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DOD-016

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Docket Nos 50-325  
and 50-324

Mr. E. E. Utley  
Executive Vice President  
Carolina Power & Light Company  
P. O. Box 1551  
Raleigh, North Carolina 27602

Dear Mr Utley:

SUBJECT: RADIOLOGICAL EFFLUENT TECHNICAL SPECIFICATIONS (RETS)

Re: Brunswick Steam Electric Plant, Unit Nos. 1 and 2

Enclosed for your information is a trip report prepared by our contractor, Franklin Research Center, that describes the October 5, 1982 radiological effluent technical specifications (RETS) meeting.

Sincerely,

Original signed by

Domenic B. Vassallo, Chief  
Operating Reactors Branch #2  
Division of Licensing

Enclosure  
As stated

cc:  
See next page

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OFFICE	DL:ORB#2	DL:ORB#2	DL:ORB#2				
SURNAME	S.Norris	J.VanVliet	D.B.Vassallo				
DATE	10/27/82	10/27/82	10/27/82				

Mr. E. E. Utley  
Carolina Power & Light Company

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## TRIP REPORT

To: Brunswick Steam Electric Plant  
Units 1 and 2  
Carolina Power & Light Company  
(CP&L)

Date of Trip: 10/5/82  
Project: 504-5506-001  
FRC Assignment: 4  
FRC Tasks: 085, 086  
Radiological Effluent Technical  
Specification Implementation

Trip Made By: S. Chen (SC)  
S. Pandey (SP)

NRC Staff Present: W. Meinke (WM), Radiological Assessment Branch  
J. VanVliet (JV), Project Manager  
K. Barr (KB), NRC Region II

Personnel Contacted: P. Snead (PS), RC Engineer  
J. Harness (JH), Manager - Plant Operation  
G. Warriner (GW), Principal Specialist - Environmental  
R. Shearin (RS), Project Specialist - Environmental  
C. Robertson (CR), Supervisor - Env. & Chem.  
R. Queener (RQ), Principal Specialist - Rad. Control  
J. Davis (JD), Senior Specialist - Env. & Chem.  
W. Murray (WM), Engineer - Nuclear Licensing  
S. Williams (SW), Technical Support  
C. Blackmon (CB), Supervisor - Radwaste  
J. Kaham (JK), Environmental

### Purpose of Meeting

To discuss proposed changes to the Brunswick Radiological Effluent Technical Specifications (RETS) and to discuss the Offsite Dose Calculation Manual (ODCM).

### Discussion

This was the first site visit by the FRC RETS review team to the Brunswick Steam Electric Plant. The meeting was conducted at the plant site, Brunswick, N.C. FRC's initial review of the proposed changes to the RETS and the technical requirements for an ODCM were the main focus of discussion. The deficiencies in the Licensee's proposed RETS were discussed, and deviations from NRC requirements were pointed out.

FRC presented two draft technical evaluation reports comparing the Licensee's proposals against the NRC requirements item by item:

1. Comparison of Plant and Model Radiological Effluent Technical Specifications, Brunswick Steam Electric Plant, September 15, 1982
2. Technical Review of Plant Offsite Dose Calculation Manual, Brunswick Steam Electric Plant, September 15, 1982.

For the majority of the items discussed at the meeting, the Licensee provided clarification and agreed to either change the specifications to meet the NRC requirements or write justifications for deviation from Model RETS, NUREG-0473.

### Summary of Major Issues

The major issues discussed during the site visit are highlighted in the following sections: Radioactive Liquid Effluent, Radioactive Gaseous Effluent, Solid Radioactive Waste, Radiological Environmental Monitoring, and Offsite Dose Calculation Manual. Essentially, no major items remained unresolved upon conclusion of the meeting; for all questions raised, the Licensee will either correct the deficiency or provide clarification in the forthcoming resubmittal.

