 4 in. embedment in a 1-1/8 in diameter hole	7,840	3,560	2,400	1,090

(Data based on threaded anchor bolts with washer and nut, 1 in. = 25 mm)

Punching Shear Strength (ChemRex Inc. Method)*
3 in. x 3 in. x 11 in (76 mm x 76 mm x 279 mm) beam

	psi	MPa
3 days	1,600	11.0
7 days	1,800	12.4
28 days	2,600	17.9

*Test conducted at a fluid consistency

Installation

Consult the EMBECO 885 grout Installation Bulletin and the product bag for details on the installation of EMBECO® 885 grout.

ChemRex Inc. recommends that the user request the services of the local representative for a prejob conference to plan the installation.

Mixing

EMBECO® 885 grout should be mixed with a mechanical mixer for a least 5 minutes. For a fluid consistency, start with 9 lb (4 kg) (1.1 U.S. gal (4.2 L) per 55 lb bag. Adjust mixing water, as needed, to establish the recommended flow of 25 to 30 seconds through a flow cone (ASTM C 939/CRD C 611). Less mixing water will be required to achieve stiffer consistencies.

Placing

EMBECO® 885 grout should be placed in a continuous pour. Discard grout that becomes unworkable. Grout should be placed from one side to avoid entrapment of air. Make sure that the grout fills the entire space to be grouted and remains in contact with the plate throughout the grouting process. Straps may be used to move the grout to ensure that the entire space is filled. DO NOT VIBRATE.

Curing

Immediately after placement, wet cure the EMBECO® 885 grout by covering all exposed grout with clean, damp rags (not burlap). Keep moist until grout surface is ready to be finished or until final set. Following the removal of the damp rags, immediately coat with a recommended curing compound, such as MASTERKURE.

Jobsite Testing

If strength tests must be made at the jobsite, use 2 in. 51 mm) CUBE molds per ASTM C 109. DO NOT use cylinder molds. Testing should be controlled on the basis of the desired placing consistency rather than strictly on the water content. Consult with your local ChemRex Inc. representative for special procedures required when mixing and casting compressive strength tests of fluid, nonshrink grout.

Limitations

- The ambient and initial material temperature of the grout should be in the range of 45 to 90°F (7 to 32°C) for both mixing and placing. Ideally, the amount of mixing water used should be that which is necessary to achieve a 25 to 30 second flow per ASTM C 939 (CRD C 611). For placement outside of 45 to 90°F (7 to 32°C), contact your local ChemRex Inc. representative.
- For pours greater than 6 in. (152 mm) deep, consult your local ChemRex Inc. representative for special precautions and installation procedures.
- When the grout will be in contact with steel which is or will be stressed over 80,000 psi (550 MPa) use MASTERFLOW® 816 cable grout.
- EMBECO® 885, one-component, cement-based grout is formulated for industrial and professional use only, and must be kept out of the reach of children. This product contains chemicals which may be potentially HARMFUL to your health, if not stored and used properly. Hazards can be significantly reduced by observing all precautions which are found on Material Safety Data Sheets (MSDS), product labels, and technical literature. Please read this literature carefully before using product.

Customer Service: 1/800/433-9517
Technical Services: 1-800/ChemRex (1/800/245-6739)
Web Site: www.chemrex.com

Limited Warranty Notice
Every reasonable effort is made to apply ChemRex Inc. exacting standards both in the manufacture of our products and in the information which we issue concerning these products and their use. We warrant our products to be of good quality and will replace or, at our election, refund the purchase price of any products proved defective. Satisfactory results depend not only upon quality products, but also upon many factors beyond our control. Therefore, except for such replacement or refund, CHEMREX INC. MAKES NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY, RESPECTING ITS PRODUCTS, and CHEMREX INC. shall have no other liability with respect thereto. Any claim regarding product defect must be received in writing within one (1) year from the date of shipment. No claim will be considered without such written notice or after the specified time interval. User shall determine the suitability of the products for the intended use and assume all risks and liability in connection therewith. Any authorized change in the printed recommendations concerning the use of our products must bear the signature of the ChemRex Inc. Technical Manager.

ChemRex Inc.
889 Valley Park Drive: Shakopee, MN 55379

Manufacturing Plants: Newark, CA; Denver, CO; Fort Wayne, IN; Centerville, IN; Mattawan, MI; Bloomington, MN; Bristol, PA.

Regional Warehouses: Hayward, CA; Ontario, CA; Atlanta, GA; Chicago Heights, IL; Fairfield, NJ; Grand Prairie, TX; Brampton, ONT (Canada).

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RO-AN Corporation

DOW CORNING® 795 STRUCTURAL GLAZING & WEATHERPROOFING SEALANT

1. PRODUCT NAME

***DOW CORNING* ® 795 Silicone Structural Glazing and Weatherproofing Sealant**

2. MANUFACTURER

Dow Corning Corporation
Midland, MI 48640
Phone: (517) 496-6000

3. PRODUCT DESCRIPTION

DOW CORNING 795 silicone building sealant is a one-part silicone formulation that cures to a durable and flexible silicone rubber building joint seal that can accommodate ±50 percent movement in a properly designed joint.

This sealant combines the best performance characteristics of the high-modulus DOW CORNING® 999-A silicone building & glazing sealant and the low-modulus DOW CORNING® 790 silicone building sealant. DOW CORNING 795 silicone building sealant demonstrates: unprimed adhesion to most common construction materials; a physical property profile that is strong enough for structural and non-structural glazing with sufficient movement capability for most weatherproofing applications; excellent fire-resistant properties; a long cure time for easy, convenient tooling; a noncorrosive by-product; a low odor while curing; and excellent weathering, durability and recovery after extension and compression.

Basic Uses : DOW CORNING 795 silicone building sealant is designed for:
- Structural and nonstructural glazing of glass, metal and plastic
- Adhering stiffeners to building panels
- Weatherproofing applications, including perimeter sealing of doors and windows

DOW CORNING 795 silicone building sealant may be factory applied to seal shop-finished products or field applied to seal erected building components in both new and remedial applications.

The sealant forms durable, flexible, watertight bonds with most building materials in any combination: glass, ceramics, plastics, stone, masonry, wood, steel, anodized and mill-finished aluminum, and painted surfaces. In most cases, no prime coat is required.

DOW CORNING 795 silicone building sealant passes a UL Fire Resistance test in an exterior joint configuration sealing system without a steel cover plate. The material also stands up to a high-pressure water force without a cover plate.

Limitations: DOW CORNING 795 silicone building sealant for structural applications must be reviewed by the technical service staff, Dow Corning Corporation, Construction Sealants TS&D.

TYPICAL PROPERTIES
These values are not intended for use in preparing specifications.

As Supplied
Color: Black, white, gray, limestone, bronze, sandstone, adobe tan, dusty rose, rustic brick, blue spruce, charcoal
MIL-S-8802 Tack-Free Time, 50% RH, hours: 3
MIL-S-8802 Curing Time, 50% RH, days at 25° C (77° F): 7-14
Full Adhesion, days: 14-21
MIL-S-8802 Flow, sag or slump, inches: 0.1
Working Time, minutes: 20-30

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As Cured - After 7 days at 25 ° C (77 ° F) and 50% RH
ASTM D 2240 Durometer Hardness, Shore A, points: 30
ASTM D 412 Tensile at 150% Elongation, psi: 80
ASTM D 412 Ultimate Tensile Strength (maximum elongation), psi: 170
MIL-S-8802 Peel Strength, milled aluminum, glass and concrete, lb/in: 32
ASTM C 510 Staining: None
ASTM D 624 Tear Strength, die B, ppi: 27
ASTM D 1149 Ozone Resistance: Good
Weathering (after 1500 hours in Atlas Weatherometer): Remains elastomeric
Joint Movement Capability, after 14 days cure, percent: ±50
UL 263 Fire Endurace, hours: 2
ASTM E 119

Specification Writers: Please contact Dow Corning Corporation, Midland, Michigan, before writing specifications on this product.

DOW CORNING 795 silicone building sealant should not be applied:
- To building materials that bleed oils, plasticizers or solvents - materials such as impregnated wood, oil-based caulks, green or partially vulcanized rubber gaskets or tapes
- In totally confined spaces, because the sealant requires atmospheric moisture for cure
- When surface temperatures exceed 49° C (120° F)
- To frost-laden or wet surfaces
- Where painting of the sealant is required; the paint film will not stretch with the extension of the sealant and may crack and peel
- To surfaces in direct contact with food; this sealant has not been tested to determine its status under Federal Food and Drug Administration regulations. For applications involving food contact, DOW CORNING 999-A silicone building & glazing sealant is recommended
- In below-grade applications
- For use as an interior penetration firestop sealing system
- In horizontal joints where abrasion and physical abuse are likely to be encountered
- For continuous immersion in water

Composition and Materials: DOW CORNING 795 silicone building sealant is a chemically stable, one-part, ready-to-use material that has the consistency of toothpaste. This consistency remains uniform over a wide temperature range from -37 to 71° C (-35 to 160° F) allowing the sealant to be applied easily at most temperatures.

Priming is not required for most common construction substrates.

In cases where doubt exists, a sample should be tested and/or a trial installation placed on the project.

Packaging: DOW CORNING 795 silicone building sealant is supplied in 10.3-fl oz (305-mL) disposable plastic cartridges and 20-fl oz (590-mL) E-Z PAK™ foil sausages that fit caulking guns, and 2- and 4.5-gal (7.5- and 17-L) bulk containers. It can be dispensed by many air-operated guns and most types of bulk dispensing equipment.

Colors: DOW CORNING 795 silicone building sealant is available in 11 colors: black, white, gray, limestone, bronze, sandstone, adobe tan, dusty rose, rustic brick, blue spruce and charcoal. Custom colors are available upon request.

Applicable Standards: DOW CORNING 795 silicone building sealant meets or exceeds the test requirements of:
- Federal Specification TT-S-001543A (COM-NBS) Class A for silicone building sealants
- Federal Specification TT-S-00230C (COM-NBS) Class A for one-component building sealants
- ASTM Specification: C-920 Type S, Grade NS, Class 25, Use NT, MG, A; and GSA (C.I.D.) No. A-A-1556 Type S, Grade NS, Class 40, Use NT, M, G, A, O
- Fire Tests of Building Construction and Materials, UL 263 (ASTM E 119)
- Canadian Specification CAN2-19.13-M82

4. TECHNICAL DATA

DOW CORNING 795 silicone building sealant is virtually unaffected by sunlight, rain, sleet, snow, ultraviolet radiation, atmospheric contamination, ozone and temperature extremes. Its unique weatherability enables it to retain original design properties even after years of exposure. Joint performance does not change significantly with aging or exposure to weather. Seals remain watertight and weatherproof. Cured sealant will not harden in cold to -54° C (-65° F) or soften with heat to 149° C (300° F). It will not become brittle, or tear or crack, and the silicone sealant stays flexible indefinitely.

DOW CORNING 795 silicone building sealant is compatible with reflective glass, most laminated glass, most insulating glass units, and acrylic and polycarbonate glazing sheets.

DOW CORNING 795 silicone building sealant has been tested by UL for performance when exposed to flames. The material, when in a joint configuration sealing system without a protective steel cover plate, meets the two-hour fire resistance ratings with or without the use of mineral wool as a backer. This is in accordance with Standard UL 263 (ASTM E 119). DOW CORNING 795 silicone building sealant also holds up when exposed to a high-pressure water force without a protective cover plate.

5. INSTALLATION

Joint Design: A thin bead of silicone will accommodate more movement than a thick bead. DOW CORNING 795 silicone building sealant should be no thicker than 1/2 inch (12.7 mm) and no thinner than 1/8 inch (3.2 mm) for joints where excessive movement is expected. Ideally, the ratio of joint width to sealant depth should be about 2:1, when appropriate.

Open-cell, polyurethane foam or closed-cell polyethylene are the recommended back-up materials for most joints; use polyethylene tape for joints too shallow to allow backer rod. These materials permit application of a thin bead and act as bond breakers, which allow the silicone sealant to stretch freely with the joint.

The width of building expansion joints varies because of seasonal and daily changes in temperature. If DOW CORNING 795 silicone building sealant cannot be installed when the design width is approximately halfway between the dimensional extremes, the designed joint must be at least twice the total anticipated joint movement. Good architectural practice calls for joint design of four times the anticipated movement due to construction tolerances and material variations.

Glazing rabbets and joints should be designed to allow installation and retention of the bond-breaking, back-up material during the installation and curing of DOW CORNING 795 silicone building sealant.

Lap shear joints should have a bead width that is equal to, or greater than, the total anticipated movement.

Fire Rating: In a properly designed joint, the silicone sealant can be applied without a cover plate and with or without a mineral wool backer material, yet still be fire resistant.

Joint Dimensions: Small curtainwall panels and lites should allow a minimum width of 1/8 inch (3.2 mm) for the sealant bead. Larger panels and lites, or those in which a great deal of movement is expected, should allow a minimum width of 3/16 to 1/4 inch (4.8 to 6.4 mm) for the sealant bead. Glazing of plastic lites, and panels fabricated from plastic, require larger than usual joint dimensions due to the plastic's high coefficient of thermal expansion.

Preparatory Work: Clean all joints and glazing pockets, removing all foreign matter and contaminants such as grease, oil, dust, water, frost, surface dirt, old sealants or glazing compounds and protective coatings.

Porous substrates should be cleaned where necessary by grinding, saw cutting, blast cleaning (sand or water) or mechanical abrading, or a combination of these methods as required to provide a sound, clean, dry surface for sealant application. Dust, loose particles, etc., should be blown out of joints with oil-free compressed air or vacuum cleaned.

