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SOUTHERN COMPANY

APR 15 2010

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ND-10-0765

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555-0001

Southern Nuclear Operating Company
Vogtle Electric Generating Plant Units 3 and 4 Combined License Application
Response to Request for Additional Information Letter No. 050
Waste Water System

Ladies and Gentlemen:

By letter dated March 28, 2008, Southern Nuclear Operating Company (SNC) submitted an application for combined licenses (COLs) for proposed Vogtle Electric Generating Plant (VEGP) Units 3 and 4 to the U.S. Nuclear Regulatory Commission (NRC) for two Westinghouse AP1000 reactor plants, in accordance with 10 CFR Part 52. During the NRC's detailed review of this application, the NRC identified a need for additional information required to complete their review of the COL application's Final Safety Analysis Report (FSAR) Section 9.3, "Process Auxiliaries." By letter received March 16, 2010, the NRC provided SNC with Request for Additional Information (RAI) Letter No. 050 concerning this information need. This RAI letter contains one RAI question, numbered 09.03.03-1. The enclosure to this letter provides the SNC response to this question.

If you have any questions regarding this letter, please contact Mr. Wes Sparkman at (205) 992-5061.

D092
NRO

Mr. B. L. (Pete) Ivey states he is a Vice President of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and to the best of his knowledge and belief, the facts set forth in this letter are true.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY

Brian L. (Pete) Ivey

Sworn to and subscribed before me this 15th *day of* April, *2010*

Notary Public: Nancy Louise Henderson

My commission expires: NOTARY PUBLIC STATE OF ALABAMA AT LARGE
MY COMMISSION EXPIRES: Mar 23, 2014
BONDED THRU NOTARY PUBLIC UNDERWRITERS

BLI/BJS/lmp

Enclosure: Response to NRC RAI Letter No. 050 on the VEGP Units 3 & 4 COL Application Involving the Waste Water System

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Southern Nuclear Operating Company

ND-10-0765

Enclosure

Response to NRC RAI Letter No. 050

on the

VEGP Units 3 & 4 COL Application

Involving the

Waste Water System

NOTE: The enclosed document is six (6) pages in length.

FSAR Section 9.3, Process Auxiliaries

eRAI Tracking No. 4497

NRC RAI Number 09.03.03-1:

In AP1000 DCD, Revision 15, the waste water retention basin design features were included as part of the AP1000 certified design. In Revision 16, Westinghouse removed the waste water retention basin from the DCD and identified it as COL Information Item 9.2.11.2, "Waste Water Retention Basins." COL Information Item 9.2.11.2 states that "the Combined License applicant will address the final design and configuration of the plant waste water retention basins and associated discharge piping, including piping design pressure, basin transfer pump size, basin size, and location of the retention basins."

In Vogtle FSAR Section 9.2.9.2.2, "Component Description," a description of the wastewater retention basin was added to address AP1000 DCD COL Information Item 9.2.11.2. The information provided discusses the location and routing of the wastewater system, but does not address all of the details requested in the COL information item.

In order to meet GDC 60, applicant should demonstrate suitable control of the release of radioactive materials in liquid effluent. Provide a discussion on whether all site-specific potentially radioactive effluents draining into and downstream of the water basin will be monitored prior to disposition. Provide justification for not providing water level instrumentation and radiation monitoring in the wastewater retention basin and blowdown sump.

Also, provide additional details on the method proposed for transfer of inventory from wastewater settling basin to the discharge canal and provide a description of the associated components (ie. transfer pumps, size of basin, basin lining, etc...) as requested in the COL information item. Verify that all site-specific potentially radioactive effluents will be monitored prior to disposition. Or provide a justification for why this information is not necessary. Update FSAR accordingly.

SNC Response:

The waste water retention basin (WWRB) receives influent from the turbine building sump pumps via the associated oil separator. Radioactive contamination of this water is not expected. However, as discussed in DCD Subsection 9.2.9.2.1, a radiation monitor (described in DCD Subsection 11.5.2.3.3 as monitor WWS-JE-RE021) is located on the common discharge piping of the turbine building sump pumps. The monitor provides an alarm in the control room upon detection of radioactivity above a preset high level point in the waste water and trips the turbine building sump pumps to isolate the contaminated waste water. Provisions are included for sampling the turbine building sumps.

There are several waste water system (WWS) lines within the scope of the certified design that bypass this radiation monitor. These sources of influent to the WWRB were discussed in the response to Westinghouse AP1000 RAI-SRP9.3.3-SBPA-02, and are summarized below:

1. Diesel Fuel Area Sumps

   The diesel fuel area sump pumps discharge to the WWS oil separator and bypass the WWS radiation monitor. This effluent does not interact with any potentially radioactive sources during operation, nor are there any recognized radioactive sources located in the vicinity of this portion of the WWS.

2. Service Water System (SWS) Cooling Tower Blowdown

   The SWS blowdown can be routed to the WWRB as an alternative to the circulating water system (CWS) cooling tower basin (Ref. DCD figure 9.2.1-1). The SWS blowdown is equipped with a radiation monitor (described in DCD Subsection 11.5.2.3.1 as monitor SWS-JE-RE008). If radiation is detected, this monitor initiates an alarm in the main control room, and blowdown flow to the cooling tower can be isolated by remote manual control. Provision is also made for taking local fluid samples.

