

**Description:** Future Long Range Assault Aircraft (FLRAA) Request for Information (RFI)

#### **RFI Intent**

The intent of this RFI is to inform the potential FLRAA trade space for new development aircraft in support of requirements refinement and acquisition planning for a potential FLRAA Program of Record (PoR). The Army is pursuing an accelerated FLRAA program using a leader-follower approach, with the Army designated as the lead Service with Special Operations Command (SOCOM) participation and the United States Marine Corps (USMC) acquisition program following approximately two years later. To the maximum extent possible, respondents are requested to address:

- a) The design's ability to meet all requirements given in Appendix A, both threshold and objective. This information should include individual sensitivity analyses of speed, range, and payload to both cost and performance. Flight Cards are provided for context.
- b) Any recommended changes to the threshold requirements given in Appendix A necessary to meet the US Government affordability and schedule goals provided.
- c) Any design risks and recommended risk reduction efforts for the proposed design to meet the affordability goals and schedule provided.
- d) Schedule and cost estimate Rough Order of Magnitude (ROM) for both the Preliminary Design Review (PDR) and Critical Design Review (CDR) completion.
- e) Acquisition cost, schedule, risks, and potential acquisition approaches that could accelerate a FLRAA prototype delivery.
- f) Provide cost (development and recurring), schedule and performance trade-offs needed to accommodate the SOCOM and USMC unique requirements documented in Appendix B and Appendix C, respectively.

#### **Army Schedule Goals**

The US Government desires a materiel solution that supports, at a minimum, the following developmental timeline: Contract Award: Q4FY21, PDR: Q2FY23, CDR: Q4FY24, First Flight: Q3FY24, First Unit Equipped: Q2FY30

#### **Army Affordability Goals**

The US Government desires a materiel solution that supports, at minimum, the following affordability objectives: \$43M AUMC (Average Unit Manufacturing Cost) (BY18\$).

#### **Army ROM Estimates**

The US Government desires the following information to further refine program cost and schedule estimates:

- AUMC cost (BY18\$). AUMC includes costs such as the air vehicle structure, rotor group, drive group, wing, propulsion, landing gear, and avionics. It does not include non-recurring production and engineering changes, contractor System Engineering & Program Management and Contractor System Test and Evaluation costs. Provide quantity by year, learning curve, and the other assumptions used in the fly-away cost estimate.
- Cost per Flight Hour (BY18\$)
- PDR and CDR completion costs (BY18\$). Provide a development cost estimate for the effort required to advance the weapon system design through CDR. This includes all preceding development activities and design reviews (i.e. SRR, SFR, etc.) leading to and completing CDR.
- Develop a detailed schedule which accelerates fielding of a FLRAA capability. Provide a detailed description of tailored, alternative or innovative approaches that streamlines the acquisition process to accelerate the program as much as possible. Provide detailed descriptions of the tailored approach to include, but not limited to, what non-essential or duplicative activities from your viewpoint should be tailored or eliminated, how commercial practices in-lieu of standard DoD practices can be used, and a recommended program management structure to facilitate improved risk, airworthiness, and test decision timelines. Specifically, address the following topics: Government Oversight, Communication/Deliverables, and Data Requirements, Qualification Approach, Test and Evaluation,

Contract Incentives, Design Reviews, Supportability Concepts, Integrated Product Teams, Managing Risks and Requirements Trade-offs. Assess the programmatic risks for each major area for this accelerated schedule.

### Air Vehicle Description and Assumptions

For each potential weapon system platform, please provide the following for proposed conceptual designs which meet the requirements in Appendix A:

- General description of the conceptual weapon system which includes the airframe, propulsion, drivetrain, rotor system, flight controls, landing gear, aircrew and passenger survivability as well as other major system and sub-systems technologies that may be integrated onto and into the weapon system.
- A detailed description of the effort completed to date or planned to be completed by 4QFY21 for potential material solutions that fulfill the requirements listed in Appendix A. Based on this description, describe the remaining efforts required for a PoR to design, develop, integrate, test, and field a material solution that is operationally effective, suitable and survivable in a 2030 threat environment.
- Provide a general description of growth potential in the weapon system to increase capability and maintain relevancy of the aircraft over a 50 year useful life.
- A general description of approach to apply modular open systems approach to integration of mission equipment.
- Maximum structural gross take-off weight (MGTOW) (lbs)
- Available or modification of currently available engine, to include manufacturer, uninstalled performance rating data, power turbine output shaft speed, direction of rotation.
- Transmission description to include weight, main rotor shaft output power rating, tail rotor shaft output power rating, overall gear reduction ratio to main rotor, tail rotor drive gear reduction ratio, other accessory drive ratings (power limits and shaft speeds)
- Maximum usable fuel quantity

