

Gamma Spectroscopy Training

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Carlsbad NM

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Radiation Protection Sample Diagnostics Program



Sandia National Laboratories

Sandia is a multi-program laboratory operated by Sandia Corporation, a Lockheed Martin Company,
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Outline

- ◉ Genie2K Environment
- ◉ Genie2K File Editors
- ◉ Batch Files Vs. Auto Sequence Files
- ◉ Heads Up
- ◉ Exercises

Genie2k Environment

Objectives

- Understand the file structure of Genie2k software.
- Overview of commonly used files.

Where is Genie2k directory?

- Currently Canberra only guarantees that the Genie2k environment works on Microsoft operating system up to Windows XP.
- The root directory for Windows XP is the c: drive.
- The Genie2k directory is located in the root directory of any Windows operating system.
 - (C:\Genie2k)

C:\Genie2k Directory

CALFILES
CAMFILES
CTLFILES
DRIVERS
EXEFILES
JOBHELP
MIDFILES
PDFS ()
REPFILS

- Calfiles contain all the calibration files.
- When accessing calibration files
c:\Genie2k\Calfiles is the default directory for any Genie2k utility.

C:\Genie2k Directory

CALFILES
CAMFILES
CTLFILES
DRIVERS
EXEFILES
JOBHELP
JOBFILES
PDFS 0
RPFFILES

- Camfiles contain all the CAM files (.cnf) and library files (.nlb).
- A camfile is a data source recognized by the VDM that holds:
 - Spectral data
 - Elapsed time
 - Sample information
 - Calibration information
 - Analysis Results
 - Etc..

Camfile Structure

Common: Each common parameter occurs only once in a class.

Common Tabular: Each common tabular parameter may occur a fixed number of times per class. To access a common tabular parameter, an entry number must be specified.

Record: Each record parameter can occur an indefinite number of times. To access a record parameter, a record number must be specified.

Record Tabular: A record parameter can occur a variable number of time per record. To access a record tabular parameter, both a record and entry number must be specified.

COMMON
PARAMETERS

RECORD-ORIENTED
PARAMETERS

Typical CAM Data Class Structure

Common Parameter
(nos. 1 and 5)

Common Tabular
Parameter
(Parameter no. 9,
entry 2)

Record
Parameter
(Parameter
no. 1,
Record no. 2)

Record
Tabular
Parameter
(parameter
no. 2, record
no. 7, entry
no. 2)

C:\Genie2k\CAMFILES*.nlb

- A library file is a data source recognized by the VDM that holds:
 - Nuclide
 - Half life
 - Emission Rate
 - Type of Emission
 - Energy
 - Abundance

Library File viewed with the Nuclide Library Editor

Nuclide Library Editor: RPSD.NLB

File Search Options Help

Nuclide

Name: Half-Life: Y D
 H M
Type: Uncertainty: ± S

Energy Lines

Energy: keV Abundance: % Key Line
Uncertainty: ± keV Uncertainty: ± Abs No Wt Mean

Name	Type	Half Life	Energy - keV	Abundance - %
BE-7	EC	53.290D		
NA-22	B+	2.602Y	* 477.59	10.4200
NA-24	B-	15.020H	* 1274.54	99.9400
			* 1368.53	99.9991
			2754.09	99.8620
K-40	EC	1.277e+009Y	* 1460.81	10.6700
CR-51	EC	27.704D		

C:\Genie2k Directory

CALFILES
CAMFILES
CTLFILES
DRIVERS
EXEFILES
JOBHELP
MIDFILES
PDFS ()
REPFILS

- The CTLFILES directory contains the template files (.tpl), the auto sequence files (.asf), and other misc. files.
- A template file contains the formatting structure for reports.
 - These files are read by the environment to produce the electronic and/or printed reports.

Example template file

\$GETL

The \$GETL command fetches the values of the current list definition into the specified

list type of Array Rep

Syntax
\$GETL n
Parameter

n A value of 1 to specific list type Variable (page 14) in data will be stored.

record The record n the specified list data Note that this parameter represented as a #I general-purpose report short value 'n'.

entry The entry number specified list data with that this parameter represented as a #I (IV-Integer Value) report variable or as

```

$REM
$REM Sample Information Report Template
$REM
$SEC Header
$REM ---1-----2-----3-----4-----5-----6-----7
"*****"
"***** GAMMA SPECTRUM ANALYSIS *****"
"*****"
"***"
$DEFL STITLE SIDENT STYPE SGEOMETRY SQUANT SUNIT STIME SDESC1
$GETL 1 1 0
"Filename: |AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA" #filename
"***"
"Report Generated On : |DDDDDDDD |TTTTTTTTT" #datetime #datetime
"***"
"Sample Title : |AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA" #LIS1(1)
"Sample Description : |AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA" #LIS1(8)
"Sample Identification : |AAAAAAAAAAAAAAAA" #LIS1(2)
"Sample Type : |AAAAAAAAAAAAAAAA" #LIS1(3)
"Sample Geometry : |AAAAAAAAAAAAAAAA" #LIS1(4)
"***"
"Peak Locate Threshold : |F.FF" SENSITVTY
"Peak Locate Range (in channels) : |IIII - |IIII" PEAKSTART PEAKEND
"Peak Area Range (in channels) : |IIII - |IIII" PASTART PAEND
$IF USEVARETOL
$SETE #FV1 VARTOLERANCE
"Identification Energy Tolerance : |FFF.FFF FWHM" #FV1
$ENDIF
$IFNOT USEVARETOL
$SETE #FV1 TOLERANCE
$SETD #FV1 ECALCNV
"Identification Energy Tolerance : |FFF.FFF |AA" #FV1 ECALUNITS
$ENDIF
"***"
"Sample size : |EEEEEEEEEE |AAAAAA" #LIS1(5) #LIS1(6)
"***"
"Sample Taken on : |DDDDDDDD |TTTTTTTTT" #LIS1(7) #LIS1(7)
"Acquisition started : |DDDDDDDD |TTTTTTTTT" ASTIME ASTIME
"***"
"Live Time : |FFFFFF.F seconds" ELIVE
"Real Time : |FFFFFF.F seconds" EREAL
"***"

```

C:\Genie2k Directory

CALFILES
CAMFILES
CTLFILES
DRIVERS
EXEFILES
JOBHELP
MIDFILES
PDFS ()
REPFILES

- Help files
- Drivers
- Not routinely accessed

C:\Genie2k Directory

CALFILES
CAMFILES
CTLFILES
DRIVERS
EXEFILES
JOBHELP
MIDFILES
PDFS ()
REFFILES

● Contains the following

- Executables
 - Place custom executables in this directory as well
- Rex files (.rex)
- Dialog description files (.fds)
- Other misc. files

Batch programming.

```
Get_Det :
detname=GBT_ENUM("DETNAME.FDS","DET:*",,"Show")
IF detname=">2" THEN SIGNAL Routine_End
ErrMsg="Det name"
Call Error_Msg
detttype=SUBSTR(detname,5,3)
detnum=RIGHT(detname,1)
IF dettype="DET" THEN detnum=4 /* For Q2 Analysis */
IF dettype="WBC" THEN detnum=3 /* For WBC Analysis */

/* Normal single-detector systems */
IF dettype="LAB" | dettype="PGE" | dettype="FAL" | dettype="NAI" THEN DO
  "set JobInpSrc="detname
  "set JobOutSrc="detname
  "HDWCHECK"
  IF RC<>0 THEN DO
    Msg.Button1=""
    Msg.Icon="!"
    Ans=GBT_MESSAGE("Detector is not available!", "Msg", "Show")
    IF JOBERROR <> 0 THEN SIGNAL Routine_End
    IF Ans=">2" THEN SIGNAL Routine_End
    RC=0
    SIGNAL Get_Det
  END
  Ans=GBT_MESSAGE("Setting up the detector ....",,"Show")
  "PUTVIEW /xy=1,-5 /cxcy=-95,-65"
  IF dettype='PGE' THEN 'HVCNTL /ARMED'
  IF dettype='FAL' THEN 'HVCNTL /ARMED'
  IF dettype='NAI' THEN 'HVCNTL /ARMED'
END
```

program

Issue

FDS files

FDS FILE

```
{ SIDENT ; ; RPSD Sample ID: ; 3; 4; 30; 30; 8; 11 }
{ STITLE ; ; Customer Sample ID: ; 5; 4; 30; 30; 1; 64 }
{ SEMPNAME ; ; Customer Name: ; 7; 4; 30; 30; 1; 32 }
{ SSPRSTR7 ; ; Customer Org: ; 9; 4; 30; 30; 1; 32 }
{ SSPRSTR1 ; ; Customer Email ID: ; 11; 4; 30; 30; 2; 12 }
{ SSPRSTR5 ; ; Customer Program ID: ; 13; 4; 30; 30; 1; 5; ; }
RPOP|RPID|RPSD|IH|DND|FRMC|EXT|SND|WM|OTH|EM|EMAA|EMGW|EMGW|EMTS|EMSW|CMC|ER }
{ STYPE ; ; Sample Type/Category: ; 15; 4; 30; 20; 1; 16; ; ; Liquid|Solid|Filter|Gas|WBC|Other }
{ SSPRSTR4 ; ; ; 15;25; 52; 20; 1; 3; ; ; SA|LCS|BL|DUP|MS }
!{ SSPRSTR2 ; ; Sample Building/Room: ; 15; 4; 30; 20 }!
!{ SSPRSTR3 ; ; ; 15;25; 52; 20 }!
{ SDESC1 ; ; Sample Description: ; 17; 4; 30; 40; 1; 64 }
{ SQUANT ; ; Sample Aliquot/Units: ; 19; 4; 30; 20 }
{ SUNITS ; ; ; 19;25; 52; 20; 1; 16; ; ; mL|Liter|gram|kg|Each }
{ STIME ; ; Sample Date/Time: ; 21; 4; 30; 25 }
{ SSPTIME ; ; Received Date/Time: ; 23; 4; 30; 25 }
{ SSPRSTR6 ; ; COC Number: ; 25; 4; 30; 25 }
{ SSURVID ; ; Survey Number: ; 27; 4; 30; 25 }
{ ACTIVUNITS; ; Activity Units: ; 29; 4; 30; 28; ; ; ; ; pCi|uCi|dpm|Bq|NSU }
{ SRWP ; ; Template: ; 31; 4; 30; 28; 4; 4; ; ; RPSD|RPOP }

! Place an OK and a Cancel button in the Dialog Box.
!
! ID; lvl; name; row; column; width
!
BUTTON
{ 1; ; O~k ; 34; 19; 14 }
{ 2; ; ~Cancel; 34; 35; 14 }
```

DIALOG BOX

Additional Sample Information

RPSD Sample ID:	<input type="text" value="J0081601"/>
Customer Sample ID:	<input type="text" value="EFFINIENCY CHECK FOR FALC"/>
Customer Name:	<input type="text" value="SANSONE, K"/>
Customer Org:	<input type="text" value="4121"/>
Customer Email ID:	<input type="text" value="KRSANSO"/>
Customer Program ID:	<input type="text" value="RPSD"/>
Sample Type/Category:	<input type="text" value="Solid"/> <input type="text" value="SA"/>
Sample Description:	<input type="text" value="SOURCE # G612 @ 5 ft"/>
Sample Aliquot/Units:	<input type="text" value="1"/> <input type="text" value="Each"/>
Sample Date/Time:	<input type="text" value="7/21/10 11:47:00 AM"/>
Received Date/Time:	<input type="text" value="7/21/10 11:47:00 AM"/>
COC Number:	<input type="text"/>
Survey Number:	<input type="text"/>
Activity Units:	<input type="text"/>
Template:	<input type="text" value="RPSD"/>

C:\Genie2k Directory

CALFILES
CAMFILES
CTLFILES
DRIVERS
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JOBHELP
MIDFILES
PDFS ()
REPFILERS

- Location of MID Files (.mid)
- Not routinely accessed but worth talking about.
- MID stands for MCS Input Definition.
- The descriptor file for detectors.
- Detailed setup of mid files is located in the Genie 2000 Operations Manual.
- Setup using MID Wizard or MID file editor.

