TGF HLA SOM

(OMDT v1.3.5.17)
(ObjectModel (Name “TGFSim”)
(VersionNumber “1.3.28”)
(Type SOM)
(Purpose “Provide a definition of the aircraft attributes TGF generates.”)
(ApplicationDomain “Air Traffic Control”)
(SponsorOrgName “Target Generation Facility”)
(POCHonorificName “Mr”)
(POCFirstName “Dan”)
(POCLastName “Warburton”)
(POCOrgName “Federal Aviation Administration/ACB-860 ”)
(POCPhone “1.609.485.4480”)
(POCEmail Dan.Warburton@faa.gov)
(ModificationDate 2003-06-03)
(MOMVersion “1.3”)
(FEDname “TgfFed”)

(Class (ID “1”)
(Name “ADMAircraft”)
(PSCapabilities PS)
(Description “This class represents the TGF generated aircraft controlled by the Advanced Aircraft Dynamics Model aircraft.)

(Attribute (Name "AircraftID")
(DataType"string")
(Accuracy "1")
(AccuracyCondition "perfect")
(UpdateType Static)
(TransferAccept N)
(UpdateReflect UR)
(Description "The aircraft's call sign.")
(DeliveryCategory "reliable")
(MessageOrdering "receive"))

```
(Attribute (Name "AircraftType")
    (DataType"string")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Static)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The type of aircraft (e.g, 'DC 9' as an example) this aircraft represents.
    This is typically the ICAO designator for the aircraft, see aircraft_baseline.xml for a list
    of types.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "FiledRouteString")
    (DataType"string")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Static)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The filed list of fixes, waypoints and NavAids the aircraft is going to fly.
    The list represents a string of fix/waypoint NavAid names separated by periods.
    (SEGMET.LGA.MXM is an example.)")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "Frequency")
    (DataType"string")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Static)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The radio frequency the pilot of the aircraft is using to contact air traffic
    controllers.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))
```

```
(Attribute (Name "BeaconCode")
    (DataType"integer")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Static)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The transponder code, represented as an octal number.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "Latitude")
    (DataType"double")
    (Cardinality "1")
    (Units "radians")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The aircrafts actual latitude withint the simulated airspace (WGS 84
    datum).")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "Longitude")
    (DataType"double")
    (Cardinality "1")
    (Units "radians")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The aircrafts actual longitude within the simulated airspace (WGS 84
    datum).")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))
```

```
(Attribute (Name "Altitude")
    (DataType"double")
    (Cardinality "1")
    (Units "feet")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The aircrafts actual altitude within the simulated airspace.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "TrueHeading")
    (DataType"double")
    (Cardinality "1")
    (Units "degrees")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The angle that the aircraft's ground speed vector makes with the ground-
    based coordinate system (i.e., true-north).  Heading is the direction that the aircraft is
    moving in.  It is an aircraft state variable and is, therefore, independant of any of the
    aircraft's fixes, routes, or targets.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "EstimatedLatitude")
    (DataType"double")
    (Cardinality "1")
    (Units "radians")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The latitude as determined by the aircraft's current navigation system.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))
```

```
(Attribute (Name "EstimatedLongitude")
    (DataType"double")
    (Cardinality "1")
    (Units "degrees")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description ""The longitude as determined by the aircraft's current navigation system.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "EstimatedAltitude")
    (DataType"double")
    (Cardinality "1")
    (Units "feet")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The altitude as determined by the aircraft's current navigation system.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "TrueAirSpeed")
    (DataType"double")
    (Cardinality "1")
    (Units "knots")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The actual speed of the aircraft relative to the surroundind airmass.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))
```

```
(Attribute (Name "IndicatedAirSpeed")
    (DataType"double")
    (Cardinality "1")
    (Units "knots")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "(aka: Calibrated AirSpeed.)  This is the speed shown by an aircraft's
    airspeed indicator.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "Mach")
    (DataType"double")
    (Cardinality "1")
    (Units "mach number")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The current Mach number of the aircraft.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "GroundTrackSpeed")
    (DataType"double")
    (Cardinality "1")
    (Units "knots")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The speed of the aircraft over ground - the earth speed projected to a
    horizontal plane.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))
```

```
(Attribute (Name "GroundTrackHeading")
    (DataType"double")
    (Cardinality "1")
    (Units "radians")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The heading of the aircraft over ground relative to true north.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "Azimuth")
    (DataType "double")
    (Cardinality "1")
    (Units "degrees")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The angle that the aircraft's longitudinal axis makes with the ground-based
    coordinate system (i.e., true north).  This is sometimes referred to as the yaw angle;
    although to avoid possible confusion with sideslip angle, the term 'azimuth' is preferred.
    Because TGF assumes zero sideslip, the difference between azimuth and heading is due
    only to the wind.  <Not currently generated but is available from existing aircraft
    state.>")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "PitchAngle")
    (DataType "double")
    (Cardinality "1")
    (Units "degrees")
    (Accurancy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "(aka: Elevation Angle) The angle that the aircraft's longitudinal axis makes
    with the ground.  <Not currently generated but is available from existing aircraft state.>")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))
```

```
(Attribute (Name "RollAngle")
    (DataType "double")
    (Cardinality "1")
    (Units "degrees")
    (Accurancy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The angle that the aircraft's lateral axis makes with the ground.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "FligtPathAngle")
    (DataType"double")
    (Cardinality "1")
    (Units "degrees")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The flight path angle of the aircraft.  It is the angle of the true airspeed
    vector makes with a horizontal plane.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "LongitudeRate")
    (DataType"double")
    (Cardinality "1")
    (Units "degrees per second.")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The rate of change in the aircraft's longitude.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))
```

```
(Attribute (Name "LatitudeRate")
