BURNUP DATA
FROM UO_2 -0.48 wt% PuO_2 FUEL

R. P. Matsen

August 1970

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DEVELOPMENT REPORT

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ERRATA

The headings have been omitted from pages A-30, A-32 and A-56.
They should read

<u>Page</u>	<u>Heading</u>
A-30	Element 5185 Analysis of the Sample 23.50 inches from the top of the center rod
A-32	Element 5185 Analysis of the Sample 38.00 inches from the top of the center rod
A-56	Element 5185 Analysis of the Sample 34.00 inches from the top of the outside rod

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Technology

BURNUP DATA FROM UO_2 -0.48 wt% PuO_2 FUEL

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ABSTRACT

Burnup data obtained from the destructive analysis of UO_2 -0.48 wt% PuO_2 fuel irradiated in the Plutonium Recycle Test Reactor are presented. The measured data are partially analyzed, however no effort has been made to detect questionable data. The data should be evaluated before it is used further.

BURNUP DATA FROM UO₂-0.48 wt% PuO₂ FUEL

R. P. Matsen

INTRODUCTION

Burnup data obtained as the result of the destructive analysis of UO₂-0.48 wt% PuO₂ fuel irradiated in the Plutonium Recycle Test Reactor (PRTR) are presented in this report. The samples were cut from elements which were the first of a series of mixed urania-plutonia fuels irradiated in the PRTR. The most exposed sample has a burnup of approximately 6500 MWd/MTM. The data that was measured for each sample is recorded in this report and has been used to calculate quantities that should be more useful to the analyst. One standard deviation uncertainties of the measured and calculated quantities are also included. At the time the measurements were made, radiochemical techniques were used. The more accurate isotopic dilution techniques currently in use had not yet been developed. Because no effort has been made to locate or mark questionable data, the validity of the data should be evaluated before it is used.

Fuel Description

The pre-irradiated fuel was natural uranium di-oxide enriched with PuO₂. Nominally, the Pu/U ratio was equal to 0.0048 by weight. The plutonium atom percents at the time the irradiation began were 80.183/17.273/2.310/0.234 for ²³⁹Pu/²⁴⁰Pu/²⁴¹Pu/²⁴²Pu respectively. The fuel rods possess an active fuel length of 88.7 inches and the fuel diameter is 0.5 inches. The cladding material is Zircaloy II. Three rods from each of seven nineteen-rod PRTR clusters were loaded with pelletized fuel. One was the center rod of the cluster, another was located in the middle or six rod ring of the cluster, and the other was positioned in the outside or 12 rod ring of the cluster. Burnup samples were cut from pelletized rods. The remaining rods

within each cluster were filled with $\text{UO}_2\text{-PuO}_2$ powder and were compacted by a swaging process. No burnup samples were obtained from these swaged rods.

Two 19-rod fuel elements have been sampled. Their irradiation history is shown in Table I.

TABLE I
Irradiation History of $\text{UO}_2\text{-0.48 wt\% PuO}_2$ Fuel Elements

<u>Element</u>	<u>Element Average Exposure (MWd)</u>	<u>In</u>	<u>Out</u>
5187	100.2	May 28, 1963	Nov. 24, 1963
5185	245.7	May 28, 1963	Oct. 9, 1964

Measured Data

The following data were measured or recorded for each fuel sample.

1. Position of the sample within the rod
2. Weight of the fuel sample plus cladding material
3. Weight of the clad after the fuel has been dissolved
4. Volume of the solution in which the fuel was dissolved
5. Time from date of fuel discharge to date of analysis.
6. Uranium atom ratios: $^{234}\text{U}/^{238}\text{U}$, $^{235}\text{U}/^{238}\text{U}$, and $^{236}\text{U}/^{238}\text{U}$
7. Plutonium atom ratios: $^{240}\text{Pu}/^{239}\text{Pu}$, $^{241}\text{Pu}/^{239}\text{Pu}$, and $^{242}\text{Pu}/^{239}\text{Pu}$
8. Plutonium decays measured as decays per minute per milliliter of solution
9. Percent of plutonium decays caused by ^{238}Pu
10. Cesium-137 decays measured as decays per minute per milliliter of solution.

One standard deviation uncertainties were estimated for measurements 6, 7, 8, and 10. The other uncertainties were assumed to be negligible.

Additional data has been acquired for some of the samples and they are recorded in Table II. These data consist of the amount of uranium and/or plutonium in solution for a given sample. Coulometric and isotopic dilution techniques were employed in obtaining these measurements. Some gamma scan information was obtained with a NaI crystal for the rods from element 5187. These are presented in Table III. The measurements were made at positions which progress in a direction from the top to the bottom of the rod. The fuel begins at a different (but unknown) position for each of the rods. The background counts were measured at some of the positions and these are also shown.

Interpretation of the Data

The results for each sample are presented in the Appendix which consists of the output of the PRGTRY burnup analysis code. In addition to the measured data, other quantities derived from the data are also presented. A quantity enclosed in parentheses is the one standard deviation uncertainty of the preceding number. These uncertainties are calculated from the uncertainties assigned to the measured data by standard propagation of error techniques. Most of the headings are self explanatory. The symbol BOL means Beginning of Life (i.e., at the time that the element was first charged) and EOL means End of Life (i.e., at the time the element was discharged). The term A/O means atom percent and GM stands for gram. All quantities that are reported in units of grams are normalized to one gram of uranium plus plutonium at the Beginning of Life (notice that the total BOL uranium plus the total BOL plutonium adds up to one gram).

Parameters that are used in the reduction of the measured data are also shown along with the rest of the information for each sample. Under the heading, SPECIFIC ACTIVITY (D/M/ML), the alpha activities are listed in decays per minute for one gram of each of the various plutonium isotopes. Parameters needed for calculating the fissions and burnup in Megawatt Days per Metric Ton of heavy Metal (i.e., MWD/MTM) are the ^{137}Cs fission yields, the number of fissions (DEL) that occur in ^{238}U because of fast neutrons from the other fissionable isotopes, and the MEV/FISSION for each of the fissionable isotopes. Other parameters used in the calculations are listed under ASSUMPTIONS.

The plutonium atom ratios for the samples from the positions at 34.0, 38.5, 45.25, and 65.0 inches of the outside ring rod of element 5185 were not measured. The plutonium atom ratios used in the Appendix for these samples was the same as for the samples from the same rod at positions of 33.5, 38.0, 44.75, and 64.5 inches respectively.

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TABLE II
Additional Experimental Measurements

<u>Element</u>	<u>Ring that Rod is from</u>	<u>Position (inches)</u>	<u>Coulometer</u>		<u>Isotopic Dilution</u>	
			<u>U(g/l)</u>	<u>Pu(g/l)</u>	<u>U(g/l)</u>	<u>Pu(g/l)</u>
5187	Center	3.00	58.0			
		13.00	95.7	.510		
		24.00	57.9			
		36.00	65.7			
		45.00	61.5			
		55.00	57.3			
		65.00	91.4			
		75.00	61.2			
		85.00	63.2	.330		
	Middle	24.00		.477		
	Outside	45.00	76.1	.396		
		55.00	97.2			
5185	Outside	33.50		.400		
		64.50		.384		
	Middle	12.50		.256		
		37.50		.319		
	Center	2.50		.303		
		38.00		.264		
	*Middle	38.00			53.38	.3142
		44.25			51.97	.3025
		55.00			84.50	.4987
		65.00			57.19	.3230

TABLE III

<u>Gamma Scan Data From Element 5187</u>			
<u>Location of Rod</u>	<u>Relative* Position (inches)</u>	<u>Total Counts/5 min.</u>	<u>Background Counts/5 min.</u>
Center	20.88	23733	626
	28.81	31887	
	34.69	34954	670
	41.19	36080	
	46.81	38003	663
	52.06	38448	
	53.13	38022	
	58.75	37991	663
	65.00	34795	
	66.00	36347	
	67.00	33291	
	68.00	34542	
	70.56	33757	
	75.56	31916	
	81.69	27400	
	86.88	22969	
Middle	22.75	21358	
Ring	28.75	25619	
	34.75	30429	
	40.75	33173	
	46.75	35203	
	52.75	38882	
	58.75	38705	1017
	64.75	38705	
	70.75	38735	
	71.75	38217	
	76.75	35786	
	82.75	32543	
	88.75	27256	
	95.75	17146	765

*The fuel begins at a different (but unknown) position for each of the rods.

TABLE III (contd.)

<u>Location of Rod</u>	<u>Relative Position (inches)</u>	<u>Total Counts/5 min.</u>	<u>Background Counts/5 min.</u>
Outside	22.75	26104	
Ring	28.75	32006	
	34.75	37087	
	40.75	41193	
	46.75	45416	
	52.75	48048	842
	58.75	48910	
	64.75	49976	
	70.75	46366	
	76.75	48021	
	82.75	38678	
	88.75	34885	
	95.75	21231	

APPENDIX A

ELEMENT 5187 ANALYSIS OF THE SAMPLE 3.00 INCHES FROM THE TOP OF THE CENTER ROD

ISOTOPIC INVENTORY

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.6347-04(.405-05)	.0063(.0004)	.6164-04(.402-05)	.1188-04(.402-05)
U-235	.7076-02	.6450-02(.452-04)	.6407(.0045)	.6291-02(.446-04)	-.7850-03(.446-04)
U-236	.0000	.1430-03(.427-05)	.0142(.0004)	.1401-03(.424-05)	.1401-03(.424-05)
U-238	.9881-00	1.0000	99.3388(.0045)	.9925-00(.122-03)	-.2631-03(.122-03)
TOTAL	.9952-00			.9991-00(.113-03)	-.9094-03(.113-03)

ISOTOPE	EOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	60.1830(.0350)	1.0000	74.9063(.0503)	.13616+12(.170+09)
PU240	17.2730(.0430)	.2762-00(.820-03)	20.6921(.0490)	.50130+12(.300+10)
PU241	2.3100(.0060)	.5058-01(.337-03)	3.9302(.0257)	.57600+10(.100+09)
PU242	.2340(.0005)	.6292-02(.724-04)	.4713(.0054)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3523-02(.8060-04)	.3825-02(.1929-04)	-.2621-03(.8287-04)
PU240	.9814-03(.2236-04)	.8275-03(.4641-05)	.1609-03(.2283-04)
PU241	.1825-03(.4451-05)	.1132-03(.6441-06)	.7531-04(.4498-05)
PU242	.2270-04(.5761-06)	.1130-04(.6165-07)	.1140-04(.5794-06)
TOTALS	.4763-02(.1076-03)	.4777-02(.2400-04)	-.1451-04(.1102-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.6442-03(.4477-04)	618.5	.0628(.0014)	.0636(.0064)	202
U-238	.5957-04(.3936-05)	58.4	.0620(.0060)		209
PU239	.1824-03(.5088-04)	185.8	.0674(.0019)	.0826(.0083)	211
PU241	.3868-04(.2936-05)	30.4	.0660(.0033)	.0855(.0085)	214
TOTALS	.9229-03(.2507-04)	893.1			

U235/U238 BOL=.6061(.0063) ALPHA-235=.2185(.0171) ALPHA-239=1.4758(.8336) PU239 FORMED FROM U238=.2043-03(.12-03)

INPUT DATA

CESIUM-137 DECAYS=.4570+02(.9140+07)D/M/ML
 PU DECAYS=.6063+08(.1331+7)D/M/ML
 PERCENT DECAYS BY PU238=.30
 SAMPLE WT=25.2650M CLAD WT=7.772GM
 SOLUTION VOL=245.1ML
 TIME OUT OF REACTOR=.767YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0057
 TIME OUT OF REACTOR=.767YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0057

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5187 ANALYSIS OF THE SAMPLE 13.00 INCHES FROM THE TOP OF THE CENTER ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5039-04(.297-05)	.0050(.0003)	.4893-04(.296-05)	-.8277-06(.296-05)
U-235	.7076-02	.6191-02(.442-04)	.6151(.0044)	.6037-02(.437-04)	-.1039-02(.437-04)
U-236	.0000	.1915-03(.540-05)	.0190(.0005)	.1876-03(.537-05)	.1876-03(.537-05)
U-238	.9881-00	1.0000	99.3608(.0044)	.9923-00(.125-03)	-.4636-03(.125-03)
TOTAL	.9952-00			.9987-00(.116-03)	-.1317-02(.116-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	50.1830(.0350)	1.0000	73.0006(.0459)	.13616+12(.170+09)
PU240	17.2730(.0430)	.2964-00(.778-03)	21.6396(.0449)	.50130+12(.300+10)
PU241	2.3100(.0060)	.6273-01(.336-03)	4.7503(.0250)	.57600+10(.100+09)
PU242	.2340(.0005)	.8350-02(.887-04)	.6096(.0065)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.350-02(.7918-04)	.3825-02(.1929-04)	-.3255-03(.8150-04)
PU240	.1042-02(.2356-04)	.8275-03(.4041-05)	.2143-03(.2402-04)
PU241	.2206-03(.5347-05)	.1132-03(.0441-06)	.1164-03(.5385-05)
PU242	.2949-04(.7397-06)	.1130-04(.6165-07)	.1829-04(.7422-06)
TOTALS	.4851-02(.1085-03)	.4777-02(.2400-04)	.2355-04(.1111-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (%/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.8096-04(.4399-04)	815.6	.0628(.0014)	.0636(.0064)	202
U-238	.8429-04(.9048-05)	82.6	.0620(.0060)		209
PU239	.3088-03(.5543-04)	304.3	.0674(.0019)	.0826(.0083)	211
PU241	.4022-04(.4463-05)	48.8	.0660(.0033)	.0855(.0085)	214
TOTALS	.1292-02(.3493-04)	1251.3			

U235/U238RCL=.6522(.0061) ALPHA-235=.2227(.0139) ALPHA-239=1.2903(.5033) PU239 FORMED FROM U238=.3810-03(.12-03)

INPUT DATA

CESIUM-137 DECAYS=.1080+10(.2160+08)D/M/ML
 PU DECAYS=.1187+09(.2314+07)D/M/ML
 PERCENT DECAYS BY PU238=7.50
 SAMPLE WT=37.108GM CLAD WT=.963GM
 SOLUTION VOL=.55.7ML
 TIME OUT OF REACTOR=.767YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0057

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----ACTIVITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5187 ANALYSIS OF THE SAMPLE 24.00 INCHES FROM THE TOP OF THE CENTER ROD

ISOTOPIC INVENTORY

ISOTOPE	EOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5347-04(.350-05)	.0053(.0003)	.5192-04(.348-05)	.2157-05(.348-05)
U-235	.7076-02	.5337-02(.482-04)	.5801(.0048)	.5692-02(.482-04)	-.1384-02(.482-04)
U-236	.0000	.2315-03(.545-05)	.0230(.0005)	.2267-03(.541-05)	.2267-03(.541-05)
U-238	.9681-00	1.0000	.993915(.0049)	.9923-00(.127-03)	-.4234-03(.127-03)
TOTAL	.9952-00			.9984-00(.118-03)	-.1585-02(.118-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	.001830(.1350)	1.0000	.71.0850(.0504)	.13616+12(.170+04)
PU240	17.2730(.6430)	.3201-00(.902-03)	22.7536(.0500)	.50130+12(.300+10)
PU241	2.3100(.0060)	.7277-01(.380-03)	5.3866(.0278)	.57600+10(.100+09)
PU242	.2340(.0005)	.1090-01(.118-03)	.7748(.0083)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3311-02(.7501-04)	.3825-02(.1929-04)	-.5137-03(.7745-04)
PU240	.1064-02(.2409-04)	.8275-03(.4641-05)	.2369-03(.2454-04)
PU241	.2530-03(.5892-05)	.1132-03(.6441-06)	.1398-03(.5927-05)
PU242	.3655-04(.9172-06)	.1130-04(.6165-07)	.2524-04(.9193-06)
TOTALS	.4665-02(.1055-03)	.4777-02(.2400-04)	-.1117-03(.1082-03)

FISSIONS

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.1154-02(.4852-04)	1107.5	.0628(.0014)	.0636(.0064)	202
U-238	.1096-03(.1151-04)	107.5	.0620(.0060)		209
PU239	.3595-03(.6567-04)	354.4	.0674(.0019)	.0826(.0083)	211
PU241	.6795-04(.6039-05)	67.4	.0660(.0033)	.0855(.0085)	214
TOTALS	.1691-02(.4580-04)	1636.8			

U235/U238 BOL=.8044(.0068) ALPHA-235=.1905(.0101) ALPHA-239=1.3072(.4408) PU239 FORMED FROM U238=.3152-03(.13-03)

INPUT DATA

CESIUM-137 DECAYS=.8850+09(.1770+08)D/M/ML

PU DECAYS=.7259+08(.1452+07)D/M/ML

PERCENT DECAYS BY PU238= 8.70

SAMPLE WT=25.838GM CLAD WT=6.807GM

SOLUTION VOL=255.0ML

SAMPLE WT=25.838GM CLAD WT=6.807GM

SOLUTION VOL=255.0ML

TIME OUT OF REACTOR=.847YRS

BOL PU241 DECAY CORRECTION TIME=.389YEARS

CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0057

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS

PU241 HALF LIFE=14.5(0.5)YEARS

ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5187 ANALYSIS OF THE SAMPLE 36.00 INCHES FROM THE TOP OF THE CENTER ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5402-04(.288-05)	.0054(.0003)	.5242-04(.284-05)	.2658-05(.284-05)
U-235	.7076-02	.5639-02(.462-04)	.5606(.0046)	.5495-02(.457-04)	-.1581-02(.457-04)
U-236	.0000	.2492-03(.104-04)	.0248(.0010)	.2439-03(.103-04)	.2439-03(.103-04)
U-238	.9881-00	1.0000	99.4093(.0047)	.9916-00(.140-03)	-.1136-02(.140-03)
TOTAL	.9952-00			.9975-00(.132-03)	-.2479-02(.132-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	30.1830(.8350)	1.0000	70.1587(.0592)	.13616+12(.170+09)
PU240	17.2730(.4430)	.3320-00(.108-02)	23.2934(.0590)	.56130+12(.300+10)
PU241	2.3100(.0020)	.7813-01(.477-03)	5.6862(.0337)	.57600+10(.100+09)
PU242	.2340(.0085)	.1228-01(.136-03)	.8618(.0095)	.87000+10(.200+09)

ISOTOPE	BOL (GM)	EOL (GM)	NET PRODUCTION (GM)
PU239	.3635-02(.8243-04)	.3825-02(.1929-04)	-.1906-03(.8465-04)
PU240	.1212-02(.2745-04)	.8275-03(.4841-05)	.3343-03(.2784-04)
PU241	.2970-03(.6986-05)	.1132-03(.6441-06)	.1838-03(.7015-05)
PU242	.4520-04(.1140-05)	.1130-04(.6165-07)	.3390-04(.1142-05)
TOTALS	.5139-02(.1174-03)	.4777-02(.2400-04)	.4115-03(.1109-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MW/MT)	FISSION YIELD	DEL	REV/FISSION
U-235	.1132-02(.4687-04)	1278.8	.0626(.0014)	.0636(.0004)	202
U-238	.1349-03(.1382-04)	132.3	.0620(.0060)		209
PU239	.5438-03(.7140-04)	496.5	.0674(.0019)	.0826(.0083)	211
PU241	.9125-04(.0011-05)	90.5	.0660(.0033)	.0855(.0085)	214
TOTALS	.2.62-02(.0066-04)	1998.0			

U235/U238 = .7766(.0084) ALPHA-235 = .1867(.0112) ALPHA-239 = .13767(.3511) PU239 FORMED FROM U238 = .1006-02(.14-03)

INPUT DATA
 CESIUM-137 DECAYS = .1100+10(.2200+08)D/M/ML
 PU DECAYS = .8201+08(.1858+17)D/M/ML
 PERCENT DECAYS BY PU238 = .10
 SAMPLE T = 26.4800M CL D WTR = .8826M
 SOLUTION VOL = 78.7ML
 TIME OUT OF REACTOR = .767 YRS
 BOL PU241 DECAY CORRECTION TIME = .350 YEARS
 CESIUM-137 REACTOR DECAY CORRECTION = 1.0057

ASSUMPTIONS
 CESIUM-137 HALF LIFE = 29.68(.10) YEARS
 PU241 HALF LIFE = 14.5(0.5) YEARS
 ALPHA241 = .370(.030)

--- QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT E187 ANALYSIS OF THE SAMPLE 45.00 INCHES FROM THE TOP OF THE CENTER ROD

ISOTOPIC INVENTORY

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5482-04(.260-05)	.0054(.0003)	.5321-04(.259-05)	.3445-05(.259-05)
U-235	.7076-02	.5508-02(.403-04)	.5555(.0040)	.5447-02(.399-04)	-.1629-02(.399-04)
U-236	.0000	.2550-03(.615-05)	.0253(.0006)	.2496-03(.615-05)	.2496-03(.615-05)
U-238	.9881-00	1.0000	99.4137(.0040)	.9919-00(.135-03)	-.8747-03(.135-03)
TOTAL	.9952-00			.9977-00(.128-03)	-.2261-02(.128-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	80.1830(.0350)	1.0000	70.4060(.0508)	.13616+12(.170+09)
PU240	17.2730(.0430)	.3283-00(.911-03)	23.1171(.0499)	.50130+12(.300+10)
PU241	2.3100(.0060)	.7708-01(.427-03)	5.6296(.0304)	.57600+10(.100+09)
PU242	.2340(.0005)	.1203-01(.128-03)	.8473(.0090)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3537-02(.8014-04)	.3825-02(.1929-04)	-.2678-03(.8243-04)
PU240	.1186-02(.2641-04)	.8275-03(.4841-05)	.3388-03(.2681-04)
PU241	.2852-03(.6662-05)	.1132-03(.6441-06)	.1720-03(.6693-05)
PU242	.4311-04(.1079-05)	.1130-04(.6165-07)	.3180-04(.1080-05)
TOTALS	.5032-02(.1138-03)	.4777-02(.2400-04)	.2548-03(.1163-03)

FISSIONS

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.1374-02(.4032-04)	1319.3	.0628(.0014)	.0636(.0064)	202
U-238	.1293-03(.1317-04)	126.8	.0620(.0060)		209
PU239	.4088-03(.6609-04)	403.0	.0674(.0019)	.0826(.0083)	211
PU241	.8560-04(.7525-05)	84.9	.0660(.0033)	.0855(.0085)	214
TOTALS	.1498-02(.5415-04)	1934.0			

U235/U238BOL=.7698(.0056) ALPHA-235=.1854(.0076) ALPHA-239=1.5364(.4287) PU239 FORMED FROM U238=.7485-03(.13-03)

INPUT DATA

CESIUM-137 DECAYS=1040+10(.2080+08)D/M/ML
 PU DECAYS=.7859+08(.1572+07)D/M/ML
 PERCENT DECAYS BY PU238= 9.30
 SAMPLE WT=25.415GM CLAD WT=6.616GM
 PU DECAYS=.7859+08(.1572+07)D/M/ML
 PERCENT DECAYS BY PU238= 9.30
 SAMPLE WT=25.415GM CLAD WT=6.616GM
 SOLUTION VOL=253.7ML
 TIME OUT OF REACTOR= .767YRS
 BOL PU241 DECAY CORRECTION TIME= .389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0057

