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Software Quality Assurance Plan for mView

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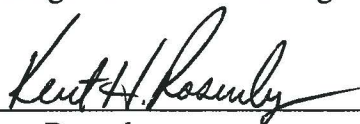
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ACRONYMS / ABBREVIATIONS

C&WDA	Closure & Waste Disposal Authority
DB	Database
EDWS	Electronic Document Workflow System
N/A	Not Applicable
PRCC	Partially Ranked Correlation Coefficient
QA	Quality Assurance
QARD	Quality Assurance Requirements Document
SQAP	Software Quality Assurance Plan
SRC	Stepwise Regression Coefficient
SRR	Savannah River Remediation LLC

1.0 INTRODUCTION

This Software Quality Assurance Plan (SQAP) defines the minimum requirements for mView. mView is vendor-supplied statistical analysis and graphing software classified as level D (see B-SWCD-C-00043). This SQAP applies to the Closure and Waste Disposal Authority organization within Savannah River Remediation LLC (SRR). This SQAP shall apply to all versions of mView. Deviations from this SQAP require additional documentation.

SRR will use mView for statistical analysis of performance assessment results. Version 4.00 of mView is uniquely tailored for this purpose as it was developed by Intera, Inc. to support the performance assessments for the United States Department of Energy's Office of Civilian Radioactive Waste Management (i.e., the Yucca Mountain Project).

1.1 Roles and Responsibilities

The following describes the pertinent roles and responsibilities, as needed to qualify this software.

The **Software User** is any individual who will use mView according to provisions of this SQAP. All Software Users are responsible for reading this SQAP and adhering to it to ensure that any version(s) of mView that they use for qualified work has been appropriately qualified on the environment(s) in which the software is being used.

The **Software User's Manager** is any individual with management authority over the Software User.

The **mView Qualification Lead** is the individual responsible for the development and approval of this SQAP and associated software quality assurance documentation. This individual shall also maintain a record of which versions and environments have been qualified to support the Savannah River Site's Liquid Waste Program.

1.2 Tools, Techniques, Methods, Standards, Practices, and Conventions

There are no tools, techniques, methods, standards, practices and conventions to describe, other than those discussed in the other sections. This section shall remain within the SQAP in case future revisions require text to be added.

1.3 Training

No specific training is required to operate mView. However, it is recommended that Software Users familiarize themselves with the software's Help Menu to use as a reference (see Section 3.4). Also, as a prerequisite to using mView, Software Users should have experience operating a computer with a Windows operating system and should read and understand this SQAP. Furthermore, Software Users should read and acknowledge any known limitations in this software (see Section 4.1).

1.4 Procured Software

mView is vendor supplied software. As such, this is purchased software and is not classified as "existing" or "developed". mView is an unlicensed executable (*.exe) file, purchased directly from the vendor, Intera, Inc.

In accordance with Section 5.7.1 of 1Q Procedure 20-1, mView is Procurement Level 3 software. Consistent with this requirement level, qualifying the use of mView does not require any additional software information or process information beyond that provided within this SQAP, nor does any additional procurement information need to be provided.

2.0 SOFTWARE QUALIFICATION

Table 2.0-1 maps each of the software qualification requirements from 1Q Procedure 20-1 to text within the associated qualifying documentation.

Table 2.0-1: Software Requirements Matrix

Software Qualification Activities	Document	Section of Referenced Document
Software Classification	Software Classification Document, B-SWCD-C-00043	Entire Document
Software Quality Assurance Procedures/Plans	SQAP: B-SQP-C-00005	Entire Document
Procurement Level	SQAP: B-SQP-C-00005	Section 1.4
Safety Software Inventory Listing	SQAP: B-SQP-C-00005	N/A
Requirements, Life Cycle Phases	Requirements Document, 10072-RD-4.0-01 ^a	Entire Document
Design, Life Cycle Phases	Design Document, 10072-DD-4.0-00 ^a	Entire Document
Implementation, Life Cycle Phases	SQAP: B-SQP-C-00005	Section 3.3
Testing, Life Cycle Phases	SQAP: B-SQP-C-00005	Section 3.5 and Attachment 2
Installation and Acceptance, Life Cycle Phases	SQAP: B-SQP-C-00005	Section 3.4 and Attachment 1
Operations & Maintenance, Life Cycle Phases	SQAP: B-SQP-C-00005	Section 3.6
Retirement, Life Cycle Phases	SQAP: B-SQP-C-00005	Section 3.7
Configuration Management/Baseline Control	SQAP: B-SQP-C-00005	Section 4.0
Evaluation	SQAP: B-SQP-C-00005	Section 3.5 and Attachment 2
Problem Reporting & Corrective Action	SQAP: B-SQP-C-00005	Section 4.1
Cyber Security Controls	SQAP: B-SQP-C-00005	Section 4.2
Risk and Safety Analysis	SQAP: B-SQP-C-00005	Section 4.2

Notes: (a) Referenced document was developed under an equivalent United States Department of Energy QA Program as outlined in the Office of Civilian Radioactive Waste Management's *Quality Assurance Requirements Document* (QARD). [DOE-RW-0333P, Rev. 16] Software QA requirements for the Office of Civilian Radioactive Waste Management are described in Supplement I of the QARD and closely reflect 1Q Procedure 20-1 requirements.

3.0 SOFTWARE LIFE CYCLE REQUIREMENTS

Pursuant to 1Q Procedure 20-1, there are seven phases to the software life cycle that shall be considered and documented, as appropriate. These seven phases are:

- Requirements
- Design
- Implementation
- Installation & Acceptance
- Testing
- Operations & Maintenance
- Retirement

Each software life cycle phase is discussed below.

3.1 Life Cycle Phase: Requirements

The requirements for mView are described in the *Requirements Document for mView V4.0*. [10072-RD-4.0-01] The document was prepared according to the requirements of the QARD, which closely reflects 1Q Procedure 20-1 requirements. [DOE-RW-0333P, Rev. 16] The requirements are not repeated herein.

3.2 Life Cycle Phase: Design

The aspects of the design of mView are described in the *Design Document for mView V4.0*. [10072-DD-4.0-01] The document was prepared according to the requirements of the QARD, which closely reflects 1Q Procedure 20-1 requirements. [DOE-RW-0333P, Rev. 16] Details of the design are not repeated herein.

3.3 Life Cycle Phase: Implementation

Pursuant with the graded approach to life cycle planning (see 1Q Procedure 20-1) the software functional requirements and the design of mView shall be implemented by the developer. As vendor-supplied software, documentation of software implementation for mView is considered proprietary and shall not be reproduced without explicit permission from the vendor.

3.4 Life Cycle Phase: Installation & Acceptance

An installation test ensures that the software is correctly installed. Instructions for performing the installation test are provided in Table 3.4-1. Completion and documentation of this test satisfies the requirements for installation and acceptance testing of mView software.

Software Users should document the results of the test using the mView Software Installation Test Form (see Attachment 1) and submit the completed form to the mView Qualification Lead, consistent with the instructions provided in Section 4.0. If the Software User intends to qualify mView on multiple computers, they must complete and document a separate mView Software Installation Test Form for each target platform to be qualified. For the purposes of this SQAP, a target platform is the combination of the hardware (i.e., desktop computer, laptop computer, or server) and the operating system (e.g., Windows 7).

Table 3.4-1: Installation Test

Step	Task/Action	Expected Result from Task/Action
1	Verify that the target platform ^a meets minimum requirements ^b for running mView.	Target platform meets minimum requirements.
2	Obtain a copy of the zipped directory <i>Install_mView.zip</i> and save to a desired location on the target platform. ^{c,d}	<i>Install_mView</i> have been saved to the desired location.
3	Unzip <i>Install_mView.zip</i> to the desired location.	Files will be at the desired location.
4	Start mView. Navigate to the executable file (<i>mView.exe</i>) and double click it.	The mView application is available with the default configuration of a single data page (see Figure 3.4-1).
5	Verify version. In the Menu Bar select Help → About mView.	A dialog box comes up identifying the software version ^e .
6	Create a 3D spatial plot page. In the Menu Bar select Page→ New Plot Page → 3D Spatial.	A 3D spatial plot page is created in the object tree with the default plot objects. A new top-level window is created, containing the axes for the 3D spatial plot with a scale (sc) of 1, an elevation (El) of 90 and an (Az) azimuth of 0.
7	Manipulate the 3D spatial plot. At the bottom of the 3D spatial plot window, select and move both the El and Az sliders. Note: To view the 3D spatial plot page, select Window → 3D-Spatial.	The 3D axes rotate within the plot each time the sliders are moved.
8	Test help installation. In the Menu Bar select Help → Help Topics	A new top-level window appears with mView help information.
9	Document the results of Installation Test using the mView Software Installation Test Form (see Attachment 1).	Installation is complete. The instance mView may be closed by clicking the “x” in the upper right-hand corner of the user interface. The configuration does not need to be saved.

Notes: (a) For the purposes of this SQAP, a target platform is the combination of the hardware (i.e., desktop computer, laptop computer, or server) and the operating system (e.g., Windows 7).

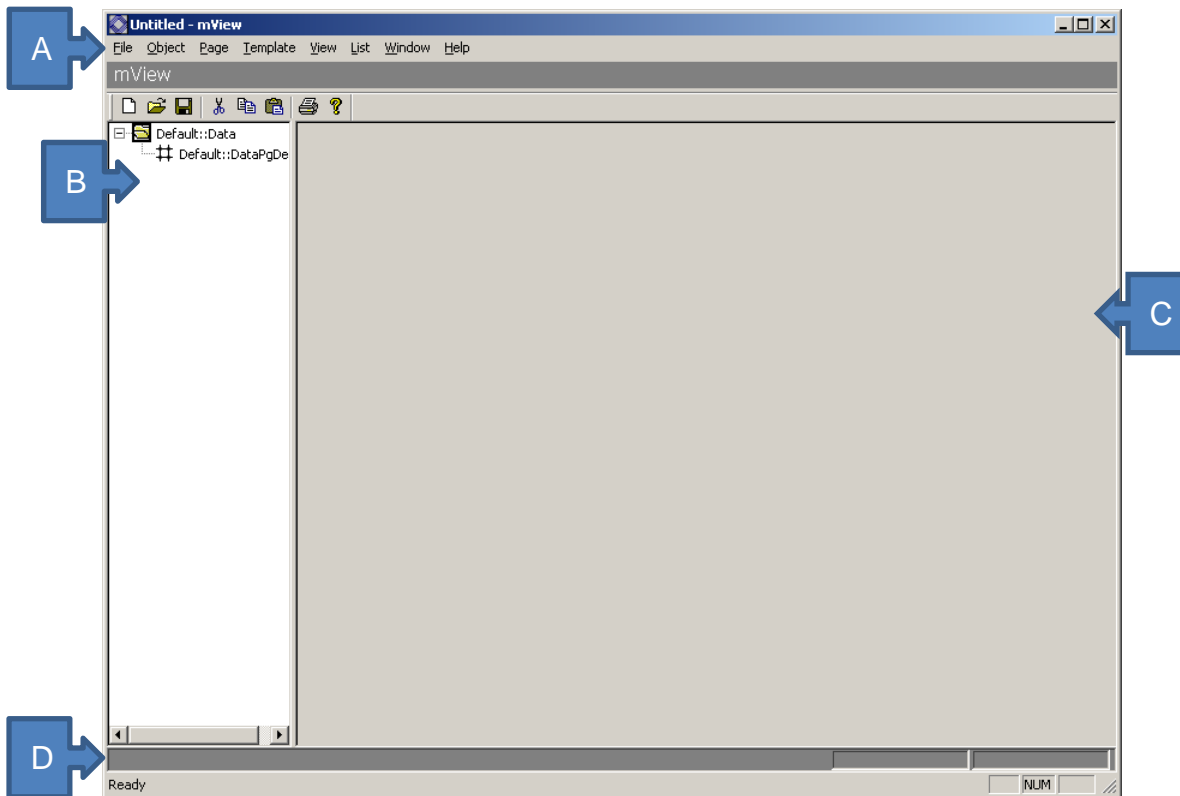
(b) The minimum requirements for running mView are (1) a Windows operating system (i.e., Windows 2000 or newer) and (2) a Web browser with internet access (i.e., Internet Explorer).

