

Use Oil Management and Furnace Operation Summary for NRC License Renewal Environmental Scoping Team

Description

At VYNPS, two commercial grade used oil furnaces (burners) are designated specifically for burning used oil to provide heat to buildings located outside of the power block for worker comfort during cold weather months. Non-radioactively contaminated oil is burned in a furnace located in the Containment Access Building (CAB). Radioactively Contaminated oil is burned in a furnace that is located in the North Warehouse. It is intended that the used oil furnaces are only used when needed for heat.

Operational Control

Operation of the used oil furnaces is accomplished through a controlled procedure developed specifically for this activity. The furnaces are only operated to heat buildings and not for the sole purpose of reducing used oil inventory as appropriate to comply with the intent of the State of Vermont Regulations. No more than 1329 gallons (twenty four - 55 gallon drums) are allowed on site for above ground storage unless, the used oil is not stored for greater than 90 days and each container used to store oil is marked to identify the date that the container became full.

Standards for the types of used oil are strictly controlled in accordance with VYNPS procedures. Used motor vehicle crankcase or machine gearbox oil that exceed the allowable levels must be hazardous waste. VYNPS maintains records to document the amount of used oil fuel burned on site for a period of three years.

An additional controlled procedure for burning radioactively contaminated used oil is utilized to ensure compliance with recent NRC rulemaking [RIN: 3150-AC14; "Disposal of Oil by Incineration"] and subsequent changes to 10CFR20.305 and 10CFR20.2004. This procedure provides guidance for;

- collection of used oil,
- sampling and analysis of composite used oil,
- generation of the Used Oil Burn Permit,
- start-up of the North Warehouse Used Oil Burner,
- calculations and monthly assessment of Dose Contribution,

The furnaces, like a household furnace, are thermostatically controlled, and once placed in operation, will function automatically with little or no operator attention. Occasional observation ensures that the unit is operating properly.

Fire Protection

Each used oil furnace is protected by three local thermal fire detectors. Any one of these detectors will shutdown the associated furnace and initiate a local alarm outside of the associated building. The associated oil storage reservoir is bermed to hold the contents of the reservoir in the event of reservoir failure.

Sampling

Below is the sampling procedure radioactively contaminated used oil for VYNPS Technicians as provided in the controlled procedure.

B. Sampling and Analysis of Composited Used Oil

1. When the North Warehouse Used Oil Burner Reservoir has been filled with used oil, the Chemistry technician shall collect and analyze a sample as follows:
 - a. Obtain the next available Burn Permit Number, a copy of Figure 1, a one-gallon sample container and a COLIWASA tube (or other appropriate sampling device).
 - b. Proceed to the North Warehouse, employing appropriate radiological control and entry techniques.
 - c. Using a COLIWASA tube, collect a one-gallon sample from the North Warehouse Used Oil Burner Reservoir for analysis of radionuclide contamination.
 - d. Place a label (use a copy of Figure 1, or equivalent) on the reservoir indicating the date of the sample, name of Chem. tech., proposed Burn Permit Number and a caution to prohibit the addition of more used oil to the reservoir unless approved by the Hazardous Waste Coordinator with notification to the HP/Chem. Spec. (NUC).
 - e. Upon returning to the lab with the sample, prepare a one liter aliquot, in a Marinelli container.

CAUTIONS

- IDENTIFY THE SPECTRUM WITH THE BURN PERMIT NUMBER OBTAINED IN STEP 1 OF THIS SECTION.
- IF NO PEAKS ARE DETECTED AFTER MEETING THE LLDS IN ODCM TABLE 4.2.1, CONTINUE THE COUNT TO SATISFY THE ENVIRONMENTAL LLDS LISTED IN ODCM TABLE 4.5.1 (TABLE II OF OP 2610).

- f. Analyze the Marinelli on the gamma spectrometer (MCA) to determine concentrations of radionuclides that meet or exceed the Lower Limit of Detection (LLD) for all of the liquid-phase radionuclides ("effluent" LLDS) listed in ODCM Table 4.2.1 (for Principal Gamma Emitters $\leq 5E-7$ microcurie/ml and for Iodine-131, $\leq 1E-6$ microcurie/ml).

