Aerial Weapons Scoring System (AWSS)

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by

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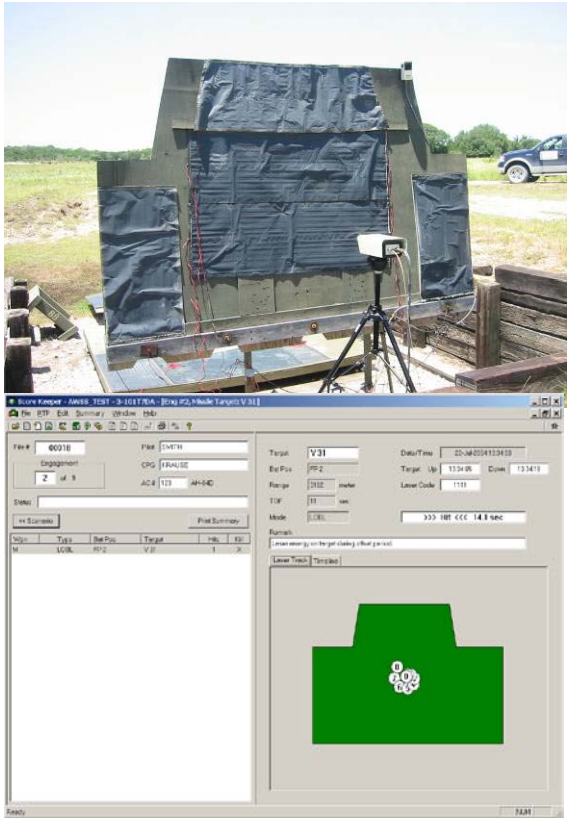
What is AWSS?

- **Scalable & portable system of computer controlled sensors used to score live-fire helicopter gunnery for evaluation of crew & weapons performance.** This objective scoring system allows the commander to validate training standards, ensure training effectiveness, and substantiate training ammunition requirement levels.
- Consists of:
  - Acoustic sensors for 2.75” rocket impact location
  - Radar sensors for cannon/machine gun scoring
  - IR/Optical sensors for laser designator detection & tracking when used with the Hellfire Captive Training missile
- Six fully portable systems delivered to the US Army for crew qualification gunnery training
- Only fielded system worldwide for Attack Helicopter live fire training

AWSS Required Operational Capability

- **AWSS is the standard objective scoring method for all US Army AH-64 & OH-58 crew qualification gunnery tables (6-8)**
- Provide Commander with objective feedback of target effect for all Attack Helicopter weapons engagements
- Operate Day and Night with no degradation or limitation due to environmental conditions that would not preclude training
- Detect and score > 90% of all projectiles (rockets and bullets) in the target effect area (scored zone)
- Maintain > 95% equipment availability rate
- Sustain NO damage from environmental / EMI standard conditions for Army ranges & training devices



AWSS Background

Original Requirement	1984
Prototype Operations (Ft Hood, TX)	1986-90
Production Deliveries	1991
ECPs Incorporated	1995-99
Upgrades Funded	2000
Production Start	2003
Fielding	2004-07
Continuous System Enhancements	2007-present

Currently there are (4) Systems based at Ft. Hood, TX that are utilized for all US Army Attack Helicopter live-fire gunnery operations in North America. There is (1) System permanently based at Grafenwoehr, Germany and another (1) System at Camp Casey, South Korea.

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System Packaging for Portability

