U- 600398
L30-86(01-27)-L
1A.120

ILLINOIS POWER COMPANY

CLINTON POWER STATION, P.O. BOX 678, CLINTON, ILLINOIS 61727

January 27, 1986

Docket No. 50-461

Director of Nuclear Reactor Regulation
Attention: Dr. W. R. Butler, Chief
Licensing Branch No. 2
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Clinton Power Station (CPS) Unit 1
TMI Action Plan Item II.F.1. "Additional Accident Monitoring Instrumentation"

Dear Dr. Butler:

Illinois Power Company Letter U-600245, dated October 17, 1985, requested variances from four NUREG-0737, Item II.F.1, "Additional Accident Monitoring Instrumentation" requirements. One of these four variances concerned provisions to ensure that the iodine filters for the high-range effluent radiation monitors (AXM-1s) are not degraded by moisture.

The variance request presented the results of a thermal analysis which was performed for the sample lines and the sample assemblies (SA-16s) on the AXM-1 grab sample pallets (GSP-1s). The results of the thermal analysis showed that it was possible for moisture to condense in the GSP-1 sample lines and the SA-16s during certain types of postulated accidents.

To minimize the potential for plugging the isokinetic nozzles which draw a sample to the SA-16s, Illinois Power (IP) committed in the variance request letter to extend the sample line heat tracing onto the GSP-1s up to the isokinetic nozzles. To minimize the effects of moisture condensing in the SA-16s, Illinois Power committed to use silver zeolite iodine cartridges and waterproof filter paper. Also, if moisture is discovered in the SA-16s after grab samples have been taken from the AXM-1s, the iodine count rate will be multiplied by a factor of two for conservatism.

In a phone conversation with IP on November 6, 1985, Byron Siegel (NRC Project Manager for Clinton) indicated that the NRC had reviewed the subject variance request and found it acceptable subject to the condition that IPC would heat trace the entire sample line, including the inlet and outlet of the SA-16s for both AXM-1s. In addition, heat tracing for the Standby Gas Treatment System (SGTS) AXM-1 sample lines would be required between the bulk filter assembly (BFA-1) and the sample cooler.

8601290159 860127
PDR ADOCK 05000461
A PDR

B001
1/1

Illinois Power has evaluated the need for this additional heat tracing. We believe it is neither feasible nor practicable to add the heat tracing to the above described portion of the sample lines. IP's justification for not installing the additional heat tracing, as requested by the NRC, is provided in the attachment to this letter.

Please notify us at your earliest convenience if the enclosed information is adequate for your review and approval.

Sincerely yours,

F. A. Spangenberg

F. A. Spangenberg
Manager - Licensing & Safety

JBD/ckc

Attachment

cc: Mr. B. L. Siegel, NRC Clinton Licensing Project Manager
NRC Resident Office
Regional Administrator, Region III USNRC
C. F. Gill, Region III USNRC
Illinois Department of Nuclear Safety

Illinois Power Company Justification for Not Adding Heat Tracing to the High-Range Effluent Monitor Grab Sample Pallet Sample Lines

As described in IP variance request Letter U-600245, Clinton Power Station (CPS) utilizes Eberline AXM-1 Radiation Monitors to meet the requirements of TMI Action Plan Item II.F.1(2), "Sampling and Analysis of Plant Effluents". The AXM-1s will provide the capability for sampling the Standby Gas Treatment System (SGTS) exhaust line and the Station Ventilation (HVAC) stack for radioactive particulates and iodines during and following an accident.

The sample lines for the AXM-1s are heat traced from the point of sampling (except for the portion of the HVAC system sampling line which is routed inside the HVAC stack) to the inlet of the AXM-1s grab sample pallets (GSP-1s). The SGTS and HVAC AXM-1 sample line heat tracing is set for a temperature of 180°F and 130°F, respectively. Figure 1 shows the routing of the sample line internal to Eberline's GSP-1s. As the sample enters the GSP-1, it passes through shutoff valve V1 and approximately 12 inches of 3/8 inch outside diameter (O.D.) tubing before reaching the isokinetic nozzle which draws a 100cc/min. sample from the main sample. The isokinetic nozzle is connected to the SA-16 sample assembly, which houses the particulate and iodine filters, by approximately 8-10 inches of 1/8 inch O.D. tubing. Presently, the GSP-1 sample lines are not heat traced.

In response to a request from NRC Region III, IP performed a thermal analysis of the sample lines and SA-16 sample assemblies on the GSP-1s. This thermal analysis indicated that under certain types of postulated accidents, moisture (13.4 cc/hr for the SGTS AXM-1 and 23 cc/hr* for the HVAC AXM-1) would condense in the 3/8 inch tubing upstream of the isokinetic nozzle. In Letter U-600245, IP committed to heat trace this portion of the sample line to prevent plugging of the isokinetic nozzle. The thermal analysis also showed that small amounts of moisture could condense in the SA-16 sample assemblies.

