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B. J. McMurray, N. P. Nisick

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INPUT AND DECAYED VALUES OF RADIOACTIVE SOLID WASTES
BURIED IN THE 200 AREAS THROUGH 1971

G. L. Hanson, J. D. Anderson, G. R. Kiel,
B. J. McMurray, N. P. Nisick

March 22, 1973

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Page I

INPUT AND DECAYED VALUES OF RADIOACTIVE SOLID WASTES
BURIED IN THE 200 AREAS THROUGH 1971

INTRODUCTION

Solid radioactive wastes resulting from chemical separations processing of spent reactor fuels have been disposed by burial in trenches in the 200 Areas since 1944. Solid radioactive wastes from other Hanford facilities and from off-site AEC contractors have also been buried in the 200 Areas' Waste Burial Grounds. Large items of solid waste, such as failed equipment, have been packaged in heavy wooden or concrete boxes and buried in the "industrial waste" burial trenches. Such items from the Purex Plant have been placed on rail cars and stored in two tunnels associated with the plant. Small items of failed equipment and trash type contaminated wastes have been packaged in cardboard cartons, wooden boxes, steel or fiber drums and buried in the "dry waste" burial trenches.

On May 1, 1970, AEC Immediate Action Directive 0511-21, "Policy Statement Regarding Solid Waste Burial," was implemented. Since that time, industrial wastes containing or suspected of containing transuranic radionuclides have been packaged in concrete boxes and "dry wastes" have been packaged in steel boxes or drums and buried in segregated "alpha trenches." Buried solid radioactive wastes are considered to be in long-term storage in the ground, except that those segregated wastes buried in the "alpha trenches" are considered to be in interim retrievable storage (20 years). A land area of approximately 149 acres has been used to bury 5.2 million cubic feet of contaminated solid waste through calendar year 1971. Annual reports of radioactive solid waste burials issued, beginning in 1968, have shown land area used, and volume and quantity of radioactivity (grams U and/or Pu and curies) buried. No corrections for radioactive decay have been reported.

In July 1972, J. D. Anderson, G. L. Hanson, G. R. Kiel, B. J. McMurray, and N. P. Nisick were assigned the responsibility for a study to provide the decayed inventory of radioactivity in each solid waste burial ground in the 200 Areas. The results of this study are included as Tables 1 and 2 in this report.

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DISCUSSION

The first formal burial records were initiated in October 1959, and measured only discards of stainless steel failed equipment. Beginning in 1960, information regarding source, general type, and volume was reported. In 1967, a study⁽¹⁾ was made which estimated volume and radioactivity of the previously buried wastes, based on the then current burial practices and the area to volume ratios. Since CY-1968, waste shipments for burial have been accompanied by a shipping ticket showing the type of waste, source of waste, volume, grams of plutonium and/or uranium, and the radioactivity in curies with the major specific fission products identified, if known.

In order to provide a basis for calculating radioactive decay of the solid wastes buried in each 200 Area burial ground the study team decided that annual inputs to each burial ground, including volume, land area used, grams of plutonium, kilograms of uranium, curies of total radioactivity and curies of certain specific fission products should be provided. A comprehensive review of the 1967 study data and the reference documents, which report solid waste burials, was made by G. L. Hanson and J. D. Anderson. This review found that burials during the second half of CY 1967 were not included in subsequent record documents. Summary tables in ARH-2757 PT2, "Summary of Radioactive Solid Waste Burials in the 200 Areas During 1972," have been corrected to include these burials. It was also found that most burial records reported only grams of plutonium, kilograms of uranium, and total curies of radioactivity, except that beginning in 1968 curies of specific radionuclides were reported on a portion of the solid wastes buried.

In order to provide input data for specific fission products to each 200 Area burial site, the total radioactivity input, each year to each burial site, was assumed to contain mixed fission products in the ratio present in irradiated uranium fuel elements one year after discharge from the reactor. Computer code DCAY 2 was used to generate specific fission product inputs to these burial sites and is included in the Appendix.

Annual inputs of solid waste volume in cubic feet, land area used in square feet, grams of plutonium, ^{233}U , and thorium, curies of total beta radioactivity, and curies of specific fission products (e.g., ^{60}Co , ^{90}Sr , ^{137}Cs , etc), to each burial site, were tabulated and submitted for computerized radioactive decay using computer code DCAY 2. Decay calculations were made only on the total beta

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Page III

activity and on the specific fission products. The annual inputs, total inputs, land area used, and decayed inventory through December 31, 1971 for 200 East Area solid waste burial sites including the Purex tunnels are presented in Table 1. Similar data for 200 West Area solid waste burial sites are presented in Table 2.

The data presented in this document is based on the best available solid waste burial records and supersedes all prior solid waste burial reports. Subsequent solid waste burial reports for 200 Area sites will utilize data presented herein, and will provide updated input and decayed inventories for all burial sites.

J. D. Anderson
J. D. Anderson

1-8-74
Date

G. L. Hanson
G. L. Hanson

1-8-74
Date

B. J. McMurray
B. J. McMurray

1-8-74
Date

N. P. Nisick
N. P. Nisick

1-8-74
Date

G. R. Kiel now employed by Exxon.

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TABLE 1
200 EAST APEA
SOLID WASTE BURIAL GROUND SITES

PAGE 1

	VOLUME (CU FT)	PU (GM)	BETA (CI)	SR-90 (CI)	RU-106 (CI)	CS-137 (CI)	OTHERS (CI)	U (KGM)	AREA (SQ FT)	OTHERS (GM)
DRY WASTE NO. 001										
1945	.110+05	.110+03	.100+02	.199-00	.428-00	.212-00		.500+02	.114+05	
1946	.130+05	.110+03	.100+02	.199-00	.428-00	.212-00		.500+02	.135+05	
1947	.130+05	.110+03	.100+02	.199-00	.428-00	.212-00		.500+02	.135+05	
1948	.130+05	.110+03	.100+02	.199-00	.428-00	.212-00		.500+02	.135+05	
1949	.130+05	.110+03	.150+02	.298-00	.642-00	.319-00		.500+02	.135+05	
1950	.130+05	.110+03	.150+02	.298-00	.642-00	.319-00		.500+02	.135+05	
1951	.130+05	.110+03	.150+02	.298-00	.642-00	.319-00		.500+02	.135+05	
1952	.150+05	.120+03	.150+02	.298-00	.642-00	.319-00		.500+02	.135+05	
1953	.300+04	.100+02						.500+02	.156+05	
SUM THRU 71	.107+06	.900+03	.100+03	.199+01	.428+01	.212+01		.400+03	.111+06	
DECAY THRU 71	.107+06	.900+03	.475+01	.114+01	.181-05	.126+01		.400+03	.111+06	
DRY WASTE NO. 12A										
1953	.700+04	.150+02	.100+02	.199-00	.428-00	.212-00		.100+01	.124+05	
1954	.100+05	.150+02	.100+02	.199-00	.428-00	.212-00		.100+01	.178+05	
1955	.100+05	.150+02	.100+02	.199-00	.428-00	.212-00		.100+01	.178+05	
1956	.250+05	.770+03	.400+02	.796-00	.171+01	.850-00		.850+02	.444+05	
1957	.292+05	.775+03	.400+02	.796-00	.171+01	.850-00		.850+02	.519+05	
1958	.293+05	.775+03	.400+02	.796-00	.171+01	.850-00		.850+02	.520+05	
1959	.293+05	.775+03	.400+02	.796-00	.171+01	.850-00		.850+02	.520+05	
1960	.293+05	.775+03	.500+02	.994-00	.214+01	.106+01		.850+02	.520+05	
1961	.257+05	.770+03	.500+02	.994-00	.214+01	.106+01		.850+02	.456+05	
1962	.239+05	.760+03	.500+02	.994-00	.214+01	.106+01		.850+02	.424+05	
1963	.361+05	.775+03	.500+02	.994-00	.214+01	.106+01		.850+02	.641+05	
1964	.444+05	.775+03	.500+02	.994-00	.214+01	.106+01		.850+02	.788+05	
1965	.712+05	.775+03	.100+03	.199+01	.428+01	.212+01		.850+02	.126+06	
1966	.733+05	.775+03	.150+03	.298+01	.642+01	.319+01		.850+02	.130+06	
1967	.948+05	.385+03	.200+03	.398+01	.857+01	.425+01		.520+02	.168+06	
SUM THRU 71	.539+06	.893+04	.890+03	.177+02	.381+02	.189+02		.990+03	.956+06	
DECAY THRU 71	.539+06	.893+04	.740+02	.144+02	.601-00	.156+02		.990+03	.956+06	

TABLE 1 (CONTINUED)