(c) The mView Qualification Lead shall maintain a copy of mView software, available upon request. If a newer version is required, the software may be procured through the software vendor, Intera, Inc.

(d) Intera, Inc. has provided explicit permission, via an email to the mView Qualification Lead, to duplicate mView Version 4.0 of the software for onsite use (i.e., throughout the Savannah River Site); however, offsite sharing of the software is prohibited.

(e) Software Users should contact the mView Qualification Lead to verify that the installed version of mView has been qualified. If the version has not been qualified, Software Users must conduct performance testing as described in Section 3.5 to qualify the software.

Figure 3.4-1: Default mView Interface



- Notes:
- (a) Menu Bar
 - (b) Object Tree:
 - parent (or root) icons are referred to as “pages”
 - children icons are referred to as “objects”
 - (c) Object Property Window
 - (d) Message Line

3.5 Life Cycle Phase: Performance Testing

Each qualified version of mView software shall undergo a test designed to confirm the desired functions of the software. This test was developed to demonstrate acceptable performance of any version of mView. Completion of performance testing of a version of mView shall constitute qualification of that version.

Software Users should document the results of the test using the mView Software Performance Test Form (see Attachment 2) and submit the completed form to the mView Qualification Lead, consistent with the instructions provided in Section 4.0. If a Software User intends to qualify multiple versions of mView, they must complete a separate mView Software Performance Test Form for each version of the software.

The performance test uses a series of pre-developed QA test files: one mView configuration file (*mView_QA_Test.mview*) and three text files used as inputs (*mView_QA_Test_Data.txt*, *mView_QA_Test_Namematch.txt*, and *mView_QA_Test_STOCH.txt*). This test was developed to test specific analysis and graphing functions. Note that qualified use of this software is not

limited to those functions that are tested; through this test, mView shall be qualified for performing any function of the software, except in cases where issues have been identified (see Section 4.1).

Instructions for the performance test and the evaluation of the results are provided in Table 3.5-1. For illustrative purposes, figures showing an example user interface for these test steps are provided following this table.

Table 3.5-1: Performance Test

Step	Task/Action	Expected Result from Task/Action	Figure
1	Install mView (see Section 3.4).	mView is installed on the target platform.	N/A
2	Obtain copies of the mView QA test files: <i>mView_QA_Test.mview</i> <i>mView_QA_Test_Data.txt</i> <i>mView_QA_Test_Namematch.txt</i> <i>mView_QA_Test_STOCH.txt</i> Note: These files may be obtained from the mView Qualification Lead.	Copies of the test files are saved to the target platform.	N/A
3	Navigate to and launch mView by double-clicking the executable (<i>mView.exe</i>)	mView opens.	3.4-1
4	Open the QA Test configuration file in mView. In the Menu Bar go to File → Open, then navigate to and select the file: <i>mView_QA_Test.mview</i>	The object tree will populate with several objects.	3.5-1
5	Activate the object for realization data. Within the object tree, under the “input::Data” page, select (single click) the object: “rlz data::Read SA Table”	The object property window will update to show object properties of the object for reading the output data file.	3.5-2
6	Update the realization data object. In the object property window, click the Browse button then navigate to the file: <i>mView_QA_Test_Data.txt</i> Then click the Apply button. Note: It is important complete the browse step even though the filename is already displayed to ensure the correct full path and filename are selected and displayed in the field.	mView will process the command. The Message Line will read: “ReadTran: File read OK: 385 steps 1 variables 300 vectors”	3.5-2
7	Activate the object for stochastic data. Within the object tree, under the “input::Data” page, select the object: “stoch data::Read SA Table”	The object property window will update to show object properties of the object for reading the stochastic input file.	3.5-3

Table 3.5-1: Performance Test (Continued)

Step	Task/Action	Expected Result from Task/Action	Figure
8	Update the stochastic input file and name match file. In the object property window: a) Click the first Browse button then navigate to and select the file: <i>mView_QA_Test_STOCH.txt</i> b) Click the second Browse button then navigate to and select the name-match file: <i>mView_QA_Test_Namematch.txt</i> c) Then click the Apply button.	mView will process the command. The Message Line will read: "ReadVar: VarNameFile : Line# 200"	3.5-3
9	Activate the parameter variables object. Within the object tree, under the "input::Data" page, select the object: "params:: Select Variables and Steps"	The object property window will update to show object properties for selecting parameter variables.	3.5-4
10	Verify object properties. a) Verify that the Input SA Table Table is: "stoch data stoch data \input" b) Ensure that both value sources have "Master" and "Multiple" checked c) Click the buttons for "All Var" and "All Step" d) Then click the Apply button.	mView will process the command. No message will display with this command.	3.5-4
11	Activate the object for selecting the 10,000-year timestep. Within the object tree, under the "input::Data" page, select the object: "t=10ky::Select Variables and Steps"	The object property window will update to show object properties of the object for selecting the single timestep variable.	3.5-5
12	Verify object properties. a) Verify that the Input SA Table Table is: "rlz data rlz data \input" b) Ensure that only "Master" and "Multiple" are checked on the left side. c) Ensure that only "Master" is checked on the right side. d) Click the button for "All Var". e) Ensure that the only high-lighted timestep is "10000.000." f) Then click the Apply button.	mView will process the command. No message will display with this command.	3.5-5
13	Activate the object for selecting the 20,000-year timestep. Within the object tree, under the "input::Data" page, select the object: "t=0 to 20ky::Select Variables and Steps"	The object property window will update to show object properties of the object for selecting multiple timesteps.	3.5-6

Table 3.5-1: Performance Test (Continued)

Step	Task/Action	Expected Result from Task/Action	Figure
14	<p>Verify object properties.</p> <ul style="list-style-type: none"> a) Verify that the Input SA Table Table is: "rlz data rlz data \input" b) Ensure that only "Master" is checked on the left side. c) Ensure that only "Master" and "Multiple" are checked on the right side. d) Verify that the variable "GSDepVar" is highlighted. e) Click the button for "All Step". f) Then click the Apply button. 	mView will process the command. No message will display with this command.	3.5-6
15	<p>Activate the object for setting up the partially ranked correlation coefficient (PRCC) analysis. Within the object tree, under the "PRCC::Data" page, select the object: "PRCC::PCC/SRC"</p>	The object property window will update to show object properties for setting up a PRCC analysis.	3.5-7
16	<p>Verify object properties.</p> <ul style="list-style-type: none"> a) Ensure that the Independent Variables are "params params \input" b) Ensure that the Dependent Variables are "t=0 to 20ky t=0 to 20ky \input" c) Verify that all the Basic Controls are checked except SRC. d) The Print Cutoff and the Plot Cutoff should both be set to 0.3 e) The Top Ind should be set to -1. f) Then click the Apply button. 	mView will process the command. No message will display with this command.	3.5-7
17	<p>Activate the object for writing a data file from the PRCC analysis. Within the object tree, under the "Write PRCC File::Utility" page, select the object: "Write PRCC File::Write Table"</p>	The object property window will update to show object properties for writing a PRCC file.	3.5-8
18	<p>Verify object properties.</p> <ul style="list-style-type: none"> a) Ensure that the Table Data Source is "PCC PRCC \PRCC" b) Ensure the Table Output File is "mView_QA_Output_PRCC.txt" c) Ensure that the Option: Col Headers is checked. d) Then click the Apply button. 	<p>mView will process the command. The Message Line will read: "WriteTable: file written successfully"</p> <p>A new text file (mView_QA_Output_PRCC.txt) will appear in the same directory as the mView configuration file (mView_QA_Test.mview).</p>	3.5-8
19	<p>Activate the first object for reading the data file from the PRCC analysis. Within the object tree, under the "Read PRCC::Data" page, select the object: "Data1::Read XY"</p>	The object property window will update to show object properties for reading a PRCC file.	3.5-9

Table 3.5-1: Performance Test (Continued)

Step	Task/Action	Expected Result from Task/Action	Figure
20	<p>Verify object properties.</p> <ul style="list-style-type: none"> a) Ensure that the XY Data File is: <i>"mView_QA_Output_PRCC.txt"</i> b) Ensure the File Format is Table. c) Ensure the checkbox for ID from Column Header is checked. d) Set the X Column Index to 1. e) Set the Y Column Index to 46. f) Then click the Apply button. 	mView will process the command. The Message Line will read: "Read XY: XY read OK: 385 rows"	3.5-9
21	<p>Activate the second object for reading the data file from the PRCC analysis. Within the object tree, under the "Read PRCC::Data" page, select the object: "Data2::Read XY"</p>	The object property window will update to show object properties for reading a PRCC file.	3.5-10
22	<p>Verify object properties.</p> <ul style="list-style-type: none"> a) Ensure that the XY Data File is: <i>"mView_QA_Output_PRCC.txt"</i> b) Ensure the File Format is Table. c) Ensure the checkbox for ID from Column Header is checked. d) Set the X Column Index to 1. e) Set the Y Column Index to 48. f) Then click the Apply button. 	mView will process the command. The Message Line will read: "Read XY: XY read OK: 385 rows"	3.5-10
23	<p>The mView configuration file (<i>mView_QA_Test.mview</i>) includes a preconfigured plot page: "PRCC Plot::XY". If steps 1 through 22 completed successfully, the plot should be populated with two data curves selected from the PRCC data.</p> <p>Verify the PRCC plot. In the Menu Bar select Window → PRCC Plot::XY Plot</p>	A plot window will appear that matches Figure 3.5-11.	3.5-11
24	<p>Activate the object for setting up the stepwise regression coefficient (SRC) analysis. Within the object tree, under the "SRC::Data" page, select the object: "SRC::STEPWISE"</p>	The object property window will update to show object properties for setting up an SRC analysis.	3.5-12
25	<p>Verify object properties.</p> <ul style="list-style-type: none"> a) Ensure that the Independent Variables are "params params \input" b) Ensure that the Dependent Variables are "t=10ky t=10ky \input" c) Ensure that the only Basic Controls that are checked are Rank and Stepwise. d) Ensure that SIGIN = 0.99 and SIGOUT = 1.0. e) Ensure that none of the Output Controls are checked. f) Then click the Apply button. 	mView will process the command. No message will display with this command.	3.5-12

