

U. S. ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE

REGION I

INSPECTION REPORT

CO Report No.: 71-02
Subject: Jersey Central Power & Light Co. Docket No.: 050-00363
Forked River 1 License No.: None
Location: Forked River, Lacey Township, Priority: _____
New Jersey Category: A

Dates of Inspection: June 29, 1971

Dates of Previous Inspection: January 4, 1971

Type of Licensee: PWR, 3580 Mwt (CE)

Type of Inspection: Announced, Quality Assurance Reinspection

Principal Inspector: *R. F. Heishman* 8-4-71
R. F. Heishman Date

Accompanying Inspectors: *Wm. M. Hayward* 4 AUG. 71
W. M. Hayward Date

Other Accompanying Personnel: None

Reviewed by: E. M. Howard *E. M. Howard (fn)* 8-4-71
Date

Proprietary Information: None

SECTION I

Enforcement Action: None

Licensee Action on Previously Identified Enforcement Matters: None

Unresolved Items:

A provision or requirement to assure specific responses to procurement quality requirements was not found to be included in the quality program planning prepared for Forked River by GPU. (Paragraph 3, Appendix I)

Status of Previously Reported Unresolved Items: None

Unusual Occurrences: None

Persons Contacted:

The following personnel were contacted during the inspection;

JCP&L/GPU

Mr. R. W. Heward, Jr., Project Manager
Mr. M. K. Pastur, Assistant Project Manager
Mr. J. P. Moore, Mechanical Engineering Manager
Mr. B. G. Avers, QA Manager
Mr. E. S. Fisher, QA Engineer
Mr. N. Cole, MPR, Quality Engineer

B&R

Mr. R. Giloth, Project Manager, Forked River 1
Mr. J. E. Smith, Assistant Project Manager, Forked River 1
Mr. F. C. Meckle, QA Supervisor, Forked River 1

CE

Mr. T. Colandrea, Manager Quality Systems

S-R

Mr. T. S. Frost, QA Manager, Forked River 1

Management Interview

The following subject was discussed with Messrs. Avers and Heward on July 23, 1971:

The inspector stated that provisions to assure specific responses to procurement quality requirements were not found to be included in the quality program planning prepared for the project. Mr. Heward stated additional guidance would be included in the site receiving inspection procedures to indicate specific responses to the quality requirements. Mr. Avers stated additional specific requirements for vendors would be added to require quality documentation to be provided to the site receiving contractor prior to or concurrent with shipment of the materials. The inspector stated these items would be reviewed during subsequent inspections.

SECTION II

Additional Subjects Inspected, Not Identified in Section I, Where
No Deficiencies or Unresolved Items Were Found

1. Project Status

The licensee provided the following information regarding the status of the project:

Design

Conceptual design for the plant has been completed. New considerations for the circulating water system will require additional conceptual design following decisions on the type of cooling system to be used. Detailed plant design is proceeding on essentially the original schedule. The following are approximations of completion as of mid-June, 1971.

A. NSSS

1. Conceptual design is essentially complete.
2. Major NSS component detailed sizing design is complete; code calculations are in progress.
3. Overall, NSSS final design is approximately 25% complete.

B. Balance of Plant

1. Turbine Generator design is approximately 80% complete.
2. Civil - Structural design is approximately 35% complete.
3. Electrical - Mechanical design is approximately 10% complete.
4. Equipment specifications are approximately 25% complete.
5. Overall design is approximately 14% complete.

Procurement

A. NSS

1. Procurement is complete for all major components.

2. Procurement for auxiliary equipment is approximately 60% complete.

B. Balance of Plant

1. Procurement is essentially complete for the following:
 - a. Turbine generator
 - b. Condenser
 - c. Feedwater Pumps
 - d. Feedwater Pump Turbines
 - e. Feedwater Heaters
 - f. Makeup Water Treatment Plant
 - g. Condensate Polishing Plant
2. Overall, procurement is approximately 7% complete.

Construction

Site construction has not yet begun; therefore, it's percentage completion is zero.

2. Criterion I - Organization

Organizational changes in the B&R QA organization were reviewed.

3. Criterion II

The QA/QC program of the principal contractors was reviewed and found to have been approved by the licensee.

4. Criterion IV

The CE, B&R and S-R procedures and instructions relative to procurement document control have been inspected.

Details of Subjects Covered in Section I

(See Appendix I.)

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APPENDIX I

Prepared by:
W. M. Hayward
Reactor Inspector

APPENDIX I

SECTION II

Additional Subjects Inspected, Not Identified in Section I, Where
No Deficiencies or Unresolved Items Were Found

1. Criterion III - Design Control

Responsiveness to Criterion III, Design Control, Appendix B, 10 CFR 50 requirements was inspected in the quality programming prepared for use in the Forked River No. 1 nuclear power plant by General Public Utilities, Combustion Engineering, Burns and Roe and Stearns Roger. Their responses appeared adequate in the areas audited.

2. Criterion XVIII - Audits

Responsiveness to Criterion XVIII, Audits, Appendix B, 10 CFR 50 requirements was evaluated in the quality programming prepared by the previously listed organizations. Responsiveness or accountability was considered to meet the intent of this criterion.

Details of Subjects Discussed in Section I

3. Criterion VII - Control of Purchased Material, Equipment and Services

Criterion VII requires measures to be established which will provide quality documentation available on the construction site prior to installation or use of goods or services.

Further, documentation must be of such form and verbiage as to permit applicant auditors/inspectors to identify and verify certifying data to be specifically and totally compliant with contract, purchase order and quality specification requirements.

Compliance is to be demonstrated by inclusion in the quality planning of specific requirements to be imposed by the applicant, through and by the procuring contractors assuring delivery of quality verifying certifications and records responsive in terms, units of measure and characteristics, specifically identified/referenced in procurement quality requirements. These requirements in most instances call out national/technical society codes and standards for materials and quality determining procedures.

The Forked River quality program planning was inspected to determine total compliance with Criterion VII, Appendix B, 10 CFR 50.

A provision or requirement to assure specific responses to procurement quality requirements was not found to be included in the quality program planning prepared for Forked River by GPU.

Fuel

Field Notes Oyster Creek Inspection - June 23 - 25
and July 2, 1971.

A. Persons Contacted

Mr. T. McCluskey - Station Superintendent

Mr. D. Ross - ~~Technicians~~ Supervisor

Mr. J. Carroll - Operations Supervisor

Mr. D. Reeves - Technical Engineer

Mr. E. Riggle - Maintenance Supervisor

Mr. J. Sullivan, Assistant Technical Engineer.

