US Navy Insensitive Munitions (IM) Munition Reaction Evaluation Board (MREB)

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Acknowledgements

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BLUF

Paper

To inform the Insensitive Munitions (IM) and Munitions Safety communities on the US Navy Munitions Reaction Evaluation Board's (MREB) mission, authority, responsibility and membership.

Mission

- To provide guidance and recommendations for the proper design and conduct of ordnance hazard assessment testing;
- Provide evaluation of ordnance hazard assessment test plans
- Provide scoring of technical performance (i.e. test/no test and reaction level) of hazard testing in support of IM compliance, Hazard Classification (HC) and Weapons Systems Explosive Safety Review Board (WSESRB) review processes for munitions

Background

- Joint Requirements Oversight Council (JROC) established joint US Standardized IM tests 2006
- Office of Secretary of Defense (OSD) established the joint US IM test standards and passing criteria 2010
  - Joint standards are based on NATO AOP-39 policy document which provides guidance on IM and HC assessment and testing
  - Strive to harmonize IM and HC test requirements
  - It became imperative that the US Navy have one single authority for the review of weapons systems test plans and results for compliance with safety, IM and HC requirements
- NOSSA decision to consolidate 3 Navy Boards into one board in 2008
  - NOSSAINST 8010.1 established that forms MREB 2009
  - MREB began officially in January 2010
  - MREB board members comprised of Subject matter experts from IM, HC and basic safety testing.
  - NOSSAINST 8010.1 updated in 2017

MREB Philosophy

- Convenes in person and/or by video/web/teleconference at a US Navy installation
- Lead Chairperson coordinates meeting time and location with the MREB Site Chairperson's and voting members
- Attendance by full membership is encouraged so that judgements are consistent and independent of meeting location, program, sponsor or test activity

MREB Leadership

- Leadership of the MREB consists of:
  - Lead Chairperson
    - Nominated by the appropriate US Navy Warfare Center Dept/Director Head and concurred with by NOSSA.
    - Provides overall direction for the MREB
    - Rotates among site every two years
  - Site Chairperson
    - Each US Navy Warfare Center will have a Site Chairperson nominated by the appropriate Dept/Director Head and concurred with by NOSSA
  - Vice Chairperson
    - Each US Navy Warfare Center will have a site Vice Chairperson nominated by the appropriate Dept/Director Head and concurred with by NOSSA

MREB Membership

- MREB membership is as follows:
  - Voting Members
    - Individuals with expertise related to munitions development, IM requirements, HC requirements, ordnance technology, and test and evaluation technologies and methods
  - Executive Secretary
    - Appointed by Lead Chairperson to coordinate MREB meetings
    - Responsible for meeting minutes, summarizing Board's findings. Summarizing and distributing comments on test plans to NOSSA and distribution of the minutes and findings for review and approval
  - Ad Hoc Members
    - The MREB can appoint technical specialists, special appointees as ad hoc voting members to advise board
    - The MREB can appoint technical specialists as ad hoc non-voting members for consideration of unique cases
    - NOSSA and/or PEOs/PMs may also be ad hoc non voting members

MREB Meetings

- MREB meetings are conducted as required and typically once per month
- Meetings are called only when a quorum is present
  - At least six members are present
  - Goal is to have representation from each site- can be waived
  - A Site Chairperson or Vice Chairperson is present
- Consensus is preferred but rulings can be made with a two-thirds majority
  - If a two-thirds majority doesn't exist then the Site Chairperson will assign representatives to write majority and minority opinions
  - The Site Chairpersons will provide a recommendation to the Lead Chairperson who will issue the final ruling
- Program offices will arrange meeting with the appropriate Chairperson and Executive Secretary

MREB Authority and Responsibility

- Weapons Program Offices submit their POC and detailed test plans on the NOSSA Website via the NOSSA Test Plan Submission tool
  - Including approved THA
  - System Safety Program Plan - if applicable
  - If test is for official score it is important that the program receives concurrence on the test plan prior to testing
  - Recommended to submit developmental tests for review
  - If test plan includes harmonized IM/HC tests the DoD Explosives Safety Board (DDESB) concurrence may be necessary
- Weapons Program Offices must submit test results to MREB for review to obtain an assessment for official score
  - It is not necessary to submit test results for engineering assessments, however, submission of test assessment based on engineering analysis of engineering level tests, modeling, etc. to obtain official assessments

MREB Responsibilities

- Provide a response to the Program Office within 30 days of receiving the test plan, results and assessments
- Provide recommendation for approval of test plans sent to NOSSA
- Evaluate the results of ordnance hazard assessment tests including IM/HC and Basic safety tests in accordance with MIL-STD-2105D and NATO STANAGs/APs and provide an official assessment of record of the reactions
- Report it's findings/recommendations and corroborating information to NOSSA for official NOSSA concurrence

NOSSA Responsibilities

- Provide concurrence on the appointments of Lead and Site Chairpersons
- Render a decision with MREB concurrence on final approval of test plans and findings/recommendations
- Provide detailed procedures for approval of test plans and presenting test results to the MREB
- Provide MREB Process Guide and Reporting Format
- Provide test submittal guidelines
- Ensure all records are accounted for and are accessible by current and future program

Concluding Remarks

- NOSSA has created an updated NOSSA Instruction which clearly defines the duties and responsibilities of the US Navy MREB. The MREB ensures consistent evaluation of ordnance hazard assessment test plans and scoring reaction levels of hazard testing
- As U.S./NATO IM/HC tests, procedures, and requirements evolve, NOSSA will continue to maintain/update the MREB instruction
- The US Navy's MREB instruction is a proven model of cooperation and consistency for a unified board for scoring IM, HC and basic safety tests

QUESTIONS?

BACKUP SLIDE

APPLICABLE SPECS & STDs

ASTM Standard E1742/E1742M-12	"Standard Practice for Radiographic Examination," ASTM International, West Conshohocken, PA, 1 November 2012
MIL-STD-2105D	Hazard Assessment Tests for Non-Nuclear Munitions, 19 April 2011.
NATO STANAG 4439	Policy for Introduction, Assessment and Testing for IM (MURAT), Edition 3, 17 March 2010.
NATO STANAG 4240	Liquid Fuel/External Fire, Munition Test Procedures, Edition 2, 15 April 2003.
NATO STANAG 4382	Slow Heating Munitions Test Procedures, Edition 2, 15 April 2003.
NATO STANAG 4241	Bullet Impact, Munition Test Procedures, Edition 2, 15 April 2003.
NATO STANAG 4496	Fragment Impact Munitions Test Procedure. Edition 1,13 December 2006.
NATO STANAG 4396	Sympathetic Reaction Munition Test Procedures. Edition 2, 15 April 2003.
NATO STANAG 4526	Shaped Charge Jet, Munitions Test Procedure. Edition 2, 10 December 2004.
NATO STANAG 4375	Safety Drop Munition Test Procedure, Edition 3, 15 June 2010.
NAVSEAINST8020.8C	Department of Defense Ammunition and Explosives HC Procedures, 30 July 2012.
NAVSEAINST 8010.5C	Insensitive Munitions Program Planning and Execution, 15 September 2015.