

Role of Test Operations Procedures in Development of Standards for Chemical-Biological Defense Program Test and Evaluation Capabilities



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Background

Introduction: The Need for Test and Evaluation Standards

Standards for Chemical-Biological Defense Programs (CBDP) Test and Evaluation (T&E) capabilities are necessary for providing reliable results to decision-makers. They provide a framework to ensure the repeatability of test procedures and reproducibility of test results and allow for direct comparison of data obtained from qualified laboratories, both government and contractor. Community development and acceptance of these standards ensure the highest quality T&E methodologies and maximum use of the capability and, therefore, the highest possible T&E capability return on investment.

In the past, lack of standards has led to decreased confidence in the test data and repeated testing, which has in turn resulted in acquisition cost overruns and schedule slips. Most importantly the lack of T&E standards and resulting lack of reliable test data can adversely affect the performance of CBDP systems for our Warfighters.

Because of this, the Assistant Deputy Under Secretary of the Army for T&E (DUSA-TE) developed criteria for establishing CBDP T&E standards. DUSA-TE established the T&E Capability and Methodologies Integrated Product Team (TECMIPT) to ensure the criteria for standards are met. The TECMIPT consists of commodity area working groups called Capability Area Process Action Teams (CAPATs). These groups are composed of subject matter experts, Department of Defense (DoD), and interagency stakeholders who ensure T&E standards packages meet established criteria. The ultimate product of the TECMIPT and CAPATs are a T&E standards packages for each test capability within the CBDP.

Role of TOPs in the Test and Evaluation Standards Package

The T&E standards package has three parts:

1. The T&E capability needs statement (TECN) is a prioritized list of requirements for the T&E capability. The TECN is used by the Materiel Developer of the T&E capability to ensure the data requirements of the test community can be met while allowing for constraints of budget schedule and technology maturity.
2. The Verification/Validation Report and Operational Test Agency (OTA) Accreditation shows that the T&E capability can meet the requirement.
3. Test methods or procedures that satisfy the need of the CBDP community for performing tests. These are normally documented in the form of Test Operations Procedures (TOPs).

TOP Development Process

While standardized testing is always desirable, TOPs are deemed necessary when testing is done often enough that results need to be compared among laboratories and with previous test data.

Once it is determined that a TOP is needed, the author gathers test plans, reports, methodologies and verification and validation reports. The author writes the TOP following the ATEC format (Ref 1). Once an initial draft is complete, it is subjected to an internal peer review at US Army Dugway Proving Ground (DPG). The peer review includes individuals that have been actively involved in the type of testing being documented.

(Note: There is no requirement that the TOP be written at DPG, however, DPG is the Major Range and Test Facility Base [MRTFB] for chemical and biological testing, so to date all of the TOPs have been written at DPG.)

After the internal review is complete and any changes incorporated, the TOP is formally staffed at DPG. Once staffed, the TOP is considered to be a final draft.

The final draft is submitted to the appropriate CAPAT for review. Members of the CAPAT may also have been involved in the drafting of the TOP. Once all of the CAPAT comments have been adjudicated, the TOP is returned to them for concurrence.

The current signing organizations for the CAPAT are US Army Test and Evaluation Command (ATEC)/US Army Evaluation Center (AEC), Air Force Operational Test and Evaluation Center (AFOTEC), Marine Corps Operational Test and Evaluation Activity (MCOTEA), Commander, Operational Test and Evaluation Force (COMOPTEVFOR), DUSA-TE, Joint Program Executive Office for Chemical Biological Defense (JPEO-CBD), Joint Science and Technology Office (JSTO), Joint Requirements Office for Chemical, Biological, Radiological, and Nuclear Defense (JRO-CBRND).

After concurrence from the CAPAT the TOP is submitted to ATEC for staffing, which includes review by all ATEC subordinate commands. The TOP is ready for publication once ATEC has signed, but because CB TOPs are used as T&E standards, it is submitted to the TECMIPT and DUSA-TE for approval as a T&E standard. Once approved by the TECMIPT chair and DUSA-TE, the TOP is published for public release by ATEC and as the methods and procedures for T&E standards by DUSA-TE.



Testing being performed in accordance with TOP 8-2-510A Chemical and Biological Contamination Survivability (CBCS) Large Item Exteriors



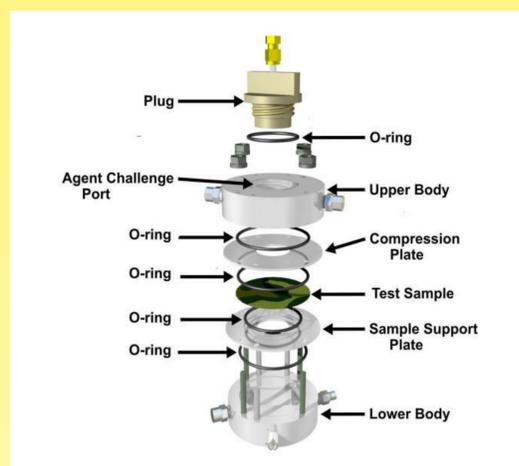
Testing being performed in accordance with TOP 08-2-511A Chemical, Biological, Radiological (CBR) Contamination Survivability Small Items