Mr. D. Kaulback, Radiation Protection Supervisor

Mr. F. Kossatz - Mechanical Foreman.

Mr. R. Pelyne - Chemical Supervisor.

Mr. T. Johnson - Electrical Foreman

Mr. I. FinFrock, Jr., - Manager, Nuclear Generating
STATIONS

Mr. W. Hirst - Chairman, General Office
Review Board.

Mr. T. Crimmins - Secretary, General Office
Review Board

Mr. D. Hetrick - Vice Chairman, General Office Review Board

B/413

B. Administration & Organization

1. Site Organization - Mr. McCluskey stated that the site organization has remained stable since the last inspection (April, 1971) with the following exceptions.

- a. Mr. Brite has been hired as an Associate Engineer. Mr. Brite recently graduated from the U. of Virginia with a degree in Nuclear Engineering.
- b. Mr. Fickeissen has been hired as an Assistant Technical Engineer. Mr. Fickeissen recently graduated from Drexel with a B.S. and has had 5 years of nuclear experience in the Nuclear Navy. Mr. Fickeissen has had ^{some experience} at the OC-1 facility as a cooperative student.
- c. Mr. Simeave is at the facility for the summer months. He is a ~~cooperative~~ ^{work-study} student from Drexel.
- d. Mr. Maryott is at the facility for 6 months. He is on loan from Jersey Nuclear Corporation.
- e. Mr. D. Phillips is at the facility for 3 months. He is on loan from Georgia Power Company.



9. Mr. McCluskey also stated that there are plans to hire two additional Engineers in the near future. The inspector was informed by both Messrs. McCluskey and Finfrock that Mr. McCluskey may be leaving the facility in 2 1/2 years. Mr. Finfrock stated that the Station Superintendent's position will be filled by someone presently at the site. Tentative plans are to utilize Mr. McCluskey a more to the J.C. main offices to be considered in the J.C.

and may Central have some other...
 to give us how a station...
 before the end of 1971...
 stated that three engineers will be...
 5 years of... in general experience and...
 will come from the present site organization...
 He stated the inspectors that these engineers...
 will spend the majority of their time on the...
 Central facility...

3. Plant Operation Review Committee (PORC) - 2 members
 The last routine inspection The PORC has met on 3 occasions:

- a. April 21, 1970 - Both GORB members
 (Reese and Hetrick, absent)
- b. April 22, 1971 - Both GORB members
 (Reese and Hetrick, present)
- c. May 16, 1971 - No meeting

Meeting minutes provided were less than noted during the October 12-14, 1970 inspection.

4. General Office Review Board (GORB) - 2 members
 were held with Messrs Hirst, Hetrick and
 Crumrine and a review of minutes, GORB
 meeting minutes, GORB Audit reports, GORB
 Action Item List, GORB Audit Findings and
 GORB correspondence with JC President, Bouvier.
 Significant inspection findings were as follows:

- a. In the October, 1970 Special Inspection
 There have been 7 GORB meetings. Attendance
 at these meetings by GORB members was
 insufficient to constitute a Technical Inspection
 group - one for a quorum.

e) Periodic Audits of plant operations have been conducted quarterly as required by Technical Specifications. A review of audit reports showed the following:

Date	No of Personnel Auditing	No of Days	Deficiencies Noted
7/15/70	2	1	3
10/15/70	3	1	3
1/12, 13/71	4	2	14
4/10/71	3	2	4

A review of the course of audit reports discussed that 2 deficiencies at the Laboratory as well as other deficiencies identified in the audits were noted.

no have been corrected. 1/12, 13/71 as well as other deficiencies identified in the audits were noted.

in 12...
 New door of 83' 6" elevation...
 the elevator door, pipe...
 main sample tank area...
 be in violation of 10CFR 20 regulations.

2) During the 10/15/70 Audit, Deficiency item No. 3 was reported as "The set point of the high radiation instruments in the main steam line tunnel was set at 10⁴ units. Should be set at 10⁵ units."

10 times background. Technical Specifications (Table 3.1.1 item B.6) requires this instrument to be set at ≤ 10 times background. A review of the GORB covers pendence of the same discussion with Mr. W. Hirst. Hirst advised that GORB had not communicated with the Company President on the verbiage of technical specifications as required by 6.8.C.d(5) of the technical specifications. Discussions with Mr. Hirst on this issue resulted in a commitment by him to inform Mr. Bouler, Jr. President that the GORB had been reviewed ^{in not reporting} on this issue and he further stated that he would have all future audit reports reviewed to identify items of non-compliance with technical specifications and regulatory requirements.

f. GORB's Program for auditing ^{the same} was noted to only require auditing ^{of} four aspects of plant operations ~~in~~ each year. Mr. Hirst was informed that this appears to be a 'narrow' program. ~~and~~ He stated (telecom 7/4/71) that this issue would be reviewed by GORB to determine if and where the audit programs should be expanded.

5. Administration of Maintenance Activities - Discussions were held with Messrs. Furlong, McCloskey and Riggle and a review was made work orders and records of equipment performance.

Mr. McCloskey was asked what steps had been taken since the October, 1970 inspection to improve the maintenance activities. He stated that he personally reviewed maintenance activities and that he had contracted Mr. Lippert to conduct the October, 1970 inspection and discussed certain items with him (McCloskey does not elaborate on this). Mr. Furlong stated that there was plans to assign an engineer to the maintenance group on a full time basis before the end of 1970. Mr. Riggle stated that there was an engineer (O'Conner) currently assigned part time to the maintenance group to review QA/QC aspects of maintenance activities.

Mr. Riggle informed the inspectors that he maintains records that permit an evaluation of equipment performance. These records were reviewed by the inspectors as found

to consist of a listing of work orders submitted noting the date submitted, a brief description of the problems and equipment involved and the date corrective action was completed. Mr. Riggle also informed the inspectors that the purchase of all replacement or spare parts for maintenance activities requires both his and Mr. McCluskeys approval.

Mr. McCluskey stated that steps ~~are~~ have been taken to keep Mr. Riggle better informed of plant operations and there was a recent plan to relocate him (Riggle) at a new ^{member} to the other staff offices.

6. Operator Retraining Program. - Discussions were held with Messrs. Linfrank, Carroll and Reeves to determine the implementation of the operator retraining program stipulated in JC's letter to JRL dated (~~early~~ ^{February} 1970). The inspectors stated that it would be expected that JC would assure itself that the operators proficiency remained high. The inspectors further stated that CO records in this area would be ^{made} to insure that JC was meeting its responsibility. Mr. Reeves advised the company of the implementation of the retraining program on 1/15/71. The listing advised that ≈ 500 man hours of training has been accomplished (less lectures by Reeves and self study) since January 1971.

