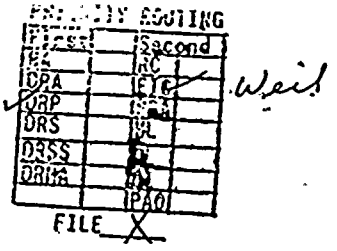
Indiana Michigan
Power Company
P.O. Box 16631
Columbus, OH 43216

INDIANA
MICHIGAN
POWER

AEP:NRC:1074

Donald C. Cook Nuclear Plant Units 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
ALLEGATIONS FROM A FORMER MAINTENANCE WORKER



U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Attn: Mr. A. Bert Davis

September 9, 1988

Dear Mr. Davis:

Mr. E. G. Greenman's letter of August 10, 1988, detailed several allegations from a former maintenance worker who had been employed at the Donald C. Cook Nuclear Plant by Catalytic Industrial Maintenance Company (CIMCO).

The results of our investigation concerning the allegations are provided as an enclosure to this letter. This enclosure is considered exempt from disclosure according to CFR Part 2 Title 10 Section 2.790 of the NRC's Rules of Practice, and we therefore request that this information not be placed in the NRC Public Document Room.

On August 24, 1988, NRC Resident Inspector Bruce Jorgensen advised W. G. Smith, Jr. that the third item in Allegation No. 1 could be ignored. He was advised by your office that a Region III Inspector had resolved the issue during an inspection trip to the Cook Nuclear Plant.

This document has been prepared following Corporate procedures which incorporate a reasonable set of controls to ensure its accuracy and completeness prior to signature by the undersigned.

Sincerely,

M. P. Alexich
Vice President

edg

Enclosure

cc: D. H. Williams, Jr., w/o encl.
W. G. Smith, Jr. - Bridgman, w/o encl.
R. C. Callen, w/o encl.
G. Bruchmann, w/o encl.
G. Charnoff, w/o encl.
NRC Resident Inspector - Bridgman, w/o encl.

ENCLOSURE 1 TO AEP:NRC:1074

ALLEGATIONS FROM A FORMER

CIMCO MAINTENANCE WORKER

RESPONSE TO ALLEGATIONS

(R-111-88-A-0053)

ALLEGATION NO. 1

During a maintenance operation which involved removal of a manway cover on either the number 2 or 3 steam generator in Unit 2, bolts for the cover broke as a result of the improper use of air- and/or motor-operated tools. This apparently occurred during a Unit 2 outage in the Spring of 1987.

Review and disposition of these allegations should include the following information:

- An evaluation of the use of air/motor-operated tools by CIMCO during steam generator maintenance. Please review the circumstance surrounding the allegedly broken bolts and address specific actions taken in regard to the alleger's concerns.

- An evaluation of the circumstances surrounding the alleged failure to drain the steam generator as required by the Radiation Work Permit.

- An evaluation of the use of respiratory equipment during steam generator maintenance. Please address any changes in your policy which may have occurred between the alleged instance in 1982 and the present.

RESPONSE

- On March 10, 1987, the Cook Nuclear Plant Construction Department removed primary manway covers on Unit 2 steam generators (SG) Nos. 21, 22, 23 and 24 in support of SG primary side activities. Removal of manway cover bolts is a generic problem throughout the industry. Five bolts did in fact have to be drilled out. The procedures for removing and replacing manway bolts is documented and follows accepted industry practice. The use of air or hydraulic powered impact tools are also industry accepted methods for removal of manway bolts. Details of the evaluation of the use of air or hydraulic powered tools by CIMCO is contained in Attachment 1 to this enclosure (Internal Memo, Steam Generator Manway Bolt and Bolt Holes, dated April 2, 1987, to the file).

  Further corrective actions were taken during a refueling outage in the fall of 1987. Attachment 2 to this enclosure (American Electric Power Service Corporation Mechanical Engineering Division Trip Report dated September 15-29, 1987) details SG Primary Manway Bolt Hole Inspection and Repair. A review of this report reveals that we are aware of manway bolt problems and have an active program to track and maintain records of such problems.

- A search of appropriate 1987 Control Room Reports, Condition Reports, Safety Event Reports, Licensing Event Reports and Radiation Work Permits resulted in no information about failure to drain a steam generator

- This allegation was resolved by a NRC Region III Inspector and reported to Cook Nuclear Plant Manager W. G. Smith, Jr. by the Plant Resident Inspector, Bruce Jorgensen on August 24, 1988.

