



January 10, 1996

Donald F. Schnell  
Senior Vice President  
Nuclear

Document Control Desk  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Mail Stop P1-137  
Washington, DC 20555

ULNRC-3306

Gentlemen:

**REPLY TO NOTICE OF VIOLATION  
INSPECTION REPORT NO. 50-483/95016  
CALLAWAY PLANT**

This responds to Mr. Thomas P. Gwynn's letter dated December 12, 1995, which transmitted a Notice of Violation for events discussed in Inspection Report 50-483/95016. Based on our assessment of the circumstances involved in this issue, we find insufficient basis for issuance of a violation and respectfully request that you reconsider your position. Our response is presented in the attachment.

None of the material in the response is considered proprietary by Union Electric.

If you have any questions regarding this response, or if additional information is required, please let me know.

Very truly yours,

A handwritten signature in cursive script that reads "Donald F. Schnell".

Donald F. Schnell

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DFS/bjp  
Attachment: 1) Response to Violation

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cc: Mr. L. J. Callan  
Regional Administrator  
U.S. Nuclear Regulatory Commission  
Region IV  
611 Ryan Plaza Drive, Suite 400  
Arlington, TX 76011-8064

NRC Resident Inspector

Ms. Kristine M. Thomas (2 copies)  
Licensing Project Manager, Callaway Plant  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Mail Stop 13-E-21  
Washington, DC 20555

Manager, Electric Department  
Missouri Public Service Commission  
PO Box 360  
Jefferson City, MO 65102

Mr. Thomas A. Baxter  
Shaw, Pittman, Potts, & Trowbridge  
2300 N. Street N.W.  
Washington, DC 20037

### **Statement of Violation**

During an NRC inspection conducted on November 6-9, 1995, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," (60 FR 34381; June 30, 1995) the violation is listed below:

Technical Specification 6.8.4(g), states, in part, that a program shall be provided to monitor the radiation and radionuclides in the environs of the plant. The program shall provide: (1) representative measurements of radioactivity in the highest potential exposure pathways and (2) verification of the accuracy of the effluent monitoring program modeling of environmental exposure pathways. The program shall: (1) be contained in the Offsite Dose Calculation Manual; (2) conform to the guidance of Appendix I to 10 CFR Part 50; and (3) include monitoring, sampling, analysis, and reporting of radiation and radionuclides in the environment in accordance with the methodology and parameters in the Offsite Dose Calculation Manual.

Table 9.11-A of the Offsite Dose Calculation Manual, states, in part, that for the airborne exposure pathway sampling for radioiodine and particulates, samples from five locations will be taken, one of which is from a control location, as for example 15 to 30 kilometers (10 to 20 miles) distant and in the least prevalent wind direction.

Contrary to the above, the control location for the airborne exposure pathway was located 9.5 miles northwest of the Callaway plant in one of the more prevalent wind directions.

This is a Severity Level IV violation (Supplement IV ).

### **Basis for Challenging the Violation**

Union Electric believes no violation of NRC regulations has occurred. The location of air sampling station A7 is consistent with the requirements of the NRC regulations and the Callaway Plant ODCM.

- The Notice of Violation incorrectly interprets the ODCM example location as a requirement, and does not consider the modifying guidance provided by the footnote in the ODCM;
- The locations of the air sampling stations, including the designation of A7 as the control location, have been previously reviewed by inspectors in the Radiological Assessment Branch and NRC Region III. These inspectors concluded that the air sampling locations met the NRC's regulations; and

- The location of station A7 provides valid background data with respect to the site specific characteristics of the Callaway Plant.

Additionally, Union Electric does not agree with the assertion in the cover letter which states in part, "The violation is of concern because it ... affects the validity of environmental monitoring data reported to the NRC." There is no violation of NRC regulations, and the environmental data reported to the NRC is valid. The bases for our position are addressed in the following discussion:

### Regulatory Basis

The Callaway Plant Radiological Effluent Technical Specifications (RETS) were issued by the USNRC as Appendix A to Facility Operating License NPF- 30<sup>1</sup>. Table 3.12-1, "Radiological Environmental Monitoring Program", Item 2, "Airborne Radioiodine and Particulates", provided guidance for the location of the air sampling stations, including station A7. The RETS guidance is consistent with the guidance provided by the Branch Technical Position (BTP)<sup>2</sup>. Amendment 50 to Facility Operating License NPF- 30<sup>3</sup> relocated the RETS to the Callaway Plant Offsite Dose Calculation Manual (ODCM) in accordance with Generic Letter 89-01<sup>4</sup>.

