



Minutes of the 38th MMPDS Coordination Meeting

Held in:

Virtual Meeting
August 30 - September 3, 2021

Compiled by:

Battelle
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Columbus, OH 43201-2693

Prepared for:

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38th MMPDS Coordination Meeting

Introduction of Attendees

A list of 38th 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 38th MMPDS General Coordination Committee meetings held virtually between August 30th through September 3rd. 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 of organizing and coordinating the WebEx sessions to keep the program moving forward. The final Minutes become official 30 days after posting unless comments are sent to Battelle as described in the Foreword to MMPDS-16.

Every meeting discusses significant Agenda Items. At the 38th meeting, Battelle presented a reorganization of Sections 9.1, 9.2, and 9.3 for Volume II that gathers information about the Handbook process, material specification requirements, material testing, data generation requirements, and data submission process. This is in preparation for publishing the new Volume. A second AM related item was a summary of the data analysis for a larger data set for L-PBF 718. This was Battelle's first opportunity to analyze some of the types of data included in the data package. There is still a great deal of work to do before material allowables entries can be approved but these items are significant progress towards that objective.

As of this writing, Battelle and the FAA expect that the 39th Meeting will take place in Santa Ana, California the week of March 28, 2022. Travel restrictions may require special accommodations, especially for members from outside the US. Battelle is continuing to monitor federal, state, and local developments and will work with the GSG to decide upon the final format (face-to-face, virtual, hybrid).

As discussed during the 38th GCC, there may be some virtual sessions in February to introduce complicated items, gather feedback from a wider audience, and provide an opportunity to discuss Consent Agenda items. The success of every meeting depends on your continuing participation.

Thanks again for attending the 38th MMPDS GCC 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,
MMPDS Chairman, Mark James
FAA Manager, Dynamic Systems Section, AIR-627
Technical Innovation Policy Branch, AIR-620

Approval of the 38th MMPDS Meeting Minutes

Except for items 21-25, 21-26, and 21-28, if no objections or corrections have been received within 30 days, the minutes of the 38th Meeting are considered approved. The other items will be considered approved after 60 days unless Battelle is notified.



SUMMARIES

38th MMPDS Meeting Attendance			August 16th	August 18th	August 30th				August 31st	September 1st	September 2nd	September 3rd	
Last Name	First Name	Company	MATSSG	ASG	Orientation	ISG	GSG	ISG/GSG	FTG 1-3	ETTG 1-4	GTG 1-4	MTG 1-3	GCC
Agne	Kyle	Honda Aero			x					x			
Anderegg	David	Defense Logistics Agency					x	x	x	x	x	x	x
Anderson	Neil	The Boeing Company				x		x	x		x		
Andrulonis	Rachael	Student/Invited Guest - Contact Battelle Before Registering								x			
Ashforth	Cindy	Federal Aviation Administration								x			
Avula	Kiran	Gulfstream Aerospace			x			x	x				
Bach	Andreas	Novelis									x	x	x
Bakuckas	John	Federal Aviation Administration			x		x	x		x	x	x	
Beckman	Jonathan	Gulfstream Aerospace				x		x		x	x	x	
Bennett	Jay	NASA					x	x	x	x	x	x	x
Bennett	Russell	The Boeing Company				x		x			x		
Biedermann	Eric	Vibrant Corporation								x			
Bittner	Peter	Constellium	x			x		x			x	x	x
Bostanci	Melike Nur	Turkish Aerospace Industries				x		x	x			x	
Bourges	Laurent	LISI Aerospace											
Braid	Neil	Gulfstream Aerospace											
Bostanci	Melike Nur	Turkish Aerospace Industries								x	x	x	
Bourges	Laurent	LISI Aerospace							x				
Bray	Gary	Westmoreland	x			x		x		x	x	x	x
Brennan	Sarah	Blue Origin								x			
Brown	Gregory	Velo3D								x			
Calnan	John	Moog Inc.								x	x		
Carter	Andrew	Stratasys Direct Manufacturing											
Cho	Eunjun	Korea Aerospace Industries									x	x	
Chung	Pui See	Blue Origin				x		x		x		x	
Cordner	Samuel	NASA								x	x	x	x
Crill	Matthew	The Boeing Company	x	x	x	x		x		x	x	x	x
Crisler	Elizabeth	Textron Aviation (Cessna)			x	x		x	x	x	x	x	x
Cunha	Mauricio	Embraer				x			x	x	x	x	x
Daley	Nancy	Aerojet Rocketdyne								x	x	x	x
Dangerfield	Victor	Universal Alloy			x	x		x			x	x	x
Davies	Curtis	Federal Aviation Administration			x			x	x	x	x	x	x
Dinler	Ali Firat	Tusas Engine Industries											
Doty	Peter	SAE Industry Technologies Consortia								x			
Dux	Tiffany	Howmet Aerospace Inc.									x	x	
Elwell	Abram	The Boeing Company		x		x		x			x	x	x
Esparragoza	Manuel	Questek			x	x		x		x		x	
Evans	Tyler	Battelle Memorial Institute				x		x					
Fang	Frank	Collins Aerospace			x	x		x	x	x	x	x	x
Garcia-Avila	Matias	ATI Metals	x			x		x		x	x		
Goetschius	Susan	Raytheon Intelligence & Space											
Goode	Randy	Lockheed Martin								x	x		
Goodman	Jay	Blue Origin			x	x		x			x	x	x
Gorelik	Michael	Federal Aviation Administration					x	x	x	x			
Gossard	Justin	Battelle Memorial Institute			x	x		x	x		x		
Grant	Robert	Federal Aviation Administration					x	x		x			
Gruen	Brian	Battelle Memorial Institute			x	x		x	x	x		x	x

