

# Minutes of the 36th MMPDS Coordination Meeting

#### Held in:

Virtual Meeting September 21st - 25th, 2020

#### Compiled by:

Battelle 505 King Avenue Columbus, OH 43201-2693

#### **Prepared for:**

FAA William J. Hughes Technical Atlantic City, NJ 08405

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# 36th MMPDS Coordination Meeting

#### Introduction of Attendees

A list of 36th Coordination Meeting attendees, indicating the virtual meetings they attended, has been incorporated into this document.

#### Chairman's Remarks – Mark James, FAA

I want to thank everyone who participated in the 36th MMPDS coordination meetings held virtually between September 21st through September 25th. The COVID-19 virus continues to be a great challenge that will impact the aerospace industry for some time to come. The Battelle team did an excellent job again of organizing and coordinating the WebEx sessions to keep the program moving forward.

As discussed, the MMPDS Bylaws define the GCC as being "composed of individuals physically attending an MMPDS GCC meeting regardless of the GSG or ISG membership status." However, due to the demands of the program and in order to continue moving forward, we consider items approved during the GCC as approved.

As of this writing, Battelle and the FAA expect that the 37th Meeting will take place in Santa Ana, CA the week of March 22, 2021. Thanks again for attending the 36th MMPDS Coordination meetings. Your commitment, dedication, and donation of your valuable time to maintain MMPDS is most appreciated. I look forward to seeing everyone in Santa Ana.

Best Regards, Chairman, Mark James

Mark James Standards Staff Engineer for Small Airplanes Structures, Flammability and Noise Control Specialist (NCS)

### Approval of the 36th MMPDS Meeting Minutes

The 36th MMPDS Coordination Meeting Minutes were approved.



# SUMMARIES

| 36th            | MMPDS M     | leeting Attendance                           | September 21st | September 21st | September 21st | September 22nd | September 23rd | September 24th | September 25th | September 25th |
|-----------------|-------------|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Last Name       | First Name  | Company                                      | Orientation    | ISG            | ISG/GSG        | FTG 1-3        | ETTG 1-3       | GTG 1-3        | MTG 1-3        | GCC            |
| Anderegg        | David       | Defense Logistics Agency                     |                |                | X              | X              | Х              | Х              | X              | X              |
| Anderson        | Neil        | Boeing                                       |                |                |                | X              |                |                |                |                |
| Andrulonis      | Rachael     | NIAR   | Х              |                |                |                | Х              |                |                | X              |
| Antonysamy      | Alphons     | GKN Aerospace                                |                |                |                |                |                |                |                |                |
| Ashforth        | Cindy       | Federal Aviation Administration              |                |                |                |                | х              |                |                |                |
| Bach            | Andreas     | Aleris Rolled Products                       |                |                |                |                |                |                |                |                |
| Baird           | Brad        | Collins Aerospace                            | Х              | X              | X              |                | Х              |                |                |                |
| Bakuckas        | John        | Federal Aviation Administration              |                |                |                |                |                | Х              |                |                |
| Barnes          | Devin       | Lockheed Martin                              |                |                |                |                | Х              | х              |                |                |
| Barros          | Marcelo     | Embraer                                      |                |                | Х              | х              |                | Х              |                |                |
| Beckman         | Jonathan    | Gulfstream                                   |                |                |                |                | Х              | х              |                |                |
| Bennett         | Jay<br>     | NASA   | Х              |                | Х              | х              | Х              | Х              | Х              | Х              |
| Bennett         | Russell     | Boeing                                       | Х              | х              | Х              |                |                | Х              | х              | Х              |
| Bihlman         | Bill        | Aerolytics, LLC                              |                |                |                |                | Х              |                |                |                |
| Bischoping      | Zachary     | Moog Inc.                                    |                |                |                |                | х              |                |                |                |
| Bittner         | Peter       | Constellium                                  |                | X              | X              |                | Х              | Х              | х              | X              |
| Bourges         | Laurent     | Lisi Aerospace                               |                |                |                | X              |                |                |                |                |
| Bray            | Gary        | Westmoreland                                 |                | Х              | X              |                | х              | Х              | X              | X              |
| Buchwald        | Scott       | Constellium                                  |                |                |                |                |                |                | х              |                |
| Buckner         | Elisa       | Northrop Grumman                             |                |                |                |                |                |                |                |                |
| Chen            | Во          | Beijing Institute for Aeronautical Materials |                |                |                |                |                |                |                |                |
| Chung           | Pui See     | Blue Origin                                  | Х              | Х              |                |                | Х              |                | X              |                |
| Chung           | Tony        | Blue Origin                                  |                |                |                |                |                |                |                |                |
| Cordner         | Sam         | NASA   | X              |                | X              | X              | х              | Х              | X              |                |
| Crill           | Matthew     | Boeing                                       | х              | х              | X              |                | Х              | Х              | X              | X              |
| Crisler (Frink) | Elizabeth   | Textron Aviation                             | х              | х              | X              |                | Х              | х              | X              | X              |
| Crist           | Ernie       | Howmet                                       |                |                |                |                |                |                |                |                |
| Cunha           | Mauricio    | Embraer                                      |                |                |                |                | Х              | Х              | X              |                |
| Daley           | Nancy       | Rocketdyne                                   |                |                |                |                | х              | х              | x              | X              |
| Dangerfield     | Victor      | Universal Alloy                              |                | X              |                |                |                | Х              | X              |                |
| Dater           | Brian       | Lockheed Martin                              | х              | х              | X              | X              |                |                |                |                |
| Davies          | Curtis      | Federal Aviation Administration              | х              |                | X              |                | Х              | Х              |                |                |
| Demiroğlu       | Mehmet      | Tusas Engine Industries                      |                |                |                |                | х              |                |                |                |
| Dinler          | Ali Firat   | Tusas Engine Industries                      |                |                |                |                |                |                |                |                |
| Doty            | Peter       | SAE ITC                                      |                |                |                |                | Х              |                |                |                |
| Dux             | Tiffany     | Howmet                                       | х              | х              | X              |                |                | Х              | X              |                |
| Esparragoza     | Manuel      | Questek                                      | х              | х              | X              |                |                | х              | X              | X              |
| Garcia-Avila    | Matias      | ATI Metals                                   |                | х              | X              |                | Х              | Х              | X              |                |
| Gibbons         | Duncan      | Students - Stellenbosch University           | X              |                | X              |                | X              | X              | X              | X              |
| Glendening      | Andrew      | NASA   |                |                |                |                | Х              |                | X              |                |
| Goode           | Randy       | Lockheed Martin                              |                | х              | X              | X              | X              | X              | X              | X              |
| Gorelik         | Michael     | Federal Aviation Administration              |                |                | Х              |                | х              | х              | x              | X              |
| Grant           | Robert      | Federal Aviation Administration              |                |                |                |                | х              |                |                |                |
| Guerrier        | Paul        | Moog Inc.                                    |                | x              | X              |                | х              |                |                |                |
| Guo             | Guangping   | Beijing Institute for Aeronautical Materials | х              | x              |                |                |                |                | х              |                |
| Gurrola         | Robert      | Howmet                                       |                | x              | х              | х              |                | х              |                | X              |
| Hahn            | Michael     | Northrop Grumman                             |                | x              | X              | x              | х              | х              | x              | X              |
| Hall            | Doug        | Battelle Memorial Institute                  | х              | x              | х              | х              | х              | х              |                | X              |
| Heine           | Christoph   | Airbus                                       | х              | x              | х              | х              | х              | х              | x              | х              |
| Hernandez-Otero | Edwin       | Boeing                                       | x              | x              | x              |                | x              | х              | x              | X              |
| Hess            | Ethan       | US Navy                                      |                |                |                |                |                |                |                |                |
| Hirsch          | Michael     | US Air Force                                 |                |                | x              |                | х              |                |                |                |
| Holshouser      | Christopher | NIAR   |                |                |                |                | х              |                |                |                |
| James           | Mark        | Federal Aviation Administration              |                |                | x              | X              | х              | х              | x              | X              |
| Jiao            | Zehui       | Beijing Institute for Aeronautical Materials | х              |                |                |                | х              |                |                |                |
| Johnson         | Dwight      | Textron Aviation                             |                | х              | х              | x              | х              |                | х              | x              |
| Jones           | Lindsay     | Boeing                                       |                |                |                |                | х              | х              |                |                |
| Jones           | Marshall    | US Navy                                      |                | <u> </u>       |                |                | х              |                |                |                |
|                 | •           |  | •              | •              | •              | •              | •              | •              | •              | •              |

