

T&R MANUAL, VOLUME 6

CHAPTER 1

UNMANNED AERIAL VEHICLES (UAV) INTERNAL OPERATOR (7314)

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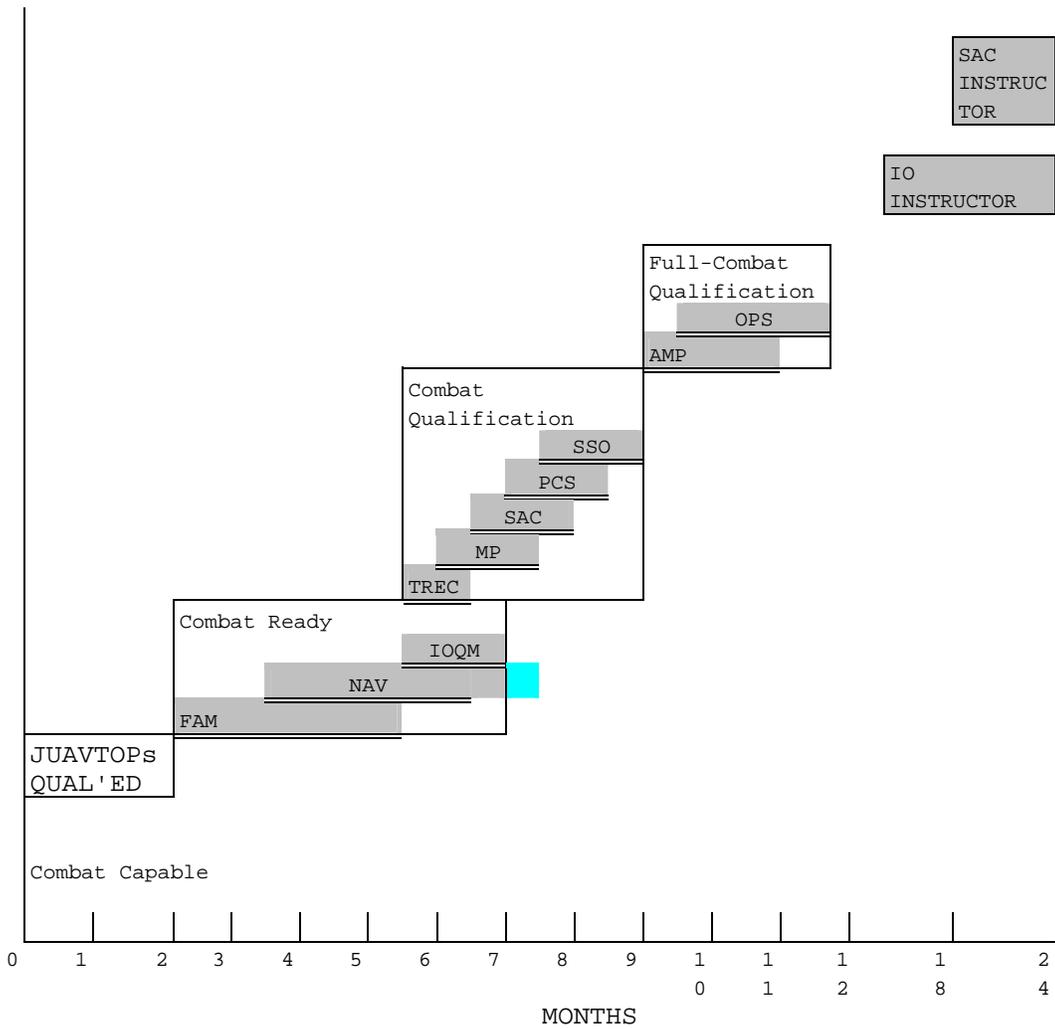


Figure 1-1.--Internal Operator Notional Training Progression Model

100. PROGRAM OF THE INSTRUCTION (POI) FOR BASIC INTERNAL OPERATOR

<u>WEEKS</u>	<u>COURSE</u>	<u>ACTIVITY</u>
1-8	Combat Capable	NAMTRAGRU DET AMTU 6001
9-21	Combat Ready	Tactical Squadron
22-40	Combat Qualification	Tactical Squadron
41-52	Full-Combat Qualification	Tactical Squadron

101. POI FOR CONVERSION INTERNAL OPERATOR

<u>WEEKS</u>	<u>COURSE</u>	<u>ACTIVITY</u>
*	Combat Capable	NAMTRAGRU DET AMTU 6001
1-12	Combat Ready	Tactical Squadron
13-31	Combat Qualification	Tactical Squadron
32-43	Full-Combat Qualification	Tactical Squadron

\*Combat Capable Refresher POI under development by NAMTRAGRU DET

102. POI FOR REFRESHER INTERNAL OPERATOR

<u>WEEKS</u>	<u>COURSE</u>	<u>ACTIVITY</u>
*	Combat Capable	NAMTRAGRU DET AMTU 6001
1-8	Combat Ready	Tactical Squadron
9-27	Combat Qualification	Tactical Squadron
28-34	Full-Combat Qualification	Tactical Squadron

\*Combat Capable Refresher POI under development by NAMTRAGRU DET

110. GROUND/ACADEMIC TRAINING COURSES OF INSTRUCTION

<u>Course</u>	<u>Activity</u>
Internal Operator Course	NAMTRAGRU DET AMTU 6001
IO Ground/Flight Syllabus	Tactical Squadron
Medical Requirements	See OPNAVINST 3710.7__

111. SQUADRON LEVEL TRAINING

Publications and Related Directives  
 Communications Procedures  
 Maintenance Procedures  
 Safety  
 Weapons Training  
 MAWTS-1 Academic Support Package  
 Map Interpretation  
 Search and Rescue  
 Fueling and Servicing  
 Aircraft Recognition  
 Troubleshooting (Ground/In-flight)

120. PROGRAM OF INSTRUCTION FOR BASIC INTERNAL OPERATOR

1. Combat Capable Phase. This portion of the syllabus is conducted at Ft Huachuca, AZ by NAMTRAGRU DET AMTU 6001. See paragraph 141.

2. Combat Ready Phase

STAGE	EVENTS	HOURS	CRP
	<u>GND/SIM/FLT</u>	<u>GND/SIM/FLT</u>	<u>PERCENT</u>
Familiarization	2/0/6	2.0/0.0/7.0	6.6
Navigation	1/0/4	2.0/0.0/4.0	4.4
Automated Navigation	0/0/2	0.0/0.0/2.0	2.0
Internal Operator Qualified in Model	0/0/2	0.0/0.0/4.0	2.0
<b>Totals for phase</b>	<b>3/0/14</b>	<b>4.0/0.0/17.0</b>	<b>15.0</b>
<b>Combined Totals</b>	<b>17</b>	<b>21.0</b>	<b>15.0</b>
<b>Accumulation for Basic POI</b>	<b>17</b>	<b>21.0</b>	<b>75.0</b>

3. Combat Qualification Phase

STAGE	EVENTS	HOURS	CRP
	<u>GND/SIM/FLT</u>	<u>GND/SIM/FLT</u>	<u>PERCENT</u>
Threat Recognition	2/0/0	2.0/0.0/0.0	1.0
Mission Planning	1/0/2	1.0/0.0/4.0	5.0
Supporting Arms Control	1/1/1	3.5/1.0/2.0	4.0
Portable Control Station	1/0/2	1.0/0.0/2.0	5.0
Split Site Operations	1/0/2	1.0/0.0/2.0	5.0
<b>Totals for phase</b>	<b>6/1/7</b>	<b>8.5/1.0/10.0</b>	<b>20.0</b>
<b>Combined totals</b>	<b>14</b>	<b>19.5</b>	<b>20.0</b>
<b>Accumulation for Basic POI</b>	<b>31</b>	<b>40.5</b>	<b>95.0</b>

4. Full-Combat Qualification Phase

STAGE	EVENTS	HOURS	CRP
	<u>GND/SIM/FLT</u>	<u>GND/SIM/FLT</u>	<u>PERCENT</u>
Advanced Mission Planning	1/0/1	1.0/0.0/2.0	2.5
Dual Operations	1/0/1	1.0/0.0/1.0	2.5
<b>Totals for phase</b>	<b>2/0/2</b>	<b>2.0/0.0/3.0</b>	<b>5.0</b>
<b>Combined totals</b>	<b>4</b>	<b>5.0</b>	<b>5.0</b>
<b>Totals for Basic POI</b>	<b>35</b>	<b>45.5</b>	<b>100.0</b>

121. PROGRAM OF INSTRUCTION FOR CONVERSION INTERNAL OPERATOR

1. Combat Capable Phase. This portion of the syllabus is conducted at Ft Huachuca, AZ by NAMTRAGRU DET AMTU 6001. See paragraph 141.

2. Combat Ready Phase

STAGE	EVENTS	HOURS
	<u>GND/SIM/FLT</u>	<u>GND/SIM/FLT</u>
Familiarization	2/0/6	2.0/0.0/7.0
Navigation	1/0/2	2.0/0.0/2.0
Automated Navigation	0/0/2	0.0/0.0/2.0
Internal Operator Qualified in Model	0/0/2	0.0/0.0/4.0
<b>Totals for phase</b>	<b>3/0/12</b>	<b>4.0/0.0/15.0</b>
<b>Combined totals</b>	<b>15</b>	<b>19.0</b>
<b>Accumulation for Conversion POI</b>	<b>15</b>	<b>19.0</b>

3. Combat Qualification Phase

STAGE	EVENTS	HOURS
	<u>GND/SIM/FLT</u>	<u>GND/SIM/FLT</u>
Threat Recognition	2/0/0	2.0/0.0/0.0
Mission Planning	1/0/1	1.0/0.0/2.0
Supporting Arms Control	1/0/1	3.5/0.0/2.0
Portable Control Station	1/0/2	1.0/0.0/2.0
Split Site Operations	1/0/2	1.0/0.0/2.0
<b>Totals for phase</b>	<b>6/0/6</b>	<b>8.5/0.0/8.0</b>
<b>Combined totals</b>	<b>12</b>	<b>16.5</b>
<b>Accumulation for Conversion POI</b>	<b>27</b>	<b>35.5</b>

4. Full-Combat Qualification Phase

STAGE	EVENTS	HOURS
	<u>GND/SIM/FLT</u>	<u>GND/SIM/FLT</u>
Advanced Mission Planning	1/0/1	1.0/0.0/2.0
Dual Operations	1/0/1	1.0/0.0/1.0
<b>Totals for phase</b>	<b>2/0/2</b>	<b>2.0/0.0/3.0</b>
<b>Combined totals</b>	<b>4</b>	<b>5.0</b>
<b>Totals for Conversion POI</b>	<b>31</b>	<b>40.5</b>

122. PROGRAM OF INSTRUCTION FOR REFRESHER INTERNAL OPERATOR

1. Combat Capable Phase. This portion of the syllabus is conducted at Ft Huachuca, AZ by NAMTRAGRU DET AMTU 6001. See paragraph 141.

