

MWI 8060.2
REVISION D

EFFECTIVE DATE: September 7, 2004
EXPIRATION DATE: September 7, 2009

MARSHALL WORK INSTRUCTION

ED01

SPECIAL TEST EQUIPMENT (STE) DESIGN GROUP SUPPORT REQUEST (MSFC Form 4405)

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DOCUMENT HISTORY LOG

Status (Baseline/ Revision/ Cancel)	Document Revision	Effective Date	Description
Baseline		2/6/01	
Revision	A	5/8/01	Changed 'Control' to 'and Development' in 1., 3b, 3d, and 6.1. Added 'and...hardware' to 1. Added 'A...obtained.' to 5.1. Added 'NASA' and '(reference...001)' to 5.2. Changed 'support' to 'design and development' in 5.3. Added 'The...employee' in 5.5. Added 'thrust...systems' to 5.6. Deleted 'Any...dimension.' in 5.7. Deleted 'Group' in 6.1 and 6.4. Deleted 'any' in 6.2. Added 6.2.1. Changed 'can' to 'shall' and added 'external' in 6.5.1. Changed 'is required' to 'should be provided' in 6.5.3. Changed 'should' and 'will' to 'shall' in 6.5.7. Deleted 'These...documents.', changed 'as required by' to 'per', 'Control' to 'and Development' in 6.5.7.1. Added 'NASA' and 'Assurance' to 6.5.7.1, 6.5.7.2, and 6.5.7.3. Added 'per...Development)' to 6.5.7.2 and 6.5.7.3. Added 6.5.7.4. Changed 'will' to 'shall' in 6.5.7.1, 6.5.7.2, 6.5.7.3, 6.5.10.2, 6.5.11, and 9. Added 'all necessary', changed 'and' to 'along with' in 6.5.10.2. Converted 6.5.10.2.1 to 'a.' and 6.5.10.2.2 to 'b.'. Changed 'The...is' to 'Figure 1 shows' in 12. Changed 'drawing' to 'document' and added '- Figure 1' in flow chart. (Document footer URL updated by the Directives Manager 11/19/2003.)
Revision	B	12/12/2003	Changed 'Configuration Management' to 'Configuration Management Plan' in 1., 3.3, and 6.2. Changed '6.e' to '6.1.5' in 1. and 6.2. Changed 'Quality Record' to 'Record' throughout text of document.
Revision	C	6/7/2004	Capitalized occurrences of 'Requester' and 'Program Manager' throughout document. Added ", and by...completion." in 5.3. Changed 'Project Manager' to 'Requester' in 6.1. Removed 'For hardware...control,' and changed 'project manager' to 'Requester' in 6.2.1. Removed 'Requester' in 6.4. Removed 'By Signing... project.' in 6.5.6. Changed 'project manager' to 'Requester' in 6.6.
Revision	D	9/7/2004	In compliance with center-wide action (CAITS # 04-DA01-0387), changed all occurrences of MPG to MPR, removed 'shall' from all definitions, and reworded document as necessary to differentiate requirement statements from supporting text. Changed 'Quality Records' to 'Records' in 3.6, 6.8, & 9. Changed 'the person' to 'a NASA employee', 'The...by' to 'By', and added ', the requester' in 5.3. Removed 'and...number' in 6.3. Changed 'necessary' to 'non-optional' in 6.5. Changed 'A' to 'The need...be', 'and provide' to 'estimate...provides', & '. Allowances...made' to ', including allowances' in 6.5.1. Added '(Optional)' to 6.5.3 and 6.5.9.

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1. PURPOSE

This Marshall Work Instruction (MWI) provides instructions for requesting support from the Special Test Equipment (STE) Design Group via the preparation and submission of an STE Design Group Support Request Form, MSFC Form 4405. The Special Test Equipment Design Group, ED38, is located within the Engineering Directorate's Materials, Processes, and Manufacturing Department. This MWI, in conjunction with MPR 8060.2 (Non-Flight and Non-Facility Design and Development) and ED38's Organizational Issuances (OIs), satisfies the non-flight requirements of MWI 8040.1, paragraph 6.1.5 (Configuration Management Plan, MSFC Programs/Projects), and provides special consideration to those designs that produce hardware directly in contact with flight or other configuration-controlled hardware.

2. APPLICABILITY

This MWI is to be used by anyone requesting support from the STE Design Group. It is also applicable to STE Design Group personnel and support contractors.

