0059645

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

1315 W. 4th Avenue • Kennewick, Washington 99336-6018 • (509) 735-7581

June 4, 2003

Ms. Laurie Kral
Office of Air Quality Program
United States Environmental Protection Agency, Region 10
1200 Sixth Avenue
Seattle, Washington 98101

Mr. Andy Ginsburg, Administrator
Air Quality Division
Oregon Department of Environmental Quality
811 SW Sixth Avenue
Portland, Oregon 97204

Mr. Russell Jim
Yakama Indian Nation
P.O. Box 151
Toppenish, Washington 98948

Mr. Gary Burke, Chairman
Confederated Tribes of the Umatilla Indian Reservation
P.O. Box 638
Pendleton, Oregon 97801

Dear Ms. Kral, Messrs. Ginsburg, Jim and Burke:

United States Environmental Protection Agency (USEPA) and Affected State Notification of Draft Significant Modification to the Hanford Site Title V Air Operating Permit (AOP)

Enclosed for your review is the application and draft significant modification to the Hanford Site Title V AOP pursuant to Washington Administrative Code (WAC) 173-401-725(4). This submittal contains a change in status of emission unit 300 P-340-NT-EX-001 (Emission Unit ID 423) from a major point source to a minor point source. The attachment provides the United States Department of Energy's (USDOE) application documents and requested changes.

The Washington State Department of Ecology and the Washington State Department of Health have reviewed this application and consider it complete. All WAC 401-725(4) requirements will be followed for review and issuance of this significant modification. The public participation and comment period will start on June 10, 2003, for at least 30 days, in accordance with WAC 173-401-800 to 820.

If you have any questions regarding this notification and request for review, please contact Oliver Wang of my staff at (509) 736-3040. Thank you.

Sincerely,

Mike Wilson
Program Manager
Nuclear Waste Program

Oliver Wang
Professional Engineer
Nuclear Waste Program

MW:OW:nc
Attachment: DOE's application for significant modification and requested changes.

cc w/ attachment:

Dale Jackson
United States Department of Energy
Richland Operations Office
P.O. Box 550, MS: A4-52
Richland, Washington 99352

Bill Green
Fluor Hanford
P.O. Box 1000, MS: N1-25
Richland, Washington 99323

Dennis Bowser
United States Department of Energy
P.O. Box 450, MS: H6-60
Richland, Washington 99352

Barry Curn
Bechtel National
3000 George Washington Way
Richland, Washington 99352

cc w/ attachment:

Craig Lawrence
Washington State Department of Health
P.O. Box 47827
Olympia, Washington 98504-7827

Chris Kemp
CH2m Hill Hanford Group
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Richland, Washington 99352-1505

Joan Woolard, BHI
Bechtel Hanford, Inc.
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Richland, Washington 99352

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Pacific Northwest National Laboratory
P.O. Box 999, MS: P7-68
Richland, Washington 99352

Administrative Record: Hanford AOP

cc w/o attachment:

Joel Hebdon, Director
Regulatory Compliance and Analysis Division
United States Department of Energy
P.O. Box 550, MSIN: A5-58
Richland, Washington 99352

Douglas Hardesty
Office of Air Quality Program
United States Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

Al Conklin
Washington State Department of Health
P.O. Box 47827
Olympia, WA 98504-7827

Ken Niles
Oregon Office of Energy
625 Marion Street NE
Salem, Oregon 97301

Permit Register-Washington State
Department of Ecology
P.O. Box 47600
Olympia, Washington 98504-7600

Attachment

DOE's application for significant modification and requested changes

(Consisting of 14 pages, including this coversheet)

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

MAY 28 2003

REISSUE

03-RCA-0232

Mr. Allen W. Conklin, Supervisor
Air Emissions and Defense Waste Section
Washington State Department of Health
P.O. Box 47827
Olympia, Washington 98504

Mr. O. S. Wang
Nuclear Waste Program
Washington State Department of Ecology
1315 West Fourth Avenue
Kennewick, Washington 99336

Addressees:

REQUEST FOR SIGNIFICANT MODIFICATION TO THE HANFORD SITE TITLE V AIR OPERATING PERMIT(AOP) (NUMBER 00-05-006), DOWNGRADE OF STACK P-340-NT-EX-001

Enclosed is a request for a Significant Modification to the Hanford Site Title V AOP pursuant to Washington Administrative Code (WAC) 173-401-725(4) (Enclosure 1). The Significant Modification request package contains a change in status of emission unit 300 P-340-NT-EX-001 (Emission Unit ID 423) from a major point source to a minor point source. Specifically, the requested changes are as follows:

- Remove emission unit 300 P-340-NT-EX-001 (Emission Unit ID 423) and the associated notice of construction (NOC) approval AIR 97-604 from AOP Attachment 2, Table 1.1, page 2-71.
- Update AOP Attachment 4, pages 4-2 through 4-8 with a new National Emission Standards for Hazardous Air Pollutants (NESHAP) quarterly status report.
- Add emission unit 300 P-340-NT-EX-001 (Emission Unit ID 423) and the associated NOC approval AIR 97-604 (NOC ID 228) to AOP Attachment 2, Table 1.2.
- Change "Sampling Frequency" to "4 week sample/ year."
- Change "Radionuclide Requiring Measurement" to "TOTAL ALPHA TOTAL BETA."
- Change "Monitoring and Testing Procedure" to "Appendix B, Method 114(3)."
- Change "Federal and State Regulatory Requirements" to "40 CFR 61.93[b][I] & WAC 246-247-075[3]."
- Change "Sampling Requirements" to "Record Sample."

Based on sampling results from measurements taken upstream of the high-efficient particulate air filter, the potential to emit radionuclides is 0.004 millirem per year (Enclosure 2). A stack is considered to be a NESHAP designated stack if the potential to emit radionuclides is 0.1 millirem per year or greater.

Also included in the Significant Modification as Enclosure 3 is a form titled "Notification of Permit Modification Request to the U.S. Environmental Protection Agency, Region 10 (EPA), the Tribes, and Affected States." The AOP modification process for Significant Modifications is contained in WAC 173-401-725(4). According to this process, the State of Washington Department of Ecology will be responsible for the following:

- Provide EPA a copy of the permit application;
- maintain and update the permit register;
- prepare and publish public notices and/or public hearings;
- conduct 30-day public and affected states review period;
- respond to any public and affected state's comments, prepare responsiveness summary, and revise application accordingly;
- provide to EPA for 45-day review;
- Issue within 15 days after EPA review/approval, or deny the change;
- update and publish modified AOP as required; and
- complete review on the majority of significant AOP modifications within nine months after receipt of a complete application.

If you have any questions, please call Mary F. Jarvis, of my staff, on (509) 376-2256.

Sincerely,

Mary Jarvis

for Joel Hebdon, Director
Regulatory Compliance and Analysis Division

RCA:MFJ

Enclosures

cc w/encls:

R. H. Engelmann, FHI	R. Jim, YN
R. Gay, CTUIR	C. M. Lawrence, WDOH
W. E. Green, FHI	D. Sobotta, NPT
R. H. Gurske, FHI	F. M. Simmons, FHI
J. E. Hyatt, FHI	Environmental Portal, A3-01

Enclosure 1

Hanford Site Title V Air Operating Permit
Request for Significant Modification to the AOP

HANFORD SITE AIR OPERATING PERMIT

Significant Permit Modification Request

Permit Number 00-05-006

Significant permit modifications are allowed under WAC 173-401-725(4) for those modifications that do not meet the requirements for a minor permit modification or an administrative amendment.

Provide the following information pursuant to WAC-173-401-725(4)

Emission point identification and description of the change:

See attachment 1, Revised AOP Attachment 2, page 2-71.

Describe the emissions resulting from the change:

There are no new emissions resulting from the changes described in this significant permit modification request.

Describe the new applicable requirements that will apply as a result of the change:

New applicable requirements include:

- Sampling frequency [WAC 246-247-075(1)] [WAC 173-401-615(1)]: 4 week sample/ year,
- Sampling requirement [WAC 246-247-075(5), WAC 173-401-615(1)]: record sample,
- federal regulatory requirement: 40 CFR 61.93[b][4][I],
- state regulatory requirement: WAC 246-247-075[3],
- monitoring and testing procedure [WAC 246-247-040(5)] [WAC 173--401-615(1)]: Appendix B, Method 114(3), and
- radionuclides requiring measurement [WAC 173-401-615(1)]: TOTAL ALPHA TOTAL BETA.

Suggested Draft Permit Language:

for example:

- *Monitoring/PCM that will be used to support compliance determination/certification*
- *Description of air pollution control equipment (abatement technology)*
- *Other controls such as limits on inventory, process limits such as throughput, hours of operation, or acceptance criteria, or other assumptions used in Potential to Emit calculations*
- *Other process descriptions that constitute a term or condition, such as reporting or recordkeeping requirements.*

See attachment 1, Revised AOP Attachment 2, page 2-71, for suggested language.

