U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-483/84-45(DRP) License No. NPF-30

Docket No. 50-483

Licensee: Union Electric Company
Post Office Box 149 - Mail Code 400
St. Louis, MO 63166

Facility Name: Callaway Plant, Unit 1

Inspection At: Callaway Site, Steedman, MO 65077

Inspection Conducted: October 1 through November 23, 1984

Inspector: J. H. Neisler

Approved By: W. L. Forney, Chief
Projects Section 1A

1/2/85
Date

Inspection Summary

Inspection on October 1 through November 23, 1984 (Report No. 50-483/84-45(DRP))
Areas Inspected: Routine inspection by the Senior Resident Inspector of allegations; 10 CFR 50.55(e) items; and operating license conditions. The inspection involved 248 inspector-hours onsite by one NRC inspector including 62 inspector-hours onsite during off-shifts.
Results: No items of noncompliance or deviations were identified.

DETAILS

1. Persons Contacted

Principal Licensee Employees

W. Weber, Manager Nuclear Construction
R. Powers, Assistant Manager, QA
M. Doyne, General Superintendent, Nuclear Construction
R. Veatch, Supervisory Engineer, QA Construction
J. Laux, Supervisory Engineer, QA Startup
C. Plows, QA Consultant
H. Millwood, QA Consultant
L. Kanuckel, QA Engineer
S. Hogan, QA Engineer
B. Stanfield, QA Engineer
W. Norton, QA Engineer
J. Patterson, Operations Superintendent
G. Pattrissi, Consultant, Fire Protection

Contractor and Other Personnel

G. Wilson, QA Engineer, Daniel International
W. Reilly, SNUPPS
M. Majors, Level II Quality Inspector, Daniel International
R. Ruggles, NDE Level II, Daniel International

In addition to the above, the inspector contacted other personnel in the crafts, engineering and quality areas.

2. Allegations

(Closed) ATS No. RIII-84-A-0138: On October 2, 1984, the NRC received a 10 CFR 2.206 request dated September 28, 1984, from the Government Accountability Project (GAP) to suspend the Callaway low power license. The request cited 48 allegations of deficiencies during the construction at Callaway. On October 3, 1984, the 48 allegations were submitted to the licensee for their review and investigation. The licensee's response dated December 7, 1984, is attached to this report and is considered to be acceptable.

The inspector investigated the GAP allegations by physically inspecting alleged deficient items, interviewing site personnel and by review of documentation pertaining to the allegations. The allegations either were not substantiated, did not pertain to nuclear safety-related issues or had been previously addressed by the NRC.

(Closed) 1. Painters at Callaway have prepared thousands of welds in the Reactor Building for painting by removing the rust-proofing from the welds. The rust-proofing was removed with grinders from these welds that had already been Quality Control inspected and approved.

No measurements were made of the remaining weld metal or base metal. Since no re-inspection has been done, the quality and safety of thousands of welds in the Reactor Building is now indeterminate.

The inspector examined accessible piping welds in the Reactor Building on October 1, 1984. No indications of questionable wall thickness due to excessive grinding were observed during the examination.

Approximately 2000 pipe welds were prepared for inservice inspection. This preparation, by pipefitters, included grinding the weld smooth to permit ultrasonic inspection of the weld area during preservice and inservice inspection. These welds were inspected using approved NDE techniques prior to being placed in service and will be periodically inspected to Section XI of the ASME Code throughout the life of the plant. Any weldments that had questionable wall thicknesses were identified as nonconformances and dispositioned by completing the necessary corrective action to meet Code requirements.

Based on visual inspection of structural and pipe welds and examination of preservice inspection results, this allegation was not substantiated and is considered to be closed.

(Closed) 2. Welders have ground smooth the horizontal, the vertical and the floor panel welds of the Spent Fuel Pool, Transfer Canal and Cask Loading Pool. In the process, negligent welders removed weld metal and base metal. As a result of this overgrinding, certain areas of these pools no longer meet thickness requirements. The integrity of the Spent Fuel Pool, Transfer Canal and Cask Loading Pool is questionable.

The inspector performed a visual inspection of welds in the spent fuel pool, transfer canal and cask loading pool on October 1, 1984. The welds had not been ground smooth. Each weld had a crown that appeared to have been smoothed with a polishing or flap wheel. The inspector did not observe indications that base metal had been removed from the one-fourth inch thick stainless liner plate. The weld seams have been subjected to a vacuum box test and the liner leak tested. Test records indicate that there are no leaks in either of these structures. Leak chases are installed and monitored. Liners of spent fuel pools, transfer canals, and cask loading pools are not classified as Category 1, safety-related structures. This allegation was not substantiated and is considered to be closed.

(Closed) 3. Hasty and improper rework was done on the seam welds of the liner plates in the Spent Fuel Pool, Transfer Canal, and Cask Loading Pool. These liner plates are defective in that they are not exactly square. This defect made original welding difficult. The seam welds of the liner plates were reworked but because of time constraints, the welds were not sufficiently repaired.

These seam welds were inspected on October 1, 1984, (see response to allegation two above) by the resident inspector. At the time of the inspection, the welds were considered to meet the provisions of the applicable Code. The welds have been vacuum box tested and leak tested successfully. The liner plates were procured as plates not as a complete unit; therefore, fit up was performed during erection. The canal and pool liners are not classed as safety-related structures. This allegation was not substantiated and is considered to be closed.

(Closed) 4. Weld metal joining the reinforcing ribs and the steel liner plates of the Containment Building has been eaten away by rust and corrosion. These welds located on the backside of the steel liner plates were not rust-proofed. Corrosion covered the backside of these plates before they were encased in concrete.

