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Implementation of New Evaluations into the IRDFF library

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Introduction

New evaluations for the dosimetry reactions ^{54}Fe(n,p), ^{115}In(n,g)^{116m}In ^{93}Nb(n,g) and ^{58}Ni(n,2n) were produced by K. Zolotarev for inclusion in a new release of the IRDFF dosimetry library. These are single-reaction evaluations. However, the ENDF-6 format does not allow multiple entries for the same material, therefore the evaluated data for all reactions of the same material must be merged into the same material file. The editing of the comments in the file cannot be automatized, therefore the whole editing process was done manually to produce an IRDFF_P0 starter file, which would conform to the ENDF-6 format rules. Post-processing of this file was done to produce the final data file IRDFF_P in the form as needed for the dosimetry library. The details of initial editing are given for each reaction in turn, followed by the description of the final processing steps to produce the dosimetry library. The main part of the processing operations refers to the extension of the energy range to 60 MeV using data from the TENDL-2013 library.

Initial editing

Fe-54

The editing of the file was rather straightforward. The obsolete comment related to the original evaluation were replaced with the new text and the length of the comment section was corrected accordingly. The data blocks of files MF3 and MF33 were replaced with the new data.

In-115

The editing of the file was more complex because the new evaluation includes resonance parameters and branching ratios for isomer production. The comment section was edited to reflect the contents and the number of entries for the comments and the dictionary was corrected. The total and elastic cross sections above the resonance range were added, adopting the data from the ENDF/B-VII.1 library. These are not dosimetry reactions and were added for completeness only.

Nb-93

The editing of the file was similar to the one for ^{115}In(n,g). The comment section was edited to reflect the contents and the number of entries for the comments and the dictionary was corrected.

The capture product has a very long half-life and the reaction is used as a cumulative monitor of the neutron fluence. However, for neutron activation analysis (NAA) the short-lived metastable isomer production is important. The branching ratio is not given in any of the evaluated data libraries (except TENDL-2013, which is based on model calculations), neither is it present in the Atlas of the Resonance Parameters by Mughabghab. The thermal cross section for the production of the isomer (0.863 barns) can be derived from the ko factor in the database for NAA (JRNC, Art., v.133 No.1 (1989) p.43-130), assuming the gamma-emission probability of 0.5 %. The branching ratio in TENDL-2013 gives a cross section for the isomer production at thermal neutron energies that is significantly lower, therefore File

MF 9 was constructed with a constant branching ratio that reproduces the required cross section for the isomer production. This additional information is provided for convenience and is not classified as an official dosimetry reaction, since it does not have proper uncertainty information.

Ni-58

The editing of the file was again rather straightforward. The comments related to the original evaluation were replaced with the new text and the length of the comment section was corrected accordingly. The data blocks of files MF3 and MF33 were replaced with the new data. In two places the MAT number in the comment section was corrected.

Processing for dosimetry

The starter file produced as described above was checked with the CHECKR code to make sure it conformed to the ENDF-6 format specification. The only message noted related to the lack of MF10/MT102 for ^{115}In because the data are contained in MF9/MT102, but this is a deficiency of the CHECKR code and not an error in the data. The starter file was then processed to produce a pointwise ENDF file and the energy range was extended to 60 MeV, where needed. A batch script for Windows was used for the purpose, with calls to the following auxiliary codes from the PrePro-2012 suite, the ENDVER package and local codes. The codes are available on request from the author.

GETZAM – Retrieve a material from an ENDF library.

ENDTAB – Extract specified cross sections in two-column format from an ENDF file.

MRGMAT – Merging of a list of ENDF files into a single library.

EDTMF3 – Edit cross sections in an ENDF file by normalizing a portion of the file for continuity.

EDENDF – Edit cross section data in an ENDF file.

COVCUT – Cut a block of the covariance matrix from an ENDF file.

COVEDT – Insert a block of covariance matrix into an ENDF file.

ED1451 - Edit the comments section of an ENDF file.

The TENDL-2013 library was used to extend the energy range to 60 MeV. The link to the version of the library "s60A" at the NRG ftp site "ftp://ftp.nrg.eu/pub/www/talys" was provided by the author, since the regular library on the official TALYS web site http://www.talys.eu/tendl-2013/ only contains the covariances up to 30 MeV. The relevant materials were merged into a single file and processed with PrePro-2012 to produce a PENDF file, Doppler-broadened to 300K.

Fe-54

The processing was identical as in the previous version of the IRDFF library. The cross section curves for the (n,2n,), (n,p) and (n,a) reactions are shown in Figures 1, 2 and 3 below, indicating the necessary

normalization of the TENDL data for continuity. The label “Extended” implies the original TENDL-2013 cross sections and the label “Scaled” refers to the same cross sections scaled for continuity in all plots.The covariance matrices for the same reactions are shown in Figures 4, 5 and 6.

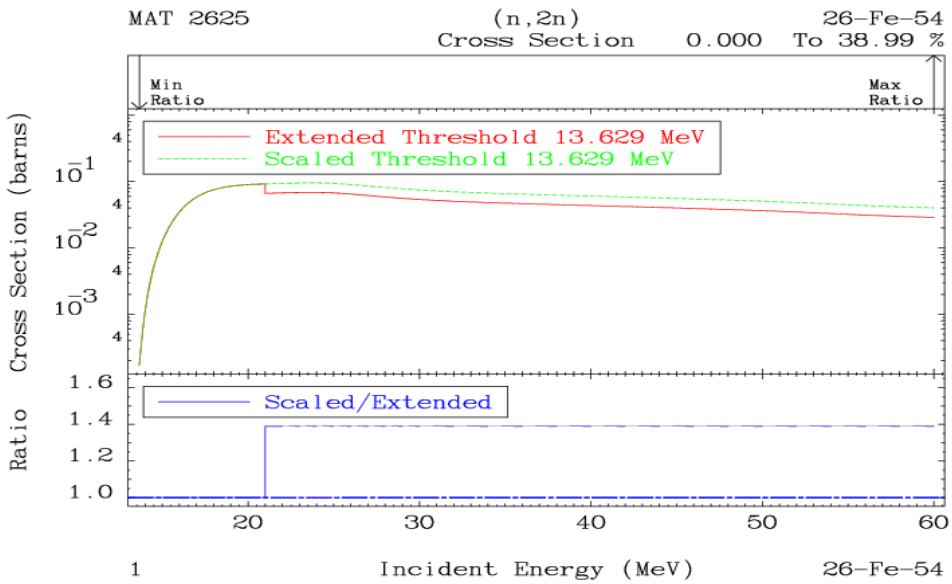

FIG. 1: The Fe-54(n,2n) reaction cross section extended to 60 MeV, indicating the needed renormalization at 21 MeV for continuity.

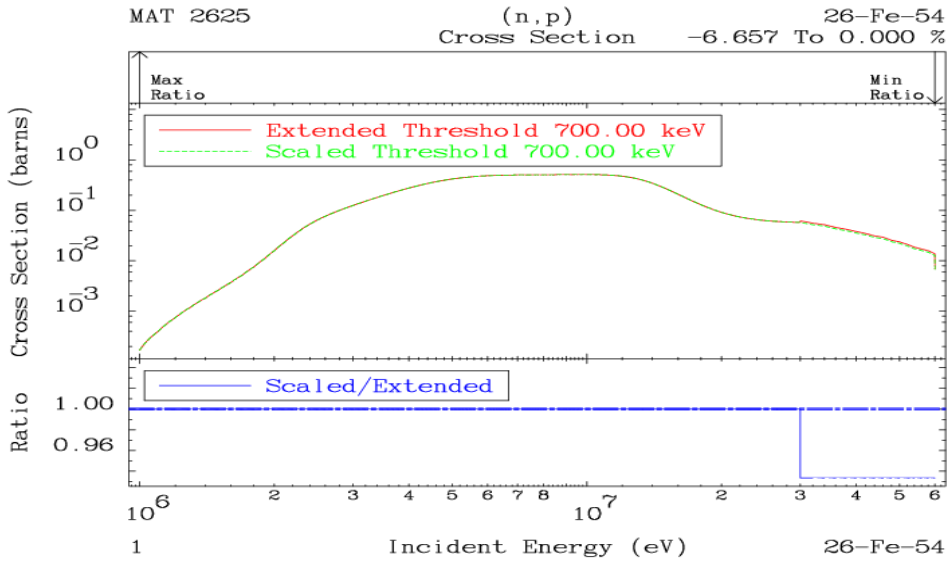

FIG. 2: The Fe-54(n,p) reaction cross section extended to 60 MeV, indicating the needed renormalization for continuity.

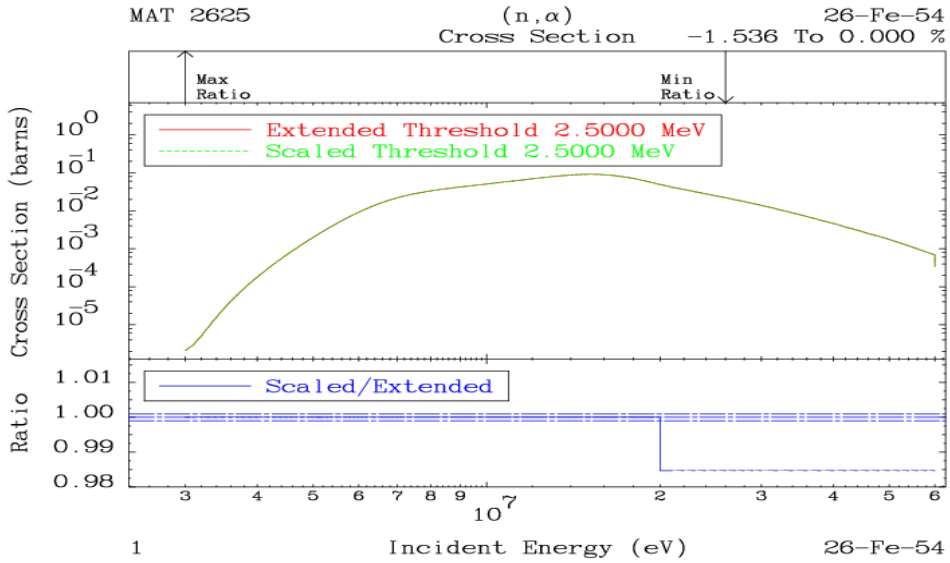

FIG. 3: The Fe-54(n,a) reaction cross section extended to 60 MeV, indicating the needed renormalization for continuity.

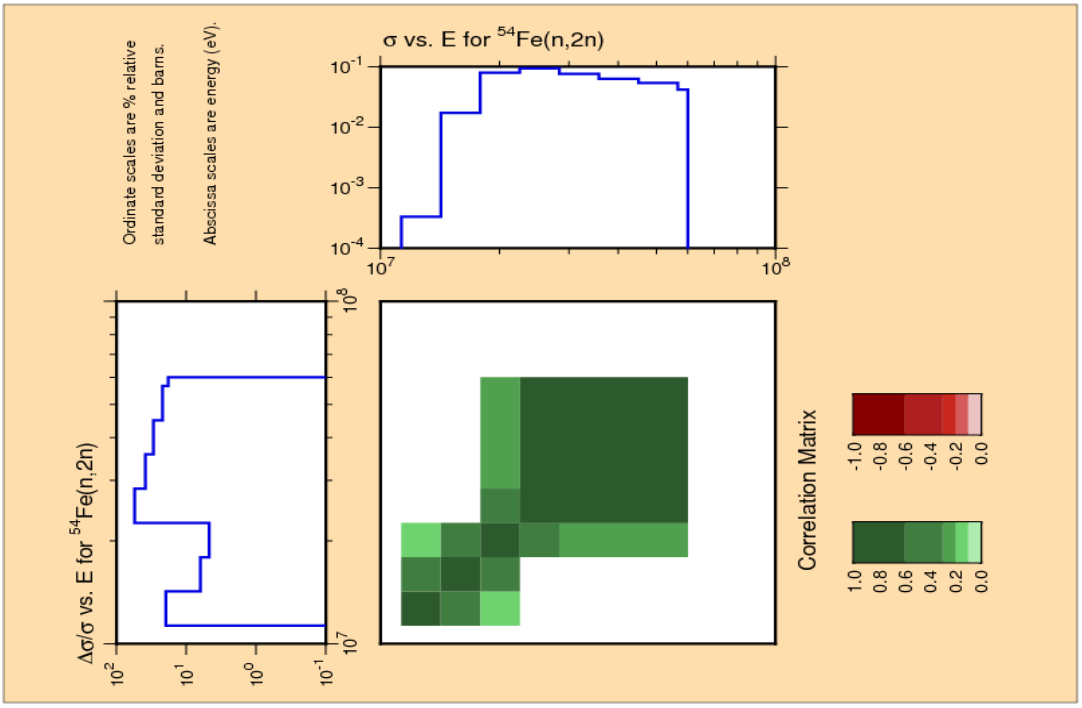

FIG. 4: Covariance matrix for (n,2n) reaction on ^{54}Fe.

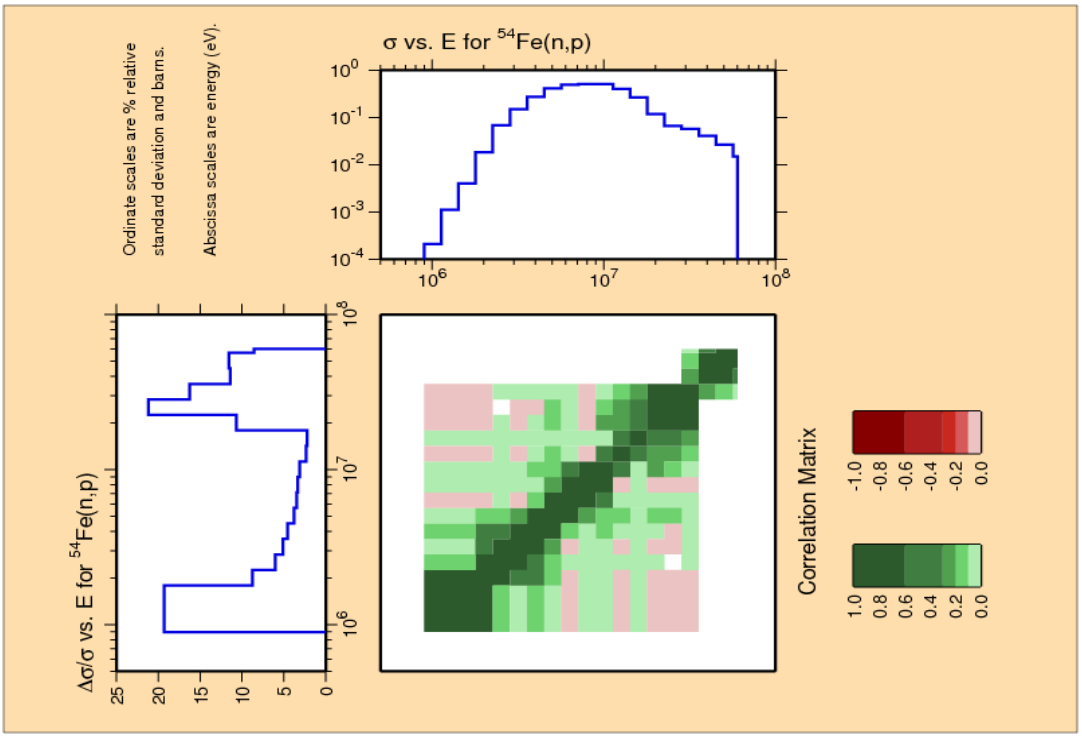

FIG. 5: Covariance matrix for (n,p) reaction on ^{54}Fe

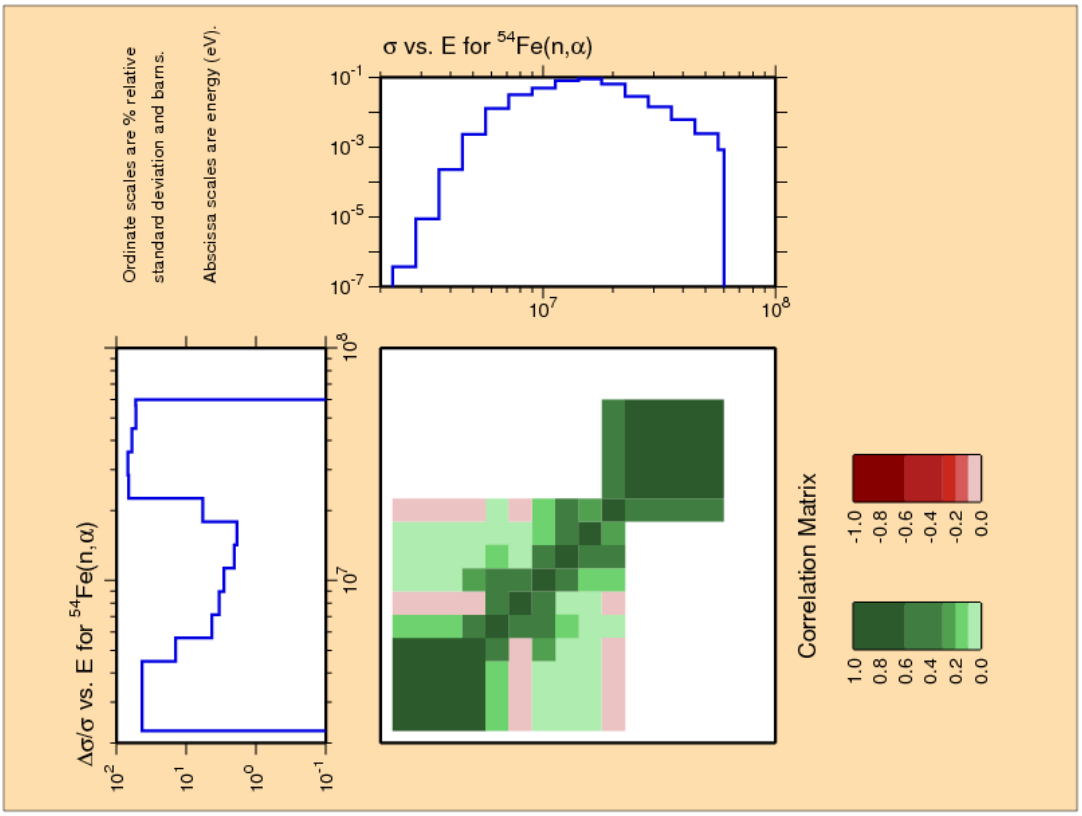

FIG. 6: Covariance matrix for (n,a) reaction on ^{54}Fe.

In-115

The processing was quite elaborate due to the presence of the resonance parameters and the branching ratios. The sequence consisted of the following operations:

- Reconstruction of zero-Kelvin PENDF file with the PrePro-2012 codes.
- Extension of the total, elastic and capture cross sections to 60 MeV.
- Doppler-broadening of the cross section to 300 K.
- Replacement of the capture branching ratio in File 9 with explicit cross sections for the excitation of the isomeric states in File 10 using the ACTIVATE code of PrePro-2012.
- Insertion of a dummy resonance file (without the resonance parameters) that was generated manually.
- The relevant newly processed sections were inserted into the original file with the MERGER code of PrePro-2012.
- The ACTIVATE code does not change the pointer in File 8 from MF 9 to MF 10. This was done by an ad-hoc procedure with the local AD_HOC code.

- The LRP flag was also corrected with the same code to reflect the fact that resonance parameters had been removed from the file.

The remaining operations of updating the inelastic and (n,2n) reaction cross sections producing metastable products was carried out as before. The plot showing the capture cross section extended to 60 MeV is shown in Figure 7. Similar plots for the other reactions are not available because COMPLOT at present does not support the plotting of File 10 data.

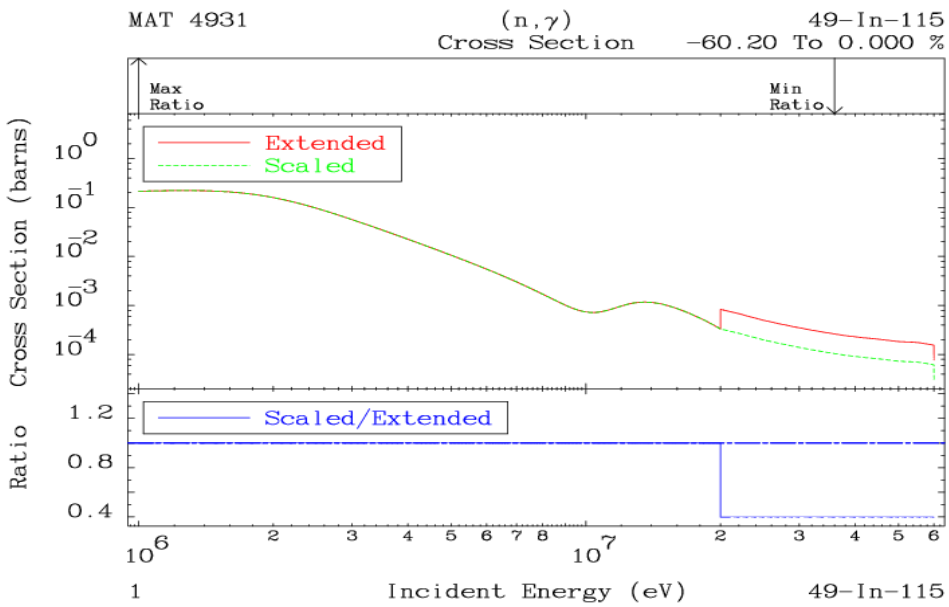

FIG. 7: Capture cross section of ^{115}In extended to 60 MeV. The red curve are the original TENDL-2013 cross sections (label “Extended”) and the green cure is the same cross section scaled for continuity (Label “Scaled”).

The covariance matrix plots for the inelastic, (n,2n) and capture cross sections are shown in Figures 8, 9 and 10.

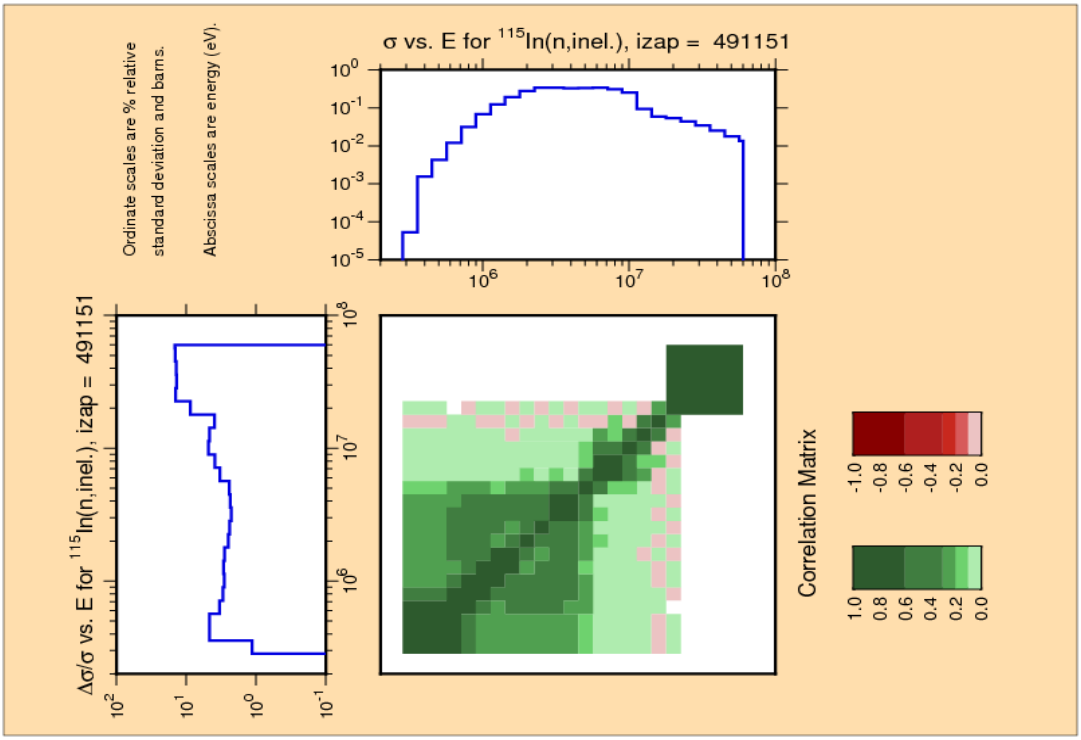

FIG. 8: Covariance matrix for inelastic scattering on ^{115}In for the excitation of the isomeric state.

