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C F BRAUN & CO Engineering and Construction Subsidiary of Santa Fe International Corporation

September 15, 1982

PRINCIPAL STAFF			
DA		OI	
D/RA			
A/RA			
DEP RP			
DEP SS			
DEP TP			
ML			
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B R Shelton
Commonwealth Edison Co
SNED-35 FNB
P O Box 767
Chicago, IL 60690

BL-6 ltr 9/16/82

Dear Mr. Shelton

INDEPENDENT HVAC REVIEW-INTERIM REPORT
LA SALLE STATION
ADVANCE PURCHASE ORDER 805-023
BRAUN PROJECT 6356-N

Attached to this letter is the September 15, 1982 Interim Report for the independent HVAC review of Commonwealth Edison's La Salle County Nuclear Plant. In accordance with the project instructions, we are simultaneously sending a copy to Mr. James G Keppler, Regional Administrator, United States Nuclear Regulatory Commission.

Sincerely yours

Andrew J Kempiak

Andrew J Kempiak
Project Manager

AJK br

CC James G Keppler
Regional Administrator
United States Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

Joe Dierbeck
Commonwealth Edison Co
La Salle County Station

George R Boddeker
Manager Nuclear Projects
C F Braun & Co
1000 So Fremont
Alhambra, CA 91802

SEP 16 1982

COMMONWEALTH EDISON COMPANY

LA SALLE COUNTY STATION

CHICAGO, ILLINOIS

INDEPENDENT HVAC REVIEW

INTERIM REPORT

PROJECT 6356-N

C F BRAUN & CO

ALHAMBRA, CALIFORNIA

SEPTEMBER 15, 1982

Commonwealth Edison Co	INDEPENDENT HVAC REVIEW	Project 6356-N
La Salle	INTERIM REPORT	

This interim report contains the preliminary results of the Independent HVAC Review of the Commonwealth Edison La Salle Station Unit 1 Nuclear Power Plant as performed by C F Braun.

As C F Braun Project Manager for this review, I state that C F Braun has maintained independence, has not been coerced by any of the parties involved and has had complete cooperation from all parties in the performance of this review.

Andrew J Kempiak

A. J. Kempiak, P.E.
Project Manager

1.0 INTRODUCTION

At the request of the Nuclear Regulatory Commission (NRC), Commonwealth Edison Company (CECO) obtained the services of an outside engineering-construction firm, CF Braun, to conduct an independent review of the seismic, safety related and seismic supported, non safety related heating, ventilating and air conditioning (HVAC) systems installed in Unit I of CECo's La Salle County Station in La Salle County, Illinois.

On August 11, 1982 in a public meeting at the NRC region III offices, Braun presented their qualifications and experience in the design of HVAC systems for nuclear, industrial and commercial installations.

The work plan including, quality control and quality assurance requirements, was presented to the NRC on August 24, 1982 at the NRC region III offices.

On August 23, 1982 Braun sent the review team project manager, QA engineer, QC supervisor, and HVAC technical advisor to La Salle County Station to formulate the procedures and begin project operations.

This interim report presents the progress and status of this independent HVAC review. It includes the following items.

Scope
Work Plan
Summary
Status
Outlook/Projections

The attachments provide the following information.

Appendix A - List of documents received from CECo/S&L/Zack

Appendix B - QC Procedures

Appendix C - QA/QC Qualification

Appendix D - Observation/Finding Reports

Appendix E - Personnel Experience Summaries

2.0 SCOPE OF WORK

The scope of work for this project is to perform an independent review of the safety-related, and seismic supported non-safety related HVAC systems at the Commonwealth Edison Company (CECo) La Salle County Nuclear Plant. The S&L design is not in question and will not be reviewed.

The review will include all seven La Salle unit one safety-related HVAC systems listed below.

1 - Control Room HVAC System (System Identification Code VC)

2 - Auxiliary Electric Equipment Room HVAC System (VE)

3 - Diesel-Generator Room Ventilation System (VD)

4 - CSCS Equipment Area Cooling System (VY)

5 - Switch Gear Rooms Ventilation Systems (VX), except for the re-circulation duct in the Auxiliary Building HVAC Equipment Room.

6 - Portions of the Reactor Building Ventilation System (VR) - The following parts of the reactor building ventilation system are safety-related.

- Supply air duct between and including the secondary containment isolation dampers and the duct penetration of the secondary containment boundary.

- Exhaust air duct between and including secondary containment isolation dampers, and the duct penetration of the secondary containment boundary.

7 - Those portions of the Standby Gas Treatment System SGTS (VG) installed by the Zack Co.

The review will also include the supports for all three non-safety related but seismically supported systems listed below:

8 - Primary Containment Ventilation System (VP)

9 - Primary Containment Purge System (VQ)

10 - Reactor Building Ventilating System (VR)

The primary objective of this independent review is to provide verification that the HVAC installation by the Zack Co. is in accordance with the Sargent and Lundy design. This will include, but not be limited to, a review of -

Commonwealth Edison Co	INDEPENDENT HVAC REVIEW INTERIM REPORT	Project 6356-N
La Salle		

SCOPE OF WORK Continued

Material installed

Field and shop welding on supports and ductwork

Operability of associated mechanical equipment

Design changes as a result of site nonconformances

Field testing by Zack Co. up to, and including, any construction testing performed by Zack Co. or their subcontractors.

If required, Braun will identify any additional testing or changes necessary to assure that the HVAC systems fulfill their safety function. Braun will also review the adequacy and results of these additional tests performed by others.

All observations made during the review will be documented and submitted to a Braun site and internal review team composed of senior technical personnel with broad experience in technical management. These review teams will determine if the observation is accurate and has the potential for a safety concern.

All inspection, review activities, quality assurance and project procedures to be performed by C F Braun & Co during this independent review of the HVAC systems will be conducted in accordance with written project and QA instructions.

3.0 WORK PLAN

This section of the report describes the work plan for Braun's independent review of the HVAC installation.

The HVAC technical advisor will compare the S&L design documents to the Zack Co. shop drawings to verify that Zack has correctly interpreted the design documents. Zack's procedures for procurement and processing of HVAC material will be reviewed by the QA and welding/material engineers to evaluate their conformance to appropriate S&L design documents and ANSI standards, this will include verification that the materials installed are of comparable quality.

The welding/material engineer will also review the weld procedure qualifications and welder qualifications associated with the ductwork fabrication practices. Any information or testing generated by CECo or Conam will be used to assist in this evaluation. Zack's fabrication procedures will be compared to SMACNA standards and ANSI 509 requirements, as appropriate, in addition to that required by the design documents.

The HVAC technical advisor will survey all the installed duct systems as defined in section 2.0. INTRODUCTION. Based on this survey he will select portions of the system whose failure may jeopardize the operation of safety-related equipment for detailed inspection. The portions selected will include concealed and insulated ductwork. If discrepancies are found in the selected portions, then additional portions of ductwork will be selected for further inspection. Braun is prepared to inspect 100 percent of the system if deemed necessary.

The leak rate and balancing test for the Control Room HVAC System (VC), CSCS Equipment Area Cooling System (VY) and portions of the Reactor Building Ventilation System (VR) will be reviewed in detail to verify system conformance to the design documents. Spot checks will be made of the Auxiliary Electric Equipment Room HVAC system (VE), Diesel Generator Room Ventilation System (VD) and Switch Gear Rooms Ventilation Systems (VX) to ascertain that they have been tested to the same quality as that of the systems reviewed in detail. In addition, the HVAC technical advisor will survey the system operating tests performed by CECo to verify that the results confirm the adequacy of the balancing/leak rate tests.

The Structural Technical Advisor will categorize and review the nonconformance reports generated against the HVAC support systems. Structural descrepancies discovered as a result of inspection activities will be evaluated to determine whether the existing support satisfies the intent of the design. The Structural Technical Advisor will also review any specification or other contract documents which address the structural integrity of the HVAC systems.

WORK PLAN Continued

A review of the HVAC refrigerant system, subcontracted by Zack, will also be accomplished. Preliminary information indicates that there have been no nonconformances generated against these systems.

In addition to this step-by-step review of the Zack installation, Braun will review all CECo and Zack NCRs and FCRs generated against the installed system. Each document will be categorized by type for example, weld problem; material certification lacking; location/dimensional/ interference discrepancy; fabrication problem; etc. The frequency of occurrence and importance of each category will be assessed. Twenty percent of those types determined to be critical to safety will be inspected in detail to verify that the specified disposition has been correctly implemented. If discrepancies are found, then the remaining NCRs of this type will be reviewed.

The HVAC technical advisor will randomly select other parts of the system to be inspected for similar types of nonconformances. The inspections will result in a determination of whether or not similar types of nonconformances may have existed on these random sections but were not reported.

During Braun's review of the HVAC support nonconformance reports (NCR) they will evaluate 10 percent of the NCR's to determine if the technical justification is correct. If Braun's review determines safety concerns involving significant as-built design changes, then these changes will be evaluated against the design documents.

QA/QC procedures are described in the Project and QA Instructions which were transmitted to CECo via BL-5, dated September 10, 1982. Appendix B, QC Procedures has been included in this interim report for information purposes.

4.0 SUMMARY

The project has been fully staffed in the field with 5 inspectors, 4 technical advisors, QA engineer and project manager. The welding and material engineer has been reviewing documents in Alhambra and visiting the site as needed. An internal review committee of 3 specialists has been formed in Alhambra to perform a review of those inspection discrepancies which the site committee feels are potential safety concerns.

Project and QA instructions were issued as controlled documents which provide the written procedures to accomplish the review.

A member of CECo's operating QA group conducted an audit of Braun activities on Friday September 10, 1982. Although the audit report has not been received, the auditor indicated that there were no negative findings.

On Monday September 13, 1982 an inspector from the Nuclear Regulatory Commissions Region III's office visited the C F Brauns site office facilities. He was given an uncontrolled copy of the C F Braun project and quality assurance procedures. During the visit he reviewed several inspection reports (QC-1) and one observation/finding report (QC-2). He talked to the HVAC advisors and reviewed the field inspection activities.

We have performed a field survey for 5 of the 10 HVAC systems requiring review. This has led to the generation of 134 requests for inspections of selected hangers and ductwork sections. Some of the reasons for selecting the hanger and duct sections chosen are its location relative to other safety equipment, similarity to other hangers or duct sections, relative importance compared to other portions of system and type of equipment installed in system such as damper, silencers, cooling coils, etc.

Weld procedure specifications and welder performance qualification tests have been reviewed by our material and welding specialists. We need to resolve questions on the former item while the latter item appears acceptable pending a more detailed review.

There are approximately 2400 NCRs written against the Zack installation. Close to 1800 have been written against supports with the remainder covering dampers, fans and other HVAC components. Braun has received and reviewed too small a quantity of these NCR to formulate any opinions or provide for any categorization. We are continuing our review efforts as the reports are received.

SUMMARY Continued

Inspection has completed or partially completed, 54 of the 134 requested inspection reports QC-1. This has led to the issuance of 12 observation/finding reports. The site review team has determined that 8 of these discrepancies are technically acceptable and 3 are observations requiring CECo disposition with one being held for further review.

Inspection activities have been hampered by accessibility requirements for security concerns, removal of insulation and fireproofing, erection of scaffolding and difficulty of getting close to items needing inspection due to existing cable trays, conduits, piping, equipment etc.

Insulation had to be removed from 72 hangers and fireproofing from 55 hangers at the point of connection to the building structure. Fifty one hangers required the installation of scaffolding to provide the required access. This encompasses the ongoing inspection activities.

5.0 STATUS

The Project and QA Instruction have been written, reviewed and approved for use as a controlled document on this project by the Project Manager and the QA Manager in Alhambra, California. These instructions define the procedures to be followed by all C F Braun personnel in the performance of this review.

The HVAC technical advisor and engineer have reviewed the ductwork drawings and performed field surveys for 5 of the 10 HVAC systems. Based on this effort they have generated 134 requests for inspections (RFI) of selected hangers and ductwork sections within these systems. A list of systems, percent complete and number of RFIs follows.

SYSTEM	PERCENT COMPLETE	RFI
Control Room HVAC, VC	60	60(1)
Auxiliary Electric Equipment Room HVAC, VE	80	12
Diesel-Generator Room Ventilation, VD	100	11
CSCS Equipment Area Cooling, VY	80	(2)
Switchgear Room Ventilation, VX	100	51
	TOTAL	134

(1) Includes VE system since VE & VC are on same support
(2) Included with/VD

The only work remaining for system VE is that portion of ductwork located in Unit 2 which acts as a backup for the Unit 1 VE system.

The welding and material specialist has reviewed 6 welding procedure specifications. Comments have been noted on several of these specifications which require further review and discussions with the contractor. In addition he has performed a preliminary review of 91 welder performance qualification test record packages. The majority appear to be acceptable but a more detailed review is required.

The structural technical advisor has reviewed the 20 available nonconformances and found them acceptable. He has developed inspection criteria for surface mounted anchor plates. Sargent and Lundy Report CQD-003490, Revision 0 Assessment of Stitch Welds in HVAC Ductwork Construction has been reviewed. The results were found reasonable due to the small loads imposed on individual welds. He has evaluated the initial group of discrepancies noted on the observation/finding reports.