#### 1. Radioactive Liquid Effluent

Both units of the Brunswick plant are boiling water reactors. Major liquid effluents are discharged via the liquid radwaste effluent line (Figure 1). Although this effluent path handles the majority of the radioactive discharges, the effluents are normally collected, processed, and monitored before being released in batches. A radiation monitor (D-12, RMK-604) has been installed for this effluent path, which also provides automatic isolation in the event that an excessive level of radioactivity is detected.

Other potential effluent lines are the service water line, effluent from stabilization pond, and the turbine building sump. Among these, the service water line has a monitor (D-12, RMK-605), and the stabilization pond has a composite sampler. The turbine building (circulating water pit) sump does not have a monitor or a composite sampler. However, the Licensee explained that the sump effluents normally contain only low-level activities and are collected and grab-sampled. They are released in batches only if the activity level meets the requirement. To prevent inadvertent releases, the Licensee will also lock the valve if the releases are not being made.

The Licensee plans to install the augmented offgas treatment (AOG) system in the near future, and has identified the service water effluent from the AOG precooler as another potential effluent line. The Licensee will install a radiation monitor for this effluent line but as yet is unable to designate that monitor by an ID number.

- o Component Cooling Water Effluent Line: The Licensee did not enlist component cooling water as an effluent line on the basis that the component cooling water is a closed loop, and that any leakage will eventually go to the service water line where the radiation monitor will indicate the contamination. FRC requested that better justification or an alternative be provided since any leakage will be diluted by the large amount of service water and that the service water detector will not be sensitive to the leakage in the component cooling water. The Licensee agreed to provide a better justification.

