

MEMORANDUM 4C-2/27

From: H. Potters

Subject: Comments on TRANS 1001, 1002,
1003, 1004, 3003 and 3005

27th March 1972

a. GENERAL

1. Points marked with a ? are unclear or an error is suspected: please check and correct if necessary, or reformulate.
2. Lines marked with an A contain assumptions we made in order to complete the data in our file (e.g. half-lives, t -values, etc.). Please confirm the correctness of these assumptions.
3. We took over points from other centres as far as still relevant and not exchanged in official EXPOR memos.
4. NNCSC has not until now reacted on several points in memo 4C-3/47, part B. We are particularly curious as to their answers on points 1a, c, 2a and 7a, which are to a certain extent points we also would like to make.
5. In some works especially from NDS we noticed a tendency to randomise the keyword order in the BIB-section (see our memo 4C-2/26, point B.1).
6. In many entries especially from NDS the MS modifier was used without giving the half-lives. In that case we took the half-lives from the Nuklidkarte (Bundesministerium fuer Wissenschaftliche Forschung, Bonn, 3rd edition) in order to be able to enter the data. They should be added in the DATA section (4CM/VII/MIN, point 40. See also our memo 4C-2/26, point C.18).
7. A minor point: multiplication should be noted by * in free text and not by the (often unclear) letter X.
8. Comments on TRANS 1005, 3005, 4003 (and, if received, 1006 and 4002) will follow as soon as the conversion has been done.

B. TRANS 1001

10017 006-013

ANALYSIS

The scattering cross-section is assumed to be constant (not close to a resonance) over the energy region measured (0.07-6.2 eV). This is why the slope does not give the scattering cross-section at 0.0253 eV but a kind of average over this energy region.

Further: the intercept of the line is not $\sigma_{n,\gamma}^0$ (at 2200 m/sec.) but $\sigma_{n,\gamma}^0 * V_0$.

So subwork 006-009 should have the AV modifier in the ISO-QUANT and EN-MIN, EN-MAX in the DATA-table, while for subwork 010-013 the text in ANALYSIS should read V(0)*SIGMA(0) (N,GAMMA) instead of N,GAMMA C/S.

10019 003

?

ANALYSIS

It is not clear whether L = 1 is assumed for the 12.3 keV resonance only or for all resonances.

10030 004

RESID-NUC

Should be: (39-Y-90-M1).

A Half-life is missing (3.2 HR ?).

10031

Half-lives missing

010 A (5.5HR ?)

011 A (50.D ?)

10046 003

007

011

016

024

026

030

ISO-QUANT

A The RED function parameter code assumes an ℓ -value to be given which is missing ($\ell=0?$).

10046

?

Missing data

In comparing entry 10046 with data in NEUDADA we found a preliminary data set from Wynchank, March 1969. The following data were not in 10046 :

Eu¹⁵¹ Resonance energy 0.461 eV

Resonance parameters 63.9 and 65.46 eV

Eu¹⁵³ Resonance energy 0.457 eV

A retrieval from NEUDADA is added as an appendix (A).

Please state whether we have to delete these data or whether they have been forgotten.

10046 002-003 ?

Differences

Another result of the comparison was that the values for the 78.05 eV resonances are maximum values so should be entered under a column headed DATA-MAX. Is this still valid?

C. TRANS 1002

10034 003-064

STANDARD

The modifier RS denotes a ratio; so STANDARD is irrelevant and has to be dropped. If the free text is too important to leave out, enter it under COMMENT. Symptom of compulsorialitis?

10052 012

?

ISO-QUANT

A Very probably RED should be entered in the Function field. We assumed (l=0?).

023

?

COMMON

A This is the only case where COMMON is missing for the ISO-QUANT (...,D). We assumed (l=0?).

10077 001

STANDARD

For spin values STANDARD is irrelevant. Free text can go under COMMENT.

D. TRANS 1003

10100 001

SAMPLE

U(3)O(2).

004

STANDARD

Can be left out.

E. TRANS 1004

10044 001

? SAMPLE

What does "empty at room temperature" mean? I cannot see how to keep these liquids in a flask at room temperature; so the flask is empty at room temperature - a triviality.

Or does it mean that the length is for example 47 IN. at liquid He temperature and 48 IN. at room temperature?

In both cases the exegese breaks down.

If the target out measurement is done at room temperature with an empty flask, please state so.

F. TRANS 3003

30001 }
30002 }
30003 }
30004 }

?