STATUS Continued

A status of inspection activities follows:

INSPECTIONS REQUESTS, QC-1

Received from HVAC		134
Inspected		
Complete	47	
Partial (1)	7	54
Backlog (2)		80

(1) Fireproofing needs to be removed at attachment of steel member to wall plate otherwise support has been inspected.

(2) Some of the items causing the inspection backlog are as follows:

1 - Insulation needs removal
2 - Removal of fireproofing
3 - Scaffolding needs to be set up - some ducts are 40' above floor level.

OBSERVATIONS/FINDINGS, QC-2

Found acceptable	8
Held for material engineer review	1
Observation	3
Finding	0
TOTAL	12

6.0 OUTLOOK

A management audit of project activities will be accomplished during the week of September 20, 1982 by the Manager of Quality Assurance, Alhambra.

Audits of engineering and inspection activities have been scheduled and will be conducted by the project quality assurance engineer during the three weeks commencing September 20, 1982.

The HVAC technical advisor will complete the 3 systems identified in section 3.0 STATUS as well as the reactor building ventilation-VR, SGTS-VG and the 3 non safety related but seismically supported system. He needs to correlate the design and construction drawings as well as review NCR/FCR, balance/leakage tests, system operating tests and refrigeration tests.

The material and welding specialist will discuss his comments on the welding procedure specifications with the contractor and complete his review of the welder performance qualifications tests. He will also assist in the evaluation of whether or not the installed material is of comparable quality to that required by the design documents.

The structural technical advisor will continue reviewing the nonconformances and participate in the site committee's review of observation/finding reports.

Inspections will continue for the HVAC system survey requests and other inspection requests as a result of NCR reviews.

Outlook for completion of this independent review is mid October.

APPENDIX A

LIST OF DOCUMENTS

RECEIVED FROM ZACK,

S&L AND CECo

3 pages

LIST OF DOCUMENTS RECEIVED FROM ZACK, S&L, AND CECo

1.0 ZACK

The following nonconformance reports were received from Zack on September 9, 1982.

NCR # 460	535	612	632	1845(619)	
504	571	614	912	1493	
510	603	620	1421	1864	
534	611	630	1423		

The following nonconformance reports were received from Zack on September 14, 1982.

NCR # 604	616	660	1141	1661	1946	2299
606	631	661	1243	1668	1968	
607	633	662	1251	1669	1973	
608	656	663	1444	1671	2078	
609	657	974	1487	1820	2089	
613	658	977	1532	1823	2243	
615	659	978	1559	1874	2255	

The following purchase orders for Hilti Kwik bolts were received on September 8, 1982:

P.O. # C2232 dated July 12, 1982
P.O. # C4036 dated November 30, 1979

Miscellaneous welding procedures, procedure qualifications and welder qualifications were received on August 26, 1982.

SARGENT & LUNDY

The following documents were received from Sargent & Lundy on August 16, 1982:

1 La Salle County Station FSAR, Vols. 5 and 7

2 June 3, 1976 meeting notes

3 MSS-16.1

4 MSS-16.2-A

5 MSS-7.2

6 MF-270.10.1

7 RMC-P-1

LIST OF DOCUMENTS RECEIVED FROM ZACK, S&L, AND CECo (CONTINUED)

8 RMC-P-2

9 RMC-P-3

10 RMC-P-4

11 RMC-P-5

12 Testing & balancing procedures

The following documents were received from Sargent & Lundy on August 17, 1982:

Air Flow Measuring Station List - Supplement to Sargent & Lundy Specification J-2590

Grille List - Supplement to Sargent & Lundy Specification J-2590

Damper List - Supplement to Sargent & Lundy Specification J-2582

The following documents were received from Sargent & Lundy on September 7, 1982:

Full sized drawings as listed by S&L letter number 4266-25.

The following document was received from Sargent & Lundy on August 30, 1982:

Sargent & Lundy Report CQD-003490, Revision 0, of August 27, 1982, Assessment of Stitch Welds in HVAC Ductwork Construction.

CECo

The following document was received from Commonwealth Edison Co on August 12, 1982:

The letter from T C Fahner, Attorney General State of Illinois to J G Keppler, Regional Administrator, United States Nuclear Regulatory Commission dated August 12, 1982.

The following document was received from Commonwealth Edison Co on August 24, 1982:

The letter from C W Schroeder, Nuclear Licensing Administrator to T M Novak, Assistant Director, Division of Licensing, U S Nuclear Regulatory Commission dated August 24, 1982.

LIST OF DOCUMENTS RECEIVED FROM ZACK, S&L, AND CECo (CONTINUED)

The following document was received from Commonwealth Edison Co on August 20, 1982:

The letter from C Reed, Vice President, Commonwealth Edison Co to H R Denton, Director, Office of Nuclear Reactor Regulation, U S Nuclear Regulatory Commission dated August 4, 1982.

The following document was received from Commonwealth Edison Co on September 9, 1982:

The letter from T M Novak, Assistant Director for Licensing, Division of Licensing, U S Nuclear Regulatory Commission to C Reed, Vice President - Nuclear Operations, Commonwealth Edison Co dated September 8, 1982.

The following document was received from Commonwealth Edison Co on August 14, 1982:

The letter from B R Shelton, La Salle County Station Project Engineering Manager, Commonwealth Edison to G R Boddeker, C F Braun & Co Power Division dated August 13, 1982.

The following document was received from Commonwealth Edison Co on August 25, 1982:

Four (4) letters addressed to NRC Relative to the LSCS HVAC Review. The letters were sent by: (1) Ms. J. S. Goodie, Asst. Att. Gen. of Ill. (August 24, 1982); (2) Ms. S. L. Marello (undated - delivered August 24, 1982): (3) Mr. T. Divine, Govt. Acct. Proj. (August 13, 1982); and (4) Mr. A. T. Howard, August 13, 1982).

APPENDIX B

QUALITY CONTROL

PROCEDURES

14 pages

878
12-75

C F BRAUN & CO

Commonwealth Edison Co	PROJECT AND	Project 6356-N
La Salle	QA INSTRUCTIONS	September 10, 1982

APPENDIX B - 1

QUALITY CONTROL PROCEDURES

QA Manager's Approval

H. L. McGuire

For L K Hovey

Issue date September 10, 1982 4 pages

Revision 1

8209240377

Commonwealth Edison Co.	Appendix B Procedure 1	Project 6356-N
La Salle	QUALITY CONTROL PROCEDURES	September 10, 1972

1.0 PURPOSE To establish the procedures to be followed for the inspection of hanger brackets and ducting in the HVAC systems installed by the contractor in Unit 1 and in common with Units 1 and 2 at the Commonwealth Edison La Salle County Nuclear Station.

2.0 PROCEDURE C F Braun HVAC Engineering group will select the hanger brackets and ducting located in seven safety related HVAC systems, code letters VC, VD, VE, VG, VR, VX and VY and three seismically supported systems code letters VP, VQ and VR for visual and dimensional inspection.

The selection of supports to be inspected shall be determined by the HVAC engineer by projecting problems that may result if a support or component failed, by direct observation of the installed system and/or by information gained during the review of NCR'S or FCR'S written against a specific hanger bracket or ductwork component.

The Braun HVAC Engineer will list the items requiring inspection on inspection form QC-1. This form will list the hanger number and the reference drawing number. The inspector will report any discrepancies on this inspection form.

The selection of ducting for inspection will follow the same procedure as the selection of hangers.

3.0 PERSONNEL All inspection personnel used by C F Braun on this inspection assignment shall meet the following requirements.

1- Inspectors shall have received formal training and testing in welding inspection and shall be certified in writing by the Braun Quality Assurance Manager as meeting the requirements for a level II Inspector as defined in Braun QA Instructions.

2- Training and qualification examination results shall be recorded on form QC-4, Training Record, see Appendix A, Procedure 2.

3- Health and vision examination results shall be recorded on form QC-5 Health/Visual Statement, see appendix A, Procedure 2.

4- The categories of certifications held by the inspector shall be recorded on form QC-6 Certificate of Qualification, see Appendix A, Procedure 2.

5- Inspectors shall perform work only in areas allowed by their certification record.

4.0 INSPECTION The Braun HVAC Engineers will complete their section of the Inspection Form Number QC-1 by listing the item and drawing numbers of hangers or ducts selected for inspection. This form will be presented to the Quality Control Supervisor, who will delegate the inspection responsibility to a qualified inspector.

1- Hangers, the inspection of the hangers will consist of two primary functions.

a Dimensional inspection to verify the size of the hanger, the location of component members and to gain assurance that the correct member, shape and size as described on the applicable drawing was used.

b Visual inspection of the welding and overall workmanship. This inspection shall be conducted to assure compliance with the contractors procedure QCP-20 revision 11.

2- Ducting

a The ducting will be inspected visually for weld quality and overall workmanship using the contractors procedure QCP-20 revision 11, as the reference quality specification.

5.0 DOCUMENTATION The results of all inspections conducted will be recorded on the Inspection Form QC-1 that contained the request for hanger/duct inspection. The inspectors will sign and return the Inspection Form to the Quality Control Supervisor for his review. The results of the inspection will be in one of two classifications.

1- No discrepancies. This classification indicates that all attributes checked were in accordance with the appropriate specifications or drawings and there were no discrepancies.

The Inspection Form will be stored in the QA vault by the PQAE after the review and sign-off by the QC Supervisor.

2- Yes discrepancies. This classification will be used to report observations of poor workmanship/welding or dimensional discrepancies.

a Workmanship/welding discrepancies found will be transferred from form QC-1 to Observation/Finding Report Form QC-2 by the QC Supervisor.

The type of discrepancy and the reference document will be recorded on the form prior to its review by the site review committee who will be responsible for the resolution of the discrepancies.

b Dimensional discrepancies are classified as any length, or width deviation that exists between the constructed unit and the current Sargent and Lundy drawing. The QC Supervisor will verify by signature and comment that a dimensional discrepancy does or does not exist by his review of FCR'S and NCR'S which have not been incorporated in the drawings but are applicable to the item in question.

Form QC-2 will be presented to Braun Site Review Committee within 24 hours after the inspection for their review and resolution.

Originals of all reports recording inspection results shall be kept on file by the PQAE.

COMMONWEALTH EDISON CO | Appendix B Procedure 1 | PROJECT 6356-N

LA SALLE STATION | INSPECTION FORM QC-1 | ASSIGNMENT NO

ITEM TO INSPECT

Hanger Number _____

Hanger Drawing# _____

Duct Location _____

Duct Drawing _____

By HVAC Engineer _____ Date _____

LOCATION

Building/Floor _____

Elevation _____

Coordinates _____

Recorded By _____ Date _____

DESCRIPTION AND INSPECTION	Accpt.	DISCR.	DISCREPANCIES
Hanger Detail Drawing No _____			
Hanger			
1-Vertical member size _____			
2-Horizontal member size _____			
3-Diagonal member size _____			
4-Brace member size _____			
5-Attachment member size _____			
6-Weld Size(Minimum) _____			
7-Weld Quality(Ref WCP-20) _____			
8- Welders Ident _____			
Duct Welded/Seamed			
9- Duct Size _____			
10-Weld Size(Minimum) _____			
11-Insulation _____			
12-Clips _____			
13-Brace _____			
14-Other _____			
15-Other _____			

Signed _____ Inspector _____ Date

Welds Coated With Galvanox

Yes ☐ No ☐

Reviewed By _____ Q.C. Supervisor _____ Date

Comments _____

DISCREPANCIES YES ☐ NO ☐

APPENDIX B-2

QUALITY CONTROL PROCEDURES

INSPECTION STATUS

QA Manager's Approval

H. L. McGuyer
For L K Hovey

Commonwealth Edison Co	Appendix B Procedure 2	Project 6356-N
La Salle	INSPECTION STATUS	September 10, 1982

1.0 SCOPE This instruction establishes the means by which the status of inspections will be recorded during the independent review of the installed HVAC systems of the La Salle Nuclear Generating Station for the Commonwealth Edison Company (CECo)

2.0 RESPONSIBILITIES

2.1 The HVAC Technical Advisor will maintain a set of reproducibles of ductwork drawings for recording specific ductwork section or hangers to be inspected.

2.2 The site Quality Control Supervisor will maintain a log (Form QC-3) of the inspection assignments identified on QC-1 inspection reports. Refer to Appendix B, Procedure 1.

2.3 The PQAE will log and file those inspection reports in the QA vault once they become a Quality Assurance Record (Form QC-7).

3.0 PROCEDURE FOR LOGGING INSPECTION ASSIGNMENTS/REPORTS

3.1 The HVAC Technical Advisor, upon completing his portion of Form QC-1 indicates on a set of reproducable drawings maintained at his desk, which runs of ductwork and which hangers he has assigned for inspection. He accomplishes this by cross-hatching on the reproducibles. This will be a one direction cross hatching. Additionally he will record the inspection form (QC-1) assignment number on the reproducible for the hanger or section of ductwork so defined.

