

U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

NRC Inspection Report: 50-482/84-51

Construction Permit: CPPR-147

Docket: 50-482

Category: A2

Licensee: Kansas Gas and Electric Company (KG&E)
P. O. Box 208
Wichita, Kansas 67201

Facility Name: Wolf Creek Generating Station

Inspection At: Wolf Creek Site, Coffey County, Burlington, Kansas

Inspection Conducted: October 23 through November 2, 1984

Inspectors: <u><i>Mark W. Peranich</i></u>	<u>12/10/84</u>
M. W. Peranich (Team Leader), Chief, Construction Programs/CAT Section	Date
<u><i>S. R. Stein</i></u>	<u>12/10/84</u>
S. R. Stein, Reactor Construction Engineer	Date
<u><i>G. C. Gower</i></u>	<u>12/10/84</u>
G. C. Gower, Sr. Reactor Construction Engineer	Date
<u><i>R. L. Cilimberg</i></u>	<u>12/10/84</u>
R. L. Cilimberg, Metallurgical Engineer	Date
<u><i>T. K. McLellan</i></u>	<u>12/10/84</u>
T. K. McLellan, Reactor Construction Engineer	Date
<u><i>R. L. Lloyd</i></u>	<u>12/10/84</u>
R. L. Lloyd, Reactor Construction Engineer	Date
<u><i>J. I. Nemoto</i></u>	<u>12/10/84</u>
J. I. Nemoto, Reactor Construction Engineer	Date

Contractor Consultants: J. McCormack, G. Black, J. Devers.

Approved by: <u><i>Robert F. Heishman</i></u>	<u>12/10/84</u>
Robert F. Heishman, Chief Reactor Construction Programs Branch	Date

Inspection Summary

Areas Inspected

Announced special construction verification inspection for an assessment of the Delian Corporation Construction Self Appraisal (CSA) and related followup corrective actions was conducted. The inspection involved 760 inspector-hours onsite by ten inspectors.

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Results

The results of the special construction inspection are discussed in each section of this report. The deficiencies and unresolved items identified during the inspection are summarized in enclosures to the transmittal letter of this report.

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I. BACKGROUND, OBJECTIVE AND SCOPE

A. Background

The Kansas Gas and Electric Company (KG&E), as lead applicant for the Wolf Creek Generating Station (WCGS) contracted with the Delian Corporation (Delian) for a Construction Self Assessment (CSA) of the WCGS. This assessment was performed from June through August 1984 and the Delian CSA report was transmitted to KG&E on August 28, 1984. The objective of the CSA as stated in the report was to "provide an independent evaluation of the construction at Wolf Creek with primary emphasis on hardware inspections similar to the Nuclear Regulatory Commission (NRC) Construction Appraisal Team (CAT) inspection."

The independent CSA effort was originally planned as preparation for an NRC CAT inspection which KG&E found later would not be conducted. KG&E was aware that there was no requirement under NRC regulations to conduct a CSA but decided to proceed on a voluntary basis with the CSA initiative in the interest of providing additional verification of the quality of construction at the WCGS.

Following completion of the Delian CSA effort, KG&E provided the CSA report and the KG&E pending corrective actions to the NRC Director, Wolf Creek Task Force, Region IV as further assurance of the quality of construction for the plant. The NRC Director, Wolf Creek Task Force asked the Director, Office of Inspection and Enforcement (IE) for assistance of NRC CAT personnel in assessing the adequacy of the Delian CSA effort and of related ongoing corrective actions.

A team of IE staff and NRC consultants was formed to conduct the requested special construction verification inspection (SCVI). The NRC Director of the Wolf Creek Task Force requested that the scope of the SCVI address the following matters:

1. An assessment of the Delian Corporation effort and report for independence, scope adequacy to achieve the stated objective, accuracy of inspection results, completeness of inspection and report, appropriate categorization of deficiencies as to their level of seriousness, and appropriateness and justification of conclusions. To the extent that it is practicable, the special inspection should, by sample, verify the conditions identified by the Delian Corporation.
2. An assessment of the KG&E response to the Delian Corporation report to determine if corrective measures are appropriate.

The NRC Director, Wolf Creek Task Force also provided IE with copies of the Delian CSA report and current KG&E information on status of corrective actions for use in preparation for the SCVI. KG&E also informed the NRC Director, Wolf Creek Task Force that all documentation (specifications, procedures, drawings and other documents) used to conduct the CSA would be available in Delian files onsite for NRC review and use in conducting the SCVI.

On October 23, 1984 the NRC SCVI team held an entrance meeting with the applicant and contractor representatives. Enclosure 1 of this section includes an attendance list. The entrance meeting was held to clarify in general terms the purpose and scope of the special NRC inspection and to obtain additional information for the inspection. The information presented by KG&E and Delian during the meeting included: Status Briefing on CSA and Associated Corrective Action Program; Statusing (and Table of Resolution) of CSA Concerns; for each CSA discipline team, a listing of the CSA team leader and KG&E and contractor support team members (Enclosure 2); the resumes of Delian CSA team leaders; and assigned DIC Contacts.

KG&E acknowledged the request that the NRC team be provided with periodic information on the status of the Delian Phase II CSA corrective actions for the 155 specific and 15 generic concerns (Enclosure 3). Examples of status information received and used by the SCVI team in the assessment of the Delian Phase II CSA corrective action effort are attached to this report. This includes: Attachment C, CSA Status Summary of Case Specific Concerns and Generic Concerns; Attachment D, Status of CSA Generic Concerns; Attachment E, Table of Resolution of CSA Concerns, Rev. 8, dated 11/01/84, page 1-17.

Primary KG&E contacts for the NRC inspection were R. Grant, Director of Quality and C. Parry, Superintendent of Quality Systems Engineering.

Enclosure 4 of this section lists DIC contacts for the NRC review of the CSA effort. A first day review of Delian CSA files found that certain documents (specifications and procedures, in most part) had been returned by Delian to KG&E or contractor organizations. Also, the SCVI noted that "backup" documents (NCR's, CARs, audit reports, etc.) needed for the SCVI (and Delian) to evaluate the adequacy of corrective action being taken by the reference "closeout document" (see Attachment C) for each CSA concern was not included in the CSA files. KG&E took immediate action to provide the SCVI team with all necessary documentation, including the requested duplicate set of Delian CSA file folders for each of the 155 specific and 15 generic concerns identified as a result of the CSA effort. KG&E also provided Delian with a set of "backup" documents provided to the SCVI team. Generally, all requested documentation needed during the SCVI to complete the planned assessment was provided by KG&E during the course of the inspection.

On November 2, 1984 an NRC exit meeting was held with the applicant and contractor representatives. Enclosure 5 of this section includes the attendance list.

The exit meeting was held primarily to inform the applicant of deficiencies identified during the SCVI which may need immediate attention, to acknowledge applicant QA Manager commitments for ensuring the effective control and implementation of the CSA corrective action program, and to note that the assessment of the CSA effort and followup corrective actions and resulting conclusions would be based on a review of the findings of the SCVI and would be documented in the inspection report. The applicant was also

informed that the NRC viewed the CSA initiative as a positive action towards providing an additional measure of the quality of construction at Wolf Creek.

B. Inspection Objective and Scope

The objective of the special construction verification inspection was to assess for areas sampled the extent the CSA effort and followup corrective actions provide an additional measure of assurance of the quality of construction at Wolf Creek.

The scope of the special construction verification inspection included a review of the CSA report; a reverification of a representative sample of hardware and associated records examined by the CSA effort and of similar or other items not included in the CSA sample; and a discipline review of the ongoing corrective action program for resolution of the 155 specific and 15 generic concerns resulting from the CSA effort. Additionally, interviews were conducted with designated CSA discipline team leaders, KG&E Quality Assurance personnel and other support contractor personnel.

The areas for which NRC selective examinations of the CSA effort and related corrective actions was conducted include:

- ° Electrical and Instrumentation Construction
- ° Mechanical Construction
- ° Welding and Nondestructive Examination
- ° Civil and Structural Construction
- ° Material Traceability and Maintenance
- ° QC Inspection Effectiveness
- ° Quality Assurance

ATTACHMENT 1

OCTOBER 23, 1984

USNRC ENTRANCE MEETING

ATTENDANCE SHEET

Kansas Gas and Electric Company

F. Duddy, Project Director
P. Dyson, Supervisor Field Engineering
G. Fouts, Construction Manager
R. Grant, Director - Quality
C. Hoch, Quality Assurance - Technical
G. Koester, Vice President - Nuclear
W. Lindsay, Quality Systems Supervisor
O. Maynard, Licensing Supervisor
C. Parry, Superintendent - Quality System Engineering
E. Peterson, Quality Assurance Technical Auditor
W. Rudolph, II, Manager - Quality Assurance

Kansas City Power and Light Company

R. Flannigan, Site Representative

Daniel International Corporation

J. Berra, Vice President
P. E. Halstead, Project Manager

Delian Corporation

B. Carter, CSA Team
D. Leaver, CSA Team
B. Palmer, CSA Team
F. Pimentel, CSA Team
C. Thompson, CSA Team
H. Wong, CSA Team
G. Young, CSA Team

Bechtel

C. Herbst, Assistant Project Engineer
G. Stanley, Assistant Project Manager

NRC and Consultants

G. Black
R. Cilimberg
G. Gower
W. Guldemon
R. Lloyd
J. McCormack
T. McLellan
J. Nemoto
M. Peranich
S. R. Stein
R. Taylor

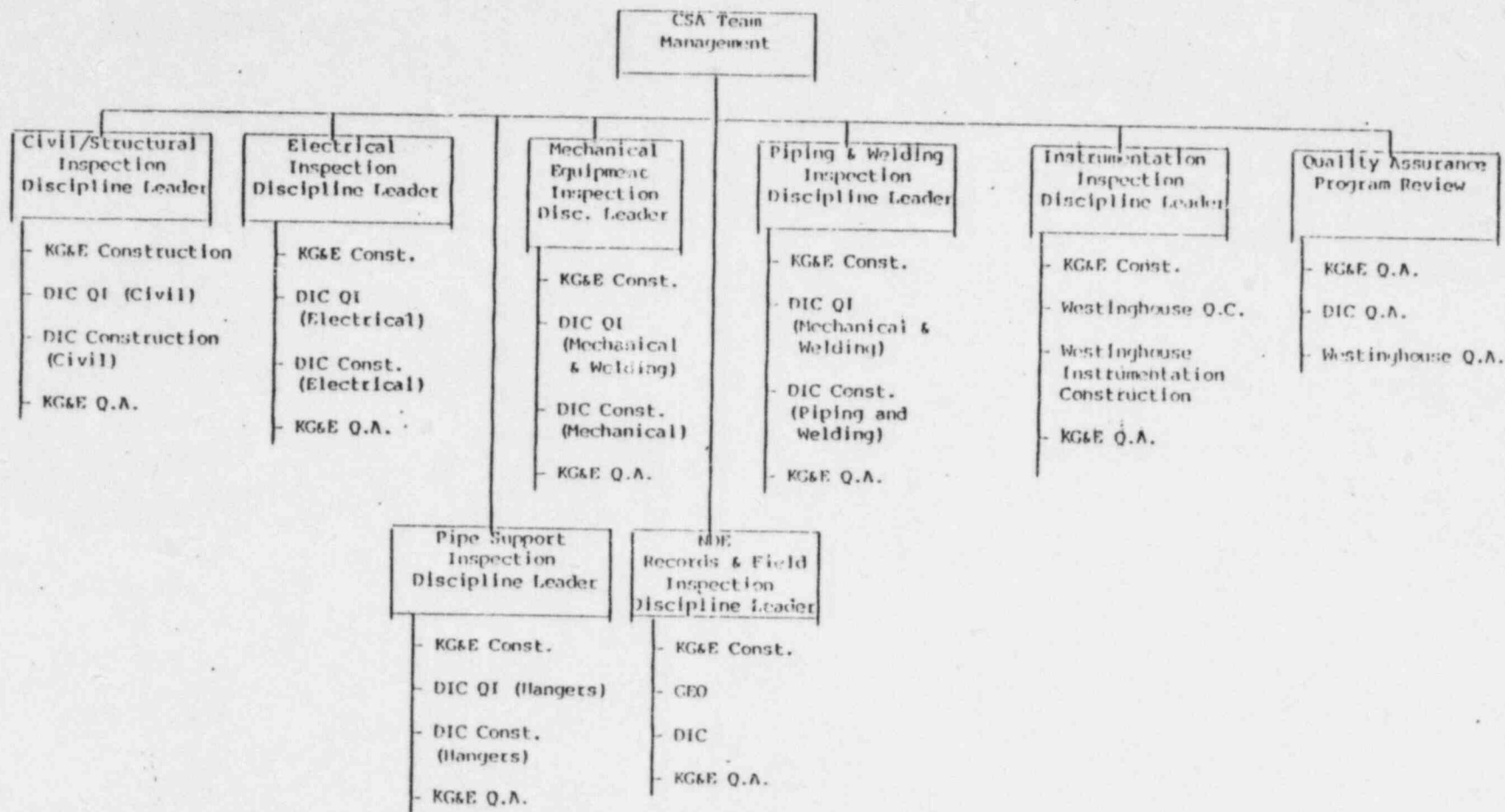


Figure I-1. CSA Team Organizational Interfaces

ATTACHMENT 3

CSA RESULTS OF INSPECTION

° 155 SPECIFIC CONCERNS RESULTED FROM INSPECTIONS

+ ELECTRICAL	48
+ PIPE	26
+ WELDING	24
+ NDE	7
+ PIPE SUPPORTS	29
+ HVAC	5
+ INSTRUMENTATION	9
+ CIVIL/STRUCTURAL STEEL	3
+ MECHANICAL EQUIPMENT	4

15 GENERIC CONCERNS RESULTED FROM SPECIFIC CONCERNS AND CONCLUSIONS
OF CSA REPORT

ATTACHMENT 4

DIC CONTACTS FOR NRC REVIEW OF CSA

<u>DISCIPLINE</u>	<u>NAME</u>
—	*Phillip Halstead
Civil	Frank Raycher
Piping/Welding	Johnny Hanvey
Mechanical/HVAC	Leon Payne
Electrical	Shelton King
Pipe Supports	Harold Kubasek
Quality	Lew Easterwood

*Contact to arrange alternates if above listed people are not available.

ATTACHMENT 5

NOVEMBER 2, 1984

USNRC EXIT MEETING

ATTENDANCE SHEET

Kansas Gas and Electric Company

P. Dyson, Field Engineering Supervisor
R. Grant, Director - Quality
C. Hoch, Quality Assurance - Technical
W. Lindsay, Quality Systems Supervisor
C. Parry, Superintendent - Quality Systems Engineering
E. Peterson, Quality Assurance Technical Auditor
W. Rudolph, II, Manager - Quality Assurance

Daniel International Corporation

J. Berra, Vice President
P. Halstead, Management Consultant

Delian Corporation

B. Palmer, Consultant
H. Wong, Consultant
G. Young, Consultant

NRC and Consultants

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J. Devers
G. Gower
W. Guldemon
R. Lloyd
J. McCormack
T. McLellan
J. Nemoto
M. Peranich
S. Stein

II. THE KG&E AND DELIAN RELATIONSHIP

A. Objective

The objective of the special construction verification inspection (SCVI) in this area was to assess if the work, authority, and independence delegated to Delian by KG&E were sufficient to achieve the objective and scope of work as stated by the Delian CSA report and for the followup corrective actions.

B. Discussion

The objective and scope for the Delian Phase I CSA effort are provided on page I-1 and I-2 of the Delian CSA report.

Delian presented information on the objective and scope for the Delian Phase II CSA followup corrective actions to the NRC SCVI team during the October 23, 1984 entrance meeting. In general, these activities were characterized as a third party evaluator of corrective actions, including: the identification of appropriate corrective actions; evaluation of the adequacy of corrective action responses; and the verification that corrective actions are complete and adequate.

The Delian Phase II CSA corrective action process would address most of the 155 specific concerns through the utilization of normal quality programs of the responsible organization. CSA forms would be used to document the CSA evaluation and verification of the closure of the CSA concern.

For the 15 generic concerns and a few of the more significant specific concerns, the Delian Phase II CSA corrective actions will be accomplished by the implementation of CSA established action plans and through the corrective action programs of each responsible organization. The results would also be documented on CSA Corrective Action Verification and CSA Closure Forms.

1. Delian Phase I CSA

a. Inspection Scope

The inspection in this area consisted of a review of KG&E/Delian contractual documents and of the objective and scope of work stated in Section I of the CSA report. Discussions were also held with the KG&E Director of Quality and Quality System Engineering Superintendent and Delian CSA personnel. A review of observations and findings of the NRC SCVI for each area were also examined.

Contract and related letter agreement documents reviewed include:

- ° KG&E Purchase Order (PO) No. 45606, including the referenced scope of work letter dated June 28, 1984 from Delian to KG&E.

° KG&E letter dated August 1, 1984, KG&E to Delian (KQLO 84-015).

b. Inspection Findings

(1) Contractual Arrangements

A review of KG&E/Delian contract documents found that generally adequate provisions did exist to provide Delian with sufficient authority, independence and scope of work to achieve the CSA objective and scope of work as stated in Section I of the Delian CSA report.

(2) CSA Implementation

The SCVI assessment of the CSA effort for independence, scope and completeness of work is discussed in Sections III through Section IX of this report for each area inspected. In general, NRC inspector conclusions in this regard reflect that the level of independence and authority delegated by KG&E to Delian for performance of the CSA was adequately implemented.

This conclusion is also based on NRC inspectors' observations during the followup inspection of identified CSA concerns which noted a general disagreement between DIC and Delian personnel regarding the merit of the concerns identified by the CSA and also on the corrective action being directed by Delian. These observations generally support a conclusion that the CSA concerns were independently documented by CSA, regardless of the potential for disagreement by a DIC CSA discipline team member.

Only a few SCVI observations raised some question on the adequacy of the independence of the CSA effort. These generally related to inadequacies in the scope of the CSA inspection effort for areas such as welding of structural steel connections (Section V.B.1.b), bolt torquing at the limited 80% design value (Section IV.B.3.b), and material traceability documentation (Section VII.B.1.c).

c. Conclusion

Our overall assessment is that the CSA effort was generally conducted and reported in accordance with the independence, authority, and work provisions established in contract documents. It is also our overall assessment that the CSA objective to evaluate the adequacy of construction was generally achieved for the scope of the CSA review. In the following areas the CSA effort fell short of providing additional assurance of the quality of construction to the degree indicated. noted below:

- (1) The CSA inspection sample for electrical terminations was marginal. [Section III.B.2.c.]

- (2) The CSA effort for the comparison of mechanical equipment nameplate data with FSAR specifications was marginal. [Section IV.B.2.c.]
- (3) The CSA effort for inspection of structural steel welding was insufficient. [Section V.B.1.c.]
- (4) The CSA effort for inspection of vendor welds was insufficient. [Section V.B.2.c.]
- (5) The CSA effort for reinforced concrete was marginal. [Section VI.B.1.c.]
- (6) The CSA effort in material traceability was insufficient. [Section VII.B.1.c.]
- (7) The CSA effort for verification of maintenance requirements was marginal. [Section VII.B.3.c.]

2. Phase II - Corrective Action Followup

a. Inspection Scope

The inspection of this area consisted of a review of KG&E/Delian contract documents; a review of the information on the scope of the Delian Phase II corrective actions; NRC discussions with KG&E, Delian and DIC personnel; NRC observations of Delian ongoing Phase II activities, documentation and procedures; and a review of KG&E's QA program for monitoring ongoing Delian and DIC corrective action activities.

Contract and related letter agreement documents reviewed include:

- ° KG&E PO 45606 and referenced Delian to KG&E letter dated June 28, 1984.
- ° KG&E to Delian letter dated August 29, 1984 (KQLO 84-016).
- ° Purchase Requisition No. 35983 dated October 31, 1984, to add supplemental scope of work to PO 45606.
- ° CSA Concern Closure Form Instructions with Form, Undated, and acquired on October 23, 1984.
- ° Delian Corporation's Construction Self Assessment (CSA) Procedure, Rev. 0, dated October 29, 1984.
- ° Delian Corporation Construction Self Assessment (CSA) Procedure, Rev. 1, dated November 1, 1984.
- ° KG&E QA Manual Procedures

- ° CSA Concern File Folders and Contents, including original and subsequently updated CSA Concern Closure Forms and CSA Corrective Action/Verification Forms.

b. Inspection Findings

(1) Contractual Arrangements

The initial NRC review of KG&E and Delian contract documents and related letter agreements and initial observations of Delian implementation of delegated Phase II activities (as discussed under (2) below) found that the contract scope and other related instructions did not provide for sufficient clarification of Delian or KG&E responsibilities in this area. This finding was satisfactorily resolved by KG&E's issuance of purchase requisition No. 35983 to supplement the scope of work of PO 45606.

(2) Delian Phase II CSA Implementation

Delian Phase II CSA activities are described as consisting of the control and management of corrective actions and the closure of CSA concerns. Delian initiated the preliminary onsite administrative aspects of the Phase II effort during the first week of October 1984. The Delian CSA team members arrived on site during the week of October 14, 1984 to start the technical reviews of the Phase II effort.