300 P-340NTEX-001

340-NT-EX
340 BUILDING
Emission Unit ID: 423

Abatement Technology (state only enforceable)

Applicable Requirements: ALARACT
ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area	Description of Abatement Technology [WAC 246-247-010(4)] [WAC 246-247-040(4)]	Required Number of Units [WAC 246-247-010(4)] [WAC 246-247-060(5)]	Additional Description/Conditions [WAC 246-247-010] [WAC 246-247-040(4)] [WAC 246-247-060(5)]
	Moisture separator	1	Serves the vessel off-gas portion of the treatment system
	Fan	2	In parallel, (only one fan operates at a time, one is a backup)
	HEPA	2	In series. 3 parallel flow paths, (Minimum of 2 active flow paths providing 1 stage prefiltration and 2 stages HEPA filtration)
	Prefilter	1	3 parallel flow paths, (Minimum of 2 active flow paths providing 1 stage prefiltration and 2 stages HEPA filtration)

Monitoring Requirements (state and federally enforceable)

Federal and State Regulatory Requirements	Monitoring and Testing Procedure [WAC 246-247-040(5)] [WAC 173--401-615(1)]	Radionuclides Requiring Measurement [WAC 173-401-615(1)]	Sampling Frequency [WAC 246-247-075(1)] [WAC 173-401-615(1)]
40 CFR 61.93[b][4][i] & WAC 246-247-075[3]	Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	4 week sample/ year

Sampling Requirements: [WAC 246-247-075(5), WAC 173-401-615(1)]:
Record Sample

This Emission Unit has 1 active Notice of Construction.

Project Title	Approval No.	Date Approved	NOC_ID
340-A Building Tank Sludge Cleanout	AIR 97-604	6/19/1997	228

Conditions (state only enforceable)

1) Only one tank solids removal campaign shall be performed during any annual period, which consists of the removal of all sludge in the subject tanks.

2) The ventilation system consists of 3 parallel flow paths. A minimum of two active flow paths is required each path shall include a minimum of one prefilter, two HEPA filters in series, and two exhaust fans (one of which will be a backup fan)

3) The total abated offsite dose from the 340-A Building Tank Sludge Cleanout activities shall not exceed 3.05E-07 mrem/year.

Enclosure 2

EC300-03-02

340-NT-EX POTENTIAL-TO-EMIT CALCULATION

FLUOR DANIEL HANFORD, INC.

INTEROFFICE CORRESPONDENCE

EC300-03-02

To:	F. M. Simmons	S6-81	Date:	April 1, 2003
From:	D. L. Dyekman	N1-24	Telephone:	373-2530
cc:	L. P. Diediker	N1-24		
	R. H. Engelmann	N1-25		
	D. L. Flyckt	S6-71		
	W. E. Green, Jr.	N1-25		
	J. E. Hyatt	T3-03		
	J. Pennock	S6-72		
	R. Ranade	N1-26		
	R. T. Stordeur	L6-04		

Subject: 340-NT-EX POTENTIAL-TO-EMIT CALCULATION

Attached for your use is an estimate of the 340-NT-EX stack potential-to-emit (PTE) radionuclides. The comments from the March 25, 2003 meeting with WDOH (and EPA conference call) have been incorporated. The final PTE estimate for 340-NT-EX is 0.004 mrem/yr.

If you have any questions or comments please do not hesitate to call me at 373-2530

Thank you.

CALCULATING A POTENTIAL-TO-EMIT FOR THE 340-NT-EX STACK

INTRODUCTION

The 340-NT-EX stack is the primary ventilation discharge point for the 340 Vault and associated waste tanks. The 340 facility tanks were historically used to collect radioactive liquid waste (RLW) from various facilities in the 300 Area prior to shipping the waste to the 200 Area for storage and disposal. The 340 facility tanks no longer receive RLW and records indicate the last waste transfer occurred in 1998. During waste receipt and transfer operations the 340-NT-EX stack was evaluated as a major stack with a potential-to-emit (PTE) radionuclides into the air in quantities which could cause a member of the public to receive in any year an effective dose equivalent in excess of 0.1 mrem/yr (1). The purpose of this memorandum is to document the methods, assumptions and data used to re-estimate the 340-NT-EX stack PTE for routine operations excluding waste transfers.

