

# **MINUTES**

of the

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## **13<sup>th</sup> MMPDS Coordination Meeting**

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Held in:

Las Vegas, NV

March 30 – April 3, 2008

*To Be Incorporated Into:*

*MMPDS-04, CN-1*

Compiled by:

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Columbus, OH 43201-2693

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# 13TH MMPDS COORDINATION MEETING MINUTES

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## **I. Introduction of Attendees**

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Included in Attachments is a Distribution List for the Minutes of the 13th MMPDS Coordination Meeting. Additionally, a list of Coordination Meeting attendees, indicating the meetings they attended, has been included.

## **II. Chairman's Remarks – FAA**

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Thank you to all of our meeting attendees at the 13<sup>th</sup> MMPDS General Coordination Committee (GCC) Meeting, as well as the group meetings throughout the week. It was a busy week and quite productive, thanks to your hard work and efforts. Attendance was very impressive with over 70 attendees during the week. This kind of participation should provide encouragement to everyone involved as it sends a message regarding the importance of the upgrade and maintenance of this document to the industry.

A primary objective of the MMPDS is to facilitate standardization of statistically based static strength properties for metallic materials and joining systems used in the aerospace industry. In meeting this objective, we want to ensure that the MMPDS document and process is consistent with MIL-HDBK-5 heritage. A management plan for the MMPDS was developed with the cooperation and coordination of this group. A key element of the plan is equitable and sustainable funding sources for the MMPDS through increased support from the Government Steering Group, the Industry Steering Group, and through commercialization. Together we have been able to maintain the high standards and integrity established by MIL-HDBK-5 and MMPDS as the benchmark for static strength properties standardization.

There are clearly challenges ahead including adequate and stable funding and increased ISG and GSG membership. Through our current management plan, and the implementation of some of the excellent funding and cost-savings ideas discussed at the meeting, we will be able to continue.

See you next fall.

## **III. Approval of the 12th MMPDS Meeting Minutes**

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Approval was given, without corrections, on the 12th MMPDS meeting minutes. Since no changes or additions were proposed, the draft minutes have been approved as initially distributed.

# 13TH MMPDS COORDINATION MEETING MINUTES

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# 13th MMPDS COORDINATION MEETING MINUTES

## Minutes Summary of Agenda Items

### STEERING, WORKING, AND TASK GROUPS

- ASG**      **Airframer Steering Group.** Lori Flansburg, Lockheed, led discussions at the ASG meeting on Tuesday. Topics of discussion included; **Item 07-22** Proposed Inclusion of Guidelines for Development and Presentation of Allowables-Based Flow Curves for Nonlinear Analysis in MMPDS, with a presentation by S. Van der Veen. They also discussed GSG **Item 07-24** Review of Elemental Property Sections, and plan to discuss this further in a teleconference prior to the fall meeting. Detailed comments on each item are included later in these minutes.
- Action:* Teleconference prior to fall meeting to discuss Item 07-24.
- FTG**      **Fastener Task Group.** M. James, FAA, N. Ontko, AFRL, and M. Tefend, Battelle, led technical discussions at the Wednesday FTG meeting. M. James gave an overview of the status of all active FTG items at the GCC meeting on Thursday. Detailed comments on each FTG item are included later in these minutes.
- GSG**      **Government Steering Group.** J. Bakuckas, FAA, led discussion at the GSG members-only meeting on Monday.
- GTG**      **Guidelines Task Group.** R. Rice, Battelle, led technical discussions at the GTG meeting on Tuesday. He gave an overview of the status of all active GTG items at the GCC meeting on Thursday. Detailed comments on each GTG item are included later in these minutes.
- IHWG**     **International Harmonization Working Group.** R. Rice led discussion at the IHWG meeting on Tuesday.
- ISG**      **Industrial Steering Group.** I. Gheorghe, Universal Alloy, ISG Chair and R. Rice led the discussions at the ISG members-only meeting on Monday. Roy Nash, Kaiser, was elected as the new Vice-Chair. B. Thomas, Bombardier, becomes the Chair following this meeting. R. Rice led discussions at the ISG-members only financial meeting. ISG items are discussed in the 21<sup>st</sup> ISG Minutes and 21<sup>st</sup> Joint GSG/ISG Minutes for members only.
- LAGWG**   **Legacy Alloy Guidelines Working Group.** J. Jackson, Battelle, led the LAGWG discussion on Tuesday. The topic of discussion was a revision in the guidelines to footnote the increased T<sub>99</sub> and T<sub>90</sub> minimums where significantly higher than the design allowables. See agenda Item 07-41.
- MATSIG**   **Materials and Technical Services Interest Group.** MATSIG selected Mike Niedzinski, Alcan, as Chair and Ray Cribb, Brush Wellman, as Vice-Chair. A summary of items discussed; Item 07-36 strain rates for tensile curves, fracture toughness requirements for specification minimums, common formats for data

# 13th MMPDS COORDINATION MEETING MINUTES

## Draft Minutes Summary of Agenda Items

(Continued)

submission, and the inclusion of other suppliers such as suppliers of titanium and heat resistant alloys. The group plans to hold a teleconference prior to the fall meeting.