As a result of NRC team member interviews with Delian CSA team members and the review of Delian documentation relative to ongoing CSA team member technical evaluations, it was determined that current Delian instructions for CSA conduct of the Phase II effort were inadequate and there was insufficient assurance that these activities would be adequately controlled and documented. NRC discussions with KG&E and Delian in this regard resulted in the resolution of this finding by the issuance of a comprehensive Delian Corporation procedure (Rev. 1, dated November 1, 1984) delineating how the Delian Phase II CSA corrective action activities are to be conducted and documented. KG&E also acknowledged that their review of the procedure found the instructions acceptable as related to documentation required by KG&E as objective evidence that the CSA specific and generic concerns have been adequately addressed. Further, KG&E acknowledged that Delian would be required to perform a reevaluation of all Phase II CSA technical activities conducted before November 1, 1984 to ensure that CSA individuals with appropriate expertise performed required technical reviews and that all such activities are documented in accordance with the instructions of the November 1, 1984 procedure.

(3) KG&E Participation, Audit or Surveillance of Corrective Action Activities

Early during the NRC inspection, KG&E was not planning to conduct QA audits, or surveillance, of ongoing Delian Phase II "independent evaluation" of corrective actions. The initial KG&E involvement with the Delian Phase II effort was generally limited to support provided by the onsite QA Superintendent in arranging meetings between Delian and Contractor, in review of Delian/Contractor action plans of proposed corrective action for CSA generic concerns, and in resolving any disputes resulting from such meetings.

NRC initial findings relative to matters listed below were presented to the KG&E Director of Quality as the basis for the NRC concern that currently planned KG&E surveillance of ongoing Delian or DIC corrective action activities were not sufficient, under existing conditions, to satisfy KG&E's responsibilities for delegated activities. The matters discussed were:

- (a) Procedures for control of Delian Phase II CSA activities and KG&E assurances of CSA implementation in this area.
- (b) KG&E's near term schedule for fuel load.
- (c) NRC inspector observations of the prevalent difference of opinion between Delian and DIC personnel regarding the merit of Delian Phase I CSA concerns or the Delian Phase II proposed action plans for resolution of CSA generic concerns.

The following clarification by the KG&E Director of Quality of KG&E's commitments for ensuring that all Delian corrective action activities are established and implemented in an effective manner was provided.

- ° "KG&E QA is involved in determining appropriate corrective actions for the "Generic" CSA concerns because they represent program level problems.
- ° "KG&E will approve the Delian procedure used to implement phase II of P.O. 45606 (i.e., verification of Corrective Actions).
- ° "KG&E Quality Evaluations group to perform an audit or surveillance to verify Delian compliance with the KG&E approved procedure.
- ° "KG&E Quality Systems will perform a review of all Delian Corrective Action Packages to ensure all required corrective actions have been completed, verified and documented by the CSA and the audited organizations.

- ° "KG&E Quality Systems will ensure all applicable documentation related to the CSA inspection, findings and corrective actions are retained in a useable form as QA Records in accordance with applicable site procedures."

In regard to the NRC question on how KG&E would ensure the DIC effective implementation of Delian corrective action plans, KG&E's commitment in this regard is generally summarized as follows:

- ° KG&E will utilize its existing contractor surveillance program to ensure Delian action plans for the resolution of CSA generic concerns are effectively implemented by DIC, including review or observation of the method DIC utilizes to select any expanded sample requested by the Delian action plan to assess the extent of a CSA generic concern.

c. Conclusion

The above KG&E commitments are considered an acceptable resolution to NRC questions on the means that KG&E will utilize to ensure the effective implementation of corrective action activities delegated to either Delian or DIC.

III. ELECTRICAL AND INSTRUMENTATION CONSTRUCTION

A. Objective

The primary objective of the NRC special construction verification inspection (SCVI) was to assess the extent the Delian Corporation's Construction Self Assessment (CSA) effort and followup corrective action, for the area of electrical and instrumentation construction, provide an additional measure of assurance of the quality of construction at the Wolf Creek Generating Station.

B. Discussion

The report from the CSA inspection effort was reviewed to determine the scope of inspections for electrical raceway, cable and equipment, instrumentation, and instrument tubing. A sample of the CSA effort, from Tables II-1 and II-3 of the CSA report, was selected for examination. The SCVI sample included some areas in which CSA identified specific and generic concerns and some areas in which no concerns were identified. In several areas the examination also included samples outside the CSA effort to provide an additional basis for evaluation of the overall Delian effort.

The CSA report and a selection of the 60 electrical and instrumentation concerns were evaluated for the adequacy of scope, independence, completeness, the appropriateness of the CSA deficiency categorization as to the level of seriousness, the overall conclusions and basis for the conclusions and adequacy of corrective actions. Discussions with onsite Delian, Kansas Gas and Electric Company (KG&E) and contractor personnel as well as the results of the SCVI inspections were taken into consideration for the overall evaluation of the CSA effort.

1. Electrical Raceway

a. Inspection Scope

Ten segments of cable tray totaling 300 feet were selected from the CSA sample of 720 feet. An additional 200 feet of these same tray segments, which were adjacent to and not included in the CSA inspection, were selected for examination. These segments, previously inspected and accepted by the licensee, were examined for compliance to licensee commitments relative to routing, location, support spacing, separation, bedding, identification, loading, physical condition, completeness, and protection.

Five segments of conduit totaling 250 feet were selected for examination from the CSA sample of 800 feet. These segments, previously inspected and accepted by the licensee, were examined for compliance to licensee commitments relative to routing, location, support spacing, separation, identification, completeness, and physical condition.

Thirteen raceway supports associated with the above electrical raceway, and four additional supports identified by CSA concern numbers 24 and 25, were examined for compliance to licensee commitments relative to location, spacing, material type and size, configuration, attachments, and where applicable, bolting and weld appearance and configuration. The four additional supports were also examined for the completeness of corrective action as identified by the CSA effort.

For a listing of the electrical raceway and supports examined, see Table III-1.

The following documents provided the acceptance criteria for the NRC SCVI team examinations and review.

- Wolf Creek Generating Station Final Safety Analysis Report (FSAR)
- Bechtel Power Corporation Specification E-01013, Rev. 11, "Electrical Installation, Inspection and Testing"
- Bechtel Power Corporation Drawing E-1R8900, Rev. 2, "Raceway Notes, Symbols and Details"
- Daniel International Corporation (DIC) Construction Procedure QCP-X-300, Rev. 14, "Inspection of Electrical Raceway"
- DIC Construction Procedure QCP-X-302, Rev. 19, "Inspection of Raceway Supports"
- DIC Construction Procedure QCP-X-304, Rev. 7, "Inspection of Cable Installation"

b. Inspection Findings

In the area of electrical raceway and supports, the NRC SCVI inspectors observed that material and installation methods used were generally as specified in the licensee commitments. However, several construction and inspection deficiencies were identified in both the CSA sample evaluated and the independent SCVI sample and are detailed in the following sections.

(1) CSA Report Review

The scope for inspection of cable tray does not appear sufficient. A discrepancy between the CSA report text and the listing of samples (CSA Table II-1) indicates that their sample of tray may have been as little as 120 feet. The physical selection may have also been insufficient as a number of SCVI findings were in elbow sections immediately adjacent to the CSA samples which were predominantly the straight runs of the tray selected.

Excluding the limited scope of cable tray inspection the report was generally complete with respect to the items examined and findings recorded. Discussion with the Delian inspector and review of the CSA findings indicate that independence of the effort was maintained.

Overall, the deficiencies identified were sufficiently categorized to identify their seriousness. One exception was the number of deficiencies identified with flexible conduit: 12 by CSA and one by the SCVI. Even though outside of the scope of the selected sample, these many instances suggest a high level of significance and require further review by the licensee.

(2) NRC SCVI Sample

(a) Cable Entering or Exiting Raceway

Several cables were observed to exit (rollout) cable tray into the top of equipment without being secured at or near the rollout per the specified criteria. The initial condition was observed in the independent SCVI sample where cables exit tray 4J2A32 at box 1ZSE242.

While the NRC inspectors observed that the specific instances themselves do not represent a significant deficiency in construction as there was no evidence of physical damage, subsequent investigation by the licensee representative indicated this condition to be generic throughout the facility and was subsequently recorded on Notification of Discrepant Condition (NDC) E-111. Although the inspection criteria was available through a specification reference in the Quality Control Procedure, it was not readily apparent from the QC checklist. As a result, QC personnel did not identify these minor construction deficiencies.

The SCVI inspectors also observed one instance in the CSA sample and four instances in the independent sample where cable transferring between cable tray and conduit violated the specified minimum bend radius or barely met the requirement with no additional protection provided to prevent violation due to subsequent construction activities. The following is a list of the tray to conduit observations identified to the licensee.

4U2A32	to	4U2A2C
4J2A32	to	4J2A1L
4J2A31	to	4J2A2B
1J1G60	to	1J1G5C
4J1C66	to	4J1C1U

It was noted that protection methods are detailed by the architect-engineer to be used where necessary.

Discussions with the licensee representative indicated that if field personnel were suspicious of a bend radius measurement, they would make a temporary template for immediate verification only. No permanent templates exist. The licensee representative verified the specific violations and is evaluating additional protection to prevent future violations.

Again, the SCVI inspectors observed that none of the instances identified exhibited a significant deficiency in construction, but rather that minor construction deficiencies had not been identified by QC personnel. Also, the NRC inspectors are concerned that the current method of verification may not identify bend radius violations due to the configuration of the installed cable.

(b) Cable Tray Barriers

In general, cable tray covers (fire barriers and dust covers) were found to be installed in accordance with the specified criteria. However, several instances of missing and improperly sealed barriers and a loose barrier clamp, as listed below, were observed and identified to the licensee representative. The unsealed barrier was found in the CSA inspected sample while the other two instances were found during independent inspection.

1C8F58 - barrier not sealed
1J1H80 - loose barrier clamp
1C8K07 - barrier removed

The licensee's representative documented these discrepancies on Nonconformance Reports (NCRs) 1SN-20890E, -20919E, and -20920E.

The NRC inspectors observed that none of the specific instances identified represented a significant deficiency in construction, but rather that minor construction deficiencies had not been identified by QC personnel.

One additional discrepancy found by the SCVI in the CSA sample involved the barrier for cable tray 4J2A31 at the junction of conduit 4J2A1A. As installed, the barrier partially obscured the tray identification. The licensee representative subsequently recorded this condition on NDC E-097. This condition is considered to be minor and an isolated case.

(c) Cable Bedding and Training

With the exception of cable transfer and rollout deficiencies previously discussed, the SCVI inspectors observed that cable bedding and training had generally been maintained in the areas examined as per the specified criteria.

However, one instance of two cables (1GEY18CA and 1GEY18AA) within the Delian raceway sample was found with one end not sealed and both coiled and laying on a lighting receptacle above tray 1C8F58. Discussion with and investigation by the licensee representative indicated the cable had been deleted but not removed. This condition was subsequently documented on NDC-E-152. The NRC inspectors considered this instance an isolated case.

(d) Supports

Generally, raceway support assemblies, hold down clamps, bolted support braces, welds, and anchors were observed to be in accordance with the specified criteria. An isolated instance of a loose hold down clamp bolt on support 351F-75 was identified to the licensee representative. The condition was subsequently documented on NCR 1SN-20913-E for correction.

During the review and examination of the CSA concern number 24 regarding support 371D-24 (now identified as 371D-1003), one anchor was observed to have concrete spalling behind the raceway support. The NRC inspectors expressed to the licensee representative that the extent of the spalling appeared to infringe upon the required anchor minimum embedment. Subsequent discussion with the licensee representative and QC personnel revealed that minimum embedment is measured from the design surface of the concrete, regardless of the amount of spalling, per the project specifications. Further review of the project requirements by the NRC inspectors did not find criteria established to consider spalling when verifying minimum anchor embedment.

Concurrently, the review and examination of concern number 24 and the related generic concern number 165 revealed a clarification of criteria for the sidewall spread of raceway (Unistrut) supports on Request for Clarification or Information (RCI) 21D-7158. This clarification indicates that a small deflection is acceptable provided no buckling (kinking) is present. Discussion with the project personnel indicated that the RCI did not provide any accept/reject criteria as the present procedure provided the criteria adequately. When asked what was the need for the RCI if the criteria existed, it was indicated the RCI was generated only for the condition identified by the CSA effort. Review of the procedures by the NRC inspectors could not determine the existence of acceptance criteria for Unistrut sidewall deflection.

The lack of criteria established for the above conditions could allow for unacceptable installations to exist. It is recommended that licensee detailed attention be

given to these conditions to assure adequate corrective action by the CSA effort and an analysis to assure that these conditions do not allow for an unacceptable condition elsewhere in the facility. These items remain unresolved.

(e) Raceway Separation

The Wolf Creek Generating Station FSAR Section 8.3.1.4.1.1, Raceway and Cable Routing, provides the basic separation criteria between redundant Class 1E circuits and between Class 1E and non-Class 1E circuits. The criteria as stated is in consonance with IEEE Standard 384-1974 and NRC Regulatory Guide (RG) 1.75-1974. The requirements of RG 1.75 and IEEE-384 are discussed in the FSAR Section 8.1.4.3, Design Criteria, Regulatory Guides and IEEE Standards, and although several items are supplemented or clarified, no exceptions to either document are taken. In summary, FSAR Section 8.3.1.4.1.1 requires cables from different separation groups to be in steel conduit or enclosed wireways or separated by a fire barrier when the normal 5-foot vertical and 3-foot horizontal separation cannot be maintained.

A conflict was noted by the SCVI inspectors between the FSAR commitments and raceway installations as permitted by Drawing E-1R8900. Paragraph 3.36.5 of the drawing permits non-class 1E conduit to be run within one inch of open Class 1E cable tray. The SCVI inspectors noted several non-Class 1E conduit to Class 1E cable tray installations that met the drawing requirement but did not meet the FSAR commitment for either 3-foot 5-foot separation, enclosed raceway or separation by barriers. These are:

<u>Non-Class 1E Conduit</u>		<u>Class 1E Tray</u>
6U3H1A, 6U3H1B	to	4G1C12, 4U1B58 (and free air cable exiting tray)
5J3030	to	1U1E01
5U3090	to	1J1D01, 1C8C01, 1U1E01
5U5010, 5U5011, 6U3E3M, 6U3E3N	to	4U1C72

IEEE-384 permits lesser separation distances to be established by analysis based on flame retardancy testing of the installation. RG 1.75 requires this analysis to be part of the FSAR. Discussions held with representatives of Bechtel Power Corporation indicated that analyses for the Wolf Creek Generating Station installations have not been performed. This item is considered a violation of Appendix B, Criterion III.

c. Conclusion

Several instances of minor construction deficiencies identified by the SCVI were found to be generic by the licensee. A conflict between the FSAR commitment for divisional separation and several installations of non-safety conduit permitted by the detail drawing requires resolution.

While some of the NRC inspection observations were made in the same areas previously examined by the CSA effort, the overall CSA effort resulted in conclusions appropriate for the basis provided, and identified specific and generic deficiencies which require detailed licensee attention to provide correction and assure the quality of construction. Within the scope of the CSA raceway inspection, the effort was complete, independent, properly concluded and does provide an additional measure of assurance of quality of construction.

2. Cable and Terminations

a. Inspection Scope

Since the NRC Region IV task force inspected cable and cable routing, no independent sample was evaluated by the SCVI team. However, cable was reviewed during the SCVI inspection of raceway.

The NRC SCVI inspectors inspected approximately 50 field terminations in two of the four control room panels inspected by the CSA effort. These were panels SA036A and SA066C.

In addition, approximately 30 field terminations from various areas of the plant were independently inspected. These were:

<u>Panel</u>	<u>Cable</u>
RP-210	4GSY02AD 4BMY02AD 4BMK06BC
NN-11	1NNY01AA 1NNY01AB 1NNY01AG 1NNY01AH
NE-106	4NER11AC 4NEB02AP

The terminations were inspected for identification, proper landing of conductors, wire or insulation damage, evidence of proper crimping, lug bending and general workmanship. The termination inspection records were also reviewed.

The following documents provided the acceptance criteria for the inspection of terminations:

° DIC Construction Procedure QCP-X-304, Rev. 10,
"Cable Termination"

° Bechtel Drawing E-17000, "Electrical Termination
List"

b. Inspection Findings

(1) CSA Report Review

Although the number of terminations inspected by the Delian team appeared adequate, their singular location (control room panels) was not sufficiently representative of the plant. The CSA report conclusion recognizes this limitation. The in-process inspection of terminations by Delian provided the review of characteristics not available in final inspections. However, the CSA report does not identify any acceptance criteria used for inspection of terminations.

No specific sample of cable was inspected by the CSA effort.

(2) NRC SCVI Sample

(a) Cable

During the NRC SCVI inspection of raceway, several problems were identified with cable exiting cable tray. These are discussed in Section III B.1.b.2.(a), above. Cable bedding and training observed during raceway inspection is also discussed in Section III.B.1.b.2.(c), above.

(b) Terminations

No deficiencies were noted in the evaluation of the CSA sample of terminations. However, one field deficiency and a potential problem with vendor terminations was found in the independent sample that was inspected. Both of these occurred in panel RP-210.

One conductor from cable 4BMK06BC in panel RP-210 had its insulation deformed and cut through to the wire. Although this apparently occurred during installation of the terminal lug, the DIC inspection records accepted the installation. However, the DIC field termination was made using nylon screws with the licensee performing the final change-out to the current metal terminal screws and a review of the licensee's documentation for this process was not made. This deficiency was documented by DIC on a Notice of Discrepant Condition which had not yet been serialized.

A number of vendor installed terminal lugs in the same panel were found to be bent a full 90 degrees. The DIC Lead Electrical Engineer indicated that the requirement

for field terminations is one bend not to exceed 45 degrees. When the SCVI inspector questioned the vendor requirement, DIC reviewed the purchase specification for the panel and reported that the specification contained no requirement for terminal lug bending. DIC has requested a determination of acceptability of this condition from Bechtel Power Corporation via RCI 1-1361-E. This item remains unresolved.

No other deficiencies were found in the other panels inspected.

c. Conclusion

Only one deficiency in vendor terminations was identified by the SCVI effort. However, the acceptability of vendor termination lug bending requires licensee attention.

Due to the limited scope of the CSA terminations sample, the SCVI findings for terminations and the lack of a specific cable inspection by Delian, the CSA effort does not provide an additional measure of assurance of quality in this area.

3. Equipment

a. Inspection Scope

Three items of electrical equipment inspected by the CSA team were chosen for evaluation by the SCVI inspectors. These were:

High Pressure Safety Injection (HPSI) Pump Motor DPEM01A
Motor Control Center (MCC) NG02B
125 V d.c. Battery NK-12

In addition to location, mounting details, identification and general workmanship, the HPSI pump motor was inspected for nameplate data verification; the MCC was inspected for attachment welds (length, location, general contour), nameplate data verification and breaker size; and the 125 V battery was inspected for cell electrolyte level, rack configuration and battery room environment.

The following documents provided the acceptance criteria for the inspections:

- ° DIC Construction Procedure, QCP-XI-300, Rev. 10, "Inspection of Electrical Equipment"
- ° DIC Construction Procedure WP-XI-300, Rev. 8, "Installation of Electrical Equipment"
- ° Manufacturers' equipment manuals

b. Inspection Findings

(1) CSA Report Review

The size of the CSA sample for equipment appeared adequate to determine the quality of construction in this area. Discussions with Delian representatives revealed that the inspection of motor operated valves (MOVs) was hindered by the inspector's inability to open the MOV covers for a thorough inspection. The CSA inspection was comprehensive, complete and independent for the equipment that was fully accessible to the inspector.

The significant hardware deficiency found by the CSA effort was properly identified as such and properly extended to inadequate inspection criteria and inspection reports.

(2) NRC SCVI Sample

(a) HPSI Pump Motor DPEM01A

No discrepancies were noted with the installation of the pump motor which is in consonance with the CSA inspection.

(b) MCC NG02B

No deficiencies were noted in the location, identification and mounting of the MCC. Breaker size, workmanship and identification of the several cubicles inspected met the specified requirements.

The bolting discrepancies identified by the CSA effort and recorded under their concern numbers 35 and 164 are discussed in Section VII, Material Traceability and Maintenance, of this report.

(c) 125 V d.c. Battery NK-12

The battery cell electrolyte levels, battery rack configuration and battery room housekeeping were found to be generally acceptable. However, the SCVI inspector noted an inconsistency in the deformation of the battery rack brace pads between the two racks; deformation being caused by torquing of the brace pad bolting assemblies. The inconsistent deflection puts the actual torque values in doubt. DIC recorded this condition on NDC E-103 for resolution by the licensee. This item remains unresolved.

The plug welds attaching the battery racks to the floor embed channels exhibited considerable variation in contour. The concern was documented by DIC on Electrical Rework Assignment RA-EI.341-22 which requires two welds to be cleaned and reinspected. This unresolved item will require followup by Regional weld inspectors.

A review of the QC inspection checklists revealed an incorrect drawing reference on the latest checklist. When this was identified to DIC, Generic Resolution F-014 dated September 7, 1984, was produced. F-014 states that, although required by the QC procedure, drawing or specification numbers and revisions need not be recorded on the QC checklists as this information is available from other documents. Although no adverse affect on the hardware in this particular case was noted by the SCVI inspector, the Generic Resolution indicates a program weakness. It is now not certain how the specific documents and revisions used as the acceptance criteria for an inspection can be verified. The licensee needs to more fully address this area.