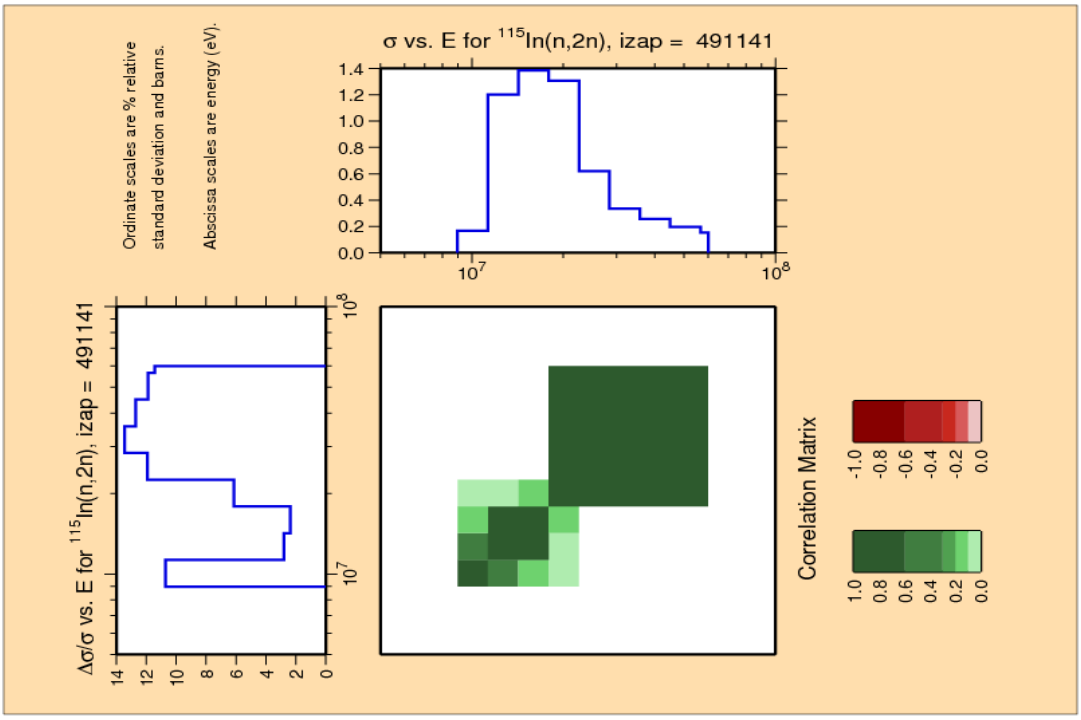

FIG. 9: Covariance matrix for (n,2n) reaction on ^{115}In for the excitation of the isomeric state

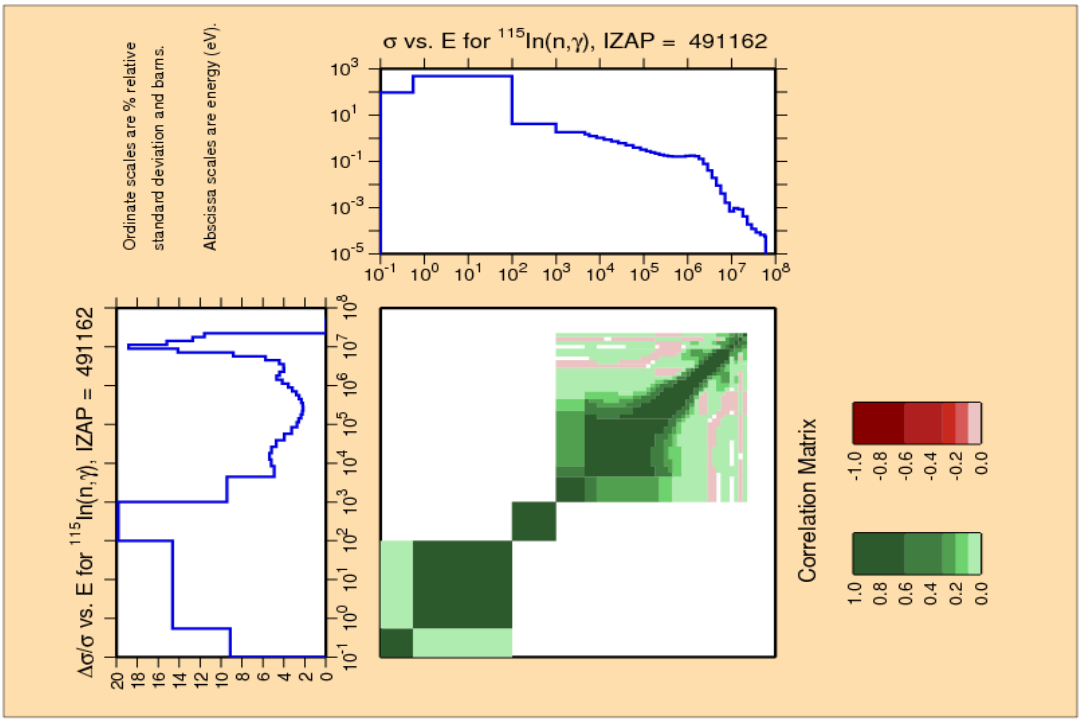

FIG. 10: Covariance matrix for radiative capture on ^{115}In for the excitation of the isomeric state.

Nb-93

The processing of the data for this nuclide was also quite elaborate but similar to the one for ^{115}In. The sequence consisted of the following operations:

- Reconstruction of zero-Kelvin PENDF file with the PrePro-2012 codes.
- Extension of the capture cross section and its covariance matrix to 60 MeV.
- Doppler-broadening of the cross sections to 300 K.
- Replacement of the capture branching ratio in File 9 with explicit cross sections for the excitation of the isomeric states in File 10 using the ACTIVATE code of PrePro-2012.
- Insertion of a dummy resonance file (without the resonance parameters) that was generated manually.
- Due to a small bug in ACTIVATE that misses the FEND record after deleting MF9 data and for aesthetic reasons, the relevant newly processed sections were inserted into the original file with the MERGER code of PrePro-2012.
- The ACTIVATE code does not change the pointer in File 8 from MF 9 to MF 10. This was done by an ad-hoc procedure with the local AD_HOC code.
- The LRP flag was also corrected with the same code to reflect the fact that resonance parameters had been removed from the file.

The remaining operations of updating the inelastic and the (n,2n) reaction cross sections producing metastable products was carried out as before. The plot showing the extended capture cross section is shown in Figure 11. Similar plots for the other reactions are not available because COMPLOT at present does not support the plotting of File 10 data.

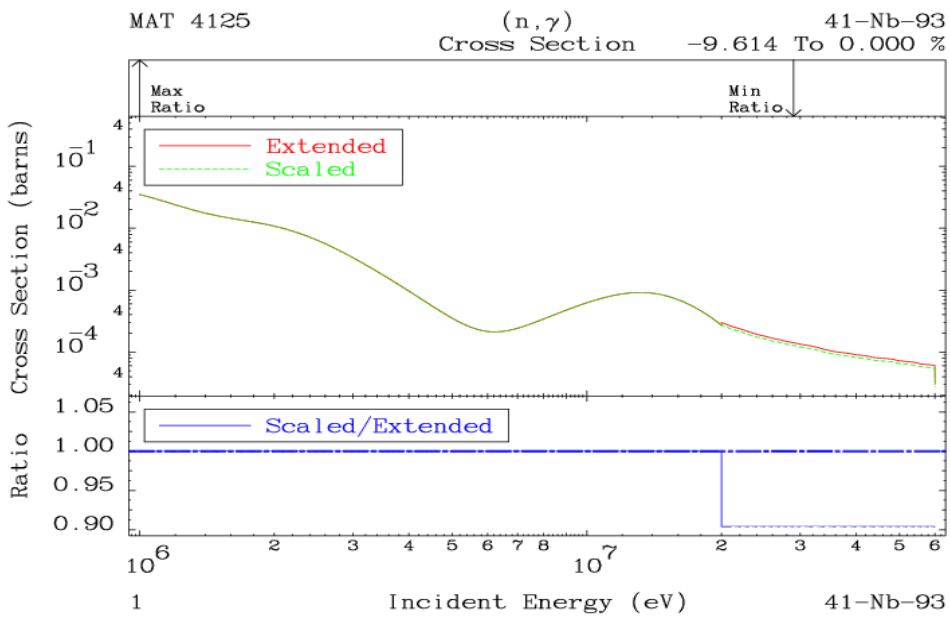

FIG. 11: Capture cross section of ^{93}Nb extended to 60 MeV.

The covariance matrix plots for the inelastic, (n,2n) and capture cross sections are shown in Figures 12, 13 and 14.

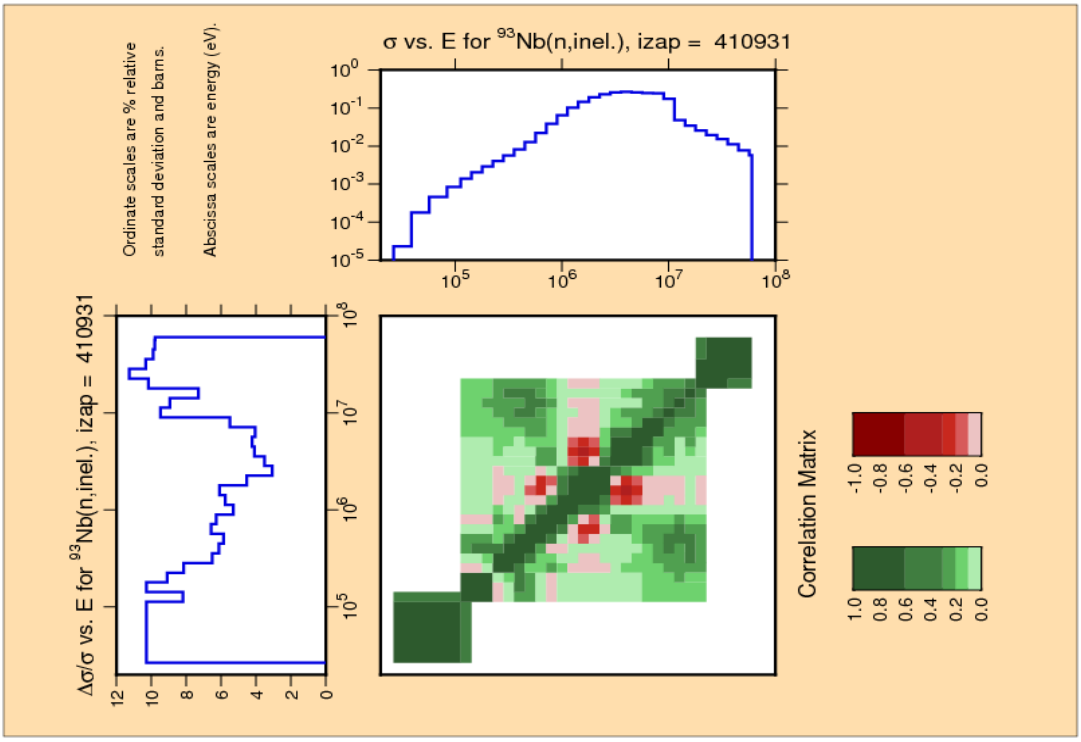

FIG. 12: Covariance matrix for inelastic scattering on ^{93}Nb for the excitation of the isomeric state.

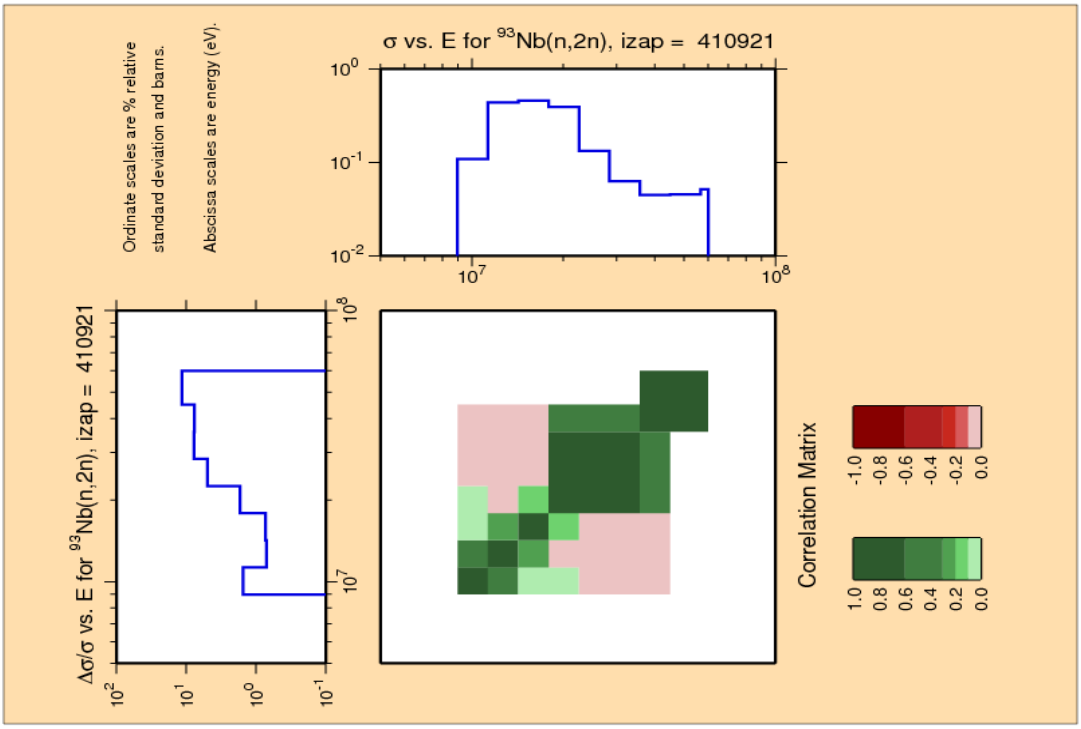

FIG. 13: Covariance matrix for the (n,2n) reaction on ^{93}Nb for the excitation of the isomeric state.

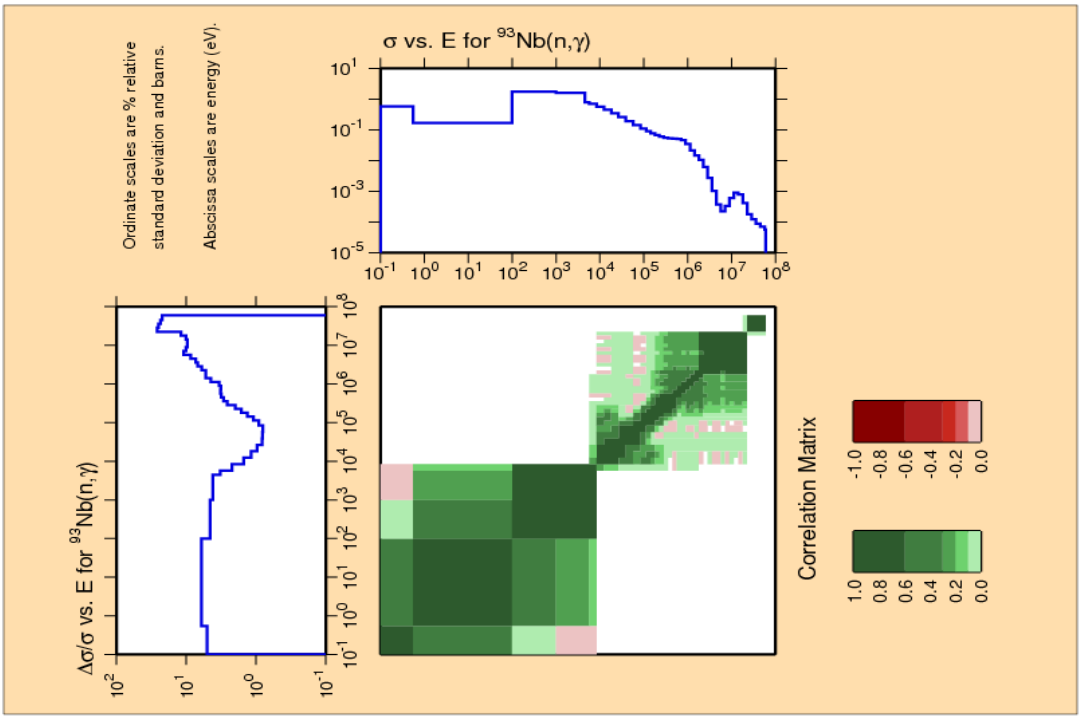

FIG. 14: Covariance matrix of the cross sections for radiative capture on ^{93}Nb.

Ni-58

The processing was identical as in the previous version of the IRDFF library, except that no action was required on the (n,2n) cross sections because the new evaluation already extends to 60 MeV. The cross section curves for the (n,p) reaction are also not shown because no renormalization of the TENDL data was necessary. The covariance matrices for the two reactions are shown in Figures 15 and 16.

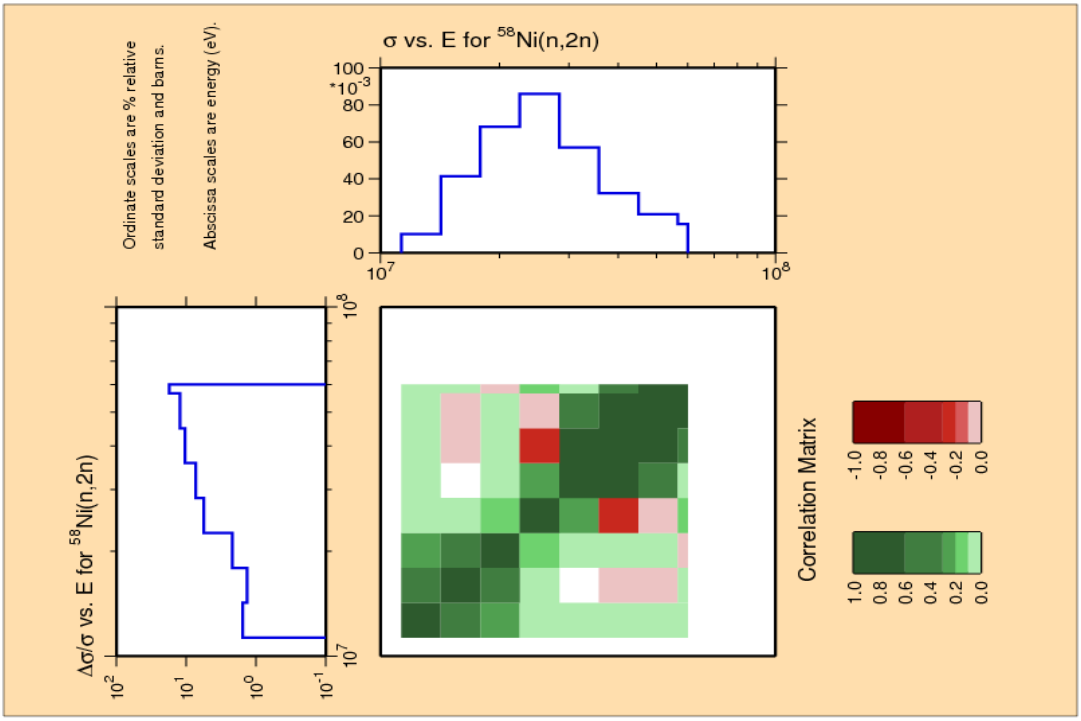

FIG. 15: Covariance matrix for the (n,2n) reaction on ^{58}Ni.

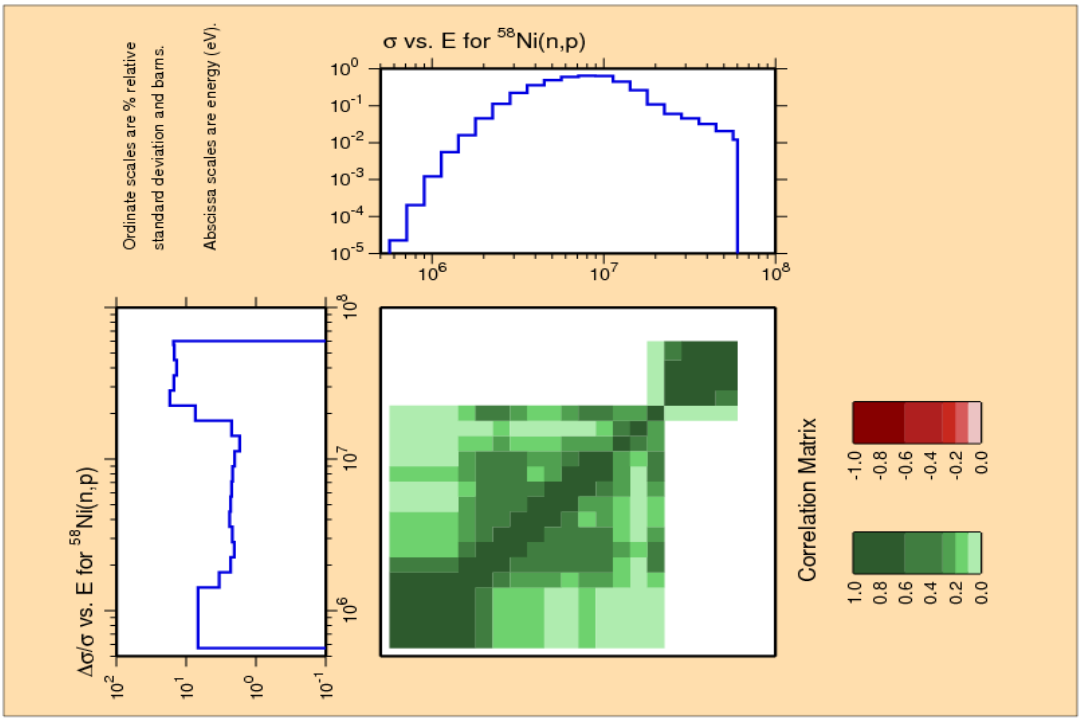

FIG. 16: Covariance matrix for the (n,p) reaction on ^{58}Ni.