**Action:** Teleconference prior to fall meeting. Please provide your availability for the teleconference to Mike Niedzinski.

**MTG**      **Materials Task Group.** J. Jackson led technical discussions at the Wednesday MTG meetings. She and R. Rice gave an overview of the status of all active MTG items at the GCC meeting on Thursday. Detailed comments on each MTG item are included later in these minutes.

**PIMWG**      **Process Intensive Materials Working Group.** The GSG has suggested this group be renamed to **Emerging Technologies Working Group**. The group will encompass Friction Stir Welding, Fiber-Materials Laminate, LAM and provide a contact point for emerging materials and process that do not fit into the typical MMPDS materials.

R. Reinmuller, Lockheed, led technical discussions on Friction Stir Welding Tuesday afternoon. Item 07-17 on Friction Stir Welding continued to be the primary topic of discussion. C. Widener, Wichita State University gave a presentation. A copy is included with these minutes.

**SCCWG**      **Stress Corrosion Cracking Working Group.** M.Tefend led technical discussions at the SCCWG meeting on Wednesday afternoon. The primary topic of discussion was GSG 07-34 Improved Guidelines for Definition of SCC Threshold Properties. Details of the discussion and are given under that agenda item.

**SWG**      **Statistics Working Group.** R. Rice led technical discussions at the SWG meeting on Tuesday. R. Rice gave an overview of the status of all active SWG items at the GCC meeting on Thursday. Detailed comments on each SWG item are included later in these minutes.

### SPECIAL PRESENTATIONS

(Copies of the following presentations are included)

**ASG**      J. Pratt, Argos Engineering, gave a presentation on Allowables-Based Flow Curves for Nonlinear Analysis in MMPDS.

**MTG**      E. Colvin, Alcoa, gave a presentation on 2099-T83 Extrusions.

**MTG**      T. Prucha, AFS, gave a presentation on Design Allowables for Castings.

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## Draft Minutes Summary of Agenda Items

(Continued)

- MTG H. Schaff, Aubert & Duval gave a presentation on MLX17
- FTG N. Ontko, US Air Force, gave a presentation on Structural Joint Fastener Test Software
- FTG B. Tweedy, Wichita State University, gave a presentation on the Qualification of Friction Stir Spot Welds
- GCC R. Cribb, Brush Wellman, gave a presentation on Copper-15Ni-8Tin (ToughMet 3).
- GCC L. Pike, Haynes, gave a presentation on Haynes 282 Alloy

### CHAPTER 1. GENERAL

- GSG NIN AMS Coordination (MTG).** J. Jackson attended the spring AMS meeting following the MMPDS meeting. See the attached agenda item for a summary of topics discussed and tables of new specifications and existing specifications which are being balloted or have recently been balloted to AMS committees.
- GSG NIN Meetings of Potential Interest to MMPDS Coordination Members (GCC).** An updated list of upcoming technical meetings of potential interest to MMPDS coordination group members was included in the agenda.
- GSG 07-57 Definition of Acceptance Requirements for Material Specifications (IHWG).** R. Rice led discussions on this item. R. Reinmuller, Lockheed, provided an edited specification that could be used as an outline. M. Niedzinski, Alcan, provided a list of specifications that are universally recognized as reference and NADCAP audit specifications:
- AMS 2750 -Pyrometry of furnaces used for thermal processing
  - AMS 2772- Heat treatment of Aluminum Raw Materials
  - AMS 2770- Heat Treatment of Aluminum Parts
  - AMS 2355- Quality Assurance Sampling and Testing of Aluminum and Magnesium
- There may be similar specifications which cover steels, titanium and refractory/heat resistant metals.
- Input was also received from V. Konovalov, Russian Aviation Register, who was unable to attend this meeting. One of his questions was if the two interested users (airframers) must be non- Russian only? He does plan to attend the Fall MMPDS meeting.

## 13th MMPDS COORDINATION MEETING MINUTES

### Draft Minutes Summary of Agenda Items

(Continued)

*Action:* Continued. R. Rice has asked for inputs by June 6<sup>th</sup> to prepare a fall agenda item.

**GSG NIN**     **Review of Differences in Guidelines between MMPDS-02 and ESDU 932 (IHWG).** R. Rice presented a list of the common alloys, tempers and product forms in the 2 handbooks. Differences are expected primarily in the A-basis minimums.

*Action:* Continued. A. Quilter is expected to attend the Fall MMPDS meeting.

