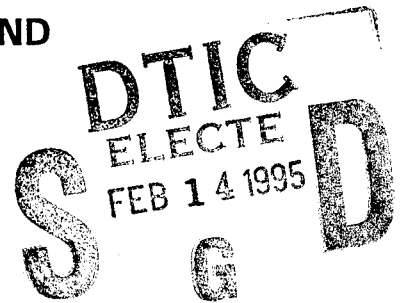


**BRIEFING/REVIEW MEETING  
IMPLEMENTATION OF THE MILITARY HANDBOOK 17  
FOR POLYMER MATRIX COMPOSITES AND  
METAL MATRIX COMPOSITES**

Meeting Date: 27 January 1995  
Minutes Submitted: 1 February 1995



Contract No. DAAL01-93-C-4064

Technical Progress Report  
MSC TPR 3507/CA07

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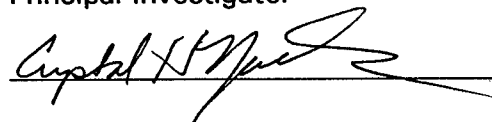
Distribution Statement A, DODD 5230.24, AR70-11

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED

Date of Determination: 9/14/93. Other requests should be referred to U.S. Army Research Laboratory,  
Attn: AMSRL-MA-TS (Ms. Kathy Bamberg) 405 Arsenal Street, Watertown, MA 02172-0001.

Submitted By:

Crystal H. Newton  
Principal Investigator



Prepared For:

Department of the Army  
U.S. Army Research Laboratory  
Arsenal Street  
Watertown, MA 02172-0001

**Composite Materials Handbook Briefing  
ARL - Watertown  
27 January 1995**

**MINUTES**

1. Discussion of Fall Meeting - Possible dates are 18 Sept and 11 September. Government rates are \$102 until 14 October, \$62 15 October on. Concern was expressed regarding availability of rates in Newport. Clearwater is the second choice. Format for MMC working sessions will depend on rate of growth in participation. Strawman for sessions/format for MMC working groups at the Fall Meeting was prepared with final decisions to be made at Salt Lake City. Meeting planning is to be included as part of the Purchase Order and Contract Modification discussed earlier between Kathy Bamberg and Crystal Newton. Preparation and mailing meeting announcements should be included - international mailing as well, cover letter may be needed to be from Gary Hagnauer (3 months in advance of meeting). Meeting program preparation and distribution should be added.

2. Development of volumes for the handbook. The inclusion of metal matrix composites as part of MIL-HDBK-17, as a separate volume or volumes, was discussed. The following numbering system was proposed:

1. Guidelines - PMC
2. Utilization of Data - PMC
3. Material Properties - PMC, unlimited distribution, U.S. customary units
4. Material Properties - PMC, limited distribution
5. Material Properties - PMC, SI units
6. Guidelines and Utilization of Data - MMC
7. Materials Properties - MMC

One possibility discussed was distribution of U.S. customary units through DODSSP and SI units through CRDA with CINDAS. Electronic distribution through CINDAS. Volumes 1 and 3 are currently dual unit.

3. MMC - Everett Baker is retiring after this meeting. Kathy Stevens would be a possible chair. Steve Johnson is a possibility.
4. Ozone-depleting chemicals search of the handbook for direct and first-level indirect references has been completed.
5. Stress-strain data and other graphical information should be included in the document.
6. Executive session for MMC will be held 2 May 1995 at MSC.
7. Session schedule for fall meeting was established (attached).
8. CINDAS coordination - CRDA between CINDAS and ARL under development. Includes making document available. Cooperation between CINDAS and secretariat

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to be included in CRDA and Contract Modification. Greater definition of who's doing what is needed for the future.

9. Publication schedule - Attached. Bernie Hart and Crystal Newton will coordinate presentation of publication schedule at executive session and general session.
10. Preparation for the Salt Lake City Meeting. Chairs are Ted Muha (picking up for Harvey Berkowitz), Everett Baker (who is retiring), and Joe Wells. Joe Wells is trying to arrange a speaker on squeeze casting, someone from Lanxide on high volume fraction, Neal Ontko on MIL-HDBK-5 perspective.

