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Rockwell Aerospace
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2481

May 30, 1996 In reply refer to 96ETEC DRF-0294

R. Le Chevalier
Mail Stop T038
DOE-ETEC Site Manager
U. S. Department of Energy
Energy Technology Engineering Center
P. O. Box 7929
Canoga Park, CA 91309-7929

Subject: NESHAPs Report for 1995

Dear Mr. Le Chevalier:

Enclosed is the NESHAPs Report for 1995 for the DOE facilities at SSFL. This report reflects the results of detailed analyses of effluent samples for the single radiological exhaust stack in operation at a DOE facility during 1995, and estimates of emissions from one diffuse area source. Corrected analytical results for Pu-241 have been used for this revised submittal.

This report includes the Certification Statement to be signed by M. J. Gabler for ETEC and yourself for the ETEC Site Office, required for the final report.

If you have any questions or comments on this report, please contact Bob Tuttle, at 818/586-6135.

Very truly yours,

M. E. Lee, Program Manager
Environmental Programs
Energy Technology Engineering Center

Enclosure: Radionuclide Air Emissions Annual Report
(Individual Dose from Point Sources)

cc: S. Lasell, DOE/OAK

DOEAIR95

U. S. Department of Energy
Radionuclide Air Emissions Annual Report
(under Subpart H of 40 CFR Part 61)
Calendar Year 1995

Site Name: Santa Susana Field Laboratory
(Prepared May 30, 1996)

Operations Office Information

Office: Oakland Operations Office
Address: 1301 Clay Street Room 700N
Oakland, CA 94612-5208

Contact: Steve Lasell Phone: 510/637-1602

Site Information

Operator: Rocketdyne Division, Rockwell International Corp.
Address: 6633 Canoga Avenue
P. O. Box 7922
Canoga Park, CA 91309-7922

Contact: B. M. Oliver (T100) Phone: 818/586-6138

Section I. Facility Information

Site Description

The Santa Susana Field Laboratory is located in a mountainous wilderness region between the residential areas of the Simi and San Fernando Valleys, at the boundary of Ventura and Los Angeles Counties, in southern California. The site consists of approximately 2668 acres, but DOE operations are limited to a designated area of about 90 acres. The climate is generally dry, with variable winds.

The facility formerly served as a test site for very low-power experimental nuclear reactors and for developmental fuel fabrication, and fuel decladding. For the past seven years, only decontamination and decommissioning operations have been performed and essentially all radioactive material, except for small amounts of residual contamination, has been removed from the site.

Source Description

Potential sources of release of radionuclides at SSFL include both point and area (non-point) sources. The single (DOE) operating point source consists of a ventilation exhaust stack, while the area source consists of a slightly contaminated soil area. Analytical results from effluent and material sampling, identifying and quantifying radionuclides, have been used in preparing this report.

The RMHF (Radioactive Materials Handling Facility) is used for storage of waste packages waiting shipment to a DOE waste disposal site, evaporation of radioactively contaminated water generated in decontamination operations, and decontamination, size-reduction, and packaging in support of the decontamination operations. Ventilation from work areas in this facility is exhausted through HEPA filters and released from a stack. In the NESHAPs report, this release point is identified as Point Source #1.

(Building T059, a former low-power reactor test facility, previously used in the development of nuclear reactors in the Systems for Nuclear Auxiliary Power (SNAP) program, where remaining activated steel and concrete structural material has been removed in a decommissioning operation, had been included in prior reports, but no radioactive materials were discharged from this facility in 1995. Ventilation from work areas in this facility is exhausted through HEPA filters and released from a stack, only as needed to provide a breathable atmosphere in the workplace. This ventilation was not required during 1995. Therefore, in this NESHAPs report, this stack is not considered to be a release point for radioactivity.)

(The RMHF Pond (Sump 614) is a collection sump for rainfall runoff from the RMHF. As it is sometimes dry, sediment may be subject to airborne resuspension by the wind. During 1995, this sump contained water throughout the year, and so was not subject to windborne dispersal of radioactive material. Therefore, in this NESHAPs report, this area is not considered to be a release point for radioactivity.)

(The RMHF North Slope is an identified area of low-level soil contamination. Radioactivity in this soil may become airborne by the wind when the soil surface is exposed. However, throughout 1995, the area was covered with dense brush, and no release has been assumed. Therefore, in this NESHAPs report, this area is not considered to be a release point for radioactivity.)

The Side Yard of Building T064 and adjacent areas still contains some contaminated soil subject to remediation. These areas have been cleared of brush and so are temporarily exposed to airborne resuspension by the wind. This source is identified as Area Source Number 1.