2. Combat Ready Phase

STAGE	EVENTS	HOURS
	<u>GND/SIM/FLT</u>	<u>GND/SIM/FLT</u>
Familiarization	2/0/2	2.0/0.0/3.0
Navigation	1/0/2	2.0/0.0/2.0
Automated Navigation	0/0/1	0.0/0.0/1.0
Internal Operator Qualified in Model	0/0/2	0.0/0.0/4.0
<b>Totals for phase</b>	<b>3/0/7</b>	<b>4.0/0.0/10.0</b>
<b>Combined totals</b>	<b>10</b>	<b>14.0</b>
<b>Accumulation for Refresher POI</b>	<b>10</b>	<b>14.0</b>

3. Combat Qualification Phase

STAGE	EVENTS	HOURS
	<u>GND/SIM/FLT</u>	<u>GND/SIM/FLT</u>
Threat Recognition	2/0/0	2.0/0.0/0.0
Mission Planning	1/0/1	1.0/0.0/2.0
Supporting Arms Control	1/0/1	3.5/0.0/2.0
Portable Control Station	1/0/2	1.0/0.0/2.0
Split Site Operations	1/0/2	1.0/0.0/2.0
<b>Totals for phase</b>	<b>6/0/6</b>	<b>8.5/0.0/8.0</b>
<b>Combined totals</b>	<b>12</b>	<b>16.5</b>
<b>Accumulation for Refresher POI</b>	<b>22</b>	<b>30.5</b>

4. Full-Combat Qualification Phase

STAGE	EVENTS	HOURS
	<u>GND/SIM/FLT</u>	<u>GND/SIM/FLT</u>
Advanced Mission Planning	0/0/1	0.0/0.0/2.0
Dual Operations	0/0/1	0.0/0.0/1.0
<b>Totals for phase</b>	<b>0/0/2</b>	<b>0.0/0.0/3.0</b>
<b>Combined totals</b>	<b>2</b>	<b>3.0</b>
<b>Totals for Refresher POI</b>	<b>24</b>	<b>33.5</b>

123. PROGRAM OF INSTRUCTION FOR INSTRUCTOR TRAINING

STAGE	EVENTS	HOURS
	<u>GND/SIM/FLT</u>	<u>GND/SIM/FLT</u>
Instructor Under Training	<u>4/1/4</u>	<u>6.5/1.0/7.0</u>
<b>Total for IUT</b>	<b>9</b>	<b>14.5</b>

124. REQUIREMENTS, QUALIFICATIONS, DESIGNATIONS

STAGE	EVENTS	HOURS
	<u>GND/SIM/FLT</u>	<u>GND/SIM/FLT</u>
RQD	<u>0/0/2</u>	<u>0.0/0.0/4.0</u>
Ship Board Operations	<u>1/0/2</u>	<u>1.0/0.0/2.0</u>
<b>Total for RQD</b>	<b>5</b>	<b>7.0</b>

140. FLIGHT/SIMULATOR PERFORMANCE REQUIREMENTS1. General

a. This manual generalizes mission guidance to allow for local conditions and to allow this manual to remain unclassified. CMC (A) and CG MCCDC encourage squadrons to use the full range of tactics in the tactical manuals and adopt the latest developed and proven tactics.

b. Compliance with written flight description is mandatory for syllabus flight completion. Events are listed as: FLT = Aircraft only, SIM = simulator only, GRD = Ground Event, FLT/SIM = Aircraft preferred/Simulator optional, or SIM/FLT = Simulator preferred/Aircraft optional. In the absence of a flight simulator, completion of a simulator syllabus event is not required to complete that stage. Completion of those events should be accomplished as soon as practicable upon simulator availability. Should the command desire, simulator events can be flown as actual flight events for T&R credit. ACT will be stressed and evaluated throughout each stage.

c. All events shall terminate with a comprehensive debrief with emphasis on the aircrew's performance using all evaluation techniques.

d. Internal Operators shall fly events annotated with an "N" at least 30 minutes after official sunset. Events annotated with "(N)" may be conducted either in the day or night.

2. Syllabus Assignment

a. Basic internal operators will be assigned to fly the entire syllabus. Conversions and Refreshers will fly the flights designated by a "C" or "R" respectively in the flight description.

b. Refresher Syllabus. The refresher syllabus is predicated on the experience of the refresher Internal Operator. An Internal Operator in the refresher syllabus should fly all "R" coded events. **However, a refresher Internal Operator need not fly every event within a stage of training to be requalified in that stage. The Commanding Officer may tailor the refresher syllabus to fit the experience of the refresher Internal Operator per MCO P3500.14F.** When the "R" coded events within a stage of training are complete, the Internal Operator may be credited with the CRP from the entire stage of training. This assumes that the refresher has had previous proficiency in that stage of training. If the refresher Internal Operator has no previous proficiency in a stage or particular event, then the refresher should fly the entire stage or all events not previously flown. The refresher syllabi applies only up to the stage achieved during the prior tour, after that the Internal Operator will complete the entire remaining syllabus.

3. Aircrew Evaluation Flights. All internal operators shall have a JUAVTOPS evaluation form filled out annually upon completion of the annual JUAVTOPS Check (RQD-600). A designated JUAVTOPS instructor or an assistant JUAVTOPS instructor shall evaluate RQD-600.

4. Aircrew Training Forms (ATFs)

a. An ATF is required for any initial event completed by a Basic, Transition, Conversion, or Refresher Internal Operator or as recommended by the Squadron Standardization Board.

**b. If the Commanding Officer has waived a syllabus event, the squadron training officer shall place a waiver letter in section 3 of the APR.**

5. Instructor Requirements. The minimum instructor requirements are listed in each phase of training.

6. Flight Completion. Compliance with the written flight description is mandatory for syllabus flight completion. Times indicated for each flight are only recommendations.

7. Weight and Balance. Weight and balance sheets will be completed per JUAVTOPS guidelines and Standard Operating Procedures.

8. Crew Requirements/Position Designations. Crew requirements are listed for each event. Crew positions are listed for each event at the right margin of the event header.

9. Previous Qualification. Refresher internal operators previously qualified in any syllabus stage should fly only those "R" coded flights. If not previously qualified, they shall fly the full basic syllabus for those stages.

10. Sequence. Training should be accomplished by flying events within a stage in sequence and stages in sequence when practical.

11. Definitions

a. Discuss

(1) The Internal Operator Instructor (IOI) shall discuss a procedure or maneuver during the brief, in flight, or debrief.

(2) The Internal Operator Under Instruction (IOUI) is responsible for knowledge of the applicable procedures prior to the briefing.

b. Demonstrate

(1) The IOI performs the maneuver with accompanying description.

(2) The IOUI observes the maneuver and is responsible for the knowledge of the procedures prior to the flight.

c. Introduce

(1) At his option, the IOI may perform the maneuver with an accompanying description, or he may coach the IOUI through the maneuver without demonstration.

(2) The IOUI shall perform the maneuver with coaching as necessary and is responsible for knowledge of the procedures prior to the flight.

d. Review

(1) The IOI observes and grades the maneuver without coaching the IOUI. An airborne critique of the IOUI's performance is at the option of the instructor.

(2) The IOUI is expected to perform the maneuver without coaching and devoid of procedural error at a level acceptable to warrant progress into the next stage of training.

141. COMBAT CAPABLE PHASE

1. General

a. Combat Capable Instruction consists of military and contractor training conducted at the designated training unit. Syllabus description and requirements are available in the current edition of the training unit's syllabus. Upon completion of Combat Capable Phase, the IO is considered a JUAVTOPS qualified as an Internal Operator.

b. Basic System Familiarization. Basic system/IO familiarization and qualification will be obtained during the Combat Capable Phase of Training at the designated training unit. The following stages make up the basic system familiarization and qualification portion of the Combat Capable Training (based on the established Training Unit Class outline): Introduction to the Pioneer UAV system, GCS, PCS, TCU, RRS, equipment familiarization, system operating modes, payloads, autopilot, UAV system operating procedures, mission planning, map reading, aerial navigation, emergency procedures, UAV launch/recovery systems and JUAVTOPS qualification.

c. Omitted Sorties. Flight training events which are not flown in the Combat Capable Training shall be flown in the succeeding stage of training.

d. Evaluation Sorties. Designated evaluation sorties should be flown with a qualified IO instructor or experienced Mission Commander.

2. Syllabus Assignments. The IO should fly the entire Combat Capable Phase before advancing to the next phase.

3. Re-fly Intervals. Listed in the training unit's syllabus.

4. Combat Capable Syllabus Objectives. Listed below are the titles of the learning objective areas associated with the entry level training syllabus for Pioneer UAV Internal Operators. This course of instruction is conducted by NAMTRAGRU DET AMTU 6001, Fort Huachuca, Arizona. Detailed descriptions of each area available from NAMTRAGRU DET AMTU 6001.

- 1) Basic Aerodynamics
- 2) Basic Navigation
- 3) FAA Regulation/Procedures
- 4) Ground/Flight Safety and Mishap Procedures/Reporting
- 5) Aircrew Coordination
- 6) SOP and Course Rules
- 7) JUAVTOPS Checklist Procedures
- 8) JUAVTOPS and Aircrew Training Records
- 9) Weather and Factors on UAV Operations
- 10) Basic Mission Planning
- 11) Technical/Maintenance Documentation
- 12) Emergency Procedures
- 13) Pioneer UAV
- 14) Ground Control Station
- 15) Tracking Communications Unit
- 16) Portable Control Station
- 17) Remote Receive Station
- 18) System Limitations
- 19) Day Payload
- 20) Night Payload
- 21) Briefing/Debriefing
- 22) Modes of Launch/Recovery
- 23) Flight Modes
- 24) In-Flight Navigation
- 25) Aircrew Training Documentation
- 26) Fire Support
- 27) Radio Communication Procedures
- 28) Advanced Mission Planning
- 29) Performance Flights
- 30) JUAVTOPS Check Ride

#### 142. COMBAT READY PHASE

1. Purpose. To develop Internal Operator combat proficiency and certify the IO as Qualified-in-Model.

#### 2. General

a. The Individual Under Training should be Combat Capable Phase of Training complete prior to commencing Combat Ready Training.

b. Ground Training. Ground (GND) syllabus events have been scheduled to augment the flight syllabus requirements. These events can be executed in conjunction with the flight events. However, the completion of the ground training event prior to its corresponding flight is mandatory. Ground events can not update or replace the corresponding flight event.

#### 3. Familiarization (FAM)

a. Purpose. To develop proficiency and experience in tactical UAV system operation and to emphasize the importance of crew coordination, system



FAM-203      1.0    FLT                    C GCS (N)                    CREW POSITION: IP

Goal.    Introduce local flight procedures.

Requirement.    The operator will be introduced to the local pattern and emergency procedures while occupying the IP position. The operator will be required to complete a landing and launch, and identify entry/exit points.

Performance Standards.    IAW JUAVTOPS.

Prerequisites.    FAM 200, FAM 201.

FAM-204      1.0    FLT                    C GCS (N)                    CREW POSITION: PO

Goal.    Introduce payload operation during a range flight.

Requirement.    The operator will be introduced to range flight operations while occupying the PO position. The operator will operate the payload in rate, position, camera guide and target acquisition control modes. Introduce emergency procedures.

Performance Standards.    IAW JUAVTOPS.

Prerequisites.    FAM-202.

FAM-205      1.0    FLT                    C RQ-2 (N)                    CREW POSITION: IP

Goal.    Conduct local flight area procedures.

Requirement.    The operator will conduct local pattern procedures to include entry/exit procedures while occupying the IP position. Introduce dish lock procedures, range flight operations, flight control in sticks, knobs, combination, and camera guide. Review emergency procedures.

Performance Standards.    IAW JUAVTOPS.

Prerequisite.    FAM-203.

FAM-206      1.0    FLT                    C,R RQ-2 (N)                    CREW POSITION: PO

Goal.    Conduct payload operation during a range flight.

Requirement.    The operator will conduct payload operation during a range flight while occupying the PO position. The operator will operate the payload in rate, position, camera guide and target acquisition control modes. Review and conduct emergency procedures.

Performance Standards.    IAW JUAVTOPS.

Prerequisite.    FAM-204

FAM-207      2.0    FLT                    C,R RQ-2 (N)                    CREW POSITION: IP

Goal. Conduct range flight operations.

Requirement. The operator will conduct range flight procedures while occupying the IP position. Review and conduct emergency procedures.

Performance Standards. IAW JUAVTOPS the operator must successfully complete two dish locks, flight control in sticks, knobs, combination and camera guide.

Prerequisite. FAM-205.

#### 4. Navigation (NAV)

a. Purpose. To develop proficiency and experience in UAV navigational procedures.

b. General. Combat Capable Training must be obtained prior to commencing this stage.

c. Ground Training. (1 Event, 2.0 hours).

d. Flight Training. (4 Flights, 4.0 hours).