PAGE 2

	VOLUME (CU FT)	PJ (GM)	BETA (CI)	SR-90 (CI)	RU-106 (CI)	CS-137 (CI)	OTHERS (CI)	U (KGM)	AREA (SQ FT)	OTHERS (GM)
DRY WASTE NO. 12B										
1967	.172+05	.160+03	.670+03	.133+02	.287+02	.142+02		.700+01	.274+05	
1968	.386+05	.556+03	.169+04	.336+02	.724+02	.359+02			.550+05	
1969	.539+05	.352+03	.345+04	.687+02	.148+03	.734+02			.736+05	
1970	.466+05	.131+03	.960+03	.191+02	.411+02	.204+02			.630+05	
1971	.384+05	.300+02	.630+03	.125+02	.270+02	.134+02			.373+05	.560+02 U-2
SUM THRU 71	.195+06	.123+04	.740+04	.147+03	.317+03	.157+03		.700+01	.256+06	.560+02
DECAY THRU 71	.195+06	.123+04	.166+04	.138+03	.679+02	.148+03		.700+01	.256+06	.560+02
MINOR CONSTRUCTION NO. 4										
1955	.530+05	.100+02	.100+02	.199-00	.428-00	.212-00		.100+01	.148+06	
1956	.300+04								.840+04	
SUM THRU 71	.560+05	.100+02	.100+02	.199-00	.428-00	.212-00		.100+01	.156+06	
DECAY THRU 71	.560+05	.100+02	.556-00	.133-00	.488-05	.145-00		.100+01	.156+06	
CONSTRUCTION (NO NUMBER)										
1958	.400+05	.100+02	.500+01	.994-01	.214-00	.106+00		.100+01	.375+05	
1959	.400+05	.100+02	.500+01	.994-01	.214-00	.106+00		.100+01	.375+05	
SUM THRU 71	.800+05	.200+02	.100+02	.199-00	.428-00	.212-00		.200+01	.750+05	
DECAY THRU 71	.800+05	.200+02	.618-00	.144-00	.578-04	.157-00		.200+01	.750+05	
222-B VAULTS										
1947	.100+04	.150-00	.100+03	.199+01	.428+01	.212+01		.150-00	.200+04	
1948	.100+04	.150-00	.100+03	.199+01	.428+01	.212+01		.150-00		
1949	.100+04	.200-00	.100+03	.199+01	.428+01	.212+01		.200-00		
1950	.100+04	.150-00	.100+03	.199+01	.428+01	.212+01		.150-00		
1951	.100+04	.150-00	.100+03	.199+01	.428+01	.212+01		.150-00		
1952	.100+04	.200-00	.100+03	.199+01	.428+01	.212+01		.200-00		
SUM THRU 71	.600+04	.100+01	.600+03	.119+02	.257+02	.127+02		.100+01	.200+04	
DECAY THRU 71	.600+04	.100+01	.289+02	.695+01	.122-04	.769+01		.100+01	.200+04	

TABLE 1 (CONTINUED)

PAGE 3

	VOLUME (CU FT)	PU (GM)	BETA (CI)	SR-90 (CI)	RU-106 (CI)	CS-137 (CI)	OTHERS (CI)	U (KGM)	AREA (SQ FT)	OTHERS (GM)
INDUSTRIAL WASTE NO. 002										
1945	.100+04	.150+02						.100+01	.100+04	
1946	.100+04	.150+02						.100+01	.100+04	
1947	.450+05	.110+03	.100+04	.199+02	.428+02	.212+02		.430+02	.420+05	
1948	.450+05	.110+03	.200+04	.396+02	.857+02	.425+02		.420+02	.420+05	
1949	.450+05	.110+03	.300+04	.597+02	.128+03	.637+02		.430+02	.420+05	
1950	.450+05	.110+03	.400+04	.796+02	.171+03	.850+02		.420+02	.420+05	
1951	.450+05	.110+03	.500+04	.994+02	.214+03	.106+03		.430+02	.420+05	
1952	.460+05	.110+03	.500+04	.994+02	.214+03	.106+03		.420+02	.430+05	
1953	.460+05	.110+03	.500+04	.994+02	.214+03	.106+03		.430+02	.430+05	
SUM THRU 71	.319+06	.800+03	.250+05	.497+03	.107+04	.531+03		.300+03	.298+06	
DECAY THRU 71	.319+06	.800+03	.125+04	.299+03	.117+02	.330+03		.300+03	.298+06	
INDUSTRIAL WASTE NO. 005										
1954	.520+05		.200+04	.398+02	.857+02	.425+02			.474+05	
1955	.550+05		.200+04	.398+02	.857+02	.425+02			.500+05	
1956	.500+04	.620+03	.350+04	.696+02	.150+03	.743+02		.120+03	.460+04	
SUM THRU 71	.112+06	.620+03	.750+04	.149+03	.321+03	.159+03		.120+03	.102+06	
DECAY THRU 71	.112+06	.620+03	.419+03	.999+02	.487+02	.109+03		.120+03	.102+06	
INDUSTRIAL WASTE NO. 05A										
1956	.540+05	.200+03	.150+04	.298+02	.642+02	.319+02		.300+02	.562+05	
1957	.520+05	.200+03	.500+04	.994+02	.214+03	.106+03		.300+02	.541+05	
1958	.590+05	.780+03	.500+04	.994+02	.214+03	.106+03		.300+02	.615+05	
1959	.530+05	.200+03	.500+04	.994+02	.214+03	.106+03		.300+02	.552+05	
SUM THRU 71	.218+06	.138+04	.165+05	.328+03	.707+03	.350+03		.120+03	.227+06	
DECAY THRU 71	.218+06	.138+04	.998+03	.234+03	.690+01	.256+03		.120+03	.227+06	

TABLE 1 (CONTINUED)

PAGE 4

	VOLUME (CU FT)	PU (GM)	BETA (CI)	SR-90 (CI)	RU-106 (CI)	CS-137 (CI)	OTHERS (CI)	U (KGM)	AREA (SQ FT)	OTHERS (GM)
INDUSTRIAL WASTE NO. 010										
1960	.560+05	.535+03	.300+04	.597+02	.128+03	.637+02		.106+03	.822+05	
1961	.510+05	.530+03	.300+04	.597+02	.128+03	.637+02		.105+03	.749+05	
1962	.590+05	.535+03	.400+04	.796+02	.171+03	.850+02		.110+03	.866+05	
1963	.459+05	.530+03	.200+04	.398+02	.857+02	.425+02		.105+03	.674+05	
1964	.408+05	.535+03	.200+04	.398+02	.857+02	.425+02		.105+03	.599+05	
1965	.865+05	.535+03	.870+04	.173+03	.373+03	.185+03		.110+03	.127+06	
1966	.351+05	.535+03	.420+04	.835+02	.180+03	.892+02		.105+03	.515+05	
1967	.534+05	.275+03	.650+04	.129+03	.278+03	.138+03		.550+02	.783+05	
1968	.295+05		.712+05	.142+04	.305+04	.151+04			.316+05	
1969	.178+05		.595+05	.118+04	.255+04	.126+04			.300+05	
1970	.120+05	.916+03	.255+05	.507+03	.109+04	.541+03			.163+05	
1971	.261+05		.175+04	.347+02	.747+02	.371+02			.348+05	
SUM THRU 71	.513+06	.493+04	.191+06	.380+04	.819+04	.406+04		.801+03	.741+06	
DECAY THRU 71	.513+06	.493+04	.333+05	.349+04	.119+04	.375+04		.801+03	.741+06	
PUREX TUNNEL NO. 1										
1960	.106+05		.454+05	.903+03	.194+04	.964+03			.216+05	
1961	.467+04		.170+04	.338+02	.728+02	.361+02				
1962	.234+04		.460+05	.796+03	.171+04	.850+03				
1964	.240+04		.700+03	.139+02	.300+02	.149+02				
SUM THRU 71	.200+05		.878+05	.175+04	.376+04	.186+04			.216+05	
DECAY THRU 71	.200+05		.596+04	.135+04	.336+01	.146+04			.216+05	
PUREX TUNNEL NO. 2										
1967	.240+04		.760+03	.139+02	.300+02	.149+02			.102+06	
1969	.240+04		.500+03	.994+01	.214+02	.106+02				
1970	.480+04	<.500+03	.700+03	.139+02	.300+02	.149+02				
1971	.720+04		.800+02	.159+01	.343+01	.170+01				
SUM THRU 71	.168+05	<.500+03	.198+04	.394+02	.848+02	.421+02			.102+06	
DECAY THRU 71	.168+05	<.500+03	.444+03	.368+02	.182+02	.395+02			.102+06	
200-E TOTAL										
	.218+07	.193+05	.339+06	.674+04	.145+05	.720+04		.274+04	.305+07	.560+02
200-E DECAY TOTAL										
	.218+07	.193+05	.442+05	.567+04	.128+04	.612+04		.274+04	.305+07	.560+02

