

WOLF CREEK NUCLEAR GENERATING STATION
CONSTRUCTION SELF ASSESSMENT CORRECTIVE ACTION EVALUATION

PERFORMED BY DELIAN CORPORATION

FOR

KANSAS GAS & ELECTRIC

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I. INTRODUCTION

This report summarizes the process and results of the corrective action evaluation program that was performed to address concerns defined in the Construction Self Assessment (CSA) of Wolf Creek Nuclear Generating Station. The following sections of this report provide a brief discussion of the background leading up to the corrective action program (Section I-A); discuss the scope of the corrective action performed by Delian (Section I-B); discuss the results of the corrective action evaluation program (Section-II); and review the conclusions reached in the original CSA report in light of the results obtained from the corrective action program (Section III).

A. Background

The CSA was performed for Kansas Gas and Electric Company (KG&E) by Delian Corporation during the period May through August, 1984. The objective of the CSA was to independently evaluate the adequacy of construction at Wolf Creek through installed hardware inspections and quality program reviews. The CSA results were documented in an August 28, 1984 report (See Reference 1). Table 1 identifies the 156 specific and 15 potential generic concerns that resulted from the CSA inspection. Subsequent to completing the CSA, KG&E requested Delian to evaluate the technical and programmatic adequacy of the corrective actions being performed by KG&E and its contractors in response to the findings of the CSA. Delian performed these activities for KG&E during the period September 3 through December 6, 1984. The subsequent sections of this report discuss the corrective action evaluation program and the results obtained therefrom.

B. Scope of Corrective Action Evaluation

The basic objective of the corrective action evaluation was to assure that the corrective actions performed in response to the CSA findings fully addressed the technical and programmatic implications of the findings. To accomplish this objective the following was done:

- o The original 156 specific concerns which were written up during the CSA were treated individually with a corrective action being performed

and documented for each concern by KG&E and its contractors. All corrective actions were carried out under the auspices of the existing Wolf Creek site quality program. Delian performed a separate tracking and technical review function to verify that the corrective action appropriately addressed the original CSA concern and was performed in accordance with appropriate Wolf Creek QA program requirements.

- o Action plans were jointly developed by Delian and KG&E QA to address 15 potential generic concerns. The generic concerns were identified based on the conclusions of the CSA report regarding possible generic problems and were largely extensions and/or combinations of certain of the specific concerns. In addition to preparing action plans for the potential generic concerns, action plans were also prepared for ten of the more significant specific concerns (see Table 1).
- o The tracking and technical review function performed by Delian was controlled by the procedure entitled, "Description of CSA Corrective Action Process." This procedure was prepared by Delian and approved by KG&E-QA. Revision 2 of this procedure dated November 21, 1984 and approved by KG&E letter KQWLO 84-138 of December 4, 1984 was controlling at the completion of the project and is included as Attachment A to this report. This procedure described the steps followed by Delian in processing and tracking closure of CSA concerns.
- o The specific activities performed by Delian as part of the corrective action evaluation program are highlighted below:
 - + For all of the generic concerns and for ten of the more significant specific concerns, prepare action plans (jointly with KG&E-QA) which defined the scope of the corrective action. Typically, these action plans were oriented toward ascertaining the extent of a problem (i.e., extent within a given discipline, common to several disciplines, or programmatic).

- + Evaluate proposed corrective action and supporting documentation (including responses to those concerns for which action plans were prepared) to assure that the corrective action adequately addressed the CSA concern and that it was performed in accordance with program requirements.
 - + Document acceptance or rejection of proposed corrective action and, where necessary, inform responsible organization of need for further action and/or information.
 - + Upon acceptance of a proposed corrective action, perform document review and if appropriate perform a physical inspection to verify satisfactory implementation of the corrective action.
 - + Document verification or rejection of the corrective action implementation and, where necessary, inform the responsible organization of need for further action.
- o Unlike the CSA which was an independent, third party effort, the corrective action evaluation was a joint effort between Delian and KG&E QA. KG&E's involvement included:
- + Determine appropriate corrective actions for the generic concerns
 - + Approve the Delian procedure for the corrective action evaluation and perform a surveillance to verify Delian compliance with the procedure.
 - + Review all corrective action packages completed by Delian to ensure all required corrective actions have been performed, verified, and properly documented.
 - + Perform final verification of those concerns which were closed out "in-process" by Delian (see KG&E letter KQWLO 84-138 of December 4, 1984 in Attachment A).

- + Provide for retention (as QA records) of all applicable documentation related to the CSA inspections and corrective action evaluation.
- o As noted in the procedure, "Description of CSA Corrective Action Process," Delian was the final authority on the requirements for corrective actions and the type of verification. Two methods of verification were used for most of the corrective actions: (1) physical review in which the corrected hardware was actually inspected; and (2) complete document review in which all relevant documents were reviewed against the quality program requirements. Physical review included a review of documentation against the quality program requirements. For both these methods, the verification was not performed until the corrective action was complete. Physical review was used where feasible except in a few cases which are noted in Table 1. Complete document review was used for documentation deficiencies, non-Q hardware problems, and in a few cases for hardware problems where the item was not accessible for inspection.

Near the end of the corrective action effort, it became apparent that a number of the corrective actions would require additional time to complete. Accordingly, KG&E directed Delian to close out those corrective action packages by describing what actions had been verified to date and what additional verifications shall be performed by KG&E. Thus a third verification method, "in-process" document review, was used for these concerns for which corrective action had not been fully completed. Table 1 lists the verification method for each concern.

As part of the 24 in-process verifications, Delian reviewed the intended corrective action and the documentation in-place as of December 6, 1984. Also, Delian specified the steps which it considered necessary to complete the verification of the corrective action. Table 2 lists these required steps.

II. CORRECTIVE ACTION RESULTS

A. Format of Results

As noted above, there were 171* concerns for which corrective action was performed. A separate file was maintained for each of these concerns including the original CSA finding, an action plan (where appropriate) to guide the corrective action activity, corrective action documents provided by the responsible organization, and a closure form for tracking the status of the corrective action and for documenting verification of the corrective action and final closure of the concern. These 171 files together with this letter report document the results of the corrective action effort.

B. Discussion of Results

As is evident from Table 1, there were 90 concerns verified through physical inspections (which included a document review), 81 verified through complete document review, and 24 verified through in-process document review. (The total adds 195 since a number of the concerns had multiple parts). Of the 81 verified by complete document review, there were four safety-related items which could have been physically inspected (63, 76H, 125 and 144). As noted in the Table 1 footnote these were verified by complete document review on the basis of their minor significance. About 50 nonconformance reports were issued during the process of resolution of the 171 CSA findings as well as several corrective action reports and quality program violations.

Generally, a physical inspection verification included a document review. The work documents and inspection documents are included in the file for each concern. The nature of the complete document review varied depending on the concern. Normally the documents reviewed consisted of those necessary to show that the quality program requirements had, in fact, been met or to show the

* Table 1 numbers the concerns only to 170. However, there are two separate concerns with the number "76", 76H and 76P. Thus, the total is 171.

nature of the deficiency when one existed. In a few cases (such as concerns 35, 101, 113, 131 and 149) the field work has been completed and inspected by Delian but final closure of the documentation had not been performed at the time of the inspection. These concerns were footnoted on Table 1.

Out of the 171 concerns, there were 10 rejections. All 10 of the rejected concerns were either minor hardware problems or minor documentation problems. All of these rejections were subsequently reverified and accepted by Delian. However, due to the delay associated with the rejection, six of the 10 were closed based on in-process document review. Table 3 lists these 10 concerns and the basis for rejection.

III. CONCLUSIONS

The purpose of this section is to discuss the original CSA report (Reference 1) conclusions in light of the additional information and insights obtained during the correction action evaluation. Only those original CSA conclusions which had potential generic or programmatic implications are discussed in detail here. Regarding the 156 specific concerns, it is concluded that KG&E has resolved or is adequately addressing, all of the original findings. At the time of this report, resolution was fully complete on 136 of the 156 specific concerns. A number of these 136 were found upon investigation to not be deficient conditions and thus do not require corrective action. As noted in Section II above, the 20 specific concerns for which corrective action was only partially complete and which were closed in-process by Delian are being formally resolved by KG&E as part of its QA program. Details regarding resolution of the specific concerns may be obtained from the appropriate files.

The original CSA conclusions which had potential generic or programmatic implications were of two types: (1) conclusions which strongly implied the existence of a generic problem and the action necessary to address it and (2) conclusions which were less explicit in that they were in the form of questions based on limited data, or were questions regarding whether a finding in one discipline extended into other disciplines. All of the first type of conclusion as well as those of the second type which did turn out to be problems, have been or are being adequately resolved by the corrective action program. The remaining conclusions of the second type were demonstrated to be non problems which, therefore, required no corrective action.

The conclusions which had potential generic and programmatic implications are discussed below. Table 4 summarizes these conclusions and associated resolutions along with the page numbers in the reference (1) report which discussed the conclusions and the related concern numbers which resulted from the original CSA inspections.

Instrument Tubing Cleanliness and Damage

The original CSA conclusion derived from a number of instances in the field in

which tubing was damaged and had foreign materials and residue on the surface. Since the tubing is damage prone, particularly in high thoroughfare areas, there appeared to be a need for reinspection and correction of any damage during the period leading up to and immediately prior to operation. The corrective action investigation confirmed both the existence of the problem identified during the CSA inspection as well as management awareness of the problem and the existence of inspection and testing programs which provide reasonable assurance that such damage will be identified and corrected. Thus, it is concluded that while instrument tube damage has been occurring, sufficient programs are in place to correct the damage and no action beyond that already being performed is required.

Improper Implementation of Vendor Instructions

CSA had concluded that there were numerous deficiencies with fastener hardware used to perform on-site assembly of sections of electrical switchgear and motor control centers. The problem apparently stemmed from a failure to fully implement vendor instructions. A complete reinspection was conducted of all electrical equipment shipped in sections and assembled by DIC on-site, and all deficiencies were corrected. An investigation of mechanical equipment was conducted as part of the corrective action evaluation to assure that vendor instructions were adequately specified in the special instructions for on-site equipment assembly and installation. This investigation did not uncover any evidence that the vendor instruction problem extended into the mechanical equipment area. Thus the results of the corrective action program have fully resolved the original CSA concern related to generic problems associated with implementation of vendor instructions.

Spreading of Unistrut Walls

CSA found a number of instances in which the walls of the unistrut used to support electrical conduit were somewhat bowed. This condition was not in accordance with the design and raised concerns regarding the seismic capability of the installation. However, as a result of the corrective action program, these situations were reviewed by the A/E who concluded that the unistrut was acceptable on a use-as-is basis.

Completeness of Q.C. Inspection Criteria

The original CSA conclusion was based upon situations where Q.C. inspection criteria appeared either incomplete or more general than desirable. These situations involved HVAC hanger configuration, pipe support location, special pipe clamp configuration, and the electrical equipment fasteners. Each of these situations were investigated to determine if there was evidence that hardware problems existed due to the inspection criteria problem.