**Schedule:**

**Thursday 1:30 - 4:30 pm - Guidelines/general session**

Introduction and Overview - Ted Muha

Material Scope discussion and speaker(s) - Joe Wells to coordinate with Ted Muha, Crystal Newton, and Bernie Hart

Presentation of CINDAS-MSD data effort - Ted Muha/Crystal Newton

**Thursday 6:30 - 10:00 pm - Working group sessions**

**Friday 8:00 am - 10:00 am - Working group sessions**

**Friday 10:00 am - 12:00 pm - General session**

**Friday pm - preparation of minutes**

Proceedings - Salt Lake City minutes to be prepared by MSC and printed and distributed by ARL.

11. MMC Electronic Communication - Paul Huang, List Service/Mail Reflector Service - registry, any information sent to Service will be forwarded to all registered members, Don Honaker - electronic bulletin board is being established by Touchstone, need to determine if this is just MMC or also includes MIL-HDBK-17. Email directory to be maintained for both by Secretariat. Full list not available to outsiders.
12. Resolution of Peter Shyprykevich's comment. The section including the bolt-bearing test matrix will not be included in the draft prepared for DOD coordination review. Assuming that the comment is resolved at the Reno meeting, the resolved section can be included in the final publication version based on the review by the Coordination Group.
13. Preparation of MIL-HDBK-17 meeting booklet. The schedule and tasks for preparation of the booklet will be coordinated among Bernie Hart, Crystal Newton, Kathy Bamberg, and Karen Wilcox. The preparation of the booklet for the fall meeting will be included in the contract modification.
14. Intersociety Forum - Agenda reviewed.

15. Data Review Working Group - Bob Pasternak will not be moving with the organization. It is not clear whether he will be available for the Reno meeting. A transition needs to be planned. Gary wants to make CINDAS an integral part of the handbook activities. Ron Bogaard was identified as the new chair.
16. Guidelines Working Group - Bruce Fink is working with Joe Soderquist and Sam Garbo. He is writing the agenda item descriptions for the Guidelines working group.
17. Statistical Analysis - Task group is being established to revise STAT17 to match current status of statistical analysis in the handbook - to be available on multiple platforms, to add graphical analysis, to make it Windows-driven and user-friendly, to provide for ease of revision, and to provide a more accurate, easy-to-use input file. A task group is being constituted with a meeting tentatively scheduled for Wednesday afternoon in Reno. Crystal Newton will check if Dan DeSchepper is going to travel to the meeting. If the task group meeting is held, it will be announced at the executive session so that interested working group chairs can announce the meeting during their sessions. If a task group meeting is not held in Reno, a survey at this meeting is a possibility. Which software programs will be included needs to be determined by MIL-HDBK-17 working groups.
18. Export Control - Joe Brennan will check current status of requirements. For materials that are similar to materials already released, Gary Hagnauer will write a letter to Kathy recommending release. New materials may be considered by export control panel. Letters to all data sources will be sent by MSC. A form letter for this information is included in the draft data source information packet, so that this information can be submitted with the data. Crystal Newton requested any comments or changes to the Distribution Limitations on MIL-HDBK-17 Data information request letter.
19. Data Source Information Packet will be distributed to a small group of people interested in submitting data as a draft, with request for use and comments. Figure 1, missing in the review copy, is attached.
20. Business Plan. How to involve people in existing or new areas should be considered. National standardization plan from Cecil Schneider mentioned. Business plan should be considered. Secretariat to be involved in preparation of briefing materials for within DOD and also to involve NIST, DOE, etc. Presentations may be made by ARL, MSC, and/or CINDAS personnel. There is interest at appropriately high levels that needs to be encouraged to participate and support MIL-HDBK-17. Joint MIL-HDBK-17/ASTM D-30 meeting to be pursued for Fall 1996. Crystal Newton and Rich Fields will draft a proposal for consideration at Reno. This would support national and international coordination, encourage participation, and reduce travel costs. Whether the best approach would be combined sessions or coordinated independent sessions needs to be addressed. An international meeting (France and Germany) should also be considered. This would be a briefing or introduction to MIL-HDBK-17, and would not replace a regular semi-annual meeting.

