

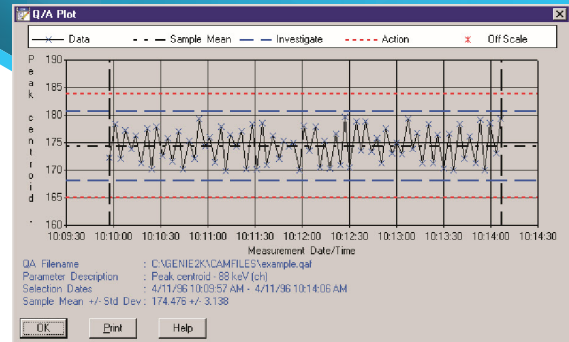


SOFTWARE

Genie™ 2000

Quality Assurance Software

Genie 2000 Quality Assurance Software offers comprehensive capabilities to monitor the performance of the spectroscopy system.



Genie 2000 Quality Assurance Control Chart

FEATURES

- Complete monitoring of any set of system parameters assuring that measurements are made in a repeatable manner
- Comprehensive statistical tests for deviations from historical means or expected values
- Plot and report capabilities provide output for assessment of system condition and system quality documentation
- Graphical user interface for intuitive, interactive operation
- Batch procedure commands for automated volume sample counting applications

DESCRIPTION

Genie 2000 Quality Assurance Software offers comprehensive capabilities to monitor the performance of the spectroscopy system. In today... trade's environment, where nuclear measurements are made in critical environmental, health physics and safeguards applications; the ability to verify system performance at any given time is essential. Even many years after a sample is counted and analyzed, the spectroscopist may be called upon to prove that the system was functioning properly – and subject to rigorous quality control procedures – at the time of the measurement.

With these requirements in mind, the Genie 2000 QA package has been designed to allow completely exible monitoring of any data parameter. The system uses the Genie family... trade's Conguration Access Method (CAM) Data files as its input. The user can specify any CAM parameter or set of parameters to be tracked. Typically, users will congure the system to monitor parameters such as peak centroid, FWHM, nuclide activities, backgrounds, MDA, etc. However, with the enhanced capability to monitor any parameter, the user can define QA files to monitor other information such as front end setup information.

DESCRIPTION

Definition of the QA parameters to be recorded is done through a straightforward windowing style Graphical User Interface (GUI). The GUI techniques used are fully consistent with the user interface of other Genie 2000 software and VMS-based Genie-ESP software.

Editing or adding of parameter definitions can be disabled with a command line argument for applications where access to this function is to be limited.

Data transfer from live detectors or previously stored CAM files is done through a simple menu selection in the QA package. Additionally, transfers can be initiated through batch procedure commands where QA information is recorded as part of a count room procedure. In this manner, the entire QA test run can be automated, minimizing the possibility of operator error.

There are two basic types of tests that can be applied to QA data – N-Sigma Tests and Boundary Tests. N-Sigma tests are further subdivided into three subtypes. The user may apply the tests in any combination to a given set of data.

Some of the dened tests are:

SAMPLE DRIVEN N-SIGMA TEST

The Sample Driven N-Sigma Test takes the accumulated sample data, calculates mean and standard deviation, and applies limit tests. The user can either specify the time period for calculating the mean or use the entire data base.

USER DRIVEN N-SIGMA TEST

This test is similar to the Sample Driven N-Sigma Test, except that the user enters a “known” mean and standard deviation. This is often used when the user has recently purged historical data from the system and is beginning a new file.

BIAS N-SIGMA TEST

In the Bias N-Sigma Test, the user enters a “true” known value to be used instead of the mean. This will be done where the parameter value is known information (i.e. ⁶⁰Co energy at 1332.5 keV). Standard deviation is still calculated from the data.

BOUNDARY TEST

In the Boundary Test, the user specifies absolute conditions for alarm testing. For example, if a peak centroid is expected in channel 1000, the user may wish to alarm at channel 1005 or 995, regardless of long term means and trends.

For N-Sigma tests the user may specify two levels of alarm notification levels. For example, the user may indicate that a two-sigma deviation is a level that warrants investigation, but a three-sigma deviation requires specific action that must be taken.

TREND TESTS

In the Trend Tests, the user specifies a number of consecutive samples on one side of the menu (above or below) to indicate an alarm. The user can also specify a number of samples trending in the same direction to indicate an alarm.

Data output from the Quality Assurance software may be in the form of graphical plots or hardcopy reports. Both may be sent either to the screen or to a printer.

The graphical plots are called up through a dialog which requests the type of test to be applied. The data is presented in the form of a scatter chart, showing the stored values for the time period of interest. Also presented on the plot is mean or true values and N-Sigma or boundary limits, depending upon the type of test selected.

Report output is similarly selected except that more than one test type can be applied to a single report. The report format includes the values as well as flags indicating violation of an alarm limit.

An “edit results” facility is provided, allowing the user to reject results that are known to be invalid, or correct results.

ORDERING INFORMATION

- S505C Genie 2000 Quality Assurance Software