CHAPTER 11

RADIOACTIVE WASTE MANAGEMENT SYSTEM

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ACRONYMS AND ABBREVIATIONS

A/B	auxiliary building
AC/B	access building
ACC	accumulator
AMC	Annual Maintenance Cost
AOC	Annual Operating Cost
AOO	anticipated operational occurrence
CFR	Code of Federal Regulations
COL	Combined License
CPNPP	Comanche Peak Nuclear Power Plant
CRF	Capital Recovery Factor
CVCS	chemical and volume control system
CVDT	containment vessel reactor coolant drain tank
CWS	Circulating Water System
DCD	Design Control Document
DCEM	Direct Cost of Equipment and Materials
DLC	Direct Labor Cost
DOT	Department of Transportation
EAB	exclusion area boundary
ESW	essential service water
FSAR	final safety analysis report
GWMS	gaseous waste management system
HT	holdup tank
HVAC	heating, ventilation, and air conditioning
Hx	heat exchanger
ICF	Indirect Cost Factor
LCCF	Labor Cost Correction Factor
LWMS	liquid waste management system
MCR	Main Control Room
NEI	Nuclear Energy Institute
ODCM	offsite dose calculation manual
PCP	process control program
PERMS	process effluent radiation monitoring and sampling system
P&ID	piping and instrumentation diagram
PMW	primary makeup water
PWR	pressurized-water reactor
R/B	reactor building
RCP	reactor coolant pump

ACRONYMS AND ABBREVIATIONS

RCS	reactor coolant system
RG	regulatory guide
RWSAT	refueling water storage auxiliary tank
SG	steam generator
SRST	spent resin storage tank
SSC	structure, system, and component
SWMS	solid waste management system
TAC	Total Annual Cost
VCT	volume control tank
WHT	waste holdup tank
WMT	waste monitor tank
WMS	Waste Management System

11.0 RADIOACTIVE WASTE MANAGEMENT SYSTEM

11.1 SOURCE TERMS

This section of the referenced Design Control Document (DCD) is incorporated by reference with no departures or supplements.

11.2 LIQUID WASTE MANAGEMENT SYSTEM

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

11.2.1.5 Site-Specific Cost-Benefit Analysis

CP COL 11.2(5) Replace the third paragraph in DCD Subsection 11.2.1.5 with the following.

The cost benefit analysis performed to satisfy the requirements of 10 CFR Part 50, Appendix I, Section II.D used the guidance and methodology given in RG 1.110, March 1976. The generic parameters used in calculating the Total Annual Cost (TAC) are given in RG 1.110 for each radwaste treatment system augment. The fixed generic parameters provided in RG 1.110 include the Annual Operating Cost (AOC) (Table A-2), Annual Maintenance Cost (AMC) (Table A-3), Direct Cost of Equipment and Materials (DCEM) (Table A-1), and Direct Labor Cost (DLC) (Table A-1). The following variable parameters were used in the plant specific cost benefit analysis:

- Capital Recovery Factor (CRF) -This factor is taken from Table A-6 of RG 1.110 and reflects the cost of money for capital expenditures. A cost-of-money value of 7% per year is assumed in this analysis, consistent with the "Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission" (NUREG/BR-0058). Using the formulation following Table A-6, an interest rate of 7%, and a service life of 60 years, a CRF of 0.07123 was obtained.

- Indirect Cost Factor (ICF) -This factor takes into account whether the radwaste system is unitized or shared (in the case of a multi-unit site) and is taken from Table A-5 of RG 1.110. It is assumed that the radwaste system for this analysis is a unitized radwaste system at a multi-unit site, which equals an ICF of 1.75.

- Labor Cost Correction Factor (LCCF) -This factor takes into account the differences in relative labor costs between geographical regions and is taken from Table A-4 of RG 1.110. A LCCF of 1.1 is assumed in this analysis.

The first augment considered is a near replica train of the current US-APWR LWMS system which includes a single cartridge filter and four PWR clean waste demineralizers. Other augments considered independently were; 1) a liquid waste evaporator, 2) a reverse osmosis unit, and 3) a 90 gpm cartridge filter. The direct costs for the examined augments were scaled in order to represent the flow rates of the site-specific design and a 10% contingency factor was used.

Of the augments considered, the lowest total annual cost (TAC) was a 90 gpm cartridge filter with a TAC of $14,910 in 1975 dollars. Using the $1,000 per person-rem criterion prescribed by Appendix I to 10 CFR Part 50 the dose reduction would have to be 14.91 person-rem whole body (or thyroid) to be cost beneficial. Because the site specific population dose estimate is well below this value (i.e., 2.36 person-rem/yr and 2.07 person-rem/yr, Total Body and Thyroid respectively) there are no cost-beneficial liquid radwaste augments and no further cost-benefit analysis is needed to demonstrate compliance with 10 CFR 50, Appendix I Section II.D.

11.2.1.6 Mobile or Temporary Equipment

STD COL 11.2(1)
STD COL 12.3(7)

Replace the last sentence in the first paragraph in DCD Subsection 11.2.1.6 with the following.

Process piping connections have connectors different from the utility connectors to prevent cross-connection and contamination. The use of mobile or temporary equipment will require applicable regulatory requirements and guidance such as 10 CFR 50.34a, 10 CFR 20.1406 and RG 1.143 to be addressed. As such the purchase or lease contracts for any temporary and mobile equipment will specify the applicable criteria.

The space allocated for the temporary and mobile equipment is located in the Auxiliary Building to minimize the impact to the environment in the event of an accident or spillage of radioactive materials. Shield walls are provided on three sides with one side open for access during installation, operation, inspection, and maintenance. The shield walls also serve to minimize spread of contamination to the entire area. A shield door is provided with truck bay access door from the common walkway inside the A/B. At the door opening a curb with sloped sided is constructed to prevent spreading of any liquid spillage into the truck bay area. The connection for the spent resin is provided on the process piping panel and the transfer line is built into the pipe chase for shielding purposes. The location of the mobile unit facilitates short transfer distance. Drainage collection is provided for liquid leakage and is routed to the waste holdup tanks, which are located on a floor below, for reprocessing. Provisions are included to mitigate contamination of the facility. Demineralized water piping is provided for decontaminating the facility. The floor in the area for the mobile system is sloped away from the truck bay door and the stairwell. The floor is sloped toward the plant west wall, where contamination from leaks from the mobile systems can enter the floor drain for processing by the LWMS. A level detector is provided within the drain collection header.

STD COL 11.2(8)
STD COL 12.3(7)

Replace the second paragraph of DCD Subsection 11.2.1.6 with the following.

The temporary mobile/portable equipment installed in the LWMS is vendor-supplied and operated within the specified requirements. The temporary mobile/portable equipment includes the necessary connections and fittings to interface with the plant piping. The connectors are uniquely designed to prevent inadvertent cross connection between the radioactive and non-radioactive plant piping. The piping also includes backflow inhibitors. Liquid effluent from the temporary mobile/portable equipment is routed to the LWMS. An operating procedure will be provided prior to fuel load to ensure proper operation of the temporary mobile/portable equipment to prevent contamination of non-radioactive piping or uncontrolled releases of radioactivity into the environment so that guidance and information in Inspection and Enforcement (IE) Bulletin 80-10 (Ref. 11.2-25) is followed.

11.2.2 System Description

CP COL 11.2(2)
CP COL 11.2(6)

Replace third paragraph in DCD Subsection 11.2.2 with the following.

Process flow diagrams with process equipment, flow data, tank batch capabilities, and key control instrumentation are provided to indicate process design, method of operation, and release monitoring for the site specific liquid waste management system (LWMS).

Figure 11.2-201, Sheets 1 through 10 illustrate the piping and process equipment, instrumentation and controls for Comanche Peak Nuclear Power Plant (CPNPP) Units 3 and 4 LWMS.

The Liquid Waste Management System (LWMS) boundary ends at the discharge isolation valve and the radiation monitor of the discharge header from the waste monitor tanks, which is considered the controlled discharge point. The evaporation pond is not part of the LWMS because the pond only contains treated effluent for discharge. Unlike the waste monitor tanks, which could contain off-specification effluent that may need to be re-processed; the evaporation pond is designed to manage the tritium concentration in the SCR by providing temporary holdup of treated effluent for discharge.

The treated liquid effluents released from the CPNPP Units 3 and 4 and the evaporation pond are piped directly into the Unit 1 Waste Management System (WMS) flow receiver and head box, which includes the discharge flume. The effluents enter from the top of the receiver and head box and are above the liquid level in the box so that they flow freely into the box, from where the content flows to the Unit 1 WMS discharge flume, and by gravity to the Unit 1 Circulating Water System (CWS), via an existing Unit 1 pipeline connecting the WMS to the CWS. The Unit 3 and 4 treated effluent and the Unit 3 and 4 evaporation pond effluents are commingled with various Unit 1 and 2 waste effluent streams. This Unit 1 circulating water flow path then goes to the Unit 1 condenser water box outlet, where it joins the Unit 2 condenser water box outlet flow. The joined flows from the

condenser water boxes are then sent to the SCR via the Unit 1 and 2 discharge tunnel and outfall structure from all four units (see Figure 11.2-201 Sheet 10) for a visual representation of the above described flow path.

This arrangement ensures that there is always circulating cooling water flow for Unit 1 and/or Unit 2 and that there is less back pressure into the treated effluent flow. Based on the fact that the effluent piping flows freely into the box and that there is less back pressure, there is no need for a mixing orifice and backflow preventer, as the large circulating water return flow and length of pipe is sufficient to thoroughly mix the release.

The bypass valve, VLV-531, is located in the same area with the radiation monitor and the discharge control valves (RCV-035A and RCV-035B), which are inside the Auxiliary Building. All normal discharge is required to go through the discharge control valves. To ensure discharge operation is not prevented by the failure of the control valves at any time, a bypass valve is added around the radiation monitor and the discharge control valves. Plant procedures require that an operator verify the tank water radioactivity concentration by sampling and water volume by level indicator prior to a liquid effluent release via the bypass valve. The ODCM and supporting procedures ensure appropriate actions to prevent an unmonitored release.

Any leakage from the piping and the valves inside the buildings is collected in the floor drain sump, and is forwarded to the waste holdup tank for re-processing. It should be noted that the discharge control valves are downstream of the discharge isolation valve (AOV-522A and AOV-522B). During normal operations, the discharge is anticipated to occur once a week for approximately three hours for treated effluent, and one discharge (approximately an hour at 20 gpm) of detergent waste (filtered personnel showers and hand washes) daily. After each discharge, the line is flushed with demineralized water for decontamination.

The bypass valve is normally locked-closed and tagged. It requires an administrative approval key to open and the valve position is verified by at least two technically qualified members of the CPNPP Operations staff before discharge can start. Thus, a single operator error does not result in an unmonitored release. In the unlikely event that the valve is inadvertently left open, or partially open, the flow element detects flow and initiates an alarm for operator action. Also, a portion of the flow continues to flow through the radiation monitor sample chamber. Because the monitor output depends on radionuclide concentration and not flow rate, there is no impact on radiation monitor sensitivity from reduced flow conditions. Prior to opening VLV-531 to establish the alternate flow path, the tanks (ATK-006A and ATK-006B) will be sampled and water volume verified by level indicator to confirm that the contents meet the discharge specifications. Therefore, there is no impact on the annual liquid release and the annual dose to the members of the public if the bypass valve is inadvertently left fully-open.

If the monitor reaches the high setpoint, it sends signals to initiate pump shutdown, valve closure and operator actions.

11.2.3.1 Radioactive Effluent Releases and Dose Calculation in Normal Operation

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CP COL 11.2(2)
CP COL 11.2(4)

Replace the last six paragraphs in DCD Subsection 11.2.3.1 with the following.

The detailed design information of release point is described in Subsection 11.2.2.

The annual average release of radionuclides is estimated by the PWR-GALE Code (Ref.11.2-13) with the reactor coolant activities described in Section 11.1. The version of the code is a proprietary modified version of the NRC PWR-GALE code reflecting the specifics of the US-APWR design (Ref. 11.2-27). The parameters used by the PWR-GALE Code are provided in DCD Table 11.2-9 and the calculated effluents are provided in Table 11.2-10R. The calculated effluents for the maximum releases are provided in Table 11.2-11R. For this site-specific application, handling of contaminated laundry is contracted to off-site services. Therefore, the detergent waste effluent is not considered.

The calculated effluent concentrations using annual release rates are then compared against the concentration limits of 10 CFR 20 Appendix B (see Tables 11.2-12R and 11.2-13R.).

Once it is confirmed that the treated effluent meets discharge requirements, the effluent is released into Squaw Creek Reservoir (SCR) via the CPNPP Units 1 and 2 circulating water return line. The liquid effluent is maintained at ambient temperature, as it is stored inside the Auxiliary Building (A/B) waste monitoring tanks (WMTs). Currently, SCR has a tritium reporting level of 30,000 pCi/L (Reference 11.2-201, ODCM for CPNPP Units 1 and 2). Based on an analysis, the tritium concentration in SCR is anticipated to remain within the limit due to local rainfall, evaporation, and controlled release to Squaw Creek.

However, during the maximum tritium generation condition (i.e., all four units operating at full power), the tritium reporting level in SCR could be exceeded. When it is determined to be undesirable to increase the tritium concentration in SCR by discharging treated effluent from Units 3 and 4, up to half of the treated liquid effluent from CPNPP Units 3 and 4 can be diverted to the evaporation pond for temporary staging (Subsection 11.2.3.4).

Isotopic concentrations are calculated assuming 247,500 gpm per unit of circulating water from CPNPP Units 1 and 2 (Reference 11.2-201). The isotopic ratios between the expected releases and the concentration limits of 10 CFR 20 Appendix B are listed in Tables 11.2-12R. The isotopic ratios between the

maximum releases and the concentration limits of 10 CFR 20 Appendix B are listed in Table 11.2-13R. These ratio values are less than the allowable value of 1.0.

The individual doses and population doses are evaluated with the LADTAP II Code (Reference 11.2-14). The site-specific parameters used in the LADTAP II Code are listed in Table 11.2-14R, and the calculated individual doses are listed in Table 11.2-15R. Population dose due to public use of SCR is estimated to be 250 times the maximum SCR individual dose based on an estimated maximum usage of 250 people. The exposure pathways considered due to the public use of SCR are fishing and shoreline recreation. There are no drinking water pathways or irrigated food pathways associated with SCR. Swimming is not a significant contributor to population dose and the 50-mile population dose due to fish ingestion is unchanged due to the public use of SCR. Therefore, drinking water, irrigated foods, swimming and fish ingestion are not considered for the 50-mile population dose.The calculated population dose from liquid effluents is 2.36 person-rem for whole-body and 2.07 person-rem for thyroid. Based on these parameters, the maximum individual dose to total body is 0.90 mrem/yr (adult) and the maximum individual dose to organ is 1.29 mrem/yr (teenager's liver). These values are less than the 10 CFR 50 Appendix I criteria of 3 mrem/yr and 10 mrem/yr, respectively. Evaluating the dose contribution from the evaporation pond (conservatively assuming 50% evaporation of the diverted flow) amounts to 2.37E+00 mrem/yr (Adult's GI-Tract) described in FSAR Table 11.3-204 and the combined dose from the vent stack gaseous emission and the evaporation pond emission amounts to 2.55E+00 mrem/yr (Adult's GI-Tract) described in FSAR Table 11.3-205, which is well within the 10 CFR Appendix I limit. Based on the above, the evaporation pond meets the acceptance criteria of SRP 11.2. RG 1.143 does not provide any guidance on specific design requirements for an evaporation pond. Hence RG 1.143 is not applicable to the design of the evaporation pond. According to NUREG-0543 (Reference 11.2-202), there is reasonable assurance that sites with up to four operating reactors that have releases within Appendix I design objective values are also in conformance with the EPA Uranium Fuel Cycle Standard, 40 CFR 190. Once the proposed Units 3 and 4 are constructed, the Comanche Peak site will consist of four operating reactors.

11.2.3.2 Radioactive Effluent Releases Due to Liquid Containing Tank Failures

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CP COL 11.2(3) Replace the last sentence in the second paragraph in DCD Subsection 11.2.3.2 with the following.

Source term for each tank is provided in the DCD and the assessment of this model using the site-specific parameters to evaluate the conservatism of this analysis is described below.

CP COL 11.2(3) Replace the first two sentences in the last paragraph in DCD Subsection 11.2.3.2 with the following.

The evaluation of potential radioactive effluent releases to surface water or groundwater due to failure of the boric acid tank is provided in Subsection 2.4.13. Releases from this tank result in concentrations at the nearest unrestricted potable water supply that are within the limits of 10 CFR 20, Appendix B (Ref 11.2-8).

CP SUP 11.2(1) Add the following Subsection after DCD Subsection 11.2.3.3.

11.2.3.4 Evaporation Pond

The primary purpose of the evaporation pond is to receive, store, and process treated radioactive effluent from the LWMS when it is undesirable to potentially increase the SCR tritium concentration by discharging Unit 3 and 4 treated effluent into SCR.

The open evaporation pond covers approximately 1.5 acres and can hold up to 2.1 million gallons of treated effluent from the LWMS. The pond liquid depth is 4 ft with a 2-ft freeboard provided by a berm designed to prevent surface flooding from entering the pond.

The evaporation pond is designed to provide sufficient surface area for natural evaporation based on the local area rainfall, evaporation rate, and receiving half of the Units 3 and 4 treated liquid effluent. The evaporation pond is sized to prevent overflow due to local maximum rainfall condition. Rainfall is the primary contributing source for dilution of the pond.

The evaporation pond is constructed with two layers of high-density polyethelene (HDPE) material suitable for this service. The HDPE is a minimum of 60 mils thickness. A drainable mesh mat with a minimum thickness of 30 mils is provided in between the two layers of HDPE to allow movement and detection of leakage from the top layer of HDPE. An alarm signal is sent to the MCR and the Radwaste Control Room for operator action if leakage is detected.

The bottom of the evaporation pond is sloped toward the leak detection pit and toward the discharge pump pit. The leak detection pit is a small pit underneath the two layers of HDPE in which leakage through the HDPE is caught and detected. The discharge pump pit is designed to facilitate pumping water out of the pond.

The pond does not need to be used continuously because diversion of flow is not required during normal operating conditions and anticipated operational occurrences. The design features (HDPE, leak detection pit, and sloping towards the drainage pit for discharge) and operating procedures (cleaning, diversion only when required) ensure ease of decontamination and minimization of cross contamination (leakage to the groundwater), and thus satisfy 10 CFR 20.1406 and RG 4.21.

The LWMS piping for transporting treated effluent from the discharge valve inside the A/B to the evaporation pond and the piping from the pond to the Unit 1 flow receiver and head box consists of the following piping segments:

1. From the WMT discharge valves, single-walled carbon steel pipe is routed in pipe chases from the A/B, through the Power Source Building (PS/B), up to the Turbine Building (T/B) exit wall penetration.

2. The effluent pipe is then connected to a single-walled carbon steel pipe or double-walled HDPE piping from the T/B wall to the yard. This portion of pipe is run in the piping trench. A transition manhole is constructed near the plant pavement boundary to accommodate splitting the radwaste effluent pipe into two piping segments: the first segment goes to the Unit 1 flow receiver and headbox, and the second segment goes to the radwaste evaporation pond.

3. Buried double-walled HDPE piping from the transition manhole to the Unit 1 flow receiver and head box and to the evaporation pond.

4. Buried double-walled HDPE piping from the radwaste evaporation pond to the Unit 1 flow receiver and head box. This pipe is buried parallel to the effluent pipe from the WMTs and passes through the same manholes for testing and inspection for piping integrity.