METHODS

Environmental Protection Agency regulations 40 CFR 61.93 paragraph (b)(4)(ii) requires the owner or operator of a radioactive air emission unit to evaluate the potential-to-emit radionuclides into the air by estimating release rates based on the discharge of the effluent stream that would result if all pollution control equipment did not exist, but the facility operations were otherwise normal (2). Reference (3) documents the results of an effort to measure 340-NT-EX airborne radionuclide concentrations upstream of the air pollution control and abatement equipment. These upstream air samples were collected before, during and after a radioactive liquid waste transfer. After all air samples had been collected, the sample probe was rinsed and the rinseate analyzed for radioactivity. The air sample concentrations measured prior to the liquid waste transfer represent a good approximation of the current 340-NT-EX PTE, and will be used to re-calculate a new estimate. The pre-transfer radionuclide air concentration will then be combined with the annualized stack flow volume and dose conversion factors from reference (4) to complete the PTE assessment.

RADIONUCLIDE AIR CONCENTRATION

The first step necessary to estimate curies emitted is to calculate a sum total concentration of radionuclides in the ventilation air stream for the time period of interest (*i.e.* before initiation of the waste transfer). The sum total concentration will consist of adding three quantities: 1) the raw activity found on the pre-transfer air sample filter paper, 2) the fraction of the sample probe rinse activity attributable to the pre-transfer sample period, and 3) the assumed activity for isotopes below detectable levels on the pre-transfer air sample that were positively measured on the later waste transfer air samples.

The raw air sample activity was taken from reference (3) Table 2. The fractional probe rinse activity attributable to the pre-transfer sample period was estimated as follows:

Sample *1 Probe activity* =

$$\left(\frac{Sample\ 1\ total\ alpha\ or\ beta}{total\ alpha\ or\ beta\ for\ all\ air\ samples}\right)\times(probe\ rinse\ activity)\cong 0.4\%$$

The Sample 1 probe rinse activity was calculated using two sources of data: first using the total beta values and second using the total alpha values. The total beta values yielded a larger percentage fraction (0.4%) than total alpha values (0.01%). To be conservative, the total beta values were used and the final fraction percent was rounded up to 1%. The activity for isotopes measured in the waste transfer air samples but not detected in the pre-transfer sample analyses, was estimated by using the reported minimum detectable activity (MDA) for each respective isotope. The largest reported isotopic MDA values found among all of the sample analyses were used for additional conservatism. Final results are contained in Table 1.

Table 1. 340-NT-EX Upstream Air Sample Concentration.

Isotope	Sample 1 Result[1] (pCi)	Sample MDA[2] (pCi)	Total Probe Rinse (pCi)	Probe Rinse MDA (pCi)	Fractional Probe Rinse[3] (pCi)	Total (pCi)	Total Concentration[4] (uCi/ml)
Alpha	2.8		2325.0		23.3	26.1	8.2E-14
Beta	168.0		5632.0		56.3	224.3	7.0E-13
Co-57		4.2	126.1		1.3	5.5	1.7E-14
Co-60	3920.0		11.6		0.1	3920.1	1.2E-11
Sb-125		107.2		16.3	0.2	107.4	3.4E-13
Cs-134		7.0	32.9		0.3	7.3	2.3E-14
Cs-137	11800.0		41.2		0.4	11800.4	3.7E-11
Eu-152		116.6	123.0		1.2	117.8	3.7E-13
Eu-154		19.9	197.0		2.0	21.9	6.9E-14
Eu-155		16.1	52.0		0.5	16.6	5.2E-14
Am-241		9.6	736.2		7.4	17.0	5.3E-14

(1) Reference (3) Table 2, Sample 1.
(2) Minimum Detectable Activity.
(3) Probe rinse contribution for Sample 1 estimated at 1% of total probe rinse value.
(4) Reference (3) Table D.1 Sample 1 volume = 3.19E+08 ml.

CURIES RELEASED

The curies released and associated offsite dose impact are next calculated for each isotope using the following formula:

$$\textit{Offsite Dose} = (\textit{stack air concentration}) \times (\textit{annual stack flow volume}) \times (\textit{dose conversion factor})$$

The maximum fan capacity of 2400 cubic feet per minute (4) was used for additional conservatism. A review of the last four published Radionuclide Air Emissions Reports for the Hanford Site (1998 – 2001) indicate the fan has operated in the range of 1660 to 1800 cubic feet per minute. Placing the respective values into the offsite dose formula and completing unit conversions yields the offsite dose for each isotope. The total alpha and total beta activity values were assumed to be isotopes with the largest dose conversion factors. Summing the dose contribution from each isotope produces the total offsite dose. The final curie and dose calculations for 340-NT-EX are presented in Table 2.

