

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. Mc Auger
For L K Hovey

Issue date September 10, 1982 4 pages
Revision 1

Commonwealth Edison Co.

Appendix B
Procedure 1

Project 6356-N

La Salle

QUALITY CONTROL PROCEDURES

September 10, 1984

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.

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QUALITY CONTROL PROCEDURES

September 10, 1953

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.

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QUALITY CONTROL PROCEDURES

September 10, 1952

- 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

PROJECT 6356-N

LA SALLE STATION

INSPECTION FORM QC-1

ASSIGNMENT NO

ITEM TO INSPECT

LOCATION

Hanger Number _____

Building/Floor _____

Hanger Drawing# _____

Elevation _____

Duct Location _____

Coordinates _____

Duct Drawing _____

Recorded By _____ Date _____

By HVAC Engineer _____ Date _____

DESCRIPTION AND INSPECTION

ACPT.
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

3
75

C F BRAUN & CO

Commonwealth Edison Co
La Salle

PROJECT AND
QA INSTRUCTIONS

Project 6356-N

Sept. mbcc 10, 1982

APPENDIX B-2
QUALITY CONTROL PROCEDURES
INSPECTION STATUS

QA Manager's Approval

H. L. Mc Auger
For L. K. Hovey

Issue date September 10, 1982 pages 4
Revision 0

Commonwealth Edison Co

Appendix B
Procedure 2

Project 6356-N

La Salle

INSPECTION STATUS

September 10, 1953

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 reproducible 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.

Commonwealth Edison Co

Appendix B

Project 6356-N

La Salle

Procedure 2
INSPECTION STATUS

September 10, 1952

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.

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QA INSTRUCTIONS

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

Appendix B

Project 6356-N

La Salle

Procedure 3

OBSERVATIONS/FINDINGS REPORT

September 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.

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Appendix B
Procedure 3

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OBSERVATIONS/FINDINGS REPORT

Issued 10/1982

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
 LA SALLE STATION OBSERVATION/FINDING REPORT 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 _____

Submitted to _____

CECo on _____

Date _____ 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 _____

Commonwealth Edison Co

INDEPENDENT HVAC REVIEW
INTERIM REPORT

Project 6356-N

La Salle

APPENDIX C

QA/QC QUALIFICATIONS

29 pages

FORM OF LEAD AUDITOR QUALIFICATIONS

EMPLOYER

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 |
| 2. Graduate Level | University of West Va. BSME | 1951 |

3

EXPERIENCE - Company/Dates

- 9 Pts. Max.

- | | | |
|---|---|--|
| Industry (5 pts. max.) and Nuclear Industry (NI), or Quality Assurance (QA), or Auditing (AU), or Combined NI, QA, AU | Westinghouse Atomic Power Division
Univ. of California Lawrence Radiation Lab
Universities Research Assoc. Fermi Nat. Lab
Bechtel Power Corp- Proj. QA Engineer
Ebasco- Site QA Supervisor
Daniel- Sr. QA Engineer | 1951 to 1960
1960 to 1967
1957 to 1969
1970 to 1973
1974 to 1976
1976 to 1977 |
|---|---|--|

9

PROFESSIONAL ACCOMPLISHMENT - Certificate/Date

- 2 Pts. Max.

1. P.E. Mechanical- Commonwealth of Pennsylvania-Reg. No. 007819-1952
2. Society Pennsylvania Society of Professional Engineers-Pittsburgh Chapter

2

MANAGEMENT - Justification/Evaluator/Date

- 2 Pts. Max.

