



# International Test and Evaluation Program

The International Test and Evaluation Program (ITEP) enables bilateral and multilateral agreements between U.S. forces and Allies which are critical for expediting the development and fielding of advanced warfighting technologies, and supporting T&E infrastructure and capabilities.

Bilateral and multilateral agreements between U.S. forces and Allies enable the planning and execution of cooperative T&E projects, transfer of necessary test equipment and materials, exchange of T&E-relevant information through working groups, and reciprocal use of test facilities.

The United States continues to hold 11 bilateral agreements, as well as 2 multilateral agreements, to include the Multinational Test and Evaluation Program (MTEP) Memorandum of Understanding with Australia, Canada, New Zealand, and the United Kingdom, and the Transatlantic MTEP Memorandum of Understanding with France, Germany, Italy, and the United Kingdom, signed in January 2021. The addition of other NATO partners to the Transatlantic MTEP is under discussion. During FY21, discussions also continued with two other prospective international partners to establish new bilateral agreements with those nations.

In FY21, in support of the International Test and Evaluation Program (ITEP) mission, DOT&E reviewed and approved 14 agreements/memoranda, summarized in Table 1. Table 1 lists all agreements/memoranda signed in FY21, and if applicable, the time and location of associated test plans or events.

<b>Table 1. IT&amp;E Documents in Effect in FY21</b>			
<b>IT&amp;E Projects</b>	<b>Entry into Force/Effect Date</b>	<b>Test Dates</b>	<b>Test Activity Locations</b>
The Transatlantic Multinational Test and Evaluation Program Memorandum of Understanding (MOU)	Jan 20, 2021	MOU will expire Jan 19, 2046	Test activities will be detailed in projects under the MOU
Advanced Distributed Modular Acquisition System (ADMAS) Instrumentation Equipment and Material Transfer Arrangement (E&MTA)	Oct 26, 2020	Equipment transfer planned in FY22	Koblenz, Germany
Sky Sabre System Reciprocal Use of Test Facilities (RUTF) Project Arrangement (PA)*	Nov 20, 2020	Jun 14-Jul 9, 2021	White Sands Missile Range, New Mexico
Flight Test Working Group Terms of Reference, Amendment One	Dec 1, 2020	Activity continuing through 2023	
Heterogeneous Multiphase Reactive Blast Cooperative T&E Cooperative T&E Project Arrangement	Dec 4, 2020	Ongoing	Suffield Research Centre, Ralston, Alberta, Canada
28th Engineers Regiment Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) Tactics, Techniques, and Procedures (TTPs) RUTF PA and Annex A*	Jan 14, 2021	Jan 18-Feb 12, 2021	Dugway Proving Ground, Utah
Annex B to the RUTF Concerning 28th Engineers CBRNE Defense TTPs RUTF PA*	Apr 26, 2021	May 3-21, 2021	Dugway Proving Ground, Utah
Flight Test Aegis Weapon Systems-31 RUTF PA	Mar 29, 2021	May 20, 2021	Pacific Missile Range Facility, Hawaii
Electronic Warfare Operational Test 2016 RUTF PA, Amendment Three	May 7, 2021	Testing was delayed due to the coronavirus (COVID-19) pandemic and is expected to continue in 2022	Naval Research Lab, Washington DC or Norfolk, Virginia, Marine Corps Base Hawaii, Oahu, Hawaii
CF-18 Software Upgrade T&E RUTF PA*	Jun 14, 2021	Jul 1-Aug 5, 2021	Naval Air Warfare Center, China Lake, California
T&E of the German Bundeswehr CBRNE Defense TTPs RUTF PA*	Jun 16, 2021	Jun 28-Jul 16, 2021	Dugway Proving Ground, Utah

**Table 1. IT&E Documents in Effect in FY21**

IT&E Projects	Entry into Force/Effect Date	Test Dates	Test Activity Locations
T&E of the Australian Special Operations Engineer Regiment CBRNE Defense and Explosive Ordnance Disposal TTPs RUTF PA and Annex A	Sep 21, 2021	Sep 28-Oct 15, 2021	Dugway Proving Ground, Utah
High Intensity Radiation Field Testing on the CC-295 Kingfisher RUTF PA	Sep 20, 2021	Sep 30 – Nov 5, 2021	Naval Air Warfare Center Aircraft Division, Patuxent River, Maryland
Approval in Principle for the Strategic Development Planning and Experimentation for National Advanced Surface-to-Air Missile System Experimentation RUTF PA	Sep 16, 2021	The Project Agreement remains to be negotiated. Consequently, the test start date has yet to be determined.	Andoya Test Range Facility, Norway