NAV-210      2.0    GND                    C,R                    CREW POSITION: IO

Goal. Introduce the operator to UAV navigation.

Requirement. Discuss the principles of map reading, terrain association, UAV navigation instruments, plotter operation, use of radial maps, the navigation programmer mode, and radar or ATC advisements.

Prerequisite. FAM-201.

NAV-211      1.0    FLT                    GCS                    CREW POSITION: PO

Goal. Introduce the payload operator to UAV navigation.

Requirement. Introduce the operator to navigation using the plotter, radial maps, terrain association, payload graphics, and plotter failure procedures.

#### Performance Standards

(1) Using the plotter, locate and identify two points.

(2) Using terrain association, locate and identify two points.

(3) Using radial maps, locate and identify two points.

(4) Using payload graphics, locate and identify two points.

(5) During plotter failure, perform effective crew coordination to navigate.

Prerequisites. FAM-206, NAV-210.

NAV-212      1.0    FLT                    C,R GCS N                    CREW POSITION: PO

Goal. Introduce the payload operator to night UAV navigation.

Requirement. Introduce the operator to navigation at night using the plotter, radial maps, terrain association, payload graphics, and plotter failure procedures.

Performance Standards

- (1) Using the plotter, locate and identify two points.
- (2) Using terrain association, locate and identify two points.
- (3) Using radial maps, locate and identify two points.
- (4) Using payload graphics, locate and identify two points.
- (5) During plotter failure, perform effective crew coordination to navigate.

Prerequisite. FAM-206, NAV-210.

NAV-213      1.0    FLT                    GCS                    CREW POSITION: IP

Goal. Introduce the operator to UAV navigation.

Requirement. Introduce the operator to navigation using the plotter, radial maps, plotter failure procedures and radar or ATC advisement.

Performance Standards. During the knob control mode of flight:

- (1) Using the plotter, navigate to two points.
- (2) Using radial maps, navigate to two points.
- (3) During plotter failure, perform effective crew coordination to navigate.

Prerequisites. FAM-207, NAV-210.

NAV-214      1.0    FLT                    C,R GCS (N)                    CREW POSITION: IP

Goal. Conduct UAV navigation using knob and stick control modes.

Requirement. The operator will conduct navigation during knob and stick control. The operator will navigate using the plotter, radial maps, and plotter failure procedures.

Performance Standards. During the knob and stick control modes of flight:

- (1) Using the plotter, navigate to two points.
- (2) Using radial maps, navigate to two points.
- (3) During plotter failure, perform effective crew coordination to navigate.

Prerequisite. NAV-213.

5. Automated Navigation (NAV)

a. Purpose. To develop proficiency and experience in using the Navigation Programmer control mode.

b. Flight Events. (2 Flights, 2.0 hours).

NAV-220      1.0   FLT                      C GCS (N)                      CREW POSITION: IP

Goal. Review the Navigation Programmer Mode.

Requirement. Review navigation programmer mode. Discuss trouble shooting techniques during flight and emergency procedures.

Performance Standards. The operator will input data for four points and fly in Dead Reckoning, GCS and GPS operational modes.

Prerequisite. NAV-214.

NAV-221      1.0   FLT                      C,R GCS (N)                      CREW POSITION: IP

Goal. Conduct a flight Navigation Programmer Mode.

Requirement. Conduct a flight in navigation programmer mode.

Performance Standards. The operator will successfully load data and execute navigation programmer to fly to four specific points. Explain trouble shooting procedures during simulated flight problems. Explain emergency procedures IAW JUAVTOPS during simulated emergencies.

Prerequisite. NAV-220.

6. Internal Operator Qualification in Model (IOQM)

a. Purpose. To certify the Internal Operator Under Instruction as an Internal Operator Qualified in Model (IOQM).

b. General. At the completion of this IOQM-231 the operator is considered Internal Operator Qualified in Model and may be designated as IOQM by the commanding officer.

c. Prerequisite. Combat Ready Phase complete prior to these flights.

d. Flight Training. (2 Flights, 4.0 hours).

IOQM-230      2.0   FLT                      C,R,E GCS (N)                      CREW POSITION: PO

Goal. Certify the IOUI in the PO position.

Requirement. During a local and range flight, the IOUI will be evaluated while occupying the PO position on all PO procedures covered in the Combat Ready Phase.

Performance Standards. Execute PO procedures in rate, position, camera guide, and target acquisition modes. Execute emergency procedures IAW JUAVTOPS during simulated emergencies. Perform effective crew coordination during normal operations and simulated emergencies. The PO must successfully complete a launch and recovery, three simulated emergencies and locate and identify a minimum of four specific points.

IOQM-231      2.0    FLT                      C,R,E    GCS    (N)                                      CREW POSITION: IP

Goal. Certify the IOUI in the IP position.

Requirement. During a local and range flight, the IOUI will be evaluated while occupying the IP position on all IP procedures covered in the combat ready phase.

Performance Standards. Execute IP procedures in all control modes and all methods of navigation. Execute emergency procedures IAW JUAVTOPS during simulated emergencies. Perform effective crew coordination during normal operations and simulated emergencies. The IP must successfully complete a launch and recovery, five simulated emergencies and navigate to a minimum of four specific points.

#### 143. COMBAT QUALIFICATION PHASE

1. Purpose. To develop proficiency of the Internal Operator in the tactical employment of the UAV system.

#### 2. Threat Recognition (TREC)

a. Purpose. To develop proficiency and experience in threat recognition.

b. Ground Training. (2 Events, 2.0 hours).

TREC-300      1.0    GND                      C,R    CREW POSITION: IO

Goal. Evaluate threat weapons and vehicle recognition.

Requirement. The IO will attend a weapons vehicle recognition class given by the intelligence section. The class will include friendly as well as enemy weapon/vehicle recognition.

Performance Standards. Upon completion of this event, the IO will pass an exam with a minimum score of 80%.

TREC-301      1.0    GND                      C,R    CREW POSITION: IO

Goal. Evaluate threat SAM/AAA recognition.

Requirement. The IO will attend a SAM/AAA recognition class given by the intelligence section. The class will include friendly as well as enemy SAM/AAA.

Performance Standards. Upon completion of this event, the IO will pass an exam with a minimum score of 80%.



4. Supporting Arms Controller (SAC)

a. Purpose. To develop proficiency and experience in UAV supporting arms control.

b. Ground Training. (1 Event, 3.5 hours).

c. Simulator Training. (1 Simulator Event, 1.0 hours). For this portion of training the operator may use the TSFO Facility or CAS Trainer Facility to simulate the control of supporting arms. As much realism as possible is encouraged. This event can not update any flight events.

d. Flight Training. (1 Flight, 2.0 hours)

SAC-320      3.5    GND                    C,R                                    CREW POSITION: IO

Goal. Introduce the operator to supporting arms control.

Requirement. The operator will receive a period of instruction on the call for fire for artillery, mortar and naval surface fires, supporting arms adjustment using the light pen and other methods. The operator will also receive instruction on communications to fire support units, and weapon systems in artillery, mortars and naval surface fires.

Performance Standards. Pass an open/closed book written exam with a minimum score of 80 percent.

SAC-321      1.0    SIM/FLT                    C,R                                    CREW POSITION: IO

Goal. Introduce the call for fire and adjustment of supporting arms.

Requirement. Using the TSFO Trainer, CAS Trainer Facility, or actual flight the operator will conduct simulated missions to build knowledge and experience in fire adjustment.

Performance Standards. The operator must correctly call for and adjust a minimum of three artillery/mortar/naval surface fires missions.

Prerequisite. SAC-320.

SAC-322      2.0    FLT                    C,R    GCS (N)                                    CREW POSITION: PO

Goal. Conduct call for fire and adjustment of supporting arms utilizing the light pen.

Requirement. The operator will successfully provide adjustment of fire support to have effect on a specific target.

Performance Standards. Complete a minimum of three artillery/mortar/naval surface fires missions. The operator will also report BDA upon completion of firing.

Prerequisite. SAC-321.

Ordnance

(1) Eight 155mm HE

(2) Five 155mm WP

(3) Equivalent mortar/NSF ammunition may be substituted for the above.

External Syllabus Support. (1) 155mm Battery, (1) 81mm/60mm mortar section, (1) NSF support ship.

#### 5. Portable Control Station Flight (PCS)

a. Purpose. To develop proficiency and experience in operating from the Portable Control Station and UAV split site operations.

b. General. The operator must complete the Combat Ready Training prior to executing these events.

c. Ground Training. (1 event, 1.0 hour).

d. Flight Training. (2 Flights, 2.0 hours).

PCS-330      1.0    GND                      C,R    PCS                                      CREW POSITION: IO

Goal. Introduce the operator to flight operations from the PCS.

Requirement. Discuss the differences in payload operation, navigation from the GCS to the PCS on a range flight. Review appropriate preset menus and payload control. This training should be based on future split site or dual UAV operations.

Prerequisite. IOQM designated.

PCS-331      1.0    FLT                      C,R    PCS    (N)                                      CREW POSITION: PO

Goal. Conduct payload operation from the PCS.

Requirement. Review/discuss/demonstrate/conduct payload operation from the PCS.

Performance Standards. Locate and identify at a minimum of one check point IAW JUAVTOPS.

Prerequisite. PCS-330.

PCS-332      1.0    FLT                      C,R    PCS    (N)                                      CREW POSITION: IP

Goal. Conduct flight operation from the PCS.

Requirement. Review/discuss/demonstrate/conduct range flight operations from the PCS.

Performance Standards. Navigate to a minimum of one check point IAW JUAVTOPS.

Prerequisite. PCS-330.





OPS-411      1.0    FLT                    C,R RQ-2 (N)                    CREW POSITION: IP

Goal. Conduct dual UAV flight operations.

Requirement. The operator will conduct dual UAV flight operations while occupying the IP position from either the PCS or GCS. Review JUAVTOPS and/or Squadron SOPs, NAV Programmer Control and emergency procedures unique to dual UAV operations.

Performance Standards. IAW JUAVTOPS and local SOPs.

Prerequisite. OPS-410.

150. INSTRUCTOR UNDER TRAINING (IUT)

1. INTERNAL OPERATOR INSTRUCTOR UNDER TRAINING

a. Purpose. To develop proficiency and experience as an Internal Operator Instructor. Upon completion, the operator will be considered qualified to be designated as an UAV Internal Operator Instructor.

b. General. Combat Qualification Training should be obtained prior to commencing instructor training. The Commanding Officer may waiver training requirements.

c. Ground Training. (3 Events, 3.0 hours).

d. Flight Training. (4 Flights, 7.0 hours).

IUT-500      1.0    GND                    C,R,E                    CREW POSITION: IUT

Goal. Introduce the IUT to the principles of instruction.

Requirement. Discuss references for training such as JUAVTOPS, T&R Manual, Local SOPs and Unit SOPs. Introduce T&R requirements and training documentation. The IUT will fully understand all system components and their functions.

IUT-501      1.0    GND                    C,R,E RQ-2                    CREW POSITION: IUT

Goal. Conduct a FAM-201 instruction.

Requirement. The IUT will conduct FAM-201.

IUT-502      2.0    FLT                    C,R,E RQ-2 (N)                    CREW POSITION: IUT

Goal. Conduct instruction during a FAM flight event.

Requirement. The IUT must demonstrate the ability to instruct an internal pilot and payload operator during a FAM flight.

Performance Standards. Identify and evaluate performance and correct deficiencies in a timely manner.

IUT-503      2.0    FLT                    C,R,E RQ-2 (N)                    CREW POSITION: IUT

Goal. Conduct instruction during a NAV flight.

Requirement. The IUT must demonstrate the ability to instruct an Internal Pilot and Payload Operator during a NAV flight.

Performance Standards. Be able to evaluate performance and correct deficiencies. Demonstrate navigation using plotter, without plotter, payload graphics, radial maps and system information.

