MASTER DIRECTIVES

UNITED STATES MARINE CORPS
MARINE AIRCRAFT GROUP 12
FIRST MARINE AIRCRAFT WING, MARFORPAC
UNIT 37150
FPO AP 96603-7150

GruO P3000.1J
S-3
31 January 02

GROUP ORDER P3000.1J

From: Commanding Officer, Marine Aircraft Group 12
To: Distribution List

Subj: STANDARD OPERATING PROCEDURES FOR FLIGHT OPERATIONS (SHORT TITLE: SOP FOR FLIGHT OPERATIONS IN MAG-12)

Ref: (a) OPNAVINST 3710.7R
(b) MCO P3500.14_ (T&R VOL 1, ADMIN)
(c) MCO P3500.15_ (T&R VOL 2, FIXED WING)
(d) MCASO P3710.3 (AIRFIELD OPERATIONS MANUAL)
(e) WgO P3710.1 (1ST MAW SOP FOR AIR OPERATIONS)
(f) WgO 3550.1
(g) MCO 5720.73

Encl: (1) LOCATOR SHEET

1. Purpose. To publish policy, procedures and guidance for flight operations within Marine Aircraft Group 12 per references (a) through (g).

2. Cancellation. GruO P3000.1H.

3. Background. Flight operations within individual squadrons shall be conducted in accordance with references (a) through (g), and other applicable directives. This SOP is intended to be co-located with the 1st MAW and squadron SOP for flight operations. Every attempt has been made to eliminate redundancy and conflicts with higher governing directives. Further, it sets forth standardized procedures within the air group to permit routine inter-squadron operations. It is not intended to inhibit a squadron commander's flexibility in conducting flight operations.

4. Action. All MAG-12 units shall become familiar with, and comply with, the instructions and procedures contained in this Order.

5. Summary of Revision. Significant revisions have been made; this Order should be reviewed in its entirety.

6. Recommendation. Submit comments and recommendations regarding this Order to this Headquarters (Attn: Operations).

7. Applicability. This Order applies to all personnel assigned to MAG-12. Each aircrew shall read and be familiar with the contents of this order prior to their first flight in a MAG-12 aircraft. All aircrew will acknowledge familiarity with this order via a monthly read and initial board.

8. Certification. Reviewed and approved this date.

J. D. DEWITT, JR.

DISTRIBUTION: A plus S-3 (100)
MCAS Iwakuni (1)
MWSS-171 (1)
MACS-4 Det B (1)

# LOCATOR SHEET

Subj: STANDARD OPERATING PROCEDURES FOR FLIGHT OPERATIONS (SHORT TITLE: SOP FOR FLIGHT OPERATIONS IN MAG-12)

Location: _____
(Indicate the location(s) of copy (ies) of this Order.)

SOP FOR FLIGHT OPERATIONS IN MAG-12

RECORD OF CHANGES

Log completed change action as indicated.

| Change Number | Date of Change | Date Entered | Signature of Person Incorporating Change |
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SOP FOR FLIGHT OPERATIONS IN MAG-12

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# CHAPTER 1

## MAG-12 MISSION AND INTRODUCTION


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# CHAPTER 1

## MAG-12 MISSION AND INTRODUCTION

1000. MISSION. The mission of Marine Aircraft Group 12 is to conduct offensive air support, airborne electronic warfare, and aerial reconnaissance in support of Fleet Marine Forces from advanced bases, expeditionary airfields or aircraft carriers, and conduct such other air operations as may be directed.

1001. SPECIFIC MISSIONS

1. Conduct offensive air operations and anti-air warfare in support of Fleet Marine Forces and such other air operations as may be directed.

2. Conduct tactical airborne electronic warfare missions, to include electronic support, electronic attack, electronic protection and suppression of enemy air defenses.

3. Maintain the capability to deploy and operate from advanced bases, expeditionary airfields, and aircraft carriers.

4. Conduct, supervise, and coordinate such training for individuals and units as required to qualify assigned squadrons for tactical deployment and combat operations.

5. Augment shore establishments, when based thereon, with personnel and equipment as directed by appropriate authority.

6. Coordinate requirements for ground defense with appropriate commands when in separate locations.

7. Provide for the internal security of assigned areas.

8. Direct, collect, process, and disseminate intelligence information in coordination with appropriate agencies.

9. Provide logistics and maintenance support for attached squadrons.

10. Provide detachments as required for the support and maintenance of separately deployed units.

11. Provide intermediate calibrations (qualification) and repair services for all aeronautical test and measuring equipment assigned to MAG-12 units.

12. Provide supply, financial, and aircraft maintenance automatic data processing (ADP) support in accordance with current OPNAV, NAVSUP, and Marine Corps directives.

1002. PURPOSE AND SCOPE. The purpose of this Order is to provide basic guidance for flight operations and related areas for MAG-12 squadrons and aircrew. This Order is intended to complement existing directives and clarify procedures within this organization. It is not the intent to repeat guidance and procedures currently in effect, but to clarify those procedures and restrictions that may be ambiguous, not previously discussed, or to include those that may be more restrictive. In the event of a disparity between directives from higher authority and the interpretations as set forth in this order, the more stringent limitations shall apply. All aircrew that fly in aircraft assigned to MAG-12 are responsible for a thorough knowledge of, and compliance with, the procedures contained in this Order and all directives referenced.

1003. CHANGE PROCEDURES. Recommended changes to this Order should be submitted to the Commanding Officer, MAG-12 (S-3).

1004. WORDING. The concept of word usage and meaning adhered to in this Order is as follows:

"Shall" is used only when an action is mandatory.

"Should" is used only when an action is recommended.

"May" and "need not" are used only when action is optional.

"Will" is used only to indicate future action and not necessarily to indicate a mandatory action.

# CHAPTER 2

## PROFICIENCY CRITERIA FOR AIRCREW AND FLIGHT DESIGNATIONS


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# CHAPTER 2

## PROFICIENCY CRITERIA FOR AIRCREW AND FLIGHT DESIGNATIONS

2000. GENERAL. In order to maintain a current flying status, NAs and NFOs are required to satisfy the following criteria:

| Naval Aviator | Naval Flight Officer |
|---|---|
| NATOPS Qualification | NATOPS Qualification |
| Medical Up chit in NATOPS jacket | Medical Up chit in NATOPS jacket |
| DIFOP Orders in NATOPS jacket | DIFOP Orders in NATOPS jacket |
| NATOPS Open/Closed/IAE exams | NATOPS Open/Closed/IAE exams |
| Instrument Rating | Instrument Qualification |
| Annual Flight Hour Minima | Annual Flight Hour Minima |
| Annual Instrument Hours | Annual Flight Physical |
| Annual Night Hours | Current Physiology Training |
| Annual Flight Physical | Current Water Survival Training |
| Current Physiology Training | Annual Ejection Seat Lecture |
| Annual Ejection Seat Lecture | Annual Egress Drill |
| Current Water Survival Training | |
| Annual Egress Drill | |

2001. INSTRUMENT GROUND SCHOOL. An aviator who is approaching his instrument rating must attend a TYCOM approved instrument ground school and satisfactorily complete a written exam prior to the instrument evaluation flight/simulator. Units that anticipate ground school attendance conflicts due to deployments or operations may schedule aircrew up to two months prior to the expiration of an instrument rating. The written examination can be completed up to 60 days prior to commencing the evaluation flight/simulator but will only be administered at the completion of a formal instrument-training syllabus.

2002. REQUIREMENTS PRIOR TO FIRST MAG-12 FLIGHT

1. Flight operations in West Pac offer different challenges over flight operations in CONUS. In order to prepare aircrews for these challenges, a series of lectures and exams tailored for West Pac flight operations have been developed. Aircrews shall receive these lectures and complete the associated exams prior to their first sortie. MAG-12 S-3 will arrange for the presentation of the following material.

a. Immediate action examination (administered by assigned unit).

b. Local course rules brief and examination.

c. SAR, ATC, and weather lecture.

d. ICAO procedures lecture.

e. Korean buffer zone lecture.

f. Kadena Ordnance procedures test.

g. Review of Squadron Read and Initial folder.

h. Review/reissue of navigation (FLIP) publications.

2. Pilots joining the MAG as permanent personnel are required to complete the following additional requirements.

a. Satisfactory completion of one OFT flight to include local instrument departure and arrival procedures, and a review of all immediate action emergencies.

b. Local flight gear inspection.

c. Completion of Pilot Check-in Sheet, initiated by the NATOPS Officer.

3. All aircrew shall stand down for 72 hours prior to their first flight in WESTPAC. The first flight for all aircrew arriving to Iwakuni for the first time shall be an orientation instrument round robin which includes an instrument approach to Nyutabaru and the Tsuiki divert/Iwakuni divert as published in the MAG-12 in-flight guide. This profile should be practiced in the OFT (as available) prior to the first flight.

2003. REQUIREMENTS TO MAINTAIN FLIGHT PROFICIENCY. Aircrew requirements for all squadron, staff and augments to maintain flight proficiency are delineated as follows.

1. Day Flight

a. Complete a monthly Immediate Action Exam and emergency procedures review.

b. Complete a monthly emergency procedures profile in the OFT (when available). The annual NATOPS evaluation satisfies this requirement for the corresponding month of the evaluation.

c. Maintain annual NATOPS currency in the aircraft.

d. Maintain a valid instrument rating.

e. Maintain annual Aircrew Coordination Training requirements.

f. Maintain a current Read and Initial Card.

g. Fly at least once every 15 days.

2. Night Flight

a. General. No pilot shall sign for an aircraft for a night flight that has not flown that model aircraft within the previous 15 days.

b. Night Systems Flights. Non-NSQ pilots shall complete a flight in the appropriate model aircraft within 7 days prior to conducting a NS flight. Annual NVG refresher training at an approved NITE Lab facility is required. Annual NVG refresher training will include the following:

(1) NVD Technology Update.

(2) NVD Mishap Lessons Learned.

(3) Sensor Integration.

(4) Misperceptions and Illusions.

(5) NVG Focusing Procedures.

(6) Terrain Board Demonstration.

c. Night Ordnance Dive Delivery Flights. Pilots conducting night dive ordnance delivery sorties require a minimum of one flight within the past 7 days, one air-to-ground flight within the past 15 days, one night flight (any sortie type) within the past 30 days, and if aided, one night goggle sortie flight within the past 60 days.

3. Review this SOP on a periodic basis and initial compliance on the squadron R&I board.

2004. LAPSED FLIGHT PROFICIENCY REFRESHER TRAINING. Pilots who have not flown for 16 days or more in model shall complete the requirements outlined in the following table.

| TIME SINCE LAST FLIGHT | REQUIREMENTS |
|---|---|
| 16-30 Days | 1, 2, 3 |
| 31 Days - 180 Days | 2, 3, 4 |
| 180 Days - 365 Days | 2, 3, 4, 5 |
| Over 365 Days | 2, 4, 5, 6 |

1. Flight restricted to day 200 level T&R sortie and shall not be LAT. If flight includes air-to-air, aircrew are restricted to limited maneuvering ($\leq$ 180 degrees).

2. OFT (if available) prior to flight.

3. Review open and closed book NATOPS exam, aircrew coordination exam, and Read and Initial board. Complete an Immediate Action exam.

4. Flight restricted to day VMC NAV mission (1000' minimum altitude). Follow-on flights shall include a tailored warm-up syllabus as determined by the squadron Commanding Officer.

5. Verify currencies of NATOPS requirements and exams prior to first flight. Complete an SOP, aircrew coordination and course rules review.

6. Requirements per OPNAVINST 3710.7.

2005. FLIGHT DESIGNATIONS. Commanding Officers of each squadron within MAG-12 are responsible for the training, certification and designation of their aircrews and those Group augments "assigned" to them.

SOP FOR FLIGHT OPERATIONS IN MAG-12

CHAPTER 3

NORMAL OPERATING PROCEDURES


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# CHAPTER 3

# NORMAL OPERATING PROCEDURES

3000. GENERAL. The intent of this chapter shall be applied across all T/M/S operated in this MAG. The procedures contained in the applicable aircraft NATOPS, Tactical manuals and current editions of the references are the final authority for MAG-12 aircrew conducting operations. The MAG-12 Operations Department shall act as liaison with MCAS Iwakuni on all matters pertaining to flight operations. Applicable airfield operating instructions shall prevail when operating at deployed locations.