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT #187 ANALYSIS OF THE SAMPLE 55.00 INCHES FROM THE TOP OF THE CENTER ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5167-04(.324-05)	.0051(.0003)	.5014-04(.324-05)	.3830-06(.324-05)
U-235	.7076-02	.5767-02(.501-04)	.5732(.0049)	.5620-02(.495-04)	-.1456-02(.495-04)
U-236	.0000	.2396-03(.537-05)	.0238(.0005)	.2345-03(.534-05)	.2345-03(.534-05)
U-238	.9881-00	1.0000	.993978(.0050)	.9917-00(.139-03)	-.1051-02(.139-03)
TOTAL	.9952-00			.9977-00(.130-03)	-.2277-02(.130-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	50.1830(.1350)	1.0000	71.0369(.0727)	.13616+12(.170+09)
PU240	17.2730(.1430)	.3195-00(.132-02)	22.6963(.0732)	.50130+12(.300+10)
PU241	2.3100(.0680)	.7431-01(.531-03)	5.4759(.0379)	.57600+10(.100+09)
PU242	.2340(.0065)	.1113-01(.125-03)	.7910(.0088)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3685-02(.8301-04)	.3825-02(.1929-04)	-.1700-03(.8522-04)
PU240	.1173-02(.2660-04)	.8275-03(.4041-05)	.3452-03(.2700-04)
PU241	.2841-03(.6772-05)	.1132-03(.6441-06)	.1709-03(.6803-05)
PU242	.4181-04(.1044-05)	.1130-04(.6165-07)	.2991-04(.1046-05)
TOTALS	.5193-02(.1167-03)	.4777-02(.2400-04)	.3761-03(.1191-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (%W/M/TM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.1117-02(.4978-04)	1168.4	.0628(.0014)	.0636(.0064)	202
U-238	.1242-03(.1268-04)	121.8	.0620(.0060)		209
PU239	.4743-02(.7020-04)	467.7	.0674(.0019)	.0826(.0083)	211
PU241	.3050-04(.7108-05)	79.8	.0660(.0033)	.0855(.0085)	214
TOTALS	.1896-02(.5119-04)	1837.7			

U235/U238RLE=.7943(.0670) ALPHA-235=.1959(.0095) ALPHA-239=1.3206(.3657) PU239 FORMED FROM U238=.9303-03(.14-03)

INPUT DATA

CESIUM-137 DECAYS=.9160+00(.1832+08)D/M/ML
 PU DECAYS=.7312+08(.1460+17)D/M/ML
 PERCENT DECAYS BY PU238=.00
 SAMPLE T=23.835GM CL D WT=.4126M
 SOLUTION VOL=.94.6ML
 TIME OUT OF REACTOR=.767YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN REACTOR DECAY CORRECTION=1.0057

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5147 ANALYSIS OF THE SAMPLE 65.00 INCHES FROM THE TOP OF THE CENTER ROD

ISOTOPIC INVENTORY

ISOTOPE	EOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5716-04(.401-05)	.0057(.0004)	.5547-04(.398-05)	.5713-05(.398-05)
U-235	.7076-02	.5973-02(.467-04)	.5936(.0046)	.5822-02(.461-04)	-.1255-02(.461-04)
U-236	.0000	.2051-03(.550-05)	.0204(.0005)	.2008-03(.547-05)	.2008-03(.547-05)
U-238	.9881-00	1.0000	.993803(.0047)	.9918-00(.136-03)	-.9941-03(.136-03)
TOTAL	.9952-00			.9979-00(.128-03)	-.2051-02(.128-03)

ISOTOPE	EOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	80.1830(.0350)	1.0000	72.4538(.0718)	.13616+12(.170+09)
PU240	17.2730(.0430)	.3025-00(.125-02)	21.9173(.0714)	.50130+12(.300+10)
PU241	2.3100(.0080)	.6615-01(.512-03)	4.9718(.0373)	.57600+10(.100+09)
PU242	.2340(.0005)	.9070-02(.120-03)	.6572(.0086)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3759-02(.8530-04)	.3825-02(.1929-04)	-.6613-04(.8746-04)
PU240	.1142-02(.2589-04)	.8275-03(.4641-05)	.3144-03(.2630-04)
PU241	.2601-03(.6244-05)	.1132-03(.6441-06)	.1469-03(.6277-05)
PU242	.3482-04(.9061-06)	.1130-04(.6165-07)	.2322-04(.9082-06)
TOTALS	.5195-02(.1176-03)	.4777-02(.2400-04)	.4184-03(.1200-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.1151-02(.4641-04)	1009.0	.0628(.0014)	.0636(.0064)	202
U-238	.1067-03(.1117-04)	104.7	.0620(.0060)		209
PU239	.4107-03(.8296-04)	404.9	.0674(.0019)	.0826(.0083)	211
PU241	.6150-04(.5626-05)	62.0	.0660(.0033)	.0855(.0085)	214
TOTALS	.1831-02(.4406-04)	1580.5			

U235/U235B1L=.8227(.0065) ALPHA-235=.1936(.0105) ALPHA-239=1.3314(.4154) PU239 FORMED FROM U238=.8911-03(.14-03)

INPUT DATA

CESIUM-137 DECAYS=.1220+10(.2440+08)D/M/ML
 PU DECAYS=.1111+09(.2222+07)D/M/ML
 PERCENT DECAYS BY PU238= 6.50
 SAMPLE WT=32.502GM CLAD WT=6.00PGM
 PU DECAYS=.1111+09(.2222+07)D/M/ML
 PERCENT DECAYS BY PU238= 6.50
 SAMPLE WT=32.502GM CLAD WT=6.00PGM
 SOLUTION VOL=249.4ML
 TIME OUT OF REACTOR=.767YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0057

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 4187 ANALYSIS OF THE SAMPLE 75.00 INCHES FROM THE TOP OF THE CENTER ROD

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

ISOTOPE	EOI (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5476-04(.363-05)	.0054(.0004)	.5317-04(.363-05)	.3408-05(.363-05)
U-235	.7076-02	.6251-02(.521-04)	.6211(.0052)	.6096-02(.521-04)	-.9805-03(.521-04)
U-236	.0000	.1827-03(.357-05)	.0162(.0004)	.1593-03(.355-05)	.1593-03(.355-05)
U-238	.9881-00	1.0000	99.3573(.0052)	.9923-00(.130-03)	-.4907-03(.130-03)
TOTAL	.9952-00			.9987-00(.119-03)	-.1314-02(.119-03)

ISOTOPE	EOI (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	80.1830(.1350)	1.0000	74.0493(.0527)	.13616+12(.170+09)
PU240	17.2730(.1430)	.2831-00(.072-02)	20.9634(.0514)	.50130+12(.300+10)
PU241	2.3100(.1060)	.5789-01(.364-03)	4.4468(.0274)	.57600+10(.100+09)
PU242	.7360(.105)	.7300-02(.110-03)	.5406(.0088)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3711-02(.6375-04)	.3825-02(.1029-04)	-.1245-03(.8594-04)
PU240	.1012-02(.2380-04)	.8275-03(.4541-05)	.2246-03(.2425-04)
PU241	.2241-03(.5270-05)	.1132-03(.0441-06)	.1109-03(.5309-05)
PU242	.2735-04(.7632-06)	.1130-04(.0165-07)	.1605-04(.7657-06)
TOTALS	.5064-02(.1131-03)	.4777-02(.2400-04)	.2270-03(.1156-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MMB/MT)	FISSION YIELD	DEL	MEV/FISSION
U-235	.6194-03(.5222-04)	786.9	.0625(.0014)	.0636(.0064)	202
U-238	.6906-04(.073-05)	67.7	.0625(.0060)		209
PU239	.1335-03(.5562-04)	151.4	.0674(.0019)	.0826(.0083)	211
PU241	.4320-04(.4064-05)	42.8	.0680(.0033)	.0855(.0085)	214
TOTALS	.1166-02(.2977-04)	1048.9			

U235/U238= .8614(.0073) ALPHA-235=.1941(.0135) ALPHA-239=2.5707(****) PU239 FORMED FROM U238=.4234-03(.13-03)

INPUT DATA

CESIUM-137 DECAYS=.5440+0(.108+08)D/M/ML
 PU DECAYS=.7118+08(.1426+7)D/M/ML
 PERCENT DECAYS BY PU238=.60
 SAMPLE T=24.4256M CLD WT=.5596G
 SOLUTION VOL=.49.6ML
 TIME OUT OF REACTOR=.767 FS
 BOL PU241 DECAY CORRECTION TIME=.369 YEARS
 CESIUM-137 IN REACTOR DECAY CORRECTION=1.0057

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10) YEARS
 PU241 HALF LIFE=14.5(0.5) YEARS
 ALPHA241=.370(.030)

-----ACTIVITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5187 ANALYSIS OF THE SAMPLE 85.00 INCHES FROM THE TOP OF THE CENTER ROD

ISOTOPIC INVENTORY

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5124-04(.267-05)	.0051(.0003)	.4977-04(.265-05)	.8934-08(.265-05)
U-235	.7076-02	.6569-02(.472-04)	.6525(.0047)	.6408-02(.472-04)	-.6679-03(.472-04)
U-236	.0000	.1134-03(.402-05)	.0113(.0004)	.1111-03(.399-05)	.1111-03(.399-05)
U-238	.9881-00	1.0000	.993311(.0047)	.9926-00(.120-03)	-.1101-03(.120-03)
TOTAL	.9952-00			.9993-00(.110-03)	-.6678-03(.110-03)

ISOTOPE	EOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	80.1830(.1350)	1.0000	75.6738(.0537)	.13616+12(.170+09)
PU240	17.2730(.0430)	.2681-00(.893-03)	20.2912(.0540)	.50130+12(.300+10)
PU241	2.3100(.0060)	.4602-01(.264-03)	3.6126(.0206)	.57600+10(.100+04)
PU242	.2340(.0005)	.5583-02(.624-04)	.4225(.0047)	.87000+10(.200+04)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3524-02(.7974-04)	.3825-02(.1929-04)	-.3003-03(.8204-04)
PU240	.9460-03(.2147-04)	.8275-03(.4641-05)	.1215-03(.2197-04)
PU241	.1607-03(.3965-05)	.1132-03(.6441-06)	.5645-04(.4017-05)
PU242	.1902-04(.5028-06)	.1130-04(.6165-07)	.8620-05(.5066-06)
TOTALS	.4663-02(.1053-03)	.4777-02(.2400-04)	-.1142-03(.1080-03)

FISSIONS

ISOTOPE	FISSIONS (GM)	FURNUP (MW/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.5564-03(.4740-04)	534.1	.0628(.0014)	.0636(.0064)	202
U-238	.5023-04(.6312-05)	49.3	.0620(.0060)		209
PU239	.1513-03(.5194-04)	149.2	.0674(.0019)	.0826(.0083)	211
PU241	.2320-04(.2323-05)	23.0	.0660(.0033)	.0855(.0085)	214
TOTALS	.7811-03(.2127-04)	755.5			

U235/U238(LF=.9056(.0066) ALPHA-235=.2005(.0191) ALPHA-239=1.3865(****) PU239 FORMED FROM U238=.6008-04(.12-03)

INPUT DATA

CESIUM-137 DECAYS=.4310+06(.8620+07)D/M/ML
 PU DECAYS=.7108+08(.1440+07)D/M/ML
 PERCENT DECAYS BY PU238= 5.90
 SAMPLE WT=25.1626M CLAD WT=5.3566M
 SOLUTION VOL=251.9ML
 SOLUTION VOL=251.9ML
 TIME OUT OF REACTOR= .767YRS
 BOL PU241 DECAY CORRECTION TIME= .389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0057

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 0187 ANALYSIS OF THE SAMPLE 3.00 INCHES FROM THE TOP OF THE MIDDLE ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5707-04(.377-05)	.0057(.0004)	.5598-04(.374-05)	.6220-05(.374-05)
U-235	.7076-02	.6652-02(.393-04)	.6607(.0039)	.6485-02(.393-04)	-.5914-03(.393-04)
U-236	.0000	.1109-03(.380-05)	.0110(.0004)	.1086-03(.377-05)	.1086-03(.377-05)
U-238	.9881-00	1.0000	99.3226(.0040)	.9920-00(.126-03)	-.7914-03(.126-03)
TOTAL	.9952-00			.9987-00(.119-03)	-.1275-02(.119-03)

ISOTOPE	EOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	50.1830(.1350)	1.0000	75.8754(.5517)	.13616+12(.170+00)
PU240	17.2730(.4430)	.2668-00(.854-03)	20.2428(.5519)	.50130+12(.300+10)
PU241	2.3100(.0000)	.4434-01(.256-03)	3.4808(.0199)	.57600+10(.100+00)
PU242	.2340(.0005)	.5285-02(.715-04)	.4010(.0054)	.87000+10(.200+00)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3813-02(.8601-04)	.3825-02(.1929-04)	-.2250-04(.8815-04)
PU240	.1019-02(.2305-04)	.0275-03(.4641-05)	.1913-03(.2351-04)
PU241	.1739-03(.4112-05)	.1132-03(.6441-06)	.6270-04(.4162-05)
PU242	.2035-04(.5362-06)	.1130-04(.6165-07)	.9046-05(.5368-06)
TOTALS	.5018-02(.1133-03)	.4777-02(.2400-04)	.2404-03(.1158-03)

F I S S I O N S

ISOTOPE	ISOTOPE (GM)	BURNUP (MW/MTM)	FISSIION YIELD	DEL	DEL/FISSIION
U-235	.4026-03(.5950-04)	463.3	.0620(.0014)	.0609(.0061)	202
U-238	.6696-04(.7239-05)	65.7	.0620(.0060)		204
PU239	.4020-03(.4315-04)	556.4	.0674(.0019)	.0706(.0077)	211
PU241	.2433-04(.2451-05)	24.1	.0660(.0033)	.0799(.0030)	214
TOTALS	.1437-02(.2668-04)	1009.5			

U-235/U-238 = .5144(.0085) ALPHA-235 = .2245(.0207) ALPHA-239 = .6205(.3211) PU239 FORMED FROM U-238 = .7275-03(.13-03)

INPUT DATA

CESIUM-137 DECAYS=.6370+00(.1274+08)D/M/ML
 PU DECAYS=.8045+08(.1729+7)D/M/ML
 PERCENT DECAYS BY PU238= 7.50
 SAMPLE T=27.7126M CLAD WT=6.1226M
 SOLUTION VOL=350.3ML
 TIME OUT OF REACTOR=.7126YRS
 BOL PU241 DECAY CORRECTION TIME= .369YEARS
 CESIUM-137 IN REACTOR DECAY CORRECTION=1.0057

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

----- QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5187 ANALYSIS OF THE SAMPLE 13.00 INCHES FROM THE TOP OF THE MIDDLE ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5121-04(.237-05)	.0051(.0002)	.4969-04(.236-05)	-.7005-07(.236-05)
U-235	.7076-02	.6291-02(.344-04)	.6250(.0034)	.6131-02(.339-04)	-.9453-03(.339-04)
U-236	.0000	.1416-03(.476-05)	.0141(.0005)	.1386-03(.473-05)	.1386-03(.473-05)
U-238	.9881-00	1.0000	.993558(.0034)	.9916-00(.131-03)	-.1116-02(.131-03)
TOTAL	.9952-00			.9981-00(.126-03)	-.1925-02(.126-03)

ISOTOPE	EOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	.80.1830(.0350)	1.0000	74.1571(.0483)	.13616+12(.170+09)
PU240	17.2730(.0430)	.2861-00(.820-03)	21.2186(.0482)	.50130+12(.360+10)
PU241	2.3100(.0060)	.5366-01(.287-03)	4.1170(.0218)	.57600+10(.100+09)
PU242	.2340(.0005)	.6841-02(.777-04)	.5073(.0057)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3824-02(.8652-04)	.3825-02(.1929-04)	-.1314-05(.8864-04)
PU240	.1099-02(.2485-04)	.8275-03(.4641-05)	.2712-03(.2528-04)
PU241	.2141-03(.4983-05)	.1132-03(.6441-06)	.1009-03(.5024-05)
PU242	.2649-04(.6706-06)	.1130-04(.6165-07)	.1518-04(.6735-06)
TOTALS	.5163-02(.1167-03)	.4777-02(.2400-04)	.3860-03(.1191-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MW/D/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.8054-03(.3426-04)	773.1	.0628(.0014)	.0609(.0061)	202
U-238	.9829-04(.1000-04)	96.4	.0620(.0060)		209
PU239	.5956-02(.5299-04)	587.2	.0674(.0019)	.0766(.0077)	211
PU241	.4087-04(.3777-05)	40.5	.0660(.0033)	.0799(.0080)	214
TOTALS	.1540-02(.4205-04)	1497.3			

U235/U235BOL=.8664(.0048) ALPHA-235=.1736(.0101) ALPHA-239=.7186(.2574) PU239 FORMED FROM U235=.1022-02(.13-03)

INPUT DATA

CESIUM-137 DECAYS=.9900+09(.1980+08)D/M/ML
 PU DECAYS=.9444+08(.1889+07)D/M/ML
 PERCENT DECAYS BY PU238= 7.40
 SAMPLE WT=28.8476GM CLAD WT=5.7366GM
 SOLUTION VOL=255.3ML
 PU DECAYS=.9444+08(.1889+07)D/M/ML
 PERCENT DECAYS BY PU238= 7.40
 SAMPLE WT=28.8476GM CLAD WT=5.7366GM
 SOLUTION VOL=255.3ML
 TIME OUT OF REACTOR=.712YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0057

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5187 ANALYSIS OF THE SAMPLE 24.00 INCHES FROM THE TOP OF THE MIDDLE ROD

ISOTOPIC INVENTORY

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5037-04(.264-05)	.0050(.0003)	.4886-04(.264-05)	-.9012-06(.264-05)
U-235	.7076-02	.6188-02(.474-04)	.6148(.0047)	.5028-02(.468-04)	-.1048-02(.468-04)
U-236	.0000	.1983-03(.355-05)	.0197(.0004)	.1940-03(.353-05)	.1940-03(.353-05)
U-238	.9881-00	1.0000	.99.3605(.0047)	.9913-00(.139-03)	-.1474-02(.139-03)
TOTAL	.9952-00			.9977-00(.131-03)	-.2330-02(.131-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	10.1836(.350)	1.0000	71.8140(.0733)	.13616+12(.170+04)
PU240	17.2730(.430)	.3143-00(.135-02)	22.5712(.0755)	.50130+12(.300+10)
PU241	2.3100(.080)	.6645-01(.392-03)	4.9372(.0291)	.57600+16(.160+04)
PU242	.7346(.0055)	.9435-02(.112-03)	.6776(.0084)	.87000+16(.200+04)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3624-02(.8323-04)	.3825-02(.1229-04)	-.1606-03(.8544-04)
PU240	.1107-02(.2624-04)	.8275-03(.4641-05)	.3291-03(.2664-04)
PU241	.2500-03(.5975-05)	.1132-03(.0641-06)	.1403-03(.6009-04)
PU242	.3501-04(.9076-06)	.1130-04(.0165-07)	.2371-04(.9027-06)
TOTALS	.5110-02(.1157-03)	.4777-02(.2400-04)	.3330-03(.1161-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MW/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.0523-03(.4693-04)	818.2	.0620(.0014)	.0609(.0061)	202
U-238	.1303-03(.1329-04)	127.7	.0620(.0060)		203
PU239	.0233-03(.7123-04)	939.8	.0674(.0019)	.0766(.0077)	211
PU241	.0200-04(.3723-05)	63.3	.0680(.0033)	.0799(.0030)	214
TOTALS	.2000-02(.3372-04)	1049.0			

U-235/238 = .04512(.6066) ALPHA-235 = .2205(.0134) ALPHA-239 = .5845(.1542) PU239 FORMED FROM U235 = .1350-02(.14-03)

INPUT DATA

CESTIM-137 DECAY = .1980+1 (.3100+03) D/M/ML
 PU241 DECAY = .115+03(.2310+07) D/M/ML
 PERCENT DECAY: U-238 = .50
 SAMPLE WT = 72.5 GM CLAD WT = .4006G
 SOLUTION VOL = 47.2ML
 TIME OUT OF REACTOR = .712 YRS
 BOL PU241 DECAY CORRECTION TIME = .309 YEARS
 CESTIM-137 INTERACTOR DECAY CORRECTION = .0057

ASSUMPTIONS

CESTIM-137 HALF LIFE = 29.68(.10) YEARS
 PU241 HALF LIFE = 14.5(0.5) YEARS
 ALPHA241 = .376(.030)

----- QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT #187 ANALYSIS OF THE SAMPLE 36.00 INCHES FROM THE TOP OF THE MIDDLE ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5169-04(.228-05)	.0051(.0002)	.5013-04(.225-05)	.3670-06(.225-05)
U-235	.7076-02	.5014-02(.333-04)	.5878(.0033)	.5760-02(.329-04)	-.1316-02(.329-04)
U-236	.0000	.2195-03(.487-05)	.0218(.0005)	.2147-03(.484-05)	.2147-03(.484-05)
U-238	.9881-00	1.0000	.99.3853(.0033)	.9911-00(.141-03)	-.1676-02(.141-03)
TOTAL	.9952-00			.9972-00(.137-03)	-.2782-02(.137-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	60.1830(.0350)	1.0000	71.5135(.0583)	.13616+12(.170+09)
PU240	17.2730(.0430)	.3193-00(.106-02)	22.8342(.0591)	.50130+12(.300+10)
PU241	2.3100(.0060)	.6711-01(.375-03)	4.9654(.0272)	.57600+10(.100+09)
PU242	.2340(.0005)	.9605-02(.108-03)	.6869(.0077)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3758-02(.8520-04)	.3825-02(.1929-04)	-.6689-04(.8736-04)
PU240	.1205-02(.2730-04)	.8275-03(.4641-05)	.3776-03(.2769-04)
PU241	.2631-03(.6151-05)	.1132-03(.6441-06)	.1499-03(.6185-05)
PU242	.3655-04(.9246-06)	.1130-04(.6165-07)	.2525-04(.9267-06)
TOTALS	.5263-02(.1191-03)	.4777-02(.2400-04)	.4859-03(.1215-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MW/D/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.1098-02(.3328-04)	1054.2	.0628(.0014)	.0609(.0061)	202
U-238	.1479-03(.1475-04)	145.1	.0620(.0060)		209
PU239	.9817-03(.6925-04)	967.8	.0674(.0019)	.0766(.0077)	211
PU241	.6796-04(.6048-05)	67.4	.0660(.0033)	.0799(.0080)	214
TOTALS	.2296-02(.6316-04)	2234.5			

U235/U238 BOL=.8140(.0046) ALPHA-235=.1983(.0080) ALPHA-239=.6323(.1589) PU239 FORMED FROM U238=.1535-02(.14-03)

INPUT DATA

CESIUM-137 DECAYS=.1960+10(.3920+08)D/M/ML
 PU DECAYS=.1331+09(.2662+07)D/M/ML
 PERCENT DECAYS BY PU238= 0.30
 SAMPLE WT=37.736GM CLAD WT=7.157GM
 SOLUTION VOL=54.9ML
 PERCENT DECAYS BY PU238= 0.30
 SAMPLE WT=37.736GM CLAD WT=7.157GM
 SOLUTION VOL=54.9ML
 TIME OUT OF REACTOR=.712YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0057

