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TECHNICAL AND SECRETARIAT SUPPORT OF THE
MIL-STD-1515 FASTENER STANDARDIZATION EFFORT

BATTELLE'S COLUMBUS LABORATORIES
505 KING AVENUE
COLUMBUS, OHIO 43201

MAY 1982

FINAL REPORT FOR THE PERIOD JUNE 1976--MARCH 1982

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

MECHANICAL BRANCH
AERONAUTICAL SYSTEMS DIVISION
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433

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This technical report has been reviewed and is approved for publication.



R. P. Stewart, ASD/ENFEM
Mechanical Branch
Aeronautical Systems Division
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FOR THE COMMANDER



PETER J. BUTKEWICZ, COL, USAF
Director
Flight Systems Engineering

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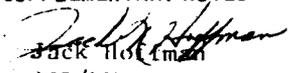
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report presents the major activities associated with the subject contract. The Aeromechanical Fastener Requirements Group (AMFRG) composed of the Air Force, Navy, Army, prime aerospace manufacturers, and fastener manufacturers was reorganized in 1976 to efficiently prepare and maintain MIL-STD-1515, Fastener Systems for Aerospace Applications. Twice yearly meetings were arranged, attended, technical support provided, and minutes prepared and distributed. MIL-STD-1515 was completely revised and two change notices to the revised document were completed and published. Research programs involving stress corrosion, fatigue		

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properties of recess head fasteners, and removal torque measurements of fasteners installed in various aircraft were completed during the contract term.

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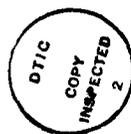
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FOREWORD

This report was prepared by Battelle's Columbus Laboratories, Columbus, Ohio, under Contract F33615-76-C-0803. The effort reported herein was administered under the direction of the Mechanical Branch, Aeronautical Systems Division, Wright-Patterson Air Force Base, Ohio, by Mr. Richard P. Stewart, ASD/ENFEM.

This final report covers work performed from June 1976 to March 1982. The report was submitted by the authors on March 4, 1982.



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BACKGROUND AND INTRODUCTION

Conservative estimates indicate that 20 to 30 percent of the cost of primary aircraft structure can be attributed to the procurement and installation of mechanical fastening systems. This percentage does not reflect the increased cost of maintenance, inventory, redesign, and retrofit brought about by having similar but nonequivalent fastening systems in the procuring agency's fleet. Obviously a contractual document that controls the use, selection, kinds, styles, associated tooling, and related areas of mechanical fastening can result in considerable cost savings. In recognition of the need for such a document, the Air Force, as agent for the Department of Defense, initiated at Battelle first a study plan and second a contract to implement the plan, to provide technical and secretariat support to a group organized to prepare and maintain a control or standardization document.

The group, called the Aeromechanical Fastener Requirements Group (AMFRG), is composed of various representatives from the Air Force, Navy, Army, other Department of Defense organizations, representatives from prime aerospace manufacturers, and representatives from the various fastener manufacturers.

The standardization document is MIL-STD-1515, "Fastener Systems for Aerospace Applications". The stated purpose of this document is to establish standardization in the selection, development, and use of aerospace fastening systems, including hole characteristics and inspection criteria. The primary objectives of the standard are "to document selection and application information for approved fastening systems and procedures so the designer can achieve an optimum balance of performance, reliability, and exchangeability with minimum cost, logistic inventory, and maintenance". The standard is authorized under Department of Defense Project 5300-0039 with the Air Force as preparing activity.

SUMMARY

A technical and secretariat contract was implemented at Battelle on June 30, 1976. The purpose of the effort was to provide support in the preparation and maintenance of MIL-STD-1515, "Fastener Systems for Aerospace Applications".

The study plan previously mentioned (published as ASD/TR-75-32, Military Standard 1515 Development Plan) was used as the guide for the technical and secretariat support effort. It was revised and published as the "AMFRG Manual on Organization and Operations of the Aeromechanical Fastener Requirements Group" and distributed to each member of the group. It outlines the duties and responsibilities of participating organizations and is the operating guide of the AMFRG.

Major operational activities associated with the support effort are listed in chronological order in Table 1. These do not include normal day-to-day activities such as coordinating task group activities, responding to industry and government technical inquiries, and maintaining awareness of current fastener technology, and other standardization efforts.