For HVAC duct hanger configuration an extensive reinspection effort confirmed that the hardware meets the latest design requirements. For special pipe clamps, a 100% reinspection identified a few hardware deficiencies which were resolved on a use-as-is basis. The pipe support location problem was determined to be an isolated one. The electrical equipment fastener problem was resolved on the basis of a 100% reinspection. Furthermore, these fasteners were commercial grade hardware and did not require a Q.C. signoff.

Accordingly, the corrective action effort concluded that, although there were instances where more specific inspection criteria would have added assurance to quality, only the electrical equipment fastener problem was extensive and this problem was fully investigated and resolved. Thus, there does not appear to be any evidence of hardware problems resulting from a lack of specific Q.C. inspection criteria.

Updating of Special Instruction Sheets

The original CSA inspection identified three areas in which travelers failed to reflect the latest design requirements as a result of the "Special Instruction Sheets" not being updated. For snubbers, DIC initiated and completed two Corrective Action Reports (CAR 43 and 44) to define and resolve the problem. For special pipe clamps, a 100% reinspection was performed, with a few deficiencies identified and resolved. For HVAC duct hangers an extensive reinspection indicated that the installed hardware is acceptable despite the fact that the travelers did not explicitly identify and include the latest drawings used for construction or inspections. The corrective action evaluation also investigated and found no evidence of problems with incorporation of vendor

instructions into travelers for mechanical equipment. Therefore, the corrective action program adequately addressed the original CSA concern in this area.

Quality of ANSI B31.1 Field Fabricated Piping Welds

The CSA inspections identified several DIC piping welds fabricated to ANSI B31.1 which, based on initial inspection, appeared to not meet requirements. The concern was whether this problem could be more widespread. For three of the welds, more detailed inspection during the corrective action evaluation indicated that the welds did meet requirements. A fourth weld was dye penetrant tested after blending. The test indicated that the weld was acceptable. Thus, there was no evidence of a generic problem with ANSI B31.1 field fabricated piping welds.

Control of Non-Conforming Conditions in Turned Over Equipment

CSA reviewed the system for identifying and resolving non-conforming conditions in turned over hardware and concluded that the Startup Field Report (SFR) system had been improperly used in some instances and that there may be a need for improved procedures and training. This resulted in Corrective Action Report 18 and Work Hold Agreement 22 being issued by KG&E. Successful closeout of the CAR should resolve the original problem and provide adequate assurance that the SFR system is being properly implemented. CSA also tentatively concluded that the Notice of Discrepant Condition (NDC) system was being misused. Further investigation during the corrective action evaluation confirmed the existence of a problem with regard to closure of NDCs without issuance of a non-conformance vehicle as required. This investigation resulted in Quality Program Violation 12/84-01 being issued by KG&E. Once completed, this should correct the NDC problem.

Pipe Support Deficiencies

The CSA inspection identified a number of pipe support hardware and documentation deficiencies. These deficiencies raised a concern as to whether a program problem existed in the fabrication and installation of pipe supports. The deficiencies included mislocated supports, missing welds, incorrect pipe

clamps installed, incorrect snubber setting, and a number of minor deficiencies. Investigation of the minor deficiencies indicated that they were not of a repetitive nature. Each of the more significant deficiencies was fully investigated during the corrective action evaluation and found to be isolated or limited in scope. Thus, based on the additional information obtained during the corrective action effort there does not appear to be evidence of a program problem with pipe supports.

QA Audits Not Performed Per Schedule

The CSA inspection found that QA construction audits for the first two quarters of 1984 were not performed as specified in the KG&E QA schedule which was established at the beginning of 1984. Both the missing audits and concerns regarding the setting of priorities on topics for audits and the availability of resources to meet the schedule were addressed during the corrective action program. Investigation during the corrective action phase indicated that the incomplete audits were performed later in 1984. Also, mechanisms have been put in place by KG&E to assure that the high priority activities are audited per applicable requirements. Finally, action has been taken by KG&E QA to assure availability of necessary resources to perform required audits on schedule.

Potential Problem with Control of Vendor Activities

The CSA inspection noted several concerns with vendor activities including vendor weld problems, vendor radiograph problems, and some problems with fastener hardware supplied as part of a purchase order for some electrical switchgear and motor control centers. As a result, the CSA report raised a question as to whether vendor activities had been properly controlled.

Investigations during the corrective action evaluation indicated that the scope of the vendor weld problem is very limited and that there is only one vendor with a minor radiograph problem. Furthermore, the electrical equipment fastener problem turned out to be a problem with implementing vendor instructions rather than a problem controlling vendor activities. Thus, the original question as to whether vendor activities had been properly controlled is no longer relevant.

HVAC Duct Hanger Overhead Attachment Welds

CSA noted several examples of undersize welds on HVAC duct hanger overhead attachments. The undersize weld problem was restricted to joints connecting angle clips to embed plates and connecting vertical support plates to horizontal structural steel members, probably as a result of the tight geometry and resulting limited accessibility. To assess the extent of this problem, the corrective action evaluation included a reinspection of 13 additional duct hanger overhead joints with the one of the two configurations noted above. Two of the 13 duct hangers were found to have minor undersized welds. These two as well as the three hangers with undersize welds which were found in the CSA inspection were accepted on a use-as-is basis by the A/E. The reinspection and use-as-is acceptance by the A/E fully resolve this problem.

TABLE 1
SUMMARY OF CSA CONCERNS AND CORRECTIVE ACTION VERIFICATION METHOD

CSA Concern Number	Description	CSA Responsible Individual(6)	Responsible Organization	Action Plan Prepared	Method Of Verification
1	Structural Steel, Missing Documentation	GY	DIC	No	Complete Document Review
2	Electrical, Rust on Conduit	HGW	DIC	No	Physical Inspection
3	Electrical, Cable Min. Separation	HGW	DIC	Yes	Complete Document Re-view(1)
4	Electrical, Conduit Marking	HGW	DIC	No	Physical Inspection
5	Electrical, Flex Out of Condulet	HGW	DIC	No	Physical Inspection
6	Electrical, Flex Connection Loose	HGW	DIC	No	Physical Inspection
7	Electrical, Fitting Loose	HGW	DIC	No	Physical Inspection
8	Electrical, Conduit Bends Greater than 360°	HGW	DIC	No	Complete Document Review
9	Electrical, Min. Separation	HGW	DIC	No	Physical Inspection
10	Electrical, Lack of Cable Flex	HGW	DIC	No	Complete Document Review
11	Electrical, Flex Connector Loose	HGW	DIC	No	Physical Inspection
12	Electrical, Missing Clamp On Support	HGW	DIC	No	Physical Inspection

TABLE 1
SUMMARY OF CSA CONCERNS AND CORRECTIVE ACTION VERIFICATION METHOD

CSA Concern Number	Description	CSA Responsible Individual(6)	Responsible Organization	Action Plan Prepared	Method Of Verification
13	Welding, (Piping) Weld Paper Not Stamped Correctly	CPT	DIC	No	Complete Document Review
14	Welding, (Piping) Weld Loca- tion not shown on B/P	CPT	DIC	No	Complete Document Review
15	Mechanical, (Piping) a) Valves Left Open b) Nuts Not Fully Engaged	BDC	a)KG&E b)DIC	a)No b)No	a)Complete Document Review b)Complete Document Review
16	Mechanical, (Piping) NDE Indication Not Addressed	CPT	DIC	No	Complete Document Review
17	Mechanical, (Supports) Traveler B.O.M. Not Correct	BDC	DIC	No	Complete Document Review
18	Mechanical, (Supports) Not to Tolerance	SR	DIC	No	Complete Document Review
19	Mechanical, (Supports) Obstruction	SB	DIC	No	Complete Document Review
20	Mechanical, (Supports) No QC Verification Noted	SB	DIC	No	Complete Document Review
21	Electrical, Pull Box Cover Not Installed	HGW	DIC	No	Physical Inspection
22	Electrical, Cables Not Tied Down	HGW	DIC	No	Complete Document Review
23	Electrical, Flex Connector Loose	HGW	DIC	No	Physical Inspection

TABLE 1
SUMMARY OF CSA CONCERNS AND CORRECTIVE ACTION VERIFICATION METHOD

CSA Concern Number	Description	CSA Responsible Individual(6)	Responsible Organization	Action Plan Prepared	Method Of Verification
24	Electrical, Unistrut Wall Spread	HGW	DIC	No	Physical Inspection
25	Electrical, Washer Rotated on Unistrut	HGW	DIC	No	Complete Document Review
26	Electrical, Galvanize off Conduit	HGW	DIC	No	In-Process Document Review
27	Electrical, Tray Support not Secured Properly	HGW	DIC	No	Physical Inspection
28	Electrical, No Fire Barrier	HGW	DIC	No	Physical Inspection
29	Electrical, Cable Tray Penetration Barrier	HGW	DIC	No	Physical Inspection
30	Electrical, Floor Penetration not as Required	HGW	DIC	No	Physical Inspection
31	Electrical, Missing Cable Softener	HGW	KG&E	No	Physical Inspection
32	Electrical, Excess Tray Fill	HGW	DIC	No	Physical Inspection
33	Mechanical, (Supports) Insufficient Weld Length	BDC	DIC	a) No a) No	a) Physical Inspection b) Physical Inspection
34	Mechanical, (Supports) Not to Tolerance Incorrect Material I.D.	BDC	DIC	No	Physical Inspection

TABLE 1
SUMMARY OF CSA CONCERNS AND CORRECTIVE ACTION VERIFICATION METHOD

CSA Concern Number	Description	CSA Responsible Individual(6)	Responsible Organization	Action Plan Prepared	Method Of Verification
35	Electrical, MCC Bolting Not to Spec's.	HGW	DIC	No	Physical Inspection(2)
36	Electrical, Box not Properly Secured	HGW	DIC	No	Physical Inspection
37	Electrical, Broken Flex in Conduit	HGW	DIC	No	Physical Inspection
38	Electrical, Flex Loose	HGW	DIC	No	Complete Document Review
39	Electrical, Lack of Edge Softener on Cable	HGW	DIC	No	Physical Inspection
40	Electrical, Broken Flex	HGW	DIC	No	Physical Inspection
41	Piping, Flange Bolts not Fully Engaged	BDC	DIC	No	Complete Document Review
42	Mechanical, Snubber(Support) not Completely Wrapped	BDC	DIC	No	Complete Document Review
43	Mechanical, (Supports) Operational Interference	BDC	DIC	No	Complete Document Review
44	Mechanical, (Piping) Clearance Between Valve Handle	BDC	DIC	No	Complete Document Review
45	Mechanical, (Supports) Snubber Interference	BDC	DIC	No	Physical Inspection
46	Electrical, Missing Bolts on Cover	HGW	DIC	No	Physical Inspection

