

SYSTEM AUDIT REPORT NUMBER 00/35812/S05



THIS REPORT RELATES TO SURVEILLANCE

VISIT ON 8/30-31/00

Company MARSHALL SPACE FLIGHT CENTER

Other Sites Visited

1. N/A

Address Bldg. 4203

Huntsville, AL

2. N/A

Scope: ALL PROCESSES FOR PROCUREMENT, DESIGN, DEVELOPMENT, AND ONSITE PRODUCTION OF FLIGHT HARDWARE, FLIGHT SOFTWARE, AND ASSOCIATED GROUND SUPPORT EQUIPMENT INTERFACING WITH FLIGHT HARDWARE AND SOFTWARE, FOR WHICH MSFC HAS RESPONSIBILITY.

Standard(s) ISO-9001:94

Support Documentation(s) N/A

Non-English Languages Used N/A

**Comments/Concerns of the Assessment Team:**

No adverse trends detected. Recommend for continued Registration to ISO-9001:1994.

We will need to follow-up on the status of MSFC NCR 1-1, to review progress of site wide System Back-Up. One (1) out of thirteen (13) organizations still to be followed up on.

- The visit is deemed to be Satisfactory
- Unsatisfactory visits may result in a change to the next audit activity.

- Corrective Action Plan (CAP) Instructions:**
  - Return CAP in 20 working days (all NCs & QS-9000 Ois).
  - Certificate processing initiates after receipt/acceptance of CAPs.
  - QS-9000 Ncss must be cleared prior to certificate issuance.
  - Return CAP in ten days for major NCs issued during surveillance.

**NQA ASSESSMENT TEAM**

LEAD AUDITOR Joe Grieco

TEAM Judge P. Lunt

TEAM

TEAM

TEAM

**COMPANY INFORMATION**

MGT REP Sid Saucier

QUALITY MANUAL (REV & ISSUE DATE)

MPD, R/E, (6/12/00)

The contents of this report is confidential and must not be disclosed to a third party without prior agreement of NQA, USA and the company named above.

Non-compliances/non-conformances raised or observations noted within this report are the result of limited sampling and therefore non-compliances/non-conformances may exist which have not been identified.

The company representative's signature indicates their agreement and understanding of any non-compliances/non-conformances and observations contained in this report.

Prior to the assessment, the company must have completed a complete system internal audit and subsequent management review documented. The quality system shall be understood throughout the organization.

Signature Joe V. Grieco  
NQA, USA Representative

Date

Signature Sid Saucier  
Company Representative

Date 8-31-00

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**SYSTEM REVISION STATUS AND AUDIT MATRIX**

X indicates reference point for assessment. Note: X through entire box as applicable to indicate actual function/process audited against ISO 9000 requirement.		SPECIFIC ISO 9000 REQUIREMENTS FUNCTIONS/PROCESSES AUDITED DURING THIS VISIT									NEXT VISIT PLAN
		Q U A L I T Y	I S O Q M R	S C D I R	D E S I G N	M M G R S & P	I N S P E C T I O N	S T O R E S			
ISO 9000 REQUIREMENTS											
Mgt. Responsibility	4.1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Quality System	4.2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Contract Review	4.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Design Control	4.4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Document & Data Control	4.5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Purchasing	4.6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control of Customer Supplied Product	4.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Product Identification & Traceability	4.8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Process Control	4.9	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspection & Testing	4.10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control of Inspection. Measuring & Test Equip.	4.11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inspection & Test Status	4.12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control of Non-Conforming Product	4.13	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Corrective & Preventive Action	4.14	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Handling, Storage, Packaging, Preservation & Delivery	4.15	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control of Quality Records	4.16	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Internal Quality Audits	4.17	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Training	4.18	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Servicing	4.19	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Statistical Techniques	4.20	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Customer Complaints		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Use of NQA Logo		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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*TV01  
Feb. 2001*