## 3001. FLIGHT SCHEDULES

1. An aviation unit's flight schedule is the daily plan for utilizing available resources to accomplish its mission. It shall be published the day prior to execution (i.e. Wednesday's schedule will be published Tuesday afternoon). The goal is to achieve a daily ATO cycle and to provide the Commander with a reasonable time period in which to conduct an Operational Risk Assessment for missions involving flight operations. The flight schedule must reflect the commander's best judgment in balancing commitments, training requirements, aircrew capabilities and limitations. Therefore, the daily flight schedule shall be signed by the Squadron Commanding Officer, or in his absence the Executive Officer or the Detachment's Officer-in-Charge. Changes to the daily flight schedule shall be approved by the Squadron Commanding Officer, or in his absence, the Executive Officer or the Det OIC.

2. Format/Content. All MAG-12 aircraft squadrons shall publish daily flight schedules using the format found in the Squadron Assistance Risk Assessment (SARA) computerized model. Additional information may be included on the daily flight schedule. Deviations from this format shall be made only on approval from this Headquarters.

3. Utilization of authorized stereo flight plans on squadron flight schedules alleviates the requirement to file an ICAO Flight Plan for local flights. The current edition of reference (d), contains amplifying information and instructions concerning flight schedules and flight plan filing.

4. Simulator Flights shall be scheduled on the daily flight schedule. Scheduled times, aircrew, and mission to be accomplished shall be listed.

5. Distribution

a. Each squadron shall distribute the appropriate number of copies of their daily flight schedule to the following organizations:

| | |
|---|---|
| MCAS Operations: | Email 1 copy, call 253-3553 for address and details |
| MAG-12 Operations: | Email 1 copy, call 253-3521 for address and details |

b. Each squadron's daily flight schedule shall be distributed so as to reach the Group S-3 no later than 1300 Monday through Friday. The schedule for Saturday, Sunday and Monday shall be combined and delivered on Friday.

3002. OPERATIONS DUTY OFFICER (ODO). Each squadron shall assign an ODO via the daily flight schedule. There shall be an ODO on duty during all local flight operations. For cross-country flights and out-and-ins, the ODO or SDO shall remain on duty until all aircraft can be reasonably assumed to be out of the local area.

1. Responsibilities. The ODO is the direct representative of the Commanding Officer and is specifically charged with ensuring the daily flight schedule is safely and efficiently executed. Before standing ODO for the first time, eligible aircrew shall receive appropriate training by the Operations Officer or his designated representative. The ODO shall be familiar with the Commanding Officer's policies, the squadron's Pre-Mishap Plan, aircraft and aircrew availability, training priorities, etc. The ODO shall keep the Commanding Officer informed, via the Operations Officer, as to the progress of the daily flight schedule and ensure all changes to the flight schedule are approved by the Commanding Officer, or in his absence, the Executive Officer or Det OIC. A properly functioning UHF radio must be available and monitored by the ODO.

2. The ODO's specific duties will include but are not limited to:

a. Ensuring the safety of flight operations.

b. Monitor sortie completion for ACP.

c. Notifying the CO, XO, OPSO, and Safety Officer of any aircraft emergency or unusual circumstance.

d. Completing a flash report for all declared emergencies and report it to the Group Safety Officer.

e. Monitoring base radio at all times during local flight operations.

f. Providing requested assistance during aircraft emergencies.

g. Knowledgeable in the unit's Pre-Mishap Plan. Activate when required.

h. Maintaining a mission accomplishment sheet and Master Flight Schedule.

i. Administering the daily flight schedule and managing all deviations to the written plan.

j. Maintaining a timely and accurate record of aircraft assignments, locations, and status.

k. Supervising the execution of the daily flight schedule and keeping the CO, XO, and Operations Officer advised of progress in the schedule.

l. Coordinating with maintenance, Base Operations, and other agencies.

m. Ensuring that each aircrew's Read and Initial card is up to date prior to brief time.

n. Knowing the following:

(1) Current location of CO, XO, OPSO, and DOSS or ASO.

(2) Current location of all aircrew who are flying during the tour of duty (i.e., XCTY Aircrew).

(3) Current and forecast weather for local flying area to include alternate airfield, water and air temperatures.

(4) Current NOTAMS for local area.

(5) Current location of Squadron Pre-mishap Plan.

(6) Current location of Squadron Duty Officer and any other required personnel.

(7) Current location of the ODO NATOPS and PCL.

(8) Duties and responsibilities of the ODO, as published in this order.

(9) Current ordnance loads, configurations and armament codes (if applicable) for each aircraft.

(10) Current ground refueling plan and the intentions of Maintenance Control.

(11) Current operational priorities and the fallout plan in case pilots/aircraft cannot make an event.

(12) Rapidly changing weather conditions at Iwakuni or deployed location are provided to airborne pilots.

o. Provide inter-flight coordination for aerial refuel, ACM briefs and range status as required.

p. Monitor current events taking place providing a logical pass down to incoming ODOR.

q. Ensure that the Ready Room, Briefing Room, PUBS room, and TAMPS room are kept clean and all pubs, Boards and Video Equipment are in place and serviceable.

r. Ensure any changes to the Flight Schedule are signed off by the CO, XO, or Det OIC.

s. Ensure that all unused ranges, restricted areas, and warning areas are canceled. Coordinate through MAG-12 Operations.

t. Ensuring that all NAVFLIRS and Mission Accomplishment sheets are filled out correctly.

u. Ensure all flight leaders complete an ORM checklist.

v. Ensure scheduled aircrew have reviewed/signed R&I/PIF notices.

x. Provide real time updates of each missions status (T/O time, land time, completion, cancellation etc.) to the Group TACC.

## 3003. FITNESS FOR FLIGHT

1. General. Reference (a) establishes basic guidelines for determining fitness of pilots for flight. All Pilots shall be familiar with this reference and shall comply with guidelines contained therein, except as modified or interpreted below. The squadron Commanding Officer must approve requests for deviations.

2. Crew Rest

a. Individual pilots are responsible to ensure they are physically and mentally prepared to fly, and that they do not fly while in a fatigued condition.

b. Pilots are responsible to notify the Operations Officer or the ODO at the earliest practical time if unable to meet commitments due to fatigue or illness.

3. Flight Operations and Work Day Requirements

a. Aircrew operating tactical jet aircraft shall fly no more than three sorties or 6.5 flight hours in a single day. If a third sortie is flown, it shall be launched in sufficient time to preclude landing after official sunset at unfamiliar fields and shall be a low task load sortie (no ACM, LAT, A/G).

b. Maximum allowable crew day is 12 hours. This period includes the time from the first scheduled event to the scheduled/known land time. This does not include duties afterward. Aircrew are individually responsible for ensuring that they do not exceed their crew day.

c. Eight hours of uninterrupted crew rest shall be made available during every 24 hour period. Squadron operations departments shall, in an attempt to ensure crew rest requirements are met, allow 10 hours from last scheduled event (to include debrief) to first scheduled event of the next day. Scheduling shall be in accordance with the guidelines of current ORM Risk Assessment Worksheets.

d. No aircrew shall fly more than two consecutive sorties without deplaning and debriefing. The only exception to this restriction shall be during the conduct of aircraft carrier operations or FCLP's where multiple flights may become necessary.

4. Minor Illness and Emotional Upset. Aircrew suffering from minor illness or emotional upset shall not be required to fly

(whether or not a grounding notice has been obtained). No inference will be drawn in such cases and the individual's request is sufficient justification. Aircrew shall notify the Operations Officer or ODO as early as possible if they will be unable to fly under these conditions.

3004. FLIGHT TRAINING FOR AUGMENT AIRCREWS

1. While prudence is required in determining the priority of regular duties and flight operations, a primary responsibility of all designated Naval Aviators and Naval Flight Officers is the maintenance of flight proficiency.

2. MAG-12 will publish a listing of MAG-12 and 1st MAW Staff aircrews authorized to fly with MAG-12 squadrons via Naval message on a required basis, no less than quarterly. This listing will "assign" MAG-12 staff pilots and NFOs on DIFOP orders to a particular squadron that is responsible for ensuring that the staff officer is given the opportunity to meet annual minimums. Squadrons shall schedule eight MAG augment sorties per month. It is ultimately each aircrew's responsibility to achieve flight minimums, however Squadron Commanders shall do all they can to assist in meeting flight proficiency requirements.

3. Augment aircrew shall acquaint themselves with their "assigned" unit's flight SOP and comply with the unit's training schedule. Further, they shall acquaint themselves with the SOPs of the squadrons with which they are "authorized" to fly. All MAG-12 F/A-18 pilots are authorized to fly with all MAG-12 F/A-18 squadrons, are encouraged to do so, and Squadron Commanders are requested to embrace this concept.

4. For administrative purposes, VMFA-212 will carry all MAG-12 aircrew on their IMR.

5. Augment aircrew shall accomplish the flight phase of the NATOPS evaluation check with the squadron with which they are assigned to fly. The Group NATOPS Evaluator shall administer the ground phase of the NATOPS evaluation check to augment aircrews. A squadron NATOPS evaluator shall evaluate the flight phase.

6. Augment aircrew shall attend aircrew training with their assigned squadron, whenever possible.

7. Requests for augment aircrew to deploy with a tactical squadron will be coordinated by the Group Operations Officer.

8. Aircrew priority for flight within tactical squadrons will first be squadron aircrew then augment aircrew.

9. Squadron Commanders may, at their discretion, designate qualified augment aircrew as formation leaders, mission commanders and instructors (ACTI, etc). Qualified augment aircrew may fly functional check flights if approved by the Squadron Commander.

3005. DAILY FLIGHT RESTRICTIONS

1. Hot Refuel (Hot Pit)

a. Day and night hot refuel evolutions are permitted however, aircraft shall be hot refueled only once between missions and no crewmember shall fly more than two consecutive sorties without deplaning, debriefing, and rebriefing. The only exceptions to this restriction shall be during the conduct of aircraft carrier qualification operations or field carrier landing practice operations. No hot refueling after a PMCF sortie.

b. Prior to all flights following a hot refueling, a final check of the fuel door will be accomplished prior to continuing flight operations. If squadron personnel are present, such at MCAS Iwakuni, the door must be checked once the aircraft is clear of the pits. If squadron personnel are not present, such as at transient airfield, each aircraft will be visually inspected by another aircraft in the flight. Verification of a secure fuel door will be passed on the flights tactical frequency prior to taxi to the duty runway. In all cases the flight lead is responsible for integrity of the fuel caps for the entire flight.

2. Hot Seat. During daylight operations, hot seat evolutions are permitted. In addition, the following is applicable:

a. AV-8B aircraft shall Hot Seat with the main engine secured and the aircraft operating on auxiliary power unit.

b. Aircraft shall be Hot Seated only once between missions.

c. Night Hot Seating is permitted. Special attention to final checks shall be ensured. Night conditions do not lessen a flight lead's responsibility to ensure his flight's fuel doors are secure prior to take off.

3. Hot Refuel and Hot Seat evolutions shall be annotated on the daily flight schedule. Non-scheduled Hot Refuel and Hot Seat events require the approval of the Squadron Commanding Officer.

4. Flight Operations Involving Duty Personnel. In general, aircrew who are assigned watch duties cannot reasonably be expected to obtain the minimum number of crew rest hours stipulated by OPNAV. Special flight scheduling instructions shall apply to those personnel assigned watch duties regardless of whether it is within a squadron, the MAG, or station headquarters.

a. Aircrew who are assigned watch duties may be placed on the flight schedule during daylight hours between 0900 and 1500 on the day of duty provided those personnel are available for posting/instruction and it does not interfere with specific watch requirements.

b. Aircrew shall not be scheduled to fly on the day following assignment to watch duties.

5. Single Ship Operations. Single ship operations shall not normally be scheduled except as outlined in paragraph 3032. Single ship over water flights transiting between airfields require the approval of CG, 1st MAW.

3006. COMMUNICATION AND TRANSPONDER PROCEDURES

1. Communication Equipment

a. All MAG-12 aircraft shall follow standard frequency and waypoint plans during local flights. MAG-12 Operations shall maintain and distribute inflight cards for standardized COMM/Waypoint plans. During deployed operations outside the local flying area, use of COMM/Waypoint plans tailored to the deployed site are authorized.

b. ATIS information shall be used and reported to ground control on the initial call for taxi and to approach control upon recovery.

c. KY-58 checks shall be accomplished on every flight.

d. IFF Equipment. As part of their local training, MACS-4 Det B normally provides Mode IV and KY checks at regularly scheduled intervals. During these scheduled periods, aircraft operating from MCAS Iwakuni shall conduct Mode IV and KY checks.