The NRC has indicated a need for additional heat tracing on the sample lines at the inlet and outlet of the SA-16s for both AXM-1s. IP believes that this is neither feasible or practical for the following reasons:

1) The AXM-1 sample line heat tracing used consists of ceramic heating elements encased in a corrugated inconel sheath (which is approximately 1 inch in width-long face). Due to the construction of the heat tracing (purchased to ensure seismic

---

* Note: The condensation rate in the HVAC GSP-1 3/8 inch inlet line was previously reported as 2.3 cc/hr in IP letter U-600245. This number was incorrectly stated due to a typographical error and is correctly shown above as 23 cc/hr. This does not change the conclusions of the thermal analysis nor the rate of condensation in the SA-16 sampler assembly.

and environmental qualification) the allowable bending radius will not conform to the routing of the 1/8 inch SA-16 inlet tubing. The 1/8 inch inlet tubing has an unsupported bend which allows flexibility for removing it from the SA-16s. The tubing which leaves the SA-16s is flexible metal hose which further complicates the problem. The tubing to and from the SA-16s must be flexible to allow quick and easy removal of the SA-16s (for transport to the lab), due to the radiological conditions that would be evident after an accident, for minimizing operating personnel radiation doses.

2) If the heat tracing was extended onto the 1/8 inch SA-16 tubing, the potential for moisture condensation in the SA-16s would still exist because the heavy lead shielding will never reach the temperature of the sample. If the SA-16s were heat traced it would create a handling problem. The heat trace circuits and thermocouples would have to be disconnected prior to allowing the SA-16s to be removed from the GSP-1s for transport to the lab. Also, the temperature of the SA-16 (up to 180°F) would make it difficult to handle. In addition to these problems, replacing the SA-16 to take another grab sample would present more difficulties. The replacement SA-16 would be at ambient temperature which would prevent operation of the GSP-1 until the SA-16 reached the sample temperature, or the next grab sample (if started immediately after changing the SA-16) would again have the potential for moisture condensation in the SA-16.

In addition to the above problems, there are a number of conservatisms in the thermal analysis which IP believes makes the addition of the heat tracing unnecessary. The condensation rates determined in the thermal analysis are based on the expected maximum moisture content of the effluent streams and minimum ambient temperatures at the GSP-1s and are, therefore, conservative. Also, the SGTS effluent (which is the only anticipated release point post-LOCA) will not contain as much moisture as assumed in the thermal analysis because the SGTS filter trains utilize demisters to remove moisture. Also, the filter trains have several components which will condense some moisture (such as pre-filters, HEPA filters, bulk charcoal adsorbers, etc.) These components are equipped with drip pans and drains for moisture collection. These items were not considered in the thermal analysis, and thus, the expected amount of moisture condensed in the SA-16s is likely to be very small.

As stated above, IP has committed to use waterproof particulate filter paper and silver zeolite iodine cartridges. To provide conservatism for the reduction in efficiency of the silver zeolite iodine cartridges due to moisture degradation, IPC has committed to multiply the iodine count rate by a factor of 2 if moisture is discovered in the SA-16 sample assembly after a grab sample has been taken.

As can be seen from Figure 1, the 3/8 inch tubing makes a 90° bend at the isokinetic nozzle and is routed vertically upwards where it again joins with the 1/8 inch tubing coming from the SA-16. The sample line then exits the GSP-1 and is routed to the bulk filter assembly (BFA-1). To minimize the amount of condensation in the vertical portion of the 3/8 inch tubing on the GSP-1, 1½ inches of fiberglass insulation is utilized. The insulation extends from the isokinetic nozzle to isolation valve V6. The amount of moisture condensing in the vertical line is expected to be very small. (This will be verified by performing a thermal analysis.) Considering the design of the isokinetic nozzle, the likelihood of plugging is very small. (The end of the nozzle actually extends past the edge of the elbow into the heat traced portion of the 3/8 inch tubing.) Heat tracing is utilized for the sample line between the outlet of the GSP-1s to the BFA-1s.