3.2 The HVAC Technical Advisor then turns over the QC-1 Form to the site QC Supervisor. The site QC Supervisor then logs in that specific inspection assignment on the inspection report log (Form QC-3) attached.

3.3 Reference to Appendix B, Procedure 1, QC Procedures for the method of completing the inspection reports QC-1.

3.4 If the inspection results noted on inspection Form QC-1 indicate that there are no discrepancies then the status column of Form QC-3 will be filled in with "no discrepancies" and the date the QC Supervisor determines this status is noted in the "date complete" column.

3.5 If the QC-1 Form indicates that a discrepancy exists then the QC Supervisor will initiate a observation/finding report Form QC-2. The QC-2 assignment number is noted in the status column, for example, see QC-2-XX (where XX is the assignment number). The date the QC Supervisor determines this status is noted in the "date complete" column.

4.0 PROCEDURE FOR LOGGING OBSERVATION/FINDING REPORTS

4.1 Refer to Appendix B Procedure 3, observation/finding report for the method of completing these QC-2 reports.

4.2 The project secretary will maintain an observation/finding report log, Form QC-3A. This form will identify the QC-2 assignment number, and will include a cross reference to the applicable QC-1 inspection form as well as a few descriptive items. The form will be used to document the date when the QC-2 report has been sent to the appropriate parties, the date of the CFB disposition to CECo and when the CECo corrective action was verified.

4.3 The attached sample and following writing describes the use of this form.

Line A. The site review committee has reviewed the observation/finding report and found the condition to be acceptable requiring no further action.
Line B. The site review committee has determined that the inspection discrepancy should be classified as an observation and they have verified the CECo disposition.
Line C. Site and internal reviews have determined that the inspection discrepancy should be classified as a finding and the site has verified the CECo disposition.
Line D. The internal review committee has changed the site review committee's determination from a finding to an observation.

Commonwealth Edison Co

La Salle Station

Appendix B-Procedure 3
INSPECTION REPORT LOG
FORM QC-3

Project 6356-N

NUMBER QC-1-	DATE	INSPECTOR NAME	HANGER/ DUCT	LOCATION	DATE COMPLETE	STATUS	COMMENTS

Commonwealth Edison Co

La Salle Station

Project 6356-N

OBSERVATION/FINDING REPORT LOG
QC-3 A

QC-2	Hanger/Duct	Location	Refer To QC-1-	DATE To/From: Site Review	DATE To/From: Internal Review	DATE To/From: CECo	Date Verified	ACCEPTABLE	OBSERVATION	FINDING	COMMENTS

.578
12-75

Commonwealth Edison Co
La Salle

PROJECT AND
QA INSTRUCTIONS

Project 6356-N
September 10, 1982

APPENDIX B - 3

QUALITY CONTROL PROCEDURES

QA Manager's Approval

H. L. McLaughlin
For L K Hovey

Issue date September 10, 1982 3 pages
Revision 1

Commonwealth Edison Co
La Salle

Appendix B
Procedure 3
OBSERVATIONS/FINDINGS REPORT

Project 6356-N
Sept. mid. 10 1975

1.0 PURPOSE To establish the procedures to be followed for evaluating discrepancies identified by the inspectors on inspection form QC-1 in order to determine if they should be classified as an observation or finding.

2.0 DEFINITIONS

DISCREPANCY - A departure of the actual installation from the specified design requirements as noted by inspection activities or engineering review.

OBSERVATION - A confirmed discrepancy requiring CECo disposition and a verification of corrective action by the site review committee.

FINDING - An observation which has been identified as a potential safety concern.

3.0 PROCEDURES All inspection forms, QC-1, will be reviewed by the QC Supervisor to determine if a discrepancy has been identified. Any noted discrepancies will be described on Observation/Finding Report, QC-2. These reports will be evaluated by a site review committee consisting of Project Manager, QA Engineer, and HVAC Technical Advisor or Material/Welding Engineer, depending on the expertise required. The site review committee will determine if the discrepancy is accurate and has the potential for a safety concern.

If the discrepancy is found to be inaccurate, or the site review committee determines it is an acceptable condition, they will indicate in writing their justification for accepting the discrepancy and forward the report to CECo for their information.

If the site review determines that the discrepancy is accurate, but is not a potential safety concern, it will be properly documented and submitted to CECo as an observation requiring their disposition. Dispositioning may involve field correction, additional analyses or both, to ensure that the required design margins are maintained.

If the discrepancy is considered accurate and a potential safety concern, it will be forwarded to Braun's internal review committee, as a finding, for their concurrence. Concurrently, a copy of the finding will be forwarded to CECo for their determination of operability and reportability in accordance with the technical specification.

The internal review committee will be chaired by Braun's chief nuclear engineer and will include senior technical personnel in the appropriate field of expertise for the finding being evaluated.

If this committee agrees that the finding is a potential safety concern, they will notify the project manager via telephone and he will immediately telephone CECo. CECo will then promptly make a determination of operability and reportability in accordance with the technical specification, this includes submitting a 14 day LER to the NRC. The internal review committee will document their finding on a copy of QC-2 and provide their signatures. The completed form will be telecopied to the Braun Project Manager who will issue it to CECo for dispositioning and verification.

If the internal review committee disagrees that the finding is a potential safety concern, they will indicate their justification on a copy of QC-2, sign the form and telecopy it to the Braun Project Manager. He will change the site review team disposition from a finding to an observation and submit the form to CECo as an observation.

4.0 POTENTIAL SAFETY CONCERN CRITERIA An observation must satisfy both of the following criteria to be a potential safety concern and therefore a finding.

1. The observation must be a deficiency that could adversely affect the safety of operations at any time if it had remained uncorrected, and

2. The observation must be either

a) A significant deficiency in fabrication or installation requiring extensive repair, or,

b) A significant deviation from the design documents.

COMMONWEALTH EDISON CO — Appendix B - Procedure 3 — PROJECT 6356-N

OBSERVATION/FINDING REPORT

LA SALLE STATION — QC-2

ASSIGNMENT NO _____

ITEMS INSPECTED	LOCATION
Hanger Number _____	Building/Floor _____
Hanger Drawing # _____	Elevation _____
Duct Location _____	Coordinates _____
Duct Drawing _____	Welder Ident _____

Discrepancy _____

References _____

Submitted to Site Review on _____

Disposition by Site Review Team — OBSERVATION ☐ — FINDING ☐

Site Review by _____

Date _____

Submitted to CECo on _____

Review Committee on _____

Determination of Internal Review Committee — AGREE ☐ — DISAGREE ☐

By _____ Date _____ By _____ Date _____

Verification of Corrective Action On Observation/Finding

By _____ Date _____

Site Review Committee

Submitted to CECo on _____

APPENDIX C

QA/QC QUALIFICATIONS

29 pages

EMPLOYER	NAME	DATE
C F BRAUN & CO	James S Fiedler	9/27/77

QUALIFICATION REQUIREMENTS			POINTS
EDUCATION – University/Degree/Date –		– 4 Pts. Max.	
1. Undergraduate Level.	Waynesburg College-Bachelor of Arts	1951	3
2. Graduate Level	University of West Va. BSME	1951	
EXPERIENCE – Company/Dates		– 9 Pts. Max.	
Industry (5 pts. max.) and	Westinghouse Atomic Power Division	1951 to 1960	9
Nuclear Industry (NI), or	Univ. of California Lawrence Radiation Lab	1960 to 1967	
Quality Assurance (QA), or	Universities Research Assoc. Fermi Nat. Lab	1967 to 1969	
Auditing (AU), or	Bechtel Power Corp-Proj. QA Engineer	1970 to 1973	
Combined NI, QA, AU	Ebasco- Site QA Supervisor	1974 to 1976	
	Daniel- Sr. QA Engineer	1976 to 1977	
PROFESSIONAL ACCOMPLISHMENT – Certificate/Date		– 2 Pts. Max.	
1. P.E. Mechanical- Commonwealth of Pennsylvania-Reg. No. 007819-1952			2
2. Society Pennsylvania Society of Professional Engineers-Pittsburch Chapter			
MANAGEMENT – Justification/Evaluator/Date		– 2 Pts. Max.	2

Explain: Jim was employed for the position of Project QA Engineer sed on his seven years of experience in an equal assignment at veral nuclear power plant jobsites.

Evaluated by: (Name & Title) A E Pickford QA Manager 10/3/77 Date

Total Points 16

AUDIT COMMUNICATION SKILLS Very good

Evaluated by: (Name & Title) A E Pickford QA Manager 10/3/77 Date

AUDIT TRAINING COURSES

Course Title or Topic		Date
1. Quality Assurance Audit Techniques for the Nuclear Power Industry	Course 101N L. Marvin Johnson & Assoc. Covina, California	Nov 29 - Dec 3, 1976
2.		

AUDIT PARTICIPATION

Location	Audit	Date
1. Columbia, South Carolina	Corporate Audit of V.C. Summer Nuclear Sta.	2/14/77- 2/17/77
2. Dothan, Alabama	" " " Jos. Farley Nuclear Sta.	11/ 2/76-11/ 6/76
3. Newport News, Va.	Newport News Industrial Corp (Vendor Audit)	1/26/77- 1/28/77
4. Seneca, New York	Gould Pump (Vendor Audit)	10/12/76-10/15/76
5. Milwaukee, Wisconsin	Allis-Chalmers Pump Div (Vendor Audit)	10/ 2/76-10/ 5/76

See Attachment "A"

EXAMINATION Oral (Passed) 9/3/77 Date

Date Certified

AUDITOR QUALIFICATION CERTIFIED BY
(Signature and Title)

A E Pickford QA Manager 10/10/77

ANNUAL EVALUATION (Signature and Date)					

ATTACHMENT "A"

Monterey Park, California	Power Division (Internal Audit) QA Program	January 19, & 20, 1982
	"Document Logging and Distribution" "Design Criteria Control"	
Monterey Park, California	Power Division (Internal Audit) QA Program	June 29 & 30, 1981
	"Design Control"	
Monterey Park, California	Power Division (Internal Audit) QA Program	April 14, 1981
	"Document Logging and Control"	
Monterey Park, California	Power Division (Internal Audit) QA Program	March 25, through March 27, 1981
	"Document Logging and Control" "Design Control" "Design Criteria Control" "Collection, Storage and Maintenance of QA Records" "Engineering Change Notices" "Audits of QA Program" "Nonconforming Procedure"	
Monterey Park, California	Power Division (Internal Audit) QA Program	February 25, 1981
	"Document Logging and Control"	

AUDITOR QUALIFICATION CERTIFIED BY (Signature and Title) — Date Certified

Laurence K Hovey QA Manager — 19 August 1982

111-3A
9-78

C F BRAUN & CO

Common Wealth Edison — Project 6356-N

NUCLEAR FIELD INSPECTION MANUAL

CERTIFICATE OF QUALIFICATION.

NAME R W Phillips — EMPLOYEE NO 1328

LEVEL OF QUALIFICATION

TRAINING [ ]

QUALIFIED BY _____

TITLE _____

SNT-TC-1A [III]

QUALIFIED BY A E Pickford

TITLE Manager Quality Assurance

QUALITY CONTROL DISCIPLINE(S) QUALIFIED TO PERFORM

ALL - Level III Capabilities

ACTIVITIES QUALIFIED FOR

Performance and interpretation of radiography, liquid penetrant, magnetic
particle and ultrasonic inspection methods. Writer of NDE Procedures.
Certified AWS Inspector Certificate Number B0115991
Certified by ASNT as Level III Examiner Number MB 771

BASIS FOR CERTIFICATION

EDUCATION	EXPERIENCE RELATED TO QC
See attached sheets	

HEALTH & VISUAL STATEMENT VERIFIED BY G S Fiedler

CERTIFICATION RECORDS VERIFIED BY L K Hovey

Section	1
Attachment	4.4-1.8
Revision No	1

EFFECTIVE PERIOD OF CERTIFICATION

FROM 6-2-81 TO 6-2-84

CERTIFIED BY _____

MANAGER OF QA

Laurence K Hovey

RECORDS OF EDUCATION, TRAINING, AND QUALIFICATION ARE AVAILABLE FOR REVIEW IN THE QC DEPARTMENT OF C F BRAUN, ALHAMBRA, CALIFORNIA. *TRAINING MANUALS AND QUALIFICATION PROGRAMS ARE AVAILABLE ON REQUEST.

CERTIFICATION OF LEVEL III NDE ENGINEER

This is to certify that Robert W Phillips is qualified as a Level III Examiner in liquid penetrant, magnetic particle, radiographic and ultrasonic examination. This is in accordance with the American Socie for Nondestructive Testing Recommended Practice Number SNT-TC-1A and meets the requirements of the ASME Boiler and Pressure Vessel Code and the ANSI Code for Pressure Piping. Mr Phillips is qualified without written examination.

Mr Phillips has been in our employ since 1974. He has 24 years experience in the nondestructive examination field having served as technician, quality control manager, and laboratory director for two NDE laboratories. He has also been a source inspector for three major contracting companies.

He has completed two years of college majoring in industrial supervision, and has completed college courses in metallurgy, welding metallurgy and quality control. Mr Phillips is certified by the State of California to conduct college level courses in nondestructive examination. He is currently teaching such courses. He is a member o the American Society for Nondestructive Testing.