TALLE 2
200 WEST AREA
SOLID WASTE BURIAL GROUND SITES

PAGE 5

	VOLUME (CU FT)	PU (GM)	BETA (CI)	SR-90 (CI)	RU-106 (CI)	CS-137 (CI)	OTHERS (CI)	U (KGM)	AREA (SQ FT)	OTHERS (GM)	
DRY WASTE NO. 001											
1944	.500+03										
1945	.160+05	.111+04	.200+02	.398-00	.857-00	.425-00		.500+02	.700+03		
1946	.160+05	.111+04	.200+02	.398-00	.857-00	.425-00		.500+02	.209+05		
1947	.210+05	.111+04	.300+02	.597-00	.128+01	.637-00		.500+02	.275+05		
1948	.190+05	.111+04	.200+02	.398-00	.857-00	.425-00		.500+02	.248+05		
1949	.220+05	.608+04	.200+02	.398-00	.857-00	.425-00		.500+02	.288+05		
1950	.470+05	.210+05	.200+02	.398-00	.857-00	.425-00		.500+02	.615+05		
1951	.490+05	.310+05	.200+02	.398-00	.857-00	.425-00		.500+02	.641+05		
1952	.625+05	.315+05	.500+02	.994-00	.214+01	.106+01		.350+03	.818+05		
SUM THRU 71	.253+06	.940+05	.200+03	.398+01	.857+01	.425+01		.700+03	.331+06		
DECAY THRU 71	.253+06	.940+05	.952+01	.229+01	.433-05	.253+01		.700+03	.331+06		
DRY WASTE NO. 002											
1953	.703+05	.295+05	.750+02	.149+01	.321+01	.159+01		.350+03	.740+05		
1954	.723+05	.311+05	.105+03	.209+01	.450+01	.223+01		.350+03	.760+05		
1955	.742+05	.327+05	.135+03	.268+01	.578+01	.287+01		.350+03	.780+05		
1956	.742+05	.327+05	.185+03	.368+01	.792+01	.393+01		.350+03	.780+05		
SUM THRU 71	.291+06	.126+06	.500+03	.994+01	.214+02	.106+02		.140+04	.306+06		
DECAY THRU 71	.291+06	.126+06	.277+02	.661+01	.281-03	.724+01		.140+04	.306+06		
DRY WASTE NO. 003											
1957	.107+06	.305+05	.225+03	.447+01	.964+01	.478+01		.530+04	.112+06	.461+07	TH
1958	.102+06	.305+05	.225+03	.447+01	.964+01	.478+01		.102+05	.107+06	.923+07	TH
1959	.105+06	.550+04	.230+03	.457+01	.985+01	.489+01		.210+05	.110+06	.185+08	TH
1960	.704+05	.150+04	.220+03	.438+01	.942+01	.467+01		.335+05	.735+05	.277+08	TH
SUM THRU 71	.385+06	.680+05	.900+03	.179+02	.385+02	.191+02		.700+05	.402+06	.600+08	
DECAY THRU 71	.385+06	.680+05	.557+02	.130+02	.646-02	.142+02		.700+05	.402+06	.600+08	

TABLE 2 (CONTINUED)

PAGE 6

	VOLUME (CU FT)	PU (GM)	BETA (CI)	SR-90 (CI)	RU-106 (CI)	CS-137 (CI)	OTHERS (CI)	U (KGM)	AREA (SQ FT)	OTHERS (GM)
222-T VAULTS										
1945	.300+03	.300-01	.200+02	.398-00	.857-00	.425-00		.300-01	.250+03	
1946	.300+03	.300-01	.250+02	.497-00	.107+01	.531-00		.300-01		
1947	.300+03	.400-01	.500+02	.994-00	.214+01	.106+01		.400-01		
1948	.300+03	.400-01	.100+03	.199+01	.428+01	.212+01		.400-01		
1949	.300+03	.400-01	.125+03	.249+01	.535+01	.266+01		.400-01		
1950	.300+03	.400-01	.150+03	.298+01	.642+01	.319+01		.400-01		
1951	.300+03	.400-01	.150+03	.298+01	.642+01	.319+01		.400-01		
1952	.300+03	.400-01	.150+03	.298+01	.642+01	.319+01		.400-01		
SUM THRU 71	.240+04	.300-00	.770+03	.153+02	.330+02	.164+02		.300-00	.250+03	
DECAY THRU 71	.240+04	.300-00	.373+02	.897+01	.177-04	.991+01		.300-00	.250+03	
222-S VAULTS										
1952	.200+03	.500-01	.300+02	.597-00	.128+01	.637-00		.500-01	.250+03	
1953	.400+03	.500-01	.200+03	.398+01	.857+01	.425+01		.500-01		
1954	.800+03	.500-01	.400+03	.796+01	.171+02	.850+01		.500-01		
1955	.100+04	.100+00	.600+03	.119+02	.257+02	.127+02		.100+00		
1956	.900+03	.100+00	.650+03	.129+02	.278+02	.138+02		.100+00		
1957	.800+03	.100+00	.700+03	.139+02	.300+02	.149+02		.100+00		
1958	.750+03	.100+00	.700+03	.139+02	.300+02	.149+02		.100+00		
1959	.700+03	.100+00	.700+03	.139+02	.300+02	.149+02		.100+00		
1960	.500+02	.500-01	.500+02	.994-00	.214+01	.106+01		.500-01		
SUM THRU 71	.560+04	.700-00	.403+04	.801+02	.173+03	.856+02		.700-00	.250+03	
DECAY THRU 71	.560+04	.700-00	.235+03	.556+02	.113-01	.608+02		.700-00	.250+03	
DRY WASTE NO. 03A										
1970	.796+05	.271+04	.251+04	.189+03	.413+02	.210+03	.840+03 CO-60	.449+04	.108+06	.101+06 TH
1971	.355+05	.121+04	.312+04	.621+02	.134+03	.663+02		.185+03	.629+05	.210+02 U-23
SUM THRU 71	.115+06	.392+04	.563+04	.251+03	.175+03	.277+03	.840+03	.467+04	.171+06	.730+04 TH
DECAY THRU 71	.115+06	.392+04	.358+04	.244+03	.109+03	.269+03	.689+03	.467+04	.171+06	.108+06

TABLE 2 (CONTINUED)

PAGE 7

	VOLUME (CU FT)	PU (GM)	BETA (CI)	SR-90 (CI)	RU-106 (CI)	CS-137 (CI)	OTHERS (CI)	U (KGM)	AREA (SQ FT)	OTHERS (GM)
DRY WASTE NO. 04A										
1961	.933+05	.412+04	.320+03	.636+01	.137+02	.680+01		.106+06	.107+06	.415+08 TH
1962	.112+06	.437+04	.280+03	.557+01	.120+02	.595+01		.167+06	.128+06	.655+08 TH
1963	.790+05	.483+04	.330+03	.656+01	.141+02	.701+01		.466+05	.908+05	.248+08 TH
1964	.818+05	.470+04	.390+03	.776+01	.167+02	.829+01		.290+05	.940+05	.495+08 TH
1965	.728+05	.465+04	.315+03	.626+01	.135+02	.669+01		.958+05	.836+05	.395+08 TH
1966	.593+05	.481+04	.300+03	.597+01	.128+02	.637+01		.365+05	.631+05	.248+08 TH
1967	.115+06	.688+04	.415+03	.825+01	.178+02	.881+01		.188+05	.129+06	.439+07 TH
1968	.128+05	.102+04	.660+03	.131+02	.283+02	.140+02			.915+04	
SUM THRU 71	.625+06	.354+05	.301+04	.599+02	.129+03	.639+02		.500+06	.710+06	.250+09
DECAY THRU 71	.625+06	.354+05	.290+03	.511+02	.393+01	.551+02		.500+06	.710+06	.250+09
DRY WASTE NO. 04B										
1968	.952+05	.427+04	.673+05	.422+02	.908+02	.450+02	.652+05 H-3	.137+04	.112+06	.340+05 TH
1969	.120+06	.368+04	.808+05	.238+03	.513+03	.254+03	.584+04 CO-60	.145+04	.247+06	
							.630+05 H-3			
1970	.142+05	.232+03	.101+06	.270+02	.582+02	.289+02	.100+06 H-3	.400+01	.193+05	
1971	.432+05	.273+04	.240+04	.283+02	.610+02	.303+02	.975+03 H-3	.102+04	.509+05	.164+05 TH
SUM THRU 71	.273+06	.109+05	.252+06	.336+03	.723+03	.359+03	.235+06	.384+04	.430+06	.504+05
DECAY THRU 71	.273+06	.109+05	.209+06	.317+03	.163+03	.340+03	.205+06	.384+04	.430+06	.504+05
CAISSON - NO. 1										
1968	.179+03	.473+03	.398+03	.792+01	.170+02	.845+01		.648+02		
1969	.460+02		.420+03	.835+01	.180+02	.892+01		.888+02		.820+04 TH
SUM THRU 71	.225+03	.473+03	.818+03	.163+02	.350+02	.174+02		.154+03		.820+04
DECAY THRU 71	.225+03	.473+03	.137+03	.151+02	.473+01	.162+02		.154+03		.820+04
CAISSON - NO. 2										
1969	.800+01	<.500-00	.200+02	.398-00	.857-00	.425-00				
SUM THRU 71	.800+01	<.500-00	.200+02	.398-00	.857-00	.425-00				
DECAY THRU 71	.800+01	<.500-00	.389+01	.374-00	.153-00	.401-00				

TABLE 2 (CONTINUED)