### Appendix A – Army Requirements

Operational Attribute	ICRD Value	Threshold Requirement	Objective Requirement
Worldwide Performance	HOGE at combat radius with payload at 6k/95, HIGE at takeoff in mission configuration at 6k/95	95% maximum rated power to perform a 500 feet per minute vertical rate of climb from a hover out of ground effect at mission start, at up to 6k/95°F, at the 12 passenger design gross weight configuration with sufficient fuel to achieve a 122 NM combat radius and a 30 minute reserve.	100% maximum continuous power to perform a 500 feet per minute vertical rate of climb from a hover out of ground effect at mission start, at up to 6k/95°F, at the 12 passenger design gross weight configuration with sufficient fuel to achieve a 122 NM combat radius and a 30 minute reserve.
Unrefueled Combat Radius	170-229 NM unrefueled with 30 min loiter	200 NM	300 NM
Maximum Continuous Cruise Speed	>230-270 kts with full payload	250 KTAS at maximum continuous power and design gross weight and configuration.	280 KTAS at maximum continuous power and design gross weight and configuration.
Internal Payload – Cargo area in addition to crew	3.5-4.0k lbs. internal	Cabin floor loading capacity minimum of 300 lbs per square foot, equipped with tie down fittings rated at a minimum of 5000 lbs each in any direction.	
External Payload	6.0-8.0k	8,000lbs with 25 square feet flat plate drag, 110 NM at no less than 140 KTAS. Cargo hook capacity no less than 10,000 lbs	10,000 lbs with 25 square feet flat plate drag, 110 NM at no less than 140 KTAS. Cargo hook capacity no less than 13,100 lbs

Passengers – Combat troops in addition to crew	10-12 passengers	12 crash attenuating passenger seats which are at least 23 inches wide and designed for the 95 <sup>th</sup> percentile soldier weighing 365 lbs.	
Self-Deployment	2,100 NM w/o refueling, rolling takeoff	A one-way unrefueled range of at least 1,725 NM.	A one-way unrefueled range of at least 2,440 NM.
Interoperability and Communications	Interoperability for Joint and combined arms operations	Secure/encrypted full-duplex wireless data transfer. Provisions to integrate secure networks in their native form as modules. Connectivity and end-to-end integrity to send and receive situational awareness data to include exchanging voice, text, graphics, and imagery.	
Condition-based Maintenance	Operate for up to 30 days with organic maintenance support, maintenance data provided in flight	Capable of conducting 100 flight hours over a 45 day period between scheduled field-level maintenance events during surge operations.	Capable of conducting 200 flight hours over a 60 day period between scheduled field-level maintenance events during surge operations.
Inflight Refuel	Compatible as an aerial refueling receiver or donor, all platforms "A-Kit"	Shall include structural engineering that will facilitate installation of an aerial refueling system.	
Operational Readiness	>90%	Maintain an A <sub>O</sub> of 84%.	Maintain an A <sub>O</sub> of 92%.
Common Components and Repair Parts	Commonality across and between Services for training, tools, support equipment supply chains, maintenance/overhaul facilities, procedures, system / sub-systems / filters, fluids, fasteners, connectors, test equipment, across the FVL FoS	Respondent proposed.	
Safety and Survivability	Safety and survivability of aircraft and personnel during operations in extreme environmental conditions	Crash protection system shall provide means for protecting aircraft occupants from severe and fatal injuries caused by acceleration and contact forces, fire, toxic gases, submersion and other hazards associated with a survivable aircraft crash. Shall be fully mission capable in Hot, Basic, and Cold environments in accordance with MIL-STD-810.	

**See Attachment 1 - Draft Mission Profiles/Flight Cards**

**Appendix B – SOCOM Unique Requirements**

Operational Attribute	ICRD Value	Threshold Requirement	Objective Requirement
Inflight Refuel	Compatible as an aerial refueling receiver or donor, all platforms "A-Kit"	Shall include airframe structural engineering that will facilitate installation of an aerial refueling system.	
Inflight Refuel	Compatible as an aerial refueling receiver or donor, all platforms "A-Kit"	Installation of aerial refuel "B-Kit" to include probe and all applicable plumbing, pumps and fuel management system.	
Air Transportability	N/A	Aircraft shall be configurable for transport in a single C17	

## Appendix C – USMC Unique Requirements

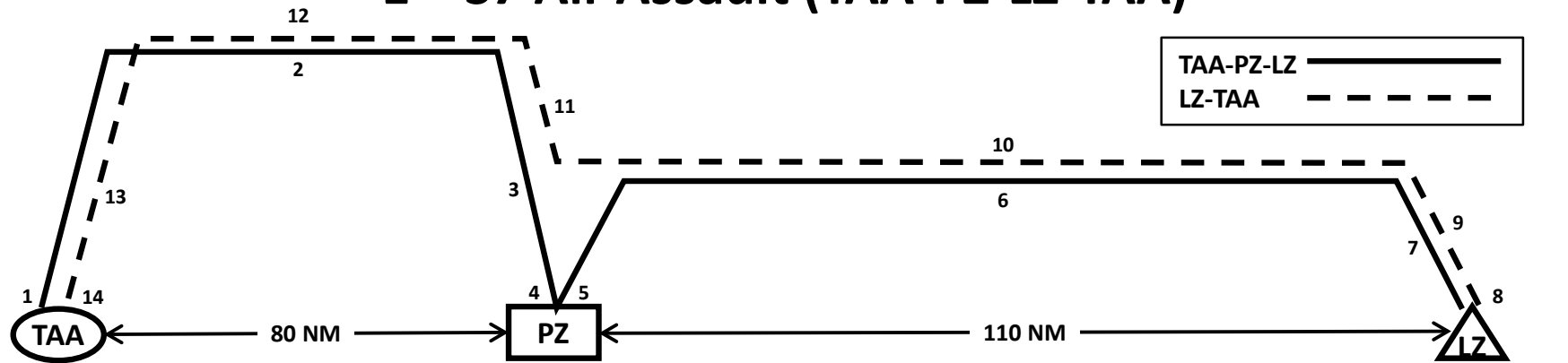
To the maximum extent possible, respondents are requested to address impacts of the USMC unique requirements both in proposed design changes within the Army variant as well as if it were a stand-alone design (if considered unfeasible or cost prohibitive to modify from the Army Variant). This should include both an Attack and Utility Variant (with as much commonality between the Attack/Utility variants as practical) with cost and schedule deltas based on the design changes and acquisition path (modified or stand-alone) for a buy size of 349 aircraft.