ALLEGATION NO. 2

Following the August 25, 1987 layoff, CIMCO only retained inexperienced people who were not qualified for their jobs. CIMCO used people from a gas distribution plant and "instead of redlining drawings, CIMCO's got a young foreman who's learned political survival."

- An evaluation of the experience requirements used by CIMCO in their hiring process.

RESPONSE

- was contacted and interviewed in the presence of . The following is the policy of CIMCO:

It is CIMCO's policy that the employment according to existing agreement, such as General Foreman, Foreman, etc., comes under THE GENERAL PRESIDENTS' PROJECT MAINTENANCE AGREEMENT. Article II states in part: "Management right - The Union understands that the Contractor is responsible to perform the work required by the Owner. Therefore, the Contractor has the complete authority and right to:

+ Plan, direct and control the operation of the work.

+ Decide the number of employees required.

+ Hire and lay off employees as the Contractor feels appropriate to meet work requirement and/or SKILLS required.

+ Name the foreman.

+ Transfer employees with special SKILLS.

+ Determine the need and number of foremen."

In August of 1987 CIMCO retained a young foreman (, Local #190) and laid off (Local #190). and all the pipefitters craft that CIMCO retained were MORE than qualified for the work that CIMCO was performing. is, at this time, a Catalytic Supervisor on another job site. All of CIMCO's pipefitters are trained to 12 MHP 5080 SP.001. This document established the program used to provide training to CIMCO supervisory and craft personnel. Pipefitters are trained in the following Cook Nuclear Plant Procedures:

PMI-2220	System Internal Cleanliness
PMSO.037	Concrete Drilling Permit
PMSO.075	Opening of Possible Press. Lines
12 MHP 5021:001.031	Fire-Barrier Penetration Seals

12 MHP 5021.001.033	Anchor Bolts
12 MHP 5021.001.063	Install. & Fab. of Component Supports, Hangers, & Restraints
12 MHP 5021.002.005	Steam Generator Manways
12 MHP 5021.001.064	Instrument & Control Air Install.

ALLEGATION NO. 3

Employees can purchase drugs in the plant parking lot. Urine samples can be purchased for the Fitness for Duty program and the collection of the urine sample is not monitored. Cranberry juice is used by plant employees to thwart Fitness for Duty testing.

- An evaluation of the alleger's concerns regarding the availability of drugs in the plant parking lot and the subversion of the Fitness for Duty testing program.

RESPONSE

- An investigation by Cook Nuclear Plant Security, Report No. was completed by CIMCO's Fitness for Duty (FFD) is an approved Cook Nuclear Plant program, and CIMCO uses the same laboratory, , as Cook Nuclear plant uses in the chemical screening of employees.

  The investigation commenced with the review of appropriate security program documentation and information and resulted in no evidence to support the allegations as stated. The review included interviews with Cook Nuclear Plant security management and supervisors and the several Local Law Enforcement Agencies (LLEA) patrolling the Cook Nuclear Plant owner controlled area. Special attention was given to the Unit Reports, the Cook Nuclear Plant Security Patrols, and the site visits by LLEA.

  The Special Investigator for the Berrien County Prosecutor's Office was also interviewed to learn if the . had any knowledge of drug sales at Cook Nuclear Plant. In conclusion, no evidence could be developed to support the allegation as stated.

  The FFD Program is under continuous review and all employees are being monitored and observed by supervisors for any violations. We are not aware of any clinical evidence to indicate any truth to the statement that "cranberry juice use will thwart fitness for duty testing."

  The chemical testing for drug screen urinalysis samples are handled with the utmost care. The Laboratory processing collections at the site or at their nearby facility, involves comprehensive control measures from the time of collection, through handling and testing. Appropriate identification is required from the time the specimen is excreted to the time testing is completed. The specimen

is signed for by everyone handling the specimen and purpose given for all said handling. All results from testing are handled with the utmost in care and confidentiality, being hand delivered or mailed in a sealed envelope.

ATTACHMENT 1 TO ENCLOSURE 1 TO NRC:AEP:1074

INDIANA & MICHIGAN ELECTRIC COMPANY

AMERICAN ELECTRIC AEP POWER SYSTEM

DATE: April 2, 1987

SUBJECT: Steam Generator Manway Bolt And Bolt Holes

IND. & MICH. ELECTRIC CO. RECEIVED APR 07 1987 DONALD C. COOK PLANT TECHNICAL ENGINEERING

FROM:

TO: File

On March 10, 1987, we were in the process of removing primary manway covers on Unit 2 steam generators. The Construction Department, which normally removes and replaces these manways, first attempted to remove the bolts on steam generator #22 and #23. In the first attempt they tried to use a one and one half inch impact wrech which is normally used to break the bolts loose. When this did not work they received permission from maintenance to use a hydraulic torque wrench and to go up to approximately 3,745 ft./lbs. of torque.