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5137 ANALYSIS OF THE SAMPLE 45.00 INCHES FROM THE TOP OF THE MIDDLE ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.4032-04(.248-05)	.0049(.0002)	.4785-04(.248-05)	-.1916-05(.248-05)
U-235	.7076-02	.5872-02(.463-04)	.5836(.0046)	.5720-02(.458-04)	-.1356-02(.458-04)
U-236	.0000	.2045-03(.545-05)	.0203(.0005)	.2000-03(.545-05)	.2000-03(.545-05)
U-238	.9981-00	1.0000	.993912(.0046)	.9913-00(.142-03)	-.1479-02(.142-03)
TOTAL	.9952-00			.9974-00(.134-03)	-.2639-02(.134-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	20.1830(.0350)	1.0000	72.4298(.0535)	.13616+12(.170+09)
PU240	17.2730(.0430)	.3079-00(.949-03)	22.3026(.0537)	.50130+12(.300+10)
PU241	2.3100(.0500)	.6204-01(.344-03)	4.6491(.0253)	.57600+10(.100+09)
PU242	.2340(.0050)	.8540-02(.920-04)	.6186(.0066)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.2747-02(.8487-04)	.3825-02(.1929-04)	-.7022-04(.8704-04)
PU240	.1119-02(.2623-04)	.8275-03(.4041-05)	.3311-03(.2604-04)
PU241	.2425-03(.5662-05)	.1132-03(.0441-06)	.1293-03(.5609-05)
PU242	.3240-04(.8126-06)	.1130-04(.0165-07)	.2110-04(.8150-06)
TOTALS	.5140-02(.1171-03)	.4777-02(.2400-04)	.4033-03(.1136-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MW/MTU)	FISSION YIELD	DEL	DEL/FISSION
U-235	.1152-02(.8609-04)	1106.2	.0620(.0014)	.0609(.0061)	202
U-238	.1020-03(.1046-04)	140.1	.0620(.0060)		209
PU239	.8026-03(.7464-04)	870.2	.0674(.0019)	.0766(.0077)	211
PU241	.5678-04(.5100-05)	56.3	.0660(.0033)	.0799(.0080)	214
TOTALS	.2235-02(.5111-04)	2172.8			

U-235/U-238 = .6094(.0064) ALPHA-235 = .1785(.0090) ALPHA-239 = .6090(.1754) PU239 FORMED FROM U-238 = .1342-02(.14-03)

INPUT DATA

CESIUM-137 DECAYS=.1680+10(.3360+08)D/M/ML
 PU DECAYS=.1100+09(.2296+7)D/M/ML
 PERCENT DECAYS BY PU239=.30
 SAMPLE WT=32.7100 CL D WT=.35200
 SOLUTION VOL=49.1ML
 TIME OUT OF REACTOR=.712 RS
 BOL PU241 DECAY CORRECTION TIME=.369YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0057

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

----- ACTIVITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 187 ANALYSIS OF THE SAMPLE 55.00 INCHES FROM THE TOP OF THE MIDDLE ROD

ISOTOPIC INVENTORY

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.4928-04(.250-05)	.0049(.0003)	.4781-04(.257-05)	-.1953-05(.257-05)
U-235	.7076-02	.6039-02(.363-04)	.6001(.0036)	.5884-02(.364-04)	-.1192-02(.364-04)
U-236	.0000	.1862-03(.483-05)	.0187(.0005)	.1842-03(.480-05)	.1842-03(.480-05)
U-238	.9881-00	1.0000	99.3763(.0037)	.9914-00(.135-03)	-.1328-02(.135-03)
TOTAL	.9952-00			.9977-00(.130-03)	-.2339-02(.130-03)

ISOTOPE	EOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	10.1830(.1350)	1.0000	72.5411(.1485)	.13616+12(.170+09)
PU240	17.2730(.0430)	.3051-00(.833-03)	22.1316(.0475)	.50130+12(.300+10)
PU241	2.3100(.0060)	.6277-01(.363-03)	4.7110(.0266)	.57600+10(.100+09)
PU242	.2340(.0005)	.8496-02(.912-04)	.6163(.0066)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3708-02(.8393-04)	.3825-02(.1929-04)	-.1174-03(.8612-04)
PU240	.1136-02(.2570-04)	.8275-03(.4041-05)	.3085-03(.2612-04)
PU241	.2428-03(.5679-05)	.1132-03(.6441-06)	.1296-03(.5716-05)
PU242	.3100-04(.7991-06)	.1130-04(.6165-07)	.2059-04(.8014-06)
TOTALS	.5118-02(.1157-03)	.4777-02(.2400-04)	.3412-03(.1182-03)

FISSIONS

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.1106-02(.3672-04)	965.3	.0628(.0014)	.0609(.0061)	202
U-238	.1281-03(.1288-04)	125.6	.0620(.0060)		209
PU239	.8091-03(.0416-04)	797.7	.0674(.0019)	.0766(.0077)	211
PU241	.5543-04(.4985-05)	55.0	.0660(.0033)	.0799(.0080)	214
TOTALS	.1098-02(.5472-04)	1943.6			

U235/U238PCL=.8315(.0051) ALPHA-235=.1856(.0008) ALPHA-239=.6354(.1877) PU239 FORMED FROM U238=.1205-02(.13-03)

INPUT DATA

CESIUM-137 DECAYS=.1710+1(.3420+08)D/M/ML
 PU DECAYS=.1279+09(.2558+7)D/M/ML
 PERCENT DECAYS BY PU238= 8.80
 SAMPLE WT=36.9156GM CLAD WT=6.1886GM
 PU DECAYS=.1279+09(.2558+7)D/M/ML
 PERCENT DECAYS BY PU238= 8.80
 SAMPLE WT=36.9156GM CLAD WT=6.1886GM
 SOLUTION VOL=255.2ML
 TIME OUT OF REACTOR= .712YRS
 BOL PU241 DECAY CORRECTION TIME= .389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0057

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 9187 ANALYSIS OF THE SAMPLE 65.00 INCHES FROM THE TOP OF THE MIDDLE ROD

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

ISOTOPE	EOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5338-04(.318-05)	.0053(.0003)	.5179-04(.316-05)	.2030-05(.316-05)
U-235	.7076-02	.6287-02(.419-04)	.6246(.0041)	.6126-02(.413-04)	-.9496-03(.413-04)
U-236	.0000	.1862-03(.392-05)	.0165(.0004)	.1626-03(.390-05)	.1626-03(.390-05)
U-238	.9881-00	1.0000	98.3536(.0042)	.9916-00(.133-03)	-.1179-02(.133-03)
TOTAL	.9952-00			.9980-00(.126-03)	-.1968-02(.126-03)

ISOTOPE	EOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	20.1830(.1350)	1.0000	73.9291(.0498)	.13616+12(.170+09)
PU240	17.2730(.1430)	.2866-00(.836-02)	21.1844(.1490)	.50130+12(.300+10)
PU241	2.3100(.1060)	.5691-01(.336-03)	4.3530(.1251)	.57000+10(.100+06)
PU242	.2340(.1005)	.7217-02(.817-04)	.5335(.1060)	.87000+10(.200+04)

ISOTOPE	EOL (GM)	EOL (GM)	NET PRODUCTION (GM)
PU239	.3719-02(.8528-04)	.3825-02(.1529-04)	-.5619-04(.8744-04)
PU240	.1015-02(.2453-04)	.8275-03(.4441-05)	.2571-03(.2447-04)
PU241	.2238-03(.5238-05)	.1132-03(.6441-06)	.1106-03(.5277-05)
PU242	.2754-04(.6962-06)	.1130-04(.6165-07)	.1624-04(.6990-06)
TOTALS	.5115-02(.1154-03)	.4777-02(.2400-04)	.3277-03(.1178-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MM/MTR)	FISSION YIELD	DEL	MEV/FISSION
U-235	.7157-03(.1153-04)	754.3	.0520(.0014)	.0609(.0061)	202
U-238	.1857-03(.1086-04)	133.7	.0620(.0060)		209
PU239	.7008-03(.6010-04)	606.5	.0674(.0019)	.0766(.0077)	211
PU241	.4071-03(.4012-05)	43.3	.0600(.0033)	.0799(.0080)	214
TOTALS	.1442-03(.1541-04)	1097.8			

U-235/U-238=LE= .0053(.0003) ALPHA-235=.2016(.0120) ALPHA-239=.6052(.2140) PU239 FORMED FROM U-238=.1077-02(.13-03)

INPUT DATA

CESIUM-137 DE. LIF=.6030+00(.136+08)D/M/YR
 PU DECAYS=.6030+00(.1211+7)D/M/YR
 PERCENT DECAYS BY PU238=.00
 SAMPLE WT=17.516GM CL DWT=.157GM
 SOLUTION VOL=4.1ML
 TIME OUT OF REACTOR=.712 RS
 DEL PU241 DECAY CORRECTION TIME=.389YEA S
 CESIUM-137 IN-REACTOR DECAY CORRECTION=.0057

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5187 ANALYSIS OF THE SAMPLE 75.00 INCHES FROM THE TOP OF THE MIDDLE ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5467-04(.294-05)	.0054(.0003)	.5305-04(.292-05)	.3292-05(.292-05)
U-235	.7076-02	.6539-02(.421-04)	.6495(.0042)	.6373-02(.417-04)	-.7028-03(.417-04)
U-238	.0000	.1282-03(.355-05)	.0127(.0004)	.1255-03(.353-05)	.1255-03(.353-05)
U-238	.9881-00	1.0000	.993323(.0042)	.9918-00(.129-03)	-.9867-03(.129-03)
TOTAL	.9952-00			.9984-00(.122-03)	-.1565-02(.122-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	0.1830(.0350)	1.0000	75.1069(.0514)	.13616+12(.170+09)
PU240	17.2730(.0430)	.2728-00(.857-03)	20.4877(.0514)	.50130+12(.300+10)
PU241	2.3100(.0060)	.5085-01(.289-03)	3.9514(.0222)	.57600+10(.100+09)
PU242	.2340(.0005)	.6045-02(.656-04)	.4540(.0049)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3808-02(.8616-04)	.3825-02(.1929-04)	-.1675-04(.8829-04)
PU240	.1043-02(.2360-04)	.8275-03(.4641-05)	.2157-03(.2405-04)
PU241	.2020-03(.4718-05)	.1132-03(.6441-06)	.8883-04(.4762-05)
PU242	.2331-04(.5848-06)	.1130-04(.6165-07)	.1201-04(.5881-06)
TOTALS	.5077-02(.1147-03)	.4777-02(.2400-04)	.2998-03(.1172-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	EURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.5768-03(.4186-04)	553.7	.0628(.0014)	.0609(.0061)	202
U-238	.8207-04(.8674-05)	80.5	.0620(.0060)		209
PU239	.5765-03(.5378-04)	568.4	.0674(.0019)	.0766(.0077)	211
PU241	.3232-04(.3061-05)	32.0	.0660(.0033)	.0799(.0080)	214
TOTALS	.1268-02(.3513-04)	1234.7			

U235/U238 R/L=.9007(.0059) ALPHA-235=.2185(.0175) ALPHA-239=.6052(.2607) PU239 FORMED FROM U238=.9084-03(.13-03)

I N P U T D A T A

CESIUM-137 DECAYS=.8620+09(.1724+08)D/M/ML
 PU DECAYS=.9644+08(.1929+07)D/M/ML
 PERCENT DECAYS BY PU238= 7.10
 SAMPLE WT=30.505GM CLAD WT=6.204GM
 SOLUTION VOL=254.7ML
 TIME OUT OF REACTOR=.712YRS
 TIME OUT OF REACTOR=.712YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0057

A S S U M P T I O N S

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 1137 ANALYSIS OF THE SAMPLE 85.00 INCHES FROM THE TOP OF THE MIDDLE ROD

ISOTOPIC INVENTORY

ISOTOPE	EOL (GM)	EOL MASS RATIO	EOL (A/U)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4076-04	.5653-04(.371-05)	.0056(.0004)	.5489-04(.374-05)	.5124-05(.374-05)
U-235	.7076-02	.6730-02(.571-04)	.6684(.0057)	.5562-02(.571-04)	-.5141-03(.571-04)
U-236	.0000	.6412-04(.390-05)	.0084(.0004)	.5237-04(.387-05)	.8237-04(.387-05)
U-238	.9981-00	1.0000	.993176(.0057)	.9922-00(.130-03)	-.5893-03(.130-03)
TOTAL	.9952-00			.9990-00(.116-03)	-.1022-02(.116-03)

ISOTOPE	EOL (A/U)	EOL MASS RATIO	EOL (A/U)	SPECIFIC ACTIVITY (D/M/GM)
PU239	19.1830(.330)	1.0000	76.3998(.0452)	.13616+12(.170+00)
PU240	17.2730(.430)	.2597-00(.732-03)	19.8441(.0450)	.50130+12(.300+10)
PU241	2.160(.000)	.4273-01(.237-03)	3.3776(.1183)	.57000+10(.100+00)
PU242	.7340(.335)	.4955-02(.550-04)	.3786(.042)	.87000+10(.200+00)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3716-02(.8512-04)	.3825-02(.1929-04)	-.5914-04(.8728-04)
PU240	.9833-03(.2221-04)	.8275-03(.4041-05)	.1548-03(.2268-04)
PU241	.1679-03(.3900-05)	.1132-03(.0441-06)	.5468-04(.3901-04)
PU242	.1800-04(.4757-06)	.1130-04(.0195-07)	.7592-05(.4707-06)
TOTALS	.4915-02(.1114-03)	.4777-02(.2400-04)	.1579-03(.1140-03)

FISSIONS

ISOTOPE	INTEGRALS (GM)	BURNUP (MW/MTU)	FISSION YIELD	DEL	DEL/FISSION
U-235	.4111-04(.0745-04)	414.2	.0020(.0014)	.0609(.0061)	292
U-236	.5141-04(.0993-05)	54.4	.0020(.0060)		209
U-238	.3171-04(.1100-04)	352.8	.0674(.0019)	.0750(.0077)	211
U-241	.2141-04(.2100-05)	20.3	.0600(.0035)	.0799(.0000)	214
TOTALS	.6551-03(.2075-04)	841.7			

U235/U238 R/L=.5074(.0000) ALPHA-235=.1914(.0275) ALPHA-239=.6630(.4172) PU239 FORMED FROM U235=.5300-03(.13-13)

INPUT DATA

DESIGN-237 DELAYS=.7440+0(.1480+08)D/M/ML
 PU239CALS=.1112+09(.2324+7)D/M/ML
 PERCENT DELAY FOR PU238=.70
 SAMPLE TIME=7.1000% CL D WTR=.4740
 SOLUTION VOLUME=10.0VL
 TIME TO REACTOR=.712 RS
 BOL PU241 DELAY CORRECTION TIME=.70YEARS
 CESIUM-137 IN-REACTOR DELAY CORRECTION=.0057

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

----- ACTIVITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT #187 ANALYSIS OF THE SAMPLE 3.00 INCHES FROM THE TOP OF THE OUTSIDE ROD

ISOTOPIC INVENTORY

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5062-04(.382-05)	.0050(.0004)	.4911-04(.379-05)	-.6499-06(.379-05)
U-235	.7076-02	.6767-02(.510-04)	.6721(.0051)	.6594-02(.511-04)	-.4822-03(.511-04)
U-236	.0000	.9305-04(.440-05)	.0092(.0004)	.9105-04(.446-05)	.9105-04(.446-05)
U-238	.9881-00	1.0000	.99.3137(.0051)	.9915-00(.134-03)	-.1234-02(.134-03)
TOTAL	.9952-00			.9984-00(.123-03)	-.1625-02(.123-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	60.1830(.0350)	1.0000	76.3551(.0437)	.13616+12(.170+09)
PU240	17.2730(.0430)	.2611-00(.703-03)	19.9371(.0432)	.50130+12(.300+10)
PU241	2.3100(.0060)	.4143-01(.230-03)	3.3270(.0188)	.57600+10(.100+09)
PU242	.2340(.0005)	.4988-02(.535-04)	.3809(.0041)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3814-02(.8733-04)	.3825-02(.1929-04)	.3906-04(.8943-04)
PU240	.1013-02(.2290-04)	.8275-03(.4641-05)	.1857-03(.2337-04)
PU241	.1608-03(.3962-05)	.1132-03(.6441-06)	.5658-04(.4014-05)
PU242	.1952-04(.4883-06)	.1130-04(.6165-07)	.8214-05(.4921-06)
TOTALS	.5067-02(.1144-03)	.4777-02(.2400-04)	.2896-03(.1169-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MW/D/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.3911-03(.5131-04)	375.4	.0628(.0014)	.0491(.0049)	202
U-238	.6893-04(.7456-05)	67.6	.0620(.0060)		209
PU239	.8583-03(.6399-04)	846.2	.0674(.0019)	.0563(.0056)	211
PU241	.2211-04(.2229-05)	21.9	.0660(.0033)	.0604(.0060)	214
TOTALS	.1340-02(.3974-04)	1311.1			

U235/U238BOL=.9319(.0072) ALPHA-235=.2331(.0335) ALPHA-239=.3177(.1731) PU239 FORMED FROM U238=.1170-02(.13-03)

INPUT DATA

CESIUM-137 DECAYS=.8070+09(.1614+08)D/M/ML
 PU DECAYS=.8441+08(.1688+07)D/M/ML
 PERCENT DECAYS BY PU238= 0.90
 SAMPLE WT=27.7966GM CLAD WT=.9436GM
 CESIUM-137 DECAYS=.8070+09(.1614+08)D/M/ML
 PU DECAYS=.8441+08(.1688+07)D/M/ML
 PERCENT DECAYS BY PU238= 0.90
 SAMPLE WT=27.7966GM CLAD WT=.9436GM
 SOLUTION VOL=259.2ML
 TIME OUT OF REACTOR=1.055YRS
 BOL PU241 DECAY CORRECTION TIME= .389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0057

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)
 CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5187 ANALYSIS OF THE SAMPLE 13.00 INCHES FROM THE TOP OF THE OUTSIDE ROD

ISOTOPIC INVENTORY

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5902-04(.584-05)	.0059(.0006)	.5723-04(.584-05)	.7464-05(.584-05)
U-235	.7076-02	.6550-02(.462-04)	.6506(.0046)	.6379-02(.457-04)	-.6975-03(.457-04)
U-236	.0000	.1413-03(.386-05)	.0140(.0004)	.1382-03(.386-05)	.1382-03(.386-05)
U-238	.9881-00	1.0000	.993295(.0046)	.9909-00(.141-03)	-.1822-02(.141-03)
TOTAL	.9952-00			.9976-00(.134-03)	-.2382-02(.134-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	80.1830(.0350)	1.0000	75.0939(.0444)	.13616+12(.170+09)
PU240	17.2730(.0430)	.2739-00(.724-03)	20.5645(.0437)	.50130+12(.300+10)
PU241	2.3100(.0060)	.4923-01(.265-03)	3.8881(.0213)	.57600+10(.100+09)
PU242	.2340(.0005)	.6040-02(.629-04)	.4536(.0047)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3937-02(.8901-04)	.3825-02(.1929-04)	.1116-03(.9107-04)
PU240	.1083-02(.2448-04)	.8275-03(.4841-05)	.2551-03(.2491-04)
PU241	.2015-03(.4790-05)	.1132-03(.0641-06)	.9233-04(.4833-05)
PU242	.2408-04(.5993-06)	.1130-04(.6165-07)	.1277-04(.6025-06)
TOTALS	.5249-02(.1185-03)	.4777-02(.2400-04)	.4719-03(.1209-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.5588-03(.4587-04)	536.4	.0628(.0014)	.0491(.0049)	202
U-236	.9854-04(.1016-04)	96.6	.0620(.0060)		209
PU239	.1224-02(.7133-04)	1207.0	.0674(.0019)	.0563(.0056)	211
PU241	.3438-04(.3225-05)	34.1	.0660(.0033)	.0604(.0060)	214
TOTALS	.1916-02(.5676-04)	1874.2			

U235/U238BOL=.9014(.0064) ALPHA-235=.2482(.0221) ALPHA-239=.3223(.1251) PU239 FORMED FROM U238=.1730-02(.14-03)

INPUT DATA

CESIUM-137 DECAYS=.1220+10(.2440+08)D/M/ML
 PU DECAYS=.9447+08(.1891+07)D/M/ML
 PERCENT DECAYS BY PU238=.30
 SAMPLE WT=27.300GM CLAD WT=4.830GM
 SOLUTION VOL=252.1ML
 TIME OUT OF REACTOR=1.055 RS
 BOL PU241 DECAY CORRECTION TIME=.389 YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0057

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10) YEARS
 PU241 HALF LIFE=14.5(0.5) YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5187 ANALYSIS OF THE SAMPLE 24.00 INCHES FROM THE TOP OF THE OUTSIDE ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5050-04(.355-05)	.0050(.0004)	.4895-04(.353-05)	-.8160-06(.353-05)
U-235	.7076-02	.6242-02(.400-04)	.6202(.0039)	.6076-02(.395-04)	-.1000-02(.395-04)
U-236	.0000	.1733-03(.311-05)	.0172(.0003)	.1694-03(.309-05)	.1694-03(.309-05)
U-238	.9881-00	1.0000	.993576(.0040)	.9905-00(.149-03)	-.2252-02(.149-03)
TOTAL	.9952-00			.9969-00(.143-03)	-.3085-02(.143-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	80.1830(.0350)	1.0000	73.3744(.0479)	.13616+12(.170+09)
PU240	17.2730(.0430)	.2948-00(.818-03)	21.6322(.0473)	.50130+12(.300+10)
PU241	2.3100(.0060)	.5738-01(.307-03)	4.4280(.0240)	.57600+10(.100+09)
PU242	.2340(.0005)	.7706-02(.848-04)	.5654(.0062)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3930-02(.8892-04)	.3825-02(.1929-04)	.1044-03(.9099-04)
PU240	.1153-02(.2632-04)	.8275-03(.4641-05)	.3359-03(.2672-04)
PU241	.2331-03(.5576-05)	.1132-03(.6441-06)	.1259-03(.5613-05)
PU242	.3066-04(.7716-06)	.1130-04(.6165-07)	.1936-04(.7740-06)
TOTALS	.5383-02(.1212-03)	.4777-02(.2400-04)	.5856-03(.1236-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	FURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.8291-03(.3959-04)	795.9	.0628(.0014)	.0491(.0049)	202
U-238	.1283-03(.1296-04)	125.8	.0620(.0060)		209
PU239	.1496-02(.8053-04)	1474.5	.0674(.0019)	.0563(.0056)	211
PU241	.5210-04(.4710-05)	51.7	.0660(.0033)	.0604(.0060)	214
TOTALS	.2505-02(.7280-04)	2447.9			

U235/U238BOL=.8587(.0056) ALPHA-235=.2062(.0108) ALPHA-239=.3580(.1044) PU239 FORMED FROM U238=.2133-02(.15-03)

INPUT DATA

CESIUM-137 DECAYS=.1680+10(.3360+08)D/M/ML
 PU DECAYS=.1051+09(.2102+07)D/M/ML
 PERCENT DECAYS BY PU238= 9.70
 SAMPLE WT=29.239GM CLAD WT=5.361GM
 PU DECAYS=.1051+09(.2102+07)D/M/ML
 PERCENT DECAYS BY PU238= 9.70
 SAMPLE WT=29.239GM CLAD WT=5.361GM
 SOLUTION VOL=253.7ML
 TIME OUT OF REACTOR=1.055YRS
 BOL PU241 DECAY CORRECTION TIME= .389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0057

