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Consistency Tests on JEF2.2 Decay Data File

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Abstract:

Object of the Contract of the

We review a lot of problems or questions about JEF2-2 and we produce a study about internal consistency tests on all nuclides of JEF2.2 (from H3 to Fm257). These tests are made on gamma, X, alpha spectra, on gamma-ray of 511 kev, and total energy.

We use data format and conventions of procedure ENDFB-6 . [ENDF 102 - BNL-NCS-44945(P.F.Rose-Cl.Dundford)]

1. Consistency of gamma and X spectra

For decay heat calculations it is necessary to know $E_{"\gamma"}$ for total γ decay heat calculation and spectra γ and X calculations by energy groups.

In JEF2-2 we can get three different types of photonic decay energies.

•
$$\overline{E}_{\gamma}$$
 = $\overline{E}_{photonic}$ = $\overline{E}_{\gamma} + \overline{E}_{x} + \overline{E}_{ann.rad.} + ...$

ER(0) average decay heat for γ spectrum

ER(9) average decay heat for X spectrum

Spectrum γ and X (STYP=0 and STYP=9)

SOMG =
$$FD_{\gamma} * \sum_{i=1}^{NG} (I_{\gamma_i} * E_{\gamma_i})$$

$$SOMX = FD_X * \sum_{i=1}^{NX} (I_{X_i} * E_{X_i})$$

 FD_k is the discrete spectrum normalization factor.

We test consistencies between these three types of values and the values calculated with spectra data.

In annexes are given all tests about this study.

1.1. gamma spectrum (annexe"spectre.gamma" - table 1)

Internal consistency of γ spectrum

$$ECARG = \frac{ER(0) - SOMG}{ER(0)} * 100$$

We list nuclides with IECARGI >5%

We find 85 nuclides with IECARGI > 10%

1.2. X spectrum (annexe "spectre.X" - table 2)

Internal consistency of X spectrum

$$ECARX = \frac{ER(9) - SOMX}{ER(9)} * 100$$

only nuclides with |ECARX| > 5% are given. 16 nuclides have a X spectrum but ER(9) = 0. and 45 nuclides have |ECARX| > 10%

1.3. gamma and X spectra (annexe"spectre.gamma+X" - table 3)

Consistency between
$$\frac{\overline{E_{"\gamma"}}}{\overline{E_{"\gamma"}}}$$
 and ER(0) + ER(9) $\overline{E_{"\gamma"}}$ and SOMG + SOMX

We calculate

ECAR1 =
$$\frac{\overline{E_{"\gamma"}} - (ER(0) + ER(9))}{\overline{E_{"\gamma"}}} * 100$$

$$ECAR2 = \frac{\overline{E_{"\gamma"}} - (SOMG + SOMX)}{\overline{E_{"\gamma"}}} * 100$$

We list nuclides for which |ECAR1| or |ECAR2| > 5 %.

We find 282 nuclides with IECAR2I >10 % (inconsistency between $\overline{E_{"\gamma"}}$ and SOMG + SOMX) and 362 nuclides with IECAR1I >10 % (inconsistency between $\overline{E_{"\gamma"}}$ and ER(0) + ER(9))

For calculation of decay gamma heat we normalize gamma rays to ($\overline{E_{"\gamma"}} \;$ - ER(9)) Is it correct ?

2. Consistency of α spectrum (annexe "spectre.alpha" -table 4)

 $\overline{E_{\alpha}}$ is the average energy of all heavy charged particles and delayed neutrons.

FD α is the normalization factor for α spectrum.

ER(4) is average energy for α spectrum

We compare ER(4) including recoil energy to SOMAL with -

$$SOMAL = FD\alpha * \left(1 + \frac{4}{A}\right) * \sum_{i=1}^{N\alpha} I\alpha_i * E\alpha_i$$

In annexe "spectre.alpha" we list 13 nuclides with $\frac{ER(4)}{SOMAL} > 1.05$ and < 0.95

For normalization of α spectrum we cannot take $\overline{E_{\alpha}}$ which is average energy of <u>all</u> heavy charged particles and delayed neutrons.

This is the reason why we use ER(4) and not $\overline{E_{"\alpha"}}$ for comparisons

It is clear that ENDF format is not well adapted to describe all phenomena independantly: we need the true value of each average energy related to each physical phenomena.

3. gamma-ray of 511 kev (annexe "raie.511 Kev" - table 5)

The intensity of 511kev γ -ray is generally given in X spectrum : I_{511}^{X} For 70 nuclides there is a good agreement between these types of values.

This intensity can be known from β^+ spectrum when the positrons are present: E > 1022kev

RIS is the positron intensity (β^+ spectrum STYP=2)

RIS
$$\neq 0 \rightarrow I_{511}^{\beta+}$$

$$I^{\beta+}_{511} = FD_{\beta^+} * \sum_{i=1}^{N_{\beta}} 2 * RIS_i$$

Generally there is a good agreement between I_{511}^x and $I_{511}^{\beta+}$ but there is redundance of informations.

For 12 nuclides

$$I^{X}_{511} \neq I^{\beta +}_{511}$$

For 3 nuclides

$$I^{X}_{511} \neq 0$$

$$I^{\beta+}_{511} = 0 (RIS = 0)$$

For 10 nuclides

$$I^{\beta+}_{511} \neq 0$$
 no I^{X}_{511}

Morever the intensity of 511kev γ -ray is given with γ spectrum: I_{511}^{γ}

For 3 nuclides

$$I^{\gamma}_{511} \neq 0$$

$$I^{\gamma}_{511} \neq 0$$
 no I^{X}_{511} and no $I^{\beta+}_{511}$

For 8 nuclides

$$I^{\gamma}_{511} \neq 0$$

$$I_{511} \neq 0$$
 $I_{511} \neq 0$ and $I_{511} \neq 0$

in this case what to do?

For 4 nuclides

$$I^{\beta+}_{511} = I^{\gamma}_{511} \qquad \text{ no } I^{X}_{511}$$

For 5 nuclides
$$I^{\beta+}_{511} \neq I^{\gamma}_{511}$$
 no I^{X}_{511}

The results about this study are detailed in annexe "raie.511kev"

4. Consistency between total energies (annexe "q.etot" - table 6)

 $\mathbf{Q_i}$ is total energy available in the corresponding decay process and Br_i is the fraction of the decay for the corresponding decay mode.

$$Q = \sum_{i=1}^{NDK} Br_i * Q_i$$

To take into account the neutrino energy which is not in JEF2 (not included in ENDFB6 format), we calculate only for nuclides without β + decay (RTYP=2)

$$ETOT = \overline{E_{"\beta"}} * 2.25 + \overline{E_{"\gamma"}} + \overline{E_{"\alpha"}}$$

We have done the approximation $E_v = \overline{E_{"B"}} * 1.25$

and we compare ETOT to Q. In annexe "q.etot" we give the list of nuclides for which

$$\frac{Q}{ETOT} > 1.2 \text{ and } \frac{Q}{ETOT} < 0.8$$

5. Conclusion

The ENDFB-6 format seems not quite adapted for decay heat calculation. We don't have the neutrino energy and we must know the average energy for β spectrum. For α energy we don't know the repartition between each physical phenomena.

Perhaps it is necessary to define a procedure for knowledge of energy we must use in decay heat calculations.

Morever this paper shows anomalies found with consistency tests.

TABLE 1 spectre.gamma

NG number of gamma rays

ER(0) average decay heat for γ spectrum

 FD_{γ} normalization for gamma spectrum

$$SOMG = FD_{\gamma} * \sum_{i=1}^{NG} (I_{\gamma_i} * E_{\gamma_i})$$

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	40	PERIODE		NG	ER(0)	SOMG	ECARG =(ER(0)-SOMG)*100./ER(0)
N :	12F	1.100E-02	s	4	1.0820E+03	9.0450E+01	9.1641E+01
к.	46F	1.583E+00	M	16	2.8700E+03	2.0717E+03	2.7816E+01
	45F	5.390E-01		1	1.0000E+00	1.4035E+00	-4.0350E+01
CR -		5.080E-01		1	3.0000E+00	3.2375E+00	-7.9167E+00
				1			
MN		3.840E-01			2.0000E+01	1.6338E+01	1.8310E+01
CO !		2.400E-01		1	7.0000E+01	7.4368E+01	-6.2400E+00
NI :		7.500E+04		1	0.0000E+00	0.0000E+00	
GA '		1.320E+01		2	6.8950E+02	3.4296E-06	1.0000E+02
SE !	87F	5.800E+00	s	11	2.2300E+03	2.6557E+03	-1.9091E+01
KR !	94F	2.000E-01	s	18	1.7000E+03	1.8930E+03	-1.1351E+01
RB	81M	3.048E+01	M	8	1.4000E+01	6.3036E+00	5.4974E+01
SR	83F	1.350E+00	J	137	5.0000E+02	5.3798E+02	-7.5963E+00
Y	81F	1.207E+00	M	3	4.0000E+00	3.6517E+00	8.7070E+00
ZR :		4.180E+00 1.690E+01		2 40	6.3201E+02 8.9700E+02	5.4157E+02 1.9234E+02	1.4310E+01 7.8558E+01
ZRI	01F	2.000E+00	S	6	4.0000E+01	1.8473E+03	-4.5182E+03
ZR1		2.900E+00		25	B.6000E+02	1.7836E+03	-1.0740E+02
NB1	04M	7.100E+00 4.800E+00	s	14	3.0000E+02 3.1500E+03	1.2642E+03 1.3715E+03	-3.2140E+02 5.6460E+01
NB1		1.020E+00		12	4.0900E+03	1.1121E+03	7.2809E+01
MO1		1.125E+00 3.670E+01		3 20	1.3900E+03 1.7400E+03	5.3626E+02 3.9898E+02	6.1420E+01 7.7070E+01
MO1	06F	B.400E+00	S	4	5.9000E+02	1.0150E+03	-7.2040E+01
MO1		1.500E+00		3	1.1400E+03	3.7694E+02	6.6935E+01
RH1	M00	4.600E+00	М	11	4.1600E+01	3.7990E+01	8.6772E+00
PD1	12F	2.105E+01	Н	1	5.0546E+00	1.8500E+01	-2.6600E+02
AG1		7.233E+00 8.000E-01		1 53	9.8000E-01 2.0300E+03	1.0597E-03 2.8967E+03	9.9892E+01 -4.2696E+01
CD1		1.410E+01	A	1	6.0545E-01	6.0546E~02	9.0000E+01
IN1		6.200E+00		28	2.7800E+03	1.3230E+02	9.5241E+01
IN1		5.200E+00		31	2.0400E+03	1.2268E+03	3.9861E+01
SN1	31F	3.900E+01	S	38	1.1900E+03	4.6602E+03	-2.9161E+02
SB1	24N	2.020E+01	М	1	1.0000E-03	8.0538E-04	1.9462E+01
TE1 TE1		1.539E+02 2.490E+00		6 13	2.0300E+02 1.8200E+03	1.7456E+02 1.1093E+04	1.4010E+01 -5.0951E+02
	37F 40F	8.600E-01		1	1.6100E+03	2.2341E+02	8.6124E+01
	40F	4.800E-01		4	4.0190E+04	9.7327E+02	9.7578E+01
XE1		1.220E+00		165	1.0800E+03	8.4094E+03	-6.7864E+02
XE1	43F	3.000E-01	ຮ	1	2.4200E+03	1.7250E+02	9.2872E+01

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PERIODE	NG	ER(0)	SOMG	ECARG = (ER(0)-SOMG)*100./ER(0)
CS147F 2.200E-01 S	44	1.0631E+02	8.1778E+02	-6.6924E+02
BA142F 1.060E+01 M	90	1.0690E+03	1.0690E+04	-9.0003E+02
LA133F 3.911E+00 H LA135F 1.950E+01 H	128 12	6.0000E+01 1.0100E+01	6.4906E+01 8.2633E+00	~8.1774E+00 1.8185E+01
CE149F 5.200E+00 S CE150F 4.000E+00 S	22 27	1.5300E+03 6.3000E+02	4.7903E+02 1.2899E+03	6.8691E+01 -1.0474E+02
PR144F 1.728E+01 M PR144M 7.200E+00 M PR150F 6.100E+00 S	8 1 4	2.8900E+01 9.0000E-01 2.3400E+03	9.5180E+00 4.6852E+02 1.5138E+02	6.7066E+01 9.4794E+01 9.3531E+01
EU146F 4.595E+00 J EU150M 1.262E+01 H	155 15	2.0900E+03 8.6600E+01	1.8202E+03 8.1125E+01	1.2910E+01 6.3221E+00
TB146M 2.300E+01 S TB157F 9.830E+01 A	10 1	2.8700E+03 0.0000E+00	2.5068E+03 4.5780E-03	1.2655E+01
DY149F 4.233E+00 M	52	2.1300E+03	1.8104E+03	1.5002E+01
H0158N 2.133E+01 M H0161F 2.481E+00 H H0170M 4.300E+01 S	11 9 11	2.6966E+03 1.5500E+01 1.3333E+03	2.3771E+03 7.3219E+00 4.8769E+03	1.1849E+01 5.2762E+01 -2.6578E+02
ER163F 1.250E+00 H ER172F 2.054E+00 J	11 17	1.0000E+00 4.8600E+02	8.0173E-01 2.1441E+02	1.9827E+01 5.5883E+01
TM162M 2.430E+01 S	18	1.0000E+02	2.3731E+02	-1.3731E+02
LU169M 2.667E+00 M LU172M 3.667E+00 M	1 1	0.0000E+00 0.0000E+00	2.9754E-04 1.5857E-03	
HF169F 3.240E+00 M HF177M 1.080E+00 S HF178N 3.100E+01 A HF180M 5.500E+00 H	5 12 14 6	5.0000E+02 9.8000E+02 1.3059E+03 9.3332E+01	4.5980E+02 8.2978E+02 2.3919E+03 1.1467E+03	8.0393E+00 1.5328R+01 -8.3160E+01 -1.1286E+03
TA173F 3.139E+00 H	198	3.9400E+02	3.6022E+02	8.5744E+00
W179M 6.400E+00 M	2	2.0500E+01	1.9050E+01	7.0741E+00
RE184M 1.655E+02 J	12	3.3700E+02	3.1587E+02	6.2712E+00
OS180F 2.150E+01 M OS185F 9.363E+01 J OS191M 1.310E+01 H	1 13 1	3.5000E+00 6.6600E+02 1.0000E-01	1.2196E-07 1.342BE+02 5.4818E-02	1.0000E+02 7.9839E+01 4.5182E+01
IR190N 3,194E+00 H IR192M 1,440E+00 M IR193M 1.060E+01 J IR194N 3.185E-02 S	5 3 1 2	1.4850E+03 1.5793E-01 0.0000E+00 1.6500E+02	9.1124E+02 5.8158E+01 3.6651E-03 1.1220E+02	3.8637E+01 -3.6725E+04 3.2000E+01
PT193M 4.329E+00 J	3	2.0000E-01	2.3311E-01	-1.6556E+01
AU182F 2.100E+01 S AU192M 2.900E-02 S AU196M 8.100E+00 S	35 10 1	9.4000E+02 0.0000E+00 3.0000E-01	8.6832E+02 7.8990E-07 2.5398E-01	7.6255E+00 1.5340E+01
HG182F 1.130E+01 S HG188F 3.250E+00 M HG191F 4.833E+01 M HG191M 5.083E+01 M	3 19 7 80	4.3000E+02 7.3000E+02 4.6000E+02 1.3600E+03	1.4657E-06 5.4403E+02 3.9239E+02 1.4373E+03	1.0000E+02 2.5475E+01 1.4698E+01 -5.6848E+00

	PERIODE		NG	ER(0)	SOMG	ECARG = (ER(0)-SOMG) *100./ER(0
PB199M	1.220E+01	м	2	1.0300E+02	7.6762E+01	2.5474E+01
P0209F	1.021E+02	A	11	4.8669E+00	3.0029E+00	3.8299E+01
RN210F	2.389E+00	н	40	5.6000E+01	5.3115E+01	5.1511E+00
RA213F	2.733E+00	M	3	9.0000E+00	9.4590E+00	-5.0997E+00
RA213M	2.100E-03	S	3 3	1.6200E+03	7.0783E+01	9.5631E+01
U238F	4.471E+09	A	2	6.7392E-02	6.3612E-02	5.6090E+00
PU242F	3.738E+05	A	3	S.8371E-02	1.9871E-02	6.5958E+01
PU244F	8.005E+07	A	3 1	8.7657E+00	1.5730E-02	9.9821E+01
CM244F	1.811E+01	A	12	2.4436E-02	1.5007E-02	3.8587E+01
CM246F	4.733E+03	A	1	1.8421E+00	1.2291E-02	9.9333E+01
CM248F	3.402E+05	A	1	5.7821E+02	7.0871E-03	9.9999E+01
CF247F	3.111E+00	н	13	0.0000E+00	7.6126E+00	
CF250F	1.309E+01	A	3	5.4165E+00	2.6454E-02	9.9512E+01
CF252F	2.647E+00	A	3	2.1646E+02	2.0364E-02	9.9991E+01
ES254F	2.755E+02	J	23	3.7776E-01	9.2952E-01	-1.4606E+02
E\$256M	7.600E+00	H	3	4.8100E+01	3.3210E+02	-5.9044E+02

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TABLE 2 spectre.X

NX number of X rays

ER(9) average decay heat for X spectrum

FDX normalization for X spectrum

$$SOMX = FD_X * \sum_{i=1}^{NX} (I_{X_i} * E_{X_i})$$

$$ECARX = \frac{ER(9) - SOMX}{ER(9)} * 100$$

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	PERIODE	NX	ER (9)	SOMX	ECARX =(ER(9)-SOMX)*100./ER(9)
C 11F	2.039E+01 M	1	0.0000E+00	1.0195E+03	
0 13F 0 15F	8.900E-03 S 2.037E+00 M	1	0.0000E+00 0.0000E+00	1.0220E+03 1.0210E+03	
SI 25F	2.200E-01 S	2	0.0000E+00	1.0220E+03	
TI 43F	4.900E-01 S	4	0.0000E+00	1.0220E+03	
V 46F	4.224E-01 S	1	2,6290E-01	1.0210E+03	-3.8825E+05
CR 45F CR 46F	5.000E-02 S 2.600E-01 S	1 4	0.0000E+00 2.6290E-01	2.7594E+02 1.0220E+03	-3.8864E+05
MN 50F	2.830E-01 S	ı	6.2490E-01	1.0220E+03	-1.6345E+05
FE 49F	7.500E-02 S	1	1.0220E+03	3.0660E+02	7.0000E+01
CO 53M CO 54F	2.470E-01 S 1.932E-01 S	4 1	0.0000E+00 1.3760E+00	1.0210E+03 1.0210E+03	-7.4099E+04
NI 53F NI 55F	4.500E-02 S 1.890E-01 S	4 4	1.0070E+03 7.7620E+02	4.5990E+02 1.0210E+03	5.4330E+01 -3.1536E+01
GA 62F	1.161E-01 S	4	8.9320E+01	1.0220E+03	-1.0442E+03
GE 68F GE 69F GE 71F	2.708E+02 J 1.627E+00 J 1.144E+01 J	4 5 4	0.0000E+00 2.4400E+02 1.6740E-02	4.1457E+00 2.5874E+02 4.1900E+00	-6.0410E+00 -2.4930E+04
AS 74F	1.778E+01 J	4	2.1655E+00	1.3662E-01	9.3691E+01
KR 71F	9.700E-02 S	5	6.1410E+02	1.0220E+03	-6.6424E+01
RB 74F RB 81M	6.490E-02 S 3.048E+01 M	5 9	8.8280E+02 2.0130E+01	1.0200E+03 2.1303E+01	-1.5538E+01 -5.8254E+00
SR 82F SR 83F	2.556E+01 J 1.350E+00 J	4 5	2.3539E+02 2.4360E+02	7.8825E+00 2.6615E+02	9.6651E+01 -9.2570E+00
Y 96F	6.200E+00 S	4	0.0000E+00	2.6317E+00	
№ 90м	1.882E+01 S	3	1.7000E+01	3.6279E+00	7.8660E+01
RH106M	2.167E+00 H	4	2.4405E-01	2.2694E-01	7.0112E+00
AG103F AG112F AG115F	1.094E+00 H 3.140E+00 H 2.000E+01 M	5 4 4	2.8780E+02 2.4505E-03 4.8215E-01	2.6675E+02 6.0251E-04 3.5437E-01	7.3156E+00 7.5413E+01 2.6503E+01
CD105F	5.550E+01 M	5	3.0760E+02	2.8180E+02	8.3876E+00
IN119M	1.800E+01 M	4	5.1512E-01	2.4939E-01	5.1587E+01
SN113M SN130F	2.140E+01 M 3.720E+00 M	4 4	0.0000E+00 1.5313E+01	1.6507E+00 1.2715E+01	1.6966E+01
SB126F SB130F	1.240E+01 J 4.000E+01 M	4 4	5.3148E-01 3.0929E+00	1.5989E-01 2.6709E+00	6.9915E+01 1.3644E+01
TE118F TE131M	6,000E+00 J 1.250E+00 J	4	3.3260E+01 8.9336E+00	1.9912E+01 2.9750E+00	4.0132E+01 6.6698E+01

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4	PERIODE	NX	ER (9)	SOMX	ECARX = (ER(9)-SOMX)*100./ER(9)	
XE118F	6.000E+00 M	1	6.1970E+02	5.7232E+02	7.6456E+00	
CS138F	3.220E+01 M	4	4.6587E-01	2.1491E+01	5.3869E+01	
ND140F ND152F	3.370E+00 J 1.140E+01 M	4	0.0000E+00 1.3134E+00	2.7469E+01 1.2044E+00	8.3024E+00	
PM138F PM149F	1.000E+01 S 2.212E+00 J	5 4	5.3600E-01 4.4657E-02	9.5755E+02 2.7669E+03	-1.7855E+05 9.3804E+01	
SM145F	3.400E+02 J	4	6.4557E+01	3.1016E+01	5.1956E+01	
GD142F	1.500E+00 M	5	8.3300E+02	6.5402E+02	2.1487E+01	
TB152F	1.750E+01 H	5	2.1910E+02	2.3364E+02	-6.6382E+00	
H0146F	3.900E+00 S	1	1.7880E+02	2.0440E+02	-1.4318E+01	
ER165F	1.036E+01 H	4	4.6730E+00	3.7828E+01	~7.0951E+02	
YB163F YB169F	1.105E+01 M 3.201E+01 J	5 4	2.6230E+02 1.1582E+02	2.4239E+02 5.7867E+01	7.5906E+00 5.0037E+01	
TA179F TA185F	1.776E+00 A 4.900E+01 M	4 4	0.0000E+00 3.9925E+01	2.7847E+01 2.0222E+01	4.9349E+01	
W178F	2.164E+01 J	4	0.0000E+00	1.6354E+01		
RE178F	1.320E+01 M	5	3.7020E+02	3.9193E+02	-5.8710E+00	
OS189M	4.806E+00 H	1	3.9490E+00	2.0048E+00	4.9234E+01	
IR190M	1.200E+00 H	1	0.0000E+00	2.1298E+00		
HG194F	5.200E+02 A	1	0.0000E+00	2.1362E+00		
TL190F TL201M	2.600E+00 M 2.035E-03 S	5 4	3.4230E+02 7.2880E+00	3.2334E+02 7.6612E+00	5.5396E+00 -5.1212E+00	
PB201M PB202F	1.020E+00 M 5.264E+04 A	5 1	7.0000E+01 6.0075E+01	2.2981E+01 2.4720E+00	6.7171E+01 9.5885E+01	
PB205F	1.521E+07 A	2	5.4601E+01	3.3259E+00	9.3909E+01	
P0208F	2.900E+00 A	1	0.0000E+00	9.4261E-04		
AT201F	1.483E+00 M	5	0.0000E+00	2.3442E+02		
RN221F	2.500E+01 M	4	2.7171E+01	1.8309E+01	3.2617E+01	
PA236F	9.100E+00 M	4	8.7761E+00	9.7549E-01	8.8885E+01	
U231F	4.200E+00 J	4	8.2779E+01	5.4679E+01	3.3946E+01	
PU235F	2.530E+01 M	4	8.6833E+01	8.1683E+01	5.9311E+00	
AM237F	1.217E+00 H	4	1.3697E+02	8.4769E+01	3.8111E+01	
AM238F AM239F	1.633E+00 H 1.190E+01 H	4 4	8.5932E+01 1.8089E+02	7.7386E+01 7.7050E+01	9.9446E+00 5.7405E+01	
ES254F	2.755E+02 J	4	1.5212E+03	8.2019E-04	1.0000E+02	
FM253F	3.000E+00 J	4	8.5049E+01	6.5958E+01	2.2447E+01	

TABLE 3 spectre.gamma+X

NG number of gamma rays

ER(0) average decay heat for γ spectrum

NX number of X rays

ER(9) average decay heat for X spectrum

ERGX = ER(0) + ER(9)

EGM =
$$\overline{E_{"\gamma"}}$$
.

ECAR1 =
$$\frac{\overline{E_{"\gamma"}} - (ER(0) + ER(9))}{\overline{E_{"\gamma"}}} * 100$$

$$SOMGX = SOMG + SOMX$$

$$= \operatorname{FD}_{\gamma} * \sum_{i=1}^{NG} \left(\operatorname{I}_{\gamma_{i}} * \operatorname{E}_{\gamma_{i}} \right) + \operatorname{FD}_{X} * \sum_{i=1}^{NX} \left(\operatorname{I}_{X_{i}} * \operatorname{E}_{X_{i}} \right)$$

$$ECAR2 = \frac{\overline{E_{"\gamma"}} - (SOMG + SOMX)}{\overline{E_{"\gamma"}}} * 100$$

Page	nma+X	997_14:05 spectre.gamma+X							
	ECAR2	SOMGX	ECAR1	ERGX	NX	m ng	PERIODE F		
	(EGM-SOMGX)*100./EGM	SOMG+SOMX	(EGM-ERGX)*100./EGM	ER(0)+ER(9)					
	3.7262E+01	5.6818E+01	3.7262E+01	5.6818E+01	0	0.56 1	2.020E-02 S	B 12F	
	-7.1240E-04	1.0195E+03	1.0000E+02	0.0000E+00	1	.9.54 0	2.039E+01 M 10	C 11F	
	9.1390E+01	9.3414E+01	3.3190E-03	1.0850E+03	1	15.00 4	1.100E-02 S 10	N 12F	
	-1.9608E-01 -1.3524E-02	1.0220E+03 1.0210E+03	1.0000E+02 1.0000E+02	0.0000E+00 0.0000E+00	1		8.900E-03 S 10 2.037E+00 M 10		
	-5.6386E+0D	3.2970E+02	-5.7333E+00	3.3000E+02	0	2.11 6	8.200E-03 S	NA 33F	
	-1.9608E-01	1.0220E+03	1.0000E+02	0.0000E+00	2	0.00 0	2.200E-01 S 10	SI 25F	
	6.3276E+00	5.8845E+03	6.0812E+00	5.9000E+03	0	32.02 21	5.600E+00 S 62	P 36F	
	-4.2710E+02	2.4308E+04	-4.2739E+02	2.4321E+04	2	1.62 24	1.870E-01 S 46	S 29F	
	1.5715E+01	1.9990E-02	1.5716E+01	1.9990E-02	4	0.02 0	3.022E+05 A	CL 36F	
	3.0705E+01	2.2419E-01	3.0705E+01	2.2419E-01	3	0.32 0	3.504Е+01 J	AR 37F	
	2.7816E+01 -1.3917E+01	2.0717E+03 1.4273E+04	0.0000E+00 -1.3895E+01	2.8700E+03 1.4270E+04	0	70.00 16 29.10 8	1.583E+00 M 28 4.720E-01 S 125	K 46F K 50F	
	6.0908E+00 1.0000E+02 1.1284E+01	4.1049E-01 1.1788E-05 2.6909E+03	6.0908E+00 1.0000E+02 1.1284E+01	4.1049E-01 1.1788E-05 2.6909E+03	3 3 0	0.44 0 77.00 1 33.15 22	1.031E+05 A 1.630E+02 J 1.000E+01 S 30	CA 45F	
	-6.5693E-05	1.0220E+03	1.0000E+02	0.0000E+00	4	2.00 0	4.900E-01 S 10	TI 43F	
	1.1717E-03 5.7405E+00	1.0210E+03 8.9259E-01	9.9974E+01 5.7406E+00	2.6290E-01 8.9259E-01	1 3	0.99 0 0.95 0	4.224E-01 S 10 3.300E+02 J	V 46F V 49F	
	-1.4490E-02 -9.5554K-05	2.7594E+02 1.0220E+03	1.0000E+02 9.9974E+01	0.0000E+00 2.6290E-01	14	75.90 0 2.00 0	5.000E-02 S 2.600E-01 S 10	CR 45F CR 46F	
	0.0000E+00 6.0160E+00	1.0220E+03 2.3908E+03	9.9939E+01 6.0172E+00	6.2490E-01 2.3908E+03	1 0	22.00 0 13.87 38	2.830E-01 S 10 1.088E+00 M 25	MN 50F MN 58F	
	-2.2000E+00 -1.2199E+01	3.0660E+02 2.7670E+02	-2.4067E+02 -1.3539E+01	1.0220E+03 2.8000E+02	1 0	0.00 0 6.61 19		FE 49F FE 63F	
	-1.4891E+00 -6.6660E-03	1.0210E+03 1.0210E+03	1.0000E+02 9.9865E+01	0.0000E+00 1.3760E+00	4 1		2.470E-01 S 10 1.932E-01 S 10		
	-2.2561E-04 1.9130E-03 -6.5835E+02	4.5990E+02 1.0210E+03 8.9964E+03	-1.1896E+02 2.3976E+01 -6.5835E+02	1.0070E+03 7.7620E+02 8.9964E+03	4 4 0		4.500E-02 S 4 1.890E-01 S 10 1.800E+01 S 11	NI 55F	
	5.1128E+00 1.2908E+01	1.8432E+03 6.3518E+02	5.2757E+00 1.2908E+01	1.8400E+03 6.3518E+02	0	2.48 25 9.32 5	6.600E+00 S 19 3.900E+00 S 7		
	6.6754E+00	1.4351E+03	6.6772E+00	1.4351E+03	0	7.78 56	1.470E+00 S 15	ZN 78F	
	-4.7180E-04 7.4727E+00 1.0000E+02 -1.3121E+01 4.8493E+01 1.5428E+01 5.0916E+01	1.0220E+03 6.2076E+01 3.4296E-06 2.0814E+03 2.5754E+03 2.2834E+03 2.3185E+03	9.1260E+01 7.4730E+00 2.8102E+01 -1.3043E+01 4.8400E+01 1.5185E+01 5.0917E+01	8.9320E+01 6.2076E+01 6.8950E+02 2.0800E+03 2.5800E+03 2.2900E+03 2.3185E+03	4 0 0 0 0 4	7.09 37 59.00 2 10.00 114 00.00 75	1.320E+01 S S 3.000E+00 S 18 1.697E+00 S 50	GA 75F GA 77F GA 79F GA 80F GA 81F	

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PERIODE	EGM	NG	NX	ERGX	ECAR1	SOMGX	ECAR2	
				ER(0)+ER(9)	(EGM-ERGX)*100./EGM	SOMG+SOMX	(EGM-SOMGX) *100./EGM	
GE 68F 2.708E+02 J	4.14		4	0.0000E+00	1.0000E+02 9.9601E+01	4.1457E+00	-1.3865E-01	
GE 71F 1.144E+01 J	4.20		4	1.6740E-02	9.9601E+01	4.1900E+00	2.3895E-01	
GE 80F 2.950E+01 S	430.00		0	6.0000E+02	-3,9535E+01	6.0001E+02	-3.9536E+01	
GE 82F 4.600E+00 S	880.00	5	0	1.0800E+03	-2.2727E+01	1.0800E+03	-2.2730E+01	
AS 79F 9.010E+00 M	22.00	10	0	1.9316E+01	1.2200E+01	1.9316E+01	1.2200E+01	
AS 80F 1.650E+01 S	810.00		Ŏ	5.5804E+02	3.1107E+01	5.5804E+02 3.2511E+02	3.1106E+01 9.2296E+01	
AS 82F 1.910E+01 S AS 82M 1.360E+01 S	4220.00	8	0	3.3000E+02 2.7900E+03	3.1107E+01 9.2180E+01 1.6964E+01	2.7891E+02	1.6992E+01	
AS 82M 1.360E+01 S AS 84F 5.500E+00 S	5300.00	10	ő	1.5800E+03	7.0412E+01	1.5750E+03	7.0506E+01	
AS 85F 2.028E+00 S	920.00	10	ő	1.3800E+03	-5.0000E+01	1.3848E+03	-5.0527E+01	
SE 70F 4.110E+01 M	945.46	36	5	9.9560E+02	-5 3038R±00	9.9989E+02	-5.7572E+00	
SE 79M 3.910E+00 M	15.87	1	ŏ	9.0438E+00	-5.3038E+00 4.3028E+01 1.3525E+01 -7.8838E+00	9.0439E+00	4.3027E+01	
SE 81F 1.850E+01 M	10.72	8	ŏ	9.2680E+00	1.3525E+01	9.2680E+00	1.3524E+01	
SE 83F 2.233E+01 M	2410.00	98	ŏ	2.6000E+03	-7.8838E+00	2.6056E+03	-8.1143E+00	
SE 85F 3.170E+01 S	2380.00	47	Ö	2.2100E+03	7.14295+00	2.2146E+03	6.9509E+00	
SE 87F 5.800E+00 S	1313.00	11	0	2.2300E+03	-6.9840E+01	2.6557E+03	-1.0226E+02	
SE 88F 1.530E+00 S	1351.00	13	4	5.6612E+03	-3.1904E+02	5.6650E+03	-3.1932E+02	
BR 88F 1.650E+01 S	4290.00	166	0	3.2600E+03	2.4009E+01	3.2622E+03	2.3957E+01	
BR 89F 4.380E+00 S	3220.00	92	0	1.5202E+03	5.2790E+01	1.5202E+03	5.2789E+01	
BR 90F 1.710E+00 S	3080.00	8	0	1.2370E+03	5.9838E+01	1.2370E+03	5.9837E+01	
KR 71F 9.700E-02 S	1022.00	0	5 5	6.1410E+02	3.9912E+01	1.0220E+03	-1.1347E-03	
KR 75F 4.300E+00 M				1.3210E+03	1.0154E+01	1.3290E+03	9.6088E+00	
KR 79M 5.000E+01 S	42.06		0	3.5324E+01	1.6019E+01	3.5324E+01	1.6020E+01 4.3115E+01	
KR 89F 3.170E+00 M KR 94F 2.000E-01 S	3130.00 2176.57	261 18	0	1.7805E+03 1.7000E+03	4.3116E+01 2.1395E+01	1.7805E+03 1.8930E+03	1.3030E+01	
			-	0.00000.00	1 24400.01	1.0200E+03	6.5824E-05	
RB 74F 6.490E-02 S RB 81M 3.048E+01 M	1019.97		5 9	8.8280E+02 3.4130E+01	1.3448E+01 -3.8236E-01	2.7606E+01	1.8805E+01	
RB 81M 3.048E+01 M RB 89F 1.515E+01 M			ő	2.0700E+03	1 02668.01	2.0683E+03	-1.8868E+01	
RB 90M 4.300E+00 M			ě	3.2067E+03	1.3398E+01	3.2067E+03	1.3097E+01	
RB 92F 4.510E+00 S	393.00	53	ō	2.1500E+03 1.3800E+03 3.6600E+03	-4.4707E+02	2.1466E+03	-4.4621E+02	
RB 93F 5.700E+00 S	1920.00	251	4	1.3800E+03	2.8124E+01	1 3743₽+03	2.8421E+01	
RB 94F 2.702E+00 S	4120.00	149	3	3.6600E+03	1.1165E+01	3.6601E+03 6.8227E+02 1.9349E+03	1.1163E+01	
RB 95F 3.840E-01 S RB 96F 1.990E-01 S	3370.00	20	4	6.7015E+02	8.0114E+01	6.8227E+02	7.9755E+01 6.0351E+01	
RB 96F 1.990E-01 S	4880.00	108	4	1.9400E+03	6.0245E+01	1.9349E+03	6.0351E+01	
RB 97F 1.718E-01 S			4	6.1343E+02	8.7220E+01	6.1458E+02	8.7196E+01 3.8148E+01	
RB 98F 1.140E-01 S			0	1.1300E+03 2.0474E+03	-3.9850E+01	1.1300E+03 2.0474E+03	-3.9852E+01	
RB 99F 5.900E-02 S RB100F 5.100E-02 S	1948.00	31 2	0	2.0474E+03 2.3300E+02	8.8039E+01	2.3302E+02		
			5	1.2020E+03	6.3557E+00	1.1984E+03	6.6399E+00	
SR 79F 2.250E+00 M SR 82F 2.556E+01 J	1283.58 7.88	14	4	2.3539E+02	-2.8872E+03	7.8825E+00	-3.2120E-02	
SR 83F 1.350E+00 J	800.00	127	5	7.4360E+02	7 0500E+00	8.0413E+02	-5.1646E-01	
SR 87M 2.810E+00 H	51.01		8	3.2107E+02	-5.2946E+02	3.2107E+02	-5.2946E+02	
SR 92F 2.710E+00 H	1130.00	10	ŏ	1.3392E+03	-1.8513E+01	1.3392E+03	-1.8510E+01	
SR 92F 2.710E+00 H SR 93F 7.320E+00 M	1130.00 1760.00	136	ĕ	1.9376E+03	-5.2946E+02 -1.8513E+01 -1.0091E+01	1.9376E+03	-1.0091E+01	
SR 94F 1.268E+00 M	1450.00	- 5	0	1.2096E+03	1.6579E+01 9.9994E+00	1.2096E+03	1.6576E+01	
SR 97F 4.200E-01 S SR 98F 6.500E-01 S	2500.00	66	4	2.2500E+03	9.9994E+00	2.2572E+03	9.7101E+00	
SR 98F 6.500E-01 S	300.00		6	1.5998E+02	4.6672E+01	1.5998E+02	4.6672E+01	
SR 99F 2.700E-01 S	3030.00	79	4	1.2603E+03	5.8407E+01	1.2604E+03	5.8403E+01	
SR100F 2.020E-01 S SR101F 1.210E-01 S	1375.00	67	0	5.1600E+02	6.2473E+01	5.1561E+02	6.2501E+01	
SR101F 1.210E-01 S	1476.00	8	0	1.8074E+02	8.7755E+01	1.8074E+02	8.7755E+01	