IUT-504      1.0    GND                    C,R,E                    CREW POSITION: IUT

Goal. Demonstrate MP-310 instruction.

Requirement. The IUT will conduct a MP-310 training class.

IUT-505      2.0    FLT                    C,R,E RQ-2 (N)                    CREW POSITION: IUT

Goal. Demonstrate instruction for a MP-312 flight.

Requirement. The IUT will demonstrate the ability to instruct an Internal Operator during a MP-312 flight. The IUT will supervise all mission planning and mission performance.

Performance Standard. Be able to evaluate performance and correct deficiencies.

IUT-506      1.0    FLT                    C,R,E RQ-2 (N)                    CREW POSITION: IUT

Goal. Certification as an Internal Operator Instructor.

Requirement. The IUT will conduct instruction on any Internal Operator flight event.

Performance Standard. The IUT must organize the aircrew and supervise the mission planning within a reasonable time allowance. The IUT will brief the mission.

Prerequisites. IUT-500 through IUT-505.

## 2. Supporting Arms Control Instructor Under Training

a. Purpose. To develop proficiency and experience as an Supporting Arms Control Instructor. Upon completion, the IUT will be considered qualified to be designated as an UAV Supporting Arms Control Instructor.

b. General. Combat Qualification Training should be obtained prior to commencing instructor training. The Commanding Officer may waiver training requirements.

c. Ground Training. (1 Event, 3.5 hours).

d. Simulator Training. (1 Event, 1.0 hour). The IUT-511 be completed using the TSFO Trainer or CAS Training Facilities for SAC training.

IUT-510      3.5    GND                    C,R,E                                    CREW POSITION: IUT

Goal.    Conduct SAC-320 instruction.

Requirement.    The IUT will conduct a SAC-310 training class.

Performance Standards.    Be able to instruct a payload operator on the presets and light pen utilization as they apply to a fire support mission.

Prerequisite.    IUT-506. Recommend formal instruction in supporting arms control and coordination (i.e. FO school, TACP course, etc.)

IUT-511      1.0    SIM/FLT                    C,R,E                                    CREW POSITION: IUT

Goal.    Demonstrate SAC-321 or SAC-322.

Requirement.    The IUT may conduct a SAC-321 using the TSFO or CAS Trainer or SAC-322 actual flight.

Performance Standards.    The IUT will be proficient in the call for fire, adjustment of fires and fire support weapon systems. Be able to evaluate performance and correct deficiencies.

Prerequisite.    IUT-507.

Ordnance

(1) Eight 155mm HE

(2) Five 155mm WP

(3) Equivalent mortar/NSF ammunition may be substituted for the above.

External Syllabus Support.    (1) 155mm Battery, (1) 81mm/60mm mortar section, (1) NSF support ship.

151.    REQUIREMENTS, QUALIFICATIONS, DESIGNATIONS

1.    JUAVTOPS Evaluation

a.    Purpose.    To ensure standards, procedures and requirements of the UAV JUAVTOPS Manual are complied with.

b.    General

(1) Written examinations must be completed prior to the flight event and current within 30 days.

(2) The JUAVTOPS Manual will be used as the reference for these events.

(3) At the completion of RQD-601, the IOUI can be designated by the commanding officer as a JUAVTOPS Internal Operator Evaluator.

c.    Flight Training.    (2 Flights, 4.0 hours).

RQD-600      2.0    FLT                    E RQ-2 (N)                    CREW POSITION: IO

Goal. Annual JUAVTOPS qualification.

Requirements. The Internal Operator will be required to man the IP and PO positions during this flight. Specific launch/recovery type is not required.

Performance Standards. All procedures listed in the JUAVTOPS Manual will be followed. Successfully passed open book, closed book and oral exams.

Prerequisite. Combat capable trained.

RQD-601      2.0    FLT                    E RQ-2 (N)                    CREW POSITION: JUAVTOPS IO EVAL

Goal. To certify the Internal Operator as a JUAVTOPS Internal Operator Evaluator.

Requirements. The Internal Operator will be required to evaluate a CK-600 flight in accordance with the JUAVTOPS Manual.

Performance Standards. IAW JUAVTOPS.

Prerequisite. Current CK-600 and designated as an Internal Operator Instructor.

## 2. UAV Shipboard Operations (SBO)

- a. Purpose. To introduce the operator to UAV shipboard operations.
- b. General. The operator should complete Combat Ready Phase training prior to executing these events.
- c. Ground Training. (1 Event, 1.0 hour).
- d. Flight Training. (2 Flights, 1.0 hour).

SBO-610      1.0    GND                    C,R                    CREW POSITION: IO

Goal. Introduce the operator to UAV shipboard operations and terminology.

Requirement. The operator will be introduced to shipboard operations. Emphasis will be placed on LPDs equipped for UAV operations as well as LHA operations. Discuss shipboard launch/recovery, safety procedures, wave-off procedures, arrested deck landings, net recovery, controlling agencies and Base Recovery Course (BRC).

FCLP-611      1.0    FLT                    C,R RQ-2GCS (N)                    CREW POSITION: IO

Goal. Conduct Field Carrier Landing Practice.

Requirement. The operator will be introduced to FCLPs using a simulated LHA, LHD or LPD deck. The operator will observe 5 low approaches to a simulated net. Explain all safety procedures during shipboard operations.

Prerequisite. SBO-610.

SBO-612      1.0    FLT                      C,R RQ-2 (N)                      CREW POSITION: IO

Goal. Conduct UAV shipboard operations.

Requirement. The operator will be introduced to shipboard operations while occupying the IO position. This event will be completed while embarked on an LPD equipped for UAV operations. Review shipboard launch/recovery, safety procedures, wave off, net recovery and controlling agencies.

Performance Standards. Launch and recover from a ship.

Prerequisites. SBO-610 and FCLP-611.

160. ORDNANCE REQUIREMENTS. Annual ordnance requirements are developed on a "per crew" basis per OPNAVNOTE 8010.

1. External Ordnance - BASIC/TRANS/CONV

<b>ORDNANCE</b>	<b>100 SERIES</b>	<b>200 SERIES</b>	<b>300 SERIES</b>	<b>400 SERIES</b>	<b>REFRESHER</b>	<b>IUT</b>	<b>ANNUAL*</b>
155mm HE (1)	0	0	8	0	8	8	8
155mm WP (1)	0	0	5	0	5	5	5
Note 1. Mortars or Naval Surface Fire can be substituted for the 155mm ammunition.							

\*Annual Ordnance requirements maintain an aircrew member at proficiency.





T&R MANUAL, VOLUME 6

INTERNAL OPERATOR FLIGHT UPDATE CHAINING

<u>STAGE</u>	<u>FLIGHT</u>	<u>FLIGHTS UPDATED</u>
FAM	200	
	201	200
	202	200
	203	200, 201
	204	200, 201, 202
	205	200, 201, 203
	206	200, 201, 202, 204
	207	200, 201, 203, 205
NAV	210	
	211	200, 201, 202, 204, 206, 210
	212	200, 201, 202, 204, 206, 210
	213	200, 201, 203, 205, 207, 210
	214	200, 201, 203, 205, 207, 210, 213
NAV	220	200, 201, 203, 205, 207, 213, 214
	221	200, 201, 203, 205, 207, 213, 214, 220
IOQM	230	200, 201, 202, 204, 208, 210, 211
	231	200, 201, 203, 205, 207, 213, 214, 220, 221
TREC	300	
	301	
MP	310	
	311	200, 201, 210, 211, 213
	312	200, 201, 210, 211, 213, 311
SAC	320	
	321	320
	322	320, 321
PCS	330	
	331	330
	332	330, 331
SSO	340	
	341	330, 331, 332, 340
	342	200, 201, 203, 205, 207, 210, 213, 310, 311, 312, 340
AMP	400	
	401	200, 201, 210, 310, 311, 312, 400
OPS	410	
	411	200, 201, 210, 310, 311, 312, 400, 401, 410

Figure 1-3.--Flight Update Chaining

CHAPTER 2

UNMANNED AERIAL VEHICLES (UAV) EXTERNAL OPERATOR

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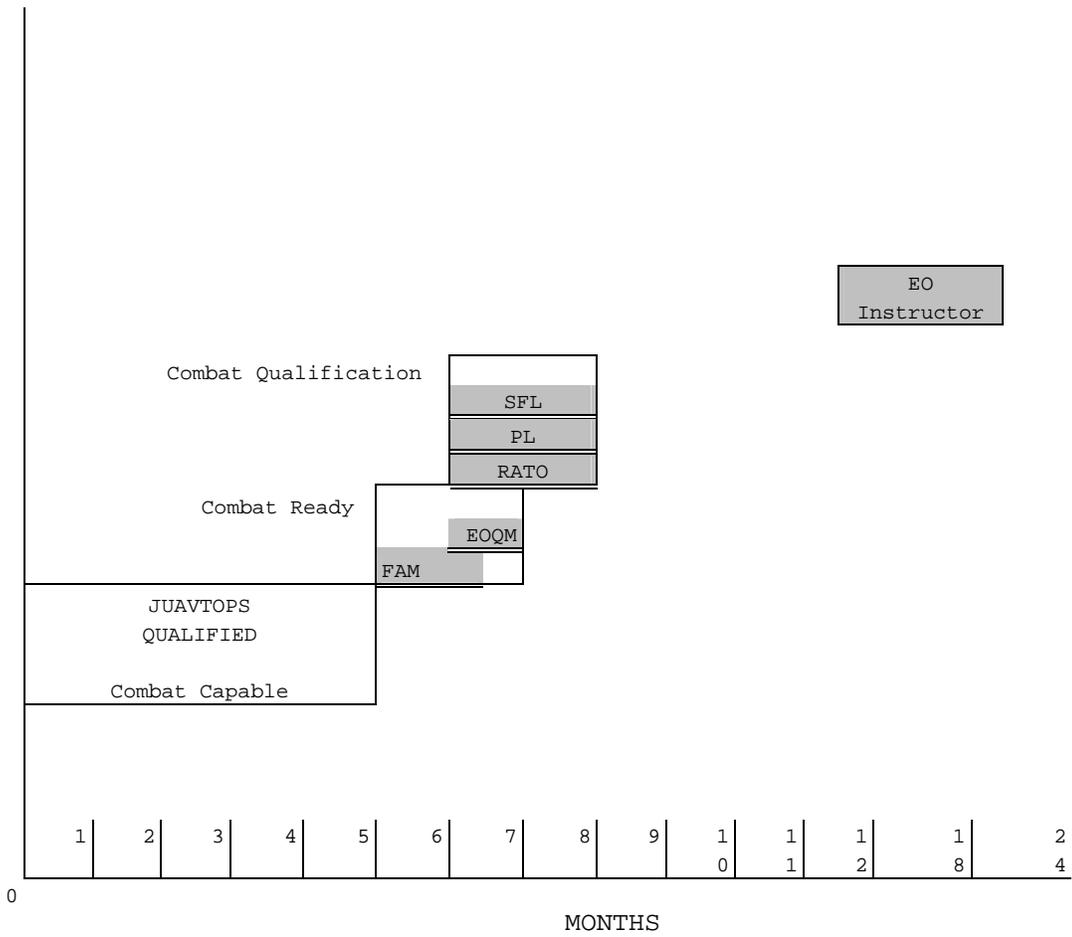


Figure 2-1.--External Operator Notional Training Model

200. PROGRAMS OF THE INSTRUCTION (POI) FOR BASIC, CONVERSION\*, AND REFRESHER\* EXTERNAL OPERATOR

WEEKS	COURSE	ACTIVITY
1-18*	Combat Capable	NAMTRAGRU DET AMTU 6001
19-29	Combat Ready	Tactical Squadron
30-38	Combat Qualification	Tactical Squadron

\* Time to train is for Basic External Operator POI only. Combat Capable Refresher and Conversion POI are being developed for the External Operator.