Additional manholes are provided for testing and inspection of the buried piping. Each manhole is equipped with drain collection basins and leak detection instruments to send a signal when activated by fluid in the manhole to a receiver in the MCR for operator action. This design approach minimizes leakage and provides accessibility to facilitate periodic testing (hydrostatic or pressure), or visual inspection to maintain pipe integrity and is compliant with RG 4.21. A back flow preventer is provided near the Units 1 and 2 discharge boxes to prevent back flow from the circulating water.

The treated effluent release piping is non-safety and does not have any safety function. In addition, the Unit 1 flow receiver and head box, circulating water system, and discharge box are not required to perform any safety function or important to safety functions.

The evaporation pond is designed and constructed in accordance with the following standards; others may be applicable as the design is finalized:

Texas Administrative Code (TAC), Title 30 on Environmental Quality, Part 1 Texas Commission on Environmental Quality (TCEQ):

TCEQ 321.255, Requirements for Containment of Wastes and Pond(s)

TCEQ 330, Municipal Solid Waste

TCEQ 217.203, Design Criteria for Natural Treatment Facilities

American Society for Testing and Materials (ASTM)

ASTM D3020, Specification for Polyethylene and Ethylene Copolymer Plastic Sheeting for Pond, Canal and Reservoir Lining

ASTM D5514-06, Standard Test Method of Large Scale Hydrostatic Puncture Testing of Geosynthetics

ASTM D7002-03, Standard Practice for Leak Location on Exposed Geomembranes Using the Water Puddle System

Industry standards such as ANSI / HI -2005 “Pump Standards” will be used in designing the pumps

Geosynthetic Research Institute Standard GM13 will be utilized for HDPE

The evaporation pond construction requirements from the TECQ and ASTM codes and standards listed above are specified in a construction specification that includes sloping the pond, liner type, instrument calibration, number of layers, thickness, etc.

The evaporation pond is constructed on top of a layer of clay with permeability less than 1E-7 centimeter per second. The overall construction meets or exceeds the requirements for waste water ponds stipulated by TCEQ. Some TCEQ requirements are as follows:

- In situ clay soils or placed and re-compacted clay soils meeting:
  - more than 30% passing a Number 200 mesh sieve
  - liquid limit greater than 30%
  - plasticity index greater than 15
  - a minimum thickness of two feet
  - permeability equal to or less than 1×10^{-7}centimeter per second

- Soil compaction will be 95% standard proctor density at optimum moisture content
- The pond is protected from inundation by a ten-year, two-hour rainfall event

The evaporation pond will be initially inspected and tested following construction and prior to the initial release of treated liquid effluents from the LWMS to the pond. Testing and inspection of the evaporation pond will consist of the following:

- Inspection of the liner for integrity, lack of damage, and welt seam construction
- Slope and drainage capability
- Instrumentation calibration
- Leakage detection system

The evaporation pond will be periodically tested and inspected using the acceptance criteria established in the codes and standards listed above. The periodic testing and inspection procedures for the evaporation pond meet the TCEQ permit process and requirements, and include the following:

- Water sample and analysis before draining and decontamination to monitor concentration buildup
- Liner and welt seam integrity
- Drainage capability
- Instrument calibration
- Soil and groundwater contamination analysis per NEI 07-07

If testing and/or inspection results require the liner to be repaired, the pond contents are removed, and the pond is rinsed before repair is performed.

Evaporation Pond Operation

When it is determined to be undesirable to increase the tritium concentration in SCR by discharging treated effluent from CPNPP Units 3 and 4, the liquid effluent from CPNPP Units 3 and 4 can be diverted to the evaporation pond for temporary staging. When the tritium concentration in SCR decreases to a level that allows discharge to the reservoir, the effluent in the evaporation pond is sampled and analyzed for discharge into SCR. In the event that both CPNPP Units 1 and 2 are temporarily not in operation, or when there is no dilution flow, the CPNPP Units 3 and 4 waste holdup tanks (WHTs) have enough capacity to store more than a

month of the daily waste input. The evaporation pond can also receive 100 percent of the CPNPP Units 3 and 4 treated liquid effluent on a temporary basis, up to two years.

The evaporation pond is equipped with a centrifugal pump to discharge the contents to SCR when the tritium concentration in SCR permits. The discharge piping leaving the evaporation pond discharges into the Unit 1 receiver and head box. A radiation monitor close to the evaporation pond discharge pump provides a signal to automatically turn off the pump, shut the discharge valve, and alarm in the MCR and the Radwaste Control Room. The setpoint of the evaporation pond discharge radiation monitor is the same as the setpoint of the WMT discharge radiation monitors that monitor flow going into the evaporation pond.

The evaporation pond discharge pump also acts as a recirculation pump for the pond. The pond is recirculated sufficiently to obtain a representative sample at the discharge pump before discharging the pond contents to the CPNPP Unit 1 flow receiver and head box. The procedures for recirculation and sampling are governed by the site-wide ODCM, which adopts NEI 07-09A, thus addressing NRC guidance such as NUREG-1301 and RG 1.21.

The evaporation pond discharge pump and discharge isolation valve are under supervisory control.

Operating procedures limit the use of the evaporation pond to receive treated effluent on an as-needed basis and the pond will be washed each time it is emptied. Sampling procedures require that the tritium concentration in SCR is confirmed to be below the pre-determined setpoint before the evaporation pond contents are discharged to SCR. The tritium sampling procedures are governed by the site-wide ODCM, which has an implementation milestone established as shown in Table 13.4-201.

11.2.4 Testing and Inspection Requirements

CP COL 11.2(7) Add the following sentences to the end of the last paragraph of DCD Subsection 11.2.4.

The licensee has an Epoxy Coatings Program used to facilitate the ALARA objective of promoting decontamination in radiologically controlled areas outside containment. The program controls refurbishment, repair, and replacement of coatings in accordance with the manufacturers' product data sheets and good painting practices. The program will be implemented as described in FSAR Table 13.4-201.

11.2.5 Combined License Information

Replace the content of DCD Subsection 11.2.5 with the following.

STD COL 11.2(1) ***11.2(1)*** *The mobile and temporary liquid radwaste processing equipment*

This combined license (COL) item is addressed in Subsection 11.2.1.6.

CP COL 11.2(2) ***11.2(2)*** *Site-specific information of the LWMS*

This COL item is addressed in Subsections 11.2.2 and 11.2.3.1.

CP COL 11.2(3) ***11.2(3)*** *The liquid containing tank failure*

This COL item is addressed in Subsection 11.2.3.2.

CP COL 11.2(4) ***11.2(4)*** *The site-specific dose calculation*

This COL item is addressed in Subsection 11.2.3.1, Table 11.2-10R, Table 11.2-11R, Table 11.2-12R, Table 11.2-13R, Table 11.2-14R and Table 11.2-15R.

CP COL 11.2(5) ***11.2(5)*** *Site-specific cost benefit analysis*

This COL item is addressed in Subsection 11.2.1.5.

CP COL 11.2(6) ***11.2(6)*** *Piping and instrumentation diagrams*

This COL item is addressed in Subsection 11.2.2 and Figure 11.2-201.

CP COL 11.2(7) ***11.2(7)*** *The implementation milestones for the coatings program used in the LWMS*

This COL item is addressed in Subsection 11.2.4.

STD COL 11.2(8) ***11.2(8)*** *The mobile/portable LWMS connections*

This COL item is addressed in Subsection 11.2.1.6.

11.2.6 References

Add the following references after the last reference in DCD Subsection 11.2.6.

11.2-201 *Offsite Dose Calculation Manual for CPNPP Units 1 & 2*, Revision 26.

11.2-202 U.S. Nuclear Regulatory Commission, *Methods for Demonstrating LWR Compliance With the EPA Uranium Fuel Cycle Standard (40 CFR 190),* NUREG-0543, Washington, DC, 1980.

CP COL 11.2(4)

Table 11.2-10R (Sheet 1 of 2)
Liquid Releases Calculated by PWR GALE Code(4) (Ci/yr)

Isotope	Shim Bleed	Misc. Wastes	Turbine Building	Combined Releases	Detergent Waste(3)	TOTAL Releases (1)
Corrosion and Activation Products						
Na-24	0.00000	0.00029	0.00002	0.00031	N/A	4.70E-03
P-32	0.00000	0.00000	0.00000	0.00000	N/A	0.00E+00
Cr-51	0.00000	0.00008	0.00000	0.00008	N/A	1.30E-03
Mn-54	0.00000	0.00004	0.00000	0.00005	N/A	7.00E-04
Fe-55	0.00000	0.00003	0.00000	0.00003	N/A	5.00E-04
Fe-59	0.00000	0.00001	0.00000	0.00001	N/A	1.00E-04
Co-58	0.00000	0.00012	0.00000	0.00013	N/A	1.90E-03
Co-60	0.00000	0.00001	0.00000	0.00002	N/A	0.00E+00
Ni-63	0.00000	0.00000	0.00000	0.00000	N/A	0.00E+00
Zn-65	0.00000	0.00001	0.00000	0.00001	N/A	2.20E-04
W-187	0.00000	0.00002	0.00000	0.00002	N/A	3.50E-04
Np-239	0.00000	0.00003	0.00000	0.00004	N/A	5.30E-04
Fission Products						
Rb-88	0.00000	0.00187	0.00000	0.00187	N/A	2.80E-02
Sr-89	0.00000	0.00000	0.00000	0.00000	N/A	6.00E-05
Sr-90	0.00000	0.00000	0.00000	0.00000	N/A	8.00E-06
Sr-91	0.00000	0.00000	0.00000	0.00000	N/A	6.80E-05
Y-91m	0.00000	0.00000	0.00000	0.00000	N/A	4.40E-05
Y-91	0.00000	0.00000	0.00000	0.00000	N/A	1.00E-05
Y-93	0.00000	0.00002	0.00000	0.00002	N/A	3.10E-04
Zr-95	0.00000	0.00001	0.00000	0.00001	N/A	2.00E-04
Nb-95	0.00000	0.00001	0.00000	0.00001	N/A	1.00E-04
Mo-99	0.00000	0.00011	0.00000	0.00011	N/A	1.64E-03
Tc-99m	0.00000	0.00011	0.00000	0.00011	N/A	1.70E-03
Ru-103	0.00001	0.00020	0.00000	0.00021	N/A	3.11E-03
Rh-103m	0.00001	0.00020	0.00000	0.00021	N/A	3.10E-03
Ru-106	0.00010	0.00243	0.00005	0.00257	N/A	3.81E-02
Rh-106	0.00010	0.00243	0.00005	0.00257	N/A	3.90E-05
Ag-110m	0.00000	0.00003	0.00000	0.00004	N/A	6.00E-04
Ag-110	0.00000	0.00000	0.00000	0.00000	N/A	7.20E-05
Sb-124	0.00000	0.00000	0.00000	0.00000	N/A	0.00E+00
Te-129m	0.00000	0.00000	0.00000	0.00001	N/A	7.80E-05
Te-129	0.00000	0.00002	0.00000	0.00002	N/A	3.10E-04
Te-131m	0.00000	0.00002	0.00000	0.00002	N/A	2.50E-04
Te-131	0.00000	0.00000	0.00000	0.00001	N/A	7.60E-05
I-131	0.00002	0.00001	0.00000	0.00002	N/A	4.00E-04
Te-132	0.00000	0.00003	0.00000	0.00003	N/A	4.70E-04
I-132	0.00000	0.00001	0.00001	0.00002	N/A	3.10E-04
I-133	0.00001	0.00002	0.00003	0.00005	N/A	8.10E-04
I-134	0.00000	0.00001	0.00000	0.00001	N/A	8.90E-05
Cs-134	0.00002	0.00005	0.00000	0.00007	N/A	1.00E-03
I-135	0.00000	0.00002	0.00003	0.00005	N/A	7.80E-04
Cs-136	0.00030	0.00112	0.00000	0.00141	N/A	2.16E-02
Cs-137	0.00003	0.00008	0.00000	0.00011	N/A	2.00E-03

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Table 11.2-10R (Sheet 2 of 2)

Liquid Releases Calculated by PWR GALE Code(4) (Ci/yr)

Isotope	Shim Bleed	Misc. Wastes	Turbine Building	Combined Releases	Detergent Waste(3)	TOTAL Releases (1)
Fission Products						
Ba-137m	0.00003	0.00000	0.00000	0.00003	N/A	4.60E-04
Ba-140	0.00001	0.00031	0.00001	0.00033	N/A	4.89E-03
La-140	0.00001	0.00051	0.00001	0.00053	N/A	8.00E-03
Ce-141	0.00000	0.00000	0.00000	0.00000	N/A	6.00E-05
Ce-143	0.00000	0.00003	0.00000	0.00003	N/A	5.00E-04
Pr-143	0.00000	0.00001	0.00000	0.00001	N/A	7.90E-05
Ce-144	0.00000	0.00011	0.00000	0.00011	N/A	1.70E-03
Pr-144	0.00000	0.00011	0.00000	0.00011	N/A	1.70E-03
All others	0.00000	0.00000	0.00000	0.00000	N/A	1.20E-05
TOTAL (except H-3)	**0.00065**	**0.01053**	**0.00025**	**0.01143**	N/A	**1.70E-01**
H-3 release						1.60E+03

Notes:

1. The release totals include an adjustment of 0.16 Ci/yr added by the PWR-GALE Code to account for AOOs.
2. An entry of 0.00000 indicates that the value is less than 1.0E-5 Ci/yr.
3. For this site-specific application, contaminated laundry is contracted for off-site services.
4. These releases are for a single reactor.

CP COL 11.2(4)

Table 11.2-11R (Sheet 1 of 2)
Liquid Releases with Maximum Defined Fuel Defects(4) (Ci/yr)

Isotope	Shim Bleed	Misc. Wastes	Turbine Building	Combined Releases	Detergent Waste(3)	TOTAL Releases(1)
Corrosion and Activation Products						
Na-24	0.00000	0.00029	0.00002	0.00031	N/A	3.20E-04
P-32	0.00000	0.00000	0.00000	0.00000	N/A	0.00E+00
Cr-51	0.00000	0.00008	0.00000	0.00008	N/A	8.25E-05
Mn-54	0.00000	0.00004	0.00000	0.00004	N/A	4.13E-05
Fe-55	0.00000	0.00003	0.00000	0.00003	N/A	3.09E-05
Fe-59	0.00000	0.00001	0.00000	0.00001	N/A	1.03E-05
Co-58	0.00000	0.00012	0.00000	0.00012	N/A	1.24E-04
Co-60	0.00000	0.00001	0.00000	0.00001	N/A	1.03E-05
Ni-63	0.00000	0.00000	0.00000	0.00000	N/A	0.00E+00
Zn-65	0.00000	0.00001	0.00000	0.00001	N/A	1.03E-05
W-187	0.00000	0.00002	0.00000	0.00002	N/A	2.06E-05
Np-239	0.00000	0.00003	0.00000	0.00003	N/A	3.09E-05
Fission Products						
Rb-88	0.00000	0.03849	0.00000	0.03849	N/A	3.97E-02
Sr-89	0.00000	0.00000	0.00000	0.00000	N/A	0.00E+00
Sr-90	0.00000	0.00000	0.00000	0.00000	N/A	0.00E+00
Sr-91	0.00000	0.00000	0.00000	0.00000	N/A	0.00E+00
Y-91m	0.00000	0.00000	0.00000	0.00000	N/A	0.00E+00
Y-91	0.00000	0.00000	0.00000	0.00000	N/A	0.00E+00
Y-93	0.00000	0.00000	0.00000	0.00000	N/A	0.00E+00
Zr-95	0.00000	0.00001	0.00000	0.00001	N/A	1.03E-05
Nb-95	0.00000	0.00002	0.00000	0.00002	N/A	2.06E-05
Mo-99	0.00000	0.01333	0.00000	0.01333	N/A	1.38E-02
Tc-99m	0.00000	0.00527	0.00000	0.00527	N/A	5.44E-03
Ru-103	0.00000	0.00001	0.00000	0.00001	N/A	1.03E-05
Rh-103m	0.00000	0.00001	0.00000	0.00001	N/A	1.03E-05
Ru-106	0.00000	0.00001	0.00000	0.00001	N/A	1.03E-05
Rh-106	0.00000	0.00001	0.00000	0.00001	N/A	1.03E-05
Ag-110m	0.00000	0.00000	0.00000	0.00000	N/A	0.00E+00
Ag-110	0.00000	0.00000	0.00000	0.00000	N/A	0.00E+00
Sb-124	0.00000	0.00000	0.00000	0.00000	N/A	0.00E+00
Te-129m	0.00000	0.00000	0.00000	0.00000	N/A	0.00E+00
Te-129	0.00000	0.00000	0.00000	0.00000	N/A	0.00E+00
Te-131m	0.00000	0.00033	0.00000	0.00033	N/A	3.40E-04
Te-131	0.00000	0.00000	0.00000	0.00000	N/A	0.00E+00
I-131	0.02891	0.01445	0.00000	0.04336	N/A	4.47E-02
Te-132	0.00000	0.00526	0.00000	0.00526	N/A	5.43E-03
I-132	0.00000	0.00015	0.00015	0.00030	N/A	3.09E-04
I-133	0.00163	0.00327	0.00491	0.00981	N/A	1.01E-02
I-134	0.00000	0.00005	0.00000	0.00005	N/A	5.16E-05
Cs-134	0.73457	1.83643	0.00000	2.57100	N/A	2.65E+00
I-135	0.00000	0.00083	0.00125	0.00208	N/A	2.15E-03
Cs-136	0.12019	0.44873	0.00000	0.56892	N/A	5.87E-01
Cs-137	0.43698	1.16528	0.00000	1.60226	N/A	1.65E+00

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Table 11.2-11R (Sheet 2 of 2)

Liquid Releases with Maximum Defined Fuel Defects(4) (Ci/yr)

Isotope	Shim Bleed	Misc. Wastes	Turbine Building	Combined Releases	Detergent Waste(3)	TOTAL Releases (1)
Fission Products						
Ba-137m	0.20917	0.00000	0.00000	0.20917	N/A	2.16E-01
Ba-140	0.00000	0.00010	0.00000	0.00010	N/A	1.03E-04
La-140	0.00000	0.00002	0.00000	0.00002	N/A	2.06E-05
Ce-141	0.00000	0.00000	0.00000	0.00000	N/A	0.00E+00
Ce-143	0.00000	0.00000	0.00000	0.00000	N/A	0.00E+00
Pr-143	0.00000	0.00000	0.00000	0.00000	N/A	0.00E+00
Ce-144	0.00000	0.00001	0.00000	0.00001	N/A	1.03E-05
Pr-144	0.00000	0.00001	0.00000	0.00001	N/A	1.03E-05
TOTAL (except H-3)	**1.53145**	**3.53272**	**0.00633**	**5.07050**	N/A	**5.23E+00**
H-3 release						1.60E+03

Notes:

1. The release totals include an adjustment of 0.16 Ci/yr added by the PWR-GALE Code to account for AOOs.
2. An entry of 0.00000 indicates that the value is less than 1.0E-5 Ci/yr.
3. For this site-specific application, contaminated laundry is contracted for off-site services.
4. These releases are for a single reactor.