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	ER(0)+ER(9)	(EGM-ERGX) *100./EGM	SOMG+SOMX	(EGM-SOMGX)*100./EGM	
AG103M 5.700E+00 S 37.70 0 4 AG105M 7.233E+00 M 1.18 1 5 AG107M 4.430E+01 S 24.52 1 0 AG109M 3.960E+01 S 23.68 1 0	3.7674E+01 1.1778E+00 4.3489E+00 3.2748E+00	6.8958E-02 1.8642E-01 8.2266E+01 8.6169E+01	9.1697E+00 1.9917E-01 4.3489E+00 3.2748E+00	7.5677E+01 8.3121E+01 8.2266E+01 8.6169E+01	
AG110F 2.460E+01 S 34.77 13 6 AG116M 1.050E+01 S 1306.15 7 0	3.0635E+01 1.1882E+03	1.1899E+01 9.0319E+00	3.0635E+01 1.1882E+03	1.1899E+01 9.0320E+00	
AG118F 3.700E+00 S 892.72 8 6 AG120F 1.170E+00 S 1076.60 4 0 AG120M 3.200E-01 S 1696.44 5 6	8.0963E+02 7.7749E+02 1.2465E+03	9.3072E+00 2.7783E+01	8.0963E+02 7.7749E+02 1.2465E+03	2.7783E+01	
AG121F 8.000E-01 S 844.00 53 0	1.2465E+03 2.0300E+03	2.6525E+01 -1.4052E+02	1.2465E+03 2.8967E+03		
CD102F 5.500E+00 M 780.43 17 5 CD104F 5.767E+01 M 186.38 7 5 CD107F 6.500E+00 H 50.21 36 0	9.5900E+02 2.5959E+02 8.8911E+00	-2.2881E+01 -3.9278E+01 8.2291E+01	9.5926E+02 2.5839E+02 8.8912E+00	-2.2914E+01 -3.8632E+01 8.2291E+01	
CD113M 1.410E+01 A 0.71 1 4 CD115M 4.460E+01 J 23.50 18 6	7.0704E-01 2.1990E+01	8.2291E+01 -8.4302E-06 6.4082E+00	1.6214E-01 2.1990E+01	7.7068E+01 6.4079E+00	
CD119F 2.690E+00 M 1674.49 30 6 CD119M 2.200E+00 M 2354.67 43 0 CD123F 2.200E+00 S 2849.00 116 0	1.4554E+03 2.2047E+03 2.1650E+03	1.3082E+01 6.3699E+00 2.4008E+01	1.4554E+03 2.2047E+03 2.1655E+03	1.3082E+01 6.3696E+00 2.3992E+01	
CD126F 5.060E-01 S 769.11 11 0 CD127F 4.300E-01 S 3560.00 15 0	6.3890E+02 5.0540E+03	2.4008E+01 1.6930E+01 -4.1966E+01	6.3890E+02 5.0545E+03	1.6930E+01	
IN104F 1.700E+00 M 3570.33 19 5 IN106F 6.200E+00 M 3560.00 28 5	3.2097E+03 3.5529E+03	1.0101E+01 1.9943E-01	3.2332E+03 9.0746E+02	7.4509E+01	
IN106M 5.200E+00 M 2950.00 31 5 IN112F 1.440E+01 M 30.90 10 4 IN118F 5.000E+00 5 347.11 5 0	2.9476E+03 1.5273E+02 3.2966E+02	1.0101E+01 1.9943E-01 8.1361E-02 -3.9426E+02 5.0267E+00 8.3513E+00	2.1333E+03 1.5273E+02 3.2966E+02	-3.9427E+02	
IN121M 3.880E+00 M 69.16 11 12 IN131F 2.700E-01 S 2894.85 4 0	6.3382E+01 2.5200E+03	8.3513E+00 1.2949E+01 -2.8668E+01	6.3382E+01 2.5200E+03	8.3512E+00 1.2948E+01	
IN131N 3.200E-01 S 4663.16 6 0	6.0000E+03 7.3900E+03	2.24727.00	6.0368E+03		
SN107F 2.900E+00 M 1699.98 76 0 SN110F 4.111E+00 H 337.83 1 4 SN113M 2.140E+01 M 1.60 0 4 SN123F 1.292E+02 J 8.00 9 6 SN129F 2.400E+00 M 2480.00 56 0	3.0088E+02 0.0000E+00	-3.34/1E+02 1.0937E+01 1.0900E+02 1.3801E+01 4.0859E+01 -4.8517E+02 8.6127E+01 4.9576E+01 3.3287E+01	7.3868E+03 3.0089E+02 1.6507E+00	-3.1698£+00	
SNI3UF 3.72UE+UU M	6.8921E+00 1.4667E+03 9.3627E+02	1.3801E+01 4.0859E+01 -4.8517E+02	6.8921E+00 1.4667E+03 9.3368E+02	1.3801E+01 4.0856E+01 -4.8355E+02	
SN130M 1.700E+00 M 2352.00 8 4 SN131F 3.900E+01 S 2360.00 38 0 SN131M 1.020E+00 M 2391.00 3 0	3.2628E+02 1.1900E+03 1.5951E+03	8.6127E+01 4.9576E+01	3.2628E+02 4.6602E+03 1.6326E+03	8.6127E+01 -9.7465E+01	
SN132F 4.000E+01 S 1660.00 10 4 SN133F 1.500E+00 S 2030.00 31 0	1.2922E+03 2.7252E+02	2.2158E+01 8.6575E+01	1.2922E+03 2.7252E+02	2.2156E+01	
SB129M 1.770E+01 M 1365.00 29 0	2.2339E+03	-6.3656E+01	2.2339E+03	-6.3658E+01	
TE113F 1.700E+00 M 2323.42 39 5 TE114F 1.517E+01 M 973.32 48 0	2.1729E+03 4.3200E+03	6.4784E+00 -3.4384E+02	2.1601E+03 4.3218E+03	-3.4402E+02	
TE118F 6.000E+00 J 19.90 0 4 TE121M 1.539E+02 J 217.00 6 9 TE135F 1.900E+01 S 480.00 41 0	3.3260E+01 2.1733E+02 5.1000E+02	-3.4384E+02 -6.7136E+01 -1.5207E-01 -6.2500E+00 -1.7438E+01 -8.9891E+02	1.9912E+01 1.8889E+02 5.0968E+02	1.2955E+01	
TE136F 1.750E+01 S 1740.00 23 4 TE137F 2.490E+00 S 182.20 13 0	2.0434E+03 1.8200E+03	-1.7438E+01 -8.9891E+02	5.0968E+02 2.0426E+03 1.1093E+04	-1.7393E+01 -5.9884E+03	
I136M 4.500E+01 S 2510.00 28 0 I137F 2.450E+01 S 1230.00 244 0	2.1322E+03 1.1319E+03	1.5052E+01 7.9789E+00	2.1321E+03 1.1319E+03	7.9781E+00	
1138F 6.410E+00 S 1560.00 100 0 1139F 2.290E+00 S 1400.00 103 4 1140F 8.600E-01 S 4120.00 1 0	1.3600E+03 7.5033E+03 1.6100E+03	1.2821E+01 -4.3595E+02 6.0922E+01	1.3594E+03 7.5073E+03 2.2341E+02	-4.3623E+02	
fi41F 4.800E-01 S 1787.00 4 0	4.0190E+04	-2.1490E+03	9.7327E+02		
			spectre.gamm	na+X	4

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ECAR2

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PERIODE

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FRANCOIN DOM: No. 100 DOM:	Jun 16 199	7 14:05	708					spectre.ga	mma+X	Page 5
Notice 1.0000-01 170.56 3		PERIODE	EGM	NG	NX	ERGX	EÇAR1	SOMGX	ECAR2	
CS124F 1.008-00 M 2.766.64 116 4 1.9910e-04 - 6.1603e-02 1.9805e-04 - 6.1503e-02 1.9805e-04 - 6.1503e-04 1.9805e-04 - 6.1503e-04 1.9805e-04 - 6.1503e-02 1.9805e-04 - 6.1503e-04 1.9805e-04 - 7.5976e-00 1.2948e-03 - 7.5976e-03 - 7.5976e-00 1.2948e-03 - 7.5976e-03 - 7.5976e									(EGM-SOMGX) *100./EGM	
CS124F 1.00E-00 M 276.64 116 4 1.9910E-04 - 6.160E-02 1.980SP-04 - 6.158E-02 CS122F 1.00E-01 S 1234.74 44 5 1.3346E-03 - 7.276E-00 1.294E-03 - 7.576E-00 CS122H 1.50E-01 S 1234.74 44 5 1.3346E-03 - 7.276E-00 1.294E-03 - 7.576E-00 CS123H 1.50E-02 S 135.00 12 0 3.400E-02 - 7.683E-02 3.37726-03 - 7.5976E-00 CS123H 1.50E-00 S 135.00 12 0 3.400E-02 - 7.683E-02 3.37726-03 - 7.5976E-00 CS123H 1.50E-00 S 135.00 12 0 3.400E-02 - 7.683E-02 3.37726-03 - 7.5976E-00 CS123H 1.50E-00 S 135.00 12 0 3.400E-02 - 7.683E-02 3.395SE-02 - 7.138E-02 CS124F 1.50E-00 S 135.00 12 0 3.400E-02 - 7.5876E-00 CS124F 1.00E-00 S 135.00 12 0 3.400E-02 - 7.188E-02 3.395SE-02 - 7.138E-02 CS144F 1.00E-00 S 135.00 193 4 7.80ZE-02 3.149E-01 3.395SE-02 - 7.138E-02 S 1.138E-02 CS144F 1.00E-00 S 1450.00 184 4 1.042E-02 5.149E-01 8.80G58-02 3.40ZE-01 S 1.042E-01 CS144F 1.770E-00 S 1450.00 84 4 1.1042E-02 7.169E-01 4.108E-02 3.142E-01 CS144F 1.40E-01 S 202.00 124 4 1.30E-02 5.15E-02 5.15	XE114F 1.	000E+01 S	178.56			1.9000E+02	-6.4056E+00	1.9382E+02	-8.5460E+00	
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CS124F 1.00E-00 M 276.64 116 4 1.9910E-04 - 6.160E-02 1.980SP-04 - 6.158E-02 CS122F 1.00E-01 S 1234.74 44 5 1.3346E-03 - 7.276E-00 1.294E-03 - 7.576E-00 CS122H 1.50E-01 S 1234.74 44 5 1.3346E-03 - 7.276E-00 1.294E-03 - 7.576E-00 CS123H 1.50E-02 S 135.00 12 0 3.400E-02 - 7.683E-02 3.37726-03 - 7.5976E-00 CS123H 1.50E-00 S 135.00 12 0 3.400E-02 - 7.683E-02 3.37726-03 - 7.5976E-00 CS123H 1.50E-00 S 135.00 12 0 3.400E-02 - 7.683E-02 3.37726-03 - 7.5976E-00 CS123H 1.50E-00 S 135.00 12 0 3.400E-02 - 7.683E-02 3.395SE-02 - 7.138E-02 CS124F 1.50E-00 S 135.00 12 0 3.400E-02 - 7.5876E-00 CS124F 1.00E-00 S 135.00 12 0 3.400E-02 - 7.188E-02 3.395SE-02 - 7.138E-02 CS144F 1.00E-00 S 135.00 193 4 7.80ZE-02 3.149E-01 3.395SE-02 - 7.138E-02 S 1.138E-02 CS144F 1.00E-00 S 1450.00 184 4 1.042E-02 5.149E-01 8.80G58-02 3.40ZE-01 S 1.042E-01 CS144F 1.770E-00 S 1450.00 84 4 1.1042E-02 7.169E-01 4.108E-02 3.142E-01 CS144F 1.40E-01 S 202.00 124 4 1.30E-02 5.15E-02 5.15	XE139F 3.	968E+01 S	920.00	266		1.0155E+03	-1.0383E+01	1.0157E+03		
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BA126F 1.667B+00 H 519.66 87 5 5.8407E+02 -1.2394E+01 5.8815E+02 1.1180E+01 4.7585E+03 8A131F 1.180E+01 J 470.80 48 0 4.2756E+02 9.1844E+00 4.2757E+02 9.1829E+00 8A131F 1.180E+01 J 470.80 48 0 4.2756E+02 9.1844E+00 4.2757E+02 9.1829E+00 8A131F 1.180E+01 J 470.80 68 3E21E+02 1.3404E+01 8.3622E+01 1.4031E+01 8A142F 1.660E+01 M 760.00 90 4 1.0794E+03 -4.2032E+01 1.0701E+04 -1.3080E+03 8A143F 1.450E+01 S 870.00 71 2 3.4713E+02 6.0100E+01 3.4713E+02 6.0100E+01 8A143F 7.200E+02 1.3404E+00 8.320E+00 4.2582E+03 2.5817E+04 -1.6920E+03 8A143F 7.200E+02 1.3403E+01 4.200E+02 8.3409E+00 8.3288E+02 5.3541E+00 8A143F 7.200E+02 1.3403E+01 2.063E+03 2.5817E+04 -1.6920E+03 8A459E+01 2.063E+03 2.5817E+04 -1.6920E+03 8.4457E+01 2.063E+03 2.5817E+04 -1.6920E+03 8.4459E+01 8.4459E+	Ç314/F 2.	2005-01 3	1300,00	32	7	1.131313+02	9.1700E-01	0.20025+02	4.04/12+01	
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BA146F 7.200E+00 5 880.00 247 0 8.3300E+02 5.3409E+00 8.2288E+02 5.3541E+00 8.4459E+01 8.459E+01 8.4459E+01 8.459E+01 8.45	BA143F 1.	450E+01 S	870.00	71	2	3.4713E+02	6.0100E+01	3.4713E+02	6.0100E+01	
LA135F 1.950E+01 H 35.70 12 4 3.5690E+01 2.8007E-02 3.3839E+01 5.2140E+00 LA137F 6.000E+04 A 30.36 0 4 2.5262E+01 1.6805E+01 2.5262E+01 1.6805E+01 LA141F 3.930E+00 H 46.06 28 0 4.2946E+01 6.7562E+00 4.2946E+01 6.7560E+00 LA143F 1.413E+01 M 130.00 76 0 2.6600E+02 -1.0462E+02 2.6603E+02 -1.0464E+02 LA143F 2.420E+01 S 1480.00 70 6 6.5038E+02 5.6055E+01 6.5039E+02 5.6055E+01 LA146F 6.270E+00 S 2280.00 186 4 1.2623E+03 4.4634E+01 1.2623E+03 4.4635E+01 LA147F 4.000E+00 S 1260.00 46 4 2.8168E+02 7.7645E+01 2.8168E+02 7.7645E+01 CE127F 3.200E+01 S 4.09 1 0 4.3000E+00 -5.2632E+00 4.2632E+00 -4.3623E+00 CE131F 1.000E+01 M 738.56 79 4 7.9073E+02 -7.0640E+00 7.9048E+02 -7.0300E+00 CE131F 5.000E+00 M 184.22 3 0 1.9700E+02 -6.9385E+00 1.9698E+02 -6.9250E+00 CE147F 5.500E+00 M 770.00 53 4 8.5946E+02 -1.1618E+01 8.6297E+02 -1.2074E+01 CE147F 5.500E+00 S 2637.00 22 0 1.5300E+03 4.1980E+01 1.2899E+03 -5.7109E+01	BA146F 2.	220E+00 S	880.00	247	0	8.3300E+02	5.3409E+00	8.3288E+02	5.3541E+00	
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CELSOF 4.000E+00 S BZ1.00 Z7 0 6.3000E+02 Z.3264E+01 1.2899E+03 -5.7109E+01	CE147F 5.	500E+01 S				1.3757E+02	7.7811E+01	1.3757E+02	7.7811E+01	
CELSOF 4.000E+00 S BZ1.00 Z7 0 6.3000E+02 Z.3264E+01 1.2899E+03 -5.7109E+01	CE149F 5.	200E+00 S	2637.00			1.5300E+03	4.1980E+01	4.7903E+02	8.1834E+01	
PR134F 1.700E+01 M 2033.31 29 0 1.4400E+04 -6.0820E+02 1.4377E+04 -6.0706E+02	CE150F 4.	000E+00 S	821.00	21	U	6.3U0UE+02	2.3264E+01		~5./109E+01	
	PR134F 1.	700E+01 M	2033.31			1.4400E+04	-6.0820E+02	1.4377E+04		
PR134M 1.100E+01 M 2033.65 33			2033.65	33	0	9.6000E+03 8.9040E-06	-1.7206E+02	9.5690E+03 8.9040E-06 9.5180E+00	-3.7053E+D2	
PR143F 1.358E+01 J 0.31 1 0 8.9040E-06 9.9997E+01 8.9040E-06 9.9997E+01 PR144F 1.728E+01 M 28.90 8 0 2.8900E+01 0.0000E+00 9.5180E+00 6.7066E+01	DRIAGE 1	7288+01 M				5.504UB+U6	0.000E+00	0.5040E=00	5.333/E+U± 6.70668±01	
PRI44F 7.200E+00 M 12.70 1 4 1.2710E+01 -7.8742E-02 1.1861E+01 6.6090E+00							-7.8742E-02	1.1861E+01		
PR145F 5.980E+00 H 27.71 58 6 2.5842E+01 6.7422E+00 2.5842E+01 6.7415E+00	PR145F 5.	980E+00 H			ē	2.5842E+01	6.7422E+00	2.5842E+01		
PR147F 1.360E+01 M 840.00 64 6 7.3731E+02 1.2225E+01 7.3732E+02 1.2224E+01	PR147F 1.	360E+01 M	840.00	64	6	7.3731E+02	1.2225E+01	7.3732E+02	1.2224E+01	
} PK149F 2.20/E+UU M 41/,05 D/ 4 3.0320E+U2 1.102UE+U1 3.0343E+U2 1.1054E+U1							1.10205+01	3.6943E+02		
PRISOF 6.100E+00 S 2315.00 4 0 2.3400E+03 -1.0799E+00 1.5138E+02 9.3461E+01 PRIS1F 1.890E+01 S 655.00 27 0 4.5000E+02 3.1298E+01 4.4667E+02 3.1607E+01	PR150F 6.	100E+00 S				2.3400E+03	-1.0799E+00	1.5138E+02		
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PERIODE EGM NG NX ERGX ECAR1 SOMGX ECAR2 ER(0)+ER(9) (EGM-ERGX)*100./EGM SOMG+SOMX (EGM-SOMGX)*100./EGM ND137F 3.850E+01 M 1166.38 174 5 1.1011E+03 5.5968E+00 1.1026E+03 5.4724E+00 ND138F 5.028E+00 H 47.50 13 4 4.3320E+01 8.8002E+00 4.3092E+01 9.2803E+00 ND140F 3.370E+00 J 27.44 0 4 0.0000E+00 1.0000E+02 2.7469E+01 -1.0540E-01 ND154F 2.590E+01 S 396.00 51 0 4.2000E+02 -6.0606E+00 4.2471E+02 -7.2504E+00 PM135F 4.900E+01 S 2658.46 32 0 2.8800E+03 -8.3334E+00 2.8833E+03 -8.4573E+00 PM136F 1.783E+00 M 2629.97 27 4 1.6409E+04 -5.2394E+02 1.6414E+04 -5.2413E+02 PM137F 2.400E+00 M 1725.85 96 5 1.5799E+03 8.4567E+00 1.5825E+03 8.3082E+00 PM138F 1.000E+01 S 957.54 0 5 5.3600E-01 9.9944E+01 9.5755E+02 -5.6093E-04 PM149F 2.212E+00 J 0.41 28 4 4.0830E-01 7.2991E-04 3.6641E-01 1.0260E+01	
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SM136F 4.270E+01 S 308.27 22 4 3.5062E+02 -1.3738E+01 3.5100E+02 -1.3861E+01	
SM145F 3.400E+02 J 72.14 2 4 7.2143E+01 4.1244E-04 3.8602E+01 4.6493E+01 SM151F 8.879E+01 A 0.01 1 0 6.8000E-03 4.8092E+01 6.7636E-03 4.8370E+01	
SM155F 2.210E+01 M 104.48 52 0 9.4197E+01 9.8421E+00 9.4197E+01 9.8417E+00 SM156F 9.400E+00 H 124.73 11 0 1.1751E+02 5.7885E+00 1.1751E+02 5.7854E+00	
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GD142F 1.500E+00 M 654.00 0 5 8.3300E+02 -2.7370E+01 6.5402E+02 -2.5198E-03	
GD144F 4.500E+00 M 1233.32 62 0 7.1360E+03 -4.7860E+02 7.1367E+03 -4.7866E+02	
GD147F 1.588E+00 J 1250.02 167 5 1.3220E+03 -5.7615E+00 1.3263E+03 -6.1020E+00 GD163F 1.133E+00 M 1988.00 11 0 5.8000E+02 7.0825E+01 5.8373E+02 7.0637E+01	
TB146M 2.300E+01 S 3530.00 10 5 3.5328E+03 -7.9321E-02 3.1696E+03 1.0210E+01	
TB156N 1.019E+00 J 36.83 0 1 3.6836E+01 -1.6292E-02 2.5707E-01 9.9302E+01	
TB157F 9.830E+01 A 20.93 1 4 1.1300E+02 -4.3983E+02 1.1295E+02 -4.3958E+02	
DY146F 2.900E+01 S 157.41 2 0 1.7000E+02 -8.0003E+00 1.6534E+02 -5.0417E+00	
DY146M 1.500E-01 S 2935.60 9 4 3.1042E+03 -5.7435E+00 3.1042E+03 -5.7431E+00	
DY149F 4.233E+00 M 2250.00 52 1 2.2450E+03 2.222E-01 1.9280E+03 1.4312E+01 DY152F 2.369E+00 H 250.14 1 4 2.8711E+02 -1.4778E+01 2.8714E+02 -1.4790E+01	
HO158F 1.100E+01 M 1406.65 243 0 5.0100E+04 -3.4617E+03 5.0175E+04 -3.4670E+03 HO158N 2.133E+01 M 2735.70 11 5 2.7357E+03 7.3179E-04 2.4162E+03 1.1678E+01	
HO150M 5.019E+00 H 13220.00 347 0 1.3220E+05 -9.0000E+02 1.3226E+05 -9.0048E+02	
HO161F 2.481E+00 H 15.50 9 0 1.5500E+01 0.0000E+00 7.3219E+00 5.2762E+01	
HO164F 2.900E+01 M 26.95 2 8 2.9930E+01 -1.1039E+01 2.9956E+01 -1.1136E+01	
HO170M 4.300E+01 S 2028.70 31 0 1.3333E+03 3.4278E+01 4.8769E+03 -1.4040E+02	
ER148F 4.500E+00 S 858.63 2 5 9.4211E+02 -9.7225E+00 9.4207E+02 -9.7178E+00 ER150F 1.850E+01 S 791.47 1 1 8.4370E+02 -6.5990E+00 8.4372E+02 -6.6015E+00	
ER150F 1.850E+01 S 791.47 1 1 8.4370E+02 ~6.5990E+00 8.4372E+02 ~6.6015E+00 ER156F 1.950E+01 M 15.06 6 4 1.3774E+01 8.5556E+00 1.3742E+01 8.7671E+00	
ER158F 2.250E+00 H 129.60 36 4 1.4462E+02 -1.1590E+01 1.4428E+02 -1.1331E+01	
ER165F 1.036E+01 H 37.80 0 4 4.6730E+00 8.7638E+01 3.7828E+01 -7.5022E-02	
ER167M 2.280E+00 S 118.28 1 0 8.6590E+01 2.6792E+01 8.6590E+01 2.6792E+01	
ER169F 9.300E+00 J 0.02 3 0 1.8347E-02 9.8029E+00 1.8347E-02 9.8020E+00	
ER172F 2.054E+00 J 504.00 37 4 5.0370E+02 5.9521E-02 2.3210E+02 5.3949E+01	
TM151F 5.200E+00 S 1185.53 1 0 9.8440E+02 1.6965E+01 9.8440E+02 1.6965E+01 TM151M 4.130E+00 S 1698.32 9 0 1.4100E+03 1.6977E+01 1.4114E+03 1.6895E+01	
TM151M 4.130E+00 S 1698.32 9 0 1.4100E+03 1.6977E+01 1.4114E+03 1.6895E+01 TM157F 3.500E+00 M 1543.32 144 4 9.1599E+03 -4.9352E+02 9.1636E+03 -4.9376E+02	
TM157F 3.500E+00 M 1543.32 144 4 9.1599E+03 -4.9352E+02 9.1636E+03 -4.9376E+02 TM159F 9.150E+00 M 1333.32 130 5 7.2907E+03 -4.4681E+02 7.3001E+03 -4.4751E+02	
TM159F 9.150E+00 M 1333.32 150 5 7.2507E+03 -4.4061E+02 7.5061E+03 -4.4751E+02 TM161F 3.800E+01 M 899.17 232 0 1.0200E+03 -1.3439E+01 1.0235E+03 -1.3832E+01	
TM162M 2.430E+01 S 300.00 18 5 3.0490E+02 -1.6333E+00 4.4054E+02 -4.6847E+01 TM176F 1.900E+00 M 1706.03 86 0 1.9300E+03 -1.3128E+01 1.9278E+03 -1.3002E+01	
spectre.gamma+X	(

Ju	n 16 19	997 14:05						spectre.gai	nma+X	F	Page 7
		PERIODE	EGM	NG	NX	ERGX	ECAR1	SOMGX	ECAR2		
ļ						ER(0)+ER(9)	(EGM-ERGX)*100./EGM	SOMG+SOMX	(EGM-SOMGX)*100./EGM		
Y	B151F	1.600E+00 S 1.650E+00 M	1202.50 61.25		4	1.0384E+03 5.6600E+01	1.3644E+01	1.0390E+03 5.6654E+01	1.3599E+01 7.5085E+00		
		4.800E+00 M			5	3.4140E+02	7.5974E+00 -2.2240E+01 -5.6978E+00 -9.4933E+00	3.3611E+02	-2.0345E+01		
Y	B162F	1.887E+01 M	233.35	45	5	2.4665E+02	-5.6978E+00	2.4702E+02	-5.8583E+00		
Y	B164F	1.264E+00 H 3.201E+01 J	13.44 326.84		4	1.4717E+01 3.2683E+02	-9.4933E+00 3.0626E-03	1.4338E+01 2.6888E+02	-6.6722E+00 1.7733E+01		i
1											
	U160F	3.550E+01 S 1.073E+01 M	2566.64	22	0	B.8900E+03	-2.4637E+02	8.8882E+03 5.2334E+03	-2,4630E+02		
		1.419E+00 J			4 5	5.2340E+03 1.3133E+03	-2.4637E+02 -3.0097E+02 -8.1813E+00	1.3131E+03	-3.0093E+02 -8.1614E+00		
	F162F	3.760E+01 S	308.28	3	0	2.9200E+02	5.2803E+00	2.9187E+02	5.3232E+00		
	F167F	2.050E+00 M	682.79		5	7.3400E+02	-7.5000E+00	7.3405E+02	-7.5074E+00		İ
H	F170F	1.600E+01 H	495.45	93	4	5.4555E+02	-7.5000E+00 -1.0113E+01 -2.3865E+03	5.4261E+02	-9.5182E+00		
		1.211E+01 H		187	4	1.9892E+04	-2.3865E+03	1.9935E+04	-2.3919E+03		
	F175F F177M	7.000E+01 J 1.080E+00 S	398.36 1070.00		6 4	3.6054E+02 1.0671E+03	9.4921E+00 2.7171E-01	3.6054E+02 9.1669E+02	9.4921E+00 1.4328E+01		
	#178M	4 00000+00 5	1147 AD	14	ō	2.4222E+03	-1.1110E+02	2.4222E+03	-1.1110E+02		
H	F178N	3.100E+01 A	1595.50	14	ŏ	1.3059E+03	1.8151E+01	2.3919E+03	-4.9915E+01		
	F180M	3.100E+01 A 5.500E+00 H 9.000E+06 A	93.33	6	0	9.3332E+01	1.8151E+01 0.0000E+00 -8.6802E+00	1.1467E+03 2.3064E+02	-1.1286E+03		
	F182F	9.000E+06 A	212.22	5	Ó	9.3332E+01 2.3064E+02 8.9127E+02	-8.6802E+00	2.3064E+02	-8.6813E+00		
H.	FIBZM	1.025E+00 H	980.45	28	0	8.912/E+U2	9.0958E+00	8.9127E+02	9.0953E+00		
T	A169F	4.900E+00 M	1499.98	19	1	8.2086E+03	-4.4725E+02	8.1681E+03	-4.4455E+02		
	A173F	3.139E+00 H 1.050E+01 H	536.00 841.89	198	5 5	5.3637E+02 9.2732E+02	-6.9598E-02 -1.0148E+01	5.0194E+02 9.2534E+02	6.3551E+00 -9.9128E+00		
T:	A175F A179F	1.776E+00 A	28.00		4	0.0000E+00	1.0000E+02	2.7847E+01	5.4633E-01		
l T	A183F	5.100E+00 J	328.49	32	ō	2.3651E+02	2.8001E+01	2.3651E+02	2.8001E+01		
T	A185F	4.900E+01 M	164.59	27	4	1.6460E+02	-3.0315E-03	1.4510E+02	1.1843E+01		
١ ,		2.933E+01 M			0	2.6000E+03	-3.5883E+02 -1.3888E+01	2.5995E+03 1.7737E+02	-3.5874E+02		
		2.306E+00 H			4	1.7734E+02	-1.3888E+01	1.7737E+02	-1.3903E+01		
		2.164E+01 J			4 8	0.0000E+00 2.0946E+01	1.0000E+02	1.6354E+01	1.0704E+01 6.7362E+00		
	W175M W185F	6.400E+00 M 7.510E+01 J	0.05		Ö	2.3317E-02	-2.2058E-01 5.3366E+01	1.9492E+01 2.3317E-02	5.3366E+01		
					_						
R	E177F E184M	1.400E+01 M 1.655E+02 J	572.33 389.00		5 8	6.0620E+02 3.8965E+02	-5.9174E+00 -1.6709E-01	6.0645E+02 3.6859E+02	-5.9618E+00 5.2468E+00		ļ
R	E186M	1.998E+05 A	60.00		4	6.4035E+01	-6.7250E+00	6.1646E+01	-2.7439E+00		
0	S174F	4.400E+01 S	465.30	7	0	5.0760E+02	-9.0909E+00	5.0762E+02	-9.0952E+00		
ŏ	S176F	3.000E+00 M			ŏ	3.5310E+03	_2 £620 0 ±02	3.5305E+03	-2.6523E+02		
0.	S179F	6.500E+00 M	1203.32	60	Ō	1.0600E+04	-7.8090E+02	1.0668E+04 2.0760E+00	-7.8651E+02		
	S180F	2.150E+01 M	5,60		1 4	5.5970E+00		2.0760E+00	6.2929E+01 6.3971E+00		
	S182F	2.211E+01 H 9.363E+01 J	461.48 713.00		4	4.3248E+02 7.1349E+02	6.2637E+00 -6 8722E-02	4.3196E+02 1.8188E+02	7.4491E+01		
		4.806E+00 H			i	3.9490E+00	-9.6468E+01	2.0048E+00	2.6119E-01		
Ŏ.	S196F	3.490E+01 M	96.11		ō	6.9600E+01	2.7586E+01	6.9586E+01	2.7601E+01		
1	R181F	4.900E+00 M 5.500E+01 M 3.019E+00 H 1.389E+01 H 1.050E+01 H 1.319E+01 J 1.200E+00 H	1333.32	31	4	4.1695E+03	-2.1271E+02	4.1745E+03	-2.1309E+02		
Ī	R183F	5.500E+01 M	2739.19	34	4	2.5695E+03	6.1941E+00	2.5673E+03	6.2755E+00		
I	R184F	3.019E+00 H	1722.47	188	5	1.8958E+03	-1.0063E+01 -1.1852E+03	1.8958E+03	-1.0065E+01		
Ī	R185F	1.389E+01 H	833.33	179	0	1.0710E+04 5.5764E+04	-1.1852E+03 -1.1053#±04	1.0699E+04 5.5836E+04	-1.1839E+03 -1.1067E+04		
+ +	K189F	1.319E+01 A	82.84	29	4	7.8213E+01	5.5810E+00	7.7976E+01	5.8673E+00		1
Î	R190M	1.200E+00 H	2.13	0	ī	7.8213E+01 0.0000E+00	1.0000E+02	2.1298E+00	1.1261E-02		
	UTOOM	3.1345100 11	1,40.00		8	1.5485E+03	-3.1046E-02	9.7467E+02	3.7037E+01		
		1.440E+00 M 3.185E-02 S			0	1.5793E-01 1.6500E+02	-1.1832E+03 -1.1053E+04 5.5810E+00 1.0000E+02 -3.1046E-02 0.0000E+00 -4.7059E+01	5.8158E+01 1.1220E+02	-3.6725E+04 0.0000E+00		İ
	R194N R197F	5.800E+00 M	718.33	41	ó	3.7100E+04	-5.0648E+03	3.7100E+04	-5.0648E+03		
									.,		_ [
I								spectre.gamm	a+X		7