## 3007. MISSION PLANNING, BRIEFING AND DEBRIEFING PROCEDURES

### 1. Briefing

a. The NATOPS and TACSOP briefing guide(s) shall be utilized for all briefings. All flights shall brief a secondary mission in the event the primary mission cannot be accomplished. A thorough briefing in accordance with current directives shall be conducted with all participating aircrew prior to flight. The duration and content of individual briefings depends on the assigned mission. The conduct of each briefing is the responsibility of the assigned Formation Leader.

b. All aircrew in a scheduled flight shall be prepared in advance. All aircrew shall be present at the prescribed briefing time in a flight suit so that subsequent manning of aircraft and takeoff occur as scheduled. Each aircrew attending the briefing shall record enough essential data to be able to assume the lead or complete the mission independently, if required.

c. The TACSOP Briefing Guide shall be utilized for all syllabus training flights. Detailed procedures contained within this order may be briefed as "SOP", provided that MAG-12 aircrew are involved in the flight. In all other cases, detailed procedures shall be briefed.

d. The Squadron CO, XO, or Det OIC may designate another aircrew in the flight to practice briefing and leading the flight. However, any discrepancies noted during such briefings shall be corrected by the assigned Formation Leader who remains responsible for the overall conduct of the flight.

e. The "Emergency of the Day", NATOPS question, tactics question, take off data and associated safety briefs applicable with the type mission to be flown shall be covered in detail.

### 2. Weather

a. Flight leaders are responsible for obtaining current weather and NOTAMS from the ODO. This information will be briefed, and updated prior to walking.

b. Fuel requirements will be dictated by forecast weather as set forth in reference (a) except that fuel requirements shall be based on distance to alternate from missed approach at destination.

c. Refer to reference (a), and appropriate NATOPS section II (Qualifications and Currency Requirements) for specific weather requirements.

3. Fuel Planning and Management. The lack of a robust long range weather forecast system in the Western Pacific can lead to short notice/rapidly changing weather conditions. Accordingly, aviators must properly manage their available fuel while monitoring and updating enroute and destination weather.

a. Once airborne, pilots shall check both internal and external (when carried) tank transfer operations.

b. As a general rule, aircraft will land with at least the following "on deck" fuel loads:

| Type Aircraft | During day/ VMC conditions | During night/ IMC conditions |
|---|---|---|
| F/A-18 | 2000 | 3000 |
| AV-8B | 1500 | 1700 |
| EA-6B | 2500 | 3000 |

c. Fuel Low caution/light requires a full stop landing regardless of fuel remaining indications.

d. Minimum fuel requirements are defined in reference (a) and are discussed below. Pilot judgment is the key to declaring "minimum fuel" or "emergency fuel" and involves consideration of weather, runway, arresting gear status, and distance to divert field. The following shall be used as a basis for determining when a "minimum fuel" or "emergency fuel" situation exists.

(1) Minimum Fuel. An advisory term indicating that in the judgment of the pilot the fuel state is such that no undue delay can be accepted enroute to the destination. If at any time the pilot computes that his fuel is such that he will land with a low fuel light, he shall declare "minimum fuel."

(2) Emergency Fuel. If at any time the pilot computes that he will land with less than 1500 pounds of usable fuel (F/A-18), 1200 pounds of usable fuel (AV-8B), or 2500 pounds of usable fuel (EA-6B), he shall declare an emergency. Additionally, if at any time the fuel remaining indicates the need for priority handling by ATC, the pilot shall declare "emergency fuel" and report fuel remaining in minutes.

4. IFR filing and positive control. OPNAVINST 3710.7R requires that all flights be conducted in accordance with Instrument Flight rules and under positive control to the maximum extent possible. Accordingly, all flights in MAG-12 aircraft shall comply with the spirit and intent of this regulation. This does not imply that VFR flight is not authorized when required for mission completion and in keeping with local course rules procedures (Example - "Due regard" over large water distances is permitted). Within the airspace of Japan and Korea, all 1st MAW aircraft will be under IFR control above FL200.

5. Debriefing. Formation leaders or designated mission commanders shall formally debrief the entire flight as soon as possible after each flight. Any difficulty or delay with controlling agencies will be reported to the ODO. An operational hazard report will be filed when necessary, paying particular attention to the time of the occurrence and any mitigating circumstances. Flight Leaders shall be responsible for clearly recapping the conduct of the flight and clarifying any areas of misperception or problems that may have arisen. Debriefs shall be clear, concise, and emphasize training points and objectives of the flight. Particular effort shall be made to develop specific lessons learned.

3008. FLIGHT SAFETY AND SURVIVAL EQUIPMENT

1. Aircrew shall fly with all flight safety survival equipment maintained in accordance with applicable NATOPS Manuals, the current edition of reference (a), and the Aircrew Personnel Protective Equipment Manual (NAVAIR 13-1-6).

2. Only authorized flight equipment shall be worn by aircrew that fly MAG-12 aircraft. This flight equipment may be augmented with up to 5 pounds of personal survival equipment stowed in the survival vest in accordance with appropriate directives. Pilots operating single seat aircraft are prohibited from conducting photoreconnaissance with personal cameras.

3. Anti-exposure suits shall be worn according to the criteria set forth in the current edition of reference (a).

3009. AERONAUTICAL CHART USAGE AND UPDATING. All aircrew shall ensure that charts used for navigation training flights are current and updated.

## 3010. FOREIGN OBJECT DAMAGE PREVENTION (FOD) PREVENTION

1. Squadrons shall conduct a thorough FOD walk of their respective areas prior to the first launch each day. The command echelon, along with all available aircrew and SNCO's should participate to the maximum extent feasible. Properly trained personnel, wearing FOD free garments immediately prior to turn up, will inspect aircraft engines and intakes.

2. FOD prevention should be of utmost concern to aircrews and maintenance personnel while aircraft engines are turning on deck. To accomplish this goal, aircrews and maintenance personnel shall be especially conscious of procedures involving the use of boarding ladders and the presence of maintenance personnel needing to converse with the pilot after engines have been started. In order of priority they may:

a. Use the ICS hot mike cord.

b. Use the base maintenance frequency.

c. Use standard hand signals.

d. Use other methods in accordance with sound operating procedures and applicable NATOPS recommendations.

3. Aircrew shall not place any articles on the glare shield or above the canopy rails with the canopy open.

4. Additional information on FOD prevention is contained in FOD Prevention Order 13720.2.

## 3011. Aircraft Lighting

### 1. Taxi lights

a. The taxi light shall be on for all day and night field takeoffs and landings.

b. During night hours, the taxi light shall be on during taxi operations except when under the positive direction of a taxi director.

c. During IMC instrument approach to landing, the use of the taxi light may be waived at the discretion of the pilot in command or the flight lead (during section approaches) if refracted lighting inhibits forward visibility.

2. Strobe/anti-collision lights shall be on at all times day or night when the engines are turning with the following exception:

a. When hot refueling during daylight hours, all exterior lights shall be secured.

b. When hot refueling during night, external position and formation lights shall be on and strobe/anti-collision lights shall be secured.

c. When operating in formation at night, at least one aircraft shall have the strobe/anti-collision lights on. Exterior lighting shall be as briefed.

d. External lighting in the target area during night attack syllabus sorties shall be as briefed.

3012. F/A-18 SPECIFIC GROUND PROCEDURES

1. Engine start will be accomplished in the following priority:

a. APU start. If APU is inoperative, the aircraft is down for normal operations.

b. NCPP105 or other JASU (If available)

c. Cross-bleed start. Used for engine restarts after a successful APU start or to satisfy PMCF requirements. Cross-bleed starts shall only be attempted when the exhaust blast area is clear of objects or personnel that will be affected by the jet blast.

2. Post-start procedures:

a. Maintenance trouble shooters should be summoned by hand signals as soon as possible after discovery of a discrepancy in order to correct the problem in an expeditious manner.

b. Normal downing discrepancies include, but are not limited to:

(1) Any FCS transient failures (X's or BLIN codes) that will not reset or continually recur (except ATC anomaly BLIN codes).

(2) Inoperative INS, Mission Computer, Air Data Computer, a "LOAD X" condition, SMS No-Go/Not Ready, or HUD, LDDI, RDDI or MPCD/HI failures.

c. After the plane captain has started his checks, aircrew shall actuate the control surfaces and tailhook only when given specific plane captain signals. Pilots shall notify the P/C and receive an acknowledgment that the control surfaces are clear prior to utilizing the FCS exercises mode.

d. Aircrew shall ensure that takeoff trim has been set to 12 degrees nose up when the "half flap" and "trim" signals are given.

e. Aircrew shall acknowledge hands clear and shall not actuate any control surface (ailerons, flaps, stabilator or rudder) or NWS when the plane captain gives the "hands out" signal during Plane Captain checks, ordnance checks, and final checks.

f. During the "5-down" check (arresting hook, speed brake, hook, launch bar-cycle, and pilot heat) and the final check, left and right DDI's and the UFC can be used for the insertion of data, providing the pilot acknowledges the plane captain's "hands out" signal. The aircrew shall not lower their hands to activate any switch below the canopy rail during these checks.

g. Aircrew in aircraft undergoing stray voltage checks or the arming of missiles, rockets, or guns must ensure that no RF energy is being radiated from their aircraft by boxing "EMCON" on the UFC and making no transmissions on the UHF.

h. In an emergency situation, the pilot shall signal "clear the aircraft" by waving his hand horizontally to the plane captain before actuating any cockpit controls.

i. Ejection seats shall remain safe while the canopy is open and armed when it is down and there is intent for flight. If there is no intent for flight (i.e. post flight, taxi check, etc.), pilots may elect to remain unstrapped (for emergency egress) with the canopy down and the seat safe. In no case shall the pilot be unstrapped with the seat armed.

j. Pilots shall check the BIT status prior to taxi.

k. The SMS shall not be programmed until SMS GO or SMS OPRNL GO is displayed.

l. An OK indication for INS alignment is required prior to takeoff.

m. When ambient temperatures exceed 90 degrees F, the radar should be off until just prior to taxing to the runway (See Hot Weather Operations of the NATOPS).

n. The parking brake shall be set any time the aircraft is stopped except when on the runway.

o. The I.D. function on the MUMI/Checklist page shall be completed prior to flight. The last three digits of the Julian date and the event number shall be entered.

3. Standard communications:

a. All aircraft shall monitor base frequency while on the deck.

b. All aircraft shall check ATIS prior to taxi.

c. Flight Lead shall report "switching tower and tactical" to the ODO on the base frequency and then switch to TAC frequency on the AUX prior to taking the runway.

d. Flights should not utilize base frequency as their tactical frequency.

e. When applicable, all aircraft shall monitor departure control prior to takeoff. When operating from MCAS Iwakuni, lead shall conduct a ground radio check with departure control prior to takeoff roll.

f. Preset channels should not normally be changed from the frequency card by individual pilots. If changed for a cross-country or detachment, they will be reset prior to shutting down at home base. The "manual" channel should be used for frequencies not preset but required in the local area.

g. UHF guard shall be monitored on at least one radio in every aircraft in the flight at all times.

h. If two-way communication is lost following a frequency shift, aircraft shall:

(1) Verify the PRIME frequency using AUX.

(2) If single radio, follow the briefed COMM plan and meet on the next logical frequency.

(3) Join up and visually receive the new frequency from lead. If join up is not possible, return to the last assigned frequency.

i. Normal flight operations are permissible with only one operating radio. All frequency changes shall then be made with positive check-ins and check-outs (exception ground control). Should any confusion exist, pilots operating aircraft with only a single radio will inquire verbally to ensure they understand the next assigned frequency.

4. Taxi. A maximum of 75% RPM shall be used for taxi and 80% for cross-bleed starting. 80% is the max RPM for a line turn. Aircraft shall have brakes and NWS checked leaving the chocks. Taxi speed shall be limited to 15 knots to reduce the likelihood of FOD induced by the nose tire.

a. Aircraft shall not taxi with inoperative NWS (NWS must appear on the HUD). FCS cautions and FCS display should be rechecked prior to leaving the line.

b. Aircraft shall normally marshal in a squadron-designated area outside of the line unless specifically briefed otherwise.

c. Normal taxi interval is 1000 feet centered on the taxiway. During periods of daylight, flights of 4 or more aircraft may utilize a 500 foot staggered taxi interval when warranted by excess airport congestion. When possible, taxi order and hold short positions will be organized so as to minimize sweeping of exhausts in front of other aircraft.

d. The radar shall be placed to STBY/OPERATE anytime the aircraft is taxing unless an OVHT condition exists.