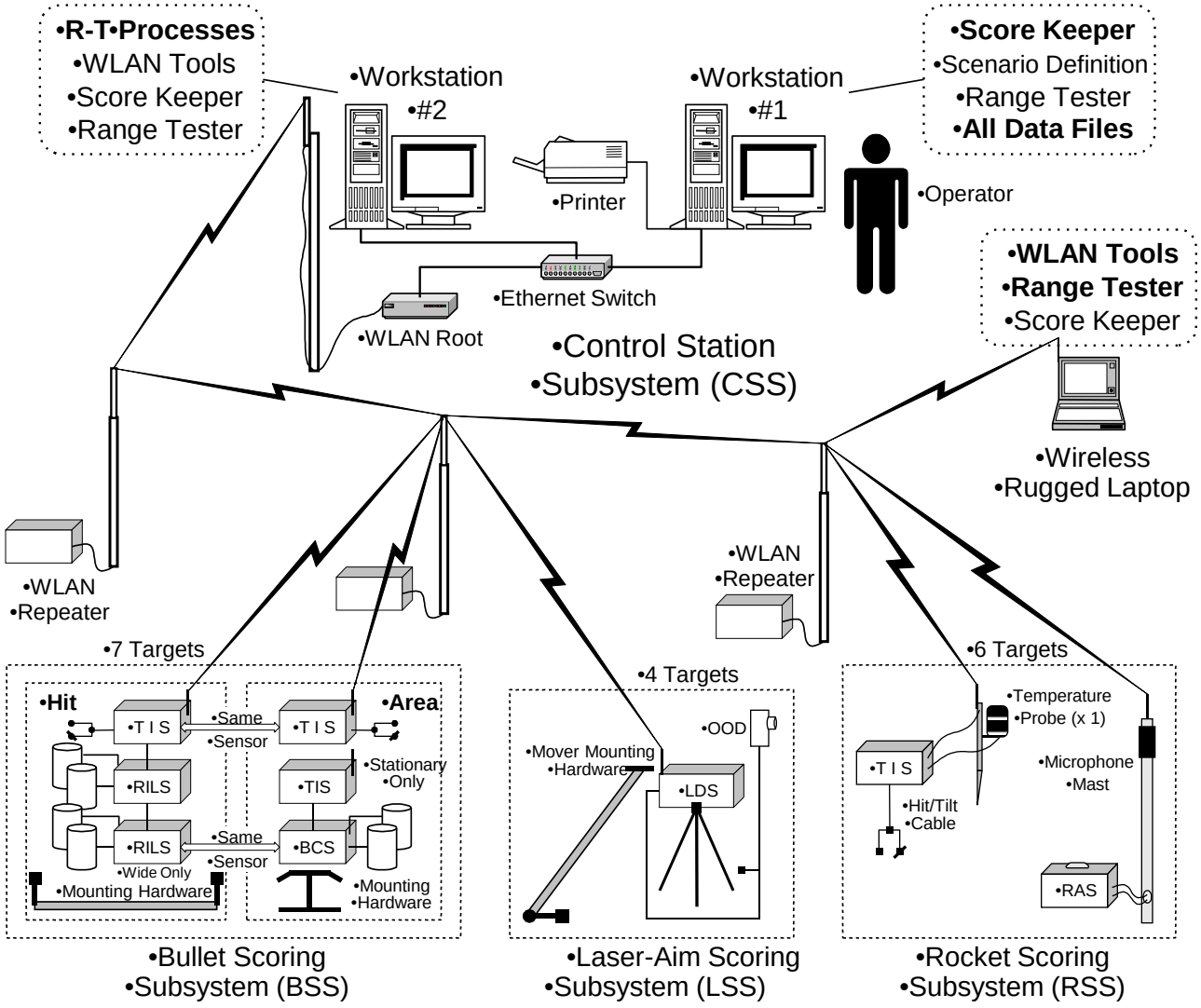
AWSS Benefits

- Every Weapon Engagement is scored to same standard
- Target Effect of every Weapon Engagement is provided in near REAL-TIME
- Every Weapon Engagement is documented
- TTPs can be validated and standardized
- Crew Performance Improves Dramatically
- Training Resource Utilization is captured
- Performance can be tracked
- Crew Errors are separated from Bias Errors
  - Both can be identified and tracked
  - Weapons maintenance / boresight accuracy improved
- OBJECTIVE MEASUREMENT OF COMBAT READINESS!

AWSS Subsystems

- Control Station Subsystem (CSS)
  - (CSS) Computers, Printer, WLAN Data Link, System Software
- Bullet Scoring Subsystem (BSS)
  - 7.62mm, .50 cal, 20mm, 30mm, 40mm
  - Real-Time Hit Scoring (98% Detection/Location On-Target)
  - Area Scoring (98% Detection within 50X20 meters area)
- Laser-Aim Scoring Subsystem (LSS)
  - LOAL and LOBL Missile Launch Modes