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Last Name	First Name	Company	MATSSG	ASG	Orientation	ISG	GSG	ISG/GSG	FTG 1-3	ETTg 1-4	GTG 1-4	MTG 1-3	GCC
Grylls	Richard	Beehive3D								x			
Guerrier	Paul	Moog Inc.				x		x		x	x		
Guo	Guangping	Beijing Institute for Aeronautical Materials			x			x		x	x		x
Gurrola	Robert	Howmet Aerospace Inc.				x		x	x		x		x
Hahn	Michael	Northrop Grumman		x		x		x	x	x	x	x	x
Hall	Doug	Battelle Memorial Institute	x		x	x	x	x	x	x	x	x	x
Hall	Gary	Bell Helicopter	x	x	x	x		x		x	x		
Hasting	Will	Velo3D	x		x	x		x		x	x	x	x
Heine	Christoph	Airbus			x	x		x	x	x	x	x	x
Hoffmann	Wolfgang	EASA			x				x	x	x	x	
James	Mark	Federal Aviation Administration					x	x	x	x	x	x	x
Jelis	Elias	US Army	x		x					x			
Jones	Lindsay	The Boeing Company											
Jones	Marshall	US Navy					x	x			x		
Kane	Michael	US Army			x		x	x		x	x	x	x
Karesh	Matt	Velo3D			x	x		x		x			
Kasami	Akiko	Mitsubishi Heavy Industries Ltd.				x				x	x	x	
Ketkar	Chintamani	Textron Aviation (Cessna)								x		x	
Kikuchi	Yusuke	Honda R&D Americas, Inc.								x			
Klenosky	Daniel	Spirit Aerosystems			x	x		x		x	x		
Klepsch	Linda	WIAM Gmbh				x		x	x				
Kraft	Steven	Lockheed Martin								x			
Krile	Bob	Battelle Memorial Institute							x	x	x	x	
Kusner	Robert	Materion Brush Inc.			x	x		x		x	x	x	x
Lamas	José Eduardo	Embraer			x	x		x	x		x	x	x
Leicht	Doug	Parker LORD						x		x			
Liu	George	US Army					x	x					
Luna	Sarah	NASA								x			
Maciejewski	Kimberly	Arconic				x		x			x	x	x
McGill	Matthew	Parker LORD				x		x	x		x		
Melemez	Fazli	Turkish Aerospace Industries			x	x		x	x	x	x	x	x
Miles	Rick	Northrop Grumman				x		x					
Nagao	Kazuki	Honda R&D Americas, Inc.			x	x		x		x	x	x	x
Norimatsu	Koichi	IHI Corporation									x		
Oar	Emma	Moog Inc.								x			
Ofsthun	Mark	Honda Aircraft Company	x	x	x	x		x	x	x	x	x	
Olsen	Kirk	Parker LORD			x	x		x	x	x	x	x	x
Oshino	Hironobu	IHI Corporation			x	x		x					
Özkaya	Furkan	Tusas Engine Industries								x	x		
Park	Jooyoung	Korea Aerospace Industries											
Park	Alison	NASA								x			
Piché	Marie	Bombardier Aerospace						x	x	x	x	x	x
Pujar	Vijay	Collins Aerospace			x	x		x		x			x
Rainey	Kelsey	GE Additive								x			
Raposo	Humberto	CarTech							x	x	x	x	
Reakes	Clay	Battelle Memorial Institute			x	x		x	x	x	x	x	x
Reber	Korey	Collins Aerospace											

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Reed	Jonathan	Blue Origin								x			
Reeves	Daniel	Blue Origin						x		x			
Resseguie	Richard	Hexagon											
Robertson	Jessica	Haynes International	x		x	x		x		x	x	x	x
Rubadue	Jana	Battelle Memorial Institute	x	x	x	x		x	x	x	x	x	x
Ruzek	Andrew	Materion Brush Inc.								x			
Sabo	Ken	Lockheed Martin									x		
Scalf	Cyndee	Battelle Memorial Institute			x	x		x	x	x	x	x	x
Scheuring	Jason	Kaiser Aluminum	x			x		x		x	x	x	x
Schmitz	Aaron	3D Systems Inc.			x	x		x		x	x		
Shannon	Carinne	Battelle Memorial Institute	x	x	x	x		x	x	x	x	x	x
Sheffels	Christopher	Honda Aircraft Company			x	x		x	x	x	x	x	x
Shepard	Mike	3D Systems Inc.								x		x	
Shivers	Brian	US Air Force			x			x	x	x	x	x	
Snyder	Don	Bell Helicopter			x	x		x	x	x	x		
Snyder	Matthew	Battelle Memorial Institute									x		
Sodouri	Pedrum	Norsk Titanium			x	x		x		x		x	x
Spiegelberg	William	Materion Brush Inc.			x							x	
Steele	Leslie	Collins Aerospace		x		x		x	x	x	x	x	x
Steevens	Andrew	The Boeing Company		x	x	x		x		x	x	x	x
Stephens	Kathryn	Honeywell								x	x		
Stonaker	Kevin	Federal Aviation Administration			x		x	x		x	x	x	x
Stonerock	Sharon	Battelle Memorial Institute											
Sutton	Adam	Lockheed Martin				x		x	x	x	x		
Takahashi	Kotomi	IHI Corporation								x			
Thomas	Bruce	Bombardier Aerospace		x		x		x	x	x	x	x	x
Thompson	Steven	US Air Force	x				x	x	x	x	x	x	x
Tredway	Jeff	Textron Aviation (Cessna)								x		x	
Tummons	David	The Boeing Company		x	x	x		x	x	x	x	x	x
Ullmann	Joseph	NAVAIR						x		x			
Vanderpol	Paul	Collins Aerospace			x	x		x	x	x	x	x	x
Vetland	Emma	GKN Aerospace								x			
Vierthaler	Lindsey	NIAR								x			
Vogel	Bret	Textron Aviation (Cessna)		x		x		x	x	x	x	x	x
Watkins	Sarah	Raytheon Intelligence & Space											
Wells	Douglas	NASA			x					x	x		
Wertz	Katelun	US Air Force										x	x
Wheelock	Paul	Rolls-Royce				x		x		x	x	x	x
White	Will	Battelle Memorial Institute											
Wolfman	Justin	Northrop Grumman								x			
Wong	Barbara	Lockheed Martin			x	x				x			
Wrenn	Katy	The Boeing Company									x		
Yondu	Numan Berat	Tusas Engine Industries											
Young	Bruce	Battelle Memorial Institute									x	x	x
Zhong	Bin	Beijing Institute for Aeronautical Materials								x	x	x	

