

DiabloCanyonNPEm Resource

From: Pick, Greg
Sent: Thursday, February 03, 2011 5:55 PM
To: DiabloCanyonNPEm Resource
Subject: FW: SAPNs - Selective Leaching OE
Attachments: SAPN 50363554.pdf; SAPN 50123904.pdf

From: Tan, Miranda [<mailto:M1TF@pge.com>]
Sent: Thursday, February 03, 2011 3:56 PM
To: Pick, Greg
Cc: Grebel, Terence
Subject: SAPNs - Selective Leaching OE

Greg,

Attached for your review are two notification you requested.

Regards,
Miranda
805 781 9415

<<SAPN 50363554.pdf>> <<SAPN 50123904.pdf>>

Hearing Identifier: DiabloCanyon_LicenseRenewal_NonPublic
Email Number: 2503

Mail Envelope Properties (CA7A6E1C5CB1204FA832458074C4571B01006D95529C)

Subject: FW: SAPNs - Selective Leaching OE
Sent Date: 2/3/2011 5:54:47 PM
Received Date: 2/3/2011 5:54:50 PM
From: Pick, Greg

Created By: Greg.Pick@nrc.gov

Recipients:
"DiabloCanyonNPEM Resource" <DiabloCanyonNPEM.Resource@nrc.gov>
Tracking Status: None

Post Office: R4CLSTR01.nrc.gov

Files	Size	Date & Time
MESSAGE	344	2/3/2011 5:54:50 PM
SAPN 50363554.pdf	90781	
SAPN 50123904.pdf	144795	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

DCNotification: **50363554**Type: **DN** Work Type: **EVAL AANS**Description: **NRC LTR for LR RAI Set 35**

Order:

Funct. Loc: **DC****DIABLO CANYON**Reported By: **KNBM** Kevin BraicoRpt By Work Ctr: **PL**Contact Info: **KNBM** Kevin Braico 805/781-9414Created On: **30 Nov 10 09:22**Planner Group: **NPR** No planning requirdMain Wrk Ctr: **PL**

Project Manager - License Renewal

PROBLEM DESCRIPTION

11/30/2010 09:22:35 Kevin Braico (KNBM) Phone 805/781-9414

A draft letter was received from the NRC as a request for information related to the Diablo Canyon Power Plant License Renewal Application Aging Management Review. The NRC staff is reviewing the information contained in the license renewal application and has identified areas where clarification is needed to complete the review. The response letter is in progress and will provide clarification to the NRC's questions. The draft request for additional information was discussed with the License Renewal Project and a mutually agreeable date for the response is within 30 days from the date of the letter. A copy of the letter from the NRC has been attached to this notification.

12/01/2010 14:48:35 Robyn A. Goff (RAC3) Phone 805/545-3023

The issue/event documented on this notification was reviewed by the Notification Review Team (NRT) and determined to be the indicated significance level per OM7.ID1. If additional information is discovered that would affect the significance level determination, contact a member of the NRT or e-mail DCPN NRT Members.

12/15/2010 16:22:01 Kyle Duke (KADB) Phone 805/550-6311

PG&E letter DCL-10-164 was signed by the site vice president and submitted to the NRC on December 13, 2010.

Event Date **30 Nov 10**Notif Required By **31 Dec 12**Station Sig.: **5 Other**



Notification: **50363554**

Type: **DN** Work Type: **EVAL AANS**

Description: **NRC LTR for LR RAI Set 35**

Order:

STATUS DETAILS

System Status: **NOPR OSTS**

User Status: **25 ASGN** Assigned to Target Workcenter

Task # 1 Track Revised Commitment #6

Status: **TSRL** Task Released

Code Group:

Task Code:

Responsible: **User Responsible KNBM** Kevin Braico **805/781-9414**

Work Ctr:

Created On: **10 Dec 10** By: **KNBM** Kevin Braico

Planned Start: **13 Dec 10** Planned Finish: **31 Dec 12**

Completed On: By:

12/10/2010 08:45:52 Kevin Braico (KNBM) Phone 805/781-9414
LRA Table A4-1, License Renewal Commitments, was amended by PG&E
letter DCL-10-164 to state the following:

Commitment: Implement the Selective Leaching of Materials program as
described in LRA Section B2.1.17.
Implementation Schedule: During the 5 years prior to the period of extended
operation.

Task # 2 Evaluate Firewater OE

Status: **TSRL** Task Released

Code Group:

Task Code:

Responsible: **User Responsible CTB6** Christopher T. **805/545-4581**

Work Ctr:

Created On: **31 Jan 11** By: **KNBM** Kevin Braico

Planned Start: **31 Jan 11** Planned Finish: **31 Dec 11**

Completed On: By:

DC

Notification: **50363554**

Type: **DN** Work Type: **EVAL AANS**

Description: **NRC LTR for LR RAI Set 35**

Order:

01/31/2011 16:57:01 Kevin Braico (KNBM) Phone 805/781-9414
Evaluate if Selective Leaching Program requires a plant specific program based off Firewater system OE. Reference notification 50123904.

Task # 3 Track RAI Response Commitment

Status: **TSRL**

Task Released

Code Group:

Task Code:

Responsible: **User Responsible CTB6** Christopher T. **805/545-4581**

Work Ctr:

Created On: **31 Jan 11**

By: **KNBM Kevin Braico**

Planned Start: **31 Jan 11**

Planned Finish: **31 Dec 11**

Completed On:

By:

01/31/2011 17:05:20 Kevin Braico (KNBM) Phone 805/781-9414
This task tracks the statment made in PG&E Letter DCL-10-164.

"For materials and environments where selective leaching is currently occurring or for materials in environments where the component has been repaired with the same material, a plant specific program will be created."

U-0

Notification: **50123904**Type: **DN** Work Type: **EQPR AANS**Description: **Fire water line break at SU Trans. 2-1.**Order: **60009683****Fire water line break at SU Trans. 2-1.**Funct. Loc: **DC-0-18-P-P****U0 SYS 18 PIPING PIPE**Reported By: **MWL9** Michael W. LeeRpt By Work Ctr: **OPSD**

Contact Info:

Created On: **17 Dec 08 10:42**Planner Group: **CPC** Const PIng - CivilMain Wrk Ctr: **MCC-PIPE** Maint Const Crew - Pipefitter

PROBLEM DESCRIPTION

12/17/2008 10:35:51 Michael W. Lee (MWL9) Phone 805/545-3243

An underground fire water line to startup transformer 2-1 has broken.

Fire water was flowing heavily from a hole at the base of the fire water deluge station for SU trans. 2-1. Flow was stopped by closing FW-1-FP7, isolating supply to the transformer. This also isolated fire water to SU trans. 1-1.

12/17/2008 13:34:17 Chai Chingburanakit (SXC8)

EFIN CIVIL ENGINEERING'S RESPONSE: A walkdown was performed by SXC8, CFK1, and JEB6 to identify/determine any structural damage due to the leaking underground pipe. There were no damage and/or undermining of any structure found in the vicinity during the walkdown. Shoring to support excavation to locate the leak and leak repair of piping.