A review of the CSA concerns for battery NK12 (concern numbers 100, 101 and 155) showed that CSA's requirement for corrective action plans and their evaluation of responses was commensurate with the categorization of the findings. The one significant finding on battery rack bolting, concern number 155, was properly incorporated into generic concern number 164 and is discussed in Section VII, Material Traceability and Maintenance, of this report.

c. Conclusions

No deficiencies in addition to the CSA findings were noted during the SCVI inspection of the MCC and HPSI pump motor.

Two items with the 125 V d.c. battery rack require additional licensee attention: brace pad torquing and plug weld quality.

The scope and depth of the CSA effort in this area provides an additional measure of assurance of quality for electrical equipment with one exception: the inspection of MOV operators.

4. Instrumentation Inspection

a. Inspection Scope

Several items inspected by the CSA effort were evaluated by the SCVI team. These consisted of one tubing run (approximately 100 feet in length), one pressure indicator and the accessories for one air operated valve, and are identified below:

Isometric drawing J-14BB13 (tubing run)
PI-402 (pressure indicator)
EM 8823 (air operated valve)

Two additional tubing runs for an approximate total of 70 feet were independently inspected. These were detailed on isometric drawings J-04BG02 and J-14BG16.

In addition to the tubing itself, the tubing supports, instrument mounting details and mounting structure configurations were verified. Inspection records were also reviewed.

The following documents provided the acceptance criteria for the inspection.

- ° Bechtel Specification 10466-M-204 Appendix X, Rev. 16, "Field Fabrication and Installation of Instrument Tubing, Tubing Supports and Instrument Supports".
- ° Westinghouse Nuclear Operations Division (WNOD) Procedure G-SAP-A-005, Rev. 4, "Engineering Job Instruction for Field Instrumentation Installations".

b. Inspection Findings

(1) CSA Report Review

The samples chosen by the CSA inspector were of sufficient size and variety to make an adequate determination of construction quality. The only omission noted in the CSA effort for instrumentation was the lack of inspection documentation review.

The concerns evaluated by the SCVI were properly categorized by CSA and represented the results of an effective, independent inspection.

(2) NRC SCVI Sample

No deficiencies were noted with the CSA inspected pressure indicator and air operated valve accessories, and only one minor deficiency was noted on one of the independently inspected tubing runs. This deficiency was a tubing clamp on isometric J-04BG02 located over the specification tolerance for the designed spacing. This condition was being documented on an NCR at the close of the inspection and an NCR number had not yet been assigned.

The CSA inspection of isometric J-14BB13 resulted in concern number 143 for a loose tubing clamp and bent and sagging tubing. At the time of the SCVI, Westinghouse NOD had repaired and reinspected the items identified by the CSA although Delian had not yet verified the corrective action. The SCVI inspector identified three separate deficiencies in the tubing run, one of which was located immediately adjacent to the repaired section of the tubing.

The three deficiencies included an area of sagging tubing and two instances of physical interference. The sagging tubing was located approximately 10 feet from the area identified by the CSA concern. The tubing was also in contact with a tube

steel support immediately adjacent to the repaired section and was apparently caused by the repair, and the second interference occurred where the tubing passes through a wall penetration shared with an insulated pipe. The Bechtel specification M-204 Appendix X and Westinghouse procedure G-SAP-A-005 require sufficient clearance from all steel and concrete surfaces of building members.

The sagging tubing and the area of contact with the tube steel were documented on NCR 1SN55413-J. The interference with the pipe insulation and wall penetration sleeve requires coordination with the insulation contractor and was documented on the Open Items Status Report. Although relatively minor in nature, deficiencies in tubing which has been inspected, repaired and reinspected may indicate that the licensee does not have sufficient control over inspected and accepted tubing runs.

In addition to reviewing concern number 143, the SCVI reviewed CSA's generic concern number 156 issued as a result of foreign material on instrument tubing and tubing damage caused by subsequent construction activities. Although the CSA corrective action plan is not specific, it identifies the key elements the licensee should meet: identification of damage, prevention of damage, determination of corrective action effectiveness, and tubing verification prior to operation. CSA was still reviewing the licensee's proposed actions relative to this concern at the end of the SCVI.

c. Conclusions

Four deficiencies, which were not considered to be significant construction deficiencies, were noted by the SCVI and documented by the construction organization. However, the presence of three of these on one tubing run that had been inspected twice, repaired and reinspected indicates that the licensee's corrective action program in this area needs improvement.

The CSA effort in instrumentation was acceptable in scope, independence, and categorization of findings. Although it would have benefited from a review of documentation, the effort does provide an additional measure of assurance of quality.

TABLE III-1

RACEWAY AND SUPPORT INSTALLATION

Raceway

1C8F	1J1G	6J2A	4J2A	1J3F6A
1C8G	1J1H	6J2B	4J1C5B	3J6002
1C8J	1J1J	4U2A	1U3M1D	3U6002

Supports

371D-1002	351F-71	251F-74	241-03	252FR-29
371D-1003	351F-72	351F-75	241-04	
371D-1004	351F-73	241-02	241-05	

IV. MECHANICAL CONSTRUCTION

A. Objective

The objective of the special construction verification inspection (SCVI) was to assess the extent the Construction Self Assessment (CSA) effort and followup corrective actions, in the area of mechanical construction, provide an additional measure of assurance of the quality of construction at Wolf Creek Generating Station.

B. Discussion

The scope and description of the CSA effort in the area of mechanical construction are provided on page III-1 and III-2 of the Delian Construction Assessment Report. The more significant inspection findings are discussed on page III-3 of the report and the specific details of the individual concerns resulting from the CSA effort in this area are contained in 50 separate concern packages maintained by Delian Corporation at the Wolf Creek site.

During the course of the NRC inspection, the individual concern packages were examined to more fully assess the nature of the concern, corrective action taken or the action plan proposed to resolve the concern. Acceptance criteria for the NRC inspections were essentially the same as used by CSA and referenced in the Delian report. Copies of the appropriate standards, specifications, drawings, manuals and procedures were provided by KG&E or DIC as needed. Also, interviews were conducted with Delian, KG&E and DIC personnel involved in the mechanical construction area as needed to assess the CSA effort. Factors considered in the assessment of the CSA were: independence, adequacy of their scope for the stated objectives, completeness, appropriateness of CSA identified deficiencies, their categorization and the conclusions reached in their report.

Specifics of the NRC verification inspections are provided below.

1. Pipe Supports/Restraints

a. Inspection Scope

The Delian report lists a total of 50 large bore and 20 small bore supports/restraints as those inspected by the CSA team. Page III-3 of the report provides the details of what was inspected and Tables III-3 and -4 give the individual systems involved, hanger numbers and other pertinent information relative to the support/restraint.

The NRC team inspected a sample of 13 large and small bore pipe supports/restraints that the CSA team had also inspected. Two additional support/restraints not inspected by the CSA team were also inspected. The 15 are identified below:

EG01-C012
AB01-R032
AE05-H005
EG10-A001
EG13-R008*
EP02-R021
EP02-R011
EP02-R010

AE05-R014
AE05-R001*
EJ02-C002
EJ02-R023
AB01-R515
EM12-H005
EP02-H005

Prior to NRC inspection of the above supports/restraints, data packages used by the CSA team for the inspection items were reviewed along with the concern packages for those that had generated a concern. Similar data was used for the SCVI of the two restraints not included in the CSA sample. These data packages contained design sketches, bill of materials, any special instruction sheets involved, QC inspection forms and other quality related documentation. For the 13 supports, specific design/construction attributes noted to have been inspected by CSA were reviewed.

During the NRC team inspection the same attributes were examined and verified and on some supports additional attributes beyond those inspected by CSA were examined for conformance to design/construction specifications.

b. Inspection Findings

NRC inspections of the supports/restraints noted above, including the two not in the CSA sample, did not result in the identification of significant deficiencies beyond those identified by the CSA effort.

On several supports the specific concerns identified by CSA were observed to have been corrected or reworked; other concerns were noted to have been accepted "as is". It is noted that several specific concerns in this area resulted in generic concern 166. This matter dealt primarily with the possibility that Special Instruction Sheets (SIS) may not have been updated following drawing changes, etc. Resolution of this relatively significant concern involved review of a considerable number of SISs and the eventual issuance of two Corrective Action Reports (CAR). The NRC team reviewed the particulars of this finding and the proposed resolution including the two CARs. The finding is considered valid and the proposed corrective action is a reasonable method of resolution.

It is noted that the CSA effort by Delian did not include inspection of the expansion anchor bolts used to fasten surface mounted base plates for the support/restraints in their sample or as a separate area of inspection. In view of this, the NRC team selected a sample of expansion anchor

*Support Restraint not in CSA Sample

bolts used in supports/restraints both within the CSA sample and outside. A total of 8 surface mounted base plates which included a total of 32 expansion anchor bolts were inspected for proper torque. The details and results of the inspection of anchor bolts are discussed in Section V of this report.

c. Conclusion

The CSA effort in this area was found to be generally acceptable in terms of independence, scope, completeness, characterization of findings and the conclusions reached. The action plan developed in connection with generic concerns 157 and 166 are appropriate in view of the specific findings which led to their preparation.

The fact that the CSA effort did not include the verification of torque values and inspection of a sample of expansion anchor bolts detracts somewhat from the overall CSA conclusions about pipe supports/restraints, with this exception, the CSA effort provides an additional measure of assurance of quality in the area of pipe supports and restraints.

2. Equipment Data FSAR Comparisons

a. Inspection Scope

The Delian report discusses this area of inspection on page III-7. Of the seven items listed on Table III-6 of the Delian report, four were examined by the NRC team for verification. It was noted that a total of 19 parameter values - Nameplate Data or FSAR Data - were missing from Table III-6 and presumed indeterminate by Delian for comparison purposes.

b. Inspection Findings

During the NRC team coverage of this area 13 of the 19 missing comparison values were located with the help of KG&E personnel and evaluated. Several comparison values remain indeterminate for some CSA sample items. Discussions with Delian personnel on this matter indicate that an attempt to obtain some of the missing data from KG&E had failed. The matter was not pursued by Delian.

c. Conclusions

The CSA effort in this area was determined to have been generally acceptable with respect to independence and scope. The NRC review of this effort indicates that most of the items listed for comparison purposes were verified by CSA, however, a significant number of values that were not verified as shown by blanks in table III-6. Seven pieces of equipment were involved in the CSA sample. From one to four items of comparative data was left blank on each of the seven items. This raises a question about the completeness of this effort and therefore the additional measure of assurance of the quality provided by the CSA effort in this area is considered marginal.

3. Bolt Torquing for Mechanical Equipment

a. Inspection Scope

A description of the Delian effort in this area is provided on page III-7 of their report and Table III-7 lists the specifics of the items checked. During discussions with the CSA team members associated with this effort an attempt was made to determine the bases for using test-torque values 80% of the specified design values. It was learned that the 80% torque limit was essentially established to avoid breaking any torque seals that had been previously applied following final QC torquing.

b. Inspection Findings

The NRC team could not verify or establish the validity of using an 80% test limit in terms of quality verification or other quality standards. A discrepancy is noted between the statement on page III-7 about an 80% limit and the data in table III-7. Apparently some of the bolts in the CSA sample were torqued to 100% of the specified values despite the statement on page III-7. No independent SCVI examinations were conducted in this area.

c. Conclusion

In view of the NRC team's problems in establishing the basis upon which bolt torquing was accomplished there appears to be a limit on the additional measure of quality achieved from this effort.

The bolts (8 of 18) that were torqued to full specified values were of one type and size and located on the same type of equipment (auxiliary feedwater pump). To this extent there is an additional measure of assurance of quality of bolt torquing.

4. Heating, Ventilation and Air Conditioning (HVAC)

a. Inspection Scope

The CSA scope and description of the CSA inspections in this area are provided on pages III-8 and -9; the list of specific items making up the CSA sample is provided in Table III-8. The CSA concerns resulting from their inspections are provided in Table III-9.

The NRC team inspected four of the 24 HVAC hangers in the CSA sample including the adjacent sections of duct, flanges and equipment in the general area. Prior to performing the inspections both the CSA data package and the CSA concern file were obtained and reviewed for each hanger to ensure recognition of the attributes inspected by CSA and resulting findings/concerns.

Generally, the concerns identified by CSA were of a welding nature (undersized welds - generic concern 168) and inconsistencies between various documents which specified fabrication and inspection requirements (specific concern 153 and generic concern 158). The NRC inspection confirmed the CSA findings; no significant additional deficiencies were identified.

The CSA effort, as far as the NRC team could determine, did not include a sample of fire dampers. The NRC team inspected a sample of 6 fire dampers. The appropriate Bechtel drawings were used during those inspections. Also, Bechtel Specification 10466-M-627B "Technical Specification for Dampers for SNUPPS", DIC Document QCP-VIII-200 "Inspection Documentation of Field Fabrication and Erection of Safety Related Ductwork and Supports" and DIC Document AP-VI-13 "Special Programs - Fire Protection Verification" were reviewed by the NRC team in connection with their inspections in this area. The following fire dampers were inspected:

GKFD-030	GKFD-163Q
-041	-296
-160Q	-297

b. Inspection Findings

No discrepancies from design and specification requirements were observed during the inspection; however, a flow direction vane assembly was observed to have minor damage. Appropriate documentation of this damage was prepared by DIC personnel.

The CSA effort, as noted above, also did not include a sample of expansion anchor bolts in their inspections of HVAC hangers/supports. This prompted the NRC team to select a random sample of 31 expansion anchor bolts for inspection and verification of torque setting. Several discrepancies were observed and documented as a result of this effort. Specific details and on this matter are contained in Section V of this report.

c. Conclusion

The CSA effort in this area was found to be generally acceptable in terms of independence, scope, completeness, characterization of the concerns identified and the conclusions reached. The generic concern (158) that stemmed from the overall CSA evaluation of specific findings was reviewed and the NRC team concludes that the proposed action plan is a reasonable method for resolving the stated concern (conflict or lack of uniform inspection criteria).

The CSA effort would have been more complete had it included a sample of fire dampers and expansion anchor bolts. While this does detract somewhat from the overall CSA effort in the HVAC area and limits their conclusions correspondingly, those areas that were covered provide an additional measure of assurance of the quality of construction.

V. WELDING AND NONDESTRUCTIVE EXAMINATION (NDE)

A. Objective

The objective of the special construction verification inspection (SCVI) was to assess the extent the Delian Corporation Construction Self Assessment (CSA) effort and followup corrective actions in the area of welding and NDE provide an additional measure of assurance of the quality of construction at Wolf Creek.

B. Discussion

The scope and description of the CSA effort in the area of welding for mechanical, electrical and structural activities and NDE are provided in the Delian CSA report. The more significant inspection findings are discussed on pages IV-4 and IV-5 of the report. Specific details pertaining to individual concerns resulting from the CSA effort, in this area, are contained in 44 separate concern packages retained by Delian at the Wolf Creek site.

During the course of the NRC inspection all of the individual concern packages were examined to assess the nature of the concern, and the corrective action taken on the action plan proposed to resolve the concern. The vendor data packages for supplier welds selected for examination during the inspection were acquired, after some delay, and reviewed prior to the actual inspection of welds. Interviews and discussions were also conducted with Delian, KG&E and DIC personnel involved in the welding and NDE area as a part of this inspection. Factors considered were: independence of CSA, adequacy of their scope for the stated objectives, completeness, appropriateness of CSA identified deficiencies, their categorization and the conclusions reached in their report.

Specifics of the SCVI are provided below:

1. Structural Steel Welding

a. Inspection Scope

The SCVI team inspected weld connections C81, C82, C83, C84, and C85. These welds were made by field welding structural floor beams to embed plates above the Control Room per Bechtel drawing number 10466-C-121-1420-02 which is listed in Table V-4 of the Delian report.

b. Inspection Findings

The SCVI team was informed by KG&E during the entrance meeting that KG&E was performing a 100% reinspection of all structural welds as a result of the NRC Region IV finding that some structural welds were missing and various other welds did not meet requirements. The CSA of structural steel welds is covered in Sections IV and V of the Delian report. Structural welds in the Control, Auxiliary, and Reactor Buildings that were

visually inspected by the CSA are listed in Table V-4. The report also stated that "No hardware welding problems were noted in structural steel and electrical support areas." The SCVI team interviewed the CSA Civil/Structural discipline leader of Delian who indicated that structural welds were not physically reinspected. The discipline leader stated that "the structural welds were judged to be acceptable on the basis of visual observation and review of weld records only." It was also clarified that the review of existing DIC weld records was performed by the DIC member of the CSA team.

The SCVI inspection of a selected weld sample revealed that some of the inspected structural welds did not meet the Bechtel specifications. The weld deficiencies found were identified as weld underrun, undersized welds, lack of fusion between beads and excessive overlap. These welds were previously visually inspected and accepted by CSA.

c. Conclusions

The CSA effort was not effective in discovering the structural welding problems because the CSA inspectors did not physically inspect structural welds, therefore the objective of the CSA was not effectively implemented in this area. The CSA did not provide an additional measure of assurance of the quality of construction in this area.

2. Welding of Piping and Components

a. Inspection Scope

The CSA inspection of the welding of piping and components is covered in Section III of the Delian report. The CSA inspection resulted in 37 concerns based on visual inspection of piping and component welds. The CSA team physically reinspected some of the welds on which the concerns were based. The SCVI team selected concern numbers 68, 69, 72, 119, 120 and 137 which involved vendor welds and reviewed the data packages in order to identify the acceptance criteria used for the physical inspection of the welds. The inspection in this area was delayed by the inability of the DIC contacts to supply vendor data packages. KG&E resolved this problem by providing the data packages in response to requests by the SCVI team leader.

b. Inspection Findings

The CSA team has accepted the corrective action for 22 of the 37 concerns. Nine of the remaining 15 concerns requiring corrective action were related to vendor welds.

The SCVI team inspection of the selected weld sample resulted in the following observations:

- ° Welds were inspected through paint without engineering evaluation of the acceptability of that method of inspection.
- ° The CSA inspectors did not use a written procedure or criteria for the inspection of vendor welds.
- ° The SCVI team inspection did not identify any significant deficiencies beyond those identified by the CSA effort. However, the DIC personnel stated that "they were not responsible for welds made by vendors", and in a number of cases expressed their view that CSA findings were not valid. The SCVI team questions the adequacy of implementation of corrective action by DIC when DIC does not believe that they are responsible for corrective action.

c. Conclusions

The CSA effort in this area was found to be generally acceptable in terms of independence, scope, completeness, characterization of findings and the conclusions reached with the following exceptions.

The reinspection of vendor welds in accordance with the criteria referenced on Bechtel purchase orders, not used in the CSA, is required to provide a basis for implementation of corrective action. This should follow the removal of paint from the vendor welds or an engineering evaluation on the acceptability of inspecting welds through paint. This item remains unresolved.

KG&E needs to contractually delegate responsibility for the use of written procedures and criteria that would alleviate organizational disagreements concerning implementation of corrective action in accordance with the generally acceptable action plan for resolution of CSA generic concern 169. This item remains unresolved.

The CSA effort did not provide an additional measure of assurance of quality in the area of vendor welds.

3. Welding of Piping and Components - Radiographic Inspection

a. Inspection Scope

The scope of the CSA review of radiographic film for vendors is discussed on page IV-2 of the Delian report. The findings of the CSA effort for this area is given on pages IV-6 through IV-11. Table IV-6 lists film reviewed by the CSA.

The objective of the radiographic inspection was to determine if the CSA effort was adequate in scope and implementation to be capable of determining if the work, both completed and in progress, and quality control (QC) work related to welding and NDE activities, were and are, controlled and performed

in accordance with design requirements and applicable codes and specifications.

To accomplish the above objectives, the SCVI reviewed 703 radiographs, which cover approximately 377 feet of weld (32 welds made by 15 contractors and vendors). 148 of these films related to field welds completed on the site.

The SCVI sample included NDE for welds performed by two onsite contractors (DIC and GEO Testing) and 12 of the 13 piping and component vendors in the CSA sample and of one vendor not in the CSA sample. Some of the SCVI sample was the same as the CSA sample while others as noted in b.(1), (2), (3), (8), (10) and (13) below were independent of the CSA sample review of NDE for welding.

Three quality control certification/qualification packages for QC inspectors were also reviewed.

b. Inspection Findings

(1) Daniel International Company (DIC)

The SCVI team reviewed 16 welds which were reviewed by the CSA team and one that was not reviewed by Delian. This involved the review of 140 film covering 143 feet of piping or component welds for eleven systems.

The CSA found no unresolved problems. SCVI examinations confirmed this finding.

(2) Geo Construction Testing

A total of 8 film, covering 4 feet of weld associated with the Feedwater System (AE) was reviewed. This item was not reviewed by CSA. No problems were identified as a result of this review.

(3) DRAVO

The SCVI team reviewed film for 5 welds which were reviewed by CSA and 3 welds which were not reviewed by Delian. This effort involved the review of 36 film covering 30 feet of weld on the Main Steam System (AB) and Reactor Coolant System (BB).