CONCLUSIONS AND RECOMMENDATIONS

Since the reorganization of the Aeromechanical Fastener Requirements Group, brought about by the technical and secretariat support effort, MIL-STD-1515 has become a more useful and viable document. Considerable progress has been made, as evidenced by the number and content of requirements now published in the standard (12 since 1976) and the number of requirements presently in work (17). However, with the renewed awareness in fastening technology, much of the proposed document is yet to be prepared. With the advent of new design requirements, new material developments, and increased load requirements for advanced weapons systems, it is of prime importance that MIL-STD-1515 be continually updated. In addition only 2 of the 7 chapters have been started. Chapters 300, Nonstructural, and 400, Propulsion Systems Fastener Requirements, should be started in the next 12 months in order to maintain momentum. Technical and secretariat support to the preparation, maintenance, and current awareness of the MIL-STD-1515 standardization document should be a continuing contractual effort.

TABLE 1. MAJOR OPERATIONAL ACTIVITIES

Activity	Date Accomplished
<u>1976 Activities</u>	
MCG Meeting (Attended and Provided Technical and Secretariat Support)	June 30 - July 1
12th AMFRG Meeting (Attended and Provided Technical and Secretariat Support)	July 12-16
MCG Minutes (Prepared and Distributed)	August 10
12th AMFRG Meeting Minutes (Prepared and Distributed)	August 12
T.O. 1-1A-8 (Requested Vendor Data)	August 25 - September 3
All Data Received	October 20
ISG Balloting	
Sent Ballots (Attached to the AMFRG Minutes) Counted Ballots	August 12 September 15
MCG Meeting Agenda (Distributed)	September 14
AMFRG Reorganization Letter (Mailed)	September 14-16
AMFRG Manual (Guidelines)	
Distributed to AMFRG Designees Distributed to MCG	October 4-6 (and later) October 5-6
MCG Meeting (Attended and Provided Technical and Secretariat Support)	October 5-6
Chapter II, Requirement 22, Captive Screws (Distributed)	October 19
AMFRG Membership List (Reorganized and Prepared)	October 20
Survey (Prepared and Distributed)	November 1
MCG Minutes (Prepared and Distributed)	November 1
New Distribution List (Prepared by Organization Type)	December 8

TABLE 1. (Continued)

Activity	Date Accomplished
<u>1976 Activities (Continued)</u>	
Chapter II, Requirement 22, Captive Screws (Collated Comments and Reported Results of AMFRG Balloting to G. Pace)	December 10
Collated AMFRG Specialty Group Membership Forms	December 10
13th AMFRG Agenda (Prepared and Distributed)	December 10
MCG Agenda (Prepared and Distributed)	December 10
Prepared Definitions for Task Group Consideration	December 21
Survey Results Collated	December 29
<u>1977 Activities</u>	
MCG/ISG Meeting (Attended and Provided Technical and Secretariat Support)	January 10
13th AMFRG Meeting (Attended and Provided Technical and Secretariat Support--Rearranged Task Group and Meeting Schedule - Works Well)	January 11-13
Visited Various Airframe and Fastener Manufacturers to Assess Impact of MIL-STD-1515	January 14-19
MCG/ISG Minutes (Prepared and Distributed)	February 16
13th AMFRG Meeting Minutes (Prepared and Distributed)	February 16
Recess Fasteners T.O. Addition to WPAFB	March 1
Revised Definitions to Task Group	March 3
MIL-STD-1515 "A" Revision to AMFRG for Editorial and Technical Comment (Mailed)	March 22
Chapter I, Requirement 6, Head Configuration (Distributed to AMFRG Membership for Balloting)	March 31
Work Statement for 1978 MIL-STD-1515 Program (Delivered)	April 11
Panel and Quick-Release Fastener T.O. Change (Delivered)	April 11

TABLE 1. (Continued)