    (DataType"double")
    (Cardinality "1")
    (Units "degrees per second.")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The rate of change in the aircrafts latitude.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "AltitudeRate")
    (DataType"double")
    (Cardinality "1")
    (Units "feet per second.")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The rate of change in the aircrafts altitude.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "LocalAtmDensity")
    (DataType"double")
    (Cardinality "1")
    (Units "pounds per cubic foot.")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The atmospheric density at the aircraft's current position.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))
```

```
(Attribute (Name "LocalAtmAltitude")
    (DataType"double")
    (Cardinality "1")
    (Units "feet")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The altitude at which the local density and pressure are true.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "LocalAtmTempature")
    (DataType"double")
    (Cardinality "1")
    (Units "kelvin")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The temperature at the aircraft's current position.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "LocalAtmPressure")
    (DataType"double")
    (Cardinality "1")
    (Units "pounds")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The atmospheric pressure at the aircraft's current position.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))
```

```
(Attribute (Name "LocalWindGradientX")
    (DataType"double")
    (Cardinality "1")
    (Units "one over minute")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The x wind components of the local wind gradient, i.e., the change in wind
    speed per unit distance in the x direction(east).")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "LocalWindGradientY")
    (DataType"double")
    (Cardinality "1")
    (Units "one over minute")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The y componnet of the local wind gradient, i.e., the change in wind speed
    per unit distance in the y direction (north).")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "LocalWindSpeedX")
    (DataType"double")
    (Cardinality "1")
    (Units "knots")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The wind speed in the x direction (east) at the aircraft's current position.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))
```

```
(Attribute (Name "LocalWindSpeedY")
    (DataType"double")
    (Cardinality "1")
    (Units "knots")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The wind speed in the y direction (north) at the aircraft's current position.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "DesiredRollAngle")
    (DataType"double")
    (Cardinality "1")
    (Units "degrees")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The roll angle targeted by the aircraft's control system.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "DesiredAltitude")
    (DataType"double")
    (Cardinality "1")
    (Units "feet")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The altitude targeted by the aircraft's control system.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))
```

```
(Attribute (Name "DesiredTrueHeading")
    (DataType"double")
    (Cardinality "1")
    (Units "degrees")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The True Heading targeted by the aircraft's control system.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "DesiredTurnDirection")
    (DataType"integer")
    (Cardinality "1")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The desired turn direction.  -1 specifies a left turn, 1 specifies a right turn.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "DesiredIAS")
    (DataType"double")
    (Cardinality "1")
    (Units "knots")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The indicated air speed targeted by the aircraft's control system.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))
```

```
(Attribute (Name "Lift")
    (DataType"double")
    (Cardinality "1")
    (Units "pounds")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The component of aerodynamic force acting normal to the plane, formed
    by the true airspeed vector and the aircraft's lateral aixs.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "Thrust")
    (DataType"double")
    (Cardinality "1")
    (Units "pounds")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The thrust force created by the aircraft's engines; acts along the aircraft's
    longitudinal axis.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "Drag")
    (DataType"double")
    (Cardinality "1")
    (Units "pounds")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The components of aerodynamic force acting parallel to the aircraft's
    longitudinal axis and in a direction opposite the thrust.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))
```

```
(Attribute (Name "AircraftTurnRate")
    (DataType"double")
    (Cardinality "1")
    (Units "degrees per second.")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The rate of change of the aircraft's true heading.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "RollAngle")
    (DataType"double")
    (Cardinality "1")
    (Units "degrees")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The angle that the aircraft's lateral axis makes with the horizontal.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "EmptyWeight")
    (DataType"double")
    (Cardinality "1")
    (Units "pounds")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The weight of a fully operational aircraft without fuel or payload.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))
```

```
(Attribute (Name "PayloadWeight")
    (DataType"double")
    (Cardinality "1")
    (Units "pounds")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The payload capacity of the aircraft.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "FuelWeight")
    (DataType"double")
    (Cardinality "1")
    (Units "pounds")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The fuel capacity of the aircraft.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "FlapSetting")
    (DataType"integer")
    (Cardinality "1")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The current state of the flaps on the aircraft: 0 - cruise, 1 - initial climb, 2 -
    takeoff, 3 - approach, 4 - landing.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))
```

```
(Attribute (Name "SpRepId")
    (DataType"string")
    (Cardinality "1")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The ID of the Simulation Pilot Work Station (SPWS) that displays this
    aircraft.  If this aircraft is not displayed on a SPWS then this field is set to 'No SP' ")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "SimulationTime")
    (DataType"double")
    (Cardinality "1")
    (Units "seconds")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The total amount of elapsed simulation time.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))

(Attribute (Name "StartTime")
    (DataType"double")
    (Cardinality "1")
    (Units "seconds")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "The time at which the aircraft entered the simulation.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive"))
```

```
(Attribute (Name "SectorName")
    (DataType"string")
    (Cardinality "1")
    (Accuracy "1")
    (AccuracyCondition "perfect")
    (UpdateType Conditional)
    (TransferAccept N)
    (UpdateReflect UR)
    (Description "An indentifier for the air space sector the aircraft is flying within.")
    (DeliveryCategory "reliable")
    (MessageOrdering "receive")))
```