TABLE 1
SUMMARY OF CSA CONCERNS AND CORRECTIVE ACTION VERIFICATION METHOD

CSA Concern Number	Description	CSA Responsible Individual(6)	Responsible Organization	Action Plan Prepared	Method Of Verification
47	Electrical, Missing Bolts on Cover	HGW	DIC	No	Physical Inspection
48	Mechanical, (Supports) Hanger Clearance	BDC	DIC	No	Complete Document Review
49	Electrical, Flex Connector Loose	HGW	DIC	No	Complete Document Review
50	Mechanical, (Piping) Grind Spot	CPT	DIC	No	Physical Inspection
51	Electrical, Missing Strap for Unistrut	HGW	DIC	No	Physical Inspection
52	Electrical, Unistrut Strap not Engaged	HGW	DIC	No	Physical Inspection
53	Mechanical, (I&C Valve) a)Incorrect Washers Installed b)Incomplete Thread Engagement	BDC	DIC	a)No b)No	Complete Document Review Complete Document Review
54	Mechanical, (Supports) Temporary Clamp	BDC	DIC	Yes	In-Process Document Review
55	Mechanical, (Whip Restraint and Tubing Support-Civil/Structural) Clearance	BDC	WESTINGHOUSE	No	In-Process Document Review
56	Mechanical, (Whip Restraint Civil/Structural)	SB	DIC	No	Complete Document Review

TABLE 1
SUMMARY OF CSA CONCERNS AND CORRECTIVE ACTION VERIFICATION METHOD

CSA Concern Number	Description	CSA Responsible Individual(6)	Responsible Organization	Action Plan Prepared	Method Of Verification
57	Mechanical, (Supports) Operational Interference	SB	DIC	No	Complete Document Review
58	Mechanical, (Supports) Bushing not Properly Staked	SB	DIC	No	Complete Document Review
59	Electrical, No I.D. Markers on MCC	HGW	DIC	No	Complete Document Review
60	Electrical, Flex not Properly Separated	HGW	DIC	No	Physical Inspection
61	Mechanical, (Piping) a)Bolts Loose on Valve b)No White I.D. Tag	BDC	a)DIC b)DIC	a)No b)No	a)In-Process Document Review b)Complete Document Review
62	Mechanical, (Piping) a)Bolts Loose on Valve b)No White I.D. Tag	BDC	DIC	a)No b)No	a)In-Process Document Review b)Complete Document Review
63	Mechanical, (Piping) Nuts Missing on Valve	BDC	DIC	No	Complete Document Review (3)
64	NDE, (R.T.) Film Quality	CPT	KG&E VENDOR	No	Complete Document Review
65	NDE, (R.T.) Film and Weld Quality	CPT	KG&E VENDOR	No	Complete Document Review
66	NDE, (R.T.) Film Quality	CPT	KG&E	No	Complete Document Review
67	Electrical, Flex Disconnected	HGW	DIC	No	Physical Inspection

TABLE 1
SUMMARY OF CSA CONCERNS AND CORRECTIVE ACTION VERIFICATION METHOD

CSA Concern Number	Description	CSA Responsible Individual(6)	Responsible Organization	Action Plan Prepared	Method Of Verification
68	Welding, (Piping) Surface Defects	CPT	KG&E VENDOR	Yes	In-Process Document Review
69	Welding, (Piping) Surface Defects	CPT	KG&E VENDOR	Yes	In-Process Document Review
70	Welding, (Piping) Rust on Stainless	BDC	DIC	No	In-Process Document Review
71	Mechanical, (Piping) Valve Leaking	BDC	KG&E	No	In-Process Document Review
72	Welding, (Piping) a)Grinding Marks b)Weld Reinforcement	CPT	a)KG&E b)DIC	No	a)Physical Inspection b)Physical Inspection
73	Welding, (Piping) Undercut	CPT	DIC	No	Physical Inspection
74	Mechanical, (Piping) Hold Tag	BDC	DIC	No	Physical Inspection
75	Mechanical, (Equipment) Gouges and Arc Strikes	CPT	DIC	No	Physical Inspection
76P(7)	Electrical, Conduit Interference	HGW	DIC	No	Complete Document Review
76H(7)	Mechanical, (Supports) Angularity	BDC	DIC	No	Complete Document Review(3)
77	Mechanical, (Supports) Special Scope MTDN's	BDC	DIC	Yes	Complete Document Review

TABLE 1
SUMMARY OF CSA CONCERNS AND CORRECTIVE ACTION VERIFICATION METHOD

CSA Concern Number	Description	CSA Responsible Individual(6)	Responsible Organization	Action Plan Prepared	Method Of Verification
78	Mechanical, (Supports) Conflict in Drawings	SB	DIC/ BECHTEL	No	Complete Document Review
79	Mechanical, (Supports) a) Conflict in Drawings	a)BDC	a)BECHTEL	a)No	a) Complete Document Review
	b) Undersize Vendor Weld	b)CPT	b)DIC	b)No	b) Complete Document Review
80	Mechanical, (Supports) B.O.M. Error	BDC	DIC	No	Complete Document Review
81	Mechanical, (Supports) Possible Clamp Rotation	RDC	DIC/ BECHTEL	No	Complete Document Review
82	Mechanical, (Supports) Cotter Pin	BDC	DIC	No	Physical Inspection
83	NDE, (R.T.) Slag Indications	CPT	KG&E	No	Complete Document Review
84	NDE, (R.T.) Weld Quality	CPT	KG&E/ WESTING- HOUSE	Yes	Physical Inspection
85	NDE, (R.T.) Film Density	CPT	KG&E/ WESTING- HOUSE	Yes	In-Process Document Review
86	Mechanical, (Piping) ECR Issued in lieu NCR	BDC	DIC	No	Complete Document Review
87	Welding, Weld Profile	CPT	DIC	No	Physical Inspection

TABLE 1
SUMMARY OF CSA CONCERNS AND CORRECTIVE ACTION VERIFICATION METHOD

CSA Concern Number	Description	CSA Responsible Individual(6)	Responsible Organization	Action Plan Prepared	Method Of Verification
88	Mechanical, (Piping) Base Mat'l Indication	BDC	DIC	No	Physical Inspection
89	Mechanical, (Welding) In Process Inspection	CPT	DIC	No	Complete Document Review
90	Mechanical, (Piping) Pin Hole in B.M.	CPT	DIC	No	Complete Document Review
91	Mechanical, (Piping) Missing Nuts on Valve	BDC	DIC	No	In-Process Document Review
92	Welding, (Piping) Improper Prep. for P.T.	CPT	KG&E/ VENDOR	No	Physical Inspection
93	Mechanical, (Support) Rust on Hanger	SR	DIC	No	Complete Document Review
94	NDE, (R.T.) Weld Quality a)RT Discrepancies b)Lead ID in RT Area of Interest	CPT	KG&E/ WEST- INGHOUSE	Yes	Physical Inspection
95	Mechanical, (Piping) Arc Gauges	CPT	DIC	No	Physical Inspection
96	Mechanical, (Piping) Paint Chipping	BDC	DIC/ KG&E	No	Complete Document Review
97	Mechanical, (Piping) Valve, Flow Direction Missing	BDC	KG&E	No	Physical Inspection
98	Mechanical, (Piping) ASME Class Changes at Coupling	BDC	DIC/ BECHTEL	No	Complete Document Review

TABLE 1
SUMMARY OF CSA CONCERNS AND CORRECTIVE ACTION VERIFICATION METHOD

CSA Concern Number	Description	CSA Responsible Individual(6)	Responsible Organization	Action Plan Prepared	Method Of Verification
99	Mechanical, (Supports) Dimensional Error	BDC	DIC	No	Physical Inspection
100	Mechanical, a)Maintenance Records Missing b)No Danger Signs c)Exhaust Fan	BDC HGW	KG&E DIC	No	a)Physical Inspection b)Physical Inspection c)Physical Inspection
101	Electrical, Missing Nameplate	HGW	DIC	No	Physical Inspection(2)
102	Mechanical, a)Maintenance Records Missing b)No Danger Signs c)Exhaust Fan	BDC HGW	DIC	a)No b)No c)No	a)Physical Inspection b)Physical Inspection c)Physical Inspection
103	Mechanical, a)Maintenance Records Missing b)No Danger Signs c)Exhaust Fan	BDC HGW	DIC	a)No b)No c)No	a)Physical Inspection b)Physical Inspection c)Physical Inspection
104	Mechanical, a)Maintenance Records Missing b)No Danger Signs c)Exhaust Fan	BDC HGW	DIC	a)No b)No c)No	a)Physical Inspection b)Physical Inspection c)Physical Inspection

TABLE 1
SUMMARY OF CSA CONCERNS AND CORRECTIVE ACTION VERIFICATION METHOD

CSA Concern Number	Description	CSA Responsible Individual(6)	Responsible Organization	Action Plan Prepared	Method Of Verification
105	Mechanical, (Supports) Minor Traveler Discrepancies and Minor Offset in Support	BDC	DIC	No	Physical Inspection
106	Mechanical, (Piping) U.T. Prep for wall thickness test	CPT	DIC	No	Complete Document Review
107	Welding, Linear Indication Weld	CPT	DIC	No	Complete Document Review
108	Welding, Linear Indication Weld	CPT	DIC	No	Complete Document Review
109	Welding, Weld Splatter	CPT	DIC	No	Complete Document Review
110	Welding, Questionable P.T. Prep	CPT	DIC	No	Physical Inspection
111	Welding, PSI/ISI U.T. Prep	CPT	DIC/ KG&E	Yes	Physical Inspection
112	Welding, Hoop Shrinkage	CPT	DIC/ BECHTEL	No	Complete Document Review
113	Electrical, Clamp Missing	HGW	DIC	No	Physical Inspection(2)
114	Electrical, Separation	HGW	DIC	No	Physical Inspection
115	Mechanical, Equip, Bolts Missing on Valve Plates	BDC	DIC	No	Complete Document Review

TABLE 1
SUMMARY OF CSA CONCERNS AND CORRECTIVE ACTION VERIFICATION METHOD

CSA Concern Number	Description	CSA Responsible Individual(6)	Responsible Organization	Action Plan Prepared	Method Of Verification
116	Electrical, Loose Flex	HGW	DIC	No	In-Process Document Review
117	Welding, rust on SST weidment	CPT	WESTING- HOUSE	No	Physical Inspection
118	Welding, Weld Profile	CPT	KG&E VENDOR	No	Physical Inspection
119	Welding, Overlap	CPT	KG&E/ WEST.	No	In-Process Document Review
120	Welding, Porosity	CPT	KG&E VENDOR	No	Physical Inspection
121	Welding, Excessive Reinforcement	CPT	DIC	No	Physical Inspection
122	Welding, Linear Indication	CPT	DIC	No	Physical Inspection
123	Mechanical, (Supports) Code Data & Documentation	BDC	DIC	No	Physical Inspection
124	Mechanical, (Supports) Loose Jam Nut	BDC	DIC	No	Physical Inspection
125	Mechanical, (Supports) Clamp Angle Off	BDC	DIC	No	Complete Document Review(3)
126	Mechanical, (Supports) a)Snubber Tension in Lieu of Comp. b)Obstructions	BDC	DIC	a)No	a)Complete Document Review
				b)No	b)Complete Document Review

