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California Military Department

CNG Collection Management and Capabilities



Capt Megan Stromberg/J2

22 Oct 2014



- **Information/Intelligence Requirements that dictate collection and priority of collection**
 - **California Military Department Priority Intelligence Requirements and Essential Elements of Information**
- **Example Collection Request Form**
- **CMD Collection Process**
- **Collection Plan Concept**
- **Incident Awareness and Assessment**
 - **Definition**
 - **Some IAA Capabilities and Platforms (DoD and CNG)**



Shaping Collection Plan: PIRs and EEIs

■ Recommended Standing PIRs for Civil Support Operations

- a. What environmental threats within the next 72 hours will require CMD resources?
- b. What events within the next 72 hours will significantly impede CMD operations or affect CMD personnel?
- c. Where is there a potential for an EMAC request within the next 72 hours?
- d. What damage or effects will be caused by an event/disaster relevant to CMD operations?

■ Incident specific Essential Elements of Information (EEIs) that support the civil support mission (relevant to current/future CMD missions):

- Where are the locations of personnel in distress or in need of rescue (all incidents)?
- What is the status of LOCs and evacuation routes (all incidents)?
- Where and what is the damage to critical infrastructure and other facilities (all incidents)?
- Where is there presence of HAZMAT contamination (as applicable to incident and location)?
- What is the status of dams and levees (earthquake, hurricane, tornado, explosions)?
- Where are the locations of large scale flooding (hurricane, flood)?
- Where are the active fire lines and hot spots outside of fire containment (fire)?
- Is there a presence of isolated livestock (blizzard/winter storm)?
- What is the extent of volcanic effects (Volcano eruption)?



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Example IAA Collection Request

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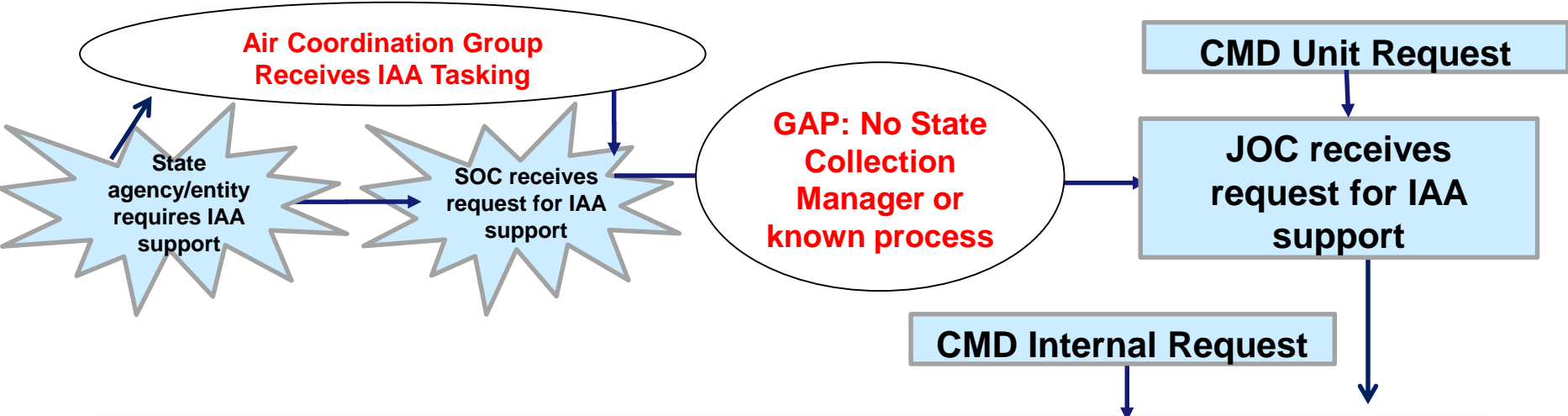
Request for IAA Support