- g. Return the liter sample to the gallon sample container. This sample will be utilized as part of a composite to be analyzed by the Laboratory for Iron-55, Strontium-89, Strontium-90, tritium and gross alpha.

NOTE

The gallon size of the sample is needed to achieve LLDs specified in ODCM Table 4.2.1 (Sr-89 & Sr-90; $\leq 5E-8$ microcurie/ml, Fe-55; $\leq 1E-6$ microcurie/ml, tritium; $\leq 1E-5$ microcurie/ml and gross alpha; $\leq 1E-7$ microcurie/ml).

- 1) A gallon of composite used oil will be prepared on a monthly basis when burner is in operation.
 - 2) The gallon sample will be stored in the designated area in the Chemistry Laboratory.
2. Data collected in the preceding section will be forwarded to the Chemistry Environmental Programs Lead for dose contribution calculations.

NOTE

Isotopic data from other samples of used oil may be obtained for evaluation and inclusion in the burn permit process.

- a. Utilizing VYOPF 2612.02, the HP/Chem. Spec. (NUC) shall calculate the dose contribution of the radionuclides that are detected in the reservoir of used oil assuming that all of these radionuclides will be released via a ground-level "gaseous" pathway (the Waste Oil Burner Vent Stack) as described in the Offsite Dose Calculation Manual (ODCM) Appendix D.
 - 1) Gamma emitters data will be obtained from sample analyses determined for each reservoir of used oil. For the following radionuclides:
 - a) Sr-89 and Sr-90 will be ratioed using the most recent monthly composite data and data for an appropriate gamma emitting nuclide such as Cs-137 obtained in Step 1.a of this section.
 - b) Fe-55 will be ratioed using the most recent monthly composite data and data for an appropriate gamma emitting nuclide such as Co-60 obtained in Step 1.a of this section.
 - c) Gross alpha and tritium will be obtained by using the most recent measurements from monthly composite data.
- b. The HP/Chem. Spec. (NUC) shall determine, based upon assessing the additional impact of this release upon the total

releases from the plant (as determined on a monthly basis utilizing OP 4609), when the Burn Permit can be prepared to allow the startup of the North Warehouse Used Oil Burner for gaseous release.

3. Monthly, the HP/Chem. Spec. (NUC) shall prepare a composite sample for shipment to the analysis lab from the 1 gallon samples saved in Section II.A.7.
 - a. The composite sample will be determined by the HP/Chem. Spec. (NUC).
 - b. Request Part 50 analyses for gamma emitters, Fe-55, Sr-89, Sr-90, tritium and gross alpha on the 10CFR 50 lab sample submission form.

NOTE

Other analyses may be requested.

- c. Make a note on the environmental lab sample submission form for the laboratory to report results in $\mu\text{Ci/ml}$.
- d. Complete first part of VYOPF 2612.03.
- e. On receipt and review of the composite results, the HP/Chem. Spec. (NUC) shall perform the following calculations:
 - 1) Scaling factor for Sr-89 and Sr-90.
 - 2) Scaling factor for Fe-55.
 - 3) Curies of gross alpha, Fe-55, Sr-89, Sr-90, and tritium released for the month.
 - 4) Release rates in $\mu\text{Ci/sec}$ for gross alpha, Fe-55, Sr-89, Sr-90 and tritium.
- f. Complete VYOPF 2612.03 and submit it for review.

Burn Permit

When the HP/Chemistry Specialist determines that sufficient dose margin exists to allow the release of the radionuclides contained in the reservoir, a permit for burning the used oil shall be prepared. The calculations are reviewed by Chemistry Supervision and the permit is reviewed and approved by the HP/Chemistry Specialist. A copy of the permit is retained in the HP/Chemistry Specialist temporary files until the completed form is returned for filing as a controlled document. The Burn Permit is then placed in a protective, clear wrapper and then affixed to the North Warehouse Used Oil Burner Reservoir.