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 4187 ANALYSIS OF THE SAMPLE 36.00 INCHES FROM THE TOP OF THE OUTSIDE ROD

ISOTOPIC INVENTORY

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4876-04	.5114-04(.337-05)	.0051(.0003)	.4957-04(.335-05)	-.1884-06(.335-05)
U-235	.7076-02	.6125-02(.527-04)	.6086(.0052)	.5962-02(.520-04)	-.1114-02(.520-04)
U-236	.0000	.1735-03(.797-05)	.0178(.0008)	.1754-03(.787-05)	.1754-03(.787-05)
U-238	.9981-00	1.0000	.99.3885(.0053)	.9905-00(.153-03)	-.2221-02(.153-03)
TOTAL	.9952-00			.9968-00(.144-03)	-.3162-02(.144-03)

ISOTOPE	EOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/"/G)
PU239	60.1830(.1350)	1.0000	72.7431(.0465)	.13616+12(.170+04)
PU240	17.2730(.0400)	.3021-00(.307-03)	21.9779(.0459)	.50130+12(.300+10)
PU241	2.2100(.0050)	.6102-01(.312-03)	4.6684(.0242)	.57600+16(.100+07)
PU242	.2340(.005)	.8395-02(.901-04)	.6107(.0065)	.87000+10(.200+06)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3770-02(.8577-04)	.3825-02(.1929-04)	-.3920-04(.8791-04)
PU240	.1170-02(.2601-04)	.6275-03(.4341-05)	.3224-03(.2642-04)
PU241	.2403-03(.5707-05)	.1132-03(.0441-06)	.1321-03(.5743-05)
PU242	.3222-04(.8069-06)	.1130-04(.0105-07)	.2091-04(.8003-06)
TOTALS	.6217-02(.1179-03)	.4777-02(.2400-04)	.4461-03(.1204-03)

F I S S I O N S

ISOTOPE	FUEL IN (GM)	FURNISH (GWD/MTD)	FISSION YIELD	DEL	DEL/FISSION
U-235	.9363-03(.5293-04)	998.8	.0626(.0014)	.6491(.0049)	202
U-238	.1394-03(.1418-04)	136.7	.0620(.0060)		209
PU239	.1594-03(.2239-04)	1571.8	.0674(.0019)	.6563(.0054)	211
PU241	.5624-03(.1057-05)	55.6	.0685(.0033)	.6604(.0060)	214
TOTALS	.2726-03(.7081-04)	2663.1			

CE235/CE239 LIF=.702(.0073) ALPHA-235=.1445(.0145) ALPHA-239=.3535(.0055) PU239 FORMED FROM U235=.2090-02(.15-03)

INPUT DATA

CESIUM-137 BURNUP=.1250+1(.2500+08)D/M/ML
 PU DECAYS=.7000+08(.1616+7)D/M/ML
 PERCENT DECAYS PU239=.40
 SAMPLE 1=21.5400 CL B WTR=.8196
 SOLUTION VOLUME=.941
 TIME OUT OF SOLUTION=1.953E5
 BOL PU241 DECAY CORRECTION TIME=.338YEARS
 CESIUM-137 BURNUP DECAY CORRECTION=1.0057

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

----- ALL VALUES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5187 ANALYSIS OF THE SAMPLE 45.00 INCHES FROM THE TOP OF THE OUTSIDE POD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.4797-04(.210-05)	.0048(.0002)	.4649-04(.208-05)	-.3273-05(.208-05)
U-235	.7076-02	.6150-02(.368-04)	.6112(.0036)	.5986-02(.364-04)	-.1091-02(.364-04)
U-236	.0000	.1802-03(.297-05)	.0179(.0003)	.1761-03(.295-05)	.1761-03(.295-05)
U-238	.9881-00	1.0000	99.3662(.0037)	.9903-00(.153-03)	-.2488-02(.153-03)
TOTAL	.9952-00			.9966-00(.149-03)	-.3405-02(.149-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	80.1830(.0350)	1.0000	72.7167(.0458)	.13616+12(.170+09)
PU240	17.2730(.0430)	.3022-00(.784-03)	21.9714(.0449)	.50130+12(.300+10)
PU241	2.3100(.0060)	.6147-01(.323-03)	4.7011(.0249)	.57600+10(.100+09)
PU242	.2340(.0005)	.8400-02(.890-04)	.6108(.0064)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3921-02(.8873-04)	.3825-02(.1929-04)	.9599-04(.9081-04)
PU240	.1190-02(.2691-04)	.8275-03(.4641-05)	.3623-03(.2731-04)
PU241	.2556-03(.5955-05)	.1132-03(.6441-06)	.1424-03(.5989-05)
PU242	.3335-04(.8333-06)	.1130-04(.6165-07)	.2205-04(.8356-06)
TOTALS	.5400-02(.1221-03)	.4777-02(.2400-04)	.6227-03(.1244-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWH/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.9125-03(.3651-04)	876.0	.0628(.0014)	.0491(.0049)	202
U-238	.1428-03(.1437-04)	140.1	.0620(.0060)		209
PU239	.1674-02(.8627-04)	1650.0	.0674(.0019)	.0563(.0056)	211
PU241	.5934-04(.5311-05)	58.8	.0600(.0033)	.0604(.0060)	214
TOTALS	.2788-02(.8114-04)	2724.9			

U235/U235BOL=.8459(.0051) ALPHA-235=.1951(.0087) ALPHA-239=.3502(.0938) PU239 FORMED FROM U238=.2355-02(.15-03)

INPUT DATA

CESIUM-137 DECAYS=.1700+10(.3400+08)D/M/ML
 PU DECAYS=.9711+06(.1942+07)D/M/ML
 PERCENT DECAYS BY PU238=10.20
 SAMPLE WT=26.290GM CLAD WT=5.767GM
 SOLUTION VOL=246.9ML
 TIME OUT OF REACTOR=1.055YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0057

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5127 ANALYSIS OF THE SAMPLE 55.00 INCHES FROM THE TOP OF THE OUTSIDE ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.4857-04(.292-05)	.0048(.0003)	.4709-04(.296-05)	-.2666-05(.296-05)
U-235	.7076-02	.6251-02(.422-04)	.6211(.0042)	.6087-02(.415-04)	-.9890-03(.415-04)
U-236	.0000	.1566-03(.462-05)	.0166(.0005)	.1629-03(.462-05)	.1629-03(.462-05)
U-238	.9881-00	1.0000	99.3575(.0042)	.9909-00(.143-03)	-.1878-02(.143-03)
TOTAL	.9952-00			.9973-00(.136-03)	-.2706-02(.136-03)

ISOTOPE	EOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	20.1830(.1350)	1.0000	73.1690(.5468)	.13616+12(.170+09)
PU240	17.2730(.1430)	.2966-00(.792-03)	21.7048(.5461)	.50130+12(.300+10)
PU241	2.3100(.060)	.5907-01(.310-03)	4.5456(.5241)	.57600+10(.100+09)
PU242	.2340(.005)	.7534-02(.877-04)	.5805(.5064)	.87000+10(.200+08)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3603-02(.8357-04)	.3825-02(.1929-04)	-.1321-03(.8577-04)
PU240	.1100-02(.2489-04)	.8275-03(.4641-05)	.2726-03(.2532-04)
PU241	.2314-03(.5389-05)	.1132-03(.6441-06)	.1181-03(.5427-05)
PU242	.2917-04(.7471-06)	.1130-04(.6165-07)	.1837-04(.7400-06)
TOTALS	.5034-02(.1142-03)	.4777-02(.2400-04)	.2770-03(.1167-03)

F I S S I O N S

ISOTOPE	FIS FISS (GM)	TURNUP (YR/MTR)	FISSION YIELD	LEL	ML/FISSION
U-235	.6140-03(.8178-04)	791.6	.0625(.0014)	.0491(.0049)	202
U-238	.1245-03(.1261-04)	122.1	.0620(.0060)		209
PU239	.1435-02(.7974-04)	1414.8	.0674(.0019)	.0563(.0056)	211
PU241	.4343-04(.6487-05)	49.0	.0633(.0033)	.0604(.0060)	214
TOTALS	.2433-02(.7550-04)	2377.4			

CELS/00399 LE=.0602(.0050) ALPHA-235=.1943(.0121) ALPHA-239=.3190(.1025) PU239 FORMED FROM U238=.1761-02(.14-03)

INPUT DATA

CELSIUM-137 DECAYS=.1770+1(.3540+08)D/M/ML
 PU DECAYS=.1074+09(.2148+07)D/M/ML
 PERCENT DECAYS BY PU238=.60
 SAMPLE WT=31.246GM CLRD WT=6.278GM
 SOLUTION VOL=40.2VL
 TIME OUT OF REACTOR=1.055YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CELSIUM-137 IN REACTOR DECAY CORRECTION=1.0057

ASSUMPTIONS

CELSIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----ALL VALUES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 1137 ANALYSIS OF THE SAMPLE 65.00 INCHES FROM THE TOP OF THE OUTSIDE ROD

ISOTOPIC INVENTORY

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4076-04	.6363-04(.294-05)	.0048(.0003)	.4714-04(.294-05)	-.2624-05(.294-05)
U-235	.7076-02	.6348-02(.467-04)	.6307(.0046)	.6180-02(.461-04)	-.8960-03(.461-04)
U-238	.0000	.1490-03(.486-05)	.0148(.0005)	.1457-03(.486-05)	.1457-03(.486-05)
U-238	.9861-00	1.0000	.903497(.0046)	.9906-00(.148-03)	-.2113-02(.148-03)
TOTAL	.9052-00			.9971-00(.141-03)	-.2865-02(.141-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	20.1830(.1350)	1.0000	74.3942(.0623)	.13616+12(.170+06)
PU240	17.2730(.1430)	.2809-00(.105-02)	20.8988(.0624)	.50130+12(.300+10)
PU241	2.3100(.0050)	.5368-01(.354-03)	4.2000(.0276)	.57600+10(.100+00)
PU242	.2340(.0005)	.6815-02(.830-04)	.5070(.0062)	.87000+10(.200+04)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.4059-02(.9196-04)	.3825-02(.1929-00)	.2340-03(.9396-04)
PU240	.1145-02(.2594-04)	.8275-03(.4641-05)	.3176-03(.2635-04)
PU241	.2311-03(.5467-05)	.1132-03(.6441-06)	.1179-03(.5504-05)
PU242	.2801-04(.7208-06)	.1130-04(.6165-07)	.1671-04(.7234-06)
TOTALS	.5463-02(.1235-03)	.4777-02(.2400-04)	.6861-03(.1258-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	FURNUP (MWD/MTM)	FISSION YIELD	BOL	MEV/FISSION
U-235	.7490-03(.4638-04)	719.2	.0620(.0014)	.0491(.0049)	202
U-238	.1117-03(.1142-04)	109.5	.0620(.0060)		209
PU239	.1270-02(.7652-04)	1260.7	.0674(.0019)	.0563(.0056)	211
PU241	.4497-04(.4133-05)	44.6	.0666(.0033)	.0604(.0060)	214
TOTALS	.2184-02(.0317-04)	2134.0			

U235/U238 BOL=.2704(.0045) ALPHA-235=.1959(.0147) ALPHA-239=.3680(.1250) PU239 FORMED FROM U238=.2009-02(.15-03)

INPUT DATA

CESIUM-137 DECAYS=.1680+10(.3360+08)D/M/ML
 PU DECAYS=.127+09(.2410+07)D/M/ML
 PERCENT DECAYS BY PU238= 0.10
 SAMPLE WT=32.745GM CLAD WT=6.189GM
 SOLUTION VOL=245.9ML
 TIME OUT OF REACTOR=1.055YRS

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

BOL PU241 DECAY CORRECTION TIME= .389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0057

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----
 -----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5167 ANALYSIS OF THE SAMPLE 75.00 INCHES FROM THE TOP OF THE OUTSIDE ROD

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

ISOTOPE	FOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5165-04(.237-05)	.0051(.0002)	.0011-04(.236-05)	.3509-06(.236-05)
U-235	.7076-02	.6691-02(.473-04)	.6646(.0047)	.0519-02(.471-04)	-.5570-03(.471-04)
U-236	.0000	.9309-04(.283-05)	.0097(.0003)	.9598-04(.281-05)	.9598-04(.281-05)
U-238	.9881-06	1.0000	99.3206(.0047)	.9914-00(.134-03)	-.1346-02(.134-03)
TOTAL	.9952-00			.9982-00(.125-03)	-.1808-02(.125-03)

ISOTOPE	FOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (C/M/GM)
PU239	20.1830(.0350)	1.0000	76.2767(.0812)	.13616+12(.170+09)
PU240	17.2730(.0430)	.2589-00(.136-02)	19.7480(.0831)	.50130+12(.300+10)
PU241	2.3100(.0060)	.4458-01(.290-03)	3.5763(.0238)	.57600+10(.100+09)
PU242	.2340(.0035)	.5230-02(.974-04)	.3989(.0074)	.87000+10(.290+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3842-02(.8722-04)	.3825-02(.1929-04)	.1655-04(.8933-04)
PU240	.9968-03(.2269-04)	.8275-03(.4641-05)	.1713-03(.2316-04)
PU241	.1816-03(.4305-05)	.1132-03(.0641-06)	.6842-04(.4363-05)
PU242	.2074-04(.5972-06)	.1130-04(.6165-07)	.9041-05(.6004-06)
TOTALS	.5042-02(.1140-03)	.4777-02(.2400-04)	.2653-03(.1165-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.4608-03(.4723-04)	442.4	.0625(.0014)	.0491(.0049)	202
U-238	.7950-04(.8360-05)	78.0	.0625(.0060)		209
PU239	.9625-03(.8457-04)	968.7	.0674(.0019)	.0563(.0056)	211
PU241	.2433-04(.2550-05)	24.1	.0665(.0033)	.0604(.0060)	214
TOTALS	.1547-02(.4576-04)	1513.1			

U-235/U-238 R= .9213(.0066) ALPHA-235= .2088(.0226) ALPHA-239= .2780(.1506) PU239 FORMED FROM U-238= .1272-02(.13-03)

I N P U T D A T A

CESIUM-137 DECAYS=.1620+10(.3240+08)D/MZML
 PU DECAYS=.1465+09(.2930+07)D/MZML
 PERCENT DECAYS BY PU238= 7.60
 SAMPLE WT=44.1006GM CLAD WT=7.3006GM
 SOLUTION VOL=250.9ML
 TIME OUT OF REACTOR=1.055YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0057

A S S U M P T I O N S

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 1187 ANALYSIS OF THE SAMPLE 85.00 INCHES FROM THE TOP OF THE OUTSIDE ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5233-04(.253-05)	.0052(.0003)	.5079-04(.251-05)	.1027-05(.251-05)
U-235	.7076-02	.6895-02(.492-04)	.6847(.0049)	.6720-02(.486-04)	-.3559-03(.486-04)
U-236	.0000	.4833-04(.151-05)	.0048(.0002)	.4731-04(.150-05)	.4731-04(.150-05)
U-238	.9881-00	1.0000	.993053(.0049)	.9918-00(.130-03)	-.9967-03(.130-03)
TOTAL	.9952-00			.9987-00(.120-03)	-.1306-02(.120-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	80.1830(.0350)	1.0000	76.8660(.0556)	.13616+12(.170+09)
PU240	17.2730(.0430)	.2541-00(.846-03)	19.5340(.0527)	.50130+12(.300+10)
PU241	2.3100(.0060)	.4007-01(.381-03)	3.2393(.0304)	.57600+10(.100+04)
PU242	.2340(.0005)	.4692-02(.555-04)	.3607(.0043)	.87000+10(.200+04)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3820-02(.8729-04)	.3825-02(.1929-04)	.3503-04(.8940-04)
PU240	.9851-03(.2228-04)	.8275-03(.4641-05)	.1576-03(.2276-04)
PU241	.1640-03(.4034-05)	.1132-03(.6441-06)	.5083-04(.4085-05)
PU242	.1834-04(.4679-06)	.1130-04(.6165-07)	.7036-05(.4720-06)
TOTALS	.5028-02(.1135-03)	.4777-02(.2400-04)	.2505-03(.1160-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWR/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.3685-03(.4359-04)	296.2	.0628(.0014)	.0491(.0049)	202
U-238	.5446-04(.6081-05)	53.4	.0620(.0060)		209
PU239	.6769-03(.5721-04)	667.4	.0674(.0019)	.0563(.0056)	211
PU241	.1094-04(.1993-05)	18.8	.0680(.0033)	.0604(.0060)	214
TOTALS	.1059-02(.3137-04)	1035.7			

U235/U238BOL=.9497(.0068) ALPHA-235=.1535(.0248) ALPHA-239=.3463(.2184) PU239 FORMED FROM U238=.9462-03(.13-03)

INPUT DATA

CESIUM-137 DECAYS=.6920+00(.1384+08)D/M/ML
 PU DECAYS=.8956+08(.1791+07)D/M/ML
 PERCENT DECAYS BY PU238= 6.10
 SAMPLE WT=29.316GM CLAD WT=6.336GM
 SOLUTION VOL=251.1ML
 TIME OUT OF REACTOR=1.055YRS
 BOL PU241 LEADY CORRECTION TIME= .389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0057

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 4165 ANALYSIS OF THE SAMPLE 2.50 INCHES FROM THE TOP OF THE CENTER ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5082-04(.224-05)	.0051(.0002)	.4929-04(.222-05)	-.4671-06(.222-05)
U-235	.7076-02	.5303-02(.350-04)	.5867(.0035)	.5750-02(.346-04)	-.1326-02(.346-04)
U-236	.0000	.2175-03(.484-05)	.0216(.0005)	.2128-03(.481-05)	.2128-03(.481-05)
U-238	.9881-00	1.0000	99.3867(.0035)	.9912-00(.139-03)	-.1515-02(.139-03)
TOTAL	.9952-00			.9974-00(.134-03)	-.2632-02(.134-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	80.1830(.0350)	1.0000	71.5384(.0700)	.13616+12(.170+09)
PU240	17.2730(.0430)	.3244-00(.120-02)	23.2071(.0714)	.50130+12(.300+10)
PU241	2.3100(.0060)	.6275-01(.422-03)	4.5950(.0300)	.57600+10(.100+09)
PU242	.2340(.0095)	.9220-02(.107-03)	.6596(.0076)	.87000+16(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3681-02(.8313-04)	.3825-02(.1929-04)	-.1640-03(.8534-04)
PU240	.1193-02(.2704-04)	.8275-03(.4641-05)	.3652-03(.2744-04)
PU241	.2371-03(.5618-05)	.1132-03(.6441-06)	.1239-03(.5655-05)
PU242	.3418-04(.8709-06)	.1130-04(.6165-07)	.2288-04(.8730-06)
TOTALS	.5125-02(.1160-03)	.4777-02(.2400-04)	.3480-03(.1185-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.1110-02(.3496-04)	1065.4	.0628(.0014)	.0636(.0064)	202
U-238	.1553-03(.1549-04)	152.3	.0620(.0060)		209
PU239	.9561-03(.6961-04)	942.6	.0674(.0019)	.0826(.0083)	211
PU241	.6157-04(.5518-05)	61.1	.0660(.0033)	.0855(.0085)	214
TOTALS	.2283-02(.6273-04)	2221.5			

U235/U235BOL=.6126(.0049) ALPHA-235=.1945(.0080) ALPHA-239=.5999(.1549) PU239 FORMED FROM U238=.1365-02(.14-03)

I N P U T D A T A

CESIUM-137 DECAYS=.1105+10(.2210+08)D/M/ML
 PU DECAYS=.7522+08(.1504+07)D/M/ML
 PERCENT DECAYS BY PU238=10.10
 SAMPLE WT=21.300GM CLAD WT=3.161GM
 SOLUTION VOL=65.2ML
 TIME OUT OF REACTOR=.488YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

A S S U M P T I O N S

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 8185 ANALYSIS OF THE SAMPLE 12.50 INCHES FROM THE TOP OF THE CENTER ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.4895-04(.254-05)	.0049(.0003)	.4745-04(.252-05)	-.2314-05(.252-05)
U-235	.7076-02	.5262-02(.312-04)	.5232(.0031)	.5122-02(.309-04)	-.1954-02(.304-04)
U-236	.0000	.3265-03(.566-05)	.0327(.0006)	.3211-03(.566-05)	.3211-03(.566-05)
U-238	.9881-00	1.0000	.994392(.0031)	.9906-00(.156-03)	-.2197-02(.156-03)
TOTAL	.9952-00			.9962-00(.152-03)	-.3839-02(.152-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	80.1830(.0350)	1.0000	67.9883(.0505)	.13616+12(.170+09)
PU240	17.2730(.0430)	.3664-00(.962-03)	24.9075(.0499)	.50130+12(.300+10)
PU241	2.3100(.0060)	.8689-01(.475-03)	6.0469(.0316)	.57600+10(.100+09)
PU242	.2340(.0005)	.1555-01(.166-03)	1.0572(.0112)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3528-02(.8001-04)	.3825-02(.1929-04)	-.2971-03(.8230-04)
PU240	.1268-02(.2941-04)	.8275-03(.4641-05)	.4705-03(.2977-04)
PU241	.3164-03(.7385-05)	.1132-03(.6441-06)	.2032-03(.7413-05)
PU242	.5555-04(.1392-05)	.1130-04(.6165-07)	.4425-04(.1343-05)
TOTALS	.5168-02(.1177-03)	.4777-02(.2400-04)	.4208-03(.1201-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MW/D/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.1625-02(.3141-04)	1559.5	.0628(.0014)	.0636(.0064)	202
U-238	.2326-03(.2295-04)	228.2	.0620(.0060)		209
PU239	.1434-02(.0540-04)	1413.9	.0674(.0019)	.0826(.0083)	211
PU241	.1191-03(.1036-04)	118.1	.0660(.0033)	.0855(.0085)	214
TOTALS	.3410-02(.0365-04)	3319.6			

U235/U238 BOL=.7239(.0043) ALPHA-235=.2026(.0057) ALPHA-239=.583(.1090) PU239 FORMED FROM U238=.1973-02(.15-03)

INPUT DATA

CESIUM-137 DECAYS=.1598+14(.3196+08)D/M/ML
 PU DECAYS=.7801+08(.1578+07)D/M/ML
 PERCENT DECAYS BY PU238=14.40
 SAMPLE WT=19.862GM CLAD WT=2.867GM
 SOLUTION VOL=249.5ML
 TIME OUT OF REACTOR=.488YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ISOTOPIC INVENTORY

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.4751-04(.232-05)	.0047(.0002)	.4603-04(.231-05)	-.3733-05(.231-05)
U-235	.7076-02	.4679-02(.294-04)	.4655(.0029)	.4553-02(.291-04)	-.2524-02(.291-04)
U-236	.0000	.4216-03(.656-05)	.0419(.0007)	.4120-03(.653-05)	.4120-03(.653-05)
U-238	.9861-00	1.0000	99.4878(.0030)	.9901-00(.172-03)	-.2693-02(.172-03)
TOTAL	.9952-00			.9952-00(.170-03)	-.4821-02(.170-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	20.1830(.0350)	1.0000	64.8522(.0574)	.13616+12(.170+09)
PU240	17.2730(.0430)	.4117-00(.122-02)	26.7016(.0590)	.50130+12(.300+10)
PU241	2.3100(.0060)	.1063+00(.546-03)	7.0091(.0342)	.57600+10(.100+09)
PU242	.2340(.0005)	.2216-01(.236-03)	1.4371(.0151)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3343-02(.7688-04)	.3825-02(.1929-04)	-.4420-03(.7926-04)
PU240	.1349-02(.3173-04)	.8275-03(.4041-05)	.5713-03(.3207-04)
PU241	.3627-03(.8592-05)	.1132-03(.6441-06)	.2555-03(.8616-05)
PU242	.7531-04(.1904-05)	.1130-04(.6165-07)	.6461-04(.1905-05)
TOTALS	.5227-02(.1185-03)	.4777-02(.2400-04)	.4495-03(.1209-03)

