Computer Sciences Corporation
Federal Sector - Civil Group

CSC/ESRS ISO 9001 Employee Awareness Handbook

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CSC Quality – Launching Wallops Into the Future

NOTES

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A Message From the Contract Manager

Many of you are familiar with the changes being implemented within our contract and within all NASA programs. So far, we have responded to these challenges and moved forward in implementation of new processes which should help ensure the success of each project we are involved in. We now face a new challenge: the process of adhering to NASA requirements for ISO 9000 compliance.

This opportunity is an extension of CSC's existing processes and our everyday commitment to striving for superior performance and continuous improvement. ISO requires few, if any, significant changes in the way we routinely do business. The formal review process serves as a verification and demonstration of our existing commitment to quality.

This handbook was developed as an overview of the key items that are important to our everyday activities in striving for quality. It provides a background and summarizes the major ISO requirements, relating them to our everyday practices.

As a contract, we will continue to strive for excellence in quality: in our products, people, commitments, and processes. With this sustained performance and CSC quality commitment, we will help launch Wallops into the Future.

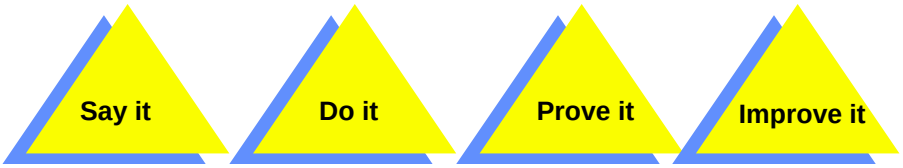
C. Robert Hickman

Overview: What is ISO 9001?

The International Organization for Standardization (ISO) has its roots in the manufacturing industry and comprises more than 100 member countries. Its goal is to promote development of standards, testing, and certification to encourage trade. The ISO series of quality system standards are intended to certify that an organization has processes capable of delivering quality products and services. To become registered as ISO-compliant means that the organization has in place a quality management system--the way it ensures that quality is built in at each part of the process--that is effective in supporting the achievement of organizational quality goals and objectives.

ISO 9001 is one of the ISO 9000 series of internationally accepted quality system standards for delivering products and services that meet customer expectations and requirements. The U.S. equivalent, which is guiding our efforts at WFF, is the *American National Standards Institute (ANSI) American Society for Quality Control (ASQC) Design, Development, Production, Installation, and Servicing*. The standard is used when conformance to specified requirements is to be assured by the supplier during the major phases of the system lifecycle, from requirements specification through design, development, production, installation, testing and follow-on servicing and maintenance.

Simply said, the owner of an ISO 9001 compliant quality system can



How Does ISO 9001 Benefit Us?

Makes good business sense
- Provides Customer confidence in our services/products
- Provides high-quality products and services at lower costs
- Provides the means to gain a competitive edge in new business

Meets Customer expectations
- Required by current Customer
- Is necessary for follow-on and new business opportunities

Increases employee confidence and visibility into work practices
- Promotes employee involvement and ownership
- Fosters continuous improvement

Team Roles and Responsibilities

Contract Management
- Communicates commitment
- Provides leadership and resources

Local Quality Steering Team (QST)
- Develops a Quality Manual
- Coordinates implementation of ISO 9001 for WFF
- Monitors and reports progress

Core Team and Line Organizations
- Ensure required processes are documented
- Ensure required processes are deployed
- Provide feedback to the ISO QST

Independent Registrar
- Conducts third-party assessment
- Identifies any process deficiencies and monitors resulting corrective actions
- Registers our compliance with the Customer

What Is the Registration Process?