Even with the increase to 3,745 ft./lbs., bolts did not come loose. After discussion with Westinghouse and AEPSC it was decided that to break the bolts "loose" it was acceptable to apply as much torque as we could (in increasing increments). Eventually, the majority of bolts "broke loose" at approximately 9,800 ft./lbs. After the bolts were broken loose, the majority of bolts were able to be "backed out" without exceeding 1,800 ft./lbs. of torque (they backed normally). There were, however, 5 bolts on steam generator #23 that would not back out. These bolts were eventually drilled out.

After the work on steam generator #22 and #23, the Construction crew went to steam generators #21 and #24. Although we anticipated similar difficulties on these manways, the bolts broke free normally and backed out normally.

From discussions with Westinghouse and AEPSC, it was verified that other utilities have experienced difficulty with manway bolts or studs (some utilities use studs; others use bolts). Westinghouse personnel stated that "stuck" bolts can be attributed to overtorquing, improper lubrication upon installation, and installing the bolts/studs into improperly cleaned holes. The Westinghouse personnel stated that when a bolt is stuck it could be difficult to attribute the cause to any one specific item - all three reasons/causes could have an influence.

From our work packages and log books, the manways were installed the last time on steam generators #22 and #23 on May 15, 1986. It appears that steam generators #21 and #24 were worked after steam generators #22 and #23. From our work packages, all of the manways were signed off on May 16, 1986. From these packages and from conversations with Construction, one crew worked generators #22 and #23 and a different crew worked generators #21 and #24.

Steam generator primary manway cover removal and installation is controlled by procedure #**12MHP5021.002.005 (Rev. 5 was used for the subject manway installation), "Steam Generator Primary Cover Removal And Installation." This procedure addresses use of lubricant, and a two step torquing sequence. Additionally, it requires that, after the two step torquing sequence, all bolts are removed one at a time and relubricated and then torqued to the final torque value (1,800 ft./lbs.). Additionally, there is

an inspection hold point after these steps that states: "verify that the manway cover bolts have been torqued to a value of 1,800 ft./lbs. by checking a minimum of 4 bolts in the presence of the Q.C. Inspector. Record the tool number of the torque wrench and/or the torque converter as applicable. Sign off when acceptable." All of these steps were appropriately documented in the maintenance procedure.

In reviewing the overall processes, it appears that the removal, cleaning, lubrication and torquing of manway bolts at this time was consistent with practices established over the years. The one difference this time was that a hydraulic torque wrench was used for the first time.

A hydraulic torque wrench appears to be a very good torquing device. It is light, easy to use, and should consistently apply the same torque values. The torque developed is depended upon the "head" used and the fluid pressure set by a regulator. Per the technical description for the wrench, the pressure developed - which sets the torque delivered - must be set by first setting the pressure/regulator at zero and then increasing the pressure. Possibly, in working on steam generators #22 and #23 this pressure may have been set incorrectly. The Maintenance Department will be revising its procedure to require an additional check of the set pressure.

During the inspections of the manways and bolt holes, it was discovered, as expected on steam generator #22 and #23, that several bolt holes required repairs. These holes will be helicoiled. Also, as expected, steam generator #24 bolt holes were found to be acceptable (there was no indication that the bolts in this generator had been overtorqued). However, it was found that all bolt holes on steam generator #21 were in need of repair. Essentially, it was found that all of the holes were "oversized" (the no-go gauge went too far into the holes). The reason for this is unknown. All bolt holes on steam generator #21 are being helicoiled.

It should be noted that the condition of most of the "bad" holes on #22 and #23 was no different than those on #21 (they were oversized and/or "bell-mounted"). Except for those few holes on 23 Hot Leg which had physically damaged threads, the "oversized" holes on those generators are indistinguishable from those on #21 and may have nothing to do with the overtorquing incident.

As an additional precaution to help preclude galling of bolts to the manway covers, washers will be used with all bolts. The maintenance procedure will be revised to specify the use of washers and also to specify lubing of the washers. Additionally, maintenance will be reviewing the need to further specify that bolt holes will be only cleaned with a brush. Presently, the procedure says "using a stainless brush" but may be advantageous to require a softer brush.