The ODCM requirements for Control Station A7 are as originally provided in the BTP and the RETS. The Notice of Violation correctly paraphrases a portion of the ODCM requirements<sup>5</sup>:

"One sample from a control location, *as for example* 15 to 30 km (10 to 20 mile) distant and in the least prevalent wind direction<sup>(3)</sup>."  
(emphasis added).

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<sup>1</sup> NUREG - 1058, "Technical Specifications, Callaway Plant, Unit No. 1", U. S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation. October, 1984.

<sup>2</sup> Radiological Assessment Branch Technical Position, Revision 1, Table 1, "Operational Radiological Environmental Monitoring Program". November, 1979.

<sup>3</sup> Letter, S. V. Athavale, Project Manager, (USNRC, Office of Nuclear Reactor Regulation), to D. F. Schnell, Senior Vice President- Nuclear, (Union Electric Company), dated February 12, 1990. Re: Amendment No. 50 to Facility Operating License No. NPF- 30 (TAC No. 74883)

<sup>4</sup> Generic Letter 89-01, "Implementation of Programmatic Controls for Radiological Effluent Technical Specifications in the Administrative Controls Section of the Technical Specifications and the Relocation of Procedural Details of RETS to the Offsite Dose Calculation Manual or to the Process Control Program", Varga, Steven A., Acting Associate Director for Projects, USNRC, Office of Nuclear Reactor Regulation. January 31, 1989.

<sup>5</sup> APA-ZZ-01000, Rev. 5, "Callaway Plant Offsite Dose Calculation Manual", Table 9.11-A, "Radiological Environmental Monitoring Program". page 72.

However, the Notice of Violation makes no mention of modifying guidance provided by Table Notation 3<sup>6</sup>, which is extracted verbatim from the BTP:

“The purpose of this sample is to obtain background information. If it is not practical to establish control locations in accordance with the distance and wind direction criteria, other sites that provide valid background data may be substituted.”

The ODCM requires a control station and provides general guidance for its location. It does not provide specific criteria for its location as is implied in the Notice of Violation. In addition, Table Notation 3 allows latitude in the establishment of the sampler location.

### **Previous NRC Inspections of Station A7**

NUREG-0813 states<sup>7</sup>:

“The final operational-monitoring program proposed by the applicant will be reviewed in detail by the staff, and the specifics of the required monitoring program will be incorporated into the radiological technical specifications for the operating license.”

The location of station A7 was first identified to the NRC as an operational phase air sampling station in Revision 1 of the ODCM. The location of the air sampling stations (excluding A7) were changed as a result of an ODCM review comment by Dr. Ed Brannigan of the Radiation Protection Branch. Dr. Brannigan's comments<sup>8</sup> on Revision 1 provide evidence that the air sampling station locations were reviewed in detail as required by NUREG-0813. Following our incorporation of these comments into Rev. 2 of the ODCM<sup>9</sup>, the NRC raised no further issues, indicating to us that the locations chosen for the sampling stations were found acceptable.

The locations selected for air sampling stations, including station A7 were also reviewed by Dr. M. J. Oestman, Inspector, USNRC Region III<sup>10</sup>. This inspection resulted in an Open Item to, “designate which sample stations are to satisfy NRC REMP requirements.” Following a second inspection<sup>11</sup>, Dr. Oestman concluded, in her closure of the Open Item,

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<sup>6</sup> ODCM, page 75

<sup>7</sup> NUREG-0813, “Final Environmental Statement Related to the Operation of Callaway Plant Unit No. 1”, USNRC, Office of Nuclear Reactor Regulation, January, 1982, ppg. 5-36.