Unit Tracking Number	
Customer/Unit/POC #/email etc.	JFH-MS J-2, MSNG, MAJ James Hankins at 601-613-7274 or jamie.hankins1@us.army.mil and SFC Bobby Ratliff at 601-313-6478 or bobby.ratliff@us.army.mil
Date/Time of Request	18-May
Required Product (FMV,EO,IR etc)	FMV, EO, MSI, HIS: Exploitation, analysis and mensuration of imagery identifying all degraded booms along the Mississippi coast and barrier islands.
Request originated by	MS Department of Environmental Quality and MS Department of Marine Resources
What is the Event/Operation	Deepwater Horizon Response
Justification	Imagery required for evaluation of oil spill effects, trajectory, and boom status assessment.
Product Dissemination Requirement	Request imagery of Deepwater Horizon Response area of operations in the Gulf of Mexico and MS coastal waters. Imagery should be unclassified and sent via e-mail to the following e-mail addresses: jamie.hankins1@us.army.mil and bobby.ratliff@us.army.mil
Classification of products	UNCLASSIFIED

ID#	Priority	Unit ID	State	Target Name	Target Description	Lat	Long	Date Requested	Periodicity	EEI	Reporting Instructions	Special Instructions	Remarks
		JFH-MS	MS	NAI 1, 2, 4, 5, 7, 8, 11, 12, 13, 14, 15, 17	Identified boom locations			18-May-10	Every Other Day	Report degraded booms, to include submerged booms and broken booms.	All products are to be sent via email to jamie.hankins1@us.army.mil and bobby.ratliff@us.army.mil		
		JFH-MS	MS	NAI 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17	Environmentally sensitive areas, back bay estuaries and probable sitse of beached oil.			18-May-10	Daily	Report encroachment of oil into marshes & coastal estuaries. Report full edge of oil slick. Direction of movement and estimated landfall. Report oil type (sheen or heavy crude).	All products are to be sent via email to jamie.hankins1@us.army.mil and bobby.ratliff@us.army.mil		