21. Semi-annual or annual reports that are ARL reports on MIL-HDBK-17 activities should be developed and would include progress viewgraphs and polished status and current activities information.
22. User's guide. Progress and future directions for the user's guide will be included in the Reno meeting program. One version with a glossy cover will be prepared with graphics covering a wide range of applications. A less formal version will be used for inclusion with the data source information package. Both versions will be pulled together by the secretariat. The Secretariat will develop draft description of approval procedures for handbook sections to be considered by working group chairs at executive session.

Attendees: Kathy Bamberg  
Bernie Hart  
Gary Hagnauer  
Crystal Newton  
Joe Wells  
Ron Bogaard  
Bob Pasternak  
Ted Muha  
Joe Brennan

## WORKING GROUP SESSION SCHEDULE

### MONDAY

TIME	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5
8:00 - 12:00				Executive	
12:00-1:00	----- LUNCH -----				
1:00-5:00	GUIDELINES	PMC TESTING	PMC MATERIALS & PROCESSING	STATISTICS	

### TUESDAY

TIME	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5
8:00-10:00	GUIDELINES	STRUCTURAL JOINTS	PMC DATA REVIEW*	BRAIDING/ FILAMENT WINDING	MMC General
10:00-12:00		THICK SECTIONS	PMC DATA REVIEW (unrestricted)		MMC M & P/ MMC TESTING
12:00-1:00	----- LUNCH -----				
1:00-3:00	GUIDELINES	STRUCTURAL JOINTS	PMC MATERIALS & PROCESSING	PMC DATA REVIEW*	MMC TESTING
3:00-4:00	Guidelines/ Struct. Joints	THICK SECTIONS	PMC TESTING	STATISTICS	MMC DATA REVIEW
4:00-5:00	Guidelines/ PMC M & P				

\* Restricted: United States citizens & green card holders

**WEDNESDAY**

TIME	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5
8:00-10:00	Guidelines/ Statistics	SUPPORT- ABILITY	TESTING		MMC M&P/ MMC DATA REVIEW
10:00-12:00	Guidelines/ Testing				
12:00-1:00	----- LUNCH -----				
1:00-5:00	Intersociety Forum				

**THURSDAY**

TIME	ROOM 1	ROOM 2
8:00-12:00	PMC General	MMC M&P/ MMC DATA REVIEW/MMC TESTING
12:00-1:00	----- LUNCH -----	
1:00-5:00		MMC General

### MMC Meeting, Salt Lake City

Meeting	9-10 Feb 1995
All proceedings information due to MSC	24 Mar 1995
Proceedings distributed	21 Apr 1995
End of review period	5 Jun 1995

### Change Notices, Volumes 1 and 3

Change Notices prepared for DoD coordination review	15 Mar 1995
DoD coordination review completed	30 Jun 1995
Any changes to change notices made in response to review	31 Jul 1995
Release of change notices	31 Aug 1995
Change Notices available from DODSSP	1 Dec 1995

### 31st Meeting, Reno

Meeting announcements mailed	16 Jan 1995
Working group agendas due to MSC	20 Feb 1995
Working group distributions to MSC	20 Feb 1995
Hotel reservation cutoff	26 Feb 1995
Meeting booklet information to ARL	6 Mar 1995
Working group chairmen's meeting	27 Mar 1995
Meeting	28-30 Mar 1995
All proceedings information due to MSC	12 May 1995
Proceedings distributed	31 May 1995
End of review period	15 Jul 1995

### Volume 2 - Revision D

Revision prepared for DoD coordination review	31 Aug 1995
DoD coordination review completed	15 Dec 1995
Any changes to revision made in response to review	15 Jan 1996
Release of revision	28 Feb 1996
Revision available from DODSSP	1 Jun 1995