| 36th       | MMPDS M    | eeting Attendance               | September 21st                        | September 21st                        | September 21st | September 22nd | September 23rd | September 24th                                   | September 25th | September 25th |
|------------|------------|---------------------------------|---------------------------------------|---------------------------------------|----------------|----------------|----------------|--|----------------|----------------|
| Last Name  | First Name | Company                         | Orientation                           | ISG                                   | ISG/GSG        | FTG 1-3        | ETTG 1-3       | GTG 1-3  | MTG 1-3        | GCC            |
| Joshi      | Dhananjay  | Textron Aviation                |                                       |                                       |                |                |                |  | x              |                |
| Kasami     | Akiko      | МНІ                             |                                       |                                       |                |                | х              | х  | x              | X              |
| Keller     | Paul       | TriMas/Allfast                  |                                       |                                       |                | X              |                |  |                |                |
| Kim        | Don        | GKN Aerospace                   | x                                     | Х                                     | X              |                | X              |  |                |                |
| Kitt       | Brian      | Spirit Aerosystems              |                                       |                                       |                |                |                |  |                |                |
| Kopacz     | Brian      | Moog Inc.                       |                                       |                                       |                |                | X              |  |                |                |
| Kowalik    | Daniel     | EWI                             |                                       |                                       |                |                | х              |  |                |                |
| Krile      | Bob        | Battelle Memorial Institute     | x                                     |                                       |                | X              | X              | х  |                | X              |
| Liou       | Richard    | Collins Aerospace               |                                       |                                       |                |                |                |  |                |                |
| Loo        | Jeffrey    | NASA                            |                                       |                                       |                |                | X              | х  | x              |                |
| Lovingfoss | Royal      | NIAR                            |                                       |                                       |                |                | X              |  |                |                |
| Luna       | Sarah      | NASA                            | x                                     |                                       |                |                | x              |  |                |                |
| Lupulescu  | Afina      | AMS International               | x                                     |                                       |                |                | X              | x  | x              |                |
| Luu        | Kimberly   | Federal Aviation Administration | x                                     |                                       |                |                |                |  |                |                |
| Mallory    | Jaikp      | Delta Airlines                  |                                       |                                       |                | x              |                | x  | x              | X              |
| Marsden    | Will       | Granta                          | х                                     |                                       |                |                |                |  |                |                |
| McNair     | Mike       | SAE ITC                         | х                                     |                                       |                |                | X              |  |                |                |
| Miller     | Ross       | Blue Origin                     | x                                     | х                                     |                | x              | x              | х  | x              |                |
| Mole       | Erika      | Blue Origin                     |                                       |                                       |                |                |                |  |                |                |
| Nagao      | Kazuki     | Honda R&D Americas, Inc.        | х                                     | х                                     | х              |                | X              | х  | x              | X              |
| Niedzinski | Michael    | Constellium                     |                                       | х                                     | х              |                |                | х  | х              | X              |
| Norimatsu  | Koichi     | IHI Corporation                 |                                       |                                       |                |                |                | х  |                |                |
| Ofsthun    | Mark       | Honda Aircraft Company          | х                                     | х                                     | х              | X              | X              |  | x              |                |
| Olsen      | Kirk       | Parker LORD                     | х                                     | х                                     | х              | X              | X              | х  | х              | X              |
| Oparka     | Stephen    | US Navy                         | х                                     |                                       |                |                | X              |  |                |                |
| Oshino     | Hironobu   | IHI Corporation                 |                                       | х                                     | х              |                | х              | х  | x              | X              |
| Özkaya     | Furkan     | Tusas Engine Industries         |                                       |                                       |                |                |                | х  |                |                |
| Papenfuss  | Norbert    | WIAM Gmbh                       | х                                     | х                                     |                |                | X              | х  |                |                |
| Parga      | Clemente   | Blue Origin                     |                                       | х                                     | х              | X              |                |  |                |                |
| Park       | Charles    | Boeing                          | х                                     | х                                     | х              |                | х              | х  |                |                |
| Piché      | Marie      | Bombardier Aviation             | х                                     | х                                     | х              | х              | х              | х  | х              | х              |
| Pujar      | Vijay      | Collins Aerospace               | х                                     | х                                     | х              |                | x              |  |                |                |
| Reakes     | Clay       | Battelle Memorial Institute     | х                                     | х                                     | х              | х              | X              | х  |                | x              |
| Reber      | Korey      | Collins Aerospace               | х                                     | х                                     |                |                | х              |  |                |                |
| Reeves     | Daniel     | Blue Origin                     |                                       |                                       |                |                | х              |  |                |                |
| Reinmuller | Roger      | Lockheed Martin                 | х                                     | х                                     | х              |                | х              | х  | х              | x              |
| Rubadue    | Jana       | Battelle Memorial Institute     | х                                     | х                                     | х              | х              |                |  | х              | X              |
| Sandoval   | Hector     | Lockheed Martin                 |                                       |                                       |                |                | х              |  |                |                |
| Scalf      | Cyndee     | Battelle Memorial Institute     | х                                     | х                                     | х              | х              | x              |  | х              | x              |
| Scheuring  | Jason      | Kaiser Aluminum                 |                                       | х                                     | х              |                | х              | х  | х              | x              |
| Shannon    | Carinne    | Battelle Memorial Institute     | х                                     | х                                     | х              | х              | х              | х  | х              | X              |
| Shivers    | Brian      | US Air Force                    | х                                     |                                       | х              | х              | х              | х  | х              |                |
| Shula      | Brian      | Honeywell                       | х                                     | х                                     | х              |                | х              |  | х              |                |
| Sippel     | Walter     | Federal Aviation Administration | x                                     |                                       | x              |                | x              | х  | x              | X              |
| Smith      | Ryan       | General Electric                | 1                                     |                                       | 1              |                | x              | 1  | 1              | -              |
| Smith      | Timothy    | Federal Aviation Administration | х                                     |                                       | х              |                | X              | х  |                |                |
| Sodouri    | Pedrum     | Norsk Titanium                  | 1                                     |                                       | ·-             |                | x              | 1  |                |                |
| Steele     | Leslie     | Collins Aerospace               | 1                                     | х                                     | x              | x              | x              | x  | x              | x              |
| Steevens   | Andrew     | Boeing                          | х                                     | x                                     | x              | **             | x              | x  |                | X              |
| Stonaker   | Kevin      | Federal Aviation Administration | x                                     |                                       | x              |                | x              | x  | x              | x              |
| Sutton     | Adam       | Lockheed Martin                 | 1                                     | x                                     | X              | x              | x              | x  | x              | Α              |
| Takahashi  | Kotomi     | IHI Corporation                 |                                       | A                                     | A              | A              | x              | ^  | Α              |                |
| Thomas     | Bruce      | Bombardier Aviation             | x                                     | х                                     | х              | x              | X              | x  | x              |                |
| Thompson   | Steve      | US Air Force                    | 1 ^                                   | ^                                     | X              | X              | X              | x  | x              | x              |
| Vanderpol  | Paul       | Collins Aerospace               | x                                     | x                                     | x              | X<br>X         | ^              |  |                | Λ              |
| Vetland    | Emma       | GKN Aerospace                   | * * * * * * * * * * * * * * * * * * * | * * * * * * * * * * * * * * * * * * * | , A            | , A            | **             | <del>                                     </del> | 1              |                |
| Vogel      | Bret       |                                 |                                       | ,,                                    | .,,            | .,,            | X              | x  | .,             | ~              |
|            |            | Textron Aviation                | <del> </del>                          | X                                     | X              | X              | X              | X Y  | X              | X              |
| Wen        | Wei (Andy) | ATI Metals                      | X                                     | X                                     | X              | X              | X              | X  | X              | X              |

| 36th      | MMPDS Me    | eting Attendance                             | September 21st | September 21st | September 21st | September 22nd | September 23rd | September 24th | September 25th | September 25th |
|-----------|-------------|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Last Name | First Name  | Company                                      | Orientation    | ISG            | ISG/GSG        | FTG 1-3        | ETTG 1-3       | GTG 1-3        | MTG 1-3        | GCC            |
| Wheelock  | Paul        | Rolls-Royce                                  | х              | x              | х              |                | X              | x              |                | Х              |
| White     | Martin      | ASTM   |                |                |                |                | X              |                |                |                |
| White     | Will        | Battelle Memorial Institute                  |                |                |                | X              | X              |                |                |                |
| Williams  | Chris       | NASA   | х              |                | X              | X              | x              | x              |                |                |
| Woish     | Mason       | Lockheed Martin                              |                |                |                |                | X              |                |                |                |
| Wrenn     | Katy        | Boeing                                       |                |                |                |                | X              | x              |                |                |
| Yondu     | Numan Berat | Tusas Engine Industries                      |                |                |                |                | x              |                | X              |                |
| Young     | Bruce       | Battelle Memorial Institute                  |                |                |                |                |                |                | x              | x              |
| Zehui     | Jiao        | Beijing Institute for Aeronautical Materials |                |                |                |                |                |                | x              |                |