3. SWS Strainer Backwash

   The SWS strainer backwash is routed to the WWRB. The SWS radiation monitor described above (SWS-JE-RE008) will initiate an alarm in the control room, if radiation is detected. Automatic strainer backwash operation should be temporarily disabled in the event of an alarm.

4. CWS Strainer Backwash

   The CWS piping to the turbine building closed cooling water system (TCS) is provided with a strainer to prevent fouling of the TCS heat exchangers. The backwash from this strainer is routed to the WWRB. Radiation monitoring of the CWS is not required, because all systems interfacing with CWS that have plausible potential for contamination are provided with radiation monitoring. Also, the CWS is operated at a higher pressure than the condenser, precluding any potential contamination coming from the condenser.

For Vogtle Units 3 and 4, there are no additional "site specific" influent streams to the WWRB outside of those associated with the certified design. All influent streams with a potential to become radioactively contaminated are monitored as discussed above, therefore, no additional radiation monitoring of the WWRB effluent is provided.

Effluent from each WWRB is discharged to the common blowdown sump via the basin transfer pumps and associated piping.

At the blowdown sump, the waste water stream mixes with the high volume CWS blowdown stream. As discussed in the Westinghouse response to RAI-SRP9.3.3-SBPA-02, all systems interfacing with the CWS that have plausible potential for radioactive contamination are provided with radiation monitoring. Additionally, as described in COLA FSAR Subsection 10.4.5.2.3, passage of condensate from the main condenser into the CWS through a condenser tube leak is not possible during power generation operation, because the CWS operates at a greater pressure than the condenser. There are site specific local chemical addition lines used to inject chemicals from local tanks

into the CWS cooling tower basin, however, these lines do not interact with any potentially radioactive areas or sources. Therefore, no additional radiation monitoring of the CWS blowdown stream is provided.

An influent stream from the river water subsystem of the raw water system (RWS) also provides dilution flow to the blowdown sump. The RWS is used as an alternate dilution flow for the WLS discharge line, which joins the plant outfall downstream of the blowdown sump. This alternate dilution flow is used if the normal cooling tower blowdown is unavailable. The alternate dilution flow comes directly from the river water intake and does not interact with any recognized radioactive sources. Therefore, no radiation monitoring of the RWS influent stream is provided.

The blowdown sump discharges to the Savannah River, via gravity, through the plant outfall pipe. A branch line from the liquid radwaste system (WLS) joins the outfall pipe downstream of the blowdown sump. As discussed in Subsection 11.5.2.3.3, the liquid releases are made in batches that are mixed thoroughly and sampled prior to discharge. The WLS line is equipped with a radiation monitor (described in DCD Subsection 11.5.2.3.3 as monitor WLS-JE-RE229). The WLS connection is a relatively low volume flow stream that connects to the high volume outfall pipe at a location downstream of the blowdown sump and below the bottom elevation of the blowdown sump. Therefore, there is no potential for contamination of the blowdown sump via the WLS piping and no additional radiation monitoring of the outfall stream is provided.

Therefore, no additional monitoring of the influent streams to the WWRB, the blowdown sump or the outfall pipe has been provided.

The WWRB is equipped with level instrumentation used to control the WWRB basin transfer pumps (as discussed in FSAR Subsection 9.2.9.2.2) and to alarm when the WWRB basin level reaches a point where operator action is required (as discussed in FSAR Subsection 9.2.9.5). Each WWRB is located northwest of the associated power block. The normal WWRB water level is at or below grade. Site grading ensures that there will be no adverse impact on safety related or RTNSS structures, systems or components in the unlikely event of an overflow of the WWRB.

The outfall pipe is sized with adequate capacity to gravity drain the blowdown sump at the highest anticipated influent flow rate. Therefore, no level instrumentation is provided at the blowdown sump. The blowdown sump is located well away from the power block (approximately 2500 feet). Site drainage features ensure that there will be no impact on safety related or RTNSS structures, systems or components in the unlikely event of an overflow of the sump.

Subsection 9.2.9 of the COLA FSAR is being revised to include additional clarification and details to more fully address COL Information Item 9.2-2. The level of detail included in the COLA FSAR description of the WWS was specifically chosen to be consistent with:

1. Other Section 9.2 DCD/COLA FSAR subsections.

2. The original DCD description of the system that was included with Revision 15 of the DCD, when the WWS was fully AP1000 scope.

Therefore, rather than providing a specific numerical value for the size of the WWRB and the basin transfer pumps, the sizing basis is included.

In addition, because it relates to this subject, COLA FSAR Table 1.8-205 will be revised to address a pending DCD Revision 18 update identified to the NRC in Westinghouse letter DCP_NRC_002744, dated January 20, 2010, "Re-submittal of Proposed Changes for AP1000 Design Control Document Rev. 18." Change number 36 of that letter adds Item 9.8 to the list of plant interfaces in DCD Table 1.8-1. The new interface is the "Requirements for location and size of waste water retention basins and associated plant outfall." Based on the referenced letter, this item will also be addressed in the DCD text as new item (8) in DCD Section 1.8.