APPENDIX

Listing of the Windows script Fix_IRDFF_all.bat

```
@echo off
echo ----------------------
echo Extend IRDFF to 60 MeV
echo ----------------------
echo.
     set endver=c:\endver\exe_win\
echo.
echo The starter IRDFF library is assumed on "irdff_p0.dat"
echo The final   IRDFF library is assumed on "irdff_p.dat"
echo.
REM  Any modifications to cross sections or additions of new reactions
REM  or materials must be done on the irdff.p0 starter file!
REM
rem set t2009=C:\Andrej\data\Tendl-2009\Tendl-2009.end
rem set t2010=C:\Andrej\data\Tendl-2010\Tendl-2010.end
rem set t2010=C:\Andrej\data\Tendl-2010\Tendl-2010.pen
    set t2010=C:\Andrej\data\Tendl-2010\Tendl-2010_act.pen
rem
    set t2011=C:\andrej\data\Tendl-2011\TENDL-2011_dos.end
rem
    set t2013=C:\andrej\data\Tendl-2013\TENDL-2013_dos.pen
rem
    set e71b3=
REM Convention for defining t47:
REM     set t47=48  Only MF 33 data present
REM     set t47=47  MF33 and MF40 data present
REM     set t47=    Only MF40 data present
    echo.
    echo Tendl-2010 library: %t2010%
    echo Tendl-2011 library: %t2011%
    echo Tendl-2013 library: %t2013%
    echo.
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Li-6 (n,T)He-4
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                        >>irdff.txt
rem     echo The cross sections and covariances were extended from 20 to 60 MeV >>irdff.txt
rem     echo using TENDL-2010 data, renormalised for continuity.               >>irdff.txt
rem     echo **************************************************************** >>irfdd.txt
rem     set irdff=li6-dos
rem     set iza=3006
rem     set mat=325
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem REM DO NOT extend Li-6 - it has been done manually in the source file!
rem rem call Fix_IRDFF %t2010% %irdff%     %iza%  3 105 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3   0 60e6 60.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_mt105.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo B-nat (n,tot), (n,abs)
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, June 2012 (A. Trkov)                                        >>irdff.txt
rem     echo The cross sections were extended from 19.4 to 60 MeV              >>irdff.txt
rem     echo using TENDL-2011 data, renormalised for continuity.               >>irdff.txt
rem     echo **************************************************************** >>irdff.txt
rem     set irdff=bnat-dos
rem     set iza=5000
rem     set mat=500
rem     set t47=48
rem REM  Retrieve B-nat data from IRDFF-starter
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
```

```
rem     copy %irdff%.endf %irdff%.dat
rem REM  Reconstruct B-nat from TENDL-2011
rem     call B_nat %t2011% Bnat_t10
rem     call Fix_IRDFF Bnat_t10.pen %irdff%     %iza%  3   1 19.4e6 19.4001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_mt001.ps
rem     move /Y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF Bnat_t10.pen %irdff%     %iza%  3   2 19.4e6 19.4001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_mt002.ps
rem     move /Y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF Bnat_t10.pen %irdff%     %iza%  3 101 19.4e6 19.4001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_mt101.ps
rem     move /Y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF Bnat_t10.pen %irdff%     %iza%  3 102 19.4e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_mt102.ps
rem     move /Y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF Bnat_t10.pen %irdff%     %iza%  3 107 19.4e6 19.4001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_mt107.ps
rem REM ------------------------------------------------------------------------------
rem echo.
rem echo B-10 (n,tot), (n,a), (n,a0), (n,a1)  Last two require special treatment!!!
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                        >>irdff.txt
rem     echo Extended cross sections and covariances from 20 to 60 MeV         >>irdff.txt
rem     echo by TENDL-2010, renormalised for continuity.                       >>irdff.txt
rem     echo The MT800 and MT801 reactions in TENDL-2010 were not in good      >>irdff.txt
rem     echo shape, therefore the shape of MT107 was taken and renormalised    >>irdff.txt
rem     echo as needed.                                                        >>irdff.txt
rem     echo **************************************************************** >>irdff.txt
rem     set irdff=b10-dos
rem     set iza=5010
rem     set mat=525
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem REM
rem REM Extract material from TENDL
rem     echo fix_irdf.t0   >getzam.inp
rem     echo %t2010%      >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem REM
rem REM The reaction MT107 must be cloned to MT800 and MT801
rem REM The file with cloned reactions should be named B-10.cur
rem     echo fix_irdf.t0    >endtab.inp
rem     echo Fix_IRDF.cur  >>endtab.inp
rem     echo 5010          >>endtab.inp
rem     echo 3             >>endtab.inp
rem     echo 19e6          >>endtab.inp
rem     echo 60e6          >>endtab.inp
rem     echo -1            >>endtab.inp
rem     echo 107        MAT 525 MF 3 MT800    >>endtab.inp
rem     echo 107        MAT 525 MF 3 MT801    >>endtab.inp
rem     echo 0             >>endtab.inp
rem     echo.              >>endtab.inp
rem     %endver%endtab<endtab.inp
rem     move /Y Fix_IRDF.cur B-10.cur
rem     REM
rem REM Edit the cross sections in the original TENDL file
rem     echo B-10.cur       >edendf.inp
rem     echo fix_irdf.t0   >>edendf.inp
rem     echo tendl.end     >>edendf.inp
rem     echo.              >>edendf.inp
rem     echo.              >>edendf.inp
rem     C:\andrej\exelib\edendf<edendf.inp
rem REM
rem REM Calling Fix_IRDFF procedure with modified TENDL file "tendl.end"
rem     call Fix_IRDFF tendl.end %irdff%     %iza%  3   1 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_mt001.ps
rem     move /y %irdff%.fix %irdff%.endf
rem REM
rem     call Fix_IRDFF tendl.end %irdff%     %iza%  3   2 20e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_mt002.ps
rem REM
rem     call Fix_IRDFF tendl.end %irdff%     %iza%  3 107 20e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_mt107.ps
```

```
rem REM
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF tendl.end %irdff%     %iza%  3 800 20e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_mt800.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF tendl.end %irdff%     %iza%  3 801 20e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps %irdff%_mt801.ps
rem REM
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo F-19 (n,2n)
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                      >>irdff.txt
rem     echo Extended cross sections and covariances from 30 to 60 MeV       >>irdff.txt
rem     echo by TENDL-2010, renormalised for continuity.                     >>irdff.txt
rem     echo **************************************************************** >>irdff.txt
rem     set irdff=F19-dos
rem     set iza=9019
rem     set mat=925
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2011% %irdff%     %iza%  3  16 30.0001e6 30.0002e6 60e6 %mat%
rem rem call Fix_IRDFF %t2010% %irdff%     %iza%  3  16 30.0001e6 30.0002e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_mt016.ps
rem REM
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Na-23 (n,tot), (n,el), (n,2n), (n,g)
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, July 2012 (A. Trkov)                                      >>irdff.txt
rem     echo Extended cross sections and covariances from 20 to 60 MeV       >>irdff.txt
rem     echo by TENDL-2011, renormalised for continuity.                     >>irdff.txt
rem     echo **************************************************************** >>irdff.txt
rem     set irdff=Na23-dos
rem     set iza=11023
rem     set mat=1125
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2011% %irdff%     %iza%  3   1 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_001.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2011% %irdff%     %iza%  3   2 20e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_002.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2011% %irdff%     %iza%  3  16 20e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_016.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2011% %irdff%     %iza%  3 102 20e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_102.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Mg-24 (n,p)
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                      >>irdff.txt
rem     echo Extended cross sections and covariances from 20 to 60 MeV       >>irdff.txt
rem     echo by TENDL-2010, renormalised for continuity.                     >>irdff.txt
rem     echo **************************************************************** >>irdff.txt
rem     echo Extension to the International Dosimetry Library supported      >>irfdd.txt
rem     echo partially by the International Atomic Energy Agency through     >>irfdd.txt
rem     echo IAEA research contracts 13335 and 14745.                        >>irfdd.txt
rem     echo Documentation published as IAEA technical reports:              >>irfdd.txt
rem     echo INDC(NDS)-0526, INDC(NDS)-0546,INDC(NDS)-0584                   >>irfdd.txt
rem     echo **************************************************************** >>irfdd.txt
rem     set irdff=mg24-dos
rem     set iza=12024
rem     set mat=1225
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
```

```
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3 103 21e6 21.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_mt103.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Al-27 (n,p), (n,a)
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                        >>irdff.txt
rem     echo Extended cross sections and covariances from 22 to 60 MeV         >>irdff.txt
rem     echo for (n,p) and from 30 to 60 MeV for (n,a) reaction                >>irdff.txt
rem     echo by TENDL-2010, renormalised for continuity.                       >>irdff.txt
rem     echo Original IRDF evaluations was given up to 40 MeV, but had         >>irdff.txt
rem     echo unphysical behaviour above these energies.                        >>irdff.txt
rem     echo The energy grid near threshold was too coarse. The points         >>irdff.txt
rem     echo below 5.5 MeV were taken from ENDF/B-VII.1.                       >>irdff.txt
rem     echo ***************************************************************** >>irdff.txt
rem     set irdff=al27-dos
rem     set iza=13027
rem     set mat=1325
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3 103 22.0001e6 22.0002e6 60e6 %mat%
rem     del irdff.txt
rem     copy %irdff%.fix *.endf
rem     move /Y %irdff%.ps %irdff%_mt103.ps
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3 107 30e6 30.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps %irdff%_mt107.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo P-31 (n,p)
rem echo.
rem REM Note that ENDF/B-VII.1 (adopted from ENDF/B-VI) has more structure
rem REM but no covariances.
rem REM
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, May 2012 (A. Trkov)                                         >>irdff.txt
rem     echo The TENDL-2011 cross section curve was renormalised to IRDF-2002  >>irdff.txt
rem     echo so the cross sections in the two libraries are equivalent.        >>irdff.txt
rem     echo The covariance matrix in IRDF-2002 had negative eigenvalues,      >>irdff.txt
rem     echo there fore the TENDL-2011 data were adopted.                      >>irdff.txt
rem     echo The data above 20 MeV are purely TENDL-2011.                      >>irdff.txt
rem     echo ***************************************************************** >>irdff.txt
rem     set irdff=p31-dos
rem     set iza=15031
rem     set mat=1525
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3   0 200.e6 200.1e6 200.e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps %irdff%_mt103.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo S-32 (n,p)
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                        >>irdff.txt
rem     echo Extended cross sections and covariances from 21 to 60 MeV         >>irdff.txt
rem     echo by TENDL-2010, renormalised for continuity.                       >>irdff.txt
rem     echo ***************************************************************** >>irdff.txt
rem     set irdff=s32-dos
rem     set iza=16032
rem     set mat=1625
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3 103 21.e6 21.0001e6 60e6 %mat%
rem     del irdff.txt
```

```
rem     move /Y %irdff%.ps %irdff%_mt103.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Sc-45 (n,tot), (n,el), (n,g);  Note: MF32 present
rem echo.
rem     echo ***************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                      >>irdff.txt
rem     echo The resonance covariances MF32 replaced by cross section        >>irdff.txt
rem     echo covariances in 640-group structure.                             >>irdff.txt
rem     echo The LB=8 section in the covariances of MT102 were removed because  >>irdff.txt
rem     echo they caused a large increase of the broad-group thermal         >>irdff.txt
rem     echo cross section.                                                  >>irdff.txt
rem     echo Extended cross sections and covariances from 21 to 60 MeV       >>irdff.txt
rem     echo by TENDL-2010, renormalised for continuity.                     >>irdff.txt
rem     echo The MAT number was changed from 2126 to 2125 for consistency.   >>irdff.txt
rem     echo ************************************************************** >>irdff.txt
rem     set irdff=sc45-dos
rem     set iza=21045
rem     set mat=2125
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem REM Strip MF32
rem     move /Y %irdff%.endf fix_irdf.t0
rem     echo fix_irdf.t1                                                      >merger.inp
rem     echo   Strip MF32                                                 6000 0 >>merger.inp
rem     echo fix_irdf.t0                                                        >>merger.inp
rem     echo END                                                                >>merger.inp
rem     echo      1 1  1  999930999                                             >>merger.inp
rem     echo      133  1  999999999                                             >>merger.inp
rem     echo.                                                                   >>merger.inp
rem     echo.                                                                   >>merger.inp
rem     c:\prepro\exe_win\merger
rem REM Insert dummy MF2
rem     echo Dummy resonance file                                         7777 0  0  >fix_irdf.t2
rem     echo  2.10450E+4 4.45700E+1          0          0          1    02125 2151 >>fix_irdf.t2
rem     echo  2.10450E+4 1.00000E+0          0          0          1    02125 2151 >>fix_irdf.t2
rem     echo  1.00000E-5 1.00000E+5          0          0          0    02125 2151 >>fix_irdf.t2
rem     echo  3.50000E+0 4.55000E-1          0          0          0    02125 2151 >>fix_irdf.t2
rem     echo                                                               2125 2  0 >>fix_irdf.t2
rem     echo                                                               2125 0  0 >>fix_irdf.t2
rem     echo  0.00000+00 0.00000+00          0          0          0    0   0 0  0 >>fix_irdf.t2
rem     echo  0.00000+00 0.00000+00          0          0          0    0  -1 0  0 >>fix_irdf.t2
rem REM
rem     echo fix_irdf.t3                                                      >merger.inp
rem     echo Dummy resonance file                                         6000 0 >>merger.inp
rem     echo fix_irdf.t2                                                        >>merger.inp
rem     echo fix_irdf.t1                                                        >>merger.inp
rem     echo END                                                                >>merger.inp
rem     echo      1 1  1  999999999                                             >>merger.inp
rem     echo.                                                                   >>merger.inp
rem     echo.                                                                   >>merger.inp
rem     c:\prepro\exe_win\merger
rem REM Insert resonance-range covariance section into MF33
rem     echo fix_irdf.t3          >covedt.inp
rem     echo sc45-dos_cov-rr.dat >>covedt.inp
rem     echo %irdff%.endf        >>covedt.inp
rem     covedt<covedt.inp
rem REM
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3   1 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_001.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3   2 20e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_002.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3 102 20e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_102.ps
rem     set mf32=
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Ti-46 (n,2n), (n,p)
rem echo.
rem     echo ***************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                      >>irdff.txt
rem     echo Extended cross sections and covariances from 20 to 60 MeV       >>irdff.txt
rem     echo by TENDL-2010, renormalised for continuity.                     >>irdff.txt
rem     echo ************************************************************** >>irdff.txt
rem     set irdff=ti46-dos
```

```
rem     set iza=22046
rem     set mat=2225
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3  16 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_016.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3 103 20e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_103.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Ti-47 (n,p), radionuclide production 21046 in MF10/MT5 (from IRDF-2002)
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, July 2012 (A. Trkov)                                       >>irdff.txt
rem     echo Extended cross sections and covariances from 20 to 60 MeV        >>irdff.txt
rem     echo by TENDL-2011, renormalised for continuity.                      >>irdff.txt
rem     echo Points were added at threshold to fix the cross section for Q>0   >>irdff.txt
rem     echo **************************************************************** >>irdff.txt
rem     set irdff=ti47-dos
rem     set iza=22047
rem     set mat=2228
rem     set t47=47
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem REM
rem REM Fix the cross section near threshold by adding points
rem     echo  M 22047 MF 3 MT103     >fix_irdf.cur
rem     echo  1.000000-5 0.000000+0 >>fix_irdf.cur
rem     echo  0.02530000 0.000000+0 >>fix_irdf.cur
rem     echo  800000.000 0.000000+0 >>fix_irdf.cur
rem     echo  810000.000 1.00000-10 >>fix_irdf.cur
rem     echo  825000.000 5.000000-9 >>fix_irdf.cur
rem     echo  850000.000 2.000000-7 >>fix_irdf.cur
rem     echo  875000.000 3.000000-6 >>fix_irdf.cur
rem     echo  900000.000 2.000000-5 >>fix_irdf.cur
rem     echo  910000.000 3.000000-5 >>fix_irdf.cur
rem     move /Y %irdff%.endf fix_irdf.t1
rem     echo fix_irdf.cur  >edendf.inp
rem     echo fix_irdf.t1  >>edendf.inp
rem     echo %irdff%.endf >>edendf.inp
rem     echo.             >>edendf.inp
rem     echo.             >>edendf.inp
rem     edendf<edendf.inp
rem REM
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3 103 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_103.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3 21046 20e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_005.ps
rem REM
rem REM Note: If the range of MF3/MT5 is not extended, all group
rem REM       cross-sections and covariance plots are truncated!
rem REM       In the present procedure the cross sections in MF10 are extended,
rem REM       but the covariance matrices in MF40 are not.
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Ti-48 (n,p), radionuclide 21047 production in MF10/MT5
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                       >>irdff.txt
rem     echo Extended cross sections and covariances from 20 to 60 MeV        >>irdff.txt
rem     echo by TENDL-2010, renormalised for continuity.                      >>irdff.txt
rem     echo **************************************************************** >>irdff.txt
rem     set irdff=ti48-dos
rem     set iza=22048
rem     set mat=2231
rem     set t47=47
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
```

```
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3 103 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_103.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3 21047 20e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_005.ps
rem
rem Note: If the range of MF3/MT5 is not extended, all group
rem       cross-sections and covariance plots are truncated!
rem       In the present procedure the cross sections in MF10 are extended,
rem       but the covariance matrices in MF40 are not.
REM ---------------------------------------------------------------------------
rem echo.
rem echo Ti-49 radionuclide 21048 production in MF10/MT5
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, July 2012 (A. Trkov)                                       >>irdff.txt
rem     echo Extended cross sections and covariances from 20 to 60 MeV        >>irdff.txt
rem     echo by TENDL-2011, renormalised for continuity.                      >>irdff.txt
rem     echo **************************************************************** >>irdff.txt
rem     set irdff=ti49-dos
rem     set iza=22049
rem     set mat=2234
rem     set t47=
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2011% %irdff%     %iza%  3 21048 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_005.ps
rem rem
rem rem Note: The covariance matrices in MF40 are not extended
rem rem       by the present procedure.
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo V-51 (n,a)
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                       >>irdff.txt
rem     echo Extended cross sections and covariances from 20 to 60 MeV        >>irdff.txt
rem     echo by TENDL-2010, renormalised for continuity.                      >>irdff.txt
rem     echo **************************************************************** >>irdff.txt
rem     set irdff=v51-dos
rem     set iza=23051
rem     set mat=2328
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3 107 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_107.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Cr-52 (n,2n)
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                       >>irdff.txt
rem     echo Extended cross sections and covariances from 20 to 60 MeV        >>irdff.txt
rem     echo by TENDL-2011, renormalised for continuity.                      >>irdff.txt
rem     echo **************************************************************** >>irdff.txt
rem     set irdff=cr52-dos
rem     set iza=24052
rem     set mat=2431
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem REM TENDL-2010 is in error - use TENDL-2011
rem     call Fix_IRDFF %t2011% %irdff%     %iza%  3  16 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_016.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Mn-55 (n,2n), (n,g) (taken from ENDF/B-VII.1)
rem echo.
```

```
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                       >>irdff.txt
rem     echo - The capture cross section was taken from the ENDF/B-VII.1      >>irdff.txt
rem     echo   library, including the covariance data. The source data are    >>irdff.txt
rem     echo   essentially the same as in the Zolotarev original evaluation,  >>irdff.txt
rem     echo   except for some small changes in the resonance parameters      >>irdff.txt
rem     echo   (see original evaluation for details).                         >>irdff.txt
rem     echo - The total cross section is also taken from the ENDF/B-VII.1    >>irdff.txt
rem     echo   library for consistency.                                                >>irdff.txt
rem     echo - The Zolotarev (n,2n) evaluation was extended from 40 to        >>irdff.txt
rem     echo   60 MeV using TENDL-2010 data, renormalised for continuity.     >>irdff.txt
rem     echo   The covariances above 20 MeV were taken from the same library. >>irdff.txt
rem     echo ****************************************************************  >>irdff.txt
rem     set irdff=mn55-dos
rem     set iza=25055
rem     set mat=2525
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem REM
rem REM Prepare the total and capture from ENDF/B-VII.1 with NJOY
rem     set e71b3=C:\Andrej\data\endfb7\n-025_Mn_055.endf
rem REM Make PENDF
rem     copy %e71b3% endfb.in
rem     c:\prepro\exe_win\linear
rem     move /Y endfb.out endfb.in
rem     c:\prepro\exe_win\recent
rem     move /Y endfb.out endfb.in
rem     c:\prepro\exe_win\sigma1
rem     move /Y endfb.out mn55-e71_prepro.pen
rem REM
rem REM Prepare NJOY input
rem     echo moder / Extract/convert neutron evaluated data                 >nji
rem     echo 1 -21                                                          >>nji
rem     echo '25-Mn-55 from %e71b3% '/                                      >>nji
rem     echo 20 2525 /                                                      >>nji
rem     echo 0/                                                             >>nji
rem     echo reconr / Reconstruct XS for neutrons                           >>nji
rem     echo -21 -22                                                        >>nji
rem     echo 'PENDF for 25-Mn-55'/                                          >>nji
rem     echo 2525 1/                                                        >>nji
rem     echo 0.001 0. 0.003/                                                >>nji
rem     echo '25-Mn-55 from %e71b3%'/                                       >>nji
rem     echo 0/                                                             >>nji
rem     echo broadr / Doppler broaden XS                                    >>nji
rem     echo -21 -22 -23                                                    >>nji
rem     echo 2525 1 0 0 0./                                                 >>nji
rem     echo 0.001 2.0e6 0.003/                                             >>nji
rem     echo 300.                                                           >>nji
rem     echo 0/                                                             >>nji
rem     echo --                                                             >>nji
rem     echo -- Multigroup fine-group cross sections - flat-weighted        >>nji
rem     echo groupr / Prepare multigroup data for covariances               >>nji
rem     echo -21 -23 0 36 /                                                 >>nji
rem     echo 2525 1 0 2 1 1 1 1 /                                           >>nji
rem     echo '25-Mn-55'/                                                    >>nji
rem     echo 300.                                                           >>nji
rem     echo 1.E+10 /                                                       >>nji
rem     echo 70                                                             >>nji
rem     echo   1.000E-05  2.081E-05  6.581E-05  2.081E-04  6.581E-04        >>nji
rem     echo   1.389E-03  2.470E-03  4.393E-03  7.812E-03  1.292E-02        >>nji
rem     echo   2.057E-02  3.039E-02  4.280E-02  6.046E-02  8.540E-02        >>nji
rem     echo   1.389E-01  2.470E-01  4.393E-01  7.812E-01  1.389E+00        >>nji
rem     echo   2.470E+00  4.393E+00  7.812E+00  1.389E+01  2.470E+01        >>nji
rem     echo   4.393E+01  7.812E+01  1.292E+02  2.048E+02  3.246E+02        >>nji
rem     echo   5.145E+02  8.155E+02  1.292E+03  2.048E+03  3.246E+03        >>nji
rem     echo   5.145E+03  8.155E+03  1.292E+04  2.048E+04  3.246E+04        >>nji
rem     echo   5.145E+04  8.155E+04 1.250000+5 1.421900+5 1.790100+5        >>nji
rem     echo  2.253600+5 2.837100+5 3.571700+5 4.496500+5 5.660700+5        >>nji
rem     echo  7.126400+5 8.971600+5 1.129500+6 1.421900+6 1.790100+6        >>nji
rem     echo  2.253600+6 2.837100+6 3.571700+6 4.496500+6 5.660700+6        >>nji
rem     echo  7.126400+6 8.971600+6 1.129500+7 1.421900+7 1.790100+7        >>nji
rem     echo  2.253600+7 2.837100+7 3.571700+7 4.496500+7 5.660700+7        >>nji
rem     echo  6.000000+7 /                                                  >>nji
rem     echo 3/                                                             >>nji
rem     echo 0/                                                             >>nji
rem     echo 0/                                                             >>nji
rem     echo errorr /                                                       >>nji
rem     echo -21 -23 36 46 / Output covariance file on unit 46              >>nji
```

```
rem     echo 2525 1 2 1 1 /                                                 >>nji
rem     echo 0 33 / Default reactions, processing MF 33                     >>nji
rem     echo 53 /                                                           >>nji
rem     echo  1.00000E-05 0.02        0.1         0.55                      >>nji
rem     echo              4.393       13.89                                 >>nji
rem     echo              43.93       78.11       138.9       247.0         >>nji
rem     echo  439.3       781.2       1234.       1811.       2658.         >>nji
rem     echo  3902.       4.50000E+03                                       >>nji
rem     echo  5.727260E+3 8.406460E+3 1.233900E+4 1.811120E+4 2.658360E+4 >>nji
rem     echo  3.901940E+4 5.727260E+4 8.406460E+4                           >>nji
rem     echo                        1.250000+5 1.421900+5 1.790100+5        >>nji
rem     echo  2.253600+5 2.837100+5 3.571700+5 4.496500+5 5.660700+5        >>nji
rem     echo  7.126400+5 8.971600+5 1.129500+6 1.421900+6 1.790100+6        >>nji
rem     echo  2.253600+6 2.837100+6 3.571700+6 4.496500+6 5.660700+6        >>nji
rem     echo  7.126400+6 8.971600+6 1.129500+7 1.421900+7 1.790100+7        >>nji
rem     echo  2.253600+7 2.837100+7 3.571700+7 4.496500+7 5.660700+7        >>nji
rem     echo  6.000000+7 /                                                  >>nji
rem     echo stop                                                           >>nji
rem     copy %e71b3% tape20
rem     c:\njoy99\njoy<nji
rem REM
rem REM Convert GENDF from ERRORR into proper ENDF-6 format
rem     echo tape46           >gntoen.inp
rem     echo mn55-e71_njoy.g >>gntoen.inp
rem     c:\andrej\exelib\gntoen<gntoen.inp
rem REM
rem REM Extract the covariance matrix of (n,g) from NJOY
rem     echo Fix_IRDFF.t1                                                    >merger.inp
rem     echo  Mn-55 from ENDF/B-VII.1                                 6000 0 >>merger.inp
rem     echo mn55-e71_njoy.g                                                 >>merger.inp
rem     echo END                                                             >>merger.inp
rem     echo      133102  999933102                                          >>merger.inp
rem     echo.                                                                >>merger.inp
rem     echo.                                                                >>merger.inp
rem     c:\prepro\exe_win\merger
rem REM
rem REM Extract (n,total) and (n,g) from PENDF
rem     echo Fix_IRDFF.t2                                                    >merger.inp
rem     echo  Mn-55 from ENDF/B-VII.1                                 6000 0 >>merger.inp
rem     echo mn55-e71_prepro.pen                                             >>merger.inp
rem     echo END                                                             >>merger.inp