Activity	Date Accomplished
<u>1977 Activities (Continued)</u>	
Chapter I, Requirement 6, Head Configuration - Rewritten Summary and Recommendations of Ad Hoc Committee (Distributed)	April 11
MCG/ISG Meeting Agenda (Distributed)	April 20
Chapter I, Requirement 3, Lubrication (Distributed to AMFRG for Balloting)	May 9
MCG/ISG Meeting (Attended and Provided Technical and Secretariat Support)	May 24-25
Minutes of May 24-25 MCG/ISG Meeting (Prepared and Distributed)	June
Revised Draft of Requirement 106, Head Configuration (Prepared and Included With AMFRG Agenda)	June
Revised Draft of Requirement 112, Nonapproved Parts (Prepared and Included With AMFRG Agenda)	June
Ballots Counted and Comments Collated for AMFRG Editorial Review of MIL-STD-1515 Revision A	June
Ballots Counted and Comments Collated for AMFRG Periodic Review of MIL-STD-1515 Revision A	June
Ballots Counted and Comments Collated for AMFRG Ballot on Requirement 103, Lubrication (Copies of Collated Comments Sent to Task Group for Review)	June
Task Group Draft of Requirement 203, Self-Retaining Bolts (Reproduced and Distributed for AMFRG Ballot)	June
List of Nonapproved NASC Documents Listed in MIL-STD-1515 Submitted to Project Monitor for Disposition	June
MCG/ISG Agenda (Prepared and Distributed)	June 10
14th AMFRG Meeting Agenda (Prepared and Distributed)	June 14
MCG/ISG Meeting (Attended and Provided Technical and Secretariat Support)	July 11

TABLE 1. (Continued)

Activity	Date Accomplished
<u>1977 Activities (Continued)</u>	
14th AMFRG Meeting (Attended and Provided Technical and Secretariat Support)	July 12-14
Sent Inquiries Regarding Facility Availability for January 1978 AMFRG Meeting	July & August
MCG/ISG Meeting Minutes (Prepared and Distributed)	August 10
14th AMFRG Meeting Minutes (Prepared and Distributed)-- (Included ISG Election Ballot)	August 10
Ballots Counted and Comments Collated for AMFRG Ballot on Requirement 203, Self-Retaining Bolts	August 10
MCG/ISG Agenda (Prepared and Distributed)	September 6
ISG Election Ballots Counted and Those Elected Notified	September 19
MCG/ISG Meeting (Attended and Provided Technical and Secretariat Support)	September 27-28
Sent Proposal for 1-year Contract Continuation (Became Effective September 30, 1977)	September 26
Test Program on Stress Corrosion Subcontracted to Lockheed-California	September 30
Observed Fastener Installation on the Stress Corrosion Test Program	October 11-12
"A" Revision Resolved Comments (Reproduced and Distributed to AMFRG)	November 7
Resolution of Comments on Requirement 103, Lubrication (Reproduced and Distributed)	November 7
Resolution of Comments on Requirement 203, Self-Retaining Bolts (Reproduced and Distributed)	November 7
Task Group Draft of Requirement 208, Spacers (Reproduced and Distributed for AMFRG Ballot)	November 7
Draft of Requirement 124, Metrication and Metric Parts (Reproduced and Distributed for AMFRG Ballot)	November 7

TABLE 1. (Continued)

Activity	Date Accomplished
<u>1977 Activities (Continued)</u>	
MCG/ISG Meeting Minutes (Prepared and Distributed)	November 7
Part of A Revision Submitted to AF for Trial of New Reproduction Method	December 9
Requirement 103, Lubrication (Reproduced and Distributed for Full Coordination)	December 9
Requirement 106, Head Configuration (Reproduced and Distributed for Full Coordination)	December 9
MCG/ISG Meeting Agenda (Prepared and Distributed)	December 9
15th AMFRG Meeting Agenda (Prepared and Distributed)	December 9
Requirement 203, Self-Retaining Bolts (Reproduced and Distributed for Full Coordination)	December 9
Sent Requests for Quotations for Fastener Costs to Fastener Companies for AF Head Recess Test Program	December 21
<u>1978 Activities</u>	
Requirement 106, Head Configurations (Collated and Distribu- ted Comments to Task Group)	January 6
Requirement 103, Lubrication (Collated and Distributed Comments to Task Group)	January 11
MCG/ISG Meeting (Attended and Provided Technical and Secretariat Support)	January 16
15th AMFRG Meeting (Attended and Provided Technical and Secretariat Support)	January 17-20
Stress Corrosion Test Program (Visited Lockheed-California Company to Review Status)	January 23
Requirement 203, Bolts, Self-Retaining (Collated and Distributed Comments to Task Group)	February 2
Symposium on Nongovernment Standards (Attended to see if Preparation of MIL-STD-1515 would be effected)	February 15-17

