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50-267

November 9, 1983  
Fort St. Vrain  
Unit No. 1  
P-83357

Mr. G. L. Madsen, Chief  
Reactor Project Branch 1  
U.S. Nuclear Regulatory Commission  
Region IV  
611 Ryan Plaza Drive, Suite 1000  
Arlington, Texas 76011

NOV 21 1983

SUBJECT: Notice of Deviation Building 10  
Concrete

REFERENCE: U.S. NRC Letter dated 10/12/83  
Madsen to Lee (G-83368)

Gentlemen:

This letter is in response to the Notice of Deviation received as a result of an inspection conducted at Fort St. Vrain during the period August 1-31, 1983. The restatement of the deviation and the response to the items contained in the Notice of Deviation is hereby submitted.

NRC COMMENT

The licensee has apparently deviated from good acceptable construction practices for placement of concrete during placement of Building 10-W-4800-6-015. Several examples are listed below:

- a. ACI 304, Section 9.7 states, in part, "For pumped concrete, it frequently is desirable to sample at both the point of delivery to the pump and the point of discharge from the line and perform correlation testing to determine if any significant changes in slump, air content, and other mix characteristics are occurring."

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PDR ADOCK 05000267  
G PDR

11-1-84  
Discussed this discrepancy  
with A. Kitzman. She is  
to followup.

4005

Contrary to the above, no correlation tests were taken at point of placement.

- b. ACI 311 recommends proper lighting and equipment for placing of concrete.

Contrary to the above, there was insufficient lighting for placement of concrete, and there were only two vibrators available.

- c. ACI 304, Section 10.2 recommends the so called "green cut" cleanup is a good method for preparing an inferior joint such as a cold joint.

Contrary to the above, the south wall of Building 10 contained a cold joint that was not discovered until the forms were removed.

The basis for the deviations from Specification 75-J-02 and ANSI 45.2.5 is because of the term "small concrete quantities," as specified in the FSAR. "Small concrete quantities" is not clearly defined in the FSAR.

#### PSC RESPONSE

##### ITEM a

It has been PSC's normal practice to sample concrete at the point of discharge from a truck in order to have a standard basis for acceptance or rejection for all concrete for a project. Section 9.7 of ACI 304 characterizes the double sampling technique as being "desirable". In the particular case of Building 10, it was PSC's judgment that the concrete did not require double sampling to be performed.

PSC began taking concrete samples at the end of the concrete pump discharge line as requested by the NRC so that slump and air content could be evaluated. This practice was started on August 5, 1983 and continued for all remaining concrete placements for Building 10, in which pumped concrete was required.

##### ITEM b

After the first concrete placement for the walls on Building 10, PSC took the following actions to correct the problem with voids in the concrete: (1) Additional lighting was placed above the wall forms so that the construction forces could more easily view the concrete during placement. (2) The number of concrete vibrators for use during concrete placements was increased significantly. These corrective actions were in effect for all

remaining Building 10 concrete placements, starting August 5, 1983.

ITEM c

The cold joints in the lower portion of the Building 10 walls were due to a truckload of concrete that was rejected for failure to meet specifications and the resultant time delay until another truckload of concrete could be delivered to the job site. During the placement of concrete for the walls for Building 10, it was determined that a cold joint was starting in the east wall therefore the "green cut" cleanup method was used prior to placing the remainder of concrete for the east wall of Building 10. However, during this same concrete placement for the walls of Building 10, there was no indication that a cold joint was developing in the south wall, and therefore no corrective measures were taken. Upon removal of the concrete forms, and the discovery of the cold joint, it was technically evaluated by PSC and found to be acceptable. The corrective measures as mentioned above that PSC put into effect prior to the next concrete placement prevented future problems of this type. The corrective measures were in effect starting August 5, 1983.

NRC COMMENT

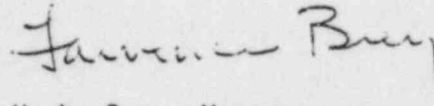
It is requested that upon response to this report that the licensee define "small quantities" of concrete.

PSC RESPONSE

Prior to the construction of Building 10, a conversation was held with Mr. W. Dickerson, the former NRC Resident Site Inspector, to discuss the applicability of the FSAR requirements for small quantities of concrete to Building 10. It was agreed that the concrete required for Building 10 would be considered to be a small quantity and that the FSAR requirements for concrete would apply. In the future we do not anticipate significant concrete work that would require an on site batch plant. On a project by project basis it will be determined whether an on site concrete batch plant can be justified. If the on site batch plant cannot be justified, then the amount of concrete to be installed shall be defined as a small quantity. In either event the applicable standards and codes for concrete shall be followed.

This completes the PSC action items required by the Reference letter. If you have any further questions, please contact Mr. J.R. Reesy (303) 571-8406.

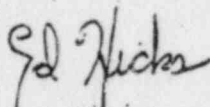
Very truly yours,



H. L. Brey, Manager  
Nuclear Engineering Division

HLB/RAG:pa

APPROVED

  
11/8/83