**GSG 03-14**   **Review of Currency of Existing Database on Legacy Alloys (MTG).**  
J. Jackson presented this agenda item. A status report on the top three priority alloys was given. Preliminary analysis of 7075-T7351 plate was covered in Handout Item Number 08-11. Additional data for the 3-4 inch range is expected. Data have been requested for 7075-T7351X Extrusion, assigned Item Number 07-35 and are expected to be in-hand for analysis for the fall meeting. Two sources have been identified for Ti-6-4 extrusion in the annealed condition. It was confirmed at the meeting that the annealed condition is the one of primary interest.

*Action:* Continued. Prepare agendas for analysis of 7075-T7351 plate in Item 08-11. Acquire and prepare agenda for analysis of 7075-T7351X extrusions in Item 07-35. Request data for Ti-6-4 annealed extrusions.

**GSG 07-24**   **Review of Elemental Property Sections (MTG/ASG).** This item was discussed in the ASG.

*Action:* Continued. Inputs and comments should be directed to L. Flansburg, Lockheed. A teleconference will be held to review comments and a draft proposal will be prepared for inclusion in the Fall agenda.

**GSG NIN**     **Define Priority of Fracture Mechanics Data From TR-76-137 Report (MTG).**  
R. Rice led this discussion

*Action:* Closed with no action.

**GSG NIN**     **Design Allowables for Castings (MTG).** A presentation was given by T. Prucha, AFS.

*Action:* Continued.

## Draft Minutes Summary of Agenda Items (Continued)

### CHAPTER 2. STEEL ALLOYS

**GSG 08-01 Mechanical Properties for Ferrium S53 Steel Bars (MTG).** J. Jackson presented this agenda item.

*Action:* Approved and closed with changes:

- 1) Place this in section 2.5 (not 2.6 as indicated in agenda)
- 2) Revise section introduction to further define SCC by adding ASTM F1624
- 3) Revise table by adding a footnote to the mechanical properties to note that all T properties were based on radial data.
- 4) Revise table by showing shear properties will as “L” and “T” with footnotes stating the actual orientations ....
- 5) Correct typo in table on BYS should be  $e/D = 1.5$

**GSG 08-02 Property Basis for Steel Tables 2.3.1.0(g1) and (g2) (MTG).** J. Jackson presented this agenda item. Many of the specifications in these tables do not contain tensile requirements and will be removed from the handbook.

*Action:* Continued. J. Jackson informed AMS Committee E (steels) on the possible removal of several specifications from the MMPDS handbook because they do not have minimum tensile requirements. Companies should review these specifications to see which of these are being used in aerospace. The most important specifications should be identified as needing revision to add tensile minimums to the specifications. AMS Committee E recommended that AMS 2759 be examined as it has hardness and tensile conversions.

**GSG 08-13 Fatigue Analysis on Ferrium S53 Corrosion-Resistant Steel Bar (MTG).** R. Rice presented this agenda item.

*Action:* Continued. Prepare final curves for approval

**GSG 08-16 Cancellation of Steel Alloy Specifications AMS 6488, AMS-T-6735, and AMS-T-6736 (MTG).** J. Jackson presented this agenda item.

*Action:* Approved and closed.

**GSG 08-20 Effect of Grain Direction on Fatigue Properties of 300M Steel (MTG).** R. Rice gave a status report.

*Action:* Continued. Assigned Item No. 08-20. Data for unnotched fatigue in L & T orientations is requested. If no data is received, an agenda item will be prepared to remove Figure 2.3.1.4.8(a).

# 13th MMPDS COORDINATION MEETING MINUTES

## Draft Minutes Summary of Agenda Items

(Continued)

**GSG NIN**     **Wrought Steels S-Basis Summary (ASG/MTG).** J. Jackson gave a status report. She has requested data or data sources for 15-5PH plate in H1025 condition. She also asked the ASG to identify which condition(s) (H900, H925, H1075, H1100, & H1150) of 15-5PH Bar are of primary interest. (H1025 is in MMPDS-04)

*Action:* Continued. ASG is to let Battelle know which heat treat conditions of bar they are interested in.

**GSG NIN**     **Correlation Between Hardness and Tensile Properties in Select Steel Alloys (MTG).** R. Rice led this discussion.

*Action:* Closed with no action.

### CHAPTER 3. ALUMINUM ALLOYS (In alloy order following general chapter items)

**GSG NIN**     **Wrought Aluminum Alloys with S-Basis Minimums (MTG).** J. Jackson gave a status report on the top priority alloys; 7050-T74511 extrusions, and 7075-T7351 plate (also covered as a legacy alloy in Item 08-11).

*Action:* Continued. Data are expected for these 2 alloys prior to the fall meeting.

**GSG 08-03**   **Modulus of Elasticity vs Temperature of Aluminum Alloys (MTG)** R. Rice presented this item.

*Action:* Approved and closed.

**GSG 06-42**   **Plane Stress Fracture Toughness of 2013-T6511 Extrusions (GTG/MTG).** R. Rice indicated that this item must remain on hold until the associated guidelines item, GSG 07-33, is approved.