Section II. Air Emissions Data

Point Source	Type Control	Efficiency	Distance to Nearest Receptor
RMHF (#1)	Pre- and HEPA filters	99.97+%	2320 m SSE

Point Source Radionuclides	Annual Quantity (Ci)	(Bq)
H-3	2.0E-05	740000
Co-60	3.5E-07	12880
Sr-90	1.2E-07	4399
Cs-137	1.1E-06	39880
Th-230	1.5E-09	54
U-234	1.0E-08	375
U-235	4.3E-10	16
U-238	1.2E-09	43
Pu-238	9.3E-10	34
Pu-239	2.7E-09	101
Pu-240	1.6E-09	59
Am-241	1.4E-10	5

Area (Non-Point) Source

T064 Area (Number 1)

Area (Non-Point) Source Radionuclides	Annual Quantity (Ci)	(Bq)
Sr-90	9.7E-08	3581
Cs-137	3.3E-06	123600

Section III. Dose Assessments

Description of Dose Model

The EPA computer program CAP88-PC is used.

Dose calculations performed to demonstrate compliance with the NESHAPs standard are based on determining the maximum estimated dose to an offsite individual located at a residence, school, business or office. For this purpose, the nearest such locations have been identified by review of maps, aerial photographs, and direct observation. The locations selected are in the nearest residential area of Simi Valley, the Brandeis-Bardin Institute, the Santa Monica Mountains Conservancy Sage Ranch office, the closest residence in Black Canyon, and the closest residence in Bell Canyon. The location with the greatest estimated annual dose calculated for these locations is considered to be the location of the Maximally Exposed Individual (MEI). The dose at this location differs from the dose to the MEI selected by CAP88-PC, and printed on the CAP88-PC Synopsis Report cover sheet, since the CAP88-PC selected maximum dose is at an unoccupied location.

The RMHF stack is used for the emission point location, and the resulting estimate of the facility Effective Dose Equivalent is compared with the NESHAPs standard to demonstrate compliance. The CAP88-PC calculation is based on laboratory analysis of an annual composite sample of the effluent, and analysis of evaporator water for tritium, which is assumed to pass through the filters, undiminished.

A dose estimate for the area source is also calculated. The CAP88-PC calculation uses conservative estimates for the presumed, but unmeasurable, releases from the area source. The area (non-point) source contribution to the facility dose is not included in the total facility dose estimate.

Compliance Assessment

Effective Dose Equivalent: 2.1E-06 mrem (2.1E-11 Sv).

Location of Maximally Exposed Individual: residence in Simi Valley, 2867 m NW.

This estimated dose is well below the NESHAPs standard of 10 mrem (1.0E-04 Sv).

The estimated dose due to the area (non-point) source is 11.0E-06 mrem (11.0E-11 Sv).

Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. (See, 18 U.S.C. 1001).

Date: 5/30/96

M. J. Gabler,
ETEC General Manager
Rocketdyne Division
Rockwell International

for Philip R. Bodiane 5/30/96

R. Le Chevalier,
ETEC Site Manager
Oakland Operations Office
U. S. Department of Energy

Section IV. Additional Information

There were no unplanned releases in 1995.

The maximum estimated dose due to potential releases from the area source in 1995 is 11.0E-06 mrem/year (11.0E-11 Sv/year). Since releases from the area source are too small and diffuse to permit accurate measurements, potential releases were estimated using the same method used in the RESRAD computer program (ANL/ES-160), for calculation of airborne radioactivity due to resuspension of soil by the wind. These estimated releases were used as input in the CAP88-PC program to perform the area source dose assessments. Releases from this source have not been detectable by onsite continuous ambient air sampling.

Supplemental Information

The collective Effective Dose Equivalent estimated from DOE operations for releases from the monitored exhaust stack during 1995 is 4.2E-04 person-rem (4.2E-06 person-Sv). The presumed releases estimated for the area source implies an additional collective dose of approximately 7.2E-04 person-rem (7.2E-06 person-Sv).

These estimates were calculated by using CAP88-PC in the "POPULATION" mode with a site-specific population distribution, based on 1990 census data, supplemented by estimates of personnel onsite. The population distribution is presented in a structure utilizing 16 directions, coinciding with the wind directions, and 20 radial zones, with the distances chosen to represent the center-of-area for each zone. These zones include the population within 80 km of the site. Doses due to both point and area sources are included, as described above.

No operations are conducted that are regulated by Subparts Q and T, nor are there any emissions of Rn-220 from sources containing U-232 and Th-232. There are no non-disposal/non-storage sources of Rn-222 emission.