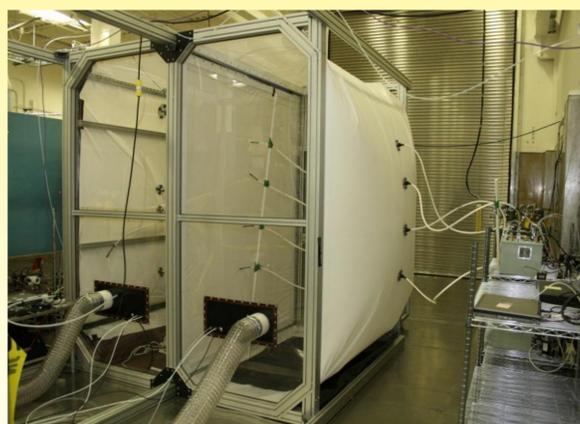
Field testing of Collective Protection (ColPro) shelters in accordance with TOP 8-2-198 Field testing of ColPro Systems



TOP 08-2-109 is being developed to establish test standards for Simulant-Agent Resistance Test Manikin (SMARTMAN) testing of protective masks



TOP 08-2-501 Permeation and Penetration Testing of Air Permeable, Semi Permeable, and Impermeable Materials with Chemical Agents is being revised to include the latest methodology



TOP 08-2-201 Collective Protection (ColPro) Novel Closure testing is being developed to establish test standards for full-scale closure testing

Summary

TOPs provide standardized descriptions of test procedures and practices for planning and conducting tests and acquiring and analyzing test data. TOPs also provide a mechanism to document technical knowledge related to developmental testing and standardize techniques to provide accurate, precise, consistent, and repeatable test results.

List of Chemical/Biological TOPs Currently Accepted as Test and Evaluation Standards:

TOP 08-2-500 Receipt Inspection of Chemical Biological (CB) Materiel, published 1-Jul-84

TOP 08-2-198 COLPRO Field Testing, published 28-Sep-11

TOP 08-2-196 Simulant Selection for Laboratory Chamber and Field, published 25-Apr-11

TOP 08-2-510A Chemical and Biological Contamination Survivability (CBCS) Large Item Exteriors, published 21-Mar-11

TOP 08-2-511A CBR Contamination Survivability Small Items, published 27-Mar-11

TOP 08-2-509 Chemical, Biological, and Radiological (CBR) Large Item Interiors, published 22-Jun-12

TOP 08-2-502 Chemical, Biological, and Radiological Contamination Survivability Material Effects Testing, published 2-Jun-12

List of Chemical/Biological TOPs Currently Being Revised

TOP 08-2-501 Permeation and Penetration Testing of Air Permeable, Semi Permeable, and Impermeable Materials with Chemical Agents, last revised 3-Mar-97

TOP 10-2-022A Chemical Vapor and Aerosol System-Level Testing of Chemical/Biological Protective Suits, last revised 14-Dec-05

TOP08-2-061A Chemical Decontaminant Testing

List of Chemical/Biological TOPs Currently in Development

TOP 08-2-109 Simulant Agent Resistance Test Manikin (SMARTMAN) Testing of Protective Masks

TOP 08-2-065 Developmental Testing of Liquid and Gaseous/Vapors Decontaminants on Bacterial Spores and Other Bio Warfare Agents on Porous Surfaces
TOP 08-2-138 Chemical Agent Resistance Testing of Gloves and Boots

TOP 08-2-066 Biological Point Detection

TOP 08-2-197 COLPRO Single Pass Carbon Filtration Testing

TOP 08-2-199 Wind Driven and Static Challenges of Collective Protection Systems

TOP 08-2-200 Entry/Exit Testing for ColPro Shelters

TOP 08-2-201 Collective Protection (ColPro) Novel Closure Testing

TOP 08-2-188 Chemical Point Detector

TOP 08-2-068 Small Item Decontamination Test Fixture
TOP 08-2-060 Vapor Sampling Test Method

TOP 08-2-140 Simulant to Agent Correlation for Protective Equipment

Acknowledgements

Personnel from the West Desert Test Center, Jacobs Dugway Team, and Dugway Data Services Team, as well as members of the CAPATs assisted in the development, review and approval of the TOPs.

POCs

[1] Published TOPs are available for public release and are found on VDLs. Contact the ATEC G9 Standardization Team usarmy.apg.atec.mbx.atec-standards@mail.mil to request a document or for information on accessing VDLs.

[2] Test and Evaluation Standards Packages which may include verification and validation reports in addition to the TOPs are available on the TECMIPT website on AKO. Contact Megan Holste (megan.j.holste.ctr@mail.mil) for details.

[3] TOPs that are under development or in draft format are generally not available to the public. Contact Scot Westwood (scot.c.westwood.civ@mail.mil) if you would like additional information on those TOPs

References

[1] DTC Regulation 25-30 DEVELOPMENT, PUBLISHING, AND USE OF TEST OPERATIONS PROCEDURES (TOPS) AND INTERNATIONAL TEST OPERATIONS PROCEDURES (ITOPS), 24 April 2008.