No problems were found by CSA. The SCVI team noted 33 film packages which had a different material thickness than those recorded on the reader sheets. In 31 film packages, the thickness difference was 1/10 of an inch and in two packages the difference was 11/100 of an inch. In order to resolve this item, the applicant should determine the actual thickness of the weld and verify that the correct penetrameter was used based on the confirmed thickness.

(4) Sargent Industries/Airite Division

This effort involved the review of 36 film covering 9 feet of weld on flued heads by both CSA and the SCVI team.

CSA concern #64 - penetrometer material did not conform to the inspection report and the film showed poor radiographic technique and film scratches. Further investigation and review verified that a proper penny was used and that the film scratches were not indications of bad welds but of poor film handling technique. The concern was resolved by CSA and KG&E and the SCVI team concurs.

(5) Atlas

This involved the review of 72 film covering 36 feet of weld on the Excess Let Down Heat Exchanger by both CSA and the SCVI team. No problems were found by CSA or the SCVI team.

(6) Pullman-Kellogg

The SCVI team reviewed the film for six welds which were reviewed by CSA. This involved the review of 48 film covering 15 feet of weld on the Feedwater System. No problems found by CSA or the SCVI team.

(7) Westinghouse

The CSA team reviewed film from 17 welds. The SCVI team reviewed film for five welds which were reviewed by CSA. This involved review of 59 film covering 6 feet of weld on the Inlet Nozzle Safe End and Control Rod Housing.

CSA concern #83 - the vendor's radiograph showed a linear indication about 7/8 inch long in an area where the maximum length would be 3/4 inch. This slag indication on closer examination proved to be two slag inclusions both of which are acceptable under the code. The SCVI team agrees with the second interpretation. The concern was resolved by CSA and KG&E.

(8) Richmond Engineering Company (RECO)

CSA reviewed film from 6 welds. The SCVI team reviewed the film for these six welds and 4 other welds. This involved the review of 38 film covering 50 feet of weld on the Let Down Heat Exchanger System and the Gas Accumulator.

For CSA concern #94, the vendor's shooting sketch shows that a 22 inch diameter pipe was radiographed. The actual welds radiographed were 3.635 inches in diameter. In addition, film placement does not agree with sketch and lead I.D. markers were located within the area of interest.

As a result of the CSA, all film in connection with the concern will be reexamined and film from other RECO contracts will be examined up to 100% depending on further findings.

The SCVI team concurred with the film analysis and the recommendation for review of additional RECO contracts.

(9) Applied Engineering Company

This involved review of 57 film covering 25 feet of weld on the Seal Water and the Let Down Reheat Exchangers by both CSA and the SCVI team.

CSA concerns #84 and #85 - Vendor films show indications of incomplete penetration, lack of fusion, undercut and unacceptable densities. The areas of concern were re-radio-graphed and the concerns were confirmed. An NCR is to be written, a 100% review of this vendor's film is to be done and possibly the internals of the vessel concerned will be removed to allow further visual examination and possibly repair.

The SCVI team agrees with the findings and with the indicated additional review and corrective action.

(10) Struthers Wells

This film review was by the SCVI team. CSA did no reviews of this vendor. This involved review of 9 film covering 16 feet of weld on Heat Exchangers. No problems found by these independent examinations.

(11) Anchor/Darling Valve Company

The SCVI team reviewed film for 6 welds which were reviewed by CSA. This involved review of 48 film covering 6 feet of weld on three 600# valve bodies.

CSA concern #66 - unacceptable film density in thin sections of the welds and in the penetrometer. Further review determined that film densities were within code limits and the concern was resolved by CSA and KG&E. The SCVI team concurs with the final review results.

(12) Walworth

The SCVI team reviewed film for eight welds which were reviewed by CSA. This involved the review of 24 film covering 13 feet of weld on 3 inch valve bodies. No problems were found by CSA or the SCVI team.

(13) Velan Valve

The SCVI team reviewed film of 4 welds repairs, three of which were reviewed by CSA. This involved review of 42 film covering 3 feet of weld on 3 inch 900# valve bodies. No problems were found by CSA or the SCVI team.

(14) G&W Energy (Taylor Forge)

The SCVI team reviewed film for 6 welds which were reviewed by CSA. This involved review of 47 film covering 21 feet of weld. No problems were found by CSA or the SCVI team.

(15) Chicago Bridge & Iron

CSA reviewed film from 31 welds. The SCVI team did not review any CBI film.

CSA concern #65 - inspection showed no shooting procedure, station markers distorted, incomplete fusion, and possible incomplete fusion (noted on the film as a surface condition). Further review determined that the referenced procedure was a shooting procedure, film indications were surface conditions as noted and the radiographs met ASME Section V requirements.

The concern was resolved by CSA and KG&E (KG&E sign-off missing).

(16) Summary Review of CSA Concerns

The CSA delineated 7 areas of concern in the NDE area of the welding/NDE discipline. Of these 7, 4 were resolved by further review of film and hardware by Delian and KG&E. These are concerns No. 64, No. 65, No. 66 and No. 83. For three concerns, No. 84, No. 85, and No. 94, the CSA team required further investigation and/or documentation before a resolution can be accomplished.

c. Conclusions

The CSA effort on film review was found to be generally acceptable with respect to independence and scope for interpreting the film and instituting corrective action. In a few cases more effort to institute review of further samples when welding defects were detected would have been appropriate.

As a result of the independent SCVI team review of the Dravo film, 33 film packets were found to be marked with a material thickness different from that shown on the reader sheet. This item remains unresolved.

The SCVI found the CSA corrective action for CSA concerns #84, #85 and #94, including the resolution of CSA identified

deficiencies in welding by Allied Engineering Company and RECO and the 100% review of all other welding performed by those two suppliers, acceptable.

The CSA provided an additional measure of assurance of quality in the area of welding.

VI. REINFORCED CONCRETE AND STRUCTURAL STEEL

A. Objective

The objective of the special construction verification inspection (SCVI) was to assess the extent the Construction Self Assessment (CSA) effort and follow up corrective actions, in the areas of reinforced concrete and structural steel, provide an additional measure of quality of construction at Wolf Creek Generating Station.

B. Discussion

The scope and description of the CSA civil and structural construction inspection effort are covered on pages V-1 through V-3 of their report and consist of two areas, namely, reinforced concrete and structural steel construction. The CSA report had no significant findings for review by the NRC inspection team. However, to assess the adequacy of the CSA conclusions, both areas of the CSA effort and report were inspected by the SCVI team excluding structural welds which were covered by the Welding and NDE effort (Section V). In addition, the SCVI team inspected concrete expansion anchor bolts for torque, embedment, concrete spalling and bolt spacing.

Interviews were conducted with onsite CSA, KG&E and DIC personnel prior to, during, and after the SCVI team examinations. Other factors considered for the CSA effort and report evaluation were: independency of the CSA effort; adequacy of the CSA scope for the stated objective; appropriateness of CSA deficiency categorization; and the conclusion of their report.

1. Reinforced Concrete

a. Inspection Scope

The CSA report (pages V-4 and V-5) lists a total of 24 concrete pour packages examined by CSA. The CSA team assembled a file of the concrete placement documentation that they reviewed.

The SCVI team inspected records of five in-place pours (OC241W20; OC361W02; OC252S01; OC252S01 and OC142W06) and reviewed the associated documentation previously sampled by CSA. The five concrete placements consisted of three concrete placements in the Reactor Building and one each in the Auxiliary Building and Control Building. The SCVI team visually inspected the surface of these five in-place concrete pours for cracks, misalignment, concrete repairs and installation of embeds. The SCVI team selected at random from the five concrete placement packages, nine inspectors who performed QC inspections to verify, through a review of the certified inspector computer listing, if they were certified in the duties that they performed. The SCVI team also reviewed the qualification records of five of the nine inspectors to determine if they were qualified to perform their duties.

The SCVI team reviewed the associated documentation of the concrete placements to determine the overall adequacy of the CSA review of DIC performance of the following:

- Concrete and Material Testing
 - a. Laboratory
 - b. Air, Slump, Temperature, Unit Weight & Cylinders
 - c. Batch Adjustment Form
- Pre-Placement Inspection
 - a. Reinforcement
 - b. Cadwelding
 - c. Embedments
- Placement Inspection

In accordance with standards, specifications, and procedures.
- Post-Placement Inspection

Curing

The associated documentation was reviewed for conformance to the following procedures:

QCP-IV-106, Rev. 12, "Concrete Pre-Placement, Placement, and Post-Placement"

QCP-IV-102, Rev. 7, "Mechanical Splicing of Rebar"

QCP-IV-105, Rev. 4, "Concrete Batching, Mixing, and Delivery"

b. Inspection Findings

(1) CSA Report Review

No concerns were identified by the walkdown and document review by the CSA inspectors regarding the concrete in-place or the documentation.

The CSA inspector stated to the SCVI team that he did not review any other documents, such as the Daily Cadweld Inspection Report, As-Built Cadweld Location Drawings, Cadweld Test Splice Results, Concrete Materials Test Results or any inspector's qualifications and certifications, to substantiate the acceptance by DIC of the different items on the Pre-Placement Checklist.

(2) SCVI Sample

The following observations were made regarding the documentation review and the concrete in-place inspection:

- (a) The SCVI team visually observed no cracks, misalignment, embedments or faulty concrete repairs during the inspection of the five in-place concrete pours selected.
- (b) Concrete and Material Testing requirements and frequency were found to be in accordance with approved procedures.
- (c) The review of the qualifications and certifications of DIC inspectors revealed that one Level I Batch Plant Inspector had signed off for the evaluation of batch tickets instead of the required Level II. This was found to be inconsistent with Table 1 "Minimum Levels of Capability for Project Functions" of ANSI N45.2.6 which states that only a Level II or Level III can evaluate the validity and acceptability of inspection, examination, and testing results. A KG&E surveillance report (S-395) was presented to the SCVI team for the resolution. It investigated a similar problem in the electrical discipline only. Further action was not taken to consider adequately the civil discipline. Therefore, the surveillance report was considered insufficient for this issue. This item remained unresolved.
- (d) The KG&E response documentation to CSA concern #162 was under evaluation by CSA and remained open pending completion of CSA review and followup corrective action, if necessary. With respect to the reinforced concrete aspects of concern #162, KG&E was found to have an acceptable response based on the SCVI team's review of the KG&E documentation.

c. Conclusion

The SCVI team concludes that there was sufficient independence of the CSA effort, but that the depth of the CSA investigation was marginal. The one deficiency identified in the reinforced concrete area was brought to the attention of DIC and KG&E for adequate disposition.

The conclusion that the depth of the CSA investigation was marginal was based on the information that the CSA inspector relied on the acceptance signature of the DIC inspector instead of substantiating the acceptance of the inspection item by review of supporting documentation. The CSA sample size of concrete placements was marginal because the total concrete volume of the selected placements appeared to be somewhat low. Based on the marginal depth of the CSA review of concrete pour documentation and marginal CSA sample size, the additional

assurance provided by the CSA effort in this area was also marginal. However, the SCVI team's examinations conducted to assess the CSA effort, did not identify any significant deficiencies in concrete pour documentation that would indicate physical deficiencies in the concrete structures.

2. Structural Steel

a. Inspection Scope

The CSA report (pages V-7 to V-11) lists their structural steel inspection sample.

The SCVI team visually inspected the structural steel installations associated with beam members: 362B1; 340B1; 391B3; 346B1; 339B1 and 324B1 previously sampled by CSA. The structural steel configurations listed above were at elevation 2068'-8". They were located in 3 different areas of the Reactor Building. Pertinent documents were reviewed. Fireproofing of the structural steel hardware in the Auxiliary and Control Buildings preempted a visual inspection by the SCVI team of CSA samples in those areas. The SCVI review of structural welding is addressed in Section V of this report.

b. Inspection Findings

(1) CSA Report Review

The CSA report concluded that the 54 structural steel members and 10 associated bolted and welded connections complied with the design drawings, installation drawings, and field installation procedures. The "Table of Resolution of CSA Concerns" listed three concerns (#1, 55, and 56) related to this area.

(2) SCVI Sample

The SCVI team visually inspected the sampled structural steel, listed in Part 2a above, installed by DIC and indicated to have been sampled by CSA. The assessment of the samples was based on the observations discussed below.

An effective assessment of the CSA effort and basis for CSA conclusions in this area was not possible due to lack of CSA retention of inspector's records or documentation showing the visual inspections and document review stated to have been performed. However, the NRC physical verification of a limited sample of structural steel configurations in the Reactor Building did not identify any deficiencies in design and found the hardware to be in accordance with the design drawings. There were three concerns (#1, 55, and 56) identified by the CSA effort. Concern #'s 1 and 56 were determined to be of no significance.

For concern #55 the original concern was that a non-safety related tubing support had been attached to a safety related whip restraint and out-of-plane vibration of the whip restraint would damage the tubing. This issue was considered minor to the SCVI team. However, the proposed written resolution indicated that the whip restraint design did not include loading from the tubing support. This should have been done despite the small loads the tubing support may cause, and in addition, the as-built design drawing should have been reviewed to see if the location of the tubing support on the whip restraint is shown. The whip restraint also should have been checked to see if the location of the tubing interferes in any way in the intended design and with the functioning of the whip restraint. The SCVI team discussed this with appropriate CSA team members who indicated that the NRC question would be considered in the resolution of the concern. Subsequent review of this matter by SCVI resulted in another open question on the resolution of this CSA concern. The resolution also needs to address the DIC program for control, documentation and design review of such cases of "field routed" tubing or piping which is attached to safety related supports. This item is unresolved.

c. Conclusion

There appeared to be adequate independence of the CSA effort. With respect to the CSA scope, the depth of the inspection was only marginal. Three concerns were identified by the CSA team in the structural steel area. The level of seriousness for concern #'s 1 and 56 were appropriate. Concern #55 requires further study. It is concluded that the CSA effort, although lacking supporting records, does result in an additional measure of quality of construction at WCGS.

3. Concrete Expansion Anchor Bolts

a. Inspection Scope

The SCVI team inspected the concrete expansion anchor bolts for pipe supports and HVAC duct hangers. This was done to provide added basis for evaluation of the CSA report on pipe supports and HVAC duct hangers. The hanger numbers identified with the pipe support related anchor bolts were: EJ03-R508; EJ03-R507; EG01-C012; AB01-R511; SJ01-C526; EJ04-H008; EM12-H005; and EM03-R020. The hanger numbers connected with the HVAC duct hanger anchor bolts were: C1460; 1541GK3410H1383; 11541GL0025NL192; 11541GF0010H1359; and 11541GF0530H1360.

A total of 63 anchor bolts were inspected for the pipe supports and HVAC duct hangers. For the pipe supports 12 anchor bolts were pre-selected and 20 were randomly chosen. These 32 anchor bolts were in either the Reactor or Auxiliary Buildings. There

were 31 anchor bolts randomly selected for the HVAC duct hangers and were located in either the Auxiliary or Control Buildings.

The anchor bolts were inspected for conformance to the following specifications and drawings:

Bechtel Specification 10466-C-103A, Rev. 6, "Technical Specifications for Installation of Concrete Expansion Anchor Bolts"

Bechtel Drawing C-1003, Rev. 0, "Structural Steel and Concrete General Notes"

Bechtel Drawing C-1037, Rev. 0, "Standard Details Sheet No. 34"

For a review of certifications of qualifications of the DIC QC inspectors assigned to the SCVI inspectors see Section VIII.

b. Inspection Findings

(1) CSA Report Review

The inspection of surface mounted base plates and anchor bolts was not included in the scope of the CSA effort.

(2) SCVI Inspection Sample

For the anchor bolts associated with the pipe supports, only one out of 32 turned. One of the nuts associated with hanger number EM12-H005 rotated about 1/8 of a full turn. This was considered an isolated case and of no significance. DIC QC inspectors present at the time of inspection generated the necessary follow-up documentation since the torque seal on the bolt was broken.

Of the 31 anchor bolts sampled for the HVAC duct hangers, a total of 6 nuts turned from 1/16 to one and a half full rotations. Hanger number 11541GF0010H1359 had the only nut needing 1-1/2 turns before reaching the required torque. Again DIC QC inspectors followed up with the required documentation. For hanger number 11541GF0530H1360 the lower two anchor bolts were installed with a slope greater than 1 in 20 with respect to a plane perpendicular to the surface of the bolted material. The DIC QC inspectors drafted the required documentation for the misaligned bolts and broken torque seals.

An observation by the SCVI of Material Traceability, noticed questionable minimum embedment lengths with six of the twelve anchor bolts supporting safety injection accumulator tank number TEP-01A in the Reactor Building. Those six anchor bolts did not meet minimum embedment

lengths required by Bechtel drawing #'s C-0X2902 and C-1C2411 and exceeded maximum tolerances by as much as 3/8".

Bechtel Drawing C-1C2411, Revision 0, Detail 1 requires the projection length of concrete anchor bolts to be 7" above the underside of the top flange of the safety injection accumulator tank (#TEP-01A) base frame. According to DIC personnel present at the time of the SCVI, a $\pm 3/8$ " tolerance was allowed, permitting the projection length to be up to 7-3/8". Contrary to the above, six out of the twelve embedded concrete anchor bolts had projections above the top flange greater than 7-3/8.

This item remained unresolved and requires an engineering evaluation report to determine if the design requirements are met by existing embedment lengths. Also, further action may be prudent to determine the scope of this problem.

Another separate effort addressed in Section III of this report noted spalling of the concrete around an anchor bolt supporting a raceway unistrut.

In summary, the SCVI samples were generally found to be in accordance with the drawings and specifications. There were no significant deficiencies identified except for the lack of anchor bolt embedment. Adequate measures in accordance with KG&E QA program requirements were being taken by appropriate personnel to disposition the noted discrepancies.

c. Conclusion

As the CSA effort did not investigate the concrete expansion anchor bolts, no assessment of the CSA effort in this area was made.

The SCVI identified no significant findings in this area, except for embedment of anchorage bolts, as discussed above.

VII. MATERIAL TRACEABILITY AND MAINTENANCE

A. Objective

The objective of the special construction verification inspection (SCVI) was to assess the extent that the Construction Self Assessment (CSA) efforts in the area of material traceability and maintenance, provides an additional measure of assurance of the quality of construction for the Wolf Creek plant.

B. Discussion

The scope and description of the CSA coverage in the area of material traceability and maintenance are provided on pages VI-1 through VI-5 of the CSA report. The CSA material traceability and maintenance inspection team did not identify any concerns in either the material traceability or maintenance areas. Some material and traceability concerns, however, were identified by other CSA disciplines.

In addition to reviewing the CSA report in its entirety to determine the scope of examinations and findings regarding the material traceability and maintenance areas, each applicable individual concern package was reviewed to assess the nature of the concern, corrective action taken or the action plan proposed to resolve the concern. Interviews with key CSA, Daniel International Corporation (DIC), and Newport News Incorporated (NNI) personnel were conducted to better assess the CSA effort. Throughout the NRC inspection, attention was given to general areas of the CSA such as independence, adequacy of inspection scope for stated objectives, completeness, appropriateness of CSA identified deficiencies and their categorization, and of conclusions reached.

NRC inspection samples were taken which included some CSA samples and similar types of items not inspected by the CSA team. This was done as an additional method of assessing the CSA report and effort.

1. CSA Material Traceability Review

a. Inspection Scope

Each of the individual CSA discipline inspection scopes and relevant CSA team inspection packages were reviewed for applicability to material traceability and maintenance.

The following CSA concerns resulting from the CSA effort in areas of the CSA report other than the material traceability section, but which involved material traceability, were reviewed to determine their relative importance and the manner in which the concerns were to be resolved:

- ° #34; Mechanical, (Supports) Not to Tolerance, Incorrect Material I.D.

- ° #35; Electrical, MCC Bolting Not to Specs
- ° #53; Mechanical, (I&C Valve)
- ° #63; Mechanical, (Piping) Nuts Missing on Valve
- ° #86; Mechanical, (Piping) ECR Issued in Lieu NCR
- ° #91; Mechanical, (Piping) Missing Nuts on Valve
- ° #100; Mechanical, Maintenance Records Missing
- ° #102, 103 and 104; No Danger Signs, Exhaust Fan
- ° #115; Mechanical, Equipment, Bolts Missing on Valve Plates
- ° #123; Mechanical, (Supports) Code Data and Documentation
- ° #130 and 131; Electrical, Bolting of Switchgear
- ° #144; Mechanical, (I&C) Missing/Loose Nuts on Terminal Box
- ° #148; Mechanical, (I&C) Missing Valve Handle, Missing Clamp
- ° #155; Electrical, No Inspection Record of Battery Rack Fasteners, Nuts Missing from Battery Rack Assemblies
- ° #157; Supports, Minor Hardware/Documentation Problems
- ° #162; An Apparent Deficiency in Management Control of Vendor Activities. Inadequacies in Vendor Supplied Hardware and Documentation in Several Disciplines
- ° #164; A Generic Problem with Regard to the Fasteners (e.g., Nuts, Bolts, Washers) Used for On-Site Assembly and Installation of Electrical Equipment. Generic concern #164 (inclusive of specific concerns #35, 130, 131 and 155) was thoroughly investigated via records review and on-site inspection.