CSC/WFF ISO Quality Steering Team

- Updates standards and procedures
- Carries out ISO training
- Complies with Customer documentation requirements

Registrar

- Reviews documentation
- Conducts pre-assessment audit to identify nonconformances
- Conducts registration audit with Customer and contract personnel; recommends registration following resolution of any nonconformances

CSC/WFF ISO Quality Steering Team

- Generates and submits plan for correcting nonconformances
- Coordinates correction of nonconformances
- Receives formal ISO compliance certificate on behalf of all contract personnel

Registrar

- Conducts follow-up verification audits with Customer and contract personnel on a periodic basis

Summary of ISO 9001 Requirements

ISO Requirement	Key ISO Points
4.1 Management Responsibility	1. Allocate resources 2. Establish Quality Policy 3. Review Quality System 4. Define responsibility and authority for quality
4.2 Quality System	1. Have documented policy, procedures, processes (and work instructions) 2. Implement all elements of ISO 3. Have a Quality Manual 4. Consideration for a Quality Plan
4.3 Contract Review	1. Have documented procedures for reviewing all contracts 2. Identify how changes are processed 3. Maintain records of contract reviews
4.4 Design Control	1. Identify and apply procedures for entire project life cycle 2. Call out designs with schedules in project/task plan(s) 3. Plan and conduct design reviews
4.5 Document and Data Control	1. Place all key documents and data under configuration management (CM) (approval procedure, change procedure, records) 2. Generate a master list of all controlled documents 3. Discard or properly mark all outdated or obsolete documents
4.6 Purchasing	1. Have written procedures for purchasing 2. Have list of acceptable subcontractors 3. Define controls over subcontractors
4.7 Control of Customer-Supplied Product	1. Have procedures for control of products provided by customer 2. Have records of all products that were damaged, lost, stolen, defective

Summary of ISO 9001 Requirements

ISO Requirement	Key ISO Points
4.8 Product Identification and Traceability	1. Have documented procedures for identifying and tracking each product (components, systems, reports) as it evolves 2. Have records of each product identification
4.9 Process Control	1. Have written procedures for all key processes (e.g., test, design, launch, installation, CM) 2. Identify all processes that may be used 3. Ensure that everyone has immediate access to needed procedures 4. Follow defined processes
4.10 Inspection and Testing	1. Have written procedures for test 2. Describe tests in project/task plan(s) 3. Require incoming, in-process, completion inspections and/or tests 4. Keep records that state whether products passed or failed tests
4.11 Control of Inspection, Measuring, and Test Equipment	1. Have documented procedures for control of test equipment, test hardware/software, and test procedures 2. Ensure that test equipment is tested 3. Ensure that test equipment is recalibrated
4.12 Inspection and Test Status	1. Make overall inspection and test status available for products being developed
4.13 Control of Nonconforming Product	1. Have a documented procedure for ensuring that defective products aren't used in operations 2. Identify authority for reviewing and resolving nonconformances 3. Record any nonconformance

Summary of ISO 9001 Requirements

ISO Requirement	Key ISO Points
4.14 Corrective and Preventive Action	1. Have procedure for fixing problems 2. Have procedure for handling customer complaints 3. Have procedures for adjusting processes based on resolution of problems
4.15 Handling, Storage, Packaging, Preservation and Delivery	1. Establish documented procedure for handling, storage, packaging, preservation and delivery 2. Arrange for protection of quality for final delivery
4.16 Control of Quality Records	1. Identify quality records 2. Have procedures for handling and processing quality records
4.17 Internal Quality Audits	1. Have procedures for conducting internal audits 2. Schedule internal audits 3. Record audit results
4.18 Training	1. Have procedures for identifying training needs 2. Provide needed training 3. Have training records
4.19 Servicing	Not a Customer requirement at this time.
4.20 Statistical Techniques	1. Have procedures for performing appropriate statistical techniques

What Do Contract Personnel Need To Do To Ensure Success?

1. Know the Quality Policy and how it affects you. (How do you and your group address Customer satisfaction?)

1.1 The quality policy: "With customer satisfaction as our primary goal:

- GSFC is committed to meeting or exceeding our customer's requirements.
- We achieve excellence in all of our efforts."

The key point is to remember that the focus is on the Customer.

1.2 Talk to our Customers to be aware of their needs and concerns. Each individual contributes to the overall contract goal by knowing that his/her specific work is contributing to the Customer's mission.

2. Have immediate access to all procedures required for your job.

2.1 Work functions must have documented procedures. Typical contract functions include design, development, testing, configuration management, systems engineering, analysis, quality assurance, manufacturing, testing, maintenance, and operations. The primary duties that you perform must have written procedures describing how they are done.