C:\Genie2k Directory

CALFILES
CAMFILES
CTLFILES
DRIVERS
EXEFILES
JOBHELP
MIDFILES
PDFS 0
REPFILES

- Location of most manuals.
- If possible, always load these documents on to the local computer when asked. (saves time when looking up information)

C:\Genie2k Directory

CALFILES
CAMFILES
CTLFILES
DRIVERS
EXEFILES
JOBHELP
MIDFILES
PDFS 0
EPFILES

- Location of all outputted reports.
- This is a place to look for result files.
- Files can be renamed or copied.
- Report files are ASCII character files.

Questions?

Genie2k File Editors

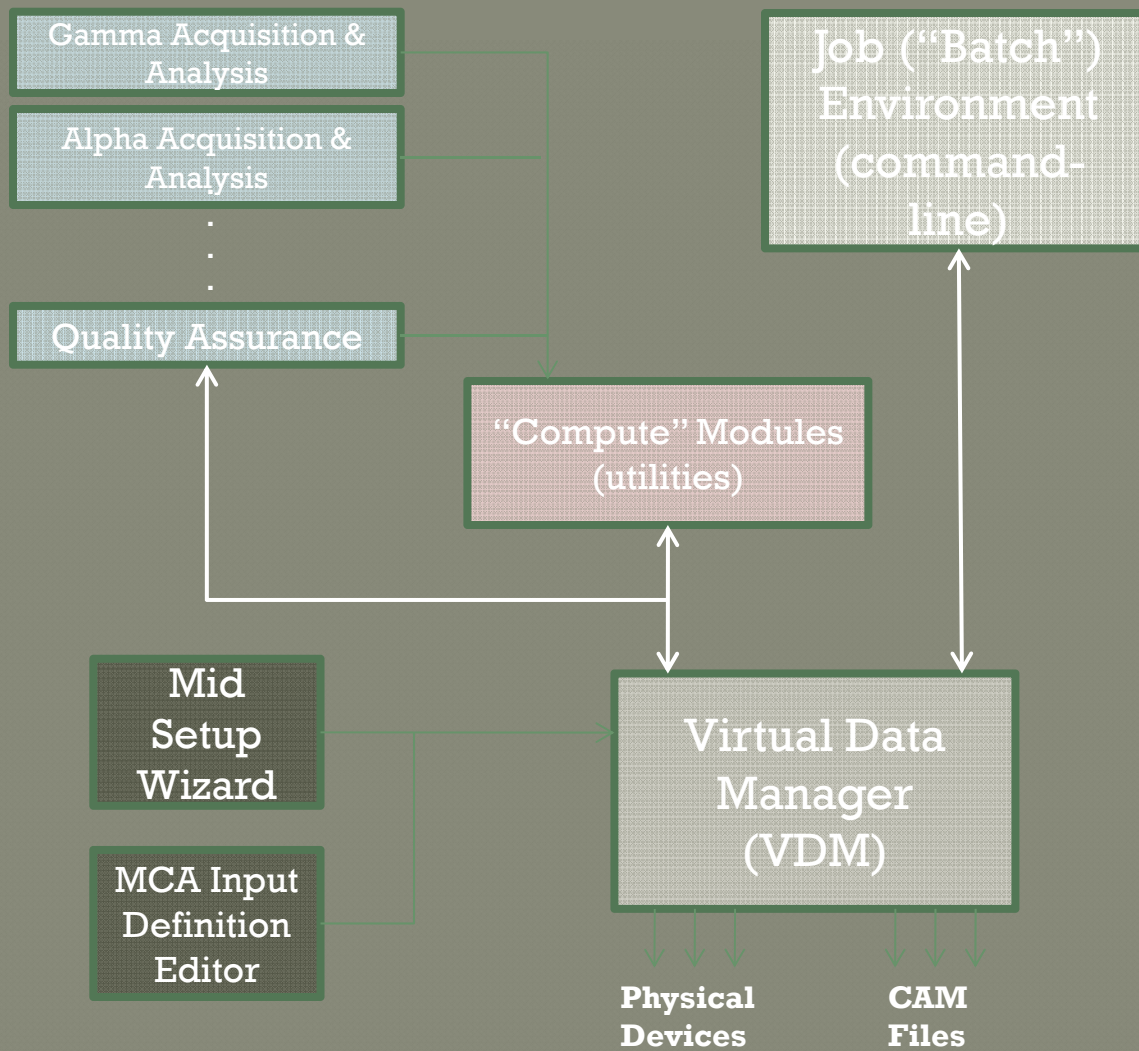
Objectives

- Genie2k VDM
- Familiarization with the different types of editors
 - Quality Assurance Editor and .QAF files
 - Nuclide Library Editor and .NLB files
 - Certificate File Editor and .CTF files
 - MCA Input Editor and .MID files

Genie2k VDM

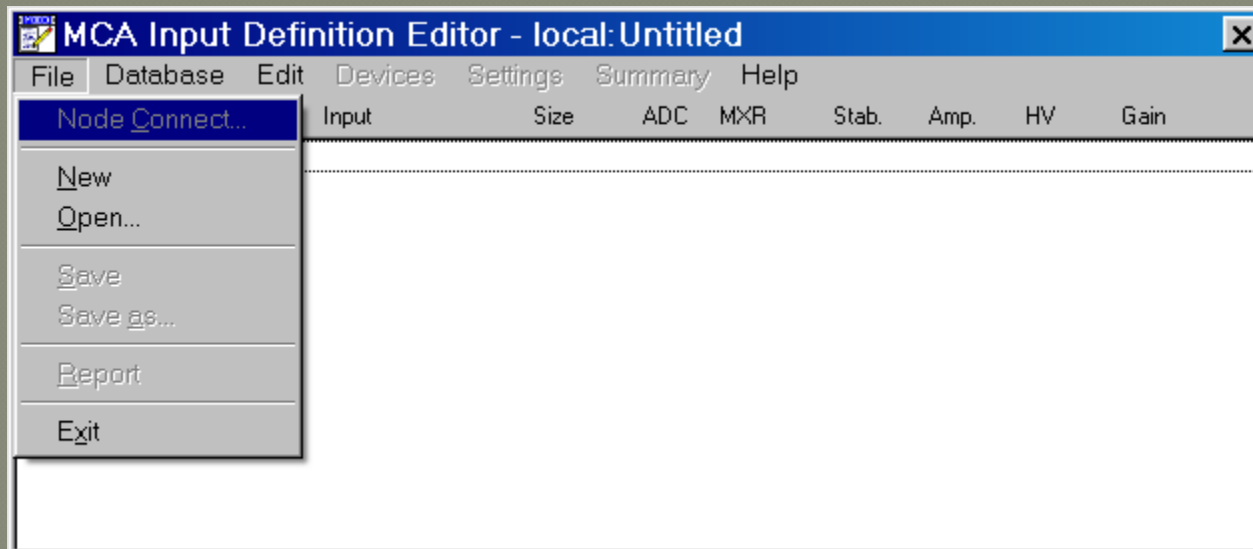
Virtual Data Manager

- In essence a server that handles data traffic between data sources and modules.
 - **data sources**
 - **File**
 - **Detector**
- Runs in the background but it can be seen in the program bar.
- Either on or off
- Required to be on to work with Genie2k environment.
- Automatically Starts when opening a data source.
- May be shutoff or turned on manually.