The SCVI inspection samples were selected from installed safety-related material and equipment. A total of 59 individual samples were examined to varying extent. Items included in the inspection were categorized into four general groups as indicated on Table VII-1 of this report.

Acceptance criteria for material traceability used in conducting these inspections were:

- ° Section 17 of SNUPPS Preliminary Safety Analysis Report

- ° DIC Procedure AP-VI-08, "Identification and Status of Material, Parts, and Components"
- ° DIC Procedure AP-VIII-03, "Identification, Marking and Inspection"

b. Inspection Findings

(1) CSA Report Review

The general conclusion made by the CSA report regarding material traceability was that filler material and base materials appear to meet applicable material specifications. This is based on their review of Certified Material Test Reports (CMTRs). However, none of the material checked for traceability listed on Table VI-1 (Material Certification) of the CSA report can be directly traced to a specific installed component. The Objective and Discussion sections of the CSA report (page VI-1) indicate that samples were to be selected from field-installed components, however, this relationship was not established.

Several QA items that were covered in other parts of the CSA report should have addressed the Material Traceability aspects of the problems. These included CSA concern numbers 34, 35, 53, 63, 86, 91, 115, 144, 148, 155, 162 and 164. Each of these concerns indicate some degree of a loss of material traceability and control.

(2) NRC SCVI Sample

In general, the documentation and control of material traceability for the SCVI sample of piping and fittings, field and vendor weld joints, and equipment was acceptable. However, deficiencies involving material traceability and control of fasteners were noted by CSA and the SCVI. These included:

- ° Motor Control Centers NG01A, NG01B, NG03C, NG03D and NG04C had cabinet to cabinet fasteners that were made of indeterminate material; were missing or improperly installed. The CSA inspection effort also included the Motor Control Centers, resulting in similar findings, however, the CSA report did not address the lack of traceability. Permanent markings on the fasteners are required by the material specification.
- ° Battery rack NK12 had fastener assemblies that were made of indeterminate material or were missing. The CSA inspection effort in other areas also included the battery racks resulting in similar findings. However, the CSA report did not address the lack of traceability.
- ° Two of four anchor bolts for main coolant pump support (Lamco Industries #1533) were judged to be made of

indeterminate material since no traceability markings were visible. Permanent markings are required by the material specification.

- ° Two of four anchor bolts for the "B" steam generator northeast support leg were judged to be made of indeterminate material since no traceability markings were visible. Permanent markings are required by the material specifications.
- ° One of three anchor bolts for the "B" steam generator southeast support leg was judged to be made of indeterminate material since no traceability markings were visible. Permanent markings are required by the material specification.
- ° Safety Injection Accumulator Tanks TEP-01A and TEP-01B had anchor bolt nuts which were not in accordance with drawing requirements. Some anchor bolt assemblies had two heavy hex nuts installed while others had a single heavy hex nut and a jam nut. Detailed placement drawings for the accumulator tanks indicate a single heavy hex nut for embedded anchor bolts and double heavy hex nuts for through type anchor bolts. Deficiencies were also noted involving placement of embedded anchor bolts for TEP-01A while inspecting the anchor bolt assemblies for material traceability. See Section VI for further discussions concerning anchor bolt embedment concerns.

A review of the installation documentation by the NRC SCVI inspector revealed no evidence of material verification during installation. All of the above deficiencies remain unresolved.

c. Conclusions

CMTRs reviewed by CSA meet the documentation data requirements in accordance with applicable material specification requirements. The NRC inspector believes the independence of the CSA material traceability inspection effort was adequate. However, the conclusions of the CSA material traceability section were incomplete in that the material traceability findings by other CSA disciplines were not considered. The CSA effort does not provide an additional measure of assurance of quality in this area.

Based on the limited independent inspection scope accomplished by the NRC, material traceability and control documentation, in general, was accurate and agreed with actual inspected hardware conditions except for the following:

- ° Review of safety-related hardware or equipment revealed some material traceability and control concerns involving fasteners. Fastener assemblies were found missing or partially missing, indeter-

minate bolting materials were installed or improperly installed and embedded anchor bolt assemblies not installed per drawing requirements.

2. CSA Maintenance Review

a. Inspection Scope

A review of the CSA effort in the area of maintenance including personal interviews with CSA and NNI personnel was conducted to determine the scope of the examination and maintenance work accomplished by NNI.

b. Inspection Findings

Many CSA concerns were found to be maintenance related. For example, CSA concern numbers 2, 5, 6, 7, 11, 12, 15, 21, 23, 35, 36, 37, 38, 40, 41, 42, 46, 47, 49, 53, 61, 62, 63, 67, 70, 71, 91, 93, 96, 97, 102, 103, 104, 113, 115, 124, 134, 142, 144, 146, 147, 148, 155, 156 and 164 were all related to maintenance to some degree. The majority of these concerns involved broken, damaged, missing or loose component parts or basic cleanliness problems. Each item associated with the above concerns should have been maintained by either Daniel for items not yet turned over to KG&E or NNI for those items under KG&E cognizance. Determination of the base cause and corrective action for these deficiencies is an unresolved item.

The CSA effort did not include inspections into Daniel's preventive maintenance program for installed items or for the adequacy of DIC turnover reviews with respect to damaged items. Only those items/components/systems turned over to KG&E and subsequently contracted to NNI were covered by the CSA inspection.

c. Conclusions

The CSA effort in the area of maintenance was found to be generally acceptable in terms of independence. The inspection scope, however, was limited to a review of NNI and did not include an examination and evaluation of DICs preventive maintenance program. It appears that the maintenance effort supplied by NNI was satisfactory based on the review of the CSA inspection.

Numerous maintenance related concerns reported by other CSA disciplines as noted in Section VII.B.2.b. above, were not addressed in the Maintenance Sections of the CSA report. The number of these concerns indicate that the scope of the CSA effort for preventive maintenance should have addressed the reasons and implications of these concerns as associated with the DIC and NNI maintenance programs. The additional measure of assurance of quality provided by this CSA effort is marginal.

TABLE VII-1
SUMMARY OF SAMPLES

	<u>No. of Samples</u>
Piping Including Associated Fittings	7 (L)*
Field and Vendor Weld Joints	16
Equipment	8
Fasteners	<u>28 (L)</u>
TOTAL	59

*(L) = Lots

VIII. QUALITY CONTROL EFFECTIVENESS

A. Objective

The objective of the special construction verification inspection (SCVI) in the area of QC effectiveness for qualification and performance of QC inspectors was to determine the extent the CSA effort provides an additional measure of assurance of the quality of construction.

B. Discussion

The scope and description of the CSA coverage in this area is provided on pages VII-1 through -3 and Table VII-1 of the CSA report. Primarily, the effort dealt with a confirmation of QC inspector qualifications through record review and an assessment of QC inspector performance as determined from the various inspection findings.

During the course of the SCVI in four areas of construction, samples of QC inspector certifications were examined for conformance to established criteria and discussions were held with the QC inspectors in the various disciplines involved. These activities provided a basis for assessing the CSA effort in terms of the stated objectives. Specifics of the SCVI team observations in this area are provided below.

1. Mechanical Construction

The SCVI team reviewed the following documents in connection with this area.

- ANSI N45.2.6-1978, "Qualifications of Inspection, Examination and Testing Personnel for Nuclear Power Plants"
- DIC Procedure AP-VI-01 "Indoctrination Training and Certification of Quality Personnel"

The qualification records for eight Level II QC inspectors were examined for conformance to the above criteria. Six qualifications records were selected from Table VII-1 of the CSA report. Disciplines involved were Weld (Mechanical), Equipment (Mechanical), NF (Mechanical), Piping, and Hangers. No discrepancies were observed.

Discussions were held with DIC Quality Training personnel regarding the testing of inspectors for pipe supports/restraints, hangers and expansion anchor bolts. The current DIC data banks of test questions were examined for Hangers (mechanical) and a special set developed for anchor bolt inspections. The NRC team found the questions to be comprehensive and to reflect both technical depth and past experience.

During the SCVI the team members came in contact with several DIC personnel that were presently engaged in quality inspection work or had been QC inspectors in the past and had advanced into a more senior position. They assisted the team in locating some of the items being inspected, provided clarification on inspection attributes as needed, assisted in providing quality documentation on components under inspection and generally answered questions about their training, experience, inspection and documentation practices. These contacts provided information to help assess the effectiveness of the DIC QC performance. Overall the DIC personnel contacted appeared knowledgeable and capable in their respective disciplines.

With respect to the CSA conclusion (page VII-3) that a possible generic concern exists with regard to the completeness of QC inspection requirements (based upon several findings, some of which involved mechanical construction), the SCVI team reviewed concern 163 and the proposed action plan. The CSA concern appears to be valid and the CSA proposed resolution (pending adequate resolution of concerns 157, 162 and 164) is a reasonable course of action.

2. Electrical and Instrumentation

The qualifications for one instrumentation inspector and two electrical inspectors were reviewed to the requirements of ANSI N45.2.6-1978 and were found to meet those requirements. One electrical inspector was interviewed and was knowledgeable of procedures and requirements. A program weakness identified by the CSA report in one area (inspection of fasteners) was found to exist in several others. It was noted by the SCVI that the identification and documentation of inspection and acceptance criteria was not adequate in several cases. Although not identified by the CSA team, the QC program was also found not to be effective in identifying repetitious minor hardware discrepancies identified by the SCVI in two areas (cable rollout and cable bend radius). These items are discussed in Section III of this report.

3. Welding and NDE

The NRC SCVI team reviewed certification and qualification files for 3 DIC quality control personnel. No discrepancies were observed.

During the NRC inspections the NRC team came in contact with personnel from KG&E, Bechtel and DIC engaged in quality inspection work. They also assisted the team in locating items to be inspected, provided clarification on inspection parameters as needed, provided quality documentation on piping and components under inspection and answered questions about their training, experience, inspection and documentation practices. Overall, with one exception discussed in Section V.B.2.a of this report relative to the ability of the

assigned DIC contact in providing requested documentation, the personnel contacted appeared knowledgeable and capable in their respective disciplines.

4. Reinforced Concrete and Structural Steel

The evaluation of QC effectiveness in this area was performed in connection with samples from concrete pour packages and concrete expansion anchor bolts. For the concrete pour packages the NRC team randomly checked nine inspectors to see if they were certified in the duties they performed. From those nine inspectors, five were reviewed to determine if they were qualified in accordance with the requirements of ANSI N45.2.6-1978. The NRC team found that generally the qualification and certification records were adequate. During this review, the NRC team identified a Level I inspector performing the duties of a Level II inspector for the evaluation of batch tickets. This is discussed in further detail in Section VI of this report.

The qualification and certification records of two inspectors for concrete expansion anchor bolts were reviewed. No discrepancies were observed.

C. Conclusions

The CSA effort in the verification of QC inspector qualifications and assessment of QC inspector performance was found to be acceptable in terms of independence, scope and completeness. The CSA findings were, for the most part, verified by the NRC team's review. The conclusions reached by the CSA team with respect to the possible generic concern about the completeness of QC inspection requirements appears valid in view of the NRC team's independent findings. The proposed CSA action plan for generic concern 163, which bears upon this matter is reasonable.

The CSA effort in this area provides an additional measure of assurance of the quality of construction.

IX. QUALITY ASSURANCE

A. Objective

The objective of the special construction verification inspection (SCVI) in the area of quality assurance was to assess the extent to which the Construction Self Assessment (CSA) effort and followup corrective actions provide an additional measure of assurance of the quality of construction at the Wolf Creek Generating Station (WCGS).

B. Discussion

Section VIII of the CSA report was reviewed to assess the scope of CSA inspections for the area of quality assurance (QA). These inspections covered: Kansas Gas and Electric (KG&E) QA effectiveness, KG&E audits, corrective action systems, and design change control. A sample of the CSA effort and findings for the area of KG&E audits and corrective action systems was selected for examination.

As related to the SCVI sample, a review of CSA generic concerns 159, 160, 161 and 170 was also conducted. The generic concerns were reviewed for the scope of the concern and status of the Delian CSA Phase II corrective action, and supporting KG&E or DIC documentation. Also, the involvement of KG&E in assuring that required corrective actions are effectively implemented was reviewed. The review of the CSA QA finding for design change control, generic concern 166 (snubber stroke problem), is covered in Section IV.B.1.b of this report.

Other factors considered in the SCVI assessment of the CSA effort were: independence; adequacy of scope for the stated objective, completeness; appropriateness of CSA deficiency categorization as to level of seriousness; and the overall conclusions of the report and adequacy of corrective action. Discussions with onsite Delian, KG&E and contractor personnel and the results of the NRC SCVI were included in the overall evaluation of the CSA effort.

Documents examined in the text which, in addition to specific documents referenced, provide the basic acceptance criteria for the SCVI in the area of quality assurance, include:

- 10 CFR 50, Appendix B
- WCGS PSAR, Section 17, QA Program
- KG&E/Delian Contract and Letter Agreements
- KG&E QA Manual/Audit Procedures
- Delian Corporation Construction Self Assessment (CSA) Procedures, Rev. 0, dated October 29, 1984 and Revision 1 dated November 1, 1984 and prior CSA Forms
- CSA Phase I documentation for selected samples/areas inspected
- CSA Phase II concern file folders

1. Involvement of KG&E - CSA Phase II

a. Inspection Scope

The CSA Phase II effort for control and management of corrective actions and closure of CSA concerns was reviewed to assess KG&E involvement in assuring that activities associated with establishing and implementing corrective actions are effectively implemented.

b. Inspection Findings

The SCVI review of CSA evaluations and corrective action plans for the 155 specific and 15 generic concerns confirmed the quality-affecting nature of these activities and that adequate procedural controls subject to KG&E QA program surveillance were required. SCVI observations of CSA corrective actions determined that current Delian forms for documenting the CSA effort were inadequate. There was insufficient assurance that CSA technical evaluations would be performed by individuals with required expertise and be adequately documented.

During the SCVI, team observations also noted the general disagreement between DIC and CSA personnel on the various concerns identified by CSA as well as the proposed CSA action plans. SCVI team discussions in this regard resulted in the question of whether DIC would be objective in implementing CSA action plans for additional sampling of DIC work to determine the scope of the CSA generic concern and required corrective action. Based on these observations, a meeting was held by the SCVI team leader with the KG&E Director of Quality and the KG&E Superintendent, Quality System Engineering to obtain a further clarification of the involvement of KG&E in ensuring effective implementation of CSA action plans and corrective action by DIC.

A summary of NRC discussions with KG&E and the quality assurance commitments made for KG&E involvement in assuring effective implementation of corrective actions for CSA concerns are discussed in further detail in Section II of this report.

c. Conclusions

With the KG&E commitments noted in Section II of this report and the followup action by KG&E to ensure that all past and current CSA Phase II activities will be performed in accordance with the November 1, 1984 Delian CSA procedure, the KG&E involvement in assuring the effectiveness of CSA and DIC corrective actions is considered acceptable.

2. KG&E Audits

a. Inspection Scope

The KG&E construction audits discussed on page VIII-2 and Table VIII-1 of the CSA report and related CSA inspection findings in this area were selected for the SCVI sample. Specific discussions were conducted with the CSA team leader and KG&E personnel including: Manager, Quality Assurance; Superintendent, Quality Evaluations; and Supervisor of Audits.

Specific documents reviewed during the SCVI of the CSA of KG&E audits include:

- ° QAP W18.1, Rev. 1, "WCGS Audit Scheduling and Surveillance Information Reporting"
- ° QAP W18.2, "WCGS Audit Procedure"
- ° QAP C16.1, "Corrective Action for QA Program Breakdowns"
- ° CSA Concern Closure and Corrective Action/Verification Forms for documentation of CSA Phase II actions, including:
 - CSA Action Plan, Rev. 0, dated 9/17/84
 - CSA Action Plan, Rev. 1, dated 11/1/84
- ° KG&E Corrective Action Documentation - CSA #159, including letter KQWL084-126, W. Rudolph to F. Pimentel, dated 9/25/84
- ° Supplement to CSA Finding No. 159, no date
- ° KG&E File No. TE:57061 audit reports for audit of DIC, including series nos.: K71, K106, K107, K109, K111, K112, K113.

b. Inspection Findings

(1) CSA Report Review

The CSA review of KG&E audits was as represented by the CSA report. The CSA included a review of existing KG&E QA procedures for scheduling and conducting audits and records for audits conducted in 1984.

The SCVI review of KG&E audit plans and reports for audits of DIC generally confirmed the first CSA finding that KG&E audits are well planned, thorough (for planned scope) and consistent with good practice; i.e., with KG&E QA program for planning, conducting, reporting and documenting audits.

The CSA finding that Lead Auditor qualifications were acceptable was confirmed through the SCVI review of the above referenced 'K' series reports.

The SCVI of audit reports and of dates the audits were conducted confirmed the CSA finding (generic concern #159) that certain KG&E construction audits scheduled for the first and second quarter of 1984 were not conducted. However, the SCVI noted differences in the count of audits not conducted as recorded on CSA forms and the CSA report.

NRC discussions with the KG&E Superintendent, Quality Evaluations resulted in a KG&E-prepared Supplement to CSA Finding #159 and the following clarification. The count for KG&E (TE:57061) construction audits of DIC not conducted as scheduled was changed to seven. This included 'K' audit Nos. K106, K109, K111, K112, K113, K119 and K122. All seven of these audits were shown as rescheduled for completion during 1984. Also five of the seven rescheduled audits had been completed. The two (K119 and K122) not completed were both scheduled to be completed by 11/5/84.

The above status for the seven audits was confirmed by the SCVI for the above referenced audit reports, except it was noted that audit K122 and the related report were completed on September 17, 1984.

(2) CSA Phase II

The status of the CSA corrective action effort at the end of the SCVI for CSA concern #159 was:

- ° Initial CSA Action Plan issued on 9/18/84.
- ° CSA review of KG&E response (KQWLO 84-126), noted by CSA as incomplete. CSA Rev. 1 Action Plan issued on 11/1/84.

The statements included in the current CSA action plan are:

"PROBLEM STATEMENT:

"CSA notes that the KG&E response states that the root cause of the audit concern was a need to reallocate four lead auditors to another program. The indicated corrective action is to subsequently perform the audits not performed." [during 1984]

"It is noted that this corrective action does not address how this problem will be prevented in the future for startup testing and operations audits.

"KG&E is requested to provide the following additional information:

"ACTION PLAN:

- "1) The basis for audit schedules, (i.e., how the activities to be audited are defined and how the schedule is decided upon).
- "2) The plan to insure that adequate resources are available to meet the schedule.
- "3) The procedures, program requirements, etc. which document the above basis and plan."

The KG&E corrective action response and implementation appears to have adequately resolved the immediate concern and potential for a violation of KG&E's annual ANSI N45.2.12 audit commitments for audits of DIC. The CSA concern that KG&E address how this problem will be prevented in the future for startup and operations audits is appropriate.

The SCVI noted that the findings of a rescheduled and conducted audit TE:57061-K111 did result in four Quality Program Violations (QPV) and two Quality Program Deviations (QPD). Also, the audit report stated that several findings of this audit had been identified by previous audit TE:57061-K52. The scope of these audits pertained to implementation of the DIC Field Change Request (FCR) portion of the design control program.

As a result of the KG&E significance attached to QPV findings (QAP W18.2, paragraph 4.1), acceptable KG&E resolution of TE:57061-K111, Design Control audit findings is needed. This item remains unresolved.

c. Conclusions

The CSA report effort in the area of KG&E audits is generally considered acceptable in terms of independence, scope, completeness and characterization of concerns identified and conclusions reached.

For CSA Phase II, the current CSA concern 159 action plan is considered an acceptable method of resolving the CSA concern and preventing recurrence of a similar problem during operations. The CSA evaluation of KG&E response to CSA concern 159 will also need to address and resolve the differences in the KG&E and CSA count of audits not conducted, including any pertaining to audit of construction activities other than performed by DIC. The CSA evaluation should also review the adequacy of KG&E's response on the impact of not conducting audit TE:57061-K111 on schedule has on the assurance of quality of construction prior to plant operation.

Based on the NRC observations of the CSA effort in this area, an additional measure of assurance of the quality and effectiveness of the KG&E audit program was achieved. An additional measure of assurance of the quality of the DIC construction quality assurance program will be achieved with the effective implementation of the CSA/KG&E Phase II followup corrective actions for CSA concern 159.

3. Corrective Action Systems

a. Inspection Scope

The CSA scope, findings and conclusions in this area are discussed on pages VIII-2 through VIII-5 of the CSA report. The objective of the CSA review of certain corrective action systems was to determine if deficiencies were being properly identified and dispositioned. The CSA sample of corrective action system documents as described in the CSA report included: 20-30 DIC Nonconformance Reports (NCRs), several hundred DIC System Discrepancy Lists (SDLs), 20-30 DIC Notice of Discrepant Conditions (NDCs), 20-30 DIC Field Change Requests (FCRs) and 20 KG&E Startup Field Reports (SFRs).

The scope of the SCVI in this area included: the CSA report findings and conclusions, a sample of DIC and KG&E corrective action system documents reviewed by CSA, and followup corrective actions for CSA generic concerns 160, 161 and 170.

b. Inspection Findings

(1) CSA Report Review

CSA findings of examples of improper use of corrective action system documents include: 2 NCRs, 2 SDLs, 5 NDCs and 7 SFRs. No misuse of FCRs was noted in this sample or by the CSA review in the area of design change control (Tables VIII-2 and Table VIII-3), where 22 FCRs were reviewed to verify appropriate revisions to drawings.