Jun 16 1	997 14:05	<u> </u>					spectre.ga	mma+X	Page 9
	PERIODE	EGM	NG	NX	ERGX	ECAR1	SOMGX	ECAR2	
					ER(0)+ER(9)	(EGM+ERGX)*100./EGM	SOMG+SOMX	(EGM-SOMGX) *100./EGM	
	5.667E+00 M	974.20		0	1.1000E+03	-1.2913E+01	1.0935E+03	-1.2249E+01	
	2.389E+00 H	61.00		4	6.0349E+01	1.0674E+00	5.7450E+01	5.8194E+00	
RN221F	2.500E+01 M	106.78	48	4	1.0678E+02	-9.3599E-04	9.7918E+01	8.2989E+00	
FR211F	3.100E+00 M	407.53	7	0	4.4500E+02	-9,1942E+00	4.4492E+02	-9.1755E+00	
RA213M	2.100E-03 S			8	1.6345E+03	-2.7897E-01	8.5429E+01		
	4.220E+01 M	162.33		0	1.4689E+02	9.5115E+00	1.4689E+02		
RA230F	1.550E+00 H	300.00	48	0	9.2100E+02	-2.0700E+02	9.2135E+02	-2.0712E+02	
	2.900E+00 H	266.17		0	1.5617E+02	4.1327E+01	1.5617E+02	4.1328E+D1	
	1.208E+00 J	212.79		0	1.9540E+02	8.1724E+00	1.9540E+02	8.1735E+00	
AC229F	1.045E+00 H	439.66	36	0	1.8505E+03	-3.2089E+02	1.8505E+03	-3.2088E+02	
	1.040E+00 S	33.62		0	2.3839E+01	2.9093E+01	2.3839E+01	2.9091E+01	
TH226F	3.090E+01 M	27.78	10	D	6.7179E+00	7.5819E+01	6.7179E+00	7.5819£+01	
PA227F	3.830E+01 M	14.03	4	0	8.0340E+00	4.2725E+01	8.0340E+00	4.2725E+01	
	2.200E+01 H			0	1.0464E+03	1.1036E+01	1.0464E+03		
	1.740E+01 J	698.75		0	5.8972E+02	1.5604E+01	5.8973E+02	1.5603E+01	
PA234M	1.170E+00 M	14.43		9	1.1591E+01	1.9688E+01	1.1591E+01	1.9688E+01	
PA235F	2.420E+01 M	9.87		7	8.7576E+00	1.1248E+01	8.7577E+00		
PA236F	9.100E+00 M	482.92	23	4	5.1654E+02	-6.9621E+00	5.0874E+02		
PAZZBF	2.300E+00 M	1989.44	75	0	2.2743E+03	-1.4319E+01	2.2743E+03	-1.4318E+01	
U228F	9.100E+00 M 2.080E+01 J	6.45	4	0	3.2850E+00	4.9089E+01	3.2850E+00		
U230F	2.080E+01 J	4.74		0	1.0472E+00	7.7889E+01	1.0472E+00		
U231F	4.200E+00 J 2.600E+01 M	94.84		4.	9.4841E+01 7.6000E-19	0.0000E+00 1.0000E+02	6.6742E+01 7.6000E-19	2.9628E+01 1.0000E+02	
	4.880E+01 M	1196.76 124.06		0	1.1057E+03 9.3194E+00	7.6089E+00	1.1057E+03		
NEZSSE	3.620E+01 M 2.250E+01 H	42.29		9	4.9064E+01	9.2488E+01 -1.6013E+01	9.3194E+00 4.9064E+01	9.2488E+01 -1.6013E+01	
				-		-1.00132401	4.90046+01	-1.6013E+01	
	2.530E+01 M	96.85	16	4	9.6844E+01	1,0241E-03	9.1694E+01		
PU244F	8.005E+07 A	9.76	1	2	9.75586+00	-6.8429E-05	1.00588+00	8.9691E+01	
	1.217E+00 H	403,21		4	4.0321E+02	0.0000E+00	3.5101E+02	1.2946E+01	
	1.190E+01 H	267.92		4	2.6792E+02	-7.5178E-04	1.6408E+02	3.8757E+01	
	2.600E+01 M	12.44		9	1.1168E+01	1.0227E+01	1.1168E+01	1.0227E+01	
AM247F	2.200E+01 M	178.08	2	0	7.8545E+01	5.5894E+01	7.8545E+01	5.5894E+01	
CM246F	4.733E+03 A	3.00	1	2	3.0021E+00	0.0000E+00	1.1723E+00	6.0950E+01	
	3.402E+05 A	579.13	1	2	5.7913E+02	5.269SE-05	9.3175E-01	9.9839E+01	
DV245E	4.940E+00 J	303.65	1.4	0	8.8018E+01	7 10130101	0 00105.01	7 10137-01	
	1,800E+00 J	952.01		4	8.5910E+01	7.1013E+01 9.7595E+00	8.8018E+01 8.6295E+02		
				_	• • • • • • • • • • • • • • • • • • • •				
	1.487E+00 J	2.70		0	2.2510E-02	9.9166E+01	2.2510E-02		
	1.309E+01 A 2.647E+00 A	6.34 217.38		7 7	6.3430E+00 2.1738E+02	1.1276E-04	9.5301E-01		
CF Z5ZF	2.84/E+00 A	217.38	3	,	2.1738E+U2	1.2635E-04	9.4109E-01	9.9567E+01	
ES254F	2.755E+02 J	1521.60	23	4	1.5216E+03	1.4601E-03	9.3034E-01		
ES256M	7.600E+00 H	42.73	3	0	4.8100E+01	-1.2575E+01	3.3210E+02	-6.7726E+02	
FM253F	3.000E+00 J	92.84	3	4	9.2843E+01	-7.5602E-04	7.3752E+01	2.0562E+01	
	2.004E+01 H	23.78	49	ō	1.7129E+00	9.2798E+01	1.7130E+00		
	1.005E+02 J			ŏ	3.1281E+01	7.7884E+01	3.1281E+01		
			•	-			5.,20,24.01	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	

spectre.gamma+X

TABLE 4 spectre.alpha

NAL number of alpha rays

ER(4) average decay heat for α spectrum

 FD_{α} normalization factor

 $EAM = \overline{E_{\alpha}}.$

 $SOMAL = FD\alpha * \left(1 + \frac{4}{A}\right) * \sum_{i=1}^{N\alpha} I\alpha_i * E\alpha_i$

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spectre.alpha

Page 1

SPECTRE ALPHA - SOMAL = $FD^*(E1^*I1+E2^*I2+...)^*(1.+4./A)$

ER(4)/SOMAL > 1.05 OU < 0.95

	EAM	ER (4)	NAL	FD	SOMAL	ER(4)/SOMAL
BE 11F	3.6273E+01	3.6273E+01	1	1.0000E+00	3.1500E+01	1.1515E+00
B 12F	6.6417E+00	6.6417E+00	2	1.0000E+00	5.9053E+00	1.1247E+00
TM156F	3.8100E+00	3.8100E+00	1	1.0000E-02	4.3415E+03	8.7757E-04
YB156F	4.8060E+02	4.6860E+02	1	1.0000E-02	4.3255E+03	1.0833E-01
YB158F	1.2210E-01	1.2210E-01	1	1.0000E-02	4.1720E+03	2.9266E-05
W165F	7.3500E+00	7.3500E+00	1	9.8500E-03	4.9455E+03	1.4862E-03
RE165F	7.3300E+02	7.1580E+02	1	8.7000E-03	4.9063E+03	1.4589E-01
OS165F	6.3100E+03	6.1640E+03	1	4.0000E-03	2.5254E+03	2.4408E+00
HG181F	2.1570E+03	2.1570E+03	3	9.0000E-10	5.5116E-04	3.9136E+06
HG187F	1.6071E+03	9.9300E+03	1	1.0000E-02	8.4561E+07	1.1743E-04
PB189F	2.3400E+03	2.2920E+03	1	1.0000E-03	5.8513E+02	3.9171E+00
BI194M	3.5000E+01	2.3709E+01	2	1.0000E-02	5.7555E+03	4.1193E-03
PO212N	8.9534E+03	1.1783E+04	1	1.0000E+00	1.7781E+02	6.6265E+01

TABLE 5 raie.511 Kev

RIS positron intensity (β^+ spectrum STYP=2)

Jun 16 1997 14:56	raie.511	KEV	Page 1
STUDY ABOUT 51		•	
511 KEV RAY COMES FROM BETA INTENSITIES ARE NOT EGAL	+ SPECTRUM AND X S	SPECTRUM	
	CLIDES		
SE 70F branch. beta + = 1.0		0 1000/00/100	* ****
SP. BETA+ E= 1.8600E+03KEV SP. BETA+ E= 2.1700E+03KEV	RIS= 3.2000E+00	2.*RIS(IR)*FD=	6.4000E-02
SP. BETA+ E= 2.2900E+03KEV SP. BETA+ E= 2.4100E+03KEV			
SP. BETA+ E= 2.4200E+03KEV	RIS= 6.0000E-01	2.*RIS(IR)*FD=	1.2000E-02
SP. BETA+ E= 2.5200E+03KEV SP. BETA+	RIS= 3.5000E+00		7.0000E-02 7.4600E-01
SP. X E= 5.1100E+02KEV I*F	D = 1.4100E+00	23.2.2	77
BR 76M branch. beta + = 3.0	000E-03) *DTC/TD\+DD	£ 0000503
SP. BETA+ E= 3.7270E+03KEV SP. BETA+		2.*RIS(IR)*FD= SOMME=	6.0000E-03
SP. X E= 5.1100E+02KEV I*F	D = 5.0000E-03		
CD102F branch. beta + = 1.0 SP BETA+ E= 1.5310E+03KEV	000E+00 RTS= 7.8000E-02	2.*RTS(TR)*FD=	1.5600E+03
SP. BETA+ E= 1.8544E+03KEV	RIS= 2.1700E+00	2.*RIS(IR)*FD=	4.3400E-02
SP. BETA+ E= 1.5310E+03KEV SP. BETA+ E= 1.8544E+03KEV SP. BETA+ E= 2.2694E+03KEV SP. BETA+ E= 2.3598E+03KEV	RIS= 9.0000E-01 RIS= 4.2000E-01	2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	1.8000E-02 8.4000E-03
SP. BETA+ SP. X E= 5.1100E+02KEV I*F		SOMME=	7.1360E-02
XE121F branch. beta + = 1.0 SP. BETA+ E= 1.3300E+03KEV SP. BETA+ E= 1.3400E+03KEV SP. BETA+ E= 1.3500E+03KEV SP. BETA+ E= 1.3600E+03KEV SP. BETA+ E= 1.4200E+03KEV SP. BETA+ E= 1.4200E+03KEV SP. BETA+ E= 1.4700E+03KEV SP. BETA+ E= 1.5700E+03KEV SP. BETA+ E= 1.6900E+03KEV SP. BETA+ E= 1.9400E+03KEV SP. BETA+ E= 1.9400E+03KEV SP. BETA+ E= 1.9400E+03KEV SP. BETA+ E= 1.9700E+03KEV SP. BETA+ E= 1.9700E+03KEV SP. BETA+ E= 1.9700E+03KEV SP. BETA+ E= 1.9700E+03KEV	RIS= 1.0000E-03	2.*RIS(IR)*FD=	2.0040E-05
SP. BETA+ E= 1.3400E+03KEV SP. BETA+ E= 1.3500E+03KEV	RIS= 1.0000E-03 RIS= 1.0000E-03	2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	2.0040E-05 2.0040E-05
SP. BETA+ E= 1.3600E+03KEV	RIS= 1.0000E-02	2.*RIS(IR)*FD=	2.0040E-04
SP. BETA+ E= 1.4200E+03KEV	RIS= 2.0000E-02	2.*RIS(IR)*FD=	4.0080E-04
SP. BETA+ E= 1.4700E+03KEV SP RETA+ E= 1.5700E+03KEV	RIS= 5.0000E-03	2.*RIS(IR)*FD=	1.0020E-04 6.0120E-04
SP. BETA+ E= 1.6900E+03KEV	RIS= 1.2000E-02	2.*RIS(IR)*FD=	2.4048E-04
SP. BETA+ E= 1.9400E+03KEV SP. BETA+ E= 1.9400E+03KEV	RIS= 1.0000E-01	2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	2.4048E-03
SP. BETA+ E= 1.9700E+03KEV SP. BETA+ E= 2.0800E+03KEV	RIS= 5.0000E-02	2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	1.0020E-03
SP. BETA+ E= 2.1400E+03KEV	RIS= 8.0000E-02	2.*RIS(IR)*FD=	1.6032E-03
SP. BETA+ E≈ 2.2000E+03KEV SP. BETA+ E≈ 2.2500E+03KEV			
		2.*RIS(IR)*FD=	4.8096E-03
SP. BETA+ E= 2.4800E+03KEV	RIS= 1.5000E-01 RIS= 1.6000E-01		
SP. BETA+ E= 2.8200E+03KEV	RIS= 2.0000E-02	2.*RIS(IR)*FD=	4.0080E-04
SP. BETA+ E= 2.8600E+03KEV SP. BETA+ E= 2.8800E+03KEV	RIS= 2.0000E-02 RIS= 1.0700E+00	2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	4.0080E-04 2.1443E-02
SP. BETA+ E= 2.3700E+03KEV SP. BETA+ E= 2.4800E+03KEV SP. BETA+ E= 2.6000E+03KEV SP. BETA+ E= 2.8200E+03KEV SP. BETA+ E= 2.8600E+03KEV SP. BETA+ E= 2.9100E+03KEV SP. BETA+ E= 2.9700E+03KEV SP. BETA+ E= 3.0300E+03KEV SP. BETA+ E= 3.0700E+03KEV SP. BETA+ E= 3.0700E+03KEV	RIS= 4.2000E-01	2.*RIS(IR)*FD=	8.4168E-03
SP. BETA+ E= 2.9700E+03KEV SP. BETA+ E= 3.0300E+03KEV	RIS= 2.3000E-01 RIS= 1.5000E-02	2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	4.6092E-03 3.0060E-04
		2.*RIS(IR)*FD=	9.6192E-03
SP. BETA+ E= 3.0800E+03KEV SP. BETA+ E= 3.1100E+03KEV	RIS= 5.4000E-01	Z. "KIS(IK)"FD-	1.00225-02
SP. BETA+ E= 3.1200E+03KEV SP. BETA+ E= 3.1500E+03KEV			
SP. BETA+ E= 3.2000E+03KEV	RIS= 7.0000E-02	2.*RIS(IR)*FD=	1.4028E-03
SP. BETA+ E= 3.2200E+03KEV SP. BETA+ E= 3.2300E+03KEV SP. BETA+ E= 3.2500E+03KEV	RIS= 5.7000E-01 RIS= 9.7000E-01	2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	
SP. BETA+ E= 3.2500E+03KEV	RIS= 1.5000E-02	2.*RIS(IR)*FD=	3.0060E-04
SP. BETA+ E= 3.5100E+03KEV SP. BETA+ E= 3.6300E+03KEV			

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SP. BETA+ E= 3.7100E+03KEV	RIS= 4.0000E+00 2.*RIS(IR)*FD= RIS= 2.6000E+00 2.*RIS(IR)*FD= SOMME=	
CS122F branch, beta + = 1. SP. BETA+ E= 4.7000E+03KEV SP. BETA+ E= 5.0000E+03KEV SP. BETA+ E= 5.0000E+03KEV SP. BETA+ E= 5.1000E+03KEV SP. BETA+ E= 5.7000E+03KEV SP. BETA+ E= 5.7000E+03KEV SP. BETA+ E= 5.9000E+03KEV SP. BETA+ E= 6.2000E+03KEV SP. BETA+ E= 6.2000E+03KEV SP. BETA+ E= 6.5000E+03KEV SP. BETA+ E= 6.5000E+03KEV SP. BETA+ E= 6.5000E+03KEV SP. BETA+ SP. X E= 5.1100E+02KEV I* BA126F branch, beta + = 1.	OU00E+00 RIS= 4.9000E-01 2.*RIS{IR}*FD= RIS= 1.2000E+00 2.*RIS{IR}*FD= RIS= 4.6000E-01 2.*RIS{IR}*FD= RIS= 4.5000E-01 2.*RIS{IR}*FD= RIS= 8.4000E-01 2.*RIS{IR}*FD= RIS= 8.0000E-01 2.*RIS{IR}*FD= RIS= 8.0000E-01 2.*RIS{IR}*FD= RIS= 6.6000E-01 2.*RIS{IR}*FD= RIS= 9.5000E-01 2.*RIS{IR}*FD= RIS= 3.0000E+00 2.*RIS{IR}*FD= RIS= 3.0000E+00 2.*RIS{IR}*FD= RIS= 2.8000E-01 2.*RIS{IR}*FD= RIS= 2.8000E-01 2.*RIS{IR}*FD= RIS= 1.9000E+00 OU00E+00	2.4000E-02 9.2000E-03 9.0000E-03 1.6800E-02 1.3200E-02 1.9000E-02 6.0000E-02 8.2000E-02 5.6000E-03 2.6460E-01
SP. BETA+ E= 1.5364E+03KEV SP. BETA+ SP. X E= 5.1100E+02KEV I* EU142F branch. beta + = 1.	FD = 2.1000E - 02	2.5250E-03 2.5250E-03
SP. BETA+ E= 5.8000E+03KEV SP. BETA+ E= 5.9000E+03KEV SP. BETA+ E= 6.3000E+03KEV SP. BETA+ E= 6.5000E+03KEV	RIS= 9.5000E-01 2.*RIS(IR)*FD= RIS= 2.4300E+00 2.*RIS(IR)*FD= RIS= 3.5700E+00 2.*RIS(IR)*FD= RIS= 7.2000E-01 2.*RIS(IR)*FD= RIS= 8.6400E+00 2.*RIS(IR)*FD= SOMME=	4.8600E-02 7.1400E-02 1.4400E-02
SP. BETA+ E= 2.1946E+03KEV SP. BETA+ E= 2.2526E+03KEV	RIS= 2.3000E-02 2.*RIS(IR)*FD= RIS= 8.1000E-02 2.*RIS(IR)*FD= RIS= 1.7000E-01 2.*RIS(IR)*FD= RIS= 8.6000E-02 2.*RIS(IR)*FD= SOMME=	1.6200E-03 3.4000E-03
YB162F branch. beta + = 1. SP. BETA+ E= 1.6467E+03KEV SP. BETA+ SP. X E= 5.1100E+02KEV I*	RIS= 3.3100E-01 2.*RIS(IR)*FD= SOMME=	6.6200E-03 6.6200E-03
SP. BETA+ E= 1.7250E+03KEV SP. BETA+ E= 1.7939E+03KEV SP. BETA+ E= 1.8244E+03KEV	RIS= 1.1400E-03 2.*RIS(IR)*FD= RIS= 3.6000E-02 2.*RIS(IR)*FD= RIS= 3.1000E-03 2.*RIS(IR)*FD= RIS= 2.1900E-02 2.*RIS(IR)*FD= RIS= 2.8000E-01 2.*RIS(IR)*FD= SOMME=	7.2000E-04 6.2000E-05 4.3800E-04
RE177F branch. beta + = 1. SP. BETA+ E= 2.7970E+03KEV SP. BETA+ E= 3.3240E+03KEV SP. BETA+ E= 3.3850E+03KEV SP. BETA+ SP. X E= 5.1100E+02KEV I*		1.0600E-02 5.4000E-02 6.6000E-02 1.3060E-01
IR184F branch. beta + = 1. SP. BETA+ E= 2.3000E+03KEV SP. BETA+ E= 2.9000E+03KEV SP. BETA+ E= 2.9000E+03KEV SP. BETA+ E= 3.0000E+03KEV SP. BETA+ E= 3.0000E+03KEV	0000E+00 RIS= 1.0000E-01 2.*RIS(IR)*FD= RIS= 2.0000E-01 2.*RIS(IR)*FD= RIS= 2.0000E-01 2.*RIS(IR)*FD= RIS= 6.0000E-01 2.*RIS(IR)*FD= RIS= 2.0000E-01 2.*RIS(IR)*FD=	2.0000E-03 4.0000E-03 4.0000E-03 1.2000E-02 4.0000E-03

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SP. BETA+ E= 3.1000E+03KEV RIS= 3.0000E-01 SP. BETA+ E= 3.1000E+03KEV RIS= 2.0000E-01 SP. BETA+ E= 3.1000E+03KEV RIS= 2.0000E-01 SP. BETA+ E= 3.2000E+03KEV RIS= 3.0000E-01 SP. BETA+ E= 3.3000E+03KEV RIS= 5.0000E-01 SP. BETA+ E= 3.5000E+03KEV RIS= 4.0000E-01 SP. BETA+ E= 3.5000E+03KEV RIS= 3.0000E-01 SP. BETA+ E= 3.5000E+03KEV RIS= 3.0000E-01 SP. BETA+ E= 3.5000E+03KEV RIS= 3.0000E-01	2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 5.*RIS(IR)*FD= 5.*RIS(IR)*FD= 5.*RIS(IR)*FD=	6.0000E-03 1.0000E-02 8.0000E-03 1.6000E-02 6.0000E-03	
511 KEV RAY COMES FROM X SPECTRUM ONLY IN BETA+ SPECTRUM RIS=0. 3 NUCLIDES CD104F branch. beta + = 1.0000E+00 SP. X E= 5.1100E+02KEV I*FD = 1.5000E-02 ER148F branch. beta + = 1.0000E+00 SP. X E= 5.1100E+02KEV I*FD = 1.7640E+00 LU170F branch. beta + = 1.0000E+00 SP. X E= 5.1100E+02KEV I*FD = 4.0000E-03			
511 KEV RAY COMES FROM GAMMA SPECTRUM ONLY NO BETA+ SPECTRUM 3 NUCLIDES CS121F branch. beta + = 1.0000E+00 SP. G E= 5.1100E+02KEV I*FD = 7.264BE+00			
YB161F branch. beta + = 1.0000E+00 SP. G E= 5.1100E+02KEV I*FD = 3.4587E-01 TA169F branch. beta + = 1.0000E+00 SP. G E= 5.1100E+02KEV I*FD = 2.3030E+00			
511 KEV RAY COMES FROM BETA+ SPECTRUM ONLY 10 NUCLIDES			
NI 59F branch. beta + = 1.0000E+00 SP. BETA+ E= 1.0734E+03KEV RIS= 1.0071E-05 SP. BETA+ SOM	2.*RIS(IR)*FD= ME= 2.0142E-05	2.0142E-05	
SR 85M branch. beta + = 1.2700E-01 SP. BETA+ E= 1.1514E+03KEV RIS= 3.0574E-05 SP. BETA+		6.1148E-05 6.1148E-05	
RH102F branch. beta + = 1.0000E+00 SP. BETA+ E= 1.2166E+03KEV RIS= 1.8005E-05 SP. BETA+	2.*RIS(IR)*FD= SOMME=		
IN114F branch. beta + = 5.0000E-03 SP. BETA+ E= 1.4440E+03KEV RIS= 2.1353E-05 SP. BETA+	2.*RIS(IR)*FD=		
SB122F branch, beta + = 2.3800E-02			

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SP. BETA+ E= SP. BETA+	1.6227E+03KEV	RIS=	6.3962E-05	2.*RIS(IR)*FD= SOMME=	1.2792E-04 1.2792E-04	
SP. BETA+ E=	beta + = 1.00 2.8800E+03KEV 3.5600E+03KEV	RIS=	5.0000E-01	2.*RIS(IR)*FD= 2.*RIS(IR)*FD= SOMME=	1.0000E-02 3.0000E-02 4.0000E-02	
W179F branch. SP. BETA+ E= SP. BETA+	beta + = 1.00 1.0600E+03KEV	00E+0 RIS=	0 9.0000E-10	2.*RIS(IR)*FD= SOMME=	1.8000E-11 1.8000E-11	
PU235F branch. SP. BETA+ E= SP. BETA+ E= SP. BETA+	beta + = 9.99 1.0807E+03KEV 1.0958E+03KEV	97E-0 RIS≃ RIS≃	1 6.1035E-09 5.3406E-08	2.*RIS(IR)*FD= 2.*RIS(IR)*FD= SOMME=	1.2207E-08 1.0681E-07 1.1902E-07	
SP. BETA+ E= SP. BETA+ E= SP. BETA+ E= SP. BETA+ E= SP. BETA+ E=	1.0968E+03KEV 1.142E+03KEV 1.1458E+03KEV 1.1796E+03KEV 1.2290E+03KEV 1.3258E+03KEV 1.3258E+03KEV 1.3488E+03KEV 1.3946E+03KEV 1.4045E+03KEV	RIS= RIS= RIS= RIS= RIS= RIS= RIS= RIS=	7.9956E-07 2.9984E-06 5.0972E-06 5.7114E-07 3.9307E-06 5.0052E-06 1.6052E-07 1.2268E-08 1.2488E-06 2.4414E-09	2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 3.*RIS(IR)*FD= 3.*RIS	7.8614E-06 1.0010E-05 3.2104E-07 2.4536E-08 2.4976E-06 4.8828E-09	
BK246F branch. SP. BETA+ E= SP. BETA+ E= SP. BETA+	beta + = 1.00 1.2080E+03KEV 1.3071E+03KEV	00E+0 RIS= RIS=	0 4.2009E-06 1.5259E-08	2.*RIS(IR)*FD= 2.*RIS(IR)*FD= SOMME=	8.4018E-06 3.0518E-08 8.4323E-06	
SHALL WE COUNT	8 NUC	LIDES				
SP. BETA+ E= SP. BETA+ E= SP. BETA+ E= SP. BETA+ E= SP. BETA+ E= SP. BETA+ E= SP. BETA+ E= SP. BETA+ E= SP. BETA+ E= SP. BETA+ E= SP. BETA+ E= SP. BETA+ E=	3.7700E+03KEV 3.8300E+03KEV 4.9700E+03KEV 4.1200E+03KEV 4.1200E+03KEV 4.2400E+03KEV 4.2400E+03KEV 4.2700E+03KEV 4.3200E+03KEV 4.3200E+03KEV	RIS= RIS= RIS= RIS= RIS= RIS= RIS= RIS=	9.6000E-01 8.0000E-01 8.1000E-01 1.1000E+00 2.7000E+00 1.2000E+00 1.4000E+00 1.6000E+00 5.5000E-01 2.1000E+00	2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	1.9200E-02 1.6000E-02 1.6200E-02 2.2000E-02 2.2000E-02 5.4000E-02 2.4000E-02 3.2000E-02 1.1000E-02 4.2000E-02	

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.0000E-04	2.*RIS(IR)*FD=	1.6000E-05					

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					2.*RIS(IR)*FD=		
SP. BETA+	E=	1.7600E+03KEV	RISE	1.3000E-03	2.*RIS(IR)*FD=	2 6000E-05	
SP. BETA+	E≃	1.8000E+03KEV	RIS=	9.0000E-02	2.*RIS(IR)*FD=	1.8000E-03	
SP RETAI	E-	1 90000203888	DIC-	4 L000E-03	2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 50MME=	0 2000E-04	
SP RETAI	17=	2 9600E+03KEV	DIC-	4.1000E-03	2 401C/10/4PD=	1 20000 02	
CD BETAL	E-	2.90000000000000	DIC.	6 0000E-01	2. RIS(IR)-PD=	1,38008-02	
CD DETAI	L-	3.0300240382	N43-	0.00000-02	2. RISTER) PD=	1 21225 02	
26. PEINT	E 11	000.03464 140	·	21205 00	SOMPLE	1.7182E-02	
SP. A E=	5.11	00E+02KEV I*F 00E+02KEV I*F	D = 1	.71206-02 .35426-02			
L198F bra SP. BETA+	ncn. E=	beta + = 1.0 1.5600E+03KEV	000E+0 RIS≃	0 3.0000E-03	2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	6.0000E-05	
SP. BETA+	E=	1.5600E+03KEV	RIS=	3.0000E-03	2.*RIS(IR)*FD=	6.0000E-05	
SP. BETA+	E≂	1.6000E+03KEV	RIS=	7.0000E+03	2 *RIS(IR) *FD=	1 40000 00	
SP. BETA+	E=	1.6100E+D3KEV	RIS=	9.0000E-03	2.*RIS(IR)*FD=	1.8000E-04	
SP. BETA+	E=	1.6300E+03KEV	RIS=	2.0000E-02	2 *RIS(IR) *FD~	4 000000-04	
SP RETAL	E=	1 82005-03854	RIC-	1 000000-02	2 *DTC/TD/*CD-	2 000000-04	
SP BRTAL	E≃	1 85006+03060	DIC-	5 100000-03	2 *DIS(IN)*ID=	2.0000E=03	
CI. DEIAT	E=	1 01000E+02VEA	DIC-	3.10005-02	2 * RIS(1R) * FD=	1.U2UUE-U3	
CD DEMY.	£-	2 0400E-030EV	D10-	2.7000E-03	2. K15(1K)*FD=	1 60000 44	
or, DETA+	E=	2.0400E+03KEV	VT2=	5.0000E-03	2."RIS(IR)*FD≏	1.6000E+04	
SE BETA+	E=	Z.UBUUE+U3KEV	RIS=	1.3000E-03	2.*RIS(IR)*FD=	2.6000E-05	
SF, BETA+	Eπ	2.3700E+03KEV	RIS≖	2.2000E-01	2.*RIS(IR)*FD=	4 4000E+03	
SP. BETA+	E=	2.4100E+03KEV	RIS≂	6.8000E-03	2.*RIS(IR)*FD=	1.3600E-04	
SP. BETA+	E=	3.0500E+03KEV	RIS=	2.6000E-01	2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	5.2000E-03	
SP. BETA+	E=	3.4600E+03KEV	RIS=	1.8000E-01	2.*RIS(IR)*FD=	3.6000E-03	
SP. BETA+					SOMME=	1.5460E+02	
SP. X E≃	5.11	00E+02KEV I*F	D = 1	.5460E-02			
		00E+02KEV I*F					
Y149F bra	nch.	beta + = 1.0	000E+0	0	2.*RIS(IR)*FD= 3.*RIS(IR)*FD= 3.*RIS		
SP. BETA+	E=	1.7200E+03KEV	RIS=	5.0000E-02	2. RIS(IR)*FD=	1.0000E-03	
SP. BETA+	E≂	1.7200E+03KEV	RIS=	2.0000E-01	2.*RIS(IR)*FD=	4.0000E-03	
SP. BETA+	E=	1.7500E+03KEV	RIS=	7.0000E-02	2.*RIS(IR)*FD=	1.4000E-03	
SP. BETA+	E=	1.7600E+03KEV	RIS=	5.0000E-02	2.*RIS(IR)*FD=	1.0000E-03	
SP. BETA+	E=	1.8200E+03KEV	RIS=	2.0000E-02	2.*RIS(IR)*FD=	4.0000E-04	
SP. BETA+	E=	1.8700E+03KEV	Rīs=	8.0000E-02	2.*RIS(IR)*FD=	1.6000E-03	
SP. BETA+	E=	1.8700E+03KEV	RIS=	3.0000E-01	2.*RIS(IR)*FD=	6.0000E-03	
SP. BETA+	E≃	2.0900E+03KEV	RIS=	4.0000E-02	2.*RIS(IR)*FD=	8.0000E-04	
SP. BETA+	E=	2.2200E+03KEV	RIS=	6.0000E-02	2.*RIS(IR)*FD=	1.2000E-03	
SP. BETA+	E=	2.4800E+03KEV	RIS≃	1.8000E-01	2.*RIS(IR)*FD=	3.6000E-03	
SP. BETA+	Ε=	2.6200E+03KEV	RIS=	7.0000E-01	2. *RIS(IR) *FD=	1.4000E-02	
SP. BETA+	E=	2.6300E+03KEV	RİS=	7.0000E-01	2.*RIS(IR)*FD=	1.4000E-02	
SP. BETA+	£=	2.7600E+03KEV	RIS=	6.0000E-01	2.*RIS(TR)*FD=	1.2000E-02	
SP. BETA+	E=	2.7600E+03KEV	RIS=	4.0000E-02	2.*RIS(IR)*FD=	8.0000E-04	
SP. BETA+	E≃	2.7600E+03KEV	RIS=	3.7000E-01	2.*RIS(TR)*FD=	7.4000E-03	
SP BETA+	E=	2.8100E+03KEV	RISE	2 4000E+00	2 *RIS(IR) *FD=	4 8000E-02	
SP. BETA+	E=	2.8500E+03KEV	RIS=	1.1000E±00	2. *RTS(TR) *FD=	6.2000E-02	
SP BETAL	E=	2.8600E+03KEV	RIC-	1 10005+00	2 * PICITO! * PD-	2 20002-02	
SD BERT	E-	7 1400E+03KEV	DIC-	£ 0000E700	2 * RISTINT TUE	1 20005-02	
SE DEINT	E	3 1000E-01KEV	#15=	0.00000-01	2, "RID!IK;"FD=	1.20006-02	
or BETA+	E=	3.3400E+03KEV	K12=	2.0000E-01	2.*RIS IR) *FD=	4.0000E-03	
SP. DEIAT	₽=	3.5000E+03KEV	KT2=	4.0000E+01	Z. "KIS. IK) "FU"	8.0000E-03	
SP, BETA+					SOMME=	2.2520E-01	
5 <i>P</i> . X E=	5.11 5.11	00E+02KEV I*F 00E+02KEV I*F	ט ≠ 2 בים י	.3000E-01			
		beta + = 1.0					
	E=	3.2100E+03KEV	RIS=	1.3000E+00	2. *RIS(IR) *FD=		
SP. BETA+			_		SOMME=	2.6000E-02	
		00E+02KEV I*F					
SP. G E=	5.11	00E+02KEV I*F	'D = 2	.2827E-02			
							_