# **36th MMPDS Coordination Meeting**

# **New Item Numbers Assigned in 2020**

| 20-01 | Stabilization of AMS-QQ-A-200/3 for 2024 Alloy Extrusions                          |
|-------|--|
| 20-02 | Editorial Corrrection for Section 9.6.1.11   |
| 20-03 | MMPDS Review & Approval Process  |
| 20-04 | V2: MMPDS Review & Approval Process  |
| 20-05 | L-605 ST Bar and Forging Creep Curve Correction                                    |
| 20-06 | Addition of 2043-T85 Extrusion Tensile Stress-Strain Curves                        |
| 20-07 | Mechanical and Physical Properties for 7160-T7351 Aluminum Alloy Plate             |
| 20-08 | Mechanical and Physical Properties for 7160-T7451 Aluminum Alloy Plate             |
| 20-09 | Expansion of Thickness Range for 6061-T651 Plate                                   |
| 20-10 | Upgrade of Secondary Properties of 7075-T76511 Aluminum Alloy Extrusions           |
| 20-11 | Split Table 9.2.4 for Chapters 2-7 and Chapter 8                                   |
| 20-12 | Maintenance for Alloys for Analysis  |
| 20-13 | CMH-17/MMPDS Coordination & Collaboration  |
| 20-14 | Discussion of Factors contributing to variance of Extrusion Stress-Strain Curves   |
| 20-15 | Revisit Stress-Strain Data Generation Guidelines - Use of Extensometers            |
| 20-16 | MMPDS & Additive Metals - Program Plan   |
| 20-17 | Components of Variance Analysis of AM, Cast, & Wrought 718                         |
| 20-18 | Updates to Low Alloy Steel Tables  |
| 20-19 | Acceptance Testing Comparions: Producers vs. Consumers Risk                        |
| 20-20 | Proposed Test Plan for Static Joint Strength of 100° Flush Shear Head Blind Rivets |
| 20-21 | Definitions for Volume II  |
| 20-22 | Consent Agenda Item: Approve and Close items from the 35th meeting                 |

## **36th MMPDS Coordination Meeting**

# **New Item Numbers Assigned in 2020**

| 20-23 Stress-Corrosion Cracking of 7160 Aluminum Alloy Plate                          |
|---|
| 20-24 Correction to 300 Stainless Steel Elongation Properties                         |
| 20-25 Stabilization for AISI 1025 Tubing Specifications                               |
| 20-26 Update References for Beryllium Toxicity  |
| 20-27 Specification Changes for Aluminum Alloys                                       |
| 20-28 Addition of Punch Shear Footnote  |
| 20-29 Analysis of Bearing and Shear Properties with Reduced Ratios                    |
| 20-30 Components of Variance Analysis of AM, Cast, & Wrought Ti 6-4                   |
| 20-31 Definitions of "Design Allowable", "Design Value", and "Material Allowables"    |
| 20-32 "Should", "Shall", "Must" decision for MMPDS program                            |
| 20-33 2196-T8511 Aluminum Extrusion Analysis and Upgrade                              |
| 20-34 Addition of Footnote for Expanded Thickness Ranges with No Secondary Properties |
| 20-35 Alloys Requested for Analysis   |
| 20-36 Request for Secondary Property Data   |
| 20-37 Re-analysis of 7160-T7451 BUS e/D=2.0 (S-L)                                     |

#### Agreed to Close

| Item No | Respon<br>Final | nsible<br>Initial      | Chpt | Title   | Туре               | Webex<br>Session | 36th<br>Action                           | 36th Meeting Description   |
|---------|-----------------|------------------------|------|---|--------------------|------------------|--|--|
| 10-25   | GTG-F           | FTG                    | 9    | Fastener Installation Parameters for Joint<br>Tension Allowables                          | Agenda             | FTG-2            | Closed w<br>no Action                    | D. Hall presented this item. Voted to close with no action (16/19 voted to close, 3/19 to continue)  |
| 11-15   | MTG             |                        | 2    | Division of Low Alloy Steel Table 2.3.1.0(g2)   | Agenda             | GCC              | Approved and Closed                      | This item was Agreed at the 35th Meeting. It was formally Closed as part of a Consent Agenda Item.   |
| 12-52   | GTG-F           | FTG                    | 9    | Fastener Minimum t/D Requirements   | Agenda             | FTG-1            |  | C. Reakes presented this item. This item was approved with the correction to fix typo to be "edge of the hole"   |
| 16-29   | GTG             | ASG                    | 1    | Review of Section 1.4.7 Bearing Properties  | Agenda             | GCC              | Approved and Closed                      | This item was Agreed at the 35th Meeting. It was formally Closed as part of a Consent Agenda Item.   |
| 16-36   | GTG-F           | FTG                    | 9    | Use of T99 as A-Basis When Higher than<br>Specification for Fastener Shear and<br>Tension | Agenda/<br>Handout | FTG-1            | 60 Day<br>Approval<br>without<br>changes | C. Shannon presented this item. ASG will organize a call to discuss the item. Any objections must be sent to Battelle within 60 days after the minutes are published.  |
| 16-37   | GTG-F           | FTG                    | 1    | Chapter 1 Guidelines on Fastener Design<br>Allowable Usage                                | Agenda             | FTG-1,<br>GTG-3  | Approved                                 | C. Reakes presented this item for approval by the FTG on 9/22. D. Hall presented this item at the GTG for final approval on 9/24.  |
| 17-19   | MTG             |                        | 2    | Addition of Transverse Bearing Strength<br>Properties for Custom 465 Bar                  | Status             | MTG-1            | Closed w<br>no Action                    | J. Rubadue proposed closing with no action. Carpenter does not intend to generate needed data. Alloy added to Item 20-36 with note that Carpenter does not intend to provide data.   |
| 17-26   | GTG             | ASG/M<br>ATSSG/<br>PSG | 9    | Guidelines for Generation and Use of A/B<br>Allowables for Castings                       | Agenda             | GTG-2            | Approved<br>w Changes<br>and Closed      | D. Hall presented this item. S. Thompson would like to see a reference to definition of material allowable before including. Suggested S-Basis properties. Needs to look at regulatory documents. Changes from ASG and MATSSG will be included. Agreed to MATSSG change and S-basis properties. Voted to approve with changes - 33 for, 7 no. Item 20-31 was opened to discuss MMPDS use of the terms design allowables and material allowables. |
| 17-30   | GTG-F           | FTG                    | 9    | Revision of Table Format for Joint<br>Allowables  | Agenda             | GCC              | Approved and Closed                      | This item was Agreed at the 35th Meeting. It was formally Closed as part of a Consent Agenda Item.   |
| 17-31   | GTG-F           |                        | 9    | Sunset Shear Strength Rule Criteria<br>Addition   | Agenda             | FTG-2,<br>GTG-3  | Approved and Closed                      | C. Shannon presented this item. It was discussed and approved by FTG and GTG.  |
| 18-05   | GTG             | ASG/M<br>ATSSG         | 9    | Data Quantities for Large Thickness Ranges  | Agenda             | GTG-3            | Approved<br>w Changes<br>and Closed      | Text changes are captured in the ppt presentations to clarify the wording.   |
| 18-21   | MTG             |                        | 3    | Upgrade S-basis to A/B-basis for 2219-<br>T852 Aluminum Alloy Hand Forgings               | Agenda             | GCC              | Approved and Closed                      | This item was Agreed at the 35th Meeting. It was formally Closed as part of a Consent Agenda Item.   |
| 18-28   | GTG             |                        | 9    | Using the Logarithm Transformation with MIDAS Analysis of Minimum Properties              | Agenda             | GTG-2            | Closed w<br>no Action                    | C. Reakes presented this item to close with no action.   |