In summary, other utilities have experienced problems with manway bolts/studs. Our recent incident appears to be the first of its kind on the D. C. Cook Units. Although the cause may never be precisely known (possibly a combination of overtorquing, improper lubrication, and/or improper cleaning of bolts and bolt holes), the most likely suspect is overtorquing of the manway bolts with a hydraulic torque wrench. This resulted in damage to threads and holes on steam generators #22 and #23. The maintenance procedure will be revised to further ensure that manways are properly replaced. On the enlargements of the bolt holes on steam generator #21, (and #22 and #23) a question remains. This condition may have existed for a considerable period

of time and may date back to the original manufacturing of the generator. It is also possible that during each manway removal the cleaning of the bolt holes caused removal of an inconsequential amount of metal but, over the years, the accumulated metal removal was sufficient to indicate necessity for repair (Note: the condition on #24 is not consistent with the condition found on the other generators).

Additional precautions presently being investigated include gauging of the bolts themselves and considering the desirability of gauging Unit 1 manway bolt holes during the next refueling outage.

ATTACHMENT 2 TO ENCLOSURE 1 TO AEP:NRC:1014

7453(1-84)IAP50
FORM QC-25
REV.

INDIANA AND MICHIGAN ELECTRIC COMPANY
DONALD C. COOK NUCLEAR PLANT

AEP POWER SYSTEM

TRIP REPORT

PRIORITY
B

SUBJECT: D. C. Cook Plant Unit 2 Primary Side Services

LOCATION: Cook Plant

FROM: TRIP DATE:

TO: APPROVED DATE 10/19/87

CC: M. P. Alexich
J. J. Markowsky/P. G. Schoepf
S. H. Steinhart/R. I. Pawliger
D. R. Hafer/J. R. Jensen
W. G. Smith, Jr. - Bridgman
J. F. Kurgan
R. Rickman - Bridgman
J. Greendonner - Bridgman
E. Jackson, C.E. - Windsor, CT.

PARTICIPANTS:

(HE&P); (I&M);
Combustion Engineering (CE) and (Conam)

PURPOSE OF VISIT:

To support the following steam generator (SG) primary side activities as performed by Combustion Engineering (CE); Eddy Current Testing (ECT), tube end repair, tube plugging, and primary manway bolt hole inspection and repair.

RESULTS: OBJECTIVE ACCOMPLISHED X YES ____ NO

ACTION ITEMS GENERATED X YES ____ NO

DETAIL

HE&P personnel were at the plant during this period to provide technical support for the following SG primary side services.

o SG ECT and Tube Plugging - As a result of ECT inspection, the total pluggable tubes for each SG is as follows: 14 in SG 21; 17 in SG 22; 17 in SG 23; and 30 in SG 24.

o SG Primary Manway Bolt Hole Inspection and Repair - As a result of the bolt hole inspection performed on the primary manways (hot leg and cold leg) of each steam generator, a total of 22 bolt holes were repaired with a Heli-Coil insert. The location of the repaired bolt

Signature

holes is documented in Table I. A more detailed discussion of each activity is as follows:

SG Eddy Current Inspection

Daily job status reports (both tube analyses and production) were reviewed with plant ISI and AEPSC personnel. Eddy current test results were transmitted daily to AEPSC for incorporation into the eddy current data base.

A few problems were encountered with data acquisition and tube plugging equipment however, these problems were resolved and did not significantly impact the overall schedule.

As a result of the eddy current inspection, the total pluggable tubes for each steam generator are as follows: SG 21-14; SG 22-17; SG 23-17; and SG 24-30.

SG Primary Manway Bolt Hole Inspection and Repair

During removal of the Unit 2 SG primary manway bolts, the plant experienced 40 seized bolts at various locations in 7 of the 8 primary manways. Thirty-three of the seized bolts

were located in bolt holes without Heli-Coils and 7 were located in bolt holes that were repaired with Heli-Coils during the March 1987 outage.

Of the 40 seized bolts, 5 bolts were removed with less than 3200 ft. lbs of torque and 1 bolt was removed with a torque greater than 3200 ft. lbs; 8 bolts were removed with an air operated impact wrench; and 26 bolts were removed by machining.

A visual inspection of the removed primary manway bolts indicated that a number of the bolts experienced severely galled threads. A visual inspection of each bolt hole thread was performed to evaluate its condition. This included, if possible, threading a bolt into and out of the bolt hole. Table II documents the bolt hole locations that required Go/Not-Go gauging as a result of a bolt being removed by an impact wrench, a torque greater than 3200 ft-lbs, or machining. As a result of the visual inspection, several additional bolt holes were gauged.