3013. F/A-18 WET RUNWAY OPERATIONS. Operating on runways that contain standing water in excess of 1/4 inch presents a very real hazard to the F/A-18 aircraft. The physical location of the engine intakes, combined with the nose landing gear design, long fuselage nose and aerodynamics of the centerline tank, make an F/A-18 very susceptible to FOD and or engine failure due to water ingestion during takeoff. When wet runway operations are anticipated, aircrew are to review the wet weather operating section contained in the NATOPS manual.

1. Takeoff During Wet Runway Conditions. All aircrew must be aware of runway conditions prior to attempting takeoff.

2. Landing During Wet Runway Conditions

a. When operating at MCAS Iwakuni, aircrew shall make an arrested landing when standing water and or runway breaking conditions so dictate and arresting gear is available.

b. During cross country operations at any airfield experiencing standing water conditions of 1/4 inch or greater, F/A-18 aircraft shall divert if possible to an alternate destination where such conditions do not exist. If a divert is not possible, aircrew shall make an arrested landing. If arresting gear is not available, perform a normal landing as a last resort. Because a normal rollout under these conditions may result in a dual engine flameout, aircrew should be prepared to use the emergency brakes.

3014. TAKEOFF

1. A minimum of 200 feet runway width is required to place four aircraft on the runway.

2. A minimum of 150 feet is required conduct a section takeoff or to place three aircraft on the runway.

3. For aircraft equipped with after-burning engines, maximum power shall normally be selected for takeoff. The only exception is with an aircraft configured without stores with greater than 8000 feet of runway and crosswind of less than 15 kts.

4. Each pilot in a formation flight will not pass thumbs up until his own takeoff checklist is complete and adjacent aircraft are checked for closed canopies, appropriate flight control settings, hydraulic/fuel leaks, flags, door open, launch bar up, boarding ladder secured, and fuel cap secure.

5. The following types of takeoffs are authorized:

a. Section Takeoff. (For FOD considerations and expeditious departures) Refer to paragraph 7 for appropriate procedures.

b. If configuration/gross weight preclude a section takeoff, a 10 second interval should be used to minimize FOD potential for gross weights below 40,000 lbs. For gross weights above 40,000, a 15 second interval should be used. Afterburner shall be held for the first 1000' of roll during an interval takeoff for all except the last aircraft. For interval takeoffs, lead shall maintain 300 knots minimum for rendezvous.

c. If weather conditions preclude both a section takeoff or a VFR join-up underneath, a radar trail departure shall be used to a rendezvous on top (10 second departure interval). After deselecting afterburner at 250 knots, a military acceleration to a 300-knot military climb schedule shall be used until the flight is joined then in accordance with ATC and/or NATOPS recommended airspeeds. Trailing aircraft will call tied-on to the preceding aircraft when radar lock is achieved. Regardless of radar status, all aircraft will fly lead's profile and ground track until VMC conditions are encountered. For a "standard departure" takeoff interval should not exceed ten seconds between aircraft in a flight which allows for rapid establishment of an FAA "standard formation." For takeoff intervals in excess of ten seconds, flight leads should request a "non-standard radar departure" with ATC.

6. High performance takeoff. Maximum angle of climb takeoffs shall not exceed 25 deg nose up. Afterburner should be terminated at 250 knots and military power used to accelerate to normal climb speed.

7. Section Takeoffs

a. Section takeoffs are permitted when both aircraft are similarly configured and have approximately the same gross weight per appropriate NATOPS. AIM-9 missiles and ACMR pods are not considered limiting factors.

b. To perform a Section takeoff, pilots shall have a minimum of 25 hours in model, have demonstrated normal skill in formation flying, have flown that T/M/S in the last 15 days and have 10 hours in the last 30 days.

c. Night section takeoffs are permitted only if both pilots have performed a section takeoff within the last 10 days.

d. Section takeoffs require the long field arresting gear or the overrun gear to be up and in battery.

e. Section Takeoffs Restrictions. Section takeoffs are not authorized when:

(1) Computed takeoff roll exceeds two thirds of the available runway.

(2) Crosswind component exceeds 15 knots.

(3) Weather is below circling minimums, or below 1000/3

where there are no circling criteria.

(4) Aircraft are configured with air-to-ground ordnance or are over 40,000 lbs gross weight. (MK-76's, BDU-48's, 20mm are the exceptions).

(5) There is standing water on the runway or braking action reported as fair or worse.

(6) Moderate to heavy bird activity is reported by tower or ATIS.

(7) The runway is less than 150 feet wide.

f. Section Takeoff Procedures

(1) The Section Leader shall take the downwind side of the runway if crosswind is a factor. If wind is not a factor, lead shall take left side. The wingman should be slightly acute of the parade bearing on his half of the runway.

(2) Day Procedures

(a) After takeoff checklists are completed and a thumbs up is received from the wingman, the leader shall give the two-finger turn-up signal.

(b) Both aircraft shall set RPM at 80% and check their instruments.

(c) When the lead receives a thumbs up from the wingman, he shall raise his hand on the wingman's side. Lead drops his arm forward, and as his hand moves below the canopy rail, smoothly selects maximum afterburner, and then retard to 2/3 afterburner.

(d) Using less than full back stick, the lead shall rotate with the wingman matching fuselage angle.

(e) When the wingman is airborne, the lead shall give one head nod and raise the landing gear and flaps. At approximately 250 kts another head nod will signal deselection of afterburner and throttles will be retarded to approximately MIL minus 3%.

(3) Night Procedures (All radio calls on Aux radio)

(a) After takeoff checklists are complete and a "ready" call is received from the wingman, the leader shall call "run up." RPM run up procedures at night are same as day.

(b) When lead receives a "ready" call from the wingman, he shall call "3, 2, 1, go". On the word go, both aircraft select maximum afterburner and retard to 2/3 afterburner. Rotation procedures at night are same as day.

(c) When the wingman is airborne, the lead shall call "Gear now" and raise the landing gear and flaps. At approximately 250 kts, the lead will call "Burner now" and deselect afterburner. Throttles will be retarded to approximately Mil minus 3%.

8. Tactical Departures. When applicable and authorized, a request for tactical departure should be made with tower when takeoff clearance is requested. Standard IFR formation flight separation shall be maintained while under positive control. Tactical departures shall be executed in the following manner:

a. After reaching a minimum altitude of 300′ AGL, and when signaled by the lead, the wingman may take co-altitude, combat spread (IFR spread) formation at or beyond the departure end of the runway.

b. A maximum angle of bank of 60 degrees shall be used during the separation maneuver.

9. Division considerations. The same limitations that apply to sections are applicable to divisions.

a. When only one runway is available, the aircraft shall line up so that the lead is on the downwind side (if crosswind is a factor) and the remaining aircraft are on bearing evenly spaced on the runway with succeeding flight members slightly acute (banana) so that all pilots' helmets are visible to the flight lead. At Iwakuni and other 150-foot wide runways, the fourth aircraft shall hold short and pull on to the runway when room is available. After safely airborne, the lead shall maintain a minimum of 300 knots (for maneuverability) and 92% or MIL minus 3 percent until the flight is joined.

b. When anticipating IFR conditions while on the SID/radar departure, the flight leader should request and execute a radar

trail departure as preferred to joining the flight under the weather. Interval shall be 10 seconds for a "standard" and 15 seconds for a "non-standard" departure. All aircraft shall maintain 300 knots (airspeed control is critical). All aircraft shall comply with procedures contained in the SID using 30 degrees angle of bank when turns are executed. In the absence of a SID, lead shall call the DME/fix when turning, and all trailing aircraft shall execute turns at the same DME/fix using 30 degrees angle of bank. A radar lock (MED PRF) shall be accomplished as soon as possible on the preceding aircraft after takeoff and the above procedures shall continue until the formation is joined. All flight members (2, 3, and 4) shall call "tied" when in radar contact with the aircraft in front of them. If an aircraft looses radar contact on the aircraft ahead, the aircrew shall call "Lost contact" at which time DME/fix turn calls will resume. All IFR departures in IMC must be thoroughly covered in the brief.

10. Aborts. If any aircraft aborts on the takeoff roll, the pilot of that aircraft shall call the abort over the UHF and execute proper NATOPS procedures. In the case of simultaneous aborts, the first aircraft to approach any arresting gear will bypass it and continue to the overrun/long field gear unless the trailing aircraft clears the first aircraft to engage the first available set of arresting gear. Avoid sympathetic aborts during section takeoffs.

11. Dual Runway Takeoffs

a. Section Takeoffs Using the Duals (SIMO-GO)

(1) Circling minimums for runway in use.

(2) Simultaneous takeoffs are considered section takeoffs and all section takeoff limitations concerned still apply.

(3) All aircrew will assume the centerline of their respective runway.

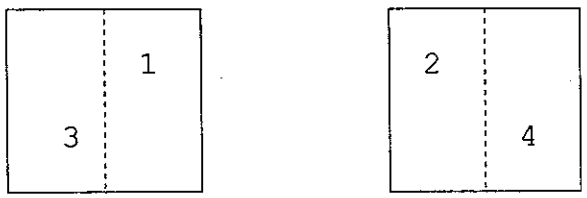
(4) When the flight has been cleared for takeoff and all radio check-ins have been completed, the lead shall instruct the wingman to "RUN 'EM UP." Both members of the flight shall set 80% and check their instruments. When the wingman is ready, he shall call "READY RIGHT/LEFT." Lead will signal the takeoff roll over comm 2 by calling "Brakes…NOW." The wingman will select MAX AB as the Lead starts takeoff roll. Each aircraft will perform an individual takeoff. Lead will call for gear and flaps when safely

airborne. No later than 250 KTS, the Lead shall say "BURNERS...NOW" and smoothly deselect afterburner.

b. Division Dual runway Interval Takeoffs

(1) Weather needs to be 5000/5 to join beneath an overcast and 300/1 to join "On Top."

(2) Line-up on the runways should be as follows for a 10 or 15 second VMC takeoff, depending on gross weight.




(3) When #2 and #4, on the opposite runway, are ready for takeoff, #2 shall call "READY RIGHT/LEFT." The Flight Lead will signal his takeoff over Comm 2 by calling "LEAD'S ROLLING." The interval between aircraft will be 10 or 15 seconds. Each aircraft (except last) shall roll 1000 feet prior to selecting afterburner. Three and Four Plane formations will rendezvous in balanced parade during a running rendezvous.

c. Division Dual Runway Simultaneous Takeoff (HERD-GO)

(1) Weather needs to be the greater of 1500/2½ or circling minimums.

(2) The same limitations that apply to sections are applicable in a "HERD GO."

(3) Line-up on the runways should be as for two simultaneous section-go takeoffs utilizing the dual runways.

(4) Procedures and voice calls are the same as a Simo-go except when #3 and #4 are ready, #3 will call "READY LEFT/RIGHT."

(5) A standard section takeoff will be performed by each section. #3 should remain on his side of the Lead and attempt to join Lead when comfortable, avoiding any "big play" after takeoff.

(6) If weather precludes the division from rendezvousing before IMC conditions are encountered, then the division will execute either a section or individual radar trail departure."

3015. DEPARTURES. All departures should be under IFR control to the maximum extent practical. All aircraft in the flight shall conform to the published SID. Lost sight procedures shall be briefed for all flights.

3016. ALTIMETER WARNING SYSTEMS PROCEDURES

1. Background. Aircraft equipped with a Heads-Up-Display provide the pilot with unparalleled cueing to aid in situational awareness. Additionally, software upgrades offer new tools to aid in preventing controlled flight into terrain (CFIT). However, aircrew continue to fly into terrain within controlled flight. Until a predictive terrain avoidance system is fielded, the primary means of cueing aircrew of an impending CFIT remains the radar altimeter (RADALT). Correct utilization of this potential life saving system is critical to safe flight operations.

a. Although the RADALT policy set forth in the following paragraphs is designed to provide an acceptable margin of safety for potential CFIT situations, no aircraft system can completely prevent CFIT. Aircrew knowledge of aircraft performance, spatial orientation, area terrain, and self-limitations remain the primary methods for avoiding and/or recovering from a potential CFIT situation.

b. The policy for employing the RADALT is presented in several subsets that correspond to operating environments or mission areas. The summation of these subsets covers nearly all of the potential sorties that MAG-12 aircrew conduct, however, it cannot cover every conceivable situation. For those situations not covered by this policy, aircrew should seek guidance for proper RADALT usage for a particular mission through their command, through appropriate NATOPS manuals, and through the use of common sense.