rem     echo      1 3  1  9999 3  1                                          >>merger.inp
rem     echo      1 3102  9999 3102                                          >>merger.inp
rem     echo.                                                                >>merger.inp
rem     echo.                                                                >>merger.inp
rem     c:\prepro\exe_win\merger
rem REM
rem REM Merge extracted parts with the main file
rem     move %irdff%.endf FIX_IRDFF.t3
rem     echo %irdff%.endf                                                    >merger.inp
rem     echo  Mn-55 from ENDF/B-VII.1                                 6000 0 >>merger.inp
rem     echo FIX_IRDFF.t1                                                    >>merger.inp
rem     echo FIX_IRDFF.t2                                                    >>merger.inp
rem     echo FIX_IRDFF.t3                                                    >>merger.inp
rem     echo END                                                             >>merger.inp
rem     echo      1 1  1  999999999                                          >>merger.inp
rem     echo.                                                                >>merger.inp
rem     echo.                                                                >>merger.inp
rem     c:\prepro\exe_win\merger
rem REM
rem REM Extend the (n,2n) reaction and the covariance matrices
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3  16 40e6 40.0001e6 60e6 %mat%
rem     del irdff.txt
    REM ---------------------------------------------------------------------------
    echo.
    echo Fe-54 (n,2n), (n,p), (n,a)
    echo.
        echo ****************************************************************  >irdff.txt
        echo IAEA, Feb. 2014 (A. Trkov)                                       >>irdff.txt
        echo Extended cross sections and covariances from 20 to 60 MeV        >>irdff.txt
        echo by TENDL-2013, renormalised for continuity.                      >>irdff.txt
        echo **************************************************************** >>irdff.txt
        set irdff=fe54-dos
        set iza=26054
        set mat=2625
        set t47=48
        echo %irdff%.endf  >getzam.inp
        echo irdff_p0.dat >>getzam.inp
        echo %iza%        >>getzam.inp
        echo 0            >>getzam.inp
        %endver%getzam<getzam.inp
        call Fix_IRDFF %t2013% %irdff%     %iza%  3  16 21e6 21.0001e6 60e6 %mat%
```

```
        del irdff.txt
        move /Y %irdff%.ps  %irdff%_016.ps
        move /y %irdff%.fix %irdff%.endf
        call Fix_IRDFF %t2013% %irdff%     %iza%  3 103 30e6 30.0001e6 60e6 %mat%
        move /Y %irdff%.ps  %irdff%_103.ps
        move /y %irdff%.fix %irdff%.endf
        call Fix_IRDFF %t2013% %irdff%     %iza%  3 107 20e6 20.0001e6 60e6 %mat%
        move /Y %irdff%.ps  %irdff%_107.ps
    REM ---------------------------------------------------------------------------
rem echo.
rem echo Fe-56 (n,p)
rem echo.
rem     echo ***************************************************************  >irdff.txt
rem     echo IAEA, June 2012 (A. Trkov)                                     >>irdff.txt
rem     echo Extended cross sections and covariances from 20 to 60 MeV      >>irdff.txt
rem     echo by TENDL-2011, renormalised for continuity.                    >>irdff.txt
rem     echo *************************************************************** >>irdff.txt
rem     set irdff=fe56-dos
rem     set iza=26056
rem     set mat=2631
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2011% %irdff%     %iza%  3 103 20e6 20.0001e6 60e6 %mat%
rem rem call Fix_IRDFF %t2010% %irdff%     %iza%  3 103 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_103.ps
rem REM ---------------------------------------------------------------------------
rem REM Exclude Fe-57
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Fe-57 (n,g)
rem echo.
rem     echo ***************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                     >>irdff.txt
rem     echo Add MT=1 (all cross sections are from JEFF-3.1)                >>irdff.txt
rem     echo *************************************************************** >>irdff.txt
rem     set irdff=fe57-dos
rem     set iza=26057
rem     set mat=2634
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem REM
rem REM Prepare the total from JEFF-3.1 with PrePro
rem     set f31=C:\Andrej\data\Jeff31\JEFF31N.ASC
rem     echo endfb.in      >getzam.inp
rem     echo %f31%        >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     c:\prepro\exe_win\linear
rem     move /Y endfb.out endfb.in
rem     c:\prepro\exe_win\recent
rem     move /Y endfb.out endfb.in
rem     c:\prepro\exe_win\sigma1
rem     move /Y endfb.out fe57-f31_prepro.pen
rem REM
rem REM Extract (n,total) from PENDF
rem     echo Fix_IRDFF.t2                                                    >merger.inp
rem     echo  026-Fe-057 from JEFF-3.1                                 6000 0 >>merger.inp
rem     echo fe57-f31_prepro.pen                                             >>merger.inp
rem     echo END                                                             >>merger.inp
rem     echo      1 3  1  9999 3  1                                          >>merger.inp
rem     echo.                                                                >>merger.inp
rem     echo.                                                                >>merger.inp
rem     c:\prepro\exe_win\merger
rem REM
rem REM Merge extracted parts with the main file
rem     move %irdff%.endf FIX_IRDFF.t3
rem     echo %irdff%.endf                                                    >merger.inp
rem     echo  026-Fe-057 from JEFF-3.1                                 6000 0 >>merger.inp
rem     echo FIX_IRDFF.t2                                                    >>merger.inp
rem     echo FIX_IRDFF.t3                                                    >>merger.inp
rem     echo END                                                             >>merger.inp
rem     echo      1 1  1  999999999                                          >>merger.inp
```

```
rem     echo.                                                                   >>merger.inp
rem     echo.                                                                   >>merger.inp
rem     c:\prepro\exe_win\merger
rem REM
rem REM No covariance extension is needed (set MAT=0)
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3 102 19e6 19.0001e6 200e6 %mat%
rem rem call Fix_IRDFF %t2010% %irdff%     %iza%  3   0 19e6 19.0001e6 200e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_102.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Fe-58 (n,tot), (n,g)
rem echo.
rem     echo ***************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                       >>irdff.txt
rem     echo Added MT=1 (all cross sections are from JEFF-3.1)                >>irdff.txt
rem     echo Removed section LB=8 from MF33/MT102 because it gave rise to      >>irdff.txt
rem     echo unphysical uncertainties in the thermal region.                  >>irdff.txt
rem     echo Extended cross sections and covariances from 20 to 60 MeV        >>irdff.txt
rem     echo by TENDL-2010, renormalised for continuity.                      >>irdff.txt
rem     echo *************************************************************** >>irdff.txt
rem     set irdff=fe58-dos
rem     set iza=26058
rem     set mat=2637
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem REM
rem REM Prepare the total from JEFF-3.1 with PrePro
rem     set f31=C:\Andrej\data\Jeff31\JEFF31N.ASC
rem     echo fe58_f31.end  >getzam.inp
rem     echo %f31%        >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     copy fe58_f31.end endfb.in
rem     c:\prepro\exe_win\linear
rem     move /Y endfb.out endfb.in
rem     c:\prepro\exe_win\recent
rem     move /Y endfb.out endfb.in
rem     c:\prepro\exe_win\sigma1
rem     move /Y endfb.out fe58-f31_prepro.pen
rem REM
rem REM Extract comments from the original file to avoid spurious messages from PrePro
rem     echo FIX_IRDFF.t0                                                        >merger.inp
rem     echo   26-Fe-058 from JEFF-3.1                                     6000 0 >>merger.inp
rem     echo %irdff%.endf                                                       >>merger.inp
rem     echo END                                                                >>merger.inp
rem     echo      1 1451  9999 1451                                             >>merger.inp
rem     echo.                                                                   >>merger.inp
rem     echo.                                                                   >>merger.inp
rem     c:\prepro\exe_win\merger
rem REM
rem REM Extract (n,total) from PENDF
rem     echo Fix_IRDFF.t2                                                        >merger.inp
rem     echo   26-Fe-058 from JEFF-3.1                                     6000 0 >>merger.inp
rem     echo fe58-f31_prepro.pen                                                >>merger.inp
rem     echo END                                                                >>merger.inp
rem     echo      1 3  1  9999 3  1                                             >>merger.inp
rem     echo.                                                                   >>merger.inp
rem     echo.                                                                   >>merger.inp
rem     c:\prepro\exe_win\merger
rem REM
rem REM Merge extracted parts with the main file
rem     move %irdff%.endf FIX_IRDFF.t3
rem     echo %irdff%.endf                                                        >merger.inp
rem     echo   26-Fe-058 from JEFF-3.1                                     6000 0 >>merger.inp
rem     echo FIX_IRDFF.t0                                                       >>merger.inp
rem     echo FIX_IRDFF.t2                                                       >>merger.inp
rem     echo FIX_IRDFF.t3                                                       >>merger.inp
rem     echo END                                                                >>merger.inp
rem     echo      1 1  1  999999999                                             >>merger.inp
rem     echo.                                                                   >>merger.inp
rem     echo.                                                                   >>merger.inp
rem     c:\prepro\exe_win\merger
rem REM
rem REM Extend the (n,g) reaction and the covariance matrix
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3 102 19e6 19.0001e6 60e6 %mat%
rem     del irdff.txt
```

```
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Co-59 (n,tot), (n,el), (n,2n), (n,3n), (n,g), (n,p), (n,a)
rem echo.
rem REM The original file 27CO59.D10 was edited manually to insert (n,tot),
rem REM (n,el), (n,g) and (n,a) from IRDF-2002. The file was renamed (co59-dos.endf
rem REM
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                        >>irdff.txt
rem     echo Extended cross sections and covariances from 20 to 60 MeV         >>irdff.txt
rem     echo by TENDL-2010, renormalised for continuity.                       >>irdff.txt
rem     echo ***************************************************************** >>irdff.txt
rem     set irdff=co59-dos
rem     set iza=27059
rem     set mat=2725
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem REM
rem REM Reactions (n,2n), (n,3n), (n,p) do not need an extension
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3   1 19e6 19.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_001.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3   2 19e6 19.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_002.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3 102 20e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_102.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3 107 21e6 21.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_107.ps
    REM ---------------------------------------------------------------------------
    echo.
    echo Ni-58 (n,2n), (n,p)
    echo.
        echo ****************************************************************  >irdff.txt
        echo IAEA, Feb. 2014 (A. Trkov)                                        >>irdff.txt
        echo Extended cross sections and covariances from 20 to 60 MeV         >>irdff.txt
        echo by TENDL-2013, renormalised for continuity.                       >>irdff.txt
        echo ***************************************************************** >>irdff.txt
        set irdff=ni58-dos
        set iza=28058
        set mat=2825
        set t47=48
        echo %irdff%.endf  >getzam.inp
        echo irdff_p0.dat >>getzam.inp
        echo %iza%        >>getzam.inp
        echo 0            >>getzam.inp
        %endver%getzam<getzam.inp
    REM - The new Zolotarev (n,2n) evaluation extends to 60 MeV - no action is required
    REM call Fix_IRDFF %t2013% %irdff%     %iza%  3  16 20e6 20.0001e6 60e6 %mat%
    REM del irdff.txt
    REM move /Y %irdff%.ps  %irdff%_016.ps
    REM move /y %irdff%.fix %irdff%.endf
        call Fix_IRDFF %t2013% %irdff%     %iza%  3 103 20e6 20.0001e6 60e6 %mat%
        move /Y %irdff%.ps  %irdff%_103.ps
    REM ---------------------------------------------------------------------------
rem echo.
rem echo Ni-60 (n,p)
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, June 2012 (A. Trkov)                                        >>irdff.txt
rem     echo Extended cross sections and covariances from 20 to 60 MeV         >>irdff.txt
rem     echo by TENDL-2011, renormalised for continuity.                       >>irdff.txt
rem     echo ***************************************************************** >>irdff.txt
rem     set irdff=ni60-dos
rem     set iza=28060
rem     set mat=2831
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2011% %irdff%     %iza%  3 103 20e6 20.0001e6 60e6 %mat%
rem rem call Fix_IRDFF %t2010% %irdff%     %iza%  3 103 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_103.ps
```

```
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Cu-63 (n,tot), (n,el), (n,2n), (n,g) and (n,a)
rem echo.
rem REM
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, June 2012 (A. Trkov)                                        >>irdff.txt
rem     echo Original evaluated file cu63n2n-dos.endf by Zolotarev was edited   >>irdff.txt
rem     echo manually to insert (n,tot), (n,el), (n,g) and (n,a) from IRDF-2002.>>irdff.txt
rem     echo Cross sections and covariances were extended from 20 to 60 MeV     >>irdff.txt
rem     echo by TENDL-2011, renormalised for continuity.                        >>irdff.txt
rem     echo Additional points were added at threshold for consistency with Q>0 >>irdff.txt
rem     echo ***************************************************************** >>irdff.txt
rem     set irdff=cu63-dos
rem     set iza=29063
rem     set mat=2925
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2011% %irdff%     %iza%  3   1 19e6 19.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_001.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2011% %irdff%     %iza%  3   2 19e6 19.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_002.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2011% %irdff%     %iza%  3  16 20e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_016.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2011% %irdff%     %iza%  3 102 20e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_102.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2011% %irdff%     %iza%  3 107 20e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_107.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Cu-65 (n,2n)
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, June 2012 (A. Trkov)                                        >>irdff.txt
rem     echo Extended cross sections and covariances from 20 to 60 MeV         >>irdff.txt
rem     echo by TENDL-2011, renormalised for continuity.                        >>irdff.txt
rem     echo ***************************************************************** >>irdff.txt
rem     set irdff=cu65-dos
rem     set iza=29065
rem     set mat=2931
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2011% %irdff%     %iza%  3  16 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_016.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Zn-64 (n,p)
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, June 2012 (A. Trkov)                                        >>irdff.txt
rem     echo Extended cross sections and covariances from 20 to 60 MeV         >>irdff.txt
rem     echo by TENDL-2011, renormalised for continuity.                        >>irdff.txt
rem     echo ***************************************************************** >>irdff.txt
rem     set irdff=zn64-dos
rem     set iza=30064
rem     set mat=3025
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2011% %irdff%     %iza%  3 103 20e6 20.0001e6 60e6 %mat%
rem rem call Fix_IRDFF %t2010% %irdff%     %iza%  3 103 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_103.ps
rem REM ---------------------------------------------------------------------------
rem echo.
```

```
rem echo Zn-67 (n,p)
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, November 2011 (A. Trkov)                                   >>irdff.txt
rem     echo Extended cross sections and covariances from 20 to 60 MeV        >>irdff.txt
rem     echo by TENDL-2010, renormalised for continuity.                      >>irdff.txt
rem     echo.                                                                 >>irdff.txt
rem     echo The Zn-67(n,p) reaction is exothermic, therefore the cross       >>irdff.txt
rem     echo section has only a pseudo-threshold due to the Coulomb barrier,  >>irdff.txt
rem     echo but is non-zero below this threshold. Following the example of   >>irdff.txt
rem     echo the EAF-2010 library, the capture cross section from JENDL-4 was >>irdff.txt
rem     echo re-scaled to give a thermal value of 0.00123 barns and adjusted  >>irdff.txt
rem     echo above 600 keV to join smoothly with the (n,p) evaluation by      >>irdff.txt
rem     echo Zolotarev. A fully correlated uncertainty of 25 % was assigned   >>irdff.txt
rem     echo arbitrarily to the cross sections below the pseudo-threshold.    >>irdff.txt
rem     echo ***************************************************************** >>irdff.txt
rem     set irdff=zn67-dos
rem     set iza=30067
rem     set mat=3034
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem REM Insert subthreshold cross section by scaling the capture from JENDL-4
rem REM to match the thermal value of 0.00123 barns.
rem     echo Zn67\Zn67_np.cur  >edendf.inp
rem     echo %irdff%.endf     >>edendf.inp
rem     echo %irdff%.tmp      >>edendf.inp
rem     echo.                 >>edendf.inp
rem     echo.                 >>edendf.inp
rem     c:\andrej\exelib\edendf<edendf.inp
rem     move /Y %irdff%.tmp %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3 103 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_103.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo As-75 (n,2n)
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                       >>irdff.txt
rem     echo Extended cross sections and covariances from 20 to 60 MeV        >>irdff.txt
rem     echo by TENDL-2010, renormalised for continuity.                      >>irdff.txt
rem     echo ***************************************************************** >>irdff.txt
rem     set irdff=as75-dos
rem     set iza=33075
rem     set mat=3325
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3  16 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_016.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Y-89 (n,2n)
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                       >>irdff.txt
rem     echo Extended cross sections and covariances from 40 to 60 MeV        >>irdff.txt
rem     echo by TENDL-2010, renormalised for continuity.                      >>irdff.txt
rem     echo ***************************************************************** >>irdff.txt
rem     set irdff=y89-dos
rem     set iza=39089
rem     set mat=3925
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3  16 40e6 40.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_016.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Zr-90 (n,2n)
```

```
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                        >>irdff.txt
rem     echo Extended cross sections and covariances from 20 to 60 MeV         >>irdff.txt
rem     echo by TENDL-2010, renormalised for continuity.                       >>irdff.txt
rem     echo ***************************************************************** >>irdff.txt
rem     set irdff=zr90-dos
rem     set iza=40090
rem     set mat=4025
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3  16 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_016.ps
    REM ---------------------------------------------------------------------------
        echo.
        echo Nb-93 (n,tot), (n,el), (n,g) (n,inl)m, (n,2n)m
        echo.
    REM
    REM Note: MF40 data are not plotted (no processing in COVR).
    REM
    REM The comments applicable to the new Zolotarev evaluation
    REM are already included in the starter file by manual editing.
        if exist irdff.txt del irdff.txt
    REM
        set irdff=nb93-dos
        set iza=41093
        set mat=4125
        set t47=47
        echo %irdff%.endf  >getzam.inp
        echo irdff_p0.dat >>getzam.inp
        echo %iza%        >>getzam.inp
        echo 0            >>getzam.inp
        %endver%getzam<getzam.inp
    REM
    REM Save a copy of the originl file
        copy /Y %irdff%.endf FIX_IRDFF.t0
    REM
    REM Prepare the PENDF at 300 K
        copy /Y %irdff%.endf endfb.in
        %prepro%linear
        move /Y endfb.out endfb.in
        %prepro%recent
        move /Y endfb.out %irdff%.endf
    REM Extend the capture cross section
        call Fix_IRDFF %t2013% %irdff%     %iza%  3 102 20e6 20.0001e6 60e6 %mat%
        move /Y %irdff%.ps  %irdff%_102.ps
        move /y %irdff%.fix %irdff%.endf
    REM
    REM Doppler-broaden and convert MF9 to MF10
        copy /Y %irdff%.endf endfb.in
        %prepro%sigma1
        move /Y endfb.out endfb.in
        %prepro%activate
    REM
    REM Prepare dummy resonance file (without resonance parameters) into fix_irdff.t2
        echo   41-Nb-093 for IRDFF                                          6000 0  0  >fix_irdff.t2
        echo  4.10930+ 4 9.21083+ 1          0          0          1          04125 2151 >>fix_irdff.t2
        echo  4.10930+ 4 1.00000+ 0          0          0          1          04125 2151 >>fix_irdff.t2
        echo  1.00000- 5 7.50000+ 3          0          0          0          04125 2151 >>fix_irdff.t2
        echo  4.50000+ 0 6.80000- 1          0          0          0          04125 2151 >>fix_irdff.t2
        echo                                                                   4125 2  0 >>fix_irdff.t2
        echo                                                                   4125 0  0 >>fix_irdff.t2
        echo  0.00000+00 0.00000+00          0          0          0          0   0 0  0 >>fix_irdff.t2
        echo  0.00000+00 0.00000+00          0          0          0          0  -1 0  0 >>fix_irdff.t2
    REM
    REM Extract processed cross sections by MERGER into endfb.in
        echo endfb.in                                                                    >merger.inp
        echo   41-Nb-093 for IRDFF                                          6000 0 >>merger.inp
        echo endfb.out                                                                  >>merger.inp
        echo END                                                                        >>merger.inp
        echo      1 3  1  9999 3  1                                                     >>merger.inp
        echo      1 3  2  9999 3  2                                                     >>merger.inp
        echo      1 3102  9999 3102                                                     >>merger.inp
        echo      110102  999910102                                                     >>merger.inp
        echo      133102  999933102                                                     >>merger.inp
        echo.                                                                           >>merger.inp
        echo.                                                                           >>merger.inp
```

```
        c:\prepro\exe_win\merger
    REM
    REM Merge extracted parts with the main file (but exclude MF 9) into FIX_IRDFF.t4
    REM   FIX_IRDFF.t0  Saved original file
    REM   FIX_IRDFF.t2  Dummy resonance file
    REM   endfb.in      Extracted processed cross sections
    REM Merge extracted parts with the main file but exclude MF 9:
        move %irdff%.endf FIX_IRDFF.t3
        echo FIX_IRDFF.t4                                                        >merger.inp
        echo   41-Nb-093 for IRDFF                                         6000 0 >>merger.inp
        echo endfb.in                                                            >>merger.inp
        echo FIX_IRDFF.t2                                                        >>merger.inp
        echo FIX_IRDFF.t0                                                        >>merger.inp
        echo END                                                                 >>merger.inp
        echo      1 1  1  9999 8999                                              >>merger.inp
        echo      110  1  999999999                                              >>merger.inp
        echo.                                                                    >>merger.inp
        echo.                                                                    >>merger.inp
        c:\prepro\exe_win\merger
    REM
    REM Do the ad-hoc corrections to the ENDF file
        echo FIX_IRDFF.t4  >ad_hoc.inp
        echo FIX_IRDFF.t5 >>ad_hoc.inp
        ad_hoc<ad_hoc.inp
        if not exist FIX_IRDFF.t5 echo ERROR on AD_HOC file adjustment
        if not exist FIX_IRDFF.t5 goto end
    REM
        echo FIX_IRDFF.t5  >stanef.inp
        echo %irdff%.endf >>stanef.inp
        echo.             >>stanef.inp
        echo y            >>stanef.inp
        echo.             >>stanef.inp
        c:\endfutil\stanef<stanef.inp
    REM
    REM Extend the remaining reactions
        call Fix_IRDFF %t2013% %irdff%     %iza% 10   4 20e6 20.0001e6 60e6 %mat%
        move /Y %irdff%.ps  %irdff%_004.ps
   move /y %irdff%.fix %irdff%.endf
        call Fix_IRDFF %t2013% %irdff%     %iza% 10  16 40e6 40.0001e6 60e6 %mat%
        move /Y %irdff%.ps  %irdff%_016.ps
    REM ---------------------------------------------------------------------------
rem echo.
rem echo Mo-92 (n,p)
rem echo.
rem     echo ***************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                       >>irdff.txt
rem     echo Extended cross sections and covariances from 20 to 60 MeV        >>irdff.txt
rem     echo by TENDL-2010, renormalised for continuity.                      >>irdff.txt
rem     echo In addition, MF2/MT251 was added to define the scattering radius  >>irdff.txt
rem     echo Original MF3/MF33 representation for MT103 was changed to        >>irdff.txt
rem     echo MF10/MF40 representation to explicitly denote the formation      >>irdff.txt
rem     echo of the metastable isomer.                                        >>irdff.txt
rem     echo ************************************************************** >>irdff.txt
rem     echo The work on the Mo(n,p)Nb-92m evaluation was performed under     >>irdff.txt
rem     echo Research Contract No 16242 with the IAEA                         >>irdff.txt
rem     echo ************************************************************** >>irdff.txt
rem     set irdff=mo92-dos
rem     set iza=42092
rem     set mat=4225
rem     set t47=
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2010% %irdff%     %iza% 10 103 40e6 40.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_103.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Rh-103 (n,inl)m
rem echo.
rem     echo ***************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                       >>irdff.txt
rem     echo The IRDF-2002 evaluation was adopted as the starter file.        >>irdff.txt
rem     echo The cross sections were extended using data from TENDL-2010,     >>irdff.txt
rem     echo renormalised for continuity. The covariances were not extended   >>irdff.txt
rem     echo because they are not present in the TENDL-2010 library.          >>irdff.txt
rem     echo ************************************************************** >>irdff.txt
rem REM
rem     set irdff=rh103-dos
rem     set iza=45103
```

```
rem     set mat=4525
rem     set t47=
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem REM
rem     call Fix_IRDFF %t2010% %irdff%     %iza% 10   4 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_004.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Ag-109 (n,g)m    Add (n,tot) from IRDF-2002
rem echo.
rem     echo ***************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                      >>irdff.txt
rem     echo The original IRDF-2002 MF3/MT1 and MF10/MT102 were extended     >>irdff.txt
rem     echo from 20 to 60 MeV using the data from TENDL-2010,               >>irdff.txt
rem     echo renormalised for continuity. The covariance matrix of MF10/MT102  >>irdff.txt
rem     echo could not be extended because it is not present in TENDL-2010.  >>irdff.txt
rem     echo ****************************************************************** >>irdff.txt
rem REM
rem     set irdff=ag109-dos
rem     set iza=47109
rem     set mat=4731
rem     set t47=
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem REM
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3   1 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_001.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza% 10 102 20e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_102.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Cd-nat (n,tot), (n,abs), (n,g), (n,p), (n,d), (n,t), (n,3He), (n,a)
rem echo.
rem REM The starter file was produced by the mkeCd.bat batch script on
rem REM C:\Projects\irdf2002\Cd
rem REM Manual corrections were made on Ehi, QM, QI and threshold energies
rem REM The comment section header was also added.
rem     echo ***************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                      >>irdff.txt
rem     echo New resonance parameters were evaluated at IRMM for the Cd      >>irdff.txt
rem     echo isotopes. The new resonance parameters were inserted into the   >>irdff.txt
rem     echo ENDF/B-VII.0 isotopic cadmium evaluations at IRMM.              >>irdff.txt
rem     echo These files are the source data for the Cd-nat dosimetry file.  >>irdff.txt
rem     echo The cross sections for Cd-nat were reconstructed from the       >>irdff.txt
rem     echo isotopic data using the PrePro codes. The cross sections were   >>irdff.txt
rem     echo extended from 19 to 60 MeV using the isotopic data from the     >>irdff.txt
rem     echo TENDL-2010 library, processed in the same way to produce the    >>irdff.txt
rem     echo cross sections for the natural Cd. Reactions (n,tot), (n,abs),  >>irdff.txt
rem     echo (n,g), (n,p), (n,d), (n,t), (n,He3), (n,a) were processed.       >>irdff.txt
rem     echo No covariance information is available.                         >>irdff.txt
rem     echo ****************************************************************** >>irdff.txt
rem REM
rem     set irdff=cdnat-dos