210. GROUND/ACADEMIC TRAINING COURSES OF INSTRUCTION

COURSE	ACTIVITY
External Operator Course	NAMTRAGRU DET AMTU 6001
IO Ground/Flight Syllabus	Tactical Squadron
Medical	See OPNAVINST 3710.7__

211. SQUADRON LEVEL TRAINING

- Publications and Related Directives
- Communications Procedures
- Maintenance Procedures
- Safety
- Weapons Training
- MAWTS-1 Academic Support Package
- Map Interpretation
- Search and Rescue
- Fueling and Servicing
- Aircraft Recognition
- Troubleshooting (Ground/In-flight)

220. PROGRAM OF INSTRUCTION FOR BASIC, CONVERSION AND REFRESHER EXTERNAL OPERATOR

1. Combat Capable Phase. This portion of the syllabus is conducted at Ft Huachuca, AZ by NAMTRAGRU DET AMTU 6001. See paragraph 241.

2. Combat Ready Phase

STAGE	EVENTS	HOURS	CRP
	GND/SIM/FLT	GND/SIM/FLT	PERCENT
Familiarization	3/2/3	3.0/1.5/2.5	13.0
External Operator Qualified in Model	0/0/1	0.0/0.0/1.0	2.0
<b>Totals for phase</b>	<b>3/2/4</b>	<b>3.0/1.5/3.5</b>	<b>15.0</b>
<b>Combined Totals</b>	<b>9</b>	<b>8.0</b>	<b>15.0</b>
<b>Accumulation for Basic POI</b>	<b>9</b>	<b>8.0</b>	<b>75.0</b>

3. Combat Qualification Phase

STAGE	EVENTS	HOURS	CRP
	GND/SIM/FLT	GND/SIM/FLT	PERCENT
Rocket Assisted Take-Off	1/0/1	0.5/0.0/0.5	7.0
Pneumatic Launch	1/0/1	0.5/0.0/0.5	7.0
Short Field Landing	1/0/1	0.5/0.0/0.5	6.0
<b>Totals for phase</b>	<b>3/0/3</b>	<b>1.5/0.0/1.5</b>	<b>20.0</b>
<b>Combined Totals</b>	<b>6</b>	<b>3.0</b>	<b>20.0</b>
<b>Accumulation for Basic POI</b>	<b>15</b>	<b>11.0</b>	<b>95.0</b>

221. PROGRAM OF INSTRUCTION FOR INSTRUCTOR TRAINING

STAGE	EVENTS	HOURS
	<u>GND/SIM/FLT</u>	<u>GND/SIM/FLT</u>
Instructor Under Training	<u>1/0/4</u>	<u>1.0/0/0/4.0</u>
<b>Total for IUT</b>	<b>5</b>	<b>5.0</b>

222. REQUIREMENTS, QUALIFICATIONS, DESIGNATIONS

STAGE	EVENTS	HOURS
	<u>GND/SIM/FLT</u>	<u>GND/SIM/FLT</u>
RQD	<u>0/0/2</u>	<u>0.0/0.0/1.5</u>
Ship Board Operations	<u>1/0/1</u>	<u>1.0/0.0/1.0</u>
<b>Total for RQD</b>	<b><u>1/0/3</u></b>	<b><u>1.0/0.0/2.5</u></b>
	<b>4</b>	<b>3.5</b>

240. FLIGHT/SIMULATOR PERFORMANCE REQUIREMENTS1. General

a. This manual generalizes mission guidance to allow for local conditions and to allow this manual to remain unclassified. CMC (A) and CG MCCDC encourage squadrons to use the full range of tactics in the tactical manuals and adopt the latest developed and proven tactics.

b. Compliance with written flight description is mandatory for syllabus flight completion. Events are listed as: FLT = Aircraft only, SIM = simulator only, GRD = Ground Event, FLT/SIM = Aircraft preferred/Simulator optional, or SIM/FLT = Simulator preferred/Aircraft optional. In the absence of a flight simulator, completion of a simulator syllabus event is not required to complete that stage. Completion of those events should be accomplished as soon as practicable upon simulator availability. Should the command desire, simulator events can be flown as actual flight events for T&R credit. ACT will be stressed and evaluated throughout each stage.

c. All events shall terminate with a comprehensive debrief with emphasis on the aircrew's performance using all evaluation techniques.

d. External Operators shall fly events annotated with an "N" at least 30 minutes after official sunset. Events annotated with "(N)" may be conducted either in the day or night.

2. Syllabus Assignment

a. Basic external operators will be assigned to fly the entire syllabus. Conversions and Refreshers will fly the flights designated by a "C" or "R" respectively in the flight description.

b. Refresher Syllabus. The refresher syllabus is predicated on the experience of the refresher External Operator. An External Operator in the refresher syllabus should fly all "R" coded events. **However, a refresher External Operator need not fly every event within a stage of training to be requalified in that stage. The Commanding Officer may tailor the refresher syllabus to fit the experience of the refresher External Operator per MCO P3500.14F.** When the "R" coded events within a stage of training are complete, the External Operator may be credited with the CRP from the entire stage of training. This assumes that the refresher has had previous proficiency in that stage of training. If the refresher External Operator has no previous proficiency in a stage or particular event, then the refresher should fly the entire stage or all events not previously flown. The refresher syllabi applies only up to the stage achieved during the prior tour, after that the External Operator will complete the entire remaining syllabus.

3. Aircrew Evaluation Flights. All external operators shall have a JUAVTOPS evaluation form filled out annually upon completion of the annual JUAVTOPS Check (RQD-600). A designated JUAVTOPS instructor or an assistant JUAVTOPS instructor shall evaluate RQD-600.

4. Aircrew Training Forms (ATFs)

a. An ATF is required for any initial flight of any event completed by a Basic, Conversion, or Refresher External Operator or as recommended by the squadron Standardization Board.

b. **If the Commanding Officer has waived a syllabus event, the squadron training officer shall place a waiver letter in section 3 of the APR.**

5. Instructor Requirements. The minimum instructor requirements are listed for each T&R event.

6. Flight Completion. Compliance with the written flight description is mandatory for syllabus flight completion. Times indicated for each flight are only recommendations.

7. Weight and Balance. Weight and balance sheets will be completed per JUAVTOPS guidelines and Standard Operating Procedures.

8. Crew Requirements/Position Designations. Crew requirements are listed for each event. Crew position is designated at right margin of event header.

9. Previous Qualification. Refresher external operators previously qualified in any syllabus stage should fly only those "R" coded flights. If not previously qualified, they shall fly the full basic syllabus for those stages.

10. Sequence. Training should be accomplished by conducting events within a stage in sequence and stages in sequence when practical.

11. Definitions

a. Discuss

(1) The External Operator Instructor shall discuss a procedure or maneuver during the brief, in flight, or debrief.

(2) The External Operator Under Instruction is responsible for knowledge of the applicable procedures prior to the briefing.

b. Demonstrate

(1) The EOI performs the maneuver with accompanying description.

(2) The EOUI observes the maneuver and is responsible for the knowledge of the procedures prior to the flight.

c. Introduce

(1) At his option, the EOI may perform the maneuver with an accompanying description, or he may coach the EOUI through the maneuver without demonstration.

(2) The EOUI shall perform the maneuver with coaching as necessary and is responsible for knowledge of the procedures prior to the flight.

d. Review

(1) The EOI observes and grades the maneuver without coaching the EOUI. An airborne critique of the EOUI's performance is at the option of the instructor.

(2) The EOUI is expected to perform the maneuver without coaching and devoid of procedural error at a level acceptable to warrant progress into the next stage of training.

241. COMBAT CAPABLE PHASE1. General

a. Combat Capable instruction consists of military and contractor training conducted at the designated training unit. Syllabus description and requirements are available in the current edition of the Training unit's syllabus.

b. Basic System Familiarizations. Basic system/EO familiarization and qualification will be obtained during the Combat Capable Training at the designated training unit. The following stages make up the basic system familiarization and qualification portion of the Combat Capable Training (based on the established Training Unit Class outline): Introduction to the Pioneer UAV system, GCS, PCS and TCU, Equipment familiarization, system operating modes, payloads, autopilot, UAV system operating procedures, mission planning, map reading, aerial navigation, emergency procedures and UAV launch/recovery systems.

c. Omitted Sorties. Training events which are not completed in the Combat Capable Phase shall be conducted in the succeeding phase of training.

d. Evaluation Sorties. Designated evaluation sorties should be conducted with a qualified EO instructor or experienced Mission Commander.

2. Syllabus Assignments. The EO should complete the entire Combat Capable Phase before advancing to the next phase.

3. Re-fly Intervals. Listed in the training unit's syllabus.

4. Combat Capable Phase Purpose. Upon completion of Combat Capable Phase, the EO is considered a JUAVTOPS qualified to be designated as a squadron External Operator by the commanding officer.

5. Combat Capable Syllabus Objectives. Listed below are the titles of the learning objectives areas associated with the entry level training syllabus for Pioneer UAV External Operators. This course of instruction is conducted by NAMTRAGRU DET AMTU 6001, Fort Huachuca, Arizona. Detailed descriptions of each area available from NAMTRAGRU.

- 1) Basic Aerodynamics.
- 2) FAA Regulation/Procedures.
- 3) Ground/Flight Safety and Mishap Procedures/Reporting.
- 4) Aircrew Coordination.
- 5) SOP and Course Rules.
- 6) JUAVTOPS Checklist Procedures.
- 7) JUAVTOPS and Aircrew Training Records.
- 8) Weather and Factors affecting UAV Operations.
- 9) Technical/Maintenance Documentation.
- 10) Emergency Procedures.
- 11) Pioneer UAV.
- 12) Ground Control Station.
- 13) Tracking Communications Unit.
- 14) Portable Control Station.
- 15) System Limitations.
- 16) Day Payload.
- 17) Night Payload.
- 18) Briefing/Debriefing.
- 19) Modes of Launch/Recovery.
- 20) Flight Modes.
- 21) Aircrew Training Documentation.
- 22) MIG (R/C) performance flights.
- 23) Pioneer half-scale performance flights.
- 24) Performance Flights (local and range).
- 25) JUAVTOPS Check Ride.

## 242. COMBAT READY PHASE

### 1. Familiarization (FAM)

a. Purpose. To develop proficiency and experience in tactical UAV system operation and to emphasize the importance of crew coordination, common terminology, and familiarization with local SOPs.

#### b. General

(1) To be trained in this portion of the academic and flight syllabus all External Operators will have at a minimum an interim secret clearance.

(2) All flights on student box with instructor.

c. Ground Training. (3 Events, 3.0 hours). Where required, ground (GND) syllabus events have been scheduled to augment the flight syllabus requirements. These events can be executed in conjunction with the flight events. However, the completion of the ground training event prior to its corresponding flight is mandatory. Ground events can not update or replace the corresponding flight event.



FAM-204      0.5    FLT                    C,R RQ-2                    CREW POSITION: EO

Goal. Introduce the EO to the area of operation, area regulations, and local procedures.

Requirement. The EO under instruction will be introduced to the local area of operation. The EO under instruction will review local rules and regulations. The EO under instruction will be required to conduct UAV taxi, launch, conduct control checks, dish lock and recovery.

Performance Standards. IAW JUAVTOPS, the EO must complete a minimum of three touch and go's, one successful dish lock and one recovery.

Prerequisite. FAM-203.

FAM-205      1.0    FLT                    C,R RQ-2                    CREW POSITION: EO

Goal. Conduct correct emergency procedures.

Requirement. While operating the Pioneer UAV, the EO under instruction will conduct simulated emergency procedures. The EOI will review and demonstrate auto-pilot disconnect procedures prior to the student conducting them.

Performance Standard. The EO will, IAW JUAVTOPS, during simulated emergencies, conduct correct emergency procedures for engine cut, high idle, stuck throttle and flight control malfunctions.

Prerequisites. FAM-203, FAM-204.

FAM-206      1.0    GND                    C,R N                    CREW POSITION: EO

Goal. Introduce the External Operator to UAV night operations.