FISSIONS

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.2097-02(.2982-04)	2012.6	.0628(.0014)	.0636(.0064)	202
U-238	.2965-03(.2916-04)	290.8	.0620(.0060)		209
PU239	.1785-02(.1187-03)	1759.5	.0674(.0019)	.0826(.0083)	211
PU241	.1739-03(.1500-04)	172.4	.0660(.0033)	.0855(.0085)	214
TOTALS	.4352-02(.1192-03)	4235.3			

U235/U235BOL=.6434(.0041) ALPHA-235=.2037(.0047) ALPHA-239=.5970(.0906) PU239 FORMED FROM U238=.2407-02(.17-03)

INPUT DATA

CESIUM-137 DECAYS=.1833+10(.3666+0810/M/ML)
 PU DECAYS=.7525+08(.1505+07)D/M/ML
 PERCENT DECAYS BY PU238=17.30
 SAMPLE WT=17.720GM CLAD WT=2.510GM
 SOLUTION VOL=256.3ML
 TIME OUT OF REACTOR=.353YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5185 ANALYSIS OF THE SAMPLE 33.50 INCHES FROM THE TOP OF THE CENTER ROD

ISOTOPIC INVENTORY

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.4719-04(.233-05)	.0047(.0002)	.4567-04(.232-05)	-.4092-05(.232-05)
U-235	.7076-02	.4496-02(.300-04)	.4476(.0030)	.4372-02(.297-04)	-.2704-02(.297-04)
U-236	.0000	.4520-03(.834-05)	.0450(.0008)	.4412-03(.834-05)	.4412-03(.834-05)
U-238	.9881-00	1.0000	.905028(.0031)	.9890-00(.196-03)	-.3760-02(.196-03)
TOTAL	.9952-00			.9940-00(.193-03)	-.6043-02(.193-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	60.1830(.0350)	1.0000	63.9717(.0538)	.13616+12(.170+09)
PU240	17.2730(.0430)	.4245-00(.114-02)	27.1560(.0544)	.50130+12(.300+10)
PU241	2.3100(.0060)	.1117+00(.580-03)	7.2666(.0356)	.57600+10(.100+09)
PU242	.2340(.0005)	.2510-01(.263-03)	1.6057(.0166)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3610-02(.8203-04)	.3825-02(.1929-04)	-.2147-03(.8426-04)
PU240	.1539-02(.3491-04)	.8275-03(.4641-05)	.7116-03(.3522-04)
PU241	.4136-03(.9640-05)	.1132-03(.0441-06)	.3003-03(.9661-05)
PU242	.9176-04(.2295-05)	.1130-04(.6165-07)	.8046-04(.2296-05)
TOTALS	.5655-02(.1283-03)	.4777-02(.2400-04)	.8777-03(.1305-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MW/D/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.2045-02(.3082-04)	2155.4	.0628(.0014)	.0636(.0064)	202
U-238	.3544-03(.3482-04)	347.5	.0620(.0060)		209
PU239	.2528-02(.1406-03)	2294.8	.0674(.0019)	.0826(.0083)	211
PU241	.2166-03(.1861-04)	214.7	.0660(.0033)	.0855(.0085)	214
TOTALS	.5144-02(.1423-03)	5012.4			

U235/U238BOL=.6178(.0042) ALPHA-235=.2045(.0052) ALPHA-239=.5624(.0753) PU239 FORMED FROM U238=.3420-02(.19-03)

INPUT DATA

CESIUM-137 DECAYS=.2260+10(.4520+08)D/M/ML
 PU DECAYS=.8661+08(.1732+07)D/M/ML
 PERCENT DECAYS BY PU238=1.70
 SAMPLE WT=18.381GM CL/D WT=2.688GM
 SOLUTION VOL=254.1ML
 TIME OUT OF REACTOR=.353YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ISOTOPIC INVENTORY

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.4636-04(.308-05)	.0046(.0003)	.4500-04(.306-05)	-.4758-05(.306-05)
U-235	.7076-02	.4460-02(.350-04)	.4438(.0036)	.4348-02(.355-04)	-.2728-02(.355-04)
U-236	.0000	.4572-03(.843-05)	.0455(.0008)	.4476-03(.843-05)	.4476-03(.843-05)
U-238	.9881-00	1.0000	99.5061(.0037)	.9920-00(.143-03)	-.7322-03(.143-03)
TOTAL	.9952-00			.9970-00(.138-03)	-.3033-02(.138-03)

ISOTOPE	EOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	60.1830(.0350)	1.0000	63.7205(.0564)	.13616+12(.170+04)
PU240	17.2730(.0430)	.4289-00(.123-02)	27.3291(.0580)	.50130+12(.300+10)
PU241	2.3100(.0050)	.1131+00(.582-03)	7.3301(.0356)	.57600+10(.100+04)
PU242	.2340(.0005)	.2543-01(.257-03)	1.6204(.0162)	.87000+10(.200+04)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.2588-02(.5837-04)	.3825-02(.1929-04)	-.1257-02(.6147-04)
PU240	.1106-02(.2509-04)	.8275-03(.4841-05)	.2784-03(.2552-04)
PU241	.2979-03(.6943-05)	.1132-03(.8441-06)	.1847-03(.6973-05)
PU242	.6612-04(.1645-05)	.1130-04(.6165-07)	.5482-04(.1646-05)
TOTALS	.4038-02(.9160-04)	.4777-02(.2400-04)	-.7394-03(.9469-04)

FISSIONS

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.2262-02(.3052-04)	2171.5	.0620(.0014)	.0636(.0064)	202
U-238	.2470-03(.2444-04)	242.2	.0620(.0060)		209
PU239	.1080-02(.1040-03)	1065.1	.0674(.0019)	.0826(.0083)	211
PU241	.1475-03(.1276-04)	146.3	.0650(.0033)	.0855(.0085)	214
TOTALS	.3737-02(.1009-03)	3625.2			

U235/U238BOL=.6145(.0050) ALPHA-235=.2060(.0055) ALPHA-239=.6160(.1207) PU239 FORMED FROM U238=.4872-03(.14-03)

INPUT DATA

CESIUM-137 DECAYS=.2088+10(.4176+08)D/M/ML
 PU DECAYS=.7914+08(.1583+07)D/M/ML
 PERCENT DECAYS BY PU238=18.30
 SAMPLE WT=23.152GM CLAD WT=3.280GM
 SOLUTION VOL=250.8ML
 TIME OUT OF REACTOR=.353YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5185 ANALYSIS OF THE SAMPLE 44.75 INCHES FROM THE TOP OF THE CENTER ROD

ISOTOPIC INVENTORY

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.4989-04(.259-05)	.0050(.0003)	.4820-04(.257-05)	-.1562-05(.257-05)
U-235	.7076-02	.4590-02(.318-04)	.4567(.0032)	.4453-02(.315-04)	-.2623-02(.315-04)
U-236	.0000	.4574-03(.792-05)	.0455(.0008)	.4457-03(.788-05)	.4457-03(.788-05)
U-238	.9881-00	1.0000	.994929(.0033)	.9873-00(.226-03)	-.5467-02(.226-03)
TOTAL	.9952-00			.9923-00(.224-03)	-.7663-02(.224-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	80.1830(.4350)	1.0000	63.7562(.0537)	.13616+12(.170+09)
PU240	17.2730(.0430)	.4269-00(.113-02)	27.2150(.0539)	.50130+12(.300+10)
PU241	2.3100(.0060)	.1137+00(.608-03)	7.3698(.0371)	.57600+10(.100+09)
PU242	.2346(.0005)	.2602-01(.268-03)	1.6589(.0168)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.4189-02(.9472-04)	.3825-02(.1929-04)	.3440-03(.9666-04)
PU240	.1787-02(.4054-04)	.8275-03(.4041-05)	.9596-03(.4080-04)
PU241	.4880-03(.1134-04)	.1132-03(.6441-06)	.3728-03(.1136-04)
PU242	.1098-03(.2739-05)	.1130-04(.6165-07)	.9854-04(.2740-05)
TOTALS	.6562-02(.1486-03)	.4777-02(.2400-04)	.1775-02(.1505-03)

FISSIONS

ISOTOPE	FISSIONS (GM)	BURNUP (MW/D/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.2160-02(.3248-04)	2073.9	.0628(.0014)	.0636(.0064)	202
U-238	.4116-03(.4044-04)	403.6	.0620(.0060)		209
PU239	.3039-02(.1633-03)	2996.3	.0674(.0019)	.0826(.0083)	211
PU241	.2652-03(.2273-04)	263.0	.0660(.0033)	.0855(.0085)	214
TOTALS	.5876-02(.1601-03)	5736.9			

U235/U238BOL=.6294(.0044) ALPHA-235=.2139(.0054) ALPHA-239=.5581(.0665) PU239 FORMED FROM U238=.5077-02(.22-03)

INPUT DATA

CESIUM-137 DECAYS=.2940+12(.5880+08)D/M/ML
 PU DECAYS=.1129+09(.2258+07)D/M/ML
 PERCENT DECAYS BY PU238=1.00
 SAMPLE WT=20.320GM CLAD WT=2.906GM
 SOLUTION VOL=248.5ML
 TIME OUT OF REACTOR=.353YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT #135 ANALYSIS OF THE SAMPLE 54.50 INCHES FROM THE TOP OF THE CENTER ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.4723-04(.217-05)	.0047(.0002)	.4566-04(.216-05)	-.4103-05(.216-05)
U-235	.7076-02	.4627-02(.347-04)	.4603(.0034)	.4492-02(.344-04)	-.2584-02(.344-04)
U-236	.0000	.4314-03(.832-05)	.0429(.0008)	.4206-03(.827-05)	.4206-03(.827-05)
U-238	.9881-00	1.0000	.994920(.0035)	.9879-00(.214-03)	-.4829-02(.214-03)
TOTAL	.9952-00			.9930-00(.211-03)	-.7010-02(.211-03)

ISOTOPE	EOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	80.1830(.0350)	1.0000	64.7249(.0662)	.13616+12(.170+09)
PU240	17.2730(.0430)	.4118-00(.137-02)	26.6550(.0665)	.50130+12(.300+10)
PU241	2.3100(.0050)	.1081+00(.720-03)	7.1191(.0447)	.57600+10(.100+09)
PU242	.2340(.0005)	.2319-01(.278-03)	1.5010(.0178)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.4118-02(.9365-04)	.3825-02(.1929-04)	.2929-03(.9582-04)
PU240	.1703-02(.3865-04)	.8275-03(.4041-05)	.8755-03(.3892-04)
PU241	.4567-03(.1083-04)	.1132-03(.6441-06)	.3435-03(.1084-04)
PU242	.9670-04(.2485-05)	.1130-04(.6165-07)	.8539-04(.2486-05)
TOTALS	.6374-02(.1446-03)	.4777-02(.2400-04)	.1597-02(.1466-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.2147-02(.3538-04)	2061.3	.0628(.0014)	.0636(.0064)	202
U-238	.3754-03(.3692-04)	368.2	.0620(.0060)		209
PU239	.2647-02(.1498-03)	2609.5	.0674(.0019)	.0826(.0083)	211
PU241	.2294-03(.1980-04)	227.9	.0660(.0033)	.0855(.0085)	214
TOTALS	.5399-02(.1511-03)	5266.8			

U235/U235BOL=.6348(.0048) ALPHA-235=.2033(.0057) ALPHA-239=.5797(.0742) PU239 FORMED FROM U238=.4472-02(.21-03)

INPUT DATA

CESIUM-137 DECAYS=.2388+10(.4776+08)D/M/ML
 PU DECAYS=.9589+08(.1918+07)D/M/ML
 PERCENT DECAYS BY PU238=17.40
 SAMPLE WT=20.1896G CLAD WT=2.9116G
 SOLUTION VOL=278.5ML
 TIME OUT OF REACTOR=.353YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5185 ANALYSIS OF THE SAMPLE 65.00 INCHES FROM THE TOP OF THE CENTER ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.4572-04(.214-05)	.0045(.0002)	.4437-04(.217-05)	-.5390-05(.217-05)
U-235	.7076-02	.4982-02(.313-04)	.4055(.0031)	.4856-02(.310-04)	-.2220-02(.310-04)
U-236	.0000	.3674-03(.757-05)	.0365(.0008)	.3596-03(.753-05)	.3596-03(.753-05)
U-238	.9881-00	1.0000	.99.4634(.0032)	.9918-00(.139-03)	-.9866-03(.139-03)
TOTAL	.9952-00			.9971-00(.135-03)	-.2860-02(.135-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	80.1830(.0350)	1.0000	65.7333(.1870)	.13616+12(.170+09)
PU240	17.2730(.0430)	.3976-00(.364-02)	26.1356(.1811)	.50130+12(.300+10)
PU241	2.3100(.0060)	.1016+00(.228-02)	6.7921(.1432)	.57600+10(.100+09)
PU242	.2340(.0005)	.2037-01(.326-03)	1.3390(.0215)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.2849-02(.6635-04)	.3825-02(.1929-04)	-.9757-03(.6910-04)
PU240	.1138-02(.2611-04)	.8275-03(.4641-05)	.3102-03(.2652-04)
PU241	.2969-03(.9599-05)	.1132-03(.6441-06)	.1837-03(.9621-05)
PU242	.5877-04(.1660-05)	.1130-04(.6165-07)	.4747-04(.1662-05)
TOTALS	.4343-02(.9944-04)	.4777-02(.2400-04)	-.4343-03(.1023-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MW/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.1850-02(.3187-04)	1775.7	.0626(.0014)	.0636(.0064)	202
U-238	.2186-03(.2161-04)	214.4	.0626(.0060)		209
PU239	.1079-02(.9125-04)	1063.6	.0674(.0019)	.0826(.0083)	211
PU241	.1278-03(.1128-04)	126.7	.0660(.0033)	.0855(.0085)	214
TOTALS	.3275-02(.8660-04)	3180.4			

U235/U238 BOL=.6062(.0044) ALPHA-235=.2003(.0059) ALPHA-239=.6203(.1263) PU239 FORMED FROM U238=.7712-03(.14-03)

I N P U T D A T A

CESIUM-137 DECAYS=.2013+10(.4026+08)D/M/ML
 PU DECAYS=.89.3+08(.1785+07)D/M/ML
 PERCENT DECAYS BY PU238=15.70
 SAMPLE WT=25.254GM CLAD WT=3.501GM
 SOLUTION VOL=250.1ML
 TIME OUT OF REACTOR=.353YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

A S S U M P T I O N S

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 1105 ANALYSIS OF THE SAMPLE 2.50 INCHES FROM THE TOP OF THE MIDDLE ROD

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

ISOTOPE	EOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.4948-04(.228-05)	.0049(.0002)	.4800-04(.228-05)	-.1761-05(.228-05)
U-235	.7076-02	.5768-02(.428-04)	.5733(.0042)	.5619-.02(.420-04)	-.1457-02(.420-04)
U-236	.0000	.2372-03(.517-05)	.0236(.0005)	.2321-03(.514-05)	.2321-03(.514-05)
U-238	.9881-00	1.0000	.983982(.0042)	.9914-00(.139-03)	-.1393-02(.139-03)
TOTAL	.9952-00			.9974-00(.132-03)	-.2623-02(.132-03)

ISOTOPE	EOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	30.1830(.8350)	1.0000	63.7251(.610)	.13816+12(.170+04)
PU240	17.2730(.430)	.4275-00(.127-02)	27.2412(.0605)	.50130+12(.300+10)
PU241	2.3100(.0080)	.1129+00(.723-03)	7.3558(.0444)	.57600+10(.100+09)
PU242	.2340(.0005)	.2633-01(.310-03)	1.6779(.1195)	.87000+10(.200+04)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3130-02(.7115-04)	.3825-02(.1929-04)	-.6955-03(.7372-04)
PU240	.1343-02(.3049-04)	.8275-03(.4641-05)	.5160-03(.3084-04)
PU241	.3643-03(.8607-05)	.1132-03(.6441-06)	.2511-03(.8631-05)
PU242	.8384-04(.2136-05)	.1130-04(.6165-07)	.7214-04(.2137-05)
TOTALS	.4921-02(.1117-03)	.4777-02(.2400-04)	.1438-03(.1142-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.1221-02(.4227-04)	1171.7	.0628(.0014)	.0609(.0061)	202
U-238	.1594-03(.1601-04)	156.3	.0620(.0060)		209
PU239	.9826-03(.7870-04)	889.9	.0674(.0019)	.0766(.0077)	211
PU241	.1942-03(.1676-04)	192.5	.0600(.0033)	.0799(.0080)	214
TOTALS	.2477-02(.6708-04)	2410.5			

U235/U238=.7942(.0059) ALPHA-235=.1934(.0083) ALPHA-239=1.1448(.1816) PU239 FORMED FROM U238= .1239-02(.14-03)

INPUT DATA

CESIUM-137 DECAYS=.8870+09(.1774+08)D/M/ML
 PU DECAYS=.5909+08(.1120+07)D/M/ML
 PERCENT DECAYS BY PU238=10.20
 SAMPLE WT=15.276GM CLAD WT=2.742GM
 SOLUTION VOL=254.4ML
 TIME OUT OF REACTOR=.458YRS
 BOL PU241 DECAY CORRECTION TIME=1.309YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5145 ANALYSIS OF THE SAMPLE 12.50 INCHES FROM THE TOP OF THE MIDDLE ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5191-04(.293-05)	.0052(.0003)	.5029-04(.291-05)	.5276-06(.291-05)
U-235	.7076-02	.5209-02(.461-04)	.5180(.0046)	.5068-02(.456-04)	-.2008-02(.456-04)
U-236	.0000	.3523-03(.117-04)	.0350(.0012)	.3442-03(.116-04)	.3442-03(.116-04)
U-238	.9681-00	1.0000	.99.4418(.0047)	.9900-00(.170-03)	-.2744-02(.170-03)
TOTAL	.9952-00			.9956-00(.163-03)	-.4418-02(.163-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	30.1830(.0350)	1.0000	67.1352(.0689)	.13616+12(.170+09)
PU240	17.2730(.0430)	.3787-00(.137-02)	25.4214(.0694)	.50130+12(.300+10)
PU241	2.3100(.0060)	.9195-01(.536-03)	6.2551(.0348)	.57600+10(.100+09)
PU242	.2340(.0005)	.1770-01(.415-03)	1.1883(.0275)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3624-02(.8238-04)	.3825-02(.1929-04)	-.2011-03(.8461-04)
PU240	.1378-02(.3126-04)	.8275-03(.4641-05)	.5506-03(.3160-04)
PU241	.3405-03(.7991-05)	.1132-03(.6441-06)	.2273-03(.8017-05)
PU242	.6485-04(.2120-05)	.1130-04(.6165-07)	.5365-04(.2121-05)
TOTALS	.5407-02(.1226-03)	.4777-02(.2400-04)	.6304-03(.1249-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MW/D/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.1655-02(.4705-04)	1589.1	.0620(.0014)	.0609(.0061)	202
U-238	.2457-03(.2440-04)	241.0	.0620(.0060)		209
PU239	.1735-02(.1114-03)	1710.5	.0674(.0019)	.0766(.0077)	211
PU241	.1444-03(.1303-04)	143.2	.0660(.0033)	.0799(.0080)	214
TOTALS	.3780-02(.1047-03)	3683.7			

U235/U238BOL=.7162(.0064) ALPHA-235=.2131(.0103) ALPHA-239=.5625(.0945) PU239 FORMED FROM U238=.2508-02(.17-03)

INPUT DATA

CESIUM-137 DECAYS=.1495+10(.2990+08)D/M/ML
 PU DECAYS=.6924+08(.1385+07)D/M/ML
 PERCENT DECAYS BY PU238=14.40
 SAMPLE WT=16.624GM CLAD WT=2.592GM
 SOLUTION VOL=258.4ML
 TIME OUT OF REACTOR=.276YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 1185 ANALYSIS OF THE SAMPLE 23.50 INCHES FROM THE TOP OF THE MIDDLE ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5460-04(.412-05)	.0054(.0004)	.5285-04(.410-05)	.3085-05(.410-05)
U-235	.7076-02	.4513-02(.442-04)	.4490(.0044)	.4387-02(.445-04)	-.2689-02(.445-04)
U-236	.0000	.4469-03(.121-04)	.0445(.0012)	.4363-03(.120-04)	.4363-03(.120-04)
U-238	.9881-00	1.0000	90.5011(.0046)	.9891-00(.196-03)	-.3638-02(.196-03)
TOTAL	.9952-00			.9941-00(.190-03)	-.5911-02(.190-03)

ISOTOPE	EOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (E/M/GM)
PU239	30.1830(.0350)	1.0000	63.9414(.0092)	.13616+12(.170+09)
PU240	17.2730(.0430)	.4248-00(.147-02)	27.1623(.0701)	.50130+12(.300+10)
PU241	2.3100(.0060)	.1124+00(.756-03)	7.2825(.0461)	.57600+10(.100+09)
PU242	.2340(.0005)	.2524-01(.322-03)	1.6139(.0204)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3529-02(.8167-04)	.3825-02(.1929-04)	-.2365-03(.8302-04)
PU240	.1531-02(.3475-04)	.8275-03(.4641-05)	.7034-03(.3506-04)
PU241	.4121-03(.9781-05)	.1132-03(.6441-06)	.2989-03(.9802-05)
PU242	.9171-04(.2395-05)	.1130-04(.6165-07)	.8041-04(.2395-05)
TOTALS	.5623-02(.1276-03)	.4777-02(.2400-04)	.8462-03(.1299-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.2235-02(.4606-04)	2145.8	.0628(.0014)	.0609(.0061)	202
U-238	.3275-03(.3236-04)	321.2	.0620(.0060)		209
PU239	.2264-02(.1422-03)	2232.0	.0674(.0019)	.0766(.0077)	211
PU241	.2164-03(.1870-04)	214.6	.0660(.0033)	.0799(.0080)	214
TOTALS	.5043-02(.1393-03)	4913.6			

U235/U238BOL=.6199(.0063) ALPHA-235=.2031(.0076) ALPHA-239=.5739(.0777) PU239 FORMED FROM U238=.3325-02(.19-03)

I N P U T D A T A

CESIUM-137 DECAYS=.2078+1(.4156+08)D/M/ML
 PU DECAYS=.7904+08(.1599+.7)D/M/ML
 PERCENT DECAYS BY PU238=10.00
 SAMPLE WT=17.574GM CL/D WT=2.681GM
 SOLUTION VOL=257.6ML
 TIME OUT OF REACTOR=.276YRS
 BOL PU241 DECAY CORRECTION TIME=1.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

A S S U M P T I O N S

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 6185 ANALYSIS OF THE SAMPLE 33.50 INCHES FROM THE TOP OF THE MIDDLE ROD

