Software Version Description

for the

General Purpose Automatic Test System (GPATS)

Common Instrument Controller (CIC)

GPATS-CIC System Software

B973051

Revision 03

June 27, 2019

Contract No.: W15QKN-14-D-0075

CDRL No. K003

Security Classification: Unclassified

Prepared by:

**Automatic Test Equipment Program**

**814 Radford Blvd Ste. 20325**

**Albany, Ga 31704**

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Approvals

The following individuals are tasked to approve this release.

|  |  |  |
| --- | --- | --- |
| Responsibility |  | Reviewer |
| Originator/Software Lead |  | Josselyn Webb |
| Project Officer-Software |  | Wallace Daniel |
| Software Support Team Lead |  | Raymond Crawford |
| Eng and Dev Branch Supervisor |  | Alan Butterworth |

List of Revisions

|  |  |  |
| --- | --- | --- |
| Date | Revision # | Description of Change |
| 05 September 2017 | Revision 01 | Initial Software Release |
| 30 October 2017 | Revision 02 | Incorporate PCRs GCIC-001 through GCIC-045 and prepare for FAT |
| 27 June 2019 | Revision 03 | Initial Windows 10 release |

Tailoring

This document is written in accordance with the Data Item Description (DID) DI-IPSC-81442A. The DID is tailored as follows:

1. Title page or identifier: There is no signature block on the cover sheet. The signees are listed on the 2nd page and the actual signatures are kept on file.

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# Scope

## Identification

This document applies to the computer software known as the GPATS-CIC System Software. The following specific identification applies:

Contract Number: W15QKN-14-D-0075

Program Name: GPATS-CIC

Supported Systems: AN/USM-657B(V)2

AN/USM-717(V)2

AN/USM-717(V)3

SSR-SSC Media: 93006H0027

SSR-CIP Media: 93006H0040

SSR-ESR Media: 93006H0038

Version Number: 2.0.0.0B

The software is released in three artifacts. The first artifact contains the system source code (SSC). It is called the “System Software Release – SSC” (SSR-SSC), part number 93006H0027. The second artifact contains various COTS Installation programs (CIP) upon which proper operation of the System Software depends. It is called the “System Software Release – CIP” (SSR-CIP), part number 93006H0040. The COTS Installation programs are installed on the Instrument Controller, along with the executables that are built from the System Source Code compiled binaries. The resulting operational Instrument Controller computer is then imaged to create the “Gold System Image”. This “Gold System Image” is then merged with boot files to create the third artifact. This artifact is the resulting bootable software system image, and is called the “System Software Release - ESR” (SSR-ESR), part number 93006H0038. It is this SSR-ESR DVD that is meant to be fielded. The “System Software Release – SSC”, the “System Software Release – ESR” and the “System Software Release – CIP” will always maintain the same revision, and is defined by the software version number reflected in this document.

This document applies to version 3.0.0.0007 of the “System Software Release – SSC”, the “System Software Release – ESR”, and the “System Software Release – CIP”.

## System Overview

The VIPER/T and TETS test systems are portable testers designed to detect and diagnose faults for a wide variety of line-replaceable units (LRU) and circuit card assemblies (CCA). The GPATS CIC is meant to replace the system controller laptop and docking station used on both of these test systems; specifically included are the TETS RF (AN/USM-657B(V)2), VIPER/T RF (AN/USM-717(V)2)and VIPER/T EO (AN/USM-717(V)3) systems. The GPATS CIC replaces the legacy system controller laptop and docking station, and the test asset circuit card assemblies contained in the legacy docking station have been newly selected for inclusion in the CIC computer. The specific hardware components of the system controller being replaced are: the Instrument Controller computer, the video capture CCA, the 1553 CCA, and the serial interface CCA. A new CAN bus interface CCA and a Quad port Ethernet CCA are being added. The MXI-2 interface and GPIB-488 circuit card assemblies will also continue to reside in the controller and will remain identical to those used in the legacy system controller. The following chart lists the specific manufacturers and part numbers for the assets:

|  |  |  |
| --- | --- | --- |
| **Asset** | **Common Interface Controller** | **VIPER/T Legacy Controller** |
| **Instrument Controller Computer** | PICMG 1.3 SBC with i7 processor in a “Lunchbox” style computer | Pentium M processor in a Laptop computer |
| **Gigabit Ethernet CCA** | Intel  i350-T4V2 | SBS Technologies  PMC-Gigabit-DT2 |
| **Serial CCA (232, 422, 485)** | Sea Level Systems  7404-2268-ET | Sea Level Systems  5102 |
| **CAN CCA** | TEWS Technology  TPMC806-10 | N/A (was in the VXI Carrier) |
| **1553 CCA** | Ballard  Lx1553-5/1MT | Data Device Corporation  BU-65569i1-300 |
| **Video Capture CCA** | Epix  PIXCI-A310 | Dalsa  PC2-Vision |
| **GPIB-488 CCA** | National Instruments  778032-01 | National Instruments  778032-01 |
| **MXI-2 CCA** | National Instruments  777185-01 | National Instruments  777185-01 |

Figure – Controller Asset Comparison

Note that the operating system software used with the legacy controller was Windows XP. This software is now obsolete, and the GPATS CIC contract specifies Windows 7 – 64 bit as the required OS.

The GPATS CIC will be operated in conjunction with the legacy VIPER/T and TETS VXI hardware, ancillary equipment, and the power supplies in their current configuration. The GPATS CIC will control the hardware in a manner that is functionally identical to the legacy controller. The GPATS CIC system software will continue to allow operation of the test assets in both manual and automated modes. The system software will also continue to incorporate startup sequencing, runtime system monitors, confidence and self tests, system logs and a fault history database. The CICL communication layer will be implemented in the GPATS CIC system software for those same test assets as were implemented in the VIPER/T system software. The system source code for both the TETS and VIPER/T systems will be merged into a single software source tree, and a software program will be developed to determine and install the appropriate software items when creating an operational system.

The test station hardware is operated via the GPATS CIC, which is a ruggedized lunchbox style chassis having a PICMG 1.3 specification single board computer. All of the GPATS CIC system software executes on this computer. The computer uses a Microsoft Windows 7 – 64 bit operating system. The menus, stand-alone instrument software, and system utility programs are written and compiled using the Microsoft Visual Basic.NET and Visual C/C++ languages. Automated Test Program Set (TPS) software is written and compiled using TYX PAWS Developer’s Studio and the Abbreviated Test Language for All Systems (ATLAS) language. The ATLAS code may also call Non-ATLAS Modules (NAMs) that are written with Visual C. The TPSs will run on the CIC under the PAWS Run-Time System. As the original Visual Studio 6 Integrated Development Environment (IDE) used to develop and maintain the legacy software is now obsolete, all of the system software will be transferred to and compiled with Visual Studio 2012.

GPATS-CIC is produced for the Marine Corps Systems Command, Combat Equipment Support Systems, Test, Measurement, Diagnostic Equipment (TMDE) organization.

## Document Overview

This document identifies the media associated with this release. It provides an inventory of the configuration items that comprise the release. Changes between this release and any previous release are identified. Related documents are identified. Installation instructions are provided. Possible problems and known errors are also listed.

This document and the GPATS-CIC System Software are UNCLASSIFIED.

# Referenced documents

**Customer Documents**

|  |  |  |
| --- | --- | --- |
| W15QKN-14-D-0075 |  | Contract for the GPATS-CIC |

**Government Documents**

|  |  |  |
| --- | --- | --- |
| DI-IPSC-81442A  January 11, 2000 |  | Data Item Description, Software Version Description |

**ATS Corporation Documents**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| B973049  Latest Revision | | |  | Software Product Specification for the GPATS-CIC System Software (K002) | |
|  | | |  |  | |
| B973048  Latest Revision | | |  | Software Transition Plan for the GPATS-CIC (K004) | |
|  |  |  | | |

# Version Description

## Inventory of materials released

The GPATS-CIC System Software is released as multiple data DVDs. One DVD provides the source code. The second DVD provides COTS Installation programs required for correct system software operation. The remaining DVD contains an image copy of a configured GPATS-CIC system hard disk. These disks are the distribution media. The identification details for these three releases are given below:

System Source Code Media:

Program Name: GPATS-CIC

Test Station: AN/USM-657B(V)2

AN/USM-717(V)2

AN/USM-717(V)3

Part Number: 93006H0027

Contract Number: W15QKN-14-D-0075

Product Name: System Software Release - SSC

Version: 3.0.0.00074

Date: June 27, 2019

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System Software Release, COTS Installation Programs:

Program Name: GPATS-CIC

Test Station: AN/USM-657B(V)2

AN/USM-717(V)2

AN/USM-717(V)3

Part Number: 93006H0040

Contract Number: W15QKN-14-D-0075

Product Name: System Software Release - CIP

Version: 3.0.0.0007

Date: June 27, 2019

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System Software Release, Emergency Software Recovery Media:

Program Name: GPATS-CIC

Test Station: AN/USM-657B(V)2

AN/USM-717(V)2

AN/USM-717(V)3

Part Number: 93006H0038

Contract Number: W15QKN-14-D-0075

Product Name: System Software Release - ESR

Version: 3.0.0.0007

Date: June 27, 2019

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Please note that four other documents also define the contents of this release. The Software Product Specification for the GPATS-CIC System Software gives more detail on the overall content of the release.

## Inventory of software contents

The System Software is comprised of the COTS Installation Programs, Core Software (CORE CSCI), Instrument System Software (ISS CSCI), and the Operating System Software (OSS).

Core

OSS

ISS

COTS

Installation

Programs

GPATS-CIC

System

Software

Figure - System Software Composition

The Commercial-Off-The-Shelf (COTS) Installation Programs consist of various products provided and used as-is from their vendors.

The Core CSCI is a developed product and consists of the GPATS-CIC applications that perform start-up, monitoring, logging, fault history database management, confidence test and self test. It also provides the system and toolbar menus.

The ISS CSCI is a developed software product. It consists of the ATLAS interface software, the Common Interface Control Layer, the RF interface software, and most of the soft front panels.

The OSS addresses the Microsoft Windows 10 – 64 Bit operating system and the vendor-supplied Instrument controller computer drivers and utilities.

Version data for each CSCI and the major commercial components is given in the following table. More extensive version information is available in software inventory data created as part of this software release. See section 3.2.1.2.1 below.

|  |  |  |
| --- | --- | --- |
| CSCI | Component | Version |
| COTS Installs | McAfee Antivirus | 8.8P11 |
| COTS Installs | CoPilot | 7.0 |
| COTS Installs | North Atlantic Industries 65CS4 (Synchro/Resolver)IVI VXI Plug&Play Driver | 2.9.0 |
| COTS Installs | Epix XCLib | 3.8 |
| COTS Installs | Epix XCAP-Lite | 3.8 |
| COTS Installs | NI IVI runtime engine | 2015 |
| COTS Installs | Teradyne M9 DTI Driver | 6.3 |
| COTS Installs | Teradyne CSi Diagnostics | 6.2P1 |
| COTS Installs | National Instruments 488.2 Driver | 18.5.0 |
| COTS Installs | National Instruments VISA Driver | 18.0.0 |
| COTS Installs | National Instruments VXI Driver | 16.0.0 |
| COTS Installs | National Instruments IVI Compliance Package | 18.0.0 |
| COTS Installs | National Instruments CVI Run Time Engine | 2017 |
| COTS Installs | Sealevel Serial Driver | SS030704RC4 |
| COTS Installs | Army IADS | 3.2.7 and 3.4.25 |
| COTS Installs | TYX Personal ATLAS Workstation (PAWS) Runtime | 1.41.0 |
| COTS Installs | Wavecad | 3.4 |
| COTS Installs | SBIR IRWindows 2001 | 9.0 |
| Core and ISS | ATS System Software (Core and ISS) | 3.0.0.0007 |
| OSS (Note1) | Microsoft Windows 10 – 64bit | SHB 10.4.0 |

Table - Software Inventory

Note1: This item is not included on the System Software Release – SSC or the System Software Release – CIP. It is, however, embedded in the System Software Release – ESR.