## AUDIT RECORD

ISO 9000 CLAUSES	Applicable Standard		Non Compliances Or Observations	
Auditor(s)		Joe Grieco	Judge P. Lunt	
	ISO 9001	Reviewed the USE-OF-LOGO requirements with Sr. Quality Engineer. At the present time, they are not utilizing the LOGO in any way.	0	0
4.9	ISO 9001	Interviewed Team Lead for Ablatives Ceramics, X34 Project MCC1 Engine, Reviewed ED 34-OWI-15 Rev. A, Assessed Combustion Chamber Nozzle (30:1) S/N 60K-56. Maintenance of Equipment in Ceramics is contracted to THIOKAL and not in scope. In Plating area, Interviewed Materials Engineer's Dept. ED33, Reviewed Electroless Nickel Phosphorus Plating Procedure ED33-WI-009 Rev. C. Assessed Project Hero Work Request No: 2000-327 Electroless Nickel Plating. In Software area, Reviewed Software Development Process Description Document, MPG 8060.1 Rev. B & ED14-SS-001 Rev. F Sampled Process for Project SLS-VPA-003, MSFC Flight Software Cycle from SRR through TRR.	0	0
4.20	ISO 9001	Interviewed Technical Assistant to Manager of Safety Reliability & Quality Assurance Department, I was given an Overview of Quantitative Risk Assessment (QRA) of Space Shuttle Propulsion Elements. Reviewed MPG 8730.4 Rev. B, Statistical Techniques. Interviewed Reliability & Maintainability Manager (HEI), Reviewed QS10-R-010 Rev. A Reliability Analysis & QS10-M-004 Rev. A Maintainability Prediction. Assessed TIR's X-33 Liquid Hydrogen Tank Statistical Analysis of Structural Material Data, CR10-16517-R01-039 Design for Reliability and the Statistical Evaluation of Shuttle Launch History.	0	0
4.1	ISO 9001	Reviewed Management Responsibility with Associate Director, Chief Financial Officer, Center Operations Directorate, Science Directorate & Space Transportation Directorate. Discussed Internal Audit summary, Problem Reporting and handling of corrective/preventive actions and the future implementation plans of ISO9001:2000 Reviewed procedure MPG-1280.1 Rev. B. Assessed the Management Review Meeting minutes, dated 6/23/00.	0	0
4.2	ISO 9001	Reviewed Level I & II DQS Documents with Sr. Quality Engineer: - Level I: Marshall Policy Directive, R/E, (6/12/00) - Level II: MPG's, (various rev's)	0	0

**AUDIT RECORD**

ISO 9000 Applicable  
CLAUSES Standard

Non Compliances  
Or Observations

Auditor(s) Joe Grieco Judge P. Lunt

4.4 ISO 9001

Interviewed Project Manager & System Engineer of DC/PCG, discussed project status since last surveillance. Reviewed MSFC-PLAN-2785A & Science Requirement/Performance & Interface Control Doc. No. PCG-D-0050 Rev.B. Assessed System Performance Specification Doc. No. PCG-S-006 Verifying the PDR meeting minutes dated 4/13/98, Assessed CDR plan dated 3/3/99, Verifying CDR meeting minutes dated 5/12/99. The IRR is scheduled for Mid November.

0 0

4.8 ISO 9001

Reviewed Product Identification and Traceability element Electrical Parts Test Lead, Ceramics Team Lead, and Q.A. Specialist. Sampled procedures MPG-8040.3 R/B, MWI-8040.4 R/B, MPG-8040.2 R/B, QS10-QA-001 R/F, and the following objective evidence:  
 A.) PROSEDS Project: 1.) A-2 Interface, dwg 96M18220-1, s/n-102, w/o 00V-1167-A, 2.) Insp Rep FQ-615, for p/n MS51959-1, 3.) p/t QQQ500, for p/n LT580UH/883C, 4.) p/t KKK603, for p/n RNC55J1003FS, 5.) Drill & Trim Board, PDI Lot # 99-33, s/n 02-4, 6.) Chassis proto-002, per procedure MSFC-FC-Proseds-302 R/O, by Insp #93-Q (4/20/00), Run #1, 7.) DR #6937, p/t AAN614, 8.) Cable W-10 Assembly, w/o W-01636/1, for dwg 96M00310 R/O, with markings P1131, P1132, MP-28, MJ-28, 111, and 96M00310.  
 B.) GLIMIT Project: 1.) p/o SF495-00, 2.) IAR 01555, 3.) p/t AAU602, 4.) p/n CDR02BX103BKUS, 5.) Lot # 0029TD.  
 C.) Building 4723 Secure Components: 1.) UPA Project, Request ID DALUPA0016R, p/n M85049/38S17N (4-ea), 2.) OGA Project, Request ID # KC0G26 R/A, p/n S684-75, with C of C, (10-ea), 3.) p/n NZGA-LG-17-N-24, Asset # F005323, p/t AAU201, @ loc 3-G-1B.  
 D.) Building 4707: 1.) Combustion Chamber Nozzle # 60K-56, per ED34-OWI-015, R/A.