  - Real-Time Hit Indication
- Rocket Scoring Subsystem (RSS)
  - PD (M274) and MPSM (M267) Rockets (90% Detection/Location within the TEA)
  - Real-Time Scoring with Target Effect (90% Detection/Location within the TEA)

Subsystems and Components



Control Station Subsystem (CSS)

- Workstation #1
  - Primary Control Station for scoring engagements
  - Holds all shared data including score files
  - Only station requiring data back up
- Workstation #2
  - Runs Real-Time Processes automatically
  - Performs sensor communication and rocket scoring
  - Secondary scoring station (backup)
- Rugged Laptop
  - Supports downrange operations (setup/BIT)
  - Remote scoring station
  - **May be used to observe engagement results in real time at remote location (tower)**

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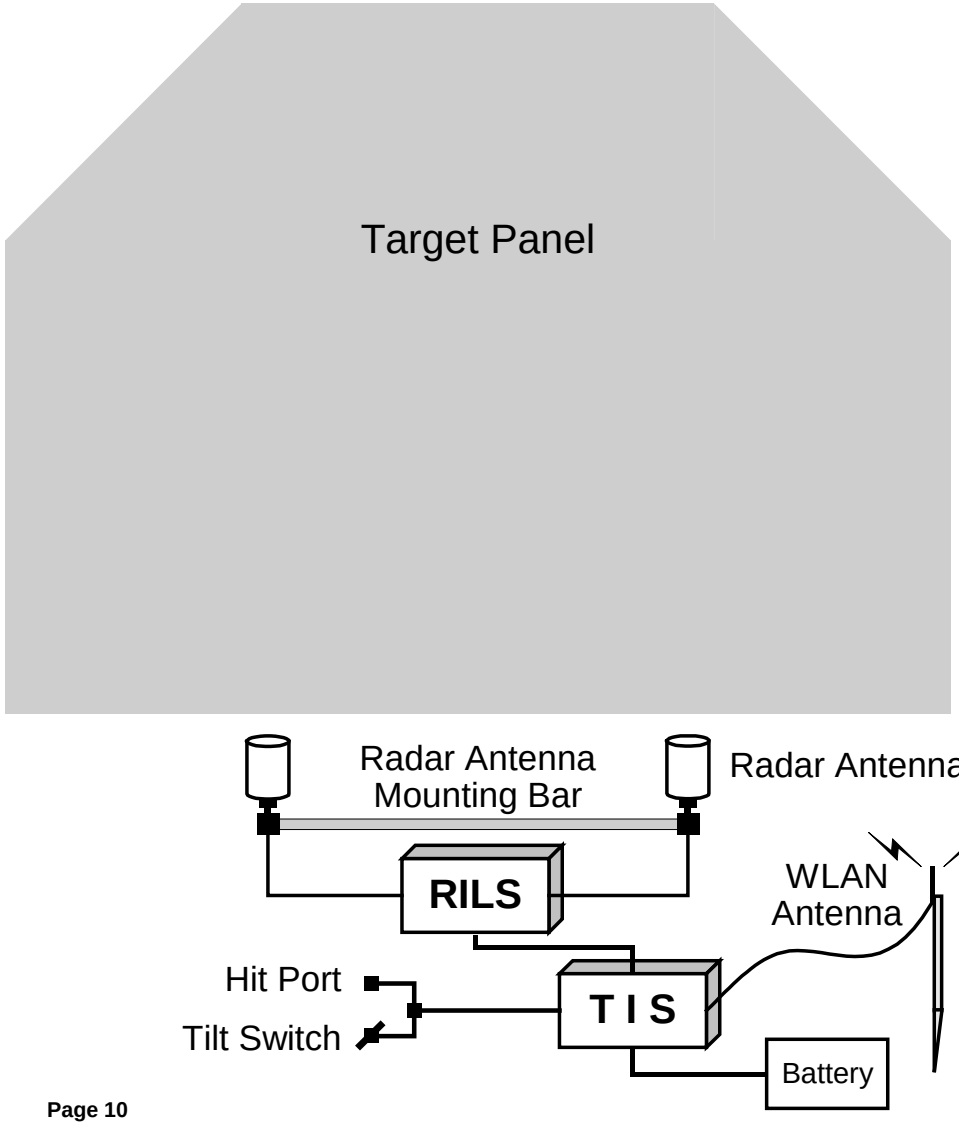
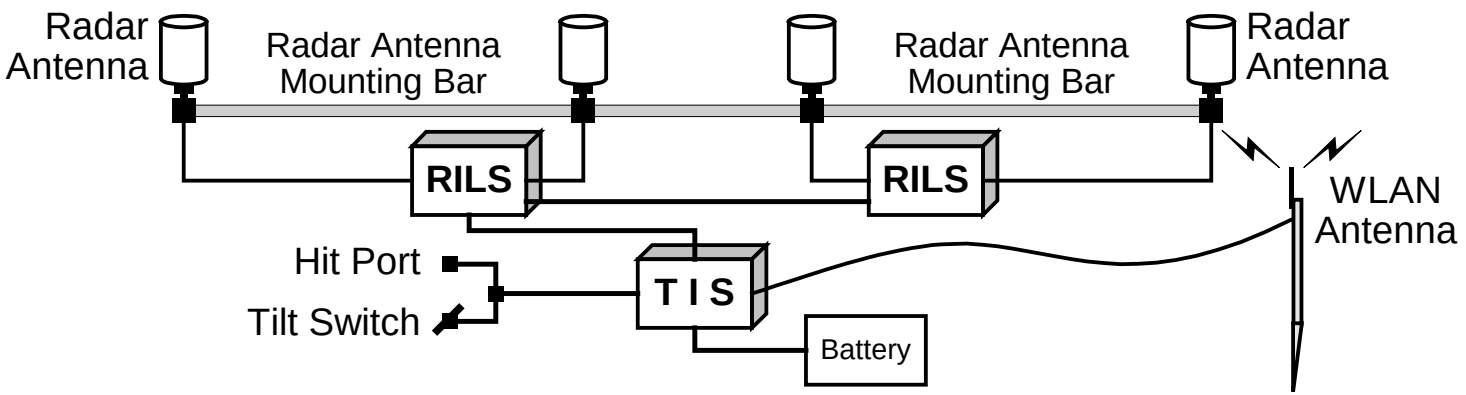
Bullet Hit Scoring Stationary Target