His specific experience and formal training in nondestructive examination include the following.

1974 - Present C F Braun & Co - Preparation of nondestructive examination procedures and specifications and interpretation of examination results in radiographic, ultrasonic, magnetic particle and liquid penetrant. Performs NDE Level III duties including training, examination and certification of Level I and Level II personnel. Audits activities of NDE personnel. Prepares and consults on NDE methods and procedures, interprets specifications and codes, and designates examination methods to be used.

1973 Completed ASNT Ultrasonic Examination Course and Richardson X-Ray sponsored Mechanical Testing course.

1970-74 Richardson X-Ray Inc, Laboratory Director, Director of Quality Assurance, and Radiation Safety Director - Responsible for all laboratory personnel. Assigned daily work schedule for radiographic, magnetic particle, penetrant and mechanical test personnel. Responsible for equipment calibration, and writing all quality control manuals and controlling their implementation in the company operation. Responsible for training and qualification of personnel in radiation safety.

1972 Completed State of California Radiological Health and Safety course.

1968-70 The Boeing Company - Survey of vendor and independent laboratory NDE facilities to assure conformance to required specifications. This function required the interpretation of indications disclosed by magnetic particle, penetrant, radiographic, ultrasonic and eddy current methods of examination in metallics and non-metallics.

1969 Completed Boeing Company sponsored Electroplating course.

1965-68 Richardson X-Ray Inc, Level III NDE Examiner SNT-TC-1A Radiographic Inspector NAVSHIPS 250-1500-1. Responsibilities included the preparation of NDE procedures meeting requirements of Military and ASME Code specifications.

1964-65 Ferro Spec Lab, Laboratory Manager - Responsible for laboratory operations. Performed functions required by Quality Control in a nondestructive examination laboratory using magnetic particle, penetrant, radiographic and ultrasonic methods of nondestructive testing.

1962-64 Aerojet General Corporation - Assisted nondestructive examination section in selection of methods such as magnetic particle, penetrant and radiographic inspection, and time of inspection in relation to manufacturing and assembly. Prepared inspection procedures and radiographic shooting sketches for inhouse inspection and independent inspection laboratories. Member of nondestructive testing vendors committee. Performed source inspection and vendor surveys in nondestructive testing.

1958 Completed ASNT Radiography course.

1952-62 Ferro Spec Lab - Responsibilities included the supervision of the Radiographic Inspection Department. This function included training of employees in equipment operations. Assisted in the interpretation of radiographs on castings and weldments. Work assignments during this period included magnetic particle and penetrant inspection, pressure testing, mechanical testing, and ultrasonic inspection.

Robert B Hill

Robert B Hill
Vice President

A. E. Pickford

Allan E Pickford
Manager, Quality Assurance

Subscribed and sworn to
before me this

7th day

of June, 1976

Jeannette A. Eggert

Notary Public

110-QA
8-78

C F BRAUN & CO

Common Wealth Edison — Project 6356-N

NUCLEAR FIELD INSPECTION MANUAL

HEALTH/VISUAL STATEMENT

NAME R W Phillips EMPLOYEE NO 1328

GENERAL HEALTH

HOW DO YOU RATE YOUR GENERAL HEALTH?

☒ EXCELLENT ☐ GOOD ☐ FAIR

DO YOU FEEL YOU ARE PHYSICALLY CAPABLE OF PERFORMING THE INSPECTION ACTIVITIES OF a welding inspector, Quality Control Supervisor ☒ YES ☐ NO

IF NO, EXPLAIN _____

I CERTIFY THAT THE ABOVE STATEMENTS ARE CORRECT TO THE BEST OF MY KNOWLEDGE.

SIGNATURE Robert W Phillips DATE 08-13-82

VISUAL

	RIGHT	LEFT
JAEGER		
CORRECTED		
DISTINGUISH PRIMARY COLORS		

REMARKS See attached.

SIGNATURE _____ DATE _____
INDIVIDUAL PERFORMING EXAMINATION

Section 1
Attachment 4.3-1.8
Revision No 1

878
12-78

QA-901(a)

NONDESTRUCTIVE EXAMINATION
VISION CERTIFICATION RECORD

NAME R W Phillips LEVEL III

EXAMINATION METHODS [illegible]

Penetrant, Magnetic Particle, Radiography, Ultrasonics

NEAR VISION TEST
(Annual Requalification)

A vision examination has been performed and the applicant is capable of reading a minimum of Jaeger Number 1 letters at a distance of not less than 12 inches with normal or corrected vision in at least one eye, or has the ability to perceive a minimum pattern of eight or smaller on an Ortho-rater and is capable of distinguishing and differentiating contrast between the colors red, yellow, and blue.

RESULTS OF VISION TEST

SATISFACTORY X UNSATISFACTORY _____

VISION TEST PERFORMED BY

[illegible]

DATE OF VISION TEST May 18 1982

VISION TEST EXPIRATION DATE May 18 1983

SIGNATURE OF NDE EXAMINER R W Phillips DATE May 19 1982
Nondestructive Examination Engineer, Level III

CM

C F BRAUN & CO

109-QA
9-78

Project 6356-N

Common Wealth Edison

NUCLEAR FIELD INSPECTION MANUAL

TRAINING RECORD

NAME R W Phillips EMPLOYEE NO 1328

DATE ASSIGNED TO QUALITY CONTROL 7-15-74

INDOCTRINATION

DATE	INDOCTRINATED BY	DATE	INDOCTRINATED BY	DATE	INDOCTRINATED BY
8-16-82	G S Fiedler				

	DATE	EXAMINED BY	DATE	EXAMINED BY	DATE	EXAMINED BY
PRACTICAL						
ORAL						

PROFICIENCY

DATE	EXAMINED BY	DATE	EXAMINED BY	DATE	EXAMINED BY

COMPREHENSIVE

DATE	EXAMINED BY	DATE	EXAMINED BY	DATE	EXAMINED BY

ON JOB TRAINING

DATE	BY	DATE	BY	DATE	BY	DATE	BY

DATE QUALIFIED FOR

LEVEL I _____ BY _____ /TITLE _____

LEVEL II _____ BY _____ /TITLE _____

LEVEL III 6-7-76 BY A E Pickford /TITLE _____

Section	1
Attachment	4.2-1.8
Revision No	1

QA Manager

C F BRAUN & CO

111-2A
9-78

Common Wealth Edison — Project 6356-N

NUCLEAR FIELD INSPECTION MANUAL

CERTIFICATE OF QUALIFICATION

NAME W F Reynolds — EMPLOYEE NO 4893

LEVEL OF QUALIFICATION

TRAINING [II]

QUALIFIED BY R W Phillips

TITLE Level III Inspector

SNT-TC-1A [ ]

QUALIFIED BY

TITLE

QUALITY CONTROL DISCIPLINE(S) QUALIFIED TO PERFORM

ACTIVITIES QUALIFIED FOR

Visual welding Inspector
Dimensional wilding Inspector

BASIS FOR CERTIFICATION

EDUCATION	EXPERIENCE RELATED TO QC
See attached sheets	

HEALTH & VISUAL STATEMENT VERIFIED BY R W Phillips

CERTIFICATION RECORDS VERIFIED BY J S Fiedler

Section	1
Attachment	4.4-1.8
Revision No	1

EFFECTIVE PERIOD OF CERTIFICATION

FROM _____ TO _____

CERTIFIED BY _____

MANAGER OF QA

Laurina K Hovy

RECORDS OF EDUCATION, TRAINING, AND QUALIFICATION ARE AVAILABLE FOR REVIEW IN THE QC DEPARTMENT OF C F BRAUN, ALHAMBRA, CALIFORNIA. TRAINING MANUALS AND QUALIFICATION PROGRAMS ARE AVAILABLE ON REQUEST.

WILLIAM F REYNOLDS - QA/QC COORDINATOR

EXPERIENCE Over 30 years experience in management planning, estimating, desig., procurement writing, procedure and specification, quality assurance, quality control field erection, and startup of new and expansion facilities embracing all fields of chemical plants, nuclear generating stations, conventional generating stations, and allied industrial complexes.

Quality Assurance Manager of a multi-billion dollar Saudi Arabian Project including development of the "Pioneer" Camp, establishing jobsite perimeters, initial development of a quality program for the management services contractor, and establishment of bid analysis procedures in accordance with acceptable Saudi Arabian government criteria.

Corporate Quality Assurance Audit Team Leader for various Middle East projects. Development of audit checklists, preparation/notification to all responsible parties of audit dates and subjects, pre and post audit conferences culminating with the issuance of formal audit reports.

Field Quality Control Supervisor for one of the largest management services contracts including interviewing, staffing and supervision of quality control (QC) engineers, laboratory technicians, Saudi national engineering students and QC inspectors. Published a Field Quality Control Manual for the industrial complex, assigned QC personnel to various phases of construction, testing, contracts, procurement, and implementation of all disciplines within the "Kingdom" of Saudi Arabia.

Instrumentation Superintendent during construction/start-up of a 1.7 MGPD diesel unit including field design of sensing and loading lines along with providing written and verbal instructions to international instrument crews. The jobsite was the Saudi Naval Base in Jeddah, Saudi Arabia, and the assignment included start-up of package boilers, checking out system controls by use of the logic diagrams, and actual pressure testing of the tubing/multitube "bundles".

Start-up Engineer for two 960 MW nuclear power plants (BWR Mark III), including development of safeguard systems, punchlists, and progress reports.

EDUCATION Petroleum Engineering, Marietta College

REGISTRATION None

MEMBERSHIP None

AGE 56, 1 year 1 month, with Braun

C F BRAUN & CO

EYE ACCUITY TEST
JAEGERS CHART

INSPECTORS NAME: WILLIAM F REYNOLDS

DATE OF EXAM: 8/19/82

NATURAL VISION ☐ 20/180 (Lt) 20/100 (Rt)

CORRECTED VISION ☐ 20/30 (Lt) 20/20 Rt

THE TEST SUBJECT HAS DEMONSTRATED ACCEPTABLE NEAR DISTANCE ACCUITY BY CORRECTLY READING J-1 LETTERS ON A STANDARD JAEGER'S TEST TYPE CHART.

EXAMINER'S SIGNATURE:

EXAMINER'S TITLE: M.D.

The test subject has demonstrated acceptable color perception by properly identifying plates #1 thru #14 of the Ishinara's Tests for Colour Blindness.

EXAMINER'S SIGNATURE:

EXAMINER'S TITLE: M.D.

C F BRAUN & CO

209-QA
9-76

Common Wealth Edison — Project 6356-N

NUCLEAR FIELD INSPECTION MANUAL

TRAINING RECORD

NAME W F Reynolds EMPLOYEE NO 4893

DATE ASSIGNED TO QUALITY CONTROL 7-20-81

INDOCTRINATION

DATE	INDOCTRINATED BY	DATE	INDOCTRINATED BY	DATE	INDOCTRINATED BY
8-20-82	R W Phillips				

	DATE	EXAMINED BY	DATE	EXAMINED BY	DATE	EXAMINED BY
PRACTICAL	8-24-82	R W Phillips				
ORAL	8-24-82	R W Phillips				

PROFICIENCY

DATE	EXAMINED BY	DATE	EXAMINED BY	DATE	EXAMINED BY
8-24-82	R W Phillips				
8-24-82	R W Phillips				

COMPREHENSIVE

DATE	EXAMINED BY	DATE	EXAMINED BY	DATE	EXAMINED BY
8-24-82	R W Phillips				
8-24-82	R W Phillips				

ON JOB TRAINING

DATE	BY	DATE	BY	DATE	BY	DATE	BY
8-24-82	R W Phillips						

DATE QUALIFIED FOR

LEVEL I _____ BY _____ /TITLE _____

LEVEL II 8-24-82 BY R W Phillips /TITLE _____

LEVEL III _____ BY _____ /TITLE _____

Section 1
Attachment 4.2-1.8
Revision No 1

Common Wealth Edison

Project 6356-1

NUCLEAR FIELD INSPECTION MANUAL

HEALTH/VISUAL STATEMENT

NAME W F Reynolds EMPLOYEE NO 4893

GENERAL HEALTH

HOW DO YOU RATE YOUR GENERAL HEALTH?

☒ EXCELLENT ☐ GOOD ☐ FAIR

DO YOU FEEL YOU ARE PHYSICALLY CAPABLE OF PERFORMING THE INSPECTION ACTIVITIES OF a welding inspector. ☒ YES ☐ NO

IF NO, EXPLAIN _____

I CERTIFY THAT THE ABOVE STATEMENTS ARE CORRECT TO THE BEST OF MY KNOWLEDGE.