2. Administrative Procedures. RADALT policy during the administrative phase of flight is designed to prevent CFIT as a result of taskings, such as in-flight emergencies, that degrade or impede normal instrument cross check procedures. The most likely occurrence for CFIT during this portion of flight is during the take-off and landing phase. During this phase of flight, a RADALT hard bug is required for CFIT avoidance.

a. Take-off Operations. During the take-off phase of flight, the RADALT hard bug shall be set to 200′. In the event of an emergency or other tasking which distracts the aircrew from their normal instrument scan, this setting affords a successful recovery for a typically configured aircraft with a -10 degree flight path angle (FPA). Aircrew operating aircraft that employ software altimeter warning systems shall set the RADALT software bug and the BAROALT bug as required by mission tasking.

b. Enroute Operations. For enroute cruising altitudes below 5000′ AGL, the RADALT hard bug shall be set to 10% below the enroute altitude (i.e. 4500′ for a 5000′ AGL enroute altitude). For block cruising altitudes, the RADALT hard bug shall be set to the bottom of the block (i.e. set to 2000′ for a 2000′ - 3000′ AGL assigned altitude block). For enroute cruising altitudes above 5000′ AGL, the RADALT hard bug shall be set to 5000′.

c. Landing Operations. During the landing and recovery phase of flight, descent checks shall include use of the RADALT hard bug in a step-down fashion.

(1) For descents from enroute cruising altitudes greater than 5000′ ALG, the RADALT hard bug shall be set at 5000′. RADALT functionality shall be checked during descent by allowing the RADALT warning to occur at 5000′ AGL. After the RADALT is confirmed to be functioning correctly, the RADALT shall be reset to the height above airport (HAA) for non-precision approaches, the height above touchdown (HAT) for precision approaches, or 450′ for visual approaches.

(2) For descents from enroute altitudes below 5000′ AGL, the RADALT functionality shall be checked at an appropriately safe altitude (1,000 ft AGL minimum) then set at an appropriate setting from the RADALT reset procedures outlined above.

3. Tactical Procedures. The tactical phase of flight includes both air to air and air to ground associated missions. These missions are extremely dynamic and CFIT can result from task saturation. Implementation of operational risk management programs, adherence to OPNAVINST training rules, and proper use of the radar altimeter warning systems can reduce the risks associated with these flights.

a. High Altitude Operations. High altitude operations are those tactical portions of a sortie where intent for flight exists above 5000′ AGL. An example of this type of flight is an air-to-

air sortie where a floor of 5000′ AGL or higher is briefed. The RADALT hard bug shall be set to 5000′ AGL. Aircrew operating aircraft that employ software altimeter warning systems shall set the BAROALT bug at 10000′ above the adjusted floor. Adjusted floor settings are commonly used when an air-to-air mission is conducted above an undercast or above terrain with an elevation greater than mean sea level. RADALT soft and hard bugs should not be the same.

b. All Altitude Operations. All altitude operations are those tactical phases of a sortie where intent for flight exists at all altitudes down to and including LAT altitudes. **The RADALT hard bug shall be set to 10% below the minimum briefed altitude except for dive delivery sorties. For dive delivery sorties, the RADALT hard bug shall be set to the minimum planned altitude for the corresponding dive angle.** During ordnance delivery missions, the radar altimeter warning system shall not be used as a weapons release cue. When changing patterns, the formation leader shall include the new pattern's altitude warning settings as part of his call to change the pattern. Aircrew operating aircraft that employ software altimeter warning systems shall set the BAROALT bug and RADALT soft bug as outlined below.

(1) Non Ordnance or Ordnance Delivery Missions. **The RADALT soft bug or the BAROALT bug shall be set to 10% below the planned release altitude for the dive.** Altimeter bug choice will depend on altitude of delivery. Deliveries below 5,000 ft AGL, use RADALT soft bug. Deliveries above 5,000 ft AGL, use BAROALT bug. During ordnance delivery missions, the RADALT soft bug warning system shall not be used as a weapons release cue.

Note: When in a low altitude environment it is important not to mask the RADALT hard bug warning with the RADALT soft bug warning by having them set to the same altitude.

3017. ENROUTE

1. For all flights conducted in controlled airspace, a 300 KIAS climb schedule shall be used until passing 10,000 feet MSL, thence in accordance with NATOPS.

2. Except for actual ACLS approaches to the carrier, the autopilot shall not be engaged below 500 feet. Additionally, the autopilot shall not be engaged when in close formation.

3. Flight control circuit breakers or generators shall not be cycled airborne, except as required by NATOPS.

4. Formation Flight

a. During airways/admin navigation while in VMC conditions, aircraft shall normally be flown in IFR Spread formation, division wall or offset box, or normal cruise formation to remain within one nautical mile of lead aircraft. These formations enhance visual/radar lookout ability.

b. When flying in parade (close formation), the wingman pilot shall not operate the radar in other than automatic modes.

c. Section configuration changes:

(1) Shall be completed above undercasts when practical.

(2) Shall utilize the radio during night/IMC.

(3) Shall simultaneously lower gear and flaps.

d. All formation lead changes shall be initiated by the formation leader verbally or with hand signals and acknowledged by the wingman prior to any formation changes.

e. Rendezvous shall be conducted no slower than max range airspeed, with lead setting power at either MIL minus 3% or 92% while in a climb.

3018. APPROACHES

1. VFR Overhead Break. When approaches to the field terminate with an overhead break, the following conditions shall apply:

a. Weather minima are 2000 feet/5 miles.

b. Maximum of four aircraft.

c. Echelon formation.

d. Maximum break airspeed is 350 knots.

e. Break as cleared by the tower using a level turn.

(1) Fan Break. Sections may conduct a fan break. When cleared to break, the flight lead shall give three sideward head nods, on the third nod, initiate a smooth roll to establish a level turn. The Flight Lead shall maintain cruise power setting with the

speed brake retracted until at least 180 degrees of turn. At this point the Flight Lead may reduce power to idle to slow below gear speed (250 KIAS). The wingman shall carefully match the leader's initial roll, reduce power to idle, extend the speed brake (as required) to establish a lag pursuit, decelerating position, on the lead aircraft. The wingman shall transition to the landing configuration in 1 "G" wings level flight, when the airspeed is below 250 KIAS. Both aircraft continue to decelerate to on-speed AOA.

(2) Interval Breaks. When flight consists of more than two aircraft, an interval break shall be performed. For an interval break, the turn-up signal shall be followed by displaying the appropriate number of fingers for the break interval in seconds. For flights of more than two aircraft, the break interval shall be a minimum of four seconds. At the initiation of the break, the flight lead will kiss off the remainder of the flight and rapidly roll into a turn to downwind. Each aircraft shall reduce power to idle after 90 degree of turn slow below 250 KIAS at which time he will transition to the landing configuration. Wingmen will execute a similar break at the appropriate interval.

2. Instrument Approaches. When the break is not available or is not desired, the following approaches shall be utilized.

a. Visual Straight-In/Downwind Entry. Approach Control vectors will align the flight with the runway (generally by ten miles) for a straight-in approach to a landing. Flight leads will slow the flight to 250 kts before break-up, separate aircraft with a "Detach" call on the radio. At the detach, the detaching aircraft will reduce power to idle, extend the speed brake and as soon as airspeed is less than 250 kts, extend the landing gear and full flaps and slow to on-speed flight. Detach wingman at two-mile intervals. Each aircraft will intercept a 3 to 3.5 (3.8 at Iwakuni) degree glide slope. Landing checks should be completed by 5 miles. For a visual section approach, standard section procedures described in this order apply.

b. TACAN Approach. On a TACAN approach the INS may be used for backup navigation during the approach.

**WARNING**: INS shall not be used as the primary navigation instrument for TACAN approaches. Inherent drift can cause significant navigation errors.

c. Ground Control Approaches (GCA). When performing GCA's, pilots shall complete landing checks prior to intercepting glide path or initiating rate of descent as appropriate. Use all the available NAVAIDS to back-up controller calls.

3019. LANDINGS. Normal landings will be a lens approach to runway centerline. When multiple aircraft are landing, the following procedures shall be followed.

1. All single plane landings shall be on speed and on centerline. The leader shall roll out on the turnoff (cold) side of the runway with succeeding aircraft following when speed is under control. Unless unusual circumstances require an early turnoff, all aircraft shall roll to the end of the runway/last taxiway.

2. Arriving aircraft shall use the taxi/landing light in VMC from the time landing gear is extended provided it does not adversely affect the pilot, wingman, LSO/LSS, or other aircraft.

3. Section Landings. Section transitions to landing configuration should be performed in VFR conditions. Section landings are normally reserved for emergency situations and may be performed when conditions such as fuel state, weather, or unanticipated delays/problems require such action to avoid an emergency fuel situation.

a. Section landings may be practiced at the discretion of the Squadron Commander following the procedures outlined below.

(1) The crosswind component is less than 15 knots (including gusts).

(2) At least 8,000 feet of runway is available.

(3) The runway is a least 200 feet wide (except MCAS Iwakuni).

(4) There is no standing water, ice, or snow on the runway. Runway braking action is good or better, RCR greater than 18 is reported.

(5) There is no hung external ordnance aboard either aircraft.

(6) Gross weight within 1000 lbs and aircraft similarly configured.

b. Section landing shall follow an instrument approach or visual straight in. An Optical Landing System (OLS), mirror, lens, or VASI should be used. The rate of descent should be similar to that of a PAR approach. Note: Keep in mind that some VASI's establish a glide slope short of the runway to accommodate the distance required for landing flare.

c. The wingman shall fly normal parade position. Once in VMC, the wingman should be particularly careful not to be sucked or stepped up from the normal parade position.

d. The lead shall fly the approach so that the heaviest aircraft is never slower than "on speed." The lead shall land on the center of the appropriate half of the runway. No excessive turns into the wingman shall be accomplished below 500' AGL. Additionally, the leader must remember that the wingman will touchdown first, (by definition of the parade position) and therefore, will be closer to the approach end to the runway than the lead aircraft.

e. After landing, each pilot shall steer to the center of his half of the runway. The wingman shall commence braking to allow sufficient nose-to-tail separation in the event of a controllability problem. If the wingman overtakes and passes the lead, the wingman shall not increase his normal braking to maintain or regain his position. The section shall taxi clear at the end of the runway.

4. M-21 Arrestment Procedures. The following procedures shall be utilized for M-21 arrestments. All pilots new to the MAG shall perform one roll-in and one fly-in engagement within 30 days of arrival at Iwakuni.

a. M-21 Fly-In Engagements. Pilots shall fly the published pattern on speed, with hook down to intercept the glide path. A carrier-type pass shall be flown, selecting military power on touchdown, and, in the event of a hook skip, rotating to on-speed once past the gear.

b. M-21 Roll-In Engagements. A normal approach to the runway shall be flown, dropping the hook once clear of the E-28, 1000' prior to the M-21. Power shall be set to maintain 100 knots to retain a wave-off capability until the wire is engaged. With a hook skip or tower directed go around, select MIL/MAX, raise the hook handle and rotate once the hook light is extinguished in order to avoid an in-flight engagement of the departure end E-28.

c. Standing Water, Poor Braking Action or Excessive Crosswind. If standing water exists on the runway or braking action is reported as poor or worse at destination airfield, an arrested landing shall be performed. In the event of a wet runway and a crosswind component in excess of 15 knots an arrested landing should be considered. At MCAS Iwakuni, the M-21 shall be used if available. If the M-21 is not available, the E-28 shall be used to the maximum extent possible. The taxiway midfield M-21 is available for emergencies when the runway is fouled. It may require ten minutes to rig the taxiway M-21.

3020. NORDO PROCEDURES. In the event of lost communications between aircraft, a join-up will be affected at a prebriefed NORDO rendezvous point. Normal lost communications IFF squawks shall be utilized by the NORDO aircraft until join-up is complete. Following join-up, standard HEFOE signals shall be utilized to relay additional aircraft problems to the other aircraft. Aircrews shall adhere to the procedures delineated in the Flight Information Handbook. In all cases however, good headwork and common sense prevail. A straight in approach should be conducted.