E. Driverny System

1. Auto-Relief Valve - Mr. Riggle informed the inspectors that the fifth auto relief valve required for the stretch power (1935 MW rating) would be delivered in September, 1971. He stated that this valve would be supplied by Dresser (the supplier of the other four relief valves).

F. Reactivity Control And Core Physics

1. Reactor Vessel level Instruments - Discussions were held with Mr. Riggie concerning the elevation (with respect to the tap in point on the reactor vessel) of the steam condensing pots (2) used in the reference legs for the GE/MAC level transmitters used in the feedwater control system and the low-low-low level switches used in the reactor protection system. Mr. Riggie was asked if JC had plans to perform measurements to determine if the steam jet steam gates were "free rotating". Mr. Riggie advised that he had reviewed ~~the issue~~ as a result of the inspector's previous comments and had additionally ^{internally} reviewed this issue with a GE representative and JC did not consider that there was any safety issue. The inspector also discussed this matter in the exit interview and pointed out that GE's topical report concerning the conformance of GE's protection system to IEEE-279 criteria stipulated that the slope of line between the steam pot and the point where the sensing line penetrates

The reactor vessel should be provided (permitted free venting on non condensable gases.) Mr. McCloskey stated that further review of this matter would be undertaken by JC.

2. Balance of Plant Instrumentation - The inspectors review during the April, 1971 inspection disclosed that there was no established periodic schedule to calibrate or trip check the instrumentation which monitors variables that ^{have} established limits or instrumentation associated with safeguard equipments. The instrumentation schedule is specified in accordance to be ^{periodic} inspected by technical specifications surveillance requirements. Mr. Riggle informed the inspector that a review of technical specifications and plant instrumentation had been conducted by the plant staff and that a periodic schedule had been developed for the calibration and trip checking of important instruments. (see Attachment No. 1 to Field Notes). Mr. Riggle also informed the inspector that this program has been implemented since the last routine inspection.

3. TESTING OF Interlocks & By-Pass Devices - The inspectors review during the last routine inspection disclosed that JC was not checking the 45% power (Turbine 3rd stage pressure switches) scram by-pass pressure switches that are used in the turbine trip and turbine acceleration relay scram circuits. Technical Specifications do not specifically require that those pressure switches (4) be checked each quarter during the channel checks for the two scram circuits. The inspector pointed out that the intent of the quarterly checks was to verify the proper functioning of all of the scram circuitry. The inspector encouraged JC at that time to perform a review of SCRAM test procedures to insure that ~~the~~ interlocks and by-pass devices that are required for proper operation of the circuits were ~~checked~~ being checked for proper set point and operation. During this inspection the inspectors reviewed the core spray interlock (≤ 285 psig reactor vessel pressure) which opens the core spray admission valves and noted that the test procedures had recently been revised to require the periodic checking of those pressure switches.

(over)

4. Local Power Range Monitors (LPRM's) -
The inspectors noted that there are currently, 13 LPRM's which are operative. No new failures have resulted since the last routine inspection. Mr. Riggle stated that replacement parts have been obtained and were currently at the facility. The plan is to replace the failed LPRM's during the period September - October, 1971 pending certain approval actions.

5. Control Rod Performance - Inspections with the Control Rods showed there are no unusual operating problems with the drives. He also stated that there was only one inoperative drive (30-02) which has been ^{considered} inoperative ~~since~~ ^{value} for some time and remains fully out of the core. Mr. Carroll stated that there is only one drive with a withdrawal stall flow ≥ 59 gpm (42-19, 6.7 gpm) and that the ^{monthly} totalized withdrawal stall flow measurement for June, 1971 was 233.5 gpm. Monthly ^{totalized} measurement for May, 1971 was 234.8 gpm.
~~The ^{totalized} measurement for May, 1971 was 234.8 gpm.~~

Mr. Carroll stated that he receives

The totalized flow for each quadrant of the reactor on a monthly frequency to see if there are any trends

Mr. Carroll also stated that there were tentative plans to rework rod 42-19 and 30-08 and possibly others during the September - October 1971 outage.

H. Power Conversion System

1. Bypass Valve - Bypass Valve Control System
The bypass valve is a GE 2000 Series Area Master GE 2000 Series Motor and the NUCOR Group 70 Tolerable Alloy, Participant, dated 4/23/71. The letter discussed the inspection of the failed aluminum push pull bar which was removed from the ^{OC-N} bypass valve control linkage in October, 1970. The letter stated that investigation by GE showed that with the high speed of response required for the ^{5700psi} pressure control system, the stress levels in the failed member was too high for the material, but not marginally so. The letter also stated that the failure may have been aggravated by

perhaps a chain falls being hung on the mechanism.
The letter further stated that all aluminum linkages of this type (horizontal push pull bars, have been replaced at OC-1 and all succeeding similar units.

2. Partial Pluggage of Circulating Water Intake Structure
Discussions were held with Messrs Reeves and Carroll and with the control room operator duty. Information provided was as follows:
On June 17, 1971 ^{C.R.} the operators observed a grossing up on the main circulating water intake and an operator was dispatched to the intake structure. Sea gross was observed to be plugging ^{the trash rack for} the No. 2 inlet bay and one of the two main circulating pumps for this bay was shut down until the gross could be removed.

3. The facility also experienced ~~at~~ two major sea gross accumulations at the intake structure in CY 1970. (see CO Report 219/70-7 Section H.1)

3. Mr. Carroll stated that the operators first indications of sea gross accumulation was the observation of fluctuating amperage for the main circulator motors or service water pressure reductions or the alarming of the traveling screen ΔP alarms. This latter alarm is not actuated when the sea gross plugs the gross rack's or the traveling screens do not see a 500 L.P. The latter run a circulator which is not in the same area as the traveling screens and it was concluded

that the condition was not as severe as it appeared to be. The main sea gross was lost at a sudden and complete loss of water supply for both inlet boys. He stated that he thought the condition would be highly unlikely as the stopping of (115,000 gpm each) for 2 main circulators would reduce the water demand significantly. However if all supply was lost he stated that the gross decay heat could be controlled by the Isolating condensers (e). ^{And their makeup} ~~one~~ to the primary system could be made by the CR pumps. He stated that the facility does have emergency procedures for a loss of service water (over)

5. Mr. Carroll was requested to provide an elevation chart showing the intake elevations for the main circulators, service water, and emergency service water pumps. This chart is included as attachment No. 2 to the field notes.

