

# **Checking tools and finalization of an EXFOR entry**

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# Overview

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- ❑ CHEX and Janis Trans Checker
- ❑ Common errors in compilation (few examples only)

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- ▶ The compilation is not complete/EXFOR entry is incomplete if error messages are shown by these checking tools.
  - ▶ It is absolutely required that all error messages are removed before submission.

Two checking modules are included to the EXFOR-Editor:

- program code Chex
  - program code JANIS Trans Checker
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- ▶ Title : Program CHEX
- ▶ Author : V. McLane, BNL, USA, 1998-2001
- ▶ Versions since 2001 : V. Zerkin, IAEA-NDS
  
- ▶ Purpose: Checking EXFOR entries

CHEX

JANIS

The screenshot displays the EXFOR Editor software interface. At the top, there are menu bars for 'File', 'Section input', 'Keyword input', 'Edit', 'Processing', 'Tools', and 'Help'. Below the menus are two toolbars. The first toolbar contains icons for file operations and editing. The second toolbar contains icons for 'Pattern', 'Wizard', 'Dummy', 'Sort', 'Chart', 'Check', 'Order', 'Checker', 'Spell Check', and 'Numer. Check'. Two blue arrows point from the labels 'CHEX' and 'JANIS' to the 'Check' and 'Checker' buttons, respectively. Below the toolbars is a grid of buttons for data entry, including 'TITLE', 'AUTHOR', 'INSTITUTE', 'REFERENCE', 'FACILITY', 'INC-SOURCE', 'DETECTOR', 'SAMPLE', 'METHOD', 'ANALYSIS', 'ERR-ANALYS', 'REAC', 'DECAY-DATA', 'HALF-LIFE', 'PART-DET', 'ADD-RES', 'MONITOR', 'MONIT-REF', 'REL-REF', 'COMMENT', 'CRITIQUE', 'FLAG', 'STATUS', and 'Edit'. Below the grid is another row of buttons: 'SUBENTRY001', 'SUBENTRY001-wizard', 'SUBENTRY', 'SUBENTRY-wizard', 'COMMON', 'DATA', 'Alteration Flag C', and 'Alteration Flag I'. At the bottom left, there is a 'EXFOR File Structure' tree view showing a hierarchy: ENTRY (33065) -> SUBENT (33065001) -> BIB -> COMMON. At the bottom right, there is a data table with the following content:

Column: 20	Row: 2	Total: 75	Insert	D:\August-2012\EXFOR\EXFOREditor-latest\33065	
33069-Sylvia.txt	33068-final-final.EXF	33068-final-final-final.txt	33070.exf	33073-Per	
ENTRY	33065	20140621			
SUBENT	33065001	20140621			
BIB	11	17			

# What CHEX and Janis Trans Checker do?

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- ❑ CHEX is checking
  - Format(position of column etc.)
  - existence of the code in the dictionary,
  - physical checking(e.g: units etc )
  - existence of required independent variables etc.
  - Charge and mass conservation etc.
  
- ❑ JANIS: Format, existence of the code in dictionary.
  
- ❑ JANIS checking is more strict/stringent than CHEX.

ENTRY	33065	20140621		33065	0	1
SUBENT	33065001	20140621		33065	1	1
BIB	11	17		33065	1	2
.....						
AUTHOR	(O.N.Koul)			33065	1	5
INSTITUTE	(3INDSAH)			33065	1	6
.....						
COMMON		1	3	33065	1	21
EN				33065	1	22
MEV				33065	1	23
				33065	1	24
ENDCOMMON		3	0	33065	1	25
.....						
REACTION	(33-AS-75(N,A)31-GA-72,DE)			33065	2	3
.....						
DATA		3	15	33065	2	7
E-MIN	E-MAX		DATA	33065	2	8
MEV	MEV		MB/MEV	33065	2	9
0.5	1.5		0.40	33065	2	10
1.5	2.5		2.07	33065	2	11

Existence of the code in Institute dictionary?

Is the heading and the unit matching?

DE-> Differential cross section-> outgoing energy distribution-> requires Incident energy, outgoing energy and cx data in MB/MEV

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Procedure of data checking permits to attach the CHEX code to control information entered to the EXFOR library.

After the execution of checking procedure a window with a message containing the results of checking will appear.