3. APPLICABLE DOCUMENTS

- 3.1 MPD 1280.1, "Marshall Management Manual"
- 3.2 MPR 8060.2, "Non-Flight and Non-Facility Design and Development"
- 3.3 MWI 8040.1, "Configuration Management Plan, MSFC Programs/Projects"
- 3.4 ED38-OI-001, "ED38 Design and Development"
- 3.5 ED38-OI-002, "ED38 Design Requirements"
- 3.6 ED38-OI-003, "ED38 Control of Records"
- 3.7 ED38-OI-004, "ED38 Documentation Control"
- 3.8 ED38-OI-005, "ED38 Drawing Standards"

4. REFERENCES

None

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5. DEFINITIONS

5.1 90M Document. Any drawing, procedure, specification, or other document that is maintained by the STE Design Group (ED38) and has been assigned an eight-character 'document number' prefixed with '90M' (the number '90' and the capitalized letter 'M' followed by a unique 5-digit sequential number). These document numbers are exclusively reserved for ED38's use. A 90M document is considered released once all signatures or initials required by ED38-OI-001 have been obtained.

5.2 Mandatory Inspection Point (MIP). A specific step, sequence, or time in an operation where a characteristic can be verified, witnessed, or performed by NASA Quality Assurance. An MIP on a 90M document is in the form of a note on that document (reference ED38-OI-001).

5.3 Requester. The Requester is a NASA employee who submits an STE Design Group Support Request Form. This person may be the STE Design Group's customer or may represent the customer(s). For example, a test engineer may submit a request on behalf of the Project Manager. By signing this form, the requester is stating that they have been authorized by the Project Manager to initiate and oversee the requested design activity as well as to commit the necessary MSFC funds and/or resources for its completion.

5.4 Special Test Equipment (STE). Any non-flight*, non-Ground Support Equipment (GSE)*, or non-facility** structure, hardware, or equipment intended to be used for testing or simulation, or associated with the manufacturing, process development, and preparation of MSFC facilities for testing or simulation. Designs include, but are not limited to, test stands, test beds, vacuum systems, cryogenic and non-cryogenic fluid delivery systems, fire extinguishing systems, load reaction and application structures, load line components, thrust measurement systems, flight hardware mockups and simulators, hardware support stands and dollies, personnel access stands, lifting and handling hardware, and tooling.

* Flight hardware and GSE are defined in MPD 1280.1, "Marshall Management Manual."

** Facility hardware is defined in MPR 8823.1, "Design Control of Facilities."

5.5 STE Design Group Support. Any design and development activity performed by the STE Design Group (ED38). Support is primarily in the area of STE design but may include other non-flight and non-facility designs as well as concepts, reviews, analyses, manpower estimates, etc.

5.6 STE Design Group Support Request Form. MSFC Form 4405 used to request support from the STE Design Group (ED38). This form has been duplicated in the appendix for reference.

5.7 Tooling. Any number of items used to facilitate the fabrication or assembly process. Designs include, but are not limited to, drill templates, clamping fixtures, and alignment devices.

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6. INSTRUCTIONS

<u>Actionee</u>	<u>Action</u>
Requester	6.1 Shall determine if support requested from the STE Design Group is within the boundaries of MPR 8060.2, "Non-Flight and Non-Facility Design and Development." If not, then shall initiate a deviation or waiver per MPR 1410.2, "Marshall Management Directives System," and provide a copy of the approved deviation or waiver to the STE Design Group's Leader, one of its team leaders, or to its management support assistant.
	6.2 Shall ensure that the non-flight requirements are met for MWI 8040.1, paragraph 6.1.5, "Configuration Management Plan, MSFC Programs/Projects," when requested design support produces hardware that directly interfaces with flight hardware or with hardware that is under configuration control.
	6.2.1 Shall ensure that all 90M documents are released prior to submission for fabrication with the following exception: The Requester may direct ED38 to submit an unreleased 90M document for fabrication provided a review is held immediately after the document has been released to verify that the fabrication information in the unreleased and released documents is identical. This review may be performed at any point during the fabrication process but shall be performed before any fabricated hardware is put into service. The Requester shall select the organization that performs the review as well as the method of concurrence.
	6.3 Shall provide the necessary funding for STE Design Group support by way of a valid labor code.
	6.4 Shall submit a signed STE Design Group Support Request (MSFC Form 4405) to the STE Design Group's Leader, one of its team leaders, or to its management support assistant.
	6.5 Shall fill out all non-optional blocks on the STE Design Group Support Request Form as follows:
	6.5.1 <u>Need Date</u> : A realistic estimate that provides sufficient time to complete each requested activity, including allowances for any necessary external design reviews (stress, material, safety, quality, etc.) or manufacturing. ED38 does not provide schedule or cost estimates for these external activities.
	6.5.2 <u>Labor Code</u> : A valid labor code number.