### The Transatlantic Multinational Test and Evaluation Program Memorandum of Understanding

The Transatlantic MTEP Memorandum of Understanding was signed in January 2020 to prescribe the general provisions that will apply to the initiation, conduct, and management of TEP activities detailed in separate Project Agreements, Equipment and Material Transfer Agreements (E&MTA), and Working Groups Terms of Reference. These TEP activities will be between participants, authorized in accordance with the national policies and procedures, from France, Germany, Italy, and/or the United Kingdom.

### Advanced Distributed Modular Acquisition System (ADMAS) Instrumentation E&MTA

The ADMAS E&MTA between the U.S. and Germany enables the Army’s T&E Command to transfer the ADMAS instrumentation and software tools to the Bundeswehr Head of Robotics R&D at Koblenz. The transfer is valid for three years, and will enable Germany to standardize test procedures, data analysis techniques, and T&E methodology for the testing of autonomous robotic vehicles and associated technology. Due to the global coronavirus pandemic, the Army was not able to initiate the transfer of the equipment or personnel in FY21, as planned.

### Sky Sabre System RUTF Project Agreement

The Sky Sabre System project agreement allowed the United Kingdom’s Ministry of Defence (UK MOD) to leverage U.S. Army personnel and facilities at White Sands Missile Range to test the vertically-launched Sky Sabre integrated Ground Based Air Defence system prior to declaring its Initial Operating Capability. Through this agreement, the UK MOD received data on threat detection, threat prioritization, weapon allocation, and threat engagement, as well as post-launch analytical support to evaluate the system’s capability (Figure 1).



**Figure 1. American and UK personnel setting up the Sky Sabre system for testing at White Sands Missile Range.**

## **Flight Test Working Group Terms of Reference**

The Flight Test Working Group was established to identify and study future collaborative efforts intended to increase the effectiveness of joint weapons systems T&E through the harmonization of T&E requirements, investment strategies, and activities on specific T&E issues of mutual interest. Specifically, the Flight Test Working Group focuses upon the adoption and establishment of interoperable flight test instrumentation architecture to allow contributing participants to collaborate on flight test programs.

## **Heterogeneous Multiphase Reactive Blast Cooperative T&E Project Agreement**

The Heterogeneous Multiphase Reactive Blast Cooperative T&E project agreement between the U.S. and Canada supports a series of tests over a three-year period between the U.S. and Canada at the Suffield Research Center, Alberta, Canada. The purpose of this agreement is to develop, test, and deploy diagnostics developed for heterogeneous multiphase reactive blast based on a series of explosive charges.

## **28th Engineers CBRNE TTPs RUTF Project Agreement**

This project agreement with the UK enabled the development and testing of the partner defense TTPs against CBRNE threats. The U.S. Army Dugway Proving Ground, Utah hosted the tests, providing threat-representative scenarios to support the evaluation of the operational effectiveness of new detectors, Personal Protective Equipment, and decontamination equipment in an operationally representative environment. Tests also included the firing of various weapons by soldiers in protective clothing to evaluate their potential effects on mission effectiveness.

## **Annex B of the 28th Engineers CBRNE Defense TTPs RUTF Project Agreement**

Under this Annex to the aforementioned project agreement, the UK sought to enhance and improve current TTPs and develop additional TTPs for operational gaps identified by the 28th Engineer Regiment during previous testing.

## **Flight Test Aegis Weapon Systems-31 (FTM-31) RUTF Project Agreement**

A High-Power Phased Array Radar was employed at the Pacific Missile Range Facility to observe the target vehicle for the Missile Defense Agency's (MDA) FTM-31 flight test. The radar successfully tracked the target vehicle as planned. Resultant data will support and improve threat characterization.

## **Electronic Warfare Operational Test 2016 RUTF Project Agreement**

The Electronic Warfare Operational Test 2016 enables the United States and Canada to continue the at-sea T&E of the electronic warfare suites fitted in Canadian Navy ships. This testing was postponed due to the global coronavirus pandemic and is expected to be conducted in Hawaii, where the U.S. will simulate anti-ship missiles to validate the Canadian Softkill System.