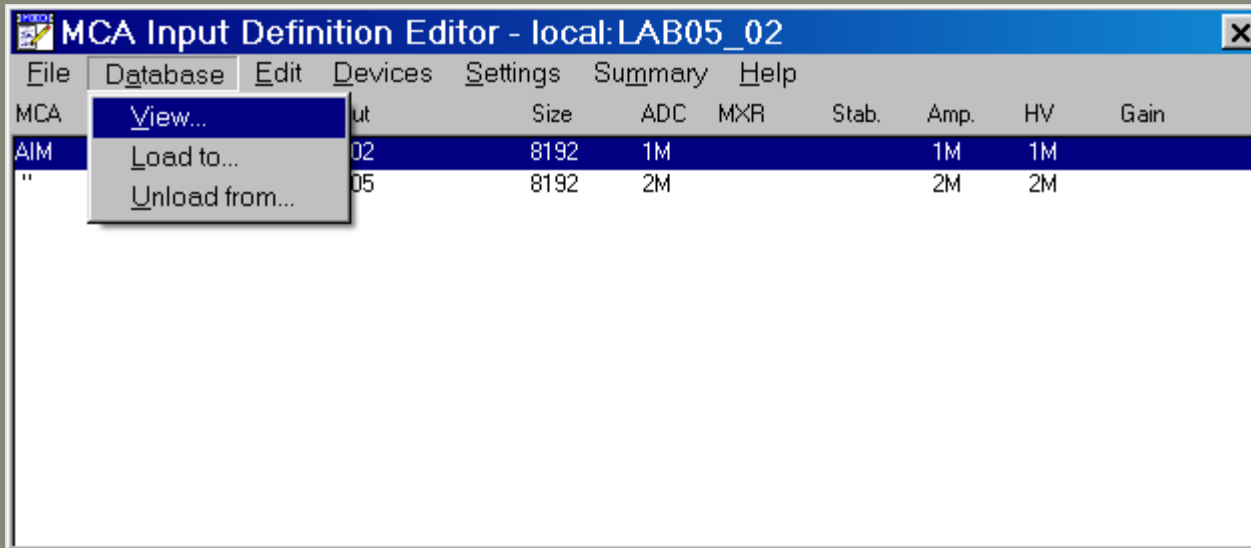


MID Files

- Used to define a detector.
- Create or Open MID files



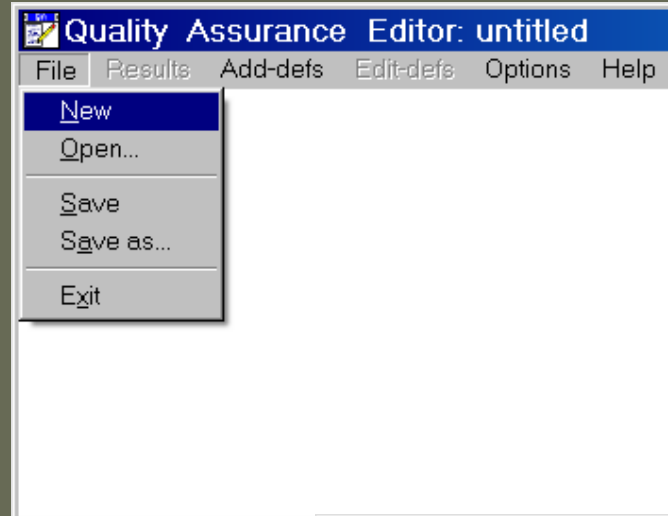
MID files must be unloaded from the database prior to editing.



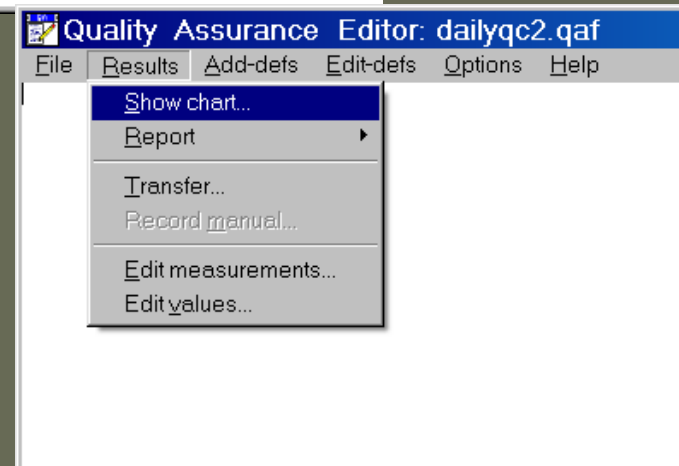
After creating or editing a MID file it has to be loaded into the MCA database.

Quality Assurance Editor

- Create and edit quality assurance files.
- Genie 2000 QA is used to establish and maintain a Quality Assurance program for Genie 2000 spectroscopy systems.
 - It's a small database.

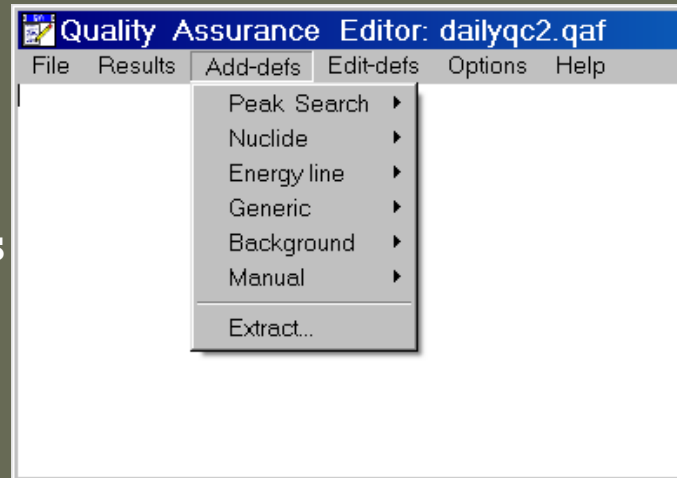


- Define Parameters
- View reports
- View Quality Controls charts.
- Edit Data Values
- Remove data points

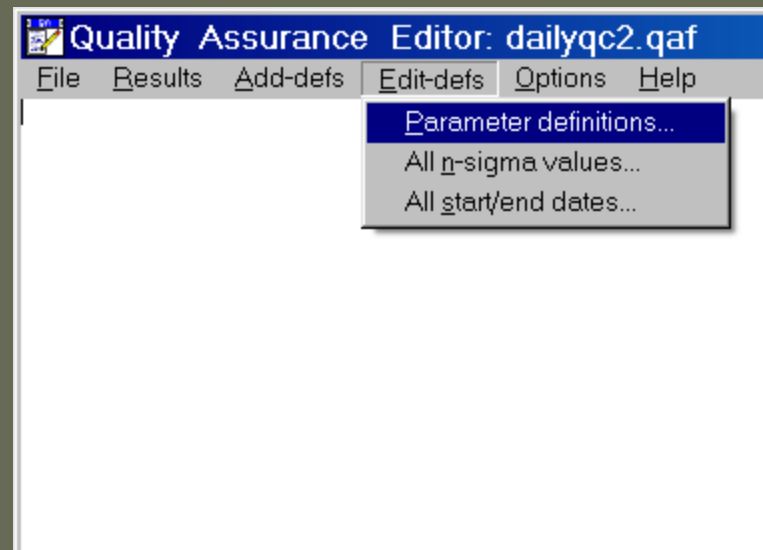


Quality Assurance Editor

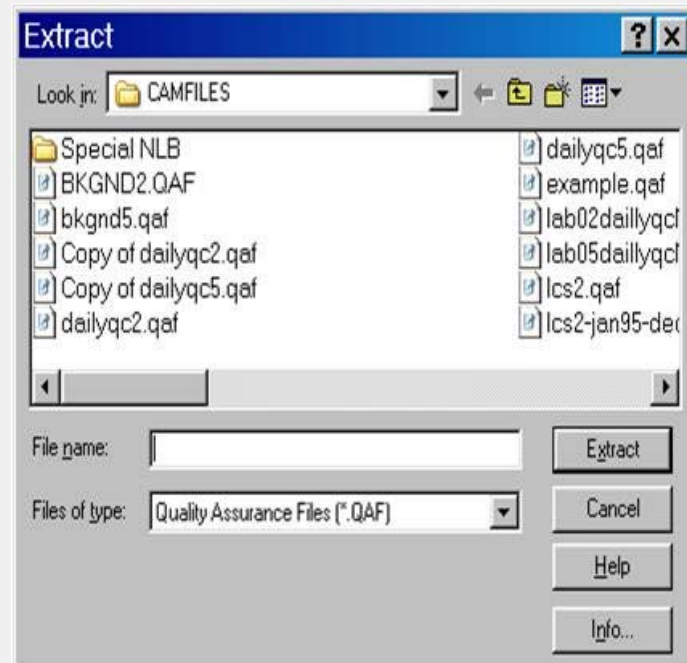
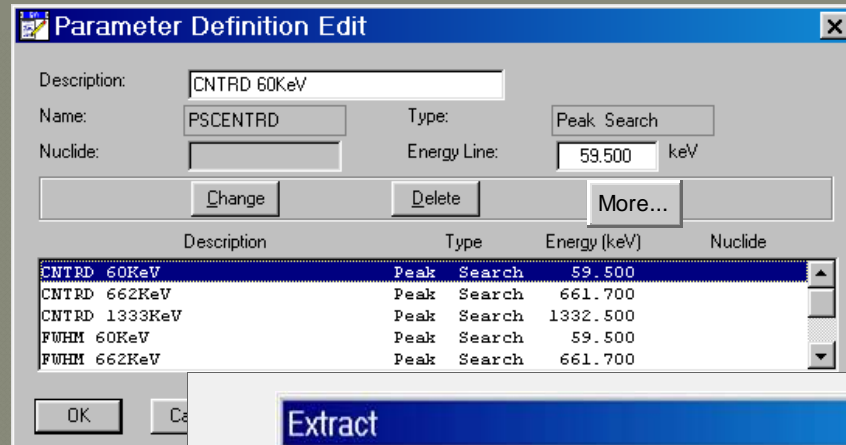
- Establish recorded parameters.
- Extract (copy) from established QA Files



- Edit parameter definitions



Parameter Extraction (QA)



Extract parameters from other QA files without the data.

Certificate File Editor

- The certificate file editors are used to change or create source certificate files (.ctf).
- Certificate files are used to define electronic source certificates.
- Are generated from the manufactures source certificate.
- The emission rate may need to be converted from the units on the paper certificate to the required units in the certificate file.

Certificate File Editor Dialog

- Certificates can be entered manually line by line.
- Can be extracted from other certificates nuclide by nuclide.
- Extracted from other certificates in bulk.

The screenshot shows the 'Certificate File Editor - Nbsstd.cff' dialog box. It has a menu bar with 'File', 'Options', and 'Help'. The main area contains several input fields: 'Title' (Canberra Spectrum 2 Certificate), 'Quantity' (1 unit(s)), 'Assay date' (9/1/1978 at 6:00:00 AM), and 'Original Certificate' (with a 'Browse' button). Below these is a 'Line' section with fields for 'Nuclide' (CD-109), 'Half-Life' (463.9), 'Energy' (88.037 keV), 'Uncertainty: +/-' (0.1), 'Emission Rate' (514.320 gps or aps per unit quantity), and 'Rate Uncertainty: +/-' (4.10 %). There are also radio buttons for 'Y', 'D', 'H', 'M', and 'S', and a checked box for 'Use for Calib/INIT?'. At the bottom of the line section are 'Add', 'Change', 'Delete', and 'Clear' buttons. A table at the bottom lists nuclides with columns for Nuclide, Energy (keV), Rate, %Uncert, and Half-Life.

Nuclide	Energy (keV)	Rate	%Uncert	Half-Life
* CD-109	88.037	514.320	4.10	463.90 D
CO-57	122.063	917.680	2.20	272.40 D
CR-139	165.853	551.380	4.00	137.70 D
HG-203	279.188	1738.500	2.50	46.62 D
SN-113	391.688	1651.400	4.80	115.00 D
SR-85	513.996	2751.600	3.00	64.85 D
CS-137	661.638	1424.100	3.00	30.00 Y
Y-88	898.021	10231.000	4.00	106.66 D
CO-60	1173.208	3626.100	0.90	5.27 Y
CO-60	1332.464	3629.300	0.90	5.27 Y
* Y-88	1836.014	10699.000	3.00	106.66 D

Extracting

CERTIFICATE FILE EDITOR WITH EXTRACT OPTIONS

LIBRARY EXTRACT

Certificate File Editor - Nbsstd.ctf

File Options Help

Title: Certificate
Qua: Assay date: 9/1/1978 at 6:00:00 AM
Original Certificate: Browse

Library Extract...
Certificate Extract...
Energy Units...