METHOD

Code (PLSED) missing.

ISO-QUANT and DATA

Neutron capture takes place after thermalisation of the neutrons; so enter MXW in the ISO-QUANT; in DATA EN should be EN-DUMMY; unless the author explicitly reduced the data to 2200 m/sec values.

COMMON

STAND-ERR = 0.000 means what?

30006 001

001-002

General

Break up the subwork into two subworks, one containing the thermal value with the MXW modifier in the ISO-QUANT and 0.0253 eV EN-DUMMY in the DATA-section, the second with the rest of the data; drop the FLAG.

30008 001

?

COMMON

*EN-ERR should be *EN-RSL?

ISO-QUANT

Outer parentheses are missing.

004 }
010 }
019 }

?

STATUS

Should it not be (DEP)?

Half-lives missing

002 A (4.4HR?)
 008 A (70.Min?)
 014 A (10.16D?)
 017 A (57.Min?)
 033 A (4.4HR?)

30009 003

DATA

EN-RES should be DATA, and EN-ERR should be DATA-ERR.

30010 001

COMMENT

Cancel (H-F) in line 31.

30012 001

? TITLE

This is a case where TITLE might be useful: where are the Ca-isotopes?

002

ISO-QUANT or DATA

A Half-life missing (2.4D?).

30013 001

? DATA

EN-ERR should be EN-RSL?

004

DATA

On comparison with data already in our file we find that DATA-ERR should be 3.8MB and not 2.8MB.

009

HISTORY

66 should be 62 if the page number is meant.

30014 004 }
 006 }
 009 }
 011 }

? STATUS

Should this be (DEP)?

Half-lives missing

002,004 A (32.Min?)
 006 A (2.4D?)
 007 A (6.5Sec?)
 011 A (50.D?)

30015 001

PAR1-DET

Should be put at subentry level if known, since this is an activation measurement.

Half-lives missing

003	A	(1.57Sec?)
004	A	(10.5Sec?)
005	A	(2.3Sec?)
006	A	(4.3Sec?)
007	A	(18.6Sec?)
008	A	(5.3Sec?)
009	A	(1.6HR?)
010	A	(0.80Sec?)

30016 001

ERR-ANALYSIS

(EN-ERR) should be (EN-RSL).

STANDARD

Should be: (ABSOL) ABSOLUTE.

002

DATA

EN-ERR should be EN-RSL.

30018 001

ISO-QUANT

We are against NNCSC's suggestion of replacing the DRT modifier by PAR because this modifier has the specific meaning of leaving the residual nucleus in a specific level or emitting a specific γ -ray or particle group.

We propose to leave out DRT, as the free text explains fully enough and people have anyway to learn to read comments (see our memo 4C-2/26, point C.10).

If this type of 1/V part data recurs frequently enough, NDS (or we) can consider proposing a specific modifier, e.g. RV, for it. We have codes for things which occur less in EXFOR. We should get rid of codes in EXFOR meaning "anything else".

002

STATUS

Expand (PUBL) (or drop it?).

003

STANDARD

This is not (NONE) but (ABSOL) as in subentry 002.

General

Several keywords have the same information as subentry 002. This information should go in subentry 001 or be repeated in 003: a poor user if he wants the 2200 m/sec. data only.

30019 001

ISO-QUANT

Add RTE modifier because of data units B*RT-EV.

30020 003-008

ANALYSIS

This keyword is missing: it is not compulsory, but for resonance parameters it is useful to include at least a statement as to how the author arrived at his results. Compulsorialitis?

DATA

MEV should be MILLI-EV.

008

DATA

Comparing with other subentries results in the conclusion that the resonance energy should be 21.6 eV instead of 29.7 eV.

30021 001

RESID-NUC

Should have -M1 extension.

?

STATUS

If "data from private communication supersedes all published values", PUBL should be deleted.

?

STANDARD

(ABSOL): what was the role of the Cu and Mg monitors?

30022 001-002

ERR-ANALYS, COMMENT, DATA

EN-ERR should be EN-RSL.

30023

Half-lives missing

004	A	(48.Sec?)
007	A	(57.Min?)
008	A	(6.1Min?)
011	A	(14.6Min?)
014	A	(48.Sec?)
015	A	(57.Min?)
016	A	(14.6Min?)

RESID-NUC

014	}
015	
016	

Both states -G) and -M1) have to be entered separately. Still better would be to leave it out: the information is already in ISO-QUANT (see memo 4C-2/26, point C.23).