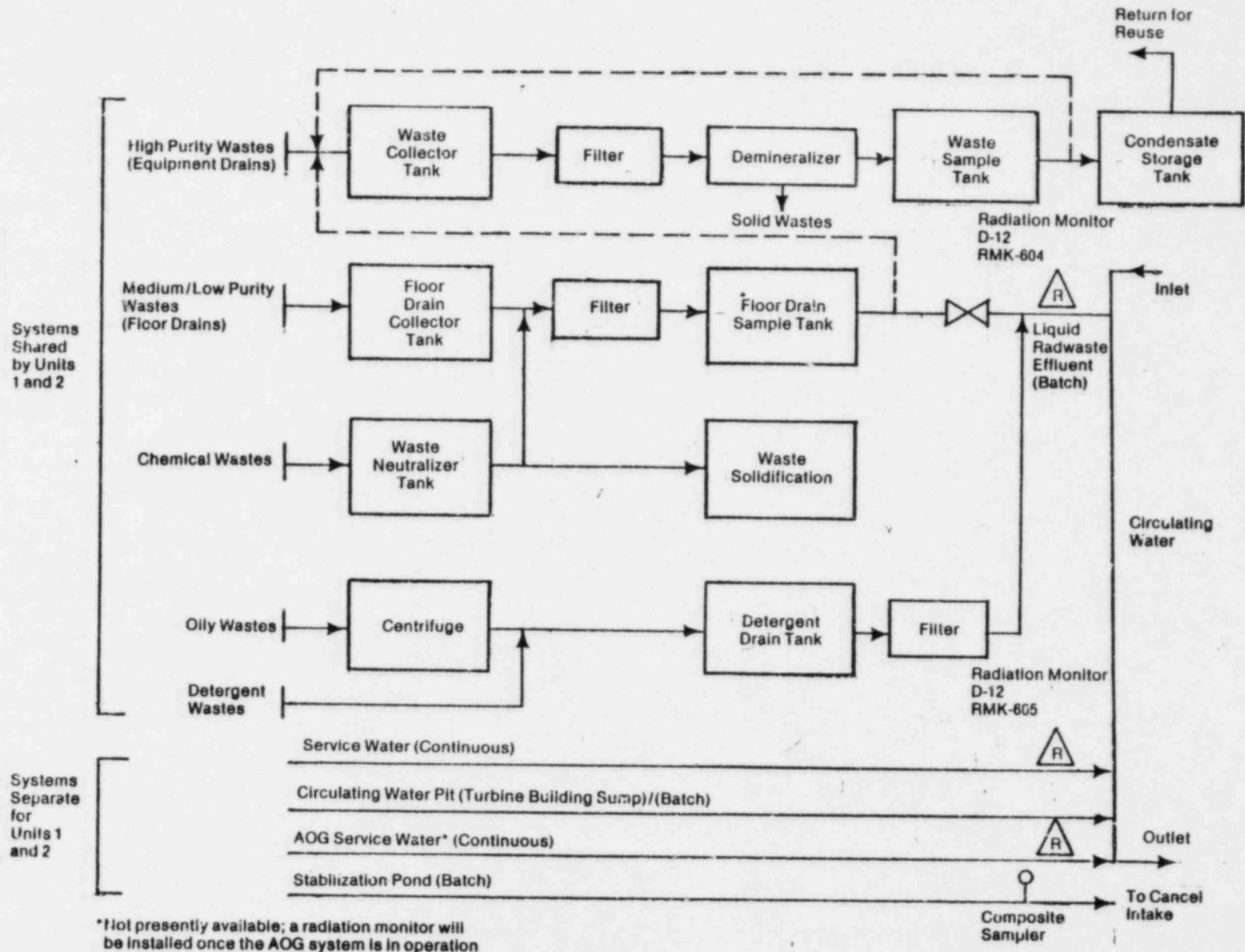


Figure 1. Liquid Radwaste and Effluent Pathways for Brunswick Steam Electric Plant Units 1 and 2