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SP.	BETA+	E=	4.5300E+03E	EV RIS=	5.4000E-01	2.*RIS(IR)*FD=	1.0800E-02	<u>.</u> <u>5:</u>
	BETA+	E=	4.5500E+03E		9.0000E-01	2.*RIS(IR)*FD=	1.8000E-02	
	BETA+	£≕	4.5600E+03E		2.8000E+00	2.*RIS(IR)*FD=	5.6000E-02	
	BETA+	E≃	4.6000E+03F		2.3000E+00	2.*RIS(IR)*FD=	4.6000E-02	
	BETA+	E=	4.7000E+03H		4.0000E-02	2.*RIS(IR)*FD=	8.0000E-04	
	BETA+	E=	4.7800E+03K		1.6000E+00	2.*RIS(IR)*FD=	3.2000E-02	
	BETA+ BETA+	E= E=	4.8200E+03K 5.0300E+03K		7.1000E+00 1.2700E+01	2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	1.4200E-01	
SP.	BETA+	E=	5.1300E+03E		1.5000E+00	2.*RIS(IR)*FD=	2.5400E-01 3.0000E-02	
	BETA+	E≃	5.2100E+03K			2. *RIS(IR) *FD=	5.4000E-02	
	BETA+	E=				2.*RIS(IR)*FD=	3.0000E-01	
	BETA+	_				SOMME=	1.9348E+00	
SP. SP.	X E=		100E+02KEV 100E+02KEV		L.9000E+00 7.9576E-03			
0014	25 Lui		Nata					
			beta + =	1.0000E+0		2.*RIS(IR)*FD=	2 6000# 02	
	BETA+ BETA+	E=	2.03306+031	EA KIZE	1.30002-01	Z.~KIS(IK)~FD= SOMME=	2.6000E-03 2.6000E-03	
SP.		5 1	100E+02KEV	7*80 = 3	3.2000E-03	-amile	2.00006-03	
SP.			100E+02KEV		1.8913E-03			
			beta + =	1.0000E+0				
	BETA+	E=	1.5520E+03E		3.5000E-03	2.*RIS(IR)*FD=	7.0000E-05	
	BETA+	E=	1.5870E+03K	EV RIS=	1.8000E-03	2.*RIS(IR)*FD=	3.6000E-05	
	BETA+	E=	1.6050E+03K		1.8000E-02	2.*RIS(IR)*FD=	3.6000E-04	
	BETA+	E=	1.6500E+03K		1.6000E-03	2.*RIS(IR)*FD=	3.2000E-05	
	BETA+	E=	1.8400E+03K		1.4000E-02	2.*RIS(IR)*FD=	2.8000E-04	
	BETA+	E≃	1.8770E+03K		3.0000E-03	2.*RIS(IR)*FD=	6.0000E-05	
	BETA+	E=	1.9110E+03K		9.7000E-02	2.*RIS(IR)*FD=	1.9400E-03	
	BETA+	E≠	1.9370E+03K			2.*RIS(IR)*FD=	1.6400E-04	
	BETA+ BETA+	E≃ E≃	1.9900E+03K 2.0120E+03K		6.0000E-02 1.0000E-02	2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	1.2000E-03 2.0000E-04	
	BETA+	E=	2.0120E+03K		4.4000E-03	2.*RIS(IR)*FD=	8.8000E-05	
	BETA+	E=	2.0800E+03K		1.3000E-02	2.*RIS(IR)*FD=	2.6000E-04	
	BETA+	E=	2.1600E+03K		4.1000E-02	2.*RIS(IR)*FD=	8.2000E-04	
	BETA+	E=	2.2090E+03K		1.2000E-01	2.*RIS(IR)*FD=	2.4000E-03	
	BETA+	Ē=	2.2460E+03R		1.6000E-01	2.*RIS(IR)*FD=	3.2000E-03	
	BETA+	E=	2.3020E+03K		2.4000E-02	2.*RIS(IR)*FD=	4.8000E-04	
SP.	BETA+	Σ≠	2.4180E+038	EV RIS=	7.6000E-02	2.*RIS(IR)*FD=	1.5200E-03	
SP.	BETA+	E=	2.5340E+03K	EV RIS=	3.5000E-01	2.*RIS(IR)*FD=	7.0000E-03	
	BETA+	E=	2.5370E+03K		1.4000E-01	2.*RIS(IR)*FD=	2.8000E-03	
	BETA+	E=	2.5700E+03K		1.1000E-02	2.*RIS(IR)*FD=	2.2000E-04	
	BETA+	E≖	2.7290E+03K		3.7000E-01	2.*RIS(IR)*FD=	7.4000E-03	
	BETA+	E=	2.7430E+03K		5.1000E-01	2.*RIS(IR)*FD=	1.0200E-02	
	BETA+	E=	2.8040E+03K		7.0000E-02	2.*RIS(IR)*FD=	1.4000E-03	
	BETA+	E=	2.9210E+03K		1.7000E+00	2.*RIS(IR)*FD=	3.4000E-02	
SP.	BETA+ BETA+	E=	3.0970E+03K 3.2370E+03K		1.1000E-01	2.*RIS(IR)*FD=	2.2000E-03 1.5000E-02	
	BETA+	E=			7.5000E-01 4.9000E+00	2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	9.8000E-02	
	BETA+	E=	3.8520E+03K		9.0000E+00	2.*RIS(IR)*FD=	1.8000E-01	
	BETA+		_,05508+030	_	J. 0000B. 00	SOMME=	3.7133E-01	
	X E=	5.1	100E+02KEV	I*FD = 4	1.0000E-01	201415-	U	
	G E≃		100E+02KEV	1*FD = 1	1.1512E-01			
ም ዚ1 ዓ	37 hr∍	nch	beta + =	1.0000E+0	00			
		E=			3,2000E-02	2.*RIS(IR)*FD=	6.4000E-04	
	BETA+	Ē=	1.4690E+03K		6.1000E-03	2.*RIS(IR)*FD=	1.2200E-04	
		E=	1.5370E+03K	EV RIS=	4.4500E-02	2.*RIS(IR)*FD=	8.9000E-04	
SP.	BETA+	E=	1.5790E+03K		7.0000E-03	2.*RIS(IR)*FD=	1.4000E-04	
	BETA+					SOMME=	1.7920E-03	
	X E≐ G E=		100E+02KEV 100E+02KEV		1.8000E-03 5.0082E-04			
	EF hra		beta + =	1.0000E+0				
TA17								
SP.	BETA+	E=	1.6400E+03R			2.*RIS(IR)*FD=	6.0000E-06	
SP.	BETA+ BETA+	E=	1.6400E+03K 1.6500E+03K 1.6700E+03K	EV RIS=	3.0000E-04	2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	6.0000E-06 4.6000E-05	

raie.511KEV

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Jun 16 1997 14:56 raie:511KEV	. Page 7
511 KEV RAY COMES FROM BETA+ SPECTRUM AND GAMMA SPECTRUM INTENSITIES ARE EGAL - IS IT THE SAME ? 4 NUCLIDES	
NB 91F branch. beta + = 1.0000E+00 SP. BETA+ E= 1.2557E+03KEV RIS= 1.6800E-03 2.*RIS(IR)*FI SP. BETA+ SP. G E= 5.1101E+02KEV I*FD = 3.199SE-03	D= 3.3600E-03 E= 3.3600E-03
NB 92M branch. beta + = 1.0000E+00 SP. BETA+ E= 1.2095E+03KEV RIS= 6.1342E-04 2.*RIS(IR)*FI SP. BETA+ SOMME SP. G E= 5.1101E+02KEV I*FD = 1.1680E-03	D= 1.2268E-03 C= 1.2268E-03
EU152F branch. beta + = 7.2080E-01 SP. BETA+ E= 1.5104E+03KEV RIS= 1.7930E-05 2.*RIS(IR)*FI SP. BETA+ E= 1.7551E+03KEV RIS= 1.7331E-04 2.*RIS(IR)*FI SP. BETA+ SP. G E= 5.1201E+02KEV I*FD = 5.5239E-04	D= 4.9738E-05 D= 4.8076E-04 E= 5.3050E-04
BI207F branch. beta + = 1.0000E+00 SP. BETA+ E= 1.8350E+03KEV RIS= 1.1778E-04 2.*RIS(IR)*FI SP. BETA+ SOMME SP. G E= 5.1101E+02KEV I*FD = 2.4989E-04	D= 2.3556E-04 B= 2.3556E-04
511 KEV RAY COMES FROM BETA+ SPECTRUM AND GAMMA SPECTRUM INTENSITIES ARE NOT EGAL - WHAT DO WE TAKE ? 5 NUCLIDES	
CO 56F branch. beta + = 1.0000E+00 SP. BETA+ E= 1.1230E+03KEV RIS= 9.3766E-05 2.*RIS(IR)*FL SP. BETA+ E= 1.4454E+03KEV RIS= 1.0761E-02 2.*RIS(IR)*FL SP. BETA+ E= 2.4833E+03KEV RIS= 1.8634E-01 2.*RIS(IR)*FL SP. BETA+ SP. G E= 5.1101E+02KEV I*FD = 4.2200E-02	D= 1.8753E-04 D= 2.152E-02 D= 3.7266E-01 C= 3.9439E-01
ZR 89M branch. beta + = 6.2400E-02 SP. BETA+ E= 1.9120E+03KEV RIS= 1.3407E-02 2.*RIS(IR)*FE SP. BETA+ E= 3.4192E+03KEV RIS= 1.7455E-03 2.*RIS(IR)*FE SP. BETA+ SOMME SP. G E= 5.1101E+02KEV I*FD = 3.5366E-02	D= 2.6814E-02 D= 3.4910E-03 D= 3.0305E-02
CD107F branch. beta + = 1.0000E+00 SP. BETA+ E= 1.3239E+03KEV RIS= 1.9940E-03 2.*RIS(IR)*FI SP. BETA+ SOMME SP. G E= 5.1101E+02KEV I*FD = 2.2519E-02	D= 3.9880E-03 E= 3.9880E-03
IN112F branch. beta + = 5.6000E-01 SP. BETA+ E= 1.1092E+03KEV RIS= 6.4463E-08 2.*RIS(IR)*FE SP. BETA+ E= 1.2658E+03KEV RIS= 9.1858E-08 2.*RIS(IR)*FE SP. BETA+ E= 1.3545E+03KEV RIS= 2.0491E-05 2.*RIS(IR)*FE SP. BETA+ E= 1.9609E+03KEV RIS= 2.1642E-03 2.*RIS(IR)*FE SP. BETA+ E= 2.5780E+03KEV RIS= 1.1975E-01 2.*RIS(IR)*FE SP. BETA+ SP. G E= 5.1101E+02KEV I*FD = 4.5019E-02	0= 1.2893E-07 0= 1.8372E-07 0= 4.0982E-05 0= 4.3284E-03 0= 2.3950E-01 0= 2.4387E-01
NP232F branch. beta + = 1.0000E+00 SP. BETA+ E= 1.4961E+03KEV RIS= 1.8910E-04 2.*RIS(IR)*FI SP. BETA+ E= 1.5174E+03KEV RIS= 4.7997E-06 2.*RIS(IR)*FI	D= 3.7820E-04 D= 9.5994E-06

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SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+ SP. G E=	E= 1.5570E+03KEV E= 1.5918E+03KEV E= 1.7185E+03KEV E= 2.5334E+03KEV E= 2.6424E+03KEV E= 2.6900E+03KEV 5.1101E+02KEV I*F	RIS= 7.6807E-06 RIS= 1.9403E-05 RIS= 1.8026E-04 RIS= 2.2748E-04 RIS= 2.4904E-04	2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= SOMME=	1.5963E-05 1.5361E-05 3.8806E-05 3.6052E-04 4.5496E-04 4.9808E-04 1.7715E-03	

TABLE 6 q.etot

$$Q = \sum_{i=1}^{NDK} Br_i * Q_i$$

t was placed

rather.

$$ETOT = \overline{E_{"\beta"}} * 2.25 + \overline{E_{"\gamma"}} + \overline{E_{"\alpha"}}$$

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	PERIODE	Q	ETOT	Q/ETOT	
_H3F	1.234E+01 A	1.8571E+01	1.2840E+01	1.446	
BE_12F	2.400E-02 S	1.1707E+04	1.6486E+04	0.710	
_C_14F	5.734E+03 A	1.5650E+02	1.1132E+02	1.406	
_C_16F	7.470E-01 S	5.5708E+03	4.6140E+03	1.207	
_N_17F	4.169E+00 S	8.6800E+03	3.8840E+03	2.235	
_F_23F	2.230E+00 S	8.5100E+03	2.0123E+04	0.423	
NA_33F	8.200E-03 S	1.5446E+04	3.1211E+02	49.490	
NA_34F	5.500E-03 S	1.6335E+04	0.0000E+00	Inf	
NA_35F	1.500E-03 S	1.9498E+04	0.0000E+00	Inf	
MG_33F	9.000E-02 S	1.2333E+04	0.0000E+00	Inf	
AL_29F	6.567E+00 M	3.6796E+03	5.5983E+03	0.657	
SI_32F	1.721E+02 A	2.2500E+02	1.5480E+02	1.453	
SI_34F	2.770E+00 S	4.7000E+03	3.1650E+03	1.485	
_P_33F	2.540E+01 J	2.4900E+02	1.7229E+02	1.445	
_S_35F	8.750E+01 J	1.6750E+02	1.0987E+02	1.525	
_K_49F	1.260E+00 S	6.4758E+03	8.5870E+03	0.754	
_K_50F	4.720E-01 S	1.2206E+04	1.5663E+04	0.779	
_K_51F	3.650E-01 S	1.2600E+04	8.8160E+03	1.429	
CA_45F	1.630E+02 J	2.5610E+02	7.7047E+01	3.324	
SC_45M	3.160E-01 S	1.2397E+01	1.9960E+01	0.621	
SC_46M	1.870E+01 S	1.4253E+02	2.0955E+02	0.680	
SC_47F	3.400E+00 J	6.0000E+02	4.7428E+02	1.265	
SC_50F	1.708E+00 M	6.8920E+03	4.2566E+03	1.619	
MN_58M	3.000E+00 S	6.1000E+03	8.3108E+03	0.734	
MN_59F	4.600E+00 S	5.1800E+03	2.9340E+03	1.766	
CO_58M	9.150E+00 H	2.4889E+01	5.3161E+01	0.468	
CO_60M	1.047E+01 M	6.5944E+01	1.3444E+02	0.491	
NI_63F	1.001E+02 A	6.5870E+01	3.8475E+01	1.712	
NI_66F	2.275E+00 J	2.3300E+02	1.4625E+02	1.593	
CU_67F	2.578E+00 J	5.7500E+02	4.6557E+02	1.235	
CU_78F	2.500E-01 S	1.1938E+04	0.0000E+00	Inf	
ZN_69F	5.700E+01 M	9.0450E+02	7.2226E+02	1.252	
ZN_73M	5.800E+00 S	2.3428E+03	0.0000E+00	Inf	
GA_74M	9.500E+00 S	5.9700E+01	8.0913E+01	0.738	
GA_83F	3.100E-01 S	9.8998E+03	6.8540E+03	1.444	
GA_84F	2.480E-01 S	9.0028E+03	3.9815E+03	2.261	
GE_73M	5.000E-01 S	6.6730E+01	1.3674E+02	0.488	
GE_75M	4.770E+01 S	1.4003E+02	2.4260E+02	0.577	
GE_78F	1.450E+00 H	9.8000E+02	8.1077E+02	1.209	
GE_84F	9.700E-01 S	7.4687E+03	5.2521E+03	1.422	
GE_85F	4.160E-01 S	5.0456E+03	2.7708E+03	1.821	
GE_86F	1.280E-01 S	5.7671E+03	3.5490E+03	1.625	

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	PERIODE	Q	ЕТОТ	Q/ETOT	
AS_75M	1.679E+02 S	3.0400E+02	5.9241E+02	0.513	
AS_77F	1.618E+00 J	6.8275E+02	5.1645E+02	1.322	
AS_87F	7.500E-01 S	9.8450E+03	6.0602E+03	1.625	
AS_88F	5.590E+01 S	8.0051E+03	5.4495E+03	1.469	
SE_73M	3.983E+01 M	7.7655E+02	6.3075E+02	1.231	
SE_77M	1.736E+01 S	1.6200E+02	2.4700E+02	0.656	
SE_79M	3.910E+00 M	9.5500E+01	1.9504E+02	0.490	
SE_81M	5.725E+01 M	1.0392E+02	2.1014E+02	0.495	
SE_92F	3.800E-02 S	8.5625E+03	1.1491E+04	0.745	
BR_76M BR_77M BR_79M BR_80M BR_82M BR_83F BR_93F BR_94F	1.310E+00 S 4.283E+00 M 4.864E+00 S 4.420E+00 H 6.100E+00 M 2.390E+00 H 1.020E-01 S 7.000E-02 S	1.1746E+02 1.0587E+02 2.0720E+02 8.5950E+01 1.2177E+02 9.1851E+02 1.1272E+04 1.1730E+04	3.4000E+01 1.4400E+01 2.6556E+02 1.6359E+02 1.6686E+02 7.2725E+02 0.0000E+00	3.455 7.352 0.780 0.525 0.730 1.263 Inf	
KR_79M	5.000E+01 S	1.3001E+02	2.3990E+02	0.542	
KR_81M	1.300E+01 S	1.9032E+02	2.7053E+02	0.704	
KR_83M	1.830E+00 H	4.1560E+01	9.0284E+01	0.460	
KR_85F	1.073E+01 A	6.8700E+02	5.6581E+02	1.214	
KR_94F	2.000E-01 S	8.1768E+03	6.8116E+03	1.200	
RB_81M RB_87F RB_98F RB_99F RB100F RB101F RB102F	3.048E+01 M 4.800E+10 A 1.140E-01 S 5.900E-02 S 5.100E-02 S 1.180E-01 S 6.900E-02 S	1.3770E+02 2.7330E+02 1.1249E+04 1.0706E+04 1.2646E+04 9.1892E+03 8.8512E+03	2.1850E+02 1.7730E+02 8.0833E+03 8.828E+03 8.0118E+03 0.0000E+00 0.0000E+00	0.630 1.541 1.392 1.213 1.578 Inf	
SR_85M	1.128E+00 H	3.7374E+02	2.4500E+02	1.525	
SR_87M	2.810E+00 H	3.8757E+02	2.0427E+02	1.897	
SR_90F	2.914E+01 A	5.4600E+02	4.4018E+02	1.240	
SR_92F	2.710E+00 H	1.9300E+03	1.5598E+03	1.237	
_Y100M	9.400E-01 S	9.3000E:03	7.6549E+03	1.215	
ZR_87M	1.400E+01 S	3.3630E+02	4.4400E+02	0.757	
ZR102F	2.900E+00 S	4.6100E+03	6.5536E+03	0.703	
ZR104F	1.200E+00 S	5.9955E+03	9.4807E+03	0.632	
NB_90M	1.882E+01 S	1.2630E+02	1.7105E+02	0.738	
NB_91M	6.200E+01 J	1.6729E+02	3.0537E+02	0.548	
NB_93M	1.640E+01 A	3.0400E+01	6.4984E+01	0.468	
NB_94M	6.260E+00 M	5.1166E+01	8.8650E+01	0.577	
NB_95M	3.608E+00 J	2.8657E+02	4.4380E+02	0.646	
M0102F	1.120E+01 M	1.0400E+03	8.3042E+02	1.252	
TC_96M	5.150E+01 M	9.3200E+01	4.5328E+01	2.056	
TC_97M	8.900E+01 J	9.6500E+01	1.9654E+02	0.491	
TC_99F	2.130E+05 A	2.9350E+02	1.9185E+02	1.530	
TC103F	5.000E+01 S	2.6592E+03	2.1705E+03	1.225	
TC111F	3.000E-01 S	6.9668E+03	0.0000E+00	Inf	
RU106F	1.009E+00 A	3.9400E+01	2.2581E+01	1.745	
RU108F	4.500E+00 M	1.3200E+03	1.0967E+03	1.204	

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	PERIODE	Q	ETOT	Q/ETOT
RH100M	4.600E+00 M	1.6927E+02	5.2825E+01	3.204
RH103M	5.612E+01 M	3.9755E+01	7.2648E+01	0.547
RH104M	4.340E+00 M	1.3223E+02	2.2981E+02	0.575
RH105F	1.473E+00 J	5.6700E+02	4.2345E+02	1.339
RH105M	4.500E+01 S	1.2957E+02	2.4040E+02	0.539
RH117F	3.960E-01 S	6.7746E+03	4.6818E+03	1.447
PD107F	6.500E+06 A	3.3100E+01	2.0925E+01	1.582
PD107M	2.130E+01 S	2.1490E+02	2.9226E+02	0.735
PD109F	1.343E+01 H	1.0279E+03	8.1087E+02	1.268
PD109M PD112F	4.690E+00 M 2.105E+01 H	1.8890E+02 2.9300E+02	2.9941E+02 2.0886E+02	0.631 1.403
AG101M	3.100E+00 S	2.7430E+02	2.1108E+02	1.300
AG101M	5.700E+00 S	1.3440E+02	2.5145E+02	0.534
AG105M	7.233E+00 M		5.2480E+01	0.573
AG103M	4.430E+01 S	9.3124E+01	1.7874E+02	0.521
AG107M AG109M	3.960E+01 S	8.8032E+01	1.6861E+02	0.522
AG111F	7.450E+00 J	1.0280E+03	8.1603E+02	1.260
AG111F	1.080E+00 M		1.3194E+02	0.508
AG120F	1.170E+00 S	8.2028E+03	6.2152E+03	1.320
AG120M	3.200E-01 S	5.3709E+03	4.3774E+03	1.227
CD111M	4.860E+01 M	3.9622E+02	5.3084E+02	0.746
CD113F	9.196E+15 A		2.0993E+02	1.505
CD113M	1.410E+01 A	5.8525E+02	4.2389E+02	1.381
CD115F	2.228E+00 J	1.1114E+03	9.1079E+02	1.220
CD126F	5.060E-01 S	5.4800E+03	4.5493E+03	1.205
CD128F	9.400E-01 S	7.0039E+03	8.9451E+03	0.783
CD130F	2.000E-01 S	7.3998E+03	0.0000E+00	Inf
IN112M	2.057E+01 M	1.5640E+02	3.1655E+02	0.494
IN113M	1.658E+00 H	3.9169E+02	5.5606E+02	0.704
IN114M	4.951E+01 J	2.5236E+02	4.1715E+02	0.605
IN114N	4.310E-02 S	5.0198E+02	3.6550E+02	1.373
IN115M	4.486E+00 H		5.4689E+02	0.660
IN116N IN118N	2.160E+00 S 8.500E+00 S	1.6239E+02 2.0243E+02	2.8274E+02 3.2397E+02	0.574
IN128M	9.000E-01 S	7.4671E+03	9.6146E+03	0.625 0.777
IN131F	2.700E-01 S	9.0483E+03	2.8949E+03	3.126
IN133F	1.800E-01 S	8.4892E+03	0.0000E+00	Inf
SN113M	2.140E+01 M	1.6992E+02	2.6125E+00	65.043
SN117M	1.400E+01 J	3.1458E+02	5.0767E+02	0.620
SN119M	2.930E+02 J	8.9530E+01	1.8174E+02	0.493
SN121F	1.127E+00 J	3.8300E+02	2.5469E+02	1.504
SN121M	5.003E+01 A	9.3361E+01	3.3120E+02	0.282
SN134F	1.040E+00 S	6.2662E+03	5.2216E+03	1.200
SN135F	8.500E-01 S	3.4404E+03	2.5170E+03	1.367
SB122M	4.210E+00 M		2.6375E+02	0.620
SB124N	2.020E+01 M		5.2211E+01	0.706
SB126N	1.100E+01 S	2.2702E+01	5.0777E+01	0.447
SB137F	3.600E-01 S	4.1686E+03	7.2265E+03	0.577
TE107F	3 600E-03 S	5.8346E+03	2.8000E+03	2.084
TE108F	2.100E+00 S	4.5334E+03	2.3000E+03	1.971
TE123M TE125M	1.197E+02 J		3.7473E+02	0.660 0.538
TE125M TE127F	5.800E+01 J 9.350E+00 H		2.7418E+02 5.0688E+02	0.528 1.369
TE127F TE127M	1.090E+02 J		1.9322E+02	0.543
_I129F	1.570E+07 A	1.9000E+02	1.4705E+02	1.292

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	PERIODE	0	ETOT	Q/ETOT	
XE125M	5.700E+01 S	2.5200E+02	4.0077E+02	0.629	
XE127M	1.167E+00 M	2.9720E+02	4.3212E+02	0.688	
XE129M	8.890E+00 J	2.3614E+02	4.6381E+02	0.509	
XE131M	1.190E+01 J	1.6393E+02	3.4052E+02	0.481	
XE133M	2.188E+00 J	2.3318E+02	4.6970E+02	0.496	
XE135F XE147F	9.090E+00 H 2.600E-01 S	1.1580E+03 7.9054E+03	9.6081E+02 0.0000E+00	1.205 Inf	
CS122N	3.600E-01 S				
CS134M	2.900E+00 H	8.1200E+01 1.3875E+02	1.2300E+01 2.7563E+02	6.602 0.503	
CS135F	2.300E+06 A	2.0500E+02	1.2668E+02	1.618	
CS137F	3.002E+01 A	5.4728E+02	4.1859E+02	1.307	
C5147F	2.200E-01 S	7.8928E+03	6.4636E+03	1.221	
CS148F	1.700E-01 S	9.6246E+03	7.5300E+03	1.278	
BA131M	1.460E+01 M	1.8750E+02	3.2450E+02	0.578	
BA133M	1.621E+00 J	2.8844E+02	5.6639E+02	0.509	
BA135M BA142F	1.196E+00 J 1.060E+01 M	2.6824E+02	5.2705E+02	0.509	
BA143F	1.450E+01 N	4.3000E+03	1.8175E+03 3.5700E+03	1.210 1.204	
BA149F	3.460E-01 S	7.3679E+03	0.0000E+00	Inf	
LA129M	5.600E-01 S	1.7200E+02	2.9815E+02	0.577	
LA132M	2.430E+01 M	1.2731E+03	4.9100E+02	2.593	
LA145F	2.420E+01 S	4.1100E+03	3.3925E+03	1.211	
CE135M	2.000E+01 S	4.4580E+02	7.0800E+02	0.630	
CE137M	1.433E+00 J	2.6382E+02	5.1215E+02	0.515	
CE141F	3.250E+01 J	5.8000E+02	4.6099E+02	1.258	
CE144F CE146F	2.849E+02 J 1.420E+01 M	3.1732E+02 1.0800E+03	2.2550E+02 7.6500E+02	1.407 1.412	
PR143F PR144M	1.358E+01 J 7.200E+00 M	9.3530E+02 6.1127E+01	7.0906E+02 1.1395E+02	1.319 0.536	
ND152F	1.140E+01 M	1.1500E+03	9.5424E+02	1.205	
PM139M	1.800E-01 S	1.8870E+02	3.1435E+02	0.600	
PM147F	2.625E+00 A	2.2470E+02	1.3950E+02	1.611	
PM149F	2.212E+00 J	1.0724E+03	8.2488E+02	1.300	
SM139M	1.070E+01 S	7.9964E+02	6.0950E+02	1.312	
SM143N	3.000E-02 S	2.7950E+03	2.0093E+03	1.391	
SM151F	8.879E+01 A	7.6300E+01	5.7238E+01	1.333	
SM153F SM153M	1.946E+00 J 1.060E-02 S	8.1700E+02 9.8400E+01	6.6799E+02 3.3400E+01	1.223 2.946	
SM156F	9.400E+00 H	7.3500E+01	5.7732E+02	1.273	
SM157F	8.067E+00 M	2.6000E+03	5.5900E+02	4.651	
SM158F	5.517E+00 M	1.8100E+03	1.4087E+03	1.285	
EU150M	1.262E+01 H	1.1504E+03	8.9414E+02	1.287	
EU152M	9.320E+00 H	1.8839E+03	1.4293E+03	1.318	
EU152N	1.600E+00 H	1.4780E+02	2.3687E+02	0.624	
EU154M EU155F	4.630E+01 M 4.960E+00 A	1.5700E+02 2.4660E+02	2.6317E+02 2.0167E+02	0.597 1.223	
EU157F	1.518E+01 H	1.3630E+03	3.3205E+02	4 105	
GD1505	1 05 00 01 11	0 74705.00	2 51000		
GD159F GD164F	1.856E+01 H 3.180E+01 S	9.7470E+02 2.5100E+03	7.5320E+02 3.4848E+03	1.294 0.720	
TB144M	4.250E+00 S	3.4569E+03	6.6230E+02	5.220	
TB151M	2.500E+01 S	2.6892E+02	8.0700E+01	3.332	
TB152M	4.300E+00 M	1.3141E+03	1.0425E+03	1.261	
TB156N	1.019E+00 J	4.9600E+01	6.2255E+01	0.797	
TB158M	1.050E+01 S	1.1000E+02	2.0950E+02	0.525	
TB161F	6.910E+00 J	5.9050E+02	4.7187E+02	1.251	
TB164F	3.000E+00 M	3.8600E+03	2.4975E+03	1.546	

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	PERIODE	Q	ETOT	Q/ETOT	
DY157M	2.020E-02 S	1.9950E+02	3.1025E+02	0.643	
DY165F	2.334E+00 H	1.2851E+03	1.0302E+03	1.247	
DY165M	1.258E+00 M	1.3900E+02	2.5635E+02	0.542	
DY166F DY168F	3.400E+00 J 8.500E+00 M	4.8100E+02 1.7600E+03	3.9043E+02 1.2766E+03	1,232 1,379	
но158м	2.700E+01 M	6.7300E+01	1.2500E-01	538.400	
но159м	8.300E+00 S	2.0590E+02	3.3310E+02	0.618	
HO160M	5.019E+00 H	1.2101E+03	1.3220E+04	0.092	
H0161M	6.730E+00 S	2.1115E+02	9.61002+01	2.197	
H0162M H0164M	1.117E+00 H 3.750E+01 M	8.9743E+02 1.4000E+02	5.9350E+02 2.2405E+02	1.512 0.625	
HO170M	4,300E+01 S	4.0000E+03	5.7426E+03	0.625	
ER153F	3.710E+01 S	4.5904E+03	2.5410E+03	1.807	
ER167M	2.280E+00 S	2.0780E+02	3.1973E+02	0.650	
ER169F	9.300E+00 J	3.5220E+02	2.3143E+02	1,522	
TM162M	2.430E+01 S	1.0538E+03	4.8000E+02	2.196	
TMI70F	1.286E+02 J	9.6705E+02	7.4548E+02	1.297	
TM171F	1,922E+00 A	9.6500E+01	5.7774E+01	1.670	
YB155F	1.710E+00 S	5.4424E+03	4.4800E+03	1.215	
YB169M YB175F	4.600E+01 S 4.190E+00 J	2.4200E+01 4.6770E+02	5.4450E+01 3.3318E+02	0.444 1.404	
YB177F	1.889E+00 H	1.3930E+03	1.1310E+03	1.232	
YB177M	6.410E+00 S	3.3150E+02	5.4990E+02	0.603	
YB178F	1.233E+00 H	6.3000E+02	1.0891E+03	0.578	
YB179F	8.167E+00 M	2.3100E+03	3.3225E+03	0.695	
LU155F	7.000E-02 S	6.2111E+03	4.5800E+03	1.356	
LU156F	5.000E-01 S	6.7870E+03	4.8710E+03	1.393	
LU169M LU170M	2.667E+00 M 6.700E-01 S	2.9000E+01 9.3000E+01	5.0470E+01 1.7505E+02	0.575 0.531	
LU171M	1,317E+00 M	7.1300E+01	1.4918E+02	0.478	
LU172M	3.667E+00 M	4.1860E+01	7.7480E+01	0.540	
LU174M	1.420E+02 J	1.7982E+02	3.0435E+02	0,591	
LU176M	3.681E+00 H	1.3125E+03	1.0831E+03	1.212	
LU177F LU179F	6.709E+00 J 4.589E+00 H	4.9710E+02 1.3500E+03	3.6563E+02 1.0650E+03	1.360 1.268	
LUISIF	3.500E+00 M	1.9700E+03	7.6025E+02	2.591	
LU182F	2.000E+00 M	4.0300E+03	2.4178E+03	1.667	
HF177N	5.133E+01 M	2.7400E+03	1.7090E+03	1,603	
HF179M	1.867E+01 S	3.7507E+02	5.0925E+02	0.737	
HF180M	5.500E+00 H	1.1416E+03	2.4633E+03	0.463	
TA157F	5.300E-03 S	6.9780E+03	4.9100E+03	1.421	
TA182M TA182N	2.830E-01 S 1.584E+01 M	1.6500E+01 5.0320E+02	3.5218E+01 8.0454E+02	0.469 0.625	
_W161F _W179M	4.100E-01 S 6.400E+00 M	6.4000E+03 2.2449E+02	4.8600E+03 3.7640E+02	1.317 0.596	
_W183M	5.200E+00 S	3.0949E+02	5.053SE+02	0.612	
_W185F	7.510E+01 J	4.3240E+02	2.8580E+02	1.513	
_W185M	1.670E+00 M	1.9740E+02	4.0873E+02	0.483	
_w188F	6.944E+01 J	3.4900E+02	2.2599E+02	1.544	
RE163F	2.600E-01 S	7.0492E+03	4.9396E+03	1.427	
RE186F RE186M	3.777E+00 J 1.998E+05 A	1.0407E+03 1.5000E+02	7.7868E+02 2.1345E+02	1.336 0.703	
RE187F	5.000E+10 A	2.0000E+00	1.4850E+00	1,347	
RE188M	1.860E+01 M	1.7200E+02	2.5850E+02	0.665	
	1.013E+00 J	1.0080E+03	7.8000E+02	1.292	
RE189F RE190M	3.194E+00 H	1.9045E+03	1.5858E+03	1.201	