#### Agreed to Close

| Item No | Respo<br>Final | nsible<br>Initial | Chpt  | Title  | Туре   | Webex<br>Session | 36th<br>Action                      | 36th Meeting Description   |
|---------|----------------|-------------------|-------|--|--------|------------------|-------------------------------------|--|
| 19-05   | GTG            |                   | 9     | Secondary Properties Requirement When<br>Expanding Thickness Range in a Table                        | Agenda |                  | 60 Day<br>Approval w                | J. Rubadue presented this item. G. Bray's revision of paragraph was accepted with change to last sentence change "design allowable properties" to "A- and B-Basis properties". Roger suggest additional data required by user. Add footnote to column that secondary properties must be confirmed. See section 1 B. Thomas said to change wording to "strongly recommended" from "recommended". Poll taken for/against - 29/5. A new Item was created to include words regarding testing (R. Reinmuller, R. Goode). Open a new item to document to identify where a footnote is needed on expanded range and to add the footnote to the example table. |
| 19-17   | GTG            | ETTG              | V2    | Minimum Content Requirements for Public Specifications - Volume II                                   | Agenda | ETTG-2           | Approved<br>w Changes<br>and Closed | D. Hall presented this item. Section 9.2.2.2.1, bullet 5 - Metallography should add " and limits" to say " requirements and limits" . No objections to keeping text for 9.2.2.4.   |
| 19-33   | MTG            |                   | 3     | Upgrade Bearing Strength from S- to A-/B-Basis 7075-T6 Bare Sheet                                    | Agenda | GCC              |                                     | This item was Agreed at the 35th Meeting. It was formally Closed as part of a Consent Agenda Item.   |
| 19-35   | GTG-F          | FTG               | 9     | Re-Evaluate R-Squared Acceptance<br>Requirement for Fastener Shear or Tensile<br>Strength Allowables | Agenda | GCC              |                                     | This item was Agreed at the 35th Meeting. It was formally Closed as part of a Consent Agenda Item.   |
| 19-45   | MTG            |                   | 3     | Addition of A206.0-T4 and T71 Sand<br>Casting Fatigue Analyses                                       | Agenda | GCC              |                                     | This item was Agreed at the 35th Meeting. It was formally Closed as part of a Consent Agenda Item.   |
| 19-46   | FTG            |                   | 8     | Review Table 8.1.2(a)  | Agenda | FTG-1            | Closed w<br>no Action               | D. Hall presented this item. In future, consider redoing the table by removing driven material column.   |
| 20-01   | MTG            |                   | 3     | Stabilization of AMS-QQ-A-200/3 for 2024<br>Alloy Extrusions   | Agenda | GCC              |                                     | This item was Agreed at the 35th Meeting. It was formally Closed as part of a Consent Agenda Item.   |
| 20-02   | GTG            |                   | 9     | Editorial Correction for Section 9.6.1.11  | Agenda | GTG-3            | Approved and Closed                 | D. Hall presented this item.   |
| 20-05   | MTG            |                   | 6     | L-605 ST Bar and Forging Creep Curve<br>Correction   | Agenda | GCC              |                                     | This item was Agreed at the 35th Meeting. It was formally Closed as part of a Consent Agenda Item.   |
| 20-06   | MTG            |                   | 3     | Addition of 2043-T85 Extrusion Tensile<br>Stress-Strain Curves                                       | Agenda | MTG-3            |                                     | C. Shannon presented this item. A definition of Aspect Ratio is included in the Minutes.   |
| 20-07   | MTG            |                   | 3     | Mechanical and Physical Properties for 7160-T7351 Aluminum Alloy Plate                               | Agenda | MTG-2            | J                                   | J. Rubadue and C. Shannon presented this item. Intro comments approved. Modulus correction will be made in the table. BMI to add info to minutes about COV ratios for shear and bearing. Other comments captured in the Chat. Stress-strain curves approved.   |
| 20-08   | MTG            | MATSS<br>G        | 3     | Mechanical and Physical Properties for 7160-T7451 Aluminum Alloy Plate                               | Agenda | MTG-2            | Approved<br>w Changes<br>and Closed | J. Rubadue and C. Shannon presented this item. Comments captured in the Chat be summarized in the minutes. Create an item to re-analyze the data for Figure 14b. Stress-strain curves approved.  |
| 20-11   | GTG-F          | FTG               | 9     | Split Table 9.2.4 for Chapters 2-7 and<br>Chapter 8  | Agenda | FTG-1,<br>GTG-3  | Approved and Closed                 | D. Hall presented this item approved by FTG and presented to GTG.  |
| 20-12   | MTG            |                   | multi | Maintenance for Alloys for Analysis  | Agenda | A-3              |                                     | J. Rubadue presented this item to consolidate several items into 2 items.  |
| 20-14   | GTG            | MATSS<br>G/ASG    | 9     | Discussion of Factors contributing to variance of Extrusion Stress-Strain Curves                     | Agenda | GTG-3            | Closed w<br>no Action               | C. Shannon presented this item proposing close with no action.   |

#### Agreed to Close

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| Item No      | Final  | Initial | Chpt | Title  | Туре     | Session | Action                              | 36th Meeting Description   |
| 20-17        | GTG    | ETTG    | V2   | Components of Variance Analysis of AM,<br>Cast, & Wrought 718  | Handout  | ETTG-3  | Closed w<br>no Action               | D. Hall persented this item. Discussed in ETTG and briefly in GTG.   |
| 20-19        | GTG    | ETTG    | V2   | Acceptance Testing Comparisons: Producers vs. Consumers Risk   | Handout  | ETTG-3  | Closed w<br>no Action               | B. Krile presented this topic. A presentation is included in the Minutes.  |
| 20-21        | FTG    |         | 8    | Proposed Test Plan for Static Joint<br>Strength of 100° Flush Shear Head Blind<br>Rivets                 | Present. | FTG-2   | Closed w<br>no Action               | P. Keller presented new information about the test plan. A new item will be opened when data are received.   |
| 20-22        | GCC    |         | All  | Consent Agenda Item: Approve and Close items that were Agreed or Agreed w/Changes from the 35th meeting. | Agenda   | GCC     | Approved and Closed                 | D. Hall presented this item to Approve & Close Agenda Items 11-15, 16-29, 17-30, 18-21, 19-33, 19-35, 19-45, 20-01, and 20-05.   |
| 20-23        | MTG    |         | 3    | Stress-Corrosion Cracking of 7160<br>Aluminum Alloy Plate  | Agenda   | MTG-3   | Approved and Closed                 | J. Rubadue presented this item adding SCC to tables.   |
| 20-24        | MTG    |         | 2    | Correction to 300 Stainless Steel<br>Elongation Properties   | Agenda   | MTG-1   | Approved and Closed                 | J. Rubadue presented this item. Battelle will confirm that the symbol is ">" not "≥" and document that confirmation in minutes.  |
| 20-25        | MTG    |         | 2    | Stabilization for AISI 1025 Tubing Specifications  | Agenda   | MTG-1   |                                     | J. Rubadue presented this item. Final tables will be shown in the minutes.   |
| 20-26        | MTG    |         | 7    | Update References for Beryllium Toxicity   | Agenda   | MTG-1   |                                     | J. Rubadue presented this item. Final changes will be shown in the minutes.  |
| 20-27        | MTG    |         | 3    | Specification Changes for Aluminum Alloys  | Agenda   | MTG-1   | Approved and Closed                 | J. Rubadue presented this item. M. Niedzinski commented that AMS 4330 was stabilized was based on a mistaken assumption that it was not being used. AMS will reballot to move it back to Active status. The ballot closes on 9/27/20. Changes for AMS 4025 will be shown in minutes. |
| 20-27        | MTG    |         | 3    | Specification Changes for Aluminum Alloys  | Handout  | MTG-1   | Approved and Closed                 | The handout was informational only and did not include changes for MMPDS. A new item will be created when BMI receives data for this alloy and will note which quench process was used.  |
| 20-28        | GTG    |         | 9    | Addition of Punch Shear Footnote   | Agenda   | GTG-3   | Approved<br>w Changes<br>and Closed | J. Rubadue presented this item. Remove sentence "Results may be conservative."   |