T. Auxiliary Systems:

1. Compressed Air Systems. - Discussion was held with Mr. Carroll and a mechanical engineer (rolling operator) for the turbine building in which the compressed air systems are located. Carroll stated that surveillance functions had been reviewed and ~~status~~ informed the inspector that IC was in the process of buying a wet-line moisture detector (color change device) for the instrument air system. He also stated that OC-1 now takes monthly dew point measurements and has plans to inspect the desiccant in the drum towers at 5 year intervals.

K. Containment

Excessive Leakage Through Drywell

1. O₂ Sampler Containment Isolation Value

The successful integrated containment leak rate test was conducted in October, 1970. The test was successfully completed after

manually valving out the O₂ sampling line for the drywell. O₂ sample line. The single inter-

locking isolation valve for this line had a good

lock value associated with it. The lock value (measured at 100 psi) was approximately 1.0 x 10⁻⁴ cc/min.

~~The lock value was used to determine the flow rate to be used for the test.~~

~~resulting in a leak rate of approximately 1.0 x 10⁻⁴ cc/min.~~

~~The test was conducted for the O₂ sampling lines for both the drywell and torus.~~

~~to return the discharge of the O₂ sampler back into containment.~~

Mr. McCloskey informed the inspector that G.I.E. has not provided a ^{containment} ^{isolate} fix for the permanent fix. New valves

were installed in both the drywell and torus O₂ sample lines in October, 1970.

To replace the valves with 'slip' intervals

The original valves were reported to be a G.I.E. supplied item and were manufactured

by Valcore Eng Corp. model 17C89C9-5
designed for 125 psig. New valves are
manufactured by Versa model 31BV5R

During the exit interview the inspector pointed out that no permanent corrective measures have been taken to install a second redundant isolation valve in each line (as stated in paragraph 10 of this class of generalization) or to return the O₂ analyzer to boost main into operation - even though the failure was identified many months ago. After further discussion, Mr. McCleskey stated that as a minimum, double automatic closing isolation valves would be installed ^{prior to} the September-October 1971 outage. He expected that this modification could be made much sooner than the September, 1971 date.

2. Drywell Nitrogen System -

OC-1 is installing a system to supply compressed N_2 to the instrument air loads supplied inside containment. The instrument air system will remain and will back up the new N_2 system. The inspector stated during discussions with Messrs Kagle and Carroll and again during the exit interview that a review of this system should be made to determine if contaminants could enter into the air piping from the compressor wearing (possibly carbon ring compressor) or from other sources. The inspector stated that the main concern would be for the dynamics pilot valves for the Main Steam Isolation Valves, which Dresden-2 had problems with. Mr. McCluskey stated during the exit interview that a review would be made to determine if contaminants could enter the system.

3. High Drywell Pressure Sensor Failure.

JC submitted a report to DRI on June 15, 1971 concerning the failure of the Containment Spray System High Drywell Pressure Sensor. The cause for the faulty pressure switch was determined to be

to be a loose magnet on the instrument bellows which prevented the switch contacts from resetting^(A). The report also stated that a check would be made of other indicating switches of this type and measures would be taken to prevent the set screws holding the magnets in position from loosening.

Mr. Riggle informed the inspection that all the high Drywell pressure switches have been modified in the manner described above and that all other Bortox indicating switches (model 224) in plant are being modified in a similar manner as the surveillance checks for these instruments came due.

(A) This specific problem was corrected by realigning the magnet and applying a coating of glyptol to prevent ~~any~~ movement.

During the exit interview the inspector stated that ^{JCS} the correction of all instruments of this type in plant ~~was indicated~~ was commendable.

1. Emergency Core Cooling System

1a. Core Spray System

The inspectors were informed by Mr. Sullivan and Sullivan of the following information:

a. A jetting pump was installed in the core spray loop (pumps B & D) in March 1979. The pump and its casing were made in accordance with 1st B.31.7 - PSC using qualified welders. ^{Qualifiers} A hydrostatic test was performed at 100% design pressure following repair of the pump. The pump is located at a head of 150'. The pump is driven by a 500 hp motor. The pump has no current drawings or incorporating any requirements for the use of this pump in the design specifications.

b. Mr. Conell stated that the installation of the jetting pump has virtually eliminated all water hammer at core spray pump sites. The installation consisted of the starting of air at the jetting pump and the jetting pump in the case of a jetting

occurred any other manner of equipment
Mr. Mackintosh informed the inspectors
during the exit interview that the
Company at Borden (Separate) of
the B&R group performing the stress
analysis of the core spray piping, was
also at the facility its site.
The effect of the spray piping was not

discussed in the LP analysis. The
inspector at the B&R stress analysis
was addressed by the B&R engineer
C.P.C. Cull of Borden and the
inspector and the B&R engineer
was noted.

The inspectors continued the search
of the core spray piping in the
in the (AFC pumps) opposite the
spray bay and noted pipe
of 1.7 inches in a vertical run of pipe in the
vicinity of the booster pumps. During the exit
interview Mr. Mackintosh and Mr.
Sullivan stated that they expected that
the spray piping was to be installed in
the 1960's work.

a high point vent connection to the roof at the same time. Mr. McCloskey stated that the modification should be completed before another emergency works pump start was required.

During the exit interview, the reporter asked what JC's plans were in regard to determining the advisability of jockey pumps to limit stream levels to acceptable levels. Specifically, the reporter asked if any quantitative measurements should be taken at the jockey pump discharge of the jockey pumps. Mr. McCloskey stated that this was part of the program for resolution of the water hammer problem. The reporter also asked if JC planned to look further (than pipe stresses) to determine if damage had occurred to other parts of the core spray system such as valves and instrumentation. Mr. McCloskey stated that the core spray pump discharge check valves were scheduled to be inspected during the Sept - Oct, 1977, shutdown and he thought that a look at damage to instrumentation

was included in the program for the final resolution of the water hammer problem. Mr. McCluskey stated, in summary, that JC will consider ^{other} possible damage that may have occurred due to water hammer.

At the time of the meeting, the inspector stated to Mr. McCluskey that the situation was such that the government was not taking in anything, but the problem was followed by the inspector. Following the inspection, the inspector stated that on May 13, 1971, he intended to inspect the reactor and that if the inspection showed serious stress levels or if the inspection disclosed problems then JC should consider the reparability aspects (K. by request). The inspector requested at that time that even if no serious problems were noted in the review of stress levels or NDT regarding that JC was requested to provide an inspection report to DPL. No commitment was given at that time.

would be submitted. He stated that as
there is the report would be submitted by
June 30, 1971. JC submitted a report
on this issue on _____, 1971.