1. Day VMC. The NORDO aircraft shall fly wing on the lead aircraft during return to base. With clearance to land, the leader shall pass the lead to the wingman prior to 3/4 miles to touchdown on glide slope. If clearance to land is rescinded, the lead aircraft shall raise his gear and pass the NORDO aircraft to signal a missed approach and join up. The NORDO aircraft shall then rejoin the lead for another approach.

2. Night/IMC. The NORDO aircraft shall fly the wing position with all lights on. The lead aircraft shall have all lights on except his strobe light. Signals to the wingman shall be initiated through the external master light switch. The light signals are:

a. Gear and Flaps. Two flashes of exterior lights.

b. Cleared to land and Passing of the Lead. Single flash of exterior lights with lead turning on anti-collision lights. Lead should ensure that his wingman is lined-up, on centerline, on glide slope referencing PAPI, prior to passing the lead to the wingman.

3. Single Aircraft NORDO Recoveries. If all attempts at rendezvous fail, the following procedures shall be adhered to:

a. VFR

(1) Day NORDO aircraft shall enter a normal VFR pattern rocking wings. The break should be accomplished over the upwind field boundary (traffic permitting), to conform to local course rules. Aircraft should check for a flashing green light on downwind and steady green light on base leg as a clearance to land.

(2) Night NORDO aircraft shall enter downwind, or fly a straight-in approach (VFR) in landing configuration, and overfly the field offset from the last known duty runway. The landing/taxi light should be cycled repeatedly to attract the attention of the tower personnel. Then follow the normal NORDO procedures (i.e., watch for lights from the tower).

b. IFR. The FLIP Flight Information Handbook, FARS and Local Course Rules apply.

4. Arrested Landings

a. In all NORDO situations, flight leaders shall request an arrested landing for the NORDO wingman, requesting all available arresting gear be put in battery. The wingman should plan on a short-field arrestment if desired/required due to an unusual circumstance/emergency. A simple NORDO situation is not an emergency and does not require an arrested landing.

b. The lead aircraft shall lower the hook when the wingman has been cleared for an arrested landing. The lead's hook shall remain down until after passing the lead to the NORDO wingman or in the event clearance for an arrested landing is revoked. Wingman shall acknowledge clearance and desire to make an arrested landing by lowering his hook.

c. If clearance to land is rescinded, the lead aircraft shall raise his gear and hook and pass the NORDO aircraft to signal a missed approach and join up. The NORDO aircraft shall then rejoin the lead for another approach.

NOTE: Lead aircraft must remember to raise his hook prior to landing.

3021. INFLIGHT REFUELING

1. All aircrew shall be completely familiar with their T/M/S NATOPS procedures, NATOPS AIR REFUELING manual, and 1st MAW SOP prior to conducting air refueling.

2. Checklists. The air-refueling checklist should be completed as soon as visual contact is made with the tanker. In all situations, the checklists shall be completed prior to engaging the drogue, and report nose cold and switches safe.

3. Night Air Refueling. Position/formation lights - ON; strobe lights - OFF. In-flight refueling with NVDs is authorized provided aircrew are NVD qualified/current and tanker aircraft are configured with NVD compatible lighting.

3022. EMERGENCY PROCEDURES

1. General. Emergencies fall into two main categories; those that require landing **as soon as possible** and those that require landing **as soon as practical**. Most fall into the latter category. Ensure eagerness to land does not increase the severity/complexity of the situation. Time permitting, flights shall inform ODO of the emergency conditions and intentions. The ODO shall ensure that all checklist items have been performed, summon technical assistance and alert an LSO if available.

2. Some malfunctions are not covered in the NATOPS Manual and require ODO/maintenance personnel assistance.

3. Any flight control malfunction requires an in-flight abort to a downwind/straight-in landing if possible. FCES, FC AIR DAT, FLAPS OFF, FLAPS SCHED, DEL ON, MECH ON, AIL OFF, RUD OFF cautions or any FCS problem that cannot **or should not** be reset is considered a flight control malfunction.

4. All emergency aircraft shall squawk 7700 until instructed otherwise by ATC.

3023. LOST WINGMAN PROCEDURES. In the interest of ORM, flights of more than two aircraft shall not be flown in IMC conditions except to transit through thin overcast/under-cast layers thereby minimizing the potential for lost sight.

1. General. Upon losing sight of your reference aircraft:

a. Assure lateral/nose-tail/vertical separation (as appropriate).

b. Pick-up instrument scan.

c. Make radio transmission "lost sight," with call sign.

d. If radar trail or visual rendezvous cannot be effected, get a separate clearance.

2. Specifics

a. Straight and Level. If lost sight while in straight and level flight, simultaneously reduce airspeed as appropriate and turn away 15 degrees (dash 2 or 3) or 30 degrees (dash 4) for 15 seconds. After 15 seconds, pick-up flight lead's heading and airspeed.

b. Climbs or Descents. If lost sight while in a climb or descent, simultaneously reduce airspeed as appropriate and turn away 15 degrees (dash 2 or 3) or 30 degrees (dash 4) for 15 seconds. After 15 seconds pick-up flight lead heading and airspeed, leveling off 1,000 feet below (climb) or above (descent) flight altitude.

c. Turns Into Wingman. If lost sight during a turn into the wingman, simultaneously reduce airspeed as appropriate and increase bank angle 15 degrees (dash 2 or 3) or to maximum practical (dash 4). Wingman will hold bank angle until lead/dash 3 confirms the roll out. Lead shall specify new flight heading.

d. Turns Away From Wingman. If lost sight during a turn away from the wingman, simultaneously reduce airspeed as appropriate and roll wings level (dash 2 or 3) or reverse bank 15 degrees (dash 4) for 15 seconds. After 15 seconds continue turn to flight heading.

e. On Final (Instrument Approach). Simultaneously turn away 15 degrees for 5 seconds and commence a climb to MSA. When clear of lead aircraft and with appropriate situational awareness, execute missed approach instructions.

2. Flights which do not take place in the local area shall brief diverts and bingo procedures in accordance with the squadron briefing guide and should be familiar with the bingo profiles as published in the NATOPS Pocket Checklist.

3028. FUNCTIONAL CHECK FLIGHTS

1. Aircrew flying functional check flights shall be fully qualified as per the current edition of reference (a) and the applicable aircraft NATOPS Manual. All aircrew authorized to fly check flights shall be designated in writing as a post maintenance check aircrew by the squadron Commanding Officer for the type and model aircraft to be flown.

2. Functional check flights shall be conducted in accordance with the current edition of reference (a) and OPNAVINST 4790.2.

3. Supersonic flight operations shall be in accordance with paragraph 3029 of this order.

4. Brief and Debrief. The pilot scheduled for a functional check flight shall receive a thorough briefing by a QA representative. This briefing shall include, but will not be limited to the following items:

a. The reason for conducting the functional check flight.

b. A brief description of work performed and major components removed and replaced, or removed and reinstalled since the last flight.

c. Specific items to be checked on the flight, appropriately annotated on the check flight checklist.

d. A description of any areas of particular interest or specific data required.

e. The date the aircraft last flew.

5. After completion of the flight, the pilot shall thoroughly debrief the same QAR on the results of the flight. The signed checklist shall be given to Maintenance Control for forwarding to Quality Assurance.

3029. NOISE ABATEMENT AND SUPERSONIC FLIGHT OPERATIONS. Aircraft noise pollution is a serious factor at MCAS Iwakuni because of the densely populated areas immediately adjacent to the airfield. Of particular sensitivity to our Japanese hosts is over flight of the industrial area located one nautical mile north of Runway 02. However, this major public relations problem can be minimized with the full cooperation of all Commanding Officers, aircrew, and maintenance personnel through adherence to the following procedures:

1. Noise abatement shall be practiced. Procedures for engine turnups are delineated in the current edition of reference (d).

2. Afterburner use over the Japanese landmasses will be limited to mission accomplishment and/or operational necessity. Afterburner use for take-off should be discontinued as soon as safe altitude and speed permit.

3. Supersonic flight is not authorized in R-567 and those portions of the R-134 within 30NM of Japanese land masses. Supersonic flight within 30NM of Japanese land masses is prohibited.

4. Avoid direct over flight of the industrial area immediately off the departure end of runway 02 if practical. Approaches to runway 20 may require over flight of the industrial area.

3030. BIRD STRIKE AVOIDANCE. Bird activity may increase as crops change, sanitary landfills are opened, wildlife refuges are created, and seasonal migration routes are utilized. All aircrew must be aware of increased bird activity and must utilize all available means to avoid them. The key to a successful Bird Strike Awareness and Reduction Program is TOTAL awareness. While the possibility of bird strikes can never be eliminated, damage to aircraft can be limited/reduced with an aggressive, well-planned program developed on the basis of bird habits, the environment and the mission requirements. Guidelines for bird strike avoidance and reduction are as follows:

1. Bird Strike Reduction Program

a. Inform all personnel, to include squadron augments, of local hazards.

b. Brief potential bird problems along the proposed route of flight.

c. Brief possible evasive maneuvers at low altitude.

d. Brief action to be taken if flocks of birds are encountered (for example, initiate a climb since most birds/flocks disperse in a downward direction).

e. Brief engine failure procedures if birds are ingested.

f. Utilize ATIS for position and potential of bird hazard.

g. Utilize taxi light for takeoffs and landings.

2. MCAS Iwakuni ATIS will report current bird activity as follows:

a. None - zero birds present.

b. Light - zero to 10 birds present.

c. Moderate - 10 to 20 birds present.
d. Heavy - more than 20 birds in the Iwakuni area.

3. Whenever bird activity is reported as moderate, extreme caution should be used when flying in the Iwakuni area. If moderate/heavy bird activity is reported, section takeoffs are not permitted. Full stop landings are required. The overhead break is closed, straight in approaches only are permitted.

4. When bird activity is encountered, pilots shall report it to the tower. This report will then be passed on to other aircraft in the Iwakuni traffic area.

3031. FA-18 SIMULATOR TRAINING.

1. Background. The OFT is a valuable training asset which improves flight safety and readiness. It is an excellent device for annual NATOPS and instrument checks, engine turn training and qualification, and realistic switchology training for ordnance personnel.

2. Information

a. Scheduling. MAG-12 Operations is the scheduling authority for the MCAS Iwakuni 2F132 OFT. Flight Simulator operation is covered under Department of the Navy contract number N61339-87-D-0012. Where conflicts arise, the contract will supersede.

b. Operating hours. The normal operating hours for the OFT are 0800-1300, Monday through Friday. The OFT will be scheduled in one and one quarter hour time blocks beginning at 0800 (e.g. 0800-0915) and ending at 1300 daily. To request use of the OFT outside of these hours contact MAG-12 Operations two days prior. MAG-12 Operations will then coordinate with MCAS Iwakuni Operations to schedule the OFT. Resolution of any conflict between users will be handled by MAG-12 Operations.

c. Staff operator responsibilities. Units are required to provide their own instructor if one is desired. The OFT staff personnel are technicians who will operate the OFT, but have neither the training nor the experience to instruct. The staff is allowed to describe the simulation of the aircraft and it's flight. They are strictly prohibited from giving instruction regarding flying or any actual aircraft systems.

d. Demonstrations and tours. All requests for simulator demonstrations or tours will be sent to MCAS Iwakuni Operations via MAG-12 Operations. Requests will include the name of the pilot who will give the tour or demonstration and, in the case of demonstrations, the name of the authorized person or dignitary. The simulator staff shall be notified of tours or demonstrations in advance.

(1) A simulator demonstration is an official introduction to the simulator for authorized personnel or dignitaries.

(2) A simulator tour is an unofficial introduction to the simulator for any person without routine access and serving in no recognized official capacity.

e. Security. The Flight Simulator is classified Secret and is therefore a controlled access area. Only personnel named on the official access roster will be permitted to enter to the cockpit trainer area. The remainder of the building, i.e., computer area, maintenance area, etc. is restricted to official staff only. All personnel must prevent the compromise of secret OFT software. To accomplish this the following guidelines shall be followed during simulator demonstrations or tours.

(1) No air-to-air weapons other than the gun shall be selected.

(2) The air-to-air radar shall remain in a 5nm scale.

5. Action. Commanding Officers will ensure compliance with the following procedures.

a. Units scheduling the OFT will include time blocks, the pilot's name, instructor's name and appropriate F/A-18 T&R syllabus training code from enclosure (1) on the flight schedule.

b. Units will submit an access roster including name, grade, social security number and security clearance prior to scheduling the OFT.

c. Units will submit a weekly simulator schedule request to MAG-12 Operations no later than 1200 Thursday of each week for the following week.

d. MAG-12 Operations will publish the OFT schedule by Friday of each week for the following week.