TABLE 1
SUMMARY OF CSA CONCERNS AND CORRECTIVE ACTION VERIFICATION METHOD

CSA Concern Number	Description	CSA Responsible Individual(6)	Responsible Organization	Action Plan Prepared	Method Of Verification
127	Mechanical, (Supports) BOM Calls for Snubber to be in Comp. Conflict with Traveler	BDC	DIC	No	Complete Document Review
128	Mechanical, (Supports) (Same as 127)	BDC	DIC	No	Complete Document Review
129	Electrical, No O.C. Documentation on Bus Bar Torquing	HGW	DIC	No	In-Process Document Review
130	Electrical, Bolting of Switchgear	HGW	DIC	No	In-Process Document Review
131	Electrical, Bolting of Switchgear	HGW	DIC	No	Physical Inspection(2)
132	Electrical, Conduit Touching Support	HGW	DIC	No	Complete Document Review
133	Mechanical, (Supports) a)Wrong Size Washers b)CAR 25 c)2 instead of 4 Hole Clamp	BDC	DIC	a)No b)Yes c)Yes	a)In-Process Document Review b)Complete Document Review c)Complete Document Review
134	Mechanical, (Supports) a)Loose Nuts b)Hangers not Shimmed	SB	DIC	No	a)Complete Document Review b)Complete Document Review

TABLE 1
SUMMARY OF CSA CONCERNS AND CORRECTIVE ACTION VERIFICATION METHOD

CSA Concern Number	Description	CSA Responsible Individual(6)	Responsible Organization	Action Plan Prepared	Method Of Verification
135	Mechanical, (I&C) Residue on Tubing	BDC	KG&E	No	In-Process Document Review
136	Mechanical, (I&C) Holes in Concrete	SB	WESTING- HOUSE	No	Complete Document Review
137	Welding, Underfill	CPT	KG&E VENDOR	No	Physical Inspection
138	Welding, Porosity	CPT	KG&E VENDOR	No	Physical Inspection
139	Welding, Undercut	CPT	KG&E VENDOR	No	Physical Inspection
140	Electrical, Flex Pulled from Connector	HGW	DIC	No	Physical Inspection
141	Mechanical, (I&C) Anchor Spacing	SB	WESTING- HOUSE	No	Complete Document Review
142	Mechanical, (I&C) Damaged Tubing & Gage	BDC	WESTING- HOUSE	No	Complete Document Review
143	Mechanical, (I&C) Loose Clamp	BDC	WESTING- HOUSE	No	In-Process Document Review
144	Mechanical, (I&C) Missing/Loose Nuts on Terminal Box	BDC	WESTING- HOUSE	No	Complete Document Review(3)

TABLE 1
SUMMARY OF CSA CONCERNS AND CORRECTIVE ACTION VERIFICATION METHOD

CSA Concern Number	Description	CSA Responsible Individual(6)	Responsible Organization	Action Plan Prepared	Method Of Verification
145	Mechanical, (Supports) Standing Water in Stanchions	BDC	DIC	No	Physical Inspection
146	Mechanical, (I&C) Damaged Tubing and Clamp Missing	BDC	WESTING- HOUSE	No	In-Process Document Review
147	Mechanical, (I&C) a) Damaged Tubing b) Hanger Not Installed	BDC	WESTING- HOUSE	a) No b) No	a) Physical Inspection b) Physical Inspection
148	Mechanical, (I&C) Missing Valve Handle and Missing Clamp	BDC	WESTING- HOUSE	No	Physical Inspection
149	Mechanical, (HVAC) Undersize Welds	CPT	DIC	No	Physical Inspection(2)
150	Mechanical, (HVAC) a) Welds Undersize b) Dimensions	CPT	a) KG&E VENDOR b) DIC	a) No b) No	a) Physical Inspection b) Complete Document Review
151	Mechanical, (HVAC) a) Welds Undersize b) Grinding Embeds c) Documentation	CPT CPT BDC	DIC DIC DIC	a) No b) No c) No	a) Complete Document Review b) Physical Inspection c) Complete Document Review
152	Mechanical, (HVAC) Post Applied Plates	BDC	DIC	No	Complete Document Review
153	Mechanical, (HVAC) Welding on Gusset Plate	BDC	DIC	No	Complete Document Review

TABLE 1
SUMMARY OF CSA CONCERNS AND CORRECTIVE ACTION VERIFICATION METHOD

CSA Concern Number	Description	CSA Responsible Individual(6)	Responsible Organization	Action Plan Prepared	Method Of Verification
154	Welding, Excessive Weld Width	CPT	KG&E/ VENDOR	No	Physical Inspection
155	Electrical, a)No Inspection Record of Battery Rack b)Nuts Missing from Battery Rack Assemblies	HGW	a)KG&E/ DIC b)KG&E	a)No b)No	a)Complete Document Review b)In-Process Document Review
<u>Potential Generic/Program Concerns</u>					
156	I&C, Tubing Damage	FP	KG&E OPS.	Yes	Complete Document Review
157	Supports, Hardware/ Documentation Problems	BDC	DIC	Yes	Physical Inspection
158	HVAC, Conflict or Lack of Uniform Inspection Criteria	FP	DIC	Yes	Complete Document Review(4)
159	Quality Assurance/Construction Audits not to Schedule for 1st/2nd qtr. 1984	BP	KG&E QA	Yes	Complete Document Review
160	Startup, SFR's not Being Properly Utilized or Dis- positioned	BP	KG&E	Yes	In-Process Document Review
161	Quality Assurance, SDL's not Being Properly Utilized or Dispositioned	BP	DIC	Yes	Complete Document Review

TABLE 1
SUMMARY OF CSA CONCERNS AND CORRECTIVE ACTION VERIFICATION METHOD

CSA Concern Number	Description	CSA Responsible Individual(6)	Responsible Organization	Action Plan Prepared	Method Of Verification
162	Implementation of Vendor Instructions for Assembly and Installation of Mechanical Equipment	FP	DIC	Yes	Complete Document Review
163	Potential concern regarding the Completeness of QC Inspection Criteria.	FP	KG&E DIC	Yes	Complete Document Review
164	A Generic Problem with Regard to the Fasteners (e.g., Nuts, Bolts, Washers) Used for On-Site Assembly and Installation of Electrical Equipment.	HGW	DIC	Yes	Physical Inspection(5) In-Process Document Review
165	A Problem with Unistrut Wall Spreading and Possible Loss of Capability to Support Electrical Conduits.	HGW	DIC BECHTEL	Yes	Physical Inspection
166	A Problem with the Established Construction Contractor Drawing Change Control Procedures in the Area of Special Instruction Sheets	BDC	DIC	Yes	Physical Inspection
167	Welding, Concern with the Quality of Field Fabricated ANSI B31.1 Piping Welds	CPT	DIC	Yes	Physical Inspection

TABLE 1
SUMMARY OF CSA CONCERNS AND CORRECTIVE ACTION VERIFICATION METHOD

CSA Concern Number	Description	CSA Responsible Individual(6)	Responsible Organization	Action Plan Prepared	Method Of Verification
168	Welding, Concern with HVAC Support Attachment Welds	CPT	DIC	Yes	Physical Inspection
169	Welding, Concern with Visual Acceptance of Vendor Fabricated Piping Welds	CPT	KG&E	Yes	Physical Inspection(5) In-Process Document Review
170	Startup, Improper Use of the System for Controlling Nonconforming Conditions for Equipment Turned over to KG&E.	BP	KG&E DIC	Yes	In-Process Document Review

FOOTNOTES TO TABLE 1

- 1) The verification was based in part on the extent of the original CSA inspection. No additional field inspection was performed as part of corrective action since disposition of NCR condition was use-as-is.
- 2) Though the work was verified complete, the associated NCRs or other documents had not yet been closed out.
- 3) Item was judged by Delian to be of minor significance so although field verification was feasible, only a document review was warranted.
- 4) As part of the corrective action, a reinspection of 56 duct hangers was performed by DIC at Delian request. Q.C. Checklists were prepared and signed off as part of this inspection and are included in the file.
- 5) A portion of the work associated with Generic Concerns 164 and 169 remains to be performed. That which had been completed was inspected.
- 6) Initials are for following Delian personnel: GY-George Young, HGW-Henry Wong, BDC-Brian Carter, SB-Steve Baron, CPT-Pat Thompson, BP-Brien Palmer, FP-Frank Pimentel.
- 7) Two number "76" were inadvertently assigned during the original CSA inspections. The letter designator was assigned to distinguish these two.

TABLE 2
KG&E QA VERIFICATIONS REQUIRED
FOR CSA CORRECTIVE ACTIONS

<u>Concern</u>	<u>Required KG&E Action</u>
26	Verify implementation and closure of NCR 1SN 21268 E
54	Perform surveillance to determine how unauthorized temporary supports are being installed and removed and take appropriate corrective action.
55	Verify closure of NCR 1SN 55503-J including follow up of <u>W</u> sample of tube supports.
61	Verify implementation and closure of NCR 1SN 17199 E
62	Verify implementation and closure of NCR 1SN 17199 E
68	Verify disposition, implementation, and closure of NCR 1SN 21241 PW
69	Verify disposition, implementation, and closure of NCR 1SN 21241 PW
70	Revise CWP EG-854-M to require leaking valve to be repaired, verify fix, and verify closure of CWP.
71	Verify disposition, implementation, and closure of RIR RCME 3041 GN1
85	Verify disposition, implementation, and closure of FDR 11083
91	Verify disposition, implementation, and closure of RIRs RCME 2623 EM and RCME 2624 EM.
116	Verify implementation and closure of CWP AL 464 E and closure of NCR 1SN 20301 E.
119	Verify disposition, implementation, and closure of FDR SAPN 11081.
129	Verify implementation and closure of NCR 1SN 20674 E.
130	Verify implementation and closure of NCR 1SN 20682 E.
133(a)	Verify disposition, implementation, and closure of NCR 1SN 21331H.

TABLE 2 (CONT.)
KG&E QA VERIFICATIONS REQUIRED
FOR CSA CORRECTIVE ACTIONS

<u>Concern</u>	<u>Required KG&E Action</u>
135	Verify closure of NDC I-0035-W; verify resolution of deficient condition (i.e., issuance and closure of proper resolution documentation).
143	Verify disposition, implementation, and closure of NCR 1SN 55488 J.
146	Verify closure of NDC I-0034-W; verify resolution of deficient condition (i.e., issuance and closure of proper resolution documentation.)
155(b)	Verify closure of RIR RCME 3032 NK and implementation and closure of CWP NK 177.
160	Complete and close CAR 18 and Work Hold Agreement 22.
164	Verify implementation and closure of NCRs 1SN 20674E, 1SN 20681 E, and 1SN 20682 E.
169	Verify disposition, implementation, and closure of NCR 1SN 21241 and FDR SAPN 11081; may require additional inspection if a problem exists.
170	Complete and close QPV 12/84-01.