					
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	PERIODE	Q	ETOT	Q/ETOT	
OS166F	1.800E-01 S	6.1587E+03	4.4100E+03	1.397	
OS167F	8.300E-01 S	6.6829E+03	3.9118E+03	1.708	
OS189M	4.806E+00 H	3.0810E+01	5.6595E+01	0.544	
OS191F OS191M	1.541E+01 J 1.310E+01 H	3.1270E+02 7.4381E+01	2.3125E+02 1.4790E+02	1.352 0.503	
OS193F	1.271E+00 J	1.1320E+03	9.1310E+02	1.240	
OS194F OS196F	5.993E+00 A	9.7000E+01	7.5049E+01	1.292	
081961	3.490E+01 M	1.1600E+03	6.4736E+02	1.792	
IR190M	1.200E+00 H	2.6300E+01	4.1730E+01	0.630	
IR191M IR192M	4.940E+00 S 1.440E+00 M	1.7128E+02	2.3125E+02	0.741	
IR193M	1.060E+01 J	5.8248E+01 8.0270E+01	1.3084E+02 1.6734E+02	0.445 0.480	
IR195F	2.500E+00 H	1.1180E+03	9.1300E+02	1.225	
PT173F	3.420E-01 S	6.6336E+03	5.3400E+03	1.242	
PT175F	2.520E+00 S	6.6605E+03	2.5150E+03	2.648	
PT193M	4.329E+00 J	1.4978E+02	2.9255E+02	0.512	
PT195M PT197F	4.020E+00 J 1.831E+01 H	2.5929E+02 7.1900E+02	4.5625E+02 5.9005E+02	0.568 1.219	
PT197M	1.572E+00 H	4.2333E+02	7.9175E+02	0.535	
AU178F	2.600E+00 S	7.1130E+03	4.2420E+02	16.768	
AU194M	6.000E-01 S	1.0740E+02	3.2000E+00	33.562	· ·
AU194N	4.200E-01 S	4.7580E+02	1.2100E+02	3.932	l
AU195M AU196M	3.050E+01 S 8.100E+00 S	3.1859E+02 8.4660E+01	4.5050E+02 1.7615E+02	0.707	
AU196N	9.694E+00 H	5.9566E+02	1.0725E+03	0.481 0.555	
AU197M	7.800E+00 S	4.0920E+02	6.1680E+02	0.663	
AU198M	2.300E+00 J	8.1200E+02	1.2787E+03	0.635	
AU201F AU203F	2.600E+01 M 5.300E+01 S	1.2750E+03 2.1400E+03	9.8800E+02 1.6740E+03	1.290 1.278	
HG179F HG195M	1.090E+00 S 1.736E+00 J	7.1079E+03 8.7403E+02	3.4070E+03 5.0325E+02	2.086 1.737	
HG197M	2.380E+01 H	3.4083E+02	6.0494E+02	0.563	
HG199M	4.260E+01 M	5.3250E+02	9.0079E+02	0.591	
HG205F HG206F	5.200E+00 M 8.150E+00 M	1.5380E+03 1.3070E+03	1.2112E+03 1.0589E+03	1.270 1.234	
HG207F	2.900E+00 M	4.7800E+03	6.3050E+03	0.758	
TL187M	1.560E+01 S	3.4031E+02	8.2820E+00	41.090	
TL193M	2.117E+00 M	1.2745E+03	2.3477E+02	5.429	i
TL195M	3.600E+00 S	4.8260E+Q2	6.2325E+02	0.774	
TL197M	5.400E-01 S	6.0830E+02	8.1525E+02	0.746	
TL204F TL206F	3.780E+00 A 4.200E+00 M	7.5283E+02 1.5335E+03	1.3942E+00 1.2096E+03	539,984 1,268	
TL207F	4.770E+00 M	1.4220E+03	1.1089E+03	1.282	,
TL210F	1.300E+00 M	5.4866E+03	4.5016E+03	1.219	
PB201M	1.020E+00 M	6.2810E+02	9.5775E+02	0.656	
PB203N	4.800E-01 S	2.9501E+03	2.3249E+03	1.269	•
PB209F PB210F	3.253E+00 H 2.232E+01 A	6.4460E+02 6.3000E+01	4.4402E+02 9.4682E+01	1.452 0.665	ı
PB211F	3.610E+01 M	1.3730E+03	1.0789E+01	1.273	!
BI198M	7.700E+00 S	2.4850E+02	4.1750E+02	0.595	I
BIZIOF	5.013E+00 J	1.1615E+03	8.7315E+02	1.330	
B1213F	4.559E+01 M	1.5303E+03	1.2577E+03	1.217	
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	PERIODE	Q	ETOT	Q/ETOT	
PO195F	4.500E+00 S	6.7628E+03	5.627BE+03	1.202	
PO197M	2.600E+01 S	6.5821E+03	5.4710E+03	1.203	
P0198F	1.760E+00 M	5.6267E+03	4,4150E+03	1.274	
PO203M	1.200E+00 M	8.3166E+02	2,1310E+03	0.390	
P0207M	2.790E+00 S	1.3830E+03	1.7360E+03	0.797	
AT201F	1.483E+00 M	6.2785E+03	4.8992E+03	1.282	
RN201F	7.000E+00 S	6.8016E+03	5.4500E+03	1.248	
RN203F	4.500E+01 S	6.4355E+03	4.3550E+03	1.478	
RN203M	2.800E+01 S	6.8762E+03	5.3420E+03	1,287	
RN204F	1.240E+00 M	5.6865E+03	4.4490E+03	1.278	
MNZU4F	1.240E+00 M	3.0003E+V3	4.44906+03	1.278	
FR204F	2.100E+00 S	7.4724E+03	5.71802+03	1.307	
FR223F	2.180E+01 M	1.1479E+03	9.1229E+02	1.258	
RA225F	1.480E+01 J	3.6200E+02	2.5638E+02	1.412	
RA227F	4.220E+01 M	1.3350E+03	1.0946E+03	1.220	
TH233F	2.230E+01 M	1.2450E+03	9.6490E+02	1.290	
TH234F	2.410E+01 J	1.9850E+02	1,5025E+02	1,321	
TH236F	3.710E+01 M	1.0000E+03	8.1345E+02	1,229	
PA234M	1.170E+00 M	2.2791E+03	1.8589E+03	1.226	
PA235F	2.420E+01 M	1.4150E+03	1.0542E+03	1.342	
PA236F	9.100E+00 M	2.8982E+03	2.1614E+03	1.341	
PA237F	8.700E+00 M	2.2500E+03	1.8700E+03	1.203	
_U235M	2.600E+01 M	7.6000E-02	2.4700E-01	0.308	
U239F	2.347E+01 M	1.2629E+03	9,7386E+02	1,297	
	1 1000 01 11	1 20000-02	1 01000.00	1 200	
NP241F	1.390E+01 M	1.3080E+03	1,0198E+03	1.283	
PU241F	1.441E+01 A	2.0935E+01	1.1907E+01	1.758	
PU243F	4.956E+00 H	5.8200E+02	4.1579E+02	1.400	
AM242F	1.602E+01 H	6.7616E+02	4.2384E+02	1.595	
AM242M	1.411E+02 A	7.3763E+01	1.2485E+02	0.591	
AM244M	2.600E+01 M	1.4974E+03	1,1462E+03	1,306	
AM245F	2.050E+00 H	8.9600E+02	6.6839E+02	1,341	
	2.0302.00	0130002102	0.00000	2.522	
CM249F	1.069E+00 H	9.0300E+02	6.5804E+02	1.372	
CM251F	1.680E+01 M	1.4200E+03	1.1203E+03	1.268	
BK248M	2.370E+01 H	8.1500E+02	4,6164E+02	1,765	
BK248M BK249F	2.370E+01 H 3.200E+02 J	1.2508E+02	7.4447E+01	1.765	
BKZ49F	3.2002+02 0	1.23002402	7.444/5+01	1.000	
CF239F	4.000E+01 S	7.80002+03	5.8000E+03	1.345	
CF253F	1.781E+01 J	3.0709E+02	1,9994E+02	1.536	
		c	. 10045 **	0.555	
ES254F	2.755E+02 J	6.6175E+03	1.1894E+04	0.556	
ES256F	2.200E+01 M	1.6690E+03	2.1293E+03	0.784	
ES256M	7.600E+00 H	1.6700E+03	9,9551E+02	1.678	

q.etot

Prolimon

Draft-Report

JEF/DOC- 676

Consistency Tests on JEF2.2 Decay Data File

B.Nimal, J. Blachot, C.M.Diop.

Abstract:

CEA/Saday France

We review a lot of problems or questions about JEF2-2 and we produce a study about internal consistency tests on all nuclides of JEF2.2 (from H3 to Fm257). These tests are made on gamma, X, alpha spectra, on gamma-ray of 511 kev, and total energy.

We use data format and conventions of procedure ENDFB-6. [ENDF 102 - BNL-NCS-44945(P.F.Rose-Cl.Dundford)]

1. Consistency of gamma and X spectra

For decay heat calculations it is necessary to know $E_{"\gamma"}$ for total γ decay heat calculation and spectra γ and X calculations by energy groups.

In JEF2-2 we can get three different types of photonic decay energies.

•
$$\overline{E}''\gamma'' = \overline{E}_{photonic} = \overline{E}_{\gamma} + \overline{E}_{x} + \overline{E}_{ann.rad.} + \dots$$

• ER(0) average decay heat for γ spectrum

ER(9) average decay heat for X spectrum

Spectrum γ and X (STYP=0 and STYP=9)

$$SOMG \ = \ FD_{\gamma} * \sum_{i=1}^{NG} \! \left(\! I_{\gamma_i} * E_{\gamma_i} \right)$$

$$SOMX = FD_X * \sum_{i=1}^{NX} (I_{X_i} * E_{X_i})$$

 FD_k is the discrete spectrum normalization factor.

We test consistencies between these three types of values and the values calculated with spectra data.

In annexes are given all tests about this study.

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1.1. gamma spectrum (annexe"spectre.gamma" - table 1)

Internal consistency of γ spectrum

$$ECARG = \frac{ER(0) - SOMG}{ER(0)} * 100$$

We list nuclides with IECARGI >5%

We find 85 nuclides with IECARGI > 10%

1.2. X spectrum (annexe "spectre.X" - table 2)

Internal consistency of X spectrum

$$ECARX = \frac{ER(9) - SOMX}{ER(9)} * 100$$

only nuclides with |ECARX| > 5% are given. 16 nuclides have a X spectrum but ER(9) = 0. and 45 nuclides have |ECARX| > 10%

1.3. gamma and X spectra (annexe"spectre.gamma+X" - table 3)

Consistency between
$$\overline{E_{"\gamma"}}$$
 and $ER(0) + ER(9)$
 $\overline{E_{"\gamma"}}$ and $SOMG + SOMX$

We calculate

ECAR1 =
$$\frac{\overline{E_{"\gamma"}} - (ER(0) + ER(9))}{\overline{E_{"\gamma"}}} * 100$$

$$ECAR2 = \frac{\overline{E_{"\gamma"}} - (SOMG + SOMX)}{\overline{E_{"\gamma"}}} * 100$$

We list nuclides for which IECAR11 or IECAR21 > 5 %.

We find 282 nuclides with IECAR2I >10 % (inconsistency between $\overline{E_{"\gamma"}}$ and SOMG + SOMX) and 362 nuclides with IECAR1I >10 % (inconsistency between $\overline{E_{"\gamma"}}$ and ER(0) + ER(9))

For calculation of decay gamma heat we normalize gamma rays to ($\overline{E_{"\gamma"}}$ - ER(9)) Is it correct?

2. Consistency of α spectrum (annexe "spectre.alpha" -table 4)

 $\overline{E_{"q"}}$ is the average energy of all heavy charged particles and delayed neutrons.

 $FD\alpha$ is the normalization factor for α spectrum.

ER(4) is average energy for α spectrum

We compare ER(4) including recoil energy to SOMAL with -

SOMAL = FD
$$\alpha * \left(1 + \frac{4}{A}\right) * \sum_{i=1}^{N\alpha} I\alpha_i * E\alpha_i$$

In annexe "spectre.alpha" we list 13 nuclides with $\frac{ER(4)}{SOMAL} > 1.05$ and < 0.95

For normalization of α spectrum we cannot take $\overline{E_{"\alpha"}}$ which is average energy of <u>all</u> heavy charged particles and delayed neutrons.

This is the reason why we use ER(4) and not $\overline{E_{"\alpha"}}$ for comparisons

It is clear that ENDF format is not well adapted to describe all phenomena independantly: we need the true value of each average energy related to each physical phenomena.

3. gamma-ray of 511 kev (annexe "raie.511 Kev" - table 5)

The intensity of 511kev γ -ray is generally given in X spectrum: I_{511}^X For 70 nuclides there is a good agreement between these types of values. This intensity can be known from β^+ spectrum when the positrons are present: E > 1022kev

RIS is the positron intensity (β^+ spectrum STYP=2)

RIS
$$\neq 0 \rightarrow I_{511}^{\beta+}$$

$$I^{\beta+}_{511} = FD_{\beta^+} * \sum_{i=1}^{N_{\beta}} 2 * RIS_i$$

Generally there is a good agreement between I_{511}^x and $I_{511}^{\beta+}$ but there is redundance of informations.

$$I_{511}^{X} \neq I_{511}^{\beta+}$$

$$I_{511} \neq 0$$

$$I^{\beta+}_{511} = 0 (RIS = 0)$$

$$I^{\beta +}_{511} \neq 0$$
 no I^{X}_{511}

Morever the intensity of 511kev γ -ray is given with γ spectrum: Γ_{511}^{γ}

$$I^{\gamma}_{511} \neq 0$$

$$I^{\gamma}_{511} \neq 0$$
 no I^{X}_{511} and no $I^{\beta+}_{511}$

$$I^{\gamma}_{511} \neq 0$$

$$I_{511}^{\gamma} \neq 0$$
 $I_{511}^{X} \neq 0$ and $I_{511}^{\beta} \neq 0$

in this case what to do?

$$I^{\beta +}_{511} = I^{\gamma}_{511}$$
 no I^{X}_{511}

$$I^{\beta+}_{511} \neq I^{\gamma}_{511}$$
 no I^{X}_{511}

The results about this study are detailed in annexe "raie.511kev"

Consistency between total energies (annexe "q.etot" - table 6) 4.

 \mathbf{Q}_i is total energy available in the corresponding decay process and \mathbf{Br}_i is the fraction of the decay for the corresponding decay mode.

$$Q = \sum_{i=1}^{NDK} Br_i * Q_i$$

To take into account the neutrino energy which is not in JEF2 (not included in ENDFB6 format), we calculate only for nuclides without β + decay (RTYP=2)

$$ETOT = \overline{E_{"\beta"}} * 2.25 + \overline{E_{"\gamma"}} + \overline{E_{"\alpha"}}$$

We have done the approximation $E_{\nu} = \overline{E_{"\beta"}} * 1.25$

and we compare ETOT to Q. In annexe "q.etot" we give the list of nuclides for which

$$\frac{Q}{ETOT} > 1.2 \text{ and } \frac{Q}{ETOT} < 0.8$$

5. Conclusion

The ENDFB-6 format seems not quite adapted for decay heat calculation. We don't have the neutrino energy and we must know the average energy for β spectrum. For α energy we don't know the repartition between each physical phenomena.

Perhaps it is necessary to define a procedure for knowledge of energy we must use in decay heat calculations.

Morever this paper shows anomalies found with consistency tests.

TABLE 1 spectre.gamma

NG number of gamma rays

ER(0) average decay heat for γ spectrum

 FD_{γ} normalization for gamma spectrum

$$SOMG = FD_{\gamma} * \sum_{i=1}^{NG} (I_{\gamma_i} * E_{\gamma_i})$$

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7	
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SB124N 2.020E+01 M

TE121M 1.539E+02 J

TE137F 2.490E+00 S

I140F 8.600E-01 S

I141F 4.800E-01 S

XE142F 1.220E+00 S

XE143F 3.000E-01 S

1

13

4

1

165

1.0000E-03

2.0300E+02

1.8200E+03

1.6100E+03

4.0190E+04

1.0800E+03

8.0538E-04 1.9462E+01

1.7456E+02 1.4010E+01

1.1093E+04 -5.0951E+02

9.7327E+02 9.7578E+01

8.4094E+03 -6.7864E+02

8.6124E+01

2.2341E+02

2.4200E+03 1.7250E+02 9.2872E+01

spectre.gamma Jun 16 1997 13:49 Page 1 ECARG = $(ER(0) - SOMG) * 100 \cdot /ER(0)$ PERIODE NG ER(0)SOMG N 12F 1.100E-02 S 1.0820E+03 9.0450E+01 9.1641E+01 K 46F 1.583E+00 M 16 2.8700E+03 2.0717E+03 2.7816E+01 V 45F 5.390E-01 S 1.0000E+00 1.4035E+00 -4.0350E+01 CR 47F 5.080E-01 S 3.2375E+00 -7.9167E+00 3.0000E+00 1.6338E+01 1.8310E+01 MN 49F 3.840E-01 S 2.0000E+01 CO 53F 2.400E-01 S 7.0000E+01 7.4368E+01 -6.2400E+00 NI 59F 7.500E+04 A 1 0.0000E+00 0.0000E+00 GA 77F 1.320E+01 S 6.8950E+02 3.4296E-06 1.0000E+02 SE 87F 5.800E+00 S 1 3 2.2300E+03 2.6557E+03 -1.9091E+01 KR 94F 2.000E-01 S 18 1.7000E+03 1.8930E+03 -1.1351E+01 RB 81M 3.048E+01 M 1.4000E+01 6.3036E+00 5.4974E+01 SR 83F 1.350E+00 J 137 5.0000E+02 5.3798E+02 -7.5963E+00 Y 81F 1.207E+00 M 4.0000E+00 3.6517E+00 8.7070E+00 5.4157E+02 ZR 89M 4.180E+00 M 6.3201E+02 1 4310E+01 ZR 97F 1.690E+01 H 40 8.9700E+02 1.9234E+02 7.8558E+01 ZR101F 2.000E+00 S 6 4.0000E+01 1.8473E+03 -4.5182E+03 ZR102F 2.900E+00 S 25 8.6000E+02 1.7836E+03 -1.0740E+02 1.2642E+03 -3.2140E+02 NB101F 7.100E+00 S 14 3.0000E+02 NB104M 4.800E+00 S 3.1500E+03 1.3715E+03 5.6460E+01 7.2809E+01 NB106F 1.020E+00 S 12 4.0900E+03 1.1121E+03 MO103F 1.125E+00 M 1.3900E+03 5.3626E+02 6.1420E+01 M0105F 3.670E+01 S 20 1.7400E+03 3.9898E+02 7.7070E+01 MO106F 8.400E+00 S 4 5.9000E+02 1.0150E+03 -7.2040E+01 MO108F 1.500E+00 S 1.1400E+03 3.7694E+02 6.6935E+01 3.7990E+01 8.6772E+00 RH100M 4.600E+00 M 4.1600E+01 PD112F 2.105E+01 H 5.0546E+00 1.8500E+01 -2.6600E+02 1.0597E-03 9.9892E+01 AG105M 7.233E+00 M 9.8000E-01 2.8967E+03 -4.2696E+01 AG121F 8.000E-01 S 53 2.0300E+03 6.0546E-02 9.0000E+01 CD113M 1.410E+01 A 6.0545E-01 1.3230E+02 9.5241E+01 IN106F 6.200E+00 M 28 2.7800E+03 IN106M 5.200E+00 M 31 2.0400E+03 1.2268E+03 3.9861E+01 4.6602E+03 -2.9161E+02 SN131F 3.900E+01 S 38 1.1900E+03

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Jun 16 1997 13:49		spect	re.gamma	Page 2
PERIODE	NG	ER(0)	SOMG	ECARG = (ER(0)-SOMG)*100./ER(0)
CS147F 2.200E-01 S	5 44	1.0631E+02	8.1778E+02	-6.6924E+02
BA142F 1.060E+01 N	M 90	1.0690E+03	1.0690E+04	-9.0003E+02
LA133F 3.911E+00 F LA135F 1.950E+01 F		6.0000E+01 1.0100E+01	6.4906E+01 8.2633E+00	-8.1774E+00 1.8185E+01
CE149F 5.200E+00 S CE150F 4.000E+00 S		1.5300E+03 6.3000E+02	4.7903E+02 1.2899E+03	6.8691E+01 -1.0474E+02
PR144F 1.728E+01 N PR144M 7.200E+00 N PR150F 6.100E+00 S	M 1	2.8900E+01 9.0000E-01 2.3400E+03	9.5180E+00 4.6852E-02 1.5138E+02	6.7066E+01 9.4794E+01 9.3531E+01
EU146F 4.595E+00 3 EU150M 1.262E+01 F		2.0900E+03 8.6600E+01	1.8202E+03 8.1125E+01	1.2910E+01 6.3221E+00
TB146M 2.300E+01 8 TB157F 9.830E+01 8		2.8700E+03 0.0000E+00	2.5068E+03 4.5780E-03	1.2655E+01
DY149F 4.233E+00 N	M 52	2.1300E+03	1.8104E+03	1.5002E+01
H0158N 2.133E+01 N H0161F 2.481E+00 N H0170M 4.300E+01 S	н 9	2.6966E+03 1.5500E+01 1.3333E+03	2.3771E+03 7.3219E+00 4.8769E+03	1.1849E+01 5.2762E+01 -2.6578E+02
ER163F 1.250E+00 ER172F 2.054E+00 C		1.0000E+00 4.8600E+02	8.0173E-01 2.1441E+02	1.9827E+01 5.5883E+01
TM162M 2.430E+01 8	S 18	1.0000E+02	2.3731E+02	-1.3731E+02
LU169M 2.667E+00 M LU172M 3.667E+00 M		0.0000E+00 0.0000E+00	2.9754E-04 1.5857E-03	
HF169F 3.240E+00 1 HF177M 1.080E+00 5 HF178N 3.100E+01 7 HF180M 5.500E+00 H	S 32 A 14	5.0000E+02 9.8000E+02 1.3059E+03 9.3332E+01	4.5980E+02 8.2978E+02 2.3919E+03 1.1467E+03	8.0393E+00 1.532BE+01 -8.3160E+01 -1.1286E+03
TA173F 3.139E+00 H	н 198	3.9400E+02	3.6022E+02	8.5744E+00
W179M 6.400E+00 N	M 2	2.0500E+01	1.9050E+01	7.0741E+00
RE184M 1.655E+02 3	32	3.3700E+02	3.1587E+02	6.2712E+00
OS180F 2.150E+01 B OS185F 9.363E+01 C OS191M 1.310E+01 B	J 13	3.5000E+00 6.6600E+02 1.0000E-01	1.2196E-07 1.3428E+02 5.4818E-02	1.0000E+02 7.9839E+01 4.5182E+01
IR190N 3.194E+00 H IR192M 1.440E+00 H IR193M 1.060E+01 G IR194N 3.185E-02 S	M 3 J 1	1.4850E+03 1.5793E-01 0.0000E+00 1.6500E+02	9.1124E+02 5.8158E+01 3.6651E-03 1.1220E+02	3.8637E+01 -3.6725E+04 3.2000E+01
PT193M 4.329E+00 3	J 3	2.0000E-01	2.3311E-01	-1.6556E+01
AU182F 2.100E+01 3 AU192M 2.900E-02 3 AU196M 8.100E+00 3	S 10	9.4000E+02 0.0000E+00 3.0000E-01	8.6832E+02 7.8990E-07 2.5398E-01	7.6255E+00 1.5340E+01
HG182F 1.130E+01 1 HG188F 3.250E+00 1 HG191F 4.833E+01 1 HG191M 5.083E+01 1	M 19 M 7	4.3000E+02 7.3000E+02 4.6000E+02 1.3600E+03	1.4657E-06 5.4403E+02 3.9239E+02 1.4373E+03	1.0000E+02 2.5475E+01 1.4698E+01 -5.6848E+00

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	PERIODE	1	NG	ER(0)	SOMG	ECARG = (ER(0)-SOMG)*100./ER(0)
PB199M	1.220E+01	М	2	1.0300E+02	7.6762E+01	2.5474E+01
PO209F	1.021E+02	A :	11 -	4.8669E+00	3.0029E+00	3.8299E+01
RN210F	2.389E+00	H	40	5.6000E+01	5.3115E+01	5.1511E+00
RA213F RA213M	2.733E+00 2.100E-03			9.0000E+00 1.6200E+03	9.4590E+00 7.0783E+01	-5.0997E+00 9.5631E+01
U238F	4.471E+09	_		6.7392E-02	6.3612E-02	5.6090E+00
PU242F PU244F	3.738E+05 8.005E+07			5.8371E-02 B.7657E+00	1.9871E-02 1.5730E-02	6.5958E+01 9.9821E+01
CM244F	1.811E+01		_	2.4436E-02	1.5007E-02	3.8587E+01
CM246F CM248F	4.733E+03 3.402E+05	A	1	1.8421E+00 5.7821E+02	1.2291E-02 7.0871E-03	9.9333E+01 9.9999E+01
CF247F	3.111E+00			0.0000E+00	7.6126E+00	
CF250F CF252F	1.309E+01 2.647E+00			5.4165E+00 2.1646E+02	2.6454E-02 2.0364E-02	9.9512E+01 9.9991E+01
ES254F ES256M	2.755E+02 7.600E+00			3.7776E-01 4.8100E+01	9.2952E-01 3.3210E+02	-1.4606E+02 -5.9044E+02

TABLE 2 spectre.X

NX number of X rays

ER(9) average decay heat for X spectrum

FDX normalization for X spectrum

$$SOMX = FD_X * \sum_{i=1}^{NX} (I_{X_i} * E_{X_i})$$

$$ECARX = \frac{ER(9) - SOMX}{ER(9)} * 100$$

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	PERIODE	NX	ER(9)	SOMX	ECARX = (ER(9)-SOMX)*100./ER(9)
C 11F	2.039E+01 И	1	0.0000E+00	1.0195E+03	
0 13F 0 15F	8.900E-03 S 2.037E+00 И	1	0.0000E+00 0.0000E+00	1.0220E+03 1.0210E+03	
SI 25F	2.200E-01 S	2	0.0000E+00	1.0220E+03	
TI 43F	4.900E-01 S	4	0.0000E+00	1.0220E+03	
V 46F	4.224E-01 \$	1	2.6290E-01	1.0210E+03	-3.8825E+05
CR 45F CR 46F	5.000E-02 S 2.600E-01 S	1 4	0.0000E+00 2.6290E-01	2.7594E+02 1.0220E+03	-3.8864E+05
MN 50F	2.830E-01 S	1	6.2490E-01	1.0220E+03	-1.6345E+05
FE 49F	7.500E-02 S	1	1.0220E+03	3.0660E+02	7.0000E+01
CO 53M CO 54F	2.470E-01 S 1.932E-01 S	4 1	0.0000E+00 1.3760E+00	1.0210E+03 1.0210E+03	-7.4099E+04
NI 53F NI 55F	4.500E-02 S 1.890E-01 S	4 4	1.0070E+03 7.7620E+02	4.5990E+02 1.0210E+03	5.4330E+01 -3.1536E+01
GA 62F	1.161E-01 S	4	8.9320E+01	1.0220E+03	-1.0442E+03
GE 68F	2.708E+02 J	4	0.0000E+00	4.1457E+00	
GE 69F GE 71F	1.627E+00 J 1.144E+01 J	5 4	2.4400E+02 1.6740E-02	2.5874E+02 4.1900E+00	-6.0410E+00 -2.4930E+04
AS 74F	1.778E+01 J	4	2.1655E+00	1.3662E-01	9.3691E+01
KR 71F	9.700E-02 3	5	6.1410E+02	1.0220E+03	-6.6424E+01
RB 74F	6.490E-02 3	5	8.8280E+02	1.0200E+03	-1,5538E+01
RB 81M	3.048E+01 M	9	2.0130E+01	2.1303E+01	-5.8254E+00
SR 82F SR 83F	2.556E+01 J 1.350E+00 J	4 5	2.3539E+02 2.4360E+02	7.8825E+00 2.6615E+02	9.6651E+01 -9.2570E+00
Y 96F	6.200E+00 S	4	0.0000E+00	2.6317E+00	
NB 90M	1.882E+01 S	3	1.7000E+01	3.6279E+00	7.8660E+01
RH106M	2.167E+00 H	4	2.4405E-01	2.2694E-01	7.0112E+00
AG103F	1.094E+00 H	5	2.8780E+02	2.6675E+02	7.3156E+00
AG112F AG115F	3.140E+00 H 2.000E+01 M	4	2.4505E-03 4.8215E-01	6.0251E-04 3.5437E-01	7.5413E+01 2.6503E+01
CD105F	5.550E+01 M	<u>4</u> 5	3.0760E+02	2.8180E+02	8.3876E+00
IN119M	1.800E+01 M	4	5.1512E-01	2.4939E-01	5.1587E+01
SN113M SN130F	2.140E+01 M 3.720E+00 M	4	0.0000E+00 1.5313E+01	1.6507E+00 1.2715E+01	1.6966E+01
SB126F	1.240E+01 J	4	5.3148E-01	1.5989E-01	6.9915E+01
SB130F	4.000E+01 M	4	3.0929E+00	2,6709E+00	1.3644E+01
TE118F TE131M	6.000E+00 J 1.250E+00 J	4	3.3260E+01 8.9336E+00	1.9912E+01 2.9750E+00	4.0132E+01 6.6698E+01

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CS138F 3.220E+01 M 4 4.6587E-01 2.1491E-01 5.3869E+01 ND140F 3.370E+00 J 4 0.0000E+00 1.2044E+00 8.3024E+00 PM138F 1.140E+01 S 5 5.3600E+01 9.5755E+02 -1.7855E+05 PM149F 2.212E+00 J 4 6.4657E-02 2.7669E+01 9.3804E+01 SM145F 3.400E+02 J 4 6.4557E+01 3.1016E+01 5.1956E+01 GD142F 1.500E+00 M 5 8.3300E+02 6.5402E+02 2.1487E+01 TB152F 1.750E+01 H 5 2.1910E+02 2.3364E+02 -6.6382E+00 H0146F 3.900E+00 S 1 1.7880E+02 2.0440E+02 -1.4318E+01 ER165F 1.036E+01 H 4 4.6730E+00 3.7828E+01 -7.0951E+02 YB163F 3.201E+01 J 5 2.6230E+02 2.4339E+02 7.5906E+00 YB163F 3.201E+01 J 4 0.0000E+00 2.7847E+01 7.5906E+00 5.0037E+01 TA179F 1.776E+00 A 4 0.0000E+00 2.7847E+01 4.9349E+01 W176F 2.164E+01 J 4 0.0000E+00 1.6354E+01 W176F 2.164E+01 J 4 0.0000E+00 1.6354E+01 RE176F 1.320E+01 M 5 3.7020E+02 3.9193E+02 -5.8710E+00 OS189M 4.806E+00 H 1 3.9490E+00 2.0048E+00 4.9234E+01 FR190M 1.200E+00 H 1 0.0000E+00 7.6612E+00 -5.1212E+00 FB203F 1.521E+07 A 2.56401E+01 A 2.3238E+00 7.6612E+00 -5.1212E+00 FB203F 1.521E+07 A 2.56401E+01 A 2.3342E+02 7.9396E+00 FB203F 1.521E+07 A 2.56401E+01 7.3399E+01 3.32617E+01 FB203F 2.900E+00 A 1 0.0000E+00 9.4261E-04 AT201F 1.483E+00 M 5 0.0000E+00 9.4261E-04 AT201F 1.483E+00 M 5 0.0000E+00 9.4261E-04 AT201F 1.483E+00 M 4 8.7761E+00 9.7549E-01 8.8885E+01 UZ31F 4.200E+00 J 4 8.779E+01 5.4679E+01 3.3946E+01 FB235F 2.530E+01 M 4 8.6833E+01 8.1683E+01 5.9311E+00 AM337F 1.613E+00 H 4 8.6933E+01 7.7386E+01 9.9346E+01 FU235F 2.530E+01 M 4 8.6833E+01 8.1683E+01 5.9311E+00 AM337F 1.190E+01 H 4 1.3697E+02 8.4769E+01 3.3811E+01 AM337F 1.190E+01 H 4 1.5697E+02 7.7050E+01 5.7405E+01 ES254F 2.755E+02 J 4 1.5212E+03 8.2019E-04 1.0000E+02		PERIODE	их	ER (9)	SOMX	ECARX = (ER(9)-SOMX)	*100./ER(9)
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YB163F 1.105E+01 M 5 2.6230E+02 2.4239E+02 7.5906E+00 YB169F 3.201E+01 J 4 1.1582E+02 5.7867E+01 5.0037E+01 TA179F 1.776E+00 A 4 9.0000E+00 4 3.9925E+01 2.0222E+01 4.9349E+01 W178F 2.164E+01 J 4 0.0000E+00 1.6354E+01 RE178F 1.320E+01 M 5 3.7020E+02 3.9193E+02 -5.8710E+00 OS189M 4.806E+00 H 1 3.9490E+00 2.0048E+00 4.9234E+01 IR190M 1.200E+00 H 1 0.0000E+00 2.1298E+00 HG194F 5.200E+02 A 1 0.0000E+00 2.1362E+00 TL190F 2.600E+00 M 5 3.4230E+02 3.2334E+02 5.5396E+00 TL201M 2.035E+03 S 4 7.2880E+00 -5.1212E+00 PB201M 1.020E+00 M 5 7.0000E+01 2.2981E+01 6.7171E+01 PB202F 5.264E+04 A 1 6.0075E+01 2.4720E+00 9.5885E+01 PB205F 1.521E+07 A 2 5.4601E+01 3.3259E+00 9.3909E+01 PO208F 2.900E+00 A 1 0.0000E+00 9.4261E-04 AT201F 1.483E+00 M 5 0.0000E+00 9.4261E-04 AT201F 3.483E+00 M 4 2.7171E+01 1.8309E+01 3.2617E+01 PA236F 9.100E+00 M 4 8.7761E+00 9.7549E-01 8.8885E+01 U231F 4.200E+00 J 4 8.2779E+01 5.4679E+01 3.3946E+01 PU235F 2.530E+01 M 4 8.6833E+01 8.1683E+01 5.9311E+00 AM237F 1.217E+00 H 4 8.6833E+01 7.7386E+01 9.9446E+00 AM237F 1.217E+00 H 4 8.6932E+01 7.7386E+01 9.9446E+00 AM237F 1.190E+01 H 4 1.5697E+02 8.4769E+01 3.8111E+01 AM238F 1.633E+00 H 4 8.6932E+01 7.7386E+01 9.9446E+00 AM239F 1.190E+01 H 4 1.5212E+03 8.2019E-04 1.0000E+02	H0146F	3.900E+00 S	1	1.7880E+02	2.0440E+02	-1.4318E+01	
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HG194F 5.200E+02 A 1 0.0000E+00 2.1362E+00 TL190F 2.600E+00 M 5 3.4230E+02 3.2334E+02 5.5396E+00 TL201M 2.035E-03 S 4 7.2880E+00 7.6612E+00 -5.1212E+00 PB201M 1.020E+00 M 5 7.0000E+01 2.2981E+01 6.7171E+01 PB202F 5.264E+04 A 1 6.0075E+01 2.4720E+00 9.5885E+01 PB205F 1.521E+07 A 2 5.4601E+01 3.3259E+00 9.3909E+01 P0208F 2.900E+00 A 1 0.0000E+00 9.4261E-04 AT201F 1.483E+00 M 5 0.0000E+00 2.3442E+02 RN221F 2.500E+01 M 4 2.7171E+01 1.8309E+01 3.2617E+01 PA236F 9.100E+00 M 4 8.7761E+00 9.7549E-01 8.8885E+01 U231F 4.200E+00 J 4 8.2779E+01 5.4679E+01 3.3946E+01 PU235F 2.530E+01 M 4 8.6833E+01 8.1683E+01 5.9311E+00 AM237F 1.217E+00 H 4 1.3697E+02 8.4769E+01 3.8111E+01 AM238F 1.633E+00 H 4 8.5932E+01 7.7386E+01 9.9446E+00 AM239F 1.190E+01 H 4 8.5932E+01 7.7386E+01 9.9446E+00 AM239F 1.190E+01 H 4 1.8889E+02 7.7050E+01 9.9446E+00 AM239F 1.190E+01 H 4 1.8889E+02 7.7050E+01 5.7405E+01 ES254F 2.755E+02 J 4 1.5212E+03 8.2019E-04 1.0000E+02	OS189M	4.806E+00 H	1	3.9490E+00	2.0048E+00	4.9234E+01	
TL190F 2.600E+00 M 5 3.4230E+02 7.6612E+00 -5.1212E+00 PB201M 2.035E-03 S 4 7.2880E+00 7.6612E+00 -5.1212E+00 PB201M 1.020E+00 M 5 7.0000E+01 2.2981E+01 6.7171E+01 PB202F 5.264E+04 A 1 6.0075E+01 2.4720E+00 9.5865E+01 PB205F 1.521E+07 A 2 5.4601E+01 3.3259E+00 9.3909E+01 PO208F 2.900E+00 A 1 0.0000E+00 9.4261E-04 AT201F 1.483E+00 M 5 0.0000E+00 2.3442E+02 RN221F 2.500E+01 M 4 2.7171E+01 1.8309E+01 3.2617E+01 PA236F 9.100E+00 M 4 8.7761E+00 9.7549E-01 8.8885E+01 U231F 4.200E+00 J 4 8.2779E+01 5.4679E+01 3.3946E+01 PU235F 2.530E+01 M 4 8.6833E+01 8.1683E+01 5.9311E+00 AM237F 1.217E+00 H 4 1.3697E+02 8.4769PE+01 3.8111E+01 AM238F 1.633E+00 H 4 8.5932E+01 7.7386E+01 9.9446E+00 AM239F 1.190E+01 H 4 8.5932E+01 7.7386E+01 9.9446E+00 1.8089E+02 7.7050E+01 5.7405E+01 ES254F 2.755E+02 J 4 1.5212E+03 8.2019E-04 1.0000E+02	TR190M	1.200E+00 H	1	0.0000E+00	2.1298E+00		
TL201M 2.035E-03 S 4 7.2880E+00 7.6612E+00 -5.1212E+00 PB201M 1.020E+00 M 5 7.0000E+01 2.2981E+01 6.7171E+01 PB202F 5.264E+04 A 1 6.0075E+01 2.4720E+00 9.5885E+01 PB205F 1.521E+07 A 2 5.4601E+01 3.3259E+00 9.3909E+01 P0208F 2.900E+00 A 1 0.0000E+00 9.4261E-04 AT201F 1.483E+00 M 5 0.0000E+00 2.3442E+02 RN221F 2.500E+01 M 4 2.7171E+01 1.8309E+01 3.2617E+01 PA236F 9.100E+00 M 4 8.7761E+00 9.7549E-01 8.8885E+01 U231F 4.200E+00 J 4 8.2779E+01 5.4679E+01 3.3946E+01 PU235F 2.530E+01 M 4 8.6833E+01 8.1683E+01 5.9311E+00 AM237F 1.217E+00 H 4 1.3697E+02 8.4769E+01 3.8111E+01 AM238F 1.633E+00 H 4 8.5932E+01 7.7386E+01 9.9446E+00 AM239F 1.190E+01 H 4 1.8689E+02 7.7050E+01 5.7405E+01 ES254F 2.755E+02 J 4 1.5212E+03 8.2019E-04 1.0000E+02	HG194F	5.200E+02 A	1	0.0000E+00	2.1362E+00		
PB202F 5.264E+04 A 1 6.0075E+01 2.4720E+00 9.5885E+01 PB205F 1.521E+07 A 2 5.4601E+01 3.3259E+00 9.3909E+01 P0208F 2.900E+00 A 1 0.0000E+00 9.4261E-04 AT201F 1.483E+00 M 5 0.0000E+00 2.3442E+02 RN221F 2.500E+01 M 4 2.7171E+01 1.8309E+01 3.2617E+01 PA236F 9.100E+00 M 4 8.7761E+00 9.7549E-01 8.8885E+01 U231F 4.200E+00 J 4 8.2779E+01 5.4679E+01 3.3946E+01 PU235F 2.530E+01 M 4 8.6833E+01 8.1683E+01 5.9311E+00 AM237F 1.217E+00 H 4 1.3697E+02 8.4769E+01 3.8111E+01 AM238F 1.633E+00 H 4 8.5932E+01 7.7386E+01 9.9446E+00 AM239F 1.190E+01 H 4 1.8089E+02 7.7050E+01 5.7405E+01 ES254F 2.755E+02 J 4 1.5212E+03 8.2019E-04 1.0000E+02							
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U231F 4.200E+00 J 4 8.2779E+01 5.4679E+01 3.3946E+01 PU235F 2.530E+01 M 4 8.6833E+01 8.1683E+01 5.9311E+00 AM237F 1.217E+00 H 4 1.3697E+02 8.4769E+01 3.8111E+01 AM238F 1.633E+00 H 4 8.5932E+01 7.7386E+01 9.9446E+00 AM239F 1.190E+01 H 4 1.8089E+02 7.7050E+01 5.7405E+01 ES254F 2.755E+02 J 4 1.5212E+03 8.2019E-04 1.0000E+02	RN221F	2.500E+01 M	4	2.7171E+01	1.8309E+01	3.2617E+01	
PU235F 2.530E+01 M 4 8.6833E+01 8.1683E+01 5.9311E+00 AM237F 1.217E+00 H 4 1.3697E+02 8.4769E+01 3.8111E+01 AM238F 1.633E+00 H 4 8.5932E+01 7.7386E+01 9.9446E+00 AM239F 1.190E+01 H 4 1.8089E+02 7.7050E+01 5.7405E+01 ES254F 2.755E+02 J 4 1.5212E+03 8.2019E-04 1.0000E+02	PA236F	9.100E+00 M	4	8.7761E+00	9.7549E-01	8.8885E+01	
AM237F 1.217E+00 H 4 1.3697E+02 8.4769E+01 3.8111E+01 AM238F 1.633E+00 H 4 8.5932E+01 7.7386E+01 9.9446E+00 AM239F 1.190E+01 H 4 1.8089E+02 7.7050E+01 5.7405E+01 ES254F 2.755E+02 J 4 1.5212E+03 8.2019E-04 1.0000E+02	U231F	4.200E+00 J	4	B.2779E+01	5.4679E+01	3.3946E+01	
AM238F 1.633E+00 H 4 8.5932E+01 7.7386E+01 9.9446E+00 AM239F 1.190E+01 H 4 1.8089E+02 7.7050E+01 5.7405E+01 ES254F 2.755E+02 J 4 1.5212E+03 8.2019E-04 1.0000E+02	PU235F	2.530E+01 M	4	8.6833E+01	8.1683E+01	5.9311E+00	
AM239F 1.190E+01 H 4 1.8089E+02 7.7050E+01 5.7405E+01 ES254F 2.755E+02 J 4 1.5212E+03 8.2019E-04 1.0000E+02							
			-				
FM253F 3.000E+00 J 4 8.5049E+01 6.5958E+01 2.2447E+01	ES254F	2.755E+02 J	4	1.5212E+03	8.2019E-04	1.0000E+02	
	FM253F	3.000E+00 J	4	8.5049E+01	6.5958E+01	2.2447E+01	

TABLE 3 spectre.gamma+X

NG number of gamma rays

ER(0) average decay heat for γ spectrum

NX number of X rays

ER(9) average decay heat for X spectrum

ERGX = ER(0) + ER(9)

EGM =
$$\overline{E_{"\gamma"}}$$
.