The reinforcing ribs are not considered structural members of containment but are to keep the liner in shape until concreting is complete. Rust on steel that is to be used as a form for concrete is permitted by the American Concrete Institute. ACI-318 states that rust increases the bonding of concrete to steel. ACI-318 further states that steel will be free from nonmetallic substances (paint) that would affect bonding. Since rusting of steel is desired prior to placing concrete, the inspector has no further concerns in this area. This allegation is considered to be closed.

(Closed) 5. Bad welds exist on pipehangers as well as on the embed plates that anchor the pipehangers. These pipehangers and embeds are located near the floor of the Reactor Building. They are difficult to reach due to the surrounding installed equipment. The bad welds have excessive weld material, tiny holes, and pockets on the surface; some of the welds are actually incomplete. No rework has been done on these faulty welds.

The inspector, accompanied by a Level II welding quality inspector and an NDE consultant, inspected pipe support (hanger) welds located near the floor of the reactor building on October 11, 1984. The inspection encompassed every pipe support (hanger) observed around the total 2000 foot level of the reactor building. Particular attention was placed on welds in the less readily accessible areas. No unacceptable welds were observed during this inspection. This allegation was not substantiated and is considered closed.

(Closed) 6. Not all welds that have been Quality Control approved have been Quality Control inspected. Welds in difficult to reach areas, such as on unistruts, have been approved without the Quality Control inspector's examination. There are also welds that have been approved without inspection located on the condensers in the Turbine Building.

"Unistrut" is one manufacturer's brand name for light weight steel shapes used for various supports. These support members are commonly used for cable tray support. Usually only one weld is performed on

a member at the attachment to an embed or plate, other connections are bolted. The inspector's observation of cable tray support welds in the reactor, auxiliary and diesel/control buildings did not identify unsatisfactory welding in this area. Tray supports were inspected by Region III based inspectors during the as-built walkdown and in the auxiliary feedwater system by the Integrated Design Inspection Team. No violations were cited by either of these teams. Welding on the condenser in the turbine building is not considered to be safety-related and was not reviewed. The allegation that all welds were not inspected was also addressed in Inspection Report No. 483/84-30.

This allegation as pertaining to nuclear safety-related equipment was not substantiated and is considered to be closed.

(Closed) 7. Inexperienced and underqualified welders were employed at Callaway. Union pipefitters and welders were not hired by Daniels International because there was a shortage of skilled welders. As a result, a welder training program was established. The program was very brief, and it was commonly referred to as a program which produced "instant welders". Journeymen welders generally spend several years developing the expertise required for welding. This program produced welders in a matter of weeks.

Training and requalification of welders is required by the ASME Code, Section IX and by the AWS Structural Welding Code regardless of previous welding experience. There are no minimum or maximum time limits established by the Codes for initial welder qualifications. All welders at Callaway who were performing Code welds were required to qualify prior to performing welds regardless of previous welding experience. Welder qualification or training has been addressed in over 15 NRC inspections including the Construction Assessment Team Inspection. Any deficiencies identified have been corrected and closed by the NRC.

Because of the number of NRC inspections that involved welding and because Daniel welder qualifications meet the requirements of AWS and ASME, this item was not substantiated and is considered to be closed.

(Closed) 8. The welder certification testing program allowed almost everyone who took the examination to pass. Thus, the program permitted inadequate welders to weld safety-related structures.

The inspector reviewed welder qualification documentation for the entire period of construction. Test coupons of welders being tested for certification may either be radiographed or subjected to a bend test depending upon code requirements. The records showed that 33% of the welders tested, whose welds were radiographed, failed the test. In addition, approximately 10% failed required bend tests. Welders were not allowed to weld until they passed the required tests. Welder certification and/or testing was inspected by the NRC during inspections 83-19, 83-15, 83-14, 83-06, 82-19, 82-15, 82-13, 82-06, 81-17, 81-11, 81-09, 81-07, 80-28, 80-26, 80-25, 80-24, 80-23, 80-22, 80-18, 80-15, 80-12,

80-08, 80-05, 80-04, 80-03, 80-02, 79-16, 79-12, 79-03, 78-14, 78-10, 78-07, 78-04 and 77-09. No noncompliances were identified that could be attributed to an inadequate site welder certification program.

This allegation was not substantiated and is considered to be closed.

(Closed) 9. The welder certification testing program did not screen out these bad welders. It was apparent that it was set up for the purpose of producing men to do the work rather than to risk slowing up production by withholding certification from bad welders. In fact, it was reported as common knowledge that the welding certification supervisor for several years would look the other way, and certify technically inadequate welders. He did this in exchange for the payment of bribe money. Workers who were unable to weld adequately graduated from this program.

The welder certification was conducted according to Daniel Procedure QCP-502 which was determined to be adequate. The welding supervisor does not certify welders.

Certification is the result of the welder successfully passing NDE and QC inspections. This certification process was inspected during the Construction Assessment Team Inspection, Report No. 483/82-03 and no deficiencies were observed. There has never been a position of welding certification supervisor. The individual supervising the welder qualification testing does not certify the welders. Certification results from completing welds that successfully pass the required nondestructive examinations. Allegations regarding welder qualifications were previously investigated and not substantiated in Inspection Report No. 483/78-04. This allegation was not substantiated and is considered to be closed.

(Closed) 10. Another technique used to pass welder-applicants was accomplished by allowing applicants to take the test as many times as was necessary. If an applicant failed, the test was not considered as a "test" but rather merely as practice. Welder-applicants took the test as many as five times before an acceptable weld was produced.

