



Final 09032013_0930

After Action Review and Lessons Learned in the use of a Remotely Piloted Aircraft (RPA) MQ-1 on the Rim Fire

Introduction

The use of RPAs on wildland fires represents a relatively new technology for Incident Management Teams (IMTs). The IMT was able to use an RPA resource supported by elements of the California Army National Guard J-6 Emergency Communications and Air National Guard 163^d Reconnaissance Wing. The RPA was successfully used for a variety of missions. Marc Hafner (CALFIRE) served as the primary liaison to the IMT. IMT Operations provided mission tasking and the Situation Unit facilitated data transfer into GIS and mapping functions. The Situation Unit facilitated an AAR.

The informal AAR documented and identified items of interest in a Lessons Learned format for RPA operations on the RIM Fire.

The following are missions that the RPA successfully completed during the Blue Teams assignment:

Types of Missions:

- Recon and monitoring during burnouts
- Recon following IR (fixed wing line scanner flights) to verify hotspots outside fire perimeter
- Recon of known spot fires (verification of both location and size)
- Fire perimeter mapping during daytime hours
- Real-time look at structures immediately after crews backfired and had pulled out

- Adhoc tasking to verify fire had not overrun structures reported as threatened
- Completed a VHF communication check on Air to Ground Tac between the RPA and Incident Communications
- Enabled digital information exchange allowing significantly reduced time for information flow from sensor to action

Other potential uses of the RPA identified by the Blue Team IMT1 include:

- Fire perimeter mapping in the absence of other IR (line scanner) information
- Recon following lightning storms (new starts)
- Recon to determine location of dozer lines
- Recon of lines in patrol status to detect hotspots near containment lines
- Opportunities to conduct Recons at night (when other suppression aircraft are not operating)
- Use of the platform for communications
- Verification of the location of crews and equipment (Safety)

AAR

What was planned (intent of mission, key task assignments, “end state”)

The RPA was ordered through CALFIRE in unified command to assist the IMT in obtaining real-time imagery to assist OPERATIONS. At least three key assignments were completed.

- The RPA detected a spot fire generated from a burnout operation early enough that crews could quickly respond and contain it (the RPA imagery allowed operators to get an approximate size and position (lat/long) of the spotover along with a direction and distance calculation from containment lines).
- The RPA recon of three IR (line scanner) hotspots outside containment lines revealed two to be false positives, and confirmed one. Associated costs with RPA deployment can be offset by savings incurred consequent to more timely and efficient suppression operations.
- Perimeter mapping of Divisions independent of nighttime line scan

What happened (perspectives on the effectiveness of the RPA as an IMT asset)

As a military asset, the process for getting an RPA resource can be challenging. There currently is no mechanism to request an RPA resource through NIFC. If, however, the incident is being managed jointly, in unified command with a state agency, the state may be able to facilitate the request .

TFR requests submitted to FAA through Air Operations need to reflect the need for sufficient air space (horizontally and vertically) to accommodate RPA operations. Operating altitudes between 12,500 ft to 18,000 feet would allow RPAs to get above or below clouds to get imagery.

Who, in the IMT, handles tasking and mission planning is a matter of consideration. While OPERATIONS often has immediate and important missions, using the RPA as an asset in PLANS with strong

coordination with OPERATIONS may make more efficient use of the resource and complement other IR acquisition already a part of PLANS responsibilities.

The RPA proved to be a valuable tool to the IMT. Weather (dense cloud cover) resulted in some flight cancellations, but, when airborne, operations went as expected.

The RPA has many capabilities beyond an IR platform. There is a need for further use of the asset to test some of the other on-board technologies.

What changes are recommended in regard to the future use of RPA assets

Some key questions that need to be resolved include:

- What is the best mechanism for ordering the RPA resource?
- Who should manage the asset?
- What other missions (in addition to the ones identified in this AAR) might be possible?
- If secondary fire-related missions could be accomplished , there may be some potential to evaluate such things as burn intensity on sensitive soils that would aid BAER and other recovery planning teams

The IMTs recommendations include:

- NIFC explore agreement opportunities to make this resource more available to IMTs
- Further work be done with the resource to evaluate its potential capabilities and use (types of missions)
- Additional operational experiences to better determine who, PLANS vs. OPERATIONS should order and assign missions.

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