CP COL 11.2(4)

Table 11.2-12R (Sheet 1 of 2)

Comparison of Annual Average Liquid Release Concentrations with 10 CFR 20 (Expected Releases)

Isotope (1)	**Discharge Concentration (μCi/ml) (2)(5)**	**Effluent Concentration Limit (μCi/ml) (3)**	**Fraction of Concentration Limit(4)**
Na-24	1.19E-11	5.00E-05	2.39E-07
P-32	0.00E+00	9.00E-06	0.00E+00
Cr-51	3.30E-12	5.00E-04	6.60E-09
Mn-54	1.78E-12	3.00E-05	5.92E-08
Fe-55	1.27E-12	1.00E-04	1.27E-08
Fe-59	2.54E-13	1.00E-05	2.54E-08
Co-58	4.82E-12	2.00E-05	2.41E-07
Co-60	0.00E+00	3.00E-06	0.00E+00
Ni-63	0.00E+00	1.00E-04	0.00E+00
Zn-65	5.58E-13	5.00E-06	1.12E-07
W-187	8.88E-13	3.00E-05	2.96E-08
Np-239	1.35E-12	2.00E-05	6.73E-08
Rb-88	7.11E-11	4.00E-04	1.78E-07
Sr-89	1.52E-13	8.00E-06	1.90E-08
Sr-90	2.03E-14	5.00E-07	4.06E-08
Sr-91	1.73E-13	2.00E-05	8.63E-09
Y-91m	1.12E-13	2.00E-03	5.58E-11
Y-91	2.54E-14	8.00E-06	3.17E-09
Y-93	7.87E-13	2.00E-05	3.93E-08
Zr-95	5.08E-13	2.00E-05	2.54E-08
Nb-95	2.54E-13	3.00E-05	8.46E-09
Mo-99	4.16E-12	2.00E-05	2.08E-07
Tc-99m	4.32E-12	1.00E-03	4.32E-09
Ru-103	7.89E-12	3.00E-05	2.63E-07
Rh-103m	7.87E-12	6.00E-03	1.31E-09
Ru-106	9.67E-11	3.00E-06	3.22E-05
Ag-110m	1.52E-12	6.00E-06	2.54E-07
Sb-124	0.00E+00	7.00E-06	0.00E+00
Te-129m	1.98E-13	7.00E-06	2.83E-08
Te-129	7.87E-13	4.00E-04	1.97E-09
Te-131m	6.35E-13	8.00E-06	7.93E-08
Te-131	1.93E-13	8.00E-05	2.41E-09
I-131	1.02E-12	1.00E-06	1.02E-06
Te-132	1.19E-12	9.00E-06	1.33E-07
I-132	7.87E-13	1.00E-04	7.87E-09
I-133	2.06E-12	7.00E-06	2.94E-07

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Table 11.2-12R (Sheet 2 of 2)

Comparison of Annual Average Liquid Release Concentrations with 10 CFR 20 (Expected Releases)

Isotope (1)	**Discharge Concentration (μCi/ml) (2)(5)**	**Effluent Concentration Limit (μCi/ml) (3)**	**Fraction of Concentration Limit(4)**
I-134	2.26E-13	4.00E-04	5.65E-10
Cs-134	2.54E-12	9.00E-07	2.82E-06
I-135	1.98E-12	3.00E-05	6.60E-08
Cs-136	5.49E-11	6.00E-06	9.15E-06
Cs-137	5.08E-12	1.00E-06	5.08E-06
Ba-140	1.24E-11	8.00E-06	1.55E-06
La-140	2.03E-11	9.00E-06	2.26E-06
Ce-141	1.52E-13	3.00E-05	5.08E-09
Ce-143	1.27E-12	2.00E-05	6.35E-08
Pr-143	2.01E-13	2.00E-05	1.00E-08
Ce-144	4.32E-12	3.00E-06	1.44E-06
Pr-144	4.32E-12	6.00E-04	7.19E-09
H-3	4.06E-06	1.00E-03	4.06E-03
TOTAL			4.12E-03

Notes:

1. Rh-106, Ag-110, Ba-137m are not included in Table 2 of 10 CFR 20 Appendix B. Therefore, these nuclides are excluded from the calculation of the discharge concentration.
2. Annual average discharge concentration based on release of average daily discharge for 292 days per year with 247,500 gpm dilution flow. This includes a Safety Factor of 0.9 to compensate for flow fluctuations.
3. 10 CFR 20 Appendix B, Table 2
4. Fractions of 10 CFR 20 concentration limits are for a single unit.
5. The basis of the PWR-GALE source term calculation uses a built-in capacity factor of 80%, which is less than the expected capacity factor for the US-APWR. This difference in capacity factor has no impact on liquid effluent release concentrations.

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Table 11.2-13R (Sheet 1 of 2)

Comparison of Annual Average Liquid Release Concentrations with 10 CFR 20 (Maximum Releases)

Isotope [(1)]	Discharge Concentration (µCi/ml) [(2)(5)]	Effluent Concentration Limit (µCi/ml) [(3)]	Fraction of Concentration Limit[(4)]
Na-24	8.12E-13	5.00E-05	1.62E-08
P-32	0.00E+00	9.00E-06	0.00E+00
Cr-51	2.09E-13	5.00E-04	4.19E-10
Mn-54	1.05E-13	3.00E-05	3.49E-09
Fe-55	7.86E-14	1.00E-04	7.86E-10
Fe-59	2.62E-14	1.00E-05	2.62E-09
Co-58	3.14E-13	2.00E-05	1.57E-08
Co-60	2.62E-14	3.00E-06	8.73E-09
Ni-63	0.00E+00	1.00E-04	0.00E+00
Zn-65	2.62E-14	5.00E-06	5.24E-09
W-187	5.24E-14	3.00E-05	1.75E-09
Np-239	7.86E-14	2.00E-05	3.93E-09
Rb-88	1.01E-10	4.00E-04	2.52E-07
Sr-89	0.00E+00	8.00E-06	0.00E+00
Sr-90	0.00E+00	5.00E-07	0.00E+00
Sr-91	0.00E+00	2.00E-05	0.00E+00
Y-91m	0.00E+00	2.00E-03	0.00E+00
Y-91	0.00E+00	8.00E-06	0.00E+00
Y-93	0.00E+00	2.00E-05	0.00E+00
Zr-95	2.62E-14	2.00E-05	1.31E-09
Nb-95	5.24E-14	3.00E-05	1.75E-09
Mo-99	3.49E-11	2.00E-05	1.75E-06
Tc-99m	1.38E-11	1.00E-03	1.38E-08
Ru-103	2.62E-14	3.00E-05	8.73E-10
Rh-103m	2.62E-14	6.00E-03	4.36E-12
Ru-106	2.62E-14	3.00E-06	8.73E-09
Ag-110m	0.00E+00	6.00E-06	0.00E+00
Sb-124	0.00E+00	7.00E-06	0.00E+00
Te-129m	0.00E+00	7.00E-06	0.00E+00
Te-129	0.00E+00	4.00E-04	0.00E+00
Te-131m	8.64E-13	8.00E-06	1.08E-07
Te-131	0.00E+00	8.00E-05	0.00E+00
I-131	1.14E-10	1.00E-06	1.14E-04
Te-132	1.38E-11	9.00E-06	1.53E-06
I-132	7.86E-13	1.00E-04	7.86E-09
I-133	2.57E-11	7.00E-06	3.67E-06
I-134	1.31E-13	4.00E-04	3.27E-10
Cs-134	6.73E-09	9.00E-07	7.48E-03

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Table 11.2-13R (Sheet 2 of 2)

Comparison of Annual Average Liquid Release Concentrations with 10 CFR 20 (Maximum Releases)

Isotope (1)	**Discharge Concentration (μCi/ml) (2)(5)**	**Effluent Concentration Limit (μCi/ml) (3)**	**Fraction of Concentration Limit(4)**
I-135	5.45E-12	3.00E-05	1.82E-07
Cs-136	1.49E-09	6.00E-06	2.48E-04
Cs-137	4.20E-09	1.00E-06	4.20E-03
Ba-140	2.62E-13	8.00E-06	3.27E-08
La-140	5.24E-14	9.00E-06	5.82E-09
Ce-141	0.00E+00	3.00E-05	0.00E+00
Ce-143	0.00E+00	2.00E-05	0.00E+00
Pr-143	0.00E+00	2.00E-05	0.00E+00
Ce-144	2.62E-14	3.00E-06	8.73E-09
Pr-144	2.62E-14	6.00E-04	4.36E-11
H-3	4.06E-06	1.00E-03	4.06E-03
TOTAL			**1.61E-02**

Notes:

1. Rh-106, Ag-110, Ba-137m are not included in Table 2 of 10 CFR 20 Appendix B. Therefore, these nuclides are excluded from the calculation of the discharge concentration.
2. Annual average discharge concentration based on release of average daily discharge for 292 days per year with 247,500 gpm dilution flow. This includes a Safety Factor of 0.9 to compensate for flow fluctuations.
3. 10 CFR 20 Appendix B, Table 2
4. Fractions of 10 CFR 20 concentration limits are for a single unit.
5. The basis of the PWR-GALE source term calculation uses a built-in capacity factor of 80%, which is less than the expected capacity factor for the US-APWR. This difference in capacity factor has no impact on liquid effluent release concentrations.

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Table 11.2-14R (Sheet 1 of 2)
Input Parameters for the LADTAP II Code

Parameter	Value
Midpoint of Plant Life(yr)	30
Circulating Water System discharge rate (gpm)	247,500
Water type selection	Freshwater
Reconcentration model index	1 (Complete mix)
Discharge rate to receiving water(ft^3/sec)	1.5(1) 45.4(2)
Total impoundment volume(ft^3)	6.3E+09
Shore-width factor	0.2 (Squaw Creek) 0.3(Whitney Reservoir) 0.3 (SCR)
Dilution factor -Squaw Creek(3)	1.0
Dilution factor (6)	1.0
Dilution factor - Brazos River(4)	822.7(1) 27.2(2)
Dilution factor - Whitney Reservoir(5)	1645.4 (1) 54.4 (2)
Transit time – Squaw Creek (hr)	7.3
Transit time (SCR)	0.0
Transit time – Brazos River (hr)	66
Transit time – Whitney Reservoir (hr)	77
Irrigation rate(Liter/m^2-month)	74.6
Animals considered for milk pathway	Cows and Goats
Fraction of animal feed not contaminated	0
Fraction of animal water not contaminated	0
Source terms	Table 11.2-10R
Source term multiplier	1
50 mile population	3,493,553
Total Production within 50 miles(kg/yr,L/yr)	Leafy Vegetable : 25,000 kg/yr Vegetable : 5,270,000 kg/yr Milk : 943,000 L/yr Meat : 281,000 kg/yr
Annual local harvest for sports harvest fishing(kg/yr)	324,375
Annual local harvest for commercial fishing harvest(kg/yr)	None
Annual local harvest for sports invertebrate harvest (kg/yr)	None
Annual local harvest for commercial invertebrate harvest (kg/yr)	None

Note:
1. The conditions for maximum individual dose calculation.
2. The conditions for population dose calculation.
3. The water of Squaw Creek is considered following evaluations.
   - Dose from fish (Maximum individual dose)
   - Dose from shoreline (Maximum individual dose)
4. The water of Brazos River is considered following evaluation.
   - Dose from drinking water in Cleburne (Maximum individual dose and population dose)
   - Dose from irrigation water (Maximum individual dose and population dose)
   - Dose from sports fishing (Population dose)
5. The water of Whitney Reservoir is considered following evaluation.
   - Dose from drinking water in Whitney (Population dose)
   - Dose from shoreline, swimming and boating (Population dose)
6. Maximum individual doses are calculated for Squaw Creek Reservoir (SCR) considering fishing, swimming and shoreline activities.

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Table 11.2-14R (Sheet 2 of 2)

Input Parameters for the LADTAP II Code

Parameter	Value
Population using water-supply system	3722 (City of Whitney) 53,440 (City of Cleburne)
Total shoreline usage time(person-hr/yr)	22,358,746
Total swimming usage time(person-hr/yr)	22,358,746
Total boating usage time(person-hr/yr)	22,358,746
Other parameters	RG 1.109

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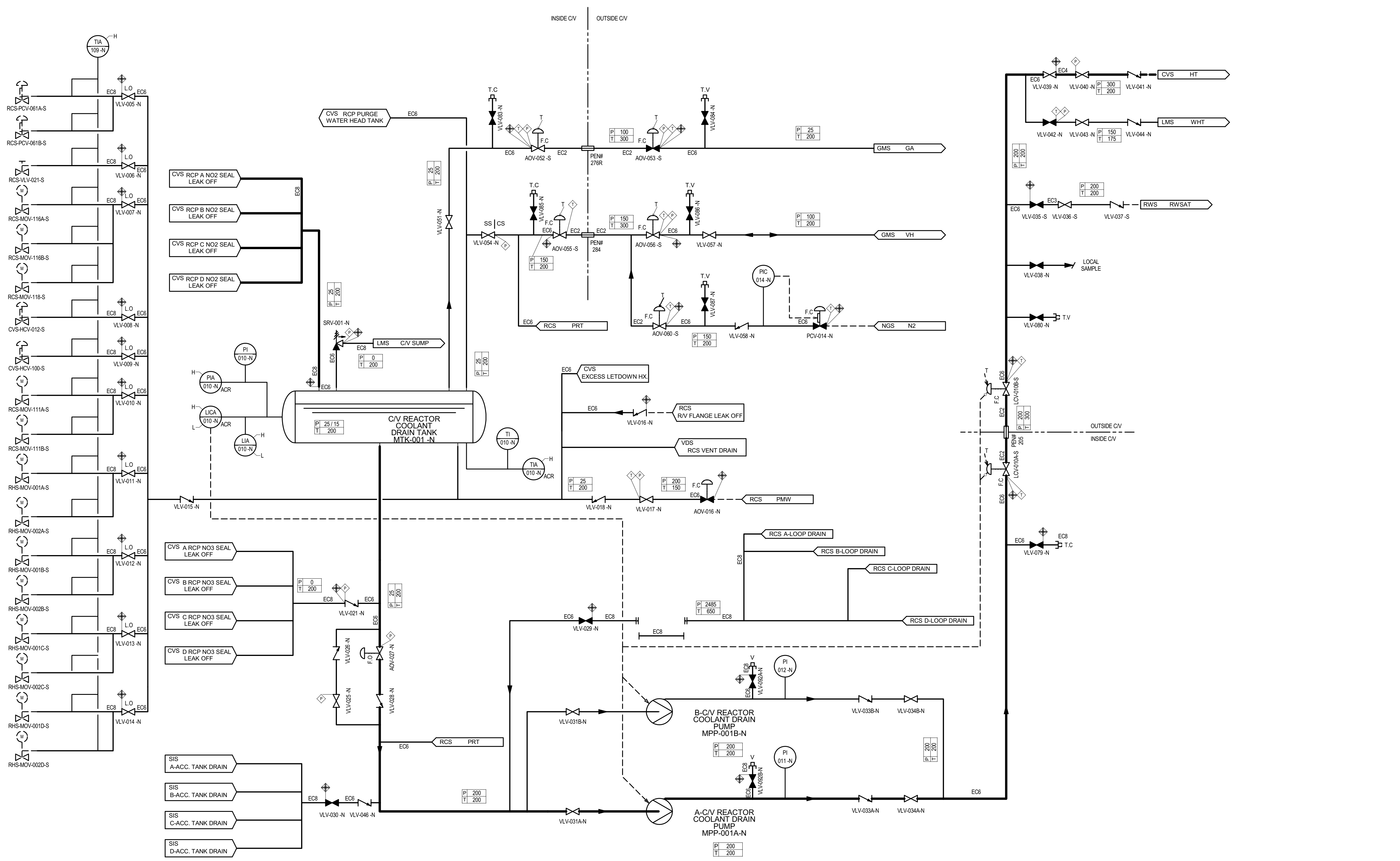
Table 11.2-15R

Individual Doses from Liquid Effluents

	Annual Doses (mrem/yr)							
PATHWAY	SKIN	BONE	LIVER	T.BODY	THYROID	KIDNEY	LUNG	GI-LLI
Drinking								
Adult	-	2.40E-05	6.39E-03	6.39E-03	6.37E-03	6.38E-03	6.37E-03	6.42E-03
Teenager	-	2.24E-05	4.51E-03	4.50E-03	4.49E-03	4.50E-03	4.49E-03	4.52E-03
Child	-	6.32E-05	8.67E-03	8.63E-03	8.62E-03	8.64E-03	8.62E-03	8.65E-03
Infant	-	6.16E-05	8.52E-03	8.47E-03	8.46E-03	8.48E-03	8.47E-03	8.48E-03
Fish								
Adult	-	7.86E-01	1.25E+00	8.83E-01	1.36E-01	5.15E-01	2.61E-01	1.72E-01
Teenager	-	8.38E-01	1.26E+00	5.22E-01	1.04E-01	4.98E-01	2.56E-01	1.32E-01
Child	-	1.05E+00	1.13E+00	2.49E-01	8.64E-02	4.26E-01	2.08E-01	9.74E-02
Shoreline								
Adult	2.27E-03	1.95E-03	1.95E-03	1.95E-03	1.95E-03	1.95E-03	1.95E-03	1.95E-03
Teenager	1.27E-02	1.09E-02	1.09E-02	1.09E-02	1.09E-02	1.09E-02	1.09E-02	1.09E-02
Child	2.65E-03	2.27E-03	2.27E-03	2.27E-03	2.27E-03	2.27E-03	2.27E-03	2.27E-03
Irrigated Foods : Vegetables								
Adult	-	1.17E-04	4.64E-03	4.60E-03	4.53E-03	4.57E-03	4.54E-03	4.74E-03
Teenager	-	1.89E-04	5.72E-03	5.60E-03	5.53E-03	5.60E-03	5.56E-03	5.80E-03
Child	-	4.38E-04	9.09E-03	8.82E-03	8.77E-03	8.89E-03	8.81E-03	8.99E-03
Irrigated Foods : Leafy Vegetables								
Adult	-	1.44E-05	5.72E-04	5.68E-04	5.58E-04	5.64E-04	5.60E-04	5.85E-04
Teenager	-	1.26E-05	3.82E-04	3.74E-04	3.70E-04	3.74E-04	3.71E-04	3.88E-04
Child	-	2.19E-05	4.55E-04	4.42E-04	4.39E-04	4.45E-04	4.41E-04	4.50E-04
Irrigated Foods : Milk								
Adult	-	6.84E-05	2.80E-03	2.77E-03	2.71E-03	2.74E-03	2.72E-03	2.71E-03
Teenager	-	1.23E-04	3.69E-03	3.58E-03	3.52E-03	3.58E-03	3.54E-03	3.53E-03
Child	-	2.95E-04	5.86E-03	5.62E-03	5.58E-03	5.67E-03	5.61E-03	5.58E-03
Irrigated Foods : Meat								
Adult	-	4.04E-05	9.71E-04	9.71E-04	9.60E-04	1.03E-03	9.61E-04	3.04E-03
Teenager	-	3.39E-05	5.81E-04	5.79E-04	5.72E-04	6.27E-04	5.73E-04	1.87E-03
Child	-	6.34E-05	7.05E-04	7.01E-04	6.93E-04	7.65E-04	6.94E-04	1.48E-03
Total								
Adult	2.27E-03	7.88E-01	1.27E+00	9.00E-01	1.53E-01	5.32E-01	2.78E-01	1.91E-01
Teenager	1.27E-02	8.49E-01	1.29E+00	5.48E-01	1.29E-01	5.24E-01	2.81E-01	1.59E-01
Child	2.65E-03	1.05E+00	1.16E+00	2.75E-01	1.13E-01	4.53E-01	2.34E-01	1.25E-01
Infant	-	6.16E-05	8.52E-03	8.47E-03	8.46E-03	8.48E-03	8.47E-03	8.48E-03