Operational Attribute	Threshold Requirement	Objective Requirement
Worldwide Performance	Ability to operate in all weather conditions and from Sea Level HOT day to high/hot conditions of 3K/91.5F. Ability to operate from and be based on all L-class ships and meet all ship suitability requirements.	Ability to operate in all weather conditions and from Sea Level HOT day to high/hot conditions of 3K/91.5F. Ability to operate from and be based on all L-class ships and meet all ship suitability requirements.
Unrefueled Combat Radius	365 NM with 30 min loiter using Mission Profiles #1 - #5 (in attachment B) and max payload	450 NM with 30 min loiter using Mission Profiles #1 - #5 (in attachment B) and max payload
Maximum Continuous Cruise Speed	275 KTAS at 90% maximum continuous power and 305 KTAS at 100% of intermediate rated power using Mission Profile #3 (in attachment B) and max internal payload	295 KTAS at 90% maximum continuous power and 330 KTAS at 100% of intermediate rated power using Mission Profile #3 (in attachment B) and max internal payload
Internal Payload	Ability to carry a max internal payload of 4.4k lbs (combination of people/weapons/mission equipment) and accommodate room for 8 troops plus 2 pilots and 2 crew	Ability to carry a max internal payload of 5.2k lbs (combination of people/weapons/mission equipment) and accommodate room for 8 troops plus 2 pilots and 2 crew
Inflight Refuel	Shall include the capability to aerial refuel	
Weapons Integration - Attack	Shall be capable of a combination of external and internal weapons carry to include a turreted or fixed gun system capable of being employed at distances greater than 2km, hellfire/JAGM like capability, guided/unguided rockets, Air to Air Missiles and ability to employ tactical UAV's from onboard the aircraft,	Shall be capable of internal weapons carry to include a turreted or fixed gun system capable of being employed at distances greater than 2km, hellfire/JAGM like capability, guided/unguided rockets, Air to Air Missiles and ability to employ tactical UAV's from onboard the aircraft,
Weapons Integration – Utility	Shall be capable of a combination of external and internal weapons carry to include a turreted or fixed gun system capable of employed at distances greater than 2km, crew-served defensive weapons, guided/unguided rockets, and ability to employ tactical UAV's from onboard the aircraft,	Shall be capable of a combination of internal weapons carry to include a turreted or fixed gun system capable of employed at distances greater than 2km, crew-served defensive weapons, guided/unguided rockets, and ability to employ tactical UAV's from onboard the aircraft,
Marinization	Shall be marinized to accommodate all aspects as specified in attachment A.	

**See USMC Attachment A – Marinization**

**See USMC Attachment B – Mission Profiles**

# 1 – S7 Air Assault (TAA-PZ-LZ-TAA)



TAA-PZ-LZ ————  
LZ-TAA - - - - -

## Departure

Fuel as required

HIGE Takeoff (90% MRP Max)

## Pick-up Load at PZ

12 Soldiers at 365 lbs. each

HIGE Takeoff (90% MRP Max)

## Expected Attribute Drivers

Combat Radius

Fuel Tank Size

## Unload at LZ

## Environmental Conditions:

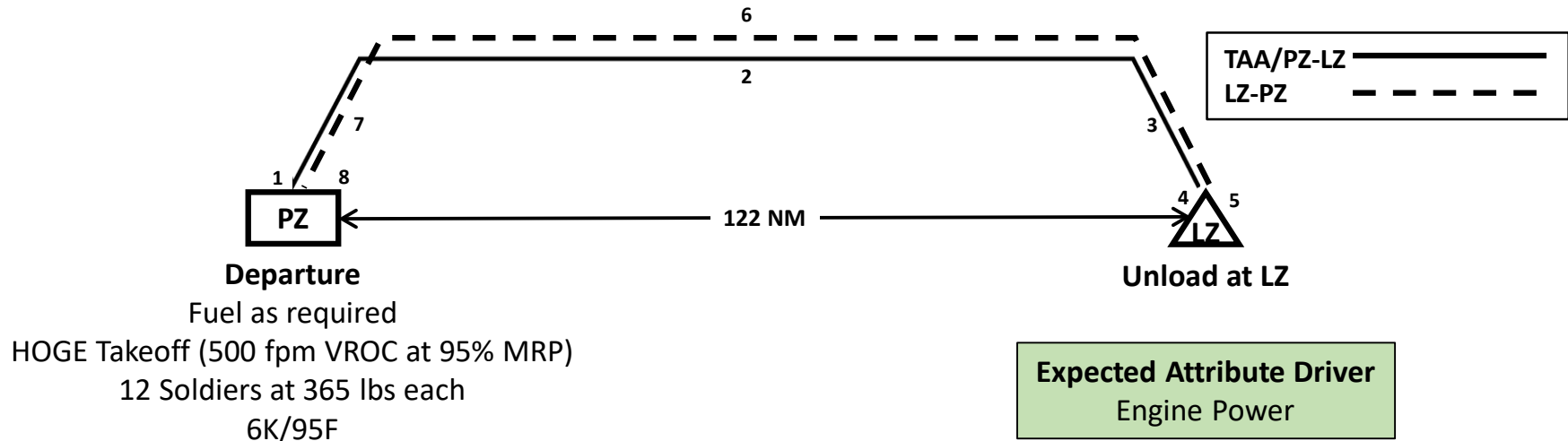
1. 2K/85F (90<sup>th</sup> percentile hot day for S7)
2. 0K/59F (ISA Standard Day)
3. 0K/-1F (90<sup>th</sup> percentile cold day for S7)