ECAR1 =
$$\frac{\overline{E_{"\gamma"}} - (ER(0) + ER(9))}{\overline{E_{"\gamma"}}} * 100$$

$$SOMGX = SOMG + SOMX$$

$$= FD_{\gamma} * \sum_{i=1}^{NG} (I_{\gamma_i} * E_{\gamma_i}) + FD_{X} * \sum_{i=1}^{NX} (I_{X_i} * E_{X_i})$$

$$ECAR2 = \frac{\overline{E_{"\gamma"}} - (SOMG + SOMX)}{\overline{E_{"\gamma"}}} * 100$$

Periode Ech NG NZ	Pag
SEP 2.708E+02 J 4.14 0 4 0.0000E+02 1.0000E+02 4.1457E+00 -1.3865E+01	
80F 2.950E+01 S 430.00 17 0 6.0000E+02 -3.9535E+01 6.0001E+02 -3.9535E+01 9.200E+01 9.	
80F 2.950E+01 S 430.00 17 0 6.0000E+02 -3.9535E+01 6.0001E+02 -3.9535E+01 9.200E+01 9.	
### \$1,0000-00 S ### \$10.00 5 0 1.08008-03 -2.27278-01 1.08008-03 -2.27308-01	
79F 9.010E+00 M 22.00 10 0 1.9316E+01 1.2200E+01 1.9316E+01 1.2200E+01 1.9316E+01 1.2200E+01 1.9316E+01 1.2200E+01 1.9316E+01 1.2200E+01 1.9316E+01 1.2200E+01 1.9316E+01 1.2200E+01 1.9316E+01 1.2200E+01 1.2200	
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87M 2.810E+00 H 51.01 1 8 3.2107E+02 -5.2946E+02 3.2107E+02 -5.2946E+02	
92F 2,710E+00 H 1130.00 10 0 1.3392E+03 -1.8513E+01 1.3392E+03 -1.8510E+01	
93F 7.320E+00 M 1760.00 136 6 1.9376E+03 -1.0091E+01 1.9376E+03 -1.0091E+01	
94F 1.268E+00 M 1450.00 5 0 1.2096E+03 1.6579E+01 1.2096E+03 1.6576E+01 97F 4.200E-01 S 2500.00 66 4 2.2500E+03 9.9994E+00 2.2572E+03 9.7101E+00 98F 6.500E-01 S 300.00 11 6 1.5998E+02 4.6672E+01 1.5998E+02 4.6672E+01	
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	PERIODE	EGM	NG	NX	ERGX	ECAR1	SOMGX	ECAR2	
					ER(0)+ER(9)	(EGM-ERGX)*100./EGM	SOMG+SOMX	(EGM-SOMGX) *100./EGM	
Y 80F 3	3.380E+01 S	1415.94	9	0	1.0934E+03	2.2778E+01	1.0934E+03	2.2778E+01	
Y 90F 2	2.667E+00 J	0.00	1	0	2.8171E-01	-9.0775E+04	2.8171E-01	-9.0775E+04	
Y 94F 1	L.910E+01 M	900.00		0	7.6426E+02	1.5082E+01	7.6426E+02	1.5082E+01	
	L.030E+01 M			0	1.2867E+03	-2.1389E+01	1.2867E+03	-2.1389E+01	
Y 96F 6	5.200E+00 S	15.00	0	4	0.0000E+00	1.0000E+02	2.6317E+00	8.2455E+01	
Y 95M I	L.000E+01 S 3.700E+00 S	1650 00	10	0	4.0310E+03 1.8137E+03	-1.2557E+01 -9.9218E+00	4.0310E+03 1.8137E+03	-1.2557E+01 -9.9222E+00	
V 97M 1	1.210E+00 S	1760.00	21	Λ	3.3614E+03	-9.0988E+01	3.3493E+03	-9.0303E+01	
Y 98F 6	5.500E-01 S	3589.44	27	6	8.3226E+02	7.6814E+01	8,3226E+02	7.6814E+01	
Y 98M 2	2.000E+00 S	3426.76	12	Ó	3.0931E+03	9.7381E+00	3.0931E+03	9.7379E+00	
Y 99F 1	1.500E+00 S	1591.64	16	0	6.1360E+02	6.1449E+01 -7.6087E+00	6.1360E+02	6.1448E+01	
Y100F 7	7.350E-01 S	1840.00	73	0	1.9800E+03	-7.6087E+00	1.9833E+03	-7.7878E+00	
Y102F 2	2.700E-01 S	3590.00	1	0	1.5190E+02	9.5769E+01	1.5190E+02	9.5769E+01	
	4.180E+00 M		2	8	6.3288E+02 8.9724E+02	-6.6544E-04	5.4244E+02 1.9257E+02	1.4290E+01 3.2581E-01	
	L.690E+01 H 2.100E+00 S		40 13	4 5	8.9724E+02 8.0784E+02	-3.6441E+02	8.0784E+02	1.3136E+01	
ZR100F 7	7.100E+00 S	774.00	8	n	2.4100E+02	1.3136E+01 6.8863E+01	2.4132E+02	6.8822E+01	
ZR101F 2	2.000E+00 S	2765.00	6	Ö	4.0000E+01	9.8553E+01 1.1494E+00 4.1046E+01	1.8473E+03	3.3191E+01	
ZR102F 2	2.900E+00 S	870.00	25	Ō	8.6000E+02	1.1494E+00	1.7836E+03	-1.0501E+02	
ZR103F 1	1.300E+00 S	3108.00	20	0	1.8323E+03	4.1046E+01	1.8323E+03	4.1045E+01	
ZR104F 1	1.200E+00 S	1107.00	8	0	1.4559E+03	-3.1518E+01	1.4559E+03	-3.1515E+01	
	1.882E+01 S	82.40	1	3	9.9400E+01	-2.0631E+01	8.2285E+01	1.3938E-01	
IB 98F 2	2.800E+00 S	84.00		0	1.1649E+02	-3.8683E+01	1.1649E+02	-3.8683E+01	
B100F 1	1.500E+00 S 7.100E+00 S	2942.00	39	0	7.1000E+02	7.5867E+01 5.3775E+01	7.0802E+02 1.2642E+03	7.5934E+01 -9.4791E+01	
10101F /	1.500E+00 S	649.00 766.00	14	0	3.0000E+02 1.2200E+03	-5.9269E+01	1.2212E+03	-5.9426E+01	
JB10JF 1	4.800E+00 S	2903.37	4	Ŏ	3.1500E+03	-8.4946E+00	1.3715E+03	5.2762E+01	
VB105F 2	2.950E+00 S	746.00		ō	2.8800E+03	-2.8606E+02	2.8813E+03	-2.8623E+02	
NB106F 1	1.020E+00 S	3390.00	12	0	4.0900E+03	-2.0649E+01	1.1121E+03	6.7194E+01	
	1.125E+00 M		3	0	1.3900E+03	-3.1380E+01	5.3626E+02	4.9314E+01	
	3.670E+01 S			0	1.7400E+03	2.7288E+01	3.9898E+02	8.3327E+01	
	8.400E+00 S 1.500E+00 S		4 3	0	5.9000E+02 1.1400E+03	3.4370E+00 -6.7536E+00	1.0150E+03 3.7694E+02	-6.6127E+01 6.4702E+01	
			•				3,1266E-01	9.8125E+01	
	8.900E+01 J 5.000E+01 S	16.67 263.51	53	0	3.1266E-01 2.3034E+02	9.8125E:01 1.2590E+01	2.3034E+02	1.2590E+01	
	7.600E+00 M			6 6	4.5455E+02	7.5133E+00	4.5455E+02	7.5127E+00	
	3.600E+01 S			ě	2.2257E+03	-5.7521E+00	2.2257E+03	-5.7524E+00	
C107F 2	2.100E+01 S	597.52	128	Ğ	5.1461E+02	1.3875E+01	5.1462E+02	1.3874E+01	
RU 92F 3	3.650E+00 M	2123.65	54	5	1.9612E+03	7.6496E+00	1.9598E+03	7.7168E+00	
RU 97F 2	2.900E+00 J	243.75	18	0	2.2678E+02	6.9621E+00	2.2678E+02	6.9624E+00	
U105F 4	4.439E+00 H	711.70	81	4	7.4757E+02	-5.0396E+00	7.3997E+02	-3.9717E+00	
н100м 4	4.600E+00 M	46.30		5	4.6292E+01	1.7277E-02	4.2682E+01	7.8145E+00	
H105M 4	4.500E+01 S	40.91	1	0	2.5914E+01	3.6648E+01	2.5914E+01	3.6648E+01	
H110F 3	3.000E+00 S	56.35	1	0	5.6070E+01	1.5498E+01	5.6070E+01	1.5498E+01	
CHILLEF 1	1.100E+01 S 1.850E+00 S	208.00 473.08	38 5	0	5.3200E+02 4.1000E+02	-1.5577E+02 1.3333E+01	5.3164E+02 4.0660E+02	~1.5559E+02 1.4051E+01	
11147 I	1.850E+00 S	2515.72		0	2.1800E+02	1.3335E+01 1.3345E+01	2.1806E+03	1.3320E+01	
	5.800E~01 S		3	Õ	3.0000E+02	1.0112E+01	3.0407E+02	8.8914E+00	
н116м 9	9.000E-01 S	2392.14		Ö	2.1500E+03	1.0122E+01	2.1463E+03	1.0276E+01	
D100F 3	3.634E+00 J	104.62		4	1.1106E+02	-6.1516E+00	1.1154E+02	-6.6093E+00	
D109F 1	1.343E+01 H	1.08		6	6.4664E-01	4.0140E+01	6.4664E-01	4.0140E+01	
PD109M 4	4.690E+00 M	100.36	1	0	8.9916E+01	1.0407E+01	8.9916E+01	1.0406E+01	
D111M 5	5.500E+00 H	382.93 5.17	79 1	12 1	3.5670E+02 5.1696E+00	6.8491E+00 9.6851E-04	3.5671E+02 1.8615E+01	6.8481E+00 -2.6008E+02	
	2.105E+01 H 1.550E+00 M			4	6.1873E+01	9.8851E-04 9.9505E+00	6.1890E+01	9.9259E+00	
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	PERIODE	EGM	NG	NX	ERGX	ECAR1	SOMGX	ECAR2	
					ER(0)+ER(9)	(EGM~ERGX)*100./EGM	SOMG+SOMX	(EGM-SOMGX)*100./EGM	
		1166.38		5	1.1011E+03	5.5968E+00	1.1026E+03	5.4724E+00	
	5.028E+00 H	47.50		4	4.3320E+01	8.8002E+00	4.3092E+01	9.2803E+00	
	3.370E+00 J 2.590E+01 S	27.44 396.00		4 0	0.0000E+00 4.2000E+02	1.0000E+02 -6.0606E+00	2.7469E+01 4.2471E+02	-1.0540E-01 -7.2504E+00	
.35F 4	4.900E+01 S	2658.46	32	0	2.8800E+03	-8.3334E+00	2.8833E+03	-8.4573E+00	
36F 1	1.783E+00 M	2629.97	27	4	1.6409E+04	-5.2394E+02	1.6414E+04	-5.2413E+02	
37F 2	2.400E+00 M	1725.85		5	1.5799E+03	8.4567E+00	1.5825E+03	8.3082E+00	
	1.000E+01 S	957.54		5	5.3600E-01	9.9944E+01	9.5755E+02	-5.6093E-04	
	2.212E+00 J 5.400E+00 M	0.41 53.67		4 0	4.0830E-01 4.8659E+01	7.2991E-04 9.3304E+00	3.6641E-01 4.8659E+01	1.0260E+01 9.3311E+00	
.55F 4	4.800E+01 S	296.00		ŏ	1.1226E+02	6.2074E+01	1,1226E+02	6.2075E+01	
	4.270E+01 S	308.27	22	4	3.5062E+02	-1.3738E+01	3.5100E+02	-1.3861E+01	
	3.400E+02 J	72.14		4	7.2143E+01	4.1244E-04	3.8602E+01	4.6493E+01	
	8.879E+01 A 2.210E+01 M	0.01		0	6.8000E-03 9.4197E+01	4.8092E+01 9.8421E+00	6.7636E-03 9.4197E+01	4.8370E+01 9.8417E+00	
	9.400E+00 H	124.73		ŏ	1.1751E+02		1.1751E+02	5.7854E+00	
		3066.64		0	2.2060E+04	-6.1935E+02	2.2062E+04	-6.1942E+02	
		1136.36		5	1.2290E+03	-8.1523E+00	1.2292E+03	-8.1736E+00	
		3150.92 2170.00		5 5	3.4130E+03 2.1694E+03	-8.3176£+00 2.9027E-02	3.4130E+03 1.8996E+03	-8.3181E+00 1.2463E+01	
	1.262E+01 H	89.50		ő	8.6600E+01	3.2348E+00	8.1125E+01	9.3524E+00	
	1.500E+00 M	654.00		5	8.3300E+02	-2.7370E+01	6.5402E+02	-2.5198E-03	
		1233.32		0 5	7.1360E+03 1.3220E+03	-4.7860E+02 -5.7615E+00	7.1367E+03 1.3263E+03	-4.7866E+02 -6.1020E+00	
.47F 1		1250.02 1988.00		0	5.8000E+02	7.0825E+01	5.8373E+02	7.0637E+01	
		3530.00		5	3.5328E+03 3.6836E+01	-7.9321E-02 -1.6292E-02	3.1696E+03 2.5707E-01	1.0210E+01	
	1.019E+00 J	36.83		1	3.6836E+01	-1.6292E-02	2.5707E-01	9.9302E+01	
	9.830E+01 A	20.93		4	1.1300E+02	-4.3983E+02	1.1295E+02	-4.3958E+02	
	2.900E+01 S	157.41		0	1.7000E+02	-8.0003E+00	1.6534E+02		
	1.500E-01 S 4.233E+00 M	2935.60		4	3.1042E+03 2.2450E+03	-5.7435E+00 2.222E-01	3.1042E+03 1.9280E+03	-5.7431E+00 1.4312E+01	
	2.369E+00 H	250.14		4	2.8711E+02		2.8714E+02	-1.4790B+01	
.58F 1	1.100E+01 M	1406.65	243	Ō	5.0100E+04	-3.4617E+03	5.0175E+04	-3.4670E+03	
.58N 2	2.133E+01 M	2735.70) 11	5	2.7357E+03	7.3179E-04	2.4162E+03	1.1678E+01	•
60M 5	5.019E+00 H : 2.481E+00 H	13220.00 15.50		0	1.3220E+05 1.5500E+01	-9.0000E+02 0.0000E+00	1.3226E+05 7.3219E+00	-9.0048E+02 5.2762E+01	
64F 2	2.481E+00 H 2.900E+01 M	26.99		8	2.9930E+01	-1.1039E+01	2.9956E+01	-1.1136E+01	
	4.300E+01 S			ŏ	1.3333E+03	3.4278E+01	4.8769E+03	-1.4040E+02	
	4.500E+00 S	858.63		5	9.4211E+02		9.4207E+02	-9.7178E+00	
	1.850E+01 S 1.950E+01 M	791.47 15.06		1 4	8.4370E+02 1.3774E+01	-6.5990E+00 8.5556E+00	8.4372E+02 1.3742E+01		
	1.950E+01 M 2.250E+00 H	129.60		4	1.4462E+02	-1.1590£+01	1.4428E+02	-1.1331E+01	
	1.036E+01 H	37.80		4	4.6730E+00	8.7638E+01	3.7828E+01	-7.5022E-02	
.67M 2	2.280E+00 S	118.28	3 1	0	8.6590E+01	2.6792£+01	8.6590E+01	2.6792E+01	
	9.300E+00 J 2.054E+00 J	0.02 504.00		0 4	1.8347E-02 5.0370E+02	9.8029E+00 5.9521E-02	1.8347E-02 2.3210E+02	9.8020E+00 5.3949E+01	
		1185.53	3 1	0	9.8440E+02	1.6965E+01	9.8440E+02	1.6965E+01	
151M 4	4.130E+00 S	1698.32	2 9	ŏ	1.4100E+03	1.6977E+01	1.4114E+03	1.6895E+01	
157F 3	3.500E+00 M	1543.32	2 144	4	9.1599E+03	-4.9352E+02	9.1636E+03	-4.9376E+02	
	9.150E+00 M			5	7.2907E+03	-4.4681E+02	7.3001E+03	-4.4751E+02	
161F 3 162M 2	3.800E+01 M 2.430E+01 S	899,17 300,00		0 5	1.0200E+03 3.0490E+02	-1.3439E+01 -1.6333E+00	1.0235E+03 4.4054E+02	-1.3832E+01 -4.6847E+01	
	1.900E+00 M			0	1.9300E+03	-1.8335E+00 -1.3128E+01	1.9278E+03	-1.3002E+01	
				-					

Jun 16 1	997 14:05		: ELEZ				spectre.ga	mma+X	Page	7
	PERIODE	EGM	NG	NX	ERGX	ECAR1	SOMGX	ECAR2		
					ER(0)+ER(9)	(EGM-ERGX)*100./EGM	SOMG+SOMX	(EGM-SOMGX)*100./EGM		
	1.600E+00 S	1202.50	3	4	1.0384E+03 5.6600E+01	1.3644E+01 7.5974E+00	1.0390E+03	1.3599E+01		
	1.650E+00 M 4.800E+00 M	61.25 279.29	29	5	3.4140E+02	7,5974E+00 -2.2240E+01	5.6654E+01 3.3611E+02	7.5085E+00 -2.0346E+01		
YB162F	1.887E+01 M	233.35		5	2.4665E+02	-5.6978E+00	2.4702E+02	-5.8583E+00		
YB164F	1.264E+00 H	13.44	37	4	1.4717E+01	-9.4933E+00	1.4338E+01	-6.6722E+00		
	3.201E+01 J	326.84	36	4	3.2683E+02	3.0626E-03	2.6888E+02	1.7733E+01		
	3.550E+01 S			0	8.8900E+03	-2.4637E+02	8.8882E+03	-2.4630E+02		
LU165F	1.073E+01 M	1305.32	136	4 5	5.2340E+03	-3.0097E+02	5.2334E+03 1.3131E+03	-3.0093E+02		
POT031.	1.419E+00 J	1214.00	316	5	1.3133E+03	-8.1813E+00	1.31316+03	-8.1614E+00		
	3.760E+01 S	308.28	3	0	2.9200E+02	5.2803E+00	2.9187E+02	5.3232E+00		
HF167F	2.050E+00 M	682.79	3	5	7.3400E+02	-7.5000E+00	7.34052+02	~7.5074E+00		
HF170F HF171F	1.600E+01 H 1.211E+01 H	495.45 799.99	93 187	4	5.4555E+02 1.9892E+04	-1.0113E+01 -2.3865E+03	5.4261E+02 1.9935E+04	-9.5182E+00 -2.3919E+03		
HF171F	7.000E+01 J	398.36	8	6	3.6054E+02	9.4921E+00	3.6054E+02	9.4921E+00		
HF177M	1.080E+00 S	1070.00	32	4	1.0671E+03	2.7171E-01	9.1669E+02	1.4328E+01		
HF178M	4.000E+00 S	1147.40	14	0	2.4222E+03	-1.1110E+02	2.4222E+03	-1.1110E+02		
HF178N	3 100E+01 A	1595.50	14	0	1.3059E+03	1.8151E+01	2.3919E+03	-4.9915E+01		
HF180M	5.500E+00 H	93.33	6	0	9.3332E+01	0.0000E+00	1.1467E+03	-1.1286E+03		
HF182F	9.000E+06 A 1.025E+00 H	212.22 980.45	5 28	0	2.3064E+02 8.9127E+02	-8.6802E+00 9.0958E+00	2.3064E+02 8.9127E+02	-8.6813E+00 9.0953E+00		
HF 102M	1.0235+00 H	300.43	20	v	0,91276+02		0.912/2+02	9.09334400		
TA169F	4.900E+00 M	1499.98	19	1	8.2086E+03	-4.4725E+02 -6.9598E-02 -1.0148E+01	8.1681E+03	-4.4455E+02		
TA173F	3.139E+00 H	536.00		5	5.3637E+02 9.2732E+02	-6.9598E-02	5.0194E+02 9.2534E+02	6.3551E+00		
TA175F TA179F	1.050E+01 H 1.776E+00 A	841.89 28.00	137	5 4	0.0000E+00	1.0000E+02	2.7847E+01	-9.9128E+00 5.4633E-01		
	5.100E+00 J	328.49	32	0	2.3651E+02	2.8001E+01	2.3651E+02	2.8001E+01		
	4.900E+01 M	164.59	27	4	1.6460E+02	-3.0315E-03	2.3651E+02 1.4510E+02	1.1843E+01		
W174F	2 933E+01 M	566.66	30	n	2.6000E+03	-3.5883E+02	2.5995E+03	-3.5874E+02		
W176F	2.933E+01 M 2.306E+00 H	155.72	6	4	2.6000E+03 1.7734E+02	-3.5883E+02 -1.3888E+01	2.5995E+03 1.7737E+02	+3.5874E+02 -1.3903E+01		
W178F	2.164E+01 J	18.31	0	4	0.0000E+00	1.0000E+02	1.6354E+01	1.0704E+01		
W179M	6.400E+00 M	20.90	2	8	2.0946E+01	-2.2058E-01	1.9492E+01	6.7362E+00		
W185F	7.510E+01 J	0.05	1	0	2.3317E-02	5.3366E+01	2.3317E-02	5.3366E+01		
	1.400E+01 M	572.33	22	5	6.0620E+02	-5.9174E+00 -1.6709E-01	6.0645E+02 3.6859E+02	-5.9618E+00 5.2468E+00		
	1.655E+02 J	389.00	32	8 4	3.8965E+02	-1.6709E-01	3.6859E+02	5.2468E+00 -2.7439E+00		
REIBOM	1.998E+05 A	60.00	7	4	6.4035E+01	-6.7250E+00	6.1646E+01	-2. 1439E+00		
	4.400E+01 S	465.30	7	0	5.0760E+02	-9.0909E+00	5.0762E+02	-9.0952E+00		
	3 000E+00 M	966.66	5	0	3.5310E+03	-2.6528E+02	3.5305E+03	-2.6523E+02		
05179F	6.500E+00 M	1203.32	60	0	1.0600E+04	-7.8090E+02	1.0668E+04	-7.8651E+02		
OS180F OS182F	2.150E+01 M 2.211E+01 H	5.60 461.48	1 32	1 4	5.5970E+00 4.3248E+02	5.3576E-02 6.2837E+00	2.0760E+00 4.3196E+02	6.2929E+01 6.3971E+00		
	9.363E+01 J	713.00		4	7.1349E+02	-6.8722E-02	1.8188E+02	7.4491E+01		
	4.806E+00 H	2.01	ō	i	3.9490E+00	-9.6468E+01	2.0048E+00	2,6119E-01		
	3.490E+01 M	96.11		0	6.9600E+01	2.7586E+01	6.9586E+01	2.7601E+01		
IR181F	4.900E+00 M	1333.32	31	4	4.1695E+03	-2.1271E+02	4.1745E+03	-2.1309E+02		
IR183F	5.500E+01 M	2739.19	34	4	2.5695E+03	6.1941E+00	2.5673E+03	6.2755E+00		
IR184F	3.019E+00 H	1722.47	188	5	1.8958E+03	-1.0063E+01	1.8958E+03	-1.0065E+01		
IR185F	1.389E+01 H	833.33		0	1.0710E+04	-1.1852E+03	1.0699E+04	-1.1839E+03		
IR187F	1.050E+01 H 1.319E+01 J	500.00 82.84		4	5.5764E+04 7.8213E+01	-1.1053E+04 5.5810E+00 1.0000E+02	5.5836E+04 7.7976E+01	-1.1067E+04 5.8673E+00		
	1.319E+01 3 1.200E+00 H	2.13	29	1	0.0000E+00	1.0000E+02	2.1298£+00	1.1261E-02		
	3.194E+00 H	1548.00	Š	8	1.5485E+03	-3.1046E-02	9.7467E+02	3.7037E+01		
IR192M	1.440E+00 M	0.16	3	Ō	1.5793E-01	0.0000E+00	5.8158E+01	-3.6725E+04		
IR194N	3.185E-02 S	112.20	2	0	1.6500E+02	-4.7059E+01	1.1220E+02	0.0000E+00		
IR197F	5.800E+00 M	718.33	41	0	3.7100E+04	-5.0648E+03	3.7100E+04	~5.0648E+03		
							spectre.gamm	na+X		7
							opoon organini	101 (7)		

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PERIODE	EGM	NG	NX	ERGX	ECAR1	SOMGX	ECAR2	
				ER(0)+ER(9)	(EGM-ERGX)*100./EGM	SOMG+SOMX	(EGM-SOMGX)*100./EGM	
PT182F 2.600E+00 M	182.55	4	0	1.9700E+02	-7.9139E+00 1.1877E+01 -4.2966E+02 -6.0646E+00 -5.5397E+00	1.9670E+02	-7.7517E+00	
PT184F 1.730E+01 M PT187F 2.350E+00 H	1815.65 966.66	33 64	0	1.6000E+03 5.1200E+03	1.1877E+01 -4 2966E+02	1.6023E+03 5.1201E+03	1.1749E+01 -4.2967E+02	
PT188F 1.019E+01 J		16	4		-6.0646E+00	2,0645E+02	-5.9623E+00	
PT200F 1.250E+01 H	57.06	36	4	2.0665E+02 6.0220E+01		6.0224E+01	-5.5461E+00	
AU182F 2.100E+01 S AU187F 8.400E+00 M	970.00 1576.76	35 275	4 5	9.6580E+02 1.4435E+03	4.3344E-01 8.4515E+00 -9.7732E+00	8.9409E+02 1.4420E+03	7.8257E+00 8.5473E+00	
AU189M 4.590E+00 M	207.70	2	ō	1.4435E+03 2.2800E+02	~9.7732E+00	2.2771E+02	~9.6331E+00	
AU192M 2.900E-02 S	431.70		0	0.0000E+00	1.0000E+02	7.8990E-07 1.7326E+02	1.0000E+02 -2.6335E+01	
AU193F 1.764E+01 H AU193M 3.900E+00 S	137.15 163.48	4	4	1.7421E+02 1.9778E+02 5.8742E+02 7.6043E+01	1.0000E+02 -2.7023E+01 -2.0981E+01 2.7658E+01 2.9830E+01 -1.1902E+01 -5.1248E+00	1.9747E+02	-2.0789E+01	
AU198M 2.300E+00 J AU199F 3.139E+00 J	812.00	6	0	5.8742E+02	2.7658E+01	5.8742E+02 7.6045E+01	2.7657E+01 2.9828E+01	
AU199F 3.139E+00 J	108.37 151.92	3	0	7.6043E+01	2.9830E+01	7.6045E+01	2.9828E+01	
AU202F 2.880E+01 S AU204F 3.980E+01 S	1902.50	13 25	0	1.7000E+02 2.0000E+03	-1.19028+01 -5.1248E+00	1.6970E+02 1.9997E+03	-1.1704E+01 -5.1095E+00	
HG182F 1.130E+01 S	430.00	3	0	4.3000E+02	0.0000E+00	1.4657E-06		
HG184F 3.060E+01 S	472.47	13	ŏ	5.1700E+02	-9.4240E+00	5.1740E+02	-9.5092E+00	
HG188F 3.250E+00 M	645.77	19	O	5.1700E+02 7.3000E+02	-9.4240E+00 -1.3044E+01	5.4403E+02	1.5755E+01	
HG189F 7.600E+00 M		36	4	3.3187E+03	-6.6097E+00	3.3144E+03	-6.4700E+00	
HG189M 8.700E+00 M HG190F 2.000E+01 M	1316.99 : 120.72	21	4	1.7368E+04 1.5562E+02	-1.2188E+03 -2.8915E+01	1.7349E+04 1.5639E+02	-1.2173E+03 -2.9548E+01	
HG191F 4.833E+01 M	437.96	7	0	4.6000E+02	-5.0315E+00	3.9239E+02	1.0406E+01	
HG191M 5.083E+01 M HG192F 4.861E+00 H	1450.00 253.75	80 24	5 4	1.4429E+03 2.7932E+02	4.8645E-01 -1.0079E+01	1.5227E+03 2.7942E+02	-5.0164E+00 -1.0115E+01	
HG192F 4.861E+00 H HG193M 1.181E+01 H	1117.65		9	1.2040E+03	-7.7233E+00	1.2051E+02	-7.8208E+00	
HG194F 5,200E+02 A	2.10	0	1	0.0000E+00	1.0000E+02	2.1362E+00	-1.7238E+00	
HG197F 2.671E+00 J	140.84 118.80	3 7	0 12	1.5189E+01 9.4464E+01	8.9216E+01 2.0482E+01	1.5189E+01 9.4464E+01	8.9216E+01 2.0482E+01	
HG197M 2.380E+01 H HG199M 4.260E+01 M	244.42	3	0	1.3620E+02	4.4276E+01	1.3620E+02	4.4276E+01	
HG205F 5.200E+00 M	5.60	12	Ō	4.7953E+00	1.4334E+01	4.7953E+00	1.4335E+01	
TL188F 1.183E+00 M	55.14	1	o o	4.1000E+01	2.5641E+01	4.1280E+01	2.5133E+01	
TL191M 5.217E+00 M TL193F 2.167E+01 M	1532.98 1 1212.65	158 48	4 4	6.6736E+03 4.7948E+03	-3.3534E+02 -2.9540E+02	6.7189E+03 4.7987E+03	-3.3829E+02 -2.9572E+02	
TL193M 2.117E+00 M	234.77	2	Õ	2.5600E+02	-9.0434E+00	2.5649E+02	-9.2521E+00	
TL197F 2.839E+00 H	415.86	76	5	4.6144E+02	-1.0962E+01	4.5913E+02	-1.0404E+01	
TL202F 1.223E+01 J TL206F 4.200E+00 M	490.72 1.41	3 1	0	4.0765E+02	1.6928E+01 9.6872E+01	4.0765E+02	1.6928E+01 9.6872E+01	
TL207F 4.770E+00 M	3.34	2	7	4.4182E-02 2.1868E+00	3.4551E+01	4.4182E-02 2.1868E+00	3.4551E+01	
PB196F 3.700E+01 M	813.09		0	8.6000E+02 1.0592E+03 1.3827E+02	-5.7692E+00 7.7310E+00 6.7621E+00 -1.9126E+01	8.5738E+02 1.0559E+03	-5.4473E+00	
PB199F 1.500E+00 H PB199M 1.220E+01 M	1148.00 : 148.30	119 2	5 4	1.0592E+03	7.7310E+00 6.7621E+00	1.0559E+03 1.1197E+02	8.0191E+00 2.4495E+01	
PB199M 1.220E+01 M PB201M 1.020E+00 M	366.00	0	5	4.3600E+02	-1.9126E+01	2.2981E+01	9.3721E+01	
PB202F 5.264E+04 A	2.56	Ō	1	6.0075E+01	-2.2499E+U3	2.4720E+00	3.3061E+00	
PB203F 2.169E+00 J PB205F 1.521E+07 A	340.87 54.60	3	0 2	2.4220E+02 5.4601E+01	2.8947E+01 9.1522E-04	2.4220E+02 3.3259E+00	2.8948E+01 9.3909E+01	
BI207F 3.800E+01 A BI210F 5.013E+00 J	1568.60 0.68	7 2	0 6	1.4787E+03 3.0648E-04	5.7312E+00 9.9955E+01	1.4787E+03 3.0648E-04	5.7328E+00 9.9955E+01	
P0208F 2.900E+00 A	0.02	0	1	0.0000E+00	1.0000E+02	9.4261E-04	9.5039E+01	
PO209F 1.021E+02 A	5.15	11	14 7	5.1495E+00 9.2116E-03	7.6017E-03	3.2855E+00	3.6202E+01	
PO218F 3.050E+00 M	0.01	1	7	9.2116E-03	5.1852E+00	9.2116E-03	5.1852E+00	
AT201F 1.483E+00 M	80.00	0	5	0.0000E+00	1.0000E+02	2.3442E+02	-1.9302E+02	
AT203F 7.370E+00 M	2957.14		0	3.1500E+03	-6.5218£+00	3.1563E+03	-6.7343E+00	
AT212M 1.190E-01 S	8.84	1	0	4.8510E+00	4.5102E+01	4.8510E+00	4.5102E+01	
						spectre.gamn	na+X	8