rem     set iza=48000
rem     set mat=4800
rem     set t47=48
rem REM
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem REM
rem     set Cd_t10=C:\Projects\irdf2002\Cd\Cd_nat_t10.end
rem     call Fix_IRDFF %Cd_t10% %irdff%     %iza%  3   1 19e6 19.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_001.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %Cd_t10% %irdff%     %iza%  3   2 19e6 19.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_002.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %Cd_t10% %irdff%     %iza%  3 101 19e6 19.0001e6 60e6 %mat%
```

```
rem     move /Y %irdff%.ps  %irdff%_101.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %Cd_t10% %irdff%     %iza%  3 102 19e6 19.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_102.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %Cd_t10% %irdff%     %iza%  3 103 19e6 19.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_103.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %Cd_t10% %irdff%     %iza%  3 104 19e6 19.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_104.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %Cd_t10% %irdff%     %iza%  3 105 19e6 19.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_105.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %Cd_t10% %irdff%     %iza%  3 106 19e6 19.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_106.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %Cd_t10% %irdff%     %iza%  3 107 19e6 19.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_107.ps
rem     set Cd_t10=
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo In-113 (n,n')m
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, November 2011 (A. Trkov)                                  >>irdff.txt
rem     echo Extended cross sections and covariances from 20 to 60 MeV       >>irdff.txt
rem     echo by TENDL-2010, renormalised for continuity.                     >>irdff.txt
rem     echo **************************************************************** >>irdff.txt
rem     set irdff=in113-dos
rem     set iza=49113
rem     set mat=4925
rem     set t47=
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2010% %irdff%     %iza% 10   4 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_004.ps
    REM ---------------------------------------------------------------------------
    echo.
    echo In-115 (n,inl)m, (n,2n)m, (n,g)m, (n,tot)
    echo.
        if exist irdff.txt del irdff.txt
    REM
        set irdff=in115-dos
        set iza=49115
        set mat=4931
        set t47=
        echo %irdff%.endf  >getzam.inp
        echo irdff_p0.dat >>getzam.inp
        echo %iza%        >>getzam.inp
        echo 0            >>getzam.inp
        %endver%getzam<getzam.inp
    REM
    REM Save a copy of the originl file
        copy /Y %irdff%.endf FIX_IRDFF.t0
    REM
    REM Prepare the PENDF at 0 K
       copy /Y %irdff%.endf endfb.in
       %prepro%linear
       move /Y endfb.out endfb.in
       %prepro%recent
       move /Y endfb.out %irdff%.endf
    REM
    REM Extend the total, elastic and capture cross sections
    REM (note that NJOY crashes in ERRORR because no covariances for capture isomers)
        call Fix_IRDFF %t2013% %irdff%     %iza%  3   1 18e6 18.0001e6 60e6 %mat%
        if exist irdff.txt del irdff.txt
        move /Y %irdff%.ps  %irdff%_001.ps
        move /y %irdff%.fix %irdff%.endf
        call Fix_IRDFF %t2013% %irdff%     %iza%  3   2 18e6 18.0001e6 60e6 %mat%
        move /Y %irdff%.ps  %irdff%_002.ps
        move /y %irdff%.fix %irdff%.endf
        call Fix_IRDFF %t2013% %irdff%     %iza%  3 102 20e6 20.0001e6 60e6 %mat%
        move /Y %irdff%.ps  %irdff%_102.ps
        move /y %irdff%.fix %irdff%.endf
    REM
    REM Doppler-broaden to 300 K and convert MF9 to MF10
        copy /Y %irdff%.endf endfb.in
```

```
        %prepro%sigma1
        move /Y endfb.out endfb.in
        %prepro%activate
    REM
    REM Prepare dummy resonance file (without resonance parameters) into fix_irdff.t2
        echo   49-In-115 for IRDFF                                          6000 0  0  >fix_irdff.t2
        echo  4.911500+4 1.139170+2          0          0          1          04931 2151 >>fix_irdff.t2
        echo  4.911500+4 1.000000+0          0          0          1          04931 2151 >>fix_irdff.t2
        echo  1.000000-5 2.000000+3          0          0          0          04931 2151 >>fix_irdff.t2
        echo  4.500000+0 6.530000-1          0          0          0          04931 2151 >>fix_irdff.t2
        echo                                                                  4931 2  0 >>fix_irdff.t2
        echo                                                                  4931 0  0 >>fix_irdff.t2
        echo  0.00000+00 0.00000+00          0          0          0          0   0 0  0 >>fix_irdff.t2
        echo  0.00000+00 0.00000+00          0          0          0          0  -1 0  0 >>fix_irdff.t2
    REM
    REM Extract processed cross sections by MERGER into endfb.in
        echo endfb.in                                                                  >merger.inp
        echo   49-In-115 for IRDFF                                          6000 0 >>merger.inp
        echo endfb.out                                                               >>merger.inp
        echo END                                                                     >>merger.inp
        echo      1 3  1  9999 3  1                                                  >>merger.inp
        echo      1 3  2  9999 3  2                                                  >>merger.inp
        echo      1 3102  9999 3102                                                  >>merger.inp
        echo      110102  999910102                                                  >>merger.inp
        echo      133102  999933102                                                  >>merger.inp
        echo.                                                                        >>merger.inp
        echo.                                                                        >>merger.inp
        c:\prepro\exe_win\merger
    REM
    REM Merge extracted parts with the main file (but exclude MF 9) into FIX_IRDFF.t4
    REM   FIX_IRDFF.t0  Saved original file
    REM   FIX_IRDFF.t2  Dummy resonance file
    REM   endfb.in      Extracted processed cross sections
    REM Merge extracted parts with the main file but exclude MF 9:
        move %irdff%.endf FIX_IRDFF.t3
        echo FIX_IRDFF.t4                                                              >merger.inp
        echo   49-In-115 for IRDFF                                          6000 0 >>merger.inp
        echo endfb.in                                                                >>merger.inp
        echo FIX_IRDFF.t2                                                            >>merger.inp
        echo FIX_IRDFF.t0                                                            >>merger.inp
        echo END                                                                     >>merger.inp
        echo      1 1  1  9999 8999                                                  >>merger.inp
        echo      110  1  999999999                                                  >>merger.inp
        echo.                                                                        >>merger.inp
        echo.                                                                        >>merger.inp
        c:\prepro\exe_win\merger
    REM
    REM Do the ad-hoc corrections to the ENDF file
        echo FIX_IRDFF.t4  >ad_hoc.inp
        echo FIX_IRDFF.t5 >>ad_hoc.inp
        ad_hoc<ad_hoc.inp
        if not exist FIX_IRDFF.t5 echo ERROR on AD_HOC file adjustment
        if not exist FIX_IRDFF.t5 goto end
    REM
        echo FIX_IRDFF.t5  >stanef.inp
        echo %irdff%.endf >>stanef.inp
        echo.             >>stanef.inp
        echo y            >>stanef.inp
        echo.             >>stanef.inp
        c:\endfutil\stanef<stanef.inp
        copy /y %irdff%.endf %irdff%.fix
    REM
    REM Extend the inelastic cross section
        call Fix_IRDFF %t2013% %irdff%     %iza% 10   4 20e6 20.0001e6 60e6 %mat%
    REM Do the ad-hoc corrections to the ENDF file to fix IZAP in MF10/MT4
    REM (the covariance plot will be fixed on the next run)
        move /y %irdff%.fix %irdff%.endf
        echo %irdff%.endf  >ad_hoc.inp
        echo %irdff%.fix  >>ad_hoc.inp
        ad_hoc<ad_hoc.inp
        move /Y %irdff%.ps  %irdff%_004.ps
        move /y %irdff%.fix %irdff%.endf
        call Fix_IRDFF %t2013% %irdff%     %iza% 10  16 20e6 20.0001e6 60e6 %mat%
        move /Y %irdff%.ps  %irdff%_016.ps
    REM ---------------------------------------------------------------------------
rem echo.
rem echo I-127 (n,2n)
rem echo.
rem     echo ***************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                     >>irdff.txt
rem     echo Extended cross sections and covariances from 20 to 60 MeV      >>irdff.txt
rem     echo by TENDL-2010, renormalised for continuity.                    >>irdff.txt
```

```
rem     echo ************************************************************** >>irdff.txt
rem     set irdff=i127-dos
rem     set iza=53127
rem     set mat=5325
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3  16 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_016.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo La-139 (n,tot), (n,el), (n,g)
rem echo.
rem     echo ***************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                     >>irdff.txt
rem     echo Cross sections and covariances energy range was extended       >>irdff.txt
rem     echo by TENDL-2010, renormalised for continuity.                    >>irdff.txt
rem     echo The total and elastic were extended from 5 to 60 MeV because   >>irdff.txt
rem     echo the original IRDFF candidate evaluation had an unphysical shape.  >>irdff.txt
rem     echo The capture cross section was extended from 20 to 60 MeV       >>irdff.txt
rem     echo ************************************************************** >>irdff.txt
rem     set irdff=la139-dos
rem     set iza=57139
rem     set mat=5728
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3   1  5e6  5.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_001.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3   2  5e6  5.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_002.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3 102 20e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_102.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Pr-141 (n,2n)
rem echo.
rem     echo ***************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                     >>irdff.txt
rem     echo Extended cross sections and covariances from 20 to 60 MeV      >>irdff.txt
rem     echo by TENDL-2010, renormalised for continuity.                    >>irdff.txt
rem     echo ************************************************************** >>irdff.txt
rem     set irdff=pr141-dos
rem     set iza=59141
rem     set mat=5925
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3  16 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_016.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Gd-nat (n,tot), (n,el), (n,abs), (n,g)
rem echo.
rem     echo ***************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                     >>irdff.txt
rem     echo Assembled at NDS from the ENDF/B-VII.1b3 evaluations for       >>irdff.txt
rem     echo 64-Gd-152,154,155,156,157,158 and 160. The files were          >>irdff.txt
rem     echo processed through the PrePro-2010 codes LINEAR, RECENT,        >>irdff.txt
rem     echo SIGMA1 and FIXUP to produce pointwise isotopic files at        >>irdff.txt
rem     echo 300 K and to reconstruct the cross sections for the natural    >>irdff.txt
rem     echo element with the MIXER. The absorption cross section was       >>irdff.txt
rem     echo summed with FIXUP. The total, elastic, absorption and          >>irdff.txt
rem     echo capture cross sections were extracted with MERGER to           >>irdff.txt
rem     echo produce the final file.                                        >>irdff.txt
rem     echo   The same procedure was applied to the cross sections         >>irdff.txt
rem     echo from the TENDL-2010 library. The cross sections from the       >>irdff.txt
rem     echo ENDF/B-VII.1b3 library were extended from 19 to 60 MeV with    >>irdff.txt
```

```
rem     echo TENDL-2010 data.                                                >>irdff.txt
rem     echo   No covariance information is included for Gd-nat.             >>irdff.txt
rem     echo ****************************************************************** >>irdff.txt
rem     set irdff=gdnat-dos
rem     set iza=64000
rem     set mat=6400
rem     set t47=48
rem REM The elemental PENDF files are produced with the Gd_nat batch script
rem REM Note: be sure to correct QM on file Gd-nat_e71b3.pen
rem REM      (corrupted by MIXR, replacing QM with temperature)
rem rem call Gd_nat C:\Andrej\data\Tendl-2010\Tendl-2010.pen Gd-nat_t10
rem rem call Gd_nat Gd-iso_e71b3_.pen                        Gd-nat_e71b3
rem     copy Gd-nat_e71b3.pen %irdff%.endf
rem     call Fix_IRDFF Gd-nat_t10.pen %irdff%     %iza%  3   1 19e6 19.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_001.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF Gd-nat_t10.pen %irdff%     %iza%  3   2 19e6 19.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_002.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF Gd-nat_t10.pen %irdff%     %iza%  3 101 19e6 19.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_101.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF Gd-nat_t10.pen %irdff%     %iza%  3 102 19e6 19.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_102.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Tm-169 (n,2n), (n,3n)
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, June 2012 (A. Trkov)                                      >>irdff.txt
rem     echo The (n,2n) and (n,3n) reaction cross sections evaluation by      >>irdff.txt
rem     echo K.I. Zolotarev (see below) were added by manually editing the    >>irdff.txt
rem     echo original file. Extended cross sections and covariances from     >>irdff.txt
rem     echo 20 to 60 MeV by TENDL-2011, renormalised for continuity.                    >>irdff.txt
rem     echo ****************************************************************** >>irdff.txt
rem     set irdff=tm169-dos
rem     set iza=69169
rem     set mat=6925
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2011% %irdff%     %iza%  3  16 40e6 40.0001e6 60e6 %mat%
rem rem call Fix_IRDFF %t2010% %irdff%     %iza%  3  16 40e6 40.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_016.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2011% %irdff%     %iza%  3  17 50e6 50.0001e6 60e6 %mat%
rem rem call Fix_IRDFF %t2010% %irdff%     %iza%  3  17 50e6 50.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_017.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Ta-181 (n,tot), (n,el), (n,g)
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                      >>irdff.txt
rem     echo Cross sections and covariances energy range was extended        >>irdff.txt
rem     echo by TENDL-2010, renormalised for continuity.                     >>irdff.txt
rem     echo All cross sections were extended from 20 to 60 MeV.             >>irdff.txt
rem     echo The capture covariances were also extended from 20 to 60 MeV    >>irdff.txt
rem     echo ****************************************************************** >>irdff.txt
rem     set irdff=ta181-dos
rem     set iza=73181
rem     set mat=7328
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem REM
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3   1 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_001.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3   2 20e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_002.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3 102 20e6 20.0001e6 60e6 %mat%
```

```
rem     move /Y %irdff%.ps  %irdff%_102.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo W-186 (n,tot), (n,el), (n,g)
rem echo.
rem REM See "C:\Projects\Tungsten\w186\Dosimetry\w186_dos.bat" for details
rem REM on generating the source dosimetry file.
rem     echo ***************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                      >>irdff.txt
rem     echo The ENDF/B-VII.1 cross sections (from an IAEA evaluation) are    >>irdff.txt
rem     echo adopted. The relevant comments from the original evaluation are  >>irdff.txt
rem     echo included. For details see original evaluation.                  >>irdff.txt
rem     echo The original covariances include the covariances of the resonance  >>irdff.txt
rem     echo parameters. The file was processed with NJOY in a group structure  >>irdff.txt
rem     echo that was adapted to the resonances of W-186, and to the covariance >>irdff.txt
rem     echo group structure above the resonance range. The processed        >>irdff.txt
rem     echo covariance was converted into ENDF format and added to the      >>irdff.txt
rem     echo dosimetry file.                                                 >>irdff.txt
rem     echo ****************************************************************** >>irdff.txt
rem     set irdff=w186-dos
rem     set iza=74186
rem     set mat=7443
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem REM
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3   0 150e6 150.0001e6 150e6 %mat%
rem     del irdff.txt
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Au-197 (n,tot), (n,el), (n,2n), (n,g)
rem echo.
rem     echo ***************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                      >>irdff.txt
rem     echo Extended cross sections and covariances from 40 to 60 MeV (n,2n),  >>irdff.txt
rem     echo from 28 to 60 MeV for total and from 30 to 60 MeV for (n,gamma).   >>irdff.txt
rem     echo The TENDL-2010 data are renormalised for continuity.            >>irdff.txt
rem     echo ****************************************************************** >>irdff.txt
rem REM The Zolotarev file is edited manually by adding the total and elastic
rem REM cross sections provided by V. Pronyaev. Although the cross sections are
rem REM given up to 30 MeV, they have the tendency to start bending upwards
rem REM above 28 MeV. A smoother continuity in the gradient is obtained if
rem REM TENDL-2010 is adopted above this energy, scaled for continuity.
rem     set irdff=au197-dos
rem     set iza=79197
rem     set mat=7925
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     copy %irdff%.endf fix_irdf.t0
rem REM Retrieve ENDF/B-VII.1 capture above 3.5 MeV
rem     copy c:\andrej\data\endfb7\n-079_Au_197.endf endfb.in
rem     c:\prepro\exe_win\linear
rem     move /Y endfb.out endfb.in
rem     c:\prepro\exe_win\recent
rem     move /Y endfb.out endfb.in
rem     c:\prepro\exe_win\sigma1
rem     echo endfb.out                              >endtab.inp
rem     echo fix_irdf.t1                           >>endtab.inp
rem     echo 79197                                 >>endtab.inp
rem     echo 3                                     >>endtab.inp
rem     echo 5000.                                 >>endtab.inp
rem     echo.                                      >>endtab.inp
rem     echo.                                      >>endtab.inp
rem     echo 102                                   >>endtab.inp
rem     echo 0                                     >>endtab.inp
rem     echo.                                      >>endtab.inp
rem     %endver%endtab<endtab.inp
rem REM Insert capture data into the starter file
rem     echo fix_irdf.t1                            >edendf.inp
rem     echo fix_irdf.t0                           >>edendf.inp
rem     echo %irdff%.endf                          >>edendf.inp
rem     echo.                                      >>edendf.inp
rem     echo.                                      >>edendf.inp
rem     echo.                                      >>edendf.inp
rem     c:\andrej\exelib\edendf<edendf.inp
```

```
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3   1 28e6 28.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_001.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3   2 28e6 28.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_002.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3  16 40.0001e6 40.0002e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_016.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3 102 30e6 30.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_102.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Hg-199 (n,n')m
rem echo.
rem     echo ***************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                     >>irdff.txt
rem     echo Original Zolotarev evaluation was edited manually to transform     >>irdff.txt
rem     echo the MF3/MT57 representation into MF=10/MT=4/LFS=1 to conform to    >>irdff.txt
rem     echo ENDF-6 format rules.                                           >>irdff.txt
rem     echo The cross sections were extended from 20 to 60 MeV using the       >>irdff.txt
rem     echo TENDL-2010 library, renormalised for continuity.                   >>irdff.txt
rem     echo The covariances were not extended because they are not present     >>irdff.txt
rem     echo in the TENDL-2010 library.                                         >>irdff.txt
rem     echo ****************************************************************** >>irdff.txt
rem REM
rem     set irdff=hg199-dos
rem     set iza=80199
rem     set mat=8034
rem     set t47=
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem REM
rem     call Fix_IRDFF %t2010% %irdff%     %iza% 10   4 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_004.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Pb-204 (n,inl)m
rem echo.
rem     echo ***************************************************************  >irdff.txt
rem     echo IAEA, June 2012 (A. Trkov)                                     >>irdff.txt
rem     echo Original Zolotarev evaluation was edited manually to transform     >>irdff.txt
rem     echo the MF3/MT57 representation into MF=10/MT=4/LFS=1 to conform to    >>irdff.txt
rem     echo ENDF-6 format rules.                                           >>irdff.txt
rem     echo   The cross sections were extended from 20 MeV to 60 MeV, based on >>irdff.txt
rem     echo the TENDL-2011 library, but covariances were not because they are  >>irdff.txt
rem     echo not present in the library for this reaction.                  >>irdff.txt
rem     echo ****************************************************************** >>irdff.txt
rem REM
rem     set irdff=pb204-dos
rem     set iza=82204
rem     set mat=8225
rem     set t47=
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem REM
rem     call Fix_IRDFF %t2011% %irdff%     %iza% 10   4 20e6 20.0001e6 60e6 %mat%
rem rem call Fix_IRDFF %t2010% %irdff%     %iza% 10   0 20e6 20.0001e6 20e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_004.ps
rem     del irdff.txt
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Bi-209 (n,3n)
rem echo.
rem     echo ***************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                     >>irdff.txt
rem     echo The new Zolotarev evaluation was extended from 45 to 60 MeV        >>irdff.txt
rem     echo using the TENDL-2010 library, renormalised for continuity.         >>irdff.txt
rem     echo ****************************************************************** >>irdff.txt
rem REM
rem     set irdff=bi209-dos
rem     set iza=83209
rem     set mat=8325
rem     set t47=48
```

```
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem REM
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3  17 45e6 45.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_017.ps
rem     del irdff.txt
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Th-232 (n,tot), (n,el) (n,f), (n,g) from ENDF/B-VII.1
rem echo.
rem     echo ***************************************************************  >irdff.txt
rem     echo IAEA, May 2012 (A. Trkov)                                       >>irdff.txt
rem     echo The dosimetry file prepared by Zolotarev and Pronyaev, is taken  >>irdff.txt
rem     echo as a starting point. The capture and fission cross section curves  >>irdff.txt
rem     echo are replaced with those from ENDF/B-VII.1, but the sub-threshold  >>irdff.txt
rem     echo fission cross sections and the corresponding subsection of the  >>irdff.txt
rem     echo covariance matrix are retained.                                 >>irdff.txt
rem     echo   The capture covariance matrix from ENDF/B-VII.1 is processed  >>irdff.txt
rem     echo with NJOY on a customised energy grid that takes into account the  >>irdff.txt
rem     echo strong resonances, but keeps the covariance energy grid relatively >>irdff.txt
rem     echo coarse to avoid very small or negative eigenvalues. Above the  >>irdff.txt
rem     echo resonance range the energy grid coincides with the covariance  >>irdff.txt
rem     echo grid of the original evaluation.                                >>irdff.txt
rem     echo   No extension of the data was needed, since the original  >>irdff.txt
rem     echo evaluation already extends up to 60 MeV.                        >>irdff.txt
rem     echo *************************************************************** >>irdff.txt
rem REM
rem     set irdff=th232-dos
rem     set iza=90232
rem     set mat=9040
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem REM
rem     set e71b3=C:\Andrej\data\endfb7\n-090_Th_232.endf
rem REM
rem REM Make pendf
rem     copy %e71b3% endfb.in
rem     c:\prepro\exe_win\linear
rem     move /Y endfb.out endfb.in
rem     c:\prepro\exe_win\recent
rem     move /Y endfb.out endfb.in
rem     c:\prepro\exe_win\sigma1
rem REM
rem REM Extract (n,tot), (n,el) from ENDF/B-VII.1 (file FIX_IRDFF.t2)
rem     echo FIX_IRDFF.t2                                                     >merger.inp
rem     echo  090-Th-232 from ENDF/B-VII.1                                 6000 0 >>merger.inp
rem     echo endfb.out                                                        >>merger.inp
rem     echo END                                                              >>merger.inp
rem     echo      1 3  1  9999 3  1                                           >>merger.inp
rem     echo      1 3  2  9999 3  2                                           >>merger.inp
rem     echo      1 3 18  9999 3 18                                           >>merger.inp
rem     echo      1 3102  9999 3102                                           >>merger.inp
rem     echo.                                                                 >>merger.inp
rem     echo.                                                                 >>merger.inp
rem     c:\prepro\exe_win\merger
rem REM
rem REM Extract the (n,f) covariance matrix (without cross-react. correlations)
rem     echo endfb.out        >covcut.inp
rem     echo fix_irdff.t1    >>covcut.inp
rem     echo 1.e-5           >>covcut.inp
rem     echo 6.e+7           >>covcut.inp
rem     echo 0               >>covcut.inp
rem     echo 90232 33 18 0 0 >>covcut.inp
rem     echo.                >>covcut.inp
rem     covcut<covcut.inp
rem REM
rem REM Merge with the dosimetry file (file fix_irdff.t1)
rem     echo fix_irdff.t0                                                     >merger.inp
rem     echo  090-Th-232 from ENDF/B-VII.1                                 6000 0 >>merger.inp
rem     echo fix_irdff.t1                                                     >>merger.inp
rem     echo FIX_IRDFF.t2                                                     >>merger.inp
rem     echo %irdff%.endf                                                     >>merger.inp
rem     echo END                                                              >>merger.inp
rem     echo      1 1  1  999999999                                           >>merger.inp
rem     echo.                                                                 >>merger.inp
```

```
rem     echo.                                                                   >>merger.inp
rem     c:\prepro\exe_win\merger
rem REM
rem REM Extract subthreshold fission from the Pronyaev evaluation for IRDFF
rem     echo %irdff%.endf  >endtab.inp
rem     echo %irdff%.cur  >>endtab.inp
rem     echo 90232        >>endtab.inp
rem     echo 3            >>endtab.inp
rem     echo 1.e-5        >>endtab.inp
rem     echo 350e3        >>endtab.inp
rem     echo -1           >>endtab.inp
rem     echo 18           >>endtab.inp
rem     echo 0            >>endtab.inp
rem     echo.             >>endtab.inp
rem     %endver%endtab<endtab.inp
rem REM
rem REM Insert the sub-threshold fission cross section (file FIX_IRDFF.t3
rem     echo %irdff%.cur   >edendf.inp
rem     echo FIX_IRDFF.t0 >>edendf.inp
rem     echo FIX_IRDFF.t3 >>edendf.inp
rem     echo 1.e-5        >>edendf.inp
rem     echo 350e3        >>edendf.inp
rem     C:\andrej\exelib\edendf<edendf.inp
rem REM
rem REM Prepare the covariance matrix of the subthreshold fission
rem REM as recommended by Pronyaev
rem     echo  Th-232 Dosimetry                                                  7777 0  0  >fix_irdff.t4
rem     echo  90232.0000 230.045000          0          0          0          1904033 18 >>fix_irdff.t4
rem     echo  0.000000+0 0.000000+0          0         18          0          1904033 18 >>fix_irdff.t4
rem     echo  0.000000+0 0.000000+0          0          1          6          3904033 18 >>fix_irdff.t4
rem     echo  1.000000-5 8.100000-1 2.000000+4 1.000000+0 3.500000+5 0.000000+0904033 18 >>fix_irdff.t4
rem     echo                                                                   904033  0 >>fix_irdff.t4
rem     echo                                                                   9040 0  0 >>fix_irdff.t4
rem     echo                                                                      0 0  0 >>fix_irdff.t4
rem     echo                                                                     -1 0  0 >>fix_irdff.t4
rem REM
rem REM Add the subthreshold fission covariance matrix (file FIX_IRDFF.t5)
rem     echo FIX_IRDFF.t3  >covedt.inp
rem     echo FIX_IRDFF.t4 >>covedt.inp
rem     echo FIX_IRDFF.t5 >>covedt.inp
rem     c:\andrej\exelib\covedt<covedt.inp
rem REM
rem REM Prepare NJOY input for generating covariance matrices from ENDF/B-VII.1
rem     echo moder / Extract/convert neutron evaluated data                      >nji
rem     echo 1 -21                                                              >>nji
rem     echo '90-Th-232 from ENDF/B-VII.1'/                                     >>nji
rem     echo 20 9040                                                            >>nji
rem     echo 0/                                                                 >>nji
rem     echo reconr / Reconstruct XS for neutrons                               >>nji
rem     echo -21 -22                                                            >>nji
rem     echo '90-Th-232 from ENDF/B-VII.1'/                                     >>nji
rem     echo 9040 2/                                                            >>nji
rem     echo 0.001 0. 0.003/                                                    >>nji
rem     echo '90-Th-232 from ENDF/B-VII.1'/                                     >>nji
rem     echo 'Processed with NJOY99.364 on ned 06.05.2012'/                     >>nji
rem     echo 0/                                                                 >>nji
rem     echo broadr / Doppler broaden XS                                        >>nji