PAGE 8

	VOLUME (CU FT)	PU (GM)	BETA (CI)	SR-90 (CI)	RU-106 (CI)	CS-137 (CI)	OTHERS (CI)	U (KGM)	AREA (SQ FT)	OTHERS (GM)
CAISSON - NO. 3										
1969	.133+03	.379+03	.179+05	.357+03	.768+03	.381+03		.736+02		
1970	.800+01	.950+02	.180+03	.358+01	.771+01	.382+01		.153+02		
1971	.370+02		.385+03	.766+01	.165+02	.818+01		.111+02		
SUM THRU 71	.178+03	.474+03	.185+05	.368+03	.792+03	.393+03		.100+03		
DECAY THRU 71	.178+03	.474+03	.378+04	.346+03	.151+03	.371+03		.100+03		
CAISSON - NO. 4										
1970	.520+02	.730+03	.569+05	.113+04	.244+04	.121+04		.486+02		.581+05 TH
1971	.200+01									
SUM THRU 71	.540+02	.730+03	.569+05	.113+04	.244+04	.121+04		.486+02		.581+05
DECAY THRU 71	.540+02	.730+03	.179+05	.109+04	.865+03	.117+04		.486+02		.581+05
CAISSON - ALPHA 1										
1970	.460+02	.270+03	.261+05	.519+03	.112+04	.554+03		.201+02		.886+04 TH
1971	.710+02	.212+03	.111+06	.127+03	.274+03	.136+03	.522+05 CE-144	.112+02		.900-00 PU-2
SUM THRU 71	.117+03	.482+03	.137+06	.646+03	.139+04	.690+03	.522+05	.313+02		.886+04
DECAY THRU 71	.117+03	.482+03	.790+05	.626+03	.591+03	.670+03	.334+05	.313+02		.886+04
INDUSTRIAL WASTE NO. 001										
1945	.460+05	.110+03	.100+04	.199+02	.428+02	.212+02		.550+02	.393+05	
1946	.460+05	.110+03	.200+04	.398+02	.857+02	.425+02		.500+02	.393+05	
1947	.460+05	.110+03	.300+04	.597+02	.128+03	.637+02		.550+02	.393+05	
1948	.460+05	.110+03	.400+04	.796+02	.171+03	.850+02		.500+02	.393+05	
1949	.460+05	.110+03	.500+04	.994+02	.214+03	.106+03		.550+02	.393+05	
1950	.640+05	.110+03	.500+04	.994+02	.214+03	.106+03		.550+02	.393+05	
1951	.590+05	.110+03	.500+04	.994+02	.214+03	.106+03		.500+02	.546+05	
1952	.590+05	.615+03	.900+04	.179+03	.385+03	.191+03		.550+02	.503+05	
1953	.720+05	.615+03	.140+05	.278+03	.600+03	.297+03		.265+03	.503+05	
SUM THRU 71	.484+06	.200+04	.480+05	.955+03	.206+04	.102+04		.265+03	.615+05	
DECAY THRU 71	.484+06	.200+04	.238+04	.572+03	.257+02	.631+03		.900+03	.413+06	
								.900+03	.413+06	

TABLE 2 (CONTINUED)

PAGE 9

	VOLUME (CU FT)	PU (GM)	BETA (CI)	SR-90 (CI)	RU-106 (CI)	CS-137 (CI)	OTHERS (CI)	U (KGM)	AREA (SQ FT)	OTHERS (GM)
INDUSTRIAL WASTE NO. 002										
1954	.100+06	.585+03	.471+05	.937+03	.202+04	.100+04		.235+03	.128+06	
1955	.125+06	.585+03	.424+05	.843+03	.182+04	.900+03		.235+03	.160+06	
1956	.130+06	.585+03	.275+05	.546+03	.118+04	.583+03		.235+03	.166+06	
1957	.680+05	.490+03	.203+05	.404+03	.870+03	.432+03		.190+03	.868+05	
1958	.440+05	.490+03	.183+05	.363+03	.783+03	.388+03		.190+03	.562+05	
1959	.450+05	.490+03	.162+05	.362+03	.780+03	.387+03		.190+03	.574+05	
1960	.205+05	.490+03	.102+05	.203+03	.437+03	.217+03		.190+03	.262+05	
1961	.630+04	.470+03	.401+04	.797+02	.172+03	.852+02		.190+03	.804+04	
1962	.900+04	.300+02	.170+03	.338+01	.728+01	.361+01			.115+05	
1963	.149+05	.300+02	.235+03	.467+01	.101+02	.499+01			.190+05	
1964	.270+05	.490+03	.830+04	.165+03	.356+03	.176+03		.950+02	.344+05	
1965	.341+05	.490+03	.202+05	.402+03	.865+03	.429+03		.100+03	.435+05	
1966	.124+05	.540+03	.513+04	.102+03	.220+03	.109+03		.100+03	.159+05	
1967	.780+04	.235+03	.700+04	.139+03	.300+03	.149+03		.500+02	.996+04	
1969	.134+04		.588+04	.117+03	.252+03	.125+03			.797+04	
1970	.776+04		.740+04	.147+03	.317+03	.157+03			.105+05	
1971	.115+05		.750+02	.149+01	.321+01	.159+01			.229+05	
SUM THRU 71	.665+06	.600+04	.242+06	.482+04	.104+05	.515+04		.200+04	.863+06	
DECAY THRU 71	.665+06	.600+04	.181+05	.352+04	.191+03	.384+04		.200+04	.863+06	
200-W TOTAL	.310+07	.348+06	.770+06	.871+04	.184+05	.931+04	.288+06	.584+06	.363+07	.310+09
200-W DECAY TOTAL	.310+07	.348+06	.335+06	.687+04	.208+04	.745+04	.239+06	.584+06	.363+07	.310+09

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1. ARH-231, Sloat, R. J., (Hanford Low Level Waste Management Reevaluation Study), December 29, 1967, Secret.
2. ARH-1165, Jacobs, M. C. and Uebelacker, D. L., (Summary of Solid Radioactive Waste Burials in the 200 Areas, July-December 1968), February 28, 1969, Unclassified.
3. ARH-1582, Jacobs, M. C. and Uebelacker, D. L., (Summary of Solid Radioactive Waste Burials in the 200 Areas During 1969), February 5, 1970, Unclassified.
4. ARH-1596, Hill, O. F., (Radioactive Solid Waste Management at Richland), February 20, 1970, Unclassified.
5. ARH-2015, PT2, Jacobs, M. C. and Uebelacker, D. L., (Summary of Solid Radioactive Waste Burials in the 200 Areas During 1970), March 5, 1971, Official Use Only.

QI FR5 DCAY2,DCAY2

COMPILED BY LEVEL 23.8 CSCX FORTRAN V ON 26 NOV 73 AT 19:02

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00101      1*      INCLUDE CO'A,LIST
00101      2*      C *****
00101      3*      C ***** THE FOLLOWING CALCULATES THE DECAY OF THE ISOTOPES
00101      4*      C *****
00103      4*      COMMON IPGBUF(15,50),PGBUF(15,50),LKT,NTB,NP6,NSSITE(5,30)
00104      4*      END
00105      5*      DIMENSION THROT(40,200),RISO(40),LTS(200),SUMLT(13,200)
00106      6*      DIMENSION H(99),F(99),N(99),JS(200)
00107      7*      DIMENSION IBSIT(200),BF(200)
00110      8*      DIMENSION INDAD(30),IW(100)
00111      9*      DIMENSION TOTDP(2,30),TOTDC(2,30)
00112     10*      DIMENSION IGNSIT(10)
00113     11*      DIMENSION ICSIT(3,100),JSHD(200)
00114     12*      DIMENSION SUPLT(30,200),DPSUM(30,200)
00115     13*      DIMENSION INDW(30)
00116     14*      DIMENSION NAME(30),DTHROT(200)
00117     15*      DATA INDW/3,4,5,6,3*0,7,8*8,9,2,0,8,2*11,2*0,10,4*11,0/
00121     16*      DATA IPGBUF/ 750 * ' /
00123     17*      DATA INDAD/8*0,8*29,3*0,29,2*30,3*0,3*30,2*0/
00125     18*      DATA IGNSIT/'N1 ', 'N2 ', 'N3 ', 'N4 ', 'N5 ',
00125     19*      *'N6 ', 'N7 ', 'T3 ', 'B5 ', 'T20 ' /
00127     20*      DATA MDATE/1972/
00131     21*      DATA LTS(200)/6H /
00133     22*      DATA SUMLT/260*0.0/,LTSIGN/' /
00136     23*      DATA (NAME(I),I=9,30)/'CE-144','CE-141','PM-147','CO-58',
00136     24*      * 'CO-60','S6-125','BA-140','I-131','U-N','TH','MFP','H-3',
00136     25*      * 'NP-237','U-233','U-D','U-E','AREA','AM','TH','PU-238',' ', ' ', ' /
00140     26*      ISWIT = 1
00141     27*      NTB = 1
00142     28*      LKT = 4
00143     29*      SBSM = 0.0
00144     30*      J = 0
00145     31*      5000 CONTINUE
00146     32*      J = J + 1
00147     33*      READ (5,5010) (NSSITE(I,J),I=1,5)
00155     34*      5010 FORMAT(A6,1X,4A6)
00156     35*      IF (NSSITE(1,J).NE.'999 ') GO TO 5000
00160     36*      DO 9010 K=1,100
00163     37*      READ (5,9000) (ICSIT(I,K),I=1,3)
00171     38*      9000 FORMAT (3A6)
00172     39*      IF (ICSIT(1,K).EQ.'999 ') GO TO 9020
00174     40*      9010 CONTINUE
00176     41*      9020 CONTINUE
00177     42*      IC = 25
00200     43*      IF (ISWIT.EQ.0) IC = 22
00202     44*      I=0
00203     45*      380 I=I+1

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COMA *INCLUDED*
COMA *INCLUDED*