CSA conclusions relative to the above findings are summarized in (a) and (b) and restated in (c) below:

- (a) The 2 NCR and 2 SDL examples of misuse were an isolated case of generally acceptable DIC use of those systems.
- (b) The use of NDC's by DIC for closeout of NCR's at transfer of a system to KG&E should be reviewed and such use of NDCs should be controlled on a case by case basis. Further, DIC personnel should be informed that NDCs should not be used to close out NCRs for systems not transferred to KG&E and which are best resolved by DIC.
- (c) "KG&E should insure that the SFR system is well understood by those who use it. It may be advisable to

include more guidance in Administrative Procedure 14-402 regarding classification of the type of SFR, use-as-is disposition, purpose of the various signoffs, etc. Also, training could be provided for those using the SFR system. Since four out of the approximately 20 SFRs reviewed were not correctly classified as NCR type, it would be prudent to perform an audit of SFRs starting with the first ones issued to determine if this mistake is widespread. This is important since SFRs which are not processed as NCRs are not lifetime records and do not receive trending reviews."

The NRC review of the Executive Summary of the CSA report, noted that the CSA findings in this area were appropriately addressed.

As a result of the CSA Phase I effort, it was noted that CSA generic concerns 160 for SFRs, 161 for SDLs and 170 for NDCs were established for followup corrective action. The need for CSA generic concern 161 was not apparent at this time, based on the CSA report "isolated case" conclusion for SDLs.

(2) CSA Phase II Corrective Actions - Generic Concern 160

CSA generic concern 160 was described as improper use and processing of Startup Field Reports (SFRs). The concern was based on the seven CSA findings of misuse of SFRs. These included 4 SFRs not properly classified as an NCR, 1 SFR not having Bechtel concurrence for use-as-is disposition and the review of 2 SFRs being performed by the originator of the SFR. In summary, the conclusions of the CSA report in this area indicate that significant corrective action should be initiated, relative to procedural revision, training and the audit of all SFRs issued to determine the magnitude of the problem with use of SFRs.

Specific documents reviewed relative to CSA resolution of this concern are:

- ° CSA Corrective Action/Verification Form, including Action Plan, dated 9/18/84
- ° CSA Concern Closure Form, with CSA Evaluation Acceptance and proposed CSA Action Plan, dated 10/31/84
- ° KG&E Correspondence, KQWLKWSU 84-164, W. J. Rudolph to R. J. Glover, DIC, dated October 9, 1984, Subject: Corrective Action Request (CAR) No. 18

- ° KG&E Correspondence, KQWLKQW 84-387, R. M. Stambaugh/M. W. Shannon/C. A. Daley to C. G. Patrick, dated October 10, 1984, Subject: CAR No. 18-TE:50140-K003-Startup Field Reports
- ° KG&E Correspondence, KQWLKOW 84-407, C. G. Patrick to R. M. Stambaugh, dated 10/24/84, Subject: Response to Quality Concern
- ° KG&E Correspondence, KQWLKSLU 84-177, dated October 18, 1984, Subject: KG&E QA Audit Report TE:50140-K003
- ° Startup Administrative Procedure, Startup Field Report, ADM 14-402, Revision 11, dated 3/21/84 and Revision 12, dated 10/9/84
- ° Corrective Action Request (CAR) No. 18, dated 10/9/84
- ° CSA package of SFRs

A general summary of parts of the information contained in the above referenced documents germane to the SCVI assessment in this area follows.

The information on the CSA forms was found to include the CSA acceptance of the KG&E response including:

- ° CAR #18 on Nonconformance Control and Correction
- ° Work Hold Agreement #22 on Nonconforming Conditions

The CSA evaluation remarks stated:

"Verification should include the following:

- "1. KG&E Quality should have verified corrective action for CAR #18 and closed the CAR.
- "2. A sample of several Non-Q SFR's should be reviewed by CSA to confirm they are, in fact, Non-Q.
- "3. A sample of several Q SFR's requiring work on a hardware item should be reviewed by CSA to confirm that implementation documentation is identified in accordance with procedures.
- "4. KG&E Quality should have verified corrective actions called for in Work Hold Agreement #22.

- "5. Revisions to ADM 14-402 and ADM 14-407 to insure sufficient programmatic controls for nonconforming conditions should be verified.
- "6. Documentation of 'nonconformance identification' and 'administrative procedure' training should be verified.
- "7. Existence of an approved and controlled Q-list should be verified.
- "8. Revisions to supporting ADM 14 series procedures related to the SFR and RIR programs should be verified."

In the October 9, 1984 document KG&E directed that DIC take necessary remedial action under CAR #18. This document, in part, stated:

"The problem was initially identified while performing Audit TE:50140-K003 'Startup Field Reports' and resulted in Work Hold Agreement #22."

The October 10, 1984 document was found to express the auditor's concerns on CAR #18 requirements. The October 24, 1984 document provided the managers response to each of five auditor concerns.

The attachment to the October 18, 1984 document included audit report, TE:50140-K003. The scope of the audit was stated as follows:

"This audit was conducted to evaluate the adequacy and effectiveness of the Startup Program for processing of nonconforming and other conditions utilizing Startup Field Reports."

The findings of audit TE:50140-K003 include the following statement.

"Based on the auditor samples, it was determined that major discrepancies existed in the Startup Field Report Program, from both a program content and implementation aspect."

The audit report lists three Quality Programs Violations (QPVs): 9/84-53, 9/84-69 and 10/84-1) and found additional noncompliances. The QPVs were noted as being contrary to the requirements of FSAR, Section 17 and ADM 14-402.

The audit report, Section IV, Evaluation states:

"The program for utilization of Startup Field Reports was found to be poorly defined, with significant discrepancies relative to implementation of program requirements. The extent and nature of the program and implementation deficiencies were such that compliance to the regulatory and standard requirements for identification, control, processing and closeout of nonconforming conditions was not being obtained. This lack of program control and noncompliances relative to implementation of program requirements has caused extensive indeterminacies relative to hardware conditions resolved by the use of Startup Field Reports.

"Corrective action measures as specified by Work Hold Agreement #22, when fully implemented and complied with by the Startup organization, will provide an adequate program for the utilization of Startup Field Reports.

"Remedial actions as specified by CAR #18, when completed, will provide WCGS Management with a measure of assurance that previously processed and closed Startup Field Reports have been properly evaluated and closed in accordance with established requirements."

The audit report was signed by the Audit Team Leader and participating auditor and initialed by the Auditor Supervisor, all dated 10/18/84.

In general, the SCVI found the CSA evaluation of KG&E response to CSA concern 160, and action plan relative to CAR #18 and Work Hold Agreement #22 as an adequate resolution. A SCVI general review of CAR #18 found it adequately represented audit TE:50140-K003 findings and the requested corrective action appeared complete, except as discussed below.

Corrective action required under CAR #18 should be clarified in the following areas. The guidance on discontinuing the review of a design error was found to be incomplete. The guidance should be revised to ensure that appropriate program requirements of design control are satisfied for each change in design. Additionally, where Reject Item Reports (RIRs) are issued for SFRs without identifiable or retrievable documentation, all QA/QC documentation as required to ensure the quality of the items should be established in accordance with applicable quality program requirements and be subject to KG&E audit. Other methods used to verify the quality of work or an item should receive KG&E QA review and approval.

The CSA package of SFRs for the CSA sample was obtained from Delian. The SCVI review of the package found it contained 46 SFRs associated with 13 different safety systems. The CSA report did not list the CSA sample of 20 SFRs and therefore no direct review those SFRs could be performed. The CSA finding of failure to check NCR for three of the four CSA identified SFRs: 1-GN-14, 1-GM-12, and 1-HB-41 was confirmed. It was noted that fourth SFR 1-MA-42, was not, as appropriate, stamped "Q". SFRs 1-KA-56 and 1-KA-55 relating to the other CSA findings were not included in the CSA package and these findings could not be confirmed. The SCVI review identified a number of other SFRs not checked as an NCR when required; 4 SFRs not initially checked NCR in block 6 were subsequently checked NCR in block 17. There were also a number of "Q" SFRs not stamped "Q", as required. The above SCVI assessment generally confirms the CSA and KG&E audit findings in this area.

Included in the CSA inspection sample was SFR 1-BB-147. This SFR was identified in block 6 and block 11 as a potential 10 CFR 50.55(e)/Part 21 but was not identified as NCR type or addressed in the CSA report. It is readily apparent from the description of the probable cause and the problem that the identified problem is subject to a 10 CFR 50.55(e)/Part 21 evaluation. The SFR identified the affected items as: Component DPBB01, A, B, C, and D, manufactured by Westinghouse for the Reactor Coolant System (BB). The initiated RIR described the problem as a broken high voltage termination lug at the surge suppressor on phase C. The apparent cause was that the component is made of cast brass and may have been overtightened. The SCVI in this area was performed after the onsite inspection and therefore no NRC review of the KG&E review of controls for lug terminations or evaluation for reportability was performed.

The review of KG&E evaluation of SFR 1-BB-147 for reportability to the NRC and of the related controls for the tightening of termination lugs during installation remains unresolved.

(3) CSA Phase II Corrective Actions - Generic Concern 161

CSA generic concern 161 was described as SDLs not being properly utilized or dispositioned.

Specific documents reviewed relative to the resolution of this concern include:

- ° CSA Corrective Action/Verification Form, Rev. 0, 9/17/84, including the CSA finding and proposed CSA action plan.

- ° CSA Concern Closure Form, with CSA Evaluation Acceptance, dated 10/15/84.
- ° DIC Response Report, dated 10/11/84.
- ° Stop Work Action No. G-003, dated 8/27/84.
- ° Corrective Action Report (CAR) No. 1-G0045, dated 8/27/84.
- ° DIC Response Report, dated 9/13/84.

The review of the specific documents listed above found that generally acceptable CSA and DIC corrective action was established to resolve CSA concern 161. Confirmation of corrective action is currently pending CSA verification.

It was noted in the Response Report, dated 10/11/84 that the problem with SDLs had been previously identified by NRC audit 482/84-08. A review of the NRC transmittal of report 482/84-08 to KG&E found that a Notice of Violation had been issued for two deviations from procedures for use of SDLs.

(4) CSA Phase II Corrective Actions - Generic Concern 170

CSA generic concern 170 was described as improper use of the system (NDCs) for controlling nonconforming conditions for equipment turned over to KG&E.

Specific documents reviewed during the SCVI of this concern include:

- ° CSA Corrective Action/Verification Form, dated 9/18/84, including the CSA finding and action plans, Rev. 0, dated 9/17/84 and Rev. 1, dated 10/11/84.
- ° KG&E letter, KQWLO 84-134, W. J. Rudolph to F. Pimentel, Subject: KG&E QA Response to CSA Finding 170.
- ° KG&E Procedure for Control and Resolution of Discrepant Conditions Reports, ADM 14-416, Rev. 0, dated 7/18/84.

The current CSA action plan lists seven steps generally directing that a major audit of a sufficient sample (95% level of confidence) of NDC's be conducted to examine and clarify the scope of the problem. A note on the CSA action plan requests that "Final KG&E submittal, subsequent to CSA review, shall be submitted by KG&E QA utilizing appropriate QA vehicle(s) i.e. CARs, NCRs, 10 CFR 50.55(e)."

The KG&E letter KQWLO 84-134 responding to the CSA action plan provides a report on the results of a 100% (not sample) review of all closed NDCs. The review is based on verification of compliance with the procedural requirements of ADM 14-416, Rev. 0. The KG&E review of the number of NDCs for each discipline area included: Electrical - 31, Piping - 42, Hangers - 26, Mechanical - 5, Civil - 12, Welding - 3, for a total of 119 NDCs reviewed. Of the 119, the KG&E review identified 43 NDCs with deficiencies, 40 of the 43 deficiencies were resolved leaving 3 of the 119 NDC deficiencies unresolved.

Based on the KG&E review and total number of deficiencies identified, it appears that some revision to procedure ADM 14-416, Rev. 0. would be appropriate to clearly indicate criteria for the selection of "the appropriate resolution" document and to provide for a more timely issuance of these documents. Also, currently it is indeterminant whether the "lateness" in the issuance of NCRs to correct a problem had any affect on compliance with certain requirements of NCR procedure AP-VI-02, i.e., for ASME system/components "prior to stamping" or "after stamping", under Section 3.30.1 and 3.30.2. Thus an audit of a sample of the corrective action taken by these NCRs appears appropriate.

The status of CSA concern 170 at the close of the SCVI was still pending completion of CSA's evaluation of KG&E's report response.

c. Conclusions

The CSA effort in this area was found to be generally acceptable in terms of independence, scope, completeness, characterization of the concerns identified and conclusions reached. The one exception is that the CSA scope for review of FCRs is considered marginal based on the results of the KG&E audit TE:57062-K111 discussed in B.2.b.(2) above.

In general, the scope of current CSA Phase II corrective action plans for CSA generic concerns 160, 161 and 170 and corrective action discussed in referenced CARs or other documents are considered adequate for achieving the required corrective action, with the following clarification:

- (1) For CSA concern 160 and as discussed above, CAR #18 and the CSA concern 160 action plan should be revised to include additional clarification of intended corrective action requirements involving FCRs for resolution of "design errors" or without "identifiable or retrievable documentation".
- (2) For CSA concern 170 and document KQWLO 84-134 as discussed above, appropriate revision of procedure ADM 14-416, Rev. 0 is required to prevent recurrence of deficiencies in the use of NDCs of the type discussed in the KG&E report.

KG&E should audit a sample of NCRs issued late due to the deficiencies in processing NDCs for compliance with procedure AP-V1-02, Section 3.30 provisions for ASME systems/components prior to and after N-stamping.

Based on NRC observations of the CSA report effort in this area, an additional measure of assurance of the quality of the corrective action system programs reviewed by CSA, except for SDLs, was achieved. Additionally, a significant additional measure of assurance of the quality of construction will be achieved with the effective implementation of the CSA/KG&E Phase II followup corrective action for CSA concerns 160, 161, and 170.

4. KG&E 10 CFR 50.55(e) Evaluation

a. Inspection Scope

KG&E TE:50140-K003 audit findings of Quality Program Violations (QPV) in the area of Startup Field Reports were selected for SCVI review of KG&E evaluation for reportability of the identified QA program breakdown to the NRC. This area was also selected to assess the adequacy of CSA Phase II followup corrective actions.

Specific documents reviewed during the SCVI in this area include:

- ° III. Project Policies, 17 Reporting Significant Deficiencies and Defects, Revision 1, dated 2/84
- ° KG&E QA Procedure, QAP 18.2, Revision 1, dated 10/10/84, Parts 7.4.2.D through 7.4.2.C for action to be taken when there is identification of a condition adverse to quality.
- ° KG&E Correspondence, KQWLKOW 84-380, W. M. Lindsay to W. J. Rudolph, dated October 4, 1984, Subject, 50.55(e) for Startup Field Reports
- ° WCGS Request for Reportability Evaluation, by Auditors C. A. Daley/M. Shannon and Supervisor, R. M. Stambaugh, dated 9/18/84
- ° Telephone Call Record, dated 10/4/84 from H. Chernoff/W. Rudolph, M. Lindsay/C. Patrick/M. Shannon/C. Daley, KG&E to B. Taylor, NRC, Region IV
- ° File Note, by R. M. Stambaugh, dated 10/25/84, w/cc to M. Shannon and C. Daley, Subject, Telephone Call Record

- ° Interviews with KG&E Auditors (contractor), M. Shannon and C. Daley and Supervisor R. M. Stambaugh
- ° General Discussions with KG&E QA Manager, WCGS
- ° List of KG&E auditor identified sample of types of deficiencies in hardware/design being resolved through use of SFRs

b. Inspection Findings

Based on the SCVI observations of the above referenced documents, interviews and discussions, the SCVI found that KG&E policy and procedural requirements applicable to KG&E QA program personnel (auditors and managers) for evaluation of a condition adverse to quality, as noted by audit report TE:50140-K003, were satisfied, to the extent that current information was available for evaluation.

It was noted that the auditors evaluation under the WCGS Request for Reportability Form, dated 9/18/84 found that two of the criteria required for reporting under 10 CFR 50.55(e) were satisfied (i.e., relative to (1) a deficiency, which were it to have remained uncorrected could have affected adversely the safety of operation of the nuclear power plant, and (2) a deficiency which represents a significant QA program breakdown). This input to the review process was then evaluated by the assigned QA organization Significant Deficiency Coordinator (SDC) who determined that the auditor conclusions for item 1 had not been demonstrated and concluded based on information available that the matter was not reportable.

The KG&E QA Significant Deficiency Coordinator (SDC) indicated that the KG&E QA Manager (WCGS) agreed with his conclusion. The SDC also stated that he had not received any new information subsequent to his evaluation. Based on further discussions the SDC stated that he was aware of the list of typical SFR problem descriptions/discrepancies prepared by the auditing function of KG&E. Further, that until such time that it is demonstrated that identified startup problems of the type on the reference list (e.g., leak during calibration, running clearances out of tolerance, terminal blocks not installed per design, drawings do not reflect correct information) are deficiencies which, if not corrected, could have affected adversely the safety of operations, the identified QA program breakdown is not viewed as reportable, or potentially reportable. The SDC also indicated that his responsibilities as the KG&E QA SDC did not require him to seek out this information, i.e., the procedures in effect require that this information be brought to his attention.

The SCVI immediate concern regarding KG&E's current position on the reportability of this item to the NRC was generally resolved upon being informed by KG&E of the documentation of two telephone

calls informing the NRC Region IV of the general problem with the SFR program and of the Work Hold #22. The first notification to NRC was on 10/4/84. The second notification was on 10/25/84, during the SCVI of this area. The second call resulted in KG&E licensing informing the NRC that the 10/4/84 telephone record statement that "hardware inspections are being conducted to determine if any nonconforming materials exist in the plant", as highlighted on the record, was an incorrect statement and needed to be corrected.

c. Conclusion

Based on the above, KG&E should continue to review this matter for reportability to the NRC as new information becomes available on either the significance of the QA program breakdown or resulting hardware deficiencies.

The KG&E/CSA corrective actions should ensure that the KG&E program for identification and review of deficiencies for reportability to the NRC is being implemented in a timely manner for SFR or NCRs checked "potentially reportable"; and for deficiencies in construction which could have gone undetected due to the breakdown in the SFR QA program, as identified by the TE:50140-K003 Design Control audit.

PERSONS CONTACTED

The following people were contacted by the NRC inspectors during the special construction verification inspection.

Kansas Gas and Electric Company

R. Bird	W. Lindsay
H. Chernoff	O. Maynard
C. Daley	C. Parry
O. Dominguez	C. Patrick
P. Dyson	E. Peterson
D. Felix	W. Rudolph
G. Fouts	M. Shannon
R. Grant	R. Stambaugh
T. Halecki	J. Wesbrooks
G. Koester	

Daniel International Corporation

D. Bach	S. King
J. Berra	S. Koenig
R. Booth	H. Kubasek
L. Boss	V. McBride
P. Early	R. McCraney
L. Easterwood	R. McGriff
D. Garrett	J. Maine
R. Gesling	G. New
D. Gillespie	L. Payne
L. Gourley	G. Riley
P. Halstead	B. Robinson
J. Hanvey	H. Shields
J. Hightower	L. Smith
J. Hooks	K. Steiner
J. Lewis	L. Weeks

Delian Corporation

S. Baron	F. Pimentel
B. Carter	C. Thompson
D. Leaver	H. Wong
B. Palmer	G. Young

Bechtel

K. Anderson	J. Purdy
J. Fletcher	D. Quattrociocchi
G. Hoffman	G. Stanley
W. Jenkins	S. Wood
C. Mathews	

Westinghouse Nuclear Operations Division

L. Mosier
R. Sunderland

Newport News Incorporated

G. Barber
J. Lytle

In addition to the above personnel, numerous other inspectors, engineers, and supervisory personnel were also contacted.