Current IAA Collection Process

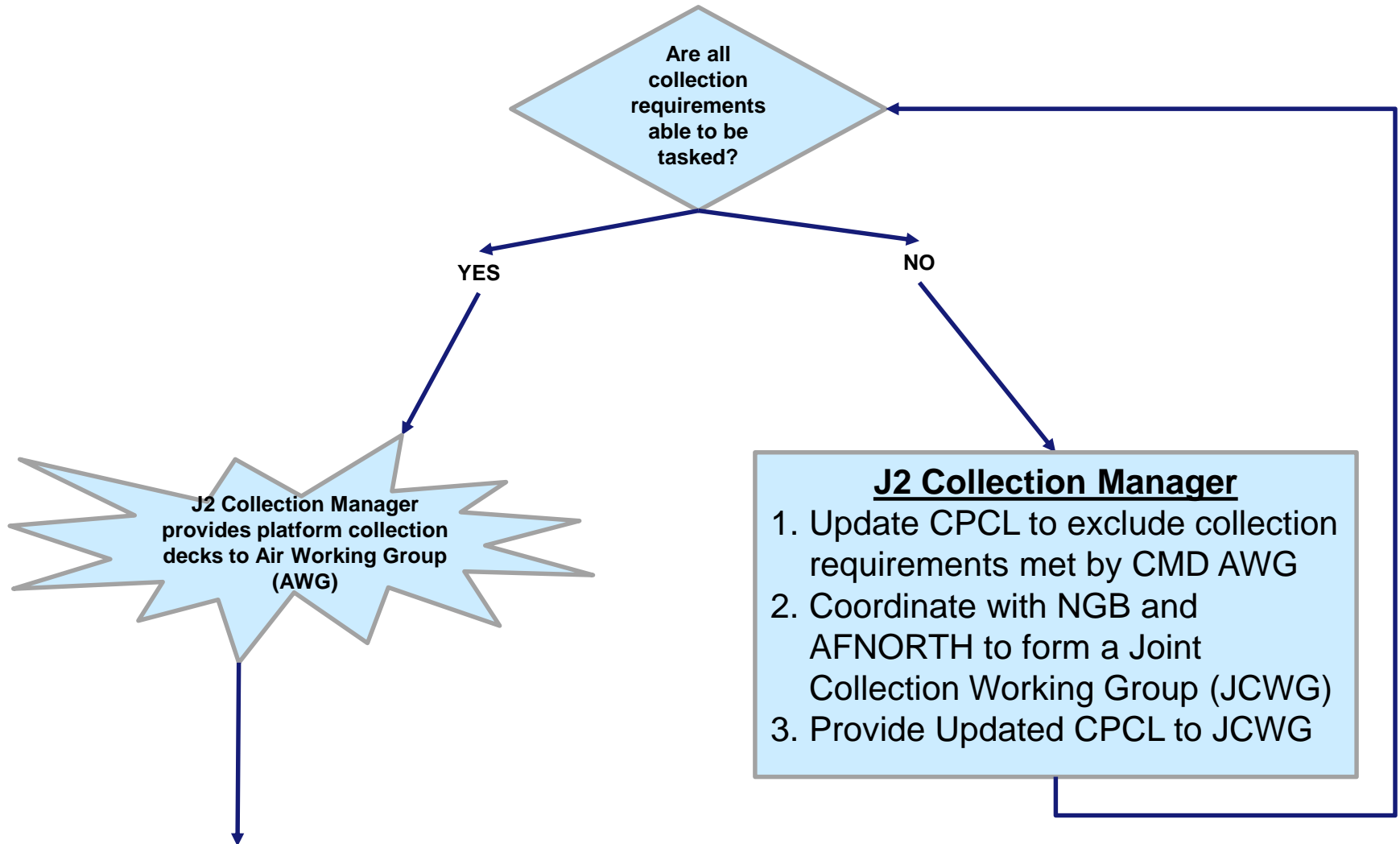


J2 Collection Manager

1. Forms the **State Requirements Management Board (SRMB)** if multiple aerial collection requirements are required IOT ensure collection requirements are prioritized based on the Commander's Guidance
2. Validate all collection requirements are complete including detailed essential elements of information (EEI) and reporting instructions
3. Produce a combined prioritized collection list (CPCL)
4. Provide verbal warning order to the **CMD Air Working Group** of collection mission
5. Allocate available resources provided by AWG to meet collection requirements



IAA Collection Process





IAA Collection Process

J2 Collection Manager
provides platform collection
decks to Air Working Group
(AWG)

Air Working Group

(Air National Guard, Army Aviation Office, etc)

1. Receives IAA tasking collection decks from J2 Collection Manager
2. Task platforms / units to execute mission
 - Assigned units conduct mission planning
3. Send tasked platform information back to J2 Collection Manager



IAA Collection Process

JFHQ J2 CM and A2

1. Produce an IAA Sync Matrix
2. Coordinate assessment capabilities if required

Execution

JFHQ J2 CM and A2

1. Provide execution C2 and support possible dynamic re-tasking if required

PAD & J2 CM

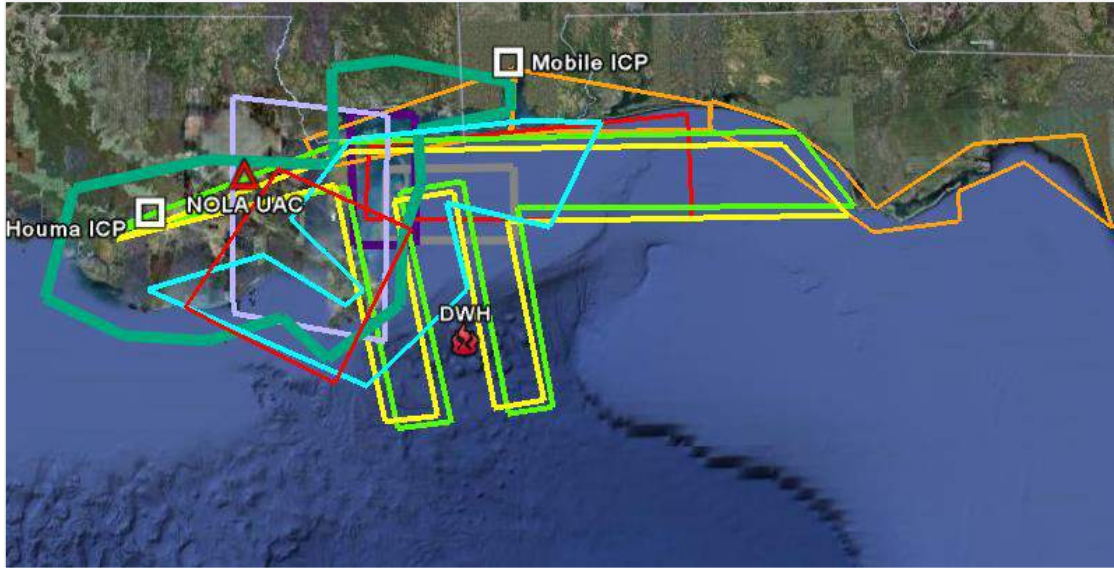
1. Ensure proper dissemination of collected information
2. Ensure collected information meets CMD or supported agencies requirements
3. Prep for next IAA Cycle