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

2

Evaluated by: (Name & Title) *A. E. Richford QA Manager* *10/19/77* Date

Total Points

16

AUDIT COMMUNICATION SKILLS Very good

Evaluated by: (Name & Title) *A. E. Richford QA Manager* *10/19/77* Date

AUDIT TRAINING COURSES

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

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 *9/27/77* Date

AUDITOR QUALIFICATION CERTIFIED BY (Signature and Title) *A. E. Richford QA Manager* *10/19/77* Date Certified

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

Lawrence K. Fry QA Manager

19 August 1982

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

<u>ALL - LEVEL III Capabilities</u>

ACTIVITIES QUALIFIED FOR

<u>Performance and interpretation of radiography, liquid penetrant, magnetic particle and ultrasonic inspection methods. Writer of NDE Procedures.</u>
<u>Certified AWS Inspector Certificate Number 80115991</u>
<u>Certified by ASNT as Level III Examiner Number MB 771</u>

BASIS FOR CERTIFICATION

EDUCATION	EXPERIENCE RELATED TO QC
<u>See attached sheets</u>	

HEALTH & VISUAL STATEMENT VERIFIED BY J S Fiedler

CERTIFICATION RECORDS VERIFIED BY L K Hovey

EFFECTIVE PERIOD OF CERTIFICATION
FROM 6-2-81 TO 6-2-84

CERTIFIED BY _____
MANAGER OF QA
Lawrence K Hovey

Section	1
Attachment	4.4-1.8
Revision No	1

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 Society 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 of 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

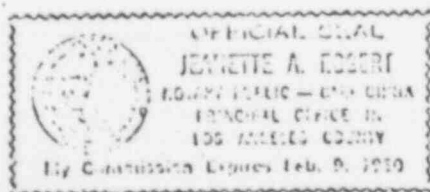
Allan E Pickford
Allan E Pickford
Manager, Quality Assurance

Subscribed and sworn to
before me this

7th day

of June, 1976

Jennette A. Eggert
Notary Public



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

NONDESTRUCTIVE EXAMINATION
VISION CERTIFICATION RECORD

NAME R W Phillips LEVEL III

EXAMINATION METHODS _____

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

R. W. Phillips

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

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	J D 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

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

QUALITY CONTROL DISCIPLINE(S)
QUALIFIED TO PERFORM

QUALIFIED BY R W Phillips

TITLE Level III Inspector

SNT-TC-LA

QUALIFIED BY _____

TITLE _____

ACTIVITIES QUALIFIED FOR

<u>Visual welding Inspector</u>
<u>Dimensional welding Inspector</u>

BASIS FOR CERTIFICATION

EDUCATION	EXPERIENCE RELATED TO CC
<u>See attached sheets</u>	

HEALTH & VISUAL STATEMENT VERIFIED BY R W Phillips

CERTIFICATION RECORDS VERIFIED BY J S Fiedler

EFFECTIVE PERIOD OF CERTIFICATION

FROM _____ TO _____

CERTIFIED BY _____

Section	1
Attachment	4.4-1.8
Revision No	1

MANAGER OF CFA

Laurina K Hwy

WILLIAM F REYNOLDS - QA/QC COORDINATOR

EXPERIENCE 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 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



EYE ACUITY TEST
JAEGERS CHART

INSPECTORS NAME: *WILLIAM F. REYNOLDS*

DATE OF EXAM: *8/19/82*

NATURAL VISION *20/80 (L)* *20/100 (R)*

CORRECTED VISION *20/20 (L)* *20/20 (R)*

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

EXAMINER'S SIGNATURE: *[Handwritten Signature]*
EXAMINER'S TITLE: *M.D.*

The test subject has demonstrated acceptable color perception by pro-
perly identifying plates #1 thru #14 of the Ishihara's tests for Colour
Blindness.

EXAMINER'S SIGNATURE: *[Handwritten Signature]*
EXAMINER'S TITLE: *M.D.*

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 JCS 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	Section 1
LEVEL III	_____	BY	_____	/TITLE	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

INDIVIDUAL PERFORMING EXAMINATION

DATE

Section	1
Attachment	4.3-1.
Revision No	1

Common Wealth Edison

Project 6356-N

NUCLEAR FIELD INSPECTION MANUAL
CERTIFICATE OF QUALIFICATION

NAME L P Rozborski

EMPLOYEE NO 2631

LEVEL OF QUALIFICATION

TRAINING I II

QUALIFIED BY R W Phillips

TITLE Level III Inspector

SNT-TC-1A I 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 78052351

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

EFFECTIVE PERIOD OF CERTIFICATION

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

CERTIFIED BY _____

Section	1
Attachment	4.4-1.8
Revision No	1

MANAGER OF QA
Laura 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.

