



# Next Generation Review Software (NGRS)

## Features

- Provides safeguards data management (data loading, data security – authentication and decompression), automatic data analysis (such as trigger scans and motion detection), review events management and generation of safeguards data review reports
- Handles surveillance data from IAEA- approved DCM-C5 (NGSS) and DCM-14 (DIS) systems
- No local data files are generated or stored
- Provides network compatibility
- Handles large image files
- Handles and views color and/or grayscale images
- Provides image enhancement tools

## Benefits

- Efficiency and Productivity – Fast processing of data to minimize the review time
- Ease of Use – Provides a user interface that is comfortable for the users of the previous GARS product while taking advantage of modern interface design techniques
- Compatibility – Reviews data from all IAEA-approved CANBERRA surveillance systems

## Description

The **Next Generation Review Software (NGRS)** is the new application for data review for the safeguards systems. NGRS has been designed to support a suite of review tools using a common, intuitive user interface, capable of correlating multiple data types for a comprehensive view of all safeguards data in a secure environment from a variety of IAEA (International Atomic Energy Agency) supported systems.

Through remote communication or through physical swapping of media, safeguards files can be accessed and then reviewed on a review station equipped with NGRS. Primary functions include the safeguards data management (data loading, data security – authentication and decompression), automatic data analysis (such as trigger scans and motion detection), management of review events and generation of safeguards data review reports.

The initial version (1.0) of the software supports surveillance data from DCM-C5 (NGSS) and DCM-14 (DIS) cameras and will feel familiar to users for the General Advanced Review System (GARS). NGRS uses modern graphical interfaces that run on the Windows® 7 operating system and provide the necessary functions to read, decrypt, authenticate and analyze safeguards data. It is capable of handling very large data sets which may reside locally or on a network accessible storage space. Automated data analysis functions will alert the reviewer to any safeguards data discrepancies as defined by the user-configurable settings and will produce reports of the results of the data analysis activities.

NGRS provides significant performance improvements over its predecessor GARS. The design allows the software to automatically adapt to multiple core architectures, when available, to further improve data processing speeds. This product is intended to be a complete replacement for GARS. This initial NGRS software release (version 1.0) supports only surveillance review functions. However, future releases of NGRS will process data from other instruments and will be easily expandable to include data from other safeguards data collection devices. NGRS has been designed as a flexible, modular software application with the expectation of facilitating the addition of future safeguards applications with minimal impact on the existing functionality. This modularity applies not only to safeguards data types but to the encryption and authentication methods used to protect the data.

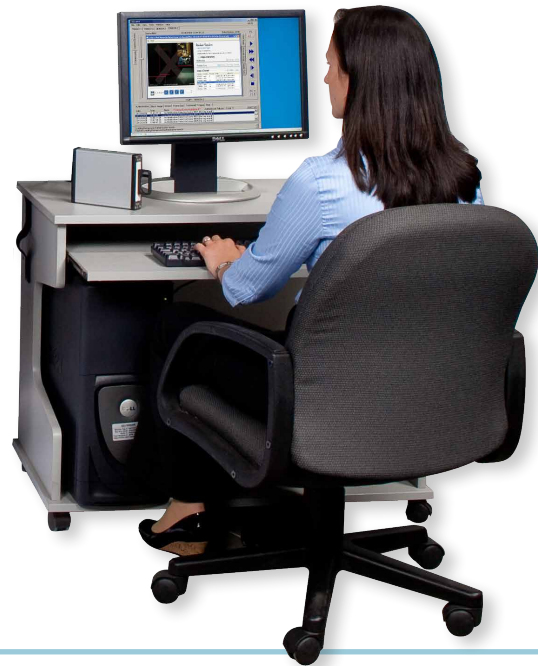
The NGRS GUI (Graphical User Interface) provides tools for reviewing image data, including a quad-view or single view video player, and tools for reviewing tabulated data such as event report navigation tools and histogram views of environmental and state-of-health data.



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The DCM-C5 and DCM-14 camera modules each apply different data encryption methods to the surveillance data and have different meta-data formats in the file header of the MPEG-formatted image files. Therefore, separate libraries have been provided within NGRS to process surveillance data from each of these camera sources. These camera support libraries operate simultaneously within NGRS, allowing DCM-C5 and DCM-14 data to be reviewed side-by-side if desired.

The NGRS software does not interface with any other commercial software. It is intended to be a stand-alone application with the specific purpose of safeguards data review. Reports are created and stored in standard text formats for use with any program capable of displaying and editing text files. The NGRS software is a Microsoft® Windows application and will take advantage of the features and functions built into the Windows operating system, including resizing windows, file access, etc.



The screenshot shows the NGRS Review Window interface with the following components labeled:

- Title Bar:** Canberra Next Generation Review System [C:\SampleCMS5 - 2012-05-31T00:00:00 to 2012-05-31T23:59:59]
- Menu Bar:** File View
- Current Scene/Master Player Indicator:** Points to the video preview windows.
- Data View Panel:** Points to the video playback area.
- Video Player Slide Bar:** Points to the playback progress bar.
- Single/Quad View Toggle:** Points to the view mode selector.
- Current scene time stamp:** 2012-05-31T10:54:59.573
- Video Playback Controls:** Includes play, stop, and seek buttons.
- Playback Speed Control:** A slider for adjusting playback speed.
- Current scene info pop-up:** Channel: sn7000032-video3, Time: 2012-05-31T10:50:23.885, Scene: #32050, Trigger: I
- Review Session Summary Panel:** Review Session, Back to Start Page, Facility: C:\SampleCMS5, Review Period: 2012-05-31T00:00:00 to 2012-05-31T23:59:59, Image Enhancement.
- Bookmark Summary:** Table with columns Camera, Channel, Name, and AUIQT.
- Analysis Summary:** Analysis Runs table with columns Analysis Type, Channel, Progress, Status, and Results.
- AOI Summary:** Areas of Interest table with columns Camera, Channel, Number, Area, and Resolution.

NGRS Review Window

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## Specifications

### DATA MANAGEMENT

- Handles large image files consisting of multiple mpeg images in color or grayscale with resolution up to 1280x960.
- Allows for data files that could be generated as a result of the maximum current DCM-C5 or DCM-14 camera resolution (acquiring a new image every one second at maximum resolution).
- Process all types of safeguards data with speed measurements based on actual memory size occupied by the data (megabytes per second).
- Handles large image files consisting of multiple mpeg images.
- Handles surveillance data from – DCM-C5 and DCM-14.
- Accommodates both locally installed keys and keys that are accessible only when a security device is plugged into the local computer.
- Processes encrypted and authenticated data based on security procedures defined by the end user and using methods that are built into the firmware and software libraries of the safeguards data generating devices (e.g., DCM-C5 and DCM-14 cameras).

### DATA ANALYSIS AND REVIEW EVENTS MANAGEMENT

- Supports the following Trigger Event types for image data – Black Scene, Scene Gap, Authentication (bad signature), AOI Motion, Time Warp and other camera-specific triggers.
- Views color and/or grayscale images with resolution up to 1280x1024.
- Processes a minimum of 20 areas of interest (AOI) in any given view for motion detection purposes.
- Supports for up to four streams of video data displayed per instance of NGRS. When viewing multiple channels simultaneously, all displayed streams are synchronized.
- Flags events based on user-defined parameters.
- Provides the ability to bookmark events and to mark events as reviewed.
- Generates metadata graphs.
- Includes an image enhancement tool.
- No Local Data Storage of Unencrypted Surveillance Data – NGRS can save certain items to local storage. These items include: bookmarks, saved review descriptors (for session restore), user image commentary. Video data is never saved to local storage in any form. All video is rendered directly from the encrypted CMS files.

### SAFEGUARDS DATA REVIEW REPORTS

- Generates user-configurable summary reports of the review session.

### SYSTEM REQUIREMENTS

The minimum hardware configuration to support NGRS is:

- A dual core processor operating at a minimum speed of 2.5 GHz.
- 4 Gigabytes of RAM.
- 250 Gigabytes of hard drive.
- 1280x1024 graphics resolution.
- Windows XP Professional SP3.

The preferred hardware configuration is:

- A quad core processor operating at a minimum speed of 3.0 GHz.
- 8 Gigabytes of RAM.
- 500 Gigabytes of hard drive.
- 1280x1024 graphics resolution.
- Windows 7 Professional.

### ORDERING INFORMATION

- 7077943 – Next Generation Review Software V1.0.