The only possible reason for heat tracing the SGTS AXM-1 sample line between the BFA-1 and the sample cooler would be to prevent condensation of the sample in this section of the tubing until it reaches the cooler and cooler discharge tubing. A condensate drain is furnished at the discharge of the cooler (low point between cooler and noble gas pallet (NGP-1)) to collect most of the moisture developed when the sample cools prior to reaching the NGP-1. This drain is sized such that manual drainage of the condensate will only be required during the latter portion of an 8 hour period following the onset of an accident and at reduced frequencies thereafter (the effluent moisture content should decrease). IP has reviewed the installed tubing run between the BFA-1 and the sample cooler and will add a second condensate drain near the discharge of the BFA-1. This drain will offer added protection of collecting any moisture developed between the BFA-1 and cooler and will be manually drained at the same frequency as the drain downstream of the cooler. Station procedures will be revised to include the appropriate steps for manual drainage.

IP believes that the above information adequately addresses the NRC's concerns and provides proper justification for not incorporating additional heat tracing. IP will proceed with the changes identified in Letter U-600245 to minimize the effects of moisture on the collection efficiency of the iodine filter media.

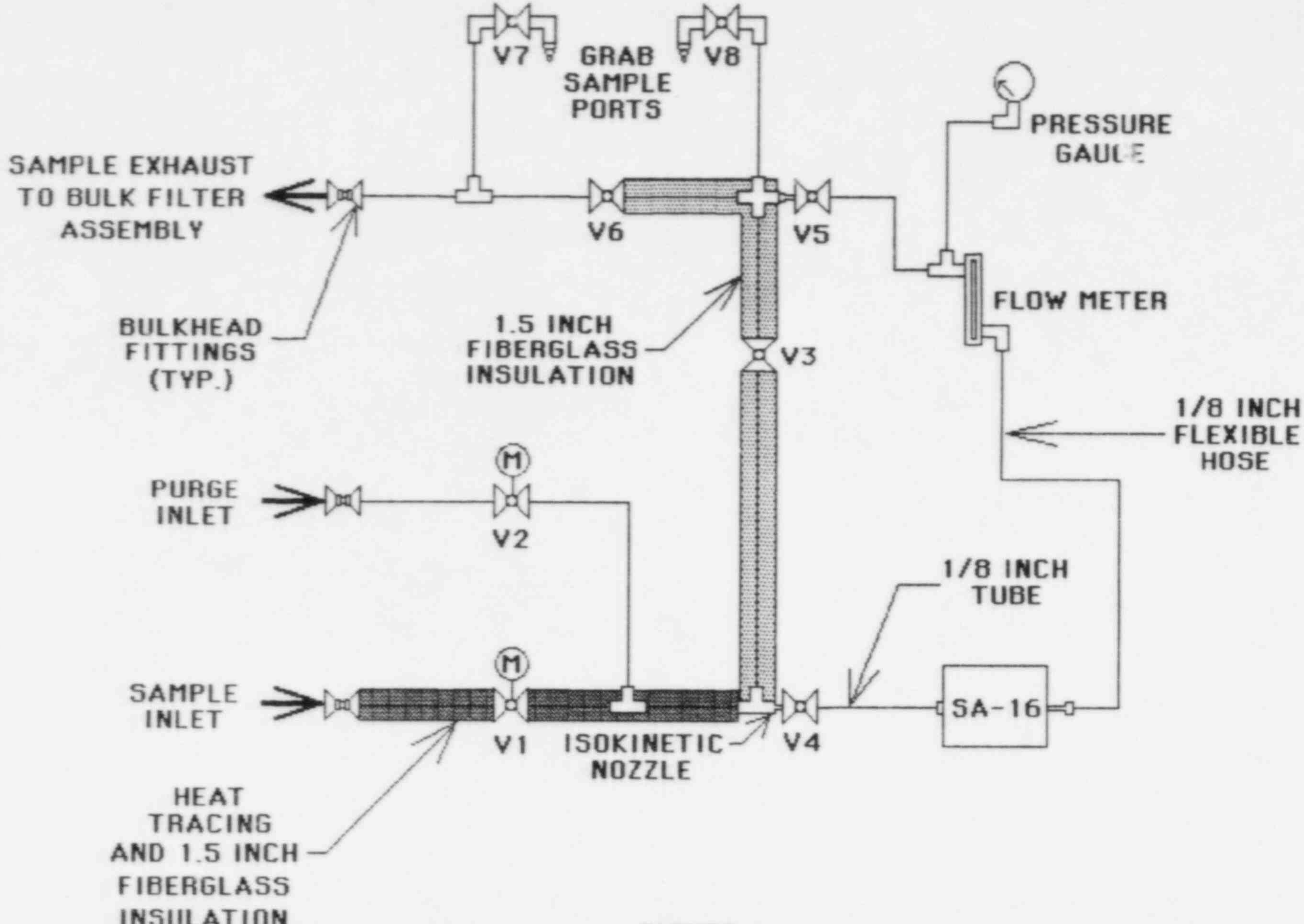

FIGURE 1

GSP-1 INTERNAL PIPING