GLOSSARY OF ABBREVIATIONS

AE	Architect Engineer
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
AWS	American Welding Society
CAT	Construction Appraisal Team
CAR	Corrective Action Request
CBI	Chicago Bridge and Iron
CFR	Code of Federal Regulations
CMTR	Certified Material Test Report
CSA	Construction Self Assessment by the Delian Corporation
Delian	Delian Corporation
DIC	Daniel International Corporation
ECR	Engineering Change Request
FCR	Field Change Request
FSAR	Final Safety Analysis Report
HPSI	High Pressure Safety Injection
HVAC	Heating, Ventilation, and Air Conditioning
I&C	Instrumentation and Control
IE	Office of Inspection and Enforcement
IEEE	Institute of Electrical and Electronics Engineers
KG&E	Kansas Gas & Electric Company
KCPL	Kansas City Power and Light Company
MCC	Motor Control Center
MOV	Motor Operated Valve
NCR	Nonconformance Report
NDC	Notice of Discrepant Condition
NDE	Nondestructive Examination
NRC	Nuclear Regulatory Commission
NNI	Newport News Incorporated
NOD	Nuclear Operations Division
NRC	Nuclear Regulatory Commission
PSAR	Preliminary Safety Analysis Report
Q	Safety Related
QA	Quality Assurance
QC	Quality Control
QPV	Quality Programs Violation
RCI	Request for Clarification or Information
RECO	Richmond Engineering Company
RG	Regulatory Guide
RIR	Reject Item Report
SCVI	Special Construction Verification Inspection by NRC
SDC	Significant Deficiency Coordinator
SDL	System Discrepancy List
SFR	Startup Field Report
SNUPPS	Standardized Nuclear Unit Power Plant System
WCGS	Wolf Creek Generating Station
WNOD	Westinghouse Nuclear Operations Division

CSA STATUS SUMMARYCase-Specific Concerns

<u>Code</u>	<u>Code Description</u>	<u>Amount and Date of Status</u>	
		<u>10/26/84</u>	<u>10/30/84</u>
A	No response received	2	1
B	CSA is evaluating response	9	12
C	CSA requires further action/information	20	25
D	CSA accepts written response, pending verification	33	60
E	CSA rejects verification	0	0
F	CSA accepts verification	2	14
G	Closure by CSA Manager	0	0
*	Requires CSA administrative processing	89	43
		<u>155</u>	<u>155</u>

Generic Concerns

<u>Code</u>	<u>Code Description</u>	<u>Amount and Date of Status</u>	
		<u>10/26/84</u>	<u>10/30/84</u>
A	CSA Action Plan issued	4	4
B	Corrective Action Complete (per written response by actionee)	9	9
C	Response determined incomplete by CSA	0	0
D	Response accepted by CSA	2	2
E	CSA rejects verification	0	0
F	CSA accepts verification	0	0
C	Closure by CSA manager	0	0
		<u>15</u>	<u>15</u>

STATUS OF CSA GENERIC CONCERNS
(Per Table of Resolution of CSA Concerns)

Code	Description	<u>10/25/84</u>		<u>11/01/84</u>	
		CSA #	Total	CSA #	Total
A	Action Plan Complete, CSA Awaiting Complete Response	156, 157 163, 169	4	156, 157 163, 169	4
B	Response Received, CSA Evaluation in Process	158, 159 160, 162 164, 166 167, 168 170	9	158, 162 164, 166 167, 168 170	7
C	Response Incomplete, per CSA Review		0	159	1
D	CSA has Approved Response, Closure Pending CSA Verification	161, 165	2	160, 161 165	3
			<u>15</u>		<u>15</u>

TABLE OF RESOLUTION OF CSA CONCERNS

ATTACHMENT E

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ITEM NUMBER	DESCRIPTION	CSA CONC. NO.	RESP. ORG. DISC.	ITEM STATUS BY RESP. ORGANIZATION	ACTION/ ACTION PLAN	CSA		DUE DATE SCH./ACT.	CLOSE OUT DOCUMENT	CSA VERIFICATION
						RESP. CSA	REV/ STATUS			
1	Structural Steel, Missing Documentation	1	DIC	Documentation Located/Item Closed	None Required	0-F	Yes 1	V-3 V-11	CSA Con- cern Form	
2	Electrical, Rust on Conduit	2	DIC	NCR Prepared/Item Closed	None Required	0-D	Yes 1	Table II-2,16	NDC-E-017 WR-11065-84 WR-10469-84	
3	Electrical, Cable Min. Separation	3	DIC	NCR Prepared/Item Closed	None Required	0-D	Yes 1	II-16	NCR-1SN- 19317E	
4	Electrical, Conduit Marking	4	DIC	NDC Prepared/Item Open	Required	1-C	No 1	II-18	NDC-E-018 (Voided Copy)	
5	Electrical, Flex Out of Condulet	5	DIC	NDC Prepared/Item Closed	None Required	0-D	Yes 1	II-16	NDC-E-010	
6	Electrical, Flex Connection Loose	6	DIC	NDC Prepared/Item Closed	None Required	0-D	Yes 1	II-16	NDC-E-026 CWP GS-39-E	
7	Electrical, Fitting Loose	7	DIC	NDC Prepared/Item Closed	None Required	0-D	Yes 1	II-16	NDC-E-013	
8	Electrical, Conduit Bends Greater than 360°	8	DIC	Memo Prepared/Item Open	Required	0 -C	No 1	II-2 II-16	Memo of 7/3/84 on Record	
9	Electrical, Min. Separation	9	DIC	NDC Prepared/Item Closed	None Required	0-D	Yes 1	II-2 II-16	NDC-E-015	
10	Electrical, Lack of Cable Flex	10	DIC	Memo Prepared/Item Open	None Required	1-F	Yes 2	II-16	Memo of 6/29/84 + 10/9/84 on Record	
11	Electrical, Flex Connector Loose	11	DIC	NDC Prepared/Item Closed	None Required	0-D	Yes 1	II-16	NDC-E-012	

Key for (A) CSA Conc. = CSA Concurrence

(1) Isolated or Limited Frequency (2) Potential Generic or Programmatic CSA Concern (3) Generic or Programmatic

Yes, Indicates CSA's Concurrence with Response Provided by Close Out Document

No, Indicates that Additional Information or Action is Required to Close Out the Concern

Rep. Ref. = Page Number in CSA Report Reference Concern

CSA Status Codes: (A) No resp. received
(B) Requires CSA evaluation (C) Further action/info required (D) Response OK pending verification (E) Reject verification (F) Verification OK pending closure (G) Closed by CSA *Requires Administrative Processing on Closure Form

TABLE OF RESOLUTION OF CSA CONCERNS

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ITEM NUMBER	DESCRIPTION	CSA CONC. NO.	RESP. ORG. DISC.	ITEM STATUS BY RESP. ORGANIZATION	ACTION/ ACTION PLAN	CSA		DUE DATE SCH./ACT.	CLOSE OUT DOCUMENT	CSA VERIFICATION
						RESP. CSA	REV/STATUS			
12	Electrical, Missing Clamp on Support	12	DIC	NDC Prepared/ Item Closed	None Required	0-D	Yes 1	II-21	NDC-E-011	
13	Welding, (Piping) Weld Paper Not Stamped Correctly	13	DIC	Memo Prepared/ Item Closed	None Required	0-D	Yes 1	III-20	Memo 7/5/84 on Record	
14	Welding, (Piping) Weld Location not shown on B/P	14	DIC	Memo Prepared/ Item Open	Required	0-C	No 1	III-20	Memo 7/5/84 on Record	
15	Mechanical, (Piping) a) Valves Left Open b) Nuts Not Fully Engaged	15	a)KGE b)DIC	Item Open Memo Prepared/ Item Closed	a)Required b)None Required	a)A b)0-D	a)N/A b)Yes 2	III-20	Memo 7/5/84 on Record	
16	Mechanical, (Piping) NDE Indication not Addressed	16	DIC	NCR + Memos Prepared/ Item Closed	None Required	1-D	Yes 1	III-20	Memos 7/12/84 on Record NCR 1SN-12-132PW	
17	Mechanical, (Supports) Traveler B.O.M. Not Correct	17	DIC	SDL Prepared/ Item Closed	None Required	0-D	Yes 1	III-31	SDL-AE-237	
18	Mechanical, (Supports) Not to Tolerance	18	DIC	NCR Prepared/ Item Closed	None Required (See Item 157)	0-F	Yes 1	III-4 III-31	1SN-19-36H	
19	Mechanical, (Supports) Obstruction	19	DIC	NCR Prepared/ Item Closed	None Required	0-F	Yes 1	III-31	1SN-19271H	
20	Mechanical (Supports) No QC Verification Noted	20	DIC	Item Resolved on CSA Form/Item Closed	None Required	*	Yes 1	III-31	CSA Form	
21	Electrical, Pull Box Cover not Installed	21	DIC	Memo Prepared/ Item Closed	None Required	1-F	Yes 2	II-16	Memo 6/30/84 on Record WA-RC-300-09 QRC 8324	
22	Electrical, Cables not Tied Down	22	DIC	Memo Prepared/ Item Closed	None Required	1-F	Yes 1	II-16	Memo 6/30/84 on Record E-01013 E-1R8900	

TABLE OF RESOLUTION OF CSA CONCERNS

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ITEM NUMBER	DESCRIPTION	CSA CONC. NO.	RESP. ORG. DISC.	ITEM STATUS BY RESP. ORGANIZATION	ACTION/ ACTION PLAN	CSA		(A)		DUE DATE SCH./ACT.	CLOSE OUT DOCUMENT	CSA VERIFICATION
						RESP. CSA	REV/ STATUS	CSA CONC.	REP. R.F.F.			
23	Electrical, Flex Connector Loose	23	DIC	Inspection Report Verified/Item Open	Required	0-C	No	1	11-17		Inspect Report 7/3/84 on Record	
24	Electrical, Unistrut Wall Spread	24	DIC	NCR Prepared/Item Closed	None Required (See 165 Also)	0-D	Yes	1	11-2 11-17		ISN-19274E	
25	Electrical, Washer Rotated on Unistrut	25	DIC	NDC Prepared/Item Closed	None Required	0-D	Yes	1	11-2 11-17		ISN-19320E NDC E-014	
26	Electrical, Galvanize off Conduit	26	DIC	NDC Prepared/Item Closed	None Required	0-D	Yes	1	11-17		NDC-E-016 WR 10757-84	
27	Electrical, Tray Support not Secured Properly	27	DIC	NCR Prepared/Item Closed	None Required	0-D	Yes	1	11-3 11-17		ISN-19312E	
28	Electrical, No Fire Barrier	28	DIC	Memo Prepared/Item Closed	None Required	0-D	Yes	1	11-17		Memo 7/5/84 on Record	
29	Electrical, Cable Tray Penetration Barrier	29	DIC	NDC Prepared/Item Closed	None Required	0-D	Yes	1	11-17		NDC-E-027	
30	Electrical, Floor Penetration not as Required	30	DIC	Memo Prepared/Item Open	Required	0-C	No	1	11-17		Memo 7/6/84 on Record, Breach of Seal Notification	
31	Electrical, Missing Cable Softener	31	DIC	Memo Prepared/Item Closed	None Required	1-F	Yes	1	11-3 11-17		Memo 7/5/84 on Record WA-RC-300-01 QC1C WA-RC-300-01 E-0103	
32	Electrical, Fire Barrier Full	32	DIC	Memo Prepared/Item Closed	None Required	1-F	Yes	1	11-3 11-17		Memo 7/2/84 on Record E-15000 E-1R8900	
33	Mechanical, (Supports) Insufficient Weld Length	33	DIC	a)NCR Prepared/Item Open b)NCR Prepared/Item Closed	Required (See Item 157)	a)1-B* b)0-D	a)No 1 b)Yes 1	111-5 111-31			a)ISN-19277HW FCR 1-0181-H Response to CSA 157* b)NCR ISN19277HW	

TABLE OF RESOLUTION OF CSA CONCERNS

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ITEM NUMBER	DESCRIPTION	CSA CONC. NO.	RESP. ORG. DISC.	ITEM STATUS BY RESP. ORGANIZATION	ACTION/ ACTION PLAN	CSA		DUE DATE SCH./ACT.	CLOSE OUT DOCUMENT	CSA VERIFICATION
						RESP. REV/ CSA STATUS	(A) CSA CONC. REF.			
34	Mechanical, (Supports) Not to Tolerance Incorrect Material I.D.	34	DIC	NCR Prepared/ Items Closed	None Required	*	Yes 1	III-31	ISN-19285HW SDL-AB-1-075	
35	Electrical, MCC Bolting not to Spec's.	35	DIC	NDC Prepared/ Item Open	None Required (See Item 164)	1-D	Yes 3	II-6 II-17	RCI-1352E and NDC-E-048 NCR ISN20681E NCR ISN20682E	
36	Electrical, Box not Properly Secured	36	DIC	TOE Prepared/ Item Open	Required	0-C	No 1	II-17	TOE 123 & 124	
37	Electrical, Broken Flex in Conduit	37	DIC	NRC Prepared/ Item Closed	None Required	0-D	Yes 1	II-17	ISN-19311-E	
38	Electrical, Flex Loose	38	DIC	NRC Prepared/ Item Closed	None Required	0-D	Yes 1	II-18	INN-19332E	
39	Electrical, Lack of Edge Softener on Cable	39	DIC	NDC Prepared/ Item Closed	None Required (See Item 170)	0-D	Yes 1	II-18	NDC-E-021	
40	Electrical, Broken Flex	40	DIC	NDC Prepared/ Item Closed	None Required	0-D	Yes 1	II-18	ISN-19310-E	
41	Piping, Flange Bolts not Fully Engaged	41	DIC	Memo Prepared/ Item Closed	None Required	0-D	Yes 1	III-20	Memo 7/5/84	
42	Mechanical, Snubber(Support) not Completely Wrapped	42	DIC	Item Resolved on CSA Form/Item Closed	None Required	*	Yes 1	III-32	CSA Form	
43	Mechanical, (Supports) Operational Interference	43	DIC	Item Resolved by RCI/Item Closed	None Required	0-D	Yes 1	III-31	RCI-1-0014H	
44	Mechanical, (Piping) Clearance Between Valve Handle	44	DIC	Item Resolved by CSA Form/Item Open	None Required	1-D	Yes 1	III-32	CSA Form + Memo 10-20-84	

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						RESP. REV/ CSA STATUS	(A) CSA CONC. REF.			
45	Mechanical, (Supports) Snubber Interference	45	DIC	NDC Prepared/ Item Closed	None Required	*	Yes 1	III-32	ISN-19538H	
46	Electrical, Missing Bolts on Cover	46	DIC	NDC Prepared/ Item Closed	None Required	O-D	Yes 1	II-19	NDC-E-023	
47	Electrical, Missing Bolts on Cover	47	DIC	NDC Prepared/ Item Closed	None Required	O-D	Yes 1	II-19	NDC-E-022	
48	Mechanical, (Supports) Hanger Clearance	48	DIC	Item Resolved on CSA Form/Item Closed	None Required	O-D	Yes 1	III-33	CSA Form	
49	Electrical, Flex Connector Loose	49	DIC	NDC Prepared/ Item Closed	None Required	O-D	Yes 1	II-18	ISN-19313E	
50	Mechanical, (Piping) Grind Spot	50	DIC	Memo Prepared/ Item Closed	None Required	O-D	Yes 1	III-20	Memo 7/14/84 on Record QSR SR-1C93-M UT-2416	
51	Electrical Missing Strap for Unistrut	51	DIC	Item Resolved on CSA Form	None Required	O-D	Yes 1	II-19	RA-RC-242-94 Memo 7/3/84	
52	Electrical, Unistrut Strap not Engaged	52	DIC	Item Resolved on CSA Form/Item Closed	None Required (See Item 165)	O-D	Yes 3	II-19	RA-RC-242-95 Memo 7/3/84 QRC 602B1J	
53	Mechanical, (I&C Valve) a)Incorrect Washers Installed b)Incomplete Thread Engagement	53	DIC	Item Resolved by Memo & Special Instructions/Item Closed	a)None Required b)None Required	a)O-D b)I-D	a)Yes 1 b)Yes 1	III-20 III-20	Memo 7/5/84 & 7/17/84 Work Pkg Index 385 SIS IM03EP06(Q)02 Spec. M204, p.8 WP-VII R. 19, p.25	
54	Mechanical, (Supports) Temporary Clamp	54	DIC	Item Resolved by Memo/Item Open	Action Plan 54	I-C	No 3	III-20	Memo 7/10/84	
55	Mechanical, (Whip Restraint and Tubing Support-Civil/ Structural) Clearance	55	KG&E DIC	Item Resolved on CSA Form/Item Open	Required	O-C	No 1	V-3	CSA Form	

TABLE OF RESOLUTION OF CSA CONCERNS

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ITEM NUMBER	DESCRIPTION	CSA CONC. NO.	RESP. ORG. DISC.	ITEM STATUS BY RESP. ORGANIZATION	ACTION/ ACTION PLAN	CSA		DUE DATE SCH./ACT.	CLOSE OUT DOCUMENT	CSA VERIFICATION
						RESP. CSA	REV/ STATUS			
56	Mechanical (Whip Restraint-Civil/Structural)	56	DIC	Item Resolved by FCR/Item Closed	None Required	O-F	(A) Yes 1	V-3	FCR-1-1401C, Item 6	
57	Mechanical, (Supports) Operational Interference	57	DIC	Item Resolved on CSA Form/Item Closed	None Required	O-F	Yes 1	III-31	CSA Form SDL AE-243	
58	Mechanical, (Supports) Bushing not Properly Staked	58	DIC	SDL Prepared/ Item Closed	None Required	O-F	Yes 1	III-31	SDL-EG-871	
59	Electrical, No I.D. Markers on MCC	59	DIC	Item Resolved on CSA Form/Item Open	Required	O-C	No 1	II-18	CSA Form Memo 7/20/84 DWG E-11NG20/R1	
60	Electrical, Flex not Properly Separated	60	DIC	NDC Prepared/ Item Open	Required	O-C	No 1	II-18	NDC-E-035 QRC 101151	
61	Mechanical, (Piping) a) Loose Bolts on Valve b) No White I.D. Tag	61	a)DIC b)DIC	NCR Prepared/ Item Closed b) Item Closed	None Required	a)0-D b)0-F	Yes 1 Yes 1	III-20	a) NCR 1SN-17199E Memo 7/11&10/8/84 on file b) Memo 9/4/84 on file	
62	Mechanical, (Piping) a) Bolts Loose on Valve b) No White I.D. Tag	62	DIC	NDC Prepared/ Item Closed	None Required	a)0-D b)0-F	Yes 1 Yes 1	III-21	a) NCR 1SN-17199E Memo 7/11&10/8/84 on file b) Memo 9/4/84 on file	
63	Mechanical, (Piping) Nuts Missing on Valve	63	DIC	NDC Prepared/ Item Closed	None Required	O-D	Yes 1	III-21	NDC-P-027	
64	NDE, (R.T.) Film Quality	64	KG&E VENDOR	Item Resolved on CSA Form/Item Closed	None Required	O-F	Yes 1	IV-18	CSA Form	
65	NDE, (R.T.) Film and Weld Quality	65	KG&E VENDOR	Item Resolved on CSA Form/Item Closed	None Required	O-F	Yes 1	IV-19	CSA Form	

TABLE OF RESOLUTION OF CSA CONCERNS

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ITEM NUMBER	DESCRIPTION	CSA CONC. NO.	RESP. ORG. DISC.	ITEM STATUS BY RESP. ORGANIZATION	ACTION/ ACTION PLAN	CSA			DUE DATE SCH./ACT.	CLOSE OUT DOCUMENT	CSA VERIFICATION
						RESP. CSA	REV/ STATUS	(A) CSA CONC.			
66	NDE, (R.T.) Film Quality	66	KG&E	Item Resolved on CSA Form/Item Closed	None Required	O-F	Yes 1	IV-18		CSA Form	
67	Electrical, Flex Disconnected	67	DIC	NDC Prepared/ Item Closed	None Required	O-D	Yes 1	II-19		ISN-19359E	
68	Welding, (Piping) Surface Defects	68	KG&E VENDOR	NDC Prepared/ Item Closed	None Required (See Item 169)	0 A -D	Yes 3	III-21		ISN-19513 MW Memo 7/9 & 7/16/84 on record	
69	Welding, (Piping) Surface Defects	69	KG&E VENDOR	Memo Prepared/ Item Open	Required (See Item 169)	1-C	No 3	III-21		Memo 7/9/84 on Record	
70	Welding, (Piping) Rust on Stainless	70	DIC	Memo Prepared/ Item Closed	None Required	O-D	Yes 1	III-21		Memo 7/16/84, on Record QSR 1094-M	
71	Mechanical, (Piping) Valve Leaking	71	DIC	NDC Prepared/ Item Closed	None Required	*	Yes 1	III-21		NDC-P026	
72	Welding, (Piping) a) Grinding Marks b) Weld Reinforcement	72	KG&E VENDOR	a) Memo Prepared/ Item Open b) Memo Prepared/ Item Open	Required (See Item 169)	a) 0-C b) 0-C	a) No 3 b) No 3	III-21		a) Memo 7/16/84 on record QSR SR 1090M b) Memo 7/6/84 on record	
73	Welding, (Piping) Undercut	73	KG&E VENDOR	NDC Prepared/ Item Open	None Required	1-D	Yes 3	III-22		ISN-19494MW	
74	Mechanical, (Piping) Hold Tag	74	DIC	Memo Prepared/ Item Closed	None Required	*	Yes 1	III-22		Memo 7/10/84 on Record	
75	Mechanical (Equipment) Gouges and Arc Strikes	75	DIC	NCR Prepared/ Item Closed	None Required	*	Yes 1	III-22		ISN-19436MW	
76P	Electrical, Conduit Interference	76P	DIC	Memo Prepared/ Item Closed	None Required	O-F	Yes 1	II-19		Letter 12/10/82, On Record RCI 1-0205-E	
76H	Mechanical, (Supports) Angularity	76H	DIC	SDL Prepared/ Item Closed	None Required	*	Yes 1	III-31		SDL-EG-879	