TABLE 3
SUMMARY OF REJECTED VERIFICATIONS

<u>Concern Number</u>	<u>Description of Concern</u>	<u>Basis for Rejection of Corrective Action</u>
34	Pipe supports - incorrect piece numbers on parts	BOM not annotated with number of SDL used to document deficiency.
70	Valve EGV144 has rust contamination on stainless steel weldments.	Rust contamination existed at time of Delian reinspection; valve was leaking.
71	Valve GNV004 leaking onto insulation.	Valve was leaking at the time of Delian reinspection.
72	Grinding marks 3/32" deep adjacent to weld.	Insulation prevented reinspection.
123	Improper attachment of code data tag.	BOM not annotated with number of NCR used to document deficiency.
124	Loose lock nut on pipe clamp.	Lock nut loose at time of Delian reinspection.
133	1/4" rather than 3/8" washers on pipe clamp.	1/4" washers installed in parallel with NCR approving use-as-is disposition for 3/8" washers.

TABLE 3 (CONTINUED)
SUMMARY OF REJECTED VERIFICATIONS

<u>Concern Number</u>	<u>Description of Concern</u>	<u>Basis for Rejection of Corrective Action</u>
135	Foreign material on instrument on tubing.	Small temporary mark left at one location on tubing after QC inspection of the tube cleaning.
143	Damaged instrument tubing.	Tubing damage existed at time of Delian reinspec- tion.
146	Damaged instrument tube hardware.	Hardware damage existed at time of Delian rein- spection.

TABLE 4
SUMMARY OF MOST IMPORTANT CSA CONCLUSIONS
AND ASSOCIATED RESOLUTION

<u>Conclusion</u>	<u>CSA Reference</u> ⁽¹⁾	<u>Concern No(s)</u>	<u>Resolution</u>
Cleanliness problems and continuing minor damage to instrument tubing and hardware suggesting need for reinspection prior to operation.	Pages 2, II-8	135, 142, 143, 146, 156	Program for testing and reinspection leading up to operation investigated and found to be adequate.
Improper implementation of vendor instructions and fastener hardware for on-site assembly and installation of electrical equipment shipped in sections.	Pages 2, II-6	35, 129, 130, 131, 155, 164	Complete reinspection and correction of all electrical equipment shipped in sections.
Possible generic problem with spreading (not in accordance with design) of the walls of unistrut used to support electrical conduit.	Pages 2, II-2	24, 165	Designer accepted general condition use-as-is.
Potential generic problem with regard to completeness of Q.C. inspection criteria.	Pages 3, 5, VII-2, VII-3	157, 158, 163, 164	Investigation indicated only one area in which lack of more specific Q.C. inspection criteria may have affected the hardware (electrical equipment fasteners) and this problem was corrected.
Potential failure of the Special Instruction Sheet portion of travelers to incorporate the latest design requirements.	Pages 6, III-6	126, 127, 128, 133, 158, 166	For areas in which problems were identified, corrective actions were taken and the problems resolved.
Concern with quality of a number of field fabricated piping welds to ANSI B31.1.	Pages 4, IV-4, IV-5	87, 121, 122, 167	Further field inspection, testing, and blending revealed that the welds in question were acceptable.

TABLE 4 (CONTINUED)
SUMMARY OF MOST IMPORTANT CSA CONCLUSIONS
AND ASSOCIATED RESOLUTION

<u>Conclusion</u>	<u>CSA Reference</u>	<u>Concern No(s)</u>	<u>Resolution</u>
Problems with the system for controlling non-conforming conditions for turned over equipment.	Pages 6, VIII-5	160, 170	Corrective action to resolve these problems has either been taken or is under way.
Multiple deficiencies with hardware and documentation for pipe supports suggesting possible program problem.	Pages 3, III-4, III-5, III-6	18, 33, 79, 123, 133, 157	The minor deficiencies were found to be non-repetitive; the more important deficiencies were each investigated, corrected, and found to be isolated problems.
QA audits not performed in accordance with audit schedule.	Pages 5, VIII-2	159	Further investigation of QA audit program confirmed that mechanisms are in place to assure that highest priority activities are audited and to assure that resources exist to perform these audits; no violation of Appendix B, ANSI, or FSAR requirements occurred.
Potential problem with control of quality of vendor activities.	Page 6	111, 84, 85, 162, 164, 169	The individual concerns with vendor welds and vendor radiographs were determined to either not violate requirements or to be isolated problems; the electrical fastener problem was determined to be unrelated to management of quality of vendor activities.

TABLE 4 (CONTINUED)
SUMMARY OF MOST IMPORTANT CSA CONCLUSIONS
AND ASSOCIATED RESOLUTION

<u>Conclusion</u>	<u>CSA Reference</u>	<u>Concern No(s)</u>	<u>Resolution</u>
Potential problem with HVAC hanger overhead attachment weld quality.	Page 4, IV-5	149, 150, 151, 168	Extensive reinspection was performed on hangers with that overhead geometry which created a potential for unacceptable welds; minor undersize conditions were found which the A/E accepted on a use-as-is basis.

NOTES:

(1)The pages in this column are from the Reference (1) report.

REFERENCES

1. Wolf Creek Nuclear Generating Station Construction Self Assessment. Performed by Delian Corporation for Kansas Gas and Electric Company. August 28, 1984.

ATTACHMENT A

DESCRIPTION OF CSA CORRECTION ACTION PROCESS



KANSAS GAS AND ELECTRIC COMPANY
WOLF CREEK GENERATING STATION

December 4, 1984

Mr. David E. Leaver
CSA Project Manager
Delian Corp.
1340 Saratoga - Sunnyvale Road
Suite 206
San Jose, CA 95129

KQWLO 84-138
Subject: KG&E Procedure Approval
Ref: KG&E P.O. 45606 Supp. No. 1

Dear David:

KG&E Quality has reviewed and found acceptable for use Delian's procedure "Description of Construction Self Assessment (CSA) Corrective Action Process", Revision 2.

Additionally, because of the amount of time necessary to closeout certain findings, it has become obvious that Delian will not be able to perform final verification for all of the concerns. Therefore, upon concurrence of KG&E, Delian shall closeout those verification packages by describing what actions they have verified to date and what additional corrective/verification actions will be taken by KG&E. KG&E Quality Assurance shall then assume responsibility for those packages. Details of this transfer shall be coordinated by Mr. Carl Parry, Superintendent-Quality Systems Engineering.

This letter will also serve as KG&E's formal approval of the addition of Mr. James A. (Al) Johnson to Delian's CSA team.

Sincerely,

KANSAS GAS & ELECTRIC CO.

R.M. Grant
Director - Quality

cc: C.E. Parry
J. Wesbrooks

DELIAN CORPORATION
1340 Saratoga-Sunnyvale Road-Suite 206
San Jose, California 95129

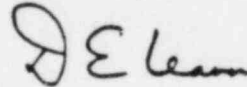
November 21, 1984

Richard Grant
Quality Assurance Corporate Manager
Kansas Gas and Electric
Wolf Creek Generating Station
New Strawn, Kansas

Dear Dick:

Attached is Revision 2 of Delian Corporation's Construction Self Assessment (CSA) Procedure for control and management of corrective actions and closure of CSA concerns. This revision was made to include Al Johnson as a qualified verifier and to document a process for CSA people to inform KG&E on nonconforming conditions outside the scope of CSA. Should you have any questions, please feel free to call me at extension 1262.

Sincerely,



David E. Leaver
Delian Corp. CSA Project Manager

DEL/dh

cc: Carl Parry, KG&E Q.A.
Brian Carter, CSA
Brien Palmer, CSA
Frank Pimentel, CSA
Pat Thompson, CSA
Henry Wong, CSA
Al Johnson, CSA

DESCRIPTION OF CSA CORRECTIVE ACTION PROCESS

1.0 SCOPE

Delian's Procedure "Description of Construction Self Assessment (CSA) Corrective Action Process" delineates the implementation and responsibilities, Phase II, related to management and resolutions of concerns resulting from Delian's CSA Inspection.

2.0 OBJECTIVE

The objective of this procedure is to assure adequate CSA technical review, management and closure of corrective actions and to assure that KG&E, contractor(s), and other agencies understand the actions required by CSA to resolve CSA concerns.

3.0 DEFINITIONS

Definitions relative to this procedure and CSA activities are as follows:

- 3.1 PHASE I CSA activities commencing with initial documentation preparation and field inspections and terminating with transmittal of CSA final inspection (August 29, 1984) report to KG&E.
- 3.2 PHASE II CSA activities commencing after transmittal of final report to KG&E (August 29, 1984), preparation of case specific and generic action plans, evaluation of corrective action(s), and verification of corrective action(s), terminating with transmittal of final corrective action report to KG&E.
- 3.3 CSA Case Specific Concerns: CSA Findings as a direct result of Phase I inspection activities.
- 3.4 CSA Generic Concerns: A CSA concern indicating a possible programmatic deviation/noncompliance or a widespread hardware noncompliance. Generic Concerns are typically based on a group of common Case Specific and/or Generic Concerns relating to hardware and/or software.
- 3.5 All CSA concerns shall be documented on the Exhibit A form. The Exhibit B form shall be used in addition for the Generic Concerns and the Case Specific Concerns requiring a detailed written action plan.

4.0 EXHIBITS AND APPENDICES

- 4.1 Exhibit A - CSA Concern Closure Form
- 4.2 Exhibit B - CSA Corrective Action/Verification Form
- 4.3 Appendix I - Flow chart describing the Delian Process for Evaluation, Verification, and Closure of Corrective Actions.

5.0 PROCEDURE

The Delian interface with KG&E QA during the corrective action/verification process is twofold. First, the existing KG&E (as well as contractor) quality program corrective action mechanisms are being used as appropriate. Thus, the Delian role is not being performed under a formal QA program, but rather, relies on existing on-site programs and this procedure. Second, KG&E QA is directing contractors to perform corrective actions in accordance with Delian requirements. Delian shall be the final authority on the requirements for corrective actions and the type of verification, i.e., physical inspection or document review.

Nonconforming conditions which are noticed by CSA personnel during the course of corrective action acceptance or verification but which are outside the scope of the original CSA inspection shall be documented in a memorandum to KG&E QA but shall not be included in the CSA process.

The following steps are required for the processing of CSA Concerns:

- 5.1 Processing of CSA Case Specific and Generic Concerns on Exhibit A.
 - 5.1.1 Review corrective action and supporting documentation for technical adequacy.
 - 5.1.2 Document acceptance or rejection.
 - 5.1.3 Inform responsible organization of need for further action/information if response is inadequate.
 - 5.1.4 Upon acceptance response, conduct review and/or inspection to verify satisfactory implementation or corrective action.
 - 5.1.5 If implementation is unsatisfactory, inform responsible organization of need for further action.
 - 5.1.6 When implementation is satisfactory, complete verification and closure blocks.
 - 5.1.7 Transmit completed package to KG&E QA Manager for review to ensure all required corrective actions have been completed, verified, and documented by Delian and the responsible organizations.