6. Currency

a. Each F/A-18 aircrew requiring flight time waivers should have attained at least 50 percent of the required flight hours in the simulator in accordance with the current edition of reference (a). Normally the Commanding General, 1st MAW, will not favorably endorse requests for waivers.

b. To the maximum extent possible, F/A-18 pilots are required to perform monthly emergency procedures in the OFT.

c. When at MCAS Iwakuni, F/A-18 pilots who have not flown in 15 calendar days shall fly a simulator warm-up prior to an aircraft flight.

F/A-18 T&R SYLLABUS TRAINING CODES

| | |
|---|---|
| SFAM-101 | DISPLAYS/CNI |
| SFAM-102 | GROUND OPS AND EPS |
| SFAM-103 | GROUND OPS AND EPS |
| SFAM-104 | GROUND OPS PRACTICE (TURN-UP CHECK) |
| SFAM-105 | FUEL AND ENGINE EPS |
| SFAM-106 | INSTRUMENT PROCEDURES |

| | |
|---|---|
| SFAM-107 | HYDRAULIC/ELECTRICAL EPS |
| SFAM-108 | FLIGHT CONTROL EPS |
| SFAM-109 | OCF PROCEDURES |
| SFCLP/EQ-204 | SIMULATED CARRIER LANDING PRACTICE, EMERGENCY PROCEDURES SPECIFIC TO CARRIER OPERATIONS |
| SAA-210 | RADAR ATTACKS AGAINST SAR-1 CAPABLE BANDITS |
| SAA-310 | RADAR ATTACKS, EMPHASIS ON SECTION COMM PROCEDURES |
| RQD-600 | NATOPS CHECK |
| RQD-601 | INSTRUMENT CHECK |
| IDM | TOUR |

3032. FLIGHT COMPOSITION

1. General. Except in unusual situations, all squadron flight operations shall be planned and conducted utilizing formations of two or more aircraft (excepting EA6Bs). Single aircraft flights will normally be approved only in those cases where such flights are required by the mission (e.g. functional check flights, ferry flights), or allowed by the T&R syllabus. If one aircraft aborts, the other aircraft may continue with the mission if the aircrew is qualified, properly briefed, and a training mission can still be accomplished. Single aircraft flights shall be approved by the Commanding Officer.

2. Succession to the Lead. Division Leaders of flights of more than two aircraft shall include in their briefing instructions on succession to the lead in the event they are unable to complete the mission. Except in an emergency, two aircraft shall not join in formation unless one of the aircraft is piloted by a designated Section Leader and the formation was briefed.

3033. AIRCREW REVIEW BOARD (ACRB)

1. Squadron Commanding Officer shall appoint members to an ACRB. This board shall include in addition to the Commanding Officer, the Executive Officer, the Operations Officer, the Pilot/WSO/ECMO Training Officer, the DOSS/ASO, the Flight Surgeon, and any other

appropriately qualified squadron aircrew the Commanding Officer directs.

2. The ACRB shall meet quarterly for the purpose of evaluating the current level of training of each pilot flying with the squadron. In addition, each pilot's training progress, air discipline and ground duty performance (as applicable) will be discussed.

3034. UNAUTHORIZED FLIGHT DEMONSTRATIONS. Unauthorized flight demonstrations to include low passes or max performance takeoffs are not authorized.

3035. WEAR OF JEWELRY FOR AIRCREW AND MAINTENANCE PERSONNEL. Aircrew and maintenance personnel, when involved in the conduct of flight operations or in the conduct of maintenance duties, to include operation of Ground Support Equipment, SHALL NOT wear any decorative jewelry that may pose a safety hazard to the aircraft or to any individual involved. Examples of such jewelry include, but are not limited to, all rings, earrings, and metal bracelets. The wearing of wedding bands and religious medallions in the vicinity of aircraft operations is permitted, however such wear can be hazardous and is strongly discouraged.

3036. OKINAWA WEATHER REQUIREMENTS

a. Due to the lack of diverts in the Okinawa area, MAG-12 aircrew must take precautions to ensure a safe transit. For aircrew transiting to Okinawa from Japan or Korea, weather must be at least 1000 ft ceiling and 3 miles of visibility. For aircraft operating locally in the Okinawa area, aircrew shall use OPNAV minimums.

# CHAPTER 4

# AIR-TO-AIR MISSION TRAINING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# CHAPTER 4

# AIR-TO-AIR MISSION TRAINING

4000. GENERAL. Air Combat Maneuvering (ACM) training prepares aircrew to meet and destroy the enemy in air-to-air combat. Dissimilar Air Combat Training (DACT) serves to develop a high level of tactical skill for all combat aircrew and furthers the learning in three-dimensional air-to-air tactics. ACM and DACT must be conducted in a realistic environment, with safety the top priority.

## 4001. ACM CURRENCY

1. Aircrew must have flown in the last 15 days in order to fly ACM.

2. If an aircrew has not flown an ACM/Basic Fighter Maneuvering (BFM) sortie within the last 30 days, he must fly a BFM syllabus sortie with an ACT(I) flight lead prior to engaging in ACM.

3. If an aircrew has not flown ACM/BFM within refly limits and has allowed his currency to become delinquent, he must refly all combat ready and combat qualified ACM/BFM flights that are delinquent with an ACM Flight Leader.

## 4002. AUTHORITY

1. Authority and responsibility for the safe and efficient implementation of ACM training for assigned aircrew rest with each squadron Commanding Officer.

2. DACT between MAG-12 units and non-1st MAW U.S. Forces units with whom no prior letter of agreement exists requires notification of CG, 1st MAW (G-3). Squadron notification of DACT must be submitted to MAG-12 (S-3) a minimum of 7 working days prior to the events so as to arrive at 1st MAW (G-3) a minimum of 5 days in advance per reference (e). See Appendix A for proper format and existing Letter of Agreement.

3. DACT with non-U.S. units must be approved by CG 1st MAW per reference (e). See Appendix A for proper format.

4003. ACM/DACT SUPERVISION

1. Squadron Commanding Officers

a. Ensure that all aircrew have read and are thoroughly familiar with the content of this section prior to participating in ACM, DACT, DEFTAC, or Evasive Maneuvering (EVM) training.

b. Forward ACTI training requirements at least 90 days in advance to CO, MAG-12 (S-3). Ensure squadron WTI's have provided the necessary flight and ground training build up for prospective aircrew prior to evaluation by MAWTS-1. MAG-12 S-3 shall consolidate and forward all requests for MAWTS-1 Instructor support.

2. Participating Aircrew. Aircrew participating in ACM shall conform to the guidelines in accordance with reference (f).

4004. ACM SYLLABUS Squadron ACM training shall be conducted per the syllabi contained in the T&R Manual, Volumes 2 and 3.

4005. BRIEFINGS AND DEBRIEFS. The Flight Leader shall utilize a squadron approved briefing guide which encompasses all phases of the flight and mission specifics including the Training Rules for air-to-air at Appendix B. All flights shall be thoroughly debriefed.

4006. LIVE ORDNANCE. ACM/DACT shall not be performed with live ordnance loaded on the aircraft.

4007. G WARM-UP AND G-LOC AWARENESS. Prior to engaging in ACM/DACT training, all aircrew shall discuss rapid G onset rates and assess their personal G tolerance based on currency of pulling Gs, training proficiency and physical condition. A G warm-up maneuver shall be conducted in flight to assess G tolerance and G-suit effectiveness as well as to prepare aircrews physically for pulling Gs.

# CHAPTER 5

## AIR-TO-GROUND MISSION TRAINING


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# CHAPTER 5

# AIR-TO-GROUND MISSION TRAINING

5000. GENERAL. Individual aircraft Tactical Manuals are the primary reference for air-to-ground training missions.

5001. SCHEDULING/FLIGHT COMPOSITION/CURRENCY REQUIREMENTS

1. Normal Flight Composition. Excluding Night System and Forward Air Controller (Airborne) (FAC(A)) sorties, air-to-ground ordnance missions shall not be scheduled or flown with less than a section of aircraft except as follows. A single ship may be scheduled and/or launch/continue due to wingman abort providing the pilot is MOS qualified, the sortie is not an initial T&R event and at least one of the following conditions is met:

a. There is a FAC(A) or Tactical Air Controller (Airborne) (TAC(A)) controlling the single aircraft.

b. There is a ground FAC controlling the single aircraft.

c. The scheduled target is physically manned by target personnel who are in position to observe ordnance delivery and have two-way communication with the delivering aircraft. WISS targets are considered unmanned.

2. TAC(A)/FAC(A) Missions. Single aircraft may be scheduled for TAC(A)/FAC(A) missions. Single FAC(A) aircraft may drop MK-76 or shoot forward firing WP rockets for the purpose of marking targets for other aircraft flying close air support (CAS) missions.

3. Night Attack. Single F/A-18D aircraft may be scheduled for Night System sorties. These aircraft shall only conduct level or medium to high altitude dive deliveries (recovery altitude above 5000 feet AGL).

4. Dive Recovery/Level Delivery Minimum Altitudes. Minimum dive recovery and level delivery altitudes are functions of currency level as follows.

MINIMUM ORDNANCE DELIVERY RECOVERY ALTITUDE

| CURRENCY LEVEL | DAY FLIGHT | NIGHT FLIGHT |
|---|---|---|
| Last ordnance delivery flight within past 15 days | 500 ft. AGL | 1000 ft. AGL |
| Last ordnance delivery flight between 16-30 days | 500 ft. AGL | NF not authorized |
| Last ordnance delivery flight over 30 days | 1000 ft. AGL | NF not authorized |

5002. BRIEFING/DEBRIEFING

1. Specific items peculiar to air-to-ground missions shall be briefed by the flight leader. At a minimum, these items shall include ordnance, fuse loads, armament computer codes, type delivery, dive recovery, release altitude, minimum altitude, error analysis, and preflight of ordnance. Air-to-surface training rules at Appendix C shall be briefed in detail.

2. Each aircrew shall study the appropriate maps and photos (if available) of the target area on all CAS missions or missions not conducted on a raked range. All aircrew shall carry a 1:50,000 map of the target area for the range/impact area (raked ranges excluded).

3. Take-off, climb out, enroute and recovery while carrying ordnance shall be planned (as much as practical) so as not to overfly populated areas.

5003. MCAS IWAKUNI ORDNANCE PROCEDURES The current edition of MCASO P3710.3 is the sole source governing document for ordnance operations aboard MCAS Iwakuni.

5004. PREFLIGHT

1. The Squadron Ordnance Officer, NCOIC, or other qualified personnel will be available to pilots during preflight of ordnance-equipped aircraft.

2. F/A-18 aircrew shall ensure that the proper symbology is present on the SMS stores page for each parent station with a MER or VER.

5005. TAKEOFF. Rendezvous shall be briefed by the flight leader, and each aircraft will check the other for security of all ordnance prior to assuming tactical formation. The controlling agency will be advised if ordnance has been inadvertently jettisoned.

5006. RENDEZVOUS/AIRBORNE CHECKS

1. On air-to-ground ordnance missions, the wingman shall check the preceding aircraft's ordnance during rendezvous to ensure that all ordnance is secure. Do not cross close aboard/under ordnance equipped aircraft.

2. When carrying live ordnance, bore sight checks shall only be done with SIM mode selected and the Master Arm in the safe position. In no case shall the trigger be squeezed.

3. Flights planning to conduct visual deliveries (live or simulated) shall perform a G awareness maneuver prior to commencing delivery runs.

5007. TARGET WEATHER CRITERIA. In no case shall ordnance be delivered through an overcast or undercast. The weather criteria contained in Appendix C shall be used for all ordnance deliveries on raked ranges and live bomb drop ranges. In the case of live ordnance, the delivery maneuver (dive angle) will be determined by the ordnance fuse/combination.

5008. MINIMUM ALTITUDE. Unless conducting scheduled LAT training, the minimum altitude for aircraft ordnance delivery is 500′ AGL day and 1000′ AGL night.

5009. AIR TO GROUND RAKED RANGE PROCEDURES

1. When deployed or when operating on an unfamiliar range, a day ordnance flight is required prior to a night ordnance flight and shall include area and target range familiarization.

2. All aircraft carrying a mix of live and inert ordnance shall proceed to high explosive targets first, then to inert targets following the complete expenditure of high explosive ordnance.