30028

Half-lives missing

003	A	(42.Min?)
005	A	(4.2Min?)
007	A	(65.Sec?)

30029 002

STATUS

Should be (DEP).

30030 005

ISO-QUANT

Modifier should be PAR, not RS.

006-015

STANDARD

STANDARD in 001 does not apply to these subentries, where they are irrelevant (Ratio,RS).

011-015

ISO-QUANT

Modifier should be PAR/REL.

30031 001

AUTHOR

2.MILLIGY

PART-DET

Should be DG, not G.

Half-lives missing

011	A	(4.4 Min?)
014	A	(54.Min?)

30032 001

ERR-ANALYS

Where are the statistical errors?

STANDARD

Should be deleted because of REL modifier.

002-009

ISO-QUANT

Add in free text: "Relative to value at 14.71 MeV".

007-009

RESID-NUC

Add -G or -M1 extension.

Half-lives missing

008

A

(100.YR?)

009

A

(8.1HR?)

30033

005

008

010

012

PART-DET

Should be (DG), not (G).

007

011

PART-DET

a. Should be (DG), not (G).

b. The 511 keV γ -line is clearly annihilation radiation and should be coded separately as (AR).

009

013-020

016

PART-DET

See point b. above.

FLAG and DATA

Why a FLAG for only one data point?
Information should go under ANALYSIS with code EXTR.

?

DATA

Comparison with our existing data file gives EN = 15.27 MeV instead of 16.27. Which is correct?

30034 001

STANDARD

Is only valid for subwork 002.

? Is it ABSOLUTE in view of subwork 003?

002

RESID-NUC

Should have -M2 extension (and not -M1 as NNCSC stated: that is the 26 Min isomer). Alternatively drop the RESID-NUC and put free text under ISO-QUANT.

002,003 ?

COMMON/DATA

A EN-RSL at 0.30 MeV in contradiction with each other (assumed 003 to be the correct one).

003

Half-life missing

0.6 Milli sec. taken over from 002.

30038 001

ERR-ANALYS

Expand NOINF.

DATA

EN-RSL should be EN-NRM-RSL, a new code.

001,007

STANDARD(001)/COMMENT(007)

STANDARD does not apply to subentry 007. The value in Compte Rendu at 14.1 MeV should be given. This last value is a valid STANDARD for all subentries. Why not give this in COMMON of subwork 001? The texts in BIB of 001 and 007 need hardly any change then.

30043 001

INSTITUTE

Codes should never be an integral part of a free text sentence.

30045 001

STANDARD

What is "ARMITAGE N158"?

Please expand also JNE in next line.

30046 001

DATA

What does STAND-ERR = 0.000 mean?

EN-DUMMY should have the value 0.0253 eV.

002-005

ISO-QUANT

In view of N-SOURCE and EN-DUMMY (in 001) the MXW modifier should be added. If NDS feels there is no difference between "thermal value" and 2200 m/sec. value, EN-DUMMY should be EN and even the addition "THERMAL VALUE" in free text after ISO-QUANT should be dropped. What is given under N-SOURCE should then be sufficient.

006

NUC-QUANT

EN-DUMMY in 001 cannot apply to spontaneous fission.

? Should it not have the PR modifier as the others? It is measured with the same technique as described in 001.

30047 001

DATA

What does STAND-ERR = 0.000 mean?

30048 001

? STATUS

Should it not be (PRIV)?

ANALYSIS

This information should go under COMMENT.

002

DATA/COMMENT

Should be :
E-LVL E-LVL
MEV MEV
0.
3.08
3.68 3.85
Adapt COMMENT.

002-005

ISO-QUANT

PAR modifier missing.

30049 002

ANALYSIS

This information should go under COMMENT.

30050 002,003

ANALYSIS

This information should go under COMMENT.

30051 001

REFERENCE

What does CFD mean?

COMMENT

What does "Previous experimental values quoted in the literature are also given" mean? Which are these values?

BIB

Lines 15, 31 and 43: expand journal codes.

DATA

STAND and STAND-ERR should be STAND₁ and STAND₁-ERR because of subentry 10.

Half-lives missing

002	A	(64.Sec?)
005	A	(64.Sec?)
008	A	(96.Min?)
009	A	(9.3Hr?)
010	A	(10.5Sec?)
014	A	(41.8D?)
018	A	(41.8D?)

003 ? STATUS

Should be (DEP)?