- 5.2 Processing of CSA Generic Concerns; and Case Specific Concerns requiring a detailed written action plan. (Processing shall be on Exhibits A & B.)
 - 5.2.1 Review corrective action and supporting documentation for technical adequacy.
 - 5.2.2 Document acceptance of response on Exhibits A & B; document rejection on Exhibit A.
 - 5.2.3 If response is rejected, inform responsible organization of need for further action/information on Exhibit A.
 - 5.2.4 Upon acceptable response, conduct review and/or inspection to verify satisfactory implementation of corrective action.
 - 5.2.5 Document acceptance of implementation on Exhibit A & B; document rejection on Exhibit A.
 - 5.2.6 If implementation is rejected, inform responsible organization of need for further action on Exhibit A.
 - 5.2.7 When implementation is acceptable, document acceptance in accordance with paragraph 5.2.5.
 - 5.2.8 Transmit completed package to KG&E QA Manager for review to ensure all required corrective actions have been completed, verified, and documented by Delian and the responsible organizations.

PREPARED BY: DElean
David Leaver

APPROVED BY: DElean
David Leaver

EXHIBIT A
CSA CONCERN CLOSURE FORM

Page 1 of 3

Concern No. _____

Response Rev. _____

Responsible Org. _____

Concern Summary: _____

RESPONSE
TO
CSA
CONCERN

Response: (Attach and reference supporting documents)

Prepared by:	Org.	Title	Print Name	Signature/Date	Ext.
Concurrence by:					

Accept ☐

Further Action/Info Req'd ☐

Remarks: (Include requests for further action/information, if applicable)

CSA
EVALUA-
TION

Evaluated by:

Print Name

Signature/Date

Ext.

Accept ☐

Reject ☐

Remarks:

CSA
VERIFI-
CATION

Verified by:

Print Name

Signature/Date

Ext.

CSA
CLOSURE

Approved by:

Print Name

Signature/Date

Ext.

EXHIBIT A

DELIAN CORPORATION
CSA CONCERN CLOSURE FORM
INSTRUCTIONS

HEADING

CSA will record the concern no., revision of response, and responsible organization. Responses for which further action or information is requested will result in issuance of the next subsequent revision number.

CSA will briefly summarize the concern. Specific detail is found on the applicable "CSA Field Inspection Concern Form" and in the body of the Construction Self Assessment Report.

RESPONSE TO CSA CONCERN

The respondent will provide the response, either directly or by reference to attachment documents. All documents referenced in the response should be provided and attached.

The respondent will identify his- or herself in the space provided.

Occasionally, CSA will request concurrence from a specific source. In these cases CSA will fill in the appropriate "Org." and "Title" blocks. Note that concurrence may be requested from someone outside the preparer's organization.

CSA EVALUATION

The response will either be judged acceptable, or further information or action will be requested. In the latter case, the remainder of the form will be left blank, and closure will be accomplished on a new revision of the form. CSA will distribute copies of both the evaluated response and of the new revision to be used. See note below regarding signatures.

CSA VERIFICATION

CSA will verify implementation of an acceptable response as appropriate. The basis of the verification (e.g., physical inspection, document review, etc.) will be documented by the CSA individual. Disapproved verifications will be processed as described for disapproved CSA Evaluations. See note below regarding signatures.

CSA CLOSURE

CSA concerns will be closed by a CSA Project Manager.

NOTE: CSA signatures denoting acceptance of response and acceptance of verification will be signed (or if currently signed, will be countersigned before closure) by a CSA individual with qualifications in the appropriate area. Page 3 of this exhibit lists CSA individuals and their areas of expertise.

EXHIBIT A

<u>Area of Expertise</u>	<u>Qualified CSA Individual</u>
Mechanical	Brian Carter Steve Baron Al Johnson
Electrical	Henry Wong Brian Carter Brien Palmer (cable, cable tray, and conduit only)
Civil/Structural	George Young Brien Palmer
Instrumentation	Steve Baron (Mechanical only) Frank Pimentel (Mechanical only) Brian Carter (Mechanical/Electrical) Al Johnson (Mechanical only)
Welding/NDE	Pat Thompson Frank Pimentel Brian Carter (Visual only)
Quality Program	Brien Palmer Frank Pimentel Brian Carter
CSA Project Managers	Frank Pimentel David Leaver

DELIAN CORPORATION
CSA CORRECTIVE ACTION/VERIFICATION FORM
INSTRUCTIONS

CSA Corrective Action/Verification (CAV) forms are to be used in conjunction with all generic CSA concerns. In addition, these forms may be used for case-specific CSA concerns where the required corrective action is felt to be extensive or detailed enough to warrant its use.

All CSA concerns, generic and specific, will also be tracked by the CSA Closure Forms (refer to Closure Form Instructions).

All entries on the CAV form shall be completed (including "N/A" entries) prior to closure by CSA. However, some entries will remain blank pending in-process investigation and corrective action.

HEADING

Enter appropriate date, including CSA concern revision status.

PART I: REQUIREMENT

Enter the appropriate requirement.

PART II: FINDING

Provide a brief description of the concern.

PART III: RECOMMENDATIONS

Provide the required corrective action ("action plan") in the expected chronological order. Where corrective action is required for specific items of hardware or documentation, provide sufficient reference thereto. Complete Page 2 (Continuation Sheet) of the CSA Corrective Action/Verification Form if additional space is required. Indicate in the space provided "See Attachment".

PART IV: CORRECTIVE ACTION TAKEN

Describe corrective action taken, either directly or by reference to appropriate file documentation received. Indicate CSA acceptance* (pending verification) by signature and date in the blocks provided. Signature should be by a CSA individual qualified in the appropriate area.

PART V: VERIFICATION

Provide description of verification steps taken.

PART VI: ACCEPTANCE

Indicate CSA acceptance* by signature of the assigned CSA individual and date in the proper space provided. The basis of the verification (e.g., physical inspection, document review, etc.) will be documented by the CSA individual. Signature should be by a CSA individual qualified in the appropriate area.

PART VII: ACCEPTANCE AND CLOSURE

The CSA Project Manager shall signify closure of the concern by signature in the appropriate space.

*ACCEPTANCE: When the corrective action is completed in Part III.

DELIAN
CORPORATION

CSA ACTION/VERIFICATION FORMDESCRIPTION OF CONCERN

CSA NO. _____

DATE _____

PAGE ____ OF ____

ACTION PLAN☐VERIFICATION PLAN☐CSA ACTION PLAN PREPARERCSA VERIFIERDATECSA TEAM LEADERDATE

DELIAN
CORPORATIONCSA CORRECTIVE ACTION/
VERIFICATION FORM

REV.0 9/17

CSA NUMBER _____

DATE _____

PAGE _____ OF _____

CSA SUBJECT _____

CONTROLLING DOCUMENT _____

LOCATION/ORGANIZATION _____

INITIATOR _____

APPROVED BY _____

I. REQUIREMENT

II. FINDING

III. RECOMMENDATIONS/PROPOSED CORRECTIVE ACTION

SCHEDULED/COMPLETION DATE _____

RESPONSIBILITY FOR CORRECTIVE ACTION _____

IV. CORRECTIVE ACTION TAKEN

DATE COMPLETED _____

APPROVED (RESPONSIBLE AUTHORITY) _____

V. VERIFICATION OF CORRECTIVE ACTION:

VI. CORRECTIVE ACTION

ATL

STATEMENT ACCEPTED

DATE

VII. CORRECTIVE ACTION

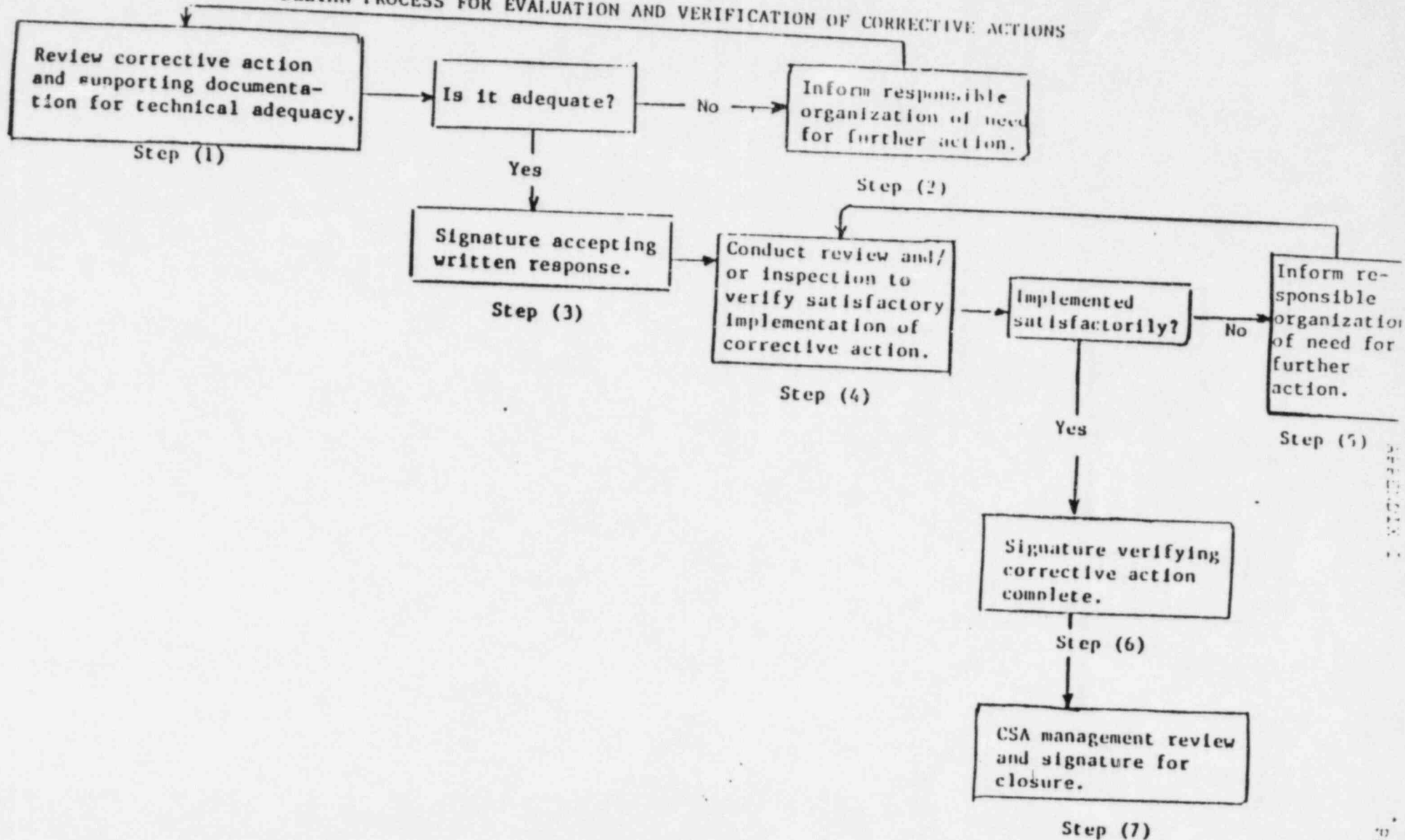
ATL

ACCEPTED

DATE

DISTRIBUTION:

DELIAH PROCESS FOR EVALUATION AND VERIFICATION OF CORRECTIVE ACTIONS



Attachment B to KMLNRC 85-036

ATTACHMENT B

Identified by NRC
Tracy Black (Inspector)

- (1) Problem: Lower spreader room, 1J1G5C/1J1G60, minimum bend radius concern. J1P cable has 1.75" allowable. Cables are: 1JEI02NC, 1LEI12AB, 1LFI11BB, 1LFI11CB, and 1LFI11LB. E-1R3514 Revision 4. First addressed by NRC on 10-27-84. NRC questioned how the actual bend radius measurement was calculated.