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Example IAA Sync Matrix

06 July 2010



- **RC-26:**
 - 1st MSN: Skimming Ops / Boom Verification
 - 2nd MSN: Boom Verification / Oil Recon
- **EPA Aspect:** Oil Reconnaissance
- **AF AUX:** Boom Identification
- **CBP PA-42:** Oceanic Imaging
- **NOAA Dash-8:** Oceanic Imaging
- **CG C-130H:** Skimmer Ops
- **Twin Otter:** Oceanic Imaging
- **BP PA-31:** Oceanic Imaging
- **BP CESNA-310:** Oceanic Imaging
- **CBP Guardian:** Next scheduled MSN 9Jul

	ZULU	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	0	1	2	3	4			
	CDT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
MS (FMV)									RC 26			RC 26																
AF AUX									5 x C-182 / EO												C x 182 / EO							
CBP (EO/IR/FMV)													CBP PA-42															
NOAA (MSI)										DASH-8																		
EPA (MSI)										ASPECT																		
CG (EO/IR/FMV/SAR)				HC-130H																								
NASA (MSI)									TWIN OTTER																			
BP ADS (MSI)									PA-31													PA-31						
BP ICARUS (MSI)									CESNA-310													CESNA-310						



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National Guard Collection Management

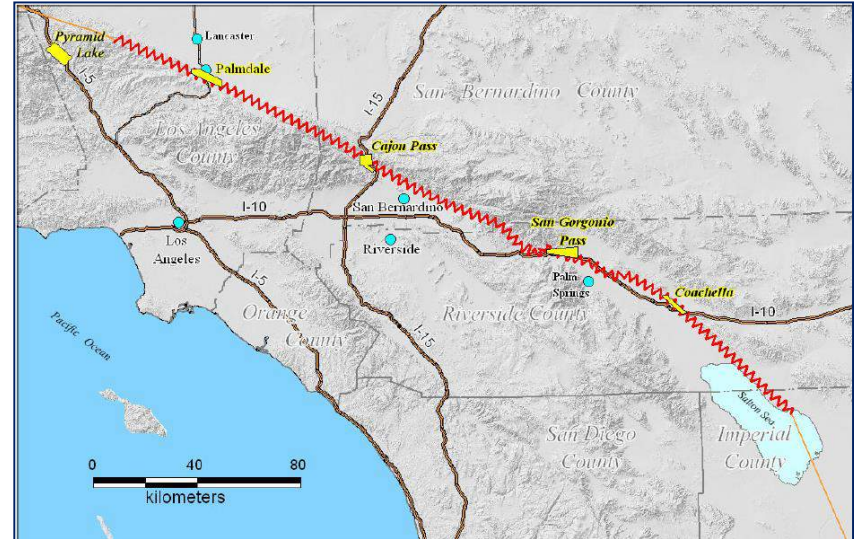
■ Capability vs. Platform

Acronym	Proper Name	Definition	Application	Example Uses
EO	Electro Optical	Snapshot of Visible Light	Situational Awareness (SA)	SA, Damage Assessment (DA), Flood extent, Hurricane damage
IR	Infrared	Can view spectrum not visible to human eye	Thermal Activity Detection	Wildfire perimeters, distressed personnel location
FMV	Full Motion Video	Continuous feed of visible light	Situational Awareness	Near real time SA, Search and Rescue, DA
HSI	Hyper-Spectral Imagery	Can view/compare continuous bands across the EM spectrum	Unique signature detection, change detection	Oil slicks, chemical spills, plume detection
MSI	Multi-Spectral Imagery	Can view/compare selected bands across the EM spectrum	Unique signature detection, change detection	Flood extent, extent of wildfire damage
LiDAR	Light Detection And Ranging	Active sending/receiving of light energy to create an image	Laser topography/hydrology	Flood extent, limited flood depth, terrain analysis
SAR	Synthetic Aperture Radar	Active sending/receiving of Radar energy to create an image	Change Detection	limited DA (bridge/dam location, not condition)