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New Item Numbers Assigned in 2021

21-01	Foreword to Volume II
21-02	Section 9.5 & 9.6 for Volume II
21-03	Ti-6Al-4V Die Forging Upgrade to A- and B-Basis Properties
21-04	Section 9.2.3 - Required Test Methods/Procedures for Volume II
21-05	Revision of AMS4534 C17200 Copper Beryllium Rod
21-06	2050-T852 Die Forging Shear Direction Correction
21-07	7055-T76511 Aluminum Alloy Extrusion Increase in Cross-Sectional Area and Circle Size
21-08	Short Transverse Shear Properties for 7050-T7451 Aluminum Alloy Plate Direction
21-09	Equation 9.7.1.4(h)
21-10	Fatigue of PH13-8 Bolts
21-11	Interim Data Analysis Methods: Volume II
21-12	Clarification of Combinability
21-13	Review of Section 5.5.3 Ti-10V-2Fe-3Al Comments and Properties
21-14	Review of Section 2.1.2 Material Properties
21-15	Review of Section 1.4.3.3 Strain Rate
21-16	Acceptance of Column Reduction Method in Section 1.6.4
21-17	Elongation Measurement
21-18	Updates from V2WG Sub-teams
21-19	Chapter 9 Changes Supporting Inclusion of New Fracture Toughness Data from Item 14-62
21-20	Microstructural Submittal Requirements
21-21	Update Table 8.1.3.2.2(k) to Correct Item 16-36 Error
21-22	Update Figures 3.7.10.1.8(e)-(h) to Correct Legend Title from Stress Ratio to Mean Stress

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New Item Numbers Assigned in 2021

21-23	Definitions of "Design Allowable", "Design Value", and "Material Allowables" for MMPDS
21-24	Update Figure 5.4.1.1.8(a) (Ti-6Al-4V annealed bar) to include Seq Equation
21-25	Update of Health and Safety Paragraphs for Beryllium Alloys
21-26	Reference Updates for Chapter 7
21-27	Update of Section 7.3 Copper and Copper Alloys
21-28	Revision of Section 9.2.4.4.2 for Stress-Strain Curve Requirements
21-29	Clarification of AerMet 100 Compression Curve
21-30	Correction to Ti-4.5Al-3V-2Fe-2Mo Full Range Stress-Strain Curve
21-31	Update of Section 2.2 Definition of Low Carbon Steel
21-32	Specification Changes
21-33	Legacy Analysis of AMS 4911 Ti-6Al-4V Sheet and Plate
21-34	Review Stress Strain Figures for Consistency with Updated Section 9.8.4.
21-35	Review of Stress-Strain Curves Not Meeting Current Criteria for Dual Parameters
21-36	Addition of AMS7038 for 718 Laser Powder Bed Fusion
21-37	Update to Section 9.2.2 for Volume II
21-38	Re-analysis of Ti 6-4 Fatigue Curve in Figure 5.4.1.1.8(a)
21-39	Move List of Stabilized Specifications and Obsolete Tempers to Appendices
21-40	Impact of Powder Re-use on AMS7000 625 LPBF

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New Item Numbers Assigned in 2021

21-41	V2: Section 9.8.3 Tabular Data Presentation
21-42	Update for Haynes 230 Strength vs. Temperature curves
21-43	MMPDS use of ASTM E3076 for Slope Determination
21-44	Clarification of Ti-10V-2Fe-3Al Compression Curve
21-45	Analysis of FCGR data for Ti 6-2-4-2 per AMS4919
21-46	Bob & Paul presentation on "Further Showing"
21-47	Consent Agenda for 38th Meeting
21-48	Periodic Testing Option for Specifications
21-49	AISI 4130 Thickness Range for AMS 6346
21-50	Thickness Correction in Table 5.4.1.0(g) Ti-6Al-4V Castings
21-51	Thickness Correction in Table 3.2.19.0(c) 2219-T852 Forgings
21-52	Removal of 7075-T6xxx Design Allowables for Thick Sections
21-53	Analysis of 718 Laser Powder Bed Fusion
21-54	Clarification of Footnote "...Adequate Quality Control Testing"

