Air Quality **PERMIT TO CONSTRUCT** **State of Idaho** **Department of Environmental Quality**	**PERMIT NO.:** 023-00001 **AQCR:** 61 **CLASS:** A **SIC:** 9999 **ZONE:** 12 **UTM COORDINATE (km):** 342.2 , 4827.6

1. **PERMITTEE** U. S. Department of Energy - Idaho Operations Office			
2. **PROJECT** Idaho National Engineering and Environmental Laboratory - TRA Evaporation Pond			
3. **MAILING ADDRESS** 850 Energy Drive	**CITY** Idaho Falls	**STATE** ID	**ZIP** 83401
4. **FACILITY CONTACT** Ronald H. Guymon	**TITLE** Director, Environmental Affairs, BBWI	**TELEPHONE** (208) 526-4704	
5. **RESPONSIBLE OFFICIAL** Teresa L. Perkins	**TITLE** Director ETSD, DOE	**TELEPHONE** (208) 526-1483	
6. **EXACT PLANT LOCATION** Idaho National Engineering and Environmental Laboratory - Test Reactor Area		**COUNTY** Butte	
7. **GENERAL NATURE OF BUSINESS & KINDS OF PRODUCTS** Government Research			

8. **GENERAL CONDITIONS**

This permit is issued according to IDAPA 58.01.01.200, *Rules for the Control of Air Pollution in Idaho*, and pertains only to emissions of air contaminants regulated by the state of Idaho and to the sources specifically allowed to be constructed by this permit.

This permit (a) does not affect the title of the premises upon which the equipment is to be located; (b) does not release the permittee from any liability for any loss due to damage to person or property caused by, resulting from, or arising out of the design, installation, maintenance, or operation of the proposed equipment; (c) does not release the permittee from compliance with other applicable federal, state, tribal, or local laws, regulations, or ordinances; (d) in no manner implies or suggests that the Idaho Department of Environmental Quality or its officers, agents, or employees, assume any liability, directly or indirectly, for any loss due to damage to person or property caused by, resulting from, or arising out of design, installation, maintenance, or operation of the proposed equipment.

This permit is not transferable to another person, place, or piece or set of equipment. This permit will expire if construction has not begun within two years of its issue date or if construction is suspended for one year.

This permit has been granted on the basis of design information presented with its application. Changes of design or equipment may require Department approval pursuant to the *Rules for the Control of Air Pollution in Idaho*, IDAPA 58.01.01.200, et seq.

KATHERINE B. KELLY, ADMINISTRATOR, AIR QUALITY DIVISION
DEPARTMENT OF ENVIRONMENTAL QUALITY

DATE ISSUED: September 9, 2002

KK/DS/bh

ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AQCR	Air Quality Control Region
ATR	TRA - 670 Advanced test reactor
BACT	Best Available Control Technology
CFR	Code of Federal Regulations
Curies/mo	curies per month
Curies/yr	curies per year
Department	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
ERM	effluent radiation monitor
ft^3	cubic foot
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
INEEL	Idaho National Engineering and Environmental Laboratory
MACT	Maximum Achievable Control Technology
MTRS	material test reactor stack
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
PTC	permit to construct
SIC	Standard Industrial Classification
TRA	test reactor area
UTM	Universal Transverse Mercator
WWTF	warm waste-treatment building

AIR QUALITY PERMIT TO CONSTRUCT NUMBER: 023-00001

Permittee: U.S. Department of Energy
Location: Idaho National Engineering Laboratory, TRA Date Issued: September 9, 2002

1. PERMIT TO CONSTRUCT SCOPE

Purpose

This permit to construct incorporates the following permit:

- PTC No. 023-00001, issued December 13, 1995

Regulated Sources

Table 1.1 below lists all sources of emissions that are regulated in this PTC:

Table 1.1 EMISSION SOURCES

Permit Section	Source Description	Emissions Control(s)
1	Test Reactor Area (TRA) evaporation pond	Uncontrolled/Storage Tanks

2. TRA EVAPORATION POND

2.1 Process Description

The lined evaporation pond (TRA-715) receives discharge from the warm wastewater system at the Idaho National Engineering and Environmental Laboratory's (INEEL) TRA. The warm wastewater system consists of two 50 cubic foot (ft^3) mixed-ion exchange beds in each of two warm waste-treatment facilities (WWTFs), the process water building (TRA-605), the retention basin inlet sump (TRA-712), and the evaporation pond pump station (TRA-716). Warm wastewater is typically processed through one mixed-ion exchange bed in the respective WWTF. The mixed-ion exchange beds are designed to remove radioactive impurities from essentially pure demineralized water. The mixed-ion exchange media are bypassed in situations involving high-conductivity water and/or treatment of water where there would be no appreciable reduction in emissions.