Round
Identification
Location
System

Bullet Hit Scoring Moving Target

T-72 Silhouette
Target Panel



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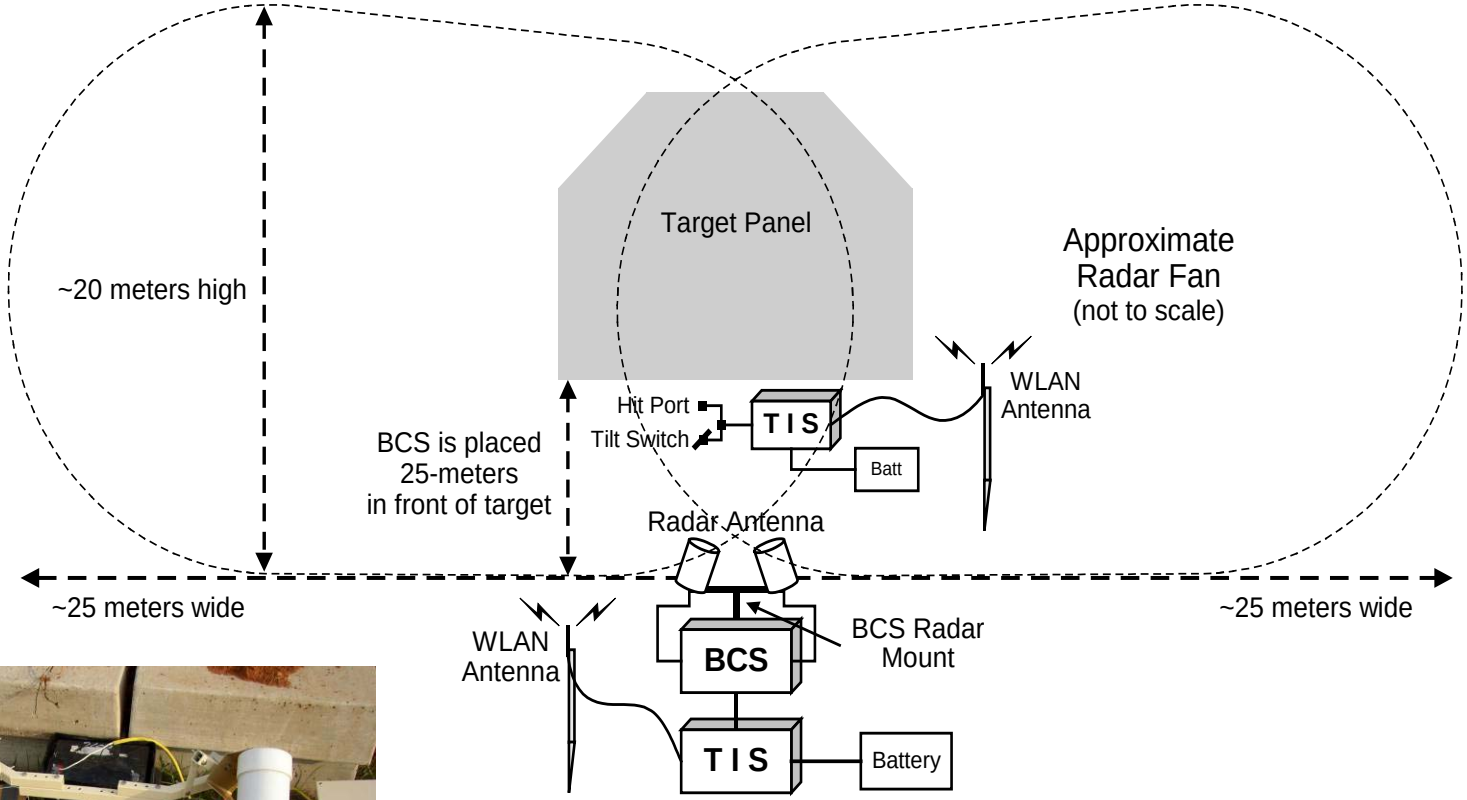
Bullet Area Scoring