At the ex-interview with Mr. F. H. [unclear]
on July 1, 1971 he was informed that it was
his impression that a copy of
his report had not been submitted
in accordance with the [unclear] with
S. C. I. and that [unclear] [unclear]
he [unclear] [unclear] [unclear]

No. Emergency Power.

1. Diesel Generator Shutdown Device
Eagle informed the inspector that [unclear]
[unclear] [unclear] the diesel generator shutdown device.

He also informed the inspector that
the only shutdown devices that remain
in effect as emergency diesel
starts are 1) diesel generator breaker
opening and 2) mechanical overspeed
device. The following [unclear]
were reported to be bypassed on emergency.

Diesel Starts:

- High engine temperature
- overspeed trip (electrical circuit)
- Low oil temperature
- Low oil pressure
- loss of engine coolant

C. 125 V Station Batteries

As a result of the investigation, it was determined that the batteries were operated at a low voltage (less than nominal) voltage (< 105 V D.C.) for the 13 batteries, which were conducted on April 12, 1971. To determine the effect of the connectors for both the 13 batteries and the results are recorded in the following table and the following results.

April 5, 1971 A battery terminal voltage at end of test 106 volts
 pilot cell voltage at end of test 1.77 volts. 100% A.H. capacity test done

May 13, 1971 13 Battery terminal voltage at end of test 107 volts
 pilot cell voltage at end of test 1.77 volts. 100% A.H. capacity test done

Mr. Ferrelle informed the inspectors that a new type of equalizing charge was applied to both batteries under test and that the batteries were discharged to 10.5 volts. The equalizing charge had been run at a fixed voltage for 24 hours. The amount of equalizing charge is determined by measuring cell specific gravities to achieve a cell voltage of 2.35 volts per cell resulting in a terminal battery voltage of 22.25.

3. Diesel Generator Starting Batteries

The load discharge testing results (beginning 7000) for the diesel generator starting batteries were reviewed and the following was noted:

- a. The No. 1 diesel battery had a measured A-H capacity of 94% (420 A-H rating) a terminal voltage of 17.3V and a pilot cell voltage of 1.55V at the conclusion of the test.
- b. The No. 2 diesel battery had a measured A-H capacity of 87.5% ~~and~~ a terminal voltage of 17.9V and a pilot cell voltage of 1.55V at the conclusion of the test.

Mr. Kiggle informed the inspectors that
C.M. had been contacted and had
informed him that 80% of the
battery A-H rating was sufficient
to provide ^{at least} 3 consecutive ~~starts~~ diesel
starts.

Attachment NO 1
Field Notes
Oyster Creek

JERSEY CENTRAL POWER & LIGHT COMPANY
NEW JERSEY POWER & LIGHT COMPANY

INTER-OFFICE MEMO

SUBJECT	Instrument Calibration	LOCATION	Oyster Creek
TO	Mr. E. I. Riggle	DATE	May 5, 1971

The Technical Specifications require that readings be taken on various plant instrumentation to insure that the license limitations are being observed and to provide a basis for taking corrective action when warranted. Listed below are those instruments, pressure switches, etc. which should be calibrated and/or tested on a regular basis. A proposed frequency is included.

<u>INSTRUMENT</u>	<u>FREQUENCY</u>
Calibration Standard	weekly
Core Spray System Pump Disc. Pres. Switches	quarterly
Relief Valve Actuation Pres. Switches	quarterly
Flow Integrators for:	quarterly
Drywell Sump (1-8)	
Drywell Equip. Drain Tank	
Torus Level Sensor	quarterly
Feedwater Control System including:	quarterly
Feed Flow	
Feedwater Temperature	
Steam Flow	
(the above Feed & Steam Flows not only for heat balance but also for RSM inputs)	
Reactor Pressure	quarterly
Main Steam Pressure	quarterly
600 psig Bypass Switch	quarterly
Recirculation Pump Flow	quarterly
Core DP	quarterly

<u>INSTRUMENT</u>	<u>FREQUENCY</u>
CRD Flow	semi-annual
System	
Drive Water	
Cooling Water	
Flow to Rx	
CRD Pressure	semi-annual
Pump Discharge	
Charging	
Drive	
Cooling	
Liquid Poison Pump Discharge Pressure	semi-annual
Liquid Poison Tank Level	semi-annual
Liquid Poison Tank Temperature	semi-annual
Core Spray System Floor Sensor	semi-annual
Core Spray System Pump Disch. Pres. Indication	semi-annual
Core Spray Pump Amp Indication	semi-annual
Emerg. Service Water Pump Amp Indication	semi-annual
Containment Spray/ESW Heat-X d/p sensor	semi-annual
ESW Ovbd. Radiation Monitors	semi-annual
Diesel Gen. Fuel Tank Level	semi-annual
N ₂ System Makeup Flow X-mitter	semi-annual
Isolation Condenser Level Sensor	semi-annual
Isolation Condenser Area Temp. Monitors	semi-annual
Isolation Condenser Vent Radiation Monitors	semi-annual
Torus Water Temperature	semi-annual
Condenser Vacuum	semi-annual
Recirculation Pump Power Indication	semi-annual
Clean Up Flow Sensor	semi-annual

<u>INSTRUMENT</u>	<u>FREQUENCY</u>
Clean Up Temperature Monitor	semi-annual
Timers:	semi-annual
Off Gas Isolation	
Auto Depressurization	

A bench check of the following units should be conducted on a semi-annual basis:

- SRM
- IRM
- APRM including the Flow Units
- APRM Calibration Unit
- Stack Gas Radiation Monitor
- Off Gas Radiation Monitor
- Radwaste Discharge Radiation Monitor
- Closed Cooling Water Radiation Monitor
- Service Water Radiation Monitor
- Main Steam Line Radiation Monitor

As much of the reactor vessel, vessel flange, head flange, and head thermocouples as well as the recirculation loop temperature instrumentation should be calibrated on a semi-annual basis, since various NDT limits are based upon the indicated values.

During the summer months of June, July, August and September the bridge temperature indication and condenser circulating water temperatures should be checked and calibrated, if necessary.

During refueling, the brush recorder should be checked for accuracy prior to timing the rods as they are scrambled. Operation of the recorder is being checked weekly at this time.

EL + 0'-6" Normal Max W.L.

6 Haehnert No. 2
Field Notes

OC-1 Inspection

EL (-) 1'-0" Normal Min W.L.