Table 3.5-1: Performance Test (Continued)

Step	Task/Action	Expected Result from Task/Action	Figure
26	Activate the object for updating the Listing data for the SRC analysis. Within the object tree, under the “10ky SRC::List” page, select the object: “10ky SRC::List Object Output”	The object property window will update to show object properties for an SRC output listing.	3.5-13
27	Verify object properties. a) Ensure that the Object Output Data to List is “Listing SRC \SRC” b) Then click the Apply button.	mView will process the command. No message will display with this command.	3.5-13
28	Confirm the SRC analysis results (part 1 of 2). In the Menu Bar select Window → 10ky SRC::List	A list window will appear showing text results of the SRC analysis.	3.5-14
29	Confirm the SRC analysis results (part 2 of 2). Scroll to the bottom of the list window. You will see the end of a table that lists values associated with the parameters of the analysis. Slowly scroll up the table until the column headings are displayed. Compare the first ten entries with the data displayed in Attachment 3.	SRC results match those shown in Attachment 3.	N/A
30	Document the results of Performance Test using the mView Software Performance Test Form (see Attachment 2).	Installation is complete. The instance mView may be closed by clicking the “×” in the upper right-hand corner of the user interface. The configuration does not need to be saved.	N/A

N/A = Not Applicable

Figure 3.5-1: mView Configuration File for QA

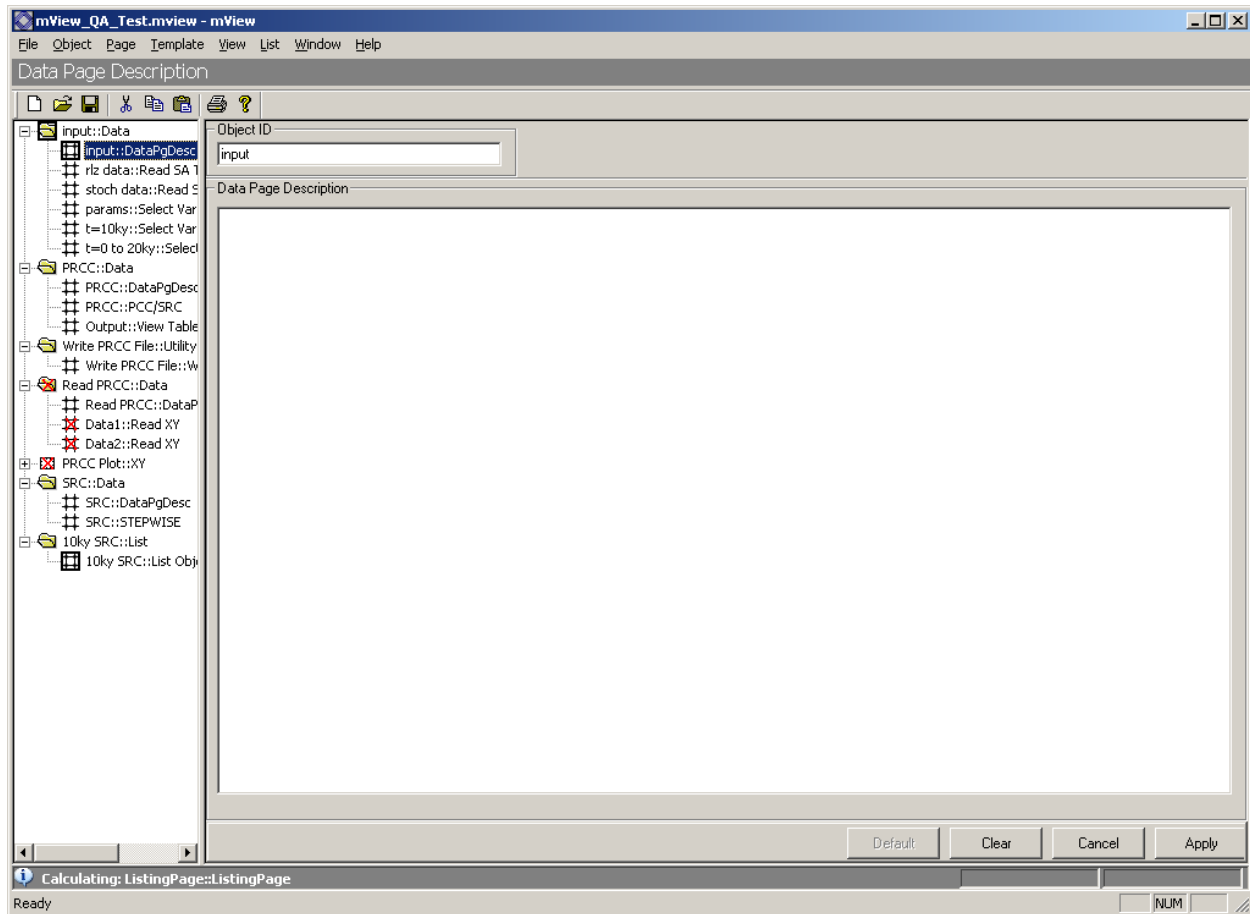


Figure 3.5-2: mView Object Properties for Reading the Output Data File

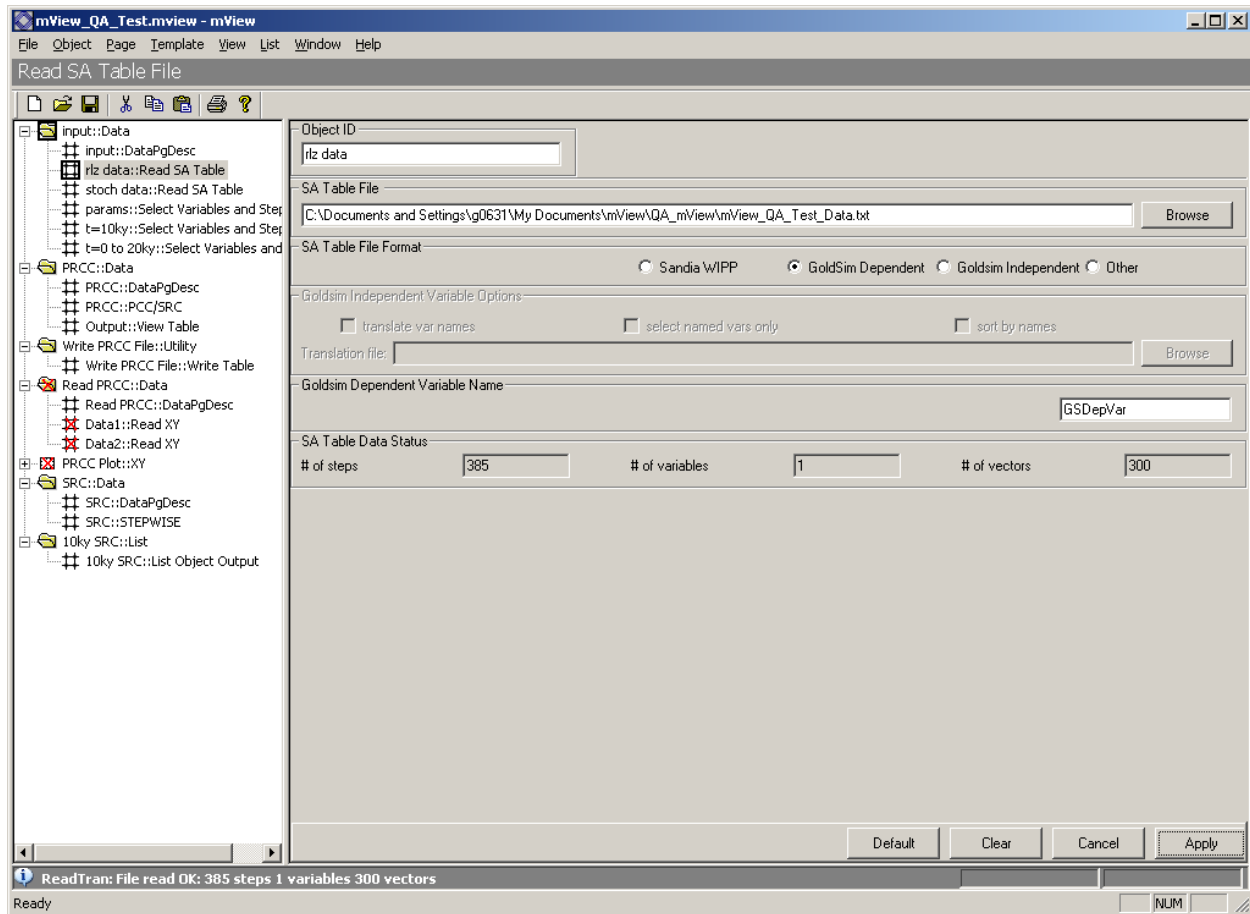


Figure 3.5-3: mView Object Properties for Reading the Stochastic Data File