The main discharge path is from the outlets of the WWTFs through TRA-605 and TRA-716 to the evaporation pond. The effluent water is monitored by the effluent radiation monitor (ERM) in the TRA-605 basement and sampled by the daily proportional sampling system in the TRA-636 building. Minor discharge paths include some buried piping from existing tanks and old reactor facilities which are routed directly to the TRA-712 and infrequent discharges routed directly to the evaporation pond itself from generating sources both inside and outside of the TRA site. In cases where water is diverted around either the ERM or the daily proportional sampling system, the wastewater is sampled to confirm compliance with the emission limits section of this permit.

2.2 Control Description

Emissions from the evaporation pond are uncontrolled. The pond has a double liner separated by one foot of sand. Perforated drainage pipes are installed between the liners and slope toward sumps to provide leak detection capability.

A 20,000-gallon (approximate) floating roof storage tank will be used to accept discharge water when the radionuclide loading exceeds 100 times the normal level as described in Permit Condition 2.5. The storage tank vent exhausts through the ventilation system to the TRA material test reactor stack (MTRS).

A 100,000-gallon floating roof storage tank will be used to accept discharge water when the radionuclide loading exceeds 1,000 times the normal level as described in Permit Condition 2.5. The storage tank vent exhausts through the ventilation system to the TRA MTRS.

Emissions Limits

2.3 National Emission Standards for Hazardous Air Pollutants

The permittee shall operate the TRA evaporation pond and all associated equipment in accordance with all applicable requirements contained in the NESHAPS for emissions of radionuclides from Department of Energy facilities (40 CFR 61.90)

2.4 Volatile and Nonvolatile Radionuclide Discharges

Volatile and nonvolatile radionuclide discharges to the evaporation pond shall not exceed, any corresponding limits listed in the following table as determined from daily proportional sampling performed pursuant to Permit Condition 2.7.

Table 2.1 RADIONUCLIDE DISCHARGE

Description	Radionuclides	
	Curies/Mo[1]	Curies/Yr[2]
Volatile radionuclide discharges	27.1	324.3
Nonvolatile radionuclide discharges	42.6	510.9

[1] Curies per month
[2] Curies per year

Operating Requirements

2.5 Sodium Iodide Detector

The permittee shall install, maintain and operate, a sodium iodide detector (or equivalent alternative method) to monitor for gross gamma radiation in the effluent stream to the evaporation pond. An annual source check shall be performed to ensure the sodium iodide detector is functioning properly. The permittee shall perform the source check in accordance with the Operations and Maintenance Manual 7.11.13.8.8 TRA-605 Effluent Radiation Monitor System Chamber A and Chamber B Source Checks. The detector shall trigger an alarm when the discharge stream radionuclide loading exceeds 10 times the "normal" level. If an alarm is triggered, the permittee shall evaluate the cause of the alarm. If the cause of the alarm is determined to be a resin bed malfunction, the permittee shall place a backup mixed-ion exchange bed in service within 24 hours, or replace or regenerate the resin in the mixed-ion bed within 24 hours. If the discharge stream radionuclide loading exceeds 100 times the "normal" levels, the discharge stream shall be diverted to the 20,000-gallon interim storage tank. If the discharge stream radionuclide loading exceeds 1,000 times the "normal" levels, the discharge stream shall be diverted to the 100,000-gallon interim storage tank. "Normal" discharge or level is the amount of discharge that would cause radionuclides to be emitted at the values listed in Permit Condition 2.4.

2.6 Diversion Procedures

In the event of a diversion of effluent flow, all water diverted to the 20,000-gallon and the 100,000-gallon interim storage tanks shall be rerouted through the TRA-605 WWTF or an alternate cleanup system prior to entering the evaporation pond.