EDUCATION, EXPERIENCE AND TRAINING

Burgard Vocational 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 technical. Duties involved radiography, tensile tests, and preparation of specimens for microstructure analysis.

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

Common Wealth Edison

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 L. 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	4.3-1.8
Revision No	1

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

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 JCS 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	Section 1 Attachment 4.2-1.8 Revision No 1
LEVEL III		BY		/TITLE	

Sr NDE Engineer, Level III

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

SMT-TC-LA II

QUALIFIED BY Robert W Phillips

TITLE NDE Engineer, Level III

QUALITY CONTROL DISCIPLINE(S)
QUALIFIED TO PERFORM

Liquid Penetrant
Radiography

ACTIVITIES QUALIFIED FOR

<u>visual weld inspection, Dimensional inspection</u>

BASIS FOR CERTIFICATION

EDUCATION	EXPERIENCE RELATED TO QC
SEE ATTACHED SHEET	

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

CERTIFICATION RECORDS VERIFIED BY L K Hovey

EFFECTIVE PERIOD OF CERTIFICATION
FROM 7-1-82 TO 7-1-85

Section	1
Attachment	4.4-1.8
Revision No	1

CERTIFIED BY *Laurie K Hovey*
MANAGER, QC, CC

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

Commonwealth Edison Co

Appendix A

Project 6356-N

La Salle

TRAINING AND QUALIFICATION

Revised 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	<u>1-29-76</u>	BY	<u>R W Phillips</u>	TITLE	<u>Section 1</u>
LEVEL II		BY	<u>NDE Engineer, Level III</u>	TITLE	<u>Attachment 4.2-1.8</u>
LEVEL III		BY		TITLE	<u>Revision No 1</u>

Commonwealth Edison Co

Appendix A
Procedure 2

Project 6356-N

La Salle

TRAINING AND QUALIFICATION

Sept 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

or 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

INDIVIDUAL PERFORMING EXAMINATION

DATE

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, structural 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 surveillance 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 inquiries, formulated fabricating, welding, and testing procedures. Made material, parts and equipment requisitions and shipping commitments. Was in direct charge of 30 men.

File Phillips

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:

Robert W Phillips, o.s.

DATE OF VISION TEST 8/3/82

VISION TEST EXPIRATION DATE July 3 1983

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

Nondestructive Examination Engineer, Level III

Commonwealth Edison Co

Appendix A
Procedure 2

Project 6356-N

La Salle

TRAINING AND QUALIFICATION

August 27, 1982

NAME H E Rupp

EMPLOYEE NO 1570

LEVEL OF QUALIFICATION

TRAINING

QUALIFIED BY R W Phillips

TITLE Level III Inspector

SMT-TC-LA

QUALIFIED BY N/A

TITLE _____

QUALITY CONTROL DISCIPLINES:
QUALIFIED TO PERFORM

ACTIVITIES QUALIFIED FOR

<u>Welding Inspector, Level I</u>

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

EFFECTIVE PERIOD OF CERTIFICATION

FROM _____ TO _____

CERTIFIED BY _____

Section	1
Attachment	4.4-1.8
Revision No	1

MANAGER OF QC
Louise K. Hoy

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

Commonwealth Edison Co

Appendix A

Project 6356-N

La Salle

TRAINING AND QUALIFICATION

21-27, 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
<i>3-10-82</i>	<i>R. W. Phillips</i>				