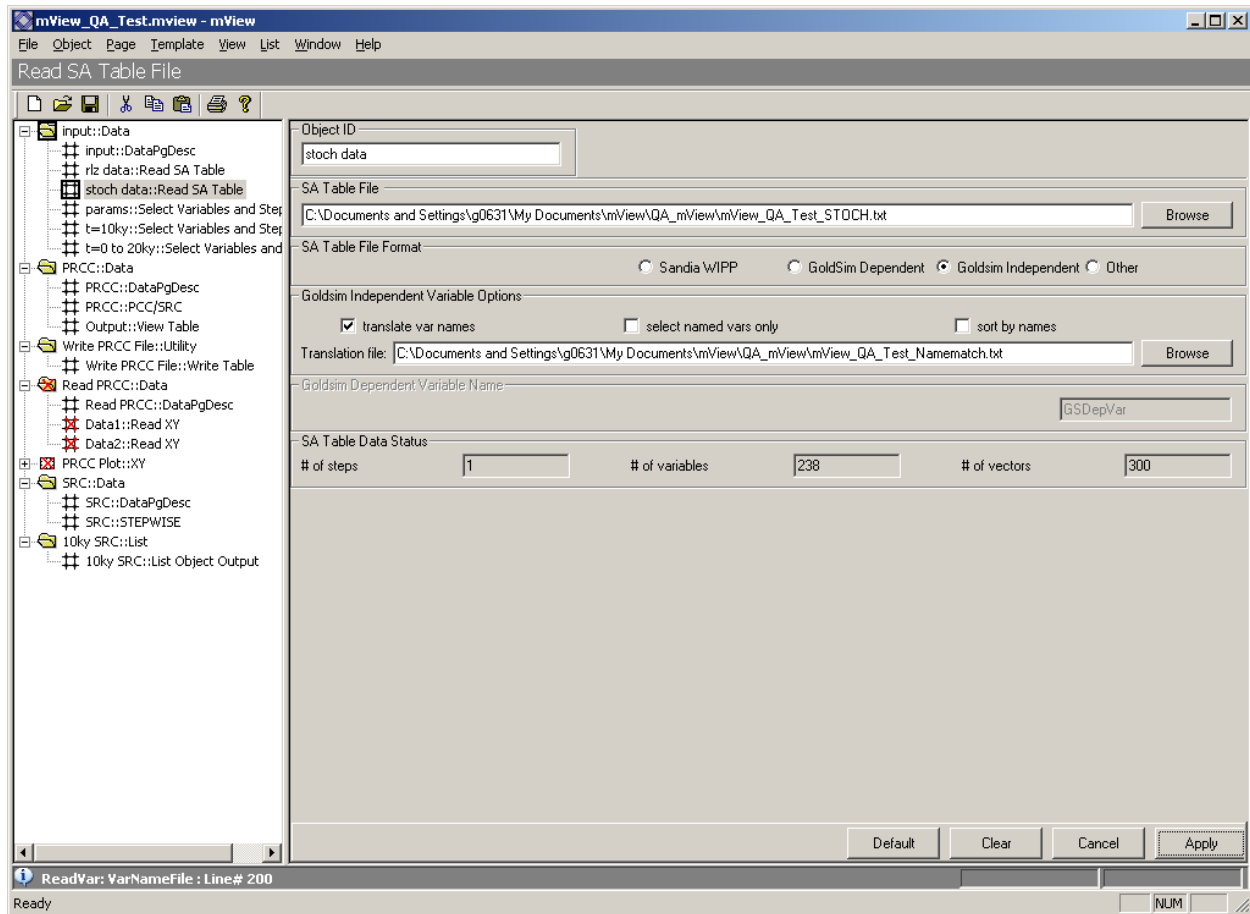


Figure 3.5-4: mView Object Properties for Selecting Variables

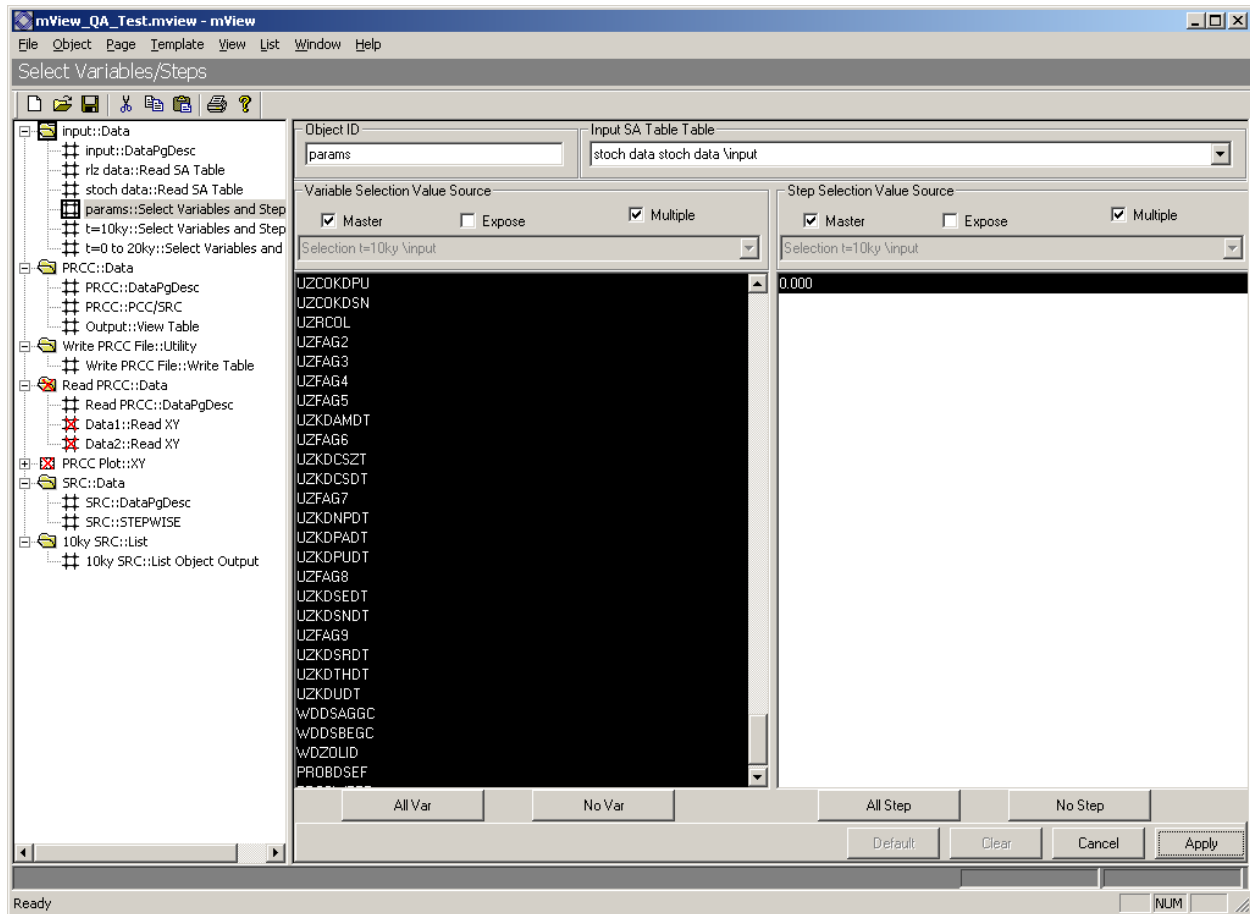


Figure 3.5-5: mView Object Properties for Selecting a Single Timestep

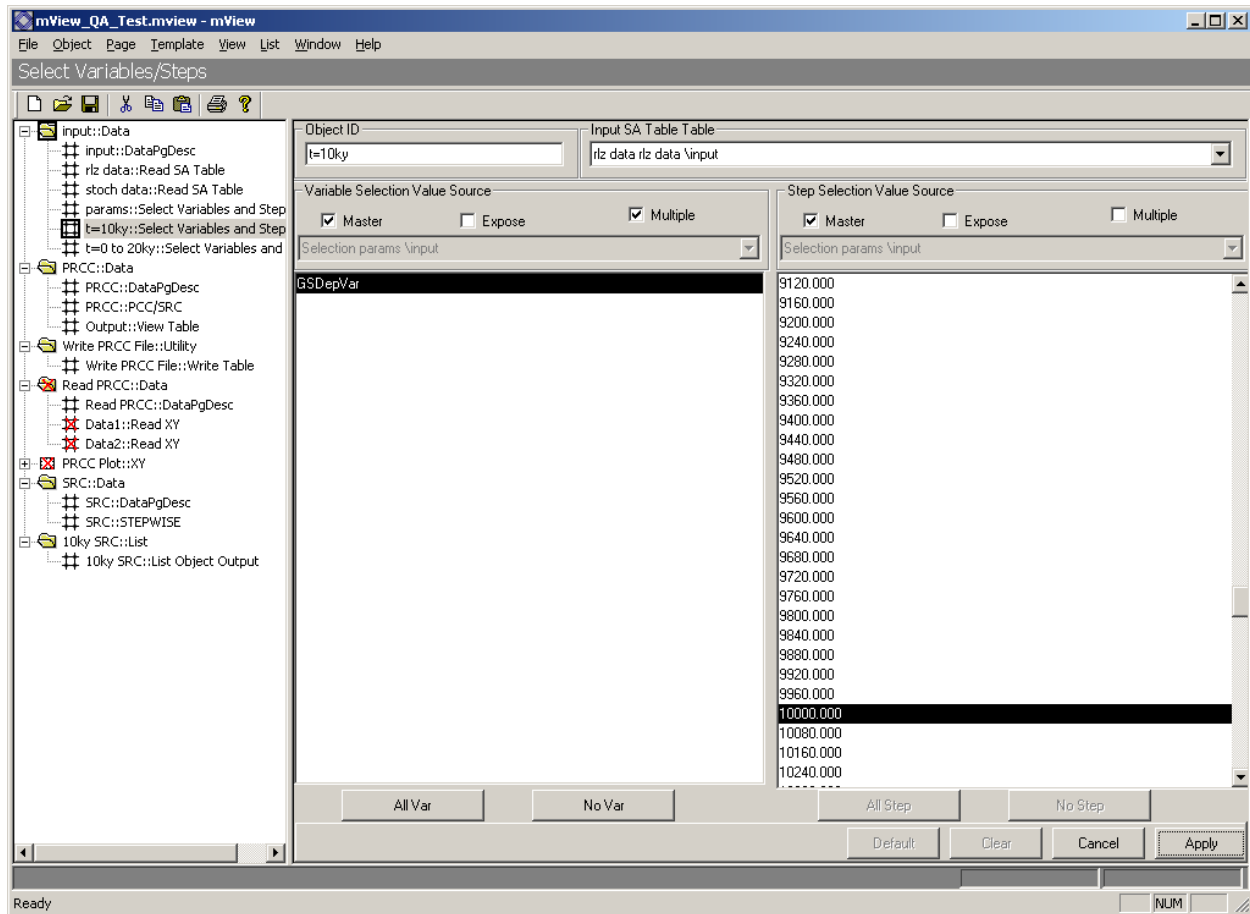


Figure 3.5-6: mView Object Properties for Selecting Multiple Timesteps

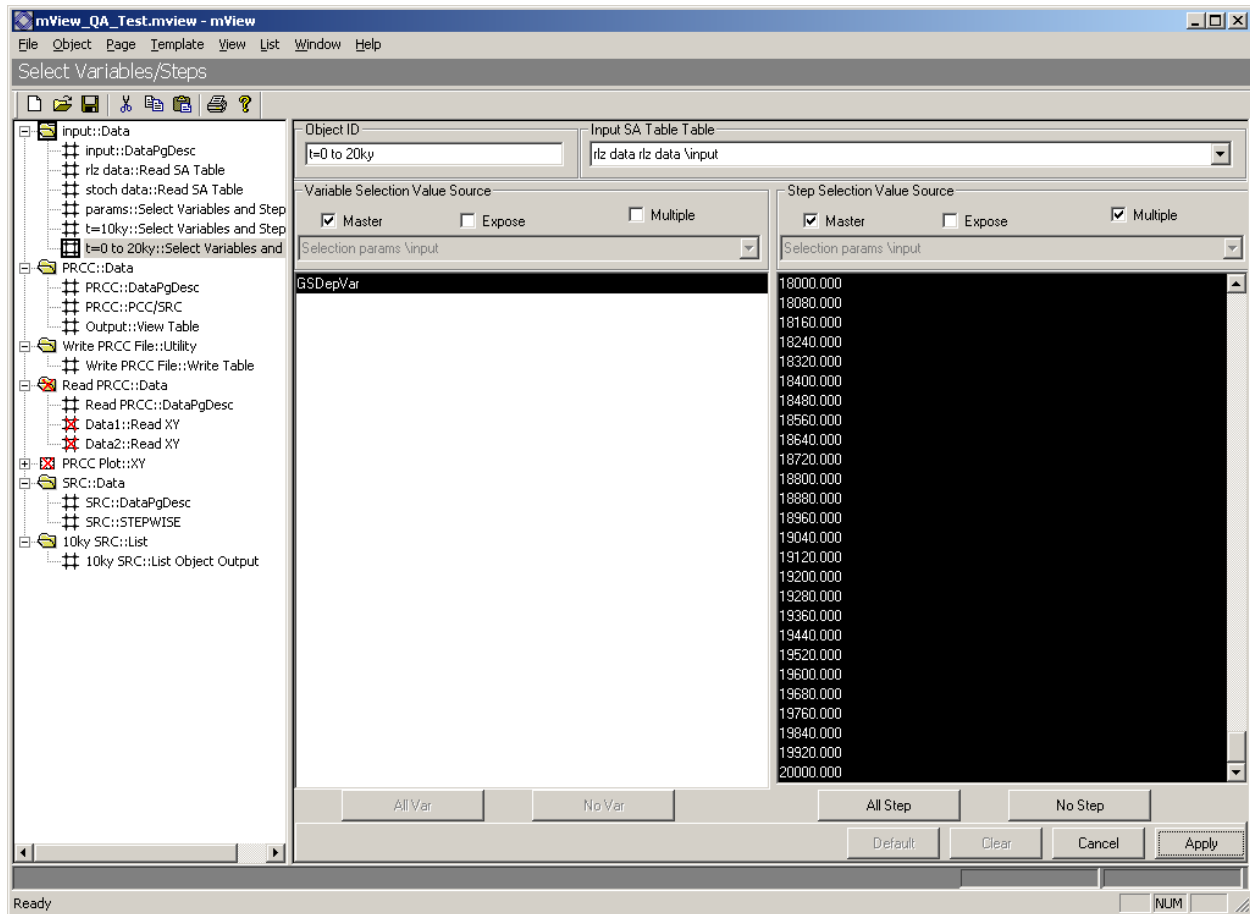


Figure 3.5-7: mView Object Properties for PRCC Setup

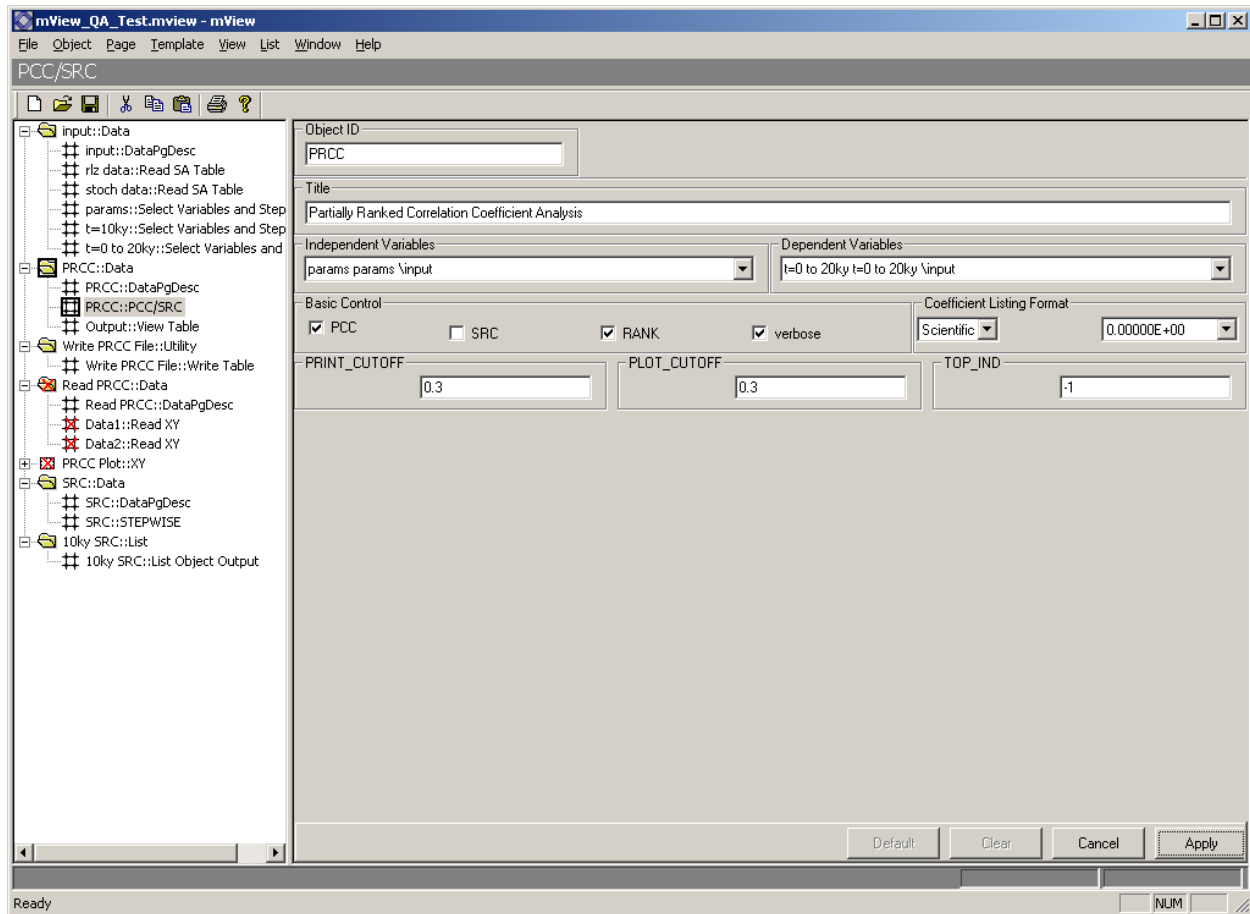


Figure 3.5-8: mView Object Properties for Writing PRCC File

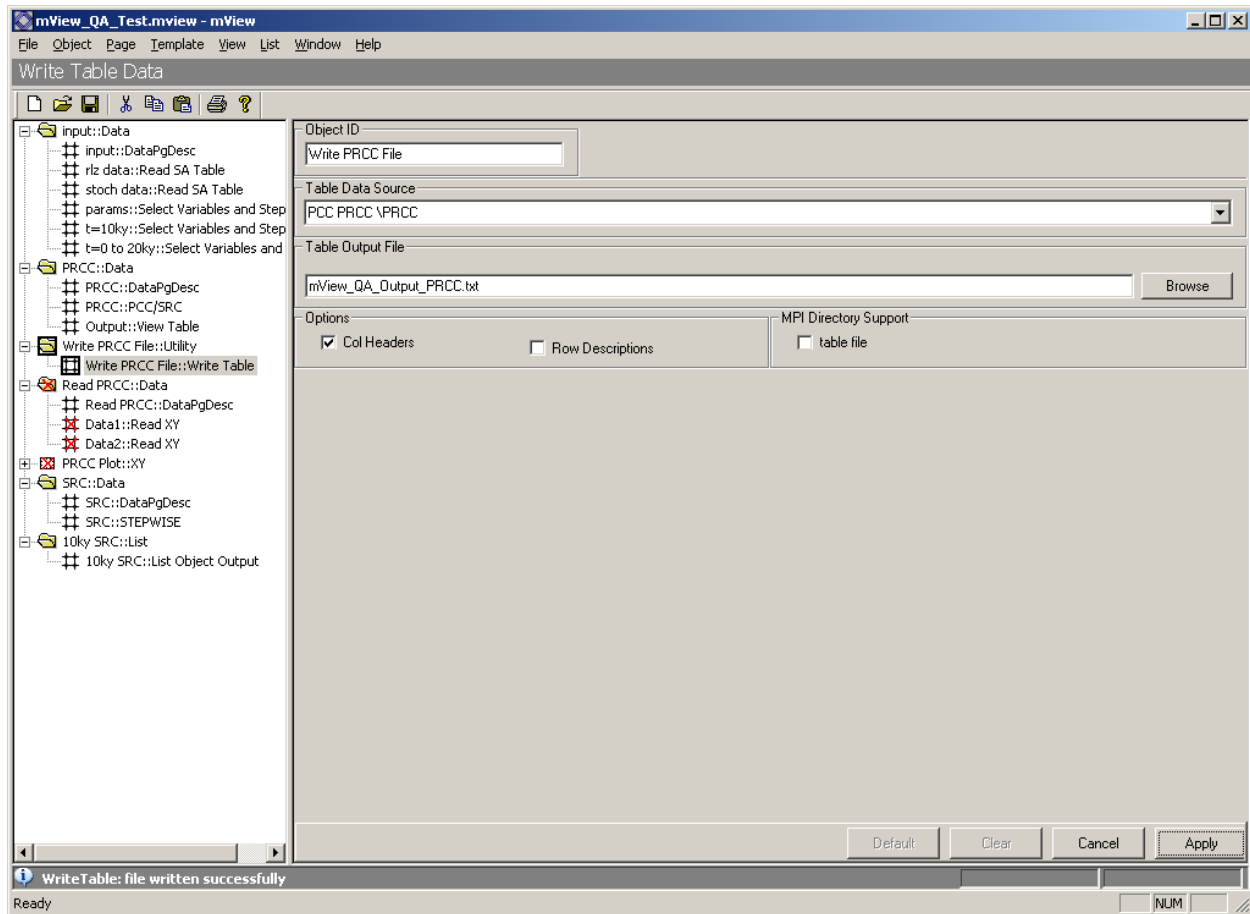