SIGNATURE W F Reynolds DATE 8-23-82

VISUAL

	RIGHT	LEFT
JAEGER		
CORRECTED		
DISTINGUISH PRIMARY COLORS		

REMARKS See attached sheet

SIGNATURE _____ DATE _____
INDIVIDUAL PERFORMING EXAMINATION

Section 1
Attachment 4.3-1.
Revision No 1

C F BRAUN & CO

111-2A
9-78

Common Wealth Edison

Project 6356-N

NUCLEAR FIELD INSPECTION MANUAL

CERTIFICATE OF QUALIFICATION

NAME L P Rozborski EMPLOYEE NO 2631

LEVEL OF QUALIFICATION

TRAINING II

QUALIFIED BY R W Phillips

TITLE Level III Inspector

SNT-TC-1A II

QUALIFIED BY Robert W Phillips

TITLE Senior Nondestructive Examination Engineer, Level III

QUALITY CONTROL DISCIPLINE(S) QUALIFIED TO PERFORM

Ultrasonic
Magnetic Particle, Dry Powder
Liquid Penetrant, Color
Contrasting
Radiographic

ACTIVITIES QUALIFIED FOR

Performance and interpretation of radiography, liquid penetrant, magnetic particle and ultrasonic inspection methods.
Certified AWS Inspector Certificate Number 780-2351

BASIS FOR CERTIFICATION

EDUCATION	EXPERIENCE RELATED TO QC
See attached sheet	

HEALTH & VISUAL STATEMENT VERIFIED BY J S Fiedler

CERTIFICATION RECORDS VERIFIED BY L K Hovey

Section	1
Attachment	4.4-1.8
Revision No	1

EFFECTIVE PERIOD OF CERTIFICATION

FROM 8-15-82 TO 8-15-85

CERTIFIED BY Laurence K Hovey
MANAGER OF Q&A

RECORDS OF EDUCATION, TRAINING, AND QUALIFICATION ARE AVAILABLE FOR REVIEW IN THE QC DEPARTMENT OF C F BRAUN, ALHAMBRA, CALIFORNIA. TRAINING MANUALS AND QUALIFICATION PROGRAMS ARE AVAILABLE ON REQUEST.

EDUCATION, EXPERIENCE AND TRAINING

Burgard Vocatonal High School - graduated 1946
Erie County Community College - Various evening courses in metallurgy and related subjects.
AWS - Welding and nondestructive testing seminars

1975 to present C F Braun & Co
Source inspection activities in various fab shops. Inspection activities included performance and interpretation of radiography, liquid penetrant, and magnetic particle inspection methods.

1965 to 1975 Bos-Hatten Inc, West Seneca, New York
Various duties and responsibilities ranging from design engineering, fabrication, and quality control in the fabrication of heat exchangers and pressure vessels. Instituted inspection methods and procedures for a quality control program and wrote the manual which resulted in the certification of the shop by the ASME.

1960 to 1965 American Standard, Buffalo, New York
Had positions as design draftsman and MET lab technicial. Duties involved radiography, tensile tests, and preparation of specimens for microstructure analysis.

1960 to 1948 Employed by various companies as a draftsman and machinist.

C F BRAUN & CO

110-QA
9-78

Common Wealth Edison

Project 6356-N

NUCLEAR FIELD INSPECTION MANUAL

HEALTH/VISUAL STATEMENT

NAME L P Rozborski EMPLOYEE NO. 2631

GENERAL HEALTH

HOW DO YOU RATE YOUR GENERAL HEALTH?

☒ EXCELLENT ☐ GOOD ☐ FAIR

DO YOU FEEL YOU ARE PHYSICALLY CAPABLE OF PERFORMING THE INSPECTION ACTIVITIES OF a welding inspector ? ☒ YES ☐ NO

IF NO, EXPLAIN _____

I CERTIFY THAT THE ABOVE STATEMENTS ARE CORRECT TO THE BEST OF MY KNOWLEDGE.

SIGNATURE Raymond P. Rozborski DATE 8/23/82

VISUAL

	RIGHT	LEFT
JAEGER		
CORRECTED		
DISTINGUISH PRIMARY COLORS		

REMARKS See attached

SIGNATURE _____ DATE _____
INDIVIDUAL PERFORMING EXAMINATION

Section 1
Attachment 4.3-1.
Revision No 1

578
11-78

C F BRAUN & CO

QA-901(a)

NONDESTRUCTIVE EXAMINATION
VISION CERTIFICATION RECORD

NAME L P ROZBORSKI LEVEL II

EXAMINATION METHODS Liquid Penetrant, Magnetic Particle Radiography, Ultrasonic

NEAR VISION TEST
(Annual Requalification)

A vision examination has been performed and the applicant is capable of reading a minimum of Jaeger Number 1 letters at a distance of not less than 12 inches with normal or corrected vision in at least one eye, or has the ability to perceive a minimum pattern of eight or smaller on an Ortho-rater.

RESULTS OF VISION TEST

SATISFACTORY X UNSATISFACTORY

VISION TEST PERFORMED BY

J Brauer OD

DATE OF VISION TEST 10/12/81

VISION TEST EXPIRATION DATE October 12 1982

SIGNATURE OF NDE EXAMINER R W Phillips DATE 10-29-81
Nondestructive Examination Engineer, Level III

CM

C F BRAUN & CO

209-QA
9-78

Project 6356-N

Common Wealth Edison

NUCLEAR FIELD INSPECTION MANUAL

TRAINING RECORD

NAME L P Rozborski EMPLOYEE NO 2631

DATE ASSIGNED TO QUALITY CONTROL 12-15-75

INDOCTRINATION

DATE	INDOCTRINATED BY	DATE	INDOCTRINATED BY	DATE	INDOCTRINATED BY
8-20-82	R W Phillips				

	DATE	EXAMINED BY	DATE	EXAMINED BY	DATE	EXAMINED BY
PRACTICAL	8-20-82	R W Phillips				
ORAL	8-20-82	R W Phillips				

PROFICIENCY

DATE	EXAMINED BY	DATE	EXAMINED BY	DATE	EXAMINED BY
8-20-82	R W Phillips				

COMPREHENSIVE

DATE	EXAMINED BY	DATE	EXAMINED BY	DATE	EXAMINED BY
8-20-82	R W Phillips				

ON JOB TRAINING

DATE	BY	DATE	BY	DATE	BY	DATE	BY
8-20-82	R W Phillips						

DATE QUALIFIED FOR

LEVEL I _____ BY _____ /TITLE _____

LEVEL II 8-24-79 BY R W Phillips /TITLE Sr NDE Engineer, Level III

LEVEL III _____ BY _____ /TITLE _____

Section 1
Attachment 4.2-1.8
Revision No 1

C F BRAUN & CO

Commonwealth Edison Co | Appendix A Procedure 2 | Project 6356-N

La Salle | TRAINING AND QUALIFICATION | August 27, 1982

NAME R A Letersky EMPLOYEE NO 2969

LEVEL OF QUALIFICATION

TRAINING [II]

QUALIFIED BY R W Phillips

TITLE Level III Inspector

SIT-TC-1A [II]

QUALITY CONTROL DISCIPLINE(S) QUALIFIED TO PERFORM

Liquid Penetrant
Radiography

QUALIFIED BY Robert W Phillips

TITLE NDE Engineer, Level III

ACTIVITIES QUALIFIED FOR

Visual weld inspection, Dimensional inspection

BASIS FOR CERTIFICATION

EDUCATION	EXPERIENCE RELATED TO QC
SEE ATTACHED SHEET	

HEALTH & VISUAL STATEMENT VERIFIED BY See attached sheet J S. Fuller

CERTIFICATION RECORDS VERIFIED BY L K Hovey

Section	1
Attachment	4.4-1.8
Revision No	1

EFFECTIVE PERIOD OF CERTIFICATION

FROM 7-1-82 TO 7-1-85

CERTIFIED BY

MANAGER OF QC
Laurence K Hovey

RECORDS OF EDUCATION, TRAINING, AND QUALIFICATION ARE AVAILABLE FOR REVIEW IN THE QC DEPARTMENT OF C F BRAUN, ALHAMBRA, CALIFORNIA. TRAINING MANUALS AND QUALIFICATION PROGRAMS ARE AVAILABLE ON REQUEST

878
12-76

C F BRAUN & CO

Commonwealth Edison Co — Appendix A — Project 6356-N

La Salle — Procedure 2 — TRAINING AND QUALIFICATION — Revision 27, 1982

NAME R A Letersky EMPLOYEE NO 2969

DATE ASSIGNED TO QUALITY CONTROL 1-12-76

INDOCTRINATION

DATE	INDOCTRINATED BY	DATE	INDOCTRINATED BY	DATE	INDOCTRINATED BY
9-13-82	R W Phillips				

	DATE	EXAMINED BY	DATE	EXAMINED BY	DATE	EXAMINED BY
PRACTICAL	9-14-82	R W Phillips				
ORAL	9-14-82	R W Phillips				

PROFICIENCY

DATE	EXAMINED BY	DATE	EXAMINED BY	DATE	EXAMINED BY
9-14-82	R W Phillips				

COMPREHENSIVE

DATE	EXAMINED BY	DATE	EXAMINED BY	DATE	EXAMINED BY
9-14-82	R W Phillips				

ON JOB TRAINING

DATE	BY	DATE	BY	DATE	BY	DATE	BY
9-14-82	R W Phillips						

DATE QUALIFIED FOR

LEVEL I 1-29-76 BY R W Phillips / NDE Engineer, Level III

LEVEL II ____ BY ____ / ____

LEVEL III ____ BY ____ / ____

Section 1
Attachment 4.2-1.8
Revision No 1

C F BRAUN & CO

Commonwealth Edison Co
La Salle

Appendix A
Procedure 2
TRAINING AND QUALIFICATION

Project 6356-N
August 27, 1982

NAME R A Letersky EMPLOYEE NO 2969

GENERAL HEALTH

HOW DO YOU RATE YOUR GENERAL HEALTH?

☒ EXCELLENT ☐ GOOD ☐ FAIR

DO YOU FEEL YOU ARE PHYSICALLY CAPABLE OF PERFORMING THE INSPECTION ACTIVITIES OF Level II welding inspector ? ☒ YES ☐ NO

IF NO, EXPLAIN _____

I CERTIFY THAT THE ABOVE STATEMENTS ARE CORRECT TO THE BEST OF MY KNOWLEDGE.

SIGNATURE Ralph A Letersky DATE 9/14/82

VISUAL

	RIGHT	LEFT
JAEGER		
CORRECTED		
DISTINGUISH PRIMARY COLORS		

REMARKS SEE ATTACHED SHEET

SIGNATURE _____ DATE _____
INDIVIDUAL PERFORMING EXAMINATION

Section	1
Attachment	4.3-1.8
Revision No	1

R A (RALPH) LETERSKY - SOURCE QUALITY CONTROL INSPECTOR

EXPERIENCE Has done both source and jobsite inspections on pressure vessels, heat exchangers, towers, piping systems, structual steel, package units, etc. Has completed several inspection assignments in Japan. He is experienced in all phases of shop work from layout to supervision. He is certified as a Level 2 in Radiography and Liquid Penetrant Inspection. He has experience with Magnetic Particle and Ultrasonic Examination.

EDUCATION High School Diploma - Dunkirk Industrial High School
SUNY at Buffalo - Engineering
SUNY at Fredonia - Elementary Metallurgy

REGISTRATION None

MEMBERSHIP None

AGE 53, 38 years experience, 6 years with Braun

PROFESSIONAL EXPERIENCE

1976 - present, C F BRAUN & CO, SOURCE INSPECTOR

See above paragraph under Experience.

1973 - 1976, NEW YORK BOARD OF WATER SUPPLY, PURCHASING INSPECTOR

Conduct general plant investigations of prime contract vendors and subvendors, inspection and survelance of workmanship, methods and procedures used at steel mills and foundaries.

1972 - 1973, CARRIER CORPORATION

It was my responsibility to train and qualify men to be productive in the following operations: Fabrication, welding, metal finishing, assembling,tube rolling, flushing and testing, handling and crating of Navy Nuclear vessels. Also, assisted in programming, direct and write report on monthly training classes. Set up and stock a total crib operation with machines, shop tools welding gases, abrasives from outside vendors, instigate and develop fabrications welding and flushing fixtures.

1971 - 1972, CITY OF DUNKIRK, GENERAL MAINTENANCE

Included electrical, plumbing, heating, and carpentry.

1969 - 1971, STRUTHERS NUCLEAR AND PROCESS CO, SUPERINTENDENT

In charge of entire plant which consisted of the supervision of 60 men in fabrication, welding and machining of commercial, commercial nuclear and Navy nuclear units.

R A (RALPH) LETERSKY - CONTINUED

1969 - 1969, KNOX FOOD AND CHEMICAL EQUIPMENT

General - Machine shop, fabrication and field inspection and Liaison Engineering.

1969 - 1969, MC CATHRON BOILER WORKS, PLANT MANAGER

In charge of all shop operations, including hiring plant personnel and maintenance of equipment and buildings. Assisted in making estimates on inquires, formulated fabricating, welding, and testing procedures. Made material, parts and equipment requisitions and shipping commitments. Was in direct charge of 30 men.