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CLOSED AGENDA ITEMS

Item No	Responsible Group		Chpt	Title	Type	WebEx Session	38th Action	38th Meeting Description
11-43	FTG		8	Supporting Data and Basis Identification for Table 8.1.2(b)	Agenda	FTG-1	Approved and Closed	This item was approved and closed. A new item will be opened to investigate remaining materials in the table.
14-62	GTG		9	Evaluate Inclusion of other Fracture Toughness Data (JIC, KJIC)	Agenda	GTG-2	Approved and Closed	C. Reakes presented this item.
15-42	MTG		2	Casting Allowables for 15-5PH and 17-4PH Steel	Agenda	MTG-3	Closed w no Action	J. Rubadue presented this item. Consensus that there is a lack of interest without new data or response from the supplier. No objections to closing without action.
19-36	GTG-F	FTG	9	Update Section 9.2.4.7 Fastener Strength Table Sunset Clause	Agenda	GTG-2, FTG-1	Approved and Closed	This item was approved by FTG and GTG to update section as shown.
19-39	FTG		8	Review Chapter 8 Tables Removed by the Sunset Clause	Agenda	FTG-1	Closed w no Action	This item was closed with no action. Test data are needed. No tables can be reinserted at this time. A new item will be opened to keep track of fasteners of interest.
20-15	GTG	MATSSG, ASG	9	Revisit Stress-Strain Data Generation Guidelines - Use of Extensometers	Agenda	GTG-2	Approved and Closed	C. Shannon presented this item.
20-18	MTG		2	Updates to Low Alloy Steel tables	Agenda	MTG-2	Approved and Closed	J. Rubadue presented this item. Proposals for topics 1-6 were Approved and closed. A new item 21-54 was opened to address topic 7 to review the footnote regarding additional quality control.
20-34	GTG		9	Footnote for Expanded Thickness Ranges with No Secondary Properties	Agenda	GTG-3	Approved and Closed	D. Hall presented this item.
21-16	GTG	GSG, ASG	1	Acceptance of Column Reduction Method in Section 1.6.4	Agenda	GCC	Approved and Closed	Approved under Consent Agreement.
21-17	GTG	MATSSG	9	Elongation Measurement	Agenda	GCC	Approved w Changes and Closed	Included in Consent Agenda. MATSSG suggest rewording of one sentence for clarification. "Even so, elongation at fracture is often more conservative (lower) because elongation after fracture has a fitback error (fracture surfaces do not fit perfectly back together)."
21-19	GTG		9	Chapter 9 Changes Supporting Inclusion of New Fracture Toughness Data from Item 14-62	Agenda	GTG-2	Approved and Closed	C. Reakes presented this item.
21-25	MTG		7	Update of Health and Safety Paragraphs for Beryllium Alloys	Agenda	MTG-2	60 Day Approval with changes	J. Rubadue presented this item. Discussed the addition of the BerylliumSafety.com website which is owned by Materion. Battelle and Materion will review OSHA.gov/beryllium site to see if it should be used instead. The "last reviewed" date will be included with websites referenced in MMPDS. The Final Minutes may include additional recommendations for using websites as a reference.
21-26	MTG		7	Reference Updates for Chapter 7	Agenda	MTG-2	60 Day Approval with changes	J. Rubadue presented this item. Battelle to check other options on the website with the company logo. (same as Item 21-25).
21-27	MTG		7	Update of Section 7.3 Copper and Copper Alloys	Agenda	MTG-2	Approved and Closed	J. Rubadue presented this item. An intentional deletion was not shown in the agenda item. It will be shown in the minutes.
21-28	GTG		9	Revision of Section 9.2.4.4.2 for Stress-Strain Curve Requirements	Agenda	GTG-2	60 Day Approval with changes	C. Shannon presented this item. Agreed to revise "grain direction and grain orientation ". These should all be "test direction". Open new item to look at terms "orientation" and "direction".
21-29	MTG		2	Clarification of AerMet 100 Compression Curve	Agenda	GCC	Approved and Closed	Approved under Consent Agreement.

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CLOSED AGENDA ITEMS

Item No	Responsible Group		Chpt	Title	Type	WebEx Session	38th Action	38th Meeting Description
21-30	MTG		5	Correction to Ti-4.5Al-3V-2Fe-2Mo Full Range Stress-Strain Curve	Agenda	GCC	Approved and Closed	Approved under Consent Agreement.
21-31	MTG		2	Update of Section 2.2 Definition of Low Carbon Steel	Agenda	GCC	Approved and Closed	Approved under Consent Agreement.
21-32	MTG			Specification Changes	Agenda	MTG-3	Approved and Closed	J. Rubadue presented this item. There were no comments on retaining or removing MIL-S-6050. Since removal was not proposed, it will be retained at this time.
21-34	GTG		9	Review Stress Strain Figures for Consistency with Updated Section 9.8.4.	Agenda	GTG-3	Closed w no Action	C. Shannon presented this item.
21-35	MTG		9	Review of Stress-Strain Curves Not Meeting Current Criteria for Dual Parameters	Agenda	MTG-3	Approved w Changes and Closed	C. Shannon presented this item. Editorial changes will be noted in the minutes.
21-36	ETTG	MATSSG	V2	Addition of AMS7038 for 718 Laser Powder Bed Fusion	Agenda	ETTG-3	Closed w no Action	This item is closed with no action.
21-37	GTG	ETTG	V2	Update to Section 9.2.2 for Volume II	Agenda	ETTG-3, GTG-3	Approved w Changes and Closed	D. Hall presented this item. Changes were made to bullets in Section 9.2.2.2.1.. GTG approved.
21-38	MTG		5	Re-analysis of Ti 6-4 Fatigue Curve in Figure 5.4.1.1.8(a)	Agenda	MTG-3	Approved w Changes and Closed	C. Reakes presented this item. Add R-squared.
21-39	GTG			Move List of Stabilized Specifications and Obsolete Tempers to Appendices	Agenda	GTG-1	Approved and Closed	J. Rubadue presented this item.
21-47	GCC			Consent Agenda for 38th Meeting	Agenda	GCC	Approved and Closed	This item was covered in the GCC for approval of various items.
21-49	MTG		2	AISI 4130 Thickness Range for AMS 6346	Handout	MTG-1	Approved and Closed	J. Rubadue presented this item. Approved as an editorial change.
21-50	MTG		5	Thickness Correction in Table 5.4.1.0(g) Ti-6Al-4V Castings	Handout	MTG-1	Approved and Closed	J. Rubadue presented this item. Approved as an editorial change.
21-51	MTG		3	Thickness Correction in Table 3.2.19.0(c) 2219-T852 Forgings	Handout	MTG-1	Approved and Closed	J. Rubadue presented this item. Approved as an editorial change.