Figure 3.5-9: mView Object Properties for Reading 1st PRCC File

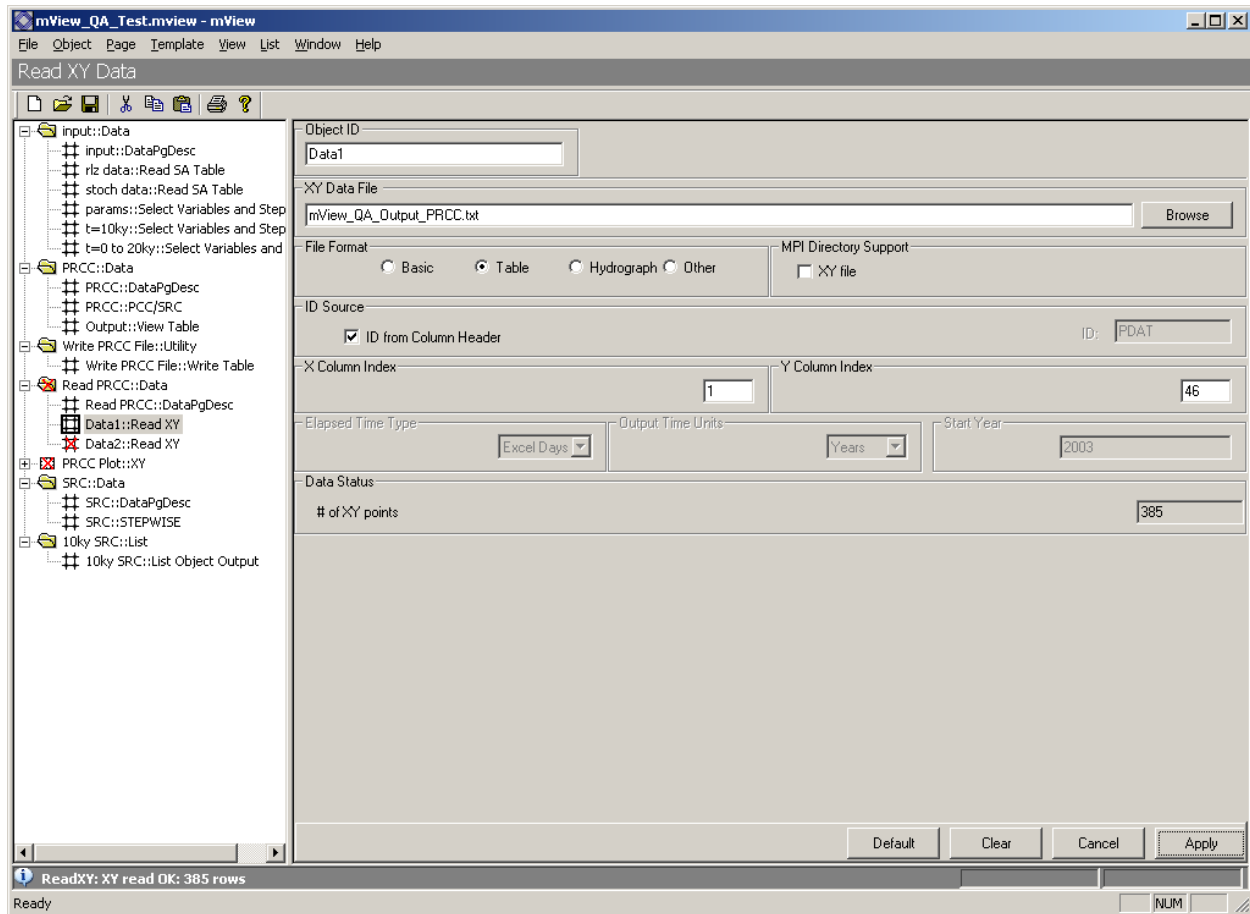


Figure 3.5-10: mView Object Properties for Reading 2nd PRCC File

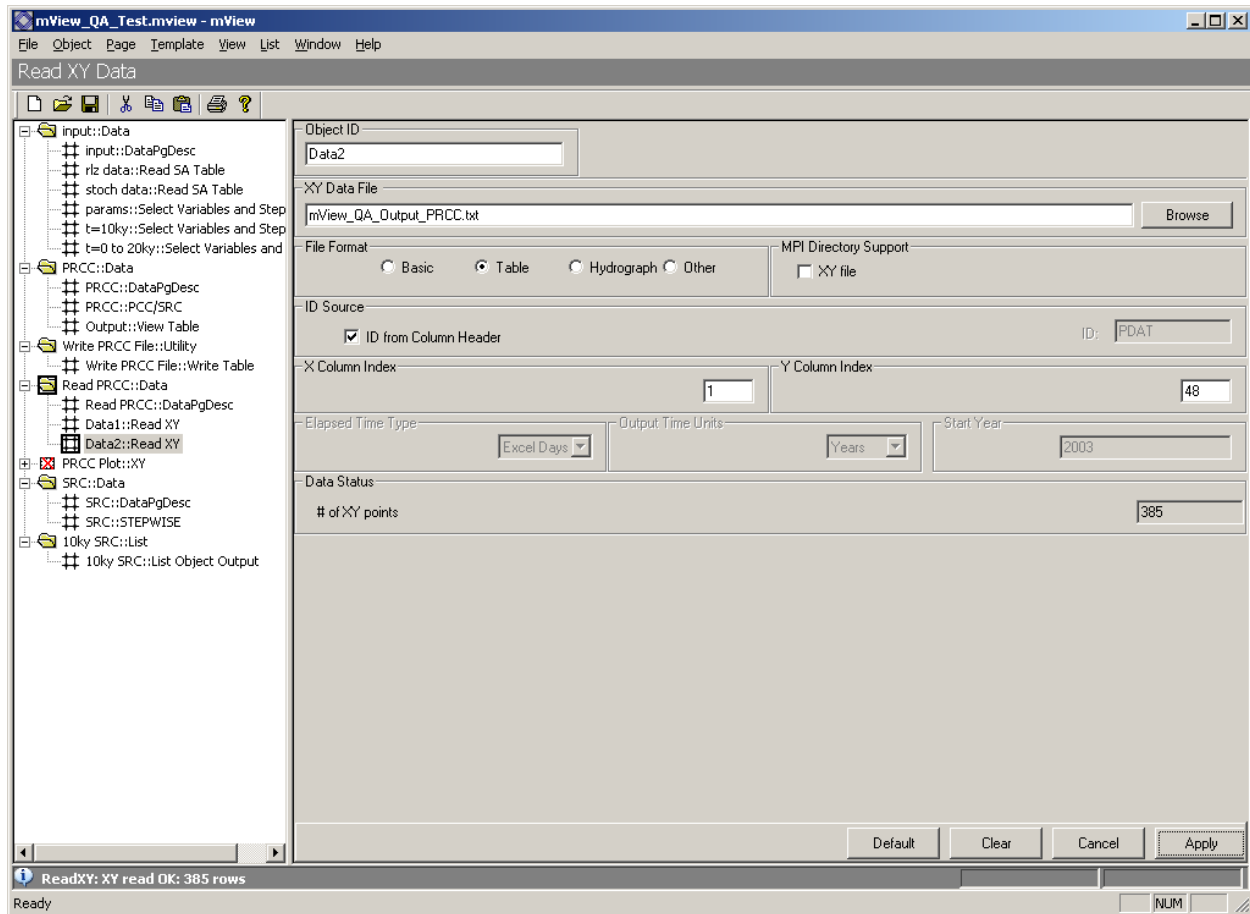


Figure 3.5-11: Example PRCC Plot in MVEIW

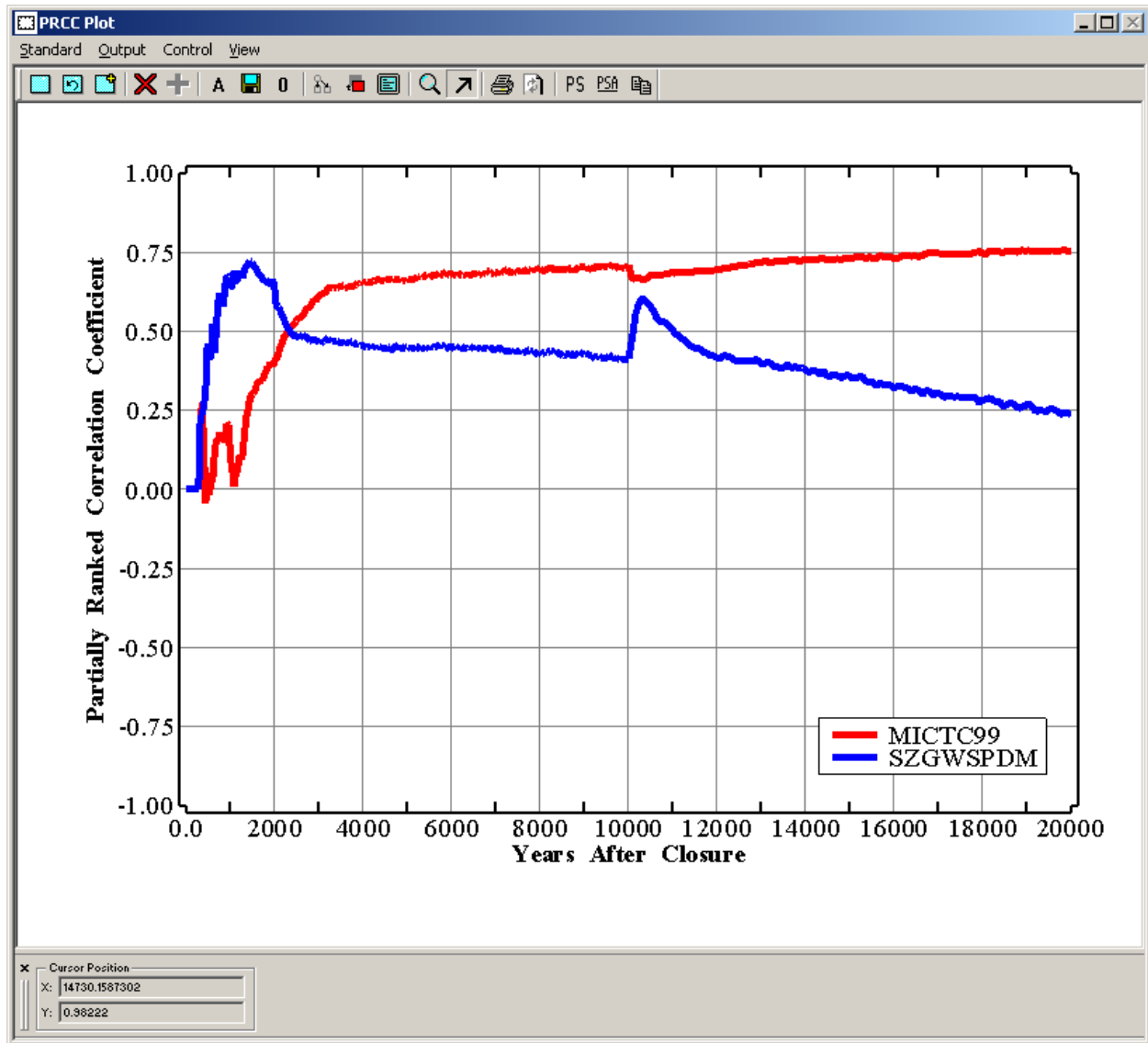


Figure 3.5-12: mView Object Properties for SRC Analysis Setup

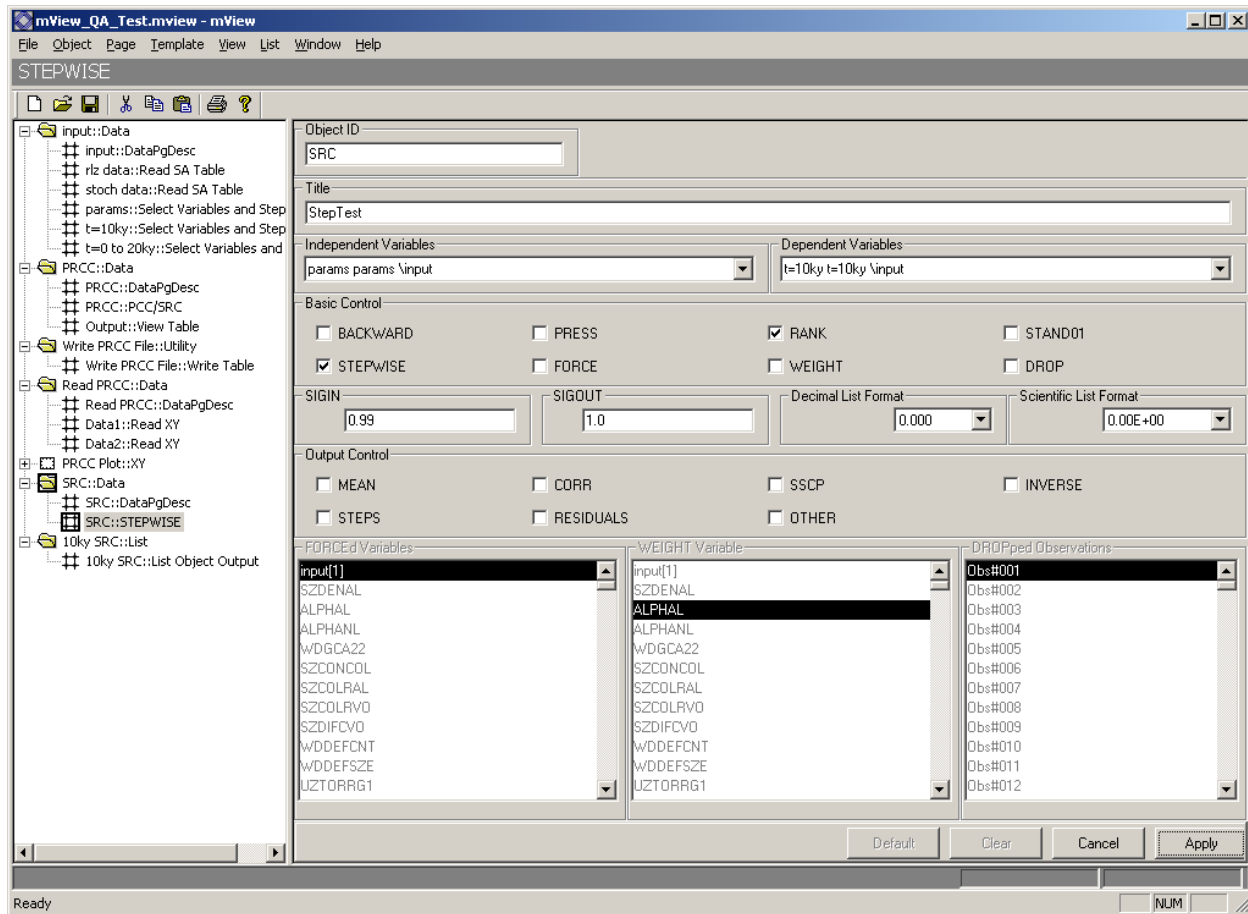


Figure 3.5-13: mView Object Properties for Generating SRC Result Listing

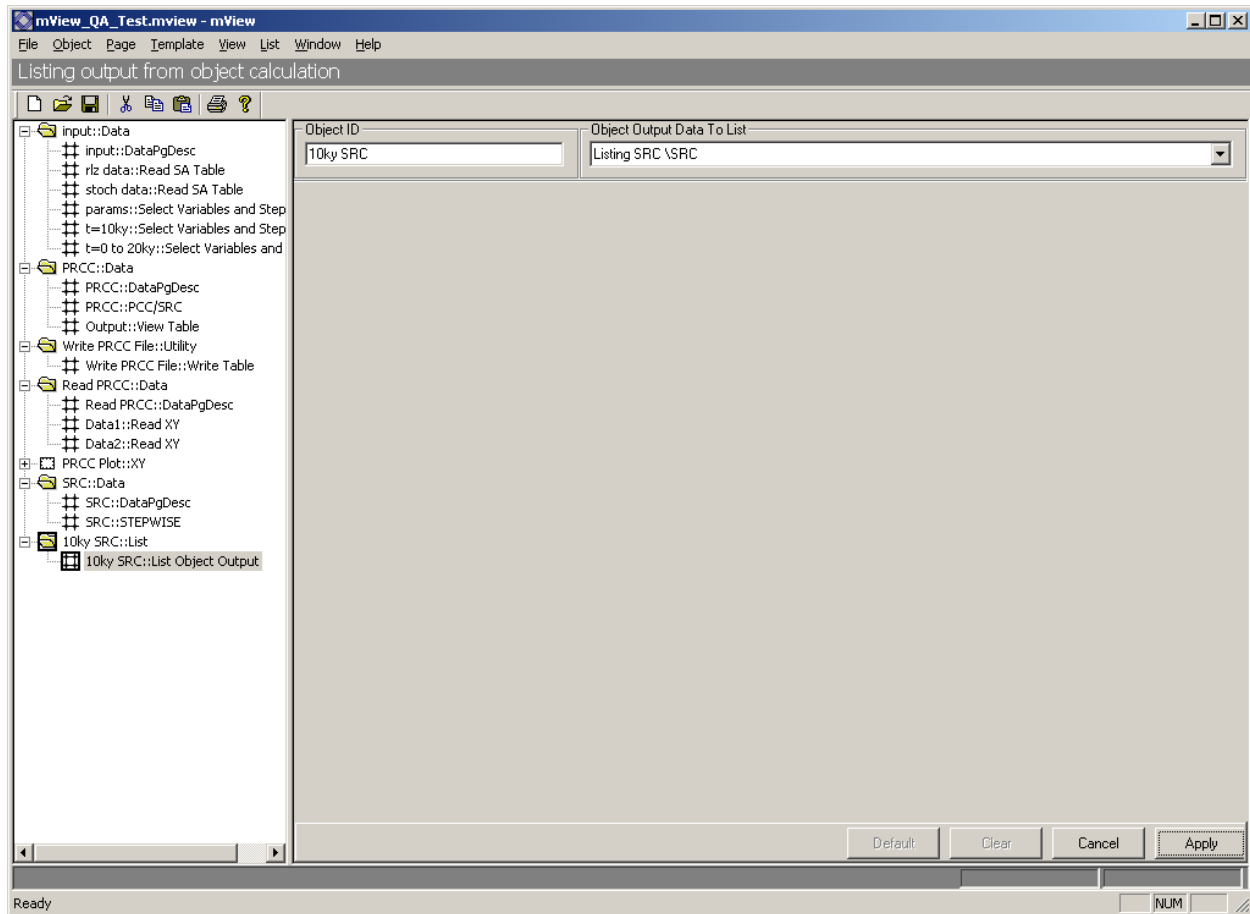
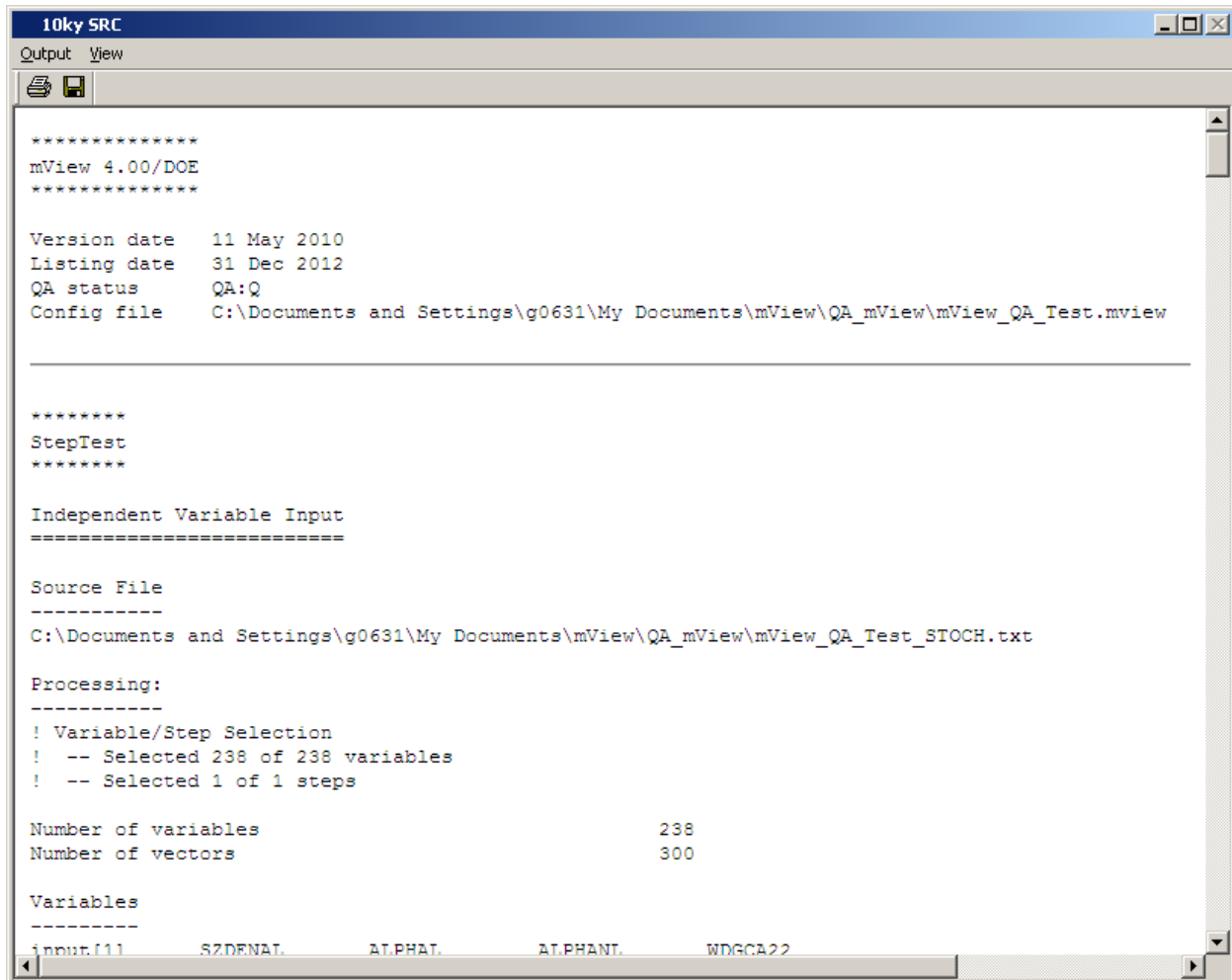