Line

Nuclide: CD-109 Half-Life: 463.9 Y D
Energy: 88.037 keV Uncertainty: +/- 0.1 H M
Emission Rate: 514.320 cps or cps per unit quantity S
Rate Uncertainty: +/- 4.10 % Use for Calib/INIT ?
Add Change Delete Clear

Nuclide	Energy (keV)	Rate	%Uncert	Half-Life
* CD-109	88.037	514.320	4.10	463.90 D
CO-57	122.063	917.680	2.20	272.40 D
CE-139	165.853	551.380	4.00	137.70 D
HG-203	279.188	1738.500	2.50	46.62 D
SN-113	391.688	1651.400	4.80	115.00 D
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Y-88	898.021	10231.000	4.00	106.66 D
CO-60	1173.208	3626.100	0.90	5.27 Y
CO-60	1332.464	3629.300	0.90	5.27 Y
* Y-88	1836.014	10699.000	3.00	106.66 D

Extract Library Nuclides

Activity Units: uCi Conversion Factor: 37000

Nuclide: Activity: % Uncertainty:

Change

Nuclide Name	Activity	% Uncertainty in Activity
BE-7	0.000	0.00
NA-22	0.000	0.00
NA-24	0.000	0.00
CL-38	0.000	0.00
K-40	0.000	0.00
AR-41	0.000	0.00
K-42	0.000	0.00

OK Cancel Help

Library Extract

•This utility allows the user to extract energy lines and their associated information from one or more existing nuclide library files (.NLB).

•If your library uses activity units other than curies or Becquerel, you'll have to convert units to Becquerel.

•Choose "< >" from the Activity Units list box, then type the appropriate conversion factor into the Conversion Factor text box.

Activity Units: Conversion Factor:

Nuclide: Activity:
% Uncertainty:

Nuclide Name	Activity	% Uncertainty in Activity
BE-7	0.000	0.00
NA-22	0.000	0.00
NA-24	0.000	0.00
CL-38	0.000	0.00
K-40	0.000	0.00
AR-41	0.000	0.00
K-42	0.000	0.00

Certificate Extract

Extract Certificate Nuclides

Extracting From: Nbsstd.ctf

Nuclide	Energy (keV)
CD-109	88.037
CO-57	122.063
CE-139	165.853
HG-203	279.188
SN-113	391.688
SR-85	513.996
CS-137	661.638

Open...

Select all

Deselect all

OK Cancel Help

ss and
listing
(CTF).

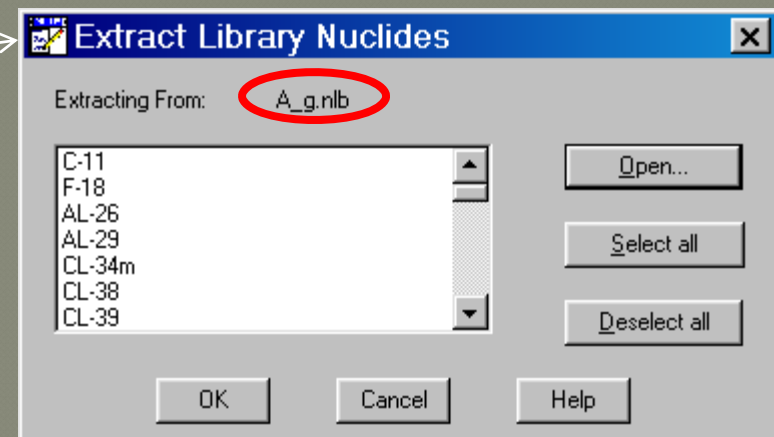
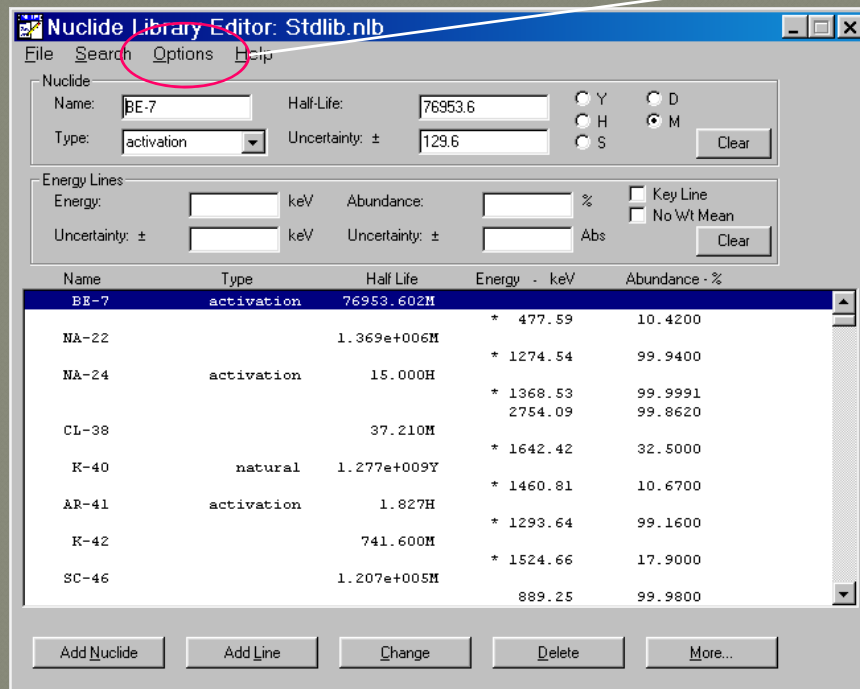
ificate
to file.

Nuclide Library Editor

- Editing and creating nuclide libraries.
- Files are stored with .nlb extension.
- Nuclide libraries are use to identify peaks from the stored spectrum against known peaks in a library.
- Nuclide libraries should not be all inclusive.
- Create multiple libraries for different process.
- Almost identical to Certificate Files.

Nuclide Library Editor

- Nuclides can be extracted from other libraries.
- There are libraries provided by Canberra sorted alphabetically.



Documentation

- Documentation for all editors, except the Quality Assurance editors, are located in Genie2k Operations Manual.

Batch Files vs. Auto Sequence Files



Batch Files



**AUTO SEQUENCING
FILES (ASF)**

Objectives

- Advantages/Disadvantages of Batch Programs vs. Auto Sequencing files
- Concepts of batch programming
- Concepts of Auto Sequencing files

Advantages of Batch Files

- Run sequence of commands to accomplish the final report
- Customize file naming.
- Customize the analysis sequence in any order.
- A single command line entry can accomplish the same as an entry dialog.

Disadvantages of Batch Files

- The batch files are in Rexx language and can be really abstract to most people.
- Require the Rexx interpreter for each computer running batch files.
- QC.rex, source data must be hard coded.
- The open file dialog box limits the file character size to eight characters.

Advantages of Auto Sequence Files

- Run the same sequence as batch files:
 - No need to program.
 - Integrated in the Genie2k environment.

Disadvantages of ASF

- File handling is automatic and requires a script file to customize a change.
- In order to run an ASF a data source has to be open.
- Count times, Background files, and Nuclide libraries have to be manually selected and must be changed in the ASF to take an effect.
- The Gamma Acquisition Interface has to be manually zeroed prior to running another ASF.

Batch Programming

- Execution of file written with a pre-determined syntax (Rexx) in such a way as to evaluate conditional statements, process data, and/or perform commands, or in some combination thereof.
- Rexx is an interpreter that reads the ACQ.rex or some other REXX file and then executes the file.
- The file is an ASCII text file and can be altered easily.

Rex File ACQ.REX

- Remarks

```
/* ----- */  
/* Analyze the saved file */
```

- Commands

```
"set JobInpSrc=c:\Genie2k\camfiles\"outname".cnf"  
"set JobOutSrc=c:\Genie2k\camfiles\"outname".cnf"
```

- Conditional Statements

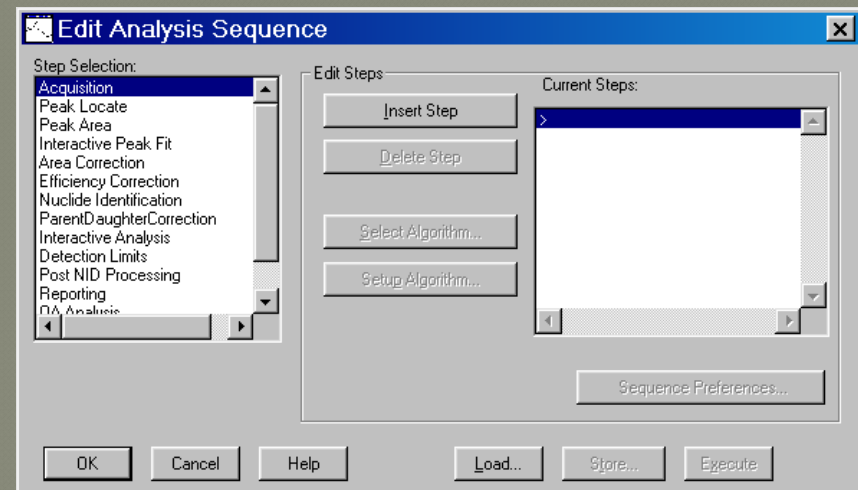
```
Ans=GBT_MESSAGE("Performing Data Analysis for "outname,,"show")  
IF dettype="LAB" THEN "PEAK_DIF /CHANNELS=100,8192 /SIGNIF=2.75"  
IF dettype="PGE" THEN "PEAK_DIF /CHANNELS=100,8192 /SIGNIF=2.75"  
IF dettype="NAI" THEN "PEAK_LIB /CHANNELS=25,1024 /GAINSHIFT /LIBRARY="libfile"  
IF dettype="DET" THEN "PEAK_DIF /CHANNELS=100,8192 /SIGNIF=2.75"  
IF dettype="WBC" THEN "PEAK_DIF /CHANNELS=200,8192 /SIGNIF=2.75"
```

- More Commands

```
ErrMsg="Peak Search"  
Call Error_Msg
```

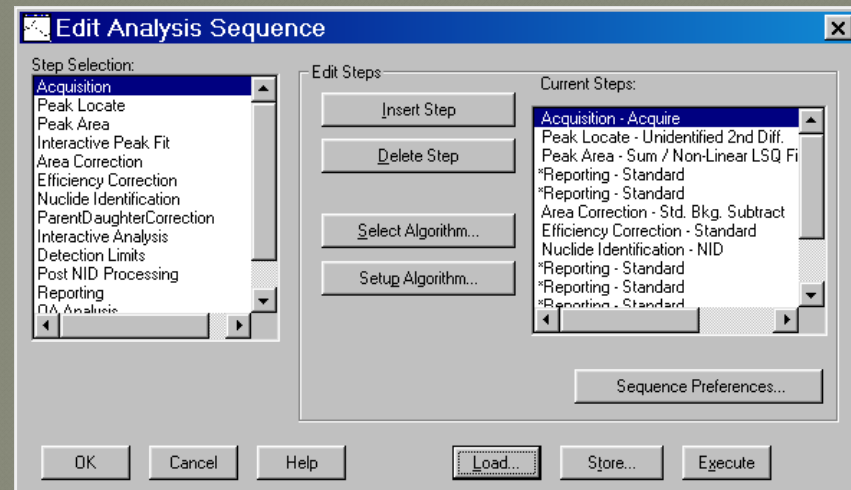
Auto Sequence File (ASF)

- An auto sequence file is a file that contains selected steps from the Canberra ASF editor.