**Narrative:** The geometry of the air assault mission is derived from MDO doctrinal distances and experimentation results of Unified Challenge (UC) 17. Relative sanctuary of 80 NM was determined in UC17 as the distance at which the assault battalion could remain in place for up to 48 hours without losses due to threat artillery. The 110 NM between PZ and LZ is the doctrinal distance of the MDO close and deep maneuver areas. The enroute speed of 225 KTAS is the speed required for FLRAA to transit from the TAA in relative sanctuary to the LZ in the same amount of time for the UH-60M to transit at best range airspeed (130 KTAS) from the PZ to the LZ. No times are provided for outbound legs as they do not have hard speed requirements (flown at fallout  $V_{BR}$ ).

## Flight Card – TAA-PZ-LZ

Description	Time (min)
1. T/O TAA to 200' AHO	0.5
2. Cruise at the higher of $V_{BR}$ or 225 KTAS	21.3
3. Descend to land PZ	1.0
4. PZ Load (ground idle)	5.0
5. T/O PZ to 80' AHO	0.5
6. Cruise at the higher of $V_{BR}$ or 225 KTAS	29.3
7. Descend to land LZ	1.0
<b>Total Time for Assault</b>	<b>58.6 min</b>
8. Unload at LZ (ground idle)	5.0
9. T/O LZ to 80' AHO	0.5
10. Cruise at $V_{BR}$	
11. Climb vic. PZ to 200' AHO	
12. Cruise at $V_{BR}$	
13. Descend to land TAA (no hover)	1.0
14. 30 minute fuel reserve (cruise)	30.0

## 2 – Mountain Air Assault (TAA/PZ-LZ-PZ)

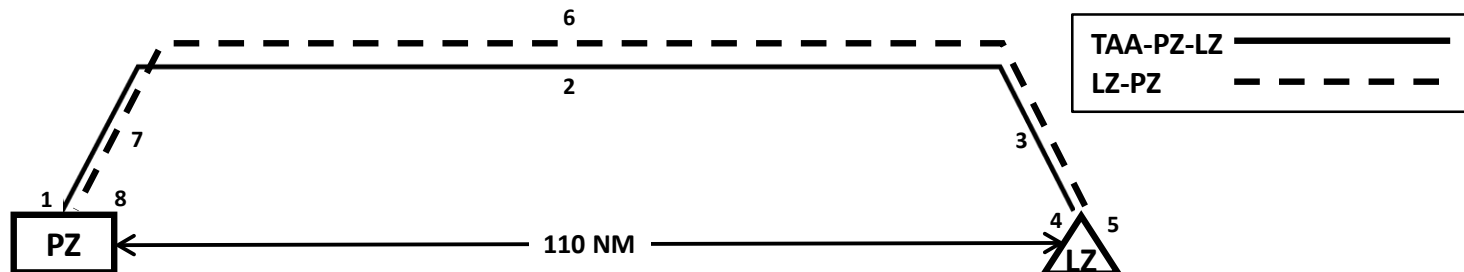


**Narrative:** The geometry of the Mountain Air Assault was derived from Analysis of Alternative distances based on current operations. Hover powered requirements for this mission are hover out of ground effect at 6K/95F at the PZ. However, the distance for this mission (122 NM) is not as long as the S7 air assault mission (190 NM), thus it is expected that the fuel load for the mountain air assault will not be full fuel (only that required for the mission). No times are provided for the segment legs as they do not have hard speed requirements (flown at fallout  $V_{BR}$ ).

### Flight Card – PZ-LZ-PZ

Description	Time (min)
1. HOGE T/O PZ to 200' AHO	0.5
2. Cruise at $V_{BR}$	
3. Descend to HOGE at LZ	1.0
4. Unload at LZ (HOGE)	5.0
5. HOGE T/O LZ to 200' AHO	0.5
6. Cruise at $V_{BR}$	
7. Descend to land PZ (no hover)	1.0
8. 30 minute fuel reserve (cruise)	30.0

### 3 – S7 External Load (PZ-LZ-PZ)



#### Departure

Fuel as required  
 HOGE Takeoff (90% MRP Max)  
 8,000 lb External Load  
 Additional Drag = 25 ft<sup>2</sup>