<sup>8</sup> Letter, B. J. Youngblood, Chief, Licensing Branch No. 1, to D. F. Schnell, Sr. Vice President-Nuclear, Union Electric Company, dated February 14, 1984.

<sup>9</sup> NRC received ODCM, Rev. 2 transmitted via ULNRC-760 dated March 8, 1984.

<sup>10</sup> USNRC Inspection Report No. 50-483/83-07(DRMS), dated May 25, 1983. Refer to Open Item 50-483/83-07-03, ppg. 4.

<sup>11</sup> USNRC Inspection Report No. 50-483/83-30, dated January 9, 1984. Closure of Open Item 50-483/83-07-03, ppg 2.

"Since the licensee's program meets the NRC's guidance in the BTP, this item is therefore considered closed." This supports our belief that the location of station A7 was found acceptable to the NRC.

In summary, locations selected for the air sampling stations were reviewed independently by two NRC inspectors prior to issuance of the Facility Operating License. The A7 station had been designated as the control location prior to these reviews and both inspectors found the locations of the stations acceptable. The location of station A7 has not changed since that time, and the NRC's requirements have not changed since that time. Therefore, it is reasonable to conclude that the station's location continues to meet the NRC's requirements. This being the case, Union Electric believes there has been no violation of NRC regulations, Callaway Plant Technical Specifications, or the requirements of the Callaway Plant ODCM.

### **Technical Basis**

Air sampling station A7 is located on the east side of the City of Fulton, MO, just outside the city limits on the Barkley farm. Using global satellite positioning, and the global coordinates described in the Callaway Plant FSAR, station A7 is 15.4 km (9.5 miles) from the Callaway Plant, in the NW sector (see Table 1, Appendix A). The location of station A7 was established during the pre-operational environmental monitoring program, and it was identified as the control station location in Revision 1 of the ODCM<sup>12</sup>, prior to issuance of the Facility Operating License. Its location has not changed since its initial siting during the pre-operational program.

There were no air sampling station locations in the pre-operational monitoring program which conformed to the distance and wind direction used as an example in the BTP. Station A7 was selected as the control location because:

- Station A7, at 15.4 km, is sufficiently distant from the plant to provide valid background data;
- Although the location of A7 is not in the least prevalent wind direction, the wind blows towards other sectors about 90% of the time;
- The relative deposition rate (D/Q) for Station A7 is more than an order of magnitude less than the lowest indicator station (B3), and only 2.5 times greater than the sector with the lowest D/Q;

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<sup>12</sup> Callaway Plant Offsite Dose Calculation Manual, Revision 1. November 18, 1983.



- Station A7 had accumulated more than three years of background data, including seasonal variability, whereas a new station would have no background data; and
- Station A7 also monitors the largest population center within the 10 mile EPZ, providing monitoring capability in the unlikely event of a major release of airborne activity.

As noted above, while sample station A7 is not located in the least prevalent wind direction, the wind blows towards other sectors, i.e., away from the NW sector and station A7 about 90% of the time (see Table 2, Appendix A). For any given release, there is a 90% chance that it will be blown towards another sector, and away from station A7. Also, during winter and spring months, the prevalent wind direction is frequently towards the east to southeast sectors and Station A7 is in the least prevalent wind direction.<sup>13</sup> The D/Q for station A7 differs by only a factor of 2.5 from the sector with the lowest D/Q (see Table 3, Appendix A). The D/Q at location A7 is also more than an order of magnitude less than the lowest indicator location. With no other nuclear fuel cycle facilities located in the area, this difference in D/Q is sufficient to differentiate routine normal plant effluents from background fluctuations, should an indicator station ever show a measurable amount of activity attributable to Callaway Plant. In the unlikely event of a major release that affects A7, a sample location in an unaffected wind direction can be used as a temporary control location for the event. Also, the data for the event would be compared with previous background data at that location, including compensation for seasonal variations in the background.

The validity of data reported to the NRC is assured by effective interpretation of the analytical data. Analytical results are routinely reported to UE by our offsite analysis contractor (currently Teledyne) in a monthly progress report. These reports are reviewed for abnormal sample results and to assure sample analytical specifications are met (i.e. Lower Limit of Detection, etc.). Any problems identified are evaluated per procedure.