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SORTED BY ITEM NUMBER

Item No	Responsible Group		Chpt	Title	Type	WebEx Session	38th Action	38th Meeting Description
	Final	Initial						
04-21	FTG		8	Fastener Tables of Sunset Review Interest	On Hold		Not Covered	This item is on hold, pending items 12-50, 12-105, and 17-28.
08-23	FTG		8	Sunset Review of Table 8.1.3.2.2(c), NAS1921C	On Hold		Not Covered	This item is on hold, pending items 12-50, 12-105, and 17-28.
09-13	FTG		8	Sunset Review of Table 8.1.3.2.3(a), MS21140	On Hold		Not Covered	This item is on hold, pending items 12-50, 12-105, and 17-28.
11-05	MTG		1	AMS Coordination	Agenda		Not Covered	The AMS Metals Committees is meeting virtually September 19-24 (after MMPDS meeting). A summary will be included in the minutes.
11-38	FTG		8	Sunset Review of Flush Head, Mechanical Lock Spindle Blind Rivet Table 8.1.3.2.2(e) NAS 1921 M	On Hold		Not Covered	This item is on hold, pending items 12-50, 12-105, and 17-28.
11-43	FTG		8	Supporting Data and Basis Identification for Table 8.1.2(b)	Agenda	FTG-1	Approved and Closed	This item was approved and closed. A new item will be opened to investigate remaining materials in the table.
12-105	GTG-F	FTG	9	Modification to the Sunset Criteria Procedures	On Hold		Not Covered	This item will not be covered. Pending resolution of 12-50 and 17-28.
12-17	MTG	ASG & MATSSG	6	Footnote for Non-Ferrous Alloys Test Specimen When Not From Full Thickness	Status		Not Covered	This item was not covered. Please let Jana Rubadue know if you are aware of any non-ferrous alloys for which this may apply.

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Item No	Responsible Group		Chpt	Title	Type	WebEx Session	38th Action	38th Meeting Description
	Final	Initial						
12-50	GTG-F	FTG	9	Evaluation of new Regression and Confidence Models for Lap Joint Tests	On Hold		Not Covered	Per call with FTG on 6/24/2021, this item is on hold pending data for 17-28.
12-89	MTG	PSG		Target Materials for Propulsion Applications	Status		Not Covered	This item was not covered
13-34	MTG		5	Addition of AMS 4919 Ti-6-2-4-2 Plate Properties	Status		Not Covered	This item was not covered.
13-50	GTG		9	ASTM Coordination	Status		Not Covered	This item was not covered
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 Covered	This item is on hold, pending items 12-50, 12-105, 17-28, and 08-23.
14-62	GTG		9	Evaluate Inclusion of other Fracture Toughness Data (JIC, KJIC)	Agenda	GTG-2	Approved and Closed	C. Reakes presented this item.
15-13	MTG		multi	Clarification of Shear Orientation for Legacy Alloys	Status		Not Covered	No action on this item. Further investigation will be conducted for the spring meeting.
15-19	GTG-F		9	Verification of Secondary Modulus Methods for Fasteners	Handout	FTG-3	Continue	This item is continued. Battelle to locate ARTC report or contact AIA to see if the report is available and remove company names from report if needed.

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15-36	GTG	ISG, GSG	9	Modification of Indirect Analysis Equation	Handout	GTG-4	Continue	R. Krile gave a presentation. A copy of the presentation will be included in the minutes. An Agenda will be proposed to replace Sections 9.5.7 and 9.5.8.
15-38	GTG		9	Reevaluation of Degrees of Freedom Calculation for Regression with Effect of Temperature	Status		Not Covered	This item was not covered. Battelle will prepare an agenda for the next meeting.
15-42	MTG		2	Casting Allowables for 15-5PH and 17-4PH Steel	Agenda	MTG-3	Closed w no Action	J. Rubadue presented this item. Consensus that there is a lack of interest without new data or response from the supplier. No objections to closing without action.
16-12	FTG		8	Identifying Basis of Fastener Shear Strength on Remaining Tables	On Hold		Not Covered	This item is on hold, pending Battelle's return to the office.
16-13	FTG		8	Corrections to Table 8.1.3.2.2(c) NAS 1921C	On Hold		Not Covered	This item is on hold, pending items 12-50, 12-105, 17-28, and 08-23.
16-20	GTG	ETTG	V2	Equivalence Testing Assuming Change in Process (From Item 11-40)	Status		Continue	The OSAT is implemented in the MMPDS Dashboard. Please try this method with your internally generated data and share lessons learned.
16-23	GTG		6	Re-evaluate Guidelines for Effect of Temperature Curves	Status		Not Covered	This item was not covered. Battelle will prepare an agenda item for the next meeting.
17-23	GTG		9	Legacy Alloy Review Strategy – Near Term	Status	GTG-1	Continue	D. Hall gave a status report. Battelle is gathering cost information on testing.

