



ACME AIR REFUELING OPERATOR TRAINERS

ACME's sophisticated trainer systems provide complete, turn-key capability to *realistically* train air refueling operators in all mission elements, any time, any place.

Simulated connections, communications, malfunctions, weather effects, turbulence, lighting, shadows, aircraft and geography modeling, instruments, controls, simulated fuel offload...it's all here.

TRAIN FOR ANY RECEIVER TYPE

Train for any air refuelable aircraft type – fighters, bombers, helicopters, drones, and even other tankers. US and foreign aircraft models available.

BOOM AND DROGUE TRAINING

Train for boom or drogue refueling operations with as-actual controls and malfunctions.

DIRECT OR REMOTE VIEW

Train refueling operations with direct view of the receivers such as on the KC-10, or KC-135, or remote view camera systems such as the KC-46, KC-767, or KDC-10.

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KEYS TO REALISTIC TRAINING



REALISTIC RECEIVER MODELS

- Aircraft types, paint schemes, and tail/nose numbers
- Articulated refueling doors, slipways, probes
- Dynamic flight controls
- Spinning propellers and jet fans
- Aircraft lights with selectable illumination intensity
 - Formation
 - Anti-collision
 - Position
 - Navigation
 - Floods
 - Refueling and slipway

PROPER REFUELING BOOM EFFECTS

- Realistic fuel spray upon disconnect
- Spark at connection/disconnect when applicable
- Articulated boom nozzle that can buckle on contact
- Boom strikes on receivers
 - Boom 'bites' showing boom damage to receiver
 - Shattered receiver canopies and windscreens
 - Knock-off receiver antennas

REALISTIC REFUELING BOOM MODEL

- Fully flyable, extendable/retractable/stowable boom
- Dynamic flight controls with applicable unit insignia
- To scale, accurate, full color extension indications
- Articulated boom nozzle that can buckle on contact
- Flexing, vibrating, bendable inner boom
- Aircraft lights with selectable illumination intensity

ARO STATION REALISM

- Realistic boom and telescope controls
- Controls with force feedback
- Instruments and controls
- Operator Position, seats, and supports
- Internal and external communications

DROGUE MALFUNCTIONS

- Deployment/retraction jam
- Basket separation and fuel spray
- Hose whip
- Flow or pump issues
- Forced disconnects

BOOM MALFUNCTIONS

- Flight Control Failures/Jams
- Boom or telescope jams
- Hydraulic, electrical, fuel failures
- Flow or pump issues
- Forced disconnects



Train for day, night, and all weather refueling



Tanker, boom, & receiver models all fly and affect the others

DYNAMICALLY FLYING TANKER, BOOM, AND RECEIVER

In ACME's air refueling system, the tanker aircraft, the refueling boom, and the receiver aircraft have independent aerodynamic models. The tanker aircraft can be controlled by an autopilot and can be commanded in racetrack flight patterns, constant flight path, or waypoint following. The boom has an aerodynamic model that is responsive to the control surface movement. The receiver models each have independent flight models with their own autopilots or can be manually controlled by the instructor with a joystick. The receivers can be commanded to move between rendezvous points individually or in groups in echelon formations.

REALISTIC FORCES, AFFECTS, AND EFFECTS

ACME's tanker, boom and receivers interact with each other through physics-based modeling. This means when in contact, the boom forces can interact with the receiver and can even move small receivers. The boom refueling tube will bend and flex based on the force interaction between the models that replicate the in-flight, boom-aircraft interaction. The trainer also supports scratches and receiver damage due to boom strikes outside the receptacle. ACME's ARO trainers emulate the drogue hose flexing and bowing, and receivers can push and bend the basket and hose.

LIGHTS, SHADOWS, DAYLIGHT, AND DARKNESS

Realistic refueling demands careful attention to light and shadows. The environment, the tanker, the boom, and the receiver all illuminate and can obscure each other. Shadows are key for seeing the depth between boom and receiver even with remote view systems.

ACME's air refueling operator trainer systems have multiple overlaying light sources each with variable intensity, multiple shadows and shadow casters, including slipway lights, tail and boom spot lights, basket lights, receiver lights, sun and moon.

Darkness masks the tanker, boom and receiver too, hiding details and affecting how the boomer or camera sees the receiver.

ACME'S ARO TRAINING EXPERTISE

ACME has extensive, hands-on experience with three different air refueling operator trainer systems: the KC-135 BOPTT, KC-10 BOT, and KC-767 Japan Boom Operator Trainer (JBOT).

We're experts with air refueling processes and procedures, controls, visibility, system malfunctions, normal and emergency operations, and refueling in every possible configuration of weather, visibility, and time of day.



KC-135 BOOM OPERATOR PART TASK TRAINER

ACME accomplished a supportability upgrade to the two KC-135 BOPTT trainers that increased reliability and sustainability while also increasing training realism. The modification added cutting-edge image generation and control loading technologies into the BOPTT.

KC-10 BOOM OPERATOR TRAINER

ACME's upgrades to the KC-10 BOT were extensive and included:

- Re-hosting the trainer aerodynamic software code
- New touch-screen Instructor Operator Station (IOS) control monitor on an articulated mounting arm
- Refined, more functionally organized IOS user interface
- High-fidelity models with articulated refueling doors
- Advanced control loading system to provide force and feel

KC-767 JAPAN BOOM OPERATOR TRAINER

ACME built the complete JBOT Trainer from the ground up including:

- Air Refueling Operator and Instructor Stations with multi-function, touch screen displays and user interfaces and full communication system
- Simulated remote viewing system emulating views from the aircraft's air refueling camera systems and headsets creating 3D views of refueling operation
- Suite of high-fidelity models of US and Japanese receivers with articulated refueling doors, jet and propeller engines, and as-actual paint and numbering
- Flyable tanker and receivers or pre-set autonomous flight for multiple receivers
- Advanced, physics models enabling tanker, boom, and receivers to fly realistically