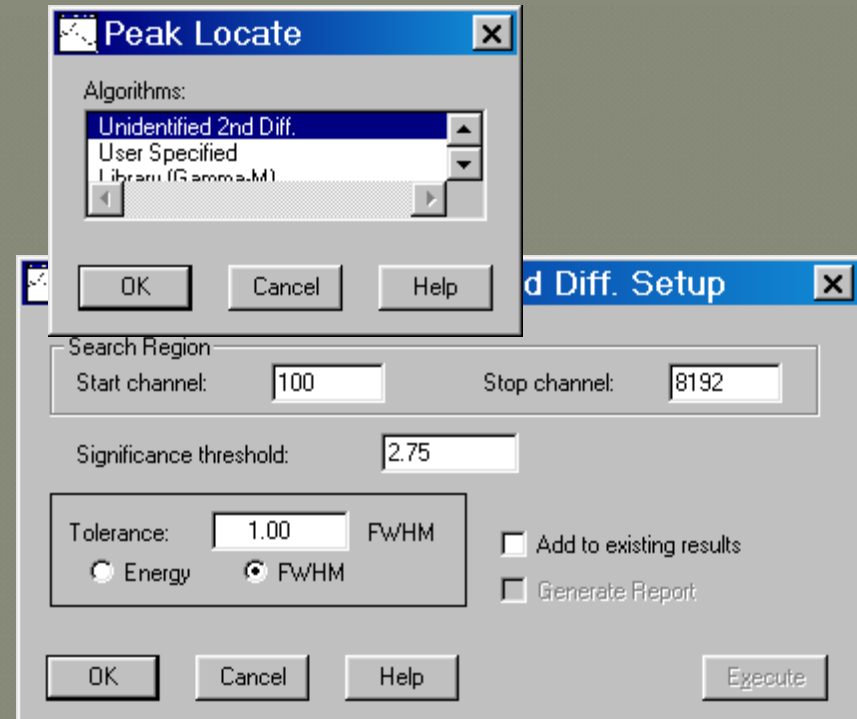


Auto Sequence File (ASF) Simplified

- Select from a pre-determine set of steps.
- Add the step to the sequencing side (left).
- Select the Algorithm for each step (if possible).
- Setup the Algorithm.



- Each step has at least one algorithm
- There can be multiple instances of the same step.
- Each step has a dialog box to set parameters.



Batch vs. ASF



Acquisition

ACQUISITION SETUP DIALOG

```
/* ----- */
/* Get the Preset Time to be used */
/* ----- */

Ctime:
Opt.Prompt=""
preset=GBT_QUERY("PRESET.FDS","Opt","show")
IF preset=">2" THEN SIGNAL Routine_End
ErrMsg="Count Time"
Call Error_Msg
IF preset<120 | preset>600000 THEN DO
  Ans=GBT_MESSAGE("Count time must be between 120 and 600000","msg","show")
  "WAIT /ELAPSED=3"
  SIGNAL Ctime
END

/* ----- */
/* Start the mca */
/* ----- */

/* Normal single-detector systems */
IF dettype="LAB" | dettype="PGE" | dettype="FAL" | dettype="NAI" THEN DO
  "set JobInSrc="detname
  "set JobOutSrc="detname
  "STARTMCA /livepreset="preset
  ErrMsg="Start MCA"
  Call Error_Msg
END
```

Acquire Setup

Time Preset

Live Time 1000

Real Time Sec

 Min

 Hr

Computational Preset

None Value:

Integral Start Chan:

Area Stop Chan:

Counts

MCS Preset

Sweep Count:

Don't Clear Data/Time at Start of Acquisition

Clear Data/Time at Initial Start of Acquisition

Clear Data/Time at Start of Acquisition

OK Cancel Help Execute

Peak Locate

```
ACQEX - Notepad
File Edit Format View Help
call Error_Msg

"DEL C:\GENIE2K\CAMFILES\DET01TMP.CNF"
"NORMAL C:\GENIE2K\CAMFILES\DET01.CNF /CAL<C:\GENIE2K\CAMFILES\DETSUM.CNF /OUT<C:\GENIE2K\CAMFILES\DET01TMP.CNF"
errmsg="DET01 2"
call Error_Msg

"STRIP C:\GENIE2K\CAMFILES\DETSUM.CNF C:\GENIE2K\CAMFILES\DET01TMP.CNF /FACTOR=-1.0"
errmsg="SUB 2"
call Error_Msg

/* Copy to output file */
"set jobinprc=c:\genie2k\camfiles\deetsun.cnf"
"set joboutsprc=c:\genie2k\camfiles\outname.cnf"
Ans=GBT_MESSAGE("Copying to file 'outname' ...", "show")
MOVEDATA /OVERWRITE
errmsg="SAVE 5M"
call Error_Msg

/* Move sample info from DET01 to sample file */
"set jobinprc=DET01"
"set joboutsprc=c:\genie2k\camfiles\outname.cnf"
Ans=GBT_MESSAGE("Moving sample data ...", "show")
MOVEDATA /SAMPLE /PROCESSING /EFFCAL /OVERWRITE
errmsg="Move sample and cal. data"
call Error_Msg

"set jobinprc=c:\genie2k\camfiles\outname.cnf"
"set joboutsprc=c:\genie2k\camfiles\outname.cnf"
"PARS /DETNAME=DET01"
errmsg="DETNAME 2"
call Error_Msg

END

/* Analyze the saved file */
"set jobinprc=c:\genie2k\camfiles\outname.cnf"
"set joboutsprc=c:\genie2k\camfiles\outname.cnf"
Ans=GBT_MESSAGE("Performing data analysis for 'outname' ...", "show")
IF dettype="LAB" THEN "PEAK_DIF /CHANNELS=100,8192 /SIGNIF=2.75"
IF dettype="PDE" THEN "PEAK_DIF /CHANNELS=100,8192 /SIGNIF=2.75"
IF dettype="FAL" THEN "PEAK_DIF /CHANNELS=100,8192 /SIGNIF=2.75"
IF dettype="NAT" THEN "PEAK_LIS /CHANNELS=23,1024 /GAINSDIFF /LIBRARY="libfile"
IF dettype="DET" THEN "PEAK_DIF /CHANNELS=100,8192 /SIGNIF=2.75"
IF dettype="BIC" THEN "PEAK_DIF /CHANNELS=100,8192 /SIGNIF=2.75"
errmsg="Peak Search"
call Error_Msg

IF dettype="LAB" THEN "AREA_NL3 /CHANNELS=100,8192 /DISPLAY_R015 /FCONT=1.0 /CRITLEVEL"
IF dettype="PDE" THEN "AREA_NL3 /CHANNELS=100,8192 /DISPLAY_R015 /FCONT=1.0 /CRITLEVEL"
IF dettype="FAL" THEN "AREA_NL3 /CHANNELS=100,8192 /DISPLAY_R015 /FCONT=1.0 /CRITLEVEL"
IF dettype="NAT" THEN "AREA_L18 /CHANNELS=23,1024 /DISPLAY_R015 /GAINSDIFF /CRITLEVEL"
IF dettype="DET" THEN "AREA_NL3 /CHANNELS=100,8192 /DISPLAY_R015 /FCONT=1.0 /CRITLEVEL"
IF dettype="BIC" THEN "AREA_NL3 /CHANNELS=100,8192 /DISPLAY_R015 /FCONT=1.0 /CRITLEVEL"
errmsg="Area calculation"
call Error_Msg

IF bigndsub="yes" THEN "ABACOR /BKODG="bigfile"
errmsg="Background"
call Error_Msg

IF dettype="DET" THEN DO
  EFFCOR /LINEAR
  errmsg="Multi efficiency"
  call Error_Msg
END

"EFFCOR /LINEAR"
errmsg="Efficiency"
call Error_Msg
/*****/
```

Peak Locate Unidentified 2nd Diff. Setup

Search Region
Start channel: Stop channel:

Significance threshold:

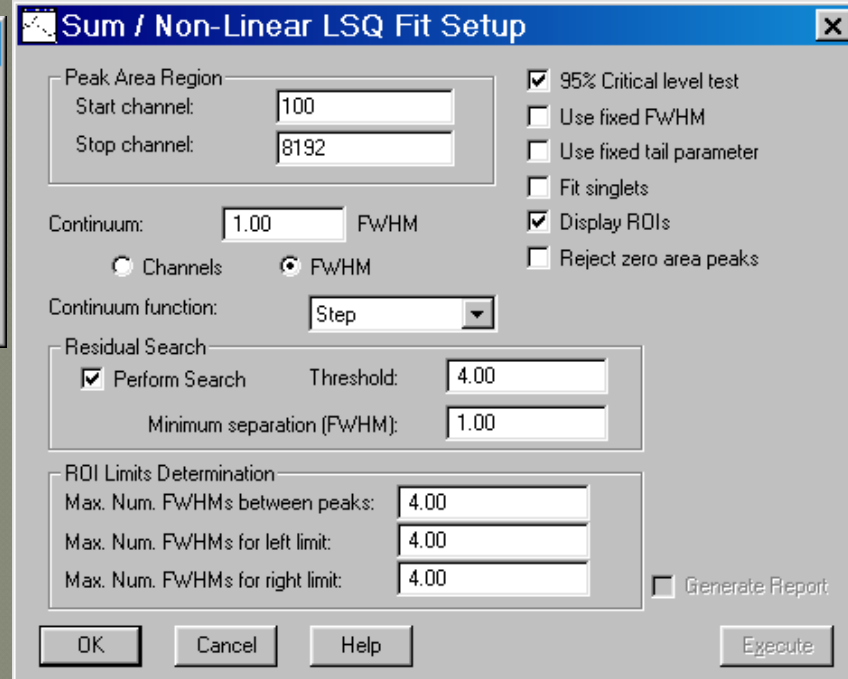
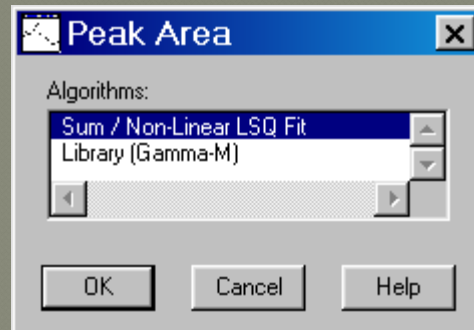
Tolerance: FWHM
 Energy FWHM

