



RAPTOR™

remote asset patrols for threat observation and reporting

Companies with geographically widespread assets frequently use surveillance flights to monitor their condition and detect threats (or sightings). GL Noble Denton's RAPTOR: Remote Asset Patrols for Threat Observation and Reporting software tool provides a complete solution for the in-flight identification of asset location and office based data evaluation

Key features and benefits include

- Ability to locate fixed assets (e.g. pipelines) during flight.
- A Global Positioning Satellite (GPS) system links the aircraft position to the computer's electronic mapping system.
- Easy to use real-time tracking for asset location and recording of sightings.
- Allows detailed auditing of surveillance flights carried out by a contractor, including flight routes, flight time and landing positions.
- A readily updated mapping system showing locations of assets to be surveyed.

Flight functionality

Using a laptop computer with the RAPTOR tool linked to the aircraft's GPS, the surveillance flight operator observes the external condition and threats to assets. A moving map shows the location of the asset which changes colour as the aircraft flies over, this allows unpatrolled areas to be quickly identified. The position of the aircraft is automatically recorded every two seconds so the asset owner can ensure that the patrols are efficient and accurate.

The in-flight operator marks the location of threats on the display. Comments can be added including the threat description, urgency and category (e.g. machinery parked, building work or flooding).



Key Airborne Features

- Aircraft position is shown in real time
- Moving maps with assets overlaid
- Displays assets within a sector to be patrolled
- Asset sections that have been patrolled are marked so unpatrolled sections can be identified
- Observed potential threats to assets can be marked directly onto the display
- Comments can be added at any time. The time of day and aircraft position are added automatically
- The laptop is synchronised with the accurate time obtained from the GPS
- Displays directions and distance to previously saved locations
- Manual mode in the event of a loss of GPS signal

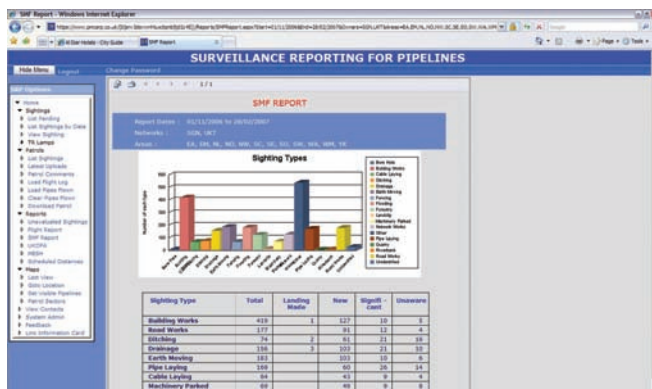
Ground functionality

Upon landing, the information captured in the patrol is uploaded directly to a central server using a mobile phone internet connection (G3/GPRS).

The RAPTOR tool can run reports showing hours flown, hours flown along an asset and the distance of the asset patrolled. This report can also be viewed during the flight to ensure that the pilot does not exceed flying-time regulations.

Data Transfer Features

- The patrol data is uploaded to a central server and the information automatically entered on a database.
- Asset route changes and application updates can be downloaded from the server to the laptop.



Office functionality

All data collected during the flight is contained in a central database. Using the RAPTOR website, potential threats can be reviewed and the results of any subsequent investigations are entered into the database following an on-site visit (if required). The location of threats can be viewed on an interactive map. The flight report, flight route and patrolled- assets can be examined for auditing purposes.

Office Features

- Potential threats can be shown on a map so that their location with respect to the asset and other near by threats can be determined
- Sightings from a selected area can be viewed directly on a map display
- Display an aircraft flight log, patrolled asset sections and flight reports
- Information for management reports include;
 - Number of sightings by category for a selected period
 - Percentage of asset route patrolled
 - Length of asset route in each patrol sector

Potential uses of the RAPTOR system

The RAPTOR software system can be configured for use with any patrolling vehicle. Maps and routes can be configured as required, as can data capture. Potential uses include;

- Monitoring electricity transmission and distribution cables, pylons and associated equipment
- Monitoring pipeline routes for Water, Gas, Oil or Refined Products
- Water course patrol by Air or Boat
- Use by local councils and highway agencies for auditing roads that have been examined for defects or gritted during winter
- Rail transportation routes, recording rail defects by mounting onto track maintenance vehicles.