*Action:* Continued. On hold until associated guidelines item is approved.

**GSG NIN**     **Fatigue Crack Propagation Data for 2014-T861 and 2024-T861 Sheet and Plate (MTG).** R. Rice led discussion on this item. Interest was expressed for the 2024 sheet and plate, however no data are expected. Therefore the item will be closed.

*Action:* Closed with no action.

## Draft Minutes Summary of Agenda Items

(Continued)

**GSG 07-41 Re-Evaluate Design Allowables for Legacy 2024-T351 Aluminum Alloy Plate (GTG/MTG).** J. Jackson presented this agenda item. The analysis was reviewed at the 12<sup>th</sup> MMPDS meeting showing an increase in some of the design allowables. At this meeting, it was decided to change the legacy alloy guidelines to footnote the T<sub>90</sub> & T<sub>99</sub> minimums when there is a significant increase.

*Action:* Approved and closed. The legacy guidelines will be revised as stated in the agenda and the footnotes added to the table as shown in the agenda.

**GSG 07-42 Addition of 1-3 inch for 2099-T83 Aluminum Alloy Extrusion (MTG).** J. Jackson presented this agenda item.

*Action:* Approved and closed

**GSG 08-10 Effect of Temperature on Properties of 2099-T83 Extrusions (MTG).** R. Rice presented this agenda item.

*Action:* Approved and closed with correction to temper designation in Figure d. Open new item to add a note to graphs representing under-aged alloys. Also include in the new or another new item, adding “under-aged” to the introductory section of this alloy.

**GSG 07-39 Derived Properties for Legacy Alloy 2124-T851 Plate (ASG/MTG).** In a previous item the reduced ratios for this alloy were questioned and the derived properties were shown as S-Basis. This item identified what data was available for reduced ratios and what data was still needed.

*Action:* Continued. ASG to discuss at fall meeting.

**GSG NIN Analysis of 2198 R-Curve Data (MTG).** R. Rice indicated that this item must remain on hold until the related guidelines item, GSG 07-33, is approved.

*Action:* Continued. On hold until associated guideline item is approved.

**GSG 08-14 Cancellation of AMS-QQ-A-250/7 for 5086 Aluminum Alloy Plate and Sheet (MTG).** J. Jackson presented this agenda item. This specification was superseded to ASTM B 209.

*Action:* Continued. It was asked that the ASG and material suppliers determine if this product is being used in aerospace applications and if this table should remain in handbook.

## 13th MMPDS COORDINATION MEETING MINUTES

### Draft Minutes Summary of Agenda Items

(Continued)

**GSG 07-38 Mechanical Properties for 6056-T6511 Aluminum Alloy Extruded Profiles (MTG).** J. Jackson gave a status report.

*Action:* Continued.

**GSG 07-16 Mechanical Properties for Alclad 6156-T62 Aluminum Alloy Sheet (MTG).** J. Jackson presented this agenda item.

*Action:* Approved and closed with changes; delete temper in first sentence of introductory section, change C6156 to 6156 and add “clad” to figures.

**GSG 08-08 Review Basis for Derived Properties for Legacy Alloys 7050-T7451 Aluminum Alloy Plate (MTG)** J. Jackson presented this agenda item.

*Action:* Approved and closed

**GSG 07-20 Mechanical Properties for 7056-T7651 Aluminum Alloy Plate (MTG).** J. Jackson presented this agenda item.

*Action:* Approved and closed with correction to thickness range in figures from 0.050 to 0.500. Open new item for compression stress-strain and compression tangent modulus curves.

**GSG 08-11 Re-Analysis of Legacy Alloy 7075-T7351 Aluminum Alloy Plate (MTG).** J. Jackson presented this handout with preliminary analysis.

*Action:* Continued.

**GSG 04-08 7075-T73511 Thin Extrusions AMS-QQ-A-200/11 (MTG).** J. Jackson presented a status report on this item. Data for this alloy has also been requested to confirm design allowables in thick sections (see Item 07-35).

*Action:* Continued. Data have been requested

**GSG 07-35 Re-Evaluate Design Allowables for Legacy 7075-T73510, T73511 Extrusions (MTG).** J. Jackson presented a status report. The B-Basis properties are in question. Typically strength decreases with increasing thickness for this alloy. Thin property data (below 0.062 inch) has also been requested for Item 04-08.

*Action:* Continued. Data requested.

## 13th MMPDS COORDINATION MEETING MINUTES

### Draft Minutes Summary of Agenda Items

(Continued)

**GSG 07-43 Mechanical Properties for 7140-T7651 Aluminum Alloy Plate (MTG).** J. Jackson presented this agenda item.

*Action:* Approved and closed with changes; fix footnotes in table (footnote c for bearing dry pin), fix BRY e/D = 1.5 for 5-6 inches B-basis should be 103 ksi (not 10.).