? COMMENT

"Energy of gamma-ray detected = 1.30 MeV" should go to subentry 004?

001,006

PART-DET(001)/COMMENT(006)

The "gamma-ray detected" with energy 0.511 (MeV missing) is clearly annihilation radiation. As a consequence PART-DET (DG) is not valid for this subentry: it should be (AR).

30052 001

REFERENCE

Data field should be 6703.

? STATUS

It is not clear what is private communication and what is taken from the reference, as the private communication is a year after the date of the reference.

? METHOD

Code should be (ASSOP)?

? DETECTOR

Was (SURBA) the He³ detector?

BIB

Lines 10 and 21: X instead of #.

COMMENT

The information should go under ERR-ANALYS.

30069

Half-lives missing

003	A	(0.81Sec?)
004	A	(7.5Sec?)
005	A	(0.80Sec?)
006	A	(6.Sec?)

003,005

ISO-QUANT

These are examples of what we meant in our memo 4C-2/26, point C.2.

30088 005

Half-life missing

A (48Sec?)

006

? STATUS

Should it be (DEP)?

G. TRANS 3004

30011 001

COMMON

EN-ERR should be EN-RSL.

30039 001

ANALYSIS

Coded information (SHAPE,AREA) missing.

30063 001

FACILITY

Facility missing. Can probably be dropped in view of what is said under N-SOURCE.

002-012

ISO-QUANT

Half-lives could better go into the DATA-table.

005

ISO-QUANT

Modifier should be MS.

COMMENT

Line 9: Gamma-decay misspelt.

RESID-NUC

Two codes should be given with expansions -M1 and -M2.

30065 002

DATA

RATIO and RATIO-ERR instead of DATA and DATA-ERR.

EN 2.50E-2 should be 2.53E-2.

001,002

General

The table should be broken up as in entry 30006..

Half-life missing

002 A

(4.4Hr?)

30066 001

N-SOURCE

Coded information missing for three of the source reactions.

Half-lives missing

002 A
005 A

(4.4Min?)
(4.4Min?)

005

DATA

What does the FLAG mean?

? Missing data

Comparison with data in NEUDADA showed a thermal (n, γ) cross-section for Rh¹⁰³ not in EXFOR. Should we delete it or is it forgotten? (See retrieve Appendix A).

30070 002

COMMENT

Information already given under STANDARD (in 001), where it should be.

30071 002

STANDARD

Should be (ABSOL) ABSOLUTE.

The information (please expand CAL to CALIBRATION) should go under COMMENT, dropping the code.

003

ISO-QUANT

Should be ((21-SC-45,EL)+(21-SC-45,INL,,PAR)) followed by the information in COMMENT. In a COMMON section E-LVL = 0 and 12 keV has to be entered.

004-007 ?

ISO-QUANT

If the COMMENT under 003 is valid for these subworks(see above) then the same remark as for 003 applies.

STANDARD

The value is a Ratio (RS-modifier), so STANDARD is irrelevant and has to be dropped.

METHOD

This information is already under ANALYSIS (where it belongs).

The true information which should go there is (TOF) TIME-OF-FLIGHT.

COMMON

Is missing: should give coefficient number.

30074 002-007

STATUS

Should be (PRIV).

STANDARD

Please put the reference for pointing to the standard in order to avoid the poor user's being obliged to try to find out what the hell is ENTRY 30067.002.

007

ISO-QUANT

Drop the REL modifier as data are given in MB and the standard is just 1.0MB.

ISO-QUANT, STANDARD

Should be subentry .017 and not .018. The ISO-QUANT free text is already in STANDARD (where it belongs).

30075 001

STANDARD

Is not ABSOLUTE: leave out as not pertinent.

002

STATUS

Should be (DEP), from next two subentries.

002-004

DATA

NO-DIM should be ARB-UNITS.

005-007

BIB

Use * instead of X for multiplication.

005

NUC-QUANT, DATA, RESID-NUC, MISC-COL

NUC-QUANT combination is unclear and no number in the whole subentry corresponds with this sum.

The DATA table does not contain any DATA or RATIO heading.

RESID-NUC keyword is inappropriate for NUC-QUANT as is free text under NUC-QUANT.

MISC-COL cannot define data instead of ISO-QUANT.

006,007

General

Probably two different regions of the slope taken: give the E-boundaries if known.