12/17/2008 15:25:11 Daniel R. Stermer (DRS5)

See clearance 0C15 D-18-058 and tech spec 1-TS-08-0336.

12/22/2008 15:43:46 Beverly J. Jones (BJA1) Phone 805/545-4044

The issue/event documented on this notification was reviewed by the Notification Review Team (NRT) and determined to be the indicated significance level per OM7.ID1. If additional information is discovered that would affect the significance level determination, contact a member of the NRT.

12/22/2008 18:44:08 Beverly J. Jones (BJA1) Phone 805/545-4044

Event Date **17 Dec 08**Notif Required By **31 Mar 09**Station Sig.: **2 Work Group Eval**

U-0

Notification: **50123904**

Type: **DN** Work Type: **EQPR AANS**

Description: **Fire water line break at SU Trans. 2-1.**

Order: **60009683**

Fire water line break at SU Trans. 2-1.

This DN notification has a condition report (DA) created. All responses to address the condition report aspect (human performance, organizational, programmatic/process) should be documented on the DA (to find number, click on task tab, DA number is indicated in the task text of code DG-CR).

12/23/2008 13:43:03 Chad C. Sorensen (CCSN) Phone 805/545-4467

Images of damaged pipe are attached to this Notification.

STATUS DETAILS

System Status: **NOPR ORAS NOPT OSTS**

User Status: **20 APPV** Approved

Task # 1 Notification Tag Control

Status: **TSRL** Task Released

Code Group: **DO-TRACK** DC Operations

Task Code: **NTAG** Notification Tag

Responsible: **User Responsible**

Work Ctr:

Created On: **17 Dec 08** By: **MWL9** Michael W. Lee

Planned Start: **17 Dec 08** Planned Finish: **17 Dec 08**

Completed On: By:

12/17/2008 10:40:03 Michael W. Lee (MWL9) Phone 805/545-3243
Remove Notification Tag And Complete Task Prior To Completing Notification.

TAG LOCATION: on SU transformer 2-1 deluge header, directly north of U1 TB.

U-0

Notification: **50123904**Type: **DN** Work Type: **EQPR AANS**Description: **Fire water line break at SU Trans. 2-1.**Order: **60009683****Fire water line break at SU Trans. 2-1.**

Task # 2

Status: TSCO	Task Completed
Code Group: DO-EFFCT	DC Plant Effect Assessment
Task Code: SFMR	SFM Review
Responsible: User Responsible	
Work Ctr: OPR	Operations Crew - On Shift
Created On: 17 Dec 08	By: MWL9 Michael W. Lee
Planned Start: 17 Dec 08	Planned Finish: 17 Dec 08
Completed On: 17 Dec 08 15:29	By: DRS5 Daniel R. Stermer

Task # 3 Prepare LBIE AD for excavation

Status: TSCO	Task Completed
Code Group: DG-EVAL	DC General Evaluations
Task Code: EVAL	Evaluate the following (See Long Text)
Responsible: User Responsible	CFK1 Carl F. Knifton 805/545-6760
Work Ctr: MCC-FE04	DO NOT USE
Created On: 17 Dec 08	By: GCA1 Gil C. Apodaca
Planned Start: 17 Dec 08	Planned Finish: 17 Dec 08
Completed On: 18 Dec 08 15:44	By: CFK1 Carl F. Knifton 805/545-6760

12/17/2008 14:47:19 Gil C. Apodaca (GCA1) Phone 805/545-6650
Please perform LBIE applicability determination for excavation at underground firewater line break near SUT 2-1.

12/18/2008 15:43:04 Carl F. Knifton (CFK1) Phone 805/545-6760
THIS LBIE AD ADDRESSES ONLY THE EXCAVATION FOR THE REPAIR OF THE FIREWATER LINE NORTH OF THE TURBINE BUILDING FOR THE START UP TRANSFORMER 2-1 DELUGE SYSTEM.
THE FIREWATER PIPING BURST IN THE AREA AND WATER WAS GUSHING OUT OF THE AREA.
THE SIZE OF THE EXCAVATION WILL BE APPROXIMATELY 15 FT X 15 FT X 7 FT DEEP AT THE DEEPEST POINT.
THIS WORK IS IN SUPPORT FOR REPAIR FOR THE FIREWATER PIPING AND IS MAINTENANCE.
THERE ARE VARIOUS UTILITIES IN THE AREA.
REFERENCE DWGS: 438145, 438149, AND 438068.
ENGINEERING HAS EVALUATED THE EXISTING FOUNDATIONS AND UNDERGROUND

U-0

Notification: **50123904**

Type: **DN** Work Type: **EQPR AANS**

Description: **Fire water line break at SU Trans. 2-1.**

Order: **60009683**

Fire water line break at SU Trans. 2-1.

UTILITIES FOR THE NEED TO SUPPORT AND/OR BRACE. SEE TASK 6.

LBIE APPLICABILITY DETERMINATION

LBIE SCREEN:

1. PROPOSED ACTIVITY/IMPLEMENTING DOCUMENT NO:
NOTIFICATION 50123904.

BRIEFLY DESCRIBE WHAT IS BEING CHANGED AND WHY.
PROVIDE THE EXCAVATION FOR THE FIREWATER LINE NORTH OF THE
TURBINE BUILDING FOR THE START UP TRANSFORMER 2-1 DELUGE
SYSTEM.

THE FIREWATER PIPING BURST IN THE AREA AND WATER WAS
GUSHING OUT OF THE AREA.

THE SIZE OF THE EXCAVATION WILL BE APPROXIMATELY 15 FT X 15 FT
X 7 FT DEEP AT THE DEEPEST POINT.

THIS WORK IS IN SUPPORT FOR THE MAINTENANCE REPAIR OF THE
FIREWATER LINE.

SOIL IS COVERED IN THE Q-LIST IN SECTIONS I.M.7, SLOPE EAST OF
THE POWER BLOCK AND III.H.4.1.2, COMPONENTS FOR BURIED
BYPASS PIPING NORTH OF THE INTAKE STRUCTURE. THE SOIL/SLOPE
CLASSIFICATION IS QUALITY CLASS 'S', DESIGN CLASS II. THE SLOPE
EAST OF THE INTAKE STRUCTURE FOR THE QUALITY CLASS 'S' SOIL
AS SHOWN ON DRAWING 445675.

THIS EXCAVATION IS NOT NEAR ANY QUALITY CLASS 'S' SOIL AND IT IS
ACCEPTABLE TO EXCAVATE IN THE AREA.

2. APPLICABILITY DETERMINATION.

DOES THE PROPOSED ACTIVITY INVOLVE:

2A. A CHANGE TO THE FACILITY/ISFSI OPERATING LICENSE (OL),
ENVIRONMENTAL PROTECTION PLAN (EPP) OR TECHNICAL
SPECIFICATIONS (TS)? THE ANSWER IS NO.

2B. A CHANGE TO THE QUALITY ASSURANCE PROGRAM? THE ANSWER
IS NO.