| Item No | Respor<br>Final | nsible<br>Initial | Chpt | Title  | Туре    | Webex<br>Session | 36th<br>Action        | 36th Meeting Description  |
|---------|-----------------|-------------------|------|--|---------|------------------|-----------------------|---|
| 03-14   | MTG             | ASG               | 1    | Review of Currency of Existing Database on Legacy Alloys   | Status  |                  | Not<br>Covered        | This item was not discussed. This item is closed and incorporated into Item 20-35 "Alloys Requested for Analysis" per Item 20-12. |
| 04-21   | FTG             |                   | 8    | Fastener Tables of Sunset Review Interest  | On Hold |                  | Not<br>Covered        | This item is on hold, pending items 12-50, 12-105, 17-28, and 17-29.  |
| 08-23   | FTG             |                   | 8    | Sunset Review of Table 8.1.3.2.2(c),<br>NAS1921C   | On Hold |                  | Not<br>Covered        | This item is on hold, pending items 12-50, 12-105, 17-28, and 17-29.  |
| 09-13   | FTG             |                   | 8    | Sunset Review of Table 8.1.3.2.3(a),<br>MS21140  | On Hold |                  | Not<br>Covered        | This item is on hold, pending items 12-50, 12-105, 17-28, and 17-29.  |
| 10-14   | MTG             | ASG               | 3    | Wrought Aluminum Alloys with S-Basis<br>Minimums   | Status  |                  | Not<br>Covered        | This item was not discussed. This item is closed and incorporated into Item 20-35 "Alloys Requested for Analysis" per Item 20-12. |
| 10-15   | MTG             |                   | 3    | Mechanical Properties for Forgings   | Status  |                  | Not<br>Covered        | This item was not discussed. This item is closed and incorporated into Item 20-35 "Alloys Requested for Analysis" per Item 20-12. |
| 10-25   | GTG-F           | FTG               | 9    | Fastener Installation Parameters for Joint Tension Allowables  | Agenda  | FTG-2            | Closed w<br>no Action | D. Hall presented this item. Voted to close with no action (16/19 voted to close, 3/19 to continue)                               |
| 11-05   | MTG             |                   | 1    | AMS Coordination   | Status  |                  | Not<br>Covered        | This item was not discussed. An update will be included in the minutes.   |
| 11-15   | MTG             |                   | 2    | Division of Low Alloy Steel Table 2.3.1.0(g2)  | Agenda  | GCC              |                       | This item was Agreed at the 35th Meeting. It was formally Closed as part of a Consent Agenda Item.                                |
| 11-38   | FTG             |                   | 8    | Sunset Review of Flush Head, Mechanical<br>Lock Spindle Blind Rivet Table 8.1.3.2.2(e)<br>NAS 1921 M | On Hold |                  | Not<br>Covered        | This item is on hold, pending items 12-50, 12-105, 17-28, and 17-29.  |
| 11-43   | FTG             |                   | 8    | Supporting Data and Basis Identification for Table 8.1.2(b)  | Status  |                  | Not<br>Covered        | This item was not discussed.  |
| 12-105  | GTG-F           | FTG               | 9    | Modification to the Sunset Criteria<br>Procedures  | Status  |                  | Not<br>Covered        | This item was not discussed. Pending resolution of 12-50 and 17-28.   |

| Item No | Respon<br>Final | Initial             | Chpt | Title   | Туре    | Webex<br>Session | 36th<br>Action | 36th Meeting Description  |
|---------|-----------------|---------------------|------|---|---------|------------------|----------------|---|
| 12-17   | MTG             | ASG &<br>MATSS<br>G | 6    | Footnote for Non-Ferrous Alloys Test<br>Specimen When Not From Full Thickness   | Status  |                  | Not<br>Covered | This item was not discussed. Are there any non-ferrous alloys which need a footnote added?  |
| 12-50   | GTG-F           | FTG                 | 9    | Evaluation of new Regression and Confidence Models for Lap Joint Tests          | Status  |                  | Not<br>Covered | This item was not discussed.  |
| 12-52   | GTG-F           | FTG                 | 9    | Fastener Minimum t/D Requirements   | Agenda  | FTG-1            |                | C. Reakes presented this item. This item was approved with the correction to fix typo to be "edge of the hole"                            |
| 12-89   | MTG             | PSG                 |      | Target Materials for Propulsion<br>Applications                                 | Status  |                  | Not<br>Covered | This item was not discussed.  |
| 13-34   | MTG             |                     | 5    | Addition of AMS 4919 Ti-6-2-4-2 Plate<br>Properties                             | Status  |                  | Not<br>Covered | No action on this item. Waiting on fatigue crack growth data from AFRL. Requested data from Arconic.                                      |
| 13-50   | GTG             |                     | 9    | ASTM Coordination   | Status  |                  | Not<br>Covered | This item was not discussed.  |
| 14-19   | GTG             |                     | 9    | Inclusion of KIsi Fracture Toughness Data                                       | Status  |                  | Not<br>Covered | This item was not discussed.  |
| 14-28   | FTG             |                     | 8    | Sunset Review of Table 8.1.4.2(i), LGPL2SC-V Pin, 3SLC-C Collar in Clad 7075-T6 | On Hold |                  | Not<br>Covered | This item was not discussed. No action on this item.  |
| 14-62   | GTG             |                     | 9    | Evaluate Inclusion of other Fracture<br>Toughness Data (JIC, KJIC)              | Handout | GTG-1            | Continue       | C. Reakes presented this item. B. Thomas will send additional comments to G. Bray. G. Bray will prepare an agenda for the Spring meeting. |
| 14-66   | MTG             |                     | 2    | Addition of 15-5PH Sheet S-Basis per AMS 5862 for H1025 Condition               | Status  |                  | Not<br>Covered | Data are needed. This item is closed and incorporated into Item 20-35 "Alloys Requested for Analysis" per Item 20-12.                     |
| 14-67   | MTG             |                     | 3    | Addition of 3-6 Inch Range for 7075-T73X<br>Bar and Rod per AMS 4124            | Status  |                  | Not<br>Covered | Data are needed. This item is closed and incorporated into Item 20-35 "Alloys Requested for Analysis" per Item 20-12.                     |

| Item No | Respo | nsible         | Chpt  | Title  | Туре   | Webex   | 36th           | 36th Meeting Description   |
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| item No | Final | Initial        | Clipt | ricie  | туре   | Session | Action         | Sour Meeting Description   |
| 15-13   | MTG   | ISG &<br>GSG   | multi | Clarification of Shear Orientation for<br>Legacy Alloys  | Agenda | MTG-3   | Continue       | J. Rubadue presented this item. Identify 2024-T3, 7075-T76, and 7475 as punch shear as proposed. Continue 718 based on comments from S. Thompson and G. Bray.  |
| 15-19   | GTG-F | FTG            | 9     | Verification of Secondary Modulus<br>Methods for Fasteners                                     | Status |         | Not<br>Covered | This item was not discussed.   |
| 15-36   | GTG   | ISG &<br>GSG   | 9     | Modification of Indirect Analysis Equation   | Agenda | GTG-2   | Continue       | B. Krile presented this item. Please send questions and comments to B. Krile. An agenda proposing this modification of the indirect method will be included in the Spring meeting. An attachment is included in the Minutes.   |
| 15-38   | GTG   |                | 9     | Reevaluation of Degrees of Freedom<br>Calculation for Regression with Effect of<br>Temperature | Status |         | Not<br>Covered | This item was not discussed.   |
| 15-40   | GTG   | ASG/M<br>ATSSG | 9     | Guidelines for When Specimens Are Not<br>From Full Thickness                                   | Agenda | GTG-1   | Continue       | ASG and MATSSG had comments with suggested changes. MATSSG asked if KIc was also a concern. B. Thomas the concern should be mentioned. R. Reinmüller stated that the producer should identify which other properties may be impacted. R. Goode mentioned ASG discussed what would be in the study. It would include tensiles. D. Barnes are we providing enough guidance for what is needed. J. Bennet concerned about rejections. |
| 15-42   | MTG   |                | 2     | Casting Allowables for 15-5PH and 17-4PH Steel   | Status |         | Not<br>Covered | This item was not discussed. No changes to this item.  |
| 16-02   | GTG   |                | 9     | Updates to Strain Departure Methods for<br>Stress-Strain Curve Analyses                        | Status |         | Not<br>Covered | This item was not discussed.   |
| 16-12   | FTG   |                | 8     | Identifying Basis of Fastener Shear<br>Strength on Remaining Tables                            | Status |         | Not<br>Covered | This item was not discussed.   |