**GSG 08-12 Fatigue Crack Growth of 7140-T7651 Aluminum Alloy Plate (MTG).** R. Rice gave a status report.

*Action:* Continued. Need specimen geometry details

**GSG NIN Identification of Casting Type Used for E357 and F357 (MTG).** J. Jackson presented this agenda item.

*Action:* Closed with no action.

**GSG NIN Specification Allowables for Centrifugally Cast 709.0 (Similar to Wrought 7075-T6) (MTG).** J. Jackson presented a status report.

*Action:* Continued.

#### CHAPTER 4. MAGNESIUM ALLOY

No Chapter 4 agenda items were discussed.

#### CHAPTER 5. TITANIUM ALLOYS

No Chapter 5 agenda items were discussed.

#### CHAPTER 6. HEAT RESISTANT ALLOYS

**GSG 07-03 A- and B-Basis Properties for Inconel 718 Bar (MTG).** J. Jackson gave a status report that no additional data have been received since the last meeting. Data have been supplied by M. Katcher, Haynes International, and T. Bayha, Allvac, to upgrade Inconel 718 bar per AMS 5662 from S-Basis to A- and B-Basis. Additional data have been requested from SPS Technologies, Carpenter, Aubert & Duval.

*Action:* Continued. Request data from SPS Technologies, Carpenter, and Aubert & Duval.

## 13th MMPDS COORDINATION MEETING MINUTES

# Draft Minutes Summary of Agenda Items

(Continued)

### CHAPTER 7. MISCELLANEOUS ALLOYS AND HYBRID MATERIALS

**GSG 07-40 Mechanical Properties of ToughMet 3 Bar (MTG).** J. Jackson presented this agenda item.

*Action:* Approved pending publication of revision A to specification with changes; show shear properties as “L” and “T” with footnotes stating the radial orientations on which the data were based. Add remaining physical properties in a new item or as part of this item in fall meeting if it is still open.

**GSG 08-21 A- & B-Basis Properties for MP35N & MP159 Bar for Diameters Up to 0.800 Inches (MTG).** J. Jackson presented this agenda item.

*Action:* Continued. Assigned Item No. 08-21. Prepare agenda showing S-Basis for all diameters.

### CHAPTER 8. STRUCTURAL JOINTS

**GSG 04-21 Fastener Tables of Sunset Review Interest (FTG).** M. Tefend reviewed this agenda item which contains a status of the current group of sunset tables and the next recommended one. Active Sunset items may be found in the Public Documentation (FTG) tab on the MMPDS website under the General Announcement Letter.

*Action:* Continued. All tables in Sunset Group I (Items 05-35, 05-44, 05-53 thru 05-55, and 05-57) were approved to be placed on the new Non-Confirmed Sunset Fasteners table. Sunset Group V tables were identified. These tables are as follows: Table 8.1.3.2.2(j), Table 8.1.3.2.2(c), Table 8.1.3.2.3(e), Table 8.1.5.2(g) and Table 8.1.5.2(h).

**GSG 05-35 Sunset Review of Solid Rivet Table 8.1.2.2(g) MS20426B (FTG).** This table covers Static Joint Strength of 100° Flush Head Aluminum Alloy (5056-H321) Solid Rivets in Machine-Countersunk Magnesium Alloy Sheet. The table was voted to be removed as per the Sunset Clause. This fastener will be included in the new Non-Confirmed Sunset Fastener Table in the next version of the MMPDS handbook.

*Action:* Approved and Closed. The final table is included in the minutes.

**GSG 05-44 Sunset Review of Blind, Protruding Head, Mechanical Lock Rivet Table 8.1.3.1.2(i) NAS1720KE (FTG).** This Static Joint Strength of Blind Protruding Head Locked Spindle Aluminum Alloy (7050) Rivets in Aluminum Sheet. This table was voted to be removed as per the Sunset Clause. This fastener will be included in the new Non-Confirmed Sunset Fastener Table in the next version of the MMPDS handbook.

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## Draft Minutes Summary of Agenda Items

(Continued)

*Action:* Approved and Closed. The final table is included in the minutes.

- GSG 05-53** **Sunset Review of Blind, Flush Head, Mechanical Lock Rivet Table 8.1.3.2.2(m) NAS1721KE and NAS1721L (FTG).** Static Joint Strength of Blind 100° Flush Head Locked Spindle Aluminum Alloy (7050) Rivets in Machine-Countersunk Aluminum Alloy Sheet. This table was voted to be removed as per the Sunset Clause. This fastener will be included in the new Non-Confirmed Sunset Fastener Table in the next version of the MMPDS handbook.

*Action:* Approved and Closed. The final table is included in the minutes.

- GSG 05-54** **Sunset Review of Flush Head Blind Bolt Table 8.1.3.2.3(d) NS100 (FTG).** Static Joint Strength of Blind 100° Flush Head Alloy Steel Fasteners in Machine-Countersunk Aluminum Sheet. This table was voted to be removed as per the Sunset Clause. This fastener will be included in the new Non-Confirmed Sunset Fastener Table in the next version of the MMPDS handbook.