3. When in the air-to-ground pattern, forward firing ordnance shall not be armed until the nose of the aircraft is pointed at the target and the interval is clear. After pull-off, the master arm switch shall be positioned to safe. Simultaneous/buddy runs are not authorized.

4. During training, no ordnance shall be expended through a cloud layer or when the impact surface is not visible.

5. A NORDO aircraft shall not drop practice ordnance. NORDO aircraft shall orbit at a briefed altitude in the same direction as the pattern. A NORDO aircraft experiencing other problems shall fly in the opposite direction to the pattern. Should the NORDO require landing ASAP, squawk emergency and fly to the nearest suitable airfield.

6. On a raked range, an aircraft shall call "in hot/cold", and "off" the target. To maintain safe separation within the flight, additional calls may be made. The MASTER ARM switch shall be secured after safely recovering from each run.

7. In the pop-up pattern on a raked range, the downwind shall be flown above 2000 feet AGL so the aircraft in the run may be observed. Any descent below 1000 feet AGL shall be accomplished while wings level on the run-in heading.

8. All pilots shall know the location of other aircraft in the pattern prior to climbing to pattern altitude.

9. On the final pass to the target the Section/Division Leader shall call "In hot/cold last run" when established wings level on the run in heading.

10. After the final run, a "Switches Safe" call shall be initiated by the flight lead. This call shall be repeated by the remainder of the flight prior to departing the target/operating area. A "BDA" check shall be accomplished on the off-target rendezvous or as soon thereafter as safety dictates.

5010. TACTICAL TARGET AREA

1. When under FAC/FAC(A) control prior to rolling in on a target, all pilots shall have copied the FAC/FAC(A) brief and verified that all members of the flight understand the brief. The FAC/FAC(A) shall first clear all aircraft "HOT" on each run prior to any ordnance delivery.

2. All aircraft shall make an "IN" call when wings level and pointed at the target. The MASTER ARM shall be armed after the "CLEARED HOT" call is received or the run shall be aborted.

3. The MASTER ARM switch shall be secured after safely recovering from each run.

4. After the final run, a "Switches Safe" call shall be initiated by the flight lead. This call shall be repeated by the remainder of the flight prior to departing the target/operating area. A battle damage check should be conducted on the off-target rendezvous or as soon thereafter as safety dictates.

5011. TACTICAL ABORT CRITERIA. Tactical abort criteria contained in Appendix C includes minimum altitudes, airspeeds, maximum dive angles, minimum dive angles, minimum interval between aircraft, timing, loss of sight at critical points during a maneuver, and loss of situational awareness. Tactical abort parameters specific to the conduct of different tactical missions/maneuvers shall be briefed before each mission. A thorough brief shall include, but not be limited to, the appropriate air-to-surface training rules at Appendix C. Target weather and specific scenario abort criteria shall be addressed in all operations plans/LOIs/SOPs and/or mission briefs.

5012. NIGHT ILLUMINATION REQUIREMENTS

1. All night attack missions shall have illumination or use of external sensors (FLIR, LDT, LDTR, LMAV, IMAV, NVD's) unless otherwise directed by the Squadron Commanding Officer. When using flare illumination, it must be remembered that sky conditions play a major role in determining flare effectiveness. Spatial disorientation and the "milk bowl" effect can make target acquisition difficult.

2. When bombing with flare illumination, visibility shall be no less than 5NM and the ceiling high enough to provide for VFR delivery of ordnance (e.g. 8000 feet for 30 degree dives). Aircraft shall release their ordnance at altitudes that allow dive recovery above the flares. FLIGHT BENEATH FLARES IS NOT AUTHORIZED.

3. When employing night visual deliveries, targets shall be marked so that the target location is visually indicated by more than a single point of light.

5013. HUNG ORDNANCE. Individual airfields have different hung ordnance procedures. All aircrew are charged with knowing the specific procedures for each airfield at which they are operating. All aircrew shall take a Kadena Ordnance procedures test upon

arrival to MAG-12 and the procedures contained in Appendix D shall be reviewed prior to operating from that airfield. In the absence of other base specific guidance, the following direction/ information applies:

1. Captive AIM-9s without canards or fairings (blue tubes) and TACTS Pods are authorized in flight to and from MCAS Futenma. All other ordnance (captive/inert/live) is not authorized.

2. Hung ordnance is defined as any practice or live ordnance that the pilot has attempted to drop which has not released from the aircraft. This includes F/A-18 and AV8B aircraft that have fired the gun, but have not expended all 20mm/25mm ammunition (i.e., rounds counter not XXX'd out). Recovery with hung ordnance should be flown so as to avoid over flight of populated areas.

3. Unexpended ordnance is defined as any external practice or live ordnance carried with the intention of release or firing of which no attempt was made to release or fire.

4. Target area procedures for hung live ordnance. Flights carrying ordnance to target areas shall make every reasonable attempt to deliver the ordnance at the target as tactically fits the mission. If this is not feasible, the following should be accomplished in order as necessary:

a. Make multiple runs in the normal ordnance pattern to expend all ordnance.

b. Make administrative runs above the ordnance fragmentary pattern, time and fuel permitting, in an effort to expend all ordnance through normal means. Every reasonable effort shall be made to clear all ordnance prior to return to base.

c. F/A-18 Specific Procedures. If a legitimate attempt to drop ordnance loaded on VERs or parent racks results in a hung ordnance condition, the aircraft shall make administrative runs above the appropriate fragmentary pattern in an effort to drop the hung ordnance by means of the Selective Jettison System when returning with such ordnance is not practicable or is unsafe.

(1) If safety of flight dictates, use of the Emergency Jettison System is authorized.

**CAUTION:** CHECKLIST PROCEDURES FOR SELECT OR EMER JETTISON MUST BE METICULOUSLY FOLLOWED TO AVOID INADVERTENT RELEASE OF RACKS AND OTHER STORES!!!

(2) If the hung ordnance still has not dropped, the landing gear shall be lowered, the Air-to-Ground master mode deselected, and the landing gear raised (this procedure should lock the hung ordnance on VER configured aircraft).

(3) The aircraft shall be configured for landing in a safe area (over water when possible) and a hung ordnance straight-in, full stop landing shall be executed.

5. Hung Ordnance Recovery. The following procedures shall be adhered to by all MAG-12 squadrons recovering with hung ordnance:

a. Any aircraft that has fired its gun, but is not X'd out, is carrying a rocket pack (hung, full, partial, or empty), or is carrying live air-to-air missiles/air-to-surface missiles shall execute a straight in approach to a full stop landing. For operations at Iwakuni, the approach should be executed to runway 02 consistent with safety of flight considerations.

b. All aircraft recovering with hung ordnance shall execute a straight-in approach to a full stop landing. For operations at Iwakuni, the approach should be executed to runway 02 consistent with safety of flight considerations.

c. All aircraft recovering with hung live ordnance regardless of recovery airfield shall adhere to the following "general" hung ordnance procedures:

(1) Make an attempt to jettison the ordnance while still over the target area, or over an authorized jettison area.

(2) Execute a GCA or straight in approach (as required by the local airfield operating procedures) to the landing runway.

(3) Notify approach and tower on initial contact that the aircraft will be executing a hung ordnance approach.

(4) Notify tower of the type of hung ordnance.

(5) Perform all aircraft configuration changes over water or unpopulated areas.

(6) Avoid making arrested landings, unless required by NATOPS (i.e., emergencies) or wet runway procedures.

(7) After landing, proceed immediately to the disarming area and await squadron or MALS ordnance personnel, who will disarm and pin all ordnance prior to further taxi.

5014. JETTISON OF ORDNANCE

1. The location of the ordnance jettison area at MCAS Iwakuni is "Target Island," 2.75 nautical miles east of the air station.

2. Procedures

a. Contact the tower for clearance to jettison ordnance on "Target Island." Jettison ordnance SAFE in a level delivery at 1000 feet MSL or 500 feet above fragmentary pattern heading 016/196. If NORDO, flash landing light, enter jettison pattern, and look for green light from tower for clearance to jettison.

b. It is the pilot's responsibility to ensure that the area is clear of surface vessels prior to jettisoning ordnance. Ordnance shall be jettisoned in the safe mode above maximum fragmentary altitude.

3. Jettison Outside of the Iwakuni Operating Area

a. Ordnance shall normally be jettisoned anytime retention of the store compromises flight safety, giving due regard to personnel or facilities on the ground.

b. Every effort shall be made to avoid ordnance jettison over land. This will enhance safety by reducing the possibility of an incident involving the civilian populace and precluding the required utilization of EOD personnel for the disarming and removal of live ordnance. Specific rules for each base/target area must be followed.

c. During emergencies, and if circumstances warrant, jettison may be accomplished over any water area clear of shipping lanes/fishing grounds, (warning/restricted areas are recommended). Record the position as closely as possible and report to the Squadron ODO who shall notify the Group S-3 of the location, type, amount of ordnance jettisoned.

**WARNING:** Although small craft are restricted from entering a restricted area, it is imperative the area be visually cleared prior to jettison.

# CHAPTER 6

## LOW ALTITUDE TACTICS AND JAPANESE NAVIGATION TRAINING ROUTES (JNTRs)


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SOP FOR FLIGHT OPERATIONS IN MAG-12

d. All ordnance shall be jettisoned "SAFE." However, minimum jettison altitude shall be above minimum safe altitude to avoid fragmentation damage in case of explosion. Recommended jettison procedure is level flight, 300 knots, 5000 feet AGL or as directed by appropriate NATOPS Tactical Manual. After release, a positive "G" maneuver shall be performed in case of airborne detonation.

5015. RECOVERY/LANDING

1. Flight leaders should call base ten minutes prior to landing in order that the disarming crew may be dispatched, if required. If landing at a deployed location, indicate the runway to be used for landing.

2. Any aircraft that has fired guns in which the pilot has a positive indication that all rounds have been expended (i.e. "XXX" in the HUD for F/A-18 aircraft) is permitted to make a normal recovery. Touch-and-go landings are not permitted after a live fire flight. If the pilot does not have a positive indication of an empty gun, he shall make a hung ordnance approach to landing.

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**NOTE**: If it becomes evident that an arrestment is necessary with rockets aboard, the aircrew should consider jettisoning the rocket pack. If this is not practical, the pilot shall inform the tower so that the arresting gear crew can be notified.

5016. HOT PIT PROCEDURES. With the exception of unexpended MK-76/BDU-106/BDU-48/BDU-45 (w/MK-89 spotting adapter with MER safe and pinned), chaff or a disarmed gun, no ordnance of any kind is allowed in the hot refuel pits. Lot XIII and above FA-18 aircraft, with a separate expendable safing plunger external to the cockpit, may take unexpended flares through hot refuel pits once properly secured by ground personnel.

# CHAPTER 6

## LOW ALTITUDE TACTICS AND JAPANESE NAVIGATION TRAINING ROUTES (JNTRs)

6000. GENERAL. The demanding nature of maneuvering at low altitude requires a carefully structured and monitored training program to ensure the training objectives outlined in the Marine Corps T&R Manual are safely achieved. The goal of Low Altitude Tactics (LAT) training is to train aircrew to fly at low altitude while comfortably and safely performing their tactical mission.

6001. QUALIFICATION. The key to producing standardized and safely trained aircrew is the use of highly qualified ground and airborne instruction. The training, qualification, and certification of instructors shall be accomplished as prescribed herein.

6002. FLIGHT REQUIREMENTS

1. A thorough review and understanding of all aspects of LAT shall be accomplished prior to aircrews conducting LAT. This review shall include, but not be limited to, those sections of the current OPNAVINST 3710.7, MCO 3500.14, and applicable aircraft tactical manuals pertinent to LAT.

6003. Fixed-Wing Low Altitude Tactics (LAT)

1. Low Altitude Tactics (LAT)

a. LAT flights are designed to develop proficiency in low altitude tactics. The term LAT applies only to fixed-wing operations conducted during VMC where the briefed intent is to conduct tactical training per the T&R Volume 2 at or below 500 feet AGL. Non-LAT NAV training is limited to above 500 feet AGL minimum altitude.

b. Fixed-wing ordnance delivery for the sole purpose of refining delivery skills is excluded from the LAT definition.

c. For initial qualification, a Low Altitude Tactics Instructor (LAT(I)) is required in the aircraft/flight. The LAT(I) chase aircraft is not part of the LAT formation. Dual-piloted aircraft shall have a designated LAT(I) occupying