ISOTOPIC INVENTORY

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5964-04(.382-05)	.0059(.0004)	.5770-04(.380-05)	.7934-05(.380-05)
U-235	.7076-02	.4246-02(.325-04)	.4226(.0033)	.4125-02(.325-04)	-.2951-02(.325-04)
U-236	.0000	.4942-03(.118-04)	.0492(.0012)	.4822-03(.118-04)	.4822-03(.118-04)
U-238	.9881-00	1.0000	.99.5223(.0035)	.9886-00(.207-03)	-.4130-02(.207-03)
TOTAL	.9952-00			.9934-00(.204-03)	-.6623-02(.204-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	80.1830(.0350)	1.0000	62.6145(.0555)	.13616+12(.170+09)
PU240	17.2730(.0430)	.4464-00(.122-02)	27.9505(.0564)	.50130+12(.300+10)
PU241	2.3100(.0060)	.1200+00(.638-03)	7.6123(.0380)	.57600+10(.100+09)
PU242	.2340(.0005)	.2911-01(.307-03)	1.8227(.0190)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3622-02(.8234-04)	.3825-02(.1929-04)	-.2035-03(.8457-04)
PU240	.1623-02(.3684-04)	.8275-03(.4641-05)	.7960-03(.3714-04)
PU241	.4440-03(.1037-04)	.1132-03(.6441-06)	.3308-03(.1039-04)
PU242	.10.8-03(.2676-05)	.1130-04(.6165-07)	.9545-04(.2676-05)
TOTALS	.5706-02(.1315-03)	.4777-02(.2400-04)	.1019-02(.1337-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.2446-02(.3460-04)	2348.4	.0628(.0014)	.0609(.0061)	202
U-238	.3624-03(.3570-04)	355.4	.0620(.0060)		209
PU239	.2509-02(.1529-03)	2474.1	.0674(.0019)	.0766(.0077)	211
PU241	.2569-03(.2204-04)	254.8	.0660(.0033)	.0799(.0080)	214
TOTALS	.5575-02(.1540-03)	5432.7			

U235/U235BOL=.5830(.0046) ALPHA-235=.2062(.0064) ALPHA-239=.5894(.0731) PU239 FORMED FROM U238=.3783-02(.20-03)

INPUT DATA

CESIUM-137 DECAYS=.2320+13(.4640+08)D/M/ML
 PU DECAYS=.8515+08(.1703+07)D/M/ML
 PERCENT DECAYS BY PU238=12.10
 SAMPLE WT=17.516GM CLAD WT=2.482GM
 SOLUTION VOL=257.5ML
 TIME OUT OF REACTOR=.276YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5135 ANALYSIS OF THE SAMPLE 37.50 INCHES FROM THE TOP OF THE MIDDLE ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5265-04(.337-05)	.0052(.0003)	.5093-04(.335-05)	.1171-05(.335-05)
U-235	.7076-02	.4259-02(.333-04)	.4239(.0033)	.4138-02(.330-04)	-.2938-02(.330-04)
U-236	.0000	.4934-03(.121-04)	.0491(.0012)	.4814-03(.120-04)	.4814-03(.120-04)
U-238	.9881-00	1.0000	99.5218(.0035)	.9886-00(.208-03)	-.4150-02(.208-03)
TOTAL	.9952-00			.9934-00(.205-03)	-.6631-02(.205-03)

ISOTOPE	EOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	80.1830(.0350)	1.0000	62.5247(.0791)	.13616+12(.170+09)
PU240	17.2730(.0430)	.4481-00(.189-02)	28.0173(.0860)	.50130+12(.300+10)
PU241	2.3100(.0060)	.1203+00(.635-03)	7.6197(.0384)	.57600+10(.100+09)
PU242	.2340(.0005)	.2940-01(.315-03)	1.8382(.0194)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3603-02(.8224-04)	.3825-02(.1929-04)	-.2219-03(.8447-04)
PU240	.1621-02(.3685-04)	.8275-03(.4641-05)	.7939-03(.3714-04)
PU241	.4428-03(.1037-04)	.1132-03(.6441-06)	.3296-03(.1039-04)
PU242	.1073-03(.2703-05)	.1130-04(.6165-07)	.9596-04(.2704-05)
TOTALS	.5775-02(.1312-03)	.4777-02(.2400-04)	.9975-03(.1334-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.2435-02(.3509-04)	2337.3	.0626(.0014)	.0609(.0061)	202
U-238	.3647-03(.3593-04)	357.7	.0620(.0060)		209
PU239	.2548-02(.1540-03)	2511.8	.0674(.0019)	.0766(.0077)	211
PU241	.2583-03(.2217-04)	256.1	.0660(.0033)	.0799(.0080)	214
TOTALS	.5605-02(.1550-03)	5462.9			

U235/U235BOL=.5848(.0046) ALPHA-235=.2068(.0066) ALPHA-239=.5800(.0717) PU239 FORMED FROM U238=.3801-02(.20-03)

I N P U T D A T A

CESIUM-137 DECAYS=.2550+10(.5100+08)D/M/ML
 PU DECAYS=.9304+08(.1861+07)D/M/ML
 PERCENT DECAYS BY PU238=19.30
 SAMPLE WT=20.6986GM CLAD WT=2.9736GM
 SOLUTION VOL=277.8ML
 TIME OUT OF REACTOR=.276YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

A S S U M P T I O N S

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5185 ANALYSIS OF THE SAMPLE 38.00 INCHES FROM THE TOP OF THE MIDDLE ROD

ISOTOPIC INVENTORY

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4076-04	.4770-04(.207-05)	.0047(.0002)	.4645-04(.202-05)	-.3309-05(.202-05)
U-235	.7076-02	.4277-02(.261-04)	.4256(.0026)	.4183-02(.259-04)	-.2893-02(.259-04)
U-236	.0000	.4973-03(.753-05)	.0495(.0007)	.4884-03(.749-05)	.4884-03(.749-05)
U-238	.9881-00	1.0000	.995201(.0027)	.9952-00(.961-04)	.2439-02(.961-04)
TOTAL	.9952-00			.1000+01(.922-04)	.1145-04(.922-04)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	20.1830(.0350)	1.0000	62.6855(.0529)	.13616+12(.170+06)
PU240	17.2730(.0430)	.4467-00(.114-02)	28.0029(.0529)	.50130+12(.300+10)
PU241	2.3100(.0060)	.1129+00(.573-03)	7.5095(.0385)	.57600+10(.100+09)
PU242	.2340(.0005)	.2875-01(.293-03)	1.8022(.0181)	.87000+16(.200+04)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.1345-02(.3058-04)	.3825-02(.1929-04)	-.2480-02(.3615-04)
PU240	.6035-03(.1370-04)	.8275-03(.4641-05)	-.2239-03(.1446-04)
PU241	.1625-03(.3799-05)	.1132-03(.6441-06)	.4931-04(.3853-05)
PU242	.3917-04(.9755-06)	.1130-04(.6165-07)	.2786-04(.9774-06)
TOTALS	.2151-02(.4880-04)	.4777-02(.2400-04)	-.2627-02(.5438-04)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.2383-02(.2693-04)	2288.1	.0628(.0014)	.0609(.0061)	202
U-238	.1492-03(.1504-04)	146.4	.0620(.0060)		209
PU239	-.4746-04(.7649-04)	-46.8	.0674(.0019)	.0766(.0077)	211
PU241	.7499-04(.8625-05)	74.4	.0600(.0033)	.0799(.0080)	214
TOTALS	.2560-02(.7449-04)	2462.0			

U235/U238BOL=.5911(.0036) ALPHA-235=.2138(.0045) ALPHA-239=1.5125(****) PU239 FORMED FROM U238=-.2600-02(.94-04)

INPUT DATA

CESIUM-137 DECAYS=.1055+10(.2110+08)D/M/ML
 PU DECAYS=.3407+08(.6814+06)D/M/ML
 PERCENT DECAYS BY PU238=21.90
 SAMPLE WT=17.359GM CLAD WT=2.480GM
 SOLUTION VOL=245.2ML
 TIME OUT OF REACTOR=1.244YRS
 BOL PU241 DECAY CORRECTION TIME= .389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 4135 ANALYSIS OF THE SAMPLE 44.75 INCHES FROM THE TOP OF THE MIDDLE ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4776-04	.4631-04(.227-05)	.0046(.0002)	.4488-04(.226-05)	-.4878-05(.228-05)
U-235	.7076-02	.4477-02(.301-04)	.4455(.0030)	.4358-02(.298-04)	-.2718-02(.298-04)
U-236	.0000	.4881-03(.838-05)	.0466(.0008)	.4576-03(.826-05)	.4576-03(.828-05)
U-238	.9881-00	1.0000	99.5033(.0031)	.9904-00(.169-03)	-.2308-02(.169-03)
TOTAL	.9952-00			.9954-00(.166-03)	-.4589-02(.168-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	80.1830(.0350)	1.0000	70.7348(.0779)	.13616+12(.170+04)
PU240	17.2730(.0430)	.3361-00(.147-02)	23.7740(.0799)	.50130+12(.300+10)
PU241	2.3100(.0060)	.6573-01(.474-03)	4.7591(.0333)	.57600+10(.100+04)
PU242	.2340(.0095)	.1035-01(.128-03)	.7321(.0090)	.87000+10(.200+04)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3430-02(.7937-04)	.3825-02(.1929-04)	-.3348-03(.8168-04)
PU240	.1178-02(.2674-04)	.6275-03(.4641-05)	.3506-03(.2714-04)
PU241	.2388-03(.5652-05)	.1132-03(.0441-06)	.1236-03(.5688-05)
PU242	.3658-04(.9470-06)	.1130-04(.6165-07)	.2528-04(.9490-08)
TOTALS	.4942-02(.1120-03)	.4777-02(.2400-04)	.1647-03(.1145-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.2243-02(.3095-04)	2152.9	.0628(.0014)	.0609(.0061)	202
U-238	.2611-03(.2771-04)	275.7	.0620(.0060)		209
PU239	.1103-02(.1198-03)	1778.0	.0674(.0019)	.0766(.0077)	211
PU241	.6203-04(.6079-05)	67.5	.0600(.0033)	.0799(.0080)	214
TOTALS	.4395-02(.1208-03)	4274.0			

U235/U235BOL=.6158(.0042) ALPHA-235=.2121(.0053) ALPHA-239=.3147(.0808) PU239 FORMED FROM U238=.2035-02(.17-03)

INPUT DATA

CESIUM-137 DECAYS=.1480+10(.2960+08)D/M/ML
 PU DECAYS=.5574+08(.1115+07)D/M/ML
 PERCENT DECAYS BY PU238=17.90
 SAMPLE WT=15.2436GM CLAD WT=2.7136GM
 SOLUTION VOL=63.3ML
 TIME OUT OF REACTOR=.488YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5185 ANALYSIS OF THE SAMPLE 45.25 INCHES FROM THE TOP OF THE MIDDLE ROD

ISOTOPIC INVENTORY

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.4880-04(.200-05)	.0049(.0002)	.4738-04(.199-05)	-.2379-05(.190-05)
U-235	.7076-02	.4482-02(.281-04)	.4460(.0028)	.4370-02(.279-04)	-.2706-02(.270-04)
U-236	.0000	.4684-03(.783-05)	.0466(.0008)	.4587-03(.778-05)	.4587-03(.778-05)
U-238	.9881-00	1.0000	.99.5026(.0029)	.9922-00(.140-03)	-.5123-03(.140-03)
TOTAL	.9052-00			.9972-00(.137-03)	-.2779-02(.137-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (C/M/GM)
PU239	80.1830(.1350)	1.0000	63.8778(.0556)	.13616+12(.170+09)
PU240	17.2730(.0430)	.4257-00(.118-02)	27.1947(.0562)	.50130+12(.300+10)
PU241	2.3100(.0060)	.1074+00(.550-03)	7.2808(.0377)	.57600+10(.100+09)
PU242	.2340(.0005)	.2578-01(.261-03)	1.6468(.0164)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.2225-02(.5147-04)	.3825-02(.1929-04)	-.1560-02(.5497-04)
PU240	.9634-03(.2197-04)	.8275-03(.4841-05)	.1409-03(.2245-04)
PU241	.2603-03(.6087-05)	.1132-03(.6441-06)	.1471-03(.6121-05)
PU242	.5933-04(.1470-05)	.1130-04(.6165-07)	.4782-04(.1472-05)
TOTALS	.3553-02(.8059-04)	.4777-02(.2400-04)	-.1224-02(.8409-04)

FISSIONS

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.2029-02(.2895-04)	2139.8	.0628(.0014)	.0609(.0061)	202
U-238	.2512-03(.2477-04)	246.3	.0620(.0060)		209
PU239	.1359-02(.1076-03)	1339.6	.0674(.0019)	.0766(.0077)	211
PU241	.1287-03(.1116-04)	127.6	.0660(.0033)	.0799(.0080)	214
TOTALS	.3968-02(.1076-03)	3853.4			

U235/U238 BOL=.6176(.0039) ALPHA-235=.2138(.0050) ALPHA-239=.3419(.0742) PU239 FORMED FROM U238=.2622-03(.14-03)

INPUT DATA

CESIUM-137 DECAYS=.1625+10(.3250+08)D/M/ML
 PU DECAYS=.5405+08(.1081+07)D/M/ML
 PERCENT DECAYS BY PU238=21.60
 SAMPLE WT=17.147GM CLD WT=2.594GM
 SOLUTION VOL=246.1ML
 TIME OUT OF REACTOR=1.244YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 4185 ANALYSIS OF THE SAMPLE 54.50 INCHES FROM THE TOP OF THE MIDDLE ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/U)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.4233-04(.298-05)	.0048(.0003)	.4652-04(.298-05)	-.3244-05(.298-05)
U-235	.7076-02	.4262-02(.276-04)	.4242(.0028)	.4120-02(.276-04)	-.2956-02(.276-04)
U-238	.0000	.4805-03(.108-04)	.0478(.0010)	.4664-03(.996-05)	.4664-03(.996-05)
U-238	.9881-00	1.0000	90.5232(.0029)	.9836-00(.305-03)	-.9158-02(.305-03)
TOTAL	.9952-00			.9883-00(.304-03)	-.1167-01(.304-03)

ISOTOPE	EOL (A/U)	EOL MASS RATIO	EOL (A/U)	SPECIFIC ACTIVITY (D/M/GM)
PU239	20.1830(.1350)	1.0000	62.6205(.1424)	.13616+12(.170+09)
PU240	17.2730(.1430)	.4452-00(.338-02)	27.8786(.1549)	.50130+12(.300+10)
PU241	2.3100(.0050)	.1195+00(.114-02)	7.6617(.5696)	.57600+10(.100+09)
PU242	.2340(.0005)	.2937-01(.552-03)	1.8392(.0342)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.5185-02(.1201-03)	.3825-02(.1929-04)	.1360-02(.1216-03)
PU240	.2318-02(.5298-04)	.8275-03(.4641-05)	.1491-02(.5318-04)
PU241	.6387-03(.1602-06)	.1132-03(.6441-06)	.5265-03(.1603-04)
PU242	.1582-03(.4596-05)	.1130-04(.6165-07)	.1429-03(.4597-05)
TOTALS	.8287-02(.1894-03)	.4777-02(.2400-04)	.3520-02(.1910-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	PURNUP (MWd/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.2467-02(.2932-04)	2368.6	.0620(.0014)	.0609(.0061)	202
U-238	.5445-03(.5364-04)	534.0	.0620(.0060)		209
PU239	.4743-02(.2297-03)	4681.6	.0674(.0019)	.0766(.0077)	211
PU241	.3846-03(.3395-04)	381.4	.0680(.0033)	.0799(.0080)	214
TOTALS	.8145-02(.2362-03)	7965.5			

35/U235,DEL=.5822(.0039) ALPHA-235=.1982(.0053) ALPHA-239=.535(.0547) PU239 FORMED FROM U238=.8650-02(.30-03)

INPUT DATA

CESIUM-137 DECAYS=.1903+10(.3806+08)D/M/ML
 PU DECAYS=.657+08(.1365+07)D/M/ML
 PERCENT DECAYS BY PU238=16.20
 SAMPLE WT=10.9666G CLAD WT=2.115GM
 SOLUTION VOL=70.0ML
 TIME OUT OF REACTOR=.488YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5185 ANALYSIS OF THE SAMPLE 55.00 INCHES FROM THE TOP OF THE MIDDLE ROD

ISOTOPIC INVENTORY

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.4830-04(.193-05)	.0046(.0002)	.4506-04(.192-05)	-.4704-05(.192-05)
U-235	.7076-02	.4319-02(.223-04)	.4298(.0022)	.4221-02(.221-04)	-.2855-02(.221-04)
U-236	.0000	.4982-03(.727-05)	.0496(.0007)	.4890-03(.723-05)	.4890-03(.723-05)
U-238	.9881-00	1.0000	.995160(.0023)	.9945-00(.104-03)	.1746-02(.104-03)
TOTAL	.9952-00			.9994-00(.101-03)	-.6421-03(.101-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	20.1830(.0350)	1.0000	62.6160(.0550)	.13616+12(.170+09)
PU240	17.2730(.0430)	.4461-00(.110-02)	27.9355(.0551)	.50130+12(.300+10)
PU241	2.3100(.0060)	.1145+00(.601-03)	7.6108(.0401)	.57600+10(.100+09)
PU242	.2340(.0005)	.2935-01(.303-03)	1.8378(.0187)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.1580-02(.3547-04)	.3825-02(.1929-04)	-.2265-02(.4038-04)
PU240	.6961-03(.1587-04)	.8275-03(.4641-05)	-.1283-03(.1653-04)
PU241	.1913-03(.4479-05)	.1132-03(.6441-06)	.7805-04(.4525-05)
PU242	.4638-04(.1158-05)	.1130-04(.6165-07)	.3507-04(.1159-05)
TOTALS	.2407-02(.5667-04)	.4777-02(.2400-04)	-.2280-02(.6154-04)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.2346-02(.2326-04)	2751.6	.0628(.0014)	.0609(.0061)	202
U-238	.1719-03(.1711-04)	168.5	.0620(.0060)		209
PU239	.2598-03(.3058-04)	256.1	.0674(.0019)	.0766(.0077)	211
PU241	.9440-04(.8266-05)	93.6	.0660(.0033)	.0799(.0080)	214
TOTALS	.2872-02(.3009-04)	2769.9			

U235/U238BOL=.5965(.0031) ALPHA-235=.2172(.0043) ALPHA-239=.3040(.3004) PU239 FORMED FROM U238= -.1926-02(.10-03)

INPUT DATA

CESIUM-137 DECAYS=.1893+10(.3786+08)D/M/ML
 PU DECAYS=.6207+08(.1249+07)D/M/ML
 PERCENT DECAYS BY PU238=21.50
 SAMPLE WT=27.0206GM CLAD WT=3.8096GM
 SOLUTION VOL=244.7ML
 TIME OUT OF REACTOR=1.244YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 9185 ANALYSIS OF THE SAMPLE 64.50 INCHES FROM THE TOP OF THE MIDDLE ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4676-04	.4641-04(.23 -05)	.0646(.0002)	.4492-04(.236-05)	-.4843-05(.235-05)
U-235	.7076-02	.4314-02(.321-04)	.4789(.0032)	.4679-02(.317-04)	-.2397-02(.317-04)
U-236	.0000	.4668-03(.908-05)	.0405(.0009)	.3971-03(.894-05)	.3971-03(.894-05)
U-238	.9881-00	1.0000	96.4760(.0033)	.9891-00(.189-03)	-.3680-02(.189-03)
TOTAL	.9952-00			.9943-00(.186-03)	-.5695-02(.186-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	60.1830(.1350)	1.0000	65.7210(.0602)	.13616+12(.170+09)
PU240	17.2730(.1430)	.3962-00(.122-02)	26.0367(.0604)	.50130+12(.300+10)
PU241	2.3100(.1060)	.1018+00(.616-03)	6.8490(.1393)	.57600+10(.100+09)
PU242	.2340(.1005)	.2120-01(.224-03)	1.3933(.1146)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3863-02(.8640-04)	.3825-02(.1929-04)	-.2198-04(.8853-04)
PU240	.1513-02(.3431-04)	.8275-03(.4841-05)	.6855-03(.3463-04)
PU241	.3967-03(.9400-05)	.1132-03(.6441-06)	.2864-03(.9422-05)
PU242	.8114-04(.2045-05)	.1130-04(.5165-07)	.7034-04(.2046-05)
TOTALS	.5767-02(.1314-03)	.4777-02(.2400-04)	.1020-02(.1336-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.1987-02(.3298-04)	1907.0	.0625(.0014)	.0609(.0061)	202
U-238	.3038-03(.2995-04)	297.9	.0620(.0060)		209
PU239	.2182-02(.1292-03)	2151.7	.0674(.0019)	.0766(.0077)	211
PU241	.1693-03(.1631-04)	187.7	.0660(.0033)	.0799(.0080)	214
TOTALS	.4662-02(.1295-03)	4544.3			

U235/U238 DEL=.6613(.0045) ALPHA-235=.2066(.0064) ALPHA-239=.5643(.0310) PU239 FORMED FROM U238=.3391-02(.10-03)

INPUT DATA

CESIUM-137 DECAYS=.2243+10(.4486+08)D/M/ML
 PU DECAYS=.9360+08(.1870+07)D/M/ML
 PERCENT DECAY BY PU238=1.50
 SAMPLE WT=20.196GM CLAD WT=2.877GM
 SOLUTION VOL=54.4ML
 TIME OUT OF REACTOR=.488YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5185 ANALYSIS OF THE SAMPLE 65.00 INCHES FROM THE TOP OF THE MIDDLE ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.4660-04(.207-05)	.0046(.0002)	.4528-04(.205-05)	-.4477-05(.205-05)
U-235	.7076-02	.4869-02(.281-04)	.4843(.0028)	.4752-02(.279-04)	-.2324-02(.279-04)
U-236	.0000	.4083-03(.663-05)	.0406(.0007)	.4002-03(.660-05)	.4002-03(.660-05)
U-238	.9881-00	1.0000	99.4704(.0029)	.9931-00(.118-03)	.3098-03(.118-03)
TOTAL	.9952-00			.9984-00(.115-03)	-.1628-02(.115-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	80.1836(.0350)	1.0000	65.8579(.0515)	.13616+12(.170+04)
PU240	17.2730(.0430)	.3954-00(.101-02)	26.0389(.0503)	.50130+12(.300+10)
PU241	2.5100(.0060)	.9663-01(.520-03)	6.7537(.0366)	.57600+10(.100+04)
PU242	.2340(.0065)	.2049-01(.211-03)	1.3494(.0137)	.87000+10(.200+04)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.2137-02(.4850-04)	.3825-02(.1929-04)	-.1688-02(.5220-04)
PU240	.8425-03(.1923-04)	.8275-03(.4641-05)	.2104-04(.1979-04)
PU241	.2210-03(.5174-05)	.1132-03(.6441-06)	.1078-03(.5214-05)
PU242	.4434-04(.1105-05)	.1130-04(.6165-07)	.3304-04(.1106-05)
TOTALS	.3261-02(.7368-04)	.4777-02(.2400-04)	-.1526-02(.7749-04)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWd/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.1912-02(.2863-04)	1835.4	.0628(.0014)	.0609(.0061)	202
U-238	.1258-03(.1937-04)	192.0	.0620(.0060)		209
PU239	.9302-03(.0634-04)	917.1	.0674(.0019)	.0766(.0077)	211
PU241	.8892-04(.7800-05)	88.2	.0666(.0033)	.0799(.0080)	214
TOTALS	.3127-02(.8464-04)	3032.7			