Metal, glass and plastic surfaces should be cleaned by mechanical or solvent procedures. Detergent or soap and water treatments are not acceptable. In all cases where used, solvents should be wiped on and off with clean, oil- and lint-free cloths.

CAUTION: When using flammable solvents, keep away from heat, sparks and open flames. Use only with adequate ventilation. Avoid prolonged breathing of vapor and prolonged or repeated skin contact. Always follow solvent container label instructions.

Priming: When using DOW CORNING 795 silicone building sealant, priming is not usually required. Prior to general job use, it is always recommended that a bead of sealant be applied on the substrate material to test adhesion. For structural applications, contact Dow Corning for consultation.

Masking: Areas adjacent to joints may be masked to assure neat sealant lines. Do not allow masking tape to touch clean surfaces to which the silicone sealant is to adhere. Tooling should be completed in one continuous stroke immediately after sealant application and before a skin forms. Masking should be removed immediately after tooling.

Method of Application: Install back-up material or joint filler, setting blocks, spacer shims and tapes as specified. Apply DOW CORNING 795 silicone building sealant in a continuous operation using a positive pressure adequate to properly fill and seal the joint. Tool or strike the DOW CORNING 795 silicone building sealant with light pressure to spread the material against the back-up material and the joint surfaces. A tool with a concave profile is recommended to keep the sealant within the joint.

In glazing, tool the sealant applied at the sill so that precipitation and cleaning solutions will not pool. DOW CORNING 795 silicone building sealant can be applied at outdoor temperatures as low as -29° C (-20° F) provided that surfaces are clean, dry and frost-free.

It is imperative that uncured silicone sealants are not allowed to contact nonabradable surfaces, such as polished granites, metal or glass. Because excess silicone sealant cannot be completely removed with organic or chlorinated solvents, these surfaces must be masked or extreme care taken to prevent any silicone sealant from contacting them during sealant application. Once an uncured sealant contacts the surface, it will leave a film that may change the aesthetic surface characteristics of that substrate.

In cases where uncured sealant is inadvertently applied to adjacent surfaces, the sealant should be cleaned while still uncured using a commercial solvent such as xylol, toluol or methyl ethyl ketone. Observe proper precautions when using flammable solvents.

Precautions: CAUTION! May cause eye irritation. Avoid eye contact. Avoid prolonged or repeated skin contact. KEEP OUT OF REACH OF CHILDREN.

During cure, this sealant evolves methanol. Provide adequate ventilation to prevent methanol vapors above 200 ppm. If airborne concentration exceeds 200 ppm, use air-supplied or self-contained breathing apparatus.

Shelf Life: When stored at or below 27° C (80° F), DOW CORNING 795 silicone building sealant has a shelf life of 6 months from date of shipment from the manufacturing plant. Contact your local Dow Corning sealant distributor for specific lot shipment dates.

6. AVAILABILITY AND COST

Availability: DOW CORNING 795 silicone building sealant is marketed throughout the United States through authorized building sealant distributors.

Cost: Prices per gallon depend on volume of purchase. Contact local distributor.

7. WARRANTY

Limited Weatherseal Warranty: Dow Corning Corporation produces and sells a full line of silicone construction sealants and adhesives. These products offer a variety of physical characteristics and adhesion properties. DOW CORNING 795 silicone building sealant is part of that line and, when used with compatible substrates and when applied within the stated shelf life and according to manufacturer's recommendations for application and joint design, Dow Corning warrants that it will perform as a watertight weatherseal for a period of 20 years from the date of purchase. In addition to maintaining the integrity of the weatherseal, the sealant will not change color when used with back-up materials and substrates that have been approved for compatibility by Dow Corning, either after specific testing or noted in a current Dow Corning publication.

Limitations: This warranty specifically excludes failure of the sealant due to:
- Natural causes such as lightning, earthquake, hurricane, tornado, fire, flooding, etc., or
- Movement of the structure resulting in stresses on the sealant that exceed Dow Corning's published specifications for elongation and/or compression for the sealant, whether due to structural settlement, design error or construction error, or
- Disintegration of the underlying substrates, or
- Mechanical damage to the sealant caused by individuals, tools or other outside agents, or
- Changes in the appearance of the sealant from the accumulation of dirt or other contaminants deposited on the sealant from the atmosphere.

Remedies: In the event of a claim under this warranty, you must notify Dow Corning Corporation in writing within 30 days of the occurrence of the failure. Dow Corning's sole liability shall be to furnish sufficient silicone replacement material to restore the integrity of the weatherseal. Any labor or other cost associated with the repairs are the responsibility of the owner. DOW CORNING SHALL NOT BE LIABLE FOR AND EXPRESSLY DISCLAIMS ANY LIABILITY FOR DAMAGE TO THE CONTENTS

OF THE STRUCTURE OR FOR CONSEQUENTIAL OR INCIDENTAL DAMAGE, WHETHER IN CONTRACT OR IN TORT, INCLUDING NEGLIGENCE.

THIS WARRANTY IS IN LIEU OF ALL OTHER WRITTEN OR ORAL, EXPRESS OR IMPLIED WARRANTIES AND DOW CORNING SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PURPOSE.

Structural Adhesion Warranty: DOW CORNING 795 silicone building sealant may be used as a structural adhesive under certain conditions, but Dow Corning Corporation disclaims any general adhesion warranty. Dow Corning will issue project-specific Structural Adhesion Warranties on a case-by-case basis. No Structural Adhesion Warranty will be issued until Dow Corning has reviewed the pertinent building prints and specifications and has completed adhesion and compatibility testing of the various materials to be used with DOW CORNING 795 silicone building sealant. For details on how to obtain the Structural Warranty, please contact your Dow Corning field representative.

8. MAINTENANCE

No maintenance is needed. If sealant becomes damaged, replace damaged portion. DOW CORNING 795 silicone building sealant will adhere to cured silicone sealant with only a preparatory solvent wipe to remove accumulated dirt.

9. TECHNICAL SERVICES

Complete technical information and literature are available from Dow Corning and authorized building sealant distributors. Laboratory facilities and technical service are available from Dow Corning. For assistance, please call (517) 496-6000.

10. FILING SYSTEMS

SPEC-DATA®II
Sweet's Catalogs Section 07900/DOW:
- General building
- Industrial construction & renovation
- Mechanical engineering
- Civil engineering
- Engineering comprehensive

Architectural specifications and complete technical literature are available upon request. Contact Dow Corning for specific bulletins.

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RO-AN will use reasonable efforts to include accurate and up-to-date information, but makes no representation as to its accuracy or completeness. Specifications and descriptions are based on mfg's data sheets.
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RO-AN Corporation - Menomonee Falls, WI 53052 - U.S.A.

product data carboline®

Carboguard® 890 & 890 LT

Selection & Specification Data

Generic Type Cycloaliphatic Amine Epoxy

Description Highly chemical resistant epoxy mastic coating with exceptionally versatile uses in all industrial markets. Self-priming and suitable for application over most existing coatings, and tightly adherent to rust. Carboguard 890 and the low temp version (890 LT), both serve as stand-alone systems for a variety of chemical environments. Carboguard 890 is also designed for various immersion conditions.

Features
- Excellent chemical resistance
- Surface tolerant characteristics
- Conventional and low-temperature versions
- Self-priming and primer/finish capabilities
- Very good abrasion resistance
- VOC compliant to current AIM regulations

Color Refer to Carboline Color Guide

Finish Gloss

Primers Self-priming. May be applied over inorganic zinc primers and other tightly adhering coatings. A mist coat may be required to minimize bubbling over inorganic zinc primers. Do not apply over latex coatings.

Topcoats Acrylics, Epoxies, Polyurethanes

Dry Film Thickness 4.0-6.0 mils (100-150 microns) per coat.
6.0-8.0 mils (150-200 microns) over light rust and for uniform gloss over inorganic zincs.
Don't exceed 10 mils in a single coat. Excessive film thickness over inorganic zincs may increase damage during shipping or erection.

Solids Content By Volume (890): 75% ± 2%
(890LT): 80% ± 2%

Theoretical Coverage Rate 890: 1283 mil ft² (30.0 m²/l at 25 microns)
890LT: 1283 mil ft² (31.0 m²/l at 25 microns)
Allow for loss in mixing and application

VOC Values As supplied: 1.78 lbs/gal (214 g/l) 890
1.51 lbs/gal (180 g/l) 890LT

Thinned:
13 oz/gal w/ #2: 2.26 lbs/gal (271 g/l) 890
2.01 lbs/gal (241 g/l) 890LT
16 oz/gal w/ #33: 2.38 lbs/gal (285 g/l) 890
2.15 lbs/gal (258 g/l) 890LT

These are nominal values and may vary slightly with color.

Dry Temp. Resistance Continuous: 250°F (121°C)
Non-Continuous: 300°F (149°C)
Discoloration and loss of gloss is observed above 200°F (93°C).

Limitations
- Epoxies lose gloss, discolor and eventually chalk in sunlight exposure. Discoloration is more pronounced with 890LT.
- Do not use 890LT for immersion service.

Substrates & Surface Preparation

General Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating.

Steel Immersion: SSPC-SP10
Non-Immersion: SSPC-SP6
Surface Profile: 1.5-3.0 mils (38-75 micron)
SSPC-SP2 or SP3 are suitable cleaning methods for mild environments.

Galvanized Steel SSPC-SP1 and prime with specific Carboline primers as defined in the Market Guides.

Concrete Concrete must be cured 28 days at 75°F (24°C) and 50% relative humidity or equivalent. Prepare surfaces in accordance with ASTM D4258 Surface Cleaning of Concrete and ASTM D4259 Abrading Concrete. Voids in concrete may require surfacing. Prime with Carboguard® 1340.

CMU Mortar joints should be thoroughly cured for a minimum of 15 days at 75°F (24°C) and 50% relative humidity or equivalent. Prime with Carbocrylic® 650 or Carboguard 1340.

Drywall & Plaster Joint compound and plaster should be fully cured prior to coating application. Prime with Carbocrylic® 120 or Carboguard 1340.

Previously Painted Surfaces Lightly sand or abrade to roughen surface and degloss the surface. Existing paint must attain a minimum 3B rating in accordance with ASTM D3359 "X-Scribe" adhesion test.

Performance Data

Test Method	System	Results	Report #
ASTM D4541 Adhesion	Blasted Steel 2 cts. 890	1933 psi (Elcometer)	03220
ASTM D3359 Adhesion	Blasted Steel 1 ct. 890	5A	02730
ASTM D4060 Abrasion	Blasted Steel 1 ct. Epoxy Pr. 1 ct. 890	85 mg. loss after 1000 cycles, CS17 wheel, 1000 gm. load	02411
ASTM B117 Salt Fog	Blasted Steel 2 cts. 890	No effect on plane, rust in scribe, 1/16" undercutting at scribe after 2000 hours.	02584
ASTM B117 Salt Fog	Blasted Steel 1 ct. IOZ 1 ct. 890	No effect on plane, no rust in scribe and no undercutting after 4000 hours	L40-42,45,9
ASTM D1735 Water Fog	Blasted Steel 1 ct. Epoxy Pr. 1 ct. 890	No blistering, rusting or delamination after 2800 hours	06564
ASTM D3363 Pencil Hardness	Blasted Steel 2 cts. 890	Greater than 8H	02775
Modified NACE Std. TM-01-74 Immersion	Blasted Steel 2 cts. 890	No softening, blistering or delamination and no discoloration of liquid after 6 month exposure at 75°F in each: glycol, mineral spirits, salt water & fresh water	02533
ASTM D2486 Scrub Resistance	Blasted Steel 1 ct. 890	93% gloss retained after 10,000 cycles w/ liquid scrub medium	06142

Test reports and additional data available upon written request.

November 1999

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TO FILE

00-010.08

Carboguard® 890 & 890 LT

Application Equipment

Airless Application (Metal)

This is a high solids coating and may require adjustments in spray techniques. Wet film thickness is easily and quickly achieved. The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco.

Conventional Spray

Pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, .070" I.D. fluid tip and appropriate air cap.

Airless Spray

Pump Ratio:	30:1 (min.)
GPM Output:	3.0 (min.)
Material Hose:	3/8" I.D. (min.)
Tip Size:	.017"- .021"
Output PSI:	2100-2300
Filter Size:	60 mesh

Teflon packings are recommended and available from the pump manufacturer.

Brush & Roller (General)

Multiple coats may be required to obtain desired appearance, recommended dry film thickness and adequate hiding. Avoid excessive re-brushing or re-rolling. For best results, tie in within 10 minutes at 75°F (24°C).

Brush

Use a medium bristle brush.

Roller

Use a short nap synthetic roller cover with phenolic core.

Mixing & Thinning

Mixing

Power mix separately, then combine and power mix. DO NOT MIX PARTIAL KITS.

Ratio

890 and 890 LT — 1:1 Ratio (A to B)

Thinning

Spray:	Up to 13 oz/gal (10%) w/ #2
Brush:	Up to 16 oz/gal (12%) w/ #33
Roller:	Up to 16 oz/gal (12%) w/ #33

#33 can be used for spray in hot/windy conditions. Use of thinners other than those supplied or recommended by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.

Pot Life

890:	3 Hours at 75°F (24°C)
890 LT:	2 Hours at 75°F (24°C)

Pot life ends when coating loses body and begins to sag. Pot life times will be less at higher temperatures.

Cleanup & Safety

Cleanup

Use #2 Thinner or Acetone. In case of spillage, absorb and dispose of in accordance with local applicable regulations.

Safety

Read and follow all caution statements on this product data sheet and on the MSDS for this product. Employ normal workmanlike safety precautions. Hypersensitive persons should wear protective clothing, gloves and use protective cream on face, hands and all exposed areas.