0'-6" EL (-) 1'-0"

Min W.L. for Circ. Water Pumps

7'-4"

6'-4"

Min. W.L. for Service Water Pumps

Min. W.L. for Screen Wash Pumps

EL (+) 7'-4"

EL (-) 18'-4"

3'-2"

10'-0"

Min. W.L. for Emer. Service Water Pumps

BOTTOM OF SERVICE WATER AND SCREEN WASH PUMPS

2'-2"

EL (+) 10'-6"

EL (-) 11'-0"

BOTTOM OF CIRC. WATER PUMP

2'-6"

EL (-) 12'-6"

EL (-) 13'-6"

BOTTOM OF EMER. SERVICE WATER PUMP

EL (-) 15'

EL (-) 18'

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Jersey Central Power & Light Co.
Forked River 1

FIELD NOTES

CO Report 363/71-02

Date of Inspection: June 29, 1971

Field Notes by: W. M. Hayward ~~Reactor~~ Inspector, Construction

Enforcement Action

none

Licensee Action on Previously Identified Enforcement Matters:

None

Unresolved Items:

The Quality Program, to date, lacks a means, or omits reference to a provision, to determine and assure the validity of the product/process quality certification systems to be operated in this program.

Status of Previously Reported Unresolved Items

None

Unusual Occurances

None

Persons Contacted

B G. Avers, GPU QA Manager
R. W. Howard, GPU Forked River Project Manager
M. K. Pastor, GPU Forked River Assistant Project Manager
F. C. Meckle, Burns & Roe, Forked River Project QA Supervisor
T. S. Frost, Stesms-Roger Forked River QA Manager
E. S. Fisher, GPU QA

Management Interview

none

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Jersey Central Power & Light Co.
Forked River
CO Report 363/71-02

FIELD NOTES

Date of Inspection: June 29, 1971
Field Notes of : R. F. Heishman, Reactor Inspector (principal)

R. F. Heishman

SCOPE

An announced reinspection of the QA program for Forked River unit 1 was conducted on June 29, 1971 at the corporate offices of GPU in Parsippany, N.J. These field notes cover that portion of the reinspection found deficient during the initial QA inspection conducted November 2-3, 1970. Deficient areas of criteria II and IV are reported in these field notes.

SUMMARY

Areas found deficient previously were reinspected. Corrective action was found to have been completed for review and approval of the contractor QA/QC plans. Procedures and instruction relative to Procurement Document control were found to be approved and implemented. GPU was found to have written, approved and implemented a procedure for control of Purchase documents.

The quality assurance organization of Burns and Roe, Inc. has been changed since the previous inspection. The QA manager reports to the Vice President and Director of the Power Engineering Division in the new organization. The responsibility of the QA manager have been separated from the project manager to provide additional independence.

PERSONS CONTACTED

JCP&L/GPU

Mr. R. W. Howard, Jr., Project Manager
Mr. M. K. Pastur, Assistant Project Manager
Mr. J. P. Moare, Mechanical Engineering Manager
Mr. B. G. Avers, QA Manager
Mr. E. S. Fisher, QA Engineer
Mr. N. Cole, MPR, Quality Engineer

B&R

Mr. R. Giloth FR#1 Project Manager
Mr. S. E. Smith FR#1 Assistant Project Manager
Mr. F. C. Meckle FR#1 QA Supervisor

CE

Mr. T. Colandrea, Manager Quality Systems

S&R

Mr. T. S. Frost, QA Manager, FR #1

Details

A. Project Status

The following information was provided by the licensee regarding the project status:

1. Design

Conceptual design for the plant has been completed. New considerations for the circulating water system will require additional conceptual design following decisions on the type of cooling system to be used. Detailed plant design is proceeding on essentially the original schedule. The following are approximations of completion as of mid-June, 1971.

a. NSSC

- (1) Conceptual design is essentially complete.
- (2) Major NSSS component detailed sizing design is complete; code calculations are in progress.
- (3) Overall, NSSS final design is approximately 25% complete.

b. Balance of Plant

- (1) Turbine Generator design is approximately 80% complete.
- (2) Civil - Structural design is approximately 35% complete.
- (3) Electrical - Mechanical design is approximately 10% complete.
- (4) Equipment specifications are approximately 25% complete.
- (5) Overall design is approximately 14% complete.

2. Procurement

a. NSSS

- (1) Procurement is complete for all major components.
- (2) Procurement for auxiliary equipment is approximately 60% complete.

b. Balance of Plant

(1) Procurement is essentially complete for the following:

- (a) Turbine generator
- (b) Condenser
- (c) Feedwater Pumps
- (d) Feedwater Pump Turbines
- (e) Feedwater Heaters
- (f) Makeup Water Treatment Plant
- (g) Condensate Polishing Plant

(2) Overall, procurement is approximately 7% complete.

3. Construction

Site construction has not yet begun; therefore, it's percentage completion is zero.

B. Inspection Findings

Only those items found deficient during the previous inspection are discussed in this report.

Criterion II - Quality Assurance Program

1. Deficiency

The preliminary draft status of the QA/QC programs precluded firm conclusions relative to their adequacy.

2. Discussion

The GPU QA Manual and Policy Statement was issued April 20, 1971 with the approval signature of Mr. W. A. Verrochi, Director, Power Department, GPU Service Company. The manual references instructions and procedures which have been written, approved and implemented. In addition, the QA plans of CE, B&R and S-R have been approved by the GPU project manager and the GPU QA manager and issued for use. The final contract between CE and JCP&L has not been signed; however, the QA plan which has been approved by the QA and Project Managers respectively will be a part of the final contract. Those quality procedures and instructions not yet completed appear on the respective schedules for approval and appear commensurate with the project status.

3. Findings

The GPU Quality Assurance Program meets the inspectors understanding of the intent of criterion II and the PSAR.

Criterion IV - Procurement Document Control

1. Deficiency

- a. GPU had not developed the procedures and instructions to define the review and approval of contractor procurement documents.
- b. CE, B&R and S-R had not completed the necessary procedures and instruction to implement procurement document and control.