Final review of the visual inspection and gauging results identified 22 bolt holes as requiring repair. In all cases, bolt hole repair was by a Heli-Coil insert. Table I documents the location of the repaired bolt holes.

A series of meetings was held with CE, AEP, and plant personnel to discuss the following items:

- o CE's bolt hole inspection and repair procedures were reviewed against the Westinghouse procedures to ensure suitability of the CE inspection and repair criteria.

- o CE was advised of the SG primary manway design parameters and AEPSC bolt hole acceptance criteria (thread engagement and condition).

- o CE was informed that their scope of work, including bolt hole repair by Heli-Coil, did not represent an unresolved safety issue. CE's scope of work did not deviate from the assumptions used by Westinghouse in their safety evaluation report for the initial Unit 2 bolt hole repair performed during the March 1987 outage.

- o The project schedule for these activities was reviewed to reduce CE's inspection and repair time and to provide a smooth interface with other ongoing SG activities.

To provide the required thread engagement, it was necessary to use longer bolts on SG 24 bolt hole locations, HL No. 8 and CL No. 4.

Additional information pertaining to bolt removal by machining, Heli-Coil installation, inspection results and pictures of galled threads from various bolt hole locations is retained by the Heat Exchangers and Pumps Section of the Mechanical Engineering Division.

Action Items

- Obtain Westinghouse recommendations for the SG primary manway bolt lubricant (Fel-Pro-C5-A vs Fel-Pro-N5000).

- MED is to update the Unit 2 SG Technical Manual to reference Heli-Coiled hole locations and thread lubricant recommendations from Westinghouse.

- C.E. to provide final ECT and bolt hole repair reports.

Table I

Bolt Hole Locations (1) With Heli-Coil Inserts

S/G 21 No Heli-Coils installed.

S/G 22 Installed Heli-Coil inserts for the following bolt holes.

H/L 2, 7, 10, 11

C/L 4, 7

S/G 23 Installed Heli-Coil inserts for the following bolt holes.

H/L 2, 3

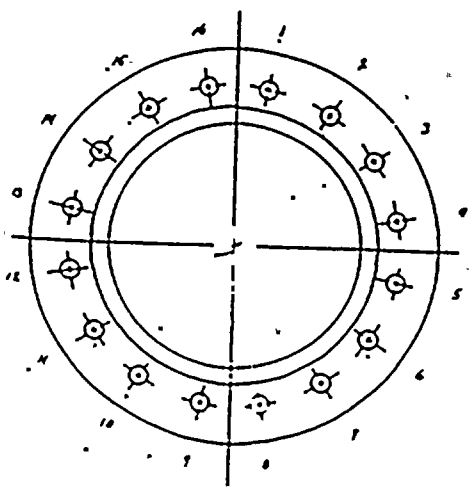
C/L 1, 2, 14

S/G 24 Installed Heli-Coil inserts for the following bolt holes.

H/L 1, 3, 5, 7, 8, 9

C/L 1, 5, 11, 14, 15

(1) Bolt hole number sequence



AMERICAN ELECTRIC POWER SERVICE CO
1 RIVERSIDE PLAZA
COLUMBUS, OHIO
ENGINEERING DEPT.

COMPANY AEP
PLANT P.C. Cook

SUBJECT Unit 2 S/G Primary Hgrway Closure Repair

TABLE II

BOLT HOLE LOCATIONS THAT REQUIRE GAGING

	SG 21		SG 22 ①		SG 23 ①		SG 24 ②	
	CL	HL	CL	HL	CL	HL	CL	HL
Bolts removed with impact wrench (damaged threads)								
holes with Heli-Coils	16		6	14		10		
holes w/o Heli-Coils			2,7	4,10				
Holes With Bolts Subjected to torques greater than 3200 ft-lb.								
With Heli-Coils								
w/o Heli-Coils								7
Bolt holes that require removal of cut-off or broken bolts								
with Heli-Coils						1,5,16		
w/o Heli-Coils			4,5	2,6,11	1,2,6 8,10,14	2,3,13	1,5,11 14,15	1,3,5 14

① For SG(s) 22 & 23 if the impact wrench did not remove the bolts, they were cut off.

② Torques > 3200 ft-lbs were applied to the bolt hole locations. Bolt 7 came out at 8200 ft-lbs and remaining bolts were cut off. Impact wrench was not used.