S78
12-78

R Phillips

C F BRAUN & CO

QA-901(a)

NONDESTRUCTIVE EXAMINATION
VISION CERTIFICATION RECORD

NAME Ralph Letersky LEVEL II

NONDESTRUCTIVE EXAMINATION

MAGNETIC PARTICLE ☐ RADIOGRAPHY ☒

LIQUID PENETRANT ☒ ULTRASONIC ☐

NEAR VISION TEST
(Annual Requalification)

A vision examination has been performed and the applicant is capable of reading a minimum of Jaeger Number 1 letters at a distance of not less than 12 inches with normal or corrected vision in at least one eye, or has the ability to perceive a minimum pattern of eight or smaller on an Ortho-rater and is capable of distinguishing and differentiating contrast between the colors red, yellow, and blue.

RESULTS OF VISION TEST:

SATISFACTORY ✓ UNSATISFACTORY _____

VISION TEST PERFORMED BY:

DATE OF VISION TEST 8/3/82

_____, O.D.

VISION TEST EXPIRATION DATE July 3 1983

SIGNATURE OF NDE EXAMINER Robert W Phillips DATE 7-12-82

Nondestructive Examination Engineer, Level III

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C F BRAUN & CO

Commonwealth Edison Co
La Salle

Appendix A
Procedure 2
TRAINING AND QUALIFICATION

Project 6356-N
August 27, 1982

NAME H E Rupp

EMPLOYEE NO 1570

LEVEL OF QUALIFICATION:

TRAINING [I]

QUALIFIED BY R W Phillips

TITLE Level III Inspector

QUALITY CONTROL DISCIPLINE(S) QUALIFIED TO PERFORM:

SNT-TC-1A [ ]

QUALIFIED BY N/A

TITLE

ACTIVITIES QUALIFIED FOR

Welding Inspector, Level I

BASIS FOR CERTIFICATION

EDUCATION	EXPERIENCE RELATED TO QC
SEE ATTACHED SHEET	

HEALTH & VISUAL STATEMENT VERIFIED BY R W Phillips

CERTIFICATION RECORDS VERIFIED BY J S Fiedler

Section	1
Attachment	4.4-1.8
Revision No	1

EFFECTIVE PERIOD OF CERTIFICATION

FROM _____ TO _____

CERTIFIED BY _____

MANAGER OF QC
Samuel K Hong

RECORDS OF EDUCATION, TRAINING, AND QUALIFICATION ARE AVAILABLE FOR REVIEW IN THE QC DEPARTMENT OF C F BRAUN, ALHAMBRA, CALIFORNIA. TRAINING MANUALS AND QUALIFICATION PROGRAMS ARE AVAILABLE ON REQUEST

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C F BRAUN & CO

Commonwealth Edison Co | Appendix A | Project 6356-N

Procedure 2

La Salle | TRAINING AND QUALIFICATION | Dec 27, 1982

NAME H E Rupp EMPLOYEE NO 1570

DATE ASSIGNED TO QUALITY CONTROL 4-27-64

INDOCTRINATION

DATE	INDOCTRINATED BY	DATE	INDOCTRINATED BY	DATE	INDOCTRINATED BY
8-10-82	R W Phillips				

	DATE	EXAMINED BY	DATE	EXAMINED BY	DATE	EXAMINED BY
PRACTICAL						
ORAL						

PROFICIENCY

DATE	EXAMINED BY	DATE	EXAMINED BY	DATE	EXAMINED BY

COMPREHENSIVE

DATE	EXAMINED BY	DATE	EXAMINED BY	DATE	EXAMINED BY

ON JOB TRAINING

DATE	BY	DATE	BY	DATE	BY	DATE	BY

DATE QUALIFIED FOR

LEVEL I _____ BY _____ /TITLE _____

LEVEL II _____ BY _____ /TITLE _____

LEVEL III _____ BY _____ /TITLE _____

Section	1
Attachment	4.2-1.8
Revision No	1

Commonwealth Edison Co — Appendix A — Project 6356-N
La Salle — Procedure 2 — TRAINING AND QUALIFICATION — Rev. 1 27, 1982

NAME H E Rupp EMPLOYEE NO 1570

GENERAL HEALTH

HOW DO YOU RATE YOUR GENERAL HEALTH?

☒ EXCELLENT ☐ GOOD ☐ FAIR

DO YOU FEEL YOU ARE PHYSICALLY CAPABLE OF PERFORMING THE INSPECTION ACTIVITIES OF G.[illegible] Inspector / welding inspector ? ☒ YES ☐ NO

IF NO, EXPLAIN _____

I CERTIFY THAT THE ABOVE STATEMENTS ARE CORRECT TO THE BEST OF MY KNOWLEDGE.

SIGNATURE H E Rupp DATE 9-4-82

VISUAL

	RIGHT	LEFT
JAEGER		
CORRECTED		
DISTINGUISH PRIMARY COLORS		

REMARKS See Attachment

SIGNATURE _____ DATE _____
INDIVIDUAL PERFORMING EXAMINATION

H E (HAL) RUPP - JOBSITE INSPECTOR

EXPERIENCE - Includes performance as engineer, designer, draftsman, and inspector. Inspection duties include receiving inspection of mechanical, instrumentation, electrical equipment, piping, material identification, installation of piping, HVAC, glove boxes, plumbing, pneumatic and hydrostatic testing, and visual weld inspection.

EDUCATION	High school graduate with additional studies in engineering and drafting at Colorado University, Pasadena City College, East Los Angeles City College, Los Angeles City College, Milwaukee Institute of Technology, and University of Wisconsin.
ORGANIZATIONS	None
AGE	51, 28 years experience, 18 years with Braun

PROFESSION EXPERIENCE

1964 to present, C F BRAUN & CO

1981 - present, Jobsite Inspector on a large refinery modernization project in Southern California responsible for the receiving inspection of all materials and equipment. Assisted as needed with other site inspection activities.

1974 - 1981, performed various construction and QC duties at Rocky Flats including inspection of structural embedments, receiving inspection, source inspection, piping systems, pneumatic and hydrotesting, glove boxes.

1964 - 1974, performed engineering, designing, drafting, specified materials for modifying existing piping, new piping, HVAC, and plumbing at Rocky Flats prior to joining the Quality Engineering Department.

1954 to 1964, VARIOUS ENGINEERING FIRMS

Prior to joining Braun, performed in various engineering capacities for Holmes and Narvor, Ralph M Parsons, DMJM and Associates Austin, Field and Fry and F R Dengel Co.

August 30, 1982

APPENDIX E

PERSONNEL EXPERIENCE

SUMMARIES

16 pages

APPENDIX D

OBSERVATION/FINDING

REPORTS

-- 8 pages

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C F BRAUN & CO

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COMMONWEALTH EDISON CO — Appendix B - Procedure 3 — PROJECT 6356-N

OBSERVATION/FINDING REPORT

LA SALLE STATION — QC-2

ASSIGNMENT NO QC-2-01

ITEMS INSPECTED		LOCATION	
Hanger Number	S-1358	Building/Floor	Aux Bldg Unit 1 El. 6
Hanger Drawing #	Detail M-1538-15 Rev E	Elevation	725 T/D
Duct Location	N/A	Coordinates	J & L and 10 & 11
Duct Drawing	M-1388-3 Rev M	Welder Ident	Z-33

Diserepancy The 1"x1"x1/4" L is welded on one side only, Top and bottom. Drawing shows weld two sides.

Refer to QC-1-07

References Detail M-1538-15 Rev E and QC-1-07

Submitted to Site Review on 9-13-82

Disposition by Site Review Team: OBSERVATION [ ] FINDING [X]

Two additional welds as shown on detail drawing M-1538-15 Rev E are required

Site Review by P J Kempiak L T Hamp S S Fiedler Date 9/14/82

Submitted to CECo on _____ Review Committee on _____

Determination of Internal Review Committee: AGREE [ ] DISAGREE [ ]

By _____ Date _____ By _____ Date _____

Verification of Corrective Action On Observation/Finding

By _____ Date _____

Site Review Committee

Submitted to CECo on _____

rev 0

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C F BRAUN & CO

COMMONWEALTH EDISON CO — PROJECT 6356-N

OBSERVATION/FINDING REPORT

LA SALLE STATION — QC-2

ASSIGNMENT NO QC-2-03

ITEMS INSPECTED		LOCATION	
Hanger Number	N/A	Building/Floor	Aux Bld. Elev 749'-0
Hanger Drawing #	N/A	Elevation	759'0
Duct Location	Between Hgr. S-1937, S-1936 & 1934	Coordinates	N-11
Duct Drawing	M-1307-1 Rev Y	Welder Ident	None

Observations One stitch weld to duct to flange is less than the 1/16 inch fillet weld size required by General Note 8 Drawing M-1538-1 Rev N.

References QC-1-24

Submitted to Site Review on 9-14-82

Disposition by Site Review Team [OBSERVATION] [FINDING] It is not required to replace the one undersize weld between the duct and flange. One undersize weld does not affect the structural integrity of the connection. Discrepancy is technically acceptable.

Site Review by J Kenpiak L Flores G S Fiedler Date 9/14/82

Submitted to CECo on ____ Review Committee on ____

Determination of Internal Review Committee

CFB QA JSF

By ____ Date ____ By ____ Date ____

Verification of Corrective Action By ____ Date ____

Submitted to CECo on ____

rev 0

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C F BRAUN & CO

COMMONWEALTH EDISON CO — PROJECT 6356-N

OBSERVATION/FINDING REPORT

LA SALLE STATION — QC-2

ASSIGNMENT NO QC-2-09

ITEMS INSPECTED		LOCATION	
Hanger Number	N/A	Building/Floor	Aux Bldg 1. FEL 749
Hanger Drawing #	N/A	Elevation	763'-8
Duct Location	Between S-1999 & wall	Coordinates	N-12.
Duct Drawing	M-1367-1 Rev Y	Welder Ident	None.

Observations: The joint between the duct and the wall sleeve is leaking in four places. The duct Test results shall be reviewed prior to any rework or possible repair

References: QC-1-23

Submitted to Site Review on 9-14-82

Disposition by Site Review Team: OBSERVATION | FINDING

Air balance tests were reviewed. Ductwork downstream of leak showed acceptable air flow rates. Air flow was in area which had lower percentage of design flow rate. Discrepancy is technically acceptable.

Site Review by: J Kemptner, K S Lain, S S Fiedler — Date: 9/14/82

Submitted to CECo on _____ Review Committee on _____

Determination of Internal Review Committee _____

CFB QA JSF

By _____ Date _____ By _____ Date _____

Verification of Corrective Action

By _____ Date _____

Submitted to CECo on _____

rev 0

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COMMONWEALTH EDISON CO — Appendix B - Procedure 3 — PROJECT 6356-N

OBSERVATION/FINDING REPORT

LA SALLE STATION — QC-2

ASSIGNMENT NO QC-2-05

ITEMS INSPECTED		LOCATION	
Hanger Number	S-1432	Building/Floor	Aux Bay Vent 749'
Hanger Drawing #	Detail M-1538-74 Rev G	Elevation	760 T/D
Duct Location	N/A	Coordinates	C-11
Duct Drawing	M-1387-1 Rev Y	Welder Ident	Z-18260 for attachments only

Discrepancy The duct has a dent approx. 1/2 inch deep located some 5 inches from flange and 7 inches from hanger on wall size

References QC-1-20

Submitted to Site Review on 9-13-82

Disposition by Site Review Team OBSERVATION [X] FINDING [ ]

The dent is not sharp and no major metal thining is noted and no air leakage occuring. OK to use without rework or repair

Discrepancy is technically acceptable

Site Review by OJ Kempiak L. Fleming J S Fiedler Date 9/14/82

Submitted to CECo on ______ Review Committee on ______

Determination of Internal Review Committee AGREE [ ] DISAGREE [ ]

CFB QA JSF

By ______ Date   By ______ Date

Verification of Corrective Action On Observation/Finding
By ______ Date ______
Site Review Committee

Submitted to CECo on ______

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COMMONWEALTH EDISON CO — Appendix B - Procedure 3 — PROJECT 6356-N

OBSERVATION/FINDING REPORT

LA SALLE STATION — QC-2

ASSIGNMENT NO QC-2-07

ITEMS INSPECTED		LOCATION	
Hanger Number	N/A	Building/Floor	Aux Bld Vent Fl 749
Hanger Drawing #	N/A	Elevation	749'
Duct Location	Plenum 1VX03F	Coordinates	J-10
Duct Drawing	M-1387-1 Rev Y	Welder Ident	None

Discrepancy (1) welds between hanger S-1929 and Plenum ducting are cracked and have porosity (2) Welds on Plenum 1VX03F are discolored, areas of corrosion are also noted in weld area where no Galvanox has been applied after welding of panels.