Retests of welders who fail the qualification test are permitted by the AWS Structural Welding Code AWS D.1-1 and the ASME Code Section IX, Subsection QW 320. Neither Code limits the number of retests for a welder who fails the qualification test. The only limits are those imposed by the individuals' employer.

Since retesting of welders who fail the qualifications tests are permitted by both welding codes, the inspector has no further concerns regarding this allegation and the allegation is considered to be closed.

(Closed) 11. As a result of using this underqualified and inexperienced work force, much rework had to be done. The pipe hanger department suffered the most because the worst welders were often relegated to

pipehanger welding. Many of these welders were hired during the construction of the Control Building. Pipehangers and supports were slapped in by these inexperienced welders to keep the construction of the Building on schedule. A lot of shoddy work was done, and duplicate work was required by the hanger department in later years.

The inspector visually inspected pipe hanger welds on safety-related systems in the lower elevations of the control building. The welding in this area met the requirements of the applicable Codes and site welding specifications. During construction the inspector observed that temporary pipe hangers were installed to facilitate pipe installation. These temporary hangers were uniquely identified with yellow paint and subsequently replaced with permanently installed hangers. The inspector found no temporary hangers remaining on the piping systems in this area during this inspection. As a result of visual inspection in this area, this allegation was not substantiated and is considered to be closed.

(Closed) 12. This mode of construction creates many problems. Once construction was complete, repair and rework was done on the lower levels of the Control Building two to three years later. Some of the welds could not be reached; some were covered with concrete. This rework weakens the metal because of the required reheating. The tensile strength is reduced and the metal becomes brittle. In addition, the cost of each weld that has to be reworked is double.

The inspector visually inspected pipe supports in the lower levels of the control building on October 18, 1984. The safety-related piping supports inspected were on the essential service water system. No deficient welds or support members were observed. Both the AWS and ASME Codes permit rewelding or repairs. Plant records reviewed indicate that temporary supports were used to support the pipes before the permanent prefabricated supports were installed subsequent to final pipe alignment. The documentation for this area does not indicate that it was necessary to repair or rework Category 1, structural steel two or three years later. This allegation was not substantiated and is considered to be closed.

(Closed) 13. Quality Control inspectors did not always maintain the necessary independence from the pressures of schedule and cost. It was reported that Quality Control inspectors would sometimes approve without inspection welds located in hard to reach areas. These areas are exactly the places where it is more difficult to do welding, and therefore, more important to inspect for poor welds.

This item was addressed in Inspection Report No. 483/84-30, Item 4.a(10). A sampling of the inprocess control surveillance reports were reviewed by the inspector covering the period from 1977 through 1983 and revealed no areas of concern. In addition, the inspector reviewed weld data packages (travelers) that had been signed off by quality inspectors for inspection of fit-up of components prior to welding. The packages included weld inspection records signed by both an inspector and a reviewer. During

the past three years, the inspector personally observed fit-up inspections, inprocess inspections, and final weld inspections of supports and restraints. This allegation was not substantiated and is considered to be closed.

(Closed) 14. Quality Control inspectors were known to favor their friends. They would inspect to a lesser standard than they were required.

The inspector reviewed QA audits and surveillances of QC performance and found no indications of QC inspectors favoring their friends. Further, interviews and discussion with craft personnel still on the job and during the past three years indicate that inspectors did not show favoritism when performing inspections. The inspector's direct observation of QC inspections and his followup inspections, other NRC inspection reports, and licensee and constructor QA audits and surveillance reports do not substantiate the above allegation. This allegation is considered to be closed.

(Closed) 15. Those Quality Control personnel who attempted to be assertive in their positions have been subjected to intimidation and harassment. It is reported that workers have dropped things from heights such that the hardware dropped would land near the Quality Control inspectors. Quality Control inspectors have been splashed with concrete and with water, and one Quality Control inspector had his hand intentionally smashed with a vibrator by a workman.

During NRC inspection 483/82-03, the subject of QC intimidation and harassment was thoroughly examined. QC inspectors were selected at random by the NRC inspectors for private interviews by a team of NRC interviewers. As a result of these interviews, the NRC inspection team concluded that QC personnel were free from harassment, intimidation and undue pressures.

The inspector previously reviewed an isolated case of QC harassment in 1983. A field engineer had used abusive language during a QC inspector's inspection of a containment electrical penetration termination and threatened to void any nonconformances that the inspector submitted. The field engineer was reprimanded and warned that he would be dismissed if any further incidents of this nature occurred.

Interviews with the remaining quality inspectors indicated that they did not feel they were unduly harassed or that they had been intimidated.

Review of records in the site First Aid station did not show any record of a QC inspector being treated for an injured hand during the years that concrete was being installed at Callaway. This allegation is considered to be closed.

(Closed) 16. Quality Control-issued "hold tags" often left workers idle for one or two days. "Hold tags" indicate that there is a problem with the tagged item and all work on this item should be stopped until the problem is resolved. Once the problem is resolved, a Quality Control inspector removes the tag and work can continue on the item. Often, a foreman or supervisor would eventually give the order to proceed with work and ignore the hold tags. Workers questioned the unexplained orders to proceed when the work had not been changed or been seen fixed. Either money was being wasted on non-problems or safety deficiencies were being accepted.

The issue of QC hold tags was controlled by Daniel Procedure AP-VII-02 and AP-VII-13. When an NCR or DR is issued the hold tag is placed on the nonconforming item. The nonconformance is evaluated by the constructor engineering group and/or the architect/engineer. Based on the evaluation by engineering and quality assurance personnel a conditional release may be issued and the supervisor instructed to continue the work. The inspector verified that conditional releases are tracked and closed out when corrective action is complete and the nonconformance no longer exists. This allegation was not substantiated and is considered to be closed.