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17-25	GTG		9	Re-evaluation of Reduced Ratio Sample Size Determination	On Hold		Not Covered	This item was not covered.
17-28	GTG-F	FTG	9	Consideration of Origin in Multiple Regression Analysis for Joint Allowables	On Hold		Not Covered	Per FTG call on 6/24/21, this item is now on hold until data is received from Boeing/Allfast. This will include full review of whether current MMPDS applied to the M7885-27 fastener data adequately illustrates the concerns about perceived overly conservative allowables for small t/D. If confirmed, possible remedies will be discussed.
17-34	GTG	SSWG	9	Guidelines for Rejection of Stress-Strain Curves from Parametric Analysis	Status	GTG-3	Continue	B. Young gave a status report. A copy of his slides will be included in the minutes. This item is related to Item 21-43.
17-45	MTG		3	Effect of Temperature Curves for 2395-T84 Extrusion	Agenda		Not Covered	This item was not covered. Data are being analyzed. An agenda item will be prepared for the 39th Meeting.
17-52	GTG	FatWg	9	Review Section 9.6.1 - Load and Strain Control Fatigue	Status		Not Covered	This item was not covered. Battelle is working on this item.
17-56	MTG		3	FCG Analysis for 2397-T87 Plate	Status		Not Covered	This item was not covered
17-61	GTG		9	Revising R-curve Requirement in Table 9.2.4	On Hold		Not Covered	This item was not covered

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17-62	GTG	FatWg	9	Revising Fatigue Requirement in Table 9.2.4	Status		Not Covered	This item was not covered
17-63	GTG	FatWg	9	Use of Box-Cox Transformation in the Fitting of Fatigue Data	Status		Not Covered	This item was not covered. Battelle is working on this item.
18-08	MTG		6	718 Investment Cast (AMS5383) Addition of Tensile A/B-basis and Elevated Temperature	Status	MTG-1	Continue	D. Hall provided a status update. The supplier is looking to provide information about thickness of the parts used to make specimens.
18-10	GTG	MATSSG	9	Data Requirements for Forgings	Status		Continue	This item was briefly discussed in MATSSG. Battelle is to look at the summary from the Die Forging Working Group (Rice/Lahrman time period).
18-13	GTG		9	Guidelines for Exclusion of Low Secondary Property Test Values	On Hold		Not Covered	This item is on hold pending Item 15-36.
19-19	GTG	FatWg	9	Consideration of a new Equivalent Stress model for Load-Controlled Fatigue	Status		Not Covered	This item was not covered. A preliminary demo was presented to the ISG.
19-25	GTG	ASG	9	Guidelines for Derived Properties for Legacy Alloys	On Hold		Not Covered	At the 37th meeting it was decided to put this item on hold until Items 15-36 and 17-23 are resolved. Meanwhile, decisions will be made on a case-by-case basis.
19-34	GTG		9	Waive Requirement for Bearing and/or Shear Properties When Appropriate	On Hold		Not Covered	This item was not covered.

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19-36	GTG-F	FTG	9	Update Section 9.2.4.7 Fastener Strength Table Sunset Clause	Agenda	GTG-2, FTG-1	Approved and Closed	This item was approved by FTG and GTG to update section as shown.
19-37	GTG-F	FTG	9	Establish a Guideline for Reinserting Chapter 8 Tables.	Status	FTG-2	Continue	C. Reakes gave a status update on the FEA model. Material properties and dimensions will be confirmed, and the appropriate stress-strain curve will be implemented once determined. Work will be continued on this item and results will be prepared for the next meeting. Purpose of FEA model is to determine validity of using shear cutoff data to confirm tables.
19-38	ETTG		V2	Process Intensive Materials & Technologies SDO Coordination	Status	ETTG-1	Continue	This item is continued. Battelle will continue collaboration efforts
19-39	FTG		8	Review Chapter 8 Tables Removed by the Sunset Clause	Agenda	FTG-1	Closed w no Action	This item was closed with no action. Test data are needed. No tables can be reinserted at this time. A new item will be opened to keep track of fasteners of interest.
19-40	GTG		9	Review Section 9.4 Substantiation of Data	Status		Not Covered	This item was not covered
19-42	MTG		3	Confirmation of Design Properties of AMS 4202 for 7475-T7351 Aluminum Alloy Plate	Status		Not Covered	This item was not covered. Battelle has data from several suppliers. Waiting on data from one more supplier.

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	Final	Initial						
19-44	MTG		multi	Update Stress-Strain Figures to Report Bron Method Relevance	Status		Not Covered	This item was not covered. Battelle will prepare an agenda item for the next meeting.
20-03	GTG		9	MMPDS Review & Approval Process	Status		Not Covered	This item was not covered
20-04	GTG	ETTG	V2	V2: MMPDS Review & Approval Process	Status		Not Covered	This item was not covered
20-09	MTG		3	Expansion of Thickness Range for 6061-T651 Plate	Status		Not Covered	This item was not covered. Suppliers agreed to supply L and ST data for 6-12 inches to extend minimum properties. However, the material spec is awaiting changes to tolerances in ANSI H35.2 for plate > 8 inch.
20-10	MTG		3	Upgrade of Secondary Properties of 7075-T76511 Aluminum Alloy Extrusions	Status		Not Covered	This item was not covered. Battelle is waiting for data.
20-13	ETTG		V2	CMH-17/MMPDS Coordination & Collaboration	Status	ETTG-1	Continue	This item is continued. Battelle will continue to coordinate and collaborate with CMH-17.
20-15	GTG	MATSSG, ASG	9	Revisit Stress-Strain Data Generation Guidelines - Use of Extensometers	Agenda	GTG-2	Approved and Closed	C. Shannon presented this item.