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00204 46*      READ (5,440) ISIT(I),BF(I)
00210 47*      440 FORMAT(A6,F4.0)
00211 48*      IF (BF(I).NE.999.) GO TO 390
00213 49*      ALX=-ALOG(2)
00214 50*      WRITE (6,300) ALX
00217 51*      300 FORMAT(5X,'-ALOG(2) = ',E12.5,/)
00220 52*      FACTT=0.0
00221 53*      DECS=0.0
00222 54*      WRITE (6,210)
00224 55*      210 FORMAT(1X,'ISO. #',8X,'FACTOR',7X,'HALFLIFE',8X,'ISOTOPE')
00224 56*      C *****
00224 57*      C ***** READ DATA FOR DECAY OF ISOTOPES *****
00224 58*      C ***** I=ISOTOPE NUMBER *****
00224 59*      C ***** F(I)=FACTOR OF ISOTOPE I *****
00224 60*      C ***** H(I)=HALFLIFE (DAYS) OF ISOTOPE I *****
00224 61*      C ***** N(I)=NAME OF ISOTOPE I *****
00224 62*      C *****
00225 63*      20 READ (5,10) I,F(I),H(I),N(I)
00233 64*      10 FORMAT (I2,5X,E9.3,5X,E8.2,21X,A6)
00234 65*      IF (I.EQ.99) GO TO 25
00236 66*      WRITE (6,200) I,F(I),H(I),N(I)
00244 67*      200 FORMAT (1X,I2,10X,E9.4,5X,E8.3,10X,A6)
00245 68*      FACTT=FACTT+F(I)
00246 69*      GO TO 20
00247 70*      25 FACT=FACTT-F(3)-F(4)-F(5)-F(6)-F(8)-F(10)
00250 71*      WRITE (6,600) FACT
00253 72*      600 FORMAT ('0',5X,'FACTOR TOTAL = ',E12.5)
00253 73*      C ***** FM=FACTOR MULTIPLIER OF INDIVIDUAL ISOTOPE FACTORS *****
00254 74*      FM=1.0/FACT
00255 75*      WRITE (6,220) FM
00260 76*      220 FORMAT('0',5X,'FACTOR MULTIPLIER = ',E12.5)
00261 77*      JSIT=1
00261 78*      C *****
00261 79*      C ***** ISITE=SITE OF THE ISOTOPE *****
00261 80*      C ***** ISC=ISOTOPE NUMBER *****
00261 81*      C ***** LTSIGN=BLANK OR < *****
00261 82*      C ***** CONC=AMOUNT OF THE ISOTOPE DEPOSITED IN ISITE *****
00261 83*      C ***** YEAR=YEAR THAT CONC WAS DEPOSITED IN ISITE *****
00261 84*      C *****
00262 85*      IF (ISWIT.EQ.0) READ (5,30) ISITE,ISO,LTSIGN,CONC,YEAR
00272 86*      IF (ISWIT.EQ.1) READ (5,35) ISITE,IEW,ISO,LTSIGN,CONC,YEAR
00303 87*      30 FORMAT (2X,A6,16X,I2,A1,E10.0,F4.0)
00304 88*      35 FORMAT (2X,A6,9X,A1,6X,I2,A1,E10.0,F4.0)
00305 89*      IPGBUF(1,1) = ISITE
00306 90*      LKT = LKT + 1
00307 91*      IF (ISC.EQ.19) ISO = 2
00311 92*      KSITE = ISITE
00312 93*      40 SYEAR = YEAR
00313 94*      IYEAR = SYEAR

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00314 95* IF (ISWIT.EQ.1) NEW = IEW
00316 96* DCTIM=(MDATE-SYEAR-.5)*365.256
00317 97* GO TO 50
00320 98* 60 CONTINUE
00321 99* IF (ISWIT.EQ.0) READ (5,30) ISITE,ISO,LTSIGN,CONC,YEAR
00331 100* IF (ISWIT.EQ.1) READ (5,35) ISITE,IEW,ISO,LTSIGN,CONC,YEAR
00342 101* IF (ISO.EQ.18) ISO=27
00344 102* IF (ISO.EQ.19) ISO = 2
00344 103* C ***** IF ALL THE ISOTOPE CONC'S HAVE BEEN READ IN FOR THAT YEAR
00344 104* C FINISH DECAY TO FIND BETA *****
00346 105* IF (YEAR.NE.SYEAR.OR.ISITE.NE.KSITE) GO TO 80
00350 106* IF (ISWIT.EQ.0) GO TO 50
00352 107* IF (NEW.NE.IEW) GO TO 80
00354 108* 50 IF (ISO.EQ.0) ISO = 18
00356 109* IF (ISO.EQ.17) CONC = CONC/1000.0
00360 110* IF (ISO.EQ.2) LTS2=LTSIGN
00362 111* IF (ISWIT.EQ.1) GO TO 241
00364 112* IF (ISO.NE.2) GO TO 241
00366 113* IB=0
00367 114* DO 240 IB = 1,200
00372 115* IF (IBSIT(IB).EQ.'999 ') GO TO 243
00374 116* IF (ISITE.EQ.IBSIT(IB)) GO TO 245
00376 117* 240 CONTINUE
00400 118* 243 BF(IB) = 1.0
00401 119* 245 CONC=CONC*BF(IB)
00402 120* RISO(ISO)=CONC
00403 121* 241 CONTINUE
00404 122* IF (ISWIT.EQ.1) RISO(ISO) = CONC
00406 123* DPSUM(ISO,JSIT)=DPSUM(ISO,JSIT)+CONC
00407 124* IF (LTSIGN.EQ.'<') SUPLT(ISO,JSIT)=SUPLT(ISO,JSIT)+CONC
00411 125* IN = INOAD(ISO)
00412 126* IF (IN.EQ.0) GO TO 246
00414 127* DPSUM(IN,JSIT) = DPSUM(IN,JSIT) + CONC
00415 128* 246 CONTINUE
00416 129* ISK = INDW(ISO)
00417 130* IF (ISK.EQ.0) GO TO 244
00421 131* IF (PGBUF(ISK,LKT).GT.0.0) GO TO 242
00423 132* PGBUF(ISK,LKT) = CONC
00424 133* IPGBUF(ISK,LKT) = LTSIGN
00425 134* IF (ISK.EQ.8.OR.ISK.EQ.11) IPGBUF(ISK+4,LKT) = NAME(ISO)
00427 135* GO TO 244
00430 136* 242 PGBUF(ISK,LKT+1) = CONC
00431 137* IPGBUF(1,LKT+1) = 'CONTIN'
00432 138* IPGBUF(ISK,LKT+1)=LTSIGN
00433 139* IPGBUF(ISK+4,LKT+1) = NAME(ISO)
00434 140* 244 CONTINUE
00435 141* IF (ISO.GT.16.AND.ISO.NE.20) GO TO 60
00437 142* IF (ISO.LE.2) GO TO 60
00441 143* IF (ISWIT.EQ.0) RISO (ISO) = CONC

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00443 144*      IF (ISO.EQ.20) GO TO 666
00445 145*      CONC=CONC*(EXP(ALX*DCTIM/H(ISO)))
00446 146*      IF (ISO.EQ.9) GO TO 606
00450 147*      IF (ISO.NE.3.AND.ISO.NE.4) GO TO 610
00452 148*      THRDT(ISO+2,JSIT)=THRDT(ISO+2,JSIT)+CONC
00453 149*      606 CONTINUE
00454 150*      DECS=DECS+2.0*CONC
00455 151*      SBSM=SBSM+RISO(ISO)*2.0
00456 152*      GO TO 620
00457 153*      610 CONTINUE
00460 154*      IF (ISO.NE.8) GO TO 615
00460 155*      C ***** CALCULATE CONC. OF BA-137M *****
00462 156*      THRDT(ISO+2,JSIT)=THRDT(ISO+2,JSIT)+.919861*CONC
00463 157*      DECS=DECS+1.919861*CONC
00464 158*      SBSM=SBSM+RISO(ISO)*1.919861
00465 159*      GO TO 620
00466 160*      615 SBSM=SBSM+RISO(ISO)
00467 161*      DECS=DECS+CONC
00470 162*      620 CONTINUE
00471 163*      IN = INDAD(ISO)
00472 164*      IF (IN.NE.29) GO TO 621
00474 165*      DTHRDT(JSIT) = DTHRDT(JSIT) + CONC
00475 166*      621 CONTINUE
00476 167*      IF (LTSIGN.EQ.'<') SUMLT(ISO,JSIT)=SUMLT(ISO,JSIT)+CONC
00500 168*      THRDT(ISO,JSIT)=THRDT(ISO,JSIT)+CONC
00501 169*      GO TO 668
00502 170*      666 CONC=CONC*(EXP(ALX*DCTIM/H(41)))
00503 171*      DTHRDT(JSIT) = DTHRDT(JSIT) + CONC
00504 172*      THRDT(1,JSIT)=THRDT(1,JSIT)+CONC
00505 173*      DECS=DECS+CONC
00506 174*      SBSM=SBSM+RISO(20)
00507 175*      IF (LTSIGN.EQ.'<') SUMLT(1,JSIT)=SUMLT(1,JSIT)+CONC
00511 176*      668 CONTINUE
00512 177*      GO TO 60
00512 178*      C ***** FIND INDIVIDUAL AMTS OF ISOTOPES THEN DECAY EACH *****
00513 179*      80 CONTINUE
00514 180*      PG8UF(1,LKT) = SYEAR
00515 181*      IP8UF(1,LKT) = IYEAR
00516 182*      IF (ISWIT.EQ.1) GO TO 700
00520 183*      DO 100 IG = 1,10
00523 184*      IF (KSITE.EQ.IGNSIT(IG)) GO TO 700
00525 185*      100 CONTINUE
00527 186*      RISO(2)=RISO(2)-SBSM
00530 187*      SBSM = 0.0
00531 188*      RISO(7)=(RISO(2)*FM*F(7))*(EXP(ALX*DCTIM/H(7)))
00532 189*      RISO(9)=(RISO(2)*FM*F(9))*(EXP(ALX*DCTIM/H(9)))
00533 190*      THRDT(7,JSIT)=THRDT(7,JSIT)+RISO(7)
00534 191*      THRDT(9,JSIT)=THRDT(9,JSIT)+RISO(9)
00535 192*      RUN=RISO(7)+RISO(9)