TABLE 1. (Continued)

Activity	Date Accomplished
<u>1978 Activities (Continued)</u>	
MCG/ISG Meeting Minutes (Prepared and Distributed)	February 27
15th AMFRG Meeting Minutes (Prepared and Distributed)	February 27
Requirement 113, Identification Markings (Reproduced and Distributed for Yellow AMFRG Ballot)	February 27
Requirement 124, Metrication (Reproduced and Distributed for Full Coordination)	February 27
A Revision (Submitted to Project Monitor)	March 16
Requirement 113, Markings (Collated and Distributed Comments to Task Group)	April 6
Requirement 124, Metrication (Collated and Distributed Comments to Task Group)	April 20
5-78 MCG/ISG Meeting Agenda (Prepared and Distributed)	April 25
AMFRG Logo Stationery (Prepared)	May
Appreciation Certificates (Prepared)	May
16th AMFRG Meeting Pre-agenda Announcement (Prepared and Distributed)	May 9
Requirement 103, Lubrication (Full Coordination Ballot Comments Distributed)	May 9
ISG Nomination Ballot (Prepared and Distributed)	May 9
5-78 MCG/ISG Meeting (Hosted and Provided Technical and Secretariat Support)	May 24-25
5-78 MCG/ISG Minutes (Prepared and Distributed)	June 6
16th AMFRG Meeting Agenda (Prepared and Distributed)	June 6
7-78 MCG/ISG Agenda (Prepared and Distributed)	June 6
16th AMFRG Meeting (Made Final Arrangements)	June
16th AMFRG Meeting Agenda (Prepared and Distributed)	June

TABLE 1. (Continued)

Activity	Date Accomplished
<u>1978 Activities (Continued)</u>	
7-78 MCG/ISG Meeting Agenda (Prepared and Distributed)	June
ISG Nomination Ballots (Collated)	June
16th AMFRG Meeting (Attended and Provided Technical and Secretariat Support)	July
7-78 MCG/ISG Meeting (Attended and Provided Technical and Secretariat Support)	July
Requirement 206, Solid Rivets (Collated and Prepared for Transmittal to Task Group)	July
Requirement 215, Panel Fasteners (Collated and Prepared for Transmittal to Task Group)	July
Recess Head Test Program (Funding Received and Fasteners Ordered)	July
7-78 MCG/ISG Meeting Minutes (Prepared and Distributed)	August
16th AMFRG Meeting Minutes (Prepared and Distributed)	August
Requirement 208, Spacers (Reproduced and Distributed for Full Coordination)	August
Requirement 215, Panel Fasteners (Comments from AMFRG Coordination Collated and Transmitted to Task Group)	August
Requirement 206, Solid Rivets (Comments from AMFRG Coordination Collated and Transmitted to Task Group)	August
10-78 MCG/ISG Meeting (Arrangements Made and Agenda Distributed)	September
ISG Election Ballots (Collated and Elected Representatives and Respective Companies Notified)	September
17th AMFRG Meeting (Investigated Hotels and Made Tentative Arrangements)	September
10-78 MCG/ISG Meeting (Attended and Provided Technical and Secretariat Support)	October
Requirement 208, Spacers (Comments from Full Coordination Collated and Transmitted to Task Group)	October

TABLE 1. (Continued)