*Action:* Approved and Closed. The final table is included in the minutes.

- GSG 05-55** **Sunset Review of Collar/Pin Table 8.1.4.2(b) NAS7024 and NAS7032 (FTG).** Static Joint Strength of 100° Flush Shear/Tension Head Alloy Steel Lockbolt Fasteners in Machine-Countersunk Aluminum Alloy Sheet and Plate. This table was voted to be removed as per the Sunset Clause. This fastener will be included in the new Non-Confirmed Sunset Fastener Table in the next version of the MMPDS handbook.

*Action:* Approved and Closed. The final table is included in the minutes.

- GSG 05-57** **Sunset Review of Threaded Fastener Table 8.1.5.2(l) HPT-V (FTG).** Static Joint Strength of 70° Flush Head Straight Shank Ti-6Al-4V Fasteners in Non-Matching Machine-Countersunk Aluminum Alloy Sheet and Plate. This table was voted to be removed as per the Sunset Clause. This fastener will be included in the new Non-Confirmed Sunset Fastener Table in the next version of the MMPDS handbook.

*Action:* Approved and Closed. The final table is included in the minutes.

- GSG 07-28** **General Announcement Letter (FTG).** M. Tefend reviewed this agenda item which contains a list of distribution contacts for this letter.

*Action:* Continued. Letters are to be sent to remaining representatives when identified. This item is expected to be closed at the next meeting.

## Draft Minutes Summary of Agenda Items

(Continued)

**GSG 07-37 Validation of FastenerCalc (FTG).** Validation of the ISG FastenerCalc software by the Fastener Task Group is required before release of this new software. Validation of this software will be accomplished by performing an analysis (i.e. Create all plots and tables required as per the guidelines) on one of each type of fastener examples thru the new software and comparing it to current approved FastenerCalcFE software. One example will be performed by hand as an independent check.

*Action:* Continued. Expect to close this item at the next meeting.

**GSG 07-48 Referencing of Non-Confirmed Sunset Fastener Tables (FTG).** M. Tefend reviewed this agenda item which contains the proposed table format for the new Non-Confirmed Sunset Fastener Table.

*Action:* Continued. The table format and location were approved. Table text (Sunset Group I) has been added to this table. (i.e. Meeting number, last edition shown & Date to be updated)

**GSG 08-04 Statistical Basis of Chapter 8 Tables (FTG).** M. Tefend reviewed this agenda item which consists of identifying each table's a) date of creation, b) date of last modification and c) the statistical basis of that table.

*Action:* Continued. M. Tefend will present the statistical basis of these tables at the next meeting.

**GSG 08-18 Chapter 8 Fastener Table Descriptions (FTG).** M. Tefend reviewed this agenda item which includes some recommendations to improve the current fastener descriptions text.

*Action:* Continued. Recommended text on statistical basis approved for inclusion in the introductory paragraph of each section. Draft to be presented at next meeting.

**GSG 08-19 Fastener Tension Allowables (FTG).** M. Tefend reviewed this agenda item which includes a draft of the footnote for inclusion into Table 8.1.5 (b1 and b2). This footnote will clarify how these tables are perceived.

*Action:* Continued. Draft of final footnote text is expected to be closed at the next meeting.

## 13th MMPDS COORDINATION MEETING MINUTES

### Draft Minutes Summary of Agenda Items

(Continued)

**GSG 08-22** **Sunset Review of Blind, Flush Head, Mechanical Lock Spindle Rivet Table 8.1.3.2.2(j) NAS 1399B, NAS 1739B and NAS 1739E (FTG).** Static Joint Strength of Blind 100° Flush Head Locked Spindle Aluminum Alloy Rivets in Machine-Countersunk Magnesium Alloy Sheet.

*Action:* New Item.

**GSG 08-23** **Sunset Review of Blind, Flush Head, Mechanical Lock Spindle Rivet Table 8.1.3.2.2(c) NAS 1921C (FTG).** Static Joint Strength of Blind 100° Flush Head Locked Spindle A-286 Blind Rivets in Machine-Countersunk Aluminum Alloy Sheet.

*Action:* New Item.

**GSG 08-24** **Sunset Review of Blind, Flush Head, Blind Bolt Fastener Table 8.1.3.2.3(e) SSHFA-200 & SSHFA-260 (FTG).** Static Joint Strength of Blind 100° Flush Head Aluminum Alloy Fasteners in Machine-Countersunk Aluminum Alloy Sheet.

*Action:* New Item.

**GSG 08-25** **Sunset Review of Threaded Fastener Table 8.1.5.2(g) HL61 Pin, HL70 Collar (FTG).** Static Joint Strength of 100° Flush Shear AISI 431 Hi-Lok Fasteners in Aluminum Alloy Sheet and Plate.