rem     echo -21 -22 -23                                                        >>nji
rem     echo 9040 1 0 0 0./                                                     >>nji
rem     echo 0.001 2.0e6 0.003/                                                 >>nji
rem     echo 300.                                                               >>nji
rem     echo 0/                                                                 >>nji
rem     echo groupr / Prepare multigroup data for covariances                   >>nji
rem     echo -21 -23 0 36                                                       >>nji
rem     echo 9040 1 0 6 1 1 1 1 /                                               >>nji
rem     echo '90-Th-232 processed with NJOY99'/                                 >>nji
rem     echo 300.                                                               >>nji
rem     echo 1.E+10                                                             >>nji
rem     echo  53 /                                                              >>nji
rem     echo 1.00000E-5 1.27500E-2 0.55000000 2.00000000 6.00000000 15.0000000  >>nji
rem     echo 30.0000000 50.0000000 100.000000 150.000000 200.000000 300.000000  >>nji
rem     echo 500.000000 1000.00000 1300.00000 2000.00000 3000.00000 4000.00000  >>nji
rem     echo 5.20000E+3 8.500000+3 1.200000+4 1.800000+4 2.800000+4 4.000000+4  >>nji
rem     echo 6.500000+4 1.000000+5 1.260000+5 1.590000+5 2.000000+5 2.510000+5  >>nji
rem     echo 3.160000+5 3.980000+5 5.010000+5 6.310000+5 7.940000+5 1.000000+6  >>nji
rem     echo 1.260000+6 1.590000+6 2.000000+6 2.510000+6 3.160000+6 3.980000+6  >>nji
rem     echo 5.010000+6 6.310000+6 7.940000+6 1.000000+7 1.260000+7 1.590000+7  >>nji
rem     echo 2.000000+7 2.510000+7 3.160000+7 3.980000+7 5.010000+7 6.000000+7  >>nji
rem     echo 3/                                                                 >>nji
rem     echo 0/                                                                 >>nji
rem     echo 0/                                                                 >>nji
rem     echo errorr /                                                           >>nji
```

```
rem     echo -21 -23 36 48 / Output covariance file on unit 48                  >>nji
rem     echo 9040 1 2 1 1 /                                                     >>nji
rem     echo 0 33 / Default reactions, processing MF 33                         >>nji
rem rem echo  44 /                                                              >>nji
rem     echo  42 /                                                              >>nji
rem     echo 1.00000E-5            0.55000000                       15.0000000   >>nji
rem     echo 30.0000000            100.000000                       300.000000   >>nji
rem     echo            1000.00000            2000.00000            4000.00000   >>nji
rem rem echo 5.20000E+3            1.200000+4 1.800000+4 2.800000+4 4.000000+4   >>nji
rem     echo            8.500000+3            1.800000+4 2.800000+4 4.000000+4   >>nji
rem     echo 6.500000+4 1.000000+5 1.260000+5 1.590000+5 2.000000+5 2.510000+5   >>nji
rem     echo 3.160000+5 3.980000+5 5.010000+5 6.310000+5 7.940000+5 1.000000+6   >>nji
rem     echo 1.260000+6 1.590000+6 2.000000+6 2.510000+6 3.160000+6 3.980000+6   >>nji
rem     echo 5.010000+6 6.310000+6 7.940000+6 1.000000+7 1.260000+7 1.590000+7   >>nji
rem     echo 2.000000+7 2.510000+7 3.160000+7 3.980000+7 5.010000+7 6.000000+7/  >>nji
rem     echo covr                                                               >>nji
rem     echo  48 0 68/                                                          >>nji
rem     echo  1 /                                                               >>nji
rem     echo   /                                                                >>nji
rem     echo   /                                                                >>nji
rem     echo  9040/                                                             >>nji
rem     echo viewr                                                              >>nji
rem     echo 68 52/                                                             >>nji
rem     echo stop                                                               >>nji
rem REM
rem REM Run NJOY
rem     copy %e71b3% tape20
rem     c:\njoy99\njoy<nji
rem REM
rem REM Convert NJOY-generated GENDF from the ERRORR module into ENDF-6 format
rem     echo tape48           >gntoen.inp
rem     echo FIX_IRDFF.t6    >>gntoen.inp
rem     c:\andrej\exelib\gntoen<gntoen.inp
rem REM
rem REM Extract (n,g) covariance matrix (file FIX_IRDFF.t7)
rem     echo FIX_IRDFF.t7                                                        >merger.inp
rem     echo  090-Th-232 from ENDF/B-VII.1                                 6000 0 >>merger.inp
rem     echo FIX_IRDFF.t6                                                       >>merger.inp
rem     echo END                                                                >>merger.inp
rem     echo      133102  999933102                                             >>merger.inp
rem     echo.                                                                   >>merger.inp
rem     echo.                                                                   >>merger.inp
rem     c:\prepro\exe_win\merger
rem REM
rem REM Merge with the dosimetry file
rem     echo %irdff%.endf                                                        >merger.inp
rem     echo  090-Th-232 from ENDF/B-VII.1                                 6000 0 >>merger.inp
rem     echo FIX_IRDFF.t7                                                       >>merger.inp
rem     echo FIX_IRDFF.t5                                                       >>merger.inp
rem     echo END                                                                >>merger.inp
rem     echo      1 1  1  999999999                                             >>merger.inp
rem     echo.                                                                   >>merger.inp
rem     echo.                                                                   >>merger.inp
rem     c:\prepro\exe_win\merger
rem REM
rem REM No range extension is needed, only the comment section is to be updated
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3   0 60e6 60.0001e6 60e6 %mat%
rem     del irdff.txt
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo U-235 (n,nu-bar), (n,f)  Add (n,tot), (n,g) from ENDF/B-VII.1
rem echo.
rem REM _0  (n,f) Original IRDFF
rem REM _1  (n,f) x.s. and covariance matrix from ENDF/B-VII.1 (only up to 20 MeV)
rem REM _2  (n,f) covariance matrix fully from Standards
rem     echo ************************************************************  >irdff.txt
rem     echo IAEA, May 2012 (A. Trkov)                                     >>irdff.txt
rem     echo The dosimetry file prepared by Zolotarev and Pronyaev, which  >>irdff.txt
rem     echo is based on IAEA standards was extended to include the total  >>irdff.txt
rem     echo and capture cross sections from the ENDF/B-VII.1 library.     >>irdff.txt
rem     echo The fission cross sections were also taken from ENDF/B-VII    >>irdff.txt
rem     echo because of smoother behaviour in certain narrow energy ranges, >>irdff.txt
rem     echo even though the differences from Standards are insignificantly >>irdff.txt
rem     echo small. The cross sections were extended to 200 MeV based on   >>irdff.txt
rem     echo TENDL-2010 evaluation, except for the fission cross section,  >>irdff.txt
rem     echo which in the Standards evaluation already extends to 200 MeV  >>irdff.txt
rem     echo   The covariance matrix of the fission cross section was taken >>irdff.txt
rem     echo from the Standards evaluation because it was evaluated rigorously >>irdff.txt
rem     echo and gives correlations over the entire energy range, but the  >>irdff.txt
rem     echo resulting uncertainties (particularly in the resonance range) >>irdff.txt
rem     echo have to be interpreted as broad-bin average cross section     >>irdff.txt
rem     echo uncertainties and not point values.                           >>irdff.txt
```

```
rem     echo   The covariance matrix of the capture cross sections was taken    >>irdff.txt
rem     echo from ENDF/B-VII.1. It was processed with NJOY on a customised      >>irdff.txt
rem     echo energy grid that takes into account the strong resonances, but     >>irdff.txt
rem     echo keeps the covariance energy grid relatively coarse to avoid very   >>irdff.txt
rem     echo small or negative eigenvalues. Above the resonance range the       >>irdff.txt
rem     echo energy grid coincides with the covariance echo grid of the         >>irdff.txt
rem     echo original evaluation.                                               >>irdff.txt
rem     echo   Extension of the covariance data was based on the TENDL-2010     >>irdff.txt
rem     echo library.                                                           >>irdff.txt
rem REM
rem     set irdff=u235-dos
rem     set iza=92235
rem     set mat=9228
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem REM
rem REM Extract fast fission cross section and covariance matrix from Standards
rem     echo fix_irdff.t3                                                        >merger.inp
rem     echo   92-U -235 from ENDF/B-VII.1                                 6000 0 >>merger.inp
rem     echo C:\Andrej\data\endfb71\ENDF-B-VII.1-standards\std-092_U_235.endf   >>merger.inp
rem     echo END                                                                 >>merger.inp
rem     echo      133 18  999933 18                                              >>merger.inp
rem     echo.                                                                    >>merger.inp
rem     echo.                                                                    >>merger.inp
rem     c:\prepro\exe_win\merger
rem REM
rem     echo C:\Andrej\data\endfb71\ENDF-B-VII.1-standards\std-092_U_235.endf  >endtab.inp
rem     echo fix_irdff.cur                                                    >>endtab.inp
rem     echo 92235                                                            >>endtab.inp
rem     echo 3                                                                >>endtab.inp
rem     echo 2.e3                                                             >>endtab.inp
rem     echo 2.e8                                                             >>endtab.inp
rem     echo -1                                                               >>endtab.inp
rem     echo 18                                                               >>endtab.inp
rem     echo 0                                                                >>endtab.inp
rem     echo.                                                                 >>endtab.inp
rem     %endver%endtab<endtab.inp
rem REM
rem REM Retrieve the cross sections and covariance matrices from ENDF/B-VII.1
rem     set e71b3=C:\Andrej\data\endfb7\n-092_U_235.endf
rem     copy %e71b3% endfb.in
rem     c:\prepro\exe_win\linear
rem     move /Y endfb.out endfb.in
rem     c:\prepro\exe_win\recent
rem     move /Y endfb.out endfb.in
rem     c:\prepro\exe_win\sigma1
rem REM Extract (n,tot), (n,el), (n,g) from ENDF/B-VII.1
rem     echo fix_irdff.t2                                                        >merger.inp
rem     echo   92-U -235 from ENDF/B-VII.1                                 6000 0 >>merger.inp
rem     echo endfb.out                                                           >>merger.inp
rem     echo END                                                                 >>merger.inp
rem     echo      1 3  1  9999 3  1                                              >>merger.inp
rem rem echo      1 3  2  9999 3  2                                              >>merger.inp
rem     echo      1 3 18  9999 3 18                                              >>merger.inp
rem     echo      1 3102  9999 3102                                              >>merger.inp
rem     echo      133 18  999933 18                                              >>merger.inp
rem     echo      133102  999933102                                              >>merger.inp
rem     echo.                                                                    >>merger.inp
rem     echo.                                                                    >>merger.inp
rem     c:\prepro\exe_win\merger
rem REM
rem REM Process the covariances with NJOY
rem     echo moder / Extract/convert neutron evaluated data                     >nji
rem     echo 1 -21                                                             >>nji
rem     echo '92-U -235 from ENDF/B-VII.1'/                                    >>nji
rem     echo 20 9228                                                           >>nji
rem     echo 0/                                                                >>nji
rem     echo reconr / Reconstruct XS for neutrons                              >>nji
rem     echo -21 -22                                                           >>nji
rem     echo '92-U -235 from ENDF/B-VII.1'/                                    >>nji
rem     echo 9228 2/                                                           >>nji
rem     echo 0.001 0. 0.003/                                                   >>nji
rem     echo '92-U -235 from ENDF/B-VII.1'/                                    >>nji
rem     echo 'Processed with NJOY99.364 on ned 06.05.2012'/                    >>nji
rem     echo 0/                                                                >>nji
rem     echo broadr / Doppler broaden XS                                       >>nji
rem     echo -21 -22 -23                                                       >>nji
rem     echo 9228 1 0 0 0./                                                    >>nji
```

```
rem     echo 0.001 2.0e6 0.003/                                                  >>nji
rem     echo 300.                                                                >>nji
rem     echo 0/                                                                  >>nji
rem     echo groupr / Prepare multigroup data for covariances                    >>nji
rem     echo -21 -23 0 36                                                        >>nji
rem     echo 9228 1 0 6 1 1 1 1 /                                                >>nji
rem     echo '92-U -235 processed with NJOY99'/                                  >>nji
rem     echo 300.                                                                >>nji
rem     echo 1.E+10                                                              >>nji
rem     echo  74 /                                                               >>nji
rem     echo 1.00000E-5 1.27500E-2 0.55000000 2.00000000 6.00000000 15.0000000   >>nji
rem     echo 30.0000000 50.0000000 100.000000 150.000000 200.000000 300.000000   >>nji
rem     echo 500.000000 1000.00000 1300.00000 2000.00000                         >>nji
rem     echo            2.250000+3 5.000000+4 1.000000+5 1.500000+5 2.000000+5   >>nji
rem     echo 2.500000+5 3.000000+5 3.500000+5 4.000000+5 4.500000+5 5.000000+5   >>nji
rem     echo 5.500000+5 6.000000+5 6.500000+5 7.000000+5 7.500000+5 8.000000+5   >>nji
rem     echo 8.500000+5 9.000000+5 1.000000+6 1.200000+6 1.500000+6 2.000000+6   >>nji
rem     echo 2.500000+6 3.000000+6 3.500000+6 4.000000+6 4.500000+6 5.000000+6   >>nji
rem     echo 5.500000+6 6.000000+6 6.500000+6 7.000000+6 7.500000+6 8.000000+6   >>nji
rem     echo 8.500000+6 9.000000+6 9.500000+6 1.000000+7 1.050000+7 1.100000+7   >>nji
rem     echo 1.150000+7 1.200000+7 1.250000+7 1.300000+7 1.350000+7 1.400000+7   >>nji
rem     echo 1.450000+7 1.500000+7 1.550000+7 1.600000+7 1.650000+7 1.700000+7   >>nji
rem     echo 1.750000+7 1.800000+7 1.850000+7 1.900000+7 1.950000+7 2.000000+7   >>nji
rem     echo 3/                                                                  >>nji
rem     echo 0/                                                                  >>nji
rem     echo 0/                                                                  >>nji
rem     echo errorr /                                                            >>nji
rem     echo -21 -23 36 48 / Output covariance file on unit 48                   >>nji
rem     echo 9228 1 2 1 1 /                                                      >>nji
rem     echo 0 33 / Default reactions, processing MF 33                          >>nji
rem     echo  30 /                                                               >>nji
rem     echo 1.00000E-5 1.27500E-2 0.55000000 2.00000000 6.00000000 15.0000000   >>nji
rem     echo 30.0000000 50.0000000 100.000000 150.000000 200.000000 300.000000   >>nji
rem     echo 500.000000 1000.00000 1300.00000 2000.00000                         >>nji
rem     echo            2.250000+3 5.000000+4 1.200000+5                         >>nji
rem     echo            3.000000+5            4.000000+5                         >>nji
rem     echo            6.000000+5                                   8.000000+5  >>nji
rem     echo                                  1.500000+6                         >>nji
rem     echo            3.000000+6                                   5.000000+6  >>nji
rem     echo                       6.500000+6                                    >>nji
rem     echo            9.000000+6                                   1.100000+7  >>nji
rem     echo                                  1.300000+7                         >>nji
rem     echo                                                         2.000000+7  >>nji
rem     echo covr                                                                >>nji
rem     echo  48 0 68/                                                           >>nji
rem     echo  1 /                                                                >>nji
rem     echo   /                                                                 >>nji
rem     echo   /                                                                 >>nji
rem     echo  9228/                                                              >>nji
rem     echo viewr                                                               >>nji
rem     echo 68 52/                                                              >>nji
rem     echo stop                                                                >>nji
rem REM
rem REM Run NJOY
rem     copy %e71b3% tape20
rem     c:\njoy99\njoy<nji
rem REM
rem REM Convert NJOY-generated GENDF from the ERRORR module into ENDF-6 format
rem     echo tape48          >gntoen.inp
rem     echo FIX_IRDFF.t6    >>gntoen.inp
rem     c:\andrej\exelib\gntoen<gntoen.inp
rem REM
rem REM Extract (n,g) covariance matrix (file FIX_IRDFF.t7)
rem     echo FIX_IRDFF.t7                                                         >merger.inp
rem     echo  092-U -235 from ENDF/B-VII.1                                 6000 0 >>merger.inp
rem     echo FIX_IRDFF.t6                                                         >>merger.inp
rem     echo END                                                                  >>merger.inp
rem     echo      133102  999933102                                               >>merger.inp
rem     echo.                                                                     >>merger.inp
rem     echo.                                                                     >>merger.inp
rem     c:\prepro\exe_win\merger
rem REM
rem REM Merge with the dosimetry file (high-energy part of fiss. x.s. explicitly)
rem     echo fix_irdff.t4                                                         >merger.inp
rem     echo   92-U -235 from ENDF/B-VII.1                                 6000 0 >>merger.inp
rem     echo fix_irdff.t7                                                         >>merger.inp
rem     echo fix_irdff.t3                                                         >>merger.inp
rem     echo fix_irdff.t2                                                         >>merger.inp
rem     echo %irdff%.endf                                                         >>merger.inp
rem     echo END                                                                  >>merger.inp
rem     echo      1 1  1  999999999                                               >>merger.inp
rem     echo.                                                                     >>merger.inp
```

```
rem     echo.                                                                   >>merger.inp
rem     c:\prepro\exe_win\merger
rem REM
rem     echo fix_irdff.cur  >edendf.inp
rem     echo fix_irdff.t4  >>edendf.inp
rem     echo fix_irdff.t5  >>edendf.inp
rem     echo 2.25e3        >>edendf.inp
rem     echo 2.00e8        >>edendf.inp
rem     c:\andrej\exelib\edendf<edendf.inp
rem REM
rem REM Extend the cross sections and covariances to high energy as needed
rem     copy fix_irdff.t5 %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3   1 20e6 20.0001e6 200e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_001.ps
rem rem move /y %irdff%.fix %irdff%.endf
rem rem call Fix_IRDFF %t2010% %irdff%     %iza%  3   2 20e6 20.0001e6 200e6 %mat%
rem rem move /Y %irdff%.ps  %irdff%_002.ps
rem rem move /y %irdff%.fix %irdff%.endf
rem rem call Fix_IRDFF %t2010% %irdff%     %iza%  3  18 20e6 20.0001e6 200e6 %mat%
rem rem move /Y %irdff%.ps  %irdff%_018.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3 102 20e6 20.0001e6 200e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_102.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo U-238 (n,nu-bar), (n,f), (n,g)  Add (n,tot) from ENDF/B-VII.1
rem echo.
rem     echo ***************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                     >>irdff.txt
rem     echo The dosimetry file prepared by Zolotarev and Pronyaev, which   >>irdff.txt
rem     echo is based on IAEA standards was extended to include the total   >>irdff.txt
rem     echo cross section from the ENDF/B-VII.1b3 library.                 >>irdff.txt
rem     echo The original fission cross section evaluation extends to 200 MeV. >>irdff.txt
rem     echo The data energy range for the other cross sections was extended  >>irdff.txt
rem     echo from 30 to 200 MeV for consistency with the fission cross section >>irdff.txt
rem     echo using the data from the TENDL-2010 library.                    >>irdff.txt
rem     echo The nu-bar data were not extended.                             >>irdff.txt
rem     echo The capture cross section covariance matrix was processed with >>irdff.txt
rem     echo NJOY on a customised energy grid to reduce the number of       >>irdff.txt
rem     echo energy groups in order to avoid vers small or slightly negative >>irdff.txt
rem     echo eigenvalues.                                                   >>irdff.txt
rem     echo *************************************************************** >>irdff.txt
rem REM
rem     set irdff=u238-dos
rem     set iza=92238
rem     set mat=9237
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem REM
rem     set e71b3=C:\Andrej\data\endfb7\n-092_U_238.endf
rem REM
rem REM Process the covariances with NJOY
rem     echo moder / Extract/convert neutron evaluated data                  >nji
rem     echo 1 -21                                                          >>nji
rem     echo '92-U -238 from ENDF/B-VII.1'/                                 >>nji
rem     echo 20 9237                                                        >>nji
rem     echo 0/                                                             >>nji
rem     echo reconr / Reconstruct XS for neutrons                           >>nji
rem     echo -21 -22                                                        >>nji
rem     echo '92-U -238 from ENDF/B-VII.1'/                                 >>nji
rem     echo 9237 2/                                                        >>nji
rem     echo 0.001 0. 0.003/                                                >>nji
rem     echo '92-U -238 from ENDF/B-VII.1'/                                 >>nji
rem     echo 'Processed with NJOY99.364 on ned 06.05.2012'/                 >>nji
rem     echo 0/                                                             >>nji
rem     echo broadr / Doppler broaden XS                                    >>nji
rem     echo -21 -22 -23                                                    >>nji
rem     echo 9237 1 0 0 0./                                                 >>nji
rem     echo 0.001 2.0e6 0.003/                                             >>nji
rem     echo 300.                                                           >>nji
rem     echo 0/                                                             >>nji
rem     echo groupr / Prepare multigroup data for covariances               >>nji
rem     echo -21 -23 0 36                                                   >>nji
rem     echo 9237 1 0 6 1 1 1 1 /                                           >>nji
rem     echo '92-U -238 processed with NJOY99'/                             >>nji
rem     echo 300.                                                           >>nji
rem     echo 1.E+10                                                         >>nji
```

```
rem     echo  133 /                                                                  >>nji
rem     echo 1.000000-5 7.501300+1 2.000000+2 3.000000+2 4.000000+2 5.000000+2   >>nji
rem     echo 6.000000+2 7.000000+2 8.000000+2 9.000000+2 1.225000+3 2.000000+3   >>nji
rem     echo 3.000000+3 4.000000+3 5.000000+3 6.000000+3 7.000000+3 8.000000+3   >>nji
rem     echo 9.000000+3 1.225000+4 1.750000+4 2.000000+4 2.200000+4 2.700000+4   >>nji
rem     echo 3.750000+4 5.000000+4 6.000000+4 7.000000+4 8.000000+4 9.000000+4   >>nji
rem     echo 9.750000+4 1.000000+5 1.100000+5 1.350000+5 1.500000+5 1.600000+5   >>nji
rem     echo 1.750000+5 1.850000+5 1.950000+5 2.000000+5 2.050000+5 2.150000+5   >>nji
rem     echo 2.250000+5 2.325000+5 2.375000+5 2.425000+5 2.475000+5 2.500000+5   >>nji
rem     echo 2.550000+5 2.650000+5 2.750000+5 2.900000+5 3.000000+5 3.125000+5   >>nji
rem     echo 3.375000+5 3.500000+5 3.625000+5 3.875000+5 4.000000+5 4.125000+5   >>nji
rem     echo 4.375000+5 4.500000+5 4.625000+5 4.875000+5 5.000000+5 5.100000+5   >>nji
rem     echo 5.300000+5 5.500000+5 5.550000+5 5.850000+5 6.000000+5 6.250000+5   >>nji
rem     echo 6.500000+5 6.750000+5 7.000000+5 7.250000+5 7.500000+5 7.750000+5   >>nji
rem     echo 8.000000+5 8.250000+5 8.500000+5 8.750000+5 9.000000+5 9.200000+5   >>nji
rem     echo 9.500000+5 9.700000+5 9.800000+5 9.900000+5 1.000000+6 1.050000+6   >>nji
rem     echo 1.175000+6 1.200000+6 1.325000+6 1.500000+6 1.700000+6 1.900000+6   >>nji
rem     echo 2.000000+6 2.100000+6 2.300000+6 3.000000+6 3.500000+6 4.000000+6   >>nji
rem     echo 4.500000+6 5.000000+6 5.500000+6 6.000000+6 6.500000+6 7.000000+6   >>nji
rem     echo 7.500000+6 8.000000+6 8.500000+6 9.000000+6 9.500000+6 1.000000+7   >>nji
rem     echo 1.050000+7 1.100000+7 1.150000+7 1.200000+7 1.250000+7 1.300000+7   >>nji
rem     echo 1.350000+7 1.400000+7 1.450000+7 1.500000+7 1.600000+7 1.700000+7   >>nji
rem     echo 1.800000+7 1.900000+7 2.000000+7 2.200000+7 2.400000+7 2.600000+7   >>nji
rem     echo 2.800000+7 3.000000+7 /                                             >>nji
rem     echo 3/                                                                  >>nji
rem     echo 0/                                                                  >>nji
rem     echo 0/                                                                  >>nji
rem     echo errorr /                                                            >>nji
rem     echo -21 -23 36 48 / Output covariance file on unit 48                   >>nji
rem     echo 9237 1 2 1 1 /                                                      >>nji
rem     echo 0 33 / Default reactions, processing MF 33                          >>nji
rem     echo  42 /                                                              >>nji
rem     echo 1.000000-5 0.55                                                     >>nji
rem     echo            7.501300+1 2.000000+2 3.000000+2 4.000000+2              >>nji
rem     echo 6.000000+2            8.000000+2            1.225000+3              >>nji
rem     echo 3.000000+3            5.000000+3                        8.000000+3   >>nji
rem     echo            1.225000+4            2.000000+4            2.700000+4   >>nji
rem     echo            5.000000+4                        8.000000+4              >>nji
rem     echo                       1.100000+5            1.500000+5              >>nji
rem     echo                                  2.000000+5                         >>nji
rem     echo                                                        2.500000+5   >>nji
rem     echo                                              3.000000+5              >>nji
rem     echo                                              4.000000+5              >>nji
rem     echo                                              5.000000+5              >>nji
rem     echo                                              6.000000+5              >>nji
rem     echo                                              7.500000+5              >>nji
rem     echo                                              9.000000+5              >>nji
rem     echo                                              1.000000+6              >>nji
rem     echo 1.175000+6            1.325000+6 1.500000+6 1.700000+6 1.900000+6   >>nji
rem     echo 2.000000+6            2.300000+6 3.000000+6            4.000000+6   >>nji
rem     echo            5.000000+6                                  8.000000+6   >>nji
rem     echo                                  1.200000+7                         >>nji
rem     echo                                  1.600000+7                         >>nji
rem     echo                       2.200000+7                                    >>nji
rem     echo            3.000000+7 /                                             >>nji
rem     echo covr                                                                >>nji
rem     echo  48 0 68/                                                           >>nji
rem     echo  1 /                                                                >>nji
rem     echo   /                                                                 >>nji
rem     echo   /                                                                 >>nji
rem     echo  9237/                                                              >>nji
rem     echo viewr                                                               >>nji
rem     echo 68 52/                                                              >>nji
rem     echo stop                                                                >>nji
rem REM
rem REM Run NJOY
rem     copy %e71b3% tape20
rem     c:\njoy99\njoy<nji
rem REM
rem REM Convert NJOY-generated GENDF from the ERRORR module into ENDF-6 format
rem     echo tape48           >gntoen.inp
rem     echo FIX_IRDFF.t6     >>gntoen.inp
rem     c:\andrej\exelib\gntoen<gntoen.inp
rem REM
rem REM Extract (n,g) covariance matrix (file FIX_IRDFF.t7)
rem     echo FIX_IRDFF.t7                                                         >merger.inp
rem     echo  092-U -238 from ENDF/B-VII.1                                 6000 0 >>merger.inp
rem     echo FIX_IRDFF.t6                                                        >>merger.inp
rem     echo END                                                                 >>merger.inp
rem     echo      133102  999933102                                              >>merger.inp
rem     echo.                                                                    >>merger.inp
rem     echo.                                                                    >>merger.inp