(Closed) 17. There was a shortage of Quality Control inspectors. One worker reports waiting six, ten hour days for a Quality Control inspector. During this delay, the worker was not permitted to move onto a new work assignment.

Adequacy of quality assurance and quality control personnel staffing was reviewed by the Region III Construction Assessment Team. Staff levels were determined to be adequate. In 1982, the NRC compiled worker to QA/QC personnel ratios for all nuclear plant construction sites within the United States. Callaway's ratio of 7.6:1 showed that Callaway's QA/QC staffing was among the ten best in the country. There was no shortage of Quality Control Inspectors at Callaway. Since the second and third sentences in the allegation have no apparent connection with nuclear safety, the inspector did not address those parts of the allegation. This allegation was not substantiated and is considered to be closed.

(Closed) 18. Deficient electrical cable has been used on safety-related systems throughout the plant. Generic problems regarding the environmental qualification testing of this Class 1E electrical cable have been recognized and acknowledged by the NRC, Office of the Inspection and Enforcement. It is reported that this cable is literally all over the plant.

The NRC issued Information Notice 84-44 concerning the environmental qualification of certain cables manufactured by Rockbestos Company. Six types of Rockbestos cables are used at Callaway.

a. Two of the cable types have been qualified at Sandia Laboratories.

b. One was tested but the test did not meet all SNUPPS requirements.

c. Three cables, plus the cable that did not meet all requirements, are currently being subjected to a two year qualification test program by Rockbestos.

The inspector verified that the Rockbestos cables that are not fully qualified have been tracked and documented as to cable number and location so that proper corrective actions can be initiated in the event the cables do not successfully pass the qualification test program.

Callaway SER Supplement 3 (NUREG-0830), 3.11.3.4, Page 3-17, states, "As a result of recent inspections of the Rockbestos Company, the NRC staff has determined that there is doubt as to the validity of the test reports referenced by the applicant to demonstrate qualification of Rockbestos electrical cables. However, based on the results of review of the information available, the staff concludes at this time that no safety problem exists in the use of these cables."

The allegation is correct in that certain cables have been identified by the NRC as having incomplete environmental qualifications, but the cables at Callaway are identified, have been evaluated by the plant designer for interim acceptance and measures are in place to perform the necessary corrective actions if the cables are not qualified. This allegation is considered to be closed.

(Closed) 19. Electrical cables were installed too early in construction operations. The cables have been exposed to the harsh environment of early construction and have been damaged during construction from hot metal and other elements thrown around during early construction.

On June 12, 1984, it was previously alleged that cables had been damaged by workers climbing on the cables. That allegation was closed in Inspection Report No. 483/84-30 as unsubstantiated. As reported in 483/84-30, the NRC inspector visually inspected the cables and found no damaged cables. Also, these cables were functionally tested during plant preoperational testing with no failures. This allegation was not substantiated and is considered to be closed.

(Closed) 20. Violations of electrical wire bend radius are reported. Eighty to eighty-five percent of junction boxes are too small through the Auxiliary Building and the Control Building. Because these junction boxes are undersized, wires which feed in and out of the boxes are overstressed.

On March 14, 1983, the licensee reported this item to the NRC pursuant to the requirements of 10 CFR 50.55(e). Subsequent review showed 23 undersized junction boxes containing cable minimum bend radius violations. The cables passing through or into these boxes were analyzed by the designer and the cables with obvious violations of minimum bend radius were replaced. Those cables with questionable bend radius violations were subjected to a 1000 volt insulation resistance test to determine whether the bend had degraded the dielectric properties of the cable. This item was closed in Inspection Report No. 483/83-33.

This deficiency had been identified by the licensee quality assurance program a year and one-half earlier. It was correctly reported to the NRC, corrective action was taken and that action reviewed and inspected by the NRC. This allegation is considered to be closed.

(Closed) 21. There are no protective cable jackets and static bleeder wires on cables feeding through the cabinets into the Control Room. Protective cable jackets and half-wrapped, outside electrical interference deflector wire were removed in order to fit the cables through the undersized cabinets.

The inspector examined documentation showing that the design organization approved modifying the prefabricated cable in the cabinets in question. Additional jacket was removed from the prefabricated cable to facilitate installation into these cabinets. The drain wires are connected at the opposite end of each cable. To connect the wire at both ends would tend to induce circulating currents and defeat the purpose of installing drain (static bleeder) wires.

The installation has been inspected by Quality Control inspectors, NRC resident inspectors, NRC region based electrical inspectors and NRR site review teams which considered the installation to be acceptable.

Although the cable jackets were removed and drain wires not connected in the cabinets, the as-built installation meets approved standards since cable jackets must be removed to terminate multi-conductor cables and connecting drain wires at both ends would be an unacceptable installation. This allegation is considered to be closed.

(Closed) 22. High voltage splicers frequently are submerged under water in eight foot deep concrete man holes. These man holes, built for high voltage splicers, have no drainage system. Water collects in the man holes submerging the electrical cables until the water eventually evaporates.

The inspector's review of electrical drawings and cable installation records show that Class 1E high voltage cables were not spliced in concrete manholes. SNUPPS electrical specifications do not permit Class 1E high voltage cables to be spliced. The NRC Environmental Qualification Team reviewed the qualifications of the power cables used at Callaway during their 1983 site visit. Submerged cables

were identified during a Union Electric Quality Assurance surveillance in October 1982. The architect/engineer's analysis of the cable qualification determined that submersion in water would have no deleterious effect on the cable.