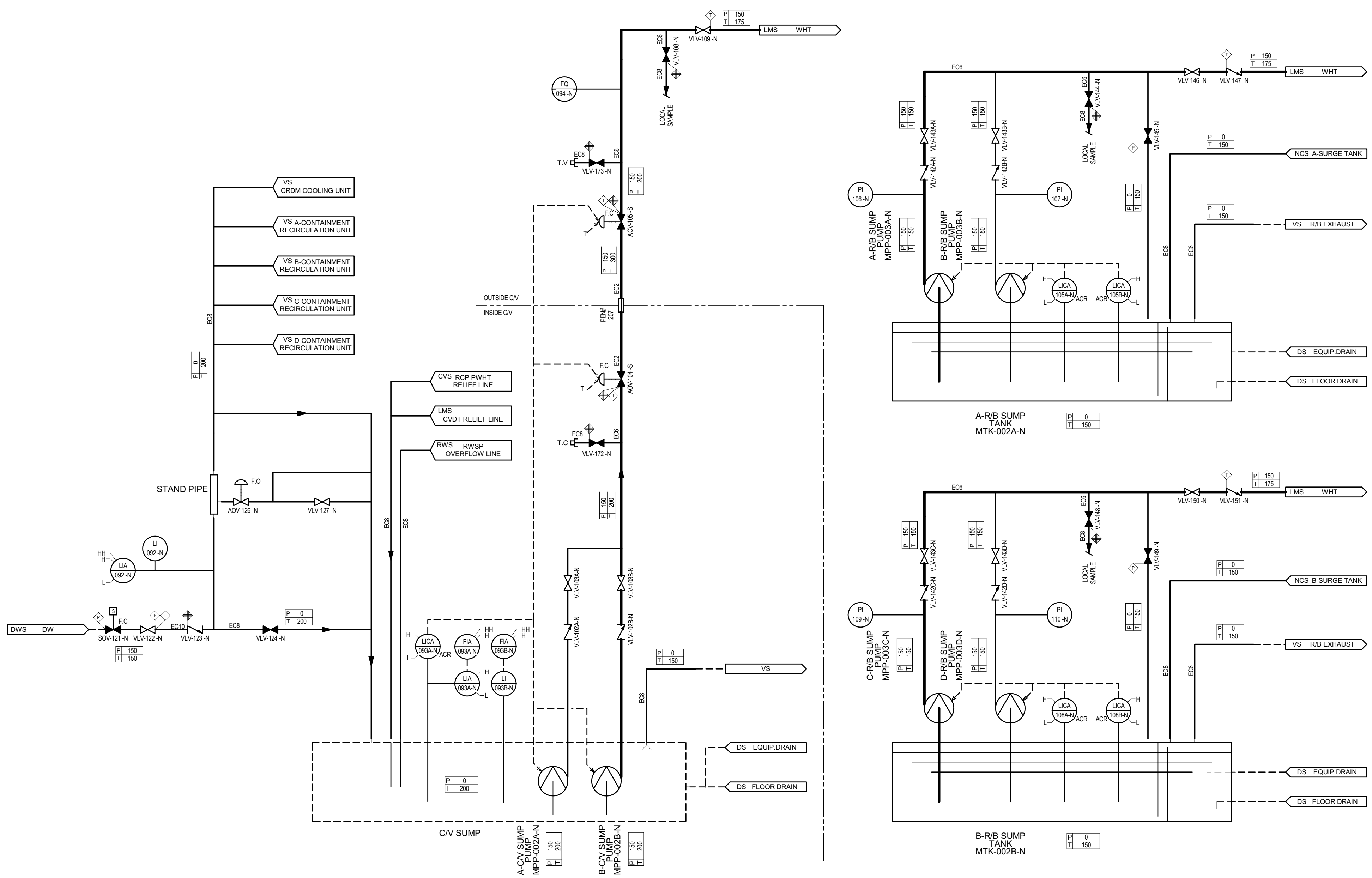
Note:

Doses are for a single unit from liquid effluent releases during normal operation including AOOs.



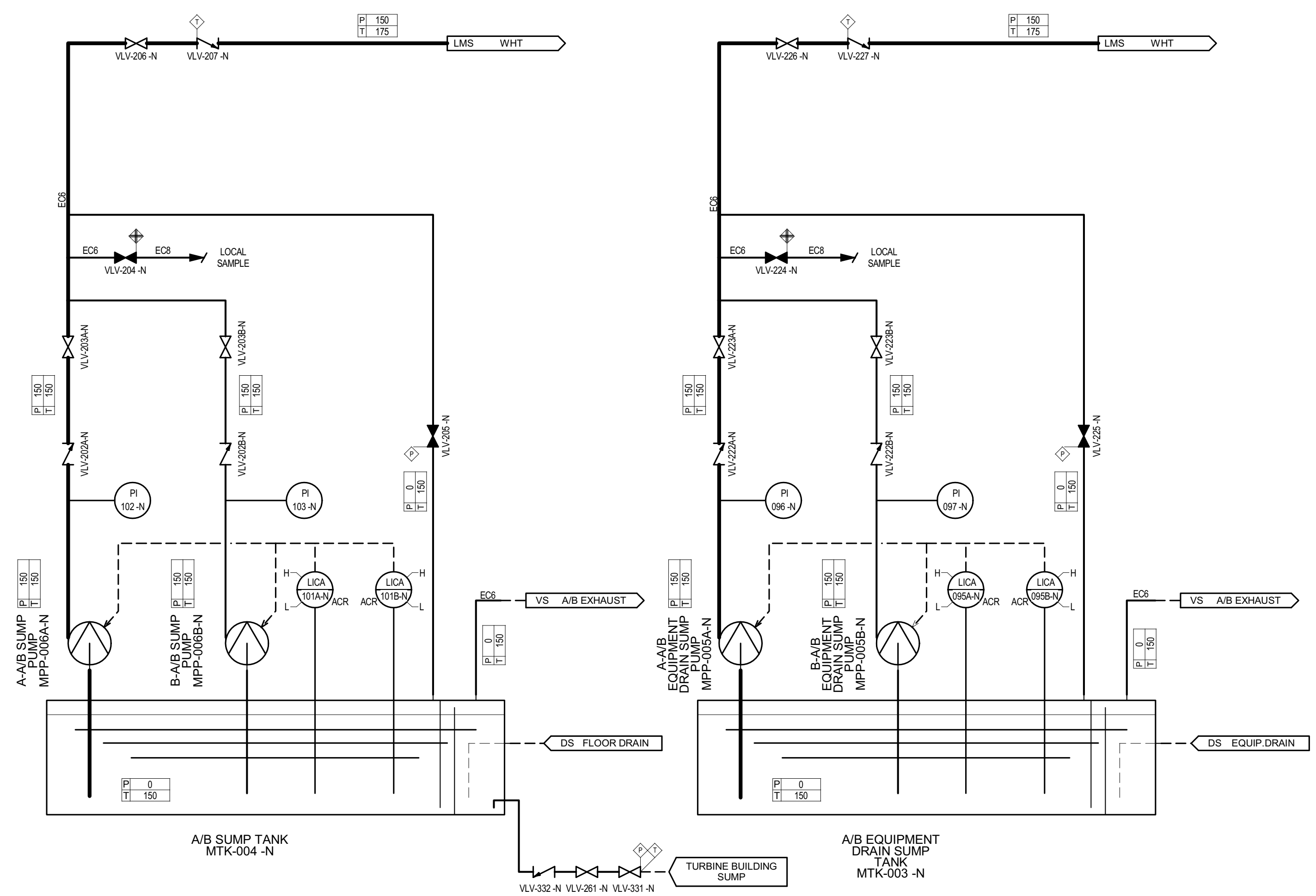
CP COL 11.2(6)

Figure 11.2-201 Liquid Waste Management System Piping and Instrumentation Diagram (Sheet 1 of 10)



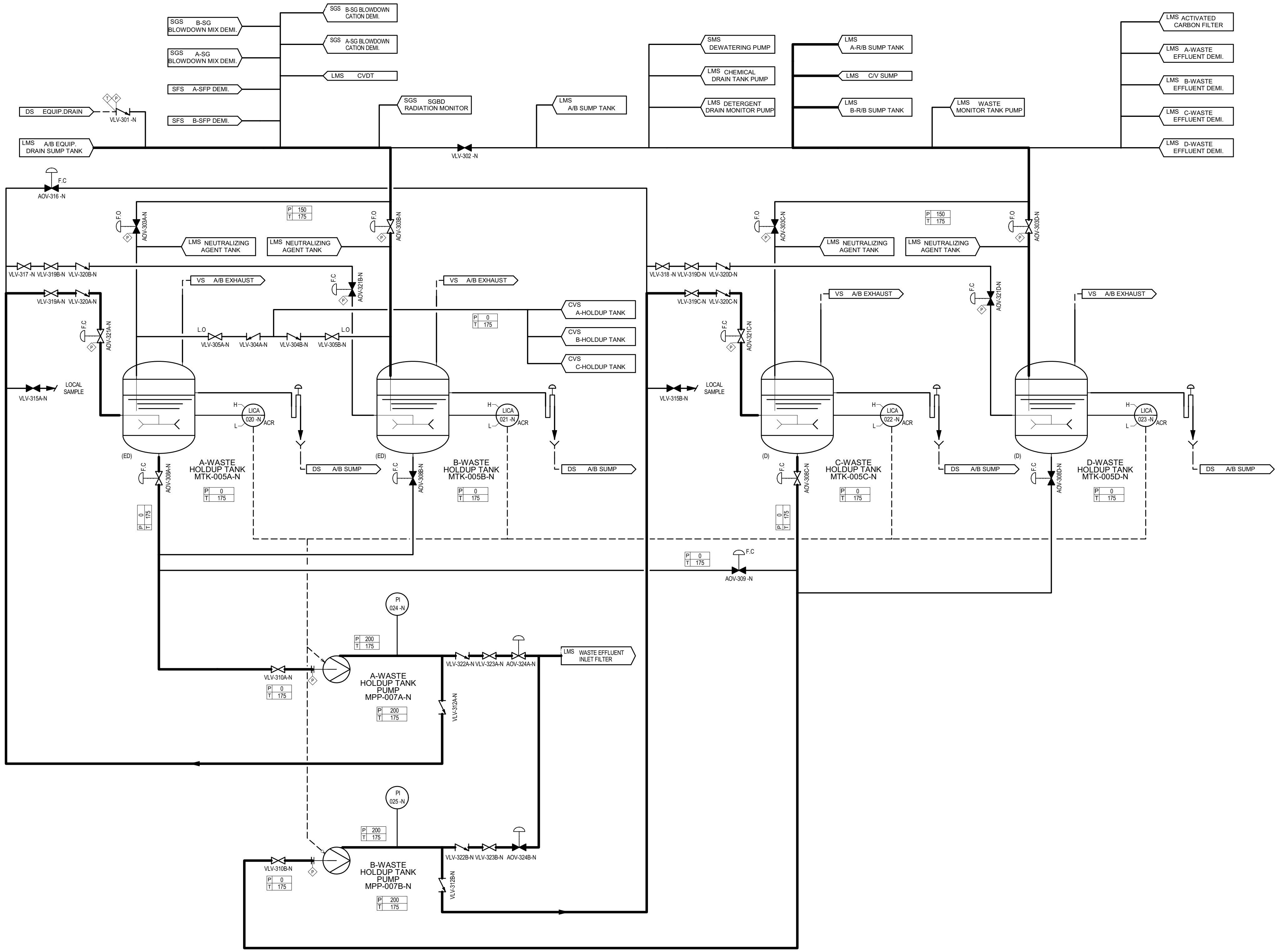
CP COL 11.2(6)

Figure 11.2-201 Liquid Waste Management System Piping and Instrumentation Diagram (Sheet 2 of 10)



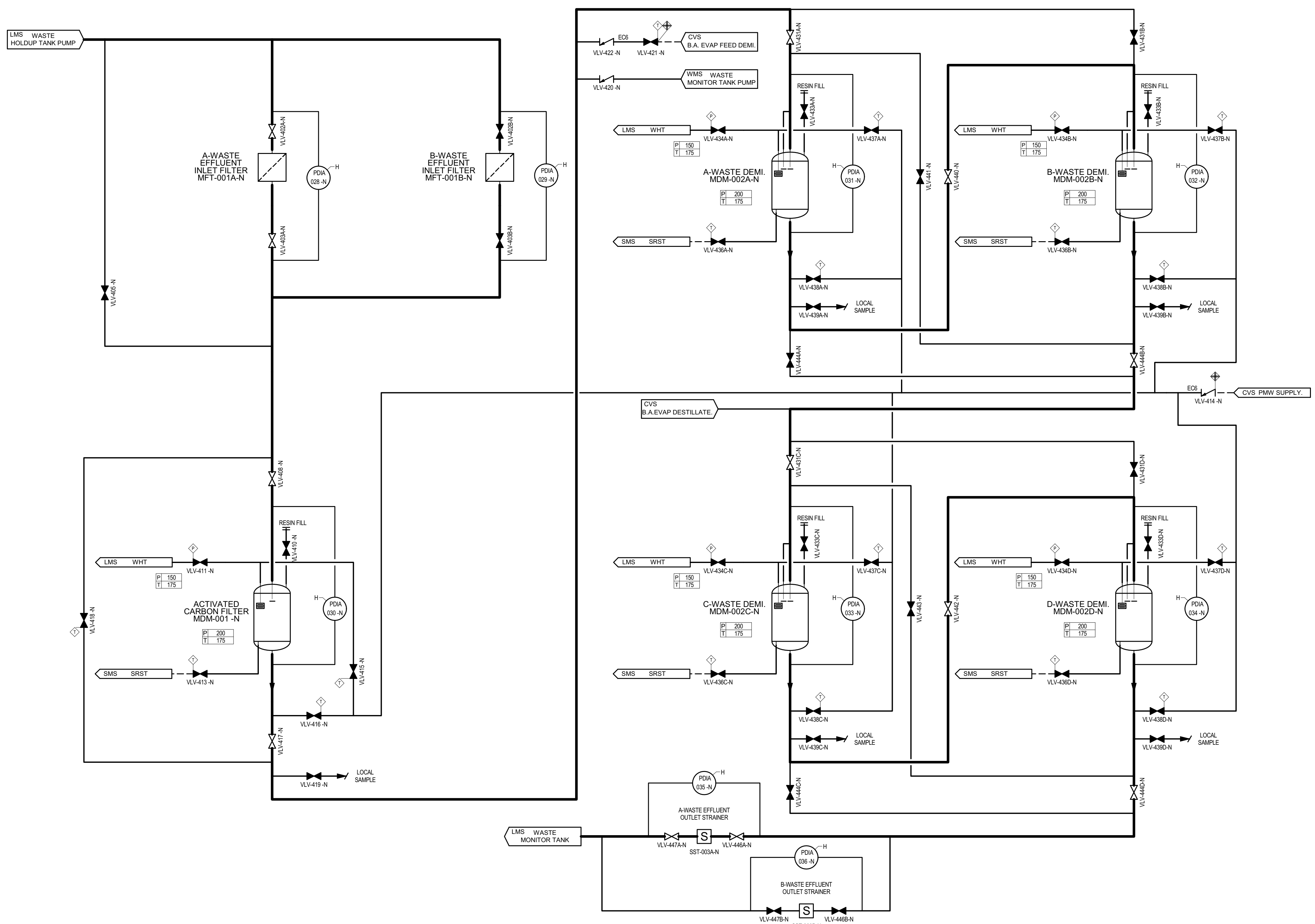
CP COL 11.2(6)

Figure 11.2-201 Liquid Waste Management System Piping and Instrumentation Diagram (Sheet 3 of 10)



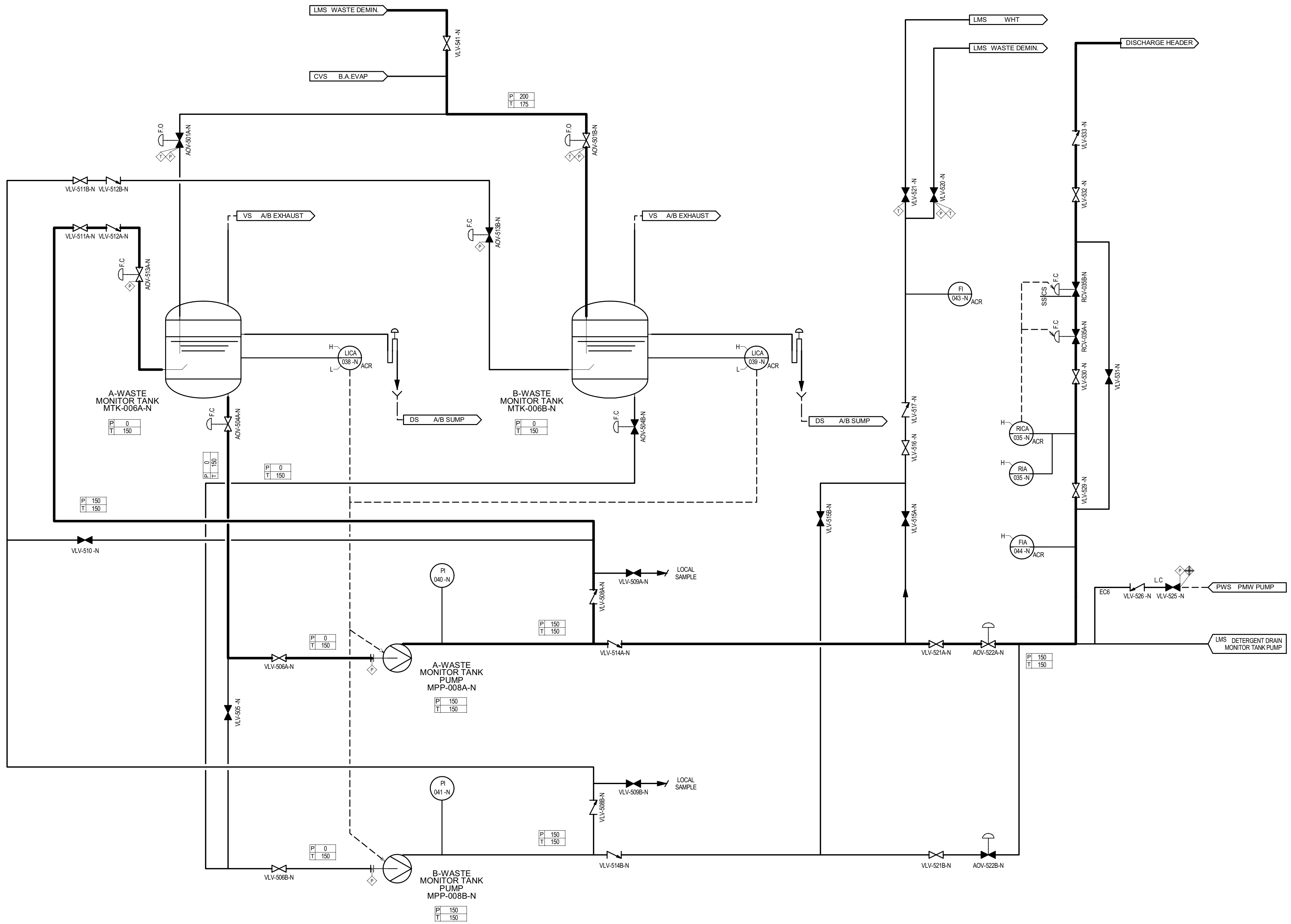
CP COL 11.2(6)

Figure 11.2-201 Liquid Waste Management System Piping and Instrumentation Diagram (Sheet 4 of 10)