TABLE OF RESOLUTION OF CSA CONCERNS

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						RESP. CSA	REV/STATUS			
77	Mechanical, (Supports) Special Scope MTDN's	77	DIC	Resolution on CSA Form/Item Open	See Action Plan 77	1-B	No 3	III-5 III-33	CSA Form/DIC 10M dated 9/26/84 Typed pg "CSA 77" dated 10/9/84	
78	Mechanical, (Supports) Conflict in Drawings	78	DIC/ BECHTEL	RCI Prepared/ Item Closed	None Required	*	Yes 1	III-31	RCI-1-0012H	
79	Mechanical, (Supports) (a) Conflict in Drawings (b) Undersize Vendor Weld	79	a)BPC b)DIC	(a) NCR Prepared/ Item Open (b) SDL Prepared/ Item Closed	Required (See Item 161) (See Also Item 157)	a)0-C b)0-D	(a)No 1 (b)Yes 1	III-5 III-31	(a)ISN-19356H (b)SDL-EG-880	
80	Mechanical, (Supports) B.O.M. Error	80	DIC	SDL Prepared/Item Open	Required	0-C	No 1	III-31	SDL-EG-881	
81	Mechanical, (Supports) Possible Clamp Rotation	81	DIC/ BECHTEL	RCI Prepared/ Item Closed	None Required	*	Yes 1	III-5 III-32	RCI-1-0013H	
82	Mechanical, (Supports) Cotter Pin	82	DIC	SDL Prepared/ Item Closed	None Required	*	Yes 3	III-31	SDL-AB-1-238	
83	NDE, (R.T.) Slag Indications	83	DIC	Resolved on CSA Form/Item Closed	None Required	0-D	Yes 3	IV-9	CSA Form	
84	NDE, (R.T.) Weld Quality	84	KG&E/ Applied Eng.	Item Open	Action Plan 84	0-C	No 3	IV-10 IV-21	CSA Form SAP EG 1993	
85	NDE, (R.T.) Film Density	85	KG&E/ Applied Eng.	Item Open	Action Plan 85	0-C	No 3	IV-10 IV-21	CSA Form + QSR-SR-1095-M	
86	Mechanical, (Piping) ECR Issued in lieu NCR	86	DIC	Memo Issued/ Item Closed	None Required	1-D	Yes 2	III-22	Memo 7/16/84, on Record ECR 22, B.O.M.	
87	Welding, Weld Profile	87	DIC	Memo Issued/ Item Open	Required (See Item 167)	1-B	No 3	III-22	Memo 7/25/84, on Record/ECR IM03EM04(Q)ECR18 PT 11574;UT 2455	

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						RESP. CSA	REV/STATUS	(A) CSA CONC. REF.		
88	Mechanical, (Piping) Base Mat'l Indication	88	DIC	Memo Issued/ Item Closed	None Required	1-F	Yes 2	III-22	Memo 7/17/84, on Record QSR SR-1092-M PT 11550;UT 2434	
89	Mechanical, (welding) In Process Inspection	89	DIC	Memos Prepared/ Item Closed	None Required	0-D	Yes 1	III-22	Memo 7/10/84, on Record	
90	Mechanical, (Piping) Pin Hole in B.M.	90	DIC	Memo Prepared/ Item Closed	None Required	0-D	Yes 2	III-23	Memo 7/16/84 on Record QSR SR-1091-M	
91	Mechanical, (Piping) Missing Nuts on Valve	91	DIC	NDC Prepared/ Item Closed	None Required	*	Yes 1	III-23	NDC-P-028	
92	Welding, (Piping) Improper Prep. for P.T.	92	KG&E/ VENDOR	Memo Prepared/ Item Closed	None Required (See Item 169)	0-F	Yes 1	III-23	Memo 7/7/84 on Record	
93	Mechanical, (Support) Rust on Hanger	93	W	NCR Prepared/ Item Closed	None Required	*	Yes 1	III-23	ISN-55265-J	
94	NDE, (R.T.) Weld Quality a)RT Discrepancies b)Lead ID in RT Area of Interest	94	KG&E (RECO)	U.T. Performed/ Item Open	Action Plan 94	0-C	No 3	IV-11 IV-21	U.T.-2431, SAP EG 1994	
95	Mechanical, (Piping) Arc Gouges	95	DIC	Surveillance Report Prepared/Item Closed	None Required	1-F	Yes 2	III-23	Memo 7/16/84, on Record QSR-1097-M NCR ISN20075PW	
96	Mechanical, (Piping) Paint Chipping	96	DIC/ KG&E	Memo Prepared/ Item Closed	None Required	0-D	Yes 1	III-23	Memo 7/14/84, on Record	
97	Mechanical, (Piping) Valve, Flow Direction Missing	97	KG&E	Memo Prepared/ Item Closed	None Required	0-D	Yes 1	III-23	Memo 7/19/84, on Record	
98	Mechanical, (Piping) ASME Class Changes at Coupling	98	DIC/ BECHTEL	Memo Prepared/ Item Closed	None Required	1-D	Yes 2	III-23	Memo 7/20/84 on Record RCI 1-0749-P	

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						RESP. CSA	REV/ STATUS			
99 R	Mechanical, (Supports) Dimensional Error	99	DIC	SDL Prepared/ Item Open	Required	1-B	No 1	III-32	SDL-EJ-406 AP-VI-02, R.25 (partial)	
100	Mechanical, (a) Maintenance Records (b) Danger Signs (c) Exhaust Fan	100	KG&E	Memo Prepared/ Item Closed	None Required	*	Yes 1	II-18	Memo 7/14/84, on Record	
101	Electrical, Missing Nameplate	101	DIC	Prepared NDC/ Item Closed	None Required	O-D	Yes 1	II-18	NDC E039	
102	Mechanical, (a) Maintenance Records Missing (b) No Danger Signs (c) Exhaust Fan	102	DIC	Memo Prepared/ Item Closed	None Required	*	Yes 1	II-18	Memo 7/14/84, on Record	
103	Mechanical, (Same as 102)	103	DIC	Memo Prepared/ Item Closed	None Required	*	Yes 1	II-18	Memo 7/14/84, on Record	
104	Mechanical, (Same as 102)	104	DIC	Memo Prepared/ Item Closed	None Required	*	Yes 1	II-18	Memo 7/14/84, + 7/18/84 On Record	
105	Mechanical, (Supports) (a) Loads on Can do not Agree with Bom (b) No MTDN (c) No CAR 25 in Traveler (d) Can Binding	105	DIC	NCR & RCI Prepared/ Item Closed	None Required	*	Yes 2	III-32	ISN 19583H RCI-1-0016H	
106	Mechanical, (Piping) U.T. Prep for W.T.	106	DIC	SR Prepared/ Item Closed	None Required	O-F	Yes 1	III-24	SR 1098M CWP EG 602P	
107	Welding, Linear Indication Weld	107	DIC	Memo Prepared/ Item Closed	None Required	1-D	Yes 1	III-24	Memo 7/17/84, on Record PT-11584	

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						RESP. REV/ CSA STATUS	(A) CSA CONC.	REP. REF. SCH./ACT.		
108	Welding, Linear Indication Weld	108	DIC	Memo Prepared/ Item Closed	None Required	1-D	Yes 1	III-24	Memo 7/17/84, on Record PT-11584	
109	Welding, Weld Splatter	109	DIC	SR Prepared/ Item Closed	None Required	0-D	Yes 3	III-24	SR-1100M NCR 1SN20110P	
110	Welding, Questionable P.T. Prep	110	DIC	Memo Prepared/ Item Closed	None Required	0-D	Yes 3	III-24	Memo 7/17/84, on Record PT-11583	
111	Welding, PSI/ISI U.T. Prep	111	DIC/ KG&E	Memo Prepared/ Item Open	Action Plan 111	1-C	No 3	III-24	Memo 7/17/84, on Record LP 4863,PT PB7-PT-4613	
112	Welding, Hoop Shrinkage	112	DIC/ BECHTEL	Memo Prepared/ Item Closed	None Required	0-D	Yes 1	III-24	Memo 7/16/84, on Record	
113	Electrical, Clamp Missing	113	DIC	NDC Prepared/ Item Closed	None Required	0-D	Yes 1	II-18	NDC-E041	
114	Electrical, Separation	114	DIC	NDC Prepared/ Item Closed	None Required (See Item 170)	0-D	Yes 1		NDC-E042	
115	Mechanical, Equip, Bolts Missing on Valve Plates	115	DIC	NDC Prepared/ Item Closed	None Required	*	Yes 1	III-24	NDC-P-041	
116	Electrical, Loose Flex	116	DIC	NDC Prepared/ Item Closed	None Required	0-D	Yes 1		NDC-E043, Memo	
117	Welding, Steel on SS	117	W	NDC Prepared/ Item Open	Required	0-C	No 1	III-24	1SN-55260J	
118	Welding, Weld Profile	118	KG&E VENDOR	Memo Prepared/ Item Open	Required (See Item 16 ⁹)	1-B	No 3	III-24	Memo 7/19/84, on Record	
119	Welding, Overlap	119	KG&E/ WEST.	NCR Prepared/ Item Open	Required (See Item 1-	0-C	No 3	III-25	1SN-19662MW	

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						RESP. CSA	REV/ STATUS			
120	Welding, Porosity	120	KG&E	Memo Prepared/ VENDOR Item Open	Required (See Item 169)	0-C	No 3	III-25	Memo 7/19/84, on Record	
121	Welding, Excessive Reinforcement	121	DIC	Memo Prepared/ Item Closed	None Required (See Item 167)	0-D	Yes 1	III-25	Memo 7/19/84, on Record	
122	Welding, Linear Indication	122	DIC	SR Prepared/ Item Closed	None Required (See Item 167)	1-F	Yes 3	III-25	QSR SR-1099-M PT-11586	
123	Mechanical, (Supports) Code Data & Documentation	123	DIC	NCR Prepared/ Item Closed	None Required (See Item 157)	*	Yes 3	III-32	ISN 19607H	
124	Mechanical, (Supports) Loose Jam Nut	124	DIC	SDL Prepared/ Item Closed	None Required	*	Yes 1	III-32	SDL-EP-281	
125	Mechanical, (Supports) Clamp Angle Off	125	DIC	SDL Prepared/ Item Closed	None Required	*	Yes 1	III-32	SDL-EP-287	
126	Mechanical, (Supports) (a) Snubber Tension in Lieu of Comp, (b) Obstructions	126	DIC	(a) NCR Prepared/ Item Closed (b) SDL Prepared Item Closed	a) None Required (See Item 166) b) Required	a)* b)1-B	a)Yes 3 No 1	III-5 III-32	(a) ISN19609H (b) SDL-EP-284	
127	Mechanical, (Supports) Bom Calls for Snubber to be in Comp. Conflict with Traveler	127	DIC	SDL Prepared/ Item Closed	None Required (See Item 166)	*	Yes 3	III-5 III-32	SDL-EP-285	
128	Mechanical, (Supports) (Same as 127)	128	DIC	SDL Prepared/ Item Closed	None Required (See Item 166)	*	Yes 3	III-5 III-32	SDL-EP-286	
129	Electrical, No Q.C. Documentation on Bus Bar Torquing	129	DIC	Resolution on CSA Form/Item Closed	None Required (See Items 162 & 163)	1-D	Yes 3	11-6 11-18	CSA Form NCR 1SN20674E QC Checklist Samples	

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						RESP. CSA	REV/ STATUS			
130	Electrical, Bolting of Switchgear	130	DIC	NDC Prepared/ Item Closed	None Required (See Item 164)	0-D	(A) Yes 1	11-18	NDC-E-049	
131	Electrical, (Same as 130)	131	DIC	NDC Prepared/ Item Closed	None Required (See Item 164)	0-D	Yes 1	11-18	NDC-E-049	
132	Electrical, Conduct Touching Support	132	DIC	NDC Prepared/ Item Closed	None Required	0-D	Yes 1	11-18	NDC-E-047 Bechtel BLSE 11,338	
133	Mechanical, (Supports) (a) Wrong Size Washers (b) CAR 25 (c) 2 instead 4 Hole Clamp	133	DIC	a+b)NDC Prepared/ Items Closed c) Item Open	a) & b)None Required * (See Item 157) c)See Action Plan 133 (See also Item 166)1-C		a&b) yes 3 c) No 3	III-5 III-32	ISN 19630H Memo "CSA No. 133"	
134	Mechanical, (Supports) (a) Loose Nuts (b) Hangers not Shimmed	134	DIC	SR Prepared/ Item Closed	None Required	*	Yes 1	III-33	NSIR's 2177H, 2178H, 2179H	
135	Mechanical, (I&C) Residue on Tubing	135	KG&E	NCR and Letter Prepared/Item Closed	None Required	2-D	Yes 3	11-8 11-21	ISN55261J SAP-EG-1815 SAP-EG-1708 SAP-EG-1866 ISN 553905 SAP-EG-2004	
136	Mechanical, (I&C) Holes in Concrete	136	W	Memo Prepared/ Item Open	Required	1-B	No 2	11-21	PCN 84-3 FCR 1-1196-C SAP-EG-2004	
137	Welding, Underfill	137	KG&E	Memo Prepared/ VENDOR Item Open	Required (See Item 169)	0-C	No 3	III-25	Memo 7/23/84, on Record	
138	Welding, Porosity	138	KG&E	Memo Prepared/ VENDOR Item Open	Required (See Item 169)	0-C	No 3	III-25	Memo 7/23/84 on Record	
139	Welding, Undercut	139	KG&E	Memo + SR VENDOR Prepared/Item Closed	None Required (See Item 169)	0-D	Yes 3	III-25	Memo 7-23-84 SR WIR-84-278	

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						RESP. REV/ CSA STATUS	(A) CSA CONC. REF.			
140	Electrical, Flex Pulled from Connector	140	DIC	NCR Prepared/ Item Closed	None Required	0-D	Yes 1	11-18	ISN-19716E	
141	Mechanical, (I&C) Anchor Spacing	141	W	Memo Prepared/ Item Closed	None Required	1-F	Yes 2	11-21	W Memo 2/24/82, NCR INN 51224-J SAP-EG-2004	
142	Mechanical, (I&C) Damaged Tubing & Gage	142	W	CWP Prepared/ Item Open	None Required (See Item 156)	1-D	Yes 2	11-21	(Cancelled) CWP BG 873I SAP-EG-1998	
143	Mechanical, (I&C) Loose Clamp	143	W	CWP Prepared/ Item Closed	None Required (See Item 156)	*	Yes 1	11-21	CWP-BB-673I KWCLWW-84-127	
144	Mechanical, (I&C) Missing/Loose Nuts on Terminal Box	144	W	Memo Prepared/ Item Closed	None Required (See Item 156)	*	Yes 1	11-21	W Memo 7/20/84, SAP-EG-1866	
145	Mechanical, (Supports) Standing Water in Stanchions	145	DIC	RCI Prepared/ Item Open	Required (See Item 156)	0-C	No 1		RCI-10434-P	
146	Mechanical, (I&C) Damaged Tubing and Clamp Missing	146	W	CWP Prepared/ Item Open	Required (See Item 156)	0-C	No 3	11-21	CWP EJ-459I G-SAP-EJ-G03- CSA Q11/I CWA-EJ-G03-CSA	
147	Mechanical, (I&C) (a) Damaged Tubing (b) Hanger not Installed	147	W	a) CWP Prepared/ Item Open b) NCR Prepared/Generic Implications Evaluated/ Item Closed	a) Required b) None Required (See Item 156)	a)0-C b)0-D	(a)No 1 (b)Yes 1	11-8 11-21	a)SAP EG-1866 CWP HB-239-I NCR 1SN55355J b)ECWP-382 FCR W-1-0432-J SAP EG1945+EG1866 CWA-HB-G03-CSA-1	
148	Mechanical, (I&C) (a) Missing Valve Handle (b) Missing Clamp	148	W	CWP Prepared/ Item Closed	None Required (See Item 156)	*	Yes 1	11-21	CWP EJ-459I SAP-EG-1866	
149	Mechanical, (HVAC) Undersize Welds	149	DIC	NDC Prepared/ Item Closed	None Required (See Item 168) AE-14	0-D	Yes 1	11-39	NDC MW061	

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						RESP. REV/ CSA STATUS	(A) CSA CONC. REF.			
150	Mechanical, (HVAC) (a) Welds Undersize (b) Dimensions	150	(a)KG&E VENDOR (b)DIC	(a) NDC Prepared Item Open (b) RCI and NDC Prepared/Item Closed	(a) Required (See Item 162) (b) None Required	a) 1-B b) *	(a)No 3 (b)Yes 1	III-39	(a) NDC-MW060 NCR ISN-20104-MW (b) RCI-1-244-M and NCR ISN-20003-M	
151	Mechanical, (HVAC) (a) Welds Undersize (b) Grinding Embeds (c) Documentation	151	DIC DIC DIC	(a) NDC Prepared/ Item Open (b) Memo Prepared/ Item Closed (c) NDC Prepared/ Item Closed	(a) Required (See Item 168) (b) None Required (c) None Required	a) 1-B b) * c) 0-D	No 3 Yes 1 Yes 1	III-39	(a) NDC MW 062 ISN 20104MW (b) Memo 8/1/84, on Record (c) ISN 19938M	
152	Mechanical, (HVAC) Post Applied Plates	152	DIC	Memo Prepared/ Item Closed	None Required (See also Item 158)	0-G	Yes 1	III-39	Memo 7/26/84, on Record Dwgs. C-1037,R.0 C-0C2323, R. 19	
153	Mechanical, (HVAC) Welding on Gusset Plate	153	DIC	Memo Prepared/ Item Open	Required	1-C	No 3	III-39	Memo 8/4/84, on Record	
154	Welding, Excessive Weld Width	154	KG&E/ VENDOR	Resolution on CSA Form/Item Closed	None Required	0-D	Yes 1	III-25	CSA Form	
155	Electrical, (a) No Inspec- tion Record of Battery Rack Fasteners (b) Nuts Missing from Battery Rack Assemblies	155	a)KGE/ DIC b)KG&E	a)Item Closed b)NDC Prepared/ Item Open	a)None Required (See Item 164) b)Required	a) 0-D b) 1-C	a)Yes 3 b)No 3	II-6 II-19	b)NDC E-065	

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					ACTION/ ACTION PLAN	RESP. REV/ CSA STATUS			
Generic/Program Concerns									
156	I&C, Tubing Damage		KG&E OPS.		See Action Plan 156	1-A	No 3		W SAP-EG-1932
157	Supports, Minor Hardware/ Documentation Problems		KG&E DIC		See Action Plan 157	a)1-B b)1-B c)1-A	No 3		
158	HVAC, Conflict or Lack of Uniform Inspection Criteria		DIC		See Action Plan 158	0-B	No 3		
159	Quality Assurance/Construction Audits not to Schedule for 1st/2nd qtr. 1984		KG&E		See Action Plan 159	0-C	No 3	VIII-2	Corrective Action Document 159,9/25/84 KQWLO "Supplement to CSA 157"
160	Startup, SFR's not Being Properly Utilized or Dispositioned				See Action Plan 160	0-D	Yes 3	VIII-5	CAR 18 Work Hold Agreement 22
161	Quality Assurance, SDL's not Being Properly Utilized or Dispositioned		DIC		See Action Plan 161	0-D	Yes 3		
162	An Apparent Deficiency in Management Control of Vendor Activities. Inadequacies in Vendor Supplied Hardware and Documentation in Several Disciplines.		KG&E		See Action Plan 162	1-B	No 3		

Status Reference for Generic Concerns:

(X) - (Y)
Action Plan Rev. Status Code

Status Codes: (A) Action Plan Complete (B) Corrective Action Complete (C) Response Incomplete per CSA Review (D) Response OK per CSA Review (E) CSA Verification - Reject (F) CSA Verification - Accept (G) CSA Closure

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					ACTION/ ACTION PLAN	RESP. REV/ CSA STATUS			
163	A Potential Generic Problem with Regard to the Completeness of QC Inspection Criteria.		KG&E DIC		See Action Plan 163	0-A (Pending 157, 162 + 164)	No 3		
164	A Generic Problem with Regard to the Fasteners (e.g., Nuts, Bolts, Washers) Used for On-Site Assembly and Installation of Electrical Equipment.		KG&E DIC		See Action Plan 164	1-B	No 3	Vendor Site Visit Report B-274	
165	A Problem with Unistrut Wall Spreading and Possible Loss of Capability to Support Electrical Conduits.		DIC BECHTEL		See Action Plan 165 Ref. 24, 52	1-D	Yes 3	11-2	
166	A Problem with the Established Construction Contractor Drawing Change Control Procedures in the Area of Special Instruction Sheets.		DIC		See Action Plan 166 (Also, See Action Plan 158)	2-B	No 3	CAR-43 CAR-44	
167	Welding, Concern with the Quality of Field Fabricated Welding Including ANSI B31.1 Piping Welds.		KG&E DIC		See Action Plan 167 Ref. 112, 121, 122	1-B	No 3		
168	Welding, Concern with HVAC Support Attachment Welds		DIC		See Action Plan 168 Ref. 149	1-B	No 3		
169	Welding, Concern with Visual Acceptance of Vendor Fabricated Piping Welds		DIC		See Action Plan 169	1-A	No 3		
170	Startup, Improper Use of the System for Controlling Nonconforming Conditions for Equipment Turned over to KG&E.		KG&E		See Action Plan 170	1-B	No 3	VIII-5	