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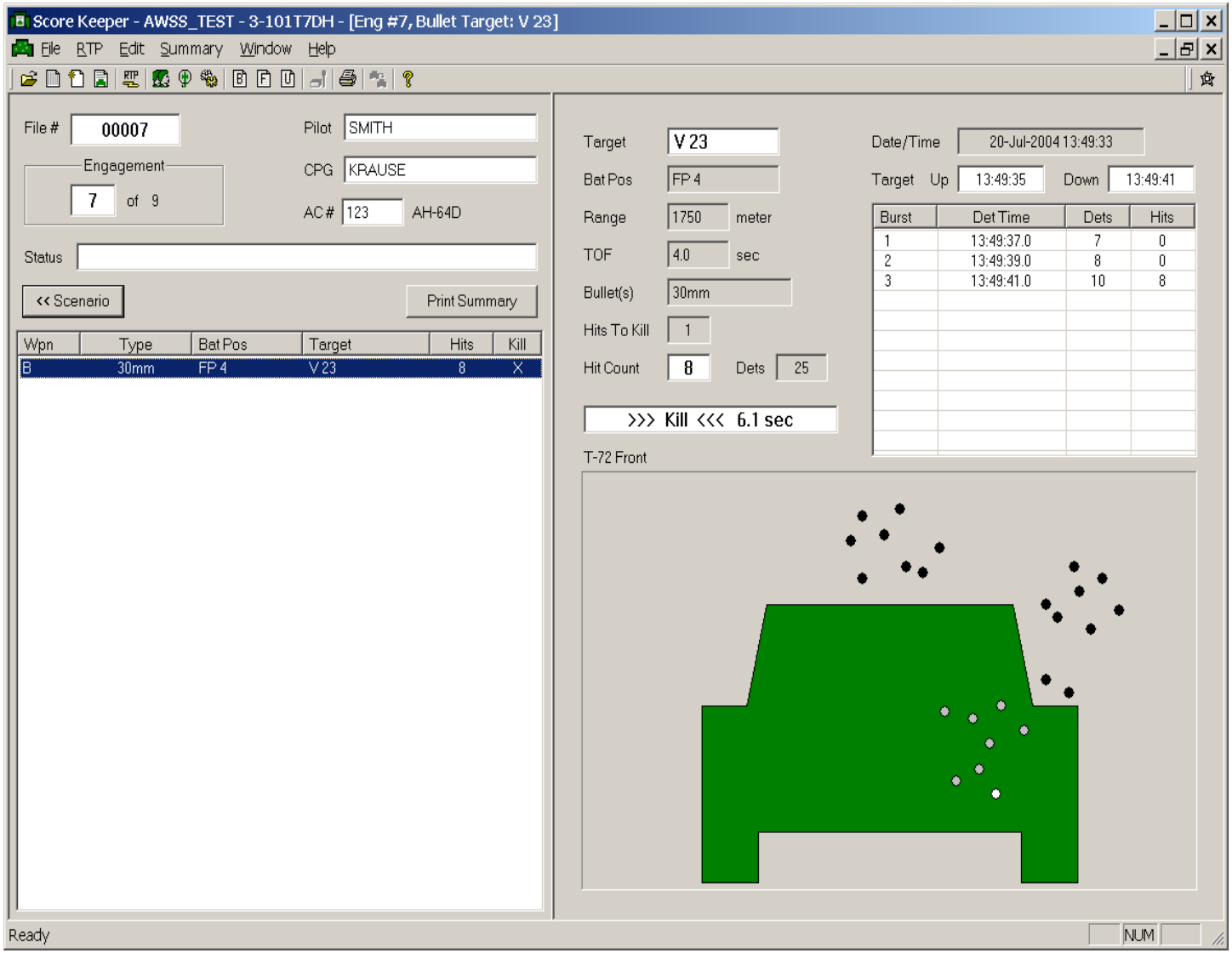
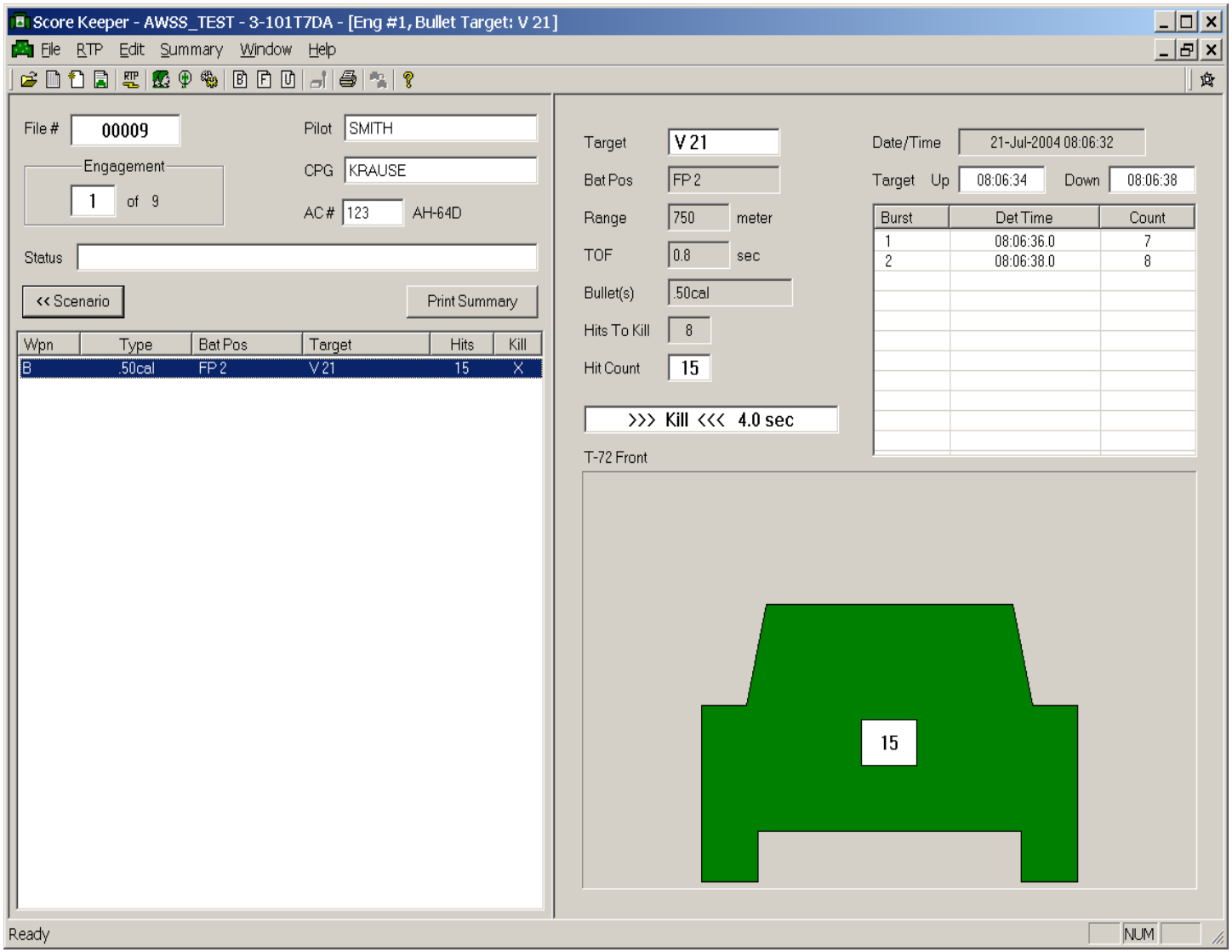
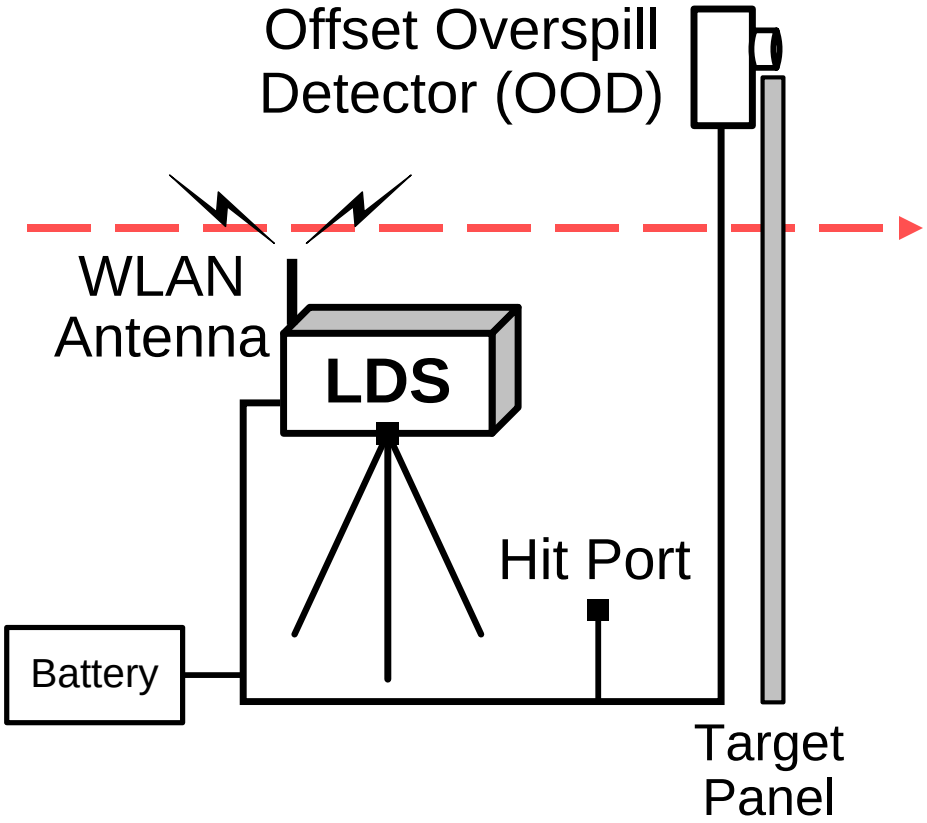
Bullet Hit Scoring Display