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- 6.5.3 CWC No.: (Optional) A valid CWC number.
- 6.5.4 Project: The name of the supported project.
- 6.5.5 Keyword Title: A short, descriptive title of the support required.
- 6.5.6 Requester Name:/Phone Number:/Org. Code:/Signature:/Date: The Requester's name, telephone number, organizational code, signature, and date of signature.
- 6.5.7 Will Hardware Produced by this Request Directly Interface with Flight Hardware? If any hardware produced by this request directly interfaces with flight hardware, then the 'YES' box shall be checked. The 'YES' box shall also be checked if any interfacing hardware is under flight configuration control whether or not it is actually flight hardware. A 'YES' checkbox answer shall initiate the following:
- 6.5.7.1 ED38 personnel shall obtain additional signatures (for NASA Quality Assurance Engineering and Flight Interfaces) on 90M documents per ED38-OI-001, “ED38 Design and Development.”
- 6.5.7.2 NASA Quality Assurance inspections for all flight interfaces produced from 90M documents shall be designated by MIPs placed on the face of the document (including surface and hole dimensions, surface flatness and finishes, protective coatings, etc.) per ED38-OI-001, “ED38 Design and Development.”
- 6.5.7.3 NASA Quality Assurance inspection shall be requested during the mating of flight to non-flight hardware as indicated on 90M documents by placement of an MIP on the face of the document (including bolt torque values, lubrication, cleanliness, etc.) per ED38-OI-001, “ED38 Design and Development.”
- 6.5.7.4 For any special tooling used in the manufacturing of flight hardware to control a feature or dimension on the flight hardware (which cannot be verified by inspection of the flight piece), an MIP shall be added to the drawing per ED38-OI-001 and as directed by NASA Quality Assurance Engineering to ensure that the special tooling meets the drawing requirement to control that feature or dimension.
- 6.5.8 Item/Description of Each Requested Activity: An itemized list describing each requested activity. If necessary, list the name and telephone number of each contact who can provide additional information.
- 6.5.9 Comments: (Optional) A place for additional comments or explanations.

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- 6.5.10 Disposition of Support Output: Select the disposition of output produced by the activity as follows:
- 6.5.10.1 If the 'Provide ____ Copies of 90M Document(s) to Requester' box is checked, fill in the quantity.
- 6.5.10.2 If the 'Submit Fabrication Services Request(s)...' box is checked, ED38 shall submit all necessary Fabrication Services Requests (MSFC Form 3751) along with copies of all applicable 90M documentation to the Manufacturing Group (ED37) for fabrication. The following information shall also be provided:
- Disposition of Fabricated Items: If 'STORE' is checked, the item(s) are placed in the building 4705 storeroom for later use. If 'PICKUP BY:' is checked, check 'REQUESTER' or 'OTHER' as appropriate. For 'OTHER', provide the name and telephone number of the person responsible for coordinating the pickup.
 - Manufacturing Labor Code: If the labor code for manufacturing is different from the labor code used for ED38 support, enter a valid code here.
- 6.5.10.3 Other: If the 'OTHER' box is checked, provide instructions for the disposition of the support output in the comments block.
- 6.5.11 Date Received:/Assigned To:/Date Assigned: These blocks are for ED38 internal use only and shall be left blank.
- 6.5.12 Attachments: Additional information in the form of drawings, sketches, weight and CG tables, loads, charts, etc., may be attached and submitted with the request.
- ED38 Personnel 6.6 Shall notify the Requester if a requested support activity violates any of the applicable documents listed in Section 3.
- 6.7 Shall perform each requested support activity in compliance with the applicable documents listed in Section 3 and:
- 6.7.1 Shall provide copies of the 90M documents to the Requester; and/or
- 6.7.2 Shall submit Fabrication Services Request(s) (MSFC Form 3751) with copies of the 90M documents to Manufacturing; and/or
- 6.7.3 Shall follow the Requester's instructions for the disposition of the support output in the comments block.
- ED38 Record Custodian 6.8 Shall file a record copy of each approved STE Design Group Support Request as a record as specified in ED38-OI-003, "ED38 Control of Records."