Ventilation

When used as a tank lining or in enclosed areas, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. User should test and monitor exposure levels to insure all personnel are below guidelines. If not sure or if not able to monitor levels, use MSHA/NIOSH approved supplied air respirator.

Caution

This product contains flammable solvents. Keep away from sparks and open flames. All electrical equipment and installations should be made and grounded in accordance with the National Electric Code. In areas where explosion hazards exist, workmen should be required to use non-ferrous tools and wear conductive and non-sparking shoes.

Application Conditions

890

Condition	Material	Surface	Ambient	Humidity
Normal	60°-85°F (16°-29°C)	60°-85°F (16°-29°C)	50°-90°F (10°-32°C)	0-80%
Minimum	50°F (10°C)	50°F (10°C)	50°F (10°C)	0%
Maximum	90°F (32°C)	125°F (52°C)	110°F (43°C)	80%

890 LT

Condition	Material	Surface	Ambient	Humidity
Normal	60-85°F (16-29°C)	60-85°F (16-29°C)	60-90°F (16-32°C)	10-80%
Minimum	40°F (4°C)	35°F (2°C)	35°F (2°C)	0%
Maximum	90°F (32°C)	125°F (52°C)	110°F (43°C)	80%

This product simply requires the substrate temperature to be above the dew point. Condensation due to substrate temperatures below the dew point can cause flash rusting on prepared steel and interfere with proper adhesion to the substrate. Special application techniques may be required above or below normal application conditions.

Curing Schedule

890 (Based on 4-8 mils, 100-200 microns dry film thickness.)

Surface Temp. & 50% Relative Humidity	Dry to Recoat	Dry to Topcoat w/ Other Finishes	Final Cure	Cure for Immersion
50°F (10°C)	12 Hours	24 Hours	3 Days	N/R
60°F (16°C)	8 Hours	16 Hours	2 Days	7 Days
75°F (24°C)	4 Hours	8 Hours	1 Day	5 Days
90°F (32°C)	2 Hours	4 Hours	16 Hours	5 Days

890 LT (Based on 5 mils, 125 microns dry film thickness.)

Surface Temp. & 50% Relative Humidity	Dry to Touch	Dry to Handle	Dry to Recoat & Topcoat w/ Others	Final Cure
35°F (2°C)	5 Hours	18 Hours	20 Hours	7 Days
40°F (4°C)	4.5 Hours	15.5 Hours	18 Hours	5 Days
50°F (10°C)	3.5 Hours	6.5 Hours	12 Hours	3 Days
60°F (16°C)	2 Hours	5 Hours	8 Hours	2 Days
75°F (24°C)	1.5 Hours	2 Hours	4 Hours	24 Hours
90°F (32°C)	1 Hour	1.5 Hours	2 Hours	16 Hours

Higher film thickness, insufficient ventilation or cooler temperatures will require longer cure times and could result in solvent entrapment and premature failure. Excessive humidity or condensation on the surface during curing can interfere with the cure, can cause discoloration and may result in a surface haze. Any haze or blush must be removed by water washing before recoating. During high humidity conditions, it is recommended that the application be done while temperatures are increasing. Maximum recoat/topcoat times are 30 days for epoxies and 90 days for polyurethanes at 75°F (24°C). If the maximum recoat times have been exceeded, the surface must be abraded by sweep blasting or sanding prior to the application of additional coats. 890 LT applied below 50°F (10°C) may temporarily soften as temperatures rise to 60°F (16°C). This is a normal condition and will not effect performance.

Packaging, Handling & Storage

Shipping Weight (Approximate):	2 Gallon Kit 29 lbs (13 kg)	10 Gallon Kit 145 lbs (66 kg)
Flash Point (Setaflash):	89°F (32°C) for Part A: 890 & 890 LT 73°F (23°C) for Part B: 890 & 890 LT	
Storage Temperature & Humidity:	40°-110°F (4°-43°C) - Store indoors. 0-100% Relative Humidity	
Shelf Life:	36 months at 75°F (24°C)	

carboline®
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(314) 644-1000 · 314-644-1617 (fax) · www.carboline.com

November 1999

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TO FILE

3M
Preservation Sealing Tape
481

Technical Data **April 1, 1999**

Supercedes January 1, 1999

Product Description

A black plastic film tape. Conforms to many irregular surfaces and has excellent stain resistance. Excellent performance as an industrial and military preservation tape. Effective for many outdoor applications in hot and cold weather over two years with quick, clean removal. Applicable Military Specification: MIL-T-22085 Amendment 3 Type II.

Product Construction

Backing: Black polyethylene
Adhesive: Special rubber-resin formulation
Color: Black
Standard Roll Length: 36 yds. (33m)
Standard Widths Available: 1, 1½, 2, 3 in. (25, 38, 50, 75 mm)

Typical Physical Properties

Note: The following technical information and data should be considered representative or typical only, and should not be used for specification purposes.

		ASTM TEST METHOD
Adhesion to Steel:	32 oz./in. width (35 N/100mm)	D-3330
Tensile Strength:	15 lbs./in. width (260 N/100mm)	D-3759
Elongation at Break:	510%	D-3759
Backing Thickness:	7.7 mils (0.20mm)	D-3652
Total Tape Thickness:	9.8 mils (0.25mm)	D-3652
Water Vapor Transmission Rate:	0.5g H_2O/100 sq. in./24 hrs. (4g H_2O/.065 sq. m/24 hrs.)	D-3833

General Information

1. Best results are obtained when applied to a clean, dry surface between 60-80°F (15-27°C).
2. Tape 481 is manufactured in an ISO 9002 registered plant to meet worldwide quality standards.

Shelf Life

To obtain best performance, use this product within one year from date of manufacture and store under normal conditions of 70°F (21°C) and 50% R.H. in the original carton.

Application Ideas

1. Seals and protects various types of equipment to be stored by military and industry.
2. Splicing and patching materials used by the construction industry.
3. Can be certified to meet certain low sulfur, low halogen, and low heavy metal requirements for aerospace and nuclear facility preservation.

Features

FEATURES	ADVANTAGES	BENEFITS
Polyethylene film backing	Good conformability to many irregular surfaces	Provides method to help protect equipment and vehicles during transportation and long-term storage
Rubber resin adhesive	Resistant to hot and cold weather	Effective for most short, medium and long term preservation with quick, clean removal
	Excellent stain resistance to a variety of surfaces	

Technical Information and Data

The technical information and data, recommendations, and other statements provided are based on tests or experience which 3M believes to be reliable, but the accuracy or completeness of such information is not guaranteed.

Product Use

Please remember that many factors can affect the use and performance of a 3M product in a particular application. The materials to be bonded with the product, the surface preparation of those materials, the product selected for use, the conditions in which the product is used, and the time and environmental conditions in which the product is expected to perform are among the many factors that can affect the use and performance of a 3M product. Given the variety of factors that can affect the use and performance of a 3M product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for the user's method of application.

Warranty and Limited Remedy

The 3M product will be free from defects in material and manufacture for a period of one (1) year from the date of manufacture. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY ARISING OUT OF A COURSE OF DEALING, CUSTOM, OR USAGE OF TRADE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of application. If the 3M product is defective within the warranty period stated above, your exclusive remedy and 3M's sole obligation shall be, at 3M's option, to replace or repair the 3M product or refund the purchase price of the 3M product.

Limitation of Liability

Except where prohibited by law, 3M will not be liable for any loss or damage arising from the 3M product, whether direct, indirect, special, incidental, or consequential, regardless of the legal theory asserted, including contract, warranty, negligence, or strict liability.

ISO 9002

This Industrial Tape and Specialties Division product was manufactured under a 3M quality system registered to ISO 9002 standards.

3M

Industrial Tape and Specialties Division

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REPAIR/REPLACEMENT REVIEW SHEET

Basis Document Number: Minor Modification 2000 - 010

Replacement of Drywell Seal and protective coating repairs Elev. 238'

Section A - Originator

1. The Work Package has been prepared incorporating all applicable elements of the guidelines identified in Appendix A of this procedure and other applicable documents.

2. The following elements of the Appendix A Guideline are determined not applicable to this activity: welding procedures and associated NDE, hydrostatic testing.

3. Package forwarded to Inservice Inspection Program Coordinator for review and approval.

D F Simmo
Originator

8/29/00
Date

Section B – Inservice Inspection Program Coordinator

The Work Package has been reviewed to ensure incorporation of all necessary ASME Section XI Repair/Replacement requirements. Additional requirements or comments are identified below:

Comments:

The Repair/Replacement Log has been updated to incorporate this work action.

The ANI has been notified of this impending work action.

Work Package returned to the Work Package Initiator for implementation.

E.J. Taintor
Inservice Inspection Program Coordinator

Date

JO FILE

Humbert, Dennis (C)

From: Grimes, Dave
Sent: Tuesday, May 01, 2001 11:01 AM
To: Humbert, Dennis (C)
Cc: Taintor, Ed; McKenney, Pat; Goodwin, Scott; Coffman, Darryl (C)
Subject: RE: Inspection of Drywell Concrete Floor

Pursuant to the request to inspect the concrete adjacent to the drywell shell, MSDE and Projects (Ed Taintor) conducted an inspection on 5/1/01 at 0800 hrs. Some randomly located radial cracks were observed which extended about 8 inches inward. These are considered to be normal shrinkage cracks which occured after initial placement of the concrete. These are sound, tight cracks without structural significance.

The general floor area within a foot of the seal location is in good condition which is consistent with the previous maintanance rule walkdown. Plant structures inclusive of concrete are periodically inspected and controlled in accordance with Maintenance Rule (10CFR60.65) and VY PP-7030. There are no signs of efflorescence, no degradation of the concrete surface and no signs of structural cracking or rust staining. Based on these observations, and review of the previous Maintenence Rule Inspection Report, MSDE finds that the condition of the slab, adjacent to the seal location is satisfactory.

As stated in the Scoping Memo (VYM 2000/016) the intent of the inspection was to examine the area adjacent to the seal for open cracks to ensure that moisture will not wick into the seal area. This memo should be within the job order file and it is suggested that it be reviewed, as it provides a comprehensive overview of the entire project and its intent.

There is one area near the A recirc pump where the crack runs parallel to the shell for about 12 inches, adjacent to the seal keyway. The cause of this crack is unknown, but is consistent with impact damage. The possibility of spalling the area during paint removal activities is recognized. The accepted solution if required is contact the Maint Rule Coordinator and to repair the spalled area with Embeco 885 grout.

Please feel free to call on us again for questions or concerns regarding this project.

-----Original Message-----
From: Humbert, Dennis (C)
Sent: Tuesday, May 01, 2001 5:20 AM
To: Grimes, Dave
Cc: Taintor, Ed; McKenney, Pat; Goodwin, Scott; Coffman, Darryl (C)
Subject: Inspection of Drywell Concrete Floor

This message is to document the VYICE inspection of the concrete floor in the Drywell at El. 238' as required by Minor Mod 00-010, Drywell Moisture Barrier Replacement, step 7.3. I made the inspection this shift and found cracks in the existing coating on the floor that run from the edge of the floor in a radial direction towards the center of the drywell. Because the existing coating is in place on the concrete floor, the extent of cracking in the concrete (if any) is indeterminate. The scope of this Minor Mod does not include removal of the existing coating on the concrete floor to inspect the concrete.

Disposition of this condition, including inspection by you is requested. Once lead removal begins this area will require lead worker training to perform this inspection, so if you have not received this training, inspection and disposition is required by Wednesday May 2nd. ER 20010860 was written to document this condition.

JO FILE

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MAY - 4 2001
00-010 09

Vantol, Bob (C)
From: Taintor, Ed
Sent: Wednesday, May 09, 2001 1:06 PM
To: Vantol, Bob (C)
Subject: FW: Drywell Seal Surface Prep

-----Original Message-----
From: Grimes, Dave
Sent: Wednesday, May 09, 2001 11:51 AM
To: Taintor, Ed
Cc: Goodwin, Scott
Subject: Drywell Seal Surface Prep

Ed,

The required prep to an SP-10 for the area below the seal (eg, below the overall concrete urface elevation and within the notch/champher adjacent to the steel liner) was achieved by the night crew using a rust grade D VIS-1. Therefore, this issue has been resolved for this project since the entire surface has now been determined to meet the "Near White Blast Cleaning" criteria.

The profile of the rust grade D area has a maximum profile of 5.5 mils which is above the specified limit of 1-3 mils. The majority of this area is contained within the seal and will not be exposed to the environment. This area also receives an initial coat of CZ-11 which provides cathodic protection.

It is important that the high peaks within the rust grade D areas receive a complete coat of CZ-11. These areas will need an increased mil thickness to provide coverage of the steel. Therefore the maximum mil thickness of the CZ-11 in these areas is 6 mils DFT the **maximum** allowed per Carboline. Remember, excess millage leads to mudcracking, which will cause rework.

Also, the general criteria for the rust grade C areas is still 3 mils DFT, recognizing that some overspray from D to C grades will be inevitable.

Please discuss these changes with QC and the painters to resolve any concerns. Notify me when the mmod is ready for signatures.

I trust that this resolves the open items to date. Let me know if we need any further refinements.

David

Added
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MAY - 9 2001
00-010.10

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JOB SAFETY ANALYSIS

JSA No. 22.25
Rev. 1

COPY

DRYWELL MOISTURE BARRIER REPAIR
WO# 00-01840-000 MM # 2000-010

Purpose

The objective of this project is to replace the drywell to containment shell floor seal at elevation 238' to limit moisture from entering into the space between the shell and the reinforced concrete floor. The Vermont Yankee drywell shell has a limited corrosion allowance for the steel shell and therefore maintaining a protective coating and effective seal in this region is required.