Bullet Area Scoring Display



Laser Scoring Subsystem (LSS)



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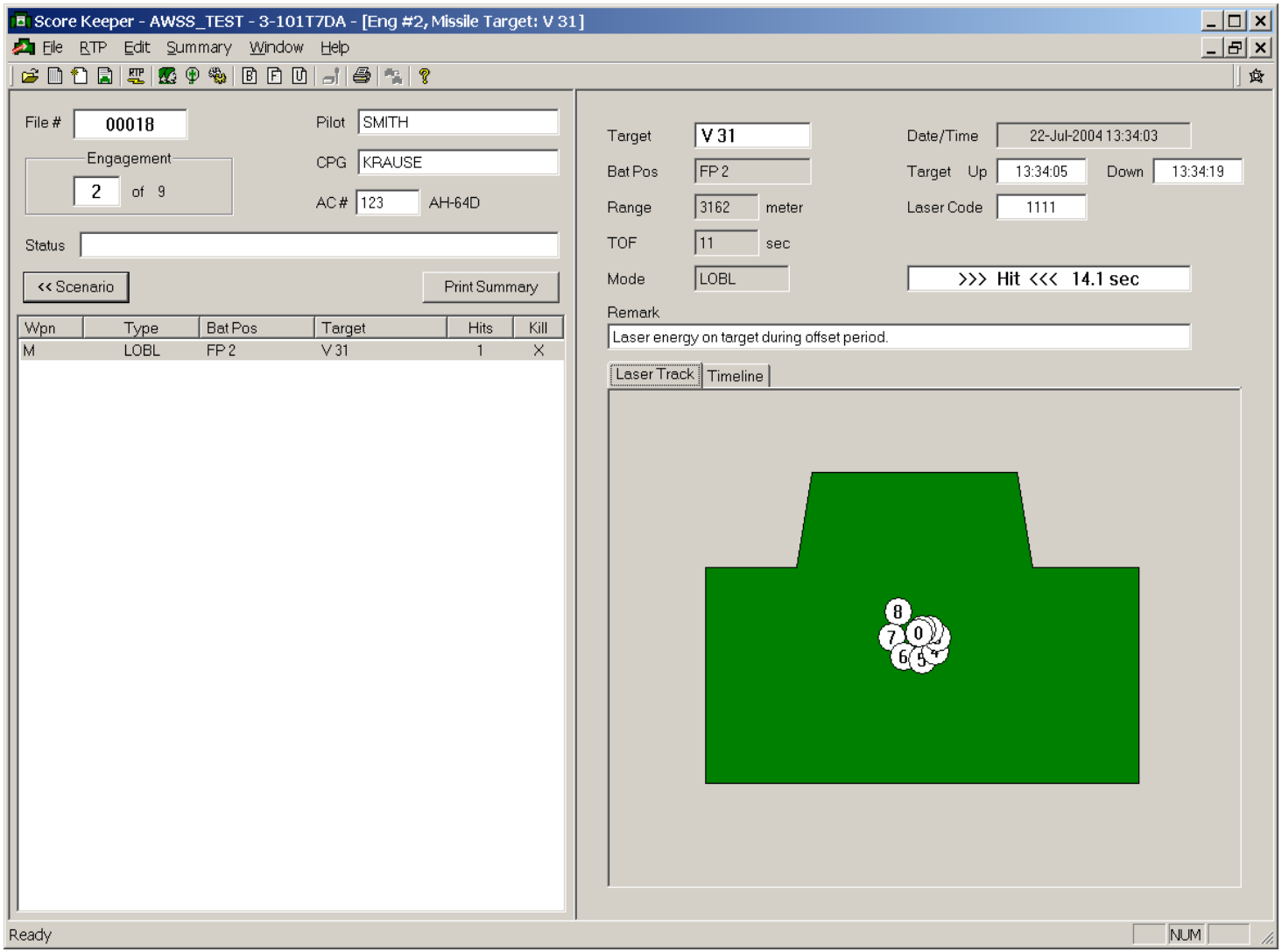
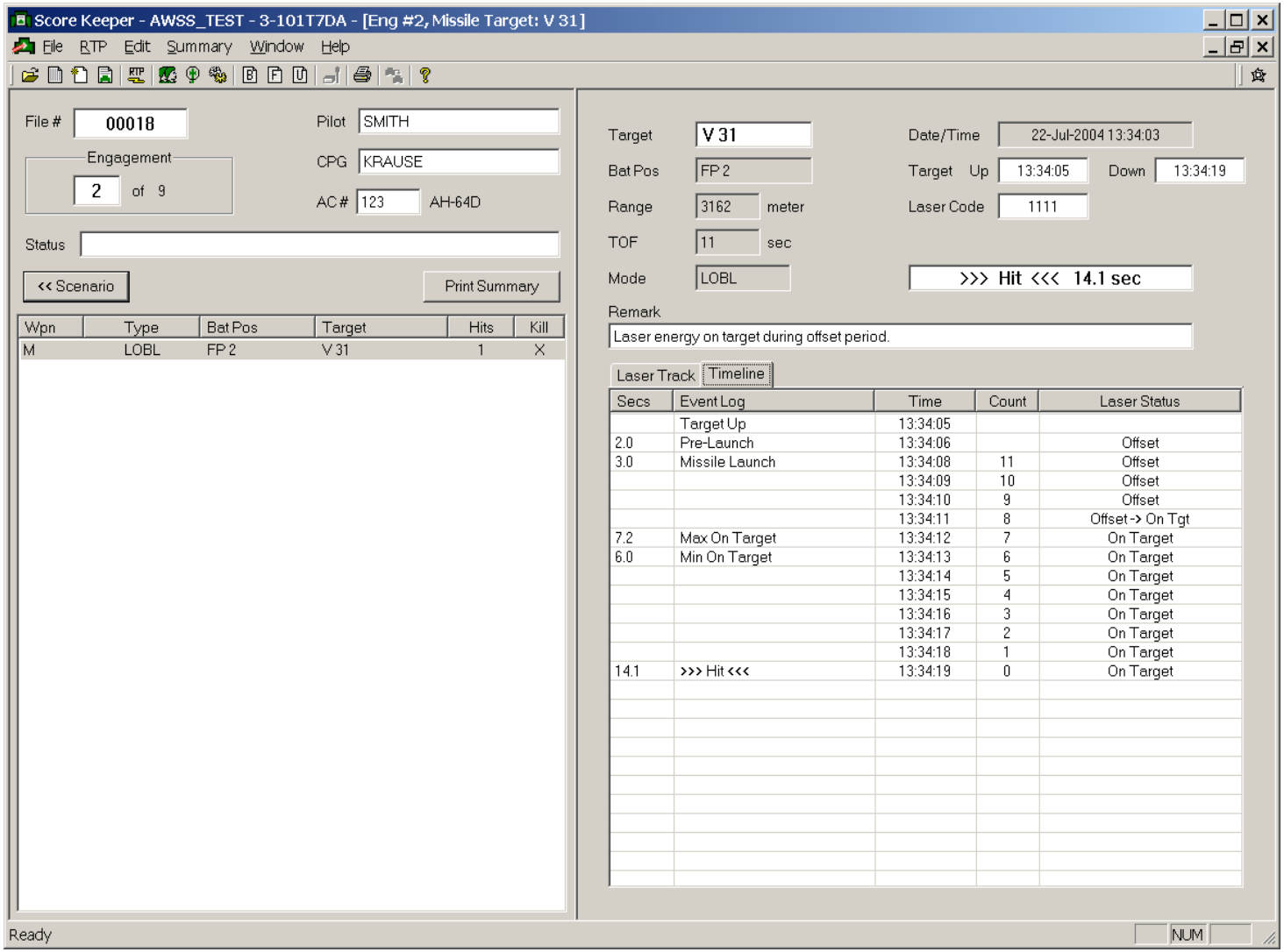
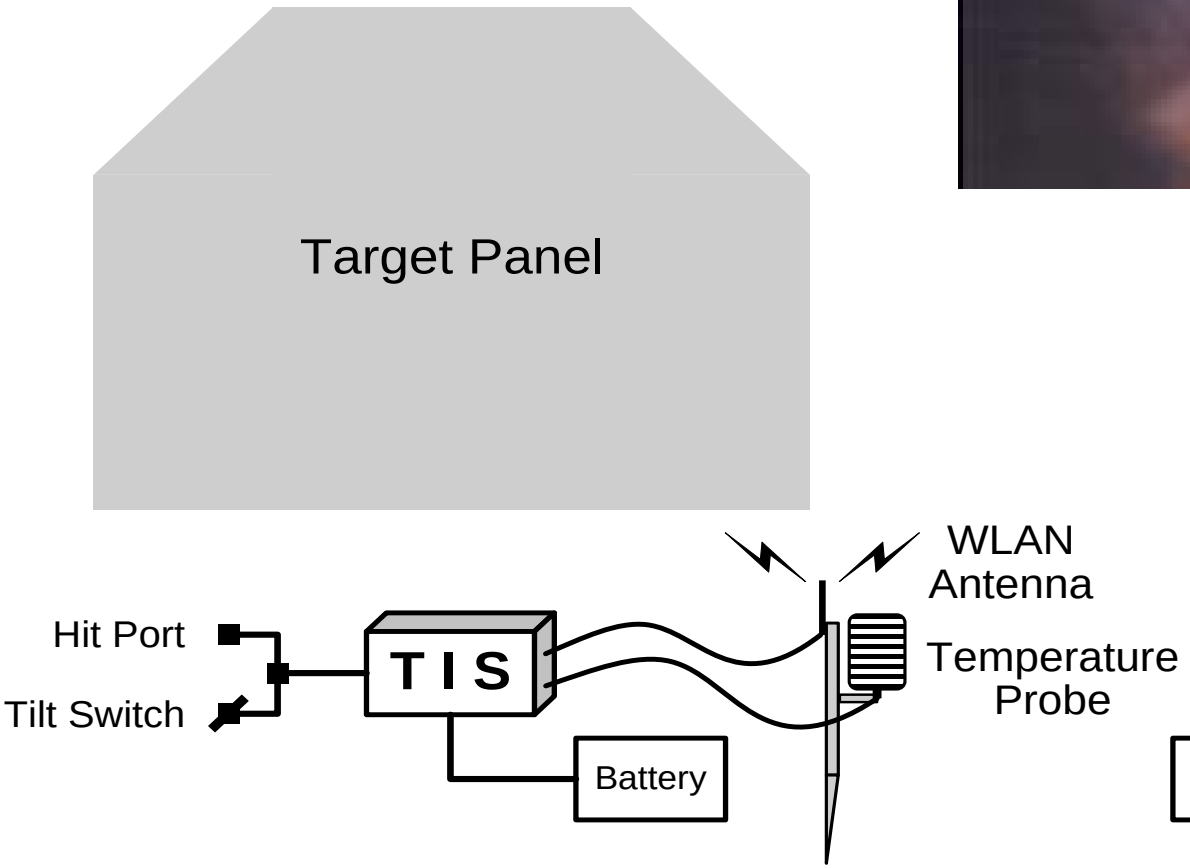
Missile Laser Track Display