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7. NOTES

None

8. SAFETY PRECAUTIONS AND WARNING NOTES

None

9. RECORDS

Signed STE Design Group Support Requests shall be maintained as records per ED38-OI-003, "ED38 Control of Records." Refer to this document for media requirements, storage methods, and retention times.

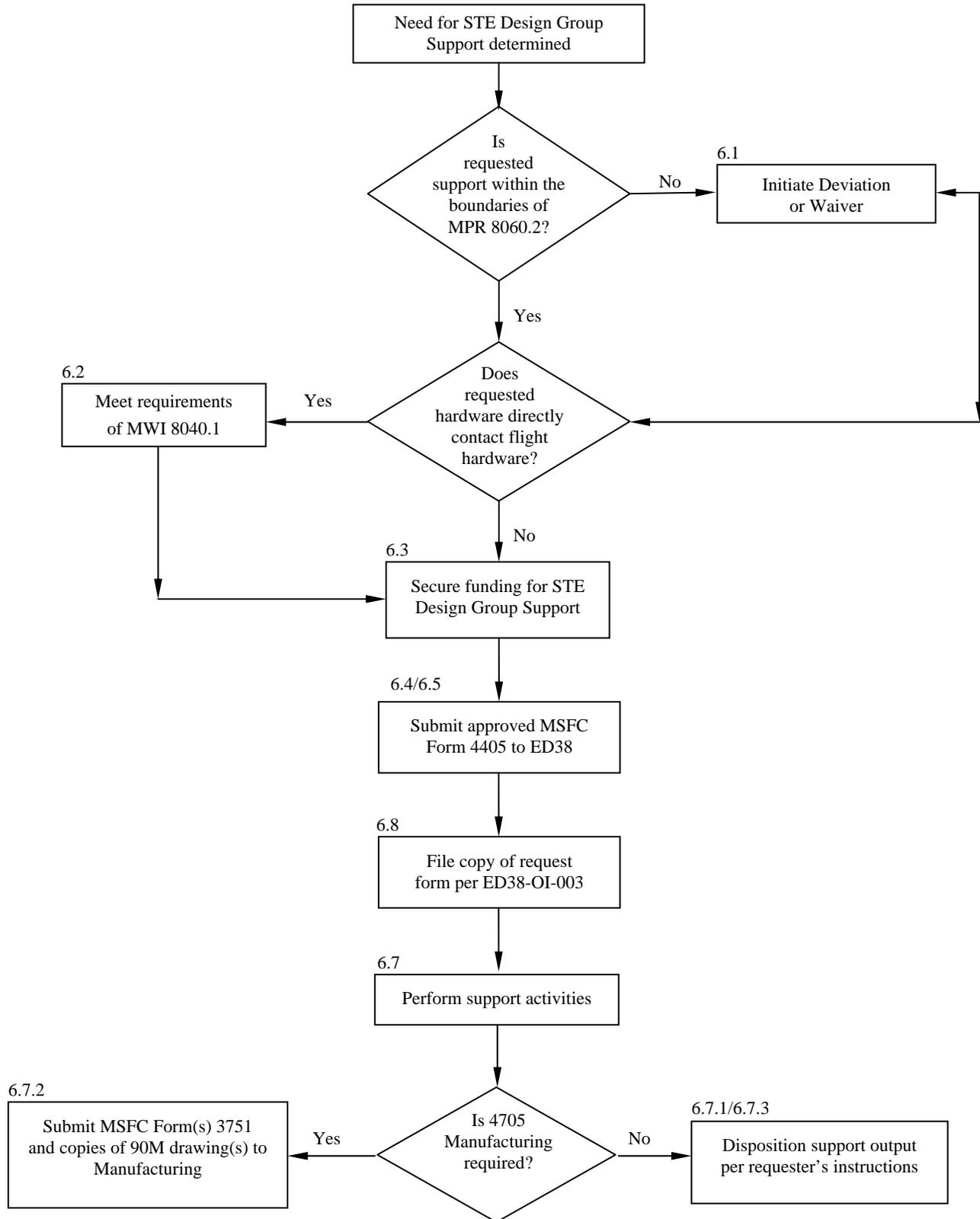
10. PERSONNEL TRAINING AND CERTIFICATION

None

11. FLOW DIAGRAM

The following flow diagram is a representation of the STE Design Group Support Request process:

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12. CANCELLATION

MWI 8060.2C dated June 7, 2004

Original signed by
Robin N. Henderson for

David A. King
Director

