

JTLS-2021-15459 Display OTH-Gold Track Time-Late Values

Eric McDonald, Ellen Roland

1.0 Summary of Model Change Request

In JTLS-GO, the Over-The-Horizon Gold (OTH-Gold) message system operates as a difference-based communication system. Updates for tracks are only processed when something has changed with that track. One of the most important pieces of data that may be updated is a track's time of last detection. If a track has not been detected within a certain time margin, it is considered to be "time-late" and may be dropped from the Common Operational Picture (COP). The ability to monitor and perform maintenance on time-late tracks is therefore important to exercise staff. The purpose of this design is to provide new ways for operators to monitor track time-late data.

2.0 Design Summary

The new time-late implementation will add a column to each track summary table. This new column will display each track's time since last update, or time-late value. If a track is considered to be time-late, this table cell will be painted with a gray background. Users will be able to sort the table by the time-late column.

3.0 Detailed Design

The current time-late implementation allows users to perform the following:

1. Enable or disable time-late calculations and display.
2. Set custom durations at which tracks are considered time-late for Air, Ground, and Naval type tracks.
3. Set a time interval for how often time-late values should be calculated.
4. In the track summary table, the track name of time-late tracks is painted with a gray background.

The current design is limiting in that it only displays if a track is time-late, but there is no way for the user to determine the actual time-late value.

Implementing this ECP will result in maintaining the first three aspects of the previous design, modifying the fourth aspect, and adding a fifth capability.

3.1 Track Summary Table Time-Late Column

The primary addition for this design is a new column in the track summary tables. This column will contain each track’s time since last detection, or time-late value. This value will be painted gray, instead of the track name, when the track is considered to be time-late according to the user’s time-late settings. The current table layout can be seen in [Figure 1](#), while a mock-up of the new table can be seen in [Figure 2](#).

Time-late data will be represented as a duration in minutes. The time-late calculation is performed as follows:

$$\text{minutes time-late} = (\text{current game time in minutes}) - (\text{track last detection time in minutes})$$

Previously, this equation was used to determine the time-late status of the track, but the number was not saved or displayed. In this new design, this value will be stored with the track object. This time-late data will then be delivered by the OTHGold Message Service to OTHGold WHIP Modules in track status update packets. This allows the data to be displayed for the user to see.

| JTLS Short Name | Track Name | Track ID | Status | Relationship | Filter Status | Update |
|-----------------|---------------|----------|--------|--------------|-------------------------------------|-------------------------------------|
| EGLIN.AFB_US | XEGLIN AFB... | U0075 | Active | FRIENDLY | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| JFK.IAP_US | XJFK IAP US | U0059 | Active | FRIENDLY | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| TUCSON.IAP_US | XTUCSON I... | U0291 | Active | FRIENDLY | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| EIELSON.AFB_US | XEIELSON A.. | U0335 | Active | FRIENDLY | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Figure 1. Current Track Summary Table

| JTLS Short Name | Track Name | Track ID | Status | Relationship | Time-Late | Send | Update |
|-----------------|---------------|----------|--------|--------------|-----------|-------------------------------------|-------------------------------------|
| EGLIN.AFB_US | XEGLIN AFB... | U0075 | Active | FRIENDLY | 5m | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| JFK.IAP_US | XJFK IAP US | U0059 | Active | FRIENDLY | 3m | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| TUCSON.IAP_US | XTUCSON I... | U0291 | Active | FRIENDLY | 10m | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| EIELSON.AFB_US | XEIELSON A.. | U0335 | Active | FRIENDLY | 1m | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Figure 2. New Track Summary Table

4.0 Data Changes

None

5.0 Order Changes

None

6.0 JODA Changes

None

7.0 Test Plan

7.1 Test Basic New Capability

Purpose: The purpose of this test is to ensure the new data is shown accurately on the OTH-Gold WHIP Module

Step 1: Setup a game with the OTH-Gold message service running and either the jtlserver or jtlclient process running to simulate a real-world Command, Control, Communication, and Computer Information System (C4I).

Step 2: Bring up a WHIP and open the OTH-Gold Module.

Step 3: Turn on a few OTH-Gold sensors, that have some partial sensor coverage overlap.

Step 4: From the OTH-Gold Module panel, set the Time Late value to 15 minutes.

Step 5: Within the game set the maximum movement time for ships to 10 minutes.

Step 6: Place several moving foreign Air Missions and Ships within the different coverage areas. Place several non-moving Ground units, such as an airbase, within the coverage area. Some objects should be covered by two or more sensors and some should only be covered by one sensor.

Expected Results: Several active detections should be obtained and displayed on the OTH-Gold WHIP Module.

Step 7: Watch the module for several minutes.

Expected Results: The time late values should be indicated.

Step 8: Turn off one of the detecting sensors

Expected Results: The objects that are no longer covered, should have their computed time-late values increase. After 15 minutes, the Time-Late data field for the non-detected objects should be colored gray. The time late value should still be easily readable.

Step 9: Turn the sensor back on.

Expected Results: The detections should appear again and the time late data column should again be updated and the Time Late column cleared to indicate the track is no longer late in updating.

Step 10: Set the Time Late reporting value from 15 minutes to 25 minutes.

Step 11: Turn a different sensor off.

Expected Results: The objects that are no longer covered, should have their computed time-late values increase. After 25 minutes, the Time-Late data field for the non-detected objects should be colored gray. The time late value should still be easily readable.

Step 12: Bring the WHIP down.

Step 13: Start another WHIP and start the OTH-Gold Module

Step 14: Review the status of the Time Late reporting value and the detected object screen.

Expected Results: The Time Late reporting value should still show as 25 minutes and the non-covered objects should have their Time Late value highlighted in gray.

Step 15: Change the Time Late Value to a larger number so that some of the existing time late values will no longer be considered late.

Expected Results: Some of the time late fields should return to the normal background color.

Step 16: Continue monitoring the game.

Expected Results: When the new time late reporting value is again exceeded, the entry should again be highlighted in gray.

Step 17: Turn the sensor back on.

Expected Results: The time late objects should again be detected and the field should be cleared.