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20-16	GTG	ETTG	V2	MMPDS & Additive Metals - Program Plan	Status	ETTG-2	Continue	D. Hall provided a status update and discussed program plan and open items for each V2 section in progress and asked for feedback on direction. FAA spoke about what to expect from a regulatory standpoint. Further showing will be required.
20-18	MTG		2	Updates to Low Alloy Steel tables	Agenda	MTG-2	Approved and Closed	J. Rubadue presented this item. Proposals for topics 1-6 were Approved and closed. A new item 21-54 was opened to address topic 7 to review the footnote regarding additional quality control.
20-29	GTG		9	Analysis of Bearing and Shear Properties with Reduced Ratios	Status	GTG-4	Continue	R. Krile gave a status update. This item is closely related to Item 15-36.
20-30	GTG	ETTG	V2	Components of Variance Analysis of AM, Cast, & Wrought Ti 6-4	On Hold		Not Covered	No action on this item.
20-34	GTG		9	Footnote for Expanded Thickness Ranges with No Secondary Properties	Agenda	GTG-3	Approved and Closed	D. Hall presented this item.
20-35	MTG		multi	Alloys Requested for Analysis	Handout		Continue	Ballot results are included in the Handout book.
20-36	MTG		multi	Request for Secondary Property Data	Status		Not Covered	Please let Battelle know what secondary (not lot release) data you have that we could combine with data from other companies.

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21-01	GTG	ETTG	V2	Foreword to Volume II	Status	ETTG-2	Continue	M. James provided a status update.
21-02	GTG	ETTG	V2	Section 9.5 & 9.6 for Volume II	Status	ETTG-2	Continue	D. Hall provided a status update.
21-04	GTG	ETTG	V2	Section 9.2.3 - Required Test Methods/Procedures for Volume II	Handout	ETTG-2	Continue	D. Hall discussed recommended reorganization for Chapter 9 in V2. Effort will be made to reorganize Chapter 9 in Volume I were possible for consistency between volumes. The item will be renamed: Sections 9.1, 9.2, 9.3 for Volume II.
21-10	FTG		other	Fatigue of PH13-8Mo Bolts	Handout	FTG-2	Continue	This item is continued. More discussion is needed. See minutes for summary of points discussed.
21-13	MTG		5	Review of Section 5.5.3 Ti-10V-2Fe-3Al Comments and Properties	Status		Not Covered	This item was not covered. Please send Carinne updates to the comment section. An agenda will be prepared for the next meeting.
21-16	GTG	GSG, ASG	1	Acceptance of Column Reduction Method in Section 1.6.4	Agenda	GCC	Approved and Closed	Approved under Consent Agreement.
21-17	GTG	MATSSG	9	Elongation Measurement	Agenda	GCC	Approved w Changes and Closed	Included in Consent Agenda. MATSSG suggest rewording of one sentence for clarification. "Even so, elongation at fracture is often more conservative (lower) because elongation after fracture has a fitback error (fracture surfaces do not fit perfectly back together)."

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21-18	ETTG		V2	Updates from V2WG Sub-teams	Status	ETTG-1	Continue	This item is continued. Chairs provided updates from each of V2WG sub-teams. If you are interested in participating, please contact D. Hall or sub-team Chairs.
21-19	GTG		9	Chapter 9 Changes Supporting Inclusion of New Fracture Toughness Data from Item 14-62	Agenda	GTG-2	Approved and Closed	C. Reakes presented this item.
21-20	GTG	ETTG	V2	Microstructural Submittal Requirements	Status		Not Covered	This item was not covered.
21-23	GTG		9	Definitions of "Design Allowable", "Design Value", and "Material Allowables" for MMPDS	Agenda	GTG-3	Continue	C. Shannon presented this item in addition to discussions from the ISG/GSG meetings. It was requested that this item be continued to allow the GSG time to harmonize their documents. Volunteers to work on this : Andrew Steevens, David Tummins, Bruce Thomas, Leslie Steel, and Mark Ofsthun.
21-25	MTG		7	Update of Health and Safety Paragraphs for Beryllium Alloys	Agenda	MTG-2	60 Day Approval with changes	J. Rubadue presented this item. Discussed the addition of the BerylliumSafety.com website which is owned by Materion. Battelle and Materion will review OSHA.gov/beryllium site to see if it should be used instead. The "last reviewed" date will be included with websites referenced in MMPDS. The Final Minutes may include additional recommendations for using websites as a reference.
21-26	MTG		7	Reference Updates for Chapter 7	Agenda	MTG-2	60 Day Approval with changes	J. Rubadue presented this item. Battelle to check other options on the website with the company logo. (same as Item 21-25).