Add to existing results
 Generate Report

OK Cancel Help

Peak Area

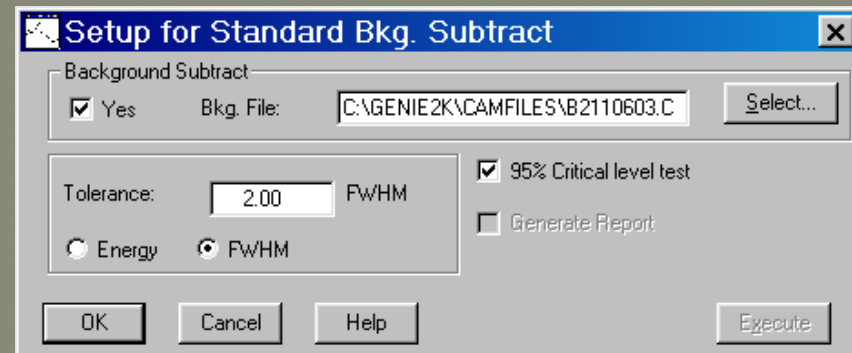
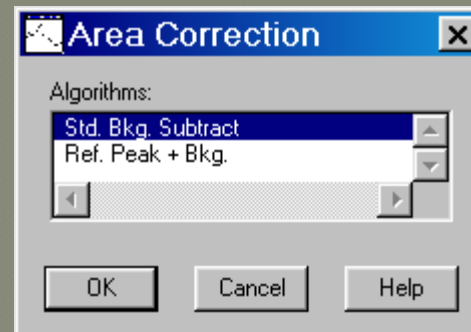
```
IF dettype="LAB" THEN "AREA_NL1 /CHANNELS=100,8192 /DISPLAY_ROIS /FCONT=1.0 /CRITLEVEL"  
IF dettype="PGE" THEN "AREA_NL1 /CHANNELS=100,8192 /DISPLAY_ROIS /FCONT=1.0 /CRITLEVEL"  
IF dettype="FAL" THEN "AREA_NL1 /CHANNELS=100,8192 /DISPLAY_ROIS /FCONT=1.0 /CRITLEVEL"  
IF dettype="NAI" THEN "AREA_LIB /CHANNELS=25,1024 /DISPLAY_ROIS /GAINSHIFT /CRITLEVEL"  
IF dettype="DET" THEN "AREA_NL1 /CHANNELS=100,8192 /DISPLAY_ROIS /FCONT=1.0 /CRITLEVEL"  
IF dettype="WBC" THEN "AREA_NL1 /CHANNELS=200,8192 /DISPLAY_ROIS /FCONT=1.0 /CRITLEVEL"  
ErrMsg="Area calculation"  
Call Error_Msg
```



Area Correction

```
IF bkgndsub="YES" THEN "AREACOR /BKGND="bkgfile  
    ErrMsg="Background"  
    Call Error_Msg  
  
IF dettype="DET" THEN DO  
    "MEFFGEN /LINEAR "  
    ErrMsg="Multi Efficiency"  
    Call Error_Msg  
  
END  
  
"EFFCOR /LINEAR"  
ErrMsg="Efficiency"  
Call Error_Msg
```

***** /

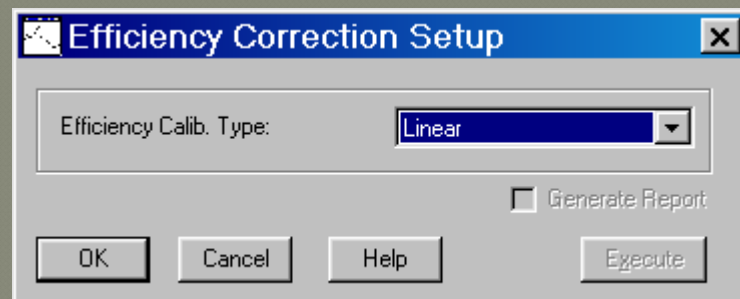
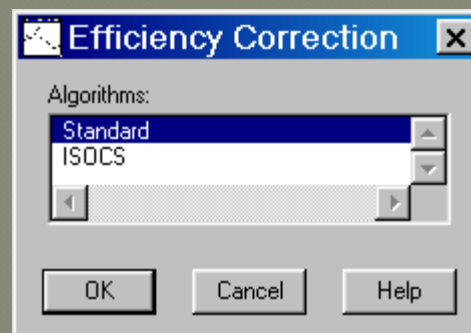


Efficiency Correction

```
IF bkgndsub="YES" THEN "AREACOR /BKGND="bkgfile  
    ErrMsg="Background"  
    Call Error_Msg  
  
IF dettype="DET" THEN DO  
    "MEFFGEN /LINEAR "  
    ErrMsg="Multi Efficiency"  
    Call Error_Msg  
END
```

```
"EFCOR /LINEAR"  
ErrMsg="Efficiency"  
Call Error_Msg
```

***** /

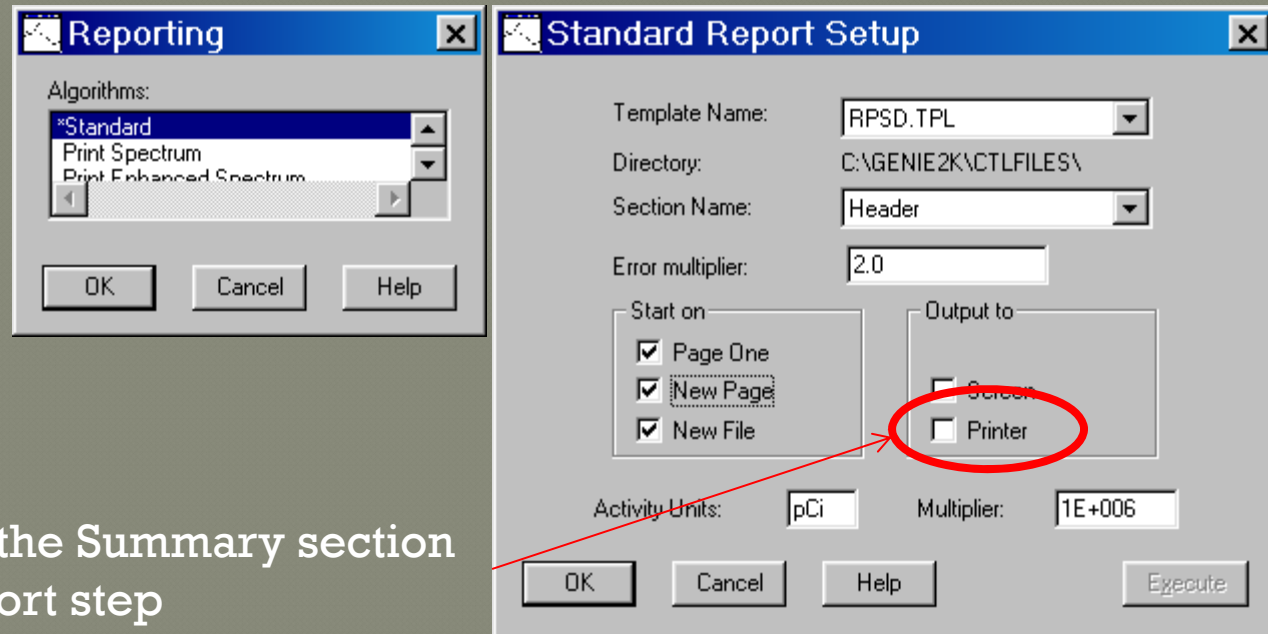


REPORTS

Reports

```
SELECT  
WHEN SSPRSTR5="RPOP" & dettype="PGE" THEN  
DO  
  "REPORT /TEMPLATE=C:\Genie2k\CTLFILERS\RPOP.TPL /EM=2.0 /NEWFILE /FIRSTPG /NEWPG /SECTION=Header"  
  "REPORT /TEMPLATE=C:\Genie2k\CTLFILERS\RPOP.TPL /EM=2.0 /NEWPG /SECTION=PeakLocate"  
END
```

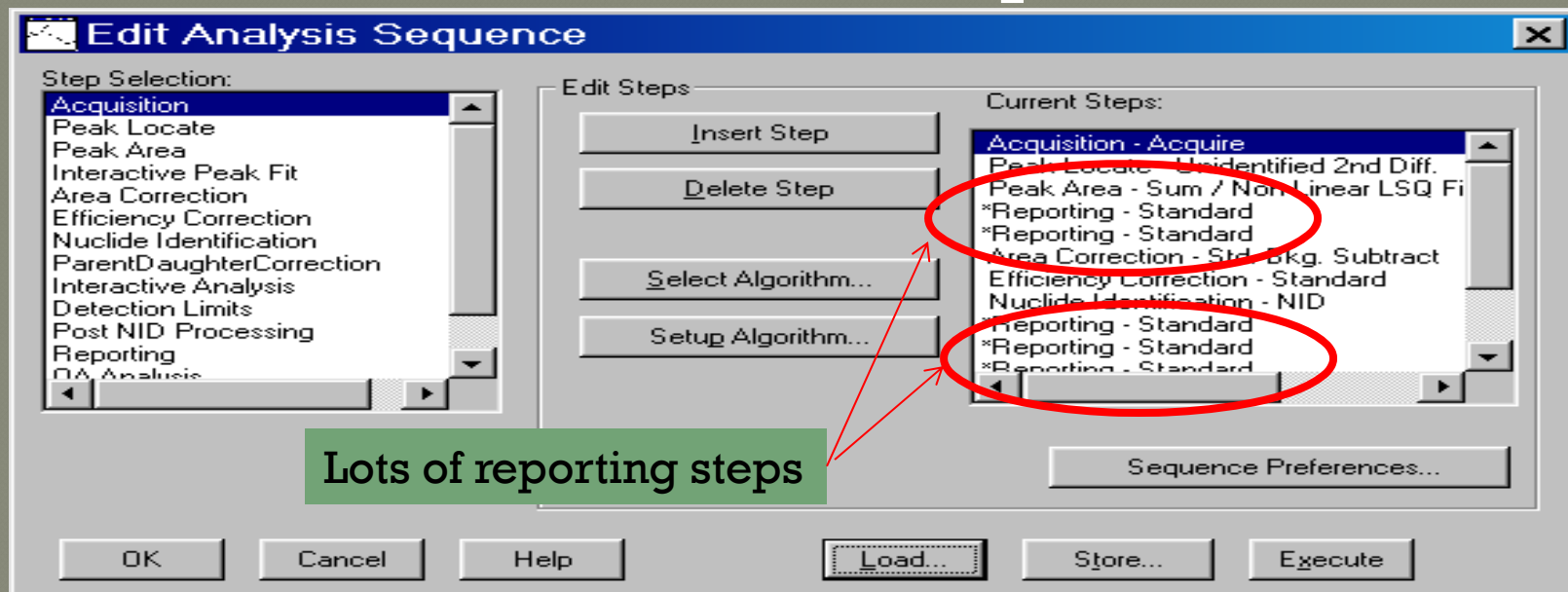
When using ASF to control the sequence it is import to check only the last print check box.