As previously discussed, the COLA FSAR will be revised, as shown in Attachment 1, to describe the sizing basis for the WWRB and outfall piping, as opposed to a specific numeric size. Location with respect to the power block is described in the text. Although not labeled, the WWRBs and the blowdown sump are shown in FSAR Figure 1.1-202. The Unit 3 WWRB is a rectangular structure centered at approximate coordinates E75+00, N82+00. The Unit 4 WWRB is a rectangular structure centered at approximate coordinates E67+00, N82+00. The blowdown sump is a small, square structure centered at approximate coordinates E87+00, N104+00. The full routing of the outfall piping, although not shown in the figure, roughly follows the road eastward from the blowdown sump to the river, where the outlet is shown and labeled as the "Discharge Line Units 3 & 4."

Associated VEGP COL Application Revision:

VEGP COLA Part 2, FSAR Table 1.8-205, will be revised (following the associated revision to the DCD) to add the following new Item No. 9.8:

Item No.	Interface	Interface Type	Matching Interface Item	Section or Subsection[1]
9.8	Requirements for location and size of waste water retention basins and associated plant outfall	NNS	Site implementation	9.2.9

VEGP COLA Part 2, FSAR Subsection 9.2.9, will be revised as shown in Attachment 1.

Attachment 1 to RAI 09.03.03-1 Response:

VEGP COLA Part 2, FSAR Subsection 9.2.9 will be revised as follows:

9.2.9 WASTE WATER SYSTEM

9.2.9.2.1 General Description

Add the following sentence to the fourth paragraph of DCD Subsection 9.2.9.2.1.

VEGP COL 9.2-2 The wastewater retention basin transfer pumps discharge the basin effluent to the blowdown sump which then mixes with the high volume waste stream (circulating water system cooling tower blowdown) prior to discharge to the Savannah River via the outfall piping.

VEGP SUP 9.2-2 Design and routing of the condenser waterbox drains is addressed in Subsection 10.4.5.2.2.

9.2.9.2.2 Component Description

Replace the paragraph in the Waste Water Retention Basin portion of DCD Subsection 9.2.9.2.2 with the following text.

VEGP COL 9.2-2 The waste water retention basin is a lined basin with two compartments and is constructed such that its contents, dissolved or suspended, do not penetrate the liner and leach into the ground. Either of these compartments can receive waste streams for holdup, or if required, for treatment to meet specific environmental discharge requirements.

The configuration and size of the wastewater retention basin allows settling of solids larger than 10 microns. Wastewater can be sampled prior to discharge from the wastewater retention basin. The wastewater retention basins are located northwest of each power block.

Add the following paragraphs at the end of DCD Subsection 9.2.9.2.2.

Basin Transfer Pumps

VEGP COL 9.2-2 Two 100% capacity submersible-type pumps send waste water from the retention basin to the blowdown sump. Each pump is sized to meet the maximum expected influent flow to prevent overflow of the basin. In the event of oily waste leakage into the retention

basin, a recirculation line is provided to recycle the oil/water waste from the basin to the oil separator. In the event of radioactive contamination, this same line can be used to send the contents of the basin to the liquid radioactive waste system (WLS). Controls are provided for automatic or manual operation of the pumps based on the level of the retention basin.

Blowdown Sump

VEGP SUP 9.2-3 A blowdown sump common to both Units 3 and 4 receives input from the wastewater retention basins and the circulating water system (CWS) cooling tower blowdown. The blowdown sump is located to the northeast of Units 3 and 4, outside of the protected area. A connection with the river water subsystem of the raw water system provides an alternate dilution source to the blowdown sump. These inputs are mixed with a dechlorination chemical, as needed, to produce an effluent that meets the NPDES permit requirements. This effluent then flows from the blowdown sump to the outfall structure, and then finally to the river.

Plant Outfall

The plant outfall is the final discharge point for Units 3 and 4. The outfall pipe is sized to drain, via gravity, the maximum expected flow from the blowdown sump. Effluent from the blowdown sump mixes with a small waste stream from the liquid radioactive waste system monitor tanks and is discharged eastward to the Savannah River. Dilution water from the raw water system may be supplied to the blowdown sump for radioactive waste discharges when the circulating water cooling tower blowdown is not available. To prevent radioactive contamination of the blowdown sump, the location of the tie-in between the liquid radwaste and the outfall is downstream and below the bottom elevation of the blowdown sump. The liquid radwaste is monitored for radiation and is addressed in detail in DCD Section 11.2; the applicable radiation monitor is addressed in detail in DCD Subsection 11.5.2.3.3.

9.2.9.5 Instrumentation Applications

Add the following at the end of the first paragraph of DCD Subsection 9.2.9.5.

VEGP COL 9.2-2 ~~The wastewater retention basin high-level alarms will indicate the basin level where operator action is required.~~ Level instrumentation is provided at the waste water retention basin and is used to control operation of the basin transfer pumps. High level alarms indicate the basin level where operator action is required.