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21-27	MTG		7	Update of Section 7.3 Copper and Copper Alloys	Agenda	MTG-2	Approved and Closed	J. Rubadue presented this item. An intentional deletion was not shown in the agenda item. It will be shown in the minutes.
21-28	GTG		9	Revision of Section 9.2.4.4.2 for Stress-Strain Curve Requirements	Agenda	GTG-2	60 Day Approval with changes	C. Shannon presented this item. Agreed to revise "grain direction and grain orientation ". These should all be "test direction". Open new item to look at terms "orientation" and "direction".
21-29	MTG		2	Clarification of AerMet 100 Compression Curve	Agenda	GCC	Approved and Closed	Approved under Consent Agreement.
21-30	MTG		5	Correction to Ti-4.5Al-3V-2Fe-2Mo Full Range Stress-Strain Curve	Agenda	GCC	Approved and Closed	Approved under Consent Agreement.
21-31	MTG		2	Update of Section 2.2 Definition of Low Carbon Steel	Agenda	GCC	Approved and Closed	Approved under Consent Agreement.
21-32	MTG			Specification Changes	Agenda	MTG-3	Approved and Closed	J. Rubadue presented this item. There were no comments on retaining or removing MIL-S-6050. Since removal was not proposed, it will be retained at this time.
21-33	MTG		5	Legacy Analysis of AMS 4911 Ti-6Al-4V Sheet and Plate	Agenda	MTG-2	Continue	This item is continued. MTG agrees the sheet values are confirmed. There are questions about the secondary properties for plate.
21-34	GTG		9	Review Stress Strain Figures for Consistency with Updated Section 9.8.4.	Agenda	GTG-3	Closed with no Action	C. Shannon presented this item.

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21-35	MTG		9	Review of Stress-Strain Curves Not Meeting Current Criteria for Dual Parameters	Agenda	MTG-3	Approved w Changes and Closed	C. Shannon presented this item. Editorial changes will be noted in the minutes.
21-36	ETTG	MATSSG	V2	Addition of AMS7038 for 718 Laser Powder Bed Fusion	Agenda	ETTG-3	Closed w no Action	This item is closed with no action.
21-37	GTG	ETTG	V2	Update to Section 9.2.2 for Volume II	Agenda	ETTG-3, GTG-3	Approved w Changes and Closed	D. Hall presented this item. Changes were made to bullets in Section 9.2.2.2.1.. GTG approved.
21-38	MTG		5	Re-analysis of Ti 6-4 Fatigue Curve in Figure 5.4.1.1.8(a)	Agenda	MTG-3	Approved w Changes and Closed	C. Reakes presented this item. Add R-squared.
21-39	GTG			Move List of Stabilized Specifications and Obsolete Tempers to Appendices	Agenda	GTG-1	Approved and Closed	J. Rubadue presented this item.
21-40	GTG	ETTG	V2	Impact of Powder Re-use on AMS7000 625 LPBF	Handout	ETTG-2	Continue	B. Krile presented the results of this analysis. This item is continued. Feedback on this analysis will be captured in the minutes.
21-41	GTG	ETTG	V2	V2: Section 9.8.3 Tabular Data Presentation	Agenda	ETTG-4, GTG-2	Continue	This item is continued. More discussion is needed to determine appropriate watermark, if sample statistics should be included, and if so, how would those statistics be used.
21-42	MTG		6	Update for Haynes 230 Strength vs. Temperature curves	Handout	MTG-1	Continue	C. Shannon presented this handout. Battelle will reconstruct the stress-strain curves with the correct ultimate values and prepare an agenda for the next meeting. This will be an editorial change in MMPDS-17.

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21-43	GTG		9	MMPDS use of ASTM E3076 for Slope Determination	Present.	GTG-4	Continue	B. Young gave a presentation. A copy will be included in the Minutes. Will continue to work with ASTM E08 and prepare methods for MMPDS.
21-45	MTG		5	Analysis of FCGR data for Ti 6-2-4-2 per AMS4919	Status	MTG-1	Continue	C. Reakes provided a status update. Battelle just received the data. Will analyze and prepare an agenda item for the next meeting.
21-46	ETTG		V2	MMPDS Vol 2, Certification & Qualification "Further Showing"	Handout	ETTG-4	Continue	Paul Guerrier presented discussion on what 'further showing' is going to mean.
21-47	GCC			Consent Agenda for 38th Meeting	Agenda	GCC	Approved and Closed	This item was covered in the GCC for approval of various items.
21-48	GTG		9	Periodic Testing Option for Specifications	Handout	GTG-1	Continue	K. Sabo presented this item. The slides will be included in the minutes. Discussed additional requirements in NEW AMS specification. Battelle will research questions in chat and do further research and work with SAE.
21-49	MTG		2	AISI 4130 Thickness Range for AMS 6346	Handout	MTG-1	Approved and Closed	J. Rubadue presented this item. Approved as an editorial change.
21-50	MTG		5	Thickness Correction in Table 5.4.1.0(g) Ti-6Al-4V Castings	Handout	MTG-1	Approved and Closed	J. Rubadue presented this item. Approved as an editorial change.
21-51	MTG		3	Thickness Correction in Table 3.2.19.0(c) 2219-T852 Forgings	Handout	MTG-1	Approved and Closed	J. Rubadue presented this item. Approved as an editorial change.

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21-52	MTG		3	Removal of 7075-T6xxx Design Allowables for Thick Sections	Handout	MTG-3	Continue	D. Hall presented this item. ASG will continue to discuss.
21-53	ETTG		V2	Analysis of 718 Laser Powder Bed Fusion	Present.	ETTG-3	Continue	C. Shannon and D. Hall presented the data analysis. A copy of the presentation will be included in the minutes.
21-54	MTG		2	Clarification of Footnote "...Adequate Quality Control Testing"			New	New item from Item 20-18, topic 7 to clarify footnote on many Chapter 2.3 tables.
21-NIN	GTG			Review Use of Grain Direction and Orientation.			New	Brand new item from item 21-28 to review the use of grain direction/orientation.
21-NIN	FTG			Investigation of Remaining Materials of Table 8.1.2(b)			New	New item from Item 11-43 to continue investigation of remaining materials.
21-NIN	FTG			Fasteners Requested for Analysis			New	New item from Item 19-39 creating a maintenance list for fasteners.
21-NIN	GTG			Proper use of "Gage"			New	New item to correctly and consistently use "gage", "gage break", or "gauge".