2C. A CHANGE TO THE SECURITY PLAN? THE ANSWER IS NO

2D. A CHANGE TO THE EMERGENCY PLAN? THE ANSWER IS NO.

2E. A CHANGE TO THE INSERVICE TESTING (IST) PLAN? THE ANSWER
IS NO.

2F. A CHANGE TO THE INSERVICE INSPECTION (ISI) PLAN? THE
ANSWER IS NO.

2G. A CHANGE TO THE FIRE PROTECTION PLAN? THE ANSWER IS NO.

2H. A NONCOMPLIANCE WITH THE ENVIRONMENTAL PROTECTION
PLAN OR MAY CREATE A SITUATION ADVERSE TO THE ENVIRONMENT?
THE ANSWER IS NO.

2I. A CHANGE TO THE FSARU (INCLUDING DOCUMENTS
INCORPORATED BY REFERENCE) EXCLUDED FROM THE
REQUIREMENT TO PERFORM A 50.59/72.48 REVIEW? THE ANSWER IS
NO.

U-0

Notification: **50123904**

Type: **DN** Work Type: **EQPR AANS**

Description: **Fire water line break at SU Trans. 2-1.**

Order: **60009683**

Fire water line break at SU Trans. 2-1.

2J. MAINTENANCE THAT RESTORES SSCS TO THEIR ORIGINAL OR NEWLY APPROVED DESIGNED CONDITION? THE ANSWER IS YES. NO 10 CFR 50.59 IS REQUIRED.
2K. A TEMPORARY ALTERATION SUPPORTING MAINTENANCE THAT WILL BE IN EFFECT DURING AT-POWER OPERATIONS FOR 90 DAYS OR LESS? THE ANSWER IS NO.

U-0

Notification: **50123904**

Type: **DN** Work Type: **EQPR AANS**

Description: **Fire water line break at SU Trans. 2-1.**

Order: **60009683**

Fire water line break at SU Trans. 2-1.

2L. MANAGERIAL OR ADMINISTRATIVE PROCEDURE/PROCESS CONTROLLED UNDER 10 CFR 50, APP. B? THE ANSWER IS NO.
2M. REGULATORY COMMITMENT NOT COVERED BY ANOTHER REGULATORY BASED CHANGE PROCESS? THE ANSWER IS NO.
2N. AN IMPACT TO OTHER SPECIFIC PROGRAMS (E.G. THE ODCM) THAT ARE CONTROLLED BY REGULATIONS, THE OL OR TS? THE ANSWER IS NO.

3. APPLICABILITY DETERMINATION CONCLUSIONS:

A 10CFR 50.59 SCREEN WILL NOT BE COMPLETED BECAUSE ALL OF THE ASPECTS OF THE ACTIVITY ARE CONTROLLED BY SOME OF THE PROCESSES LISTED ABOVE.

A 10 CFR 72.48 SCREEN IS NOT REQUIRED SINCE THE EXCAVATION IS FAR FROM ANY DRY CASK ROUTE.

4. DOES THE PROPOSED ACTIVITY INVOLVE A CHANGE TO THE PLANT WHERE THE CHANGE REQUIRES A SAFETY ASSESSMENT? THE ANSWER IS NO.

5. REMARKS:

DISCUSSION FOR SECTION 2.A, CHANGE TO THE FACILITY/ISFSI OPERATING LICENSE (OL), ENVIRONMENTAL PROTECTION PLAN (EPP) OR TECHNICAL SPECIFICATIONS (TS):

THE GROUND EXCAVATION FOR THE REPAIR OF THE FIREWATER LINE DOES NOT INVOLVE A CHANGE TO THE FACILITY/ISFSI OPERATING LICENSE (OL), ENVIRONMENTAL PROTECTION PLAN (EPP) OR TECHNICAL SPECIFICATION (TS). A REVIEW OF THE TECHNICAL SPECIFICATIONS DETERMINED THAT NO CHANGES TO TECHNICAL SPECIFICATIONS ARE REQUIRED TO IMPLEMENT THIS EXCAVATION. IMPLEMENTING ACTIVITIES ARE PROGRAMMED TO COMPLY FULLY WITH THE APPLICABLE REQUIREMENTS CONTAINED IN THE PLANT TECHNICAL SPECIFICATIONS.

THE LOCATION OF THE EXCAVATION IS OUTSIDE THE POWER BLOCK BUILDINGS BUT WITHIN THE STARTUP TRANSFORMER AREA. THE EXCAVATION IS NOT NEAR ANY OF THE QUALITY CLASS 'S' SOIL. THE FIRE WATER PIPING WILL BE EXPOSED IN THIS AREA FOR REPAIR. THE FIREWATER LINE HAS BEEN TAKEN OUT OF SERVICE AND IS BEING CONTROLLED BY PLANT PROCEDURES AND OPERATIONS. THE EXCAVATION WILL NOT CHANGE ANY OF THE REQUIREMENTS LISTED ABOVE.

SOIL IS LISTED IN THE Q-LIST, SECTIONS I.M.7, SLOPE EAST OF THE POWER BLOCK AND III.H.4.1.2, COMPONENTS FOR BURIED BYPASS PIPING NORTH OF THE INTAKE STRUCTURE. THE SOIL/SLOPE CLASSIFICATION IS QUALITY CLASS 'S', DESIGN CLASS II.

U-0

Notification: **50123904**

Type: **DN** Work Type: **EQPR AANS**

Description: **Fire water line break at SU Trans. 2-1.**

Order: **60009683**

Fire water line break at SU Trans. 2-1.

THIS WAS REVIEWED WITH ENVIRONMENTAL GROUP, TREVOR REBEL AND VERBALLY VERIFIED THAT THERE IS NO IMPACT TO THE ENVIRONMENT PLAN ON 12/17/08. SOIL SHALL BE CONTROLLED AT ALL TIMES.

DISCUSSION FOR SECTION 2.B, CHANGE TO THE QUALITY ASSURANCE PROGRAM:

THIS LBIE APPLICABILITY DETERMINATION IS ONLY FOR EXCAVATION. THE FIREWATER PIPING IN THIS AREA WILL BE REPAIRED AS MAINTENANCE AND THE REPAIR WILL BE CONTROLLED BY THE WORK ORDER.

SOIL IS COVERED IN THE Q-LIST IN SECTION I.M.7, SLOPE EAST OF THE POWER BLOCK AND III.H.4.1.2, COMPONENTS FOR BURIED BYPASS PIPING NORTH OF THE INTAKE STRUCTURE. THE SOIL/SLOPE CLASSIFICATION QUALITY CLASS IS 'S', DESIGN CLASS II. THE 'S' SOIL AT THE TOP OF THE SLOPE EAST OF THE INTAKE STRUCTURE SHOWN DWG 445674.

SINCE THE WORK WILL NOT IMPACT THE DESIGN FUNCTION OF SOIL IN THIS AREA AND THE SOIL WILL BE RETURN TO THE DESIGN CONFIGURATION, THERE WILL BE NO CHANGES TO THE DCPQ QA PROGRAM AS A RESULT OF THIS EXCAVATION.