U235/U238 R= .6715(.0039) ALPHA-235=.2157(.0052) ALPHA-239=.2696(.1038) PU239 FORMED FROM U238=-.5078-03(.12-03)

INPUT DATA

CESIUM-137 DECAYS=.1395+10(.2790+08)D/M/ML
 PU DECAYS=.5015+08(.1017+07)D/M/ML
 PERCENT DECAYS BY PU238=17.90
 SAMPLE WT=19.128GM CLTD WT=2.7616M
 SOLUTION VOL=151.9ML
 TIME OUT OF REACTOR=1.244YRS
 BOL PU241 DECAY CORRECTION TIME= .389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 135 ANALYSIS OF THE SAMPLE 74.50 INCHES FROM THE TOP OF THE MIDDLE ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4076-04	.4019-04(.235-05)	.0049(.0002)	.4770-04(.233-05)	-.2064-05(.233-05)
U-235	.7076-02	.5306-02(.357-04)	.5276(.0035)	.5167-02(.353-04)	-.1909-02(.353-04)
U-236	.0000	.3302-03(.711-05)	.0328(.0007)	.3229-03(.711-05)	.3229-03(.711-05)
U-238	.9981-00	1.0000	90.4347(.0036)	.9909-00(.150-03)	-.1844-02(.150-03)
TOTAL	.9952-00			.9966-00(.145-03)	-.3439-02(.145-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	20.1830(.0350)	1.0000	68.5300(.0635)	.13616+12(.170+09)
PU240	17.2730(.0430)	.3569-00(.124-02)	24.4563(.0647)	.50130+12(.300+10)
PU241	2.3100(.0060)	.8538-01(.502-03)	5.9892(.0338)	.57600+10(.100+09)
PU242	.2340(.0065)	.1495-01(.175-03)	1.0245(.0119)	.87000+10(.200+04)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3418-02(.7762-04)	.3825-02(.1929-04)	-.4069-03(.7998-04)
PU240	.1225-02(.2777-04)	.8275-03(.4641-05)	.3975-03(.2816-04)
PU241	.3012-03(.7070-05)	.1132-03(.0441-06)	.1880-03(.7099-05)
PU242	.5174-04(.1322-05)	.1130-04(.6165-07)	.4044-04(.1323-05)
TOTALS	.4906-02(.1132-03)	.4777-02(.2400-04)	.2191-03(.1157-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWE/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.1579-02(.3601-04)	1515.4	.0628(.0014)	.0609(.0061)	202
U-238	.2064-03(.2045-04)	202.4	.0620(.0060)		209
PU239	.1318-02(.9206-04)	1299.1	.0674(.0019)	.0766(.0077)	211
PU241	.1088-03(.9517-05)	107.9	.0663(.0033)	.0799(.0080)	214
TOTALS	.3211-02(.8797-04)	3124.8			

U235/U238 BOL=.7302(.0050) ALPHA-235=.2093(.0072) ALPHA-239=.5577(.1139) PU239 FORMED FROM U238=.1645-02(.15-03)

I N P U T D A T A

CESIUM-137 DECAYS=.1713+10(.3426+08)D/M/ML
 PU DECAYS=.8518+08(.1704+07)D/M/ML
 PERCENT DECAYS BY PU239=13.80
 SAMPLE WT=22.585GM CLAD WT=3.143GM
 SOLUTION VOL=57.9ML
 TIME OUT OF REACTOR=.488YRS
 BOL PU241 DECAY CORRECTION TIME=.1389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

A S S U M P T I O N S

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5185 ANALYSIS OF THE SAMPLE 84.50 INCHES FROM THE TOP OF THE MIDDLE ROD

ISOTOPIC INVENTORY

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5141-04(.251-05)	.0051(.0002)	.4987-04(.249-05)	.1125-06(.249-05)
U-235	.7076-02	.5808-02(.348-04)	.5773(.0034)	.5659-02(.344-04)	-.1417-02(.344-04)
U-236	.0000	.2282-03(.406-05)	.0227(.0004)	.2233-03(.406-05)	.2233-03(.406-05)
U-238	.9881-00	1.0000	.993949(.0035)	.9914-00(.137-03)	-.1368-02(.137-03)
TOTAL	.9952-00			.9974-00(.132-03)	-.2567-02(.132-03)

ISOTOPE	EOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	80.1830(.1350)	1.0000	71.6558(.0543)	.13616+12(.170+09)
PU240	17.2730(.0430)	.3182-00(.962-03)	22.7987(.0537)	.50130+12(.300+10)
PU241	2.3100(.0060)	.6616-01(.412-03)	4.8526(.0292)	.57600+10(.100+09)
PU242	.2340(.0005)	.9670-02(.115-03)	.6929(.0082)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3582-02(.8070-04)	.3825-02(.1929-04)	-.2635-03(.8297-04)
PU240	.1138-02(.2577-04)	.8275-03(.4041-05)	.3105-03(.2618-04)
PU241	.2432-03(.5718-05)	.1132-03(.6441-06)	.1300-03(.5754-05)
PU242	.3487-04(.8929-06)	.1130-04(.6165-07)	.2357-04(.8950-06)
TOTALS	.4978-02(.1126-03)	.4777-02(.2400-04)	.2006-03(.1151-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWd/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.1190-02(.3462-04)	1142.8	.0626(.0014)	.0609(.0061)	202
U-238	.1515-03(.1511-04)	148.5	.0620(.0060)		209
PU239	.9583-03(.7122-04)	944.8	.0674(.0019)	.0766(.0077)	211
PU241	.6244-04(.5680-05)	62.9	.0666(.0033)	.0799(.0080)	214
TOTALS	.2364-02(.6475-04)	2299.1			

U235/U238 BOL=.7997(.0048) ALPHA-235=.1906(.0066) ALPHA-239=.5505(.1537) PU239 FORMED FROM U236=.1222-02(.14-03)

INPUT DATA

CESIUM-137 DECAYS=.8640+09(.1768+08)D/M/ML
 PU DECAYS=.5810+08(.1176+.7)D/M/ML
 PERCENT DECAYS BY PU238=14.40
 SAMPLE WT=16.6106G CL/D WT=2.3856G
 SOLUTION VOL=272.8ML
 TIME OUT OF REACTOR=.488YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT #135 ANALYSIS OF THE SAMPLE 2.50 INCHES FROM THE TOP OF THE OUTSIDE ROD

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

ISOTOPE	EOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5174-04(.42-05)	.0051(.0004)	.5015-04(.422-05)	.3875-06(.422-05)
U-235	.7076-02	.5520-02(.40-04)	.5488(.0040)	.5373-02(.402-04)	-.1703-02(.402-04)
U-238	.0000	.2765-03(.537-05)	.0277(.0005)	.2722-03(.534-05)	.2722-03(.534-05)
U-238	.9981-00	1.0000	99.4184(.0041)	.9905-00(.156-03)	-.2259-02(.156-03)
TOTAL	.9952-00			.9965-00(.151-03)	-.3696-02(.151-03)

ISOTOPE	EOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (C/M/GM)
PU239	60.1830(.0330)	1.0000	68.6922(.0735)	.13616+12(.170+09)
PU240	17.2730(.0430)	.3628-00(.148-02)	24.9215(.0752)	.50130+12(.300+10)
PU241	2.2100(.0080)	.7830-01(.558-03)	5.4500(.0369)	.57600+10(.100+09)
PU242	.2340(.0005)	.1363-01(.148-03)	.9363(.0102)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3523-02(.8011-04)	.3825-02(.1329-04)	-.3022-03(.8240-04)
PU240	.1213-02(.2912-04)	.8275-03(.4041-05)	.4560-03(.2949-04)
PU241	.2819-03(.6712-05)	.1132-03(.6441-06)	.1686-03(.6743-05)
PU242	.4862-04(.1227-05)	.1130-04(.6105-07)	.3732-04(.1229-05)
TOTALS	.5127-02(.1164-03)	.4777-02(.2400-04)	.3598-03(.1189-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MW/M/TM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.1425-02(.4052-04)	1367.8	.0620(.0014)	.0491(.0049)	202
U-238	.1688-03(.1691-04)	165.6	.0620(.0060)		209
PU239	.1639-02(.9871-04)	1616.1	.0674(.0019)	.0563(.0056)	211
PU241	.1804-03(.8790-05)	99.6	.0660(.0033)	.0604(.0060)	214
TOTALS	.3333-02(.9307-04)	3249.2			

U235/U238 RATIO=.7593(.0056) ALPHA-235=.1951(.0071) ALPHA-239=.4651(.0927) PU239 FORMED FROM U238=.2099-02(.15-03)

I N P U T D A T A

CESIUM-137 DECAYS=.1120+10(.2240+08)D/M/ML
 PU DECAYS=.5378+08(.1076+07)D/M/ML
 PERCENT DECAYS BY PU238=11.40
 SAMPLE WT=15.4756GM CLAD WT=3.6976GM
 SOLUTION VOL=250.4ML
 TIME OUT OF REACTOR=.276YRS
 BOL PU241 DECAY CORRECTION TIME=.329YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

A S S U M P T I O N S

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5165 ANALYSIS OF THE SAMPLE 12.50 INCHES FROM THE TOP OF THE OUTSIDE ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5377-04(.305-05)	.0053(.0003)	.5205-04(.305-05)	.2293-05(.305-05)
U-235	.7076-02	.4723-02(.380-04)	.4699(.0038)	.4592-02(.376-04)	-.2484-02(.376-04)
U-236	.0000	.4290-03(.107-04)	.0427(.0011)	.4189-03(.107-04)	.4189-03(.107-04)
U-238	.9881-00	1.0000	.99.4821(.0039)	.9893-00(.187-03)	-.3423-02(.187-03)
TOTAL	.9952-00			.9945-00(.183-03)	-.5504-02(.183-03)

ISOTOPE	EOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	80.1830(.1350)	1.0000	64.8695(.0887)	.13616+12(.170+09)
PU240	17.2730(.0430)	.4048-00(.174-02)	26.2592(.0857)	.50130+12(.300+10)
PU241	2.3100(.0060)	.1111+00(.112-02)	7.3027(.0691)	.57600+10(.100+09)
PU242	.2340(.0005)	.2418-01(.335-03)	1.5685(.0215)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3597-02(.8199-04)	.3825-02(.1929-04)	-.2280-03(.8423-04)
PU240	.1462-02(.3322-04)	.8275-03(.4641-05)	.6347-03(.3354-04)
PU241	.4063-03(.1018-04)	.1132-03(.6441-06)	.2951-03(.1020-04)
PU242	.8807-04(.2349-05)	.1130-04(.6165-07)	.7677-04(.2350-05)
TOTALS	.5556-02(.1262-03)	.4777-02(.2400-04)	.7786-03(.1284-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.2051-02(.3911-04)	1968.7	.0628(.0014)	.0491(.0049)	202
U-238	.2386-03(.2377-04)	233.9	.0620(.0060)		209
PU239	.2214-02(.1328-03)	2182.7	.0674(.0019)	.0563(.0056)	211
PU241	.2066-03(.1791-04)	204.9	.0660(.0033)	.0604(.0060)	214
TOTALS	.4710-02(.1305-03)	4590.3			

U235/U238 RLF=.6489(.0053) ALPHA-235=.2113(.0074) ALPHA-239=.5480(.0772) PU239 FORMED FROM U238=.3197-02(.18-03)

I N P U T D A T A

CESIUM-137 DECAYS=.2358+1(.4716+08)D/M/ML
 PU DECAYS=.9278+08(.1846+07)D/M/ML
 PERCENT DECAYS BY PU238=15.10
 SAMPLE WT=21.265GM CLD WT=3.281GM
 SOLUTION VOL=256.4ML
 SAMPLE WT=21.265GM CLD WT=3.281GM
 SOLUTION VOL=256.4ML
 TIME OUT OF REACTOR=.276RS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

A S S U M P T I O N S

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT #1.5 ANALYSIS OF THE SAMPLE 23.50 INCHES FROM THE TOP OF THE OUTSIDE ROD

ISOTOPIC INVENTORY

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4276-04	.5350-04(.632-05)	.0053(.0006)	.5173-04(.632-05)	.1966-05(.632-05)
U-235	.7076-02	.3800-02(.822-04)	.3863(.0082)	.3767-02(.816-04)	-.3309-02(.816-04)
U-236	.0000	.5030-03(.203-04)	.0501(.0020)	.4905-03(.202-04)	.4905-03(.202-04)
U-238	.9881-00	1.0000	99.5583(.0084)	.5881-00(.237-03)	-.4675-02(.237-03)
TOTAL	.9952-00			.9925-00(.222-03)	-.7526-02(.222-03)

ISOTOPE	EOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	66.1830(.6350)	1.0000	61.4741(.6681)	.13016+12(.170+09)
PU240	17.2730(.430)	.4526-00(.137-02)	27.8219(.639)	.50130+12(.300+10)
PU241	2.3100(.6060)	.1357-00(.998-03)	8.4509(.6576)	.57000+10(.170+09)
PU242	.2340(.6065)	.3665-01(.587-03)	2.2530(.6353)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3647-02(.8298-04)	.3825-02(.1929-04)	-.1702-03(.8519-04)
PU240	.1617-02(.3763-04)	.8275-03(.4541-05)	.8300-03(.3791-04)
PU241	.5056-03(.1209-04)	.1132-03(.6441-06)	.3923-03(.1211-04)
PU242	.1383-03(.3764-05)	.1130-04(.6165-07)	.1240-03(.3765-05)
TOTALS	.5905-02(.1350-03)	.4777-02(.2000-04)	.1108-02(.1371-03)

FISSIONS

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.2788-02(.8403-04)	2676.1	.0620(.0014)	.0491(.0049)	202
U-238	.3198-03(.3208-04)	313.7	.0620(.0060)		209
PU239	.2074-02(.1898-03)	2833.7	.0674(.0019)	.0563(.0056)	211
PU241	.3338-03(.2090-04)	331.1	.0060(.0033)	.0604(.0060)	214
TOTALS	.6316-02(.1741-03)	6154.5			

U235/U238 RLF=.5324(.0115) ALPHA-235=.1868(.0102) ALPHA-239=.5846(.0629) PU239 FORMED FROM U238=.4373-02(.23-03)

INPUT DATA

CESIUM-137 DECAYS=.3910+10(.7820+08)D/M/ML
 PU DECAYS=.1302+09(.2605+07)D/M/ML
 PERCENT DECAYS BY PU238=2.10
 SAMPLE WT=26.315GM CLAD WT=3.611GM
 SOLUTION VOL=261.0ML
 TIME OUT OF REACTOR=.276YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5185 ANALYSIS OF THE SAMPLE 33.50 INCHES FROM THE TOP OF THE OUTSIDE ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.4444-04(.230-05)	.0044(.0002)	.4296-04(.229-05)	-.6806-05(.229-05)
U-235	.7076-02	.3680-02(.311-04)	.3664(.0031)	.3572-02(.308-04)	-.3504-02(.308-04)
U-236	.0000	.5620-03(.127-04)	.0560(.0013)	.5479-03(.127-04)	.5479-03(.127-04)
U-238	.9881-00	1.0000	.99.5732(.0033)	.9878-00(.232-03)	-.4957-02(.232-03)
TOTAL	.9952-00			.9920-00(.229-03)	-.7950-02(.229-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	20.1830(.0350)	1.0000	60.3666(.0882)	.13616+12(.170+09)
PU240	17.2730(.0430)	.4687-00(.217-02)	28.2938(.0957)	.50130+12(.300+10)
PU241	2.3100(.0060)	.1442-00(.942-03)	8.8205(.0540)	.57600+10(.100+09)
PU242	.2340(.0005)	.4173-01(.474-03)	2.5191(.0281)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3671-02(.8396-04)	.3825-02(.1929-04)	-.1541-03(.8614-04)
PU240	.1728-02(.3930-04)	.8275-03(.4641-05)	.9004-03(.3957-04)
PU241	.5409-03(.1286-04)	.1132-03(.6441-06)	.4277-03(.1288-04)
PU242	.1551-03(.3961-05)	.1130-04(.6165-07)	.1438-03(.3961-05)
TOTALS	.6095-02(.1386-03)	.4777-02(.2400-04)	.1318-02(.1407-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWd/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.2921-02(.3332-04)	2803.8	.0628(.0014)	.0491(.0049)	202
U-238	.3334-03(.3313-04)	327.0	.0620(.0060)		209
PU239	.2941-02(.1606-03)	2899.9	.0674(.0019)	.0563(.0056)	211
PU241	.3871-03(.3315-04)	383.8	.0600(.0033)	.0604(.0060)	214
TOTALS	.6582-02(.1811-03)	6414.4			

U235/U238BOL=.5048(.0043) ALPHA-235=.1996(.0056) ALPHA-239=.6320(.0691) PU239 FORMED FROM U238=.4643-02(.23-03)

INPUT DATA

CESIUM-137 DECAYS=.3770+1(.7540+08)D/M/ML
 PU DECAYS=.1255+09(.2509+(7)D/M/ML
 PERCENT DECAYS BY PU238=21.00
 SAMPLE WT=24.006GM CL/D WT=3.254GM
 SOLUTION VOL=258.4ML
 TIME OUT OF REACTOR=.276YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ISOTOPIC INVENTORY

ISOTOPE	EOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.4630-04(.294-05)	.0048(.0003)	.4649-04(.292-05)	-.3276-05(.292-05)
U-235	.7076-02	.3637-02(.301-04)	.3622(.0030)	.5515-02(.299-04)	-.3561-02(.299-04)
U-236	.0000	.5701-03(.914-05)	.0568(.0009)	.5534-03(.914-05)	.5534-03(.914-05)
U-238	.9881-00	1.0000	96.5763(.0031)	.9835-00(.304-03)	-.9206-02(.304-03)
TOTAL	.9952-00			.9877-00(.302-03)	-.1225-01(.302-03)

ISOTOPE	EOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	10.1830(.4350)	1.0000	60.3470(.8882)	.13616+12(.170+09)
PU240	17.2730(.4430)	.4687-00(.217-02)	28.2846(.9957)	.50130+12(.390+10)
PU241	2.5100(.8000)	.1442-00(.942-03)	8.8501(.6542)	.57600+10(.100+09)
PU242	.2340(.4095)	.4173-01(.474-03)	2.5183(.6281)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	EOL (GM)	NET PRODUCTION (GM)
PU239	.542-02(.1254-03)	.3825-02(.1929-04)	.1657-02(.1268-03)
PU240	.250-02(.5869-04)	.8275-03(.4041-05)	.1753-02(.5837-04)
PU241	.8157-03(.1928-04)	.1132-03(.8441-06)	.6975-03(.1929-04)
PU242	.2316-03(.5914-05)	.1130-04(.3165-07)	.2203-03(.5915-05)
TOTALS	.9114-02(.2071-03)	.4777-02(.2400-04)	.4327-02(.2085-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.2971-02(.5124-04)	2851.6	.0628(.0014)	.0491(.0049)	202
U-238	.4033-03(.4011-04)	395.5	.0629(.0060)		209
PU239	.3924-02(.2189-03)	3868.7	.0674(.0019)	.0563(.0056)	211
PU241	.5930-03(.5065-04)	588.1	.0663(.0033)	.0604(.0060)	214
TOTALS	.7891-02(.2189-03)	7703.8			

U235/U238 RATIO=.4968(.0042) ALPHA-235=.1987(.0042) ALPHA-239=.8317(.0787) PU239 FORMED FROM U238=.8839-02(.30-03)

INPUT DATA
 CESIUM-137 ATOMS=.4733+17(.9466+15)ATOMS/ML
 PU DECAYS=.8409+08(.1766+7)D/M/ML
 PERCENT DECAYS BY PU238=22.10
 SAMPLE WT=22.116GM CLAD WT=3.160GM
 SOLUTION VOL=26.5ML
 TIME OUT OF REACTOR=.353 YRS
 BOL PU241 DECAY CORRECTION TIME=.389 YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS
 CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 9185 ANALYSIS OF THE SAMPLE 38.00 INCHES FROM THE TOP OF THE OUTSIDE ROD

ISOTOPIC INVENTORY

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5024-04(.267-05)	.0050(.0003)	.4857-04(.267-05)	-.1196-05(.267-05)
U-235	.7076-02	.3667-02(.224-04)	.3651(.0022)	.3560-02(.222-04)	-.3516-02(.222-04)
U-236	.0000	.5786-03(.130-04)	.0576(.0013)	.5641-03(.130-04)	.5641-03(.130-04)
U-238	.9881-00	1.0000	.99.5723(.0026)	.9879-00(.230-03)	-.4877-02(.230-03)
TOTAL	.9952-00			.9921-00(.229-03)	-.7867-02(.229-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	60.1830(.0350)	1.0000	60.2233(.0592)	.13616+12(.170+09)
PU240	17.2730(.0430)	.4697-00(.137-02)	28.2845(.0610)	.50130+12(.300+10)
PU241	2.3100(.0060)	.1442-00(.745-03)	8.8845(.0430)	.57600+10(.100+04)
PU242	.2340(.0005)	.4330-01(.443-03)	2.6077(.0261)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3523-02(.8109-04)	.3825-02(.1929-04)	-.2620-03(.8335-04)
PU240	.1670-02(.3816-04)	.8275-03(.4641-05)	.8530-03(.3844-04)
PU241	.5301-03(.1237-04)	.1132-03(.6441-06)	.4168-03(.1239-04)
PU242	.1572-03(.3898-05)	.1130-04(.6165-07)	.1449-03(.3898-05)
TOTALS	.5930-02(.1347-03)	.4777-02(.2400-04)	.1153-02(.1368-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWG/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.2917-02(.2571-04)	2799.8	.0628(.0014)	.0491(.0049)	202
U-238	.3377-03(.3354-04)	331.2	.0620(.0060)		209
PU239	.3819-02(.1817-03)	2976.0	.0674(.0019)	.0563(.0056)	211
PU241	.3500-03(.3332-04)	386.8	.0660(.0033)	.0604(.0060)	214
TOTALS	.6663-02(.1836-03)	6493.7			

U235/U238 RCL=.5031(.0031) ALPHA-235=.2056(.0056) ALPHA-239=.5979(.0651) PU239 FORMED FROM U238=.4558-02(.22-03)

INPUT DATA

CESIUM-137 DECAYS=.3823+1(.7646+08)D/M/ML
 PU DECAYS=.1231+09(.2463+17)D/M/ML
 PERCENT DECAYS BY PU238=21.30
 SAMPLE WT=24.7056GM CLD WT=3.3956GM
 SOLUTION VOL=263.7ML
 TIME OUT OF REACTOR=.477YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 133 ANALYSIS OF THE SAMPLE 31.50 INCHES FROM THE TOP OF THE OUTSIDE ROD

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

ISOTOPE	EOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4076-04	.4800-04(.241-05)	.0048(.0002)	.4573-04(.241-05)	-.4027-05(.241-05)
U-235	.7076-02	.3523-02(.232-04)	.3608(.0023)	.3467-02(.232-04)	-.3609-02(.232-04)
U-236	.0000	.5092-03(.110-04)	.0587(.0011)	.5062-03(.110-04)	.5662-03(.110-04)
U-238	.9981-00	1.0000	99.5758(.0026)	.9737-00(.498-03)	-.1905-01(.498-03)
TOTAL	.9952-00			.9779-00(.497-03)	-.2213-01(.497-03)