Discussion (Attach JSA Check Sheet)

The first phase of the project is lead paint removal and surface prep of the drywell liner plate. This will involve prepping a 6" wide band around the perimeter of the 238' level of the drywell. Existing lead paint will be removed and the surface prepped using a vacuum blasting system that has been effectively demonstrated at the NPS fab shop. These units operate as closed recycling, abrasive blasting systems. Containment occurs at the point of blasting, with the blasthead creating a "containment" that is linked to a vacuum return. Most of the abrasive and dust are collected by this unit. An additional HEPA hose will be held in close proximity to the blasthead to ensure all dust and grit are collected and the lead paint dust does not become airborne. Rotary peening tools and/or needle guns attached to a HEPA vacuum may also be used in some areas. The additional HEPA hose will be used here as well.

The second phase of the project is to apply a coat of zinc primer to the 6" wide band around the perimeter of the 238' level of the drywell that was prepped in the previous step. The surface area to be primed (70 ft.^{2}) is roughly equal to both sides of a 4' x 8' sheet of plywood. Application will be by spraying.

Solvent vapors from the primer are heavier than air, so they will primarily remain in the lower level of the drywell, where exhaust ventilation will be established. Cure time is one hour at 50% humidity, slightly longer at less than 50% humidity. Application of the primer will occur during the night shift. The plan is to apply the primer as close as possible to the beginning of the night shift and allow curing overnight when there is little activity on the 238' level of the drywell.

Ventilation will be established ***in one of two manners. The first option will*** utiliz~~ing~~e installed plant ventilation equipment. Vacuum breakers V16-19A and V16-19D will be fixed in the open position, creating a flow path from the Drywell to the Torus. RTF-5 will be aligned to the Torus via valve V16-19-7. This will establish a ventilation flow path from the Drywell to the Torus and exhausting to the Reactor Building ventilation system through RTF-5. ***The second option for ventilation will utilize carbon filter elements in the dedicated 5k HEPA units. This will provide a localized ventilation path with increased air flow.*** Drywell ventilation will remain operable during ***either of*** thiese activit~~y~~***ies***.

Welding and burning activities will be controlled during painting. This will be based on air samples by

JO FILE

RP and evaluations by the Shift Engineer. The air on both the 238' and 252' levels will be monitored closely to ensure the vapors are being exhausted properly. Calculations indicate that exposure levels for this application process will be less than 50% of the allowable exposure limits stated in the MSDS for this material. Continuous communication with the plant is planned to reinforce that slight odors are to be expected but are not hazardous based on monitoring and by limits set by MSDS and vendor information.

Dow Corning 795 Silicone Building Sealant will then be applied to the entire perimeter of the lower level of the drywell where the concrete floor contacts the steel shell. The length of this joint is 140 ft. and the size of the groove to be filled with sealant (after grouting) is ½" deep x 1 ½" wide. The total volume of sealant that will be used to fill the groove is a little more than 5 gallons. The exposed surface area of the top of the groove is about 18 sq. ft., or about 1.0% of the surface area of the 238' elevation floor.

The sealant evolves methanol while curing. Adequate ventilation shall be provided to prevent methanol vapors from exceeding 200 ppm. Evaluation of this application process has determined that this process will generate less than 60% of the allowable exposure limits defined by the MSDS. To further ensure personnel safety, atmospheric monitoring will be conducted during the application process and the initial curing phase. The same ventilation path described previously will be utilized. Drywell ventilation will remain operable during this activity.

The sealant will be applied on night shift and will be allowed to cure overnight. 70% of the solvent is given off during initial curing (about 6 to 8 hours). Based on the amount of sealant required, it is anticipated that there will not be any adverse effects from these vapors after the initial overnight cure. Welding and burning activities will be prohibited on the 238' elevation during the application of the sealant and the first night of curing.

The MSDS for the product describes it as having a "slight odor". This implies that there should not be any "annoyance factor" associated with the product. Continuous communication with the plant is planned to reinforce that slight odors are to be expected but are not hazardous based on monitoring and by limits set by MSDS and vendor information.

The final phase of the project is to apply a coat of epoxy topcoat to the 6" wide band around the perimeter of the 238' level of the drywell that was primered in phase 2 (about 70 ft.^{2}).

Solvent vapors from the epoxy topcoat are heavier than air, so they will primarily remain in the lower level of the drywell, where exhaust ventilation has already been established. Cure time is 4 hours at 50% humidity and 75° F, slightly longer at lower temperatures. The plan is to apply the epoxy topcoat as close as possible to the beginning of the night shift and allow curing overnight when there is little activity on the 238' level of the drywell. Welding and burning activities will be controlled during painting. The air on both the 238' and 252' levels will be monitored closely to ensure the vapors are being exhausted properly. Drywell ventilation will remain operable during this activity. Continuous communication with the plant is planned to reinforce that slight odors are to be expected but are not hazardous based on monitoring and by limits set by MSDS and vendor information.

Personnel Protection (Attach Hazard Identification Worksheet)

PPE will be used in accordance with the attached Hazard Identification Table.

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Precautions

- Paint will be treated as lead paint unless proven otherwise.
- Lead awareness training & baseline blood tests will be offered to all personnel who will be entering the 238' elevation of the drywell.
- Remi Morrissette will handle lead awareness training notification via e-mail.
- (2) 5K HEPA units (each is double the capacity of a normal HEPA unit) will be used during lead paint removal.
- The needle guns and rotopeens are very noisy. Noise levels will be monitored and double hearing protection will be used as required.
- RP will monitor air quality throughout the various operations.
- Paint and methanol fumes will be exhausted utilizing installed plant ventilation equipment as previously described. This equipment will provide approximately 12 air changes per hour or 1 air change every 5 minutes.
- ***Should the optional ventilation path of the charcoal filters be utilized, a slight increase in the air change rate will be experienced. The 5k HEPA units are each rated at 5,000 scfm, resulting in a combined air flow rate of 10,000 scfm.***
- This evolution will involve the potential for cumulative stress injuries. The activities will require workers to be positioned on their knees and/or bent over at the waist to access work areas. The Pre-job brief for the project will include cautions regarding these potential hazards, with recommendations for preventive actions.
- ***To ensure protection from the effects of heat stress, coolvests will be available.***

Prepared By: Kerry Bassett / 02-05-01

Revised By: E.J. Taintor / 05-01-01

Dept. Head: (Or Designee) P.B. Colitt / 5/1/01

Safety Coordinator: (Or Designee) Brian Stockwell / 05/01/01

Additional Signature if required by the Safety Coordinator or Designee (N/A and initialed by the Safety Coordinator if not required):

N/A /

Plant Manager, Superintendent, or DCO

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WORK ACTIVITY - HAZARD IDENTIFICATION TABLE

Work Activity	Phase	Safety Hazard	Hazard Solution	PPE	Remarks
Paint Removal	1	Lead Paint	AP 0549	As required by AP 0549	Respirators as req'd by RP (2) dedicated 5K HEPA units
Surface Prep of Liner Plate	1	Potential Airborne Dust	Vacuum Blasters (2) 5K HEPA units	No additional required	Vacuum blasters are self contained at point of blasting. HEPA units provide will remove any dust that escapes
Surface Prep of Liner Plate	1	Noise	Double hearing protection	Hearing protection	Based on measured noise levels from needle guns
Application of Zinc Primer	2	Paint Fumes	RxBldg ventilation aligned from the Drywell through the Torus and exiting through RTF-5.	Respirators as req'd by RP	Ventilation will provide (1) air change approximately every 5 minutes.
Mixing/Installation of Embeco 885 Grout	3	Inhalation of Dust Eye/Skin Contact	Protect eyes and skin from contact. Prevent inhalation of dust.	Dust masks Eye protection Proper clothing	Standard protective clothing, gloves, eye protection
Application of Dow Corning 795 Silicone Building Sealant	4	Methanol Fumes	RxBldg ventilation aligned from the Drywell through the Torus and exiting through RTF-5.	Respirators as req'd by RP	Ventilation will provide (1) air change approximately every 5 minutes.
Application of Carboguard 890	5	Paint Fumes	RxBldg ventilation aligned from the Drywell through the Torus and exiting through RTF-5.	Respirators as req'd by RP	Ventilation will provide (1) air change approximately every 5 minutes.

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JSA CHECK SHEET

JOB TITLE/DESCRIPTION: **Drywell Moisture Barrier Repair**

LOCATION/DEPT: **Drywell, 238' elev. /Project Engineering**

PREPARED BY: **Kerry L. Bassett** DATE: **5-Feb-01**

ARE THE FOLLOWING CONDITIONS PRESENT?		Yes	No	Comments (PPE)
1)	Is there a need to establish special housekeeping requirements?	[ ]	[X]	
2)	Heavy lifting?	[X]	[ ]	Chainfalls, slings
3)	Heavy pushing or pulling?	[ ]	[X]	
4)	Twisting and/or bending?	[ ]	[X]	
5)	Trips over objects?	[ ]	[X]	
6)	Falls to the same or lower level?	[ ]	[X]	
7)	Finger, hand, or body parts to be caught in or between objects?	[ ]	[X]	
8)	Condition to cause abrasion, laceration or puncture wounds?	[ ]	[X]	
9)	To be struck by or against?	[ ]	[X]	
10)	Exposure to energized electrical components? Voltage?	[ ]	[X]	
11)	Exposure to extremely hot surfaces or systems; i.e., high pressure steam or hot water?	[ ]	[X]	
12)	Is the availability of immediate treatment for injuries necessary?	[ ]	[X]	
13)	Exposure to high pressure air or gas (>100 psi)?	[ ]	[X]	
14)	Objects/tools falling on people?	[ ]	[X]	
15)	Extreme temperatures for ≥ 20 minutes Temp F? (<25°F and >100°F).	[ ]	[X]	
16)	Confined space?	[ ]	[X]	Permit___ Non-permit ___

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JSA Check Sheet (Cont'd)

17) Are chemicals involved? If yes, circle type below: [X] [ ]

-Solvents
-Dusts
-Fumes
-Gases
-Noxious odors
-Toxic
-Reactive
-Flammable

18) Personal protection requirements?

-Gloves, hand cream	[X]	[ ]	**Standard Equipment**
-Respirators	[X]	[ ]	**Determined by RP**
-Eye protection	[X]	[ ]	**Standard Equipment**
-Face protection	[X]	[ ]	**Standard Equipment**
-Hearing protection	[X]	[ ]	**Possibly need double**
-Safety shoes	[X]	[ ]	**Standard Equipment**
-Head coverings, i.e., hard hat	[X]	[ ]	**Standard Equipment**
-Ties, kerchiefs	[ ]	[X]	
-Long sleeves	[X]	[ ]	**Standard Equipment**
-Aprons	[ ]	[X]	

Additional Comments:_____

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MEMORANDUM

VERMONT YANKEE - MARLBOROUGH

To	J. H. Callaghan	**Date**	June 22, 2001
		Group #	VYM 2000/043
From	D. F. Grimes	**W.O.#**	
Subject	Drywell Protective Coating Qualification	**I.M.S.#**	
		File #	–

References

(1) EPRI, TR-109937, "Guideline on Nuclear Safety Related Coatings" Final Report, April 1998

(2) BVY 98-147, "Response to Generic Letter 98-04, November 12, 1998

(3) Carboline "Level I Nuclear Coating System" Fax dated March 30, 2000

(4) VYM 2000/016 "Drywell Seal Project Scope" dated March 2, 2000

(5) Minor Modification 2000-010, "Drywell Seal"

(6) Technical Evaluation of New Coating System Suppression Chamber and Vent Header, Rev. 2, KTA-Tator, Inc. dated April 30, 1998 (EDCR 97-423)

(7) Containment System Response Analysis. Rev 0 (draft) GE-NE-A22-00086-02-01, December 1999

(8) Amendment No. 22 to License Application, February 25, 1971

(9) E-mail D.F. Grimes to K. L. Bassett "Protective Coatings" May 9, 2000

Background

In the Response to Generic Letter 98-04 (reference 2) Vermont Yankee states that Service Level 1 coatings used inside primary containment will meet the intent of ANSI N101.2, N101.4 and Reg Guide 1.54. Proposed revision 1 to Reg Guide 1.54 issued as Draft Reg Guide DG-1076 endorses the use of ASTM D-5144-97 (and others) for guidance on practice and programs for protective coatings used within nuclear power plants. This draft guidance was issued because the referenced ANSI Standards were withdrawn in 1988 and the responsibility was transferred to the American Society for Testing and Materials (ASTM). Draft Reg Guide DG-1076 endorses the EPRI Guideline on Nuclear Safety Related Coatings (reference 1) for guidance on the selection, application and maintenance of safety related components. Vermont Yankee committed to evaluate the EPRI guideline and to implement, as

JO FILE

appropriate, into our procedures for Service Level 1 coatings used within primary containment (reference 2). To date, Vermont Yankee has not developed any plant-specific Service Level 1 coatings procedures. Therefore, in order to support the drywell seal project, Service Level 1 coating procedures are required.

Discussion

The Drywell Seal Project (reference 4) provides for localized protective coating replacement at elevation 238' within the drywell. The coating in this area has been determined to be Nuclear Service Level 1, and based on current licensing commitments, needs to be installed in accordance with approved plant procedures. The current state of protective coating procedural development for Vermont Yankee is in the planning stages. In order to implement the project scope as defined, and in a timely manner, necessitates the development of a project specific coating plan in accordance with the requisite commitments made relative to Generic Letter 98-04.

The EPRI document accepted as guidance for the installation of protective coatings has been used for the development of the Coating Inspection Plan and qualification of the protective coating system. This plan and qualification ensures that the applied coatings will meet the intent of the referenced documentation. The coating installation will be implemented via Minor Modification 2000-10 during the next refueling outage.