References QC-1-25 and QC-1-26

Submitted to Site Review on

Disposition by Site Review Team: OBSERVATION / FINDING

Site Review by

Date

Submitted to CECo on

Review Committee on

Determination of Internal Review Committee: AGREE / DISAGREE

BEING HELD FOR MATERIAL REVIEW ENGINEERING

By Date

By Date

Verification of Corrective Action On Observation/Finding

By Date

Site Review Committee

Submitted to CECo on

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C F BRAUN & CO

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COMMONWEALTH EDISON CO

LA SALLE STATION

Appendix B - Procedure 3
OBSERVATION/FINDING REPORT
QC-2

PROJECT 6356-N

ASSIGNMENT NO QC-2-08

ITEMS INSPECTED		LOCATION	
Hanger Number	S-1261	Building/Floor	HPCS Swgr Rm 687'
Hanger Drawing #	Detail M-1538-34 Rev D	Elevation	704-3½ T/D
Duct Location	N/A	Coordinates	L & N-9
Duct Drawing	M-1437-1 Rev K	Welder Ident	Z-36

Discrepancy No stitch welds or clips on bottom of 6x12 inch duct to hanger S-1261

References Detail drawing S-1261 and QC1-66

Submitted to Site Review on 9-13-82

Disposition by Site Review Team [ ] OBSERVATION [X] FINDING

Require clips or stitch welding on bottom of 6x12 inch duct

Site Review by [signatures] Date 9/14/82

Submitted to CECo on ______ Review Committee on ______

Determination of Internal Review Committee [ ] AGREE [ ] DISAGREE

By ______ Date

By ______ Date

Verification of Corrective Action On Observation/Finding
By ______ Date ______
Site Review Committee

Submitted to CECo on ______

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C F BRAUN & CO

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COMMONWEALTH EDISON CO — Appendix B - Procedure 3 — PROJECT 6356-N

OBSERVATION/FINDING REPORT

LA SALLE STATION — QC-2

ASSIGNMENT NO QC-2-14

ITEMS INSPECTED		LOCATION	
Hanger Number	N/A	Building/Floor	Aux Bld Vest 749'-0"
Hanger Drawing #	N/A	Elevation	759'-6 T/D
Duct Location	Between S1441 & 1442	Coordinates	N-10
Duct Drawing	M-1387-1 Rev Y	Welder Ident	None

Discrepancy: Duct No 39 has one undersize weld, (Leg is less than 1/16") on underside of duct.

References: See QC-1-22

Submitted to Site Review on 9-13-82

Disposition by Site Review Team: OBSERVATION | FINDING

Duct movement will be restricted by the ~~four~~ three full sized welds between duct and hanger. No additional welding required. One undersize weld does not ~~decrease~~ affect the structural integrity of the connection. Discrepancy is technically Acceptable.

Site Review by: L K Long, J S Fiedler — Date 9/14/82

Submitted to CECo on _____ Review Committee on _____

Determination of Internal Review Committee: AGREE | DISAGREE

By _____ Date _____ By _____ Date _____

CTH QA JSF

Verification of Corrective Action On Observation/Finding

By _____ Date _____

Site Review Committee

Submitted to CECo on _____

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COMMONWEALTH EDISON CO — Appendix B - Procedure 3 — PROJECT 6356-N

OBSERVATION/FINDING REPORT

LA SALLE STATION — QC-2

ASSIGNMENT NO QC-2-15

ITEMS INSPECTED		LOCATION	
Hanger Number	S-1253	Building/Floor	HPCS Swgr Room/6
Hanger Drawing	Detail M 1538-102 Rev E	Elevation	699'5 1/4 T/D
Duct Location	N/A	Coordinates	J-789
Duct Drawing	M-1437-1 Rev K	Welder Ident	Z-36

Discrepancy (1) Duct adjacent to S-1253 has a gouge mark 3 inches long and approx 1/32 inch deep. (2) Bottom shim plate at junction of horizontal member and brace member has grind mark in corner away from any support welds.

References See QC-1-61

Submitted to Site Review on 9-13

Disposition by Site Review Team — OBSERVATION [ ] FINDING [ ]

(1) Duct grind or dent mark is not of a depth that will cause leaking and doesn't require rework. (2) Grind mark in shim plate will not reduce strength of hanger. No rework required. Discrepancy is technically acceptable.

Site Review by JJ Kenyak L Flores S S Fiedler Date 9/14/82

Submitted to CECo on _____ Review Committee on _____

Determination of Internal Review Committee — AGREE [ ] DISAGREE [ ]

By _____ Date _____ By _____ Date _____

Verification of Corrective Action On Observation/Finding

By _____ Date _____

Site Review Committee

Submitted to CECo on _____

rev 0

APPENDIX E

PERSONNEL EXPERIENCE SUMMARIES

PROJECT ENGINEER

A J KEMPIAK Andy Kempiak has over 17 years experience in power and related fields, including the past 15 with Braun. His primary areas of expertise include mechanical systems and HVAC engineering.

His current assignment is as Engineering Manager for the 1220 MWe TVA power plant project. Here he directs four project engineers responsible for building design coordination, customer interface, supplier review, and coordination with field forces. Prior to this, he served as Project Engineer for field coordination activities, involving monthly meetings with owner and field engineering staff.

Andy was leader of a group of up to 15 engineers and designers responsible for mechanical system and the HVAC design and layout activities on the TVA project. Systems designed included waste processing, service, cooling, and heated water, and chilled water systems. He was responsible for the design of all chilled water systems on the TVA project, and wrote procurement specifications for major chiller packages. Other systems he designed and specified equipment for include gas filtration and fire protection.

Within Braun's building mechanical group, he was responsible for various types of HVAC and utilities systems. As group leader on the Lawrence Livermore project, he prepared P&I flow diagrams, design and procurement specifications, HVAC and piping drawings, and preoperational test specifications for all utility systems. He was also responsible for HVAC system design and checkout on several Rocky Flats Weapons Facility projects. He designed complex ductwork systems, sized fans and other equipment, and worked as a field engineer on a plant expansion program.

On the USAF Satellite Test Center and Power Plant project, he was responsible for all HVAC design. This included the design of supply and exhaust air systems for gas turbine units and heat recovery boilers, and the design of the air-conditioning system for the plant, including chillers, HVAC units, and associated equipment.

Mr Kempiak has a BSME degree from the University of Illinois, and is a registered professional mechanical engineer in California.

QUALITY ASSURANCE ENGINEER

J S FIEDLER Jim has over 30 years experience in nuclear engineering and construction, the past 12 years as the Project Quality Assurance Engineer on various nuclear power plants throughout the United States. They include the Duane Arnold facility at Palo, Iowa, a 550 megawatt BWR unit for Iowa Electric Light and Power Co, the Greenwood Energy Center consisting of one fossil plant (800 megawatts) and a four-unit nuclear plant, PWR units (1250 megawatts each) for the Detroit Edison Company, the St Lucie nuclear unit 1, an 800 megawatt PWR for Florida Power and Light, the Waterford III nuclear unit, a 900 megawatt PWR for Louisiana Power and Light.

Since joining Braun in 1977 he has been assigned as the Project Quality Assurance Engineer on the Baily nuclear project, a 600 megawatt BWR unit for Northern Indiana Public Service Company and is currently assigned as the Project Quality Assurance Engineer on the GE/TVA STRIDE Projects.

Prior to specializing in quality assurance Jim was a design and operations engineer at the University of California's Lawrence Radiation Laboratories at Berkeley, California and was the site representative for the Universities Research Association during construction of the Fermi-National Accelerator Laboratory at Batavia, Illinois.

Before his university association he spent eight years as a design engineer with Westinghouse Electric Company, Bettis Facility in Pittsburg, Pennsylvania, during the early development of the US Navy nuclear program.

Mr Fiedler has a BA from Waynesburg College, and a BSME from the University of West Virginia. He is a registered professional engineer in the Commonwealth of Pennsylvania.

QUALITY CONTROL SUPERVISOR

R W PHILLIPS Bob has 28 years experience in Source Quality Control, eight years with Braun. His latest assignments with Braun include Source Inspection Coordinator on four projects. He was in charge of implementing the Positive Material Identification Program, currently in use. This included the operation of the analysis equipment required in the PMI program.

Bob's other duties have involved conducting training and certification of personnel in liquid penetrant, magnetic particle, radiographic and ultrasonic examination as a certified NDE Level III Examiner. Also inspection of pressure vessels, heat exchangers, piping, furnace equipment, pumps, storage tanks and structurals.

Prior to working at Braun, while at Richardson X-Ray Company, Bob directed operation of a commercial nondestructive inspection laboratory. While at Boeing, Bob performed plant surveys and supplier audits in NDE and electrodeposited plating facilities. He conducted inspection on components for aerospace use. At Richardson X-Ray Company, he was the quality control manager for a nondestructive inspection facility. At Ferro-Spec Laboratories, he managed a commercial nondestructive inspection laboratory. And, at Aerojet General he also performed source inspection and wrote manufacturing procedures in quality engineering.

Mr Phillips attended Mt San Antonio College. He is a member of the American Society of Nondestructive Testing.

MECHANICAL ENGINEER

W V CRALLEY Walt has 26 years of experience, including 12 years at Braun. At Braun, he is currently responsible for all building mechanical work - HVAC, exhaust, filtration, plumbing, utility piping, and fire protection systems with respect to design definition and development, calculations, drawings and specifications for Diamond Shamrock's polypropylene plant and Shell Chemical's Resins Plant Expansion, both in Texas. He assured that the design requirements and criteria were met on all building mechanical systems, and all calculations, drawings, equipment selections, specifications, and estimates were accomplished.

Walt has also performed HVAC calculations to support the design of several building environmental systems for the TVA Hartsville Nuclear Power Plant. This involved detailed system analysis of the performance of safety and non-safety HVAC systems.

Walt was responsible for the design and development of secondary containment and filtration systems for airborne contamination on the General Atomic's HTGR Fuel Fabrication Facility, and General Electric's LMFBR Nuclear Power Demonstration Plant. He provided design studies and load calculations, and established the mechanical systems basis of design procedures and specifications.

He was instrumental in the development and design portions of the containment and filtration systems and the preparation of systems operating and test procedures for DOE's Plutonium Recovery and Waste Treatment Facility at Rocky Flats, Colorado.

Walt had the responsibility for building mechanical systems on such projects as an abrasive blast and paint facility for the US Navy at Long Beach, California, a pilot plant for AMAX in Colorado, and oil and gas refinery for Imperial Oil in Canada, the Sodium Pump Test Facility for LMEC in California, and an olefins facility in Texas.

Walt has a BS in Mechanical Engineering from Northwestern University.

QA/QC COORDINATOR

W F REYNOLDS Bill has over 30 years experience in management planning, estimating, design, procurement writing, procedure and specification, quality assurance, quality control field erection, and startup of new and expansion facilities embracing all fields of chemical plants, nuclear gene ating stations, conventional generating stations, and allied industrial complexes.

Quality Assurance Manager of a multi-billion dollar Saudi Arabian Project including development of the "Pioneer" Camp, establishing jobsite perimeters, initial development of a quality program for the management services contractor, and establishment of bid analysis procedures in accordance with acceptable Saudi Arabian government criteria.

Corporate Quality Assurance Audit Team Leader for various Middle East projects. Development of audit checklists, preparation/notification to all responsible parties of audit dates and subjects, pre and post audit conferences culminating with the issuance of formal audit reports.

Field Quality Control Supervisor for one of the largest management services contracts including interviewing, staffing and supervision of quality control (QC) engineers, laboratory technicians, Saudi national engineering students and QC inspectors. Published a Field Quality Control Manual for the industrial complex, assigned QC personnel to various phases of construction, testing, contracts, procurement, and implementation of all disciplines within the "Kingdom" of Saudi Arabia.

Instrumentation Superintendent during construction/start-up of a 1.7 MGPD desal unit including field design of sensing and loading lines along with providing written and verbal instructions to international instrument crews. The jobsite was the Saudi Naval Base in Jeddah, Saudi Arabia, and the assignment included start-up of package boilers checking out system controls by use of the logic diagrams, and actual pressure testing of the tubing/multitube "bundles".

Start-up Engineer for two 960 MW nuclear power plants (BWR Mark III), including development of safeguard systems, punchlists, and progress reports.

Mr. Reynolds is 56 years old, and attended Marietta College majoring in petroleum engineering. He is also certified to ANSI 45.2.6.

Commonwealth Edison Company, 6356-N, September 15, 1982

SOURCE QUALITY CONTROL SENIOR INSPECTOR

L P ROZBORSKI Larry has 33 years engineering and shop experience, 7 years of source inspection with Braun. He has been assigned to inspection of compressors, turbines, pressure vessels, towers, heat exchangers, storage tanks, furnace equipment, and other petrochem process equipment.

Larry's other duties have involved design engineering, shop layout and supervision. He is certified as a Level 2, to SNT-TC-1A in radiography, magnetic particle, liquid penetrant and ultrasonic examinations. He is familiar with API, ASME, and TEMA Codes. He is certified as a senior engineering technician by the Institute for the Certification of Engineering Technicians and AWS certified welding inspector.

Prior to working at Braun, while at Bos-Hatten, Inc, Larry was responsible for all inspection procedures and QC for ASME shop certification. He wrote welding procedures and maintained qualifications of welders to ASME standards. He held positions of shop superintendent and manager of engineering.

Larry also worked for American Standard as metallurgical lab technician, senior draftsman where he was responsible for all radiography, nondestructive examinations and welder qualifications. And, for Worthington Corporation as a design draftsman.

Mr. Rozborski attended Erie Community College, evening extension courses and various seminars conducted by technical societies. He is a registered Professional Engineer in Quality Engineering in California. He is a member of the American Society of Mechanical Engineers, the American Welding Society and the American Society for Nondestructive Testing.