Requirement. The EO will be introduced to requirements associated with the lighting of the runway and the UAV and launch/recovery site. Review and discuss specific emergency procedures that may change during night operations, night operating and safety procedures and area rules and regulations for night UAV operations.

Performance Standards. Pass an open/closed book written exam with a minimum score of 80%.

Prerequisites. FAM-204.

FAM-207      1.0    FLT                    C,R RQ-2 N                    CREW POSITION: EO

Goal. Introduce UAV night operations.

Requirement. The EO under instruction will conduct UAV night operations, including pre-flight procedures, launch procedures, control checks, flight pattern management, dish lock and recovery using night operating procedures. The EO under instruction must conduct emergency procedures during simulated emergencies.

Performance Standards. IAW JUAVTOPS, the EO must complete the launch, five touch and go's and recovery. The EO will, IAW JUAVTOPS, during simulated emergencies, conduct correct emergency procedures for engine cut, high idle, stuck throttle and flight control malfunctions.

Prerequisite. FAM-206.

### 3. External Operator Qualification in Model (EOQM)

a. Purpose. To certify the External Operator Under Instruction as an External Operator Qualified in Model (EOQM).

b. General. At the completion of this EOQM-210 the operator is considered External Operator Qualified in Model and may be designated as EOQM by the commanding officer.

c. Prerequisite. The Combat Ready Phase of training must be completed prior to this flight.

d. Flight Training. (1 Flight, 1.0 hours).

EOQM-210      1.0    FLT                      C,R,E RQ-2 (N)                      CREW POSITION: EO

Goal. Combat Ready check for the EO position.

Requirement. The EO under instruction will conduct pre-flight, launch, flight pattern management, control checks, dish lock and recovery procedures. The EO under instruction shall conduct simulated emergency procedures.

Performance Standards. The EO, IAW JUAVTOPS, will conduct the pre-flight, launch, control checks, flight pattern management, a minimum of 5 touch and go's and a recovery. The EO will, IAW JUAVTOPS, during simulated emergencies, conduct correct emergency procedures for engine cut, high idle, stuck throttle and flight control malfunctions.

Prerequisite. FAM-205, FAM-207.

## 243. COMBAT QUALIFICATION PHASE

### 1. Rocket Assisted Take Off Operations (RATO)

a. Purpose. To introduce, develop proficiency and experience in the UAV RATO Launch operations.

b. General. The EO must have completed FAM 200 through 205 prior to conducting these events.

c. Ground Training. (1 Event, 0.5 hour). RATO-300 must be completed prior to the execution of RATO-301.

d. Flight Training. (1 Flight, 0.5 hour).

RATO-300      0.5    GND                      C,R RQ-2 (N)                      CREW POSITION: EO

Goal. Introduce the EO to RATO launch.



PL-311      0.5    FLT                    C,R RQ-2 (N)                    CREW POSITION: EO

Goal. Conduct a Pneumatic Launch while occupying the EO position.

Requirement. Prior to conducting the Pneumatic Launch, review Pneumatic Launch safety procedures, pre-flight procedures, launch sequence and emergency procedures. The EO under instruction will conduct all Pneumatic Launch pre-flight, launch events, and execute emergency procedures for simulated Pneumatic Launcher emergencies.

Performance Standards. IAW JUAVTOPS, the EO will successfully conduct, on the student box, all Pneumatic Launcher events.

Perquisites. PL-310.

### 3. Short Field Landing Operations (SFL)

a. Purpose. To introduce the EO to advanced UAV operations, to include short field landings.

b. General. The EO must have completed the FAM-200 through FAM-205 Combat Ready Training prior to conducting these event.

c. Ground Training. (1 Event, 0.5 hour). This event must be completed prior to execution of the related flight events.

d. Flight Training. (1 Flight, 0.5 hour).

SFL-320      0.5    GND                    C,R RQ-2 (N)                    CREW POSITION: EO

Goal. Introduce the EO to Short Field Landings.

Requirement. The EO will be introduced to Short Field Landings. The discussion should place primary emphasis on amphibious deck operations and confined locations where preferred runway dimensions are not available.

Performance Standards. Pass an open/closed book written exam with a minimum score of 80%.

Prerequisites. FAM-200 through FAM-205. If a night event, FAM-207.

SFL-321      0.5    FLT                    C,R RQ-2 (N)                    CREW POSITION: EO

Goal. Conduct a Short Field Landing while occupying the EO position.

Requirement. The EO under instruction will conduct Short Field Landings. Primary emphasis should be placed on amphibious deck operations and confined locations where preferred runway dimensions are not available.

Performance Standards. IAW JUAVTOPS, the EO will conduct one short field landing.

Prerequisites. FAM-200 through FAM-205. a night event, FAM-207.

250. EXTERNAL OPERATOR INSTRUCTOR UNDER TRAINING (IUT)

1. Purpose. To train the External Operator in procedures required to instruct UAV EOs in Combat Ready and Combat Qualification phases of the syllabus.
2. General. External Operator must have completed the Combat Qualification Phase. Upon completion of the IUT syllabus the EO may be designated an EO Instructor.
3. Ground Training. (1 Event, 1.0 hour).
4. Flight Training. (4 Flights, 4.0 hours).

IUT-500      1.0    GND                      C,R,E                                      CREW POSITION: IUT

Goal. Discuss instruction techniques and instructor responsibilities. Conduct classroom instruction.

Requirement. The IUT will receive a period of instruction on instruction techniques and instructor duties. This instruction will cover all administrative duties, JUAVTOPS requirements, aircrew training, record keeping, and evaluation documentation.

Performance Standards. Completion of an open/closed book examination, oral examination with a minimum score of 80%. Satisfactory delivery of a prepared lesson plan.

Prerequisites. Completion of Combat Qualification Phase.

IUT-501      1.0    FLT                      C,R,E RQ-2                                      CREW POSITION: IUT

Goal. Conduct instruction during FAM-204 and FAM-205.

Requirement. The IUT will conduct instruction during FAM-204 and FAM-205 flight events. The IUT will complete an ATF on the student.

Performance Standards. IUT successfully identifies and corrects deficiencies that are noted during training. IUT correctly documents student training on the Aircrew Training Forms.

Prerequisites. IUT-500.

IUT-502      1.0    FLT                      C,R,E RQ-2 N                                      CREW POSITION: IUT

Goal. Conduct instruction during FAM-207.

Requirement. The IUT will conduct instruction during FAM-207. The IUT will complete an ATF on the student.

Performance Standards. IUT successfully identifies and corrects deficiencies that are noted during training. IUT correctly documents student training on the Aircrew Training Forms.

Prerequisites. IUT-501.

IUT-503      1.0    FLT                      C,R,E RQ-2 (N)                                      CREW POSITION: IUT

Goal. Conduct instruction during RATO-301 or PL-311.

Requirement. The IUT will demonstrate the ability to conduct instruction during flight training for a RATO-301 or PL-311. The IUT will complete an ATF on the student.

Performance Standards. IUT successfully identifies and corrects deficiencies that are noted during training. IUT correctly documents student training on the Aircrew Training Forms.

Prerequisites. IUT-502.

IUT-504      1.0    FLT                    C,R,E RQ-2 (N)                    CREW POSITION: IUT

Goal. Conduct instruction during SFL-321.

Requirement. The IUT will demonstrate the ability to conduct instruction during flight training for a SFL-321. The IUT will complete an ATF on the student.

Performance Standards. IUT successfully identifies and corrects deficiencies that are noted during training. IUT correctly documents student training on the Aircrew Training Forms.

Prerequisites. IUT-502.

## 251. REQUIREMENTS, QUALIFICATIONS, DESIGNATIONS (RQD)

### 1. JUAVTOPS EVALUATION

a. Purpose. To ensure standards, procedures and requirements of the JUAVTOPS Manual are complied with.

b. General

(1) Written examinations must be completed prior to flight event and current within 30 days.

(2) The JUAVTOPS will be used as the reference for these events.

c. Ground Training. Per the JUAVTOPS Manual.

d. Flight Training. (2 Flights, 1.5 hours). These flights are simulator optional.

RQD-600      1.0    FLT/SIM                    C,R,E RQ-2 (N) (A/S)                    CREW POSITION: EO

Goal. Annual JUAVTOPS qualification.

Requirement. The EO will be required to conduct pre-flight, launch, control checks, touch and go's, dish lock and recovery procedures in accordance with the JUAVTOPS. Additionally, the EO will be required to conduct simulated emergency procedures.

Performance Standard. IAW JUAVTOPS, the EO will be required to conduct pre-flight, launch, control checks, five touch and go's, dish lock and recovery procedures. Additionally, the EO will be required to conduct simulated emergency procedures.

Prerequisite. Completion of EOQM-210.

RQD-601      0.5    FLT/SIM      C,R,E ALL (N)(A/S)      CREW POSITION: EO

Goal. Designation as a JUAVTOPS Evaluator.

Requirement. The EO will be required to evaluate a RQD-600 flight.

Performance Standards. IUT successfully identifies and corrects deficiencies that are noted during training. IUT correctly documents student training on the Aircrew Training Forms. Upon successful completion of this event the EO may be designated as an JUAVTOPS Evaluator.

Prerequisite. External Operator Instructor.

## 2. Shipboard Operations (SBO)

a. Purpose. To develop experience in operating UAVs aboard amphibious ships.

b. General. The EO must have completed Combat Qualification Training prior to commencing this stage of training.

c. Ground Training. (1 Event, 1.0 hour).

d. Flight Training. (1 Flight, 1.0 hour).

SB0-610      1.0    GND      C,R      CREW POSITION: EO

Goal. Introduce shipboard operations.

Requirement. Discuss all aspects of UAV ship board operations, procedures and safety. Ships should include LPD, LHD and LHA.

Performance Standards. Completion of an oral examination with a score of 80%.

Prerequisites. Completion of Combat Qualification Phase.

SBO-611      1.0    FLT      C,R RQ-2 (N)      CREW POSITION: EO

Goal. Introduce shipboard operations.

Requirements. Review JUAVTOPS shipboard procedures. Introduce the EO to operations from aboard ship. This event will be conducted using a simulated ship.

Performance Standard. The EO will conduct five low approaches to a simulated net.

Prerequisite. SBO 610.

260. ORDNANCE REQUIREMENTS. Annual ordnance requirements are developed on a "per crew" basis per OPNAVNOTE 8010.

1. Expendable Ordnance - BASIC/TRANS/CONV

ORDNANCE	100 SERIES	200 SERIES	300 SERIES	400 SERIES	REFRESHER	IUT	ANNUAL*
MK125 MOD1 ROCKET MOTOR	1	0	1	0	1	0	1

\*Annual Ordnance requirements maintain an aircrew member at proficiency.