	DATE	EXAMINED BY	DATE	EXAMINED BY	DATE	EXAMINED BY
PRACTICAL						
GRAL						

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
Procedure 2

Project 6356-N

La Salle

TRAINING AND QUALIFICATION

August 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

Quality Control / 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

9-9-82

VISUAL

RIGHT

LEFT

JAEGER

CORRECTED

DISTINGUISH PRIMARY COLORS

REMARKS

See Attachment

SIGNATURE

DATE

INDIVIDUAL PERFORMING EXAMINATION

Section	1
Attachment	4.3-1.8
Revision No	1

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

C F BRAUN & CO

Commonwealth Edison Co

INDEPENDENT HVAC REVIEW
INTERIM REPORT

Project 6356-N

La Salle

APPENDIX D

OBSERVATION/FINDING

REPORTS

8 pages

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 <u>S-1358</u>	Building/Floor <u>Aux Bld vent 710-6</u>
Hanger Drawing # <u>Detail M-1538-15 Rev E</u>	Elevation <u>725 T/D</u>
Duct Location <u>N/A</u>	Coordinates <u>J&L and 10 811</u>
Duct Drawing <u>M-1388-3 Rev M</u>	Welder Ident <u>Z-33</u>

Discrepancy The 1x1x1/4 L is welded on one side only, Top and bottom. Drawing shows weld two sides.

Refer to QC-1-47

References Detail M-1538-15 Rev E and QC-1-47

Submitted to
Site Review on 9-13-82

Disposition by Site Review Team OBSERVATION FINDING

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

Site Review by GJ Kempato & Flary
J.D. 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 _____

COMMONWEALTH EDISON CO

PROJECT 6356-N

LA SALLE STATION

OBSERVATION/FINDING REPORT

QC-2

ASSIGNMENT NO QC-2-03

ITEMS INSPECTED

LOCATION

Hanger Number N/A

Building/Floor Aux Bld. Vent 749-0

Hanger Drawing # N/A

Elevation 759'0

Duct Location Between Hn. S-1431, S-1432

Coordinates N-11

Duct Drawing # A 1434 M-1538-1 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 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.

Submitted to

Site Review by J S Fiedler Date 9/14/82

CECo on

Review Committee on

Determination of Internal Review Committee



By _____ Date _____ By _____ Date _____

Verification of Corrective Action

Submitted to

By _____ Date _____

CECo on _____

COMMONWEALTH EDISON CO

PROJECT 6356-N

LA SALLE STATION

OBSERVATION/FINDING REPORT

QC-2

ASSIGNMENT NO QC-2-04

ITEMS INSPECTED

LOCATION

Hanger Number N/A

Building/Floor Aux Bldg Vert Fl 749

Hanger Drawing # N/A

Elevation 763'-8

Duct Location Between S-1444 & well

Coordinates N-12

Duct Drawing M-1387-1 Rev Y

Welder Ident None

Observations The joint between the duct and the well sleeve is leaking in four places. The duct test results shall be reviewed prior to any remark or possible repair

References QC-1-23

Submitted to
Site Review on 9-19-82

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 Kempinko, K.S. Lynn
J.D. Fiedler Date 9/14/82

Submitted to
CECo on _____
Review Committee on _____



By _____ Date _____ By _____ Date _____

Verification of Corrective Action
By _____ Date _____

Submitted to
CECo on _____

COMMONWEALTH EDISON CO

Appendix B - Procedure 3

PROJECT 6356-N

LA SALLE STATION

OBSERVATION/FINDING REPORT

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 2-12260 Sec. 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

FINDING

The dent is not sharp and no major metal thinning is noted and ^{no air} leakage occurring. OK to use without remark or repair

Discrepancy is technically acceptable

Site Review by J. Kempick R. Hump
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 _____

Verification of Corrective Action On Observation/Finding

By _____ Date _____

Site Review Committee

Submitted to

CECo on _____

COMMONWEALTH EDISON CO

Appendix B - Procedure 3

PROJECT 6354-N

LA SALLE STATION

OBSERVATION/FINDING REPORT
QC-2

ASSIGNMENT NO QC-2-07

ITEMS INSPECTED

LOCATION

Hanger Number N/A

Building/Floor Aux Bld Vent E1 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 Galvanex 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