#### Potential Attribute Drivers

Airframe Structure  
 Engine Power

#### Environmental Conditions:

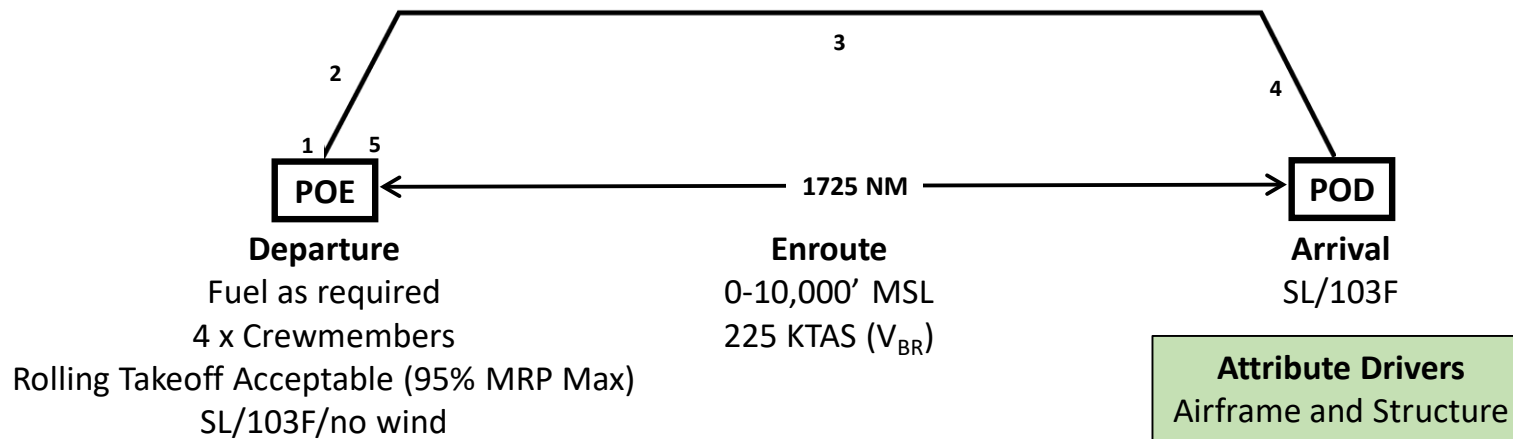
1. 2K/85F (90<sup>th</sup> percentile hot day for S7)
2. 0K/59F (ISA Standard Day)
3. 0K/-1F (90<sup>th</sup> percentile cold day for S7)

#### Flight Card – PZ-LZ-PZ

Description	Time (min)
1. HOGE to Hookup Load	5.0
2. HOGE T/O PZ to 100' AHO	1.0
3. Cruise at the lower of $V_{BR}$ or 140 KTAS	
4. Descend to HOGE at LZ	1.0
5. Unhook load at LZ	5.0
5. HOGE T/O LZ to 100' AHO	0.5
6. Cruise at $V_{BR}$	
7. Descend and land PZ (no hover)	1.0
8. 30 minute fuel reserve (cruise)	30.0

**Narrative:** The external load mission is designed to transport infantry battalion organic support equipment to include up to the M998 and tandem fuel blivets both of which weigh between 7500 and 8000 lbs. The 110 NM distance between PZ and LZ is the doctrinal distance of the MDO close and deep maneuver areas. The enroute speed is expected to be limited by the stability of the external load and is estimated to be a maximum of 140 KTAS. No times are provided for the segment legs as they do not have hard speed requirements (flown at fallout  $V_{BR}$  or max controllable airspeed).

## 4 – Self-Deployment



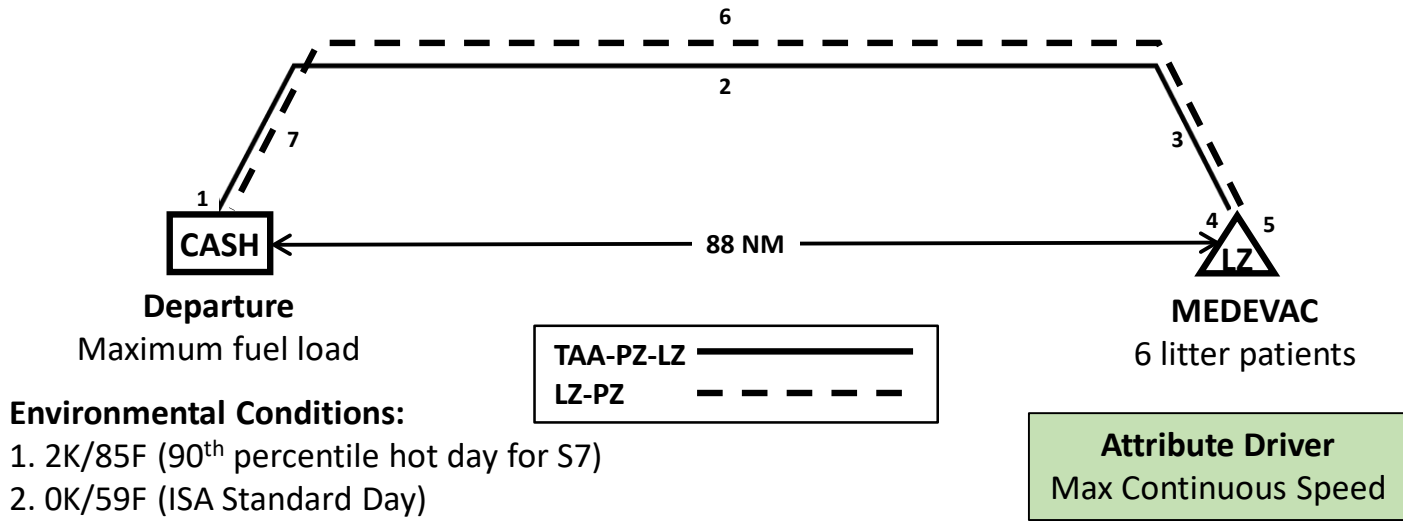
**Narrative:** The self deployment mission represents standard long range overwater planning for the longest segment of the shortest possible route across the Pacific Ocean which is from Eareckson, AK (in the Aleutian Island chain) to Chitose, Japan. For this mission, it is expected that all non-essential equipment to include passenger seats and weapons will be removed from the aircraft, and the aircraft will be equipped with auxiliary fuel tanks to provide the necessary range. There is no expectation that the aircraft cockpit will be pressurized, thus the transit altitude is limited to 10,000 ft MSL maximum IAW AR 95-1. The aircraft will be flown at the fallout best range airspeed. Times provided on the flight card are not intended to drive a speed requirement, but are shown as an estimate of the time required for the longest leg of the self deployment.