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AIRCRAFT: UAV			MOS: 7316			POSITION: EXTERNAL OPERATOR				
STAGE	EVENT CODE		HRS	REFLY INTERVAL	CRP	C	R	E	REMARKS	CREW POSITION
<b>COMBAT READY PHASE</b>										
FAM	200	GND	1.0	12	1.0	X	X	X		EO
	201	GND	1.0	6	1.0	X	X		RQ-2	EO
	202	SIM	0.5	6	2.0	X	X		R/C	EO
	203	SIM	1.0	6	2.0	X	X		R/C	EO
	204	FLT	0.5	6	2.0	X	X		RQ-2	EO
	205	FLT	1.0	6	1.0	X	X		RQ-2	EO
	206	GND	1.0	6	2.0	X	X		N	EO
	207	FLT	1.0	6	2.0	X	X		RQ-2 N	EO
EOQM	210	FLT	1.0	*	2.0	X	X	X	RQ-2 (N)	EO
<b>COMBAT QUALIFICATION PHASE</b>										
RATO	300	GND	0.5	12	3.0	X	X		RQ-2 (N)	EO
	301	FLT	0.5	12	4.0	X	X		RQ-2 (N)	EO
PL	310	GND	0.5	12	3.0	X	X		(N)	EO
	311	FLT	0.5	12	4.0	X	X		RQ-2 (N)	EO
SFL	320	GND	0.5	12	2.0	X	X		RQ-2 (N)	EO
	321	FLT	0.5	12	4.0	X	X		RQ-2 (N)	EO
<b>INSTRUCTOR UNDER TRAINING</b>										
IUT	500	GND	1.0	*		X	X	X		IUT
	501	FLT	1.0	*		X	X	X	RQ-2	IUT
	502	FLT	1.0	*		X	X	X	RQ-2 N	IUT
	503	FLT	1.0	*		X	X	X	RQ-2 (N)	IUT
	504	FLT	1.0	*		X	X	X	RQ-2 (N)	IUT
<b>REQUIREMENTS, DESIGNATIONS, QUALIFICATIONS</b>										
RQD	600	FLT/SIM	1.0	12		X	X	X	RQ-2 (N)	EO
	601	FLT/SIM	0.5	12		X	X	X	RQ-2 (N)	EO
SBO	610	GND	1.0	*		X	X			EO
	611	FLT	1.0	*		X	X		RQ-2 (N)	EO

Figure 2-2.--MOS 7316 Refly Interval, Combat Readiness Percentage

EXTERNAL OPERATOR FLIGHT UPDATE CHAINING

<u>STAGE</u>	<u>FLIGHT</u>	<u>FLIGHTS UPDATED</u>
FAM	200	
	201	
	202	201
	203	201, 202
	204	201, 202, 203
	205	201, 202, 203, 204
	206	
	207	201, 202, 203, 204, 205, 206
EOQM	210	201, 202, 203, 204, 205
RATO	300	
	301	300
PL	310	
	311	310
SFL	320	
	321	320

Figure 2-3.--Flight Update Chaining

T&R MANUAL, VOLUME 6

CHAPTER 3

UNMANNED AERIAL VEHICLES (UAV) MISSION COMMANDER (75XX/72XX)

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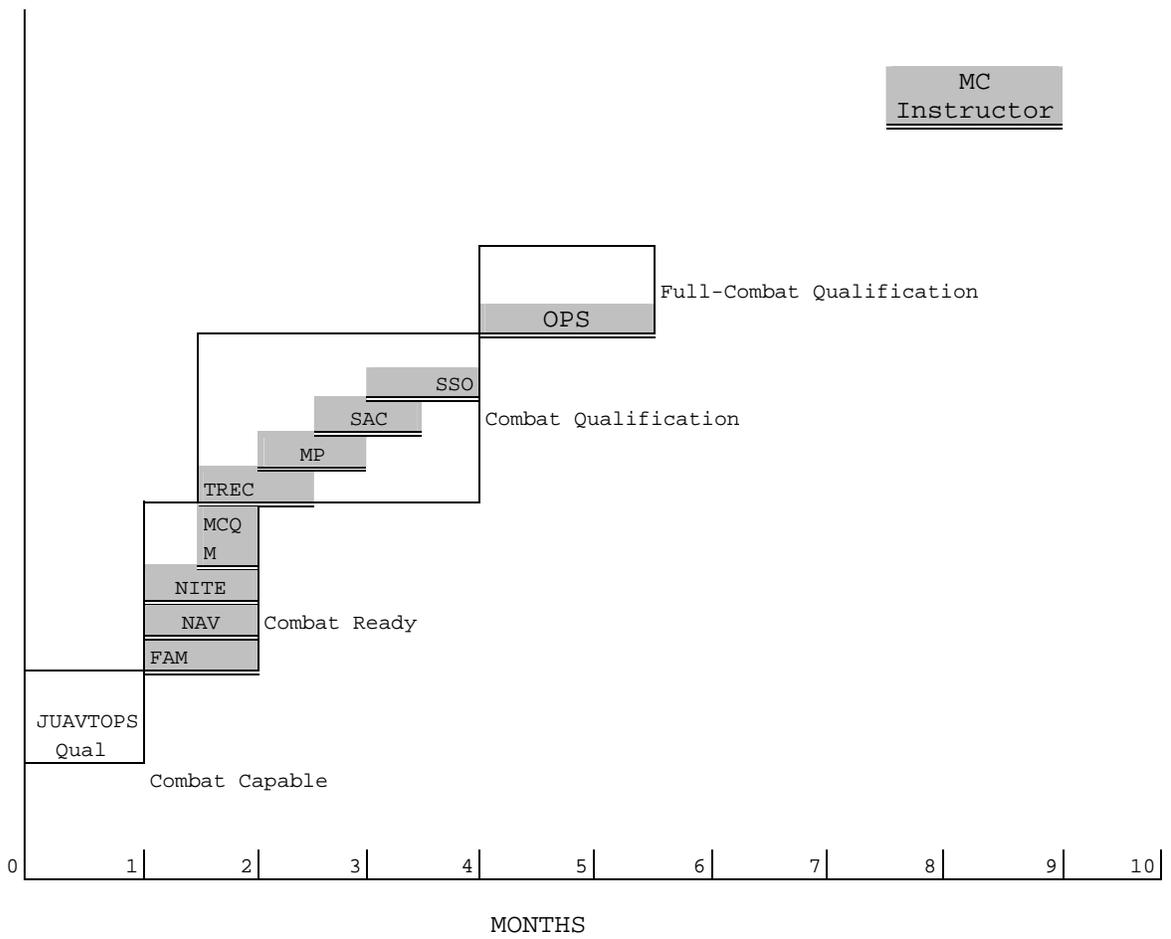


Figure 3-1.--Mission Commander Notional Training Model

300. PROGRAM OF THE INSTRUCTION (POI) FOR BASIC AND CONVERSION MISSION COMMANDER

<u>WEEKS</u>	<u>COURSE</u>	<u>ACTIVITY</u>
1-3	Combat Capable	NAMTRAGRU DET AMTU 6001
4-7	Combat Ready	Tactical Squadron
8-11	Combat Qualification	Tactical Squadron
12-15	Full-Combat Qualification	Tactical Squadron

301. POI FOR REFRESHER MISSION COMMANDER

<u>WEEKS</u>	<u>COURSE</u>	<u>ACTIVITY</u>
*	Combat Capable	NAMTRAGRU DET AMTU 6001
1-4	Combat Ready	Tactical Squadron
5-8	Combat Qualification	Tactical Squadron
9-12	Full-Combat Qualification	Tactical Squadron

\* Combat Capable Refresher POI is being developed by NAMTRAGRUDET AMTU 6001

310. GROUND/ACADEMIC TRAINING COURSES OF INSTRUCTION

<u>COURSE</u>	<u>ACTIVITY</u>
Mission Commander Course	NAMTRAGRU DET AMTU 6001
MC Ground/Flight Syllabus	Tactical Squadron
Medical	See OPNAVINST 3710.7__

311. SQUADRON LEVEL TRAINING

Publications and Related Directives  
 Communications Procedures  
 Maintenance Procedures  
 Safety  
 Weapons Training  
 MAWTS-1 Academic Support Package  
 Map Interpretation  
 Search and Rescue  
 Fueling and Servicing  
 Aircraft Recognition  
 Troubleshooting (Ground/In-flight)

320. PROGRAM OF INSTRUCTION FOR BASIC AND CONVERSION MISSION COMMANDER

1. Combat Capable Phase. This portion of the syllabus is conducted at Ft Huachuca, AZ by NAMTRAGRU DET AMTU 6001. See paragraph 341.

2. Combat Ready Phase

STAGE	EVENTS	HOURS	CRP
	<u>GND/SIM/FLT</u>	<u>GND/SIM/FLT</u>	<u>PERCENT</u>
Familiarization	3/0/3	4.0/0.0/4.0	7.0
Navigation	0/0/2	0.0/0.0/3.0	3.0
Night Operations	1/0/1	1.0/0.0/1.0	3.0
Mission Commander Qualified in Model	0/0/1	0.0/0.0/2.0	2.0
<b>Totals for phase</b>	<b>4/0/7</b>	<b>5.0/0.0/10.0</b>	<b>15.0</b>
<b>Combined Totals</b>	<b>11</b>	<b>15.0</b>	<b>15.0</b>
<b>Accumulation for Basic POI</b>	<b>11</b>	<b>15.0</b>	<b>75.0</b>

3. Combat Qualification Phase

STAGE	EVENTS	HOURS	CRP
	<u>GND/SIM/FLT</u>	<u>GND/SIM/FLT</u>	<u>PERCENT</u>
Threat Recognition	2/0/0	2.0/0.0/0.0	4.0
Mission Planning	1/0/2	3.0/0.0/4.0	6.0
Supporting Arms Control	1/1/1	3.5/1.0/2.0	6.0
Split Site Operations	1/0/1	1.0/0.0/1.0	4.0
<b>Totals for phase</b>	<b>5/1/4</b>	<b>9.0/1.0/7.0</b>	<b>20.0</b>
<b>Combined totals</b>	<b>10</b>	<b>17.0</b>	<b>20.0</b>
<b>Accumulation for Basic POI</b>	<b>21</b>	<b>32.0</b>	<b>95.0</b>

4. Full-Combat Qualification Phase

STAGE	EVENTS	HOURS	CRP
	<u>GND/SIM/FLT</u>	<u>GND/SIM/FLT</u>	<u>PERCENT</u>
Dual Operations	1/0/1	1.0/0.0/1.0	5.0
<b>Totals for phase</b>	<b>1/0/1</b>	<b>1.0/0.0/1.0</b>	<b>5.0</b>
<b>Combined totals</b>	<b>2</b>	<b>2.0</b>	<b>5.0</b>
<b>Totals for Basic POI</b>	<b>23</b>	<b>34.0</b>	<b>100.0</b>

321. PROGRAM OF INSTRUCTION FOR REFRESHER MISSION COMMANDER

1. Combat Capable Phase. This portion of the syllabus is conducted at Ft Huachuca, AZ by NAMTRAGRU DET AMTU 6001. See paragraph 341.

2. Combat Ready Phase

STAGE	EVENTS	HOURS
	<u>GND/SIM/FLT</u>	<u>GND/SIM/FLT</u>
Familiarization	3/0/2	4.0/0.0/3.0
Navigation	0/0/1	0.0/0.0/1.5
Night Operations	0/0/1	0.0/0.0/1.0
Mission Commander Qualified in Model	0/0/1	0.0/0.0/2.0
<b>Totals for phase</b>	<b>3/0/5</b>	<b>4.0/0.0/7.0</b>
<b>Combined Totals</b>	<b>8</b>	<b>11.0</b>
<b>Accumulation for Basic POI</b>	<b>8</b>	<b>11.0</b>

3. Combat Qualification Phase

STAGE	EVENTS	HOURS
	<u>GND/SIM/FLT</u>	<u>GND/SIM/FLT</u>
Mission Planning	1/0/1	3.0/0.0/2.0
Supporting Arms Control	1/1/1	3.5/1.0/2.0
Split Site Operations	1/0/1	1.0/0.0/1.0
<b>Totals for phase</b>	<b>3/1/3</b>	<b>7.5/1.0/5.0</b>
<b>Combined totals</b>	<b>7</b>	<b>13.5</b>
<b>Accumulation for Basic POI</b>	<b>15</b>	<b>24.5</b>

4. Full-Combat Qualification Phase

STAGE	EVENTS	HOURS
	<u>GND/SIM/FLT</u>	<u>GND/SIM/FLT</u>
Dual Operations	1/0/1	1.0/0.0/1.0
<b>Totals for phase</b>	<b>1/0/1</b>	<b>1.0/0.0/1.0</b>
<b>Combined totals</b>	<b>2</b>	<b>2.0</b>
<b>Totals for Basic POI</b>	<b>17</b>	<b>26.5</b>

322. PROGRAM OF INSTRUCTION FOR INSTRUCTOR TRAINING

STAGE	EVENTS	HOURS
	<u>GND/SIM/FLT</u>	<u>GND/SIM/FLT</u>
IUT	4/1/4	7.5/1.0/9.5
<b>Total for IUT</b>	<b>9</b>	<b>18.0</b>

323. REQUIREMENTS, QUALIFICATIONS, DESIGNATIONS

STAGE	EVENTS	HOURS
	<u>GND/SIM/FLT</u>	<u>GND/SIM/FLT</u>
RQD	0/0/2	0.0/0.0/4.0
<b>Total for RQD</b>	<b>2</b>	<b>4.0</b>

340. FLIGHT/SIMULATOR PERFORMANCE REQUIREMENTS1. General

a. This manual generalizes mission guidance to allow for local conditions and to allow this manual to remain unclassified. CMC (A) and CG MCCDC encourage squadrons to use the full range of tactics in the tactical manuals and adopt the latest developed and proven tactics.

b. Compliance with written flight description is mandatory for syllabus flight completion. Events are listed as: FLT = Aircraft only, SIM = simulator only, GRD = Ground Event, FLT/SIM = Aircraft preferred/Simulator optional, or SIM/FLT = Simulator preferred/Aircraft optional. In the absence of a flight simulator, completion of a simulator syllabus event is not required to complete that stage. Completion of those events should be accomplished as soon as practicable upon simulator availability. Should the command desire, simulator events can be flown as actual flight events for T&R credit. ACT will be stressed and evaluated throughout each stage.

c. All events shall terminate with a comprehensive debrief with emphasis on the aircrew's performance using all evaluation techniques.

d. Mission Commanders shall fly events annotated with an "N" at least 30 minutes after official sunset. Events annotated with "(N)" have the option of flying in the day or night.