2. Discussion

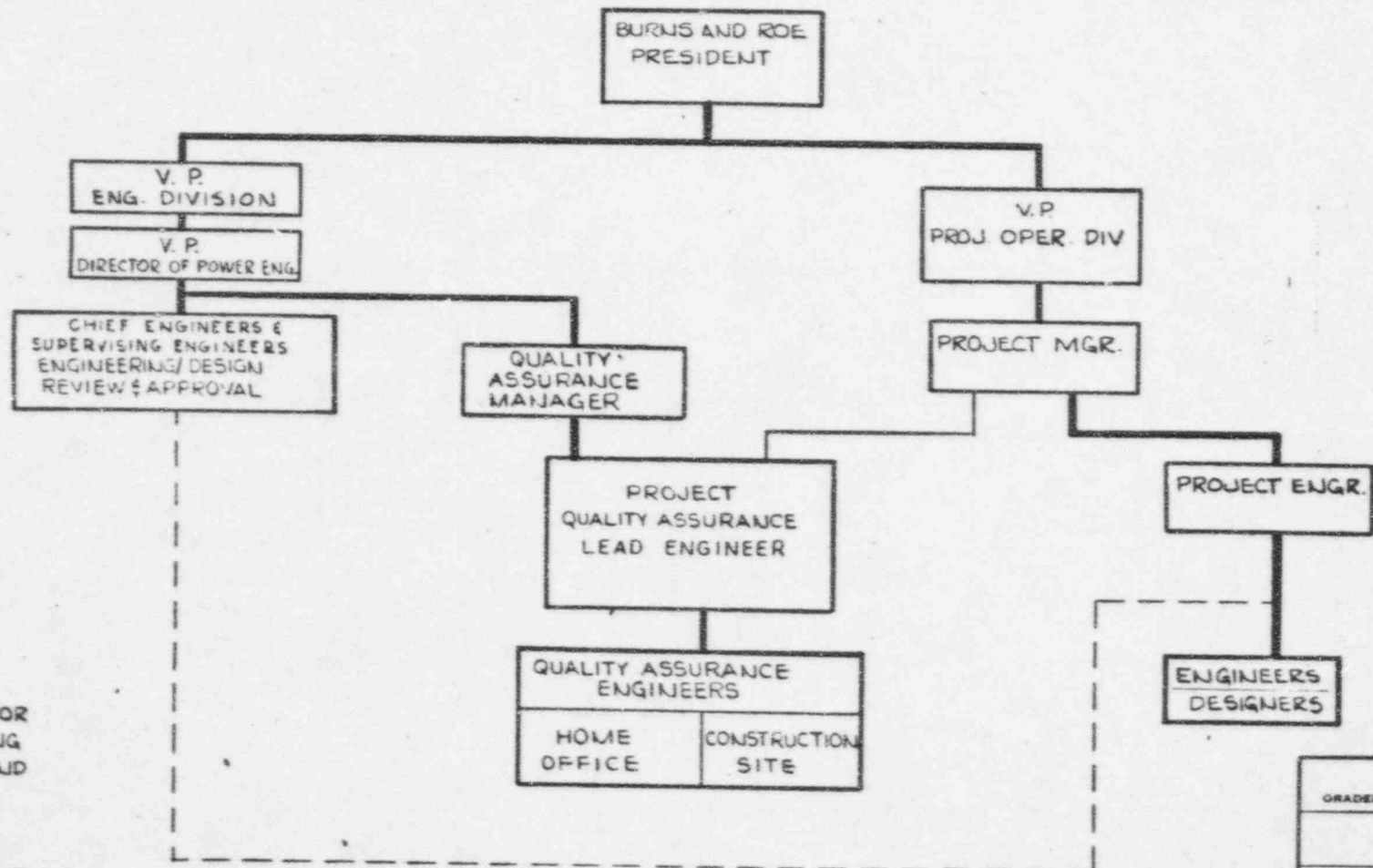
GPU has developed, approved and implemented procedures for review and approval of procurement documents. These procedures include, Procedure 6-11 "Documentation Control", Procedure 6-12 "Procurement Control & Audits of Procurement Actions" and Procedure 1-2, "Engineering Review of Specifications and Drawings". These procedures appear to correct the deficiencies identified in previous inspections.

CE, B&R and S-R have implemented procedures and instructions regarding control of purchase documents which have been approved by GPU as part of the respective QA plans.

S-R has been designated as purchasing agent for the items previously designated as JCP&L procured items. This includes most of the "Balance of Plant" items. Evidence of implementation of the QA plans was found by the inspector by a review of procurement records.

3. Findings

The GPU program of Procurement Document Control meets the inspectors understanding of the intent of Criterion IV.



LEGEND

— DIRECTION FOR COORDINATING PLANNING AND SCHEDULING

- - - TECHNICAL CRITERIA AND REVIEW

--- RESPONSIBILITY



BURNS AND ROE, INC.
ORADELL, N. J. HEMPSTEAD, N. Y. LOS ANGELES, CALIF.

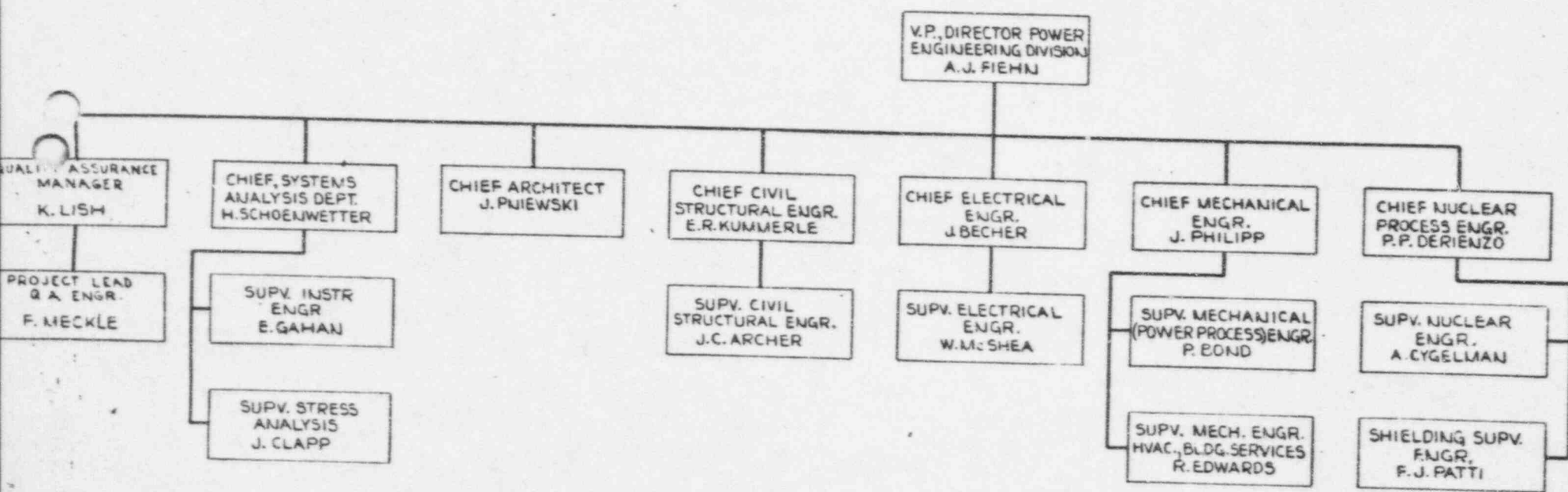
BURNS AND ROE, INC.
QUALITY ASSURANCE ORGANIZATION
LINES OF RESPONSIBILITY

JERSEY CENTRAL POWER & LIGHT CO.
FORKED RIVER STATION—UNIT 1

ENGINEERING REVIEW				SCALE	
DIV.	MECH	ELECT	STRUCT	DRWN	K. J. S. CHKD
ENGR				PL/LOG	L. M. F. DATE 1-20-77
DATE					REVIEWED BY CHIEF DRAFTSMAN
<i>[Signature]</i>				W. O. 2700	