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00536 193*      DO 90 J=1,40
00541 194*      RISO(J)=RISO(2)*FM*F(J)
00542 195*      RISO(J)=RISO(J)*(EXP(ALX*LCTIM/H(J)))
00543 196*      THRDT(J,JSIT)=THRDT(J,JSIT)+RISO(J)
00544 197*      RUN=RUN+RISO(J)
00545 198*      90 CONTINUE
00547 199*      GO TO 720
00550 200* 700 FM=1.0/FACTT
00551 201*      RUN=0.0
00552 202*      RISO(2)=RISO(2)-SBSM
00553 203*      SBSM = 0.0
00554 204*      DO 710 J=3,40
00557 205*      RISO(J)=RISO(2)*FM*F(J)
00560 206*      IF (J.NE.3.AND.J.NE.4.AND.J.NE.8) GO TO 709
00562 207*      IF (LTS2.EQ.'< ') SUPLT(J,JSIT) = SUPLT(J,JSIT) + RISO(J)
00564 208*      DPSUM(J,JSIT) = DPSUM(J,JSIT) + RISO(J)
00565 209* 709 CONTINUE
00566 210*      IF (J.EQ.3) IPGBUF(5,LKT) = LTS2
00570 211*      IF (J.EQ.4) IPGBUF(6,LKT) = LTS2
00572 212*      IF (J.EQ.8) IPGBUF(7,LKT) = LTS2
00574 213*      IF (J.EQ.3) PG6UF(5,LKT) = RISO(3) + PG6UF(5,LKT)
00576 214*      IF (J.EQ.4) PG6UF(6,LKT) = RISO(4) + PG6UF(6,LKT)
00600 215*      IF (J.EQ.8) PG6UF(7,LKT) = RISO(8) + PG6UF(7,LKT)
00602 216*      RISO(J)=RISO(J)*(EXP(ALX*DCTIM/H(J)))
00603 217*      THRDT(J,JSIT)=THRDT(J,JSIT)+RISO(J)
00604 218*      RUN=RUN+RISO(J)
00605 219*      IF (LTS2.EQ.' ') GO TO 710
00607 220*      IF (J.EQ.3.OR.J.EQ.4.OR.J.EQ.8) SUMLT(J,JSIT)=SUMLT(J,JSIT)+
00607 221*      * RISO(J)
00611 222* 710 CONTINUE
00613 223*      FM=1.0/FACT
00614 224* 720 IF (RUN.LT.0.0) WRITE (6,500) KSITE,SYEAR
00621 225* 500 FORMAT (T70,'** BETA < 0 FOR ',A6,' IN ',F6.0,' **')
00622 226*      IF (IPGBUF(1,LKT+1).EQ.'CONTIN') LKT=LKT+1
00624 227*      LKT = LKT + 1
00625 228*      IF (LKT.GE.45) CALL WRSUB
00627 229*      RISO(2)=RUN+DECS
00630 230*      DECS=0.0
00631 231*      THRDT(2,JSIT)=THRDT(2,JSIT)+RISO(2)
00632 232*      IF (ISITE.EQ.KSITE) GO TO 390
00634 233*      LKT = LKT + 1
00635 234*      IF (LKT.GE.45) CALL WRSUB
00637 235*      DO 501 I=1,25
00642 236*      ISK = INTD(I)
00643 237*      IF (ISK.EQ.0) GO TO 501
00645 238*      PG6UF(ISK,LKT) = DPSUM(I,JSIT)
00646 239*      IF ((SUPLT(I,JSIT)/DPSUM(I,JSIT)).GE..10) IPGBUF(ISK,LKT)='<'
00650 240* 501 CONTINUE
00652 241*      PG6UF(8,LKT) = DPSUM(29,JSIT)

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00653 242*      PG8UF(11,LKT) = DPSUM(30,JSIT)
00654 243*      IPG8UF(1,LKT) = ' SUM '
00655 244*      LKT = LKT +1
00656 245*      IF (LKT.GE.45) CALL WRSUB
00660 246*      IPG8UF(1,LKT) = ' DECAY'
00661 247*      PG8UF(4,LKT) = THRDT(2,JSIT)
00662 248*      PG8UF(5,LKT) = THRDT(3,JSIT)
00663 249*      PG8UF(6,LKT) = THRDT(4,JSIT)
00664 250*      PG8UF(7,LKT) = THRDT(8,JSIT)
00665 251*      PG8UF(8,LKT) = DTHRDT(JSIT)
00666 252*      PG8UF(9,LKT) = DPSUM(17,JSIT)
00667 253*      PG8UF(10,LKT) = DPSUM(25,JSIT)
00670 254*      PG8UF(11,LKT) = DPSUM(30,JSIT)
00671 255*      PG8UF(2,LKT) = DPSUM(18,JSIT)
00672 256*      PG8UF(3,LKT) = DPSUM(1,JSIT)
00673 257*      IPG8UF(2,LKT) = IPG8UF(2,LKT-1)
00674 258*      IPG8UF(3,LKT) = IPG8UF(3,LKT-1)
00675 259*      IPG8UF(9,LKT) = IPG8UF(9,LKT-1)
00676 260*      IPG8UF(10,LKT) = IPG8UF(10,LKT-1)
00677 261*      RUL10=SUPLT(2,JSIT)/DPSUM(2,JSIT)
00700 262*      IF (RUL10.GE..10) FLD(6,6,LTSAB(JSIT))=FLD(0,6,'<')
00702 263*      IF (RUL10.GE..10) IPG8UF(4,LKT)='< '
00704 264*      RUL10=SUMLT(3,JSIT)/THRDT(3,JSIT)
00705 265*      IF (RUL10.GE..10) FLD(12,6,LTSAB(JSIT))=FLD(0,6,'<')
00707 266*      IF (RUL10.GE..10) IPG8UF(5,LKT)='< '
00711 267*      RUL10=SUMLT(4,JSIT)/THRDT(4,JSIT)
00712 268*      IF (RUL10.GE..10) FLD(18,6,LTSAB(JSIT))=FLD(0,6,'<')
00714 269*      IF (RUL10.GE..10) IPG8UF(6,LKT)='< '
00716 270*      RUL10=SUMLT(8,JSIT)/THRDT(8,JSIT)
00717 271*      IF (RUL10.GE..10) FLD(24,6,LTSAB(JSIT))=FLD(0,6,'<')
00721 272*      IF (RUL10.GE..10) IPG8UF(7,LKT)='< '
00723 273*      RUL10=SUMLT(13,JSIT)/THRDT(13,JSIT)
00724 274*      IF (RUL10.GE..10) FLD(30,6,LTSAB(JSIT))=FLD(0,6,'<')
00726 275*      IF (RUL10.GE..10) IPG8UF(8,LKT)='< '
00730 276*      DO 6010 K = 1,4
00733 277*      TOTDP(1,K) = TOTDP(1,K) + DPSUM(K,JSIT)
00734 278*      6010 CONTINUE
00736 279*      TOTDP(1,8) = TOTDP(1,8) + DPSUM(8,JSIT)
00737 280*      TOTDP(1,17) = TOTDP(1,17) + DPSUM(17,JSIT)
00740 281*      TOTDP(1,18) = TOTDP(1,18) + DPSUM(18,JSIT)
00741 282*      TOTDP(1,25) = TOTDP(1,25) + DPSUM(25,JSIT)
00742 283*      TOTDP(1,29) = TOTDP(1,29) + DPSUM(29,JSIT)
00743 284*      TOTDP(1,30) = TOTDP(1,30) + DPSUM(30,JSIT)
00744 285*      DO 6030 K = 2,4
00747 286*      TOTDC(1,K) = TOTDC(1,K) + THRDT(K,JSIT)
00750 287*      6030 CONTINUE
00752 288*      TOTDC(1,3) = TOTDC(1,3) + THRDT(8,JSIT)
00753 289*      TOTDC(1,29) = TOTDC(1,29) + DTHRDT(JSIT)
00754 290*      IF (ISITE.EQ.'001 ' .AND. IEW.EQ.'W ' ) GO TO 33