Response: 2" bend radius actually found. The bend radius was verified by the use of a template.

- (2) Problem: Diesel Generator, West room, East wall, South end, adequate fire barrier cover concern. Tray 4U1C72/74 with conduits 5U5010, 5U5011, 5U3E3N, 6U3E3E, and 6U3E3M. First addressed by NRC on 10-27-84.

Response: Installation is presently within the guidelines of Paragraph 3.36.5 E-1R8900.

- (2a) Problem: NRC is concerned that E-1R8900 paragraph 3.36.5 does not adequately address requirements of FSAR 8.3.1.4.1.1 and Reg. guide #175.

Response: Bechtel to evaluate and respond.

#2a

3.36 Minimum separation required between redundant conduit systems and between redundant tray/conduit systems.

3.36.1 The minimum separation distance between conduit systems and between tray/conduit systems must be maintained between all different Class IE separation groups and between Class IE separation groups and Non-IE separation groups. It does not apply to separation between BOP separation groups 5 & 6 nor to separation distances within a separation group.

3.36.2 Installation tolerances shall not be used to violate the 1 inch minimum separation distance as defined in 3.36.3, 3.36.5 & 3.36.6.

3.36.3 Minimum separation between different Class IE conduit systems and minimum separation between Class IE conduit systems & Non IE conduit systems shall be 1". Separation shall be measured between the outside edges of the conduit.

3.36.4 Minimum separation between 1) Class IE conduit and Class IE tray of different separation groups and 2) Class IE conduit and Non-IE tray shall be as follows: Separation shall be measured from the tray siderail to the outside edge of the conduit.



- a) All areas except the cable spreading areas.
 - 1) Minimum separation of 3 ft. horizontal.
 - 2) Minimum separation of 5 ft. vertical.
- b) Cable spreading areas (including Main Control Room)
 - 1) Minimum separation of 1 ft. horizontal.
 - 2) Minimum separation of 3 ft. vertical.

3.36.5 Minimum separation between Non-IE conduit and Class IE tray shall be 1". Separation shall be measured from the tray siderail to the outside edge of the conduit.

3.36.6 Minimum separation of 1 inch in 3.36.3 & 3.36.5 must be maintained. No barriers will be added. In cases where the minimum separation distances outlined in 3.36.4 can not be maintained a Tray Cover must be installed with a minimum of 1 inch separation between the Tray Cover and the conduit.

3.36.7 Typically, Covers shall be noted on the raceway drawings. Guidelines to enable the constructor to establish the required barrier lengths and the quantity of trays in a stack to be covered are given in the fire barrier section of E-IR8900 starting on Sheet 49. Only one set of covers need be installed on a given tray even though covers may be shown for the same tray on more than one drawing. The cover shall be installed so as to satisfy the combined separation requirements of the raceway shown on all the drawings.

This drawing and the design it covers is the property of the Utilities of the borrower's express agreement that it will not be reproduced, copied, loaned, exhibited, or used except in the limited way and private use permitted by written consent given by the SNUPPS Utilities to the borrower.

										SHT. 9 A			
										UTILITY DWG NO.	REV		
NO	DATE	REVISIONS			BY	CHK	DES	ENG	PHO/	APPR	JOB NO 10466		
SCALE	DESIGNED		DRAWN		CHIEF		ENGR				BECHTEL DWG NO.	REV	
SNUPPS												E-IR8900	0
DWG APPLICABLE TO UNITS													
1 2 3 4 5 6 7 8 9 10													

(43) Problem: Cubicle NG02BDR2 Cable# 4EFG08BB white wire/black tracer, has no temp. mod. tag. Is it required?

Response: No mod. tag is required. The conductor is a spare conductor per the latest revision of E-017000.

(44) Problem: In Control Room troughs 2JR002 and 4JR004 - Free aired cable between conduits and floor troughs. Also, same conduits up above going into 5" trays.

Response: DIC investigation has confirmed that the conduits 2J3009 and 4J3010 as shown on E-IR 3910 Revision 0 are installed per current design. Separation for the free aired cables between the conduits and troughs are acceptable based on the 1'-0" horizontal and 3'-0" vertical separation dictated by E-IR 8900. Actual measurement between the conduits is 17".

(45) Problem: Separation violation between 4J1C1Z and a communication conduit in Diesel Generator Building.

Response: NDC written by Engineering and is at Quality for processing.

A-8

#45

NOTIFICATION OF DISCREPANT CONDITION

WC-AP-077.6
Rev. 6-14-84

TO: KG&E STARTUP NCR/NDC COORDINATOR

NDC # _____

DATE: 11-1-84

IDENTIFICATION OF AREA AND ITEM: SEPARATION VIOLATION BETWEEN
SYSTEM DESIGNATION: Z-5 CONDUITS

TURNOVER DATE: T/O

THE FOLLOWING CONDITION WAS OBSERVED BY DIC. THIS NDC SERVES
AS FORMAL NOTIFICATION TO THE APPROPRIATE KG&E PERSONNEL FOR
EVALUATION AND RESOLUTION AS DEEMED APPLICABLE.

DISCREPANCY: ① A SEPARATION VIOLATION EXISTS BETWEEN
4J1C1Z AND A COMMUNICATIONS CONDUIT
AT 4' EAST OF DB ON THE SOUTH FACE OF
C8 AT EL 2014'

NRC CONCERN

ORIGINATOR: *Raymond M. Murch*

SUPERVISOR: _____

RESOLUTION: _____

STARTUP ENGINEER: _____

STARTUP QC ENGINEER: _____

cc: KG&E Project Quality Supervisor
KG&E Manager Quality Assurance (WCGS)
KG&E Construction Manager - Staff Assistant

CASE TITLE: FIELD-RUN CABLES USED IN BECHTEL DESIGN ARE DEFICIENT

NRC REGION NUMBER: 0 --NRC HEADQUARTERS

REPORT TYPE: 4 -- 10 CFR 21 RESULTING FROM A 10 CFR 50.55(E)

FIRST REPORT DATE: 3/19/1984

SYSTEM: EC --LOW VOLTAGE AC (LESS THAN 600V)

PRIMARY COMPONENT: CBL --CABLE/ WIRE

SECONDARY COMPONENT: ZVZ --VALVE, UNKNOWN TYPE, UNKNOWN MATERIAL

HOW DISCOVERED: P -- PERIODIC SURVEILLANCE AND INSPECTION

WHO DISCOVERED: CO -- CONSTRUCTOR (SITE CONSTRUCTION CONTRACTOR)

CAUSE

STAGE: D -- DESIGN
PURPOSE: T -- THERMAL
REASON: S -- WRONG STANDARD OR SPECIFICATION

MANUFACTURER: V029--VALCO

DEFICIENCY: @01 FIELD-RUN CABLES TO VALCOR SOLENOID VALVES(50 VALVES EACH AT THE CALLAWAY AND WOLF CREEK SITES) ARE SPECIFIED FOR 90 C USE BUT ARE SUBJECTED TO 150 C SERVICE.

CAUSE: @01 CABLE WAS INCORRECTLY SPECIFIED.

OTHER INFORMATION: @01 AFFECTS VALVES IN SEVERAL SYSTEMS. MAY AFFECT ALL OTHER BECHTEL NUCLEAR PROJECTS. BECHTEL IS CURRENTLY PROCURING QUALIFIED HIGH TEMPERATURE CABLE FROM VALCOR.

ASSIGNED NRC STAFF

REPORT ITEMS

REPORT DATE: 3/19/1984

*Did I/CO. 5/19/84 report to
Cable problems at Wolf
Creek site.*

6-9

REPORT CLASS: I
ACCESSION NUMBER: 8403230108
DATE FORM WAS CODED: 4/19/1984
CODER INITIALS: JT
SUBMITTOR'S I.D. CODE: B130
REPORT SEQUENCE #: 00000119

FACILITIES AFFECTED: 0
: 482 --WOLF CREEK 1
: 483 --CALLAWAY 1
: 486 --CALLAWAY 2

CERCRS IDENTIFIER: 8400231

CASE TITLE: LOAD SHEDDER EMERGENCY LOAD SEQUENCER MISSING WIRES

SUBMITTOR'S FORM ID: 84-52

NRC REGION NUMBER: 4 --MID-WESTERN STATES

REPORT TYPE: 2 -- 10 CFR 50.55(E)

FIRST REPORT DATE: 3/30/1984

SYSTEM: EB --MEDIUM VOLTAGE AC (35KV TO 600V)

PRIMARY COMPONENT: CBL --CABLE/ WIRE

SECONDARY COMPONENT: SEQ --SEQUENCER

HOW DISCOVERED: I -- INITIAL/PREOPERATIONAL TESTING

WHO DISCOVERED: LI -- LICENSEE

CAUSE

STAGE: F -- FABRICATION/MANUFACTURE
PURPOSE: Y -- NOT APPLICABLE
REASON: T -- IMPROPER TURNOVER

MANUFACTURER: C560--CONSOLIDATED CONTROLS CORP.

DEFICIENCY: @01 DURING COMPONENT TESTING, IT WAS
DISCOVERED THAT VENDOR WIRES WERE MISSING
FROM 2 LOGIC RACK ASSEMBLIES(NF173-1 &-2) OF
THE LSELS. WIRES ARE TO CONNECT SEQUENCER AND
RELAY DRIVER. RELAYS MIGHT NOT HAVE WORKED
IN UNDER VOLTAGE CONDITION.

CAUSE: @01 FABRICATION ERROR.

OTHER INFORMATION: @01 REPAIRS WERE MADE BY VENDOR

ASSIGNED NRC STAFF

REPORT ITEMS

REPORT DATE: 3/30/1984
REPORT CLASS: F0
ACCESSION NUMBER: 8404090343
DATE FORM WAS CODED: 5/ 1/1984
CODER INITIALS: JH
SUBMITTOR'S I.D.CODE: KGE --KANSAS GAS & ELECTRIC CO.
REPORT SEQUENCE #: 00000231

FACILITIES AFFECTED: 482 --WOLF CREEK 1

CERCRS IDENTIFIER::8400912

CASE TITLE: MECHANICAL CABLE TERMINATION LUGS

NRC REGION NUMBER: 4 --MID-WESTERN STATES

REPORT TYPE: 2 -- 10 CFR 50.55(E)

FIRST REPORT DATE: 12/16/1983

SYSTEM: ZZ --UNKNOWN

PRIMARY COMPONENT: CBL --CABLE/ WIRE

SECONDARY COMPONENT: CON --CONNECTOR

HOW DISCOVERED: Z -- UNKNOWN

WHO DISCOVERED: LI -- LICENSEE

CAUSE

STAGE: Z -- UNKNOWN
PURPOSE: Z -- UNKNOWN
REASON: Z -- UNKNOWN

DEFICIENCY: @01 CONCERNS MECHANICAL CABLE TERMINATION LUGS.