As a result of the determination that Class 1E cable was not spliced in the duct banks, this allegation was not substantiated as pertaining to safety-related material or components and is considered to be closed.

(Closed) 23. Insufficient fire proofing has been installed on these high voltage splicers. These splicers have only one-third the required fire-proofing.

As stated in item no. 22, there were no splices in safety-related Class 1E cables in underground duct banks. This allegation was not substantiated and is considered to be closed.

(Closed) 24. The use of vibrators was an ineffective means of spreading concrete. Vibrators did not settle all of the concrete. Throughout the pours, the density of the concrete and the high volume of reinforcing steel created problems with the flow of the concrete. Pockets of air were created around the reinforcement bars. Voids remain in the concrete.

Intervenor contentions regarding concrete quality and voids in concrete were examined and ruled upon by the Atomic Safety and Licensing Board Partial Decision dated December 13, 1982, and the Atomic Safety and Licensing Appeal Board (ALAB-740) dated September 14, 1983. This allegation is is considered to be closed.

(Closed) 25. The only attempt to test the concrete for voids was the visual inspection. Visual inspection, as the only means used to detect voids, reveals only those voids which are apparent on the surface of the concrete. Sound testing is not an effective means of detecting voids because of the high volume of reinforcing steel used. For instance, in the base mat of the Containment Building, there was approximately one pound of reinforcing steel for every nine pounds of concrete.

Intervenor contentions regarding concrete quality, voids in concrete, and inspection of concrete were addressed at the Operations Licensing Hearing and ruled upon by the Atomic Safety and Licensing Board Partial Decision dated December 13, 1982, and the Atomic Safety and Licensing Appeal Board (ALAB-740) dated September 14, 1983. This allegation is considered to be closed.

(Closed) 26. Patchwork of the voids was very limited. The rebar prevented cement finishers from reaching some of the more extensive voids. Thus, grouting was done only in those areas that the finishers could reach.

Concrete patching was addressed in Inspection Reports 483/83-15 and 483/84-22. The inspector's review of Callaway Civil Specification C-103 and Daniel Procedures WP-109 and CP-109 indicate that concrete patching criteria were specified and that concrete patches were installed according to approved work procedures and inspected according to approved Quality Control Procedures. Review of concrete pour cards for repair pours shows that Category 1 repairs were controlled according to approved procedures and specifications. This allegation was not substantiated and is considered to be closed.

(Closed) 27. Defective bolts were used to install the embeds on concrete ceilings of the Control Building. These embeds were not installed at the time of the concrete pours of the ceilings as planned. Instead, these plates were placed with expansion bolts. Some of the expansion bolts used were "Redheads". "Redheads" have been found by many construction companies to be defective.

The inspector's review of plant records pertaining to concrete expansion anchors indicates that only Hilti and ITT-Phillips anchor bolts were used in safety-related applications. "Redheads" were found to have been used in some temporary applications and for mounting fire extinguisher brackets on walls. Plant specifications did not permit the use of self drilling expansion anchors (Redheads) in safety-related systems. This allegation was not substantiated and is considered to be closed.

(Closed) 28. Drainage in the Auxiliary Building is poor. Six to eight inches of water on the lower floor has been reported repeatedly. Possibly there is debris clogging the pipes or the pipes are too small to handle the large volume of water.

This allegation appears to be a repeat of a previous allegation received on June 12, 1984, which was addressed in Inspection Report No. 483/84-30, Item 4.a(15). This allegation is considered to be closed.

(Closed) 29. Pipehangers soiled with metal filings and dirt during the flood of the Reactor Building on June 2, 1984, have not been cleaned. These hangers were cleaned on their outer, easy to clean side, but were not cleaned inside the band which extends entirely around the pipe. The integrity of the pipe will be jeopardized by these dirty hangers.

The "flood" consisted of a spill of water that reached a depth of approximately six inches on the reactor building floor outside the secondary shield structure. During an inspection of this area of the reactor building on October 11, 1984, the inspector determined that no safety-related pipe clamps (bands) were installed at an elevation of less than six inches above the floor. Therefore, the pipe clamps (bands) were not submerged. This allegation was not substantiated and is considered to be closed.

(Closed) 30. Construction drawings were not being updated and revised as necessary. For instances, laborers cutting a trench to lay a pipe discovered a six-inch diameter pipe. There was no record of the pipe on the construction drawing. The identity of the pipe was unknown to the crew as well as to the supervisor.

The inspector's review of site plans did not reveal a nuclear safety-related six-inch diameter pipe buried outside the power block that might have been discovered by laborers' entrenchment activities. Control of drawings and design change control have been inspected by the NRC over nine times during the construction phase including the Integrated Design Inspection and C.A.T. Inspections. No problems were identified concerning drawing control. This allegation was not substantiated and is considered to be closed.

(Closed) 31. Construction drawings were defective. A concrete column was poured according to the construction drawings. It was later discovered that this column was too high to meet the necessary connecting beam. The concrete column had to be entirely removed. Construction of the column was halted for three months thereafter, while the drawings were being corrected.

The inspector reviewed site construction records and interviewed personnel who had spent several years on site and was not able to substantiate that this allegation ever occurred in the nuclear safety-related areas of the facility. This allegation is considered to be closed.