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00756 291*      IF (ISO.EQ.99) GO TO 34
00760 292*      GO TO 9090
00761 293*  33 CONTINUE
00762 294*      LKT = LKT + 1
00763 295*      IF (LKT.GE.45) CALL WRSUB
00765 296*      IPGBUF(1,LKT) = 'TOTALF'
00766 297*      IPGBUF(1,LKT+1) = 'TOTALF'
00767 298*      GO TO 401
00770 299*  34 LKT = LKT + 1
00771 300*      LMN = 1
00772 301*      PUNCH 4444,LMN,THRDT(3,JSIT),THRDT(4,JSIT),THRDT(8,JSIT),
00772 302*      * THRDT(5,JSIT),THRDT(6,JSIT),THRDT(10,JSIT)
01003 303*      LMN = 2
01004 304*      PUNCH 4444,LMN,THRDT(7,JSIT),THRDT(9,JSIT),THRDT(11,JSIT),
01004 305*      * THRDT(12,JSIT),(THRDT(L,JSIT),L=14,15)
01017 306*      LMN = 3
01020 307*      PUNCH 4444,LMN,(THRDT(L,JSIT),L=16,21)
01027 308*      LMN = 4
01030 309*      PUNCH 4444,LMN,(THRDT(L,JSIT),L=22,27)
01037 310*      LMN = 5
01040 311*      PUNCH 4444,LMN,(THRDT(L,JSIT),L=28,33)
01047 312*      LMN = 6
01050 313*      PUNCH 4444,LMN,(THRDT(L,JSIT),L=34,39)
01057 314*      LMN = 7
01060 315*      PUNCH 4446,LMN,THRDT(40,JSIT)
01064 316*      LMN = 8
01065 317*      PUNCH 4447,LMN,THRDT(9,JSIT)
01071 318*  4444 FORMAT ('W04BTCCA',I2,6(E11.6))
01072 319*  4446 FORMAT('W04BTCCA',I2,E11.6,' 1')
01073 320*  4447 FORMAT('W04BTCCA',I2,' 9',E11.6)
01074 321*      IPGBUF(1,LKT) = 'TOTALW'
01075 322*      IPGBUF(1,LKT+1) = 'TOTALW'
01076 323*  401 CONTINUE
01077 324*      PGBUF(2,LKT) = TOTDP(1,13)
01100 325*      PGBUF(3,LKT) = TOTDP(1,1)
01101 326*      PGBUF(4,LKT) = TOTDP(1,2)
01102 327*      PGBUF(5,LKT) = TOTDP(1,3)
01103 328*      PGBUF(6,LKT) = TOTDP(1,4)
01104 329*      PGBUF(7,LKT) = TOTDP(1,8)
01105 330*      PGBUF(8,LKT) = TOTDP(1,29)
01106 331*      PGBUF(9,LKT) = TOTDP(1,17)
01107 332*      PGBUF(10,LKT) = TOTDP(1,25)
01110 333*      PGBUF(11,LKT) = TOTDP(1,30)
01111 334*      LKT = LKT + 1
01112 335*      TOTDC(1,1) = TOTDP(1,1)
01113 336*      TOTDC(1,17) = TOTDP(1,17)
01114 337*      TOTDC(1,18) = TOTDP(1,18)
01115 338*      TOTDC(1,25) = TOTDP(1,25)
01116 339*      TOTDC(1,30) = TOTDP(1,30)

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01117 340*      PGBUF(2,LKT) = TOTDC(1,15)
01120 341*      PGBUF(3,LKT) = TOTDC(1,1)
01121 342*      PGBUF(4,LKT) = TOTDC(1,2)
01122 343*      PGBUF(5,LKT) = TOTDC(1,3)
01123 344*      PGBUF(6,LKT) = TOTDC(1,4)
01124 345*      PGBUF(7,LKT) = TOTDC(1,8)
01125 346*      PGBUF(8,LKT) = TOTDC(1,29)
01126 347*      PGBUF(9,LKT) = TOTDC(1,17)
01127 348*      PGBUF(10,LKT) = TOTDC(1,25)
01130 349*      PGBUF(11,LKT) = TOTDC(1,30)
01131 350*      DO 6020 K=1,30
01134 351*      TOTDP(1,K) = 0.0
01135 352*      TOTDC(1,K) = 0.0
01136 353*      6020 CONTINUE
01140 354*      CALL WRSUB
01141 355*      9090 CONTINUE
01142 356*      LKT = LKT + 1
01143 357*      IF (LKT.GE.45) CALL WRSUB
01145 358*      LKT = LKT + 1
01146 359*      IF (LKT.GE.45) CALL WRSUB
01150 360*      IPGBUF(1,LKT) = ISITE
01151 361*      LKT = LKT + 1
01152 362*      IF (LKT.GE.45) CALL WRSUB
01154 363*      JS(JSIT) = KSITE
01155 364*      IF (ISWIT.EQ.0) GO TO 389
01157 365*      DO 9030 K=1,100
01162 366*      IF (ICSIT(1,K).EQ.'999 ') GO TO 9040
01164 367*      IF (ICSIT(1,K).EQ.KSITE) GO TO 9060
01166 368*      9030 CONTINUE
01170 369*      9040 WRITE (6,9050) KSITE
01173 370*      9050 FORMAT (' ',A6,' DOES NOT HAVE A MATCH')
01174 371*      GO TO 9070
01175 372*      9060 JS(JSIT) = ICSIT(2,K)
01176 373*      JSHD(JSIT) = ICSIT(3,K)
01177 374*      I4(JSIT) = NEW
01200 375*      9070 CONTINUE
01201 376*      389 JSIT = JSIT + 1
01202 377*      KSITE=ISITE
01203 378*      390 CONTINUE
01204 379*      DO 410 J = 1,40
01207 380*      410 RISO(J) = 0.0
01211 381*      IF (ISO.NE.99) GO TO 40
01213 382*      WRITE(6,9999)
01215 383*      9999 FORMAT ('1',' ')
01216 384*      END
END COMPILATION **      0 MESSAGES **