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9

spectre.gamma+X

spectre.gamma+X

ECAR2

(EGM-SOMGX) *100./EGM

-1.2249E+01

5.8194E+00

8.2989E+00

-9.1755E+00

9.4759E+01

SOMGX

1.0935E+03

5.7450E+01

9.7918E+01

4.4492E+02

8.5429E+01

SOMG+SOMX

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RN206F 5.667E+00 M

RN210F 2.389E+00 H

RN221F 2.500E+01 M

FR211F 3.100E+00 M

PERIODE

RA213M 2.100E-03 S 1630.00

EGM

974.20 31

61.00

106.78

407.53

NG

40

48

NX

٥

4

a

8

ERGX

1.1000E+03

6.0349E+01

1.0678E+02

4.4500E+02

1.6345E+03

ECAR1

-1.2913E+01

1.0674E+00

-9.3599E-04

-9.1942E+00

-2.7897E-01

ER(0)+ER(9) (EGM-ERGX)*100./EGM

TABLE 4 spectre.alpha

NAL number of alpha rays

ER(4) average decay heat for α spectrum

 FD_{α} normalization factor

 $EAM = \overline{E_{"\alpha"}}.$

 $SOMAL = FD\alpha * \left(1 + \frac{4}{A}\right) * \sum_{i=1}^{N\alpha} I\alpha_i * E\alpha_i$

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SPECTRE ALPHA - SOMAL = FD*(E1*I1+E2*I2+...)*(1.+4./A)

ER(4)/SOMAL > 1.05 OU < 0.95

	EAM	ER (4)	NAL	FD	SOMAL	ER(4)/SOMAL
BE 11F	3.6273E+01	3.6273E+01	1	1.0000E+00	3.1500E+01	1.1515E+00
B 12F	6.6417E+00	6.6417E+00	2	1.0000E+00	5.9053E+00	1.1247E+00
TM156F	3.8100E+00	3.8100E+00	1	1.0000E-02	4.3415E+03	8.7757E-04
YB156F	4.8060E+02	4.6860E+02	1	1.0000E-02	4.3255E+03	1.0833E-01
YB158F	1.2210E-01	1.2210E-01	1	1.0000E-02	4.1720E+03	2.9266E-05
W165F	7.3500E+00	7.3500E+00	1	9.8500E-03	4.9455E+03	1.4862E-03
RE165F	7.3300E+02	7.1580E+02	1	8.7000E-03	4.9063E+03	1.4589E-01
O\$165F	6.3100E+03	6.1640E+03	1	4.0000E-03	2.5254E+03	2.4408E+00
HG181F	2.1570E+03	2.1570E+03	3	9.0000E-10	5.5116E-04	3.9136E+06
HG187F	1.6071E+03	9.9300E+03	1	1.0000E-02	8.4561E+07	1.1743E-04
PB189F	2.3400E+03	2.2920E+03	1	1.0000E-03	5.8513E+02	3.9171E+00
BI194M	3.5000E+01	2.3709E+01	2	1.0000E-02	5.7555E+03	4.1193E-03
PO212N	8.9534E+03	1.1783E+04	1	1.0000E+00	1.7781E+02	6.6265E+01

TABLE 5 raie.511 Kev

RIS positron intensity (β^+ spectrum STYP=2)

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STUDY	ABOUT 511 KEV RAY	Y		· · · · · · · · · · · · · · · · · · ·	, , ,
					
511 KEV RAY COMES FR	OM BETA+ SPECTRU	UM AND X SE	PECTRUM		
INTENSITIES ARE NOT EG	12 NUCLIDES				
SE 70F branch. beta +					
	E+03KEV RIS= 3. E+03KEV RIS= 3.		2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	6.0000E-03 6.4000E-02	
SP. BETA+ E= 2.2900	E+03KEV RIS= 2.	.9000E+01	2.*RIS(IR)*FD=	5.8000E-01	
			2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	1.4000E-02 1.2000E-02	
SP. BETA+ E= 2.5200			2.*RIS(IR)*FD=	7.0000E-02	
SP. BETA+ SP. X E= 5.1100E+02	KEV I*FD = 1.41	100E+00	SOMME=	7.4600E-01	
BR 76M branch. beta +	= 3.0000E-03				
SP. BETA+ E= 3.7270	E+03KEV RIS= 3	.0000E-01	2.*RIS(IR)*FD= SOMME=	6.0000E-03 6.0000E-03	
SP. BETA+ SP. X E= 5.1100E+02	KEV 1*FD = 5.00	000E-03	SUMME≕	8.0000E-03	
CD102F branch. beta +					
			2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	1.5600E-03	
			2.*RIS(IR)*FD=	4.3400E-02 1.8000E-02	
SP. BETA+ E= 2.3598	E+03KEV RIS= 4		2.*RIS(IR)*FD= SOMME=	8.4000E-03	
SP. BETA+ SP. X E= 5.1100E+02	KEV I*FD = 5.53	300E-01	SOMME	7.1360E-02	
XE121F branch. beta +	= 1.0000E+00				
SP. BETA+ E= 1.3300	E+03KEV RIS= 1.		2.*RIS(IR)*FD=	2.0040E-05	
			2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	2.0040E-05 2.0040E-05	
SP. BETA+ E= 1.3600	E+03KEV RIS= 1.	.0000E-02	2.*RIS(IR)*FD=	2.0040E-04	
			2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	4.0080E-05 4.0080E-04	
SP. BETA+ E= 1.4700	E+03KEV RIS= 5.	.0000E-03	2.*RIS(IR)*FD=	1.0020E-04	
			2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	6.0120E-04 2.4048E-04	
SP. BETA+ E= 1.9400	E+03KEV RIS= 1.	.0000E-01	2.*RIS(IR)*FD=	2.0040E-03	
			2.*RIS(IR)*FD= 2.*RIS(IR)*FD=		
SP. BETA+ E= 2.0800	E+03KEV RIS= 2.	.0000E-01	2.*RIS(IR)*FD=	4.0080E-03	
			2.*RIS(IR)*FD= 2.*RIS(IR)*FD=		
SP. BETA+ E= 2.2500	E+03KEV RIS= 1.	.4000E-01	2.*RIS(IR)*FD=	2.8056E-03	
			2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	4.8096E-03 3.0060E-03	
SP. BETA+ E= 2.6000	E+03KEV RIS= 1.	.6000E-01	2.*RIS(IR)*FD=	3.2064E-03	
SP. BETA+ E= 2.8200 SP. BETA+ E= 2.8600			2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	4.0080E-04 4.0080E-04	
SP. BETA+ E= 2.8800	E+03KEV RIS= 1.	.0700E+00	2.*RIS(IR)*FD=	2.1443E-02	
		.2000E-01 .3000E-01	2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	8.4168E-03 4.6092E-03	
SP. BETA+ E= 3.0300	E+03KEV RIS= 1.	.5000E-02	2.*RIS(IR)*FD=	3.0060E-04	
¶ SP. BETA+ E≃ 3.0700		.8000E-01 .0000E-02	2.*RIS(IR)*FD= 2.*RIS(IR)*FD≏	9.6192E-03 8.0160E-04	
🚺 SP. BETA+ E= 3.1100	E+03KEV RIS= 5.	.4000E-01	2.*RIS(IR)*FD=	1.0822E-02	
			2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	2.6052E-02 1.0020E-03	
SP. BETA+ E= 3.2000	E+03KEV RIS= 7	.0000E-02	2.*RIS(IR)*FD=	1.4028E-03	
		.7000E-01 .7000E-01	2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	1.1423E-02 1.9439E-02	
SP. BETA+ E= 3.2500	E+03KEV RIS= 1.	.5000E-02	2.*RIS(IR)*FD≃	3.0060E-04	
SP. BETA+ E= 3.5100 SP. BETA+ E= 3.6300		.9000E-01 .4000E+00	2.*RIS(IR)*FD≃ 2.*RIS(IR)*FD=	1.5832E-02 2.8056E-02	
31. 251R* E= 3.0300	2. Julia Rige I	. 10001100	KID(IK, ID-		

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SP.	BETA+ BETA+	E= E=	3.7100E+03KEV 3.7300E+03KEV	RIS=	4.0000E+00 2.6000E+00	2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	8.0160E-02 5.2104E-02	
SP.	BETA+					SOMME=	3.2248E-01	
SP.	X E=	5.1	100E+02KEV I*F	D = 8	.7000E-01			
CS12	2F_bra	nch.	beta + = 1.0	000E+0	0			
						2.*RIS(IR)*FD= 2.*RIS(IR)*FD=		
SP.	BETA+	E≖	5.0000E+03KEV	RIS=	4.6000E-01	2.*RIS(IR)*FD=	9.2000E-03	
						2.*RIS(IR)*FD=		
						2.*RIS(IR)*FD= 2.*RIS(IR)*FD=		
SP.	BETA+	E⇔	5.9000E+03KEV	RIS=	6.6000E-01	2.*RIS(IR)*FD=	1.3200E-02	
						2.*RIS(IR)*FD=		
SP.	BETA+	E=	6.2000E+03KEV 6.5000E+03KEV	RIS=	4.1000E+00	2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	8.2000E-02	
SP.	BETA+					2.*RIS(IR)*FD=	5.6000E-03	
	BETA+ X E≃	5.1	100E+02KEV I*F	D = 1	.9000E+00	SOMME=	2.6460E-01	
			beta + = 1.0 1.5364E+03KEV			2.*RIS(IR)*FD=	2.5250E-03	
SP.	BETA+						2.5250E-03	
SP.	X E=	5.1	100E+02KEV I*F	D = 2	.1000E-02			
			beta + = 1.0					
						2.*RIS(IR)*FD= 2.*RIS(IR)*FD=		
						2.*RIS(IR)*FD=		
SP.	BETA+	$\mathbf{E} =$	6.5000E+03KEV	RIS=	7.2000E-01	2.*RIS(IR)*FD=	1.4400E-02	
	BETA+ BETA+	E≐	7.2000E+03KEV	RIS=	8.6400E+00	2.*RIS(IR)*FD=	1.7280E-01 3.2620E-01	
		5.1	100E+02KEV I*F	D = 1	.8810E+00	20.11.2	3.20202 01	
YB16	OF bra	nch.	beta + = 1.0	000E+0	0			
SP.	BETA+	E=	2.0020E+03KEV	RIS≃	2.3000E-02	2.*RIS(IR)*FD=	4.6000E-04	
SP.	BETA+	E=	2.1946E+03KEV 2.2526E+03KEV	RIS=	8.1000E-02 1 7000E-01	2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	1.6200E-03 3 4000E-03	
SP.	BETA+	E=	2.2567E+03KEV	RIS=	8.6000E-02	2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	1.7200E-03	
	BETA+	5 1	100E+02KEV I*F	n = 2	0000E-01	SOMME=	7.2000E-03	
			beta + = 1.0 1.6467E+03KEV			2.*RIS(IR)*FD=	6.6200E-03	
SP.	BETA+						6.6200E-03	
SP.	X E=	5.1	100E+02KEV I*F	D = 9	.8000E-03			
TA17	5F bra	nch.	beta + = 1.0	000E+0	0 14000 00	0 +070(**)	2 2000- 05	
SP.	BETA+	≞= E=	1.7250E+03KEV	RIS=	3.6000E-03	2. *RIS(IR) *FD=	2.2800E-05	
SP	BETA+	E=	1.7939E+03KEV	RIS=	3.1000E-03	2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	6.2000E-05	
SP.	BETA+	E=	1.8244E+03KEV	RIS=	2.1900E-02	2.*RIS(IR)*FD=	4.3800E-04	
SP.	BETA+ BETA+	E=	1.8517E+03KEV	RIS=	2.8000E-01	2.*RIS(IR)*FD=	5.6000E-03 6.8428E-03	
SP.	X E=	5.1	100E+02KEV I*F	D = 1	.2620E-02	23.419-		
				000E+0				
						2.*RIS(IR)*FD= 2.*RIS(IR)*FD=		
						2.*RIS(IR)*FD=		
SP.	BETA+		100E+02KEV 1*F				1.3060E-01	
				000E+0		2.*RIS(IR)*FD=	2 0000E-03	
SP.	BETA+	E=	2.9000E+03KEV	RIS=	2.0000E-01	2.*RIS(IR)*FD=	4.0000E-03	
SP.	BETA+	E=	2.9000E+03KEV	RIS=	2.0000E-01	2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	4.0000E-03	

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	Catholic Control Villagor Control Control	The Laterage Laterage Control of the
Jun 16 1997 14:56 raie 511	KEV	Page 3
SP. BETA+ E= 3.1000E+03KEV RIS= 3.0000E-01 SP. BETA+ E= 3.1000E+03KEV RIS= 2.0000E-01 SP. BETA+ E= 3.1000E+03KEV RIS= 2.0000E-01 SP. BETA+ E= 3.2000E+03KEV RIS= 3.0000E-01 SP. BETA+ E= 3.3000E+03KEV RIS= 5.0000E-01 SP. BETA+ E= 3.3000E+03KEV RIS= 4.0000E-01 SP. BETA+ E= 3.5000E+03KEV RIS= 8.0000E-01 SP. BETA+ E= 3.5000E+03KEV RIS= 3.0000E-01 SP. BETA+ E= 3.6000E+03KEV RIS= 3.0000E-01 SP. BETA+ E= 3.9000E+03KEV RIS= 3.0000E-01 SP. BETA+ SP. BETA+ SP. X E= 5.1100E+02KEV I*FD = 2.4400E-01	2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	4.0000E-03 4.0000E-03 6.0000E-03 1.0000E-02 8.0000E-03 1.6000E-02 6.0000E-03
511 KEV RAY COMES FROM X SPECTRUM ONLY IN BETA+ SPECTRUM RIS=0. 3 NUCLIDES CD104F branch beta + = 1.0000E+00 SP. X E= 5.1100E+02KEV I*FD = 1.5000E-02		
ER148F branch. beta + = 1.0000E+00 SP. X E= 5.1100E+02KEV I*FD = 1.7640E+00 LU170F branch. beta + = 1.0000E+00 SP. X E= 5.1100E+02KEV I*FD = 4.0000E-03		
511 KEV RAY COMES FROM GAMMA SPECTRUM ONLY NO BETA+ SPECTRUM 3 NUCLIDES		
CS121F branch. beta + = 1.0000E+00 SP. G E= 5.1100E+02KEV I*FD = 7.2648E+00		
YB161F branch. beta + = 1.0000E+00 SP. G E= 5.1100E+02KEV I*FD = 3.4587E-01		
TA169F branch. beta + = 1.0000E+00 SP. G E= 5.1100E+02KEV I*FD = 2.3030E+00		
511 KEV RAY COMES FROM BETA+ SPECTRUM ONLY 10 NUCLIDES	, , , , , , , , , , , , , , , , , , , ,	·
NI 59F branch. beta + = 1.0000E+00 SP. BETA+ E= 1.0734E+03KEV RIS= 1.0071E-05 SP. BETA+		2.0142E-05
SON	MME= 2.0142E-05	
SR 85M branch. beta + = 1.2700E-01 SP. BETA+ E= 1.1514E+03KEV RIS= 3.0574E-05 SP. BETA+	2.*RIS(IR)*FD= SOMME=	
RH102F branch. beta + = 1.0000E+00 SP. BETA+ E= 1.2166E+03KEV RIS= 1.8005E-05 SP. BETA+		3.3705E-05 3.3705E-05
IN114F branch. beta + = 5.0000E-03 SP. BETA+ E= 1.4440E+03KEV RIS= 2.1353E-05 SP. BETA+	2.*RIS(IR)*FD=	
SB122F branch. beta + = 2.3800E-02		

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		Printed I	by Bernadette Ni	mal – LEPP from puck
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SP. BETA+ E= SP. BETA+	1.6227E+03KEV	RIS= 6.3962E-05		1.2792E-04 1.2792E-04
SP. BETA+ E=	beta + = 1.000 2.8800E+03KEV 1 3.5600E+03KEV 1	00E+00 RIS= 5.0000E-01 RIS= 1.5000E+00	2.*RIS(IR)*FD=	1.0000E-02 3.0000E-02 4.0000E-02
	beta + = 1.000 1.0600E+03KEV	00E+00 RIS= 9.0000E-10		1.8000E-11 1.8000E-11
SP. BETA+ E=		97E-01 RIS= 6.1035E-09 RIS= 5.3406E-08	2.*RIS(IR)*FD=	
SP. BETA+ E= SP. BETA+ E=	1.1422E+03KEV	75E-01 RIS= 7.9956E-07 RIS= 2.9984E-06 RIS= 5.0972E-06 RIS= 5.7114E-07 RIS= 3.9307E-06 RIS= 5.0052E-07 RIS= 1.6052E-07 RIS= 1.2268E-08 RIS= 1.2488E-06 RIS= 2.4414E-09 RIS= 4.0814E-06	2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	5.9968E-06
SP. BETA+ E=	beta + = 1.00 1.2080E+03KEV 1 1.3071E+03KEV	00E+00 RIS= 4.2009E-06 RIS= 1.5259E-08	2.*RIS(IR)*FD=	8.4018E-06 3.0518E-08 8.4323E-06
SHALL WE COUNT RB 77F branch.	IT TWICE ? 8 NUC. beta + = 1.00	BETA+.X AND GAMM LIDES 00E+00 RIS= 1.6000E-01		3.2000E-03
CO DEMA D-	2.2700E+03KEV	DTC- 4 ADDADE A1	3 +010/tb/+tb-	D 0000E 03

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SP. BETA+	E= 4.5	300E+03KEV	RIS=	5.4000E-01	2.*RIS(IR)*FD=	
SP. BETA+		500E+03KEV	RIS=	9.0000E-01	2.*RIS(IR)*FD=	
SP. BETA+		600E+03KEV	RIS=	2.8000E+00	2.*RIS(IR)*FD=	
SP. BETA+		000E+03KEV	RIS=	2.3000E+00	2.*RIS(IR)*FD=	
SP. BETA+		000E+03KEV	RIS≃	4.0000E-02	2.*RIS(IR)*FD=	
SP. BETA+		800E+03KEV 200E+03KEV	RIS= RIS≃	1.6000E+00 7.1000E+00	2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	
SP. BETA+		300E+03KEV	RIS=	1.2700E+01	2.*RIS(IR)*FD=	
SP. BETA+		300E+03KEV	RIS=	1.5000E+00	2.*RIS(IR)*FD=	
SP. BETA+		100E+03KEV	RIS=	2.7000E+01	2.*RIS(IR)*FD=	
SP BETA+		790E+03KEV	RIS=	1.5000E+01	2.*RIS(IR)*FD=	
SP. BETA+					SOMME=	
SP. X E-	5.1100E	+02KEV I*F	D = 1	.9000E+00		
SP. G E=	5.1100E			.9576E-03		
	nch. bet		000E+0			
SP. BETA+	E= 2.0	990E+03KEV	RIS=	1.3000E-01	2.*RIS(IR)*FD=	
SP. BETA+	e 4480-			20000 02	SOMME=	2.6000E+03
SP. X E=				.2000E-03		
SP. G E=	5.1100E	:+02KEV 1*F	D = 4	.8913E-03		
	ınch, bet		000E+0 RIS=	0 3.5000E-03	2.*RIS(IR)*FD=	= 7.0000E~05
SP. BETA+		870E+03KEV	RIS=	1.8000E-03	2.*RIS(IR)*FD=	
SP. BETA+		050E+03KEV	RIS=	1.8000E-03	2.*RIS(IR)*FD=	
SP. BETA+		500E+03KEV	RIS=	1.6000E-03	2.*RIS(IR)*FD=	
SP. BETA+		400E+03KEV	RIS=	1.4000E-02	2.*RIS(IR)*FD=	
SP. BETA+		770E+03KEV	RIS=	3.0000E-03	2.*RIS(IR)*FD=	
SP. BETA+		110E+03KEV	RIS=	9.7000E-02	2.*RIS(IR)*FD=	
SP. BETA+		370E+03KEV	RIS=	8.2000E-03	2.*RIS(IR)*FD=	
SP. BETA+	E= 1.9	900E+03KEV	RIS=	6.0000E+02	2.*RIS(IR)*FD=	1.2000E-03
SP. BETA+		120E+03KEV	RIS=	1.0000E-02	2.*RIS(IR)*FD=	
SP. BETA+		440E+03KEV	RIS=	4.4000E-03	2.*RIS(IR)*FD=	
SP. BETA+		800E+03KEV	RIS=	1.3000E-02	2.*RIS(IR)*FD=	
SP. BETA+		.600E+03KEV	RIS≃	4.1000E-02	2.*RIS(IR)*FD=	
SP BETA+		090E+03KEV	RIS=	1.2000E-01	2.*RIS(IR)*FD=	
SP. BETA+		460E+03KEV	RIS=	1.6000E-01	2.*RIS(IR)*FD=	
SP. BETA+		020E+03KEV 180E+03KEV	RIS≃ RIS=	2.4000E-02 7.6000E-02	2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	
SP. BETA+ SP. BETA+		340E+03KEV	RIS=	3.5000E-01	2.*RIS(IR)*FD=	
SP. BETA+		370E+03KEV	RIS≃	1.4000E-01	2.*RIS(IR)*FD=	
SP. BETA+		700E+03KEV	RIS=	1.1000E-02	2.*RIS(IR)*FD=	
SP. BETA+		290E+03KEV	RIS=	3.7000E-01	2.*RIS(IR)*FD=	
SP. BETA+		430E+03KEV	RIS=	5.1000E-01	2.*RIS(IR)*FD=	
SP. BETA+		040E+03KEV	RIS=	7.0000E-02	2.*RIS(IR)*FD=	
SP. BETA+		210E+03KEV	RIS≖	1.7000E+00	2.*RIS(IR)*FD=	
SP. BETA+		970E+03KEV	RIS=	1.1000E-01	2.*RIS(IR)*FD=	
SP. BETA+		370E+03KEV	RIS=	7.5000E-01	2.*RIS(IR)*FD=	
SP. BETA+		080E+03KEV	RIS=	4.9000E+00	2.*RIS(IR)*FD=	
SP. BETA+	E= 3.8	3520E+03KEV	RIS=	9.0000E+00	2.*RIS(IR)*FD=	
SP. BETA+					SOMME=	= 3.7133E-01
SP. X E=	5.1100E	+02KEV I*F	D = 4	.0000E-01		
SP. G E=	5.11001	C+02KEV I*F	D = 1	.1512E-01		
				_		
CB153F bra SP. BETA+	anch. bet $E= 1.3$	a + = 1.0 670E+03KEV	000E+0 RIS=	0 3.2000E-02	2.*RIS(IR)*FD=	= 6.4000E-04
SP. BETA+		690E+03KEV	RIS=	6.1000E-03	2.*RIS(IR)*FD=	
SP. BETA+		370E+03KEV	RIS=	4.4500E-02	2.*RIS(IR)*FD=	
SP. BETA+		790E+03KEV	RIS=	7.0000E-03	2.*RIS(IR)*FD=	
SP. BETA+				-	SOMME:	
SP. X E=	5.1100E			8000E-03		
SP. G E=	5.11001		D = 6	.0082E-04		
FA176F bra			000E+0		2 *DTC(TD) *TD	- 6 0000tr 06
SP. BETA+		400E+03KEV	RIS≃ RIS≃	3.0000E-04 3.0000E-04	2.*RIS(IR)*FD=	
		5500E+03KEV			2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	
SP. BETA+	E= 1.€	5700E+03KEV	RIS=	2.3000E-03		

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SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+	E= 1.7100E+03KEV E= 1.7600E+03KEV E= 1.8000E+03KEV E= 1.8200E+03KEV E= 1.9000E+03KEV E= 2.9600E+03KEV E= 3.0500E+03KEV 5.1100E+02KEV I*F	RIS= 1.3000E-03 RIS= 9.0000E-02 RIS= 7.0000E-03 RIS= 4.1000E-03 RIS= 6.9000E-01 RIS= 6.0000E-02 PD = 1.7120E-02	2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	2.6000E-05 1.8000E-03 1.4000E-04 8.2000E-05	
SP. G E=	5.1100E+02KEV I*F				
SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+ SP. BETA+	nch. beta + = 1.6 E= 1.5600E+03KEV E= 1.5600E+03KEV E= 1.6000E+03KEV E= 1.6100E+03KEV E= 1.6300E+03KEV E= 1.8200E+03KEV E= 1.9500E+03KEV E= 2.0400E+03KEV E= 2.0400E+03KEV E= 2.3700E+03KEV E= 2.3700E+03KEV E= 2.4100E+03KEV E= 3.4600E+03KEV	0000E+00 RIS= 3.0000E-03 RIS= 7.0000E-03 RIS= 9.0000E-03 RIS= 2.0000E-02 RIS= 1.0000E-03 RIS= 5.1000E-03 RIS= 2.9000E-03 RIS= 8.0000E-03 RIS= 1.3000E-03 RIS= 2.2000E-01 RIS= 6.8000E-03 RIS= 2.6000E-03 RIS= 2.6000E-01	2.*RIS(IR)*FD=	6.0000E-05 6.0000E-05 1.4000E-04 1.8000E-04 4.0000E-05 1.0200E-05 1.0200E-05 1.6000E-05 1.6000E-04 2.6000E-03 1.3600E-03 1.3600E-03 3.600E-03	
SP. BETA+ SP. X E= SP. G E=	5.1100E+02KEV I*F 5.1100E+02KEV I*F	TD = 1.5460E+02 TD = 1.0455E-02	SOMME=	1.5460E-02	
SP. BETA+ SP. BE	E= 1.7200E+03KEV E= 1.7500E+03KEV E= 1.7500E+03KEV E= 1.8700E+03KEV E= 1.8700E+03KEV E= 1.8700E+03KEV E= 2.0900E+03KEV E= 2.2200E+03KEV E= 2.6200E+03KEV E= 2.6300E+03KEV E= 2.7600E+03KEV E= 2.7600E+03KEV E= 2.7600E+03KEV E= 2.7600E+03KEV E= 2.7600E+03KEV E= 2.8100E+03KEV E= 2.8500E+03KEV E= 3.3900E+03KEV E= 3.3900E+03KEV E= 3.3900E+03KEV E= 3.3900E+03KEV E= 3.5000E+03KEV E= 3.5000E+03KEV E= 3.5000E+03KEV E= 3.5000E+03KEV E= 3.5000E+03KEV E= 3.5000E+03KEV	RIS= 2.0000E-01 RIS= 7.0000E-02 RIS= 5.0000E-02 RIS= 8.0000E-02 RIS= 8.0000E-02 RIS= 3.0000E-01 RIS= 6.0000E-02 RIS= 1.8000E-01 RIS= 7.0000E-01 RIS= 7.0000E-01 RIS= 6.0000E-01 RIS= 3.7000E-01 RIS= 3.7000E-01 RIS= 3.7000E-01 RIS= 2.4000E+00 RIS= 3.1000E+00 RIS= 1.1000E+00 RIS= 2.0000E-01 RIS= 4.0000E-01 RIS= 2.0000E-01 RIS= 2.0000E-01 RIS= 2.0000E-01 RIS= 2.0000E-01 RIS= 2.0000E-01 RIS= 2.3000E-01	2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD= 2.*RIS(IR)*FD=	8.0000E-03	
	E= 3.2100E+03KEV 5.1100E+02KEV I*I	0000E+00 RIS= 1.3000E+00 FD = 3.0000E-02 FD = 2.2827E-02	2.*RIS(IR)*FD= SOMME=	2.6000E-02 2.6000E-02	

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Jun 16 1997 14:56 raie.511 KEV	Page 7
511 KEV RAY COMES FROM BETA+ SPECTRUM AND GAMMA SPECTRUM INTENSITIES ARE EGAL - IS IT THE SAME ? 4 NUCLIDES	
NB 91F branch. beta + = 1.0000E+00 SP. BETA+ E= 1.2557E+03KEV RIS= 1.6800E-03 2.*RIS(IR)*FD= SP. BETA+ SOMME= SP. G E= 5.1101E+02KEV I*FD = 3.1995E+03	
NB 92M branch. beta + = 1.0000E+00 SP. BETA+ E= 1.2095E+03KEV RIS= 6.1342E-04 2.*RIS(IR)*FD= SP. BETA+ SOMME= SP. G E= 5.1101E+02KEV I*FD = 1.1680E-03	
EU152F branch. beta + = 7.2080E-01 SP. BETA+ E= 1.5104E+03KEV RIS= 1.7930E-05 2.*RIS(IR)*FD= SP. BETA+ E= 1.7551E+03KEV RIS= 1.7331E-04 2.*RIS(IR)*FD= SP. BETA+ SP. G E= 5.1101E+02KEV I*FD = 5.5239E-04	
BI207F branch. beta + = 1.0000E+00 SP. BETA+ E= 1.8350E+03KEV RIS= 1.1778E-04 2.*RIS(IR)*FD= SP. BETA+ SOMME= SP. G E= 5.1101E+02KEV I*FD = 2.4989E-04	2.3556E-04 2.3556E-04
511 KEV RAY COMES FROM BETA+ SPECTRUM AND GAMMA SPECTRUM INTENSITIES ARE NOT EGAL - WHAT DO WE TAKE ? 5 NUCLIDES	
CO 56F branch beta + = 1.0000E+00 SP. BETA+ E= 1.1230E+03KEV RIS= 9.3766E-05 2.*RIS(IR)*FD= SP. BETA+ E= 1.4454E+03KEV RIS= 1.0761E-02 2.*RIS(IR)*FD= SP. BETA+ E= 2.4833E+03KEV RIS= 1.8634E-01 2.*RIS(IR)*FD= SP. BETA+ SOMME= SP. G E= 5.1101E+02KEV I*FD = 4.2200E-02	2.1522E-02
ZR B9M branch. beta + = 6.2400E-02 SP. BETA+ E= 1.9120E+03KEV RIS= 1.3407E-02 2.*RIS(IR)*FD= SP. BETA+ E= 3.4192E+03KEV RIS= 1.7455E-03 2.*RIS(IR)*FD= SP. BETA+ SOMME= SP. G E= 5.1101E+02KEV I*FD = 3.5366E-02	2.68142-02 3.4910E-03 3.0305E-02
CD107F branch. beta + = 1.0000E+00 SP. BETA+ E= 1.3239E+03KEV RIS= 1.9940E-03 2.*RIS(IR)*FD= SP. BETA+ SOMME= SP. G E= 5.1101E+02KEV I*FD = 2.2519E-02	3.9880E-03 3.9880E-03
IN112F branch. beta + = 5.6000E-01 SP. BETA+ E= 1.1092E+03KEV RIS= 6.4463E-08 2.*RIS(IR)*FD= SP. BETA+ E= 1.2658E+03KEV RIS= 9.1858E-08 2.*RIS(IR)*FD= SP. BETA+ E= 1.3545E+03KEV RIS= 2.0491E-05 2.*RIS(IR)*FD= SP. BETA+ E= 1.9609E+03KEV RIS= 2.1642E-03 2.*RIS(IR)*FD= SP. BETA+ E= 2.5780E+03KEV RIS= 1.1975E-01 2.*RIS(IR)*FD= SP. BETA+ SP. G E= 5.1101E+02KEV I*FD = 4.5019E-02	1.8372E-07 4.0982E-05 4.3284E-03
NP232F branch. beta + = 1.0000E+00 SP. BETA+ E= 1.4961E+03KEV RIS= 1.8910E-04 2.*RIS(IR)*FD= SP. BETA+ E= 1.5174E+03KEV RIS= 4.7997E-06 2.*RIS(IR)*FD=	

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SP. BETA+ E= 1.5570E+03KEV SP. BETA+ E= 1.5918E+03KEV SP. BETA+ E= 1.7185E+03KEV SP. BETA+ E= 2.5334E+03KEV SP. BETA+ E= 2.6424E+03KEV SP. BETA+ E= 2.6900E+03KEV SP. BETA+ E= 2.6900E+03KEV	RIS= 7.9814E-06 2.*RIS(IR)*FD= RIS= 7.6807E-06 2.*RIS(IR)*FD= RIS= 1.9403E-05 2.*RIS(IR)*FD= RIS= 1.8026E-04 2.*RIS(IR)*FD= RIS= 2.2748E-04 2.*RIS(IR)*FD= RIS= 2.4904E-04 2.*RIS(IR)*FD= SOMME=	1.5963E-05 1.5361E-05 3.8806E-05 3.6052E-04 4.5496E-04 4.9808E-04 1.7715E-03
SP. G E= 5.1101E+02KEV I*F	D = 1.3438E-03	
		ı

TABLE 6 q.etot

$$Q = \sum_{i=1}^{NDK} Br_i * Q_i$$

$$ETOT = \overline{E_{"\beta"}} * 2.25 + \overline{E_{"\gamma"}} + \overline{E_{"\alpha"}}$$