*Action:* New Item.

**GSG 08-26** **Sunset Review of Threaded Fastener Table 8.1.5.2(h) HL719 Pin, HL79 Collar (FTG).** Static Joint Strength of 100° Flush Shear Head Alloy Steel Hi-Lok Fasteners in Machine-Countersunk Aluminum Alloy Sheet and Plate.

*Action:* New Item.

#### CHAPTER 9. GUIDELINES FOR THE PRESENTATION OF DATA

##### Fastener Task Group Items

**GSG 06-45** **MMPDS Fastener Guidelines Update (FTG).** M. Tefend reviewed this agenda item and discussed all received editorial comments regarding this proposed guideline item.

*Action:* Continued. This item is expected to be approved and closed at the next meeting.

# 13th MMPDS COORDINATION MEETING MINUTES

## Draft Minutes Summary of Agenda Items

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**GSG 07-29 Input on FTG Portion of MMPDS By-Laws (FTG).** M. James reviewed this agenda item at the GSG meeting. M. James to review this item with the FAA.

*Action:* Continued. This item is expected to be closed at the next meeting.

**GSG 07-49 Fastener Failure Codes (FTG)** R.Goode, Lockheed, presented this agenda item with emphasis on the two different failure scenarios and discussed several additional test procedures as an addendum to NASM. H. Vuil to present an example at the next meeting. M. Tefend to identify any NASM cross references on failure codes.

*Action:* Continued.

**GSG 08-05 General FTG Data Requirements (FTG).** M. Tefend reviewed this agenda item which includes a draft of the proposed changes to Section 9.2.4.6.3 General Data Requirements. Recommended text changes for section 9.2.4.6.3 and a relocation of Figure 9.2.4.6.3 were approved. After this item was initially closed, it was later reopened for the addition of sub-headings.

*Action:* Continued. This item is expected to be closed at the next meeting.

**GSG 08-06 Fastener Example Problem I (FTG).** M. Tefend reviewed this agenda item of the proposed changes to this example problem.

*Action:* Approved and closed.

**GSG 08-07 FTG Procedural Flowchart (FTG).** M. Tefend reviewed this agenda item which includes a proposed Fastener Procedural Flowchart.

*Action:* Approved and closed flowchart text with changes. Changes include location (After Cross reference table) and two additions to the Data requirements box (section 9.3.3.4 & 9.3.3.5 were inadvertently omitted). A copy of the corrected flowchart is included.

**GSG NIN Historical Comparison (FTG).** M. Tefend reviewed this agenda item on fastener section differences between MMPDS-03 and MIL-HBK-5H.

*Action:* Continued. Expect to close this item at the next meeting.

## 13th MMPDS COORDINATION MEETING MINUTES

### Draft Minutes Summary of Agenda Items

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**GSG NIN Fastener Combinability Example Section (FTG).** M. Tefend reviewed a re-analysis of the combinability of the current handbook fastener example and made some recommendations/ corrections as to the readability of the fastener related text in the guidelines. For user purposes, a new fastener combinability example will be created.

*Action:* New Item.

**GSG NIN Fastener Testing Requirements Table (FTG).** M. Tefend raised the issue that the fastener testing data requirements references in the handbook are confusing some handbook users. L. Flansburg recommended that a new table be created in section 9.2.4.6.3 for clarity.

*Action:* New Item.

**GSG NIN Table 9.2.4 Modification (FTG/GTG).** M. Tefend raised the issue that the fastener testing data requirements references in the handbook are confusing some handbook users. L. Flansburg recommended that Table 9.2.4 be modified for clarity.

*Action:* New Item.

#### Guidelines and Materials Task and Working Group Items

**GSG 01-01 Regression for Skewed Data (SWG).** R. Rice presented this agenda item.

*Action:* Continued. Analyze some data sets with existing allowables.

**GSG 05-27 Update for Bearing Strength Reduction for Edgewise Orientation (GTG).** J. Jackson gave a status report. Data have been received from Boeing and Lockheed.

*Action:* Continued.

**GSG 07-05 Update of Guidelines for the Submission of Plane Strain Fracture Toughness Data (GTG).** R. Rice led discussions of this item.

*Action:* Continued. Create guidelines to allow for calculated  $K_{Ic}$  from  $J_{Ic}$  with footnotes indicating  $K_{Ic}$  was calculated per ASTM E1820.

**GSG 07-08 Referencing of Obsolete Alloys Removed from MMPDS (GTG).** R. Rice gave a status report on this item.

*Action:* Continued. Prepare final tables of obsolete alloys for fall meeting.

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### Draft Minutes Summary of Agenda Items

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**GSG 07-17 Development of Design Properties for Friction Stir Welds (PIMWG).** R. Reinmuller, Lockheed, led discussions on this agenda item at the PIMWG meeting. C. Widener, WSU, gave a presentation. A copy is included.