### Flight Card – POE-POD

Description	Time (min.)
1. Rolling T/O	1
2. Climb at $V_Y$ to cruise altitude	5
3. Cruise @ $V_{BR}$ (~225 KTAS)	460
4. Descend for landing @ POD	1
5. 30 minute fuel reserve	
<b>TOTAL TIME</b>	<b>467 min</b>
	<b>7 hr + 47 min</b>



# 5 – S7 MEDEVAC (PZ-LZ-PZ)



**Narrative:** The MEDEVAC mission represents the longest distance that FLRAA would be able to provide “golden hour” support IAW current DoD guidance at threshold max continuous airspeed of 250 KTAS at 100% MCP. Current UH-60M radius of “golden hour” support is 45 NM versus 88 NM for FLRAA. “Golden hour” support is defined as one hour from receipt of MEDEVAC mission to delivery of the patient to level 2 or level 3 care.

**Flight Card – PZ-LZ**

Description	Time (min.)
1. Receipt of Mission	8.0
2. Rapid start-up	2.0
3. T/O CASH to 200’ AHO	0.5
4. Cruise at ≥250 KTAS (MCP)	21.0
5. Descend to land LZ	1.0
6. Load Patients (ground idle)	5.0
7. T/O LZ to 200’ AHO	0.5
8. Cruise at ≥250 KTAS (MCP)	21.0
9. Descend to land CASH	1.0
<b>TOTAL TIME</b>	<b>1 hour</b>

# Attachment A

## Marinization and Shipboard Suitability

# Marinization Design

- Minimum deck spot and fit in hanger
- Ability to quickly slow/stop spinning rotor during shutdown
- Compatibility with support equipment available on ship
- Landing gear provide maneuverability while eliminating tip-backs or tip-overs
- Interoperability with Landing Assist Devices
- Compatible with ship facilities
- Survive in dense electromagnetic shipboard environment
- Structural
  - Landing loads (12fps, pitching/rolling/heaving deck)
  - Chain attachment points on A/C
  - Folding for Operational needs (automatic)
- Material
  - Corrosive sea-salt environment
  - Water intrusion/absorption
  - Alternatives can add weight/cost

# Design Features (cont.)

- Survive water landings and remain afloat (per spec)
- Water egress capability and raft storage
- A/C must have power levels of HOGE +10% for take-off/landings ops
- Field of view to see the LSE and shipboard visual cues day and night
- Handling Qualities/Flight Control characteristics to account for maneuvering and additional control to account for ship airwake/motion to land/take-off within confined landing spot
  - SH-60R TRAP, SH-60S wheel boxes, or 15' clearance
  - Airwake and deck motion affect workload (acceptable DIPES ratings day/night)
  - Acceptable gust rejection characteristic
  - Low airspeed envelope/critical azimuth must allow operations (V-22 PUWSS)
  - Slope landing limits for launch and recovery must factor in ship motion

# Operation Needs

- Deck and Hanger movement
- Maintainability and Supportably
  - Conducted in the “showdown of the A/C
  - Components designed for ease of inspection
  - A/C design incorporates:
    - Fold out maintenance platforms
    - Walkways
    - Footsteps and handholds

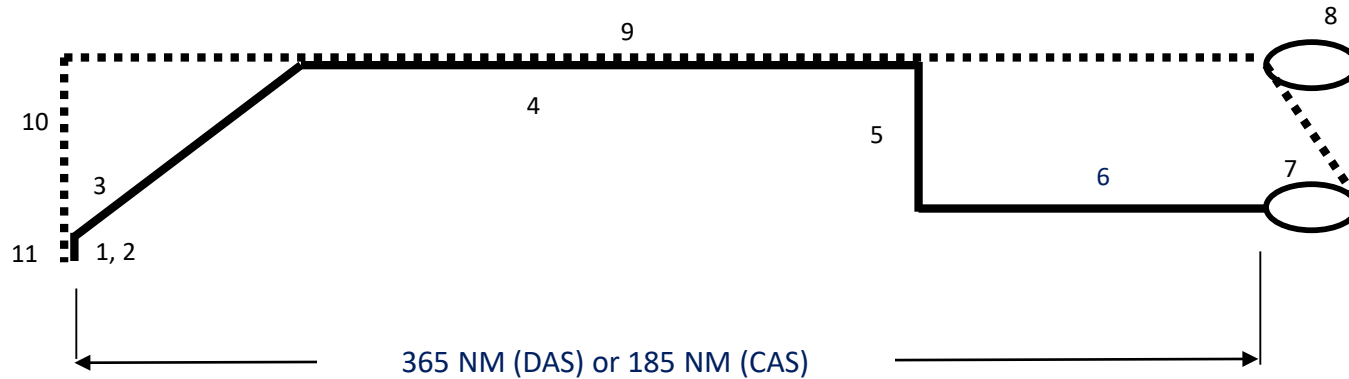
# Operational Needs (cont.)