RELEASED FOR	BY	DATE
STATUS		
PRELIMINARY INFO.		
BIDDING ONLY		
ADDENDUM NO.		
AMENDMENT NO.		
CONSTRUCTION		

REV. NO.	REVISION	DATE	BY	CHK'D	APPROVED
1	REVISED	1-27-77	J.M.	A.M.F.	[Signature]
2	REVISED	3-3-77	E.S.	A.M.F.	[Signature]



LEGEND
RESPONSIBILITY

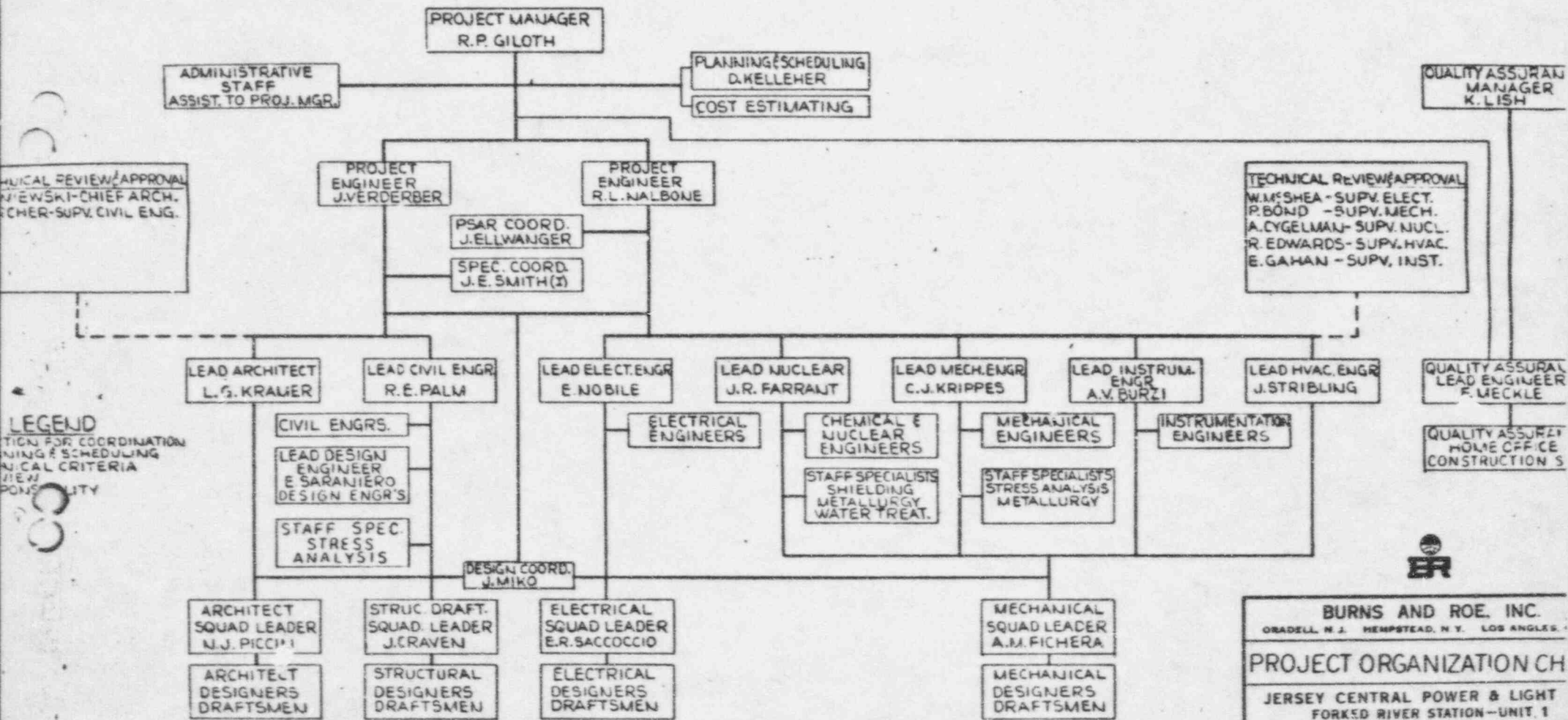


BURNS AND ROE, INC.
 GRADELL, N. J. HEMPSTEAD, N. Y. LOS ANGELES, CALIF.
 PROJECT ORGANIZATION CHART FOR
 ENGINEERING SUPERVISION
 JERSEY CENTRAL POWER & LIGHT CO.
 FORKED RIVER STATION - UNIT 1

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AMENDMENT NO.		
CONSTRUCTION		

REV NO.	REVISION	DATE	BY	CHK'D	APPROVED
1	REVISED	1-27-70	J.M.	AMF	<i>[Signature]</i>
2	REVISED	3-3-70	E.S.	AMF	<i>[Signature]</i>

ENGINEERING REVIEW				SCALE 1/8" = 1'-0"	
DIV.	MECH	ELECT	STRUC.	DRWN	E.S.
ENGR.				CHK'D	
DATE				BY	LOS A.M.F. DATE 9-10-70
<i>A. J. Fiehn</i>				REVIEWED BY CHIEF DRAFTSMAN	
V.P./DIR. POWER ENGR.				W. O. 2700	



LEGEND
 TICKS FOR COORDINATION
 MINING & SCHEDULING
 CRITICAL CRITERIA
 RESPONSIBILITY



BURNS AND ROE, INC.
 ORADELL, N. J. HEMPSTEAD, N. Y. LOS ANGELES, CALIF.

PROJECT ORGANIZATION CHART
 JERSEY CENTRAL POWER & LIGHT
 FORKED RIVER STATION - UNIT 1

ENGINEERING REVIEW				SCALE	
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ENGR				BY	DATE
DATE					

REVIEWED BY CHIEF OFFICE
 W. O. 2700

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STATUS		
PRELIMINARY INFO.		
BIDDING ONLY		
CONSTRUCTION		

REV. NO.	REVISION	DATE	BY	CHK'D	APPROVED
5	REDRAWN	4/27/70	E.S.	REP	[Signature]
6	REVISED	3-19-70	D.P.	CMH	[Signature]