CAUSE: @01 NOT STATED.

OTHER INFORMATION: @01 NO DAMAGED MECHANICAL TYPE LUGS WERE FOUND DURING INSPECTION OF SAFETY-RELATED LOAD CENTERS. CONDITION IS NO LONGER

CONSIDERED REPORTABLE.

ASSIGNED NRC STAFF

REPORT ITEMS

REPORT DATE: 6/15/1984
REPORT CLASS: F0
ACCESSION NUMBER: 8406210088
DATE FORM WAS CODED: 7/24/1984
CODER INITIALS: JT
SUBMITTOR'S I.D. CODE: KGE --KANSAS GAS & ELECTRIC CO.
REPORT SEQUENCE #: 00000912

FACILITIES AFFECTED: 482 --WOLF CREEK 1

CERCRS IDENTIFIER: 8401499

CASE TITLE: IN-CORE THERMOCOUPLE ADAPTOR CABLE CONNECTORS

NRC REGION NUMBER: 4 --MID-WESTERN STATES

REPORT TYPE: 2 -- 10 CFR 50.55(E)

FIRST REPORT DATE: 9/ 5/1984

SYSTEM: AA --REACTOR CORE

PRIMARY COMPONENT: CBL --CABLE/ WIRE

SECONDARY COMPONENT: CON --CONNECTOR

HOW DISCOVERED: S -- SPECIAL TEST AND INSPECTION

WHO DISCOVERED: LI -- LICENSEE

CAUSE

STAGE: 0 -- ON-SITE CONSTRUCTION
PURPOSE: I -- INSTRUMENTATION/ELECTRONICS/CONTROLS
REASON: R -- MISHANDLING

DEFICIENCY: @01 MORE THAN HALF OF THE CLASS 1E
THERMOCOUPLE CONNECTORS FOR THE IN-CORE
THERMOCOUPLE ADAPTOR CABLES WERE FOUND TO

HAVE CRACKED OR BROKEN INSULATION INSERTS.

CAUSE: @01 MISHANDLING IN THE FIELD MAY BE THE CAUSE
OF THE DAMAGE.

OTHER INFORMATION: @01 K&E HAS ELECTED TO REPLACE ALL OF THE
IN-CORE THERMOCOUPLE ADAPTOR CABLE CONNECTORS
WITH NEW CONNECTORS OF A DIFFERENT DESIGN.

ASSIGNED NRC STAFF

REPORT ITEMS

REPORT DATE: 9/ 5/1984
REPORT CLASS: FO
ACCESSION NUMBER: 8409210011
DATE FORM WAS CODED: 10/19/1984
CODER INITIALS: MW
SUBMITTOR'S I.D.CODE: KGE --KANSAS GAS & ELECTRIC CO.
REPORT SEQUENCE #: 00001499

FACILITIES AFFECTED: 482 --WOLF CREEK 1

CERCL'S IDENTIFIER::8401830

CASE TITLE: VULKENE SUPREME CABLE TERMINATIONS

NRC REGION NUMBER: 4 --MID-WESTERN STATES

REPORT TYPE: 2 -- 10 CFR 50.55(E)

FIRST REPORT DATE: 7/20/1983

SYSTEM: EZ

PRIMARY COMPONENT: CBL --CABLE/ WIRE

SECONDARY COMPONENT: FAS --FASTENER

HOW DISCOVERED: Z -- UNKNOWN

WHO DISCOVERED: LI -- LICENSEE

CAUSE

STAGE: 0 -- ON-SITE CONSTRUCTION
PURPOSE: E -- ELECTRICAL (POWER)
REASON: P -- PROCESSING OR FABRICATION ERROR

VENDOR: XXXX--other vendor

DEFICIENCY: @01 THE TIGHT, NEARLY-INVISIBLE WRAPPING ON
THE CABLE WAS NOT ADEQUATELY REMOVED WHEN
MAKING CABLE TERMINATIONS. CONSEQUENTLY, SOME
EQUIPMENT WAS NOT PASSING CONTINUITY,
MEGGER, OR OPERATIONAL CHECKS.

CAUSE: @01 WRAPPING WAS NOT ADEQUATELY REMOVED
BECAUSE OF BEING NEARLY INVISIBLE.

OTHER INFORMATION: @01 CABLE HAS BEEN REPLACED WITH A CABLE THAT
DOES NOT HAVE THE INVISIBLE WRAPPING. THE
VENDOR OF THE VULKENE SUPREME CABLE IS NOT
KNOWN.

ASSIGNED NRC STAFF

REPORT ITEMS

REPORT DATE: 10/17/1984
REPORT CLASS: FO
ACCESSION NUMBER: 8411050280
DATE FORM WAS CODED: 12/ 6/1984
CODER INITIALS: FH
SUBMITTOR'S I.D.CODE: KGE --KANSAS GAS & ELECTRIC CO.
REPORT SEQUENCE #: 00001830

FACILITIES AFFECTED: 482 --WOLF CREEK 1

CERCRS IDENTIFIER: 8400375

CASE TITLE: TEMPERATURE RATING OF FIELD WIRING TO
SOLENOID VALVE IS TOO LOW

SUBMITTOR'S FORM ID: 84-065

NRC REGION NUMBER: 3 --NORTH CENTRAL STATES

REPORT TYPE: 3 -- BOTH 10 CFR 21 AND CFR 50.55(E)

FIRST REPORT DATE: 4/13/1984

SYSTEM: BF --RESIDUAL HEAT REMOVAL (PWR)

PRIMARY COMPONENT: VOE --VALVE OPERATOR, SOLENOID

SECONDARY COMPONENT: CBL --CABLE/ WIRE

HOW DISCOVERED: M -- MAINTENANCE/MODIFICATION
WHO DISCOVERED: LI -- LICENSEE

CAUSE

STAGE: D -- DESIGN
PURPOSE: E -- ELECTRICAL (POWER)
REASON: M -- MISAPPLICATION/IMPROPER USE

DEFICIENCY: @01 FIELD WIRING THAT CONNECTS INSIDE THE
SOLENOID VALVE COULD EXPERIENCE TEMPERATURES
THAT EXCEED THE WIRE INSULATION MAXIMUM
TEMPERATURE RATING.

CAUSE: @01 INTERNAL OPERATING TEMP OF VALCOR
SOLENOID VALVE HIGHER THAN EXPECTED.

OTHER INFORMATION: @01 THIS REPORT WAS WRITTEN BY SNUFFS. 37
VALVES ARE AFFECTED IN SIX DIFFERENT SYSTEMS.
HIGH TEMPERATURE RATED WIRE WILL BE USED TO
MAKE THE INTERNAL VALVE CONNECTION THAT WILL
THEN RUN OUT OF THE VALVE TO A SPLICE BOX 5
TO 10 FEET REMOTE FROM THE VALVE.

ASSIGNED NRC STAFF

REPORT ITEMS

REPORT DATE: 4/13/1984
REPORT CLASS: FO
ACCESSION NUMBER: 8404260230
DATE FORM WAS CODED: 5/17/1984
CODER INITIALS: FH
SUBMITTOR'S I.D.CODE: XXX --OTHER SUBMITTOR
REPORT SEQUENCE #: 00000375

FACILITIES AFFECTED: 0
: 482 --WOLF CREEK 1
: 483 --CALLAWAY 1

CERC'S IDENTIFIER::8400386

CASE TITLE: FIELD RUN CABLES FOR SOLENOID VALVES

SUBMITTOR'S FORM ID: 84-02

NRC REGION NUMBER: 3 --NORTH CENTRAL STATES

REPORT TYPE: 5 -- 10 CFR 50.55(E) RESULTING FROM A 10 CFR 21

FIRST REPORT DATE: 4/13/1984

SYSTEM: E2

PRIMARY COMPONENT: VOE --VALVE OPERATOR, SOLENOID

SECONDARY COMPONENT: CBL --CABLE/ WIRE

HOW DISCOVERED: M -- MAINTENANCE/MODIFICATION

WHO DISCOVERED: LI -- LICENSEE

CAUSE

STAGE: D -- DESIGN
PURPOSE: E -- ELECTRICAL (POWER)
REASON: I -- RECORDS INCOMPLETE

MANUFACTURER: A499--ASCO VALVES
: T020--TARGET ROCK CORP.

VENDOR: V030--VALCOR ENGINEERING CORP.

DEFICIENCY: @01 THE INCOMING FIELD CABLES ARE TERMINATED
INSIDE A TOTALLY ENCLOSED VALVE BODY HOUSING
A LARGE ENERGIZED SOLENOID. TEMPERATURES
GENERATED BY THE SOLENOID ARE TOO HIGH FOR
THE FIELD WIRING INSULATION.

CAUSE: @01 VALCOR, SOLENOID SUPPLIER, SUPPLIED
DRAWINGS DEPICTING VALVE AND WIRING DETAILS,
BUT PROVIDED NO TEMPERATURE INFORMATION. THE
AE DID NOT RECOGNIZE THAT HIGH AMBIENT
TEMPERATURES WOULD BE ENCOUNTERED, SO HIGH
TEMPERATURE INSULATION WAS NOT SPECIFIED.

OTHER INFORMATION: @01 DESIGN CHANGES HAVE BEEN IMPLEMENTED TO
REPLACE THE FIELD WIRING WITH QUALIFIED HIGH
TEMPERATURE WIRING. IF OTHER SUCH
DEFICIENCIES ARE DISCOVERED, A SUPPLEMENTAL
REPORT WILL BE ISSUED. THE DEFICIENCY WAS
FIRST SEEN IN THE COURSE OF UNRELATED REWORK
ON ONE OF THE AFFECTED VALVES. REPORT
SUBMITTED BY SNUPPS @02 OTHER EQUIPMENT WAS
EXAMINED FOR POSSIBLE EXCESSIVE HEAT RISE AT
FIELD TERMINATIONS. FOUND 20 TARGET ROCK
SOLENOIDS AND 2 ASCO SOLENOIDS. CABLES WILL
BE REPLACED.

ASSIGNED NRC STAFF

REPORT ITEMS

REPORT DATE: 4/13/1984
REPORT CLASS: F0
ACCESSION NUMBER: 8404260045
DATE FORM WAS CODED: 5/16/1984
CODER INITIALS: MW
SUBMITTOR'S I.D.CODE: XXX --OTHER SUBMITTOR
REPORT SEQUENCE #: 00000386

REPORT DATE: 5/10/1984
REPORT CLASS: F1
ACCESSION NUMBER: 8405210105
DATE FORM WAS CODED: 11/13/1984
CODER INITIALS: RG
REPORT SEQUENCE #: 00000588

FACILITIES AFFECTED: 0
: 482 --WOLF CREEK 1
: 483 --CALLAWAY 1

*