| Item No | Respo | nsible  | Chpt  | Title   | Type               | Webex           | 36th                                     | 36th Meeting Description   |
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| item No | Final | Initial | Clipt | ritie   | Туре               | Session         | Action                                   | Sour Meeting Description   |
| 16-13   | FTG   |         | 8     | Corrections to Table 8.1.3.2.2(c) NAS 1921C   | On Hold            |                 | Not<br>Covered                           | This item is on hold, pending items 12-50, 12-105, 17-28, 17-29, and 08-23.  |
| 16-20   | GTG   | ETTG    | V2    | Equivalence Testing Assuming Change in Process (From Item 11-40)                    | Status             | ETTG-3          | Continue                                 | This item was not discussed due to time constraints. It will be continued to the next meeting.   |
| 16-23   | GTG   | PSG     | 6     | Re-evaluate Guidelines for Effect of<br>Temperature Curves                          | Status             |                 | Not<br>Covered                           | This item was not discussed.   |
| 16-29   | GTG   | ASG     | 1     | Review of Section 1.4.7 Bearing Properties  | Agenda             | GCC             | Approved and Closed                      | This item was Agreed at the 35th Meeting. It was formally Closed as part of a Consent Agenda Item.   |
| 16-36   | GTG-F | FTG     | 9     | Use of T99 as A-Basis When Higher than Specification for Fastener Shear and Tension | Agenda/<br>Handout | FTG-1           | 60 Day<br>Approval<br>without<br>changes | C. Shannon presented this item. ASG will organize a call to discuss the item. Any objections must be sent to Battelle within 60 days after the minutes are published.              |
| 16-37   | GTG-F | FTG     | 1     | Chapter 1 Guidelines on Fastener Design<br>Allowable Usage                          | Agenda             | FTG-1,<br>GTG-3 | Approved and Closed                      | C. Reakes presented this item for approval by the FTG on 9/22.  D. Hall presented this item at the GTG for final approval on 9/24.   |
| 17-19   | MTG   |         | 2     | Addition of Transverse Bearing Strength<br>Properties for Custom 465 Bar            | Status             | MTG-1           | Closed w<br>no Action                    | J. Rubadue proposed closing with no action. Carpenter does not intend to generate needed data. Alloy added to Item 20-36 with note that Carpenter does not intend to provide data. |
| 17-23   | GTG   |         | 9     | Legacy Alloy Review Strategy – Near Term  | On Hold            |                 | Not<br>Covered                           | On hold till Fall 2020   |
| 17-25   | GTG   |         | 9     | Re-evaluation of Reduced Ratio Sample<br>Size Determination                         | On Hold            |                 | Not<br>Covered                           | On hold pending Item 15-36.  |

| Item No | Respo<br>Final | nsible<br>Initial      | Chpt | Title  | Туре   | Webex<br>Session | 36th<br>Action                      | 36th Meeting Description   |
|---------|----------------|------------------------|------|--|--------|------------------|-------------------------------------|--|
| 17-26   | GTG            | ASG/M<br>ATSSG/<br>PSG | 9    | Guidelines for Generation and Use of A/B<br>Allowables for Castings                                      | Agenda | GTG-2            | Approved<br>w Changes<br>and Closed | D. Hall presented this item. S. Thompson would like to see a reference to definition of material allowable before including. Suggested S-Basis properties. Needs to look at regulatory documents. Changes from ASG and MATSSG will be included. Agreed to MATSSG change and S-basis properties. Voted to approve with changes - 33 for, 7 no. Item 20-31 was opened to discuss MMPDS use of the terms design allowables and material allowables. |
| 17-28   | GTG-F          | FTG                    | 9    | Consideration of Origin in Multiple<br>Regression Analysis for Joint Allowables                          | Status | FTG-3            | Continue                            | B. Krile presented a preliminary analysis for this item which is included in the Minutes.  |
| 17-29   | GTG-F          | FTG                    | 9    | Replacement of T90 Yield Curve with a<br>Multiple-Regression Typical Yield Curve<br>for Joint Allowables | Agenda | FTG-1            | Continue                            | W. White presented this item. Consensus not reached. Will be circulated again for review. Legends and typos will be corrected.   |
| 17-30   | GTG-F          | FTG                    | 9    | Revision of Table Format for Joint<br>Allowables   | Agenda | GCC              |                                     | This item was Agreed at the 35th Meeting. It was formally Closed as part of a Consent Agenda Item.   |
| 17-31   | GTG-F          |                        | 9    | Sunset Shear Strength Rule Criteria<br>Addition  | Agenda | FTG-2,<br>GTG-3  |                                     | C. Shannon presented this item. It was discussed and approved by FTG and GTG.  |
| 17-32   | GTG-F          | FTG                    | 9    | Edit Table 8.1.5.1   | Agenda |                  | Not<br>Covered                      | This item was not discussed.   |
| 17-34   | GTG            | SSWG                   | 9    | Guidelines for Rejection of Stress-Strain<br>Curves from Parametric Analysis                             | Status |                  | Not<br>Covered                      | This item was not discussed.   |
| 17-45   | MTG            |                        | 3    | Effect of Temperature Curves for 2395-<br>T84 Extrusion  | Status |                  | Not<br>Covered                      | This item was not discussed.   |

| Item No | Respo | nsible         | Chpt  | Title  | Туре    | Webex   | 36th                                | 36th Meeting Description   |
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| item No | Final | Initial        | Clipt | Title  | Type    | Session | Action                              | Sour Meeting Description   |
| 17-52   | GTG   | FatWG          | 9     | Review Section 9.6.1 - Load and Strain Control Fatigue                               | Status  |         | Not<br>Covered                      | This item was not discussed.   |
| 17-54   | MTG   |                | 3     | Inclusion of Properties for AMS 4221,<br>2124-T8151 Plate                            | Status  |         | Not<br>Covered                      | This item was not discussed. This item is closed and incorporated into Item 20-35 "Alloys Requested for Analysis" per Item 20-12.                                    |
| 17-55   | MTG   | PSG            | 5     | Supplemental Data for Ti-6-2-4-2 Forging   | Status  |         | Not<br>Covered                      | This item was not discussed. This item was closed and incorporated into Item 20-36 Request for Secondary Property Data per Item 20-12.                               |
| 17-56   | MTG   |                | 3     | FCG Analysis for 2397-T87 Plate  | Status  |         | Not<br>Covered                      | This item was not discussed.   |
| 17-61   | GTG   | FatWG          | 9     | Revising R-curve Requirement in Table 9.2.4  | Status  |         | Not<br>Covered                      | This item was not discussed.   |
| 17-62   | GTG   | FatWG          | 9     | Revising Fatigue Requirement in Table 9.2.4  | Status  |         | Not<br>Covered                      | This item was not discussed.   |
| 17-63   | GTG   | FatWG          | 9     | Use of Box-Cox Transformation in the Fitting of Fatigue Data                         | Status  |         | Not<br>Covered                      | This item was not discussed.   |
| 18-05   | GTG   | ASG/M<br>ATSSG | 9     | Data Quantities for Large Thickness Ranges   | Agenda  | GTG-3   | Approved<br>w Changes<br>and Closed | Text changes are captured in the ppt presentations to clarify the wording.   |
| 18-08   | MTG   |                | 6     | 718 Investment Cast (AMS5383) Addition of Tensile A/B-basis and Elevated Temperature | Agenda  | MTG-3   | Continue                            | D. Hall presented this item.  13/27 voted to Approve. 14/27 Voted to continue.  The EoT curve for %EL was missing.  Thickness range of the original parts is needed. |
| 18-10   | GTG   |                | 9     | Data Requirements for Forgings   | On Hold |         | Not<br>Covered                      | No action on this item.  |
| 18-13   | GTG   |                | 9     | Guidelines for Exclusion of Low Secondary<br>Property Test Values                    | On Hold |         | Not<br>Covered                      | On hold pending Item 15-36.  |
| 18-21   | MTG   |                | 3     | Upgrade S-basis to A/B-basis for 2219-<br>T852 Aluminum Alloy Hand Forgings          | Agenda  | GCC     | Approved and Closed                 | This item was Agreed at the 35th Meeting. It was formally Closed as part of a Consent Agenda Item.   |