Figure 3.5-14: Example of an Output Listing in mView



```
10ky SRC
Output View

*****
mView 4.00/DOE
*****

Version date   11 May 2010
Listing date   31 Dec 2012
QA status      QA:Q
Config file    C:\Documents and Settings\g0631\My Documents\mView\QA_mView\mView_QA_Test.mview

-----

*****
StepTest
*****

Independent Variable Input
=====

Source File
-----
C:\Documents and Settings\g0631\My Documents\mView\QA_mView\mView_QA_Test_STOCH.txt

Processing:
-----
! Variable/Step Selection
! -- Selected 238 of 238 variables
! -- Selected 1 of 1 steps

Number of variables      238
Number of vectors        300

Variables
-----
input[1]      SZDENAL      ALPHAT      ALPHANT      WDGCA22
```

3.6 Life Cycle Phase: Operations & Maintenance

The Installation Test (Section 3.4) and the Performance Test (Section 3.5) demonstrate acceptable performance and operation of this software. Additional information regarding the operation of this software is provided through the mView Help menu (as was accessed during the Installation Test).

Pursuant with the graded approach to life cycle planning (see 1Q Procedure 20-1) the software maintenance shall be performed by the developer. As commercial-off-the-shelf software, documentation of software maintenance for mView is considered proprietary and shall not be reproduced without explicit permission from the vendor.

3.7 Life Cycle Phase: Retirement

When the software is no longer needed, Software Users shall remove the software from the computer and notify the mView Qualification Lead. Once the software has been removed from

all computers used to support the Liquid Waste Program, the mView Qualification Lead shall change the status in the Lotus Notes SWCD Application to retired.

4.0 CONFIGURATION MANAGEMENT/BASELINE CONTROL

Configuration control is a method established to control, uniquely identify, describe, and document the configuration of each version of a computer program. As mView is purchased software, configuration control is largely at the discretion of the vendor. However, configuration control will be initiated locally to ensure that personnel supporting the Savannah River Site's Liquid Waste Program are using a version of the software that has been qualified.

Table 4.0-1 outlines the necessary steps to ensure proper configuration management of mView software under this SQAP.

Table 4.0-1: mView Software Configuration Managements Activities

Responsible Individual(s)	Step	Task/Activities
Software User and Software User's Manager	1	Identify the need to run a qualified version of mView software.
Software User	2	Perform Installation Test, as described in Section 3.4 of this SQAP.
	2a	Document the results of the Installation and Acceptance Tests by completing the mView Software Installation Test Form (see Attachment 1).
	2b	Submit the completed mView Software Installation Test Form to the mView Qualification Lead.
	3	Determine whether or not the installed version of mView has undergone performance testing, per Section 3.5. If so, proceed to Step 5.
	4	If the installed version of mView has not undergone performance testing, perform performance testing according to Section 3.5.
	4a	Document the results of the Performance Testing by completing the mView Software Performance Test Form (see Attachment 2).
	4b	Submit the completed mView Software Performance Test Form to the mView Qualification Lead.
mView Qualification Lead	5	Review and approve the completed mView QA forms.
	6	Submit approved forms to Electronic Document Workflow System (EDWS).
	7	Maintain a record of all identified limitations and/or errors related to mView software, and notify all qualified mView Software Users of such limitations and/or errors, per Section 4.1.

In addition to these steps, the mView Qualification Lead shall maintain control of the data files associated with performance testing (described in Section 3.5) and keep a record of all versions and installations of mView software that have been qualified according to this SQAP.

After qualification, the Software User shall notify the mView Qualification Lead of any changes to the computing environment that would adversely affect the qualification of mView (e.g., the operating system is updated or the software is removed).

4.1 Problem Reporting and Corrective Action

mView is a vendor-provided software. Software Users shall report all software problems to the mView Qualification Lead who shall notify the vendor. Since mView is purchased software, correction of software errors shall be performed and tested by the vendor, at the vendor's discretion. The mView Qualification Lead, or delegate, shall assess the issue(s) to determine impacts and a path forward, pursuant to 1Q, Procedure 20-1, Section 5.8. Additionally, the mView Qualification Lead, or delegate, shall notify all qualified mView Software Users of identified issues, as appropriate.

At the time of the issuance of this SQAP, one problem has been identified. Table 4.1-1 lists the known problem and the recommended corrective action.

Table 4.1-1: Required Corrective Action(s)

Issue	Issue Description	mView Version(s) Affected	Corrective Action
1	mView will not launch if the necessary Microsoft Foundation Class libraries are not found. These are standard Windows operating system files that are accessed by the executable file (<i>mview.exe</i>) when launching. If any of these files are missing, an error will appear during the Installation Test (Section 3.4) that indicates that the application was "Unable To Locate Component."	4.00	Reinstall the Windows operating system.

4.2 Software Security Controls (Risks and Safety)

Computer Security shall be applied per the 10Q, *Cyber Security Manual*. Any Software User who identifies a security-related issue shall immediately report the issue according to 10Q. As this is vendor-provided software, no further controls are required.

4.3 Quality Assurance Records/Documentation

This document shall be submitted to Document Control as a Quality Assurance record. In addition, electronic copies of completed Attachment 1 and Attachment 2 forms shall be submitted to the Savannah River Site's EDWS.

5.0 REFERENCES

10072-RD-4.0-01, Avis, J., *Requirements Document for mView V4.0*, Office of Civilian Radioactive Waste Management, Las Vegas, NV, Rev. 00, July 1, 2005.

10072-DD-4.0-00, Avis, J., *Design Document for mView V4.0*, Office of Civilian Radioactive Waste Management, Las Vegas, NV, Rev. 00, May 10, 2005.

1Q Manual, Procedure 20-1, *Quality Assurance Manual, Software Quality Assurance*, Savannah River Site, Aiken, SC, Rev. 13, October 14, 2011.

10Q Manual, *Cyber Security Manual*, Savannah River Site, Aiken, SC, Rev. 3, October 2, 2009.

B-SWCD-C-00043, Hommel, S. P., *Software Classification Document for mView*, Savannah River Site, Aiken, SC, Rev. 2, December 18, 2012.

DOE-RW-0333P, Brown, R.D. and Arthur, W.J., *Quality Assurance Requirements Document*, Office of Civilian Radioactive Waste Management, Las Vegas, NV, Rev. 16, August 23, 2004.

**ATTACHMENT 1. MVIEW SOFTWARE
INSTALLATION TEST FORM**

Target Platform

mView Version Example: Version 4.00	
Computer ID Example: V0042##	
Operating System Example: Windows 7	

Software User Training

Per Section 1.3 of the SQAP, Software User:	Software User Initials:
Has experience operating a computer with a Windows operating system. (Required)	
Has read and understood the SQAP. (Required)	
Acknowledges known limitations in the software (see Section 4.1). (Required)	

Installation Test	Pass	Fail
	(check one)	
All steps of the installation test (Table 3.4-1) were completed successfully.		

Approvals

Software User	Print	
	Sign	
	Date	
Software User Organization		

mView Qualification Lead	Print	
	Sign	
	Date	

**ATTACHMENT 2. MVIEW SOFTWARE
PERFORMANCE TEST FORM**

mView Version Example: Version 4.00	
Computer ID Example: V0042##	
Operating System Example: Windows 7	

Performance Test Results

Test Description (See Table 3.5-1 of B-SQP-C-00005 Revision 1)	Pass	Fail
	(Check One)	
Installation Step 1 of the Performance Test completed successfully.		
Read Data Steps 2 through 8 of the Performance Test completed successfully.		
Selection of Data Steps 9 through 14 of the Performance Test completed successfully.		
PRCC Analysis Steps 15 through 18 of the Performance Test completed successfully.		
Plotting of Data Steps 19 through 23 of the Performance Test completed successfully.		
SRC Analysis Steps 24 through 29 of the Performance Test completed successfully.		

Approvals

Software User	Print	
	Sign	
	Date	
Software User Organization		

mView Qualification Lead	Print	
	Sign	
	Date	

ATTACHMENT 3. MVIEW STEPWISE OUTPUT

The following provides the mView results of the ranked SRC analysis as defined in Section 3.5.

Regression analysis for dependent variable -- GSDepVar--
=====

ANOVA table for dependent variable -- GSDepVar
=====

Source	DofF	SS	MS	F	SIGNIF
REGRESSION	233	2.12E+06	9.11E+03	4.76E+00	9.65E-12
RESIDUAL	66	1.26E+05	1.91E+03		
TOTAL	299	2.25E+06			

R-Square 0.944
Intercept -1.82E+02

Variable	R-Square When Incl.	Regression Coefficient	Standardized Regr. Coeff.	Partial SSQ	T-Test Values	R-Square Deletes	Alpha Hats
MICTC99	0.404	6.32E-01	6.32E-01	1.28E+05	8.16E+00	8.87E-01	1.36E-11
GOESA	0.494	3.35E-01	3.35E-01	5.47E+04	5.34E+00	9.20E-01	1.21E-06
HLWDRALK	0.561	2.47E-01	2.47E-01	2.06E+04	3.28E+00	9.35E-01	1.65E-03
HLWMASS	0.591	1.78E-01	1.78E-01	1.17E+04	2.47E+00	9.39E-01	1.62E-02
SZGWSPDM	0.623	2.51E-01	2.51E-01	2.59E+04	3.68E+00	9.32E-01	4.74E-04
CORRATSS	0.655	-1.09E-01	-1.09E-01	5.65E+03	-1.72E+00	9.41E-01	9.05E-02
THERMCON	0.677	-1.28E-01	-1.21E-01	7.28E+03	-1.95E+00	9.41E-01	5.54E-02
DSNFMAS	0.697	2.44E-01	2.44E-01	3.09E+04	4.01E+00	9.30E-01	1.55E-04
HLWDRACD	0.715	4.54E-02	4.54E-02	9.34E+02	6.99E-01	9.43E-01	4.87E-01
UZFAG8	0.728	-1.40E-01	-1.40E-01	1.17E+04	-2.48E+00	9.39E-01	1.59E-02