Collection Plan

	Title 32 Assets	Interagency Assets	Title 10 Assets
EO/IR FMV	UH-72	CBP Pred-B	MQ-1*
	RC-26	Contract FMV	MQ-9*
	GIIEP		USAR UAS*
	NTIAA		
	ANG RPA / ARNG UAS*		
EO Still Frame	Eagle Vision	Commercial Satellites	U-2
	GIIEP	CAP IAF AUX	Global Hawk
	FMV-capable assets	NOAA King Air/Twin Otter	DC-135
		FMV-capable assets	DoD Satellites
			FMV-capable assets
IR Still Frame	FMV-capable assets	Commercial Satellites	Global Hawk
		FMV-capable assets	DoD Satellites
			FMV-capable assets



	Title 32 Assets	Interagency Assets	Title 10 Assets
HSI		EPA ASPECT	
		CAP ARCHER	
MSI	Eagle Vision	Commercial Satellites	DoD Satellites
		EPA ASPECT	
LIDAR		NOAA King Air/Twin Otter	
SAR	Eagle Vision	Commercial Satellites	Global Hawk
	JSTARS		DoD Satellites
	ANG MQ-9*		
GAMMA		EPA ASPECT	WC-135

California Military Department

Incident Awareness and Assessment Capabilities





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Definition

Incident Awareness and Assessments (IAA): IAA is conducted within the United States in support of Defense Support of Civil Authorities operations. IAA operations focus on providing timely and usable information to state and local government, Tribal, Civil, and Federal leaders in order to save lives, reduce human suffering, and protect property. The three mission sets of IAA are Broad Area Coverage (BAC), Damage Assessment (DA), and Situational Awareness (SA). IAA capabilities include Electro-Optical (EO), Infra-red (IR), Synthetic Aperture Radar (SAR), Multi-spectral/Hyper-spectral (MSI/HSI), and Full Motion Video (FMV).

In accordance with Presidential Executive Order #12333 and Department of Defense Directive 5240.1-R, the National Guard only conducts IAA when requested by proper authority.



FMV Capability-Menu of Options

FMV Platform	Type	Estimated Cost	Avg Sortie Length	Advantages	Disadvantages	State Dissemination Methods
UH-72 Lakota (ARNG/T-32)	Twin engine, multi-role helicopter	\$2,655/Hr	2 hrs (Max 3hrs)	Multi-role, Rover compatible	No inherent PAD	DCO Adobe Connect, NORTHCOM's FMV Portal, GIIEP Server
RC-26B (ANG/T-32)	Twin engine turbo prop ISR aircraft	\$755/Hr	4-6hrs	Color EO/IR sensor, NIIRS 6 (ID individuals and building materials)	Limited number of aircraft	DCO Adobe Connect, NORTHCOM's FMV Portal, GIIEP Server
GIIEP Go-Kit (NG)	Camcorder can be used on any manned platform	Unknown	Platform dependent	Includes ROVER system to provide downlink	Limited EO (no IR) and video capability, requires streaming to GIIEP server	DCO Adobe Connect
MQ-1 Predator (DoD/ANG)	Remotely Piloted Aircraft (RPA)	\$644/Hr	24-30hrs	Satellite or LOS datalink to ROVER receiver in minutes	SECDEF approval required, FAA flight restrictions, limited assets due to operational commitments	DCO Adobe Connect, NORTHCOM's FMV Portal, GIIEP Server
MQ-9 Reaper (DoD/ANG)	Remotely Piloted Aircraft (RPA)	\$1167/Hr	24-30hrs	Satellite or LOS datalink to ROVER receiver in minutes	SECDEF approval required, FAA flight restrictions, limited assets due to operational commitments	DCO Adobe Connect, NORTHCOM's FMV Portal, GIIEP Server