| Item No | Respo<br>Final | nsible<br>Initial | Chpt | Title  | Туре   | Webex<br>Session | 36th<br>Action                         | 36th Meeting Description   |
|---------|----------------|-------------------|------|--|--------|------------------|--|--|
| 18-28   | GTG            |                   | 9    | Using the Logarithm Transformation with MIDAS Analysis of Minimum Properties | Agenda | GTG-2            | Closed w<br>no Action                  | C. Reakes presented this item to close with no action.   |
| 19-04   | GTG            | ETTG              | V2   | Considerations for Certifying an AM Part                                     | Status |                  | Not<br>Covered                         | This item was not discussed.   |
| 19-05   | GTG            |                   | 9    | Secondary Properties Requirement When Expanding Thickness Range in a Table   | Agenda | GTG-2            | 60 Day<br>Approval w<br>ith<br>changes | J. Rubadue presented this item. G. Bray's revision of paragraph was accepted with change to last sentence change "design allowable properties" to "A- and B-Basis properties". Roger suggest additional data required by user. Add footnote to column that secondary properties must be confirmed. See section 1 B. Thomas said to change wording to "strongly recommended" from "recommended". Poll taken for/against - 29/5. A new Item was created to include words regarding testing (R. Reinmuller, R. Goode). Open a new item to document to identify where a footnote is needed on expanded range and to add the footnote to the example table. |
| 19-10   | MTG            |                   | 6    | Secondary Properties for 718 Bar per AMS 5662 and AMS 5663                   | Status |                  | Not<br>Covered                         | Data are needed. This item was closed and incorporated into Item 20-36 Request for Secondary Property Data per Item 20-12.   |
| 19-17   | GTG            | ETTG              | V2   | Minimum Content Requirements for Public Specifications - Volume II           | Agenda | ETTG-2           | Approved<br>w Changes<br>and Closed    | D. Hall presented this item. Section 9.2.2.2.1, bullet 5 - Metallography should add " and limits" to say " requirements and limits" . No objections to keeping text for 9.2.2.4.   |
| 19-19   | GTG            | FatWG             | 9    | Consideration of a new Equivalent Stress model for Load-Controlled Fatigue   | Status |                  | Not<br>Covered                         | This item was not discussed.   |

| Item No | Respor<br>Final | nsible<br>Initial | Chpt  | Title  | Туре               | Webex<br>Session | 36th<br>Action      | 36th Meeting Description  |
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| 19-20   | GTG             | ETTG              | V2    | Data Requirements for Volume II  | Agenda/<br>Handout | ETTG-2           | Continue            | D. Hall presented this item which was initially discussed in ETTG. Lots of discussions, resulting in removing C & D for now. Doug proposed 60Day approval removing C& D, accepting change on re-wording paragraph "Material allowables" but leaving S-Basis for now. This would allow some progress and ability to include this in report. Comment that ETTG should be included to decide if it should be 60 day this is continued. |
| 19-21   | MTG             |                   | multi | Determine Buckling Notes for Existing Figures With Dual-Shape Parameters                             | Agenda             | MTG-3            | Continue            | C. Shannon presented this item. This item was initially approved and closed, but errors were found while documenting the Minutes. This item will be continued, all buckling notes will be checked, and a new agenda will be prepared for the next meeting.  |
| 19-25   | GTG             |                   | 9     | Guidelines for Derived Properties for<br>Legacy Alloys   | Agenda             | A-3              | Continue            | J. Rubadue presented this item. ASG to discuss.   |
| 19-33   | MTG             |                   | 3     | Upgrade Bearing Strength from S- to A-/B-Basis 7075-T6 Bare Sheet                                    | Agenda             | GCC              |                     | This item was Agreed at the 35th Meeting. It was formally Closed as part of a Consent Agenda Item.  |
| 19-34   | GTG             | PSG               | 9     | Waive Requirement for Bearing and/or<br>Shear Properties When Appropriate                            | Status             |                  | Not<br>Covered      | This item was not discussed.  |
| 19-35   | GTG-F           | FTG               | 9     | Re-Evaluate R-Squared Acceptance<br>Requirement for Fastener Shear or Tensile<br>Strength Allowables | Agenda             | GCC              | Approved and Closed | This item was Agreed at the 35th Meeting. It was formally Closed as part of a Consent Agenda Item.  |
| 19-36   | FTG             |                   | 9     | Update Section 9.2.4.7 Fastener Strength Table Sunset Clause   | Status             |                  | Not<br>Covered      | This item was not discussed.  |
| 19-37   | GTG-F           | FTG               | 9     | Establish a Guideline for Reinserting Chapter 8 Tables.  | Status             |                  | Not<br>Covered      | This item was not discussed.  |

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| 19-38     | ETTG   |         | V2    | Process Intensive Materials & Technologies SDO Coordination                            | Status  |         | Not<br>Covered        | This item was not discussed. The CMH-17/MMPDS Workshop report will be included in the Minutes or sent to registered Attendees after final approval.   |
| 19-39     | FTG    | ASG     | 8     | Review Chapter 8 Tables Removed by the Sunset Clause                                   | Agenda  | FTG-3   | Continue              | C. Shannon presented this item. R. Goode created a survey to identify critical fasteners to confirm and return to Chapter 8. ASG should review the survey list and provide input to FTG.                        |
| 19-40     | GTG    |         | 9     | Review Section 9.4 Substantiation of Data  | Handout | GTG-1   | Continue              | D. Hall presented this item. An agenda item will be prepared for the Spring meeting.  |
| 19-41     | MTG    |         | 5     | Confirmation of Design Properties of AMS 4911 for Ti-6Al-4V Sheet and Plate            | Status  |         | Not<br>Covered        | This item was not discussed. This item is closed and incorporated into Item 20-35 "Alloys Requested for Analysis" per Item 20-12.   |
| 19-42     | MTG    |         | 3     | Confirmation of Design Properties of AMS 4202 for 7475-T7351 Aluminum Alloy Plate      | Status  |         | Not<br>Covered        | This item was not discussed.  |
| 19-43     | MTG    |         | 3     | Upgrade of Design Properties of AMS<br>4154 for 7075-T6511 Aluminum Alloy<br>Extrusion | Status  |         | Not<br>Covered        | This item was not discussed. Kaiser and Universal Alloy have sent updated data sets. Arconic to send data set. An agenda will be prepared for the Spring meeting. Secondary properties need to be investigated. |
| 19-44     | MTG    |         | multi | Update Stress-Strain Figures to Report<br>Bron Method Relevance                        | Status  |         | Not<br>Covered        | This item was not discussed.  |
| 19-45     | MTG    |         | 3     | Addition of A206.0-T4 and T71 Sand<br>Casting Fatigue Analyses                         | Agenda  | GCC     | Approved and Closed   | This item was Agreed at the 35th Meeting. It was formally Closed as part of a Consent Agenda Item.  |
| 19-46     | FTG    |         | 8     | Review Table 8.1.2(a)  | Agenda  | FTG-1   | Closed w<br>no Action | D. Hall presented this item. In future, consider redoing the table by removing driven material column.  |
| 20-01     | MTG    |         | 3     | Stabilization of AMS-QQ-A-200/3 for 2024<br>Alloy Extrusions                           | Agenda  | GCC     |                       | This item was Agreed at the 35th Meeting. It was formally Closed as part of a Consent Agenda Item.  |

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| 20-02   | GTG             |                   | 9    | Editorial Correction for Section 9.6.1.11                                    | Agenda | GTG-3            | Approved and Closed                 | D. Hall presented this item.   |
| 20-03   | GTG             |                   | 9    | MMPDS Review & Approval Process  | Status | A-3              | Continue                            | Was not discussed  |
| 20-04   | GTG             | ETTG              | V2   | V2: MMPDS Review & Approval Process  | Status |                  | Not<br>Covered                      | This item was not discussed.   |
| 20-05   | MTG             |                   | 6    | L-605 ST Bar and Forging Creep Curve Correction                              | Agenda | GCC              | Approved and Closed                 | This item was Agreed at the 35th Meeting. It was formally Closed as part of a Consent Agenda Item.   |
| 20-06   | MTG             |                   | 3    | Addition of 2043-T85 Extrusion Tensile<br>Stress-Strain Curves               | Agenda | MTG-3            | • •                                 | C. Shannon presented this item. A definition of Aspect Ratio is included in the Minutes.   |
| 20-07   | MTG             |                   | 3    | Mechanical and Physical Properties for 7160-T7351 Aluminum Alloy Plate       | Agenda | MTG-2            | w Changes                           | J. Rubadue and C. Shannon presented this item. Intro comments approved. Modulus correction will be made in the table. BMI to add info to minutes about COV ratios for shear and bearing. Other comments captured in the Chat. Stress-strain curves approved.   |
| 20-08   | MTG             | MATSS<br>G        | 3    | Mechanical and Physical Properties for 7160-T7451 Aluminum Alloy Plate       | Agenda | MTG-2            | Approved<br>w Changes<br>and Closed | J. Rubadue and C. Shannon presented this item. Comments captured in the Chat be summarized in the minutes. Create an item to re-analyze the data for Figure 14b. Stress-strain curves approved.  |
| 20-09   | MTG             |                   | 3    | Expansion of Thickness Range for 6061-<br>T651 Plate                         | Status |                  | Not<br>Covered                      | This item was not discussed. L & ST tensile data are needed. Basis of secondary properties to be researched.   |
| 20-10   | MTG             |                   | 3    | Upgrade of Secondary Properties of 7075-<br>T76511 Aluminum Alloy Extrusions | Status |                  | Not<br>Covered                      | This item was not discussed. It is related to Item 18-22 closed at the 34th meeting where derived properties in the 1-2 inch range were S-basis due to small sample size. Kaiser and Universal alloy agreed to supply data or material. AFRL agreed to testing. Data for 2.5-3 inch is also desired. |