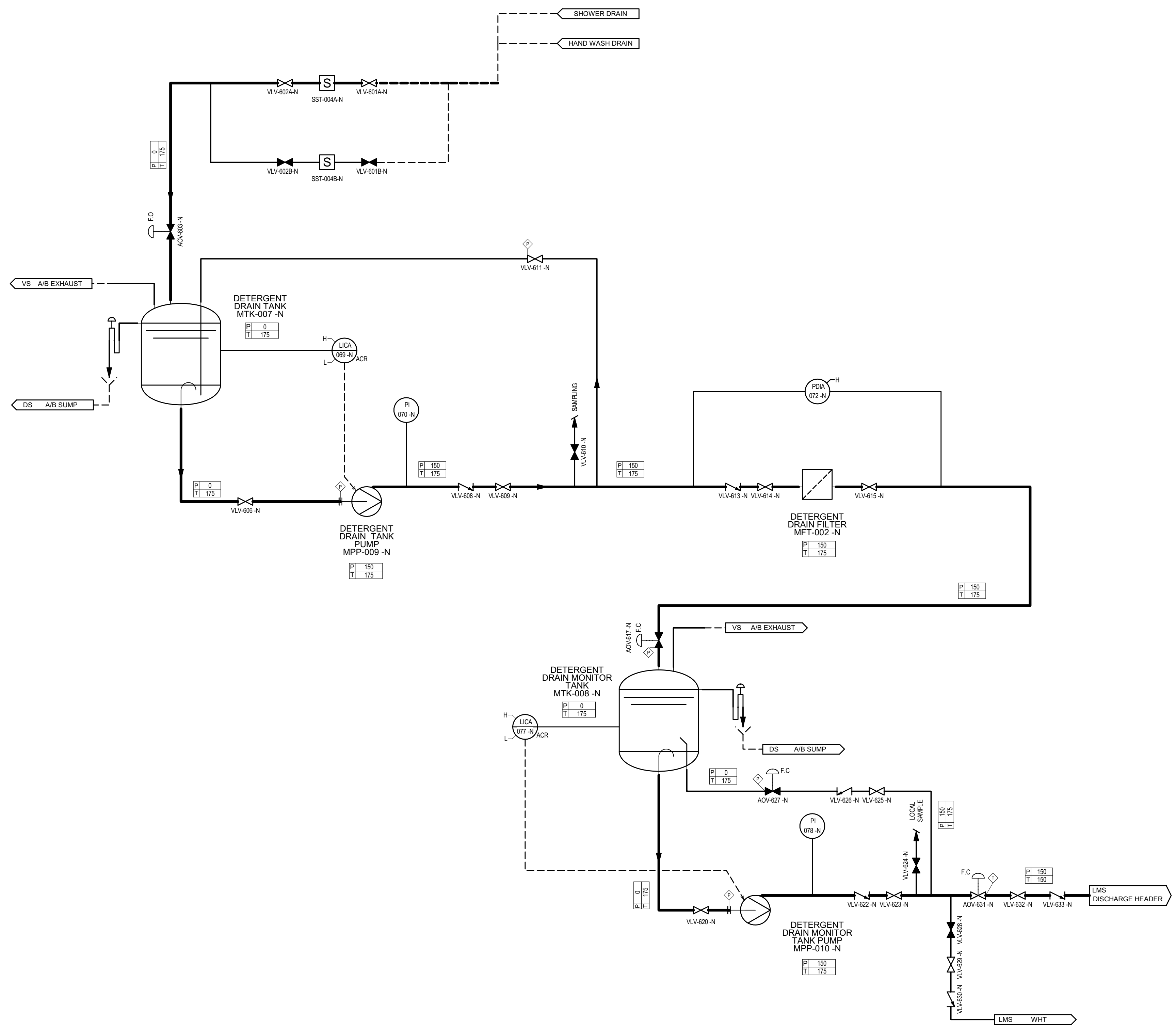
CP COL 11.2(6)

Figure 11.2-201 Liquid Waste Management System Piping and Instrumentation Diagram (Sheet 5 of 10)



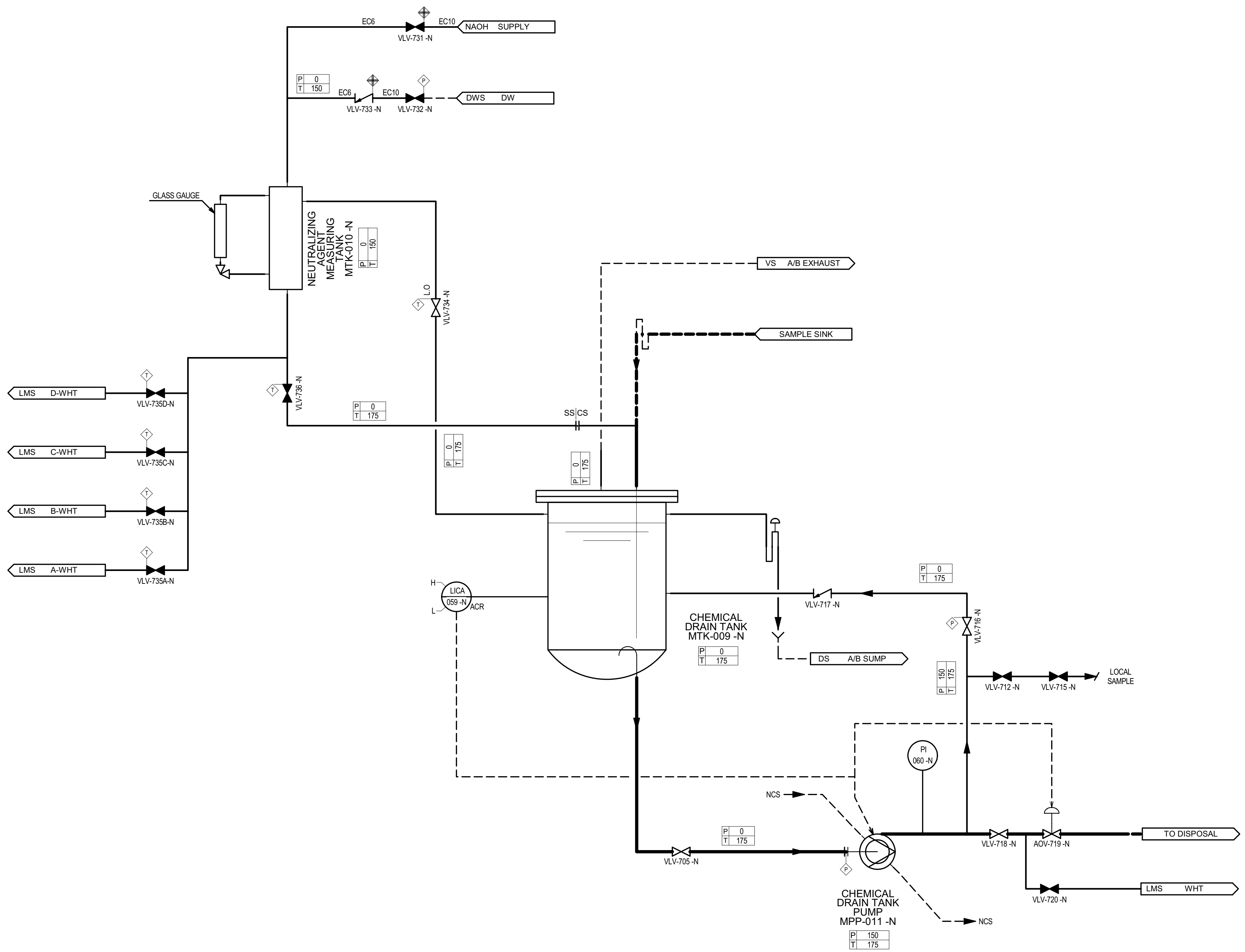
CP COL 11.2(6)

Figure 11.2-201 Liquid Waste Management System Piping and Instrumentation Diagram (Sheet 6 of 10)



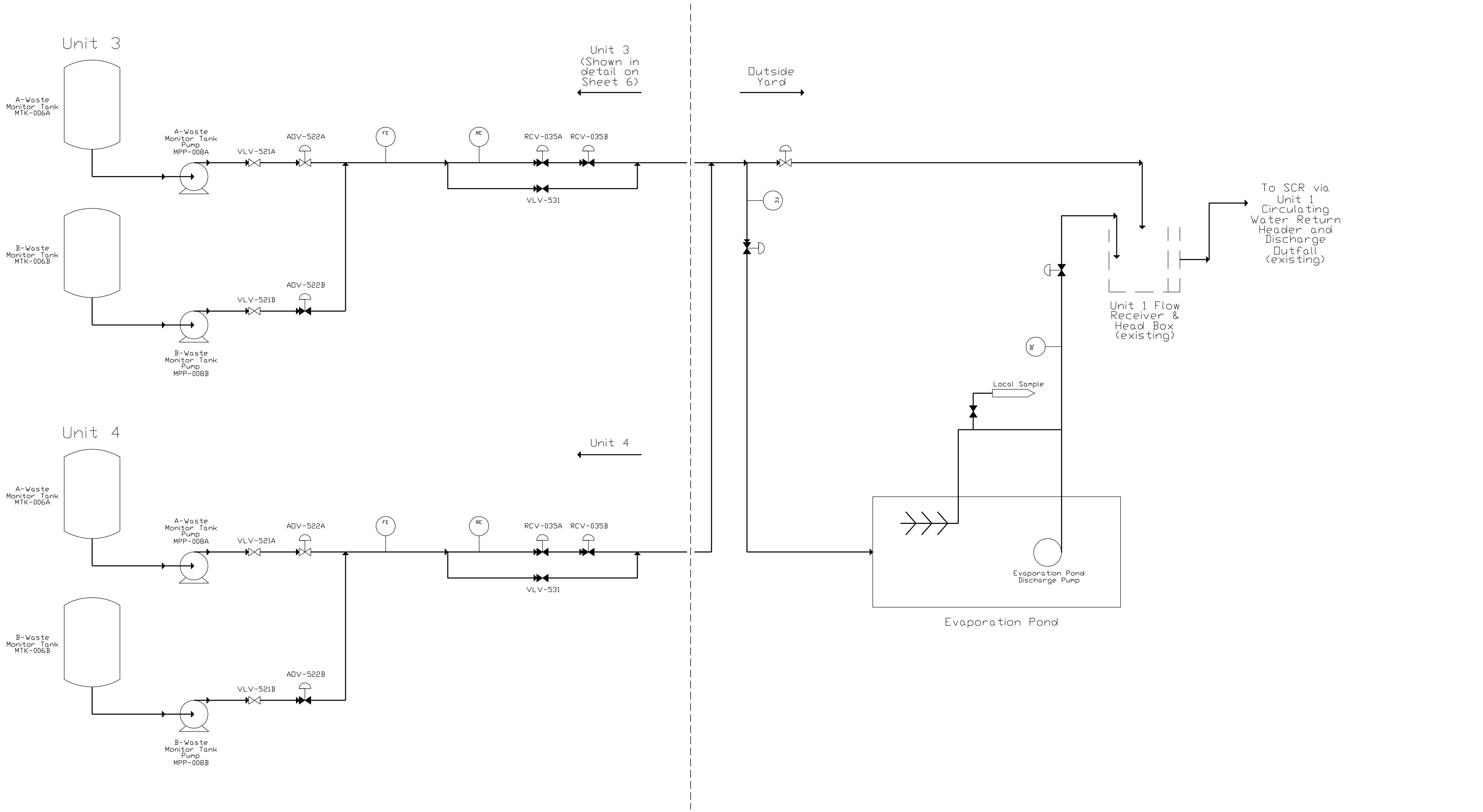
CP COL 11.2(6)

Figure 11.2-201 Liquid Waste Management System Piping and Instrumentation Diagram (Sheet 7 of 10)



CP COL 11.2(6)

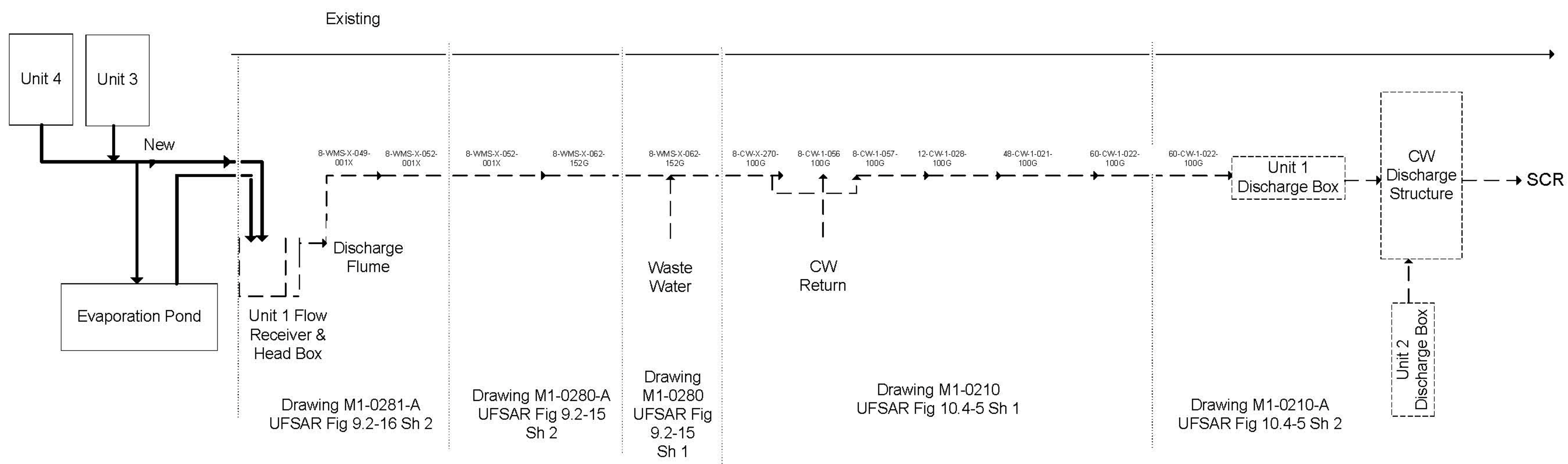
Figure 11.2-201 Liquid Waste Management System Piping and Instrumentation Diagram (Sheet 8 of 10)



CP COL 11.2(6)

Figure 11.2-201 Liquid Waste Management System Piping and Instrumentation Diagram (Sheet 9 of 10)

CPNPP Units 3 and 4 Discharge Schematic



CP COL 11.2(6)

Figure 11.2-201 Liquid Waste Management System Piping and Instrumentation Diagram (Sheet 10 of 10)

11.3 GASEOUS WASTE MANAGEMENT SYSTEM

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

11.3.1.5 Site-Specific Cost-Benefit Analysis

CP COL 11.3(8) Replace the third paragraph in DCD Subsection 11.3.1.5 with the following.

A site-specific cost benefit analysis using the guidance of RG 1.110 was performed based on the site-specific calculated radiation doses as a result of radioactive gaseous effluents during normal operations, including AOOs. The result of the dose analysis indicated a public exposure of less than 1 person-rem per year resulting from the discharge of radioactive effluents, effecting a dose cost of less than $1000 per year, in 1975 dollars. For conservatism, the population doses considered in the cost-benefit analysis were increased to 5.0 person-rem per year (Total Body) and 5.0 person-rem per year (Thyroid). Based on these population doses and the equipment and operating costs as presented in RG 1.110, the cost benefit analysis demonstrates that addition of processing equipment of reasonable treatment technology is not favorable or cost beneficial, and that the design provided herein complies with 10 CFR 50, Appendix I.

11.3.2 System Description

STD COL 11.3(9) Add the following text at the end of the second paragraph in DCD Subsection 11.3.2.

The piping and instrumentation diagrams (P&IDs) for the gaseous waste management system (GWMS) are provided in Figure 11.3-201 (Sheets 1 through 3).

CP COL 11.3(3) Replace the last sentence in the last paragraph in DCD Subsection 11.3.2 with the following.

The release point of vent stack is at an elevation of 1051’ 5”, which is same height of the top of the containment.

11.3.3.1 Radioactive Effluent Releases and Dose Calculation in Normal Operation

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CP COL 11.3(6) Replace the fifth and sixth paragraph in DCD Subsection 11.3.3.1 with the following.

The site-specific long-term annual average atmospheric dispersion factors (χ/Q) given in Tables 2.3-340 through 2.3-346 are bounded by the value given in DCD Table 2.0-1 (1.6E-05 s/m^3). These values are calculated by methods presented in RG1.111. Therefore, the radioactive concentrations at the exclusion area boundary (EAB) are bounded by the values given in DCD Tables 11.3-6 through 11.3-7. The maximum individual doses are calculated using the GASPAR II Code (Reference 11.3-17) which implements the methodology described in RG 1.109. The site-specific parameters for the GASPAR II Code calculation are tabulated in Table 11.3-8R. Calculated doses are tabulated in Table 11.3-9R. The gamma dose in air is 8.42E-02 mrad/yr and the beta dose in air is 6.50E-01 mrad/yr, which are less than the criteria of 10 mrad/yr and 20 mrad/yr, respectively,in 10 CFR 50, Appendix I. The doses to the total body, the skin, and the maximum organ are less than the criteria in 10 CFR 50, Appendix I: 5.38E-02 mrem/yr (5 mrem/yr Appendix I limit), 5.03E-01 mrem/yr (15 mrem/yr Appendix I limit), and 1.46E+00 mrem/yr [child’s bone] (15 mrem/yr Appendix I limit), respectively. The compliance with 10 CFR 20.1302 is also demonstrated. The doses to the maximally exposed individual at Squaw Creek Reservoir due to normal effluent releases from the plant vent and the evaporation pond are also calculated. These doses are calculated at the point of maximum exposure at Squaw Creek Reservoir, which occurs at a distance of 0.10 miles NNW of Units 3 & 4 for plant vent releases and at a distance of 0.41 miles NNW of the evaporation pond for evaporation pond releases. The doses to the maximally exposed individual at SCR were calculated based on a person occupying the worst-case location for 134 hours per year. The number of hours was conservatively assumed to be twice the number of hours of shoreline exposure for the maximum age group from Table E-5 of RG 1.109. The doses to an individual at SCR were conservatively included in the maximum individual doses even though SCR is a restricted area per the definition provided in 10 CFR 20.1003 because CPNPP has control of access to the reservoir and has restricted public access in the past. Doses to the maximum individual using SCR are given in Table 11.3-206.

The population doses within 50 miles are calculated using the GASPAR II Code (Reference 11.3-17). The GASPAR II Code input parameters for the population dose are tabulated in Table 11.3-8R and Table 11.3-201. The calculated doses due to plant vent releases are 2.71 person-rem (Total body) and 3.25 person-rem (Thyroid).

Additionally, the dose from the evaporation pond is also calculated using the GASPAR II Code (Reference 11.3-17). Half of the liquid effluent is assumed to be diverted into the evaporation pond. Conservatively, all of the radioactive nuclides

in the evaporation pond are assumed to be discharged to atmosphere as aerosol or vapor. The annual release rates from the evaporation pond to atmosphere are listed in Table 11.3-202, and parameters for the GASPAR II Code calculation are listed in Table 11.3-203. Liquid effluents contain no noble gases. Therefore, noble gases are not presented in the evaporation pond. Calculated individual doses are listed in Table 11.3-204. The maximum organ dose is 2.37E+00 mrem/yr (Adult's GI-Tract). The population doses, including recreational use of SCR, are 1.05 person-rem (Total body) and 1.04 person-rem (Thyroid). Moreover, the total of individual doses from the vent stack and the evaporation pond are listed in Table 11.3-205. The maximum organ dose is 2.55E+00 mrem/yr (Adult's GI-Tract). The total population doses resulting from normal plant and evaporation pond releases are 3.77 person-rem (Total body) and 4.29 person-rem (Thyroid). The results are well below the dose criteria in 10 CFR 50 Appendix I. According to NUREG-0543 (Reference 11.3-201), there is reasonable assurance that sites with up to four operating reactors that have releases within Appendix I design objective values are also in conformance with the EPA Uranium Fuel Cycle Standard, 40 CFR 190. Once the proposed CPNPP Units 3 and 4 are constructed, the Comanche Peak site will consist of four operating reactors.

