# 6. ASET Calculation Methodology

## 6.1 Primary ASET Equation

ASET is determined as the earliest time at which any tenability criterion is exceeded:

### ASET Definition

$$ASET = \min(t_{temp}, t_{vis}, t_{CO_2}, t_{CO}, t_{O_2})$$

| | |
|---|---|
| $t_{temp}$ | Time when temperature exceeds 60.0°C |
| $t_{vis}$ | Time when visibility drops below 5.0 m |
| $t_{CO_2}$ | Time when $CO_2$ exceeds 5.0% |
| $t_{CO}$ | Time when CO exceeds 1400.0 ppm |
| $t_{O_2}$ | Time when $O_2$ drops below 15.0% |

## 6.2 Data Extraction from FDS Simulation

The ASET analysis extracts time-series data at the specified exit location from FDS Plot3D output files. The process involves:

1. **Coordinate Transformation:** Converting physical exit coordinates (X, Y, Z) to FDS grid indices (i, j, k)
2. **Trilinear Interpolation:** Extracting values at the exact exit position using interpolation between surrounding grid cells
3. **Time-Series Assembly:** Collecting data at each output timestep throughout the simulation