MQ-9 Reaper Capabilities

Multi-Spectral Targeting System (MTS)

- IR, DTV, LLTV Cameras with the ability to fuse multiple cameras such as IR/DTV or IR/LLTV.
- 8 camera field of views (FOVs) providing a wide range of Full Motion Video information for the user and any supporting agencies.
- Full Motion Video gathered from MQ-9 Reapers can be sent via Remotely Operated Video Enhanced Receiver (ROVER), allowing outside agencies and personnel to see the video in real-time.
- Ability to loiter over Area of Interest for long periods of time (18+)





FMV Capability Cont.

RQ-7 Shadow (ARNG/DoD)	Unmanned Aerial System (UAS)	\$400/Hr (once on site)	6hrs	ROVER/OSRVT Color EO/ IR sensor. Can stream from control station via coax to DVR/TV.	SECDEF approval required, FAA flight Requires Line of Sight, 67NM operational range, Needs VBrick to convert from Analog to digital to stream through network	DCO Adobe Connect, NORTHCOM's FMV Portal, GIIEP Server,
RQ-11 Raven (ARNG/DoD)	Small hand-launched Unmanned Aerial System (SUAS)	\$100/Hr	1-1.5hrs	Low flight altitude eliminates some clearance concerns. 2 personnel to operate.	SECDEF approval required, Short range (5.4NM), No NRT dissemination.	Laptop uses DVR to record FMV
P-3 AIP (DoD/T-10)	Four-engine turboprop maritime surveillance aircraft	\$8,492/Hr	4-10hrs (Max 13hrs)	TCDL (Tactical Common Data Link) increases signal range to 100NM, ROVER capable	Limited onboard exploitation capability	DCO Adobe Connect, NORTHCOM's FMV Portal, GIIEP Server
Non-Traditional IAA [NTIAA] (ARNG/ANG/DoD)	Primarily targeting pods on military aircraft like F-16/15, B-52	\$20k+ (F-15)/Hr	Platform dependent	Rover capable	Expensive	DCO Adobe Connect, NORTHCOM's FMV Portal, GIIEP Server
CAP/Air Force Auxiliary [AF AUX] (Interagency)	Single-engine aircraft	\$160-290/hr	2-4hrs	Low cost, 550+ available CONUS, ADIS (Airborne Digital Imaging System) allows for NRT dissemination	Only 2 have predator equivalent FMV sensors	HDDS and GIIEP capable



EO Capability

EO Platform (Owner)	Type	Estimated Cost	Avg Sortie Length	Advantages	Disadvantages	State Dissemination Methods
CAP/Air Force Auxiliary [AF AUX] (Interagency)	Single-engine aircraft	\$160-290/hr	2-4hrs	Low cost, 550+ available CONUS, ADIS (Airborne Digital Imaging System) allows for NRT dissemination	Camera resolution on handhelds are not ideal	HDDS and GIIEP capable
Eagle Vision (Commercial Satellite)	Commercial Satellite Imagery	Free (Spot-5 ONLY)	Coverage varies	International Charter supports multi-satellite planning and rapid data turn-around (EV ground station streams imagery to GIIEP w/in 5 min of downlink)	-Gaps in coverage given lack of loiter times and satellites available -Multiple agencies required to process request	HDDS and GIIEP capable
GIIEP (State)	Camera can be used on any manned platform	Unknown	Platform dependent	Includes ROVER system to provide downlink	Limited EO (no IR) and video capability, requires streaming to GIIEP server	HDDS and GIIEP
FMV Assets (State/DoD)	See above table	See above table	See above table	See above table	See above table	See above table
NOAA Fixed Wing (Interagency)	DHC-6, King Air 350, Aero Shrike 500	Free	4hrs	Sensor suites can be modified to the 350 aircraft	Requires federally mandated mission (likely in catastrophic disaster)	HDDS, HSIN, EPA, FEMA GIS Portal



EO Capability Cont.