```

```
rem     c:\prepro\exe_win\merger
rem REM
rem REM Save the original capture cross section by Pronyaev above 10 keV
rem     echo %irdff%.endf  >endtab.inp
rem     echo fix_irdff.cur                                                  >>endtab.inp
rem     echo 92238                                                          >>endtab.inp
rem     echo 3                                                              >>endtab.inp
rem     echo 1.9e4                                                          >>endtab.inp
rem     echo 2.0e8                                                          >>endtab.inp
rem     echo -1                                                             >>endtab.inp
rem     echo 102                                                            >>endtab.inp
rem     echo 0                                                              >>endtab.inp
rem     echo.                                                               >>endtab.inp
rem     %endver%endtab<endtab.inp
rem REM
rem REM Make PENDF from ENDF/B-VII.1
rem     copy %e71b3% endfb.in
rem     c:\prepro\exe_win\linear
rem     move /Y endfb.out endfb.in
rem     c:\prepro\exe_win\recent
rem     move /Y endfb.out endfb.in
rem     c:\prepro\exe_win\sigma1
rem REM Insert the original capture cross section by Pronyaev above 10 keV
rem     echo fix_irdff.cur  >edendf.inp
rem     echo endfb.out     >>edendf.inp
rem     echo fix_irdff.t0  >>edendf.inp
rem     echo 2.0e4         >>edendf.inp
rem     echo 2.0e8         >>edendf.inp
rem     c:\andrej\exelib\edendf<edendf.inp
rem REM Extract (n,tot), (n,g) from ENDF/B-VII.1
rem     echo fix_irdff.t1                                                    >merger.inp
rem     echo   92-U -238 from ENDF/B-VII.1                            6000 0 >>merger.inp
rem     echo fix_irdff.t0                                                   >>merger.inp
rem     echo END                                                            >>merger.inp
rem     echo      1 3  1  9999 3  1                                         >>merger.inp
rem REM echo      1 3  2  9999 3  2                                         >>merger.inp
rem     echo      1 3102  9999 3102                                         >>merger.inp
rem     echo.                                                               >>merger.inp
rem     echo.                                                               >>merger.inp
rem     c:\prepro\exe_win\merger
rem REM
rem REM Merge with the dosimetry file
rem     echo %irdff%.fix                                                     >merger.inp
rem     echo   92-U -238 from ENDF/B-VII.1                            6000 0 >>merger.inp
rem     echo fix_irdff.t7                                                   >>merger.inp
rem     echo fix_irdff.t1                                                   >>merger.inp
rem     echo %irdff%.endf                                                   >>merger.inp
rem     echo END                                                            >>merger.inp
rem     echo      1 1  1  999999999                                         >>merger.inp
rem     echo.                                                               >>merger.inp
rem     echo.                                                               >>merger.inp
rem     c:\prepro\exe_win\merger
rem     move /Y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3   1 30e6 30.0001e6 200e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_001.ps
rem rem move /y %irdff%.fix %irdff%.endf
rem rem call Fix_IRDFF %t2010% %irdff%     %iza%  3   2 30e6 30.0001e6 200e6 %mat%
rem rem move /Y %irdff%.ps  %irdff%_002.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3 102 30e6 30.0001e6 200e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_102.ps
rem REM ------------------------------------------------------------------------
rem echo.
rem echo Np-237 (n,tot), (n,el), (n,f)
rem echo.
rem     echo ***************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                     >>irdff.txt
rem     echo The IRDF-2002 cross sections file was extended in energy from  >>irdff.txt
rem     echo 20 to 60 MeV using the data from the TENDL-2010 library.       >>irdff.txt
rem     echo *************************************************************** >>irdff.txt
rem REM
rem     set irdff=np237-dos
rem     set iza=93237
rem     set mat=9346
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3   1 20e6 20.0001e6 60e6 %mat%
```

```
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_001.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3   2 20e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_002.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3  18 20e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_018.ps
rem REM ---------------------------------------------------------------------------
rem echo.
rem echo Pu-239 (n,nu-bar), (n,f)  Add (n,tot), (n,el) from ENDF/B-VII.1
rem echo.
rem     echo ***************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                     >>irdff.txt
rem     echo The dosimetry file prepared by Zolotarev and Pronyaev, which   >>irdff.txt
rem     echo is based on IAEA standards was extended to include the total   >>irdff.txt
rem     echo and elastic cross sections from the ENDF/B-VII.1 library.      >>irdff.txt
rem     echo The data energy range of the cross sections from ENDF/B-VII.1  >>irdff.txt
rem     echo was extended to 200 MeV for consistency with the fission       >>irdff.txt
rem     echo cross section using data from the TENDL-2010 library.          >>irdff.txt
rem     echo The nu-bar data were not extended.                             >>irdff.txt
rem     echo The fission cross section covariance matrix was processed with >>irdff.txt
rem     echo NJOY on a customised energy grid.                              >>irdff.txt
rem REM Capture cross section is not to be included (not extendable with TENDL) >>irdff.txt
rem rem echo Note that the capture cross section is zero above 20 MeV in the  >>irdff.txt
rem rem echo TENDL-2010 library.                                             >>irdff.txt
rem rem echo Note also that TENDL-2010 has a significant discontinuity in    >>irdff.txt
rem rem echo the total cross section at 20 MeV.                              >>irdff.txt
rem     echo *************************************************************** >>irdff.txt
rem REM To avoid problems with capture and with consistency between the total
rem REM and the partials, do not include capture in the dosimetry file.
rem REM
rem     set irdff=pu239-dos
rem     set iza=94239
rem     set mat=9437
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem REM
rem     set e71b3=C:\Andrej\data\endfb7\n-094_Pu_239.endf
rem REM
rem REM Process the covariances with NJOY
rem     echo moder / Extract/convert neutron evaluated data                  >nji
rem     echo 1 -21                                                          >>nji
rem     echo '94-Pu-239 from ENDF/B-VII.1'/                                 >>nji
rem     echo 20 9437                                                        >>nji
rem     echo 0/                                                             >>nji
rem     echo reconr / Reconstruct XS for neutrons                           >>nji
rem     echo -21 -22                                                        >>nji
rem     echo '94-Pu-239 from ENDF/B-VII.1'/                                 >>nji
rem     echo 9437 2/                                                        >>nji
rem     echo 0.001 0. 0.003/                                                >>nji
rem     echo '94-Pu-239 from ENDF/B-VII.1'/                                 >>nji
rem     echo 'Processed with NJOY99.364 on ned 06.05.2012'/                 >>nji
rem     echo 0/                                                             >>nji
rem     echo broadr / Doppler broaden XS                                    >>nji
rem     echo -21 -22 -23                                                    >>nji
rem     echo 9437 1 0 0 0./                                                 >>nji
rem     echo 0.001 2.0e6 0.003/                                             >>nji
rem     echo 300.                                                           >>nji
rem     echo 0/                                                             >>nji
rem     echo groupr / Prepare multigroup data for covariances               >>nji
rem     echo -21 -23 0 36                                                   >>nji
rem     echo 9437 1 0 6 1 1 1 1 /                                           >>nji
rem     echo '94-Pu-239 processed with NJOY99'/                             >>nji
rem     echo 300.                                                           >>nji
rem     echo 1.E+10                                                         >>nji
rem     echo  164 /                                                         >>nji
rem     echo  1.000000-5 0.55000000                                         >>nji
rem     echo             7.501300+1 2.000000+2 3.000000+2 4.000000+2 5.000000+2  >>nji
rem     echo  6.000000+2 7.000000+2 8.000000+2 9.000000+2 1.225000+3 2.000000+3  >>nji
rem     echo  2.500000+3                                                    >>nji
rem     echo  3.000000+3 4.000000+3 5.000000+3 6.000000+3 7.000000+3 8.000000+3  >>nji
rem     echo  9.000000+3 1.000000+4                                         >>nji
rem     echo             1.225000+4 1.750000+4 2.000000+4 2.200000+4 2.700000+4  >>nji
rem     echo                                   3.000000+4 3.750000+4 4.000000+4  >>nji
rem     echo  5.000000+4 6.000000+4 7.000000+4 8.000000+4 9.000000+4 9.750000+4  >>nji
rem     echo  1.100000+5 1.350000+5 1.600000+5 1.750000+5 1.850000+5 1.950000+5  >>nji
rem     echo  2.050000+5 2.150000+5 2.250000+5 2.350000+5 2.425000+5 2.475000+5  >>nji
```

```
rem     echo  2.550000+5 2.650000+5 2.750000+5 2.900000+5 3.125000+5 3.375000+5  >>nji
rem     echo  3.625000+5 3.875000+5 4.125000+5 4.375000+5 4.625000+5 4.875000+5  >>nji
rem     echo  5.100000+5 5.300000+5 5.550000+5 5.850000+5 6.250000+5 6.750000+5  >>nji
rem     echo  7.250000+5 7.750000+5 8.250000+5 8.750000+5 9.200000+5 9.500000+5  >>nji
rem     echo  9.700000+5 9.900000+5 1.050000+6 1.175000+6 1.325000+6 1.500000+6  >>nji
rem     echo  1.700000+6 1.900000+6 2.100000+6 2.300000+6 2.500000+6 2.700000+6  >>nji
rem     echo  2.900000+6 3.300000+6 3.800000+6 4.250000+6 4.600000+6 4.850000+6  >>nji
rem     echo  5.150000+6 5.400000+6 5.650000+6 5.900000+6 6.100000+6 6.350000+6  >>nji
rem     echo  6.750000+6 7.250000+6 7.625000+6 7.875000+6 8.250000+6 8.750000+6  >>nji
rem     echo  9.500000+6 1.050000+7 1.125000+7 1.175000+7 1.250000+7 1.350000+7  >>nji
rem     echo  1.425000+7 1.475000+7 1.550000+7 1.650000+7 1.750000+7 1.850000+7  >>nji
rem     echo  1.950000+7 2.050000+7 2.150000+7 2.250000+7 2.350000+7 2.450000+7  >>nji
rem     echo  2.550000+7 2.650000+7 2.750000+7 2.850000+7 2.950000+7 3.100000+7  >>nji
rem     echo  3.300000+7 3.500000+7 3.700000+7 3.900000+7 4.100000+7 4.300000+7  >>nji
rem     echo  4.500000+7 4.700000+7 4.900000+7 5.100000+7 5.300000+7 5.500000+7  >>nji
rem     echo  5.700000+7 5.900000+7 6.200000+7 6.600000+7 7.000000+7 7.400000+7  >>nji
rem     echo  7.800000+7 8.200000+7 8.600000+7 9.000000+7 9.400000+7 9.800000+7  >>nji
rem     echo  1.020000+8 1.060000+8 1.100000+8 1.140000+8 1.180000+8 1.240000+8  >>nji
rem     echo  1.320000+8 1.400000+8 1.480000+8 1.560000+8 1.640000+8 1.720000+8  >>nji
rem     echo  1.800000+8 1.880000+8 1.960000+8 2.040000+8 /                      >>nji
rem     echo 3/                                                                  >>nji
rem     echo 0/                                                                  >>nji
rem     echo 0/                                                                  >>nji
rem     echo errorr /                                                            >>nji
rem     echo -21 -23 36 48 / Output covariance file on unit 48                   >>nji
rem     echo 9437 1 2 1 1 /                                                      >>nji
rem     echo 0 33 / Default reactions, processing MF 33                          >>nji
rem     echo  160 /                                                              >>nji
rem     echo  1.000000-5 0.55000000                                              >>nji
rem     echo             7.501300+1 2.000000+2 3.000000+2 4.000000+2 5.000000+2  >>nji
rem     echo  6.000000+2 7.000000+2 8.000000+2            1.225000+3 2.000000+3  >>nji
rem     echo  2.500000+3                                                         >>nji
rem     echo  3.000000+3 4.000000+3 5.000000+3 6.000000+3 7.000000+3 8.000000+3  >>nji
rem     echo  9.000000+3 1.000000+4                                              >>nji
rem     echo             1.225000+4 1.750000+4 2.000000+4 2.200000+4 2.700000+4  >>nji
rem     echo                                   3.000000+4 3.750000+4 4.000000+4  >>nji
rem     echo  5.000000+4 6.000000+4 7.000000+4 8.000000+4 9.000000+4 9.750000+4  >>nji
rem     echo  1.100000+5 1.350000+5 1.600000+5 1.750000+5 1.850000+5 1.950000+5  >>nji
rem     echo  2.050000+5 2.150000+5 2.250000+5 2.350000+5 2.425000+5 2.475000+5  >>nji
rem     echo  2.550000+5 2.650000+5 2.750000+5 2.900000+5 3.125000+5 3.375000+5  >>nji
rem     echo  3.625000+5 3.875000+5 4.125000+5 4.375000+5 4.625000+5 4.875000+5  >>nji
rem     echo  5.100000+5 5.300000+5 5.550000+5 5.850000+5 6.250000+5 6.750000+5  >>nji
rem     echo  7.250000+5 7.750000+5 8.250000+5 8.750000+5 9.200000+5 9.500000+5  >>nji
rem     echo  9.700000+5 9.900000+5 1.050000+6 1.175000+6 1.325000+6 1.500000+6  >>nji
rem     echo  1.700000+6 1.900000+6 2.100000+6 2.300000+6 2.500000+6 2.700000+6  >>nji
rem     echo  2.900000+6 3.300000+6 3.800000+6 4.250000+6 4.600000+6 4.850000+6  >>nji
rem     echo  5.150000+6 5.400000+6 5.650000+6 5.900000+6 6.100000+6 6.350000+6  >>nji
rem     echo  6.750000+6 7.250000+6 7.625000+6 7.875000+6 8.250000+6 8.750000+6  >>nji
rem     echo  9.500000+6 1.050000+7 1.125000+7 1.175000+7 1.250000+7 1.350000+7  >>nji
rem     echo  1.425000+7 1.475000+7 1.550000+7 1.650000+7 1.750000+7 1.850000+7  >>nji
rem     echo  1.950000+7 2.050000+7 2.150000+7 2.250000+7 2.350000+7 2.450000+7  >>nji
rem     echo  2.550000+7 2.650000+7 2.750000+7 2.850000+7 2.950000+7 3.100000+7  >>nji
rem     echo  3.300000+7 3.500000+7 3.700000+7 3.900000+7 4.100000+7 4.300000+7  >>nji
rem     echo  4.500000+7 4.700000+7 4.900000+7 5.100000+7 5.300000+7 5.500000+7  >>nji
rem     echo  5.700000+7 5.900000+7 6.200000+7 6.600000+7 7.000000+7 7.400000+7  >>nji
rem     echo  7.800000+7 8.200000+7 8.600000+7 9.000000+7 9.400000+7 9.800000+7  >>nji
rem     echo  1.020000+8 1.060000+8 1.100000+8 1.140000+8 1.180000+8 1.240000+8  >>nji
rem     echo  1.320000+8 1.400000+8 1.480000+8 1.560000+8 1.640000+8 1.720000+8  >>nji
rem     echo  1.800000+8 1.000000+8 /1.880000+8 1.960000+8 2.040000+8 /                      >>nji
rem     echo covr                                                                >>nji
rem     echo  48 0 68/                                                           >>nji
rem     echo  1 1.e5 /                                                                >>nji
rem     echo   /                                                                 >>nji
rem     echo   /                                                                 >>nji
rem     echo  9437/                                                              >>nji
rem     echo viewr                                                               >>nji
rem     echo 68 52/                                                              >>nji
rem     echo stop                                                                >>nji
rem REM
rem REM Run NJOY
rem     copy %irdff%.endf tape20
rem     c:\njoy99\njoy<nji
rem REM
rem REM Convert NJOY-generated GENDF from the ERRORR module into ENDF-6 format
rem     echo tape48           >gntoen.inp
rem     echo FIX_IRDFF.t6     >>gntoen.inp
rem     c:\andrej\exelib\gntoen<gntoen.inp
rem REM
rem REM Extract (n,f) covariance matrix (file FIX_IRDFF.t7)
rem     echo FIX_IRDFF.t7                                                         >merger.inp
rem     echo  094-Pu-239 from ENDF/B-VII.1                                 6000 0 >>merger.inp
rem     echo FIX_IRDFF.t6                                                         >>merger.inp
```

```
rem     echo END                                                                >>merger.inp
rem     echo      133 18  999933 18                                             >>merger.inp
rem     echo.                                                                   >>merger.inp
rem     echo.                                                                   >>merger.inp
rem     c:\prepro\exe_win\merger
rem REM
rem     echo FIX_IRDFF.t6 >coveig.inp
rem     c:\andrej\exelib\coveig<coveig.inp
rem REM
rem     copy %e71b3% endfb.in
rem     c:\prepro\exe_win\linear
rem     move /Y endfb.out endfb.in
rem     c:\prepro\exe_win\recent
rem     move /Y endfb.out endfb.in
rem     c:\prepro\exe_win\sigma1
rem     move /Y endfb.out FIX_IRDFF.t0
rem REM Extract (n,tot), (n,el)  from ENDF/B-VII.1
rem     echo FIX_IRDFF.t1                                                        >merger.inp
rem     echo   94-Pu-239 from ENDF/B-VII.1                                 6000 0 >>merger.inp
rem     echo FIX_IRDFF.t0                                                       >>merger.inp
rem     echo END                                                                >>merger.inp
rem     echo      1 3  1  9999 3  2                                             >>merger.inp
rem rem echo      1 3102  9999 3102                                             >>merger.inp
rem     echo.                                                                   >>merger.inp
rem     echo.                                                                   >>merger.inp
rem     c:\prepro\exe_win\merger
rem REM
rem REM Merge with the dosimetry file
rem     echo %irdff%.fix                                                         >merger.inp
rem     echo   94-Pu-239 from ENDF/B-VII.1                                 6000 0 >>merger.inp
rem     echo FIX_IRDFF.t7                                                       >>merger.inp
rem     echo FIX_IRDFF.t1                                                       >>merger.inp
rem     echo %irdff%.endf                                                       >>merger.inp
rem     echo END                                                                >>merger.inp
rem     echo      1 1  1  999999999                                             >>merger.inp
rem     echo.                                                                   >>merger.inp
rem     echo.                                                                   >>merger.inp
rem     c:\prepro\exe_win\merger
rem REM
rem REM Extend (n,tot), (n,el) to 200 MeV
rem     move /Y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3   1 20e6 20.0001e6 200e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_001.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3   2 20e6 20.0001e6 200e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_002.ps
rem rem move /y %irdff%.fix %irdff%.endf
rem rem call Fix_IRDFF %t2010% %irdff%     %iza%  3 102 20e6 20.0001e6 200e6 %mat%
rem rem move /Y %irdff%.ps  %irdff%_102.ps
rem REM ------------------------------------------------------------------------------
rem echo.
rem echo Am-241 (n,tot), (n,el), (n,f)
rem echo.
rem     echo ****************************************************************  >irdff.txt
rem     echo IAEA, July 2011 (A. Trkov)                                        >>irdff.txt
rem     echo The IRDF-2002 cross sections file was extended in energy from      >>irdff.txt
rem     echo 20 to 60 MeV using the data from the TENDL-2010 library.           >>irdff.txt
rem     echo The fission cross section is scaled down 8 %.                      >>irdff.txt
rem     echo ***************************************************************** >>irdff.txt
rem REM
rem     set irdff=am241-dos
rem     set iza=95241
rem     set mat=9543
rem     set t47=48
rem     echo %irdff%.endf  >getzam.inp
rem     echo irdff_p0.dat >>getzam.inp
rem     echo %iza%        >>getzam.inp
rem     echo 0            >>getzam.inp
rem     %endver%getzam<getzam.inp
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3   1 20e6 20.0001e6 60e6 %mat%
rem     del irdff.txt
rem     move /Y %irdff%.ps  %irdff%_001.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3   2 20e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_002.ps
rem     move /y %irdff%.fix %irdff%.endf
rem     call Fix_IRDFF %t2010% %irdff%     %iza%  3  18 20e6 20.0001e6 60e6 %mat%
rem     move /Y %irdff%.ps  %irdff%_018.ps
rem REM ------------------------------------------------------------------------------
rem REM
rem     if exist fe57-dos.fix del fe57-dos.fix
```

```
rem     dir *.fix >mrgmat.inp
rem     %endver%mrgmat<mrgmat.inp
rem     move /Y mrgmat.out IRDFF_P.dat
rem REM
rem     echo IRDFF_P.dat              >checkr.inp
rem     echo IRDFF_P_checkr.lst      >>checkr.inp
rem     echo Y                       >>checkr.inp
rem     echo.                        >>checkr.inp
rem     C:\endfutil\checkr<checkr.inp
rem REM
rem     echo IRDFF_P.dat              >fizcon.inp
rem     echo IRDFF_P_fizcon.lst      >>fizcon.inp
rem     echo Y                       >>fizcon.inp
rem     echo.                        >>fizcon.inp
rem     C:\endfutil\fizcon<fizcon.inp
rem REM ------------------------------------------------------------------------
rem REM Calculate average cross sections with INTER
rem     echo IRDFF_P.dat              >inter.inp
rem     echo IRDFF_P_inter.lst       >>inter.inp
rem     echo Y                       >>inter.inp
rem     echo.                        >>inter.inp
rem     C:\endfutil\inter<inter.inp
rem REM ------------------------------------------------------------------------
rem REM Check covariances for eigenvalues
rem     echo IRDFF_P.DAT         >coveig.inp
rem     c:\andrej\exelib\coveig<coveig.inp
rem     move /Y coveig.lst coveig_irdff_p.lst
rem     find "WARNING" coveig_irdff_p.lst
rem REM ------------------------------------------------------------------------
rem REM Make PENDF file for IRDFF
rem     copy IRDFF_P.dat endfb.in
rem     c:\prepro\exe_win\linear
rem     move /Y endfb.out IRDFF_P.pen
rem REM Make GENDF file for IRDFF
rem     echo           0         -5          0          1          0           0  >groupie.inp
rem     echo IRDFF_P.pen                                                            >>groupie.inp
rem     echo IRDFF_P.g                                                              >>groupie.inp
rem     echo           1          0          0          1          0              >>groupie.inp
rem     echo IRDFF Dosimetry file                                                   >>groupie.inp
rem     echo      1 1  1  999999999                                                 >>groupie.inp
rem     echo                        (blank line terminate request list)             >>groupie.inp
rem     \prepro\exe_win\groupie
rem REM ------------------------------------------------------------------------
rem REM Uncertainties and cumulative integrals - Cf-252 spectrum
rem     echo irdff_P.g                          >rr_unc.inp
rem     echo c:\andrej\data\irdff\irdff_sp.g   >>rr_unc.inp
rem     echo 9861                              >>rr_unc.inp
rem     c:\andrej\exelib\rr_unc<rr_unc.inp
rem     echo rr_unc.out  >dosfltr.inp
rem     echo rr_unc.lst >>dosfltr.inp
rem     dosfltr<dosfltr.inp
rem     call pt94 p98 rr_unc
rem     move /Y rr_unc.out rr_unc_9861.out
rem     move /Y rr_unc.lst rr_unc_9861.lst
rem     move /Y plot.ps    rr_unc_9861.ps
rem REM
rem REM Uncertainties and cumulative integrals - Thermal Maxwellian spectrum
rem     echo irdff_P.g                          >rr_unc.inp
rem     echo c:\andrej\data\irdff\irdff_sp.g   >>rr_unc.inp
rem     echo 9901                              >>rr_unc.inp
rem     c:\andrej\exelib\rr_unc<rr_unc.inp
rem     dosfltr<dosfltr.inp
rem     call pt94 p98 rr_unc
rem     move /Y rr_unc.out rr_unc_9901.out
rem     move /Y rr_unc.lst rr_unc_9901.lst
rem     move /Y plot.ps    rr_unc_9901.ps
rem REM
rem REM Uncertainties and cumulative integrals - Resonance integral
rem     echo irdff_P.g                          >rr_unc.inp
rem     echo c:\andrej\data\irdff\irdff_sp.g   >>rr_unc.inp
rem     echo 9902                              >>rr_unc.inp
rem     c:\andrej\exelib\rr_unc<rr_unc.inp
rem     dosfltr<dosfltr.inp
rem     call pt94 p98 rr_unc
rem     move /Y rr_unc.out rr_unc_9902.out
rem     move /Y rr_unc.lst rr_unc_9902.lst
rem     move /Y plot.ps    rr_unc_9902.ps
rem REM
rem REM Uncertainties and cumulative integrals - Stellar Maxwellian spectrum
rem     echo irdff_P.g                          >rr_unc.inp
rem     echo c:\andrej\data\irdff\irdff_sp.g   >>rr_unc.inp
rem     echo 9903                              >>rr_unc.inp
```

```
rem     c:\andrej\exelib\rr_unc<rr_unc.inp
rem     dosfltr<dosfltr.inp
rem     call pt94 p98 rr_unc
rem     move /Y rr_unc.out rr_unc_9903.out
rem     move /Y rr_unc.lst rr_unc_9903.lst
rem     move /Y plot.ps    rr_unc_9903.ps
rem REM
rem REM Uncertainties and cumulative integrals - Resonance integral[0.5:2e7]
rem     echo irdff_P.g                           >rr_unc.inp
rem     echo c:\andrej\data\irdff\irdff_sp.g   >>rr_unc.inp
rem     echo 9904                              >>rr_unc.inp
rem     c:\andrej\exelib\rr_unc<rr_unc.inp
rem     dosfltr<dosfltr.inp
rem     call pt94 p98 rr_unc
rem     move /Y rr_unc.out rr_unc_9904.out
rem     move /Y rr_unc.lst rr_unc_9904.lst
rem     move /Y plot.ps    rr_unc_9904.ps
rem REM ---------------------------------------------------------------------------
rem REM
rem echo    0.0        12.5       0.0         10.0             1          1 2.0   >complot.inp
rem echo IRDFF_P.g                                                                >>complot.inp
rem echo IRDF2002.g                                                               >>complot.inp
rem echo           0          0          0          0          4          1   1  >>complot.inp
rem echo  1.00000-03                                                              >>complot.inp
rem echo IRDFF                                                                    >>complot.inp
rem echo IRDF-2002                                                                >>complot.inp
rem echo      1 1  1             999999999                     0          0      >>complot.inp
rem echo      1 1  1      0.1e6  999999999                     0          0      >>complot.inp
rem echo.                                                                         >>complot.inp
rem echo.                                                                         >>complot.inp
rem echo.                                                                         >>complot.inp
rem echo.                                                                         >>complot.inp
rem      c:\prepro\exe_win\complotps
rem      move /Y plot.ps IRDFF_P-IRDF2002_g.ps
rem REM ---------------------------------------------------------------------------
rem REM
rem echo    0.0        12.5       0.0         10.0             1          1 2.0   >complot.inp
rem echo IRDFF_P.pen                                                              >>complot.inp
rem echo ..\irdf2002\IRDF2002p.dat                                                >>complot.inp
rem echo           0          0          0          0          4          1   1  >>complot.inp
rem echo  1.00000-03                                                              >>complot.inp
rem echo IRDFF                                                                    >>complot.inp
rem echo IRDF-2002                                                                >>complot.inp
rem echo      1 1  1             999999999                     0          0      >>complot.inp
rem echo      1 1  1      0.1e6  999999999                     0          0      >>complot.inp
rem echo.                                                                         >>complot.inp
rem echo.                                                                         >>complot.inp
rem echo.                                                                         >>complot.inp
rem echo.                                                                         >>complot.inp
rem      c:\prepro\exe_win\complotps
rem      move /Y plot.ps IRDFF_P-IRDF2002.ps
rem REM ---------------------------------------------------------------------------
rem REM
rem echo    0.0        12.5       0.0         10.0             1          1 2.0   >complot.inp
rem echo IRDFF_P.g                                                                >>complot.inp
rem echo C:\Projects\CRP_NAA\NAAlib\endfb_71_300K_dos.g                           >>complot.inp
rem echo           0          0          0          0          4          1   1  >>complot.inp
rem echo  1.00000-03                                                              >>complot.inp
rem echo IRDFF                                                                    >>complot.inp
rem echo ENDF/B-VII.1                                                             >>complot.inp
rem echo      1 1  1             999999999                     0          0      >>complot.inp
rem echo      1 1  1      0.1e6  999999999                     0          0      >>complot.inp
rem echo.                                                                         >>complot.inp
rem echo.                                                                         >>complot.inp
rem echo.                                                                         >>complot.inp
rem echo.                                                                         >>complot.inp
rem      c:\prepro\exe_win\complotps
rem      move /Y plot.ps IRDFF_P-e71_g.ps
rem REM ---------------------------------------------------------------------------
rem REM
rem echo    0.0        12.5       0.0         10.0             1          1 2.0   >complot.inp
rem echo IRDFF_P.pen                                                              >>complot.inp
rem echo C:\Projects\CRP_NAA\NAAlib\endfb_71_300K_dos.pen                         >>complot.inp
rem echo           0          0          0          0          4          1   1  >>complot.inp
rem echo  1.00000-03                                                              >>complot.inp
rem echo IRDFF                                                                    >>complot.inp
rem echo ENDF/B-VII.1                                                             >>complot.inp
rem echo      1 1  1             999999999                     0          0      >>complot.inp
rem echo      1 1  1      0.1e6  999999999                     0          0      >>complot.inp
rem echo.                                                                         >>complot.inp
rem echo.                                                                         >>complot.inp
rem echo.                                                                         >>complot.inp
```

```
rem echo.                                                                    >>complot.inp
rem      c:\prepro\exe_win\complotps
rem      move /Y plot.ps IRDFF_P-e71.ps
rem REM ---------------------------------------------------------------------------
:end
rem pause
```