While initial sample data interpretation at the indicator/control stations is used to distinguish Callaway Plant effects from other sources, additional interpretive data and resources are available to quantify the activity and source depending on the circumstances. Sample results can be compared to previously accumulated data at the location of interest. There are currently about 14 years of data for each of the stations, including A7. Isotopic analysis can be used to determine the fission product profile of any positive sample. Results can be compared to other sampling stations during the same time period, and in-plant effluent sampling and analysis data coupled with meteorological information can be used to determine if a release from the plant could have caused a positive sample. Also, results can be obtained from other parts of the country to characterize external events known to have caused elevated radiation levels in the environment.

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<sup>13</sup> Callaway Plant Final Safety Analysis Report, Site Addenda, Rev. OL-0, Section 2.3.1.1

The environmental sample data for airborne iodine and particulate sampling locations has been reviewed, and there is only one occasion when sample station A7 indicated fission/activation product activity. This was the time period following the accident at Chernobyl. The data at A7 was comparable to the sampling results of the indicator stations and to similar data recorded in other parts of the United States. The results were not consistent with our in-plant effluent monitoring and the activity, of course, was attributed to Chernobyl.

Every positive sample, whether from a control or indicator station, is identified and discussed in the Callaway Plant Annual Environmental Operating Report. There are no instances where subtracting A7 activity from an indicator location would have masked a reportable radionuclide. This attests to the validity of the data reported to the NRC.

The City of Fulton is the largest population center within the Callaway 10 mile EPZ. While the primary role of station A7 is to serve as a control location, it serves an important secondary purpose by providing monitoring for the City of Fulton in the unlikely event of a major release. The Callaway Plant Radiological Emergency Response Plan (RERP) utilizes data from the air monitoring stations in determination of long term recovery actions. If the release were in the direction of the City of Fulton, station A7 would provide invaluable data for that purpose.

### **Corrective Actions**

Union Electric does not believe corrective action is required since, in our view, no violation of regulations has occurred. The control location for the airborne exposure pathway is consistent with the guidance provided in the ODCM. Moreover, our selection of A7 as the control location has provided valid environmental monitoring data in our reports to the NRC.



**Appendix A**

<b>Table 1 Global Positioning Data for Station A7 and the Plant Site<sup>14</sup></b>			
Location	Longitude	Latitude	
A7	W91° 54' 44.1"	N38° 51' 17.9"	
Callaway Site	W91° 46' 52.4"	N38° 45' 42.3"	

<b>Table 2 Wind Rose Data<sup>15</sup>, Combined Three Year Average</b>		
Sector Blowing From	Sector Blowing Towards	Annual Average Percent of Time
S	N	10
SSW	NNE	8
SW	NE	7
WSW	ENE	4
W	E	7
WNW	ESE	7
NW	SE	6
NNW	SSE	5
N	S	6
NNE	SSW	4
NE	SW	4
ENE	WSW	3
E	W	5
ESE	WNW	6
SE	NW	11
SSE	NNW	10

<b>Table 3 Annual Average D/Q Values at 10 Miles<sup>16</sup></b>			
Sector	D/Q Value	Ratio to NW Sector	Remarks
NW	7.95E-11	NA	Station A7
SW	3.18E-11	2.5X lower	Sector with lowest value of D/Q
NNW	1.12E-10	1.4X Higher	Sector with highest value of D/Q

<sup>14</sup> Callaway Plant Final Safety Analysis Report, Site Addenda, Section 2.1.1.1, "Specification of Location".

<sup>15</sup> Callaway Plant Final Safety Analysis Report, Site Addenda, Tables 2.3-8, "Wind Roses, Annual 1973- 1974", 2.3-9, "Wind Roses, Annual 1974- 1975", and 2.3-10, "Wind Roses, Annual 1978- 1979".

<sup>16</sup> Callaway Plant Final Safety Analysis Report, Site Addenda, Table 2.3-83, "Average Meteorological Relative Concentration Analysis, Standard Distances, Unit Vent Release", Sheet 3 of 7.