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Q1 FR5 WRSUB,WRSUB

COMPILED BY LEVEL 23.8 CSCX FORTRAN V ON 26 NOV 73 AT 19:03

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00101 1* SUBROUTINE WRSUB
00103 2* INCLUDE COMA
00106 3* NPG = NPG + 1
00107 4* IF (NPG.EQ.1.JR.NTB.EQ.0) GO TO 70
00111 5* WRITE (6,100) NTB,NPG
00115 6* 100 FORMAT('1',///,T45,'TABLE ',I2,T55,'(CONTINUED)',T91,'PAGE ',I2/)
00116 7* GO TO 105
00117 8* 70 CONTINUE
00120 9* IF (NTB.EQ.0) GO TO 65
00122 10* WRITE(6,60) NTB,NPG
00126 11* 60 FORMAT('1',///,T45,'TABLE ',I2,T91,'PAGE ',I2 / T42,'200 EAST AREA',
00126 12* * / T33,'SOLID WASTE BURIAL GROUND SITES' /)
00127 13* GO TO 105
00130 14* 65 CONTINUE
00131 15* NTB = 2
00132 16* WRITE(6,75) NTB,NPG
00136 17* 75 FORMAT('1',///,T45,'TABLE ',I2,T91,'PAGE ',I2 / T42,'200 WEST AREA',
00136 18* * / T33,'SOLID WASTE BURIAL GROUND SITES' /)
00137 19* 105 CONTINUE
00140 20* WRITE (6,110)
00142 21* 110 FORMAT('0',T23,'VOLUME',T30,'PU',T40,'BETA',T50,'SR-90',T60,
00142 22* * 'RU-106',T70,'CS-137',T80,'OTHERS',T96,'U',T106,'AREA',T116,
00142 23* * 'OTHERS')
00143 24* WRITE(6,115)
00145 25* 115 FORMAT(' ',T29,'(CU FT)',T30,'(GM)',T40,'(CI)',T50,'(CI)',T60,
00145 26* * '(CI)',T70,'(CI)',T80,'(CI)',T96,'(KGM)',T106,'(SQ FT)',T116,
00145 27* * '(GM)')
00146 28* LS = 46
00147 29* 120 LS = LS - 1
00150 30* IF (LS.EQ.0) WRITE (6,500)
00153 31* 500 FORMAT (' ',' NO DECAY STATEMENT FOUND')
00154 32* IF (LS.EQ.0) GO TO 600
00156 33* IF (IPGBUF(1,LS).EQ.'TOTALES') GO TO 125
00160 34* IF (IPGBUF(1,LS).EQ.'TOTALH') GO TO 125
00162 35* IF (IPGBUF(1,LS).NE.'DECAY') GO TO 120
00164 36* 125 CONTINUE
00165 37* DO 400 JW = 1,LS
00170 38* IF (IPGBUF(1,JW).EQ.'CONTIN') GO TO 200
00172 39* IF (IPGBUF(1,JW).EQ.' ') GO TO 200
00174 40* IF (IPGBUF(1,JW).NE.'DECAY') GO TO 170
00176 41* WRITE (6,130)
00200 42* 130 FORMAT (' ',T3,'DECAY THRU 71')
00201 43* GO TO 200
00202 44* 170 CONTINUE
00203 45* IF (IPGBUF(1,JW).NE.'SUM ') GO TO 190
00205 46* WRITE (6,130)
00207 47* 180 FORMAT (' ',T3,'SUM THRU 71')
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00210 48*      GO TO 200
00211 49*      190 CONTINUE
00212 50*      IF (IPGBUF(1,JW).NE.'TOTALE') GO TO 700
00214 51*      IF (JW.EQ.LS) GO TO 181
00216 52*      WRITE (6,191)
00220 53*      191 FORMAT('0', / T3,'200-E TOTAL')
00221 54*      GO TO 710
00222 55*      181 CONTINUE
00223 56*      WRITE (6,245)
00225 57*      245 FORMAT ('0',T3,'200-E', / T3,'DECAY TOTAL')
00226 58*      GO TO 710
00227 59*      700 CONTINUE
00230 60*      IF (IPGBUF(1,JW).NE.'TOTAL#') GO TO 730
00232 61*      IF (JW.EQ.LS) GO TO 183
00234 62*      WRITE (6,192)
00236 63*      192 FORMAT('0', / T3,'200-W TOTAL')
00237 64*      GO TO 710
00240 65*      183 CONTINUE
00241 66*      WRITE (6,246)
00243 67*      246 FORMAT('0',T3,'200-W', / T3,'DECAY TOTAL')
00244 68*      710 CONTINUE
00245 69*      J1 = JW
00246 70*      IF (PGBUF(2,J1).NE.0.0) WRITE(6,520) PGBUF(2,J1)
00252 71*      IF (PGBUF(3,J1).NE.0.0) WRITE(6,530) PGBUF(3,J1)
00256 72*      IF (PGBUF(4,J1).NE.0.0) WRITE(6,540) PGBUF(4,J1)
00262 73*      IF (PGBUF(5,J1).NE.0.0) WRITE(6,550) PGBUF(5,J1)
00266 74*      IF (PGBUF(6,J1).NE.0.0) WRITE(6,560) PGBUF(6,J1)
00272 75*      IF (PGBUF(7,J1).NE.0.0) WRITE(6,570) PGBUF(7,J1)
00276 76*      IF (PGBUF(8,J1).NE.0.0) WRITE(6,580) PGBUF(8,J1)
00302 77*      IF (PGBUF(9,J1).NE.0.0) WRITE(6,590) PGBUF(9,J1)
00306 78*      IF (PGBUF(10,J1).NE.0.0) WRITE(6,595) PGBUF(10,J1)
00312 79*      IF (PGBUF(11,J1).NE.0.0) WRITE(6,596) PGBUF(11,J1)
00316 80*      520 FORMAT('+',T20,E7.3)
00317 81*      530 FORMAT('+',T30,E7.3)
00320 82*      540 FORMAT('+',T40,E7.3)
00321 83*      550 FORMAT('+',T50,E7.3)
00322 84*      560 FORMAT('+',T60,E7.3)
00323 85*      570 FORMAT('+',T70,E7.3)
00324 86*      580 FORMAT('+',T80,E7.3)
00325 87*      590 FORMAT('+',T96,E7.3)
00326 88*      595 FORMAT('+',T106,E7.3)
00327 89*      596 FORMAT('+',T116,E7.3)
00330 90*      NTB = 0
00331 91*      GO TO 400
00332 92*      730 CONTINUE
00333 93*      IF (PGBUF(1,JW).EQ.0.0) GO TO 197
00335 94*      WRITE (6,160) IPGBUF(1,JW)
00340 95*      160 FORMAT (' ',T10,I4)
00341 96*      GO TO 200

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00342  97*   197 CONTINUE
00343  98*   *RITE (6,165)
00345  99*   165 FORMAT(' ', ' ')
00346 100*   J = 0
00347 101*   198 CONTINUE
00350 102*   J = J + 1
00351 103*   IF (IPGBUF(1,JW).NE.NSSITE(1,J)) GO TO 198
00353 104*   WRITE (6,210) (NSSITE(1,J),I=2,5)
00361 105*   210 FORMAT (' ',T3,4A6)
00362 106*   200 CONTINUE
00363 107*   IF (IPGBUF(1,JW).EQ.'CONTIN') WRITE (6,165)
00366 108*   IF (PGBUF(2,JW).NE.0.0) WRITE (6,220) IPGBUF(2,JW),PGBUF(2,JW)
00373 109*   IF (PGBUF(3,JW).NE.0.0) WRITE (6,230) IPGBUF(3,JW),PGBUF(3,JW)
00400 110*   IF (PGBUF(4,JW).NE.0.0) WRITE (6,240) IPGBUF(4,JW),PGBUF(4,JW)
00405 111*   IF (PGBUF(5,JW).NE.0.0) WRITE (6,250) IPGBUF(5,JW),PGBUF(5,JW)
00412 112*   IF (PGBUF(6,JW).NE.0.0) WRITE (6,260) IPGBUF(6,JW),PGBUF(6,JW)
00417 113*   IF (PGBUF(7,JW).NE.0.0) WRITE (6,270) IPGBUF(7,JW),PGBUF(7,JW)
00424 114*   IF (PGBUF(8,JW).NE.0.0) WRITE (6,280) IPGBUF(8,JW),PGBUF(8,JW),
00424 115*   * IPGBUF(12,JW)
00432 116*   IF (PGBUF(9,JW).NE.0.0) WRITE (6,290) IPGBUF(9,JW),PGBUF(9,JW)
00437 117*   IF (PGBUF(10,JW).NE.0.0) WRITE (6,300) IPGBUF(10,JW),PGBUF(10,JW)
00444 118*   IF (PGBUF(11,JW).NE.0.0) WRITE(6,310) IPGBUF(11,JW),
00444 119*   * PGBUF(11,JW),IPGBUF(15,JW)
00452 120*   220 FORMAT ('+',T19,A1,E7.3)
00453 121*   230 FORMAT ('+',T29,A1,E7.3)
00454 122*   240 FORMAT ('+',T39,A1,E7.3)
00455 123*   250 FORMAT ('+',T49,A1,E7.3)
00456 124*   260 FORMAT ('+',T59,A1,E7.3)
00457 125*   270 FORMAT ('+',T69,A1,E7.3)
00460 126*   280 FORMAT ('+',T79,A1,E7.3,1X,A6)
00461 127*   290 FORMAT ('+',T95,A1,E7.3)
00462 128*   300 FORMAT ('+',T105,A1,E7.3)
00463 129*   310 FORMAT ('+',T115,A1,E7.3,1X,A6)
00464 130*   400 CONTINUE
00466 131*   JT = 0
00467 132*   IF (IPGBUF(1,LS).EQ.'TOTALE') GO TO 455
00471 133*   LS = LS + 1
00472 134*   DO 450 L = LS,45
00475 135*   JT = JT + 1
00476 136*   DO 440 J=1,15
00501 137*   IPGBUF(J,JT) = IPGBUF(J,L)
00502 138*   PGBUF(J,JT) = PGBUF(J,L)
00503 139*   440 CONTINUE
00505 140*   450 CONTINUE
00507 141*   455 CONTINUE
00510 142*   JT = JT + 1
00511 143*   DO 470 L=JT,45
00514 144*   DO 460 J=1,15
00517 145*   PGBUF(J,L) = 0.0

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00520 146*      IPGBUF(J,L) = '
00521 147*      460 CONTINUE
00523 148*      470 CONTINUE
00525 149*      LKT = JT
00526 150*      600 CONTINUE
00527 151*      RETURN
00530 152*      END
END COMPILATION **      0 MESSAGES **
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-ALOG(2) = -.69315-00

ISO. #	FACTOR	HALFLIFE	ISOTOPE
3	.1881-01	.103+05	SR90
4	.4051-01	.367+03	RU106
5	.1881-01	.103+05	Y90
6	.4051-01	.367+03	RH106
7	.6455-06	.548+09	ZK93
8	.2009-01	.110+05	CS137
9	.2784-00	.284+03	CE144
10	.1848-01	.110+05	BA137M
11	.4988-01	.650+02	ZR95
12	.1059-02	.650+02	N295M
13	.0000	.192+04	CO60
14	.1053+00	.650+02	NE95
15	.2867-05	.774+08	TC99
16	.8455-08	.256+10	PD107
17	.2507-05	.253+03	AG110M
18	.5015-07	.253+03	AG110
19	.4514-09	.511+04	CD113M
20	.4372-04	.250+03	SM119M
21	.3943-05	.913+04	SN121M
22	.1847-04	.125+03	SN123M
23	.1105-06	.365+06	SN126
24	.7985-03	.986+03	SB125
25	.1105-06	.365+06	SB126M
26	.1094-06	.365+08	SB126
27	.2178-03	.986+03	TE125M
28	.1369-02	.109+03	TE127M
29	.1354-02	.109+03	TE127
30	.5557-03	.749+03	CS134
31	.5746-07	.110+10	CS135
32	.4990-07	.237+06	SE79
33	.2784-00	.284+03	PR144
34	.7022-01	.957+03	PM147
35	.1938-03	.319+05	SM151
36	.3000-06	.438+04	EU152
37	.3038-04	.584+04	EU154
38	.7353-03	.661+03	EU155
39	.9860-05	.365+03	GD162
40	.9862-05	.365+03	TL162
41	.0000	.451+04	H3

FACTOR TOTAL = .78861-00

FACTOR MULTIPLIER = .12681+01

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END