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May 15 1	997 10:19	i gadou.	q.etot	· .	Page 1
	PERIODE	Q	ETOT	Q/ETOT	
_H3F	1.234E+01 A	1.8571E+01	1.2840E+01	1.446	
BE_12F	2.400E-02 S	1.1707E+04	1.6486E+04	0.710	
_C_14F _C_16F	5.734E+03 A 7.470E-01 S	1.5650E+02 5.5708E+03	1.1132E+02 4.6140E+03	1.406 1.207	
_N_17F	4.169E+00 S	8.6800E+03	3.8840E+03	2.235	
_F_23F	2.230E+00 S	8.5100E+03	2.0123E+04	0.423	
NA_33F NA_34F NA_35F	8.200E-03 S 5.500E-03 S 1.500E-03 S	1.5446E+04 1.6335E+04 1.9498E+04	3.1211E+02 0.0000E+00 0.0000E+00	49.490 Inf Inf	
MG_33F	9.000E-02 S	1.2333E+04	0.0000E+00	Inf	
AL_29F	6.567E+00 M	3.6796E+03	5.5983E+03	0.657	
SI_32F SI_34F	1.721E+02 A 2.770E+00 S	2.2500E+02 4.7000E+03	1.5480E+02 3.1650E+03	1.453 1.485	
_P_33F	2.540E+01 J	2.4900E+02	1.7229E+02	1.445	
_S_35F	8.750E+01 J	1.6750E+02	1.0987E+02	1.525	
_K_49F _K_50F _K_51F	1.260E+00 S 4.720E-01 S 3.650E-01 S	6.4758E+03 1.2206E+04 1.2600E+04	8.5870E+03 1.5663E+04 8.8160E+03	0.754 0.779 1.429	
CA_45F	1.630E+02 J	2.5610E+02	7.7047E+01	3.324	
SC_45M SC_46M SC_47F SC_50F	3.160E-01 S 1.870E+01 S 3.400E+00 J 1.708E+00 M	1.2397E+01 1.4253E+02 6.0000E+02 6.8920E+03	1.9960E+01 2.0955E+02 4.7428E+02 4.2566E+03	0.621 0.680 1.265 1.619	
MN_58M MN_59F	3.000E+00 S 4.600E+00 S	6.1000E+03 5.1800E+03	8.3108E+03 2.9340E+03	0.734 1.766	
CO_58M CO_60M	9.150E+00 H 1.047E+01 M	2.4889E+01 6.5944E+01	5.3161E+01 1.3444E+02	0.468 0.491	
NI_63F NI_66F	1.001E+02 A 2.275E+00 J	6.5870E+01 2.3300E+02	3.8475E+01 1.4625E+02	1.712 1.593	
CU_67F CU_78F	2.578E+00 J 2.500E-01 S	5.7500E+02 1.1938E+04	4.6557E+02 0.0000E+00	1.235 Inf	
ZN_69F ZN_73M	5.700E+01 M 5.800E+00 S	9.0450E+02 2.3428E+03	7.2226E+02 0.0000E+00	1.252 Inf	
GA_74M GA_83F GA_84F	9.500E+00 S 3.100E-01 S 2.480E-01 S	5.9700E+01 9.8998E+03 9.0028E+03	8.0913E+01 6.8540E+03 3.9815E+03	0.738 1.444 2.261	
GE_73M GE_75M GE_78F GE_84F GE_85F GE_86F	5.000E-01 S 4.770E+01 S 1.450E+00 H 9.700E-01 S 4.160E-01 S 1.280E-01 S	6.6730E+01 1.4003E+02 9.8000E+02 7.4687E+03 5.0456E+03 5.7671E+03	1.3674E+02 2.4260E+02 8.1077E+02 5.2521E+03 2.7708E+03 3.5490E+03	0.488 0.577 1.209 1.422 1.821 1.625	

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	PERIODE	Q	ETOT	Q/ETOT	
AS_75M	1.679E-02 S	3.0400E+02	5.9241E+02	0.513	
AS_77F	1.618E+00 J	6.8275E+02	5.1645E+02	1.322	
AS_87F	7.500E-01 S	9.8450E+03	6.0602E+03	1.625	
AS_88F	5.590E-01 S	8.0051E+03	5.4495E+03	1.469	
SE_73M	3.983E+01 M	7.7655E+02	6.3075E+02	1.231	
SE_77M	1.736E+01 S	1.6200E+02	2.4700E+02	0.656	
SE_79M	3.910E+00 M	9.5500E+01	1.9504E+02	0.490	
SE_81M	5.725E+01 M	1.0392E+02	2.1014E+02	0.495	
SE_92F	3.800E-02 S	8.5625E+03	1.1491E+04	0.745	
BR_76M BR_77M BR_79M BR_80M BR_82M BR_83F BR_93F BR_94F	1.310E+00 S 4.283E+00 M 4.864E+00 S 4.420E+00 H 6.100E+00 M 2.390E+00 H 1.020E-01 S 7.000E-02 S	1.1746E+02 1.0587E+02 2.0720E+02 8.5950E+01 1.2177E+02 9.1851E+02 1.1272E+04 1.1730E+04	3.4000E+01 1.4400E+01 2.6556E+02 1.6359E+02 1.6686E+02 7.2725E+02 0.0000E+00	3.455 7.352 0.780 0.525 0.730 1.263 Inf	
KR_79M	5.000E+01 S	1.3001E+02	2.3990E+02	0.542	
KR_81M	1.300E+01 S	1.9032E+02	2.7053E+02	0.704	
KR_83M	1.830E+00 H	4.1560E+01	9.0284E+01	0.460	
KR_85F	1.073E+01 A	6.8700E+02	5.6581E+02	1.214	
KR_94F	2.000E-01 S	8.1768E+03	6.8116E+03	1.200	
RB_81M RB_87F RB_98F RB_99F RB100F RB101F RB102F	3.048E+01 M 4.800E+10 A 1.140E-01 S 5.900E-02 S 5.100E-02 S 1.180E-01 S 6.900E-02 S	1.3770E+02 2.7330E+02 1.1249E+04 1.0706E+04 1.2646E+04 9.1892E+03 8.8512E+03	2.1850E+02 1.7730E+02 8.0833E+03 8.8288E+03 8.0118E+03 0.0000E+00 0.0000E+00	0.630 1.541 1.392 1.213 1.578 Inf	
SR_85M	1.128E+00 H	3.7374E+02	2.4500E+02	1.525	
SR_87M	2.810E+00 H	3.8757E+02	2.0427E+02	1.897	
SR_90F	2.914E+01 A	5.4600E+02	4.4018E+02	1.240	
SR_92F	2.710E+00 H	1.9300E+03	1.5598E+03	1.237	
_Y100M	9.400E-01 S	9.3000E+03	7.6549E+03	1.215	
2R_87M	1.400E+01 \$	3,3630E+02	4.4400E+02	0.757	
ZR102F	2.900E+00 S	4,6100E+03	6.5536E+03	0.703	
ZR104F	1.200E+00 S	5,9955E+03	9.4807E+03	0.632	
NB_90M	1.882E+01 S	1.2630E+02	1.7105E+02	0.738	
NB_91M	6.200E+01 J	1.6729E+02	3.0537E+02	0.548	
NB_93M	1.640E+01 A	3.0400E+01	6.4984E+01	0.468	
NB_94M	6.260E+00 M	5.1166E+01	8.8650E+01	0.577	
NB_95M	3.608E+00 J	2.8657E+02	4.4380E+02	0.646	
MO102F	1.120E+01 M	1.0400E+03	8.3042E+02	1.252	
TC_96M	5.150E+01 M	9.3200E+01	4.5328E+01	2.056	
TC_97M	8.900E+01 J	9.6500E+01	1.9654E+02	0.491	
TC_99F	2.130E+05 A	2.9350E+02	1.9185E+02	1.530	
TC103F	5.000E+01 S	2.6592E+03	2.1705E+03	1.225	
TC111F	3.000E-01 S	6.9668E+03	0.0000E+00	Inf	
RU106F	1.009E+00 A	3.9400E+01	2.2581E+01	1.745	
RU108F	4.500E+00 M	1.3200E+03	1.0967E+03	1.204	

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	PERIODE	Q	ETOT	Q/ETOT
RH100M	4.600E+00 M	1.6927E+02	5.2825E+01	3.204
RH103M	5.612E+01 M	3.9755E+01	7.2648E+01	0.547
RH104M	4.340E+00 M	1.3223E+02	2.2981E+02	0.575
RH105F	1.473E+00 J	5.6700E+02	4.2345E+02	1.339
RH105M	4.500E+01 S	1.2957E+02	2.4040E+02	0.539
RH117F	3.960E-01 S	6.7746E+03	4.6818E+03	1.447
PD107F	6.500E+06 A	3.3100E+01	2.0925E+01	1.582
PD107M	2.130E+01 S	2.1490E+02	2.9226E+02	0.735
PD109F	1.343E+01 H	1.0279E+03	8.1087E+02	1.268
PD109M	4.690E+00 M	1.8890E+02	2.9941E+02	0.631
PD112F	2.105E+01 H	2.9300E+02	2.0886E+02	1.403
AG101M	3.100E+00 S	2.7430E+02	2.1108E+02	1.300
AG103M	5.700E+00 S	1.3440E+02	2.5145E+02	0.534
AG105M	7.233E+00 M	3.0063E+01	5.2480E+01	0.573
AG107M	4.430E+01 S	9.3124E+01	1.7874E+02	0.521
AG109M	3.960E+01 S	8.8032E+01	1.6861E+02	0.522
AG111F	7.450E+00 J	1.0280E+03	8.1603E+02	1.260
AG111M	1.080E+00 M	6.6997E+01	1.3194E+02	0.508
AG120F	1.170E+00 S	8.2028E+03	6.2152E+03	1.320
AG120M	3.200E-01 S	5.3709E+03	4.3774E+03	1.227
CD111M	4.860E+01 M	3.9622E+02	5.3084E+02	0.746
CD113F	9.196E+15 A	3.1600E+02	2.0993E+02	1.505
CD113M	1.410E+01 A	5.8525E+02	4.2389E+02	1.381
CD115F	2.228E+00 J	1.1114E+03	9.1079E+02	1.220
CD126F	5.060E-01 S	5.4800E+03	4.5493E+03	1.205
CD128F	9.400E-01 S	7.0039E+03	8.9451E+03	0.783
CD130F	2.000E-01 S	7.3998E+03	0.0000E+00	Inf
IN112M	2.057E+01 M	1.5640E+02	3.1655E+02	0.494
IN113M	1.658E+00 H	3.9169E+02	5.5606E+02	0.704
IN114M	4.951E+01 J	2.5236E+02	4.1715E+02	0.605
IN114N	4.310E-02 S	5.0198E+02	3.6550E+02	1.373
IN115M	4.486E+00 H	3.6122E+02	5.4689E+02	0.660
IN116N	2.160E+00 S	1.6239E+02	2.8274E+02	0.574
IN118N	8.500E+00 S	2.0243E+02	3.2397E+02	0.625
IN128M	9.000E-01 S	7.4671E+03	9.6146E+03	0.777
IN131F IN133F	2.700E-01 S 1.800E-01 S	9.0483E+03 8.4892E+03	2.8949E+03 0.0000E+00	3.126 Inf
			0.51055.00	CT 0.40
SN113M	2.140E+01 M	1.6992E+02	2.6125E+00	65.043
SN117M	1.400E+01 J	3.1458E+02	5.0767E+02	0.620 0.493
SN119M SN121F	2.930E+02 J 1.127E+00 J	8.9530E+01 3.8300E+02	1.8174E+02 2.5469E+02	1.504
SN121F	5.003E+01 A	9.3361E+01	3.3120E+02	0.282
SN121N	1.040E+00 S	6.2662E+03	5.2216E+03	1.200
SN135F	8.500E-01 S	3.4404E+03	2.5170E+03	1.367
SB122M	4.210E+00 M	1.6356E+02	2.6375E+02	0.620
SB124N	2.020E+01 M	3.6850E+01	5.2211E+01	0.706
SB126N	1.100E+01 S	2.2702E+01	5.0777E+01	0.447
SB137F	3.600E-01 S	4.1686E+03	7.2265E+03	0.577
TE107F	3.600E-03 S	5.8346E+03	2.8000E+03	2.084
TE107F	2.100E+00 S	4.5334E+03	2.3000E+03	1.971
TE123M	1.197E+02 J	2.4746E+02	3.7473E+02	0.660
TE125M	5.800E+01 J	1.4473E+02	2.7418E+02	0.528
TE127F	9.350E+00 H	6.9400E+02	5.0688E+02	1.369
TE127M	1.090E+02 J	1.0492E+02	1.9322E+02	0.543
	1 5200.02 3	1 8000#+00	1 47050,00	1 202
_1129F	1.570E+07 A	1.9000£+02	1.4705E+02	1.292

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	PERIODE	Q	ETOT	Q/ETOT	
XE125M	5.700E+01 S	2.5200E+02	4.0077E+02	0.629	ļ
XE127M	1.167E+00 M	2.9720E+02	4.3212E+02	0.688	
XE129M	8.890E+00 J	2.3614E+02	4.6381E+02	0.509	
XE131M	1.190E+01 J	1.6393E+02	3.4052E+02	0.481	
XE133M	2.188E+00 J	2.3318E+02	4.6970E+02	0.496	
XE135F	9.090E+00 H	1.1580E+03	9.6081E+02	1.205	
XE147F	2.600E-01 S	7.9054E+03	0.0000E+00	Inf	
CS122N	3.600E-01 S	8.1200E+01	1.2300E+01	6.602	
CS134M	2.900E+00 H	1.3875E+02	2.7563E+02	0.503	
CS135F	2.300E+06 A	2.0500E+02	1.2668E+02	1.618	
CS137F	3.002E+01 A	5.4728E+02	4.1859E+02	1.307	
CS147F CS148F	2.200E-01 S 1.700E-01 S	7.8928E+03 9.6246E+03	6.4636E+03 7.5300E+03	1.221 1.278	
BA131M BA133M	1.460E+01 M 1.621E+00 J	1.8750E+02 2.8844E+02	3.2450E+02 5.6639E+02	0.578	
BA135M BA135M	1.021E+00 J	2.6824E+02		0.509 0.509	
BA142F	1.060E+00 D	2.2000E+03	5.2705E+02 1.8175E+03	1.210	1
BA143F	1.450E+01 M	4.3000E+03	3.5700E+03	1.210	
BA149F	3.460E-01 S	7.3679E+03	0.0000E+00	Inf	
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LA129M	5.600E-01 S	1.7200E+02	2.9815E+02	0.577	
LA132M LA145F	2.430E+01 M 2.420E+01 S	1.2731E+03	4.9100E+02	2.593	
LAI45F	4.420E+01 S	4.1100E+03	3.3925E+03	1.211	
CE135M	2.000E+01 S	4.4580E+02	7.0800E+02	0.630	j
CE137M	1.433E+00 J	2.6382E+02	5.1215E+02	0.515	i
CE141F	3.250E+01 J	5.8000E+02	4.6099E+02	1.258	
CE144F	2.849E+02 J	3.1732E+02	2.2550E+02	1.407	
CE146F	1.420E+01 M	1.0800E+03	7.6500E+02	1.412	
PR143F PR144M	1.358E+01 J 7.200E+00 M	9.3530E+02 6.1127E+01	7.0906E+02 1.1395E+02	1.319 0.536	
ND152F	1.140E+01 M	1.1500E+03	9.5424E+02	1.205	
PM139M	1.800E-01 S	1.8870E+02	3.1435E+02	0.600	1
PM147F	2.625E+00 A	2.2470E+02	1.3950E+02	1.611	
PM149F	2.212E+00 J	1.0724E+03	8.2488E+02	1.300	
SM139M	1.070E+01 S	7.9964E+02	6.0950E+02	1.312	I
SM143N	3.000E-02 S	2.7950E+03	2.0093E+03	1.391	I
SM151F	8.879E+01 A	7.6300E+01	5.7238E+01	1.333	I
SM153F	1.946E+00 J	8.1700E+02	6.6799E+02	1.223	I
SM153M	1.060E-02 S	9.8400E+01	3.3400E+01	2.946	I
SM156F	9.400E+00 H	7.3500E+02	5.7732E+02	1.273	I
SM157F	8.067E+00 M	2.6000E+03	5.5900E+02	4.651	į
SM158F	5.517E+00 M	1.8100E+03	1.4087E+03	1.285	
EU150M	1.262E+01 H	1.1504E+03	8.9414E+02	1.287	į
EU152M	9.320E+00 H	1.8839E+03	1.4293E+03	1.318	ŀ
EU152N	1.600E+00 H	1.4780E+02	2.3687E+02	0.624	ŀ
EU154M	4.630E+01 M	1.5700E+02	2.6317E+02	0.597	ŀ
EU155F	4.960E+00 A	2.4660E+02	2.0167E+02	1.223	ł
EU157F	1.518E+01 H	1.3630E+03	3.3205E+02	4.105	
GD159F	1.856E+01 H	9.7470E+02	7.5320E+02	1.294	
GD164F	3.180E+01 S	2.5100E+03	3.4848E+03	0.720	
TB144M	4.250E+00 S	3.4569E+03	6.6230E+02	5.220	
TB151M	2.500E+01 \$	2.6892E+02	8.0700E+01	3.332	I
TB152M	4.300E+00 M	1.3141E+03	1.0425E+03	1.261	I
TB156N	1.019E+00 J	4.9600E+01	6.2255E+01	0.797	
TB158M	1.050E+01 S	1.1000E+02	2.0950E+02	0.525	I
TB161F	6.910E+00 J	5.9050E+02	4.7187E+02	1.251	
TB164F	3.000E+00 M	3.8600E+03	2.4975E+03	1.546	
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DY157M	2.020E-02 S	1.9950E+02	3.1025E+02	0.643
DY165F	2.334E+00 H	1.2851E+03	1.0302E+03	1.247
DY165M	1.258E+00 M	1.3900E+02	2.5635E+02	0.542
DY166F	3.400E+00 J	4.8100E+02	3.9043E+02	1.232
DY168F	8.500E+00 M	1.7600E+03	1.2766E+03	1.379
HO158M	2.700E+01 M	6.7300E+01	1.2500E-01	538.400
но159м	8.300E+00 S	2.0590E+02	3.3310E+02	0.618
HO160M	5.019E+00 H	1.2101E+03	1.3220E+04	0.092
H0161M	6.730E+00 S	2.1115E+02	9.6100E+01	2.197
H0162M	1.117E+00 H	8.9743E+02	5.9350E+02	1.512
H0164M	3.750E+01 M	1.4000E+02	2.2405E+02	0.625
HO170M	4.300E+01 S	4.0000E+03	5.7426E+03	0.697
ER153F	3.710E+01 S	4.5904E+03	2.5410E+03	1.807
ER167M	2.280E+00 S	2.0780E+02	3.1973E+02	0.650
ER169F	9.300E+00 J	3.5220E+02	2.3143E+02	1.522
TM162M	2.430E+01 S	1.0538E+03	4.8000E+02	2.196
TM170F	1.286E+02 J	9.6705E+02	7.4548E+02	1.297
TM171F	1.922E+00 A	9.6500E+01	5.7774E+01	1.670
YB155F	1.710E+00 S	5.4424E+03	4.4800E+03	1.215
YB169M	4.600E+01 S	2.4200E+01	5.4450E+01	0.444
YB175F	4.190E+00 J	4.6770E+02	3.3318E+02	1.404
YB177F	1.889E+00 H	1.3930E+03	1.1310E+03	1.232
YB177M	6.410E+00 S	3.3150E+02	5.4990E+02	0.603
YB178F	1.233E+00 H	6.3000E+02	1.0891E+03	0.578
YB179F	8.167E+00 M	2.3100E+03	3.3225E+03	0.695
LU155F	7.000E-02 S	6.2111E+03	4.5800E+03	1.356
LU156F	5.000E-01 S	6.7870E+03	4.8710E+03	1.393
LU169M	2.667E+00 M	2.9000E+01	5.0470E+01	0.575
LU170M	6.700E-01 S	9.3000E+01	1.7505E+02	0.531
LU171M	1.317E+00 M	7.1300E+01	1.4918E+02	0.478
LU172M	3.667E+00 M	4.1860E+01	7.7480E+01	0.540
LU174M	1.420E+02 J	1.7982E+02	3.0435E+02	0.591
LU176M	3.681E+00 H 6.709E+00 J	1.3125E+03	1.0831E+03	1.212
LU177F LU179F	4.589E+00 H	4.9710E+02 1.3500E+03	3.6563E+02 1.0650E+03	1.360 1.268
LU181F	3.500E+00 M	1.9700E+03	7.6025E+02	2.591
LU182F	2.000E+00 M	4.0300E+03	2.4178E+03	1.667
HF177N	5.133E+01 M	2.7400E+03	1.7090E+03	1.603
HF179M HF180M	1.867E+01 S 5.500E+00 H	3.7507E+02 1.1416E+03	5.0925E+02 2.4633E+03	0.737 0.463
Th 1 5 7 F	E 300E-V3 G	6 07000402	4 01000:03	1 421
TA157F TA182M	5.300E-03 S 2.830E-01 S	6.9780E+03 1.6500E+01	4.9100E+03 3.5218E+01	1.421 0.469
TA182N	1.584E+01 M	5.0320E+01	8.0454E+02	0.409
_W161F	4.100E-01 S	6.4000E+03	4.8600E+03	1.317
_W179M	6.400E+00 M	2.2449E+02	3.7640E+02	0.596
_W183M	5.200E+00 S	3.0949E+02	5.0535E+02	0.612
_W185F	7.510E+01 J	4.3240E+02	2.8580E+02	1.513
_W185M	1.670E+00 M	1.9740E+02	4.0873E+02	0.483
_W188F	6.944E+01 J	3.4900E+02	2.2599E+02	1.544
RE163F	2.600E-01 S	7.0492E+03	4.9396E+03	1.427
RE186F	3.777E+00 J	1.0407E+03	7.7868E+02	1.336
	1.998E+05 A	1.5000E+02	2.1345E+02	0.703
RE186M				
RE186M RE187F	5.000E+10 A	2.0000E+00	1.4850E+00	1.347
RE187F RE188M	1.860E+01 M	1.7200E+02	2.5850E+02	0.665
RE187F				

PERIODE Q ETOT Q/ETOT OS166F 1.800E-01 S 6.1587E+03 4.4100E+03 1.397 OS167F 8.300E-01 S 6.6829E+03 3.9118E+03 1.708 OS189M 4.806E+00 H 3.0810E+01 5.6595E+01 0.544 OS191F 1.541E+01 J 3.1270E+02 2.3125E+02 1.352 OS191M 1.310E+01 H 7.4381E+01 1.4790E+02 0.503 OS193F 1.271E+00 J 1.1320E+03 9.1310E+02 1.240 OS194F 5.993E+00 A 9.7000E+01 7.5049E+01 1.292 OS196F 3.490E+01 M 1.1600E+03 6.4736E+02 1.792 IR190M 1.200E+00 H 2.6300E+01 4.1730E+01 0.630 IR191M 4.940E+00 S 1.7128E+02 2.3125E+02 0.741 IR192M 1.440E+00 M 5.8248E+01 1.3084E+02 0.445 IR193M 1.060E+01 J 8.0270E+01 1.6734E+02 0.480 IR195F 2.500E+00 H 1.1180E+03 9.1300E+02 1.225 PT173F 3.420E-01 S 6.6336E+03 9.1300E+02 1.225 PT175F 2.520E+00 S 6.6605E+03 2.5150E+03 2.648 PT193M 4.329E+00 J 1.4978E+02 2.9255E+02 0.512 PT195M 4.020E+00 J 2.5929E+02 4.5625E+02 0.568 PT197F 1.831E+01 H 7.1900E+02 5.9005E+02 1.219 PT197M 1.572E+00 H 4.2333E+02 7.9175E+02 0.535
OS166F
OS189M 4.806E+00 H 3.0810E+01 5.6595E+01 0.544 OS191F 1.541E+01 J 3.1270E+02 2.3125E+02 1.352 OS191M 1.310E+01 H 7.4381E+01 1.4790E+02 0.503 OS193F 1.271E+00 J 1.1320E+03 9.1310E+02 1.240 OS194F 5.993E+00 A 9.7000E+01 7.5049E+01 1.292 OS196F 3.490E+01 M 1.1600E+03 6.4736E+02 1.792 IR190M 1.200E+00 H 2.6300E+01 4.1730E+01 0.630 IR191M 4.940E+00 S 1.7128E+02 2.3125E+02 0.741 IR192M 1.440E+00 M 5.8248E+01 1.3084E+02 0.445 IR193M 1.060E+01 J 8.0270E+01 1.6734E+02 0.480 IR195F 2.500E+00 H 1.1180E+03 9.1300E+02 1.225 PT173F 3.420E-01 S 6.6336E+03 5.3400E+03 1.242 PT175F 2.520E+00 S 6.6605E+03 2.5150E+03 2.648 PT193M 4.329E+00 J 1.4978E+02 2.9255E+02 0.512 PT195M 4.020E+00 J 2.5929E+02 4.5625E+02 0.568 PT197F 1.831E+01 H 7.1900E+02 5.9005E+02 1.219
OS191M 1.310E+01 H 7.4381E+01 1.4790E+02 0.503 OS193F 1.271E+00 J 1.1320E+03 9.1310E+02 1.240 OS194F 5.993E+00 A 9.7000E+01 7.5049E+01 1.292 OS196F 3.490E+01 M 1.1600E+03 6.4736E+02 1.792 IR190M 1.200E+00 H 2.6300E+01 4.1730E+01 0.630 IR191M 4.940E+00 S 1.7128E+02 2.3125E+02 0.741 IR192M 1.440E+00 M 5.8248E+01 1.3084E+02 0.445 IR193M 1.060E+01 J 8.0270E+01 1.6734E+02 0.445 IR193M 1.060E+01 J 8.0270E+01 1.6734E+02 0.480 IR195F 2.500E+00 H 1.1180E+03 9.1300E+02 1.225 PT173F 3.420E-01 S 6.6336E+03 5.3400E+03 1.242 PT175F 2.520E+00 S 6.6605E+03 2.5150E+03 2.648 PT193M 4.329E+00 J 1.4978E+02 2.9255E+02 0.512 PT195M 4.020E+00 J 2.5929E+02 4.5625E+02 0.568 PT197F 1.831E+01 H 7.1900E+02 5.9005E+02 1.219
OS193F 1.271E+00 J 1.1320E+03 9.1310E+02 1.240 OS194F 5.993E+00 A 9.7000E+01 7.5049E+01 1.292 OS196F 3.490E+01 M 1.1600E+03 6.4736E+02 1.792 IR190M 1.200E+00 H 2.6300E+01 4.1730E+01 0.630 IR191M 4.940E+00 S 1.7128E+02 2.3125E+02 0.741 IR192M 1.440E+00 M 5.8248E+01 1.3084E+02 0.445 IR193M 1.060E+01 J 8.0270E+01 1.6734E+02 0.480 IR195F 2.500E+00 H 1.1180E+03 9.1300E+02 1.225 PT173F 3.420E-01 S 6.6336E+03 5.3400E+03 1.242 PT175F 2.520E+00 S 6.6605E+03 2.5150E+03 2.648 PT193M 4.329E+00 J 1.4978E+02 2.9255E+02 0.512 PT195M 4.020E+00 J 2.5929E+02 4.5625E+02 0.568 PT197F 1.831E+01 H 7.1900E+02 5.9005E+02 1.219
OS196F 3.490E+01 M 1.1600E+03 6.4736E+02 1.792 IR190M 1.200E+00 H 2.6300E+01 4.1730E+01 0.630 IR191M 4.940E+00 S 1.7128E+02 2.3125E+02 0.741 IR192M 1.440E+00 M 5.8248E+01 1.3084E+02 0.445 IR193M 1.060E+01 J 8.0270E+01 1.6734E+02 0.480 IR195F 2.500E+00 H 1.1180E+03 9.1300E+02 1.225 PT173F 3.420E-01 S 6.6336E+03 5.3400E+03 1.242 PT175F 2.520E+00 S 6.6605E+03 2.5150E+03 2.648 PT193M 4.329E+00 J 1.4978E+02 2.9255E+02 0.512 PT195M 4.020E+00 J 2.5929E+02 4.5625E+02 0.568 PT197F 1.831E+01 H 7.1900E+02 5.9005E+02 1.219
TR190M
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TR192M 1.440E+00 M 5.8248E+01 1.3084E+02 0.445 IR193M 1.060E+01 J 8.0270E+01 1.6734E+02 0.480 IR195F 2.500E+00 H 1.1180E+03 9.1300E+02 1.225 PT173F 3.420E-01 S 6.6336E+03 5.3400E+03 1.242 PT175F 2.520E+00 S 6.6605E+03 2.5150E+03 2.648 PT193M 4.329E+00 J 1.4978E+02 2.9255E+02 0.512 PT195M 4.020E+00 J 2.5929E+02 4.5625E+02 0.568 PT197F 1.831E+01 H 7.1900E+02 5.9005E+02 1.219
IR193M 1.060E+01 J 8.0270E+01 1.6734E+02 0.480 IR195F 2.500E+00 H 1.1180E+03 9.1300E+02 1.225 PT173F 3.420E-01 S 6.6336E+03 5.3400E+03 1.242 PT175F 2.520E+00 S 6.6605E+03 2.5150E+03 2.648 PT193M 4.329E+00 J 1.4978E+02 2.9255E+02 0.512 PT195M 4.020E+00 J 2.5929E+02 4.5625E+02 0.568 PT197F 1.831E+01 H 7.1900E+02 5.9005E+02 1.219
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PT195M 4.020E+00 J 2.5929E+02 4.5625E+02 0.568 PT197F 1.831E+01 H 7.1900E+02 5.9005E+02 1.219
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AU178F 2.600E+00 S 7.1130E+03 4.2420E+02 16.768 AU194M 6.000E-01 S 1.0740E+02 3.2000E+00 33.562
AU194N 4.200E-01 S 4.7580E+02 1.2100E+02 3.932
AU195M 3.050E+01 S 3.1859E+02 4.5050E+02 0.707 AU196M 8.100E+00 S 8.4660E+01 1.7615E+02 0.481
AU196N 9.694E+00 H 5.9566E+02 1.0725E+03 0.555
AU197M 7.800E+00 S 4.0920E+02 6.1680E+02 0.663
AU198M 2.300E+00 J 8.1200E+02 1.2787E+03 0.635 AU201F 2.600E+01 M 1.2750E+03 9.8800E+02 1.290
AU203F 5.300E+01 S 2.1400E+03 1.6740E+03 1.278
HG179F 1.090E+00 S 7.1079E+03 3.4070E+03 2.086
HG195M 1.736E+00 J 8.7403E+02 5.0325E+02 1.737 HG197M 2.380E+01 H 3.4083E+02 6.0494E+02 0.563
HG199M 4.260E+01 M 5.3250E+02 9.0079E+02 0.591
HG205F 5.200E+00 M 1.5380E+03 1.2112E+03 1.270
HG206F 8.150E+00 M 1.3070E+03 1.0589E+03 1.234 HG207F 2.900E+00 M 4.7800E+03 6.3050E+03 0.758
TL187M 1.560E+01 S 3.4031E+02 8.2820E+00 41.090
TL193M 2.117E+00 M 1.2745E+03 2.3477E+02 5.429
TL195M 3.600E+00 S 4.8260E+02 6.2325E+02 0.774 TL197M 5.400E-01 S 6.0830E+02 8.1525E+02 0.746
TL204F 3.780E+00 A 7.5283E+02 1.3942E+00 539.984
TL206F 4.200E+00 M 1.5335E+03 1.2096E+03 1.268 TL207F 4.770E+00 M 1.4220E+03 1.1089E+03 1.282
TL210F 1.300E+00 M 5.4866E+03 4.5016E+03 1.219
PB201M 1.020E+00 M 6.2810E+02 9.5775E+02 0.656
PB203N 4.800E-01 S 2.9501E+03 2.3249E+03 1.269
PB209F 3.253E+00 H 6.4460E+02 4.4402E+02 1.452 PB210F 2.232E+01 A 6.3000E+01 9.4682E+01 0.665
PB211F 3.610E+01 M 1.3730E+03 1.0789E+03 1.273
BI198M 7.700E+00 S 2.4850E+02 4.1750E+02 0.595
BI210F 5.013E+00 J 1.1615E+03 8.7315E+02 1.330
BI213F 4.559E+01 M 1.5303E+03 1.2577E+03 1.217

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		PERIODE	Q	ETOT	Q/ETOT	
1	PO195F	4.500E+00 S	6.7628E+03	5.6278E+03	1.202	
	PO197M	2.600E+01 S	6.5821E+03	5.4710E+03	1.203	,
ſ	PO198F	1.760E+00 M	5.6267E+03	4.4150E+03	1.274	j
	PO203M PO207M	1.200E+00 M 2.790E+00 S	8.3166E+02 1.3830E+03	2.1310E+03 1.7360E+03	0.390 0.797	
1						Ι,
1	AT201F	1.483E+00 M	6.2785E+03	4.8992E+03	1.282	[
	RN201F	7.000E+00 S	6.8016E+03	5.4500E+03	1.248	
1	RN203F	4.500E+01 S	6.4355E+03	4.3550E+03	1.478)
-1	RN203M	2.800E+01 S	6.8762E+03	5.3420E+03	1.287	
ĺ	RN204F	1.240E+00 M	5.6865E+03	4.4490E+03	1.278	
Ţ	FR204F	2.100E+00 S	7.4724E+03	5.7180E+03	1.307	}
1	FR223F	2.180E+01 M	1.1479E+03	9.1229E+02	1.258	
ı	RA225F	1.480E+01 J	3.6200E+02	2.5638E+02	1,412	l
1	RA227F	4.220E+01 M	1.3350E+03	1.0946E+03	1.220	ľ
ı						i
-1	TH233F	2.230E+01 M	1.2450E+03	9.6490E+02	1.290	Į
1	TH234F	2.410E+01 J	1.9850E+02	1.5025E+02	1.321	
ŀ	TH236F	3.710E+01 M	1.0000E+03	8.1345E+02	1.229	
	PA234M	1.170E+00 M	2.2791E+03	1.8589E+03	1.226	
1	PA235F	2.420E+01 M	1.4150E+03	1.0542E+03	1.342	}
	PA236F	9.100E+00 M	2.8982E+03	2.1614E+03	1.341	
ı	PA237F	8.700E+00 M	2.2500E+03	1.8700E+03	1.203	
-[_U235M	2.600E+01 M	7.6000E-02	2.4700E-01	0.308	ì
1	_U239F	2.347E+01 M	1.2629E+03	9.7386E+02	1.297	
1	-	1 2000 01 11		1 01000.03	1 000	
I	NP241F	1.390E+01 M	1.3080E+03	1.0198E+03	1.283)
- 1	PU241F	1.441E+01 A	2.0935E+01	1.1907E+01	1.758	
1	PU243F	4.956E+00 H	5.8200E+02	4.1579E+02	1.400	
ł	AM242F	1.602E+01 H	6.7616E+02	4.2384E+02	1.595	
	AM242M	1.411E+02 A	7.3763E+01	1.2485E+02	0.591	
	AM244M	2.600E+01 M	1.4974E+03	1.1462E+03	1.306	
4	AM245F	2.050E+00 H	8.9600E+02	6.6839E+02	1.341	
- 1	O10 : 0=	1 0000:00 ==	0.00000.00	C #004=:00	1 370	
	CM249F	1.069E+00 H	9.0300E+02	6.5804E+02	1.372	
ı	CM251F	1.680E+01 M	1.4200E+03	1.1203E+03	1.268	Ĭ
	BK248M	2.370E+01 H	8.1500E+02	4.6164E+02	1.765	
ı	BK249F	3.200E+02 J	1.2508E+02	7.4447E+01	1.680	
1	CF239F	4.000E+01 S	7.8000E+03	5.8000E+03	1.345	j
- 1	CF253F	1.781E+01 J	3.0709E+02	1.9994E+02	1.536	
- 1	ES254F	2.755E+02 J	6.6175E+03	1.1894E+04	0.556	İ
- 1	ES256F	2.200E+01 M	1.6690E+03	2.1293E+03	0.784	
J	ES256M	7.600E+00 H	1.6700E+03	9.9551E+02	1.678	
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