TUR FRM-I Project is a turnkey project delivered to TUR MND under the TUR FRM Contract signed by NATO Support and Procurement Agency (NSPA) and ROKETSAN. The project is completed in February 2015. The Project provided crucial capabilities to Karapınar Firing Range Center.

TUR FRM-II Project provides the mobilization of test equipment. In addition to this capability, the existing tracking capability will be developed and testing capability of naval weapon systems on sea platforms will be obtained.
Firing Test and Evaluation Center

The Project is a Turn Key project delivered to Turkish Ministry of National Defence (TUR MND) under the Sales Agreement signed between TUR MND, NATO Support and Procurement Agency, NSPA and ROKETSAN. ROKETSAN used system engineering approach by considering life cycle functions including design, development, equipment acquisition, training, qualification and certification of the facility.

The Project provides crucial capabilities to Firing Range, Test and Evaluation Center. In this respect, all kinds of artillery and tank ammunition, rocket and missile testing can be performed at the firing range where direction, position, range, accuracy, data acquisition, speed, acceleration characteristics can be measured in a precise manner.

By the realization of the project, Karapınar Firing Range, Test and Evaluation Center has reached to the level of to providing all services in international and high technical standards using mobile equipment. The main capabilities at the firing range are as follows:

- Ammunition, rocket/missile monitoring, tracking target and real time/post processing flight data at launch, flight and impact phases
- Real time trajectory tracking and monitoring capability using visual tracking systems including long range IR
- Ground-level, Low Altitude and High Altitude Meteorological Measurements
- Real time telemetry data monitoring and storing at launch, mid and impact areas
- Real time communication between launch point and impact point
- 3D analyses using High Speed Camera and Flight Follower system
- Accurate impact point measurement
- Ammunition and rocket conditioning
- Guided Flight Termination System

Test Range Command and Control Center (TRCC)

- Fixed Test Range Command and Control Center (F-TRCC) (1 set)
- Mobile Test Range Command and Control Center (M-TRCC) (1 set)
- F-TRCC is located at Karapinar/Konya Test Range
- M-TRCC serves as mobile system to control and manage all test activities
- M-TRCC is integrated into two ISO 40 ft shelter, which is transportable on its own trailer
- Command and Control of three firing platforms simultaneously
- Test data acquisition from various tracking and measurement sensors
- Real time display of flight in video format
- Data exchange and communication between the test range equipment/systems at both launch and impact point
- Simulation ability to analyze the risks and the adequacy of test architecture in advance of real flight test
- Test data handling activities such as acquisition, fusion, post-processing, analyses, and archiving as well as test results reporting

Mobile Tracking Radar Systems (1 ea.)

- Tracking instantaneously in real time and storage of the ballistic information
- Tracking the target from launch point along the flight path all the range
- Extrapolation the impact point accurately
- Accurate measurement of impact point after post-processing of flight data
- Transportable and capable to work on the sea platforms
- Operable within ISO 20 ft shelter for operators and antenna pedestal trailer
- Communication and exchange of data with other test range equipment
Mobile Telemetry Ground Station (TGS) (2 ea.)
- Tracking target and monitoring data from onboard telemetry subsystem on the target during the flight
- Two identical TGS integrated into ISO 20 ft shelter capable to be used on the sea platform
- Tracking the target from launch point along the flight path
- Integrated antenna, antenna control unit, receiver, acquisition unit and real time processing computer
- Monitoring user selected data in real time in both TGS shelter and Mobile or Fixed TRCC Console
- Communication with standard (IRIG) L-S-C band onboard telemetry subsystem
- Capability of auto tracking and to be guided by external sources such as tracking radars, optical tracking systems
- Communication and exchange of data with other test range equipment

Mobile Multi-Sensor Platforms (MSP) (2 ea.)
- Mobile system for ammunition tracking along the flight path by means of various sensor technologies
- Radar and optical tracking system with four visual and infrared cameras
- Tracking and monitoring instantaneously the flight in real time, and storage the ballistic information
- Tracking the target from launch point to along the flight path based
- Extrapolation the impact point accurately
- Accurate measurement of impact point after post-processing of flight data
- Integrated into transportable ISO 20 ft shelter for operators with antenna pedestal trailer
- Communication and exchange of data with other test range equipment

Mobile Electro-Optical Systems (EOS) (3 ea.)
- Tracking and monitoring instantaneously the flight in real time, storage of the ballistic information
- Three optical tracking sensor with total four visual and infrared cameras
- Calculation the target position and impact point accurately in real time
- Integrated into transportable ISO 20 ft shelter
- Communication and exchange of data with other test range equipment

Mobile Flight Termination System (FTS) (2 ea.)
- Termination of the tests in case of a failure or out-of-control situation
- Two identical FTS integrated into transportable ISO 20 ft shelters, to be used on the sea platform
- Sending the commands to the target from launch point to along the flight path
- Integrated antenna, antenna control unit, exciter, transmitter, high power amplifier, verification system and real time processing computer
- Communication with standard (RCC) UHF band onboard flight termination subsystem
- Controllable by remote computer inside the Fixed or Mobile TRCC
- Communication and exchange of data with other test range equipment
**Mobile Microwave Communication System (MCS) (2 ea.)**
- Two identical MCS integrated into transportable ISO 20 ft shelters
- Data voice, image, video etc. communication capability, extended range with relay station
- Communication in C band between all test range equipment/systems
- Communication and exchange data with other test range equipment

**Mobile Satellite Communication System (SCS) (2 ea.)**
- Integrated into transportable ISO 20 ft shelters, capable of being used on the sea platform
- Communication capability using Ku Band Satellites (TURKSAT or other Satellites)
- Communication and exchange data with other test range equipment through F/M-TRCC via wired or wireless means

**High Speed Camera (HSC) with Flight Follower System (FFS) (1 set)**
- Ballistics motion monitoring and recording of the ammunition (rockets, missiles, mortar, etc.) at both launch and impact area
- HSC integrated to FFS to monitor and record flight during launch phase
- HSC has the capability of video capturing 12,500 fps at 1024 x 1024 resolution
- FFS tracks the horizontal and/or projectile flights

**Auxiliary Test Equipment**
- Muzzle Velocity Measurement Radar
- Laser Range Finder (3 ea.) and Digital Goniometer
- Mobile Temperature Conditioning Cabinet (from ambient to +60° C)
- Video Transmission System (maximum range 50 km)
- Radio Communication System
- D-GPS (Differential GPS)
- Power Generators (at various capacity 23-112 kVA)
- Meteorological Measurement Systems (for various altitudes)