Based on evaluation of each source with the assumption of no pollution control equipment installed, none of the sources requires monitoring as prescribed in 40CFR61.93(b). The stack effluent at RMHF is continuously sampled, counted for gross alpha and beta activity weekly, and composited annually for detailed radiochemical analysis. In addition, the evaporator feedwater is analyzed for tritium, and this measured concentration is used to calculate the release. Ambient air is continuously sampled on a daily basis, with weekly determination of gross alpha and beta activity, and these samples are composited (separately by location) annually for detailed radiochemical analysis. Aspects of the QA program described by Appendix B, Method 114 are implemented as appropriate for the low level of this surveillance effort.

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Version 1.00

Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment
May 28, 1996 1:20 pm

Facility: RMHF
Address: SSFL, Top of Woolsey Canyon Road, Simi Hills
City: Chatsworth
State: CA Zip: 91311

Effective Dose Equivalent (mrem/year)
2.46E-06

At This Location: 2318 Meters Northwest
Source Category: DOE facility
Source Type: Stack
Emission Year: 1995

Comments: CAP88PC calculation for 1995 Annual Environmental Report, maximum exposed individual, revised.

Dataset Name: RMHF95IND
Dataset Date: May 28, 1996 1:20 pm
Wind File: WNDFILES\SSFLNRC.WND

MAXIMALLY EXPOSED INDIVIDUAL

Location Of The Individual: 2318 Meters Northwest
Lifetime Fatal Cancer Risk: 5.34E-11

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Dose Equivalent (mrem/y)
GONADS	2.36E-06
BREAST	2.14E-06
R MAR	2.25E-06
LUNGS	3.91E-06
THYROID	2.23E-06
ENDOST	5.24E-06
RMNDR	1.94E-06
EFFEC	2.46E-06

RADIONUCLIDE EMISSIONS DURING THE YEAR 1995

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
CO-60	Y	1.00	3.5E-07	3.5E-07
SR-90	D	1.00	1.2E-07	1.2E-07
Y-90	Y	1.00	1.2E-07	1.2E-07
CS-137	D	1.00	1.1E-06	1.1E-06
BA-137M	D	1.00	9.1E-07	9.1E-07
TH-230	Y	1.00	1.5E-09	1.5E-09
U-234	Y	1.00	1.0E-08	1.0E-08
U-235	Y	1.00	4.3E-10	4.3E-10
TH-234	Y	1.00	1.2E-09	1.2E-09
PA-234M	Y	1.00	1.2E-09	1.2E-09
U-238	Y	1.00	1.2E-09	1.2E-09
PU-238	Y	1.00	9.3E-10	9.3E-10
PU-239	Y	1.00	2.7E-09	2.7E-09
PU-240	Y	1.00	1.6E-09	1.6E-09
AM-241	W	1.00	1.4E-10	1.4E-10
H-3	*	0.00	2.0E-05	2.0E-05

SITE INFORMATION

Temperature:	17 degrees C
Precipitation:	86 cm/y
Mixing Height:	366 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	39.60
Diameter (m):	0.92
Plume Rise Momentum (m/s): (Exit Velocity)	5.96E+00

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.076	0.000	0.008
Fraction From Assessment Area:	0.924	1.000	0.992
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

2318 2370 2867 3393 4167

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Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
May 28, 1996 1:20 pm

Facility: RMHF
Address: SSFL, Top of Woolsey Canyon Road, Simi Hills
City: Chatsworth
State: CA Zip: 91311

Source Category: DOE facility
Source Type: Stack
Emission Year: 1995

Comments: CAP88PC calculation for 1995 Annual Environmental Report, maximum exposed individual, revised.

Dataset Name: RMHF95IND
Dataset Date: May 28, 1996 1:20 pm
Wind File: WNDFILES\SSFLNRC.WND

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	2.36E-06
BREAST	2.14E-06
R MAR	2.25E-06
LUNGS	3.91E-06
THYROID	2.23E-06
ENDOST	5.24E-06
RMNDR	1.94E-06
EFFEC	2.46E-06

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	2.04E-07
INHALATION	3.92E-07
AIR IMMERSION	5.73E-11
GROUND SURFACE	1.86E-06
INTERNAL	5.96E-07
EXTERNAL	1.86E-06
TOTAL	2.46E-06

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
CO-60	5.10E-07
SR-90	4.25E-08
Y-90	1.18E-10
CS-137	1.27E-07
BA-137M	1.37E-06
TH-230	3.74E-08
U-234	1.43E-07
U-235	5.95E-09
TH-234	9.34E-12
PA-234M	3.88E-18
U-238	1.45E-08
PU-238	3.22E-08
PU-239	1.02E-07
PU-240	6.00E-08
AM-241	7.93E-09
H-3	8.19E-10
TOTAL	2.46E-06