DISCUSSION FOR SECTION 2.C, CHANGE TO THE SECURITY PLAN:

THIS GROUND EXCAVATION WAS REVIEWED AGAINST THE SECURITY PLANS PRE-SCREEN ITEMS IN APPENDIX 7.5 OF PROCEDURE TS3.ID2, LICENSING BASIS IMPACT EVALUATIONS. THE WORK INVOLVES EXCAVATION THAT IS NOTED IN APPENDIX 7.5.

THEREFORE, SECURITY HAS EVALUATED AND NOTED THAT THERE IS NO IMPACT TO THE SECURITY PLAN. THIS WAS REVIEWED WITH SECURITY GROUP, TIM GRAF AND VERBALLY VERIFIED THAT THERE IS NO IMPACT TO THE SECURITY PLAN ON 12/18/08.

THE EXCAVATION IS NOT WITHIN 10 FEET OF ANY SECURITY BARRIERS. LIGHTING WILL BE PROVIDED AT THE EXCAVATION.

DISCUSSION FOR SECTION 2.D, CHANGE TO THE EMERGENCY PLAN:

THIS WORK WAS REVIEWED AGAINST THE EMERGENCY PLAN PRE-SCREEN CRITERIA OF APPENDIX 7.4 OF PROCEDURE TS3.ID2, LICENSING BASIS IMPACT EVALUATIONS, AS WELL AS THE EMERGENCY PLAN ITSELF TO DETERMINE IS ANY POTENTIAL IMPACTS TO THE EMERGENCY PLAN WOULD RESULT FROM IMPLEMENTATION OF THIS EXCAVATION. THE EXCAVATION DOES NOT IMPACT ANY EVACUATION ROUTES FROM THE PLANT. NO REPAIR IMPLEMENTATION ACTIVITIES WERE IDENTIFIED WHICH COULD IMPACT ANY OF THE EMERGENCY PLAN ILLUSTRATIONS/FIGURES, ASSUMPTIONS, CONCLUSIONS, OR ANY OF THE APPENDIX 7.4 LISTED EMERGENCY PLAN PRE-SCREEN ITEMS.

U-0

Notification: **50123904**

Type: **DN** Work Type: **EQPR AANS**

Description: **Fire water line break at SU Trans. 2-1.**

Order: **60009683**

Fire water line break at SU Trans. 2-1.

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DISCUSSION FOR SECTION 2.E, CHANGE TO THE INSERVICE TESTING
(IST) PLAN:
EXCAVATION OF SOIL WILL NOT INVOLVE ANY INSERVICE INSPECTION.
THE WORK IS NOT SAFETY-RELATED AND NOT COVER BY ASME CODE.
THEREFORE THE (IST)

U-0

Notification: **50123904**

Type: **DN** Work Type: **EQPR AANS**

Description: **Fire water line break at SU Trans. 2-1.**

Order: **60009683**

Fire water line break at SU Trans. 2-1.

PROGRAM PLAN IS NOT AFFECTED.

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DISCUSSION FOR SECTION 2.F, CHANGE TO THE INSERVICE INSPECTION (ISI) PLAN:

EXCAVATION OF SOIL WILL NOT INVOLVE ANY INSERVICE INSPECTION. THE WORK IS NOT SAFETY-RELATED AND NOT COVER BY ASME CODE. THEREFORE THE (ISI) PROGRAM PLAN IS NOT AFFECTED.

.
DISCUSSION FOR SECTION 2.G, CHANGE TO THE FIRE PROTECTION PLAN:

THE EXCAVATION WILL NOT CREATE ANY PERMANENT NEW FIRE LOADS TO ANY AREAS. THE EXCAVATION DOES NOT IMPACT THE FIRE DETECTION, PROTECTION, MONITORING FUNCTIONS, RESPONSE TO A FIRE CALL, OR INGRESS/EGRESS PERSONNEL PATHWAYS IN RESPONSE TO A FIRE. THE FIREWATER PIPING TO IN THIS AREA WILL BE REPAIRED AND IS UNDER THE DIRECTION OF OPERATIONS FOR COMPLIANCE TO PLANT PROCEDURES.

.
DISCUSSION FOR SECTION 2.H, NONCOMPLIANCE WITH THE ENVIRONMENTAL PROTECTION PLAN OR MAY CREATE A SITUATION ADVERSE TO THE ENVIRONMENT:

THIS GROUND EXCAVATION WAS REVIEWED AGAINST THE ENVIRONMENTAL EVALUATION PRE-SCREEN CRITERIA OF APPENDIX 7.3 OF PROCEDURE TS3.ID2, LICENSING BASIS IMPACT EVALUATIONS. IN APPENDIX 7.3 ENVIRONMENTAL EVALUATION PRE-SCREEN CRITERIA EXCAVATION IS MENTIONED. THE SOIL SHALL BE PREVENTED FROM RUNNING OFF INTO THE ENVIRONMENT AND SHALL BE CONTROLLED AT ALL TIMES. THIS AREA HAS BEEN PREVIOUSLY DISTURBED.

THE ENVIRONMENTAL GROUP SHALL EVALUATE THE EXCAVATION FOR A SITUATION ADVERSE TO THE ENVIRONMENT.

THIS WAS REVIEWED WITH ENVIRONMENTAL GROUP, TREVOR REBEL AND VERBALLY VERIFIED THAT THERE IS NO IMPACT TO THE ENVIRONMENT PLAN ON 12/17/08.

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DISCUSSION FOR SECTION 2.I, CHANGE TO THE FSARU (INCLUDING DOCUMENTS INCORPORATED BY REFERENCE) EXCLUDED FROM THE REQUIREMENT TO PERFORM A 50.59/72.48 REVIEW:

SECTIONS 2.4.5.7 AND 9.2.7.2.4 WERE REVIEWED FOR SOIL AND TSUNAMI CONCERNS FOR THE ASW PIPING.

THERE ARE NO CHANGES TO THE FSARU THAT RESULT FROM IMPLEMENTING THIS EXCAVATION (INCLUDING DOCUMENTS INCORPORATED BY REFERENCE), WHICH ARE EXCLUDED FROM THE REQUIREMENT TO PERFORM A 50.59/72.48 REVIEW. SOIL AND

U-0

Notification: **50123904**

Type: **DN** Work Type: **EQPR AANS**

Description: **Fire water line break at SU Trans. 2-1.**

Order: **60009683**

Fire water line break at SU Trans. 2-1.

TSUNAMI ARE ONLY DISCUSSED GENERICALLY IN REFERENCE TO THE QUALITY CLASS 'S' SOIL. THE AREA TO BE EXCAVATED IS NOT NEAR THE QUALITY CLASS 'S' SOIL.

72.48 REVIEW IS NOT REQUIRED SINCE THE AREA OF THE EXCAVATION IS NOT ANY WHERE NEAR THE ROUTE THAT THE DRY CASK WILL TAKE.