005-007

General

Suggestion: delete 005; give if appropriate the numbers from the DATA section of 005 in the BIB-sections of 006 and 007.

008-010

ISO-QUANT

Should have the REL modifier (ARB-UNITS).

30077 002-020

ISO-QUANT

Free text should preferably go into the DATA-section.

30079 002-042

ISO-QUANT

Free text should preferably go into the DATA-section.

001

CORRECTION

Information should be under INC-SPECT.

005 }
012 }
015 }
019 }

RESID-NUC

-M1 extension

006 }
013 }
016 }
020 }

RESID-NUC

-G extension

030

FLAG, DATA

Should be COMMENT: there is only one data line.

30086 001

FACILITY

Free text missing: can be deleted as not pertinent in view of N-SOURCE.

002

?

ISO-QUANT

If free text is correct, add MS modifier.

002 }
004 }
006 }
008 }

RESID-NUC

Needs -M1 extension (002 probably).

003 }
005 }
007 }
009 }

RESID-NUC

Needs -G extension.

30087 001

FACILITY, N-SOURCE, METHOD, STANDARD

Can be deleted as not pertinent. Free text of METHOD, and possibly STANDARD, belongs under ANALYSIS.

STATUS

Should not be (DEP) as NNCSC suggested because the derivation is not a simple one.

010

BIB

Keyword errors: ISO-QUANT should be NUC-
QUANT, next line should be COMMENT.

30090 001

ERR-ANALYS

Wrong code (NONE).

002-003

FLAG/DATA

Why use FLAG for one data point?

?

DATA

Is energy value correct? The title gives
14MeV, as does the (d,t) reaction. In fact,
is the energy given the threshold (looked up by
the compiler) plus 3 MeV. Should this not be
5 MeV?

30091 001

?

STANDARD

Is STANDARD relevant here? and should the
information not go under another keyword?
Compulsorialitis?

30094 001

ANALYSIS

Coded information (AREA, SHAPE) missing.

30095 001

METHOD

Also (SEPEX).

003

STATUS

Should be (DEP): COMMENT free text should go
under STATUS or ANALYSIS.

004

STANDARD

The standard given in 001 does not apply to
this subentry (ratio).

Half-lives missing

003

A

(65.Sec?)

004

A

(65.Sec?)

30098 001

COMMON

EN-ERR should be EN-RSL.

002-005 ISO-QUANT
Free text should preferably go into DATA.

30100 005 DATA
Line 15 should have DATA under heading DATA-MAX.
Half-lives missing

002 A (32.Min?)
004 A (0.95 Sec?)

30102 002 DATA
Line 20 should have DATA under heading DATA-MAX.

002,003 ? DATA
A blank under ANG-CM/AMIN means 0. (at 0. and 180. degrees). Should this not be 0.?

30109 002 ? DATA
See 30102 002,003.

30114 002-010 DATA
Energy entries with no data attached are not legal data entries. Information for resolution may be given under INC-SPECT.
BIB
Example of randomising keyword sequence (see memo 4C-2/26, point B.1).

006 ? SAMPLE
Expansion missing. We ask, however, whether we should not change the rule and leave out the expansion if it is completely identical with the code.

011-018 ? STANDARD
What does ABSOLUTE mean here? Should it not be left out as not pertinent to the data? If not: free text is missing.

014 STATUS
(PRIV) should clearly be (PUBL).

30116 001 FACILITY, N-SOURCE
 Should have code (NONE).
 Half-lives missing
 002 A (1.66 Hr?)
 003 A (57.Min?)
 003 REFERENCE
 Type field should be P.

30117 001 REFERENCE
 Type field should be P.
 FACILITY, N-SOURCE
 Should have code (NONE).
 ? METHOD
 Should have code (DIDET)?

30120 001 ISO-QUANT
 Does not appear in the LEXFOR light nuclei
 reactions list.
 METHOD
 Photos misspelt.
 PART-DET
 Free text incomplete.

30122 001 ? STANDARD
 Code (ABSOL) seems to be in contradiction
 with free text.

In some entries the REFERENCE date contains the day. We propose to legitimise this (memo 4C-2/25, point 2).