11.3.7 Combined License Information

Replace the content of DCD Subsection 11.3.7 with the following.

11.3(1) *Deleted from the DCD.*

11.3(2) *Deleted from the DCD.*

CP COL 11.3(3) ***11.3(3)*** *Onsite vent stack design parameters*

This COL item is addressed in Subsection 11.3.2.

11.3(4) *Deleted from the DCD.*

11.3(5) *Deleted from the DCD.*

CP COL 11.3(6) ***11.3(6)*** *Site-specific dose calculation*

This COL item is addressed in Subsection 11.3.3.1, Table 11.3-8R, Table 11.3-9R, Table 11.3-201, Table 11.3-202, Table 11.3-203, Table 11.3-204 and Table 11.3-205 and Table 11.3-206.

11.3(7) *Deleted from the DCD.*

CP COL 11.3(8) ***11.3(8)****Site-specific cost-benefit analysis*

This COL item is addressed in Subsection 11.3.1.5.

STD COL 11.3(9)
CP COL 11.3(9) ***11.3(9)*** *Piping and instrumentation diagrams*

This COL item is addressed in Subsection 11.3.2 and Figure 11.3-201.

11.3.8 References

Add the following references after the last reference in DCD Subsection 11.3.8.

11.3-201 U.S. Nuclear Regulatory Commission, *Methods for Demonstrating LWR Compliance With the EPA Uranium Fuel Cycle Standard (40 CFR 190),* NUREG-0543, Washington, DC, 1980.

CP COL 11.3(6)

Table 11.3-8R

Input Parameters for the GASPAR II Code (Sheet 1 of 2)

Parameter	Value
χ/Q (s/m^3)	
For maximum individual dose calculation	
No Decay, Undepleted	4.40E-07
2.26 Day Decay, Undepleted	4.40E-07
Day Decay, Depleted	3.90E-07
For population dose calculation	Section 2.3
D/Q (1/m^2)	
For maximum individual dose calculation	4.50E-09
For population dose calculation	Section 2.3
Distance to Residence (mi)	0.79
Midpoint of plant life (s)	9.46E+08 (30yr)
Fraction of the year that leafy vegetables are grown.	1.0
Fraction of the year that milk cows are on pasture.	1.0
Fraction of milk-cow feed intake that is from pasture while on pasture.	1.0
Fraction of the year that goats are on pasture.	1.0
Fraction of goat feed intake that is from pasture while on pasture.	1.0
Fraction of the maximum individual's vegetable intake that is from his own garden.	0.76
Average absolute humidity over the growing season (g/m^3).	8.0
Fraction of the year that beef cattle are on pasture.	1.0
Fraction of beef-cattle feed intake that is from pasture while the cattle are on pasture	1.0
Animal considered for milk pathway	Cow and Goat
Annual milk production for each distance and direction within 50 miles (l)	9.08E+08
Annual meat production for each distance and direction within 50 miles (kg)	4.25E+07
Annual vegetable production for each distance and direction within 50 miles (kg)	4.81E+08
Population Distribution	Table 11.3-201

CP COL 11.3(6)

Table 11.3-8R

Input Parameters for the GASPAR II Code (Sheet 2 of 2)

Parameter	Value
Source term	DCD Table 11.3-5[2] (Sheet 3 of 6)
Other parameters	RG 1.109[1]
SCR χ/Q and D/Q values for plant vent release	
No decay, undepleted	6.0×10^{-5} s/m^3
2.26 day decay, undepleted	6.0×10^{-5} s/m^3
8.00 day decay, depleted	5.6×10^{-5} s/m^3
D/Q for maximum individual dose calculation	3.9×10^{-7} m^{-2}

Note:

1. The dose conversion factors from GASPAR II are used instead of those found in RG 1.109 because they have been updated to reflect more current information. NUREG/CR-4653 provides further information on the dose factors used by GASPAR II.
2. Ba-137m is not included in the GASPAR library. Because of its short half-life, 2.552 minutes, Ba-137m has a negligible impact on the offsite doses.

CP COL 11.3(6)

Table 11.3-9R

Calculated Doses from Gaseous Effluents (Sheet 1 of 2)

Type of Dose	Dose (1)(2)
Gamma dose in air (mrad/yr)	8.42E-02
Beta dose in air (mrad/yr)	6.50E-01
Dose to total body (mrem/yr)	5.38E-02
Dose to skin (mrem/yr)	5.03E-01

Note:

1. Dose due to noble gases, including Ar-41.
2. Calculated doses are due to the addition of a single new unit.

CP COL 11.3(6)

Table 11.3-9R

Calculated Doses from Gaseous Effluents (Sheet 2 of 2)
Doses from Vent Stack Only

Pathway	Dose to each organ (1)(3) (mrem/yr)					
	GI-Tract	Bone	Liver	Kidney	Thyroid	Lung
Ground	1.01E-01	1.01E-01	1.01E-01	1.01E-01	1.01E-01	1.01E-01
Vegetable						
Adult	3.44E-02	2.50E-01	3.09E-02	2.48E-02	5.70E-02	2.27E-02
Teen	4.75E-02	3.62E-01	4.76E-02	3.83E-02	7.71E-02	3.53E-02
Child	8.77E-02	7.99E-01	1.01E-01	8.53E-02	1.59E-01	8.04E-02
Meat						
Adult	1.42E-02	3.70E-02	8.36E-03	7.68E-03	8.79E-03	7.42E-03
Teen	9.96E-03	3.09E-02	6.90E-03	6.35E-03	7.13E-03	6.16E-03
Child	1.33E-02	5.77E-02	1.23E-02	1.16E-02	1.28E-02	1.13E-02
Cow Milk						
Adult	9.72E-03	5.06E-02	1.65E-02	1.14E-02	5.40E-02	9.43E-03
Teen	1.66E-02	9.04E-02	2.91E-02	2.02E-02	8.75E-02	1.69E-02
Child	3.72E-02	2.17E-01	5.95E-02	4.42E-02	1.82E-01	3.87E-02
Infant	7.52E-02	3.96E-01	1.19E-01	8.71E-02	4.28E-01	7.89E-02
Goat Milk						
Adult	1.09E-02	6.92E-02	3.33E-02	1.78E-02	6.42E-02	1.23E-02
Teen	1.83E-02	1.21E-01	5.78E-02	3.07E-02	1.03E-01	2.19E-02
Child	3.97E-02	2.86E-01	1.07E-01	6.13E-02	2.13E-01	4.63E-02
Infant	7.90E-02	4.95E-01	2.09E-01	1.14E-01	5.03E-01	9.18E-02
Inhalation						
Adult	5.89E-03	1.53E-03	5.79E-03	5.70E-03	1.33E-02	9.33E-03
Teen	5.93E-03	1.81E-03	5.90E-03	5.81E-03	1.59E-02	1.13E-02
Child	5.09E-03	2.15E-03	5.25E-03	5.13E-03	1.79E-02	9.67E-03
Infant	2.90E-03	9.47E-04	3.07E-03	2.96E-03	1.48E-02	6.13E-03
Total(2)						
Adult	1.76E-01	5.10E-01	1.96E-01	1.69E-01	2.98E-01	1.62E-01
Teen	1.99E-01	7.07E-01	2.48E-01	2.03E-01	3.92E-01	1.93E-01
Child	2.84E-01	1.46E+00	3.86E-01	3.09E-01	6.86E-01	2.88E-01
Infant	2.58E-01	9.93E-01	4.32E-01	3.05E-01	1.05E+00	2.78E-01

Note:
1. Dose due to iodine, particulate, H-3 and C-14
2. Conservatively, both Cow Milk and Goat Milk are considered.
3. Calculated doses are from the addition of a single new unit.

CP COL 11.3(6)

Table 11.3-201

Population Distribution within 50 mi for Population Dose Calculation

Direction	Distance(mi)									
	0-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
N	0	13	39	111	266	74921	16318	25429	138627	30361
NNE	0	17	39	92	180	12920	12812	12527	125434	145586
NE	0	11	37	228	282	5473	6950	17815	694190	1245916
ENE	0	0	25	46	146	5377	4410	67032	134023	270180
E	0	0	84	141	37	340	2658	94985	16681	17747
ESE	0	4	74	82	145	1162	836	3528	7779	18881
SE	0	25	151	4644	3679	1920	500	2778	34161	4755
SSE	0	40	265	136	1314	5917	382	5164	14827	4572
S	0	114	40	29	588	1153	1650	1003	1320	3655
SSW	16	126	19	1135	32	369	780	2903	451	6930
SW	15	95	33	35	70	206	905	1528	1488	1424
WSW	33	109	31	62	29	204	888	40500	10651	5304
W	13	17	31	105	161	313	645	5302	2108	923
WNW	1	5	12	57	110	560	925	1675	1691	1495
NW	1	3	7	8	6	2295	1243	2789	2885	1440
NNW	0	1	17	32	114	1949	6660	5089	58611	10106

CP COL 11.3(6)

Table 11.3-202

Release Rates from the Evaporation Pond to Atmosphere

Isotope	Release Rate[1] (Ci/yr)	Isotope	Release Rate[1] (Ci/yr)
Na-24	2.35E-03	Rh-106	1.95E-02
P-32	0.00E+00	Ag-110M	3.00E-04
Cr-51	6.50E-03	Ag-110	3.60E-05
Mn-54	3.50E-04	Sb-124	0.00E+00
Fe-55	2.50E-04	Te-129M	3.90E-05
Fe-59	5.00E-05	Te-129	1.55E-04
Co-58	9.50E-04	Te-131M	1.25E-04
Co-60	0.00E+00	Te-131	3.80E-05
Ni-63	0.00E+00	I-131	2.00E-04
Zn-65	1.10E-04	Te-132	2.35E-04
W-87	1.75E-04	I-132	1.55E-04
Np-239	2.65E-04	I-133	4.05E-04
Rb-88	1.40E-02	I-134	4.45E-05
Sr-89	3.00E-05	Cs-134	5.00E-04
Sr-90	4.00E-06	I-135	3.90E-04
Sr-91	3.40E-05	Cs-136	1.08E-02
Y-91M	2.20E-05	Cs-137	1.00E-03
Y-91	5.00E-06	Ba-137M	2.30E-04
Y-93	1.55E-04	Ba-140	2.45E-03
Zr-95	1.00E-04	La-140	4.00E-03
Nb-95	5.00E-05	Ce-141	3.00E-05
Mo-99	8.20E-04	Ce-143	2.50E-04
Tc-99M	8.50E-04	Pr-143	3.95E-05
Ru-103	1.56E-03	Ce-144	8.50E-04
Rh-103M	1.55E-03	Pr-144	8.50E-04
Ru-106	1.91E-02	H-3	8.00E+02

Note:

1. The release rates are half of the total liquid release rates that be shown in Table 11.2-10R.

CP COL 11.3(6)

Table 11.3-203

Input Parameters for Dose Calculation from Evaporation Pond (Sheet 1 of 2)

Parameter	Value
χ/Q (s/m^3)	
For maximum individual dose calculation	
No Decay, Undepleted	3.10E-06
2.26 Day Decay, Undepleted	3.10E-06
8 Day Decay, Depleted	2.90E-06
For population dose calculation	Section 2.3
D/Q ($1/m^2$)	
For maximum individual dose calculation	2.10E-08
For population dose calculation	Section 2.3
Distance to Residence (mi)	0.31
Midpoint of plant life (s)	9.46E+08(30yr)
Fraction of the year that leafy vegetables are grown.	1.0
Fraction of the year that milk cows are on pasture.	1.0
Fraction of milk-cow feed intake that is from pasture while on pasture.	1.0
Fraction of the year that goats are on pasture.	1.0
Fraction of goat feed intake that is from pasture while on pasture.	1.0
Fraction of the maximum individual's vegetable intake that is from his own garden.	0.76
Average absolute humidity over the growing season (g/m^3).	8.0
Fraction of the year that beef cattle are on pasture.	1.0
Fraction of beef-cattle feed intake that is from pasture while the cattle are on pasture	1.0
Animal considered for milk pathway	Cow and Goat
Annual milk production for each distance and direction within 50 miles (l)	9.08E+08
Annual meat production for each distance and direction within 50 miles (kg)	4.25E+07
Annual vegetable production for each distance and direction within 50 miles (kg)	4.81E+08
Population Distribution	Table 11.3-201
Source term	Table 11.3-202

CP COL 11.3(6)

Table 11.3-203

Input Parameters for Dose Calculation from Evaporation Pond (Sheet 2 of 2)

Parameter	Value
Other parameters	RG 1.109[1]
SCR χ/Q and D/Q values for evaporation pond release	
No decay, undepleted	7.9×10^{-6} s/m^3
2.26 day decay, undepleted	7.9×10^{-6} s/m^3
8.00 day decay, depleted	7.3×10^{-6} s/m^3
D/Q for maximum individual dose calculation	4.8×10^{-8} m^{-2}

Note:

1. The dose conversion factors from GASPAR II are used instead of those found in RG 1.109 because they have been updated to reflect more current information. NUREG/CR-4653 provides further information on the dose factors used by GASPAR II.

CP COL 11.3(6)

Table 11.3-204

Calculated Doses from Evaporation Pond

Pathway	Dose to each organ [1] (mrem/yr)					
	GI-Tract	Bone	Liver	Kidney	Thyroid	Lung
Ground	2.27E-02	2.27E-02	2.27E-02	2.27E-02	2.27E-02	2.27E-02
Vegetable						
Adult	2.87E-01	1.33E-02	1.16E-01	1.13E-01	1.10E-01	1.04E-01
Teen	3.38E-01	2.04E-02	1.38E-01	1.34E-01	1.26E-01	1.19E-01
Child	3.54E-01	4.68E-02	2.17E-01	2.09E-01	1.99E-01	1.85E-01
Meat						
Adult	1.89E+00	2.97E-02	1.62E-02	7.12E-02	1.50E-02	1.48E-02
Teen	1.18E+00	2.50E-02	9.98E-03	5.62E-02	9.01E-03	8.91E-03
Child	7.22E-01	4.69E-02	1.21E-02	7.31E-02	1.10E-02	1.08E-02
Cow Milk						
Adult	3.97E-02	7.69E-03	5.11E-02	4.18E-02	4.38E-02	3.61E-02
Teen	5.10E-02	1.36E-02	7.35E-02	5.73E-02	5.95E-02	4.80E-02
Child	7.53E-02	3.18E-02	1.18E-01	9.07E-02	1.00E-01	7.58E-02
Infant	1.13E-01	5.32E-02	2.00E-01	1.39E-01	1.78E-01	1.17E-01
Goat Milk						
Adult	7.39E-02	2.24E-02	1.19E-01	9.15E-02	8.15E-02	7.51E-02
Teen	9.59E-02	3.97E-02	1.76E-01	1.27E-01	1.09E-01	1.01E-01
Child	1.48E-01	9.33E-02	2.83E-01	2.02E-01	1.80E-01	1.59E-01
Infant	2.23E-01	1.56E-01	4.93E-01	3.09E-01	3.05E-01	2.47E-01
Inhalation						
Adult	6.08E-02	5.36E-04	5.90E-02	5.92E-02	5.90E-02	7.72E-02
Teen	6.14E-02	7.53E-04	5.97E-02	5.98E-02	5.96E-02	9.08E-02
Child	5.33E-02	1.03E-03	5.28E-02	5.29E-02	5.28E-02	8.04E-02
Infant	3.04E-02	5.65E-04	3.04E-02	3.04E-02	3.05E-02	5.28E-02
Total[2]						
Adult	2.37E+00	9.64E-02	3.84E-01	4.00E-01	3.32E-01	3.30E-01
Teen	1.75E+00	1.22E-01	4.80E-01	4.57E-01	3.86E-01	3.90E-01
Child	1.38E+00	2.43E-01	7.05E-01	6.51E-01	5.65E-01	5.34E-01
Infant	3.89E-01	2.33E-01	7.47E-01	5.01E-01	5.36E-01	4.40E-01

Note:
1. Dose due to iodine, particulate and H-3
2. Conservatively, both Cow Milk and Goat Milk are considered.

CP COL 11.3(6)

Table 11.3-205

Total Doses Due to Gaseous Effluent from Vent Stack and Evaporation Pond

Pathway	Dose to each organ (1)(3) (mrem/yr)					
	GI-Tract	Bone	Liver	Kidney	Thyroid	Lung
Ground	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01	1.24E-01
Vegetable						
Adult	3.21E-01	2.63E-01	1.47E-01	1.38E-01	1.67E-01	1.27E-01
Teen	3.86E-01	3.82E-01	1.86E-01	1.72E-01	2.03E-01	1.54E-01
Child	4.42E-01	8.46E-01	3.18E-01	2.95E-01	3.58E-01	2.65E-01
Meat						
Adult	1.90E+00	6.67E-02	2.46E-02	7.89E-02	2.38E-02	2.22E-02
Teen	1.19E+00	5.59E-02	1.69E-02	6.25E-02	1.61E-02	1.51E-02
Child	7.35E-01	1.05E-01	2.44E-02	8.47E-02	2.38E-02	2.21E-02
Cow Milk						
Adult	4.94E-02	5.83E-02	6.76E-02	5.32E-02	9.78E-02	4.55E-02
Teen	6.76E-02	1.04E-01	1.03E-01	7.75E-02	1.47E-01	6.49E-02
Child	1.12E-01	2.49E-01	1.77E-01	1.35E-01	2.82E-01	1.15E-01
Infant	1.88E-01	4.49E-01	3.19E-01	2.26E-01	6.06E-01	1.96E-01
Goat Milk						
Adult	8.48E-02	9.16E-02	1.52E-01	1.09E-01	1.46E-01	8.74E-02
Teen	1.14E-01	1.61E-01	2.34E-01	1.58E-01	2.12E-01	1.23E-01
Child	1.88E-01	3.79E-01	3.90E-01	2.63E-01	3.93E-01	2.05E-01
Infant	3.02E-01	6.51E-01	7.02E-01	4.23E-01	8.08E-01	3.39E-01
Inhalation						
Adult	6.66E-02	2.07E-03	6.48E-02	6.49E-02	7.23E-02	8.65E-02
Teen	6.73E-02	2.56E-03	6.56E-02	6.56E-02	7.55E-02	1.02E-01
Child	5.84 E-02	3.18E-03	5.80E-02	5.80E-02	7.07E-02	9.01E-02
Infant	3.33E-02	1.51E-03	3.35E-02	3.34E-02	4.54E-02	5.89E-02
Total(2)						
Adult	2.55E+00	6.06E-01	5.80E-01	5.68E-01	6.30E-01	4.92E-01
Teen	1.95E+00	8.29E-01	7.29E-01	6.59E-01	7.78E-01	5.83E-01
Child	1.66E+00	1.71E+00	1.09E+00	9.60E-01	1.25E-01	8.21E-01
Infant	6.47E-01	1.23E+00	1.18E+00	8.06E-01	1.58E+00	7.18E-01

Note:
1. Dose due to iodine, particulate and H-3
2. Conservatively, both Cow Milk and Goat Milk are considered.
3. Calculated doses are from the addition of a single new unit.