DISCUSSION FOR SECTION 2.J, MAINTENANCE THAT RESTORES SSCS TO THEIR ORIGINAL OR NEWLY APPROVED DESIGNED CONDITION: THE EXCAVATION IS IN SUPPORT OF MAINTENANCE TO REPAIR A LEAKING FIREWATER VALVE. THE EXCAVATION WILL REMOVE THE SOIL AND THEN REPLACE THE SOIL IN THE SAME CONFIGURATION TO RETURN THE SOIL TO ITS DESIGN CONFIGURATION.

DISCUSSION FOR SECTION 2.K, TEMPORARY ALTERATION SUPPORTING MAINTENANCE THAT WILL BE IN EFFECT DURING AT POWER OPERATIONS FOR 90 DAYS OR LESS. THIS LEAK REPAIR IS PERMANENT REPAIR OF PIPING.

DISCUSSION FOR SECTION 2.L, MANAGERIAL OR ADMINISTRATIVE PROCEDURE/PROCESS CONTROLLED UNDER 10 CFR 50, APP. B: THIS EXCAVATION DOES NOT INVOLVE A CHANGE TO MANAGERIAL OR ADMINISTRATIVE PROCEDURES/PROCESS CONTROLLED UNDER 10 CFR 50, APPENDIX B. THE WORK WILL BE DONE IN ACCORDANCE WITH EXISTING PLANT PROCEDURES.

DISCUSSION FOR SECTION 2.M, REGULATORY COMMITMENT NOT COVERED BY ANOTHER REGULATORY BASED CHANGE PROCESS: IN PREPARING FOR EXCAVATION, THE PROCEDURE COMMITMENT DATABASE (PCD) WAS REVIEWED, VIA THE PIMS PROGRAM. NO ITEM WAS DISCOVERED WHERE THE MODIFICATIONS PERFORMED FOR EXCAVATION OR ITS IMPLEMENTING ACTIVITIES WOULD BE IN VARIANCE WITH DCPD REGULATORY COMMITMENTS AND OBLIGATIONS.

DISCUSSION FOR SECTION 2.N, AN IMPACT TO OTHER SPECIFIC PROGRAMS (E.G. THE ODCM) THAT ARE CONTROLLED BY REGULATIONS, THE OL OR TS: THE SCOPE OF THE EXCAVATION ACTIVITIES WAS REVIEWED FOR APPLICABILITY TO THE REGULATORY PROCESS DESCRIBED IN THE USA 50.59 RESOURCE MANUAL, SECTION 4.2.1 (OTHER REGULATORY REQUIREMENTS AND CONTROLS). THE WORK RELATED TO THE EXCAVATION WAS REVIEWED TO SECTION 4.2.1 AND THE ITEMS DESCRIBED DO NOT COVER THE WORK. THE WORK DOES NOT IMPACT OTHER PROGRAMS.

APPLICABILITY DETERMINATION CONCLUSION:

U-0

Notification: **50123904**

Type: **DN** Work Type: **EQPR AANS**

Description: **Fire water line break at SU Trans. 2-1.**

Order: **60009683**

Fire water line break at SU Trans. 2-1.

A 10 CFR 50.59 LBIE SCREEN IS NOT REQUIRED BECAUSE ALL ASPECTS OF THE ACTIVITY ARE CONTROLLED BY ONE OR MORE OF THE PROCESSES LISTED ABOVE (I.E. THE EXCAVATION IS PART OF A MAINTENANCE TO RETURN THE SSC TO ITS ORIGINAL DESIGN CONDITION).

A 10 CFR 72.48 IS NOT REQUIRED SINCE THE WORK IS NOT NEAR ANY DRY CASK ROUTES.

DISCUSSION FOR SECTION 4, DOES THE PROPOSED ACTIVITY INVOLVE A CHANGE TO THE PLANT WHERE THE CHANGE REQUIRES A SAFETY ASSESSMENT:

BASED ON A REVIEW OF THE SAFETY ASSESSMENT CRITERIA OF APPENDIX 7.6 OF PROCEDURE TS3.ID2, LICENSING BASIS IMPACT EVALUATIONS, THE REQUIREMENT FOR A SEPARATELY PREFORMED SAFETY ASSESSMENT DOES NOT APPLY TO THE EXCAVATION SINCE THE EXCAVATION IS NOT NEAR ANY QUALITY CLASS 'S' SOIL. ENGINEERING HAS EVALUATED THE EXISTING FOUNDATIONS AND UNDERGROUND UTILITIES FOR THE NEED TO SUPPORT AND/OR BRACE. SEE TASK 6.

Task # 4

Status: **TSCO**

Task Completed

Code Group: **DO-OPER**

Operability Evaluation

Task Code: **INOP**

SSC is Inoperable

Responsible: **User Responsible**

Work Ctr: **MCC-FE04**

Created On: **17 Dec 08**

By: **DRS5** Daniel R. Stermer

Planned Start: **17 Dec 08**

Planned Finish: **17 Dec 08**

Completed On: **17 Dec 08 15:29**

By: **DRS5** Daniel R. Stermer

U-0

Notification: **50123904** Type: **DN** Work Type: **EQPR AANS**

Description: **Fire water line break at SU Trans. 2-1.**

Order: **60009683** **Fire water line break at SU Trans. 2-1.**

Task # 5 Extent of the condition

Status: TSCO	Task Completed
Code Group: DG-EVAL	DC General Evaluations
Task Code: EVAL	Evaluate the following (See Long Text)
Responsible: User Responsible	SXC8 Chai
Work Ctr: EIF-007	Green Erban - ELG1
Created On: 17 Dec 08	By: JES2 Joy E. Skaggs
Planned Start: 23 Dec 08	Planned Finish: 23 Dec 08
Completed On: 23 Dec 08 13:51	By: SXC8 Chai

12/17/2008 22:10:44 Joy E. Skaggs (JES2)
Perform an extent of condition review for similar fire water piping.
12/18/2008 13:03:11 Daniel E. Hromyak (DEHB) Phone 805/545-4256
Ref. 50034095 for degraded condition found at similar location at deluge valve FP-2-FCV-213. FP maintenance strategy for buried pipe is run to failure based on recent studies documented in the buried pipe life cycle management (LCM) report (filenet path eng/syseng/releng/lcm). ATS corrosion specialist recommends the addition of cathodic protection to yard loop metal risers (ref. 2007 ATS fire water system corrosion protection and monitoring annual report). FP SE to develop PHIP to replace risers to yard loop deluge stations with addition of cathodic protection considering the ATS recommendation, LCM corrosion projections, and recent exterior FP corrosion problems both underground and above ground. This is a long term aging issue.
12/23/2008 13:46:50 Chai Chingburanakit (SXC8)
Normally, underground/buried pipes sustain damage due to heavy loads being transported over the area, differential settlement of soil adjacent to the piping, seismic events, age of the pipe (corrosion), water hammer, and extreme temperature change (cold). However, the damaged location of this piping is on the vertical section of the pipe. The break is approximately 2" diameter hole. This portion of the pipe is located in the area where no heavy load was being transported over the pipe. From the configuration and the location of the break it is unlikely to have been caused by water hammer (the hole close to the mid span of the straight pipe. Normally pipe ruptures due to water hammer most likely happen where the pipe changes direction or at the end connections). It was not cause by seismic event or extreme temperature change. There is minor rust on outside surface of the pipe and not around the break area. The wall around the hole seems to have uniform nominal thickness. Engineering concluded that the possible cause for the pipe to break in the existing location is either a defect on the piping during fabrication and or was damaged or weakened during construction or installation activities. Vertical cast iron pipe break in such manner is very unusual through out the history of the plant. This is just to be an isolated case. Therefore, the extended condition is confined to this location.