Double clicking on the row containing an error description in the window with checking results will highlight the wrong line. (Such possibility is available after processing of a file with the ORDER program).



	having a magnification of (8 x 100), as usual;			33065	1	12
	processing was done by the usual temperature method			33065	1	13
	using low PH 6.6 amidol developer. For the hot stage			33065	1	14
	20 min and 17 degree celsius were selected as the			33065	1	15
	suitable time and temperature.			33065	1	16
FACILITY	(CCW,3INDSAH)			33065	1	17
ERR-ANALYS	No information on uncertainty			33065	1	18
HISTORY	(20140621C) BL			33065	1	19
ENDBIB	17	0		33065	1	20
COMMON	1	3		33065	1	21

Errors for D:\August-2012\EXFOR\EXFOREditor-latest\33065-test.EXF

```

First pass completed with no fatal errors
1
- Second pass checking -
ENTRY 33065
?? WARNING Extinct code found
REFERENCE (J,NP,29,522,1962) 33065001 7
    ^^
** Nonmonatonic data field      E-MIN
    2.5      3.5      4.98      33065002 12
    ~~~~~

```

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Click the **Checker** button on the ToolBar or choose the «Checker» item in «Processing» menu to start **JANIS Trans Checker**

program code. A window with a message containing the results of checking will appear.

REACTION	(33-AS-75 (N,A) 31-GA-72,, DA)			33065	3	3
STATUS	(CURVE) Fig.2 of J, Nuclear Physics,29(1962)522			33065	3	4
ENDBIB	2	0		33065	3	5
NOCOMMON	0	0	3	33065	3	6
DATA	3	9		33065	3	7
ANG-CM-MIN	ANG-CM-MAX	DATA-CM		33065	3	8
ADEG	ADEG	MB/SR		33065	3	9
	0.	20.	28.99	33065	3	10
	20.	40.	24.97	33065	3	11
	40.	60.	17.38	33065	3	12



Errors for D:\August-2012\EXFOR\EXFOREditor-latest\33065-test.EXF

Statistics

ERRORS: **2** WARNINGS: **0**

Error Type	SUBENTRY	Error Message	Details	Line
EXCEPTION	33065003	Illegal reaction pointer	(	57
EXCEPTION	33065003	Empty BIB section, should use NOBIB		57

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❑ It is absolutely necessary to run both these checking tools as CHEX sometimes missed some errors. EXAMPLE-→

# Common errors in EXFOR compilation (Some are specific to EXFOR EDITOR):

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```
I.?? WARNING Extinct code found  
REFERENCE (J,NP,29,522,1962) 33065001 7  
      ^^
```

There are some journal codes that are already extinct, but  
You can neglect this warning message!!!

## 2. \*\* Nonmonotonic data field

If there are multiple data points/sets to be entered in the DATA section, the first column needs to be in ascending order.

Example:

DATA	3	15	33065	2	7
E-MIN	E-MAX	DATA	33065	2	8
MEV	MEV	MB/MEV	33065	2	9
0.5	1.5	0.40	33065	2	10
1.5	2.5	2.07	33065	2	11
2.5	3.5	4.98	33065	2	12
3.5	4.5	4.58	33065	2	13
4.5	5.5	6.66	33065	2	14
5.5	6.5	5.40	33065	2	15
6.5	7.5	2.93	33065	2	16
7.5	8.5	2.10	33065	2	17
8.5	9.5	1.67	33065	2	18
9.5	10.5	1.26	33065	2	19
10.5	11.5	1.44	33065	2	20
11.5	12.5	0.82	33065	2	21
12.5	13.5	0.44	33065	2	22
13.5	14.5	0.64	33065	2	23
14.5	15.5	0.22	33065	2	24
ENDDATA	17	0	33065	2	25

NOCOMMON	0	0	3			33065	2	6
DATA	3	15				33065	2	7
E-MIN	E-MAX	DATA				33065	2	8
MEV	MEV	MB/MEV				33065	2	9
	0.5	1.5	0.40			33065	2	10
	3.5	2.5	2.07			33065	2	11
	2.5	3.5	4.98			33065	2	12
	3.5	4.5	4.58			33065	2	13
	4.5	5.5	6.66			33065	2	14
	5.5	6.5	5.40			33065	2	15

Errors for D:\August-2012\EXFOR\EXFOREditor-latest\33065-test.EXF