2.2 Relevant procedures for your job must be

- Written
- Reviewed
- Approved (signed by authorized manager)
- Available (you must have immediate access)
- Current (up to date)
- Followed

2.3. Know how processes you use are improved or changed. The use of NCR/CA (nonconformance reports and corrective action), Customer feedback, internal reviews, and the overall measurement program help guide changes to all contract processes (including your local processes documented in local procedures).

2.4 Know a master list of documents exists listing the acceptable procedures you are using. See http://arioch.gsfc.nasa.gov/iso 9000.

3. Discard or appropriately mark all outdated controlled documents.

3.1 If you keep any old versions of documents that are officially controlled documents, they must be marked as "Obsolete" or "Outdated Version." You cannot keep unmarked outdated versions of controlled documents in your office. A simple handwritten identifier suffices.

3.2 Documents that fall into this category are all documents on your local master list or on anyone else's master list. Each Department Manager must establish a procedure to discard or appropriately mark all outdated controlled documents.

4. Know where schedules for reviews and tests are identified (e.g., project/task plan).

Any testing (such as system tests or regression tests) or any reviews (such as mission or design reviews) must be identified and scheduled in a planning document. This may be the project/task plan, an organization's operations manual, or any equivalent planning document.

5. Know how defects found in products are recorded, tracked, and corrected.

As problems are found in various activities (testing, inspection, integration, reviews), you must be aware of how such problems are handled for products you are working on. You must be able to refer to some written procedure that will describe how that problem is addressed.

6. Be aware of and use inspection and test procedures for products during development and before delivery.

Almost all individuals are participating in the generation of some intermediate or end product such as hardware/software, data products, documents, or full systems. Each individual must be aware of what inspections take place and where that inspection is defined in a written procedure.

7. Be able to produce records of

- **Inspections**
- **Tests**
- **Reviews**

7.1 There must be evidence that activities required in your work (defined in written procedures) have been completed. Inspections, testing, and reviews are three of the most critical activities requiring completion records.

7.2 Although the completion records may not be stored in the individual's workspace, they must exist for the project somewhere in accordance with defined local procedures.

8. Know how each unique version of a system or product is identified and controlled.

Different versions of products such as payloads or hardware/software under development, documents being generated, or files of data to be delivered must have some unique identifier to ensure that erroneous or incorrect versions are not used.

9. Know how you are qualified to do your work, how training is offered, and how work assignments are made.

9.1 You are qualified to do your job because of your education and experience, which must meet CSC's job description, which is stored at Civil Group. Each year the performance appraisal review (PAR) process details your performance and identifies objectives required to remain current.

9.2 There is requisite on-job training for certain positions. Your training records are archived on a database maintained by Human Resources at Civil Group. There is also a database that describes computer-based training (CBT) opportunities within the Group and mission-specific training.

9.3 Know how work is assigned to you and who assigns you work. Your Task Leader updates your Work Order Authorization (WOA) quarterly, or as needed.

10. Follow the procedures that pertain to your job and maintain appropriate records.

The most important responsibility to ensure ISO compliance is for you to adhere to the procedures required for your job. Those procedures designated for your use must be applied, and appropriate records must be kept.

What Do Managers Need To Do To Ensure Success?

1. Produce and maintain a master list of controlled documents.

1.1 A list must be generated of all documents that need to be under configuration management. All written procedures used within the project must be on the list. That includes procedures unique to the project or for which the procedures are not included on the master list. See http://arioch.gsfc.nasa.gov/iso9000.

1.2 The change and control procedure for the master list must exist and should be defined.

2. Identify all processes and written procedures to be used on the project or in the organization.

2.1 Any local procedures (not explicitly part of the CSC/WFF set) must be identified, entered on the master list, and controlled:

- Written
- Reviewed
- Approved
- Available (to all personnel who may use them)
- Current
- Followed

2.2 All procedures to be used on the project must be identified in a project/task plan or equivalent (such as an organization's operations manual).

3. Produce and maintain a list of quality records.

3.1 Objective evidence demonstrating conformance to Civil Group and local Procedures and Guidelines (PGs) must exist and be identified in the list of quality records. Inspection results, test results, project reviews, or NCR/CA results are examples of such records.

3.2 The list must describe where the actual records are stored, how long they are kept, how they are disposed of, and how they are filed (e.g., by date). The list of quality records is a good model for projects to use.