Missile Timeline Display



Rocket Scoring Subsystem



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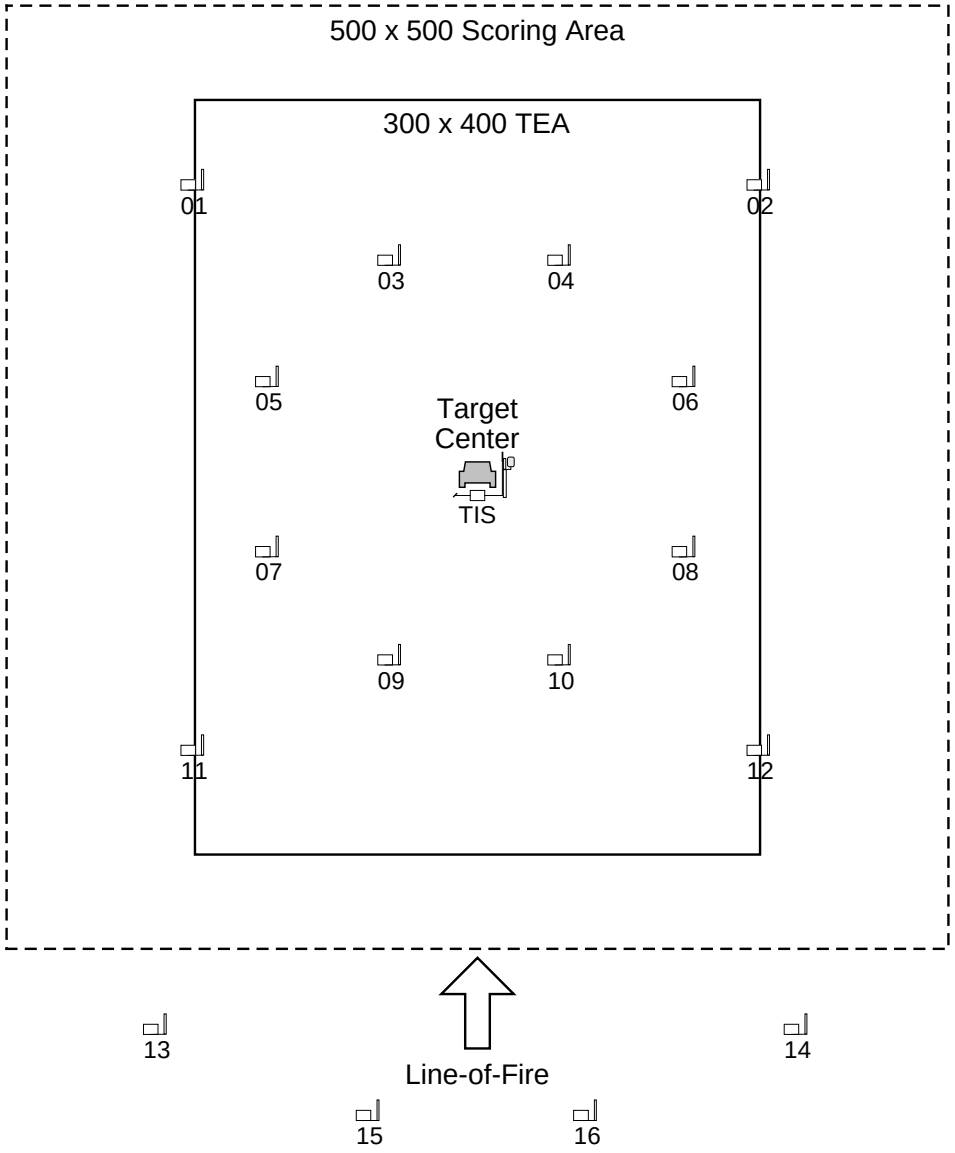
Rocket Scoring Area

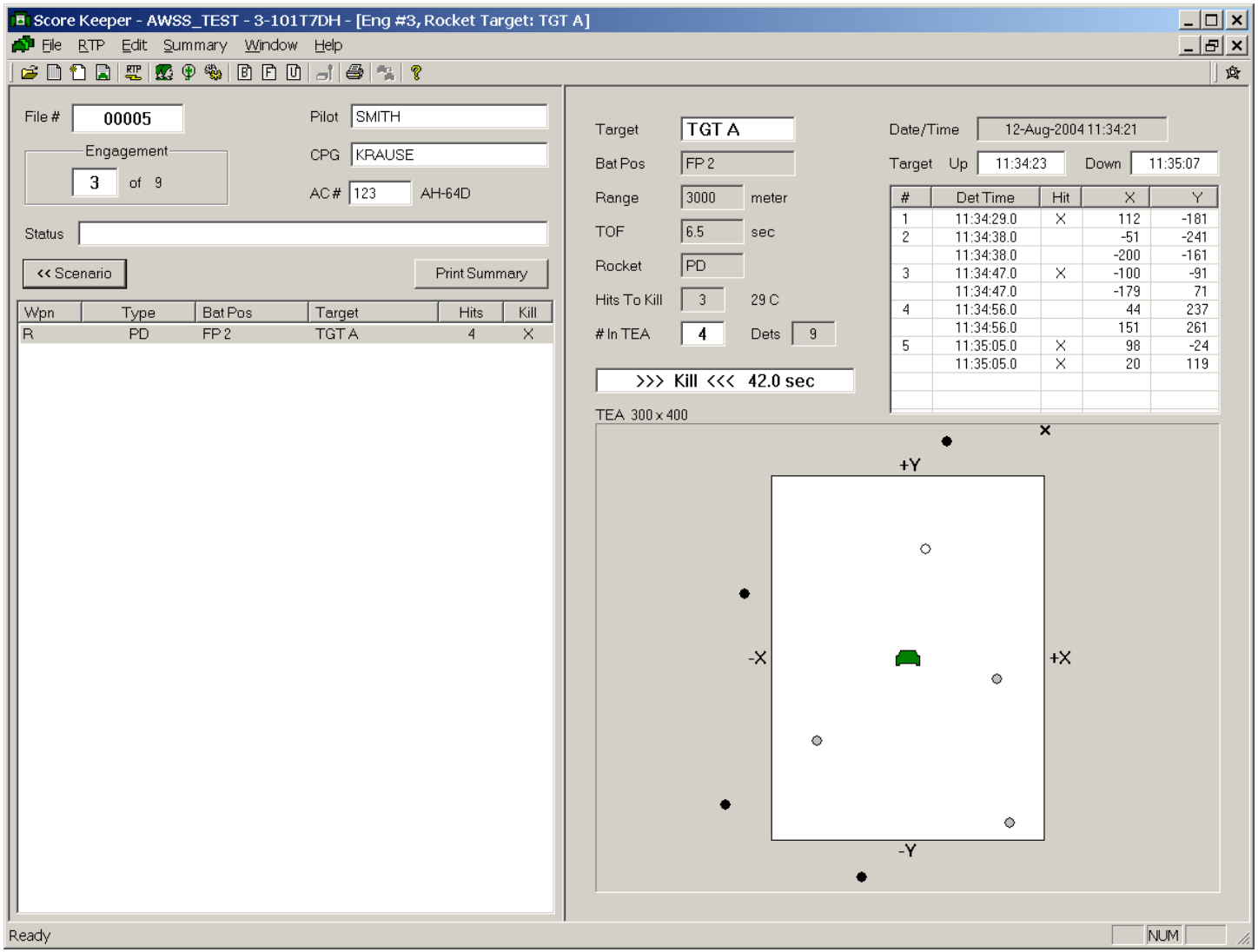


Impacts are accurately located within 500m X 500m zone.