A three phase development of the project specific coating plan is identified on the engineering schedule. The first phase is the documentation of the Structural Steel Painting Council (SSPC) and ASTM criteria as identified in EPRI Guideline. This coating inspection plan has been completed. The second phase involves the identification of the recommended Service Level 1 coating system to be utilized and verification of the coating qualification in accordance with the EPRI guidelines. The third and final phase is the review of existing NPS procedures and possibly the development of procedures specific to this project. As stated in the scope memo (reference 4) Projects Engineering is responsible for the development of the installation instructions, or more specifically, submittal of NPS coating procedures for engineering review and comment.

Based on Mechanical / Structural reviews performed to date, the NPS personnel qualification procedure, PP-1001 is workable contingent upon satisfactory resolution of comments submitted to NPS. The NPS painting and protective coating application procedure, PP-0958 P, is not acceptable for the project. The procedure in its current form is limited to maintenance, small touch-ups and repairs. The boiler plate of references covers a multitude of surface preparation techniques which are not employed within the actual body of the implementation section of the procedure. Also, there is an existing conflict within the procedure for surface preparation when compared to SSPC requirements. Several of the boiler plate items are used in the surface preparation and application of the selected coating system and need to be procedurally addressed. This procedure will either need a significant rework to meet SSPC requirements or will need to be broken up into multiple procedures so as not to address all aspects of surface preparation, application and coating specification for the drywell seal project with a single procedure (reference 9).

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A coating system that satisfies design requirements in terms of performance based testing and compatability with the existing substrate is an inorganic zinc primer with an epoxy topcoat. The inorganic zinc provides excellent corrosion resistance, weathers well and is often used in tanks. Inorganic zinc was the original coating used in containment and has a well proven performance record. The use of this primer, with the recommended surface preparation will provide the required corrosion protection to this area of the drywell. This will satisfy one of the primary objectives of the project, mitigation of the observed corrosion at the 238' in the drywell interior region. Inorganic zinc provides a sacrificial anodic coating which assures that coating degradation in the future will not be coupled with fast corrosion of the substrate due to the inhibitor properties of the zinc. The epoxy topcoat will provide excellent abrasion resistance, decontaminability, and is a surface tolerant coating. The epoxy will also prevent damage to the zinc primer. Carboline products, Carbo Zinc 11 SG and 890 epoxy has been selected as the protective coating system for this project. These products have been previously qualified and employed at Vermont Yankee for the Torus Painting Project, EDCR 97-423. The qualification requirements of this system are presented below.

The standards used to define DBA qualification for a containment coating system are ANSI N101.2 and ASTM D3911. The test parameters used for the coating qualification for this standard include temperature, pressure, radiation and duration. ASTM D3911 requires that samples be irradiated per ASTM D4082 at an integrated dose rate of 1x10E9 rads at a rate of 1MR/hr. No checking, cracking, peeling, flaking, delamination or blistering is permitted. The Carboline system has been qualified to both of these standards and has been documented as qualified for DBA conditions. Explain

Technical Evaluation of New Coating System Suppression Chamber and Vent Header, Rev. 2 (reference 6), evaluates and presents the results of DBA testing for Carboline products. Carbo Zinc 11, inorganic zinc primer , applied at a dry film thickness of 2.5 to 6.0 mils, and exposed to test conditions of 340 degrees F, 70 psig and pre-irradiated to 1E9 rads, produced no coating defects or laminations. These conditions exceed that of a loss-of-coolant (LOCA) event. A preliminary GE report on Containment System Response Analysis (reference 7) has indicated that the maximum post-accident drywell temperature is currently 336.1 degrees, however the peak drywell shell temperature is 272.1 degrees. The drywell shell maximum design temperature is 281 degrees F (reference 7, reference 8). The FSAR, figure 14.6-5 rev 2, identifies maximum LOCA pressure for the drywell as 30 psig, significantly less than the test pressure. VY DES Memo REG 98-029 identifies the radiation exposure for 40 years plus one hour of accident operation at 6E7 rads. This document also identifies the radiation exposure for 40 years of operation plus one year of accident operation at 7E8 rads. The Carbo Zinc 11 primer is documented to remain intact at radiation levels greater than those expected for a Vermont Yankee design base accident.

Carboline 890 epoxy, applied over a pre-existing Carbo Zinc 11 primer has undergone DBA testing with a pre-irradiated dose of 2E8 rads. Test temperatures were 320 degrees, 48 degrees less than the postulated peak drywell shell temperature. Test pressure was 50 psig. Surface preparation for the test sample was SSPC-SP-2, Hand Tool Cleaning, which is considerably less stringent than the SSPC-SP-6, Commercial Blast Cleaning, specified for the 238' drywell area. This test was performed to evaluate the integrity of Carboline 890 as a maintenance

JO FILE

repair to a previously painted surface with marginal surface preparation. The test documents that the coating did not exhibit defects or delaminations.

The Carboline Level 1 Nuclear Coating System test data documents that the system, proposed for use in Vermont Yankees' drywell, when subjected to even higher dose rates (1E9), meets the requirements of ANSI N 101.2 – 1972 and ASTM D 3911. Temperature levels for the test were 28 degrees higher than expected maximum post-accident drywell shell temperature of 272 degrees. The test temperatures indicated on the test report were at 300 degrees F for the eleven day duration with a pressure of 48 psig. Carbo Zinc 11 has undergone stand alone testing at a temperature of 340 degrees with satisfactory results when applied as a maintenance repair to a poorly profiled surface. Elcometer test results for each of the components shows that the inorganic zinc coating has a lower tensile strength. Bond failure of the zinc is not expected since it has been tested to conditions exceeding that of the DBA conditions. Topcoat failure of the epoxy is also not expected since it has a higher tensile strength. Therefore the probability of a bond failure between the primer and substrate and the primer and the topcoat is not expected based on the test data.

ASTM D5144, The Standard Guide for Use of Protective Coatings Standards in Nuclear Power Plants, is endorsed by the EPRI Guidelines. Physical properties of adhesion per ASTM D4541, decontamination per ASTM D 4256, abrasion resistance per ASTM D4060, chemical resistance per ASTM D3912 and flame spread per ASTM E84 have been verified as acceptable.

ASTM D 4541, the Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers, provides a method of determining the resistance to a load perpendicular to the coated surface (tensile strength). It determines if the surface will remain in tact at a prescribed force to assess the acceptability of the coating system. The Carboline system is acceptable at 350 psi.

ASTM D 4256, the Standard Test Method for Determination of Decontaminability of Coatings Used in Light-Water Nuclear Power Plants, provides a method for determining the ease of cleaning the coating after a 7 day immersion in a radionuclide solution. The significance of this test is that it provides a measure of the ease of decontaminating the coated surface. This can result in a reduction in the level of contamination and mitigate exposure to plant personnel. This test is applicable to the Carboline 890 epoxy topcoat only which exhibited a 99.96% removal. This equates to a decontamination factor (DF) of 250.

ASTM D 4060, Abrasion Resistance of Organic Coatings by the Taber Abraser, qualifies the coating by subjecting it to a rotating motion under abrasive, weighted wheels. Abrasion resistance is calculated as a weight loss of the sample relative to the number of cycles. The Carboline 890 was subjected to 1000 cycles, under 1000g with a CS-17 wheel. The results of this test is acceptable at 85 mg weight loss.

ASTM D 3912, Chemical Resistance of Coatings Used in Light-Water Nuclear Power Plants, is a limited test, as it does not test for a full range of potential chemical exposures. This test was performed for a simulated exposure to a chemical splash, where the solution may evaporate in place. The test is performed by immersing a sample in general service and decontamination solutions for a period of five days and evaluating the results over time. The

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samples are evaluated for blistering, delamination and peeling. The Carboline system produced acceptable results except for exposure to nitric acid and potassium permanganate. Neither of these reagents would be expected to be used for any purpose within containment since they are typically laboratory reagents used for metal digestion and as a titrating oxidant. Therefore, the results of this test are acceptable.

ASTM E 84, Surface burning Characteristics of Building Materials, provides a comparative measure of surface flame spread to that of red oak (=100) to that of inorganic reinforced cement board (=0). This is a distance / time based standard. The index for the Carboline system is reported as less than 25. This is the acceptable minimum value as defined by NFPA standards for "non-combustible". Individually, the Carbo Zinc has a documented flame spread index of 6. The epoxy topcoat has a flame spread index of 5.

Conclusion

The Carboline Level 1 Nuclear Coating System, comprised of Carbo Zinc 11 SG primer and a Carboline 890 epoxy topcoat is an acceptable protective coating for use within the Vermont Yankee drywell steel substrate. This system satisfies the requirements of ASTM D 5144, which supercedes the ANSI standards in effect at the time of original construction. The EPRI Guideline, TR-109937, has been reviewed and utilized for this application, and satisfies the current Vermont Yankee licensing basis.

The Coating Inspection Plan has been drafted in accordance with the SSPC guidelines contained in SSPC Publication #91-12, Steel Structures Painting Manuals, Volumes 1 and 2, Seventh Edition, and SSPC 97-07, "The Inspection of Coatings and Linings". This plan will be utilized as part of Minor Modification 2000-010 which implements the coating portion of the drywell seal project.

Procedural development for the application of the coatings and personnel qualification of the coating inspection personnel is currently under development. The combination of an approved Level 1 Nuclear Coating System, Inspection Plan, and qualification of inspection and application personnel will ensure that Vermont Yankee is in compliance with the applicable references and standards as was committed to in BVY 98-147.

David F. Grimes
Sr. Engineer
Mechanical Structural Dept.

Scott D. Goodwin
Supervisor
Mechanical Structural Dept.

JO FILE

c
K. Bassett
D. C. Girroir
P. B. Corbett

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TM/MM CONTROL SHEET

[ ] TM [X] MM (Attach VYAPF 0020.08)

DESCRIPTION

Print clearly name of

Originator/Date: David F. Grimes 8/29/00 NO: 2000-010

TM intended to be replaced by a permanent Design Change? YES [ ] NO [ ] NA [X] (If yes, attach marked up FSAR pages if applicable).

Description of Modification: (Mechanical/Electrical Modification, Safety Function Bypassed, Auto Feature Disabled, Etc.) (Attach VYAPF 0020.04 for all electrical TMs/MMs and VYAPF 0020.05 for all mechanical TMs/MMs): Provide a replacement seal design at the intersection of the drywell shell and the concrete floor at elevation 238'. The drywell shell will be stripped of paint within a full circumferential six inch band + 2"/- 0" measured from the bottom of the existing perimeter keyway and recoated with an approved, Service Level 1, protective coating. Concurrent with these activities an ASME IWE inspection of the shell will be conducted by Project Engineering. This project is being performed as a result of the IWE inspections conducted during RFO 21. These inspections revealed that some pitting was occurring in this area. Research into this issue indicates that the original seal had been removed and an effective reconfiguration of the seal was not performed. Reference VYM 2000/16, Drywell Seal Project Scope Memo and VYM 2000/43, Drywell Protective Coating Qualification Memo.

VOID

Describe how modification changes component/system operation: This modification will have no effect on component / system operations. The new seal is similar in form, fit and function to the original design.

System Engineering Group input obtained and incorporated in design.

D F Grimes / 8/29/00
Originator Date

Reason for Change: Current seal configuration does not provide sufficient protection against corrosion of the drywell shell. Reliance on existing paint (primer) for corrosion protection has not proven adequate by itself. An engineered seal and protective coating system applied in accordance with recognized standards will provide an effective moisture barrier at this junction.

VOID

Describe design requirements (wire size, pipe material, etc.): Embecco 885 Grout - fill for existing keyway, ~~Closed Cell~~ polyethylene ~~sheeting (1/32"nominal thk)~~ - bond breaker, Dow

TAPE, 3M #481 DFG 4/16/01 L/T 04-16-01

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RECEIVED SEP 25 2000

Corning 795 building sealant - silicone based elastomer, Carboline inorganic zinc primer, Carbo Zinc 11 SG - primer coat, Carboline 890 - Epoxy top coat. All materials to be Safety Class 2.

Describe any potential hazard presented by the modification (e.g., fire, flooding, rad consequences, etc.) and provide a detailed assessment if appropriate (UND9302TP1): Methanol vapors are evolved during the sealant curing process. Adequate ventilation needs to be provided during the application and curing period (14 days max). Paint vapors addressed per manufacturers instructions. Cleaning solvent vapors will also be emitted.

Indicate the mode(s) of operation for which the TM is acceptable/applicable.

Shutdown _____ Refuel _____ Startup _____ Run _____

Procedures affected: (TMs and MMs) None

VOID

Recommendations for new PMs or changes to existing PMs:

None

Other Plant documents and programs affected (MMs only) (drawings, DBD, FSARs, VYEMs, Maintenance Rule, EQ, Appendix R, Setpoint Controls, EMPAC, etc.):

Copy ? 5920-233 - Note added to designate seal detail dwg and minor mod reference

Add seal detail to ISI inspection program

(Note: Reference calculation for ASME XI IWE thinning and screening criteria is VYC-2043).

VOID

For TMs intended to be replaced by Design Changes, and all MMs, obtain new equipment EMPAC asset IDs and initiate all safety classifications worksheets per the VYSCM.

For MMs, initiate Drawing Change Notification forms in accordance with AP 6802. D F Dunn 8/29/00

Originator Date

Control Room/TSC Drawings affected (see Appendix A of DP 0029):

None

Review outstanding TMs/MMs and the Design Change List to ensure the

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cumulative affect of other TMs are factored into the TM/MM.

Comments: This modification will have no affects on pending design changes or temporary modifications.