U-0

Notification: **50123904**Type: **DN** Work Type: **EQPR AANS**Description: **Fire water line break at SU Trans. 2-1.**Order: **60009683****Fire water line break at SU Trans. 2-1.****Task # 6 Supporting of unground**Status: **TSCO** Task CompletedCode Group: **DE-ENG-T** Diablo Engineering TasksTask Code: **0065** Engineering EvaluationResponsible: **User Responsible SXC8** ChaiWork Ctr: **EIF-007**Created On: **18 Dec 08** By: **CFK1** Carl F. KniftonPlanned Start: **18 Dec 08** Planned Finish: **18 Dec 08**Completed On: **18 Dec 08 13:00** By: **SXC8** Chai

12/18/2008 12:39:49 Carl F. Knifton (CFK1) Phone 805/545-6760

Please, evaluate the need of supporting/bracing of plant components in the area of the excavation.

Conduits have been placed over the top of the pipe and the excavation will expose the conduit/duct bank. Will this need to be supported? Provide details for the supports.

A bus duct support is within the excavation area also. Does this need to be braced?

Provide any other support information as needed.

12/18/2008 12:50:03 Chai Chingburanakit (SXC8)

Efin civil engineering's response: A walkdown was performed by SXC8 of Efin and the carpenter foremen to determine how to temporarily support the bus duct and the deluge piping via scaffolding as a secondary measure.

Engineering will provide all necessary details to support the bus duct and deluge piping to the carpenters as required.

Task # 7 Provide coating & asbestos removal supt.Status: **TSCO** Task CompletedCode Group: **DG-RSTR** RestraintsTask Code: **PLNC** Construction PlanningResponsible: **User Responsible MSCE**Work Ctr: **MCD-INS** Foreman - Isulation - Jeff MayseyCreated On: **18 Dec 08** By: **GTG5** George T. GerczakPlanned Start: **22 Dec 08** Planned Finish: **24 Dec 08**Completed On: **22 Dec 08 12:21** By: **MSCE**

12/18/2008 14:41:21 George T. Gerczak (GTG5) Phone 805/545-6426

Please provide coatings support for any modifications to the underground

U-0

Notification: **50123904** Type: **DN** Work Type: **EQPR AANS**

Description: **Fire water line break at SU Trans. 2-1.**

Order: **60009683** **Fire water line break at SU Trans. 2-1.**

fire protection system as needed. Reference drawing 438145 related to any replacement of existing material with ductile iron. Any replacement of existing ACP (asbestos-cement pipe) would also require support.

12/22/2008 12:16:00 Michael S. Crigler (MSCE) Phone 805/545-3881

See order 60009806 providing coating support for this project. note; There is no provision for asbestos since the replacement pipe riser is the only work intended. Mike Crigler

Task # 8 ITR for LBIE AD

Status: **TSCO** Task Completed

Code Group: **DG-EVAL** DC General Evaluations

Task Code: **EVAL** Evaluate the following (See Long Text)

Responsible: **User Responsible SXC8** Chai

Work Ctr: **MCD-INS**

Created On: **18 Dec 08** By: **CFK1** Carl F. Knifton

Planned Start: **18 Dec 08** Planned Finish: **18 Dec 08**

Completed On: **18 Dec 08 15:59** By: **SXC8** Chai

12/18/2008 14:55:19 Carl F. Knifton (CFK1) Phone 805/545-6760

Please, perform the ITR for the LBIE AD for the excavation.

12/18/2008 15:59:22 Chai Chingburanakit (SXC8)

I HAVE REVIEWED THE LBIE APPLICABILITY DETERMINATION AND CONCUR WITH THE CONCLUSION. ALL QUESTIONS IN THE LBIE APPLICABLE DETERMINATION HAVE BEEN ANSWERED. ALL THE APPLICABLE COORDINATION HAVE BEEN VERBALLY COORDINATED.

U-0

Notification: **50123904** Type: **DN** Work Type: **EQPR AANS**Description: **Fire water line break at SU Trans. 2-1.**Order: **60009683** **Fire water line break at SU Trans. 2-1.****Task # 9** MRFF = YesStatus: **TSCO** Task CompletedCode Group: **DE-MRULE** DC Maintenance RuleTask Code: **RFFY** Maint Rule Funct. Failure: YESResponsible: **User Responsible**Work Ctr: **EADM** Maintenance Rule Eval - TaskCreated On: **18 Dec 08** By: **JES2** Joy E. SkaggsPlanned Start: **18 Dec 08** Planned Finish: **17 Jan 09**Completed On: **19 Dec 08 16:45** By: **DEHB** Daniel E. Hromyak **805/545-4256**12/19/2008 16:44:55 Daniel E. Hromyak (DEHB) Phone 805/545-4256
Loss of pressure boundary occurred rendering deluge to 3 transformers inop.**Task # 10**Status: **TSCO** Task CompletedCode Group: **DG-EVAL** DC General EvaluationsTask Code: **NRT** NRT Review Item/RequestResponsible: **User Responsible**Work Ctr: **NP-NRT** NRT CommitteeCreated On: **19 Dec 08** By: **DEHB** Daniel E. HromyakPlanned Start: **22 Dec 08** Planned Finish: **22 Dec 08**Completed On: **22 Dec 08 15:26** By: **CNO2** Chris N. Over **805/545-4813**12/22/2008 15:26:25 Chris N. Over (CNO2) Phone 805/545-4813
Determined to be SL-2 by the 12/22/08 NRT.**Task # 11** See DA for TaskStatus: **TSCO** Task CompletedCode Group: **DE-MRULE** DC Maintenance RuleTask Code: **RFFN** Maint Rule Funct. Failure: NOResponsible: **User Responsible**Work Ctr: **EMB-004** Hromyak Dan - DEHBCreated On: **19 Dec 08** By: **DEHB** Daniel E. HromyakPlanned Start: **19 Dec 08** Planned Finish: **17 Feb 09**Completed On: **22 Dec 08 15:45** By: **BJA1** Beverly J. Jones **805/545-4044**

U-0

Notification: **50123904**Type: **DN** Work Type: **EQPR AANS**Description: **Fire water line break at SU Trans. 2-1.**Order: **60009683****Fire water line break at SU Trans. 2-1.****Task # 12** eng eval brace & demoStatus: **TSCO**

Task Completed

Code Group: **DG-EVAL**

DC General Evaluations

Task Code: **EVAL**

Evaluate the following (See Long Text)

Responsible: **User Responsible**Work Ctr: **EMB-004**Created On: **20 Dec 08**By: **DEHB** Daniel E. HromyakPlanned Start: **26 Feb 09**Planned Finish: **26 Feb 09**Completed On: **26 Feb 09 03:56**By: **GTG5** George T. Gerczak **805/545-6426**

12/20/2008 11:29:01 Daniel E. Hromyak (DEHB) Phone 805/545-4256
Engineering response to request to specify temporary support requirements in task 7 is provided below as well as precautions for demo work. This evaluation supports demo order 60009709.