### Software Checksums and Software Inventory

The checksums and inventory of the software files included in this release may be found in the appendices of this document as specified below.

#### Checksum Creation Instructions

File checksums pertaining to these software releases are calculated using the following procedure. The checksum program specified below and used to generate the data is “Microsoft File Checksum Integrity Verifier”.

1. Open a command prompt session.
2. Navigate to the target device where the intended software DVD resides, e.g. **D: <ENTER>**, where “D” is the drive letter assigned to the DVD ROM drive.
3. At the prompt, type “**md5deep64  -lrj0  \* > C:\temp\csumXXX.txt**”, where “**md5deep64**” is the file name of the checksum utility found on the DVD, “**D:\**” refers to the DVD drive and root directory, “**-lrj0**” instructs the software to recurse subdirectories using relative pathnames with a deterministic sort, and the “**> C:\temp\csumXXX.txt**” creates an output file (csumXXX.txt) containing a log of the checksum information.

##### System Software Release - SSC Software Checksums

The list of software files and their checksums included in this release of part number 93006H0027. The raw data is included on the “System Software Release – SSC” DVD in the \Docs directory, as file name “csumSSC.txt”.

##### System Software Release - CIP Software Checksums

The list of software files and their checksums included in this release of part number 93006H0040. The raw data is included on the “System Software Release – SSC” DVD in the \Docs directory, as file name “csumCIP.txt”.

##### System Software Release - ESR Software Checksums

The list of software files and their checksums included in this release of part number 93006H0038. The raw data is included on the “System Software Release – SSC” DVD in the \Docs directory, as file name “csumESR.txt”.

#### Software Inventory Creation Instructions

Software Inventory of a configured RFI Instrument Controller is calculated using the following procedure.

1. Rename the computer GPATSCIC-XXXX to ensure that the controller name is identical to previous runs and can therefore be compared to previous versions using difference listing tools.
2. Open a command prompt session on the Instrument Controller.
3. At the prompt, type “**wmic /output:C:\temp\InstalledPrograms.csv product get name,version /format:csv**”, where “**C:\temp\InstalledPrograms.csv**” is the file name of the result of the command. This text file is formatted as comma separated variable for ease of importing into excel and/or other software.

##### RFI Instrument Controller Software Inventory

The inventory of the configured RFI Instrument Controller is included in this release. The raw data is included on the “System Software Release – SSC” DVD in the \Docs directory, as file name “InstalledPrograms.csv”.

## Changes installed

### Feature Changes

For complete information regarding specific software changes, view the closed PCRs located on the System Software Release – SSC DVD in the \Docs directory, in the PDF file named “GCIC2.0.0.0B\_Closed\_PCRs.pdf”.

#### PCRs Incorporated

This build closes the following Problem/Change Reports. Note that the following PCRs encompass PCRs generated based on Software version V2.0.0.0. These are closed in this release of V2.0.0.0B.