Impacts within user defined Target Effect Area (TEA) area are indicated as target hits.

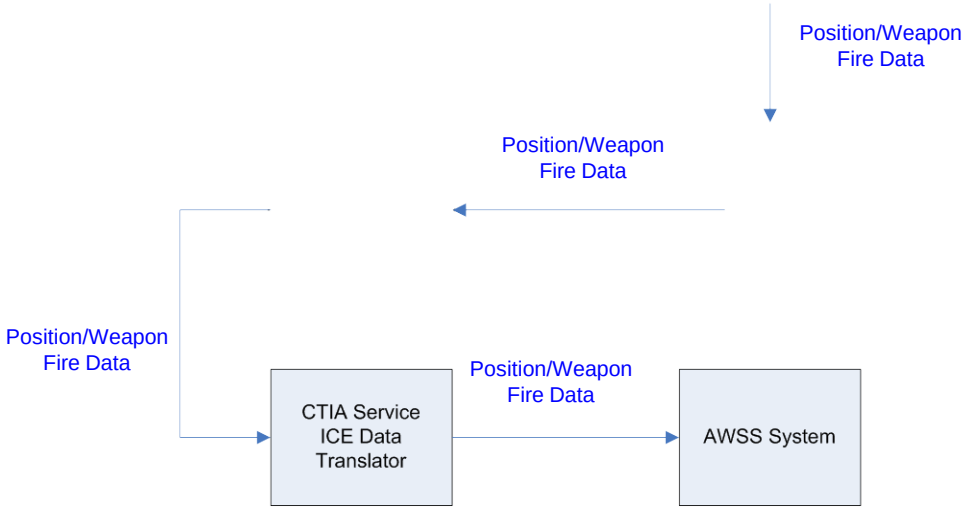
All impacts detected and resolved are indicated on score sheet for each target.

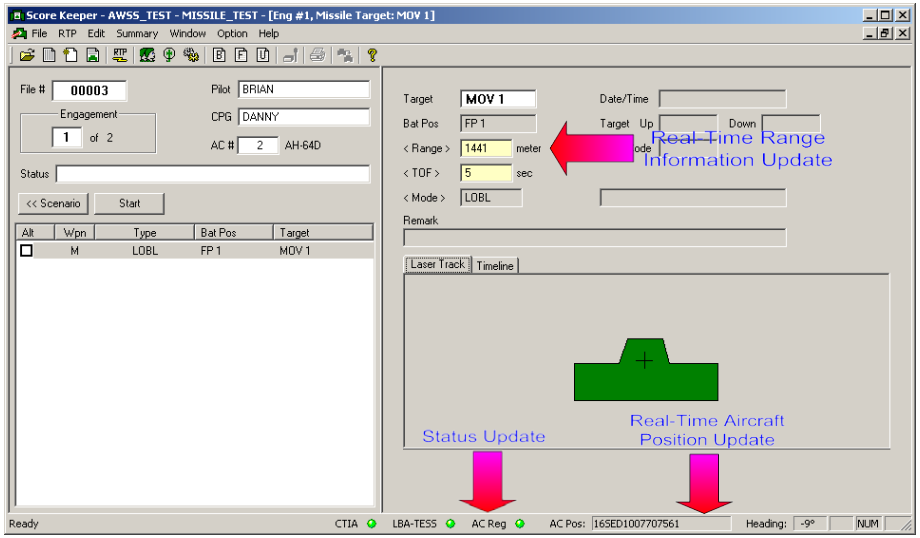
Rocket Scoring Display



Current System Upgrade Efforts

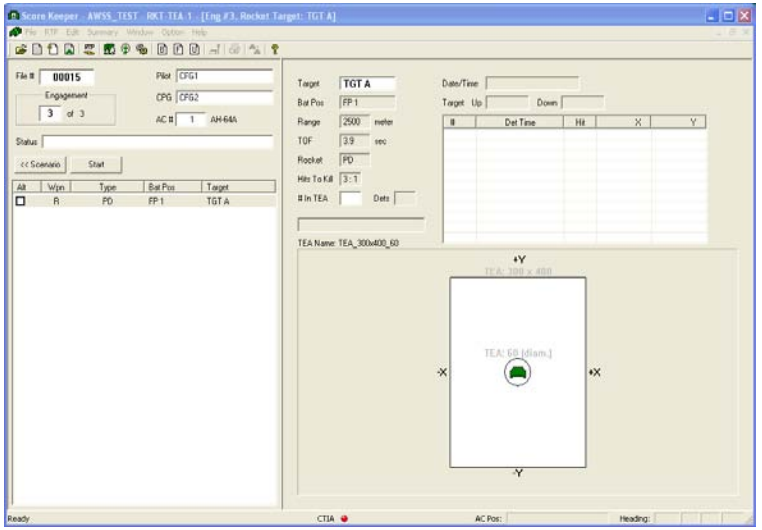
- Integration of AWSS Control Station Subsystem with Aviation Tactical Engagement Simulation System (TESS)
  - Pulls A/C status & weapons data from the 1553 bus into the AWSS Control Station for improved scoring via the TESS, Smart Onboard Data Interface Module (SMODIM)
  - Automates the scoring process for the Hellfire Missile Engagements (using the Captive Training Missile) & eliminates the need for Pilot shot call
  - Provides a common GPS time base to sync the A/C weapon firing events to the AWSS score reporting





Current System Upgrade Efforts cont.

- Evaluation of Radar for Short range, Rapid Fire Rocket Scoring
  - NAWC/WD Targets System Division, Point Mugu/Port Hueneme is cooperating with multiservice Army (PM ITTS, TMO) and Air Force (86th FWS/ACC) evaluations of the Surface Target Vector Scorer (STVS) for data collection and proof of concept
    - NAWC/WD Targets System Division
    - POC: Mr. Dae Hong 805-989-5996 dae.hong@navy.mil
  - STVS was recently developed for the US Navy for enhanced fleet training capabilities during gun weapon system & missile firing
  - Goal is to enable the AWSS to provide accurate scoring of single, pairs & ripple fire M274 Point Detonation 2.75” Training Rockets when fired at range to target of less than 1500 meters



Government & Service Contractor POC's

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Questions / Comments?