0 0

**ISO 9000**    **Applicable**  
**CLAUSES**   **Standard**

**AUDIT RECORD**

**Non Compliances**  
**Or Observations**

**Auditor(s)**    Joe Grieco                      Judge P. Lunt

4.14            ISO 9001

Reviewed Corrective and Preventive Action element, as well as Customer Complaints, with Systems Analyst II, and Supervisor Problem Assessment Center. Sampled procedure MPG-1280.4 R/A, MWI-1280.2 R/A, QS10-R-012 R/D, and the following objective evidence:

- July 2000 monthly report for delinquent RCAR's (8/7/00)
- RCAR Status List (Data Base)
- Open RCAR's #162, #161, #155, #88
- Closed RCAR's #62, #126, #143, #160
- Verified records requirements per procedure MPG-1440.2 R/H
- There have been no Customer Complaints received since the Surveillance Audit in March 2000. They have received four (4) positive customer responses (QUALCOM's) as noted with the following sample:
  - a.) #120, NASA, ED16
  - b.) #121, NASA, ED01
  - c.) #122, NASA HQ
  - d.) #123 US Attorney General
- Sampled PRACA system procedure QS10-R-005 R/B as well as: a.) OPEN and CLOSED lists in the data base for the period of 4/1/00 thru 8/31/00, b.) Closed PRACA #A17604, c.) Closed PRACA #A17586, d.) Open PRACA #A17613, e.) MSFC PRACA Codes List (4/5/96)
- Reviewed the CAP's for NQA report #00/35812/S04 and was able to close all issues on that report.

1                      1

4.17            ISO 9001

Reviewed Internal Quality Audits element with Audit Manager. Sampled procedure MPG-1280.6 R/B and the following objective evidence:

- 2000 Internal Audit schedule (6/14/00)
- Internal Audit NCR's #391, #392, #389, #390, #386, #387, #794, #797, #787
- Internal Auditor Training Records: G. Parrish, R.D. McElyea, R. Wegrich, W. Woods, B. Jackson, L. Carpenter, L. Cucarola, J. Hollingworth, P. Hoffman, S. Newton
- Internal Audits:
  - A.) Safety & Mission Assurance Office, QS01 (9/20-24/99)
  - B.) Eng. Directorate, ED01 (7/17-21/00)
  - C.) Procurement, PS01 (6/19-23/00)
  - D.) Finance Dept., RS01 (7/10-13/00)
- Reviewed 3 year record retention requirements per MPG-1280.6, R/B, para 4.0, and MPG-1440.2 R/H.

0                      0

**Total**                      1                      1

Ref No.	Clause No.	Applicable Standard	NONCONFORMANCE AND OBSERVATIONS RAISED	NC	0
1	4.14	ISO 9001	The Corrective Action Plan for RCAR # 88 has been revised but the data base records have not been updated to reflect these changes. (see ISO para 4.14.2.b)	NC	
2	4.14	ISO 9001	PRACA # A17604 does not indicate the correct Interim Closure in the Miscellaneous "H" field. The requirements associated with this field are not clearly defined in procedure QS10-R-005 R/B.		0

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*Jay V. Guio 8/31/00*  
*Jay V. Guio*

Signed for NQA

*Seely P. Lauer*

Signed for Company

*8-31-00*