ISOTOPE	EOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	60.1830(.8350)	1.0000	60.1963(.562)	.13616+12(.170+09)
PU240	17.2730(.430)	.4715-00(.120-02)	28.3850(.575)	.50130+12(.300+10)
PU241	2.3100(.000)	.1430-00(.718-03)	8.8267(.5416)	.57600+10(.100+09)
PU242	.2340(.000)	.4306-01(.441-03)	2.5921(.260)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	EOL (GM)	NET PRODUCTION (GM)
PU239	.8435-02(.1912-03)	.3825-02(.1929-04)	.4580-02(.1922-03)
PU240	.3980-02(.9037-04)	.8275-03(.4041-05)	.3152-02(.9049-04)
PU241	.1243-02(.2897-04)	.1132-03(.0441-06)	.1130-02(.2897-04)
PU242	.3685-03(.9141-05)	.1130-04(.6165-07)	.3552-03(.9141-05)
TOTALS	.1309-01(.3178-03)	.4777-02(.2400-04)	.9217-02(.3187-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MW/MTM)	FISSION YIELD	CEL	MEV/FISSION
U-235	.3805-02(.2571-04)	2884.6	.0620(.0014)	.0491(.0049)	202
U-238	.6717-03(.6710-04)	658.7	.0620(.0060)		209
PU239	.8291-02(.3703-03)	8174.6	.0674(.0019)	.0563(.0056)	211
PU241	.9559-03(.8132-04)	947.9	.0660(.0033)	.0604(.0060)	214
TOTALS	.1292-01(.3816-03)	12665.8			

U235/U238= .4869(.0033) ALPHA-235=.2011(.0047) ALPHA-239=.6740(.0552) PU239 FORMED FROM U238=.1846-01(.49-03)

INPUT DATA

CESIUM-137 ATOMS =.8343+17(.1669+16)ATOMS/ML
 PU DECAYS=.1404+09(.2968+7)D/M/ML
 PERCENT DECAY BY PU238=23.50
 SAMPLE WT=23.211GM CLAD WT=3.145GM
 SOLUTION VOL=803.8ML
 TIME OUT OF REACTOR=.529 RS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 8185 ANALYSIS OF THE SAMPLE 44.75 INCHES FROM THE TOP OF THE OUTSIDE ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.4654-04(.194-05)	.0046(.0002)	.4498-04(.194-05)	-.4782-05(.194-05)
U-235	.7076-02	.3654-02(.243-04)	.3638(.0024)	.3547-02(.241-04)	-.3529-02(.241-04)
U-236	.0000	.6046-03(.234-04)	.0602(.0023)	.5893-03(.233-04)	.5893-03(.233-04)
U-238	.9681-00	1.0000	.99.5713(.0034)	.9877-00(.235-03)	-.5084-02(.235-03)
TOTAL	.9952-00			.9919-00(.232-03)	-.8063-02(.232-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	80.1830(.0350)	1.0000	60.2067(.0562)	.13616+12(.170+09)
PU240	17.2730(.0430)	.4715-00(.129-02)	28.3899(.0575)	.50130+12(.300+10)
PU241	2.3100(.0060)	.1430-00(.716-03)	8.8109(.0414)	.57600+10(.100+09)
PU242	.2340(.0005)	.4306-01(.441-03)	2.5925(.0260)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3634-02(.8267-04)	.3825-02(.1929-04)	-.1912-03(.8489-04)
PU240	.1721-02(.3907-04)	.8275-03(.4641-05)	.8932-03(.3934-04)
PU241	.5363-03(.1250-04)	.1132-03(.6441-06)	.4230-03(.1251-04)
PU242	.1544-03(.3952-05)	.1130-04(.6165-07)	.1471-03(.3952-05)
TOTALS	.6049-02(.1374-03)	.4777-02(.2400-04)	.1272-02(.1395-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWG/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.2904-02(.3353-04)	2788.1	.0628(.0014)	.0491(.0049)	202
U-238	.3419-03(.3398-04)	335.3	.0620(.0060)		209
PU239	.3098-02(.1853-03)	3054.0	.0674(.0019)	.0563(.0056)	211
PU241	.3960-03(.3383-04)	392.7	.0660(.0033)	.0604(.0060)	214
TOTALS	.6740-02(.1860-03)	6570.1			

U235/U238BOL=.5012(.0074) ALPHA-235=.2152(.0099) ALPHA-239=.6003(.0647) PU239 FORMED FROM U238=.4763-02(.23-03)

INPUT DATA

CESIUM-137 DECAYS=.3393+1(.6786+08)D/M/ML
 PU DECAYS=.1102+09(.2204+07)D/M/ML
 PERCENT DECAYS BY PU238=21.10
 SAMPLE WT=22.794GM CLD WT=3.744GM
 SOLUTION VOL=268.7ML
 TIME OUT OF REACTOR=.488YRS
 TIME OUT OF REACTOR=.488YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

FILAMENT 1155 ANALYSIS OF THE SAMPLE 45.25 INCHES FROM THE TOP OF THE OUTSIDE ROD

ISOTOPIC INVENTORY

ISOTOPE	EOL (GM)	EOL MASS RATIO	EOL (A/U)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5550-04(.35-05)	.0056(.0004)	.5356-04(.354-05)	.3799-05(.354-05)
U-235	.7076-02	.3617-02(.417-04)	.3602(.0041)	.5443-02(.414-04)	-.3633-02(.414-04)
U-236	.0000	.5638-03(.12-04)	.0586(.0012)	.5629-03(.123-04)	.5629-03(.123-04)
U-238	.9681-00	1.0000	96.5756(.0043)	.9688-00(.594-03)	-.2399-01(.594-03)
TOTAL	.9952-00			.9729-00(.592-03)	-.2710-01(.592-03)

ISOTOPE	EOL (A/U)	EOL MASS RATIO	EOL (A/U)	SPECIFIC ACTIVITY (D/M/GM)
PU239	29.1830(.3350)	1.0000	60.2233(.6592)	.13616+12(.170+04)
PU240	17.2730(.1430)	.4697-00(.137-02)	28.2845(.610)	.50130+12(.300+16)
PU241	2.3100(.0650)	.1442-00(.745-03)	8.8845(.430)	.57600+16(.100+04)
PU242	.2340(.0085)	.4330-01(.447-03)	2.6077(.261)	.87000+16(.260+04)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.1012-01(.2302-03)	.3825-02(.1949-04)	.6292-02(.2310-03)
PU240	.4771-02(.1083-03)	.6275-03(.4041-05)	.3944-02(.1094-03)
PU241	.1505-02(.3514-04)	.1132-03(.6441-06)	.1392-02(.3514-04)
PU242	.4436-03(.1107-04)	.1130-04(.6105-07)	.4323-03(.1107-04)
TOTALS	.1674-01(.3824-02)	.4777-02(.2400-04)	.1206-01(.3831-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	FURNUP (MW/MT)	FISSION YIELD	DEL	NEU/FISSION
U-235	.3031-02(.4521-04)	2009.5	.0626(.0014)	.0491(.0049)	202
U-238	.7662-03(.7868-04)	771.0	.0626(.0060)		209
PU239	.1004-01(.4409-03)	9047.7	.0674(.0019)	.0563(.0056)	211
PU241	.1163-02(.3692-04)	1153.7	.0666(.0033)	.0604(.0060)	214
TOTALS	.1507-01(.4517-03)	14781.9			

DEL U-235 RELE=.4521(.0058) ALPHA-235=.1985(.0056) ALPHA-239=.6875(.0547) PU239 FORMED FROM U-238=.2330-01(.58-03)

INPUT DATA
 CESIUM-137 ATOM=.5123+17(.1037+16)ATOMS/ML
 PU DECAYS=.9449+06(.1686+7)D/M/ML
 PERCENT DECAY BY PU238=27.20
 SAMPLE AGE=14.59 GM CLD WT=3.4973M
 SOLUTION VOL=1.0ML
 TIME OUT OF REACTOR=.477 RS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN REACTOR DECAY CORRECTION=1.6160

ASSUMPTIONS
 CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

----- VALUES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 5185 ANALYSIS OF THE SAMPLE 54.00 INCHES FROM THE TOP OF THE OUTSIDE ROD

ISOTOPIC INVENTORY

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.4568-04(.228-05)	.0045(.0002)	.4418-04(.227-05)	-.5583-05(.227-05)
U-235	.7076-02	.3753-02(.320-04)	.3737(.0032)	.3645-02(.317-04)	-.3431-02(.317-04)
U-236	.0000	.5513-03(.102-04)	.0549(.0010)	.5377-03(.102-04)	.5377-03(.102-04)
U-238	.9381-00	1.0000	.99.5669(.0033)	.9883-00(.219-03)	-.4422-02(.219-03)
TOTAL	.9952-00			.9926-00(.217-03)	-.7351-02(.217-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	60.1830(.1350)	1.0000	60.8311(.1058)	.13616+12(.170+09)
PU240	17.2730(.6430)	.4597-00(.240-02)	27.9641(.1116)	.50130+12(.300+10)
PU241	2.3100(.0060)	.1420-00(.123-02)	8.7527(.0708)	.57600+10(.100+09)
PU242	.2340(.0005)	.4031-01(.648-03)	2.4521(.0387)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3608-02(.8272-04)	.3825-02(.1929-04)	-.2174-03(.8494-04)
PU240	.1685-02(.3792-04)	.8275-03(.4641-05)	.8379-03(.3820-04)
PU241	.5234-03(.1283-04)	.1132-03(.6441-06)	.4102-03(.1285-04)
PU242	.1473-03(.4123-05)	.1130-04(.6165-07)	.1360-03(.4124-05)
TOTALS	.5944-02(.1353-03)	.4777-02(.2400-04)	.1167-02(.1375-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.2360-02(.3331-04)	2745.4	.0628(.0014)	.0491(.0049)	202
U-238	.3099-03(.3079-04)	304.0	.0620(.0060)		209
PU239	.2600-02(.1680-03)	2562.9	.0674(.0019)	.0563(.0056)	211
PU241	.3659-03(.3168-04)	362.8	.0660(.0033)	.0604(.0060)	214
TOTALS	.6135-02(.1678-03)	5975.1			

U235/U238(L=.5151(.0045) ALPHA-235=.1997(.0048) ALPHA-239=.6732(.0768) PU239 FORMED FROM U238=.4129-02(.21-03)

INPUT DATA

CESIUM-137 DECAYS=.3700+10(.7400+08)D/M/ML
 PU DECAYS=.1279+09(.2558+7)D/M/ML
 PERCENT DECAYS BY PU238=2.70
 SAMPLE WT=25.439GM CLAD WT=3.525GM
 SOLUTION VOL=260.0ML
 TIME OUT OF REACTOR=.276YRS
 TIME OUT OF REACTOR=.276YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 135 ANALYSIS OF THE SAMPLE 64.50 INCHES FROM THE TOP OF THE OUTSIDE ROD

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

ISOTOPE	EOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4076-04	.6797-04(.517-05)	.0068(.0005)	.6579-04(.517-05)	.1603-04(.517-05)
U-235	.7076-02	.4235-02(.506-04)	.4215(.0050)	.4117-02(.500-04)	-.2959-02(.500-04)
U-238	.0060	.4723-03(.194-04)	.0470(.0019)	.4610-03(.193-04)	.4610-03(.193-04)
U-238	.9981-00	1.0000	96.5247(.0054)	.9891-00(.202-03)	-.3625-02(.202-03)
TOTAL	.9952-00			.9939-00(.195-03)	-.6148-02(.195-03)

ISOTOPE	EOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	36.1836(.3350)	1.0000	63.0193(.6655)	.13616+12(.170+00)
PU240	17.2730(.1430)	.4267-00(.145-02)	26.8928(.6681)	.50130+12(.300+10)
PU241	2.3106(.1050)	.1270-00(.696-03)	8.1072(.3418)	.57600+10(.100+00)
PU242	.5306(.6005)	.3143-01(.330-03)	1.9807(.6207)	.87000+10(.200+00)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3457-02(.7957-04)	.3825-02(.1929-04)	-.3286-03(.8187-04)
PU240	.1458-02(.3401-04)	.8275-03(.4641-05)	.6709-03(.3433-04)
PU241	.4536-03(.1062-06)	.1132-03(.6441-06)	.3404-03(.1064-04)
PU242	.1113-03(.2794-05)	.1130-04(.6105-07)	.9997-04(.2745-05)
TOTALS	.5510-02(.1262-03)	.4777-02(.2400-04)	.7827-03(.1234-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWB/MT)	FISSION YIELD	DEL	MLV/FISSION
U-235	.2476-02(.5356-04)	2376.7	.0626(.0014)	.0491(.0049)	202
U-238	.2694-03(.2688-04)	264.2	.0626(.0060)		209
PU239	.2420-02(.1525-03)	2287.5	.0674(.0019)	.0563(.0056)	211
PU241	.2091-03(.2308-04)	266.8	.0666(.0033)	.0604(.0060)	214
TOTALS	.5334-02(.1464-03)	5195.3			

U-235/U-238 RATIO=.5817(.0070) ALPHA-235=.1954(.0101) ALPHA-239=.5949(.0771) PU239 FORMED FROM U-238=.3370-02(.20-03)

INPUT DATA

CESIUM-137 DECAYS=.3045+10(.6090+08)D/M/ML
 PU DECAYS=.1074+09(.2168+17)D/M/ML
 PERCENT DECAYS BY PU238=1.10
 SAMPLE WT=24.1500 CL D WT=.4273
 SOLUTION VOL=257.0ML
 TIME OUT OF REACTOR=.2761RS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA-241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 135 ANALYSIS OF THE SAMPLE 65.00 INCHES FROM THE TOP OF THE OUTSIDE ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5250-04(.267-05)	.0052(.0003)	.5049-04(.266-05)	.7255-06(.266-05)
U-235	.7076-02	.4155-02(.258-04)	.4136(.0025)	.4013-02(.254-04)	-.3063-02(.254-04)
U-236	.0000	.4217-03(.941-05)	.0489(.0009)	.4769-03(.936-05)	.4769-03(.936-05)
U-238	.9881-00	1.0000	.995323(.0027)	.9827-00(.310-03)	-.1001-01(.310-03)
TOTAL	.9952-00			.9874-00(.309-03)	-.1262-01(.309-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	0.1830(.1350)	1.0000	63.0004(.0655)	.13616+12(.170+09)
PU240	17.2730(.1430)	.4267-00(.145-02)	26.8848(.0681)	.50130+12(.300+10)
PU241	2.3100(.0060)	.1270-00(.699-03)	8.1346(.0421)	.57600+10(.100+09)
PU242	.2340(.0005)	.3143-01(.330-03)	1.9801(.0207)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.6238-02(.1419-03)	.3825-02(.1929-04)	.2412-02(.1432-03)
PU240	.2673-02(.6068-04)	.8275-03(.4041-05)	.1846-02(.6085-04)
PU241	.8121-03(.1902-04)	.1132-03(.6441-06)	.6989-03(.1903-04)
PU242	.1915-03(.4985-05)	.1130-04(.6165-07)	.1872-03(.4985-05)
TOTALS	.9921-02(.2252-03)	.4777-02(.2400-04)	.5144-02(.2264-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MWD/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.2562-02(.2705-04)	2459.1	.0620(.0014)	.0491(.0049)	202
U-238	.3831-03(.3813-04)	375.7	.0620(.0060)		209
PU239	.4021-02(.2086-03)	3964.7	.0674(.0019)	.0563(.0056)	211
PU241	.5039-03(.4300-04)	499.7	.0660(.0033)	.0604(.0060)	214
TOTALS	.7470-02(.2103-03)	7299.2			

U235/U238BOL=.5671(.0036) ALPHA-235=.1958(.0048) ALPHA-239=.8046(.0793) PU239 FORMED FROM U238=.9665-02(.30-03)

INPUT DATA

CESIUM-137 ATOMS =.4343+17(.8686+15)ATOMS/ML
 PU DECAYS=.9024+08(.1805+.7)D/M/ML
 PERCENT DECAYS BY PU238=20.90
 SAMPLE WT=20.625GM CLAD WT=2.577GM
 SOLUTION VOL=497.1ML
 TIME OUT OF REACTOR=.353YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

ASSUMPTIONS

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

-----QUANTITIES ENCLOSED BY PARENTHESES ARE ONE STANDARD DEVIATION ERRORS-----

ELEMENT 6185 ANALYSIS OF THE SAMPLE 74.50 INCHES FROM THE TOP OF THE OUTSIDE ROD

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

ISOTOPE	EOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.4876-04(.27-05)	.0047(.0003)	.4529-04(.277-05)	-.4474-05(.277-05)
U-235	.7076-02	.4926-02(.53-04)	.4900(.0053)	.4791-02(.532-04)	-.2285-02(.53-04)
U-236	.0000	.364-03(.94-05)	.0384(.0009)	.3774-03(.941-05)	.3774-03(.941-05)
U-238	.9881-00	1.0000	98.4669(.0054)	.9867-00(.180-03)	-.3011-02(.180-03)
TOTAL	.9952-00			.9951-00(.172-03)	-.4932-02(.172-03)

ISOTOPE	EOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	30.1830(.1350)	1.0000	66.2758(.0857)	.13616+12(.170+04)
PU240	17.2730(.430)	.3818-00(.180-02)	25.3041(.0900)	.50130+12(.300+10)
PU241	2.3100(.060)	.1043+00(.702-03)	7.0071(.0447)	.57600+10(.100+00)
PU242	.2340(.005)	.2132-01(.230-03)	1.4130(.151)	.87000+10(.200+00)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3641-02(.8303-04)	.3825-02(.1929-04)	-.1842-03(.8524-04)
PU240	.136-02(.3172-04)	.6275-03(.4041-05)	.5685-03(.3206-04)
PU241	.3812-03(.9220-05)	.1132-03(.6441-06)	.2750-03(.9251-05)
PU242	.7810-04(.1982-05)	.1130-04(.3105-07)	.6730-04(.1983-05)
TOTALS	.5504-02(.1240-03)	.4777-02(.2400-04)	.7265-03(.1272-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (WWT/MT)	FISSION YIELD	LEL	MEV/FISSION
U-235	.1596-02(.5403-04)	1819.6	.0628(.0014)	.0491(.0049)	202
U-238	.2120-05(.2124-04)	207.9	.0620(.0060)		209
PU239	.1905-02(.1248-03)	1878.2	.0674(.0019)	.0563(.0056)	211
PU241	.1811-03(.1563-04)	179.6	.0660(.0033)	.0604(.0060)	214
TOTALS	.4194-02(.1157-03)	4085.3			

U-235/238 LE=.6771(.0075) ALPHA-235=.2093(.0093) ALPHA-239=.5732(.0891) PU239 FORMED FROM U238=.2811-02(.18-03)

I N P U T D A T A

CESIUM-137 DECAYS=.1723+10(.3456+08)D/M/ML

PU DECAYS=.7318+08(.1464+7)D/M/ML

PERCENT DECAYS BY PU238=10.80

SAMPLE WT=17.72GM CL D WT=2.4740

SOLUTION VOL=366.5ML

TIME OUT OF REACTOR=.276YRS

BOL PU241 DECAY CORRECTION TIME=.309YEARS

CESIUM-137 IN REACTOR DECAY CORRECTION=1.0160

A S S U M P T I O N S

CESIUM-137 HALF LIFE=29.60(.10)YEARS

PU241 HALF LIFE=14.5(0.5)YEARS

ALPHA241=.370(.030)

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ELEMENT 5185 ANALYSIS OF THE SAMPLE 84.50 INCHES FROM THE TOP OF THE OUTSIDE ROD

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

ISOTOPE	BOL (GM)	EOL MASS RATIO	EOL (A/O)	EOL (GM)	NET PRODUCTION (GM)
U-234	.4976-04	.5917-04(.32-05)	.0058(.0003)	.5633-04(.320-05)	.6571-05(.320-05)
U-235	.7076-02	.6745-02(.51-04)	.6698(.0050)	.8560-02(.504-04)	-.5162-03(.504-04)
U-236	.0000	.2095-03(.61-05)	.0208(.0006)	.2046-03(.610-05)	.2046-03(.610-05)
U-238	.9881-00	1.0000	99.3036(.0051)	.9896-00(.163-03)	-.3116-02(.163-03)
TOTAL	.9952-00			.9966-00(.155-03)	-.3428-02(.155-03)

ISOTOPE	BOL (A/O)	EOL MASS RATIO	EOL (A/O)	SPECIFIC ACTIVITY (D/M/GM)
PU239	50.1830(.0350)	1.0000	70.0468(.0611)	.13616+12(.170+09)
PU240	17.2730(.0430)	.3349-00(.100-02)	23.4587(.0594)	.50130+12(.300+10)
PU241	2.3100(.0060)	.7885-01(.552-03)	5.5965(.0377)	.57600+10(.100+09)
PU242	.2340(.0005)	.1282-01(.182-03)	.8980(.0127)	.87000+10(.200+09)

ISOTOPE	EOL (GM)	BOL (GM)	NET PRODUCTION (GM)
PU239	.3720-02(.8438-04)	.3825-02(.1929-04)	-.1050-03(.8655-04)
PU240	.1251-02(.2835-04)	.8275-03(.4041-05)	.4236-03(.2872-04)
PU241	.2937-03(.7121-05)	.1132-03(.6441-06)	.1865-03(.7150-05)
PU242	.4829-04(.1292-05)	.1130-04(.6165-07)	.3699-04(.1294-05)
TOTALS	.5319-02(.1204-03)	.4777-02(.2400-04)	.5421-03(.1228-03)

F I S S I O N S

ISOTOPE	FISSIONS (GM)	BURNUP (MW/MTM)	FISSION YIELD	DEL	MEV/FISSION
U-235	.3119-03(.5081-04)	299.4	.0628(.0014)	.0491(.0049)	202
U-238	.1525-03(.1560-04)	149.5	.0620(.0060)		209
PU239	.2335-02(.1038-03)	2302.4	.0674(.0019)	.0563(.0056)	211
PU241	.9955-04(.8791-05)	98.7	.0660(.0033)	.0604(.0060)	214
TOTALS	.2899-02(.9408-04)	2850.1			

U235/U238BOL=.9271(.0071) ALPHA-235=.6551(.1108) ALPHA-239=.3197(.0660) PU239 FORMED FROM U238=.2976-02(.16-03)

I N P U T D A T A

CESIUM-137 DECAYS=.1288+10(.2576+08)D/M/ML
 PU DECAYS=.70.3+08(.1417+07)D/M/ML
 PERCENT DECAYS BY PU238=1.70
 SAMPLE WT=19.030GM CL'D WT=2.837GM
 PU DECAYS=.70.3+08(.1417+07)D/M/ML
 PERCENT DECAYS BY PU238=1.70
 SAMPLE WT=19.030GM CL'D WT=2.837GM
 SOLUTION VOL=269.7ML
 TIME OUT OF REACTOR=.276YRS
 BOL PU241 DECAY CORRECTION TIME=.389YEARS
 CESIUM-137 IN-REACTOR DECAY CORRECTION=1.0160

A S S U M P T I O N S

CESIUM-137 HALF LIFE=29.68(.10)YEARS
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)
 PU241 HALF LIFE=14.5(0.5)YEARS
 ALPHA241=.370(.030)

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