D F Dunne 8/29/00
Originator Date

All applicable elements of Appendix "A" have been considered and addressed. VOID

D F Dunne 8/29/00
Originator Date

Appendix R Review completed (attach VYAPF 0020.09)

D F Dunne 8/29/00
Originator Date

Discuss additional training requirements with the affected Dept. Head(s). Training Required? YES [ ] NO [X]

Affected Dept.(s) Project Engineering - ISI

SAFETY CLASSIFICATION OF SYSTEMS, STRUCTURES AND COMPONENTS

[ ] SC-1 [X] SC-2 [ ] SC-3 [ ] SCE [ ] All NNS SSCs

[ ] OQA/Vital Fire

INSTALLATION/RESTORATION REQUIREMENTS:

Prerequisites: (RWP's, Housekeeping, Fire Permit, etc.):
Verify installation began within 30 days after Shift Supervisor approval. VOID
RWP, Housekeeping, Individual Qualification with approved painting procedures. Craft management and craft shall be familiar with VY safety manual and SSPC PA Guide 3: *A Guide to Safety in Paint Application.* (Relative to the use of airless sprayers). Discuss ALARA plans with Radiation Protection. ANI notification is required prior to the start of work. Chemistry approval of solvents, paints and sealants.

Precautions: Training / Personnel qualifications for abrasive blast, Rotopeen and needle gun. Adequate ventilation during coatings applications and seal installation. Ensure Operations is aware of painting and sealant activities and precautions with respect to Standby Gas Treatment. Lead paint may be encountered in seal area.

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Installation Instructions: The concrete floor within 1 foot of the perimeter edge shall be inspected for cracks and reported to the project engineer. Clean effected area of containment shell in accordance with SSPC SP-1 (solvent clean). Clean keyway to sound tight substrate. Clean effected area of containment shell via grit blast, Rotopeen and/or needle gun to achieve required profile (1-3 mils, SSPC-SP 10, Near-White Blast Cleaning). Other hand tools may be employed as required to achieve an initial SSPC-SP 11 (Power Tool Cleaning to Bare Metal) with final surface preparation conforming to SSPC-SP 10. Profile verification (1 to 3 mils) by QC required. Vacuum to thoroughly remove residuals. Surface shall be dust free prior to application of primer. Notify ISI coordinator to inspect shell of primary containment in accordance with IWE program. Paint (agitated spray application) wall of containment with Carboline Carbozinc 11 SG primer. Note that the prime coat will be applied to the steel adjacent to the bottom of the keyway, which will be filled with grout. Install grout to within ½ inch of floor level. Cure in accordance with manufacturers direction. Cut and install bond breaker polyethylene * ~~sheet~~ (2" overlap at end joints, Nominal.). Apply and dry tool (no soap) Dow Corning 795 sealant. (1/2 inch thickness max.) Fiberglass screen rub prior to Mist coat and topcoat with Carboline 890 epoxy paint. Paint is to be inspected for holidays visually and film thickness in accordance with approved procedures. Protective coating shall be installed in accordance with manufactures directions. Apply top bead (1/4 inch nom.) of sealant after seal has set. Epoxy paint may be cut against the top bead of sealant if desired. Mask or otherwise protect adjacent surfaces from paint overspray See Installation Requirements and Coatings Inspection Plan for further details.

* 3M # 481 TAPE DFG 4/16/01 04-16-01

Installation Verification/Testing Requirements: Inspect seal to verify that adherence has been maintained to concrete floor and steel shell. This should be verified after seven days of curing. Note that moisture curing will continue after 7 days and moisture will remain in the drywell after closure and inerting. Painted surfaces shall be inspected for dry film thickness. See attached Coatings Inspection Plan for verification requirements. Notify ISIPC for preservice inpections of seal and protective coatings in accordance with PP 7024, IWE Inservice Inspection Program.

VOID

Restoration Instructions (TM only): _____

Restoration Verification/Testing Requirements (TM only): _____

Reviewed By: P M McKenney for PBX / 8/30/00

Implementing Dept. Head Date

MM Screening attached (VYAPF 0020.08) [x] YES [ ] NA (TM only)

50.59(a)(1) Screening Evaluation completed and attached [X] YES

Safety Evaluation Required [ ] YES [X] NO

Describe when TM will be restored: _____

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TM/MM CONTROL SHEET (Continued)

Approximate date TM will be closed: N/A

TM/MM details/safety review/eval performed: S D Goodwin / 8.30.00
Originating Dept. Head Date

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ENGINEERING REVIEW:

VOID

Additional Reviews Required:

System Engineering [X] for S. Kenney 8/30/2000 Design Engineering [X] for RFB 8.30.00

Fire Protection [X] 08-30-2000 Appendix J [ ] N/A

ISI [X] 8/29/00 IST [ ] N/A EQ [ ] N/A

Other [X] 9/5/00 Fluid Systems.

Safety Class power supplies affected? [ ] YES [X] NO

If "YES", Design Engineering assessment of cumulative effects performed? [ ] YES

Review associated MM Screening, 50.59(a)(1) Screening and 50.59(a)(2) Safety Evaluation. N/A

Reviewed By: / 9/12/2000
Director of Design Engineering Date

==========

OPERATIONS REVIEW:

Operating Procedures affected, identified [ ] YES [X] NO
Others identified:

Procedures requiring revision prior to TM or MM implementation/ restoration:
N/A

Additional operational controls necessary:
N/A

VOID

Installation:
N/A

Restoration:
N/A

Reviewed By: / 9/12/00
Operations Manager (or Designee) Date

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JO FILE

TM/MM CONTROL SHEET (Continued)

QSS REVIEW: (For Safety Related MMs Only)

W.M. Linburger / 9/13/00
Quality Services Supervisor Date

==========

APPROVAL

TM/MM Approved By: / 9-13-00
Originating Dept. Head Date

PORC Review at Meeting #: 2000-050 M. Houle Date: 9/13/00

Plant Manager Approval: Date: 9/18/00

Distribution of approved TM/MM:

VOID

Implementing Department Head - Original
Training Manager - 1 copy
OQA Manager - 1 copy
PEAA - 2 copies with marked up drawings

/ 9/19/00
Originating Dept. Date

==========

INSTALLATION/RESTORATION: (Restoration for TMs only)
IMPLEMENTOR

Work Order generated? YES [X] NO [ ] WOR # 00-044663
WO # 00-001840-000

Controls established to ensure required Procedure changes for TMs and MMs will be in place prior to system operation: N/A

List location of all TM tags: N/A

For MMs JO file obtained; JO # 2000 - 0060

/ 9-25-00
Implementing Dept. Date

==========

SHIFT SUPERVISOR OR DESIGNEE

Notify the PEAA to:

VOID

1. Put copies of the TM/MM in the pending change files
2. Stamp all Control Room drawings identified that are affected by the TM/MM.

/ 4-24-01
Shift Supervisor or Designee Review Date

Installation Authorized By:

/ 4-24-01

JO FILE

Shift Supervisor Date

Copy of TM/MM filed in Control Room book with annotation that it is a copy and the original is in the field for installation.

Clambing / 4/24/01
Implementing Dept. Date

==========

For TM Installation:

Installation verified complete and testing performed, tags installed, original TM returned to Control Room, TM Index updated, FSAR markups submitted, if applicable. PEAA notified of TM installation, and Shift Supervisor notified:

VOID

N/A /
Implementing Department Date

Post Installation Test Performed, file original (TM) in Control Room.

N/A /
Shift Supervisor Date

==========

For TM Restoration:

TM Restoration Authorization: (Plant Conditions compatible with restoration, verify operating procedures revised and ready for issuance or controls in place to ensure procedures are revised and issued prior to operation)

N/A /
Shift Supervisor Date

TM Restoration complete, and verified: (tags removed, testing complete, control sheets .03, .04, and .05 completed, notify Shift Supervisor)

N/A /
Implementing Department Date

VOID

Notify the PEAA to:

1. remove copies of the TM from the pending change files
2. sign all Control Room drawings that were stamped as a result of the TM.

JO FILE

TM Restoration Complete and Post Retest Performed: (Verify all caution tags, lineup instructions, temp labels removed, and notify Implementation Dept. that post restoration testing is complete, and forward the completed TM to the PEM).

N/A _____ / _____
Shift Supervisor Date

==========

For MMs: DEAA NOTIFIED WITHIN ONE WEEK PRIOR TO BEGINNING IMPLEMENTATION. DPG 9/13/00

[signature] / 4/24/01
IMPLEMENTING DEPT DATE

Installation initiated within 30 days of Shift Supervisor authorization. If not, contact originator prior to installation.

Installation verified complete and testing performed, revised markups copies given to the PEAA if applicable, MM Index updated, Shift Supervisor notified and MM package forwarded to Shift Supervisor.

VOID

_____ / _____
Implementing Department Date

Post Installation Testing performed and PEAA notified that MM has been installed:

_____ / _____
Shift Supervisor Date

_____ Remove the copy of the MM from the Control Room MM Log Book, forward completed original MM to the Implementing Department for JO closeout.

_____ / _____
Implementing Department Date

NOTE

Final MM drawing revisions will be distributed and filed in the Control Room and TSC (as applicable) via DP 0029, "Control Room and TSC Design Control Records".

VOID

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APPENDIX R REVIEW (INS9526_01, ER960433_01)

MM/TM No.: MM 2000-010

Title: Drywell Seal

Plant System Affected: Primary Containment Safety Class: 2

Cognizant: David F. Grimes

Appendix R Review Items to be Considered:
[If any question is answered YES, additional Appendix R specialist review is required. However, if the document is a TM which will be implemented and restored while the plant is in cold shutdown during a single outage, Appendix R specialist review is not required.]

1. Does change involve electrical components or wiring? YES / NO

2. Does change involve Appendix R Safe Shutdown components, including any support system components [Refer to SSCA Appendix E1 and E2 for listings]? YES / NO

3. Will change impact any Appendix R lighting or visibility therefrom? YES / NO

4. Will change impact any Appendix R fire barrier, CFZ, or Suppression zone? YES / NO

5. Will change require revision/update of CWDs? (List below) YES / NO
6.
6. Will change require revision/update of CCLs? (List below) YES / NO

7. Does change impact an Appendix R Safe Shutdown Strategy? YES / NO

8. Will change require an update/modification of Appendix R documentation (including cable list database)? YES / NO

Review Comments:

VOID per notg 5/11/01

CWDs:

CCL:

K F Lamnitly 8/1/00
Design Engineering Reviewer (if applicable) Date

VOID

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MINOR MODIFICATION (MM) SCREENING EVALUATION

Review the following questions to determine if a proposed change can be accomplished using a Minor Modification. A "YES" answer to any of the following questions indicates that a Minor Modification cannot be used.

1. Does the change have any programmatic implications (EQ, Appendix R, Appendix J, ISI, IST, NPDES, Setpoint Control, etc.) that would indicate that additional Design Control (Design/I&T) is needed? This area is currently part of ISI — YES NO

2. Does the change involve changes to multiple SSC and is the change complex? — YES NO

3. Does the change require extensive calculations or analysis to justify that would indicate that additional design control (Design/I&T) is needed? — YES NO

4. Are there any other attributes (e.g., high cost, multiple contractors, scheduling constraints, etc.) associated with the change that would warrant application of additional design or administrative controls on the change? — YES NO

VOID

VOID-per mtg 5/11/01

Screening Performed by*: DF [illegible] 8/1/00

* Review will be performed during MM review.

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50.59(a)(1) SCREENING EVALUATION

Affected Document Minor Modification 2000-010

Description of Change(s) (List each change that the evaluation supports or reference that provides changes)

Installation of a drywell seal at elevation 238' and perimeter painting of a cicumferential strip approximately 6 +/- inches wide.

VOID, permit#9 5/11/01

Based on a review of the following questions, determine if the proposed activity has the potential to impact safe operation of the facility and requires a 10CFR50.59(a)(2) evaluation. A "YES" answer to any of the questions 2 through 25 requires that a written 10CFR50.59(a)(2) evaluation be performed. Either evaluation may require an FSAR change in accordance with AP 6036 or a TRM change in accordance with AP 0060. These questions need to be answered based on a review of the activity (i.e., procedure change, Temp. Mod., Equivalency Eval., Lineup Deviation, etc.) vs. the requirements of the FSAR or interim FSAR changes, the TRM and Tech. Specs. The originator should provide a response to "NO" answers that are potentially applicable to provide a basis for the conclusion.

FSAR, TRM & Tech. Spec. sections reviewed 5,12.6, 12.2.2.2, 12.3.5

FSAR, TRM & Tech. Spec. sections affected None VOID

*1. Would the activity require a Tech. Spec. change prior to implementation? If "YES" then a Tech. Spec. change must be completed before the activity can commence.

YES NO

2. Would the activity result in a change that would directly or indirectly render a system, structure, or component (SSC) either different in design, or different in function or in method of performing a function (e.g., change manual to automatic, etc.) than that described (written or pictorial) in the FSAR, interim FSAR change or TRM. (Note that pictorial changes that do not effect system design parameters or system operation are not considered to satisfy this criterion; eg: addition of an instrument isolation valve.) YES NO

The seal as described in 5920-233, will be maintained in form, fit and function.

* A yes response to the question indicates that the activity cannot be performed under 50.59. Prior regulator approval is required to perform activities which require a T.S. change.

JO FILE

3. Would the activity modify any SSC whose configuration can significantly impact a parameter specified in the FSAR or TRM? (For example, a significant change to water level or components within the primary containment can impact the containment net free space which is specified in the FSAR and used in LOCA calculations, EOPs, and the Appendix J Program). YES NO

There is no impact on parameters specified in the FSAR or TRM.

4. Would the activity require changes to any procedural requirements identified in the FSAR, interim FSAR change or TRM? Note that "procedural requirements" includes any specific responsibilities and activity sequences identified, but does not require a 50.59(a)(2) just because the procedure is identified in the FSAR, TRM or T.S.