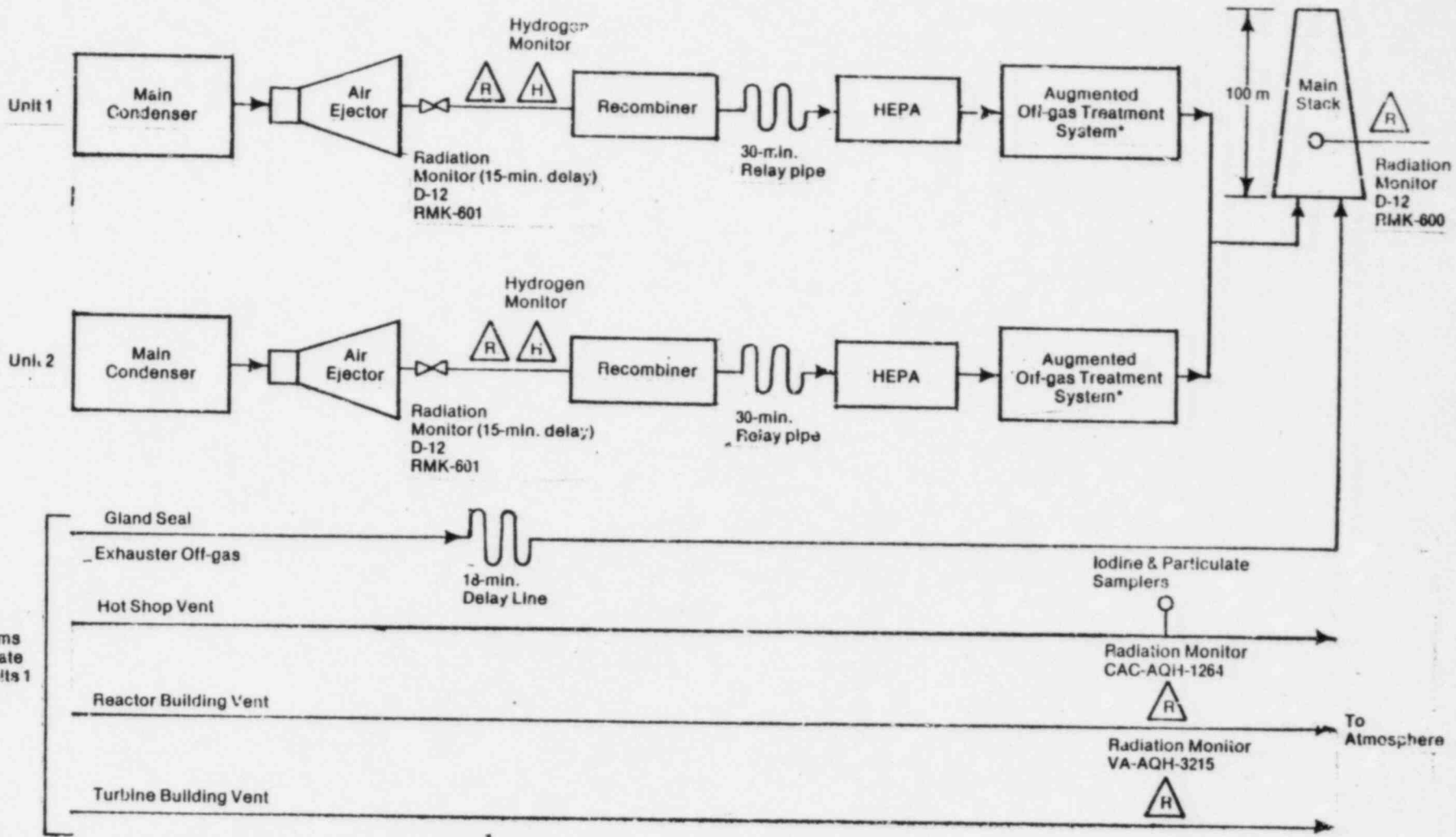
- o Monitoring Applicability: The Licensee has designated the applicability of liquid effluent monitoring instrumentation as "at all times" for radiation monitors in Table 3.11.1-1 of the submittal, except that the applicability for the composite sampler at the stabilization pond effluent line is "during releases via this pathway." To prevent the possibility of inadvertent discharge without detection, the Licensee will add wording such that if the release is not made, the valve will be locked.
- o Channel Check: In the liquid effluent monitoring surveillance requirements (Table 4.11.1-1), the Licensee has designated the applicability for channel check as "during release via this pathway" instead of the required applicability of "at all times." The Licensee agreed to modify the wording to comply with the Model RETS intent.
- o Liquid Waste Sampling and Analysis Program: The Licensee has committed to conduct a full sampling and analysis program for batch releases from sample tanks, the detergent drain tank, and the salt water release tank. The same program will also be conducted for the discharges from the circulating water pit (equivalent to turbine building sump). For stabilization pond effluents and service water, the Licensee will only sample and analyze the principal gamma emitters and I-131. The Licensee has agreed to set a trigger limit to conduct a full scale sampling and analysis program if substantial contamination is discovered in these two effluent paths. For service water, the Licensee explained that there were no composite samplers installed but that grab samples would be collected and analyzed weekly when the system is in operation.
- o LLD Documentation: The Licensee has documented LLD methodology in the ODCM but has agreed to include it in the RETS as required.

## 2. Radioactive Gaseous Effluent

A gaseous radwaste system is provided for each unit of the Brunswick plant. The processed gases from each unit are routed to the plant stack for dilution and elevated release to the atmosphere (Figure 2). Each air ejector off-gas line and the stack are continually monitored by radiation monitors, designated by D-12, RMK-601 and D-12, RMK-600, respectively. The air ejector monitor is also capable of automatic isolation. The radwaste treatment system includes the 30-minute delay line and HEPA filters for each unit. The AOG treatment system originally installed has been retired and is being replaced by an improved system. This situation is noted in pertinent sections throughout the Licensee's proposed RETS submittal.

Other effluent lines separate for each unit are from the reactor building vent (monitor CAC-AQH-1264), the turbine building vent (monitor VA-AQH-3215), and the hot shop (monitored only by iodine and particulate samplers).

Monitors will also be installed downstream of the AOG system once the system is up for operation.



\*The augmented off-gas treatment system is not available but will be installed

Figure 2. Gaseous Radwaste and Effluent Pathways for Brunswick Steam Electric Plant Units 1 and 2

The Licensee also indicated that there are also two hydrogen monitors in the twin train recombiner. According to the Licensee, the gaseous radwaste system was designed to withstand hydrogen explosion.