- Downwash/outwash
  - Needs to be limited to prevent injury/damage to personnel, equipment, and other A/C
  - Needs to be limited to allow safe operations
    - Multi-spot and single-spot deck operations
    - SAR capable to hoist personnel from the water
    - Personnel transfer from/to ships/submarines
    - VERTREP capability for hookup
  - Personnel limit zones: Caution (80-87 lbf), Hazard (87-115 lbf), Avoid (>115 lbf)
- Deck heating
  - Direct impingement of engine exhaust onto the flight deck should be minimized to prevent deck or equipment damage

# **Attachment B**

Attack and Utility Mission Profiles

# (Attack) Mission #1 CAS & #2 DAS

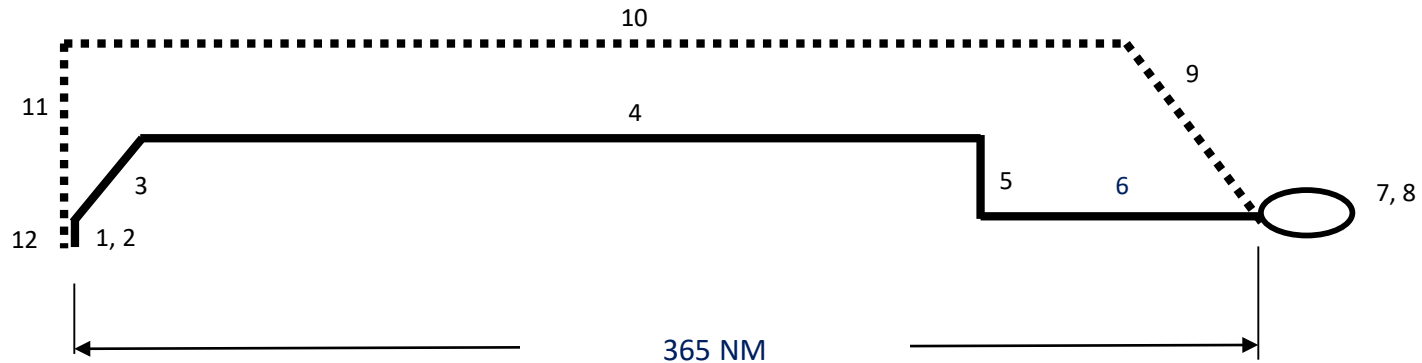


Entire mission at MIL-STD-3013 Hot Day conditions

1. Warm-up for 10 minutes at Idle Power at SL / 39.4°C.
2. VTO to HOGE for 1 minute at MRP.
3. Climb at IRP at  $V_{BROC}$  to best cruise altitude
4. Cruise to 284 nm (or 144 nm for CAS) at  $V_{90\%MCP}$
5. Descend to 300 ft (no fuel / time / distance credit).
6. Cruise to mission radius at  $V_{90\%MCP}$
7. Combat, 5 minutes at  $V_{IRP}$  (at max available IRP), 10 minutes at  $V_{BE}$ . Climb to best endurance altitude, 15 minutes at  $V_{BE}$ .
8. Off load expendable ordnance, retain launchers.
9. Cruise back at  $V_{LRC}$  at best cruise.
10. Descend to SL (no fuel / time / distance credit).
11. Land with reserves (greater of 10% of initial mission fuel or fuel for 20 minutes at  $V_{BE}$  at SL).