## **CF-18 Software Upgrade T&E RUTF Project Agreement**

The CF-18 Software Upgrade agreement enabled Canada to test the upgrades to their CF-18 Hornets at the U.S. Naval Warfare Center, China Lake, California in July and August 2021. This T&E validated and verified the upgraded software and the CF-18's ability to intercept radar signals, identify signal sources, prioritize emitters, and provide defensive action against threat weapon systems.

## T&E of the German Bundeswehr CBRNE Defense TTPs RUTF Project Agreement

This agreement enabled the German Bundeswehr to develop and test their defense TTPs against CBRNE threats. The U.S. Army Dugway Proving Ground, Utah hosted the tests, providing threat representative scenarios to support the evaluation of the operational effectiveness of new detectors, to include mass spectrometers, multi-gas measuring devices, radiation detection devices, Personal Protective Equipment, and decontamination equipment in an operationally representative environment (Figure 2). Tests also included the firing of weapons with soldiers in protective clothing to evaluate their effects on mission effectiveness. Tests also assessed post attack reconnaissance after an Improvised Explosive Device attack and testing of new radios and communications equipment.



**Figure 2. German Bundeswehr CBRNE Testing at Dugway Proving Ground, Utah**

## T&E of the Australian Special Operations Engineer Regiment (SOER) CBRNE Defense and Explosive Ordnance Disposal TTPs RUTF Project Agreement

This agreement allows the Australian SOER to conduct a full range of evaluated CBRNE mission requirements at multiple Dugway Proving Ground, Utah locations. Execution of TTPs will address Australian DOD SOER tactical operational needs and management of situations involving CBRNE threats and home-made explosives. The goal is to enhance and improve current TTPs, as well as develop additional TTPs for operational gaps identified during this T&E effort.

## High Intensity Radiation Field Testing on the CC-295 Kingfisher RUTF Project Arrangement

The Naval Air Warfare Center, Aircraft Division, Patuxent River, Maryland will provide High Intensity Radiated Field T&E support to Canada's Department of National Defense. This will include use of test facilities, set-up and operation of test equipment, and data collection, to include equipment readings, pictures, and video. This will be a five-week full-scale test.

## Approval in Principle for the Strategic Development Planning and Experimentation (SDPE) National Advanced Surface-to-Air Missile System (NASAMS) Experimentation RUTF Project Agreement

This Approval in Principle will allow the U.S. Air Force SDPE office to implement an experimentation effort with the following primary objectives: 1) examine the utility of the NASAMS to provide a layered-defense capability for Base Defense against cruise missile threats, and 2) demonstrate the ability of the NASAMS to be integrated in U.S. armed forces Battle Management Command and Control systems for Base Defense missions.

## Airborne Electronic Warfare Cooperative T&E Project Agreement

This agreement was established under the MTEP Memorandum of Understanding in 2016 and is therefore not listed in the annual FY21 Table 1, but this important multinational effort is ongoing, and is expected to continue

through at least 2026. FY21 activities and plans for the coming year under this agreement are described in detail in the Center of Countermeasures section of this annual report.

### **Integrated Air and Missile Defense (IAMD) Testing RUTF Project Agreement**

This major project agreement was signed in 2016, and is therefore not included in the annual table above. However, test events under the IAMD RUTF occur every two years, to include the most recent Formidable Shield 21. The IAMD project agreement allowed the U.S. Navy to test its maritime IAMD system in the Formidable Shield 21 exercise at the UK's Hebrides Test Range that included 11 nations and 16 ships. This testing included employment of ground-launched supersonic low altitude targets and ballistic missiles. Formidable Shield 21 witnessed the first ever use of a Pathfinder Zombie short range ballistic missile target (Figure 3), provided by the Missile Defense Agency. Additionally, the U.S. provided two Medium Range Ballistic Missile Target presentations. These tests demonstrated the potential for conducting launch on remote engagements wherein target data are passed from one ship to another. The Formidable Shield exercise series provides the most comprehensive opportunity to evaluate IAMD capability in the Atlantic area of operations. This year's event was the most complex IAMD testing yet conducted in the Formidable Shield series. It is anticipated that future events will continue to increase in complexity.



**Figure 3. U.S. MDA-provided Pathfinder Zombie short range ballistic target launch from the UK MOD Hebrides range.**