Activity	Date Accomplished
<u>1978 Activities (Continued)</u>	
10-78 MCG/ISG Meeting Minutes (Prepared and Distributed)	November
17th AMFRG Meeting (Made Final Arrangements)	November
1-79 MCG/ISG Meeting Agenda (Prepared and Distributed)	December
17th AMFRG Meeting Agenda (Prepared and Distributed)	December
MIL-STD-1515 Support Contract Proposal Submitted (Continuation)	December
<u>1979 Activities</u>	
1-79 MCG/ISG Meeting (Attended and Provided Technical and Secretariat Support)	January
17th AMFRG Meeting (Attended and Provided Technical and Secretariat Support)	January
1-79 MCG/ISG Meeting Minutes (Prepared and Distributed)	February
17th AMFRG Meeting Minutes (Prepared and Distributed)	February
Change Notice 1 to MIL-STD-1515A (In Preparation)	February
18th AMFRG Meeting - Made Preliminary Arrangements with Hotel	February
Recess Test Phase of Program - 5/16" Diameter A-286 Parts Received	February
4-79 MCG/ISG Meeting Agenda Prepared and Distributed and Arrangements Made for the Meeting	March
Guidelines - Revision Completed and Attached to Agenda for Review and Comment	March
Requirement 108 - Reproduced and Distributed for AMFRG Ballot	March
Recess Test Phase of Program - A-286 and H-11 Parts Received	March
4-79 MCG/ISG Meeting Hosted and Technical and Secretariat Support Provided	April
18th AMFRG Meeting - Final Arrangements Being Made	April
Recess Test Phase of Program - All But 2 Parts Received	April
NBS Fixturing for Tension/Bending Fatigue Tests - Redesigned and Tension/Bending Phase of Program is Under Way	April

TABLE 1. (Continued)

Activity	Date Accomplished
<u>1979 Activities (Continued)</u>	
4-79 MCG/ISG Meeting Minutes Prepared and Distributed	May
18th AMFRG Meeting Agenda (Prepared and Distributed	May
7-79 MCG/ISG Agenda Prepared and Distributed	May
18th AMFRG Meeting Final Arrangements Made With Hotel	May
Requirement 113 Sent Out for Blue Ballot (Full) Coordination	May
Requirement 115 Sent Out for Yellow Ballot (AMFRG) Coordination	May
Requirement 129 Sent Out for Yellow Ballot (AMFRG) Coordination	May
Requirement 206 Sent Out for Blue Ballot (Full) Coordination	May
Requirement 223 Sent Out for Yellow Ballot (Full) Coordination	May
AMFRG Manual Revised	May
Recess Test Phase of Program - Tension/Tension Fatigue Tests of Tension (Full-Head) Fasteners Essentially Completed	May
Requirement 113 - Blue Ballots Collated and Comments Sent to Task Groups for Discussion at July Meeting	June
Requirement 115 - Yellow Ballots Collated and Comments Sent to Task Groups	June
Requirement 129 - Yellow Ballots Collated and Comments Sent to Task Groups	June
Requirement 206 - Blue Ballots Collated and Comments Sent to Task Groups	June
Requirement 223 - Yellow Ballots Collated and Comments Sent to Task Groups	June
AMFRG Manual Reproduced and Distributed to AMFRG Members	June
Recess Test Phase of Program - One-half of Reduced Head Tests are Done and Fatigue Tests for 1/4- and 3/16-Inch Diameter Fasteners (Full-Head) are Completed	June

TABLE 1. (Continued)

Activity	Date Accomplished
<u>1979 Activities (Continued)</u>	
7-79 MCG/ISG Meeting Attended and Technical and Secretariat Support Provided	July
18th AMFRG Meeting Attended and Technical and Secretariat Support Provided	July
Submitted Proposal to Supplement Data Base on Removal Torques of Flush-Head Fasteners	July
Recess Test Phase of Program - Received Final Shipment of Parts	July
18th AMFRG Meeting Minutes Prepared and Distributed	August
7-79 MCG/ISG Meeting Minutes Prepared and Distributed	August
Requirement 202, Studs, Distributed for AMFRG Ballot	August
ISG Ballot Distributed	August
Contract Modification Involving Torque Measurements Received	August
10-79 MCG/ISG Meeting Agenda Prepared and Distributed	September
ISG Ballots Tabulated	September
Requirement 202, Studs, Ballots Collated	September
Tension/Tension Phase of the Recess Test Program Completed	September
Meeting Regarding Removal Torque Program Held	September
10-79 MCG/ISG Meeting Attended and Provided Secretariat Support	October
10-79 MCG/ISG Meeting Minutes Prepared and Distributed	October
Requirements 121, Threads in Bearing, 129, Captive Screws, and 201, Bolts and Screws Distributed for AMFRG Ballot	October
Requirement 129, Design Requirements for Panel Fasteners Distributed for Full Coordination	October
19th AMFRG and 1-80 MCG/ISG Meeting Arrangements Finalized	November