Listing of the Windows script Fix_IRDFF.bat

```
@echo off
REM ----------------------
REM Extend IRDFF to 60 MeV
REM ----------------------
REM
    set prepro=C:\prepro\exe_win\
    set endver=C:\endver\exe_win\
    set exelib=C:\andrej\exelib\
    goto start
:usage
echo.
echo Usage Fix_IRDFF p1 p2 p3 p4 p5 p6 p7 p8 p9
echo  p1 TENDL filename %1
echo  p2 IRDF filename  %2
echo  p3 ZA             %3
echo  p4 MF             %4
echo  p5 MT/ZAP         %5
echo            If      p5.gt.999 --) p5=ZA of product, MT=9000
echo            Else if p5.eq.  0 --) Only the comments are updated
echo            Else p5=MT
echo  p6 Elo            %6  Lower energy of extended range
echo  p7 EloX           %7  Elo+eps
echo  p8 Ehi            %8  Upper energy of extended range
echo  p9 MAT            %9
echo.
echo  Note: It is sometimes necessary to check the inserted data
echo        and tune Elox.
echo.
      goto end
:start
    echo.
    echo Fix_IRDFF %1 %2 %3 %4 %5 %6 %7 %8 %9
    echo.
    set tendl=%1
    set irdff=%2
    set iza=%3
    set mf=%4
    set mt=%5
    set zap=%5
    if /i %mt% gtr 999 set mt=9000
    set Elo=%6
    set EloX=%7
    set Ehi=%8
    set mat=%9
REM
REM If MF32 is present the GENDF unit must be defined by MF32
    if     %mf32%.==.  set mf32=0
    if not %mf32%.==0. set mf32=38
REM
REM WARNING: LFS=1 (fixed)
    set lfs=1
    if %2.==ag109-dos. set lfs=2
    if %2.==in115-dos. if %mt%.==16  set lfs=2
    if %2.==in115-dos. if %mt%.==102 set lfs=2
    if %2.==hg199-dos. set lfs=7
REM
    if not exist %irdff%.endf echo ERROR - non-existent IRDF file %irdff%.endf
    if not exist %irdff%.endf goto usage
    copy %irdff%.endf %irdff%.fix
    copy %irdff%.endf fix_irdf.t5
    if %mt%.==.      goto addcom
    if /i %mt% EQU 0 goto addcom
REM
    if %tendl%.==. goto usage
    if not exist %tendl% echo ERROR - non-existent library %tendl%
    if not exist %tendl% goto usage
REM
REM Extract material from TENDL
    echo fix_irdf.t0   >getzam.inp
    echo %tendl%      >>getzam.inp
    echo %iza%        >>getzam.inp
    echo 0            >>getzam.inp
    %endver%getzam<getzam.inp
REM
REM Extract cross section from TENDL (minimum energy 5 MeV !!! )
    echo fix_irdf.t0   >endtab.inp
    echo fix_irdf.cur >>endtab.inp
```

```
    echo %iza%        >>endtab.inp
    echo %mf%         >>endtab.inp
    echo  5e6         >>endtab.inp
    echo %Ehi%        >>endtab.inp
    echo -1           >>endtab.inp
    echo %mt%         >>endtab.inp
    if /I %mt% gtr 999 echo %zap% >>endtab.inp
    if /I %mf% equ 10  echo %lfs% >>endtab.inp        / Choose 1-st metastable state
    echo 0            >>endtab.inp
    echo.             >>endtab.inp
    %endver%endtab<endtab.inp
REM
REM Extend IRDFF cross section set
    copy %irdff%.endf fix_irdf.t1
    echo fix_irdf.cur >edendf.inp
    echo fix_irdf.t1 >>edendf.inp
    echo fix_irdf.t2 >>edendf.inp
    echo %EloX%      >>edendf.inp
    echo.            >>edendf.inp
    %exelib%edendf<edendf.inp
REM
REM Renormalise the extended cross section for continuity
    echo fix_irdf.t2        >edtmf3.inp
    echo fix_irdf.t3       >>edtmf3.inp
rem echo %iza% %mf% %mt%   >>edtmf3.inp
    find "MF" fix_irdf.cur >>edtmf3.inp
    echo %Elo% 1           >>edtmf3.inp
    echo.                  >>edtmf3.inp
    echo 2                 >>edtmf3.inp
    %exelib%edtmf3<edtmf3.inp
REM
REM Check by plotting unnormalised/normalised curves
    if not exist mt.dat   copy %prepro%..\mt.dat
    if not exist plot.chr copy %prepro%..\plot.chr
    if not exist plot.sym copy %prepro%..\plot.sym
echo    0.0        12.5       0.0         10.0             1          1 2.0  >complot.inp
echo fix_irdf.t2                                                             >>complot.inp
echo fix_irdf.t3                                                             >>complot.inp
echo           0          0          0          0          4          1   1 >>complot.inp
echo  1.00000-03                                                             >>complot.inp
echo Extended                                                                >>complot.inp
echo Scaled                                                                  >>complot.inp
echo      1 1  1       1.e6  999999999                     0          0     >>complot.inp
echo.                                                                        >>complot.inp
echo.                                                                        >>complot.inp
echo.                                                                        >>complot.inp
echo.                                                                        >>complot.inp
rem %prepro%complot
rem %prepro%comhard
    %prepro%complotps
    move /Y plot.ps %irdff%.ps
REM
REM Extract the covariance matrix from the TENDL file
    if %mf%.==3.  set mf=33
    if %mf%.==10. set mf=40
    if /I %mt%  gtr 999 set mt=5
    if /I %zap% lss 999 set zap=0
    if exist fix_irdf.t4 del fix_irdf.t4
    echo fix_irdf.t0  >covcut.inp
    echo fix_irdf.t4 >>covcut.inp
    echo %Elo%       >>covcut.inp
    echo %Ehi%       >>covcut.inp
    echo 2           >>covcut.inp
    echo %iza% %mf% %mt% %zap% %lfs% >>covcut.inp
    echo.            >>covcut.inp
    %exelib%covcut<covcut.inp
REM
REM Extend the covariance matrix by TENDL data
    echo fix_irdf.t3  >covedt.inp
    echo fix_irdf.t4 >>covedt.inp
    echo fix_irdf.t5 >>covedt.inp
    %exelib%covedt<covedt.inp
:addcom
REM Update the dictionary
    echo fix_irdf.t5  >stanef.inp
    echo %irdff%.fix >>stanef.inp
    echo.            >>stanef.inp
    echo y           >>stanef.inp
    echo.            >>stanef.inp
    c:\endfutil\stanef<stanef.inp
REM
REM Add new comments
```

```
    copy  %irdff%.fix fix_irdf.t6
    if not exist irdff.txt goto pltcov
    echo fix_irdf.t6  >ed1451.inp
    echo irdff.txt   >>ed1451.inp
    echo %irdff%.fix >>ed1451.inp
    echo 1           >>ed1451.inp
    echo %Ehi%       >>ed1451.inp
    %exelib%ed1451<ed1451.inp
:pltcov
REM Plot covariance
    copy %irdff%.fix tape20
    if exist tape47 del tape47
REM
echo reconr                                                          >nji
echo 20 22                                                          >>nji
echo 'Test covariances of IRDFF'                                    >>nji
echo %mat% 1 /                                                      >>nji
echo 0.001 300. 0.003 /                                             >>nji
echo ' %irdff% from IRDFF '                                         >>nji
echo 0 /                                                            >>nji
echo groupr / Multigroup data (for MF32 and MF40 covariances only)  >>nji
echo 20 22 0 38 /                                                   >>nji
echo %mat% 1 0 6 1 1 1 1 /                                          >>nji
echo 'Test covariances of IRDFF'/                                   >>nji
echo 300.                                                           >>nji
echo 1.E+10 /                                                       >>nji
echo  41 / 29 / 24 /                                                >>nji
echo  1.00000E-05 0.55        100.        1000.       4.50000E+03   >>nji
echo  5.727260E+3 8.406460E+3 1.233900E+4 1.811120E+4 2.658360E+4   >>nji
echo  3.901940E+4 5.727260E+4 8.406460E+4                           >>nji
echo              1.12947E+05 1.42191E+05 1.79008E+05 2.25358E+05   >>nji
echo  2.83709E+05 3.57200E+05 4.49647E+05 5.66072E+05 7.12643E+05   >>nji
echo  8.97164E+05 1.12947E+06 1.42191E+06 1.79008E+06 2.25358E+06   >>nji
echo  2.83709E+06 3.57200E+06 4.49647E+06 5.66072E+06 7.12643E+06   >>nji
echo  8.97164E+06 1.12947E+07 1.42191E+07 1.79008E+07 2.25358E+07   >>nji
echo  2.83709E+07 3.57200E+07 4.49647E+07 5.66072E+07 6.00000E+07 /  >>nji
if not %mf32%.==0. echo  3/                                           >>nji
echo 10/                                                            >>nji
echo  0/                                                            >>nji
echo  0/                                                            >>nji
if %t47%.==. goto mf40
echo errorr                                                         >>nji
echo 20 22  %mf32% 47 /                                                  >>nji
echo %mat% 1 6 1 1 /                                                >>nji
if %mf32%.==0. echo 0 300. /                                                 >>nji
echo 0 33 /                                                         >>nji
echo  41 / 29 / 24 /                                                >>nji
echo  1.00000E-05 0.55        100.        1000.       4.50000E+03   >>nji
echo  5.727260E+3 8.406460E+3 1.233900E+4 1.811120E+4 2.658360E+4   >>nji
echo  3.901940E+4 5.727260E+4 8.406460E+4                           >>nji
echo              1.12947E+05 1.42191E+05 1.79008E+05 2.25358E+05   >>nji
echo  2.83709E+05 3.57200E+05 4.49647E+05 5.66072E+05 7.12643E+05   >>nji
echo  8.97164E+05 1.12947E+06 1.42191E+06 1.79008E+06 2.25358E+06   >>nji
echo  2.83709E+06 3.57200E+06 4.49647E+06 5.66072E+06 7.12643E+06   >>nji
echo  8.97164E+06 1.12947E+07 1.42191E+07 1.79008E+07 2.25358E+07   >>nji
echo  2.83709E+07 3.57200E+07 4.49647E+07 5.66072E+07 6.00000E+07 /  >>nji
rem NJOY will not plot multiple ERROR outputs for the same material
echo covr                                                           >>nji
echo 47 0 67 /                                                      >>nji
echo 1 /                                                            >>nji
echo /                                                              >>nji
echo /                                                              >>nji
echo %mat% /                                                        >>nji
echo viewr                                                          >>nji
echo 67 77 /                                                        >>nji
rem NJOY will not plot multiple ERROR outputs for the same material
rem if %t47%.==48. goto mfplt
    if %t47%.==48. goto endnji
:mf40
echo errorr                                                         >>nji
echo 20 22 38 48 / %t47% /                                            >>nji
echo %mat% 1 6 1 1 /                                                >>nji
echo 0 40 /                                                         >>nji
echo  41 / 29 / 24 /                                                >>nji
echo  1.00000E-05 0.55        100.        1000.       4.50000E+03   >>nji
echo  5.727260E+3 8.406460E+3 1.233900E+4 1.811120E+4 2.658360E+4   >>nji
echo  3.901940E+4 5.727260E+4 8.406460E+4                           >>nji
echo              1.12947E+05 1.42191E+05 1.79008E+05 2.25358E+05   >>nji
echo  2.83709E+05 3.57200E+05 4.49647E+05 5.66072E+05 7.12643E+05   >>nji
echo  8.97164E+05 1.12947E+06 1.42191E+06 1.79008E+06 2.25358E+06   >>nji
echo  2.83709E+06 3.57200E+06 4.49647E+06 5.66072E+06 7.12643E+06   >>nji
echo  8.97164E+06 1.12947E+07 1.42191E+07 1.79008E+07 2.25358E+07   >>nji
```

```
echo  2.83709E+07 3.57200E+07 4.49647E+07 5.66072E+07 6.00000E+07 /    >>nji
:mfplt
echo covr                                                             >>nji
echo 48 0 68 /                                                        >>nji
echo 1 /                                                              >>nji
echo /                                                                >>nji
echo /                                                                >>nji
echo %mat% /                                                          >>nji
echo viewr                                                            >>nji
echo 68 78 /                                                          >>nji
:endnji
echo stop                                                             >>nji
     c:\njoy99\njoy<nji
     if exist tape77 move /Y tape77 %irdff%_cov33.ps
     if exist tape78 move /Y tape78 %irdff%_cov40.ps
REM
    echo.
    if %t47%.==48. echo Only MF 33 data processed
    if %t47%.==47. echo MF33 and MF40 data processed
    if %t47%.==.   echo Only MF40 data processed
    echo.
    echo Fix_IRDFF on file %irdff%.fix
    echo.
:end
```

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