(Closed) 32. Poor construction resulted from engineering errors in 5005 construction drawings. 5005 drawings were used for the installation of cable tray supports in the Control Building and the Auxiliary Building. As a result of the poor engineering, hangers were not centered properly on the embeds. The nonconformance report attributed the poor construction to craft error. In fact, the error was due to the incorrect drawings issued by engineers. Quality Control approved this inaccurate construction and accepted "as is". "As is" approval did not reflect appropriate engineering review.

The 5005 drawings referred to above were not construction drawings. FS-E-5005 drawings or "Field Sketches" were shop drawings used in the constructor electrical fabrication shop for prefabrication of some cable tray supports and did not include tolerances for attachment to embeds. These tolerances are specified on the civil engineering/ installation drawings and do not require each support to be centered on the embeds. This allegation was not substantiated and is considered to be closed.

(Closed) 33. Undocumented rework was performed on the Transfer Tube. Under cover at night two boilermakers welders and two helpers removed a piece of this stainless steel tube in order to do repair work within the tube. This work was done without any paper or documentation and without any Quality Control inspection.

The inspector reviewed nonconformance reports 2SN-5088-CW, 2SN-5089-C, 2SN-5062-CW, 2NN-0389-C, 2SN-5462-C, and 2SN-6020-CW. These nonconformances indicate that rework or repairs on the transfer tube were in fact documented, work supervised and inspected, and that the repair work was reviewed by the appropriate personnel in the organization.

Discussions with the two individuals who are cognizant of the work in this area who are still onsite indicate that no undocumented work was performed on the transfer tube and that there was adequate QC coverage. This allegation was not substantiated and is considered to be closed.

(Closed) 34. The reliability of the on-site laboratory is challenged by inaccurate test results. During the flood of the Reactor Building of June 2, 1984, fiberglass insulating blankets were soaked with borated water. Eighty-five blankets were removed and sent to the onsite laboratory to be tested for damage caused by the caustic acid. The on-site laboratory concluded that the borated water soaked blankets did not need to be replaced. The strength of the blankets had in fact deteriorated such that they could be shredded by hand. The blankets were ultimately found to be defective by the pressure of the workers and were replaced.

The inspector's investigation of this allegation found that the plant laboratory was requested by the contractor to perform a chemical analysis of the insulation per NRC Regulatory Guide 1.36. The laboratory report indicates that the insulation was analyzed for leachable chlorides, fluorides, sodium and silicates. No testing for brittleness was performed since it was not requested. Replacement of the blankets was the result of their being determined to be unacceptable by the contractor Quality Control inspector. This allegation was not substantiated and is considered to be closed.

(Closed) 35. Dosimeters were not worn by workers in the Reactor Building while fuel was being loaded in the Reactor Core. SNUPPS Radiological Emergency Response Plan requires that all personnel entering the controlled areas be issued thermoluminescent dosimeter badges. Most workers in the Reactor Building had not been issued badges nor had they been given the necessary radiation protection training. Without radiation detection badges, it was impossible for anyone to determine the level of exposure to radiation while working in the Reactor.

Investigation has determined that the reactor building was a radiation control area (RCA) only when the fuel assemblies containing startup sources were being placed in the reactor vessel. The inspector reviewed the report of a radiation survey performed at 2230 hours on June 16, 1984, showing that radiation levels did not require personnel dosimetry. This survey was performed subsequent to placing the fuel assemblies in the reactor vessel and before the RCA was terminated. The Radiological Emergency Response Plan only addresses actions during an emergency condition, not routine plant activities. Fuel

load is not an emergency. Employee radiation protection training was reviewed in Inspection Report No. 483/84-35 and was found to be acceptable. Employees entering the protected area are required to pass Radiation Worker Category I training which addresses radiation theory, health physics programs, and limits. Radiation worker Category II training, covering health physics practices and plant policies is given to employees entering radiological controlled areas.

This allegation was not substantiated as pertaining to the safety of plant workers and is considered to be closed.

(Closed) 36. Psychological testing conducted in late 1983 and early 1984 failed to remove the potentially bad elements from the work site. Acts of sabotage have occurred since the examination was administered. On July 4, 1984, there was such an act. Breakers in the Motor Control Room in the Auxiliary Building were shut off. It has been reported that in connection with the circuit breaker shut off, a voice announced over the communications system at the plant, "UE - Have a nice fourth of July". For the following days, craft workers made a joke about "UE - Have a nice day".

The alleged "act of sabotage" that occurred on July 4, 1984, was investigated by the licensee's security organization. This investigation was reviewed by the NRC's safeguards inspectors in Inspection Report No. 483/84-33. The NRC report did not identify any discrepancies in the licensee's investigation and the event was considered to be closed. Screening of personnel, including psychological testing, has been reviewed by the Region III Safeguards Section and was found to meet NRC requirements. This allegation is considered to be closed.

(Closed) 37. The psychological test failed as a screen for employees, but served as a means of harassment. Workers were coerced into taking the test. Everyone on site was given an opportunity to take the test. The test was not required although non-tested employees who had been on site for less than three continuous years of service could not be employed in restricted areas, that is behind the fence. Those who refused the test faced certain termination for lack of work opportunity.

The inspector reviewed the requirements for screening persons who are to be authorized unescorted access to plant protected areas and determined that the licensee followed the provisions of American National Standard ANS 3.3 in not requiring psychological testing for persons with uninterrupted employment of three or more years. Since the allegation states that everyone had the opportunity to take the test to qualify for the limited number of temporary positions inside the restricted area, it does not appear that harassment was involved. The personnel involved were contractor personnel whose numbers were being reduced as construction was completed and were to be used during plant startup, not as permanent employees.

This allegation was not substantiated as to employees being harassed or coerced to take the test. The test was administered to satisfy the requirements of the Security Plan. The provisions of ANS 3.3 were properly applied as a precondition for unescorted access to protected areas. This allegation is considered to be closed.