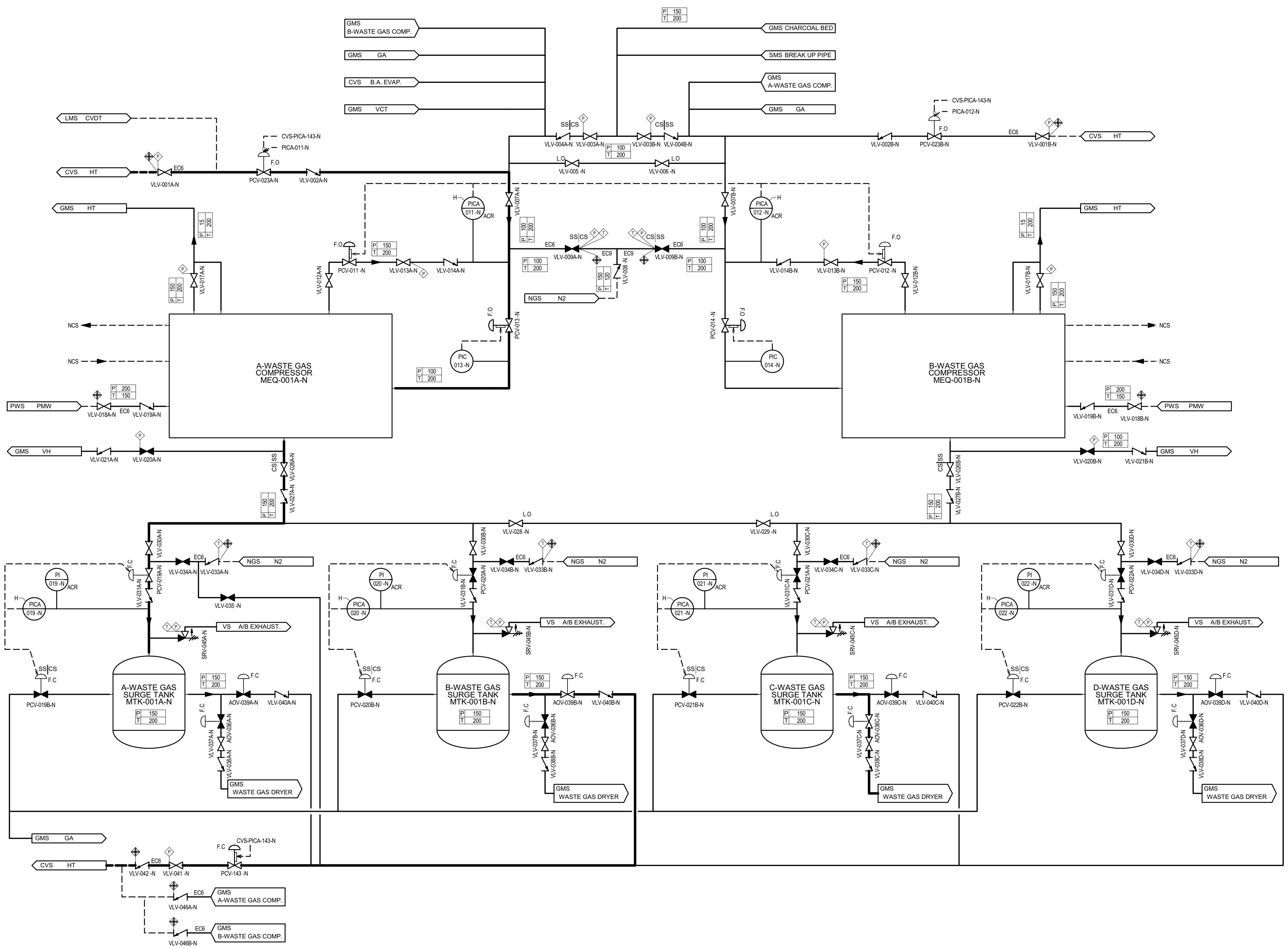
CP COL 11.3(6)

Table 11.3-206

Total Gaseous Doses to the Maximally Exposed Individual at Squaw Creek Reservoir

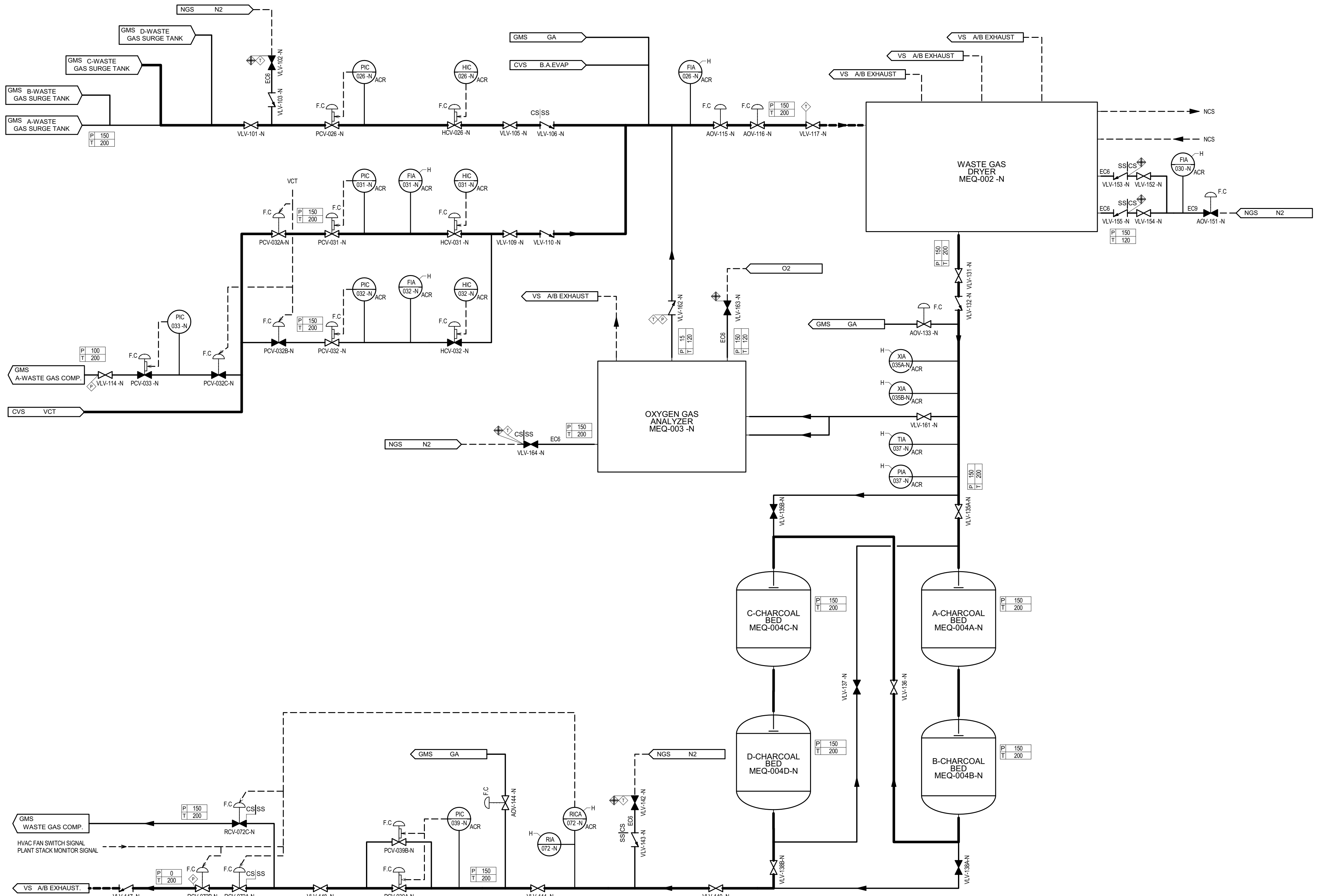
Pathway	Calculated Dose (mrem) per unit
Whole Body	7.22E-02
Thyroid	8.02E-02
TEDE	7.46E-02

Note: Calculated doses are from the addition of a single new unit.



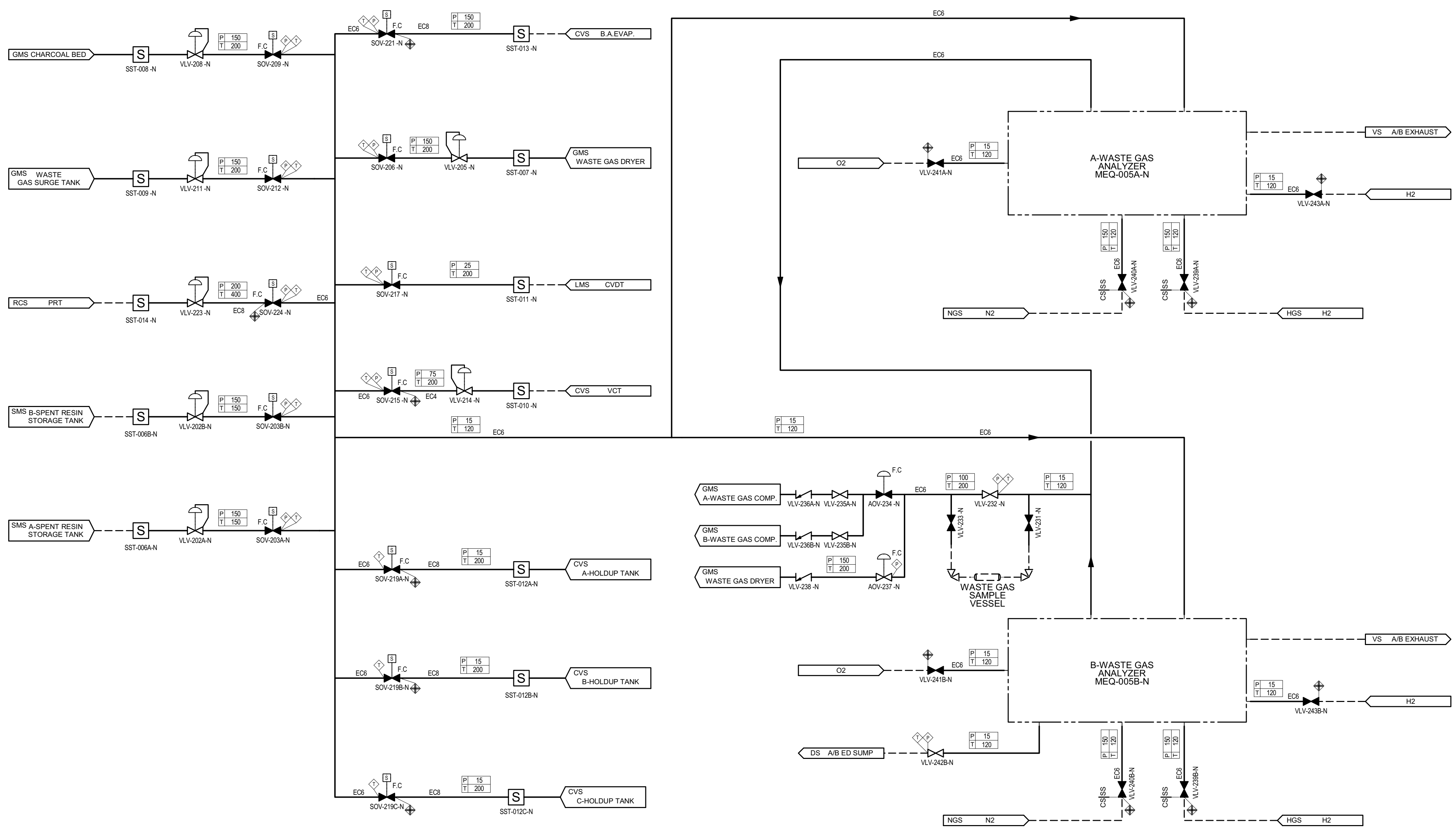
CP COL 11.3(9)

Figure 11.3-201 Gaseous Waste Management System Piping and Instrumentation Diagram (Sheet 1 of 3)



CP COL 11.3(9)

Figure 11.3-201 Gaseous Waste Management System Piping and Instrumentation Diagram (Sheet 2 of 3)



CP COL 11.3(9)

Figure 11.3-201 Gaseous Waste Management System Piping and Instrumentation Diagram (Sheet 3 of 3)

11.4 SOLID WASTE MANAGEMENT SYSTEM

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

11.4.1.3 Other Design Considerations

STD COL 11.4(5) Replace the fourth bullet in DCD Subsection 11.4.1.3 with the following.

- The current design provides collection and packaging of potentially contaminated clothing for offsite processing and/or disposal. Laundry services are performed offsite at appropriate vendor facilities. Waste resulting from these processes is forwarded directly from the vendor's location to the disposal facility or returned to the long-term storage facility, as appropriate.

11.4.1.5 Site-Specific Cost-Benefit Analysis

STD COL 11.4(6) Replace the second paragraph in DCD Subsection 11.4.1.5 with the following.

The solid waste management system (SWMS) is designed to handle spent resin, sludge, oily waste, spent filters, and dry active waste including contaminated clothing, broken equipment, and maintenance items that cannot be easily decontaminated and reused. The SWMS provides staging areas and handling equipment for waste packaging and storage for the above wastes. Any liquid and gaseous wastes resulting from the solid waste handling operation are collected and returned to LWMS and GWMS, for processing. As such, there is no unique direct release pathway from the solid waste handling operation to the environment, and a cost benefit analysis for the SWMS is included in the consideration of the LWMS and GWMS.

11.4.1.6 Mobile or Temporary Equipment

STD COL 11.4(5)
STD COL 11.4(7) Replace the last sentence in the paragraph in DCD Subsection 11.4.1.6 with the following.

The de-watering station is contracted for vendor services.

STD COL 11.4(10) Process piping connections for the de-watering station have connectors different from the utility connectors to prevent cross-connection and contamination. The use of mobile or temporary equipment will require applicable regulatory requirements and guidance such as 10 CFR 50.34a, 10 CFR 20.1406 and RG 1.143 to be addressed. As such the purchase or lease contracts for any temporary and mobile equipment will specify the applicable criteria.

11.4.2.1.1 Dry Active Wastes

STD COL 11.4(1) Replace the last paragraph in DCD Subsection 11.4.2.1.1 with the following.

Descriptions of wastes other than normally accumulated non-radioactive wastes such as wasted activated carbon from GWMS charcoal beds, solid wastes coming from component (Steam generator, Reactor vessel etc.) replacement activities, and other unusual cases will be described in the process control program and will be implemented in accordance with the milestone listed in Table 13.4-201.

11.4.2.2.1 Spent Resin Handling and De-watering Subsystem

STD COL 11.4(8) Replace the last sentence in the second paragraph in DCD Subsection 11.4.2.2.1 with the following.

The P&ID for the SWMS is provided in Figure 11.4-201.

11.4.2.3 Packaging, Storage, and Shipping

CP COL 11.4(7) Replace the third paragraph in DCD Subsection 11.4.2.3 with the following.

Some of the dry active waste is only slightly contaminated and permits contact handling. The SWMS design does not include compaction equipment or drum dryer equipment. These wastes are treated by contract services from specialized facilities.

CP COL 11.4(1) Replace the last sentence of the fourth paragraph in DCD Subsection 11.4.2.3 with the following.

A common radwaste interim storage facility is provided between Units 3 and 4 and is designed to store classes A, B, and C wastes from all four CPNPP units for up to 10 years. The common radwaste facility is designed to maintain onsite and offsite radiological doses within the limits in 10 CFR Part 20 and to maintain occupational exposures ALARA. This common radwaste interim storage facility reflects the site-specific waste volume reduction requirements and the current waste disposal strategy of the State of Texas. As design proceeds, the interim storage facility design may be revised to meet future waste acceptance and disposal criteria.

The common radwaste interim storage facility also includes a separate storage area for mixed waste and temporary staging of large equipment items for maintenance.

The radioactive mixed waste storage area is designed and constructed in accordance with permit application for its operation received from the State of Texas Commission on Environmental Quality.

The interim storage facility is designed to meet the guidance of NUREG-0800 Appendix 11.4-A. The facility design and operation ensure that radiological consequences of design basis events (such as fire, tornado, hurricane, seismic occurrence, and flood) do not exceed a small fraction of 10 CFR 100 dose limits. The facility also meets the guidance provided in Generic Letters 80-09, 81-38, and 81-39, and in SECYs 94-198 and 93-323. The facility is located within the plant's protected area and meets the dose limits set in 40 CFR 190 as implemented under 10 CFR 20.1301 (e) and 10 CFR 20.1302. Onsite dose limits from the radwaste interim storage facility meet the requirements of 10 CFR 20, including the ALARA principle of 10 CFR 20.1101.

In accordance with 10 CFR 20.1406, the facility includes design features that would minimize contamination of the waste facility and environment to the extent practicable; facilitate eventual decommissioning; and minimize the generation of extraneous radioactive waste. All potential radionuclide release pathways are monitored in accordance with 10 CFR 50, Appendix A.

The containers selected for use in the facility are chosen based on their ability to maintain integrity over their storage life, and compatibility with the types of waste stored. Additionally the containers are inspected periodically to ensure container integrity is maintained. The facility is also equipped with provisions for collecting liquid drainage and sampling of collected liquids. The design of the facility also uses shielded vaults for Class B and C waste; includes separate control and equipment room ventilation systems and airborne radiation monitor; and a remote bridge crane with closed circuit television cameras.

Detailed records are maintained for all waste stored in the facility including: waste type, waste contents, radionuclides and radioactive material, dates of storage, shipment, and other relevant data. The facility has a ventilation exhaust system and associated airborne radioactivity monitoring, and a fire protection system to detect and suppress fires.

In accordance with the regulations and guidance listed above, when the detailed design of the facility is performed, Luminant will consider the use of volume reduction techniques (such as compactors or shredders), transportation and lifting devices to prevent dropped containers, and sloped floors, curbs, and sumps to collect and contain spills or leakage. The facility design will consider proper shielding to reduce radiation levels. The detailed design will also consider the use of equipment for decontamination and repackaging of waste containers.

This interim storage facility is provided with the knowledge that as of July 1, 2008, the low level radioactive waste disposal facility in Barnwell, South Carolina, is no longer accepting Class B and C wastes from sources in states such as Texas that are outside of the Atlantic Compact, and that the disposal facility in Clive, Utah, is still accepting Class A waste from out of state. Class B and C waste constitutes a small fraction of the total low level radioactive waste that will be generated by CPNPP.

CPNPP Units 3 and 4 are scheduled to load fuel and begin commercial operation no earlier than 2016. Therefore, these units will not be generating Class B and C waste prior to that time. Although the interim storage facility is designed to store the Class A, B and C wastes generated by CPNPP Units 1, 2, 3, and 4 for 10 years, the facility could store waste for a proportionally longer period of operation if only Class B and C wastes were to be stored in that facility. It is likely that another disposal facility will be available that will accept Class B and C waste from sources in Texas well before the storage space in the interim storage facility is filled. In particular, in 2004, Waste Control Specialists applied for a license from the Texas Commission on Environmental Quality to develop a disposal facility in Andrews County, Texas, for Class A, B, and C waste. In August 2008 Waste Control Specialists received a draft license from the Texas Commission on Environmental Quality. According to its website, Waste Control Specialists plans on opening the Andrews County site in about December of 2010. Notwithstanding this, if additional storage capacity were eventually to be needed, CPNPP could expand the interim storage facility or construct additional storage facilities in accordance with applicable NRC guidance, such as Regulatory Issue Summary 2008-12, Considerations for Extended Interim Storage of Low-Level Radioactive Waste by Fuel Cycle and Materials Licenses, and Standard Review Plan 11.4.

11.4.3.2 Process Control Program

STD COL 11.4(3) Replace the content of DCD Subsection 11.4.3.2 with the following.