3.3 The project must ensure that all records identified on the list are generated, signed (if required), archived, and controlled as defined on the list.

4. Produce a Project/Task Management Plan.

Each project or task must have a plan containing several ISO key items. The plan may be in the form of an organization's operations manual for the case of the multimission support areas. Required ISO items include

- Procedures to be used on the project
- Schedules for reviews
- Schedules for tests
- Quality goals and plan (optional, but recommended)

5. Assure that all procedures and controlled documents are

- **Written**
- **Reviewed**
- **Approved**
- **Available**
- **Current**
- **Followed**

In addition to the work processes and procedures identified in paragraph 2 above, all other documents that appear on the master list must also be controlled.

6. Identify and use a corrective action process.

6.1 The project corrective action process must address the following:

- Customer complaints
- Actions resulting from audit findings
- Major nonconformances

6.2 The process must be written as a procedure and controlled. It can be part of another document or report, but it must be explicitly defined.

7. Identify and utilize a CM process.

7.1 The project (or organization) must have an explicit, written CM process. It may be part of a larger document such as the project/task plan, but it must be explicit and define what items will be controlled, who has authority to make changes (such as a Configuration Control Board), how the status of changes will be handled, and what configuration checking (audit) procedures will be used.

7.2 The Civil Group and local PGs document CM procedures, and they should be used. However, the explicit plan for the project must be written.

8. Have a procedure for reviewing and approving documents.

8.1 All controlled documents as well as deliverables must be reviewed and approved. Projects must have a written procedure for completing this activity.

8.2 All controlled documents must have evidence that they were reviewed and approved by an authorized person.

9. Have a written procedure for uniquely identifying and controlling all products.

All products must have a unique product identification name or number so that erroneous products or versions are not used.

10. Verify that the 10 items identified on pages 9-11, "What Do Contract Personnel Need To Do To Ensure Success," are implemented across each project.

Terms To Be Familiar With

Customer
Our Customer is NASA at Goddard and Wallops Flight Facility.

Contract
The contracts are the task orders and subcontracts.

Master List of Documents
A list of controlled documents that impact the quality of products and services. These documents include process descriptions, Civil Group and local PGs, and requirements specifications. See http://arioch.gsfc.nasa.gov/iso9000 for a link to the GDMS (Goddard Directives Management System).

Procedure
A document that specifies the way to perform an activity.

Process
A particular method of producing a product or service, generally involving a number of steps or operations.

Project
For the contract, any of the tasks or mission-specific operations.

Quality records
Official pieces of evidence that demonstrate conformance to specified requirements (e.g., delivery letters, inspection and test results, meeting minutes).

Quality system
Formal framework for control of critical activities that affect products and services delivered to customers.

Registrar
An independent accredited body which performs the ISO registration assessment.

Work instruction
A definition of how to perform a particular operation or activity. Work instructions are typically included in the applicable procedure.

Acronyms and Abbreviations

ANSI	American National Standards Institute
ASQC	American Society for Quality Control
CBT	computer-based training
CSC	Computer Sciences Corporation
CM	configuration management
GPG	Goddard Procedures and Guidelines
ISO	International Organization for Standardization
NASA	National Aeronautical and Space Administration
NCR/CA	nonconformance report/corrective action
NPD	NASA Policy Directive
PAR	performance appraisal review
PG	Procedures and Guidelines (NASA)
QST	Quality Steering Team
WFF	Wallops Flight Facility
WOA	Work Order Authorization

References

1. American National Standard ANSI/ASQC Q9001-1994, *Quality Systems - Model for Quality Assurance in Design, Development, Production, Installation, and Servicing.*

2. American National Standard ANSI/ASQC Q9002-1994, *Quality Systems - Model for Quality Assurance in Production, Installation, and Servicing.*

3. American National Standard ANSI/ASQC Q9003-1994, *Quality Systems - Model for Quality Assurance in Final Inspection and Test.*

4. American National Standard ANSI/ISO/ASQC A8402-1994, *Quality Management and Quality Assurance - Vocabulary*.

5. American National Standard ANSI/ASQC Q10013-1995, *Guidelines for Developing Quality Manuals.*

6. NPD 8730.3, NASA Quality Management System Policy (ISO 9000)