YES NO

5. Would the activity negatively affect instrument accuracies and response characteristics or render them outside the limits set forth by FSAR accidents and transients.

YES NO

6. Would the activity cause an SSC to operate outside the structure/system/component design or testing limits?

This activity mitigates the effects of corrosion on the shell and therefore, supports the safety function & design intent of primary containment. YES NO

VOID

7. Would the activity create additional loads (mechanical or electrical) that are greater than the design capacity of the affected equipment or system or change the sequence in which the loads are applied? (e.g., would diesel loading or sequence be affected?) YES NO

Six inches of unqualified coating material is being removed and Replaced with a qualified coating, decreasing potential strainer Loading. Additionally, based on the sealants higher specific gravity and limited quantity to potentially enter the torus and given the high capacity and low approach velocity to the strainers it is concluded that the use of the sealant does not constitute a reason to evaluate strainer loading capacities.

8. Would the activity result in increased vibration, water hammer, fatigue, corrosion, HELB, thermal cycling, pipe whip, flooding (internal and external), missile effects, fire, heavy loads, or electrical noise such that any SSC is or could be negatively affected? YES NO

This activity is to protect the drywell from corrosion and therefore supports the primary containment safety function.

JO FILE

9. Would the activity have the potential to non-conservatively change environmental conditions or create/delete air flow paths from one EQ volume to another?

YES NO

10. Would the activity modify interfaces or interaction between SSC's such that any SSC's are negatively affected?

Debris potential has been assessed without negative consequences. YES NO

11. Does the activity (failure modes) have the potential to result in (or increase the probability of) offsite radiological consequences that are greater than those specified in the FSAR?

YES NO

12. Would the activity change or affect any SSC's seismic qualification, EQ equipment qualification, redundancy or separation criteria, Appendix R compliance, ISI/IST Program compliance?
Inspection of this area is included in the ISI program.

YES NO

13. Would the activity introduce potential seismic II over I concerns?

There are no seismic concerns for this activity. YES NO

14. Would the activity modify any system or component whose operation affects the calculations used in the ODCM (e.g., effluent monitors, ventilation flowpaths, etc.)? VOID

YES NO

15. Would the activity negatively affect system/equipment protective features?

YES NO

16. Would the activity significantly increase the frequency of system operation?

YES NO

17. Would the activity introduce testing methods that are not consistent with current system/equipment testing requirements?

Test / Inspection methods are consistent with ISI current practices.

YES NO

18. Would the activity introduce additional credible failure modes or single failures that are not bounded by FSAR assumed failure modes? (Including consideration of analog to digital replacement concerns as discussed in Generic Letter 95-02).

YES NO

JO FILE

19. For radioactive waste systems, would the activity introduce any concerns when using the criteria of IE Circular 80-18, "10CFR50.59 Safety Evaluations for Changes to Radioactive Waste Treatment Systems" and IE Bulletin 80-10, "Contamination of Nonradioactive System and Resulting Potential for Unmonitored, Uncontrolled Release to Environment" as guidance. YES NO

20. Does the activity involve performing special tests or experiments, as required by AP 6001? YES NO

21. Does the activity change quality group classifications of any SSC? YES NO

22. Does the activity involve a maintenance activity where a decision has been made to operate in a configuration that is different than FSAR, interim FSAR change or TRM requirements? YES NO

The seal is not described in the FSAR, the corrosion protection of the drywell is described in Section 12.2.2.2

23. Could the change affect the implementation of the E-Plan (e.g., TSC habitability during any of the accidents as analyzed in the FSAR or interim FSAR change)? YES NO

24. Would the activity introduce additional possible malfunctions of safety related or non-safety related equipment that could initiate an abnormal operational transient as described in FSAR Section 14.5? (ER 97-1644) YES NO

VOID

25. Are there any other nuclear safety related issues associated with the change that provide cause for a formal safety evaluation to be performed? YES NO

Additional Comments:

There are no safety related issues that provide cause for a formal safety evalauation.

Safety Review Performed By*: DF Brinn / KF [illegible] 8/3/00 / 8/3/00
Date

* personnel performing safety reviews shall be qualified by successful completion of the applicable training.

Safety Evaluation Required [ ] Yes [X] No

Approved By: [illegible] / 8-3-00
Department Head Date

JO FILE

MINOR CHANGE
SDL 4-25-01
04-25-01
4-25-01

7.11a Request Operations establish/verify the following lineup. This provides a ventilation flowpath from the drywell, through the Torus, and out through the Reactor Building exhaust.

Equipment	Position
SB-16-19-8 (AC-8)	OPEN
SB-16-19-9 (AC-9)	OPEN
SB-16-19-10 (AC-10)	OPEN
SB-16-19-7B (AC-7B)	OPEN
SB-16-19-[illegible]-7)	OPEN
SB-[illegible]T-6)	OPEN
SB-16-[illegible]-6A (AC-6A)	OPEN
SB-16-19-7A (AC-7A)	OPEN
V16-19-5A	GAGGED OPEN
V16-19-5D	GAGGED OPEN
RTF-5	OPERATING

VOID

VYICE _____ DATE _____

7.11b Ensure that the Torus access covers are installed, or temporary covers are installed. Ensure that they are labeled to prevent inadvertent opening of the covers.

VYICE _____ DATE _____

MINOR CHANGE
SDL 4-25-01
04-25-01
4-25-01

7.18a Notify Operations that the coating activities in the Drywell are completed and that the ventilation lineup previously established may be secured or modified to meet plant conditions.

VYICE _____ DATE _____

VOID

7.18b If temporary Torus access covers were installed, remove at this time. Ensure that any labels installed on the covers are removed.

VYICE _____ DATE _____

added
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APR 26 2001

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2.9 A self-contained vacuum blasting system will be used to remove the existing coating on the shell and provide the surface prep for the new coatings. This will minimize the potential for airborne contamination and dust. Protection against airborne contamination shall be per the requirements of RP.

2.10 A vapor control plan will be used to minimize the methanol fumes that are emitted from the Dow Corning sealant, the fumes from the cleaning solvents and the fumes from the Carboline paint products. Chemistry and RP will be involved in the development and implementation of the vapor control plan. Coppus air-driven ventilators with no moving parts will be used to remove fumes from the drywell.

3.0 REFERENCES

VOID – per mct#3 4-26-01

3.1 Codes and Standards

3.1.1 SSPC-SP-1, Steel Structures Painting Council, Surface Preparation Specification No. 1, "Solvent Cleaning".

3.1.2 SSPC-SP-10, Steel Structures Painting Council, Surface Preparation Specification No. 10, "Near-White Blast Cleaning".

3.1.3 SSPC-SP-11, Steel Structures Painting Council, Surface Preparation Specification No. 11, "Power Tool Cleaning to Bare Metal".

3.1.4 SSPC-Vis-1, Steel Structures Painting Council, Visual Inspection Specification No. 1, "Pictorial Surface Preparation Standards for Painting Steel Surfaces".

3.1.5 ASTM 5144, "Standard Guide for the Use of Protective Coatings in Nuclear Power Plants."

VOID

3.1.6 ASTM D4537-91, "Standard Guide for Establishing Procedures to Qualify and Certify Inspection Personnel for Coatings Work in Nuclear Facilities"

3.1.7 EPRI TR-109937 "Guideline on Nuclear Safety Related Coatings."

3.1.8 Coatings Inspection Plan (attached) – Drywell Elevation 238'.

3.1.9 ASME Section XI, 1992 – Winter Addenda 92A

JO FILE

HOLD POINT

7.10.1 IWE inspection completed and documented in accordance with PP 7024.

IWE Coordinator _____ DATE _____

CAUTION: ~~**VERIFY WITH OPS THAT THE MODE SWITCH IS IN SHUTDOWN AND SBGTS IS TAGGED OUT OF SERVICE PRIOR TO PERFORMING PAINTING AND SEALING ACTIVITIES.**~~ Ensure that Operation is aware of paintin - and Sealant activiti and precautions with respect to SBGT. l/T 04-16-0 JDFG 4/16/01

VYICE _____ **DATE** _____

VOID

7.11 Contact the Shift Engineer to ensure that **NO** hot work will be performed in the drywell prior to performing painting and sealing activities.

VYICE _____ DATE _____

7.12 Apply Carbozinc 11 SG primer to the full circumferential 6" +/- wide band of the containment shell directly above the keyway down to the steel concrete interface in accordance with the Coatings Inspection Plan and the manufacturers instructions. Primer must be continuously agitated during application. **DO NOT OVERSPRAY ON EXISTING PAINTED SURFACES.** Record environmental conditions and application data per NPS Procedure PP-0959P requirements.

NPSCS _____ DATE _____

NPSQC _____ DATE _____

7.13 Install Embeco 885 grout in the keyway in accordance with the manufacturers instructions and drawing 5920-12789. Sil-Pro bonding agent may be used in lieu of the 24-hour pre-soak prior to grout placement. Curing compound may be used to eliminate the need to keep the grout wet while curing. Record data per NPS Procedure PP-0582C requirements.

NPSCS _____ DATE _____

NPSQC _____ DATE _____

JO FILE

PENDING CHANGE NOTIFICATION FORM

Notification of a pending revision to the drawing(s) listed.

VYDC/EDCR #_____ MM # 2000-010 CU #_____ Other_____ Cancellation____

JO File # and/or WO # (if applicable):_____

Title/Description of Change: DRYWELL FLOOR TO CONTAINMENT MOISTURE BARRIER

Component ID Numbers:_____

Affected Systems:_____

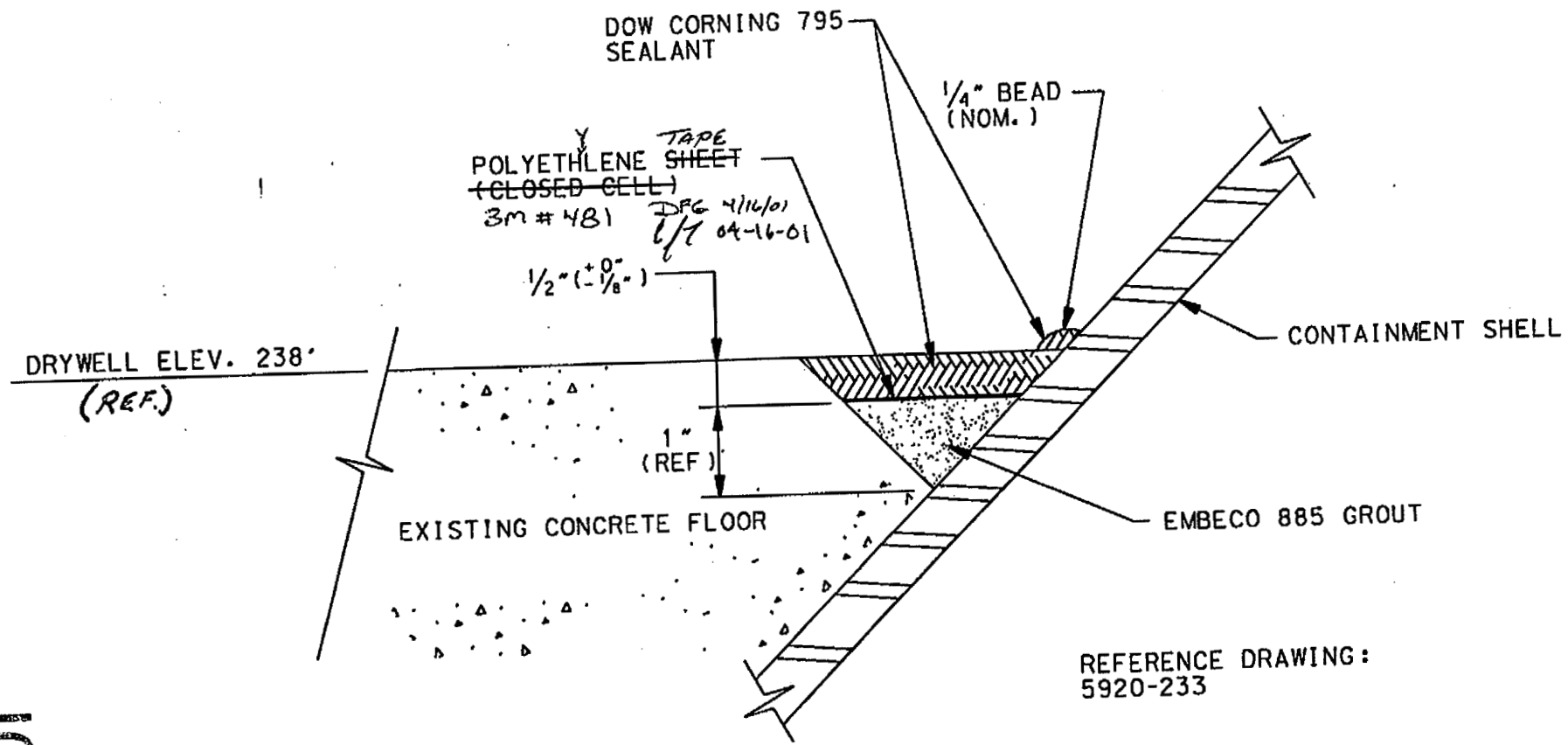
LOG NO.	DRAWING NO.	MARKUP REV.
	5920-233	0
	5920-12789	NEW

COPY

DCE/ICE/CI: DAVID F GRIMES (PLEASE PRINT) Date: 5/24/00

VYAPF 6802.01 (Sample)
AP 6802 Rev. 22
Page 1 of 1

JO FILE



DRYWELL SEAL DETAIL

THIS CHANGE FOR
MM# 00-010 ONLY

INDICATES CHANGE
DFG 7/26/00
KFB 7/27/00

JO FILE

RECEIVED
APR 25 2001

Duke Engineering & Services. A Duke Energy Company — Solomon Pond Park, 400 Donald Lynch Boulevard, Marlborough, MA	DRAWN BY	TITLE: DRYWELL SEAL DETAIL	
	CHECKED BY		
FOR: VERMONT YANKEE NUCLEAR POWER STATION, VERNON, VERMONT	APPROVED BY	JOB NO.	5920-12789

g:\vermont yankee\vy minor mod\2000-010\5920-12789.dgn

DRAWING REVISION ROUTING SLIP

The following prints are submitted for correction/revision per Minor Mod 2000-010

JO # 2000-060 WO # 00-1840

If change is a Corrective Update, indicate the initiating circumstance below by checking the appropriate response:

- ☐ Event Report
- ☐ Design Basis Document Review
- ☐ Validation
- ☐ Field Walkdown
- ☐ Change in Scope of Drawing
- ☐ Error Found on Drawing
- ☐ Other: _____

Title/Description of Change: As-Built of Drywell Seal
(Attach additional information as required, i.e. why CU is applicable, EE and/or 50.59 if applicable, etc.)