Check only at the Summary section
or the last Report step

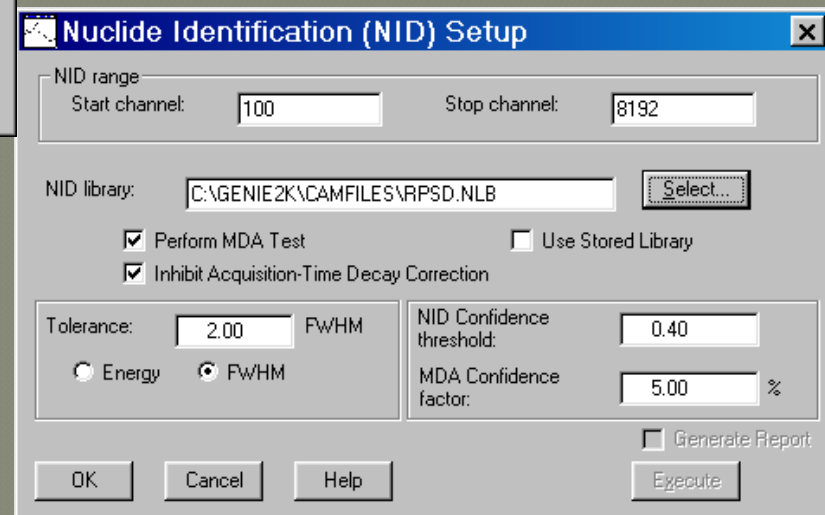
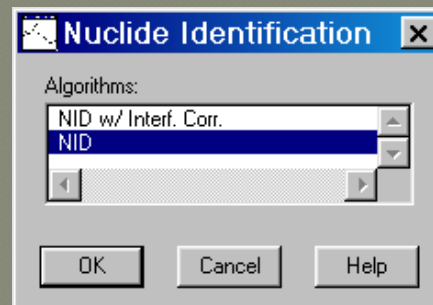
Reports Continued

- Most cases the report will be the “standard” algorithm.
- Remember that there can be multiple instances of the same step.



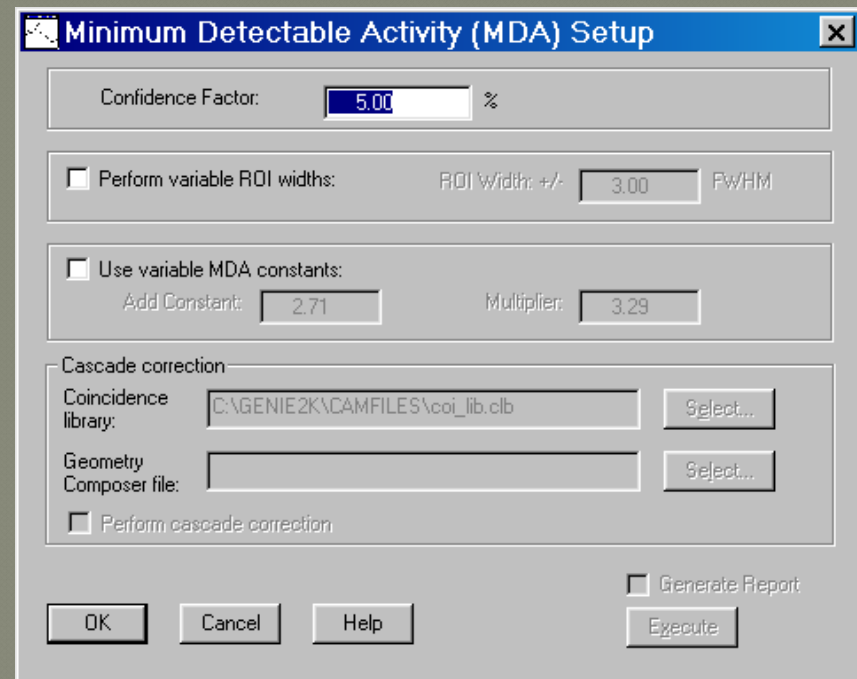
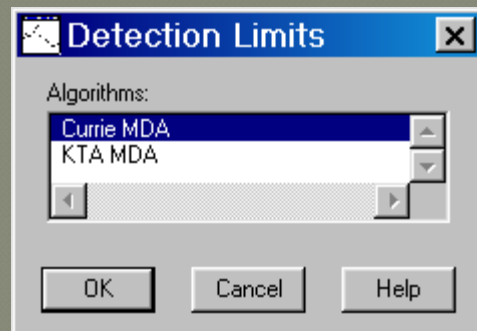
Nuclide Identification

```
IF dettype="LAB" THEN "NID_INTF /CONFID=0.4 /NOACQDECAY /MDA_TEST /LIBRARY="libfile
IF dettype="PGE" THEN "NID_INTF /CONFID=0.4 /NOACQDECAY /MDA_TEST /LIBRARY="libfile
IF dettype="FAL" THEN "NID_INTF /CONFID=0.4 /NOACQDECAY /MDA_TEST /LIBRARY="libfile
IF dettype="NAI" THEN "NID_STD /CONFID=0.2 /NOACQDECAY /ETOL=20.0 /LIBRARY="libfile
IF dettype="DET" THEN "NID_INTF /CONFID=0.3 /NOACQDECAY /MDA_TEST /LIBRARY="libfile
IF dettype="WBC" THEN "NID_INTF /CONFID=0.3 /NOACQDECAY /MDA_TEST /LIBRARY="libfile
ErrMsg="NID"
Call Error_Msg
```



MDA calculations

```
"MDA /CONFID=5.0"  
ErrMsg="MDA"  
call Error_Msg
```

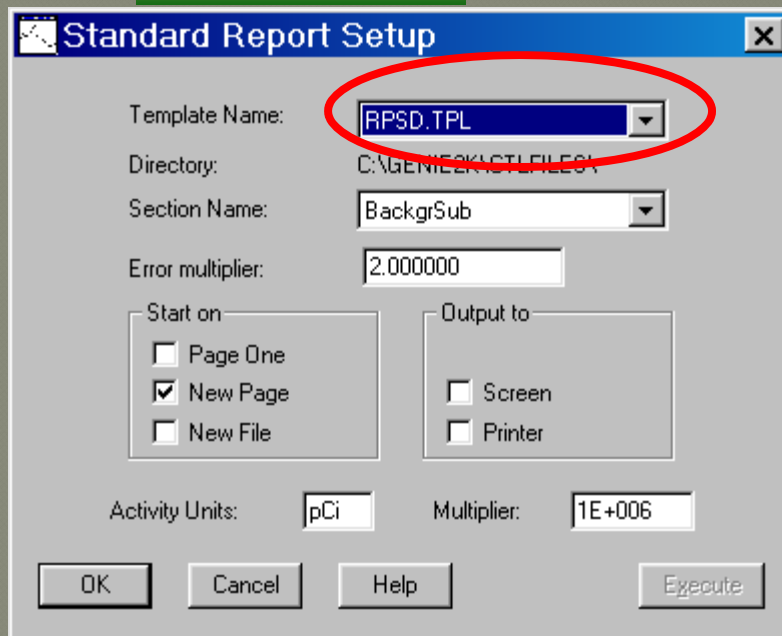


More Reports

Background Subtract / Nuclide Identification

```
/* ----- */  
/* Add section to do summary report using an external procedure */  
  
Ans=GBT_MESSAGE("Generating Report for "outname,,"show")  
SELECT  
  WHEN SSPRSTR5="RPOP" & dettype="PGE" THEN  
  DO  
    "REPORT /TEMPLATE=C:\Genie2k\CTLFILES\RPOP.TPL /EM=2.0 /NEWPG /SECTION=BackgrSub"  
    "REPORT /TEMPLATE=C:\Genie2k\CTLFILES\RPOP.TPL /EM=2.0 /NEWPG /SECTION=NID_Intf"  
  END
```

Template file



Standard Report Setup

Template Name: **RPSD.TPL**

Directory: C:\GENIE2K\CTLFILES\

Section Name: BackgrSub

Error multiplier: 2.000000

Start on:

- Page One
- New Page
- New File

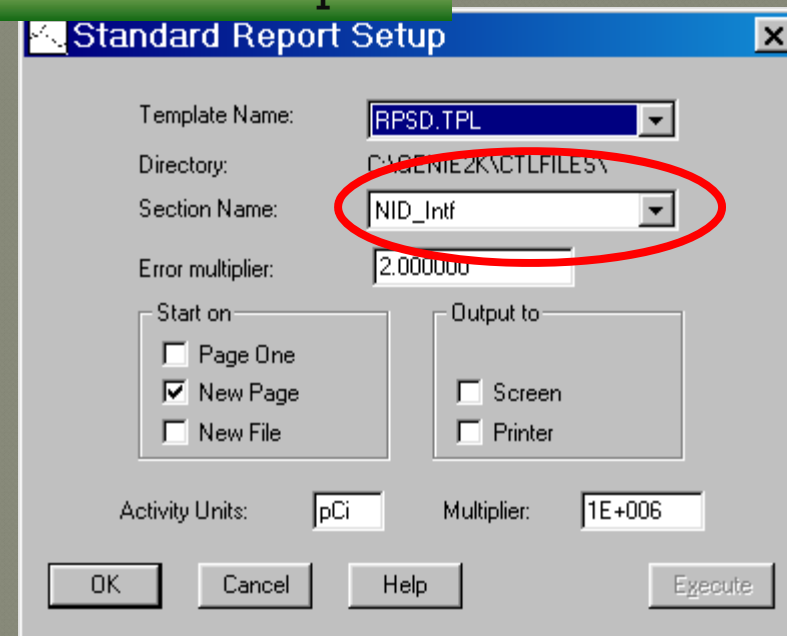
Output to:

- Screen
- Printer

Activity Units: pCi Multiplier: 1E+006

OK Cancel Help Execute

Section in template



Standard Report Setup

Template Name: RPSD.TPL

Directory: C:\GENIE2K\CTLFILES\

Section Name: **NID_Intf**

Error multiplier: 2.000000

Start on:

- Page One
- New Page
- New File

Output to:

- Screen
- Printer

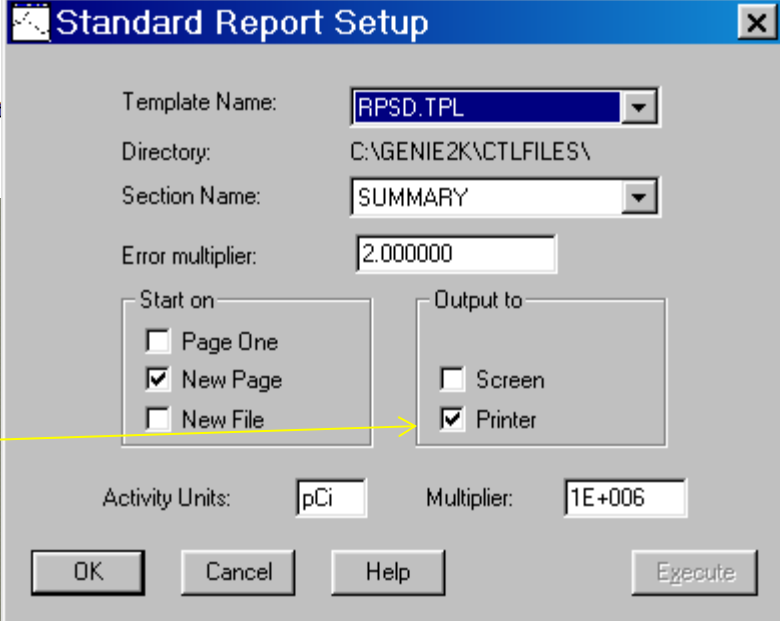
Activity Units: pCi Multiplier: 1E+006

OK Cancel Help Execute

And More Reports

```
/* SUMMARY REPORT SECTION*/  
SELECT  
  WHEN SSPRSTR5 = "RPOP" & dettype="PGE" THEN "REPORT /TEMPLATE=C:\Genie2k\CTLFILERS\RPOP.TPL /EM=2.0 /NEWPG  
/SECTION=SUMMARY"  
  WHEN SSPRSTR5 = "RPID" THEN "REPORT /TEMPLATE=C:\Genie2k\CTLFILERS\RPSD.TPL /EM=1.0 /NEWPG /SECTION=SUMMARY2"  
  WHEN SSPRSTR5 = "FRMC" THEN "REPORT /TEMPLATE=C:\Genie2k\CTLFILERS\FRMC.TPL /EM=1.0 /NEWPG /SECTION=SUMMARY2"  
  OTHERWISE "REPORT /TEMPLATE=C:\Genie2k\CTLFILERS\RPSD.TPL /EM=2.0 /NEWPG /SECTION=SUMMARY"  
END  
ErrMsg="Genie2k Report 2"  
Call Error_Msg  
  
/* SUMMARY REPORT */  
IF SSPRSTR5 /= "RPID" & SSPRSTR5 /= "FRMC" THEN DO  
  "CD\Genie2k\EXEFILES"  
  "C:\Genie2k\EXEFILES\SRWP\SUM.EXE <c:\Genie2k\repi  
  ErrMsg="Summary Report"  
  Call Error_Msg
```

Summary Section
Printer checked



The image shows a 'Standard Report Setup' dialog box with the following fields and options:

- Template Name: RPSD.TPL
- Directory: C:\GENIE2K\CTLFILERS\
- Section Name: SUMMARY
- Error multiplier: 2.000000
- Start on:
 - Page One
 - New Page
 - New File
- Output to:
 - Screen
 - Printer
- Activity Units: pCi
- Multiplier: 1E+006

Buttons: OK, Cancel, Help, Execute

More About Rexx Files

- There is a lot more in the Rexx files that was seen.
- The ACQ.rex file does a lot before the actual counting.
- After all the utilities are performed on the data, acq.rex handles the renaming of files and transferring files to network locations.

Questions

Heads Up

Things to Know not found or not easily found in the Genie2k documentation.

Objectives

- Tricks and Tips of Gamma Spectroscopy

VDM Tips



- To copy a file or rename the file, the VDM must be manually shutdown first.

VDM Tips

If there is an Error in communications with the VDM

- Try restarting the VDM and attempt to re-perform the action.
- Shutdown down the VDM, if not already, reboot the computer
- Unload the mid file, restart the computer, load the mid file back into the database.
- Call the Service Representative.

Alternate Method of Entering Sample Data

- It is possible to alter sample data while the sample is being counted

OR

- When using Auto Sequence Files

Gamma Acquisition Program

In the file menu
bar select Edit

Sample Info.

The screenshot shows the Gamma Acquisition Program interface. The title bar reads "Gamma - 00000000.CNF". The menu bar includes "File", "MCA", "Calibrate", "Display", "Analyze", "Edit", "Options", "Datasource", and "Help". The "Edit" menu is open, showing "Sample Info..." and "Analysis Sequence". The status bar displays "Idle", "Channel: 1807 : 661.6 keV", and "Preset: 1200/1200.00".

The main window contains an "Acquire" section with buttons for "Start", "Stop", "Expand On", and "Clear". Below this is the "ROI Index" section with "-" and "+" buttons. The "Datasource" section has "Prev" and "Next" buttons. The central area is a large black plot with a yellow histogram at the bottom. A small box in the top right of the plot area shows "VFS = 64".

At the bottom, the "TIME INFO" section contains a table with acquisition statistics and "Next" and "Prev" buttons.

	Acq. Start:	2/11/2011 9:44:12 AM	Elapsed	Preset
Next	Dead Time:	0.02%	Live (secs.): 1200.000	1200
Prev	Comp. Preset Region:	0 - 0 (channels)	Real (secs.): 1200.210	0
			Total (cnts.): 0.00	0

Nifty Trick

THE "MORE..." BUTTON IS NOT NORMALLY FOUND IN THE EDIT SAMPLE INFORMATION DIALOG BOX.

Edit Sample Information

Sample Title: TEST SAMPLE Sample ID: 00000000

Collector Name: LVALDIV Type: Solid

Sample Description: VIAL Quantity: 2.7668

YES Uncertainty: 0.02767

LAB Units: gram

C:\GENIE2K\CAMFILES\RPSD.NLB

Buildup Type: None Deposition Irradiation

Begin Date: at Sample Date: 2/10/2011 at 3:00:00 PM

Sample Geometry: 2LSEC

Random Error (%): 5

Systematic Error (%): 1

OK Cancel Help **More...** Load Cal...

Additional Sample Information

RPSD Sample ID: 00000000

Customer Sample ID: TEST SAMPLE

Customer Name: VALDIVIA

Customer Org: 4121

Customer Email ID: LVALDIV

Customer Program ID: OTH

Sample Type/Category: Solid SA

Sample Description: VIAL

Sample Aliquot/Units: 2.7668 gram

Sample Date/Time: 2/10/11 3:00:00 PM

Received Date/Time: 2/10/11 3:00:00 PM

COC Number:

Survey Number:

Activity Units:

Template: RPOP

Ok Cancel

Params.fds dialog

THERE IS A TRICK TO ADDING THIS BUTTON. AND IT'S PRETTY SIMPLE.

Copy the Params.fds file,
located in the
c:\Genie2k\Exefiles, and
paste in the same location.

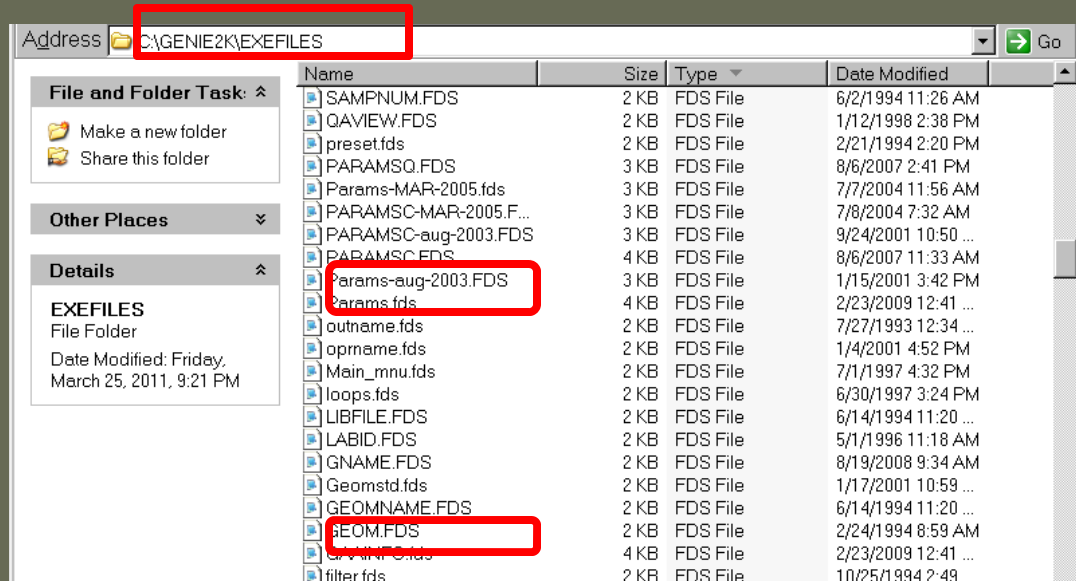
Rename the “copy of
Params.fds” file to
“GAAINFO.fds”

Anytime the user opens up
the Edit Sample Information
dialog box the “More..”
button will be visible.

The GAAINFO.fds is not
limited to just Params.fds,
any fds file can be rename to
GAAINFO.

Just remember not to
overwrite any original fds
with out backing it up and
overwriting the GAAINFO
will erase any previous fds.

Copy the Params.fds file.



Exercises

Exercises



What we shall do?

- Create a ASF (QC)
- Count a QC
- Demonstrate or simulate Gain change
- Count a Sample
- Review Data