| **USMC STR #** | **ATS**  **PCR #** | **STR Name** |
| --- | --- | --- |
| N/A | 1 | TETS RF Power Meter Table Editor Issue |
| N/A | 2 | Altered INI file processing to allow absence of Calibration data |
| N/A | 3 | CTest is not correctly setting the "System Effective" date field |
| N/A | 4 | VIPERT RF STIM WCEM Memory Corruption |
| N/A | 5 | Adjust code disabling polling while running CTEST |
| N/A | 6 | VidTool throws exception if Power is applied prior to opening |
| N/A | 7 | Several issues detected in STEST for TETS |
| N/A | 8 | DCPS SAIS not resetting properly |
| N/A | 9 | TETS RF Stim Panel Crash |
| N/A | 10 | TETS Rf Counter SAIS Panel About Window Issue |
| N/A | 11 | ARB SAIS Panel User Waveform Editor Crash |
| N/A | 12 | DCPS SAIS Panel Reset Issue |
| N/A | 13 | CTEST Cal Due Dates |
| N/A | 14 | ARB Sais Panel Vrms Units Missing |
| N/A | 15 | TETS CTEST Cal Date Instrument Call Outs |
| N/A | 16 | Teradyne DTI version needs to be updated to V6.3 |
| N/A | 17 | System Software support for TSUpload |
| N/A | 18 | DMM Tool Tips |
| N/A | 19 | SAIS Toolbar EO Power |
| N/A | 10 | SysLogViewer cannot exit via file menu drop-down |
| N/A | 21 | FHDB export folder selection |
| N/A | 22 | Self Test Timer Window Issue |
| N/A | 23 | Vidtool operation corrections/enhancements |
| N/A | 24 | Sysmenu Does Not Allow \*.xml or \*.SGM IETMS |
| N/A | 25 | Correct paths for device and switch build batch |
| N/A | 26 | Hardware and Setup instructinos on TETS show VIPER/T |
| N/A | 27 | Add help file for E1412A DMM |
| N/A | 28 | Correct S9XX labels on switch SAIS |
| N/A | 29 | Arb panel sweep control issue |
| N/A | 30 | BUSIO panel max time and receive length |
| N/A | 31 | DSO Stop Level buttons |
| N/A | 32 | DCPS Load from file does not work |
| N/A | 33 | Arb SAIS creates Triangle wave when requesting Ramp |
| N/A | 34 | Trigger values on the Arb panel not correct |
| N/A | 35 | SerialNam is not working |
| N/A | 36 | TETS RF MEAS SAIS Panel Detector Cal issue |
| N/A | 37 | VIPERT RFMEAS SAIS Panel External Trigger Level Issue |
| N/A | 38 | DMM SAIS Panel Button Label issue |
| N/A | 39 | DCPS Sais Panel Reset Issue |
| N/A | 40 | TETS RFMEASAN Sais Panel Sometime Throws an Exception on Startup |
| N/A | 41 | OSCOPE SAIS Panel Leaving an Error Status on SCOPE when closing panel. |
| N/A | 42 | DSO SAIS Panel No Help |
| N/A | 43 | RFMS Server Error Messages are Incorrect |
| N/A | 44 | FG Help and About Discrimination |
| N/A | 45 | Function Generator trigger delay spin button malfunction |
| July 19, 2018 |  | Added changes from VIPERT SW Version 1.3.1.0(This is version 2.1.0.0) |
| December 17, 2018 |  | Added changes from VIPERT SW Version 1.3.2.0(this is now version 2.1.0.0-Rc1 |
| SW Version 3.0.0.0000 |  | Moved to Windows 10 |
| TIR 3.0.0.0000-001 |  | M910 was crashing the RTS. Process handle wasn’t being set properly |
| TIR 3.0.0.0000-002 |  | ZTech scope doesn’t make adjustment. Fetch function had incorrect math |
| TIR 3.0.0.0000-003 |  | Collimator doesn’t talk to system. There was a variable being set incorrectly |
| TIR 3.0.0.0001-001 |  | There was an issue related to Visual Studio in the VEO2 project. |
| TIR 3.0.0.0002-001 |  | TETS Scope crashes RTS. There was a buffer overflow in writewavedata() |
| TIR 3.0.0.0002-002 |  | PCISeial WCEM error. There was a variable that was not initialized. |
| TIR 3.0.0.0003-001 |  | Ethernet Set Up instructions. Added instructions to set up Ethernet ports and automatically run the batch file that sets the IP addresses |
| TIR 3.0.0.0004-001 |  | Move to SHB |
| TIR 3.0.0.0005-002 |  | Operator requires a password. Group policy change to disable complexity and and min and max length |
| TIR 3.0.0.0005-004 |  | System configuration test is not working. This was due to a permission on a folder that it was trying to write to. Added permission to this folder for Administrator account |
| TIR 3.0.0.0005-005 |  | Add CAN bus fix from Astronics to our source |
| TIR 3.0.0.0005-006 |  | CICL fails to start as Admin user. This is due to security feature in Windows 10. Temp fix is start Sysmon as Administrator. |
| TIR 3.0.0.0005-009 |  | System Initiation isn’t writing to SysLog. The code to do this was commented out. |
| TIR 3.0.0.0005-011 |  | Add Fault Log Copy to system software |
| TIR 3.0.0.0006-003 |  | Add PS Exec to system |
| TIR 3.0.0.0006-005 |  | GP NAM will not execute. This was due to a batch file that it uses to set an IP Address not being able to be ran by the operator account. Changed some permission see STrP. Changed how the file is execute by the program. This is just a temp fix, a permanent solution is still needed. |
| TIR 3.0.0.0006-006 |  | GPNAM knows nothing about GIGABIT4. This functionality was added to the GPNAM |
| TIR 3.0.0.0006-007 |  | Local Area Connection should be DHCP not static. This was a change to SetIPAddress.bat |
| TIR 3.0.0.0006-008 |  | Change Secondary Logon to be automatic. This is related to TIR 3.0.0.0006-005. This was a change to the STrP. |
| TIR 3.0.0.0006-009 |  | GP NAM requires Admin name and password to run. Add operator to Network Configuration Operators group. This allows for the operator to use their password to run GPNAM. This was a change to the STrP |