TABLE 1. (Continued)

Activity	Date Accomplished
<u>1979 Activities (Continued)</u>	
Removal Torque Measurements Made on Aircraft at North Island and Miramar Naval Air Stations	November
19th AMFRG Meeting Agenda Prepared and Distributed	December
1-80 MCG/ISG Meeting Agenda Prepared and Distributed	December
Comments on Four Requirements Collated	December
Recess Program Testing Completed	December
<u>1980 Activities</u>	
1-80 MCG/ISG Meeting Attended and Provided Technical and Secretariat Support)	January
19th AMFRG Meeting Attended and Provided Technical and Secretariat Support)	January
Requirement 128, Captive Screws (Prepared and Distributed for Blue Ballot Comments)	January
Testing on Recess Test Fatigue Program Completed and Data Submitted to Project Monitor	January
1-80 MCG/ISG Meeting Minutes Prepared and Distributed	February
19th AMFRG Meeting Minutes Prepared and Distributed	February
Sent Letters Requesting Hotel and Meeting Space Information for AMFRG Meeting to be Held January 1981	February
Screened Responses Received from Hotels for 21st and 22nd AMFRG Meetings	March
Requirement 128, Design Requirements for Captive Screws (Blue Ballots Collated and Sent to Task Group Members)	March
Completed Arrangements for 20th AMFRG Meeting	April
Completed Arrangements for 7-80 MCG/ISG Meeting	April
Made Final arrangements to Visit Oceana Naval Air Facility and Langley AFB (To Continue the Removal Torque Measurements Phase of This Program)	April

TABLE 1. (Continued)

Activity	Date Accomplished
<u>1980 Activities (Continued)</u>	
7-80 MCG/ISG Meeting Agenda Prepared and Distributed	May
20th AMFRG Meeting Agenda Prepared and Distributed	May
Removal Torque Measurements Phase of Program Completed and Draft Report in Preparation	May
Removal Torque Measurements Special Interim Report Prepared and Submitted to Project Monitor	June
Draft of the Final Report on Tension/Tension and Tension/Bending Fatigue Evaluation of Various Recess Fasteners in Preparation	June
7-80 MCG/ISG Meeting Attended and Provided Technical and Secretariat Support)	July
20th AMFRG Meeting Attended and Provided Technical and Secretariat Support)	July
7-80 MCG/ISG Meeting Minutes Prepared and Distributed	July
20th AMFRG Meeting Minutes Prepared and Distributed	July
Supplemental Report on Tension/Tension and Tension/Bending Fatigue Evaluations of Various Recess Fasteners (Submitted to Project Monitor)	July
Requirement 127, Access Panel Attachments (Revised, Reproduced, and Distributed for Yellow Ballot)	August
Requirement 130, Sandwich Construction Fastening (Revised, Reproduced, and Distributed for Yellow Ballot)	August
Requirement 213, Blind Fasteners (Revised, Reproduced, and Distributed for Yellow Ballot)	August
Requirement 201, Bolts (Revised, Reproduced, and Distributed for Blue Ballot)	August
Requirement 202, Studs (Revised, Reproduced and Distributed for Blue Ballot)	August
10-80 MCG/ISG Meeting (Tentative Plans Made)	August

TABLE 1. (Continued)