BEING HELD FOR MATERIAL REVIEW ENGINEERING

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 _____

COMMONWEALTH EDISON CO Appendix B - Procedure 3 PROJECT 6356-N
 LA SALLE STATION OBSERVATION/FINDING REPORT QC-2

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 704-3 1/2 T/D
 Duct Location N/A Coordinates L 8 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 FINDING
Require clips or stitch welding on bottom of 6x12 inch duct

Site Review by J S Friedler G Kempink R Flamp
 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 _____

COMMONWEALTH EDISON CO

Appendix B - Procedure 3

PROJECT 6356-N

LA SALLE STATION

OBSERVATION/FINDING REPORT
QC-2

ASSIGNMENT NO QC-2-1A

ITEMS INSPECTED

LOCATION

Hanger Number N/A

Building/Floor Aux Bld Vent 749'-0"

Hanger Drawing # N/A

Elevation 759'-6 T/D

Duct Location Between 5144/81442

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 7/16") 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 ~~two~~^{three} full sized welds between duct and hanger. No additional welding required. One ~~undersize~~^{undersize} weld does not ~~adequately~~^{adequately} affect the structural integrity of the connection. Discrepancy is technically acceptable.

Site Review by

L. Flory & J. 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

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 <u>S-1253</u>	Building/Floor <u>HPCS. Swgr Room / 68</u>
Hanger Drawing <u>#Detail M1538-102 Rev E</u>	Elevation <u>699' 5 1/4 T/D</u>
Duct Location <u>N/A</u>	Coordinates <u>J-789</u>
Duct Drawing <u>M-1437-1 Rev K</u>	Welder Ident <u>Z-36</u>

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
<u>①</u>	<u>Duct grind or dent mark is not of a depth that will cause leaking and does not require rework.</u>	<u>② Grind mark in shim plate will not reduce strength of hanger. No rework required.</u>

Discrepancy is technically acceptable.

Site Review by J. Kempink & L. Hump Submitted to _____
J. S. Fiedler Date 9/14/82 CECo on _____
 Review Committee on _____

Determination of Internal Review Committee AGREE DISAGREE

By _____ Date _____ By _____ Date _____



Verification of Corrective Action On _____ Submitted to _____
 Observation/Finding By _____ Date _____ CECo on _____
 Site Review Committee

Commonwealth Edison Co

INDEPENDENT HVAC REVIEW
INTERIM REPORT

Project 6356-N

La Salle

APPENDIX E

PERSONNEL EXPERIENCE

SUMMARIES

16 pages

APPENDIX E

PERSONNEL EXPERIENCE SUMMARIES

<u>NAME</u>	<u>PROJECT POSITION</u>	<u>PAGE</u>
A J Kempiak	Project Manager	E -1
J S Fiedler	Quality Assurance Engineer	E -2
R W Phillips	Quality Control Supervisor	E -3
W V Cralley	HVAC Technical Advisor	E -4
W F Reynolds	Senior Inspector (Level II)	E -5
L P Rozborski	Senior Inspector (Level II)	E -6
V S Raju	HVAC Engineer	E -7
R N Moore	Chairman Internal Review Committee	E -8
F M Patterson	Internal Review Committee Member	E -9
L F Karns	Internal Review Committee Member	E -10
L F Rorex	Structural Technical Advisor	E -11
S P Keshava	Structural Engineer	E -12
H E Rupp	Inspector (Level I)	E -13
R A Letersky	Inspector (Level I)	E -14
L W Boyd Jr	Welding & Material Specialist	E -15

PROJECT ENGINEER

A J KEMPIAK Andy Kempiaak 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 Kempiaak 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 Pittsburgh, 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 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 MGD 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.

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 assistance 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 KARNES Lee Karnes 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 Karnes is 61 years of age. He received his education in Mechanical Engineering at Purdue and Newark College of Engineering.

SR STRUCTURAL ENGINEER

LELAND F ROREX Leland has over six years experience in power, all with Braun, 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
- Acctic acid/vinyl acetate plant
- Styrene plant study
- TiO₂ 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.