This subsection adopts NEI 07-10A, Generic FSAR Template for Process Control Program (Reference 11.4-23). The Process Control Program (PCP) describes the administrative and operational controls used for the solidification of liquid or wet solid waste and the dewatering of wet solid waste. The purpose of the PCP is to provide the necessary controls such that the final disposal waste product meets applicable federal regulations (10 CFR Parts 20, 50, 61, 71, and 49 CFR Part 173), state regulations, and disposal site waste form requirements for burial at a low level waste disposal site that is licensed in accordance with 10 CFR Part 61. Waste processing (solidification and/or dewatering) equipment and services may be provided by third-party vendors. The process used in the existing design meets the applicable requirements of the PCP. Table 13.4-201 provides the milestone for PCP implementation.

Additional onsite radioactive solid waste storage is provided and is discussed in Subsection 11.4.2.3.

11.4.4.5 Mobile De-watering System

STD COL 11.4(4)
STD COL 11.4(7)
Replace the last sentence in DCD Subsection 11.4.4.5 with the following.

The temporary mobile de-watering station installed in the SWMS is vendor supplied and operated within the specific requirements and layout based on vendor specifications. The temporary mobile de-watering station includes the necessary connections and fittings to interface with the plant piping. The connectors are uniquely designed to prevent inadvertent cross connection between the radioactive and non-radioactive plant piping. The piping also includes backflow inhibitors. Liquid effluent from the temporary mobile de-watering station is routed to the Liquid Waste Management System and the non-condensables are vented to the A/B ventilation system. An operating procedure will be provided prior to fuel load to ensure proper operation of the temporary mobile de-watering station to prevent the contamination of non-radioactive piping or uncontrolled releases of radioactivity into the environment so that guidance and information in Inspection and Enforcement (IE) Bulletin 80-10 (Ref. 11.4-29) is followed.

Applicable regulatory requirements and guidance, such as Regulatory Guide 1.143, are addressed by lease or purchase agreements associated with the use of a mobile dewatering subsystem for spent resin dewatering. The lease or purchase agreements include applicable criteria such as testing, inspection, interfacing requirements, operating procedures, and vendor oversight.

11.4.6 Testing and Inspection Requirements

CP COL 11.4(9) Add the following sentences to the end of the last paragraph of DCD Subsection 11.4.6.

The licensee has an Epoxy Coatings Program used to facilitate the ALARA objective of promoting decontamination in radiologically controlled areas outside containment. The program controls refurbishment, repair, and replacement of coatings in accordance with the manufacturers' product data sheets and good painting practices. The program will be implemented as described in FSAR Table 13.4-201.

11.4.8 Combined License Information

Replace the content of DCD Subsection 11.4.8 with the following.

CP COL 11.4(1)
STD COL 11.4(1) ***11.4(1)*** *Plant-specific needs for onsite waste storage*

This COL item is addressed in Subsection 11.4.2.1.1 and 11.4.2.3.

11.4(2) *Deleted from the DCD*

STD COL 11.4(3) ***11.4(3)*** *Plan for the process control program describing the process and effluent monitoring and sampling program*

This COL item is addressed in Subsection 11.4.3.2.

STD COL 11.4(4) ***11.4(4)*** *Mobile/portable SWMS connections*

This COL item is addressed in Subsection 11.4.4.5.

STD COL 11.4(5) ***11.4(5)*** *Offsite laundry facility processing and/or a mobile compaction*

This COL item is addressed in Subsections 11.4.1.3 and 11.4.1.6.

STD COL 11.4(6) ***11.4(6)*** *Site-specific cost benefit analysis*

This COL item is addressed in Subsection 11.4.1.5.

STD COL 11.4(7)
CP COL 11.4(7) ***11.4(7)*** *Site-specific solid waste processing facility*

This COL item is addressed in Subsections 11.4.1.6, 11.4.2.3 and 11.4.4.5.

STD COL 11.4(8)
CP COL 11.4(8) ***11.4(8)*** *Piping and instrumentation diagrams*

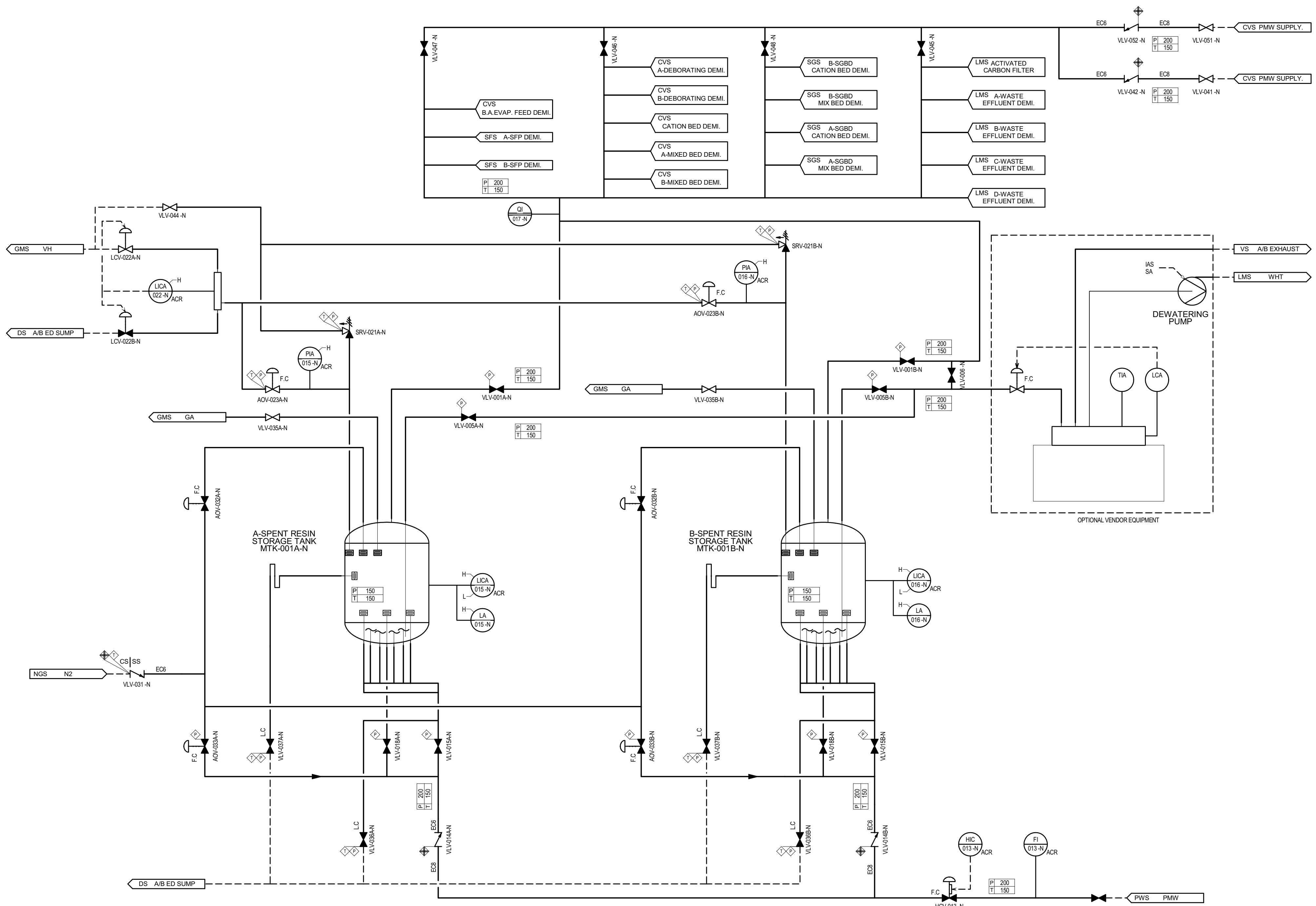
This COL item is addressed in Subsection 11.4.2.2.1 and Figure 11.4-201.

CP COL 11.4(9) ***11.4(9)*** *The implementation milestones for the coatings program used in the SWMS*

This COL item is addressed in Subsection 11.4.6.

STD COL 11.4(10) ***11.4(10)*** *The mobile/portable SWMS connections*

This COL item is addressed in Subsection 11.4.1.6.



CP COL 11.4(8)

Figure 11.4-201 Solid Waste Management System Piping and Instrumentation Diagram

11.5 PROCESS EFFLUENT RADIATION MONITORING AND SAMPLING SYSTEMS

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

CP SUP 11.5(1) Replace the last paragraph in DCD Section 11.5 with the following.

Essential service water (ESW) pipe tunnel structure at elevation 793'-1" has been changed in site-specific layout. However, the location of process effluent radiation monitors in DCD Chapter 11 is not affected by the modification of ESW pipe tunnel structure, and Figure 11.5-2 can be used except for the structure of ESW pipe tunnel remains valid. The structure of ESW pipe tunnel is shown on Figure 1.2-2.

Add the following Subsections after DCD Subsection 11.5.2.5.2

CP COL 11.5(1)

11.5.2.5.3 Startup Steam Generator Blowdown Heat Exchanger Downstream Radiation Monitor (RMS-RE-110)

The startup steam generator blowdown heat exchanger downstream radiation monitor is a gamma detector; the detection range and other details are summarized in Table 11.5-201, item number 201. A process schematic for this monitor is shown in Figure 11.5-201.

This monitor is located downstream of the startup steam generator blowdown heat exchanger in the Steam Generator Blowdown System (refer to Section 10.4.8.2.1). RMS-RE-110 measures the total gamma content in the discharge stream of the Startup Steam Generator Blowdown System. When an abnormally high radiation level is detected, the blowdown lines are isolated and the blowdown water included in the Steam Generator Blowdown System is transferred to a waste holdup tank in the LWMS. The monitor is not safety-related and does not perform any safety function.

CP COL 11.5(1)

11.5.2.5.4 Evaporation Pond Discharge Radiation Monitor (RMS-RE-111)

The evaporation pond discharge radiation monitor is a gamma detector; the detection range and other details are summarized in Table 11.5-201, item number 202. A process schematic for this monitor is shown in Figure 11.5-201.

This monitor is located downstream of the evaporation pond (refer to Section 11.2.3.4). RMS-RE-111 measures the total gamma content in the discharge stream of the evaporation pond. When an abnormally high radiation level is detected, the discharge line is isolated, the discharge pump is secured, and the

Main Control Room and Radwaste Control Room are alarmed automatically. The monitor is not safety-related and does not perform any safety function.

11.5.2.6 Reliability and Quality Assurance

CP COL 11.5(4)
CP COL 11.5(5)

Replace the third paragraph and the forth paragraph in DCD Subsection 11.5.2.6 with the following.

The procedures for acquiring and evaluating samples of radioactive effluents, as well as procedures for inspection, calibration, and maintenance of the monitoring and sampling equipment are developed in accordance with RG 1.21 and RG 4.15. The procedures for the radioactive waste systems are developed in accordance with RG 1.33. The analytical procedures are developed in accordance with RG 1.21. These procedures, described in Subsection 13.5.2, are prepared and implemented under the quality assurance program referenced in Chapter 17. Inspections are conducted daily on the process and effluent monitoring and sampling system through observance of the system channels. Periodically, the system is further checked during the course of reactor operation through the implementation of a check source. The detector response is compared to the instrument's background count rate to determine functionality. Calibration of monitors is conducted through the use of known radionuclide sources as documented by national standards. Maintenance is conducted routinely on the monitoring and sampling system, which is easily accessible, as is the accompanying power supply. Electronic and sampling components undergo a full servicing, periodically, as detailed in the operational instructions in order to maintain consistent operation.

11.5.2.7 Determination of Instrumentation Alarm Setpoints for Effluents

STD COL 11.5(2)

Replace the second sentence in DCD Subsection 11.5.2.7 with the following.

The methodology for the calculation of the alarm setpoints is part of the ODCM described in Subsection 11.5.2.9.

11.5.2.8 Compliance with Effluent Release Requirements

STD COL 11.5(4) STD COL 11.5(5) Replace the last sentence in the first paragraph and the second paragraph in DCD Subsection 11.5.2.8 with the following.

Site-specific procedures on equipment inspection, calibration, maintenance, and regulated record keeping, which meet the requirements of 10 CFR 20.1301, 10 CFR 20.1302, and 10 CFR 50 Appendix I, are prepared and implemented under the quality assurance program referenced in Chapter 17.

11.5.2.9 Offsite Dose Calculation Manual

Replace the first paragraph and the second paragraph in DCD Subection 11.5.2.9 with the following.

STD COL 11.5(1) STD COL 11.5(2) Fulfillment of the 10 CFR 50 Appendix I guidelines requires effluent monitor data. A description of the monitor controls and the calculation of the monitor setpoints are part of the ODCM. The ODCM also provides the rationale for compliance with the radiological effluent Technical Specifications and for the calculation of appropriate setpoints for effluent monitors. The ODCM follows the guidance of NEI 07-09A. The ODCM and radiological effluent Technical Specifications, which reflect the new reactor units, are implemented in accordance with the milestone listed in Table 13.4-201. The ODCM will be re-written to apply to all units and to conform with the NEI template before receipt of radioactive material in accordance with FSAR Table 13.4-201. The manual will also contain the planned effluent discharge flow rates and addresses the numerical guidelines stated in 10 CFR 50, Appendix I (Ref. 11.5-3). The manual will be produced in accordance with the guidance of NUREG-1301 (Ref. 11.5-21), and NUREG-0133 (Ref. 11.5-18), and with the guidance of RG 1.109 (Ref. 11.5-22), RG 1.111 (Ref. 11.5-23), or RG 1.113 (Ref. 11.5-24). The manual will include a discussion of how the NUREGs, RGs, or alternative methods are implemented.

11.5.2.10 Radiological Environmental Monitoring Program

STD COL 11.5(3) Replace the content of DCD Subsection 11.5.2.10 with the following.

The program is going to be described in the plant Technical Specification and the ODCM, which reflect the new reactor units, is implemented in accordance with the milestone listed in Table 13.4-201. This program measures direct radiation using thermoluminescent dosimeters as well as analyses of samples of the air, water, vegetation, and fauna in the surrounding area. The guidance outlined in NUREG-1301 (Reference 11.5-21) and NUREG-0133 (Reference 11.5-18) is to be used when developing the radiological environmental monitoring program. The radiological environmental monitoring program follows the guidance of NEI 07-09A.

11.5.2.11 Site-Specific Cost-Benefit Analysis

STD COL 11.5(6) Replace the content of DCD Subsection 11.5.2.11 with the following.

The results of site-specific cost-benefit analysis are described in Subsections 11.2.1.5 and 11.3.1.5.

11.5.5 Combined License Information

Replace the content of DCD Subsection 11.5.5 with the following.

CP COL 11.5(1)
STD COL 11.5(1) ***11.5(1)*** *Site-specific aspects*

This COL item is addressed in Subsections 11.5.2.5.3, 11.5.2.5.4 and 11.5.2.9 and Table 11.5-201 and Figure 11.5-201.

STD COL 11.5(2) ***11.5(2)*** *Offsite dose calculation manual*

This COL item is addressed in Subsection 11.5.2.7 and 11.5.2.9.

STD COL 11.5(3) ***11.5(3)*** *Radiological and environmental monitoring program*

This COL item is addressed in Subsection 11.5.2.10.

CP COL 11.5(4)
STD COL 11.5(4) ***11.5(4)*** *Inspection, decontamination, and replacement*

This COL item is addressed in Subsections 11.5.2.6 and 11.5.2.8.

CP COL 11.5(5)
STD COL 11.5(5) ***11.5(5)*** *Analytical procedures*

This COL item is addressed in Subsections 11.5.2.6 and 11.5.2.8.

STD COL 11.5(6) ***11.5(6)*** *The site-specific cost benefit analysis*

This COL item is addressed in Subsection 11.5.2.11.

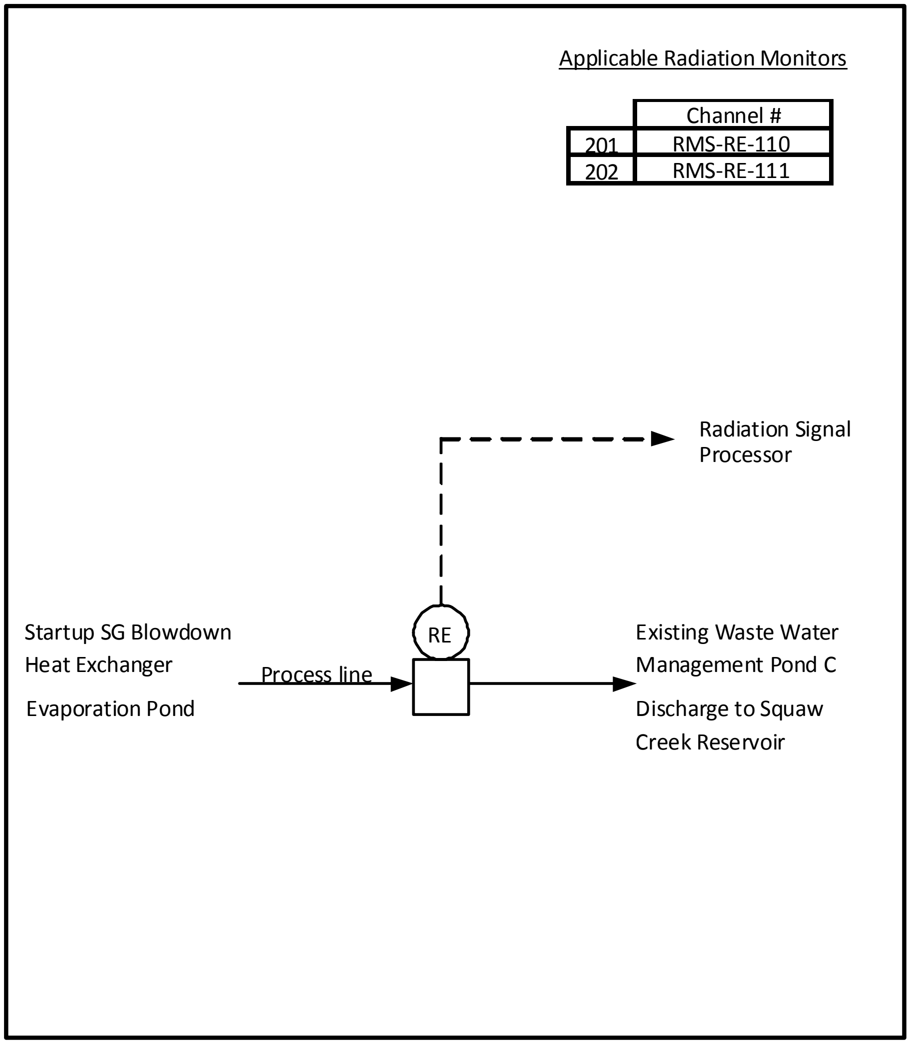
CP COL 11.5(1)

Table 11.5-201

Effluent Liquid Monitors (Site-Specific)

Item No.	Monitor Number	Service	Type	Range $\mu Ci/cm^3$	Calibration Isotopes	Check Source	Safety-Related	Control Function	Quantity	Schematic Number	GA Drawing Number
201	RMS-RE-110	1 for each unit	γ	1E-7 to 1E-2	Cs-137	Yes	No	Diverse	1 for each unit	11.5 – 1d	(Note 1)
202	RMS-RE-111	1	γ	1E-7 to 1E-2	Cs-137	Yes	No	Diverse	1	11.5 – 1d	(Note 2)

Note 1: The monitor is located adjacent to Startup Generator Blowdown Equipment shown in Figure 1.2-1R (Sheet 2 of 2)
Note 2: The monitor is located adjacent to radwaste evaporation pond shown in Figure 1.2-1R (Sheet 1of 2)



CP COL 11.5(1) **Figure 11.5-201 Typical Process In-Line Radiation Monitor Schematic**