SENIOR MECHANICAL ENGINEER - HVAC

K S RAJU K S Raju has over 22 years experience in the power engineering field, both nuclear and fossil. His primary areas of interest have been in the design and specification of gas turbines, waste heat steam systems, and refrigeration systems. He has been with Braun since December 15, 1980, performing engineering design on various HVAC systems for TVA's Hartsville nuclear power station.

While at Burns and Roe, he was the lead mechanical engineer for a pair of gas turbine/waste heat boiler cogeneration units for the City of Santa Clara. The generators produce 8 MWe each, and the boilers each produce 40,000 pounds per hour of 150 psig steam. The combustors are natural gas-fired, with fuel oil as backup. He sized and wrote specifications for the gas turbines, steam generators, deaerators, feedwater treatment equipment, pumps, gas compressors, and instrumentation. He did piping flexibility analysis, and wrote preoperational and start-up procedures. He also engineered the entire steam and condensate distribution system between the city and steam customer, a paper products plant.

In another project, he was the lead mechanical engineer on five 330 MWe combined cycle power plants for Jersey Central Power and Light Company, the Gilbert Station Units 4 through 8. On this assignment, he was responsible for engineering the power cycle piping, cooling water systems, steam and compressed air system, water treatment systems, fire protection, and HVAC. He also wrote installation specifications, and provided engineering assitance during construction and start-up.

While with Ebasco Services Inc, as a senior mechanical engineer he performed a wide variety of functions on two nuclear, two coal-fired, and ten hydroelectric power plants. He was responsible for HVAC, refrigeration, steam, cooling water, and condensate systems, and took a lead role in scheduling and manpower planning for these projects.

Mr Raju is 48 years old, and holds BS and MS degrees in Mechanical Engineering from Michigan Technological University. He is a member of the ASME.

CHIEF NUCLEAR ENGINEER

R N MOORE Roger Moore has 29 years experience in the nuclear field, including 8 years with Braun. He is presently Braun's Chief Nuclear Engineer, and his expertise and experience are primarily in the areas of nuclear engineering, safety, and licensing.

In his present assignment, he is responsible for all nuclear and environmental aspects of Braun's nuclear power work. On the TVA STRIDE project, he provides design reviews in areas of nuclear safety, health physics, and shielding. He is also responsible for coordination with and reporting to the NRC on all matters of nuclear safety.

His other projects at Braun have included Braun SAR, in which he participated in the design effort, and led the work to produce the PSAR and eventually secure the preliminary design approval from NRC. He also prepares license and permit applications to state and federal authorities on environmental and nuclear matters, responds to questions from regulatory agencies, and gives expert testimony at public hearings.

Prior to joining Braun, Roger was Director of Nuclear Services at Gulf States Utilities. Here he directed the environmental and nuclear efforts on two Louisiana power plants. He coordinated the work of a number of environmental consultants, and published the first Environmental Report based upon the new NRC format.

He was Superintendent of Engineering, Nuclear Division, for Todd Shipyards, where he led the engineering of the retrofit of a modernized design into the nuclear portion of the NS SAVANNAH. He also designed environmental control equipment and did control rod drive analysis for the LOFT project. He was also Manager of Training for nuclear matters at Babcock & Wilcox, where he qualified nuclear ship crews and coordinated various research programs.

Mr Moore has a BA in chemistry from the University of Colorado, and a business management certificate from UCLA. He is a registered nuclear engineer in California.

SYSTEMS SECTION HEAD
MECHANICAL ENGINEERING DEPARTMENT

F M PATTERSON Pat has 30 years of engineering experience, all at Braun. He is leader of the Systems Section of the Power Division which is composed of the following groups - Mechanical, HVAC and Instrument & Controls. He is responsible for all engineering in the section which includes the complete design of nuclear and fossil power plant systems. This involves preparation of P&I flow diagrams, logic diagrams, hydraulic and thermal calculations, systems, equipment and pre-op specifications, and equipment evaluation and selection. Involved is the complete design including mechanical equipment room layouts, HVAC ductwork drawings, and fabrication specifications. Mr Patterson is responsible for administering the three groups in his Section and providing technical guidance and review of the work.

Pat's other duties have involved the analysis of heat transfer and fluid flow problems of all types. Also process design of such apparatus as heat exchangers, condensers and feedwater heaters.

Mr Patterson has been in the Power Division since 1973. During this time he was responsible for mechanical and HVAC systems in the Reactor Island for TVA's Hartsville and Phipps Bend Nuclear Power stations. He also directed the activities on several other power projects.

Before his assignment to the Power Division, Pat was a Principal Engineer in the Engineering Division. Prior to that he was leader of the HVAC Group at Braun.

Mr Patterson has a BSME from the University of California at Berkeley and MSME and Engineer in ME degrees from the University of Southern California. He is a member of the IEEE Working Group for Unique Identification of Power Plant Systems and Components. He is a registered professional mechanical engineer in California.

PROJECT QUALITY CONTROL MANAGER

L F KARNS Lee Karns has 39 years of experience including 31 years with Braun.

He is currently head of the Site Quality Control Section of the Quality Engineering Department. In this capacity, he is responsible for coordination of field jobsite inspection activities at various jobsites throughout the world. He maintains liaison with jobsite inspectors and home office engineering. He is responsible for preparing Construction Inspection Plans for construction projects, review of drawings and specifications, and establishment of inspection procedures and checklists to be used at the jobsite. He coordinates with customer representatives in the preparation of the site inspection requirements. He is responsible for the field piping pressure test programs and the preparation of the piping test diagrams that are used at the jobsites.

For 18 years he was Chief Field Inspector. He was responsible for all jobsite construction inspection and quality control activities for field projects ranging to $150 million throughout the world. He was responsible for all site inspection activities for projects in The Netherlands, Trinidad, Australia, and the Philippines. He participated in source inspection activities in Europe and other foreign countries during his overseas assignments. He is familiar with foreign codes and foreign work methods. At the jobsite, he was responsible for soil inspection, concrete control, concrete inspection, welding inspection including procedure and performance qualification, Code pressure vessel fabrication and assembly inspection, inspection of piping fabrication and erection, piping system pressure testing, site metallurgy, inspection of complex materials handling systems, and boiler and furnace inspection. He is particularly qualified in the various techniques of nondestructive examination and code requirements. At the site, he has been responsible for supervising a team of inspection personnel that numbers up to 20 people.

Prior to joining Braun, he was a source inspector for 8 years in various metal manufacturing facilities serving the petroleum industry. He also supervised shop forces in the manufacture of pressure vessels and the fabrication of structural steel.

Mr Karns is 61 years of age. He received his education in Mechanical Engineering at Purdue and Newark College of Engineering.

SR STRUCTURAL ENGINEER

LELAND F RORE X Leland has over six years experience in power, all with Praun, working in the Structural group on the TVA Power Plant Project.

Current responsibilities include leading a group of several engineers designing HVAC, electrical and pipe support structures for the auxiliary and fuel buildings. He has evaluated and dispositioned field change requests, design information requests and non-conformance reports associated with erection of system supports and has written specifications for field installation and erection of supports.

Prior to working in the support group, his responsibilities had included coordination between technical engineer and suppliers of structural items, including structural and miscellaneous steel, tornado resistant doors, steel containment, air locks, and stainless steel liner plates. His duties included evaluation of bids, meeting with supplier representatives and customer, review of shop drawings, evaluation of requests for change of contract, and answering all correspondence from suppliers of structural items.

He has also been responsible for review of free-standing containment vessel design performed by subcontractor, including updating design specification and interface between containment and items belonging to other disciplines.

He has prepared and analyzed results and finite element computer analyses of Drywell steam tunnel structure, designed concrete floor slabs and prepared design report.

Mr. Rorex has a BSCE from the University of Southern California, and is a Registered Professional Civil Engineer in California.

PRINCIPAL STRUCTURAL ENGINEER

S P KESHAVA Paul has about 22 years experience in structural analysis and design, over 8 years of it in power at C F Braun & Co. From 1978 to 1981 Paul worked for Braun in the TVA Stride Support and Hangers Group in a supervisory position. He was responsible for preparation of structural standards, specifications and design guides for pipe, HVAC component, cable tray, and conduit supports. Seismic qualification calculations were performed on the HVAC ducts to determine the maximum permissible spacing between supports and the longitudinal bracing requirements thereto. Duct to support frame attachment details were prepared using either welds or blind rivets, which were qualified by calculation.

In addition, Paul's group was responsible for implementing changes to concrete embedment design brought about by NRC Bulletin 79-02. Other areas of responsibility consisted of design of pipe break restraints and their supports, and field coordination in solving constructibility problems related to welding, anchorage to concrete and system support framing.

Prior to work in this group, Paul worked for about 4 years as lead engineer coordinating the analysis and design of a Mark III containment vessel performed by the vendors. He was responsible for the technical evaluation of the vendors' work and providing engineering support to vendors where needed on specific problem areas outside the vendors' scope of responsibility.

Paul has also worked in conventional concrete and steel design in a lead capacity both in and out of the power industry. Currently he has been assigned to the piping stress analysis group as a consultant for special problems.

He earned a PhD degree from Northwestern University at Evanston, and is a registered Professional Civil Engineer in California. He is a full member of the American Society of Civil Engineers.

SOURCE QUALITY CONTROL INSPECTOR

H E RUPP Hal has over 28 years experience in engineering and inspection including the last 18 years with Braun.

Hal's most recent experience was Head Receiving Inspector at the Shell Wilmington Oil Refinery where his activities included visual weld inspection.

Prior to this he was assigned for 12 years at the Rocky Flats Nuclear Weapons Facility. His responsibilities included piping, HVAC and instrumentation engineering, design and drafting. For approximately the last six years he performed various QC activities including receiving inspection of equipment and materials for the plutonium recovery and waste treatment facility. He also performed fabrication and welding inspection on process glovebox enclosures - stainless steel sheetmetal enclosures encompassing process equipment.

He is familiar with nuclear safety, shielding and containment requirements as well as ASME codes and NEMA standards. He is knowledgeable of OSHA, ANSI, MSS, IFI, and ASTM standards including ASTM-SAE standards in bolting and other fastener hardware.

His early Braun experience includes the position of piping and HVAC designer on various petrochemical projects.

Prior to joining Braun he was a HVAC designer, draftsman and held other engineering related positions with both small and large firms engaged in mechanical system engineering for defense facilities and various commercial buildings. Hal has two years military construction and inspection experience with the U.S. Army Construction Engineers-Japan Logistics Command.

He has attended various trade technical and junior colleges. He has held membership in ASHRAE, ISA and AACE. Hal is 51 years old.

SOURCE QUALITY CONTROL INSPECTOR

R A LETERSKY Ralph has 38 years experience, 6 years of source inspections with Braun. He has accomplished both source and jobsite inspections on pressure vessels, heat exchangers, towers, piping systems, structural steel and other petrochem process equipment. Several of these assignments have been in Japan.

Ralph's prior experiences have encompassed all phases of shop work from layout to supervision. He is certified as a Level 2 in radiography and liquid penetrant inspection and has experience with magnetic particle and ultrasonic examination. Ralph is 56 years old.

Prior to joining Braun, Ralph worked for the New York Board of Water Supply conducting inspection and surveillance of the workmanship, methods and procedures used at steel mills, foundaries and fabrication plants.

His responsibilities while working for the Carrier Corp. and Struthers Nuclear and Process Co. have included the supervision of fabrication, welding and machining operations of commercial, commercial nuclear and Navy Nuclear vessels and equipment. He has performed similar duties in the commercial area for other manufactures.

PROJECT METALLURGICAL ENGINEER

L W BOYD Leonard has 24 years experience as a metallurgical engineer, the past 8 years with Braun.

He has been the project metallurgical engineer for Braun's TVA-STRIDE project since he came to Braun and, for the past year, section leader of the Metallurgical Engineering Section. The project metallurgical engineer is responsible for selection of materials of construction, corrosion requirements, and welding requirements to meet the ASME codes, AWS codes, ANSI codes, NRC regulatory guides and customer requirements.

Other project metallurgical engineer assignments at Braun include the selection of metallic and nonmetallic materials of construction and determining welding and other fabricating requirements for a variety of chemical and petrochemical plants. These projects include.

Polypropylene plants, 4 processes
Nuclear fuel fabrication facility study
PVC plant
Mark I containment test facility
Acetic acid/vinyl acetate plant
Styrene plant study
TiO_2 plant study
Refinery units, new and revamp

Prior to joining Braun, Leonard worked for Peabody Testing/Magnaflux as the metallurgical lab supervisor, for Douglas Aircraft as a product reliability engineer, for North American Rockwell as a senior engineer and supervisor, and for Shell Oil as a metallurgical engineer.

His experience includes materials application, corrosion mitigation, quality control of fabrication processes, welding requirements, metallurgical and mechanical testing, failure analysis and forensic investigations.

He has a BS in Metallurgical Engineering from the Montana School of Mines, Butte, Montana. He is a registered professional engineer, metallurgical and corrosion, in California.