*Action:* Continued.

**GSG 07-19 Proposed Guidelines on Transformation of Data (GTG).** R. Rice led discussion of this item.

*Action:* Continued. Prepare guidelines proposal for next meeting.

**GSG 07-22 Proposed Inclusion of Guidelines for Development and Presentation of Allowables-Based Flow Curves for Nonlinear Analysis in MMPDS (ASG/GTG).** A presentation was given in the ASG. A copy is included.

*Action:* Continued. Move this to a Chapter 1 item.

**GSG 07-25 Reconsideration of Applicable Thickness Ranges for SCC Data Tables (GTG).** This was not discussed at this meeting.

*Action:* Continued. Discuss in SCCWG

**GSG 07-26 Determination of Specification Minimums for Fracture Toughness Properties (GTG).** J. Jackson led discussion on this item.

*Action:* Continued. It was decided that the MMPDS coordinating members would like to propose a method for determining specification minimums for fracture toughness.

**GSG 07-27 Proposed Modification of Guidelines for Development of Effect of Temperature Curves (GTG).** R. Rice presented this agenda item using 2099-T83 extrusion data for example.

*Action:* Continued. Analyze a sample with limited tests in some time/temperature combination.

**GSG 07-31 Ramberg-Osgood Single Shape Factor vs 2 Shape Factors (GTG).** R. Rice presented this agenda item.

*Action:* Continued. Show 2 methods: 1) in addition to current graphs with 2 shape factors, show a separate graph with single shape factor, and 2) show single (n) and double (n1 & n2) shape factors on the same graph (split orientation & thickness into separate graphs).

## Draft Minutes Summary of Agenda Items

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**GSG 07-33 Guidelines for Plane Stress FT Data Analysis and Presentation (ISG/GTG).** R. Rice led discussion of this item.

*Action:* Continued. Meeting with R. Reinmuller, R. Brazill, B. Easton, someone from Airbus and someone from Bombardier.

**GSG 07-34 Improved Guidelines for Definition of SCC Threshold Properties (SCCWG/GTG).** M. Tefend led discussions of this item.

*Action:* Continued. Work to revise ASTM G64 with table addition shown in Alcoa's previous presentation. A long-term goal is to create a time to failure matrix on legacy alloys, then work with ASTM to incorporate this into ASTM G64.

**GSG 07-36 Effect of Change in Strain Rate for Full Range Tensile Curves (GTG).** R. Rice presented this agenda item.

*Action:* Continued. Create final guideline proposal showing graphs as shown in agenda item.

**GSG 08-09 Guidelines for Derived Properties (GTG).** J. Jackson presented this agenda item to clarify footnote k of Table 9.2.4.1.

*Action:* Approved and closed. Open new item to discuss requiring duplicate testing per lot or additional words for an increased number of lots which do not require duplicate testing per lot.

**GSG 08-15 Revision of Guidelines on the Display of Full Range Stress-Strain Curves (GTG).** R. Rice presented this agenda item.

*Action:* Continued.

**GSG NIN Reconsideration of Section 9.4.2 Validating Design Properties for Existing Materials (GTG).** R. Rice led discussion on this item.

*Action:* Closed with no action. Open new similar item with input from J. Layton.

**GSG NIN Development of Allowable Ultimate Strain (GTG).** An agenda item was prepared, however there was insufficient time to discuss at this meeting.

*Action:* Continued with input for R. Goode, Lockheed

## 13th MMPDS COORDINATION MEETING MINUTES

### Draft Minutes Summary of Agenda Items

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**GSG NIN**     **Development of Look-Up Tables for Crack Growth Curves (GTG).** R. Rice presented this item.

*Action:* Continued. Prepare formal proposal for fall meeting.

**GSG 08-17**   **Estimation of Average Tensile Properties from A- and B-Basis Design Allowables (SWG).** R. Rice presented this agenda item.

*Action:* Continued. Assigned item number 08-17. Evaluate on data sets with greater amount of scatter.

**GSG NIN**     **Revision of Footnote in Table 9.2.4 Regarding Number of Heats (GTG).** J. Jackson presented this agenda item.

*Action:* Continued.

**GSG NIN**     **Shear Tests Performed to ASTM E143 (GTG).** Due to lack of time, there were no discussions on this item.

*Action:* Continued. S. Fantle to provide wording for fall proposal.

**GSG NIN**     **Orientation of ST Bearing Samples (GTG).** J. Jackson led discussion on this item.

*Action:* Continued. Until a decision is made, suppliers of bearing ST data should include orientation (flat side is parallel to L or LT direction).

**GSG NIN**     **Adding Date Columns to Fracture Toughness Table (GTG).** There was insufficient time to discuss this item.

*Action:* Continued.

**GSG NIN**     **Effect of Temperature Curves for Under-Aged Alloys (GTG).** R. Rice led discussions of this item.

*Action:* Continued.