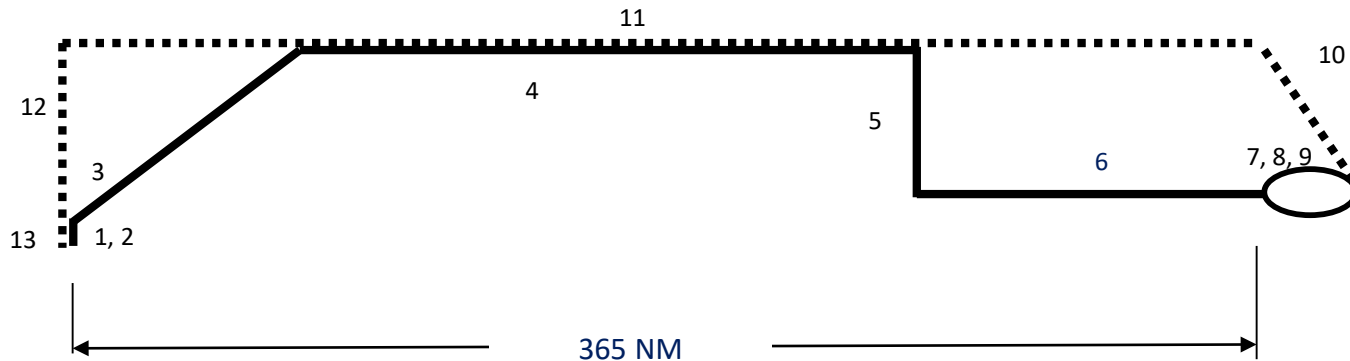
# (Attack) Mission #3 V-22 Escort



Entire mission at MIL-STD-3013 Hot Day conditions

1. Warm-up for 10 minutes at Idle Power at SL / 39.4°C.
2. VTO to HOGE for 1 minute at MRP.
3. Climb at IRP at  $V_{BROC}$  to 10,000 Ft PA.
4. Cruise for 324 nm at  $V_{90\%MCP}$  (275 KTAS (T) / 295 KTAS (O)).
  - Must be able to dash ahead at  $V_{100\%IRP}$  (305 KTAS (T) / 330 KTAS (O)).
5. Descend to 300 Ft PA (no fuel / time / distance credit).
6. Cruise for 41 nm at  $V_{90\%MCP}$ 
  - Must be able to dash ahead at  $V_{100\%IRP}$
7. Combat, 5 minutes at  $V_{IRP}$  (at max available IRP), 25 minutes at  $V_{BE}$ .
8. Off load 80% expendable ordnance, retain launchers.
9. Climb at IRP at  $V_{BROC}$  to best range altitude.
10. Cruise back at  $V_{LRC}$  at best range altitude.
11. Descend to SL (no fuel / time / distance credit).
12. Land with reserves (greater of 10% of initial mission fuel or fuel for 20 minutes at  $V_{BE}$  at SL).

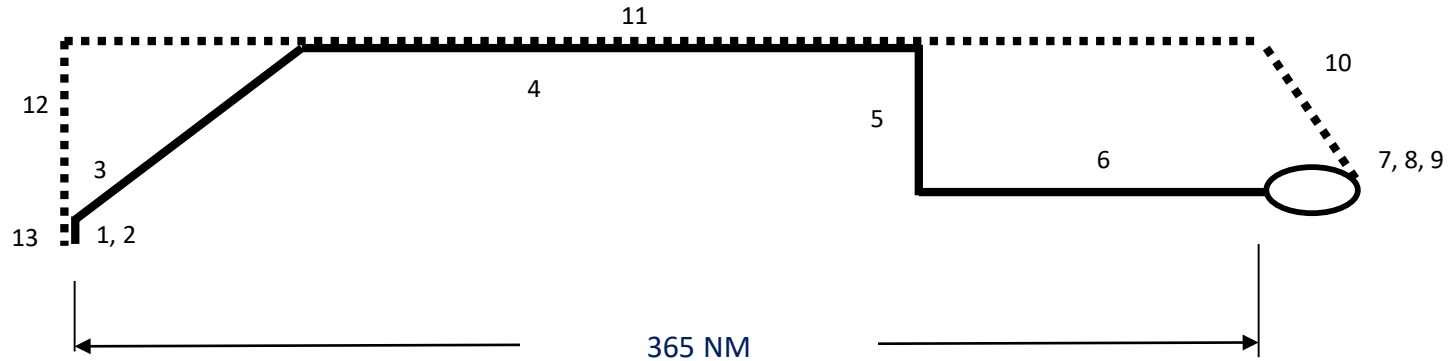
# (Utility) Mission #4 Utility



Entire mission at MIL-STD-3013 Hot Day conditions

1. Warm-up for 10 minutes at Idle Power at SL / 39.4°C.
2. VTO to HOGE for 1 minute at MRP.
3. Climb at IRP at  $V_{BROC}$  to best cruise altitude.
4. Cruise to 324 nm at  $V_{90\%MCP}$ .
5. Descend to 3,000 ft PA (no fuel / time / distance credit).
6. Cruise to mission radius at  $V_{90\%MCP}$ .
7. Combat, 5 minutes at  $V_{IRP}$  (at max available IRP), 10 minutes at  $V_{BE}$ .
8. Off load expendable ordnance, retain launchers.
9. Land at 3,000 Ft. PA, at flight idle for 10 minutes and load 8 troops.
10. Climb at IRP at  $V_{BROC}$  to best cruise altitude.
11. Cruise back at  $V_{LRC}$  at best cruise.
12. Descend to SL (no fuel / time / distance credit).
13. Land with reserves (greater of 10% of initial mission fuel or fuel for 20 minutes at  $V_{BE}$  at SL).

# (Utility) Mission #5 Troop Insertion



Entire mission at MIL-STD-3013 Hot Day conditions

1. Warm-up for 10 minutes at Idle Power at SL / 39.4°C.
2. VTO to HOGÉ for 1 minute at MRP.
3. Climb at IRP at  $V_{BROC}$  to best cruise altitude.
4. Cruise to 324 nm at  $V_{90\%MCP}$ .
5. Descend to 3,000 PA ft (no fuel / time / distance credit).
6. Cruise to mission radius at  $V_{90\%MCP}$ .
7. HOGÉ for 5 minutes at 3,000 Ft PA at MRP.
8. Offload 8 combat equipped troops via fastrope.
9. Loiter for 30 minutes at  $V_{BE}$  (weapons expended at end of segment; retain launchers).
10. Climb at IRP at  $V_{BROC}$  to best cruise altitude.
11. Return at  $V_{LRC}$  at best cruise altitude.
12. Descend to SL (no fuel / time / distance credit).
13. Land with reserves (greater of 10% of initial mission fuel or fuel for 20 minutes at  $V_{BE}$  at SL).