Component ID No.(s): Drywell Affected Systems: _____

SECTION 1		SECTION 2	SECTION 3
Drawing Number	Rev.	Log Number	2nd Engineering Reviewer Signature/Date
5920-233	0		
5920-12789	New		

Additional drawings on VYAPF 6802.02 page 2 of 2? ☐ Yes ☑ No # of Pages 1

NOTE: Any EMPAC changes associated with corrective updates should be forwarded to the appropriate department.

LPC 4

DCE/ICE/CI Initiation: The changes to the marked up drawings and/or new drawings have been reviewed and reflect the as installed condition of the plant or an approved alterna and the mark-ups meet the requirements of AP 6802.

Print: D F Grimes (DCE/ICE/CI) Signature: D F [illegible] (DCE/ICE/CI) Department: M/S DE Date: 6/28/0

Markups sent to DDG: _____ Date: _____
DC Assistant

Drawing package sent to DC Assistant: _____ Date: _____
DDG Clerk

Drawing package received by DC Assistant: _____ Date: _____
DC Assistant

LPC 4

VERMONT YANKEE
ACCOUNTABILITY REVIEW FORM
TEMPORARY AND MINOR MODIFICATIONS

Minor Modification : 2000-010 Originating **Dept.:** Mechanical / Structural

Refer to AP 0020 for guidance.

I ADMINISTRATIVE

ATTRIBUTES	SAT	Needs Improvement	N/A
1. Has the TM/MM Control Sheet (VYAPF 0020.03) been completed through the initial signature of the Originating Department Head?			
2. Have all pending change notifications been made (DBD, FSAR, drawings)	✓		✓

* INDEPENDENT REVIEW PERFORMED PRIOR TO DEPT. HEAD REVIEW KFB

II TECHNICAL

ATTRIBUTE	SAT	Needs Improvement	N/A
1. Is a TM/MM the appropriate design vehicle for this change?	✓		
2. Has a safety screen/evaluation been completed in accordance with AP 6002 and included in the package?	✓		
3. Have Electrical or Mechanical Data Sheets (VYAPF 0020. 04 or .05 or both) been completed and attached if necessary?	✓		
4. Have the appropriate items from Appendix A to AP 0020 been considered and addressed in the TM/MM?	✓		
5. For TMs, are the modes of operation allowable while the TM is installed identified?			✓
6. Are all impacted plant documents identified and are markups included in the package as required (DBD, FSAR, Programs, Procedures, etc.)	✓		
7. Are markups for all drawings impacted by the TM/MM contained in the package and are they all initialed and dated by the TM/MM CI?	✓		
8. Have training needs been documented in the TM/MM if necessary?	✓		
9. Have installation/restoration requirements been adequately addressed in the TM/MM?	✓		
10. Is the description of the modification complete and clear?	✓		
11. Are the design requirements for the modification adequately described?	✓		
12. Are all hazards associated with the modification identified and assessed?	✓		
13. Are all impacted control room drawings identified on VYAPF 020.03?			✓
14. Does the TM/MM address concerns regarding building/area modifications that may affect the EQ analysis (interference with, modification or creation of normal air flow paths) [INS932601TP1]	✓		
15. Does the TM/MM address potential blocking of access to equipment needed to safely operate the plant? [INS932601TP1]			✓

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II TECHNICAL (continued)

ATTRIBUTE	SAT	Needs Improvement	N/A
16. Has an Appendix R review been completed as required? [ER960433_01]	✓		
17. Has all vendor supplied input been included in the independent review of the TM/MM? [LER9620-02]	✓	–	
18. Has the cumulative effect of modifications on safety class power supply loading been reviewed by Elec/I&C Design Engineering? [PFI935902]			✓
19. Have potential hazards presented by the modification (e.g. fire, flooding, radiation consequences, etc.) been described and assessed? [PFI935902]	✓		
20. Have implementation hold points been established in the TM/MM if implementation requires changing plant conditions that can impact personnel safety? [ER980502_01]	✓		
21. Have operating/monitoring/maintenance instructions for the TM been provided including identification of responsibilities for operation/monitoring/maintenance of the TM? [ER980786_01]			✓
22. Have building permit requirements been addressed for office building changes? [ER98-0029]			✓
23. Are specified parts, equipment, materials, and processes suitable for the required application ?	✓		
24. Are post installation/restoration testing requirements adequate to demonstrate that the design requirements are met?	✓		

Reviewer: K Hunnell **Date:** 8/1/00

Forward this form to the DEAA when complete.

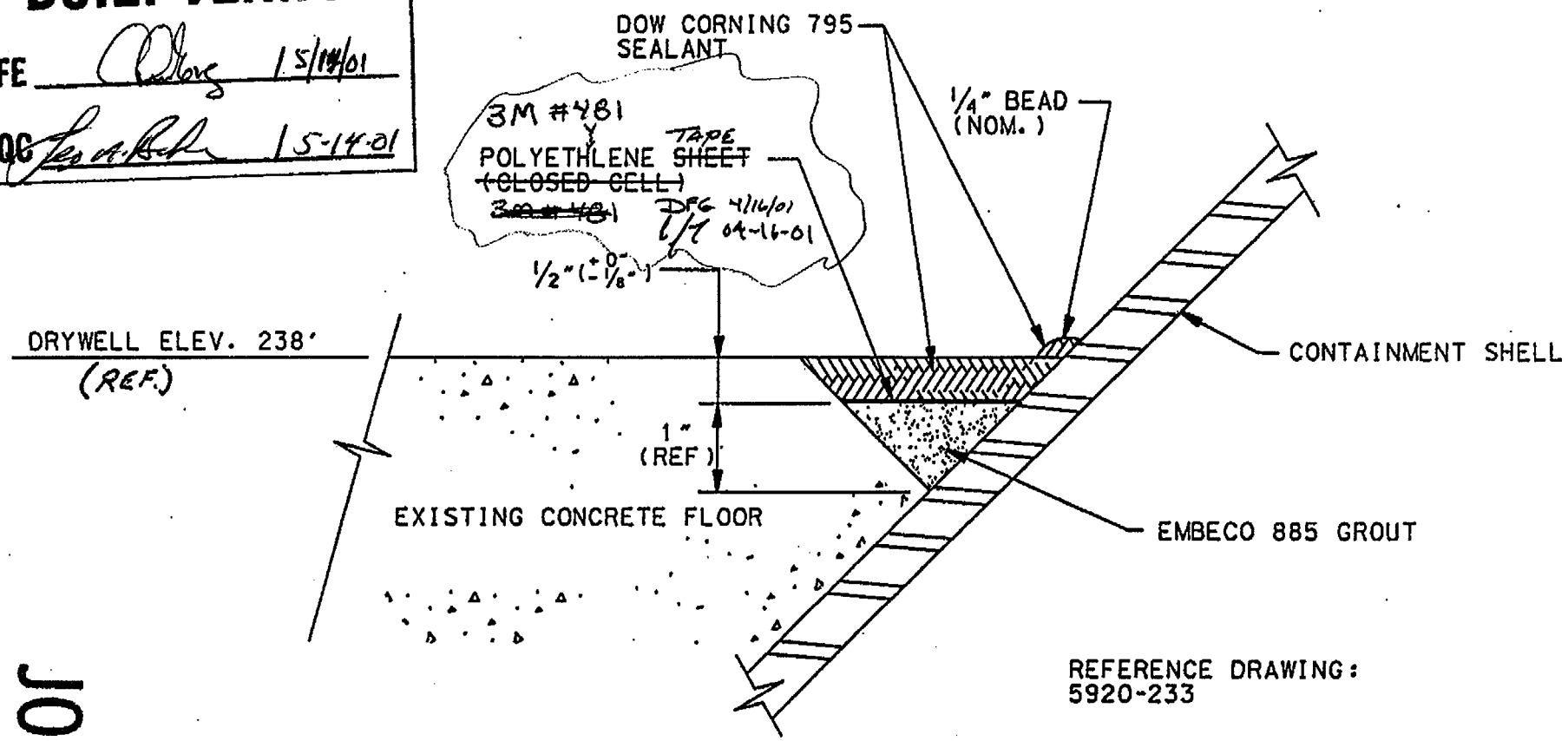
JO FILE

Grimes, Dave

From: Grimes, Dave
Sent: Tuesday, July 03, 2001 9:15 AM
To: Girroir, Dennis
Cc: Goodwin, Scott
Subject: Drywell Seal Closeout

Dennis,
Per AP 6022, the JO procedure, we are required to notify you that the Drywell Seal Minor Mod is being closed out and that the replacement seal is subject to inspections under ASME IWE. The drawing number for the seal is 5920-12789, and may be used to facilitate inspections if necessary. Please call with any questions.
David

AS-BUILT VERIFIED
NPSFE 1/5/14/01
NPSQC 1/5-14-01



DRYWELL SEAL DETAIL

THIS CHANGE FOR
MM# 00-010 ONLY
INDICATES CHANGE
DFG 7/20/00
KFB 7/27/00

JO FILE

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APR 25 2001

Duke Engineering & Services. A Duke Energy Company — Solomon Pond Park, 400 Donald Lynch Boulevard, Marlborough, MA	DRAWN BY	TITLE: DRYWELL SEAL DETAIL	
	CHECKED BY		
FOR: VERMONT YANKEE NUCLEAR POWER STATION, VERNON, VERMONT	APPROVED BY	JOB NO.	5920-12789

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TEMPORARY FORMS. (SEE PLAN 1-1).

N) PLACE CONCRETE IN POUR 6 .

P) REMOVE TUBES AND TEMPORARY FORMS.

R) PLACE CONCRETE IN POUR 7 .

S) REMOVE TUBES AND TEMPORARY FORMS.

T) PRESSURE GROUT POUR 6 AND 7 .

2.2 GROUT PANS METHOD

A) SECURE GROUT PANS FOR POUR 1.

B) PLACE CONCRETE IN POUR 1 THROUGH THE MANHOLE IN BOTTOM OF DRYWELL.

C) PRESSURE GROUT POUR 1 . AS RECOMMENDED BY GROUT MANF, BY USING STANDPIPE IN MANHOLE AND GROUT PANS. START WITH PANS NEAREST THE CENTERLINE OF THE DRYWELL AND GROUT EACH RING IN SUCCESSION.

D) PRESSURE GROUT WEDGE 2 .

E) SECURE OUTER GROUT PANS AND PLACE TEMPORARY FORMS FOR POURS 3 . (SEE PLAN 1-1).

F) PLACE CONCRETE IN POURS 3 .

G) REMOVE FORMS AND SECURE GROUT PANS FOR POURS 4 .

H) PLACE CONCRETE IN POURS 4 .

J) PRESSURE GROUT REMAINDER OF AREA STARTING WITH PANS NEAREST THE CENTERLINE OF THE DRYWELL AND GROUT EACH RING IN SUCCESSION.

K) PRESSURE GROUT WEDGE 5 .

L) SECURE OUTER GROUT PANS AND PLACE TEMPORARY FORMS FOR POURS 6 AND 7 . (SEE PLAN 1-1).

M) PLACE CONCRETE IN POUR 6 .

N) REMOVE FORMS.

P) PLACE CONCRETE IN POURS 7 .

R) PRESSURE GROUT REMAINDER OF AREA.

3.0 OBVIOUSLY, OTHER METHODS CAN BE DEVELOPED TO ACCOMPLISH THE OBJECTIVES LISTED IN 1.0, ABOVE. THE PARTIES RESPONSIBLE FOR FOUNDATION DESIGN ARE ENCOURAGED TO DEVELOP METHODS WHICH ARE BEST SUITED TO THEIR USUAL PRACTICES AND WHICH ARE BASED ON AVAILABLE MATERIALS, SITE CONDITIONS, EXPERIENCE, ETC.

4.0 NOTE ALSO THAT ANY DETAILED PROCEDURE MUST CONSIDER THE EFFECT THE METHOD WILL HAVE ON THE VESSEL SUPPORT SKIRT. DETAILS MUST BE DEVELOPED EARLY IN THE OVER-ALL PROJECT SCHEDULE SO THAT THE REQUIREMENTS FOR OPENINGS IN THE SUPPORT SKIRT CAN BE MADE KNOWN TO THE DRYWELL FABRICATOR IN A TIMELY MANNER.

SEE 5920-12789 FOR DRYWELL FLOOR TO CONTAINMENT MOISTURE BARRIER

LL DRAIN

RUCTION DRAIN

CONTACT

YWELL TO

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HEIGHT
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THIS CHANGE FOR MM # 00-010 ONLY

→ INDICATES CHANGE

DFB 7/20/00
KFB 7/20/00

NY 706102
5920-233

REVISIONS

JO FILE