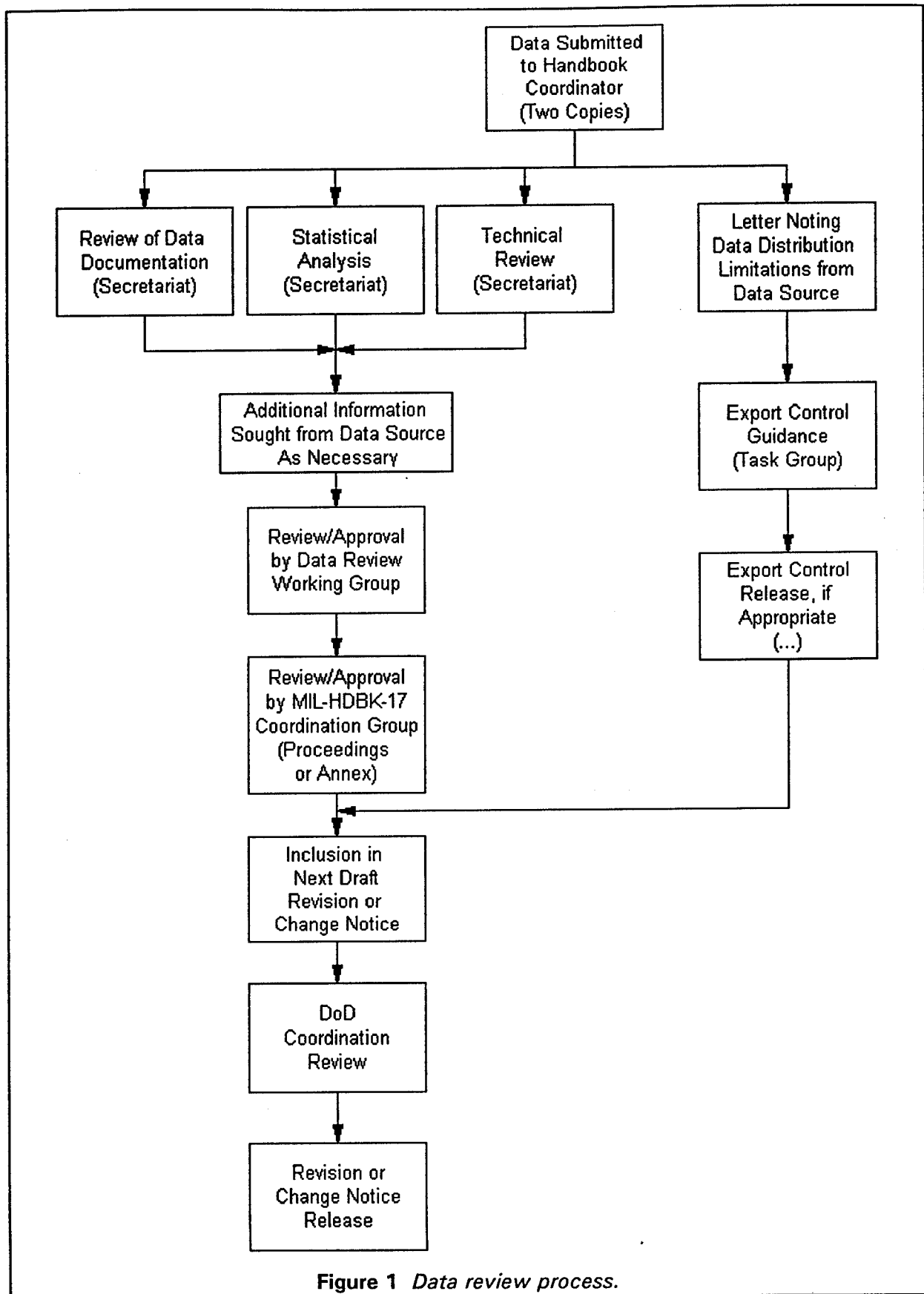


Figure 1 Data review process.