Monitoring and Recordkeeping Requirements

2.7 Proportional Composite Sampling

The permittee shall conduct daily proportional composite sampling on the effluent stream prior to the evaporation pond entry point. Each daily grab sample shall be analyzed to demonstrate compliance with the nonvolatile radionuclide emission limit specified in Permit Condition 2.4. A composite sample shall be analyzed on a monthly basis using liquid scintillation counting methods to determine compliance with the volatile radionuclide emission limit specified in Permit Condition 2.4.

2.8 Radiological Surveys

During the second and third quarters of each calendar year (April 1 to September 30), the permittee shall perform weekly radiological surveys of the pond liner. The permittee shall decontaminate the pond liner as necessary to maintain contamination levels less than or equal to 10^5 disintegrations per minute per 100 square centimeters of any exposed evaporation pond liner (10^5 dpm/100 cm^2). In the event inclement weather causes unsafe radiological survey work conditions, the permittee is relieved of the requirement to perform the weekly radiological survey during the week of inclement weather, provided the survey attempt and weather conditions are documented. The records of the survey attempt and weather conditions at the time of the attempt must be maintained on-site for a minimum of two years and shall be made available to Department representatives upon request.

Reporting Requirements

2.9 Quarterly Reporting

The permittee shall submit a quarterly report to the Department that summarizes the results of the discharge stream monitoring required in Permit Condition 2.7. The report shall contain an estimate of the amount of radionuclides discharged to the evaporation pond (in Curies) during each reporting period, and shall distinguish between volatile and nonvolatile radionuclide emissions. The quarterly report shall be based on a quarter calendar year and shall be submitted no later than 45 days after the end of each quarter.

2.10 Certification of Documents

All documents submitted to the Department, including, but not limited to, records, monitoring data, supporting information, requests for confidential treatment, testing reports, or compliance certifications, shall contain a certification by a responsible official. The certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document(s) are true, accurate, and complete.

3. PERMIT TO CONSTRUCT GENERAL PROVISIONS

1. All emissions authorized herein shall be consistent with the terms and conditions of this permit and the *Rules for the Control of Air Pollution in Idaho*. The emissions of any pollutant in excess of the limitations specified herein, or noncompliance with any other condition or limitation contained in this permit, shall constitute a violation of this permit and the *Rules for the Control of Air Pollution in Idaho*, and the Environmental Protection and Health Act, Idaho Code §39-101, et seq.

2. The permittee shall at all times (except as provided in the *Rules for the Control of Air Pollution in Idaho*) maintain in good working order and operate as efficiently as practicable, all treatment or control facilities or systems installed or used to achieve compliance with the terms and conditions of this permit and other applicable Idaho laws for the control of air pollution.

3. The permittee shall allow the Director, and/or the authorized representative(s), upon the presentation of credentials:

3.1 To enter, at reasonable times, upon the premises where an emissions source is located, or in which any records are required to be kept under the terms and conditions of this permit.

3.2 At reasonable times, to have access to and copy any records required to be kept under the terms and conditions of this permit, to inspect any monitoring methods required in this permit, and require stack emissions testing in conformance with IDAPA 58.01.01.157 when deemed appropriate by the Director.

4. Nothing in this permit is intended to relieve or exempt the permittee from compliance with any applicable federal, state, or local law or regulation, except as specifically provided herein.

5. The permittee shall notify the Department, in writing, of the required information for the following events within five working days after occurrence:
   - Initiation of Construction - Date
   - Completion/Cessation of Construction - Date
   - Actual Production Startup - Date
   - Initial Date of Achieving Maximum Production Rate - Production Rate and Date

6. If emissions testing is specified, the permittee must schedule such testing within 60 days after achieving the maximum production rate, but not later than 180 days after initial startup. Such testing must strictly adhere to the procedures outlined in IDAPA 58.01.01.157 and shall not be conducted on weekends or state holidays without prior written approval from the Department. The Department may modify testing procedures and specific time limitations by prior negotiation if conditions warrant adjustment. The Department shall be notified at least 15 days prior to the scheduled compliance test. Any records or data generated as a result of such compliance test shall be made available to the Department upon request.

   The maximum allowable operating rate shall be limited to 120% of the average operating rate attained during any performance test period, for which a test protocol has been granted prior approval by the Department, unless (1) the test demonstrates noncompliance; (2) a more restrictive operating limit is specified elsewhere in this permit; or (3) at such an operating rate, emissions would exceed any emissions limit(s) set forth in this permit.

7. The provisions of this permit are severable, and if any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.