U-2 Optical Bar Camera (DoD)	Single-seat/single engine high alt aircraft	\$8,362/hr	10-12hrs	70NM swath/90k+ sq NM in one mission (could image all of CA), Expedited processing can occur w/coord	Dissemination can take up to 3 days, expensive	HDDS
MC-12 (DoD)	Med-alt, manned, King Air 350	\$3,723/hr	6hrs	Rover capable	Expensive, limited aircraft due to overseas ops	HDDS, GIIEP
RQ-4 Global Hawk (DoD)	Remotely Piloted Aircraft (RPA)	\$6,930/hr	24hrs	Time sensitive data can be disseminated as UNCLASS shape files, good resolution	Requires SECDEF approval	HDDS
OC-135 Open Skies (DoD)	Modified WC-135 used for observation with 3 cameras	\$20,654/hr	12-16hrs		Expensive, requires refueling	HSIN (Homeland Security Information Network)
National Technical Means (NTM)	DoD Satellites	Free	Coverage varies	Excellent geospatial intelligence data source	Data requires declassification and requires federally mandated mission (likely in catastrophic disaster)	NGB will release NGA declassified imagery to JFHQ-J2 for dissemination



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DRAGONLADY

- Platform: U - 2
- Sensor: EO
- Capabilities:
 - Range: up to 5,566 NM
 - Ceiling: 70,000 Ft
 - Endurance: 12 Hours
- Limitations:
 - Limited Aircraft available due to overseas
 - Processing collected imagery can take up to 3 days

- Cost Per Hour: Approx \$8,362 (FY14)
- Dissemination Methods: Images can be uploaded to the Hazard Data Distribution System (HDDS)
- PAD: No on board Processing, Assessment and Dissemination available, But can be conducted once uploaded to HDDS
- Ideal Use: Post incident damage assessment



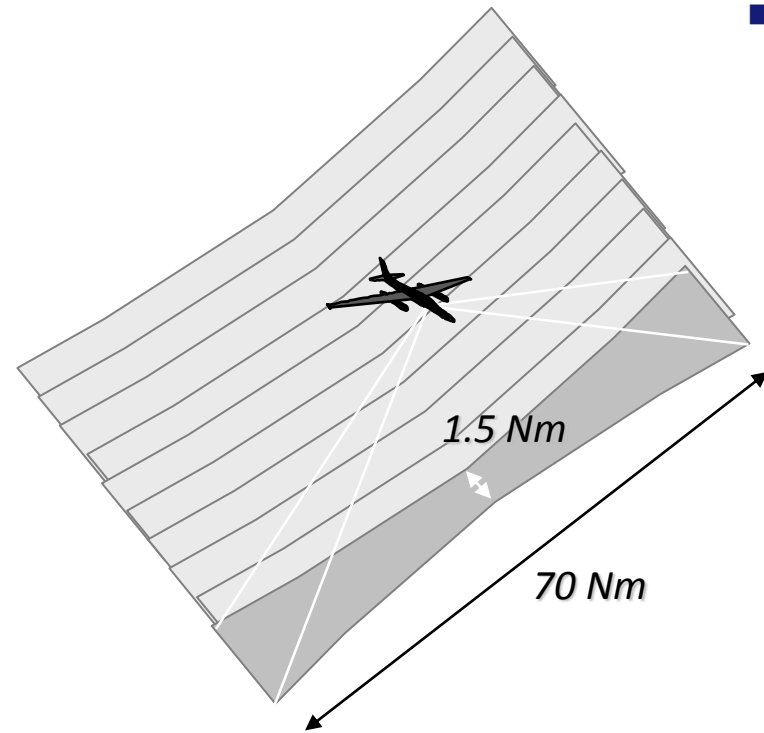
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(U) Optical Bar Camera

- (U) Panoramic (Synoptic) Aerial Film Sensor
 - Approx. 70 NM coverage per swath
 - 1.5 NM coverage along flight path per frame
 - High OBC (70K ft) resolution: NIIRS 5-6 at nadir
 - Low OBC (40K ft) resolution: NIIRS 6-7 at nadir
- (U) 10,500 ft of film per roll, 1,680 frames (22 parts)
 - 90K – 150K sq NM coverage per mission = size of California



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