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| 20-11   | GTG-F  | FTG               | 9     | Split Table 9.2.4 for Chapters 2-7 and Chapter 8   | Agenda   | FTG-1,<br>GTG-3  |                       | D. Hall presented this item approved by FTG and presented to GTG.   |
| 20-12   | MTG    |                   | multi | Maintenance for Alloys for Analysis  | Agenda   | A-3              |                       | J. Rubadue presented this item to consolidate several items into 2 items.   |
| 20-13   | ETTG   |                   | V2    | CMH-17/MMPDS Coordination & Collaboration  | Status   | ETTG-1           | Continue              | M. Gorelik provided an update on the virtual workshop.<br>The report text is being reviewed for release. It will be<br>provided to registered Attendees after final approval. |
| 20-14   | GTG    | MATSS<br>G/ASG    | 9     | Discussion of Factors contributing to variance of Extrusion Stress-Strain Curves         | Agenda   | GTG-3            | Closed w<br>no Action | C. Shannon presented this item proposing close with no action.  |
| 20-15   | GTG    | MATSS<br>G/ASG    | 9     | Revisit Stress-Strain Data Generation<br>Guidelines - Use of Extensometers               | Status   |                  | Not<br>Covered        | This item was not discussed.  |
| 20-16   | GTG    | ETTG              | V2    | MMPDS & Additive Metals - Program Plan   | Present. | ETTG-1           | Continue              | D. Hall provided an updated program plan.   |
| 20-17   | GTG    | ETTG              | V2    | Components of Variance Analysis of AM,<br>Cast, & Wrought 718                            | Handout  | ETTG-3           | Closed w<br>no Action | D. Hall persented this item. Discussed in ETTG and briefly in GTG.  |
| 20-18   | MTG    |                   | 2     | Updates to Low Alloy Steel tables  | Agenda   | MTG-1            | Continue              | J. Rubadue presented this item for discussion. Not all topics were addressed. Comments were captured and will be included in Spring Agenda.                                   |
| 20-19   | GTG    | ETTG              | V2    | Acceptance Testing Comparisons: Producers vs. Consumers Risk                             | Handout  | ETTG-3           | Closed w<br>no Action | B. Krile presented this topic. A presentation is included in the Minutes.   |
| 20-20   | GTG    | ETTG              | V2    | Definitions for Volume II  | Agenda   | ETTG-2           | Continue              | D. Hall presented this item. Revisions are needed to reflect many concerns. An agenda item will be created for the Spring   |
| 20-21   | FTG    |                   | 8     | Proposed Test Plan for Static Joint<br>Strength of 100° Flush Shear Head Blind<br>Rivets | Present. | FTG-2            | Closed w<br>no Action | P. Keller presented new information about the test plan. A new item will be opened when data are received.  |

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| 20-22   | GCC              |                   | All  | Consent Agenda Item: Approve and Close items that were Agreed or Agreed w/Changes from the 35th meeting. | Agenda  | GCC              | Approved and Closed                 | D. Hall presented this item to Approve & Close Agenda Items 11-15, 16-29, 17-30, 18-21, 19-33, 19-35, 19-45, 20-01, and 20-05.   |
| 20-23   | MTG              |                   | 3    | Stress-Corrosion Cracking of 7160<br>Aluminum Alloy Plate  | Agenda  | MTG-3            | Approved and Closed                 | J. Rubadue presented this item adding SCC to tables.   |
| 20-24   | MTG              |                   | 2    | Correction to 300 Stainless Steel<br>Elongation Properties   | Agenda  | MTG-1            | Approved and Closed                 | J. Rubadue presented this item. Battelle will confirm that the symbol is ">" not "≥" and document that confirmation in minutes.  |
| 20-25   | MTG              |                   | 2    | Stabilization for AISI 1025 Tubing Specifications  | Agenda  | MTG-1            |                                     | J. Rubadue presented this item. Final tables will be shown in the minutes.   |
| 20-26   | MTG              |                   | 7    | Update References for Beryllium Toxicity   | Agenda  | MTG-1            |                                     | J. Rubadue presented this item. Final changes will be shown in the minutes.  |
| 20-27   | MTG              |                   | 3    | Specification Changes for Aluminum Alloys  | Agenda  | MTG-1            | Approved                            | J. Rubadue presented this item. M. Niedzinski commented that AMS 4330 was stabilized was based on a mistaken assumption that it was not being used. AMS will reballot to move it back to Active status. The ballot closes on 9/27/20. Changes for AMS 4025 will be shown in minutes. |
| 20-27   | MTG              |                   | 3    | Specification Changes for Aluminum Alloys  | Handout | MTG-1            |                                     | The handout was informational only and did not include changes for MMPDS. A new item will be created when BMI receives data for this alloy and will note which quench process was used.  |
| 20-28   | GTG              |                   | 9    | Addition of Punch Shear Footnote   | Agenda  | GTG-3            | Approved<br>w Changes<br>and Closed | J. Rubadue presented this item. Remove sentence "Results may be conservative."   |

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| 20-29     | GTG    |         | 9     | Analysis of Bearing and Shear Properties with Reduced Ratios                          | Status  | A-3     | Continue       | B. Krile discussed this item related to Item 19-28 (34th minutes). Discussion on possible compromise to allow indirect using bearing or shear in primary direction of 100 samples as primary and pairing other bearing or shear with the primary. This will be irrelevant if Item 15-36 is implemented. Attendees indicated interest in continuing evaluating this until 15-36 is finalized. Prepare agenda item to update results from Item 19-28. |
| 20-30     | GTG    | ETTG    | V2    | Components of Variance Analysis of AM,<br>Cast, & Wrought Ti 6-4                      | On Hold |         | Not<br>Covered | This item was not discussed.  |
| 20-31     | GTG    |         | 9     | Definitions of "Design Allowable", "Design Value", and "Material Allowables"          | Agenda  |         | New            | From Item 17-26. These terms are used interchangeably in MMPDS. Item 20-22 attempted to make them specific. This contradicts some agency regulations. It must be clear within MMPDS and consistent between volumes.   |
| 20-32     | GTG    |         | 9     | "Should", "Shall", "Must" decision for MMPDS program                                  | Agenda  |         | New            | There are differences of opinion whether "shall" means "must". It must be clear within MMPDS and consistent between volumes. Query other SDOs to find out how they have addressed this.   |
| 20-33     | MTG    |         | 3     | 2196-T8511 Aluminum Extrusion Analysis and Upgrade                                    | Agenda  |         | New            | This item was created at the 36th meeting.  If there is more than one supplier please notify BMI  |
| 20-34     | GTG    |         | 9     | Addition of Footnote for Expanded<br>Thickness Ranges with No Secondary<br>Properties | Agenda  |         | New            | From Item 19-05 to add footnote to tables with expanded thickness ranges showing A- and B-Basis minimums. Identify tables.  |
| 20-35     | MTG    |         | multi | Alloys Requested for Analysis   | Agenda  |         | New            | This item was created from Item 20-12   |
| 20-36     | MTG    |         | multi | Request for Secondary Property Data   | Agenda  |         | New            | This item was created from Item 20-12   |
| 20-37     | MTG    |         | 3     | Re-analysis of 7160-T7451 BUS e/D=2.0 (S-L)   | Agenda  |         | New            | This item was created from Item 20-08 (Figure 14b).   |

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| 21-NIN  | GTG   |         | 9     | User Testing of Secondary Properties for<br>an Existing Table w/Expanded Thickness<br>Range | Agenda |                     | New  | From Item 19-05 R. Reinmüller, R. Goode, J. Bennett will provide text for an agenda item in the Spring. |