

Fire at Take-Off and Emergency Landing: AEROPVS022

Fire at Take-Off and Emergency Landing" is a specialized, interactive training scenario template built into vsTASKER, a real-time simulation development toolkit created by VirtualSim.

The scenario serves as a functional benchmark and tutorial for developers designing high-fidelity **Air Traffic Control (ATC) Tower Simulators** and **Computer Generated Forces (CGF)** training applications.

Core Functional Elements of the Scenario

In this simulation setup, vsTASKER's automated logic engine generates C++ code to dictate the rule-based behaviors of multiple entities interacting in real time:

- **The Critical Window (Takeoff Failure):** The simulator tests the aircraft's response patterns immediately following lift-off. It evaluates how pseudo-pilots or autonomous AI agents handle unexpected failures (like an engine fire or compressor stall) during the high-stress climb phase.
- **ATC Command & Control Interaction:** It maps out the exact handshakes between the aircraft and the controller. The scenario models pilot declarations (e.g., Mayday/PAN-PAN), runway assignment changes, and emergency flight management commands (such as executing standard instrument departures/SIDs adapted for an engine-out situation).
- **Emergency Service Deployment:** The simulation does not stop upon touchdown. It actively scripts and tracks the dispatch protocols of ground-based emergency vehicles (such as fire trucks and ambulances) to specific taxiway intersections (e.g., Golf 2) or the exact aircraft location to manage the simulated fire threat.

Software Features Demonstrated

This template is used by systems integrators to test several key vsTASKER building blocks:

- **Graphical Diagram-to-Code Engines:** Allowing developers to visually draw out the decision tree for what an aircraft should do when a fire is detected rather than hard-coding it.
- **HMI Control Panels:** Utilizing vsTASKER's built-in OpenGL or Qt-based Human-Machine Interface builders so instructors can manually activate or deactivate fire failures in real time with a toggle switch.
- **CIGI Benchmarking:** Testing the synchronization between the primary simulation logic host (vsTASKER) and external Image Generators (IG) like VBS-IG or FAST-IG to render the fire, smoke, and aircraft visually.

If you are developing a specific training simulation, would you like to know how to configure the **HMI control panels** for this scenario, or do you need assistance troubleshooting the **C++ code generation**?

Fire at Take-Off and Emergency Landing

by VirtualSim

In this demo, vsTASKER is used to steer and automatically control an A340 at take-off from Toulouse airport for a predefined standard departure (vsTASKER supports ARINC 424 Navigation Data and enroute flight-plans).

During take-off, instructor triggers an engine fire. Aircraft is stabilized then initiates a short circle for an emergency landing. For the sake of the simulation, no fuel dumping is made as fire cannot be extinguished. Overweight landing is done with a little wind-shear at arrival.

Fast-IG (OSG based) is used for the visual output while vsTASKER produced the simulation engine including all scenario phases, flight dynamics, logic, sounds, visual controls and effects, camera steering and fire trucks behaviors.

In this demo:

- Fast-IG from Oktal-SE
- vsTASKER with specific flight dynamics
- OSG particule effects
- Audio is part of the simulation



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