(Closed) 38. The psychological test, the Minnesota Multiphasic Personality Inventory is a test intended for psychological diagnosis. There is no pass or fail standards for the diagnostic test. At the Callaway site, a pass/fail system was imposed on the test. In fact, several dozen employees were terminated because they failed to pass the test.

Investigation by the inspector indicates that the Minnesota Multiphasic Personality Inventory (MMPI) Test was not administered at Callaway and that personnel were not terminated for failing the MMPI. Screening of personnel for unescorted access to plant areas was performed by the licensee's contractor, IPAT Corp., using tests developed by IPAT. No workers were terminated as a direct result of the screening; however, only persons having unescorted access authorization were considered for retention to work in vital areas after construction was complete. This allegation was not substantiated and is considered to be closed.

(Closed) 39. The general attitude of workers about construction operations at the Callaway Nuclear Power Plant is that it is a disgrace to the construction industry.

Interviews with craft workers conducted in 1982, 1983 and 1984 by the resident inspector indicates that they were proud of their performance at Callaway. The Region III Deputy Regional Administrator interviewed crafts, supervisors and quality inspectors prior to fuel load and the interviewees were unanimous in their opinion that Callaway was a well constructed plant.

Callaway's SALP report ratings by NRC inspectors have been consistently among the highest in NRC Region III.

As a result of NRC's interviews with workers and ratings issued by inspectors, this allegation was not substantiated and is considered to be closed.

(Closed) 40. There have been enormous amounts of cost overruns at the plant. There were excessive amounts of manpower on site. Approximately 200 electricians were hired in late 1983. Despite this almost one-third increase in manpower, there had been no increase in the work assignments. In general, the plant was overwhelmed with manpower. Seven, ten to twelve hour shifts became mandatory. Employees who could not maintain this demanding work schedule and missed a day of work were terminated. A medical excuse, a death in the immediate family or a call to jury duty were the only acceptable excuses for any absence. Bogus medical excuses were available on site for three dollars. Less work was done during this manpower overload than previously in an eight hour day.

Cost overruns are not within the NRC's scope of inspection responsibility. This allegation is considered to be closed.

(Closed) 41. People were idle on the job site. Some slept at work; a few brought in alarm clocks to wake up in time to go home.

Whether construction workers are idle on the job site is not within the NRC's scope of responsibility. This allegation is considered to be closed.

(Closed) 42. Illegal drugs, alcohol, gambling and prostitution could be found on the job site. In February of 1984, seven Quality Control employees were fired for alleged drug use. Please refer to the attached articles from the Kingdom Daily Star-Gazette. The Government Accountability would like information about the drug-related terminations and related developments at the Callaway Nuclear Power Plant, including but not limited to, the attached list of questions.

The licensee had a drug prevention program during construction. The inspector observed the use of trained drug detection dogs used to periodically search the site for drugs and reviewed the results of these searches with licensee management.

Lunch boxes, packages, and vehicles (including those of NRC inspectors) were searched as they entered the site.

Drug awareness training was presented to supervisors and drug abuse lectures and literature were presented to workers. Personnel using or possessing drugs or alcohol onsite were terminated.

The inspector's discussions with workers and supervisors failed to reveal evidence that prostitution could be found on the job site, nor did any interviewee know of organized gambling onsite.

This allegation is considered to be closed.

(Closed) 43. Workers were almost encouraged not to accomplish too much too quickly. One witness reports that he was physically threatened at work for working too hard. He told his foreman and it was taken as a joke. Other workers report that crews were eventually split up if they were working too fast.

Worker productivity is not within the scope of the NRC's responsibility. This allegation was not substantiated as pertaining to nuclear safety and is considered to be closed.

(Closed) 44. Poor management was another cause of the cost overruns at the plant. For instances, it is reported that two electricians spent eight hours hanging one electrical light fixture. This fixture could have been hung by one man in one hour. Much of the delay was due to the lack of work assignments. Work assignments were required for any job on site.

Sometimes a worker would be idle for one or two days waiting for such an assignment. In the meantime, the worker would appear to be busy or just sit around until he was issued a work assignment.

Worker productivity is not within the NRC's scope of responsibility. This item is considered to be closed.

(Closed) 45. Cost overruns can also be attributed to the high volume of discarded materials. For instance, one individual reports that over the course of his employment as a dump truck driver, he dumped several thousand pounds of welding rods. Welding rods are very expensive; many companies control the rods when the rods are issued to the welders as well as when they are returned. Daniels, on the contrary, only controlled these rods when they were issued to workers. It is reported by one worker that he has seen, on several occasions, welders take out ten pounds of welding rods in the morning, not use any of the ten pounds of rods during the day, and later dispose of the ten pounds in the barrel provided on site.

Approved weld material control procedures do not permit low-hydrogen welding electrodes that have been exposed to the atmosphere, moisture, or that have damaged coatings to be used to weld plant components. Weld material controls were inspected during NRC Inspection Report Nos. 483/81-19, 483/82-03, 483/82-13, 483/82-15, 483/83-05, 483/83-11, 483/83-14, 483/83-19, and 483/78-09. These inspections indicate that weld materials (electrodes) were being controlled according to the approved procedures.

As it pertains to nuclear safety-related welding activities and controls, this allegation was not substantiated and is considered to be closed.