- o Hot Shop Vent: This is a potential effluent line which was not included in the Licensee's RETS submittal. The Licensee agreed to enlist this in the future submittal but will commit only to iodine and particulate samplers for monitoring the radiation since noble gases are unlikely to contaminate the hot shop.
- o Explosive Gas Monitoring System: The Licensee has enlisted only one hydrogen monitor in Table 3.12.1-1 of the submittal, which does not meet the requirement of having a redundant monitor for backing up the one in service. According to the Licensee, there is indeed a backup system at the recombiner train. The Licensee agreed to address this issue in appropriate sections.
- o Channel Check: The Licensee has designated the applicability of channel check as "during the release via this pathway" rather than the required "at all times." The Licensee agreed to either correct the applicability or provide justification for the deviation.
- o Gaseous Radwaste Treatment: Specification 3.11.2.4 of NUREG-0473 calls for the treatment of gaseous radwaste effluents whenever the main condenser air ejector system is in operation. The Licensee's proposal, instead, chose to use the treatment system only if the monthly projected dose exceeds the design objectives. It was pointed out by FRC that this dose projection method cannot meet the intent of the Model RETS since the radwaste treatment system is required to operate whenever effluents are discharged from the air ejector system. Although the Licensee has yet to install the AOG system, the existing treatment system including the 30-minute delay line and the filters should be used to meet the requirement. The Licensee agreed to address this issue or state alternatives to properly treat the gaseous effluents.
- o Ventilation Exhaust Treatment: A separate specification is needed for the ventilation exhaust treatment system. The Licensee agreed to address this issue.
- o Main Condenser: During the meeting, the Licensee proposed a revision to Specification 3.12.6 regarding the main condenser air ejector radioactivity release rate which closely follows the Model RETS. The Licensee stated that this new revision is to supersede the previous specification which did not meet the intent of the Model RETS.
- o Drywell Purges (Mark I Containment): The LCO in the Licensee's submittal stated that the drywell will be purged through the standby gas treatment system or released to the environment at a rate not exceeding the 10CFR20 limits. This latter alternative, as stated, does not meet the intent of the Model RETS. Also, under the surveillance requirements, the Licensee did not commit to use the standby gas treatment system within the time limit specified. The Licensee has agreed to address this issue in the future resubmittal.



### 3. Solid Radioactive Waste

The Licensee has committed to maintaining a process control program (PCP) as required by the Model RETS. To fulfill this commitment, a draft PCP was provided at the meeting by the Licensee.

### 4. Total Dose

The Licensee has appropriately addressed the total dose in the proposed Specification 3.14.1. The Licensee agreed to add the direct radiation to the calculation of total dose in ODCM. Also, the Licensee will modify the surveillance requirements such that the effective coverage (within 5 miles of the plant site) will not appear in the specification, but will appear in the Model RETS bases.

### 5. Radiological Environmental Monitoring

The Licensee has agreed to rearrange Table 3.15.1-1 to follow the format of draft NUREC-0473, Rev. 3. The Licensee will include three species of fish and several types of broad leafy vegetables for sampling purposes. The Licensee stated that drinking and groundwater are not viable pathways.

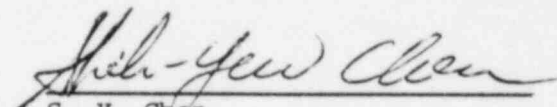
### 6. Offsite Dose Calculation Manual (ODCM)

For the ODCM, the Licensee has agreed to:

- o add methodology for total dose calculation, including direct radiation
- o attach flow diagrams for liquid and gaseous radwaste systems, effluent paths, and radiation monitors
- o indicate in the liquid effluent alarm/trip set point calculation that no effluent will be discharged simultaneously from more than one release path so that the methodology described in the ODCM submittal is not invalidated.
- o address other minor issues as brought up in FRC's review documents.

### Schedule

The Licensee projects that final resubmittals of the RETS, ODCM, and PCP with the changes recommended will be ready by December 15, 1982.

  
S. Y. Chen  
Senior Staff Engineer

Date Submitted: 10-14-82