Table 2. 340-NT-EX Potential-To-Emit Radionuclides

Isotope	Total Concentration (uCi/ml)	Total Stack Flow (L/yr)	Potential-To-Emit (ci/yr)	HNF-3602 Rv 1 Dose Factor (mrem/Ci/yr)	Potential-To-Emit (mrem/yr)	% Dose Contribution
Alpha (as Am-241)	8.2E-14	3.57E+10	2.9E-06	2.2E+02	6.4E-04	**18.0%**
Beta (as Sr-90)	7.0E-13		2.5E-05	1.9E+00	4.8E-05	1.3%
Co-57	1.7E-14		6.1E-07	4.8E-02	2.9E-08	0.0%
Co-60	1.2E-11		4.4E-04	4.1E+00	1.8E-03	**50.6%**
Sb-125	3.4E-13		1.2E-05	4.4E-01	5.3E-06	0.1%
Cs-134	2.3E-14		8.2E-07	1.7E+00	1.4E-06	0.0%
Cs-137	3.7E-11		1.3E-03	4.4E-01	5.8E-04	**16.3%**
Eu-152	3.7E-13		1.3E-05	4.0E+00	5.3E-05	1.5%
Eu-154	6.9E-14		2.4E-06	3.3E+00	8.1E-06	0.2%
Eu-155	5.2E-14		1.9E-06	1.3E-01	2.4E-07	0.0%
Am-241	5.3E-14		1.9E-06	2.2E+02	4.2E-04	**11.7%**
				Total =	**3.6E-03**	**mrem/yr**

CONCLUSION

The potential-to-emit radionuclides for the 340-NT-EX stack has been demonstrated to be 0.004 mrem/year when the 340 facility is not receiving or transferring radioactive liquid waste. The 340-NT-EX PTE is below the 40 CFR 61.93(b)(4)(i) threshold of 0.1 mrem/yr.

REFERENCES

(1) HNF-1974, Rev. 0. *Radionuclide National Emission Standards for Hazardous Air Pollutants Potential-to-Emit Assessment*. Fluor Hanford Inc. Richland, Washington.

(2) 40 CFR 61, Code of Federal Regulations, Title 40, Part 61. *National Emissions Standards for Hazardous Air Pollutants*, Subpart H, "National Emission Standards for Emissions of Radionuclides Other Than Radon From Department of Energy Facilities."

(3) HNF-SD-LEF-ER-002, Rev.0. *Unabated Emission Source Estimate for the 340-NX Stack.* R. T. Stordeur, Rust Federal Services Hanford, Inc., J. A. Glissmeyer, Pacific Northwest National Laboratory.

(4) HNF-3602, Revision 1. *Calculating Potential-to-Emit Releases and Doses for FEMPs and NOCs*. D. J. Rokkan, Fluor Hanford inc., K. Rhoads, L. H. Staven, Pacific Northwest National Laboratory.

(5) Engineered Drawing H-3-34404 Rev. 11, Bldg. No. 340. "HVAC Air Flow and Control Diagrams". U. S. Department of Energy, DOE Field Office. Richland, Wa.

ENCLOSURE 3

Significant Modification to Hanford Air Operating Permit

NOTIFICATION OF PERMIT MODIFICATION REQUEST TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 10, THE TRIBES, AND AFFECTED STATES

Attached is a request to revise the Hanford Site Air Operating Permit. This form serves as notification to EPA, tribes, and affected states of a request for an Air Operating Permit Modification per WAC 173-401-725(2), (3) and (4).

Air Operating Permit Number: 00-05-006	
Source: U.S. Department of Energy, Richland Operations, Hanford Site	
Mailing Address: P.O. Box 550 Richland, WA 99352	**Physical Address:** 825 Jadwin Ave. Richland, WA 99352
Brief Description: The purpose of this significant modification to the Hanford Site Air Operating Permit is to change the status of emission unit 300 P-340NTEX-001 from a National Emission Standards for Hazardous Air Pollutants (NESHAP) designated stack to a minor, non-designated stack. This change will result in a decrease in monitoring from continuous to a 4-week sample per year. Based on results from measurements taken upstream of the high efficient particulate air (HEPA) filters, the potential to emit radionuclides from this stack is 0.004 mrem/year. A stack is considered to be a NESHAP designated stack if the potential to emit radionuclides is 0.1 mrem/year or greater. No new activities are anticipated to occur at 300 P-340NTEX-001 that will increase the potential to emit.	
Contact Name: Joel B. Hebdon	**Phone:** 509-372-2400
Title: Director, Regulatory Compliance and Analysis Division US Department of Energy, Richland Operations Office	
FOR ECOLOGY USE ONLY	
Application Number	**Date Received**
Ecology Contact	
Date of Publication in Permit Register	**Public Comment Period Ends**