(Closed) 46. Barrels were provided on site for disposal of welding rods. The barrels were filled with welding rod stubs as well as unused welding rods. These barrels were later dumped in on-site landfills. Welding rods were prohibited in the landfill. It was also against regulations for workers to dump their garbage from home in the landfill, but this was routinely ignored. Many people, including the general supervisor, would bring garbage from home and dump it in this landfill.

Unusable weld electrodes were placed in locked 55-gallon drums. The NRC's concern in this area is that damaged or used electrodes and electrodes that had been exposed to the plant environment longer than the allowable time might be reused in welding safety-related systems. After rejected or unusable electrodes are removed from the site, the licensee may dispose of the electrodes according to his procedures or policy for trash or scrap disposal. Disposal of the worker's garbage in the landfill is not an NRC concern as it does not pertain to nuclear safety-related activities. This allegation is considered to be closed.

(Closed) 47. Many acts of sabotage have also been reported. The NRC, in its latest inspection reports, admits to eleven acts of malicious mischief regarding the destruction of electrical cables. Workers have found various items in pipes such as scraps of steel wire, electrical cables, two by four inch wooden boards, and welding rods. These pipes had to be cut open in order to remove the material. It was generally understood by workers that these acts were done deliberately to slow up work production.

Damaged electrical cables were addressed in Inspection Report No. 483/84-30, Item 4.a(3).

The licensee reported pipe cleanliness as a construction deficiency pursuant to 10 CFR 50.55(e) in July 1981. Corrective action regarding this deficiency was inspected and closed out in Inspection Report No. 483/83-19.

Piping systems were flushed according to approved procedures after construction was complete. Systems have been tested under the preoperational testing program and determined to have met applicable acceptance criteria by the NRC Region III Test Program Section.

Since concerns expressed in this allegation were previously addressed by either the NRC or the licensee, this allegation is considered to be closed.

(Closed) 48. Although these construction and Quality Assurance problems would be serious under any circumstances, they are made more for the following reason. The Nuclear Regulatory Commission, Region III has been violating its own rule regarding on-site inspections. The construction inspection offices of the NRC profess that all on site inspections by the NRC are to be unannounced to personnel on site. Quite the contrary, many workers have reported that employees on all levels were prenotified by their foreman or general foreman of upcoming NRC inspections. Several days before the inspection, the job site would be prepared for the NRC. Workers, who had not been directly informed, would know of an upcoming inspection when they were taken off of their regular job assignment and put onto a clean up crew. This prenotification weakens the NRC inspection process itself and raises serious doubts about the reliability of the staff conclusions concerning the quality and safety of the plant.

The general NRC policy is that inspections are unannounced; however, when a certain activity, such as a reactor vessel set, is required to be witnessed by the NRC, it is necessary to schedule the inspection in advance. The intent of the NRC policy is to encourage unannounced inspections and at the same time permit improved utilization of manpower through adequate planning and consideration of the licensee's schedule of operations. There has been a resident NRC inspector assigned to Callaway since 1979; therefore, construction workers were aware that the NRC was present on a continuous basis. This allegation may be referring to several plant tours by NRC Commissioners, NRR staff, and RIII management prior to issuance of the operating license. These were not

considered to be inspections. They were scheduled tours which were jointly planned and conducted by the NRC and the licensee. This allegation is considered to be closed.

3. Restrictions to Operating License NPF-25

The following items relating to fire protection issues were included in the Callaway operating license as restrictions to exceeding power levels of five percent of rated power.

a. Att. 1; G.1 - Adding Additional Emergency Lighting in Safe Shutdown Areas. Licensee engineering determined that lighting problems existed in four areas. The inspector verified that emergency lights have been installed in the two electrical penetration rooms and in the two Class 1E switchgear rooms. It was also verified that emergency lighting is provided for the safe shutdown panels. This item and Open Item No. 483/84-15-05 are considered to be closed.

b. Att. 1, G.2 - Communications to Support Shutdown from Outside the Control Room. The inspector verified that a Gai-Tronics handset with speakers and a telephone have been installed in the auxiliary shutdown panel room and that they are in working order. This item and Open Item No. 483/84-15-06 are considered to be closed.

c. 2(7.)(a) Fire Protection. The inspector verified that the Halon and sprinkler systems in the south electrical penetration room were operable and that fire barriers had been installed in penetrations in the auxiliary building and that the installation of thermal detectors in containment are complete. This item is considered to be closed.

4. Construction Deficiency Reports, 10 CFR 50.55(e)

The inspector examined the licensee's corrective action relative to the following construction deficiency reports:

(Closed) 483/84-09-EE - Electrical floor penetrations had shrinkage cracks greater than allowed by specifications. The inspector verified by observation that the seals have been repaired or replaced as indicated in the licensee's final 10 CFR 50.55(e) report. This item is considered to be closed.

(Closed) 483/84-16-EE - SB-3 Limitorque valve operator failed in the RHR system due to a key failure on the shaft. The inspector verified that the Limitorque operators have been replaced with type SB-1 operators. These replacement operators were tested during preoperational testing without failures. This item is considered to be closed.

(Closed) 483/84-17-EE - Indeterminate qualification of terminal blocks in Limitorque actuators. The licensee reported a deficiency in the qualification status of two types of terminal blocks used in Limitorque actuators for safety-related applications. No documentation is available to show proof of qualification of Kukla K622 and Buchanan 0824 termination blocks.

The inspector reviewed field rework plans FM-236-001, FM-223C-002 and FM-225-001 showing that the Kukla K622 and Buchanan 0824 terminal blocks had been replaced with qualified Marathon 300 series terminal blocks. This item is considered to be closed.

5. Exit Interview

The inspector met with licensee representatives at intervals during the inspection and summarized the scope and findings of the inspection activities.