2. Syllabus Assignment

a. Basic mission commanders will be assigned to complete the entire syllabus. Conversions and Refreshers will complete the events designated by a "C" or "R" respectively in the event description.

b. Refresher Syllabus. The refresher syllabus is predicated on the experience of the refresher Mission Commander. An Mission Commander in the refresher syllabus should fly all "R" coded events. **However, a refresher Mission Commander need not fly every event within a stage of training to be requalified in that stage. The Commanding Officer may tailor the refresher syllabus to fit the experience of the refresher Mission Commander per MCO P3500.14F.** When the "R" coded events within a stage of training are complete, the Mission Commander may be credited with the CRP from the entire stage of training. This assumes that the refresher has had previous proficiency in that stage of training. If the refresher Mission Commander has no previous proficiency in a stage or particular event, then the refresher should fly the entire stage or all events not previously flown. The refresher syllabi applies only up to the stage achieved during the prior tour, after that the Mission Commander will complete the entire remaining syllabus.

3. Aircrew Evaluation Flights. All mission commanders shall have a JUAVTOPS evaluation form filled out annually upon completion of the following:

a. JUAVTOPS Check (RQD-600). A designated JUAVTOPS instructor or an assistant JUAVTOPS instructor shall evaluate RQD-600.

4. Aircrew Training Forms (ATFs)

a. An ATF is required for any initial flight of any sortie completed by a Basic, Transition, Conversion, or Refresher Mission Commander or as recommended by the squadron Standardization Board.

**b. If the Commanding Officer has waived a syllabus sortie, the squadron training officer shall place a waiver letter in section 3 of the APR.**

5. Instructor Requirements. The minimum instructor requirements are listed for each event.

6. Flight Completion. Compliance with the written flight description is mandatory for syllabus flight completion. Times indicated for each flight are only recommendations.

7. Weight and Balance. Weight and balance sheets will be completed per JUAVTOPS guidelines and Standard Operating Procedures.

8. Crew Requirements/Position Designations. Crew requirements are listed for each event. Crew position is listed at the right margin in the event header.

9. Previous Qualification. Refresher mission commanders previously qualified in any syllabus stage should fly only those "R" coded flights. If not previously qualified, they shall fly the full basic syllabus for those stages.

10. Sequence. Training should be accomplished by flying events within a stage in sequence and stages in sequence when practical.

## 11. Definitions

### a. Discuss

(1) The MCI shall discuss a procedure or maneuver during the brief, in flight, or debrief.

(2) The MCUI is responsible for knowledge of the applicable procedures prior to the briefing.

### b. Demonstrate

(1) The MCI performs the maneuver with accompanying description.

(2) The MCUI observes the maneuver and is responsible for the knowledge of the procedures prior to the flight.

### c. Introduce

(1) At his option, the MCI may perform the maneuver with an accompanying description, or he may coach the MCUI through the maneuver without demonstration.

(2) The MCUI shall perform the maneuver with coaching as necessary and is responsible for knowledge of the procedures prior to the flight.

### d. Review

(1) The MCI observes and grades the maneuver without coaching the MCUI. An airborne critique of the MCUI's performance is at the option of the instructor.

(2) The MCUI is expected to perform the maneuver without coaching and devoid of procedural error at a level acceptable to warrant progress into the next stage of training.

## 341. COMBAT CAPABLE PHASE

### 1. General

a. The Combat Capable Instruction consists of military and contractor training conducted at the designated training unit. Syllabus description and requirements are available in the current edition of the Training unit's syllabus.

b. Basic System Familiarization. Basic system familiarization and qualification will be obtained during the Combat Capable Training at the designated training unit. The following stages make up the basic system familiarization and qualification portion of the Combat Capable Training (based on the established Training Unit Class outline): Introduction to the Pioneer UAV system, GCS, PCS and TCU, RRS, Equipment familiarization, system operating modes, payloads, autopilot, UAV system operating procedures, mission planning, map reading, aerial navigation, emergency procedures and UAV launch/recovery systems.

c. Omitted Sorties. Flight training events which are not flown in the Combat Capable Training shall be flown in the succeeding stage of training.

d. Evaluation Sorties. Designated evaluation sorties should be flown with a qualified MC instructor or experienced Mission Commander.

2. Syllabus Assignments. The MC will be required to fly the entire syllabus before being considered for the next stage.

3. Re-fly Intervals. Listed in the training unit's syllabus.

4. Combat Capable Syllabus Objectives. Listed below are the titles of the learning objective areas associated with the entry level training syllabus for Pioneer UAV Mission Commanders. This course of instruction is conducted by NAMTRAGRU DET AMTU 6001, Fort Huachuca, AZ. Detailed descriptions of each area available from NAMTRAGRU.

- 1) Basic Aerodynamics.
- 2) Basic Navigation.
- 3) FAA Regulation/Procedures.
- 4) Ground/Flight Safety and Mishap Procedures/Reporting.
- 5) Aircrew Coordination.
- 6) SOP and Course Rules.
- 7) JUAVTOPS Checklist Procedures.
- 8) JUAVTOPS and Aircrew Training Records.
- 9) Weather and Factors effecting UAV Operations.
- 10) Basic Mission Planning.
- 11) Technical/Maintenance Documentation.
- 12) Emergency Procedures.
- 13) Pioneer UAV.
- 14) Ground Control Station.
- 15) Tracking Communications Unit.
- 16) Remote Receive Station.
- 17) Portable Control Station.
- 18) Remote Receive Station.
- 19) System Limitations.
- 20) Day Payload.
- 21) Night Payload.
- 22) Briefing/Debriefing.
- 23) Modes of Launch/Recovery.
- 24) Flight Modes.
- 25) In-Flight Navigation.
- 26) Aircrew Training Documentation.
- 27) Fire Support.
- 28) Radio Communication Procedures.
- 29) Advanced Mission Planning.























RQD-601      2.0    FLT            E    RQ-2    (N)            CREW POSITION: JUAVTOPS EVALUATOR

Goal.    Designation as a JUAVTOPS MC Evaluator.

Requirements.    The MC will be required to evaluate a CK-600 flight in accordance with the JUAVTOPS Manual.

Performance Standards.    IAW JUAVTOPS.

Prerequisite.    Current CK-600 and designated as an MCI.

360. ORDNANCE REQUIREMENTS.    Annual ordnance requirements are developed on a "per crew" basis per OPNAVNOTE 8010.

1. External Ordnance - BASIC/REF/CONV

ORDNANCE	100 SERIES	200 SERIES	300 SERIES	400 SERIES	REFRESHER	IUT	ANNUAL*
155mm HE (1)	0	0	16	0	16	8	16
155mm WP (1)	0	0	10	0	10	5	10
Note 1: A like amount of 81mm mortars may be substituted for the 155mm ammunition							

\*Annual Ordnance requirements maintain an aircrew member at proficiency.

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AIRCRAFT: UAV			MOS: 7315			CREW POSITION: MISSION COMMANDER				
STAGE	EVENT CODE		HRS	REFLY INTERVAL	CRP	C	R	E	REMARKS	CREW POSITION
<b>COMBAT READY PHASE</b>										
FAM	200	GND	1.0	12	1.0	X	X			MC
	201	GND	1.0	12	1.0	X	X		RQ-2	MC
	202	FLT	1.0	12	1.0	X			GCS	MC
	203	FLT	1.0	12	1.0	X	X		GCS	MC
	204	FLT	2.0	12	1.5	X	X		GCS	MC
	205	GND	2.0	12	1.5	X	X			MC
NAV	210	FLT	1.5	12	1.5	X			GCS	MC
	211	FLT	1.5	12	1.5	X	X		GCS	MC
NITE	220	GND	1.0	12	1.5	X				MC
	221	FLT	1.0	12	1.5	X	X		GCS (N)	MC
MCQM	230	FLT	2.0	*	2.0	X	X	X	GCS (N)	MC
<b>COMBAT QUALIFICATION PHASE</b>										
TREC	300	GND	1.0	*	2.0	X				MC
	301	GND	1.0	*	2.0	X				MC
MP	310	FLT	2.0	12	2.0	X			GCS (N)	MC
	311	GND	3.0	12	2.0	X	X			MC
	312	FLT	2.0	12	2.0	X	X		GCS (N)	MC
SAC	320	GND	3.5	6	2.0	X	X			MC
	321	SIM/FLT	1.0	6	2.0	X	X		GCS (N)	MC
	322	FLT	2.0	12	2.0	X	X		GCS (N)	MC
SS0	330	GND	1.0	6	2.0	X	X			MC
	331	FLT	1.0	12	2.0	X	X		RQ-2 (N)	MC
<b>FULL-COMBAT QUALIFICATION PHASE</b>										
OPS	400	GND	1.0	12	2.5	X	X			MC
	401	FLT	1.0	12	2.5	X	X		RQ-2 (N)	MC
<b>INSTRUCTOR UNDER TRAINING</b>										
IUT	500	GND	1.0	*				X		IUT
	501	GND	1.0	*				X		IUT
	502	FLT	2.0	*				X	RQ-2 (N)	IUT
	503	FLT	3.5	*				X	GCS (N)	IUT
	504	GND	2.0	*				X		IUT
	505	FLT	3.0	*				X	GCS (N)	IUT
	506	GND	3.5	*				X		IUT
	507	SIM/FLT	1.0	*				X		IUT
	508	FLT	1.0	*				X	RQ-2 (N)	IUT

Figure 3-2.--MOS 7315 Refly Interval, Combat Readiness Percentage



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UAV MISSION COMMANDER FLIGHT UPDATE CHAINING

<u>STAGE</u>	<u>FLIGHT</u>	<u>FLIGHTS UPDATED</u>
FAM	200	
	201	200
	202	200,201
	203	200,201,202
	204	200,201,202,203
	205	
NAV	210	200,201,202,203,204,205
	211	200,201,202,203,204,205,210
NITE	220	
	221	200,201,202,203,204,205,210,211,220
MCQM	230	200,201,202,203,204,205,210,211
TREC	300	
	301	
MP	310	205,210,211
	311	
	312	205,210,211,310,211
SAC	320	
	321	320
	322	320,321
SSO	330	
	331	201,202,203,204,205,210,211
OPS	400	
	401	201,202,203,204,205,210,211,330,331

Figure 3-3.--Flight Update Chaining