```
ZCHEX (Version 2012-03-21) run on 12-Jan-2015
Input file: D:\August-2012\EXFOR\EXFOREditor-latest\33065-test.EXF
ENTRY 33065
  First pass completed with no fatal errors
1
- Second pass checking -
ENTRY 33065
** Nonmonatonic data field          E-MIN
      2.5      3.5      4.98          33065002  12
*****
```

### 3. \*\* Illegal reaction pointer(Editor Specific error)

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The opening bracket/paranthesis for coded information of the **KEYWORD** always shift to the 11th Column if we edit the contents.

We have to manually move/shift right. Interestingly, this problem is associated with a particular keywords such **ERR-ANALYS, HISTORY, STATUS, REACTION, DECAY-DATA, FLAG** which are the keywords in this sample entry. There may be more.

But there is no problem with keywords **AUTHOR, INSTITUTE, REFERENCE, METHOD, FACILITY, DETECTOR.**

\*\*\*\*But **CHEX** can never detect this.

\*\*\*\*Only **JANIS** could identify this.



REACTION	(33-AS-75 (N,A) 31-GA-72,, DA)			33065	3	3
STATUS	(CURVE) Fig.2 of J, Nuclear Physics,29(1962)522			33065	3	4
ENDBIB	2	0		33065	3	5
NOCOMMON	0	0	3	33065	3	6
DATA	3	9		33065	3	7
ANG-CM-MIN	ANG-CM-MAX	DATA-CM		33065	3	8
ADEG	ADEG	MB/SR		33065	3	9
0.	20.	28.99		33065	3	10
20.	40.	24.97		33065	3	11
40.	60.	17.38		33065	3	12

Errors for D:\August-2012\EXFOR\EXFOREditor-latest\33065-test.EXF

Statistics

ERRORS: **2** WARNINGS: **0**

Error Type	SUBENTRY	Error Message	Details	Line
EXCEPTION	33065003	Illegal reaction pointer	(	57
EXCEPTION	33065003	Empty BIB section, should use NOBIB		57

1 | 10 | 20 | 30 | 40 | 50 | 60

4. \*\* Missing independent variable  
 \*\* Missing independent variable

ENERGY  
 SEC. ENERGY

ERR-ANALYSIS NO INFORMATION ON UNCERTAINTY				33065	1
HISTORY	(20140621C)	BL		33065	1
ENDBIB	17	0		33065	1
NOCOMMON	0	0	3	33065	1
ENDSUBENT	20	0		33065	1
SUBENT	33065002	20140621		33065	2
BIB	2	2		33065	2
REACTION	(33-AS-75 (N,A) 31-GA-72,, DE)			33065	2

```

< [ ]
Errors for D:\August-2012\EXFOR\EXFOREditor-latest\33065-test.EXF
ENTRY 33065
  First pass completed with no fatal errors
1
- Second pass checking -
ENTRY 33065
?? WARNING Extinct code found
  REFERENCE (J,NP,29,522,1962) 33065001
  ^^
** Missing independent variable ENERGY 33065002
** Missing independent variable ENERGY 33065003
  
```

ENTRY	33065	20140621		33065	0	1
SUBENT	33065001	20140621		33065	1	1
BIB	11	17		33065	1	2
.....						
AUTHOR	(O.N.Koul)			33065	1	5
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MEV				33065	1	23
				33065	1	24
ENDCOMMON		3	0	33065	1	25
.....						
REACTION	(33-AS-75(N,A)31-GA-72,DE)			33065	2	3
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MEV	MEV		MB/MEV	33065	2	9
0.5	1.5		0.40	33065	2	10
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DE-> Differential cross section-> outgoing energy distribution-> requires Incident energy, outgoing energy and cx data in MB/MEV

EN  
MEV

DE

E-MIN  
MEV

DATA  
MB/MEV

14.

0.40

2.07

REACTION	(33-AS-75 (N,A) 31-GA-72, (DE))			33065	2	3
STATUS	(CURVE) Fig.1 of J, Nuclear Physics, 29(1962) 522			33065	2	4
ENDBIB	2	0		33065	2	5
NOCOMMON	0	0	3	33065	2	6
DATA	3	15		33065	2	7
E-MIN	E-MAX	DATA		33065	2	8
MEV	MEV	MB		33065	2	9
0.5	1.5	0.40		33065	2	10
1.5	2.5	2.07		33065	2	11
2.5	3.5	4.98		33065	2	12

Unit should be MB/MEV!!

MB

Errors for D:\August-2012\EXFOR\EXFOREditor-latest\33065-test.EXF

```

Input file: D:\August-2012\EXFOR\EXFOREditor-latest\33065-test.EXF
ENTRY 33065
  First pass completed with no fatal errors
1
- Second pass checking -
ENTRY 33065
  ?? WARNING Extinct code found
  REFERENCE (J,NP,29,522,1962)          33065001      7
  ^^
  ** Incorrect units, should be dimension DE field: 3 [B ] 33065002

```

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Remove all the Error messages by checking tools(CHEX+JANIS) before submission of your entry.

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Exercise for the erroneous sample 33080-erroneous.txt is available, and please do the exercise!!

1. Download the file and save it in the EXFOR-EDITOR folder.
2. Open the file using EXFOR-EDITOR.
3. Run CHECK(for ZCHEX) and see the error messages. Address and eliminate all the errors.
4. Run CHECKER(for JANIS Trans Checker), make sure the entry is ok and free of any error messages.

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Submit EXFOR entries you prepared to

Dr. B.Lalremruata([marema08@gmail.com](mailto:marema08@gmail.com)) --- Entry #  
starting with “3”

Dr.Vidya Thakur([vidyathakur@yahoo.co.in](mailto:vidyathakur@yahoo.co.in)) --- Entry #  
starting with “D”

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THANKS!!