Distribution

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 S. Pearlstein (5 copies)
 J. Schmidt (5 copies)
 CCDN

Appendix A PAGE 1

INDEX (+COMMENTS) TO REQUEST OF DATA DERIVED FROM CCDN FILES

NUCLIDE	QUANTITY	ENERGY (MEV)		REFERENCE	DATE	LAB S STAN	METHOD	DATA POINTS	REQ ACC NUMBER
		MIN	MAX						
Rh103 $\sigma(n,\gamma)$		2.530E-08	2.530E-08	NP 41 316	63	DEB	Ratio Activation	1	U00001
<p><i>FILES</i> INVESTIGATION OF THE ENERGY DEPENDENCE OF ISOTERIC RATIOS (J. BACSO, J. CSIKAI, A. DAROCZY) (3HUNDEB) (62) (J, AKS, 5, (3-4), 6312) DETAILS IN RUSSIAN, TABLES (J, NP, 41, 316, 6303) EXPERIMENTAL DESCRIPTION, NO DATA (METAL) INDIUM FOIL OF 153 MG/SQCM THICK (STANS) STANDARD UO2SO4 SOURCE USED TO CALIBRATE DETECTOR (ACCEL) 800 KEV CASCADE GENERATOR AND 100KEV NEUTRON GENERATOR (SB-BE) SB-BE SOURCE IN SCATTERING FREE ENVIRONMENT PROVIDED 24 KEV NEUTRONS (D-D) H-2(D,N)HE-3 REACTION PRODUCED NEUTRONS OF 3.1 MEV (D-T) H-3(D,N)HE-4 REACTION PRODUCED 14.67MEV NEUTRONS (ACTIV) ACTIVATION (GMC, LONGC) MICA END-RINDOW GM COUNTER, SENSITIVITY FOR LOW ENERGY GAMMAS LESS THAN 0.4 PERCENT. LONG COUNTER CALIBRATED WITH PO-BE SOURCE WAS USED AS FLUX MONITOR (B-) DECAY BETA PART-DET NO INFORMATION ERR-ANALYS (PUBL) DATA FROM ATOMKI KOZL. SUPPL. 5, (3-4) 12/63 STATUS (710106T) PREVIOUSLY DASTAR-00167 HISTORY (670727G) COMPILED INTO DASTAR</p>									
Eu151	Resonance Energy	4.610E-07	4.610E-07	WYNCHANK 69	Mar69	COL	WYNCHANK. PRELIMINARY. ENERGY UNCERTAINTY IS LESS THAN 0.01 EV BELOW 50 EV, AND VARIES SMOOTHLY FROM 0.01 TO 0.2 EV ABOVE 50 EV.	1	U00002
Eu151	f	6.390E-05	6.546E-05	WYNCHANK 69	Mar69	COL	AreaAnalysis	2	U00003
Eu151	2g*f(n)	6.390E-05	6.546E-05	WYNCHANK 69	Mar69	COL	AreaAnalysis	2	U00004
Eu151	2g*f ^o (n, l=0)	6.390E-05	6.546E-05	WYNCHANK 69	Mar69	COL	AreaAnalysis	2	U00005
Eu153	Resonance Energy	4.570E-07	4.570E-07	WYNCHANK 69	Mar69	COL	WYNCHANK. PRELIMINARY. ENERGY UNCERTAINTY IS LESS THAN 0.01 EV BELOW 50 EV, AND VARIES SMOOTHLY FROM 0.01 TO 0.2 EV ABOVE 50EV.	1	U00006

New comment attached to old data

720321 REQUEST OF DATA FROM CCDN FILES

30066

10046

Code	Energy (MEV)	Thermal	Ratio	Activation	$\sigma(n,\gamma)$	Resonance Energy	ERROR (ABS) *
045 103	=	NP 41 316 J 63 DEB					
U00001	25.3	-9 THERMAL			11.53	+0	
063 151	=	WYNCHANK 69 W 69C COL					
U00002	461.	-9			0.461	+0	
063 151	=	WYNCHANK 69 W 69C COL		Area Analysis	F		
U00003	63.9	-6			100.	+0	14.
	65.46	-6			103.	+0	10.
063 151	=	WYNCHANK 69 W 69C COL		Area Analysis	2g* Γ (n)		
U00004	63.9	-6			4.	+0	0.8
	65.46	-6			2.5	+0	0.4
063 151	=	WYNCHANK 69 W 69C COL		Area Analysis	2g* Γ ⁰ (n, l=0)		
U00005	63.9	-6			0.5	+0	
	65.46	-6			0.308	+0	
063 153	=	WYNCHANK 69 W 69C COL					
U00006	457.	-9			0.457	+0	

Resonance Energy

ERROR (ABS) *

ERROR (ABS) *