1) Rig adjacent bus duct support with horizontal brace. This is specified as a prudent measure due to the close proximity of work and unknown impact of water on surface.

CAUTION: Deluge valve assembly has a small bore pilot pipe that runs through adjacent wall. Ensure no movement occurs to prevent damage to this pipe.

2) Rig deluge valve assembly with horizontal and vertical bracing.

NOTE 1: For excavation purposes, the bus duct support is 4'-0" in depth; spt. base is 3' below surface, 3'-0" wide (ref. 438027 Civil foundation plan & 438028 foundation detail).

NOTE 2: Support for deluge drain & pilot line attached to curb has a broken weld. Ensure this is repaired during restoration.

3) Regarding demo work, enter from west after curb removal, avoiding north entry where conduits drop. Curb may be removed as noted in step 12 of order op 60009709-10. It provides no structural function and is not part of bus duct spt noted above. Minor jack hammering of curb concrete is considered part step 13 which states that excavation shall be overseen by a competent person.

U-0

Notification: **50123904** Type: **DN** Work Type: **EQPR AANS**

Description: **Fire water line break at SU Trans. 2-1.**

Order: **60009683** **Fire water line break at SU Trans. 2-1.**

Task # 13 SUT21 fire pipe t-mod

Status: TSCO	Task Completed
Code Group: DE-ENG-T	Diablo Engineering Tasks
Task Code: 0120	Mod Request Authorization Support
Responsible: User Responsible	ELG1 Erban L. Green 805/545-6524
Work Ctr: EIF-007	Green Erban - ELG1
Created On: 22 Dec 08	By: DEHB Daniel E. Hromyak
Planned Start: 24 Dec 08	Planned Finish: 24 Dec 08
Completed On: 24 Dec 08 08:14	By: ELG1 Erban L. Green 805/545-6524

12/22/2008 11:29:25 Daniel E. Hromyak (DEHB) Phone 805/545-4256
Provide T-mod to permit return to service of deluge systems (SUT21, standby SUT11 and Standby SUT12). Permanent fix per existing design is on hold pending materials procurement.

T-mod scope:

Replace 4" cast iron pipe located on civil buried pipe riser off yard loop run G2-8 (438068, detail 18). Pipe is 4' in length per field measurement. Bottom is flanged to 8x4 reducer; top is flanged to deluge assembly pipe. Ref. note 2c on 438145 for new pipe spool and fitting requirements.

Pipe is on supply line to FP-2-FCV-209, deluge valve to SUT21.

Other design drawings:

- 1) Pipe schematic 102018, sheet 2 (C-21) for FCV-209 (run G2)
- 2) Mech pilot line & details 663086, sheet 71 (pipe spec. H1 per note 4)
- 3) 663086-221 & -222, SUT21 deluge pipe and supports.

12/24/2008 08:08:39 Erban L. Green (ELG1) Phone 805/545-6524
Refer to TME 60009807 for the engineering evaluation. Refer to 60009808 for the TMOD install order and 60009809 for the TMOD remove order. 60009807 was approved and completed 12/23/08.

U-0

Notification: **50123904** Type: **DN** Work Type: **EQPR AANS**Description: **Fire water line break at SU Trans. 2-1.**Order: **60009683** **Fire water line break at SU Trans. 2-1.****Task # 14** upgrade d727186 material

Status: TSCO	Task Completed
Code Group: DG-EVAL	DC General Evaluations
Task Code: EVAL	Evaluate the following (See Long Text)
Responsible: User Responsible	HRM1 Hamid R. Mirzaei 805/545-4552
Work Ctr: SMT	Procurement- Tech & Quality
Created On: 22 Dec 08	By: ELG1 Erban L. Green
Planned Start: 15 Apr 09	Planned Finish: 15 Apr 09
Completed On: 15 Apr 09 15:12	By: HRM1 Hamid R. Mirzaei 805/545-4552

12/22/2008 14:44:28 Erban L. Green (ELG1) Phone 805/545-6524

.
Evaluate the following material to be used in the fire protection system in support of a TMOD being evaluated via 60009807.
.

.
The fire protection system is quality class G. This material is quality class N. Provide the necessary evaluation to enable the use of this material in the temporary repair.
.

.
12/22/2008 15:47:00 Hamid R. Mirzaei (HRM1) Phone 805/545-4552
QM notification 30000811 forwarded to QC and warehouse.
04/15/2009 15:05:35 Hamid R. Mirzaei (HRM1) Phone 805/545-4552
work order is complete

Task # 15 000050135251

Status: TSCO	Task Completed
Code Group: DG-CR	Condition Report
Task Code: OR	Organizational
Responsible: User Responsible	
Work Ctr: SMT	
Created On: 22 Dec 08	By: BJA1 Beverly J. Jones
Planned Start: 22 Dec 08	Planned Finish: 22 Dec 08
Completed On: 22 Dec 08 15:43	By: BJA1 Beverly J. Jones 805/545-4044

U-0

Notification: **50123904**Type: **DN** Work Type: **EQPR AANS**Description: **Fire water line break at SU Trans. 2-1.**Order: **60009683****Fire water line break at SU Trans. 2-1.****Task # 16 Material Spec**

Status: TSCO	Task Completed
Code Group: DG-EVAL	DC General Evaluations
Task Code: EVAL	Evaluate the following (See Long Text)
Responsible: User Responsible	ELG1 Erban L. Green 805/545-6524
Work Ctr: EIF-007	Green Erban - ELG1
Created On: 23 Dec 08	By: GTG5 George T. Gerczak
Planned Start: 23 Dec 08	Planned Finish: 24 Dec 08
Completed On: 24 Dec 08 10:01	By: ELG1 Erban L. Green 805/545-6524

12/23/2008 15:26:25 George T. Gerczak (GTG5) Phone 805/545-6426

Deluge Piping at the 2-1 SUT dwg 663086 sht 222 identifies the above ground piping as pipe spec H1. The spec details flanges 6" and under to be galvanized per ASTM A123. A flange with stock code D75-0630 is galvanized per A153. Is this acceptable. Please advise.

12/24/2008 09:57:19 Erban L. Green (ELG1) Phone 805/545-6524

S/C D75-0630 is a A105 carbon steel forging. It is galvanized in accordance with ASTM A153 instead of ASTM A123. The differences are in the amount of galvanizing that is applied to the specific part. This would have no bearing on the pressure boundary capability of the part at the beginning. The differences in the two methods would affect the in service life of the part if no attention were given it by Maintenance.

Two different parameters are important in the galvanization specifications: coating thickness and weight or mass of zinc. The following table specifies the given values for these two parameters from A 123 and A 153.

	Thickness (mils)	Weight(oz/sq foot)
A123	3.0	1.7
A153 Class B1	3.4	2
A 153 Class B3	2.2	1.3

Inputs to this chart are per A 123 the fitting is Grade 75 for piping and tubing greater than .25 " thick. The B1 class is worst case for A 153 and B3 is the best case. S/C D75-0630 does not indicate which class the flange fits into. From the data on the chart, the A123 galvanizing would be midway between B1 and B3. This will only affect the useful service life of the flange in the outside environment.

If the category of Structural Shapes and Plate is used from A123 the thickness is 3.9 mils and the weight is 2.3 oz / sq foot. These numbers are superior to the A 153 numbers. Therefore the galvanizing per A 153

U-0

Notification: **50123904** Type: **DN** Work Type: **EQPR AANS**

Description: **Fire water line break at SU Trans. 2-1.**

Order: **60009683** **Fire water line break at SU Trans. 2-1.**

is not as good as that provided by A 123. However, this fitting will remain painted and will be protected from the environment and will give satisfactory service in this fire water piping.

Conclusion: The use of S/C D750630 is acceptable for use in piping run G2.

Task # 17 TMOD Monitoring Plan

Status: TSCO	Task Completed
Code Group: DG-EVAL	DC General Evaluations
Task Code: EVAL	Evaluate the following (See Long Text)
Responsible: User Responsible	DEHB Daniel E. Hromyak 805/545-4256
Work Ctr: EMB-004	Hromyak Dan - DEHB
Created On: 24 Dec 08	By: GTG5 George T. Gerczak
Planned Start: 24 Dec 08	Planned Finish: 24 Dec 08
Completed On: 24 Dec 08 11:19	By: DEHB Daniel E. Hromyak 805/545-4256

12/24/2008 10:18:13 George T. Gerczak (GTG5) Phone 805/545-6426

Please provide monitoring plan for TMOD for fire protection piping at SUT 2-1. Reference orders 60009807, 60009808 & 60006809.

12/24/2008 10:24:25 Daniel E. Hromyak (DEHB) Phone 805/545-4256
FP SE will walkdown pipe (1/wk frequency).

60009683-200 provides permanent fix by replacing damaged piping (underground spool and above ground spool pieces) per design requirements. Plan is for t-mod to be installed <7 days as this work is scheduled as emergent.

Task # 18 Perform material analysis

Status: TSCO	Task Completed
Code Group: DG-EVAL	DC General Evaluations
Task Code: EVAL	Evaluate the following (See Long Text)
Responsible: User Responsible	CTB6 Christopher T. 805/545-4581
Work Ctr: ETI	Inservice Inspection
Created On: 05 Jan 09	By: DEHB Daniel E. Hromyak
Planned Start: 05 Jan 09	Planned Finish: 28 Feb 09
Completed On: 02 Feb 09 11:44	By: CTB6 Christopher T. 805/545-4581

U-0

Notification: **50123904**

Type: **DN** Work Type: **EQPR AANS**

Description: **Fire water line break at SU Trans. 2-1.**

Order: **60009683**

Fire water line break at SU Trans. 2-1.

01/05/2009 14:20:46 Daniel E. Hromyak (DEHB) Phone 805/545-4256
Please perform material analysis of failed spool piece. Pipe is shown on 102018-2 (upstream of FP-1-FCV-209), pipe run G2 on 438145, and 6" cast iron pipe spool on detail 18 of civil drawing 438068.

01/05/2009 15:31:58 Daniel E. Hromyak (DEHB) Phone 805/545-4256
Also, perform failure analysis. Correction: pipe is 4", not 6" dia.

02/02/2009 10:52:21 Christopher T. Beard (CTB6) Phone 805/545-4581

The below evaluation documents the-as received condition of the failed firewater pipe and has determined the most likely cause of the failure as being graphitization of the cast iron pipe. Pictures are attached to this task as needed.

ISI received the failed fire pipe spool piece for examination. The piece consists of a 4 foot section of 4" diameter cast iron pipe threaded into 2" shouldered flanges on both ends. (Task-18, Attachment-1)

The pipe is lined with mortar/cement on its interior. This is common for cast-iron pipes designed to carry water. The ID of the pipe appeared in good condition with the cement liner showing no indications of chipping or missing material.

The outside diameter of the pipe was covered in a black coating. The above-grade portion of the pipe was also coated in the typical red-paint of DCPP fire piping. This black coating on the underground portion of the pipe had several holidays accompanied by general corrosion and nodule formations. With the exception of the failure site, no significant pitting or through-wall corrosion was observed.

The failure site consists of an approximately 2.75" by 2.75" circular through-wall hole. The hole is larger in diameter on the outer surface of the pipe and tapers slightly as it nears the cement liner. The hole is located approximately 1 foot below the paint line indicating grade level. (Task-18, Attachment-2)

The surface of the pipe around the failure site looked fairly uniform with no evidence of deformation, smeared metal, gouging, etc.

The pipe was spark tested and had a spark characteristic of cast iron. A small magnet is strongly attracted to the pipe. A piece of the pipe wall near the opening was removed. It was brittle and broke easily. It was noted that the exposed interior of the pipe wall around the hole did

not attract a small magnet. This location also did not appear to develop significant oxide as other exposed portions of the pipe. The use of a small magnet also indicated other regions near the failure site

U-0

Notification: **50123904**

Type: **DN** Work Type: **EQPR AANS**

Description: **Fire water line break at SU Trans. 2-1.**

Order: **60009683**

Fire water line break at SU Trans. 2-1.

which were not as attracted to the magnet as the bulk of the cast iron.

The pipe was sectioned to expose the wall cross section of the areas with limited magnetic attraction. These cross sections revealed areas where the cast iron pipe wall had been reduced to a brittle matrix (Task-18, Attachment-3). This is typical of selective leaching or graphitic corrosion in gray cast iron (Ref: -1). In graphitic corrosion, the iron, which is anodic to graphite, is selectively corroded away leaving behind a brittle structure composed primarily of graphite. This brittle structure does not retain any of the strength or ductility found in the original pipe wall. It appears that this de-alloyed region became large enough to consume the entire thickness of the pipe wall. At this point, only the cement liner and brittle graphite were left to retain the internal pressure of the fire water. Either through a slow leak which grew to wash out the brittle wall or an impact event (pressure pulse), this area failed catastrophically resulting in a large through-wall hole.

In conclusion, the most likely cause for the observed failure is graphitization of the cast iron pipe, which lead to a catastrophic failure. Long term plans for providing cathodic protection for this section of pipe and others in similar applications is prudent in preventing or reducing the occurrence of the this problem.

Evaluation Performed by: Chad C. Sorensen and Chris T. Beard

References:

1. "Principles and Prevention of Corrosion", 2nd Edition, Page-324.