## Adaptation data

The System Software contains no data that is unique to any given installation site.

## Related documents

The following documents provide additional information about the requirements, design, implementation, and use of the System Software.

|  |  |  |
| --- | --- | --- |
| B973051 (N003)  Latest Revision |  | System/Subsystem Design Description (SSDD) for VIPER/T |
|  |  |  |
| B973049 (K002)  Latest Revision |  | Software Product Specification for the GPATS-CIC System Software |
|  |  |  |
| B973041 (C002)  Latest Revision |  | First Article Test Procedures for the GPATS-CIC Development/Production Program |
|  |  |  |
| B973062 (N002)  Latest Revision |  | Computer Programming Manual for the VIPER/T and TETS |
|  |  |  |
| B973048 (K004)  Latest Revision |  | Software Transition Plan (STrP) for the GPATS-CIC System Software |
|  |  |  |

## Installation instructions

Detailed instructions regarding how to change and build the GPATS-CIC System Source code, as well as to how to install the System Software Release - ESR DVD, are documented in the Software Transition Plan, B973048.

## Possible problems and known errors

There are no known issues with this release.

# Notes

## Acronyms

Table - List of Acronyms

|  |  |  |  |
| --- | --- | --- | --- |
| ASCII | | American Standard Code for Information Interchange | |
| ATLAS  ATS | | Abbreviated Test Language for All Systems  Astronics Test Systems | |
| CIC | | Common Instrument Controller | |
| CCA | | Circuit Card Assembly | |
| CDR | | Critical Design Review | |
| CDRL | | Contract Data Requirements List | |
| COM | | Computer Operator’s Manual | |
| COTS | | Commercial-Off-The-Shelf | |
| CPM | | Computer Programmer’s Manual | |
| DID | | Data Item Description | |
| DVD | | Digital Versatile Disk | |
| ESR | | Emergency Software Recovery | |
| FAT | | First Article Test | |
| GPATS | | | General Purpose Automatic Test System | |
| IC  IDE | | Instrument Controller  Integrated Development Environment | |
| LRU | | Line Replaceable Unit | |
| N/A | | Not Applicable | |
| NAM | | Non-ATLAS Module | |
| OSDS | | Operational Software Development Station | |
| PAWS | | Personal ATLAS Work Station | |
| PDR | | Preliminary Design Review | |
| PS | | Performance Specification | |
| RF | | Radio-Frequency | |
| RTS | | Run Time System | |
| SDD | | System Design Description | |
| STrP | | Software Transition Plan | |
| SUM | | Software User’s Manual | |
| SVD | | Software Version Description | |
| TETS | | Third Echelon Test System | |
| TMDE | | Test, Measurement, and Diagnostic Equipment | |
| TPS | | Test Program Set | |
| TPSDS | | Test Program Set Development Station | |
| VS2012 | | Visual Studio 2012 IDE | |
| WCEM | | Windows CIIL Emulation process | |