Activity	Date Accomplished
<u>1980 Activities (Continued)</u>	
10-80 MCG/ISG Meeting Agenda Prepared and Distributed	September
1-81 MCG/ISG and 21st AMFRG Meeting (Tentative Arrangements Made)	September
10-80 MCG/ISG Meeting (Attended and Technical and Secretariat Support Provided)	October
Requirements 127, 130, 201, 202, and 213 (Comments Received from Coordination and Being Collated)	October
10-80 MCG/ISG Meeting Minutes Prepared and Distributed	November
1-81 MCG/ISG and 21st AMFRG Meeting Agendas Prepared (Not Distributed due to Lack of Incremental Funding)	November
Arrangements Finalized for 1-81 MCG/ISG and 21st AMFRG Meeting	December
Agendas for 1-81 MCG/ISG and 21st AMFRG Meetings Reproduced and Distributed	December
<u>1981 Activities</u>	
1-81 MCG/ISG Meeting (Attended and Technical and Secretariat Support Provided)	January
21st AMFRG Meeting (Attended and Technical and Secretariat Support Provided)	January
Change Notice 2 to MIL-STD-1515A Drafted	January
1-81 MCG/ISG and 21st AMFRG Meeting (Minutes of Both Prepared, Reproduced, and Distributed)	February
Change Notice 2 to MIL-STD-1515A (Finalized and Delivered to Project Monitor)	February
Requirements 205, 209, 210, and 220 (Reproduced and Distributed for Periodic Review)	February
3-81 MCG/ISG Meeting Agenda Prepared and Distributed	February
3-81 MCG/ISG Meeting (Attended and Technical and Secretariat Support Provided)	March

TABLE 1. (Continued)

Activity	Date Accomplished
<u>1981 Activities (Continued)</u>	
3-81 MCG/ISG Meeting Minutes Prepared	March
3-81 MCG/ISG Meeting Minutes Reproduced and Distributed	April
7-81 MCG/ISG and 22nd AMFRG Meeting (Tentative Plans Made)	April
Requirements 120, 130, and 213 (Reproduced and Distributed for Ballot)	April
Requirements 202, 209, 210, and 220 (Comments Received from Periodic Review Collated and Reviewed)	April
22nd AMFRG Meeting Notice Distributed	May
ISG Election Ballot Distributed	May
7-81 MCG/ISG and 22nd AMFRG Meeting (Arrangements Finalized)	May
Requirement 214 (Reproduced and Distributed for Ballot)	May
7-81 MCG/ISG and 22nd AMFRG Meeting Agendas Prepared	May
7-81 MCG/ISG and 22nd AMFRG Meeting Agendas Reproduced and Distributed	June
Requirements 120, 130, 213, and 214 (Comments Collated, Reproduced, and Distributed)	June
7-81 MCG/ISG Meeting (Attended and Technical and Secretariat Support Provided)	July
22nd AMFRG Meeting (Attended and Technical and Secretariat Support Provided)	July
7-81 MCG/ISG and 22nd AMFRG Meetings (Minutes Prepared)	July
7-81 MCG/ISG and 22nd AMFRG Meetings (Minutes Reproduced and Distributed)	August
Requirements 201 and 210 (Revised as Directed by MCG/ISG)	August
Requirement 210 (Reproduced and Distributed for Ballot)	August
ISG Election Ballots (Received, Tallied, and Elected Members Notified)	September

TABLE 1. (Continued)

Activity	Date Accomplished
<u>1981 Activities (Continued)</u>	
Requirement 210 Comments Received and Collated	September
1-82 MCG/ISG and 23rd AMFRG Meetings (Tentative Arrangements Made)	September
MIL-STD-1599 (ACBG) Meeting (Attended and Technical and Secretariat Support Provided)	October
1-82 MCG/ISG and 23rd AMFRG Meeting (Arrangements Finalized)	October
1-82 MCG/ISG and 23rd AMFRG Meetings (Agendas Prepared)	November
23rd AMFRG Meeting Notice Distributed	November
1-82 MCG/ISG and 23rd AMFRG Meetings (Agendas Reproduced and Distributed)	December
ACBG Meeting Minutes (for Approval)	December
<u>1982 Activities</u>	
1-82 MCG/ISG Meeting (Attended and Technical and Secretariat Support Provided)	January
23rd AMFRG Meeting (Attended and Technical and Secretariat Support Provided)	January
1-82 MCG/ISG and 23rd AMFRG Meeting (Minutes Prepared)	January
1-82 MCG/ISG and 23rd AMFRG Meeting Minutes Reproduced and Distributed	February
Requirement 120 Retyped, Reproduced, and Distributed for Blue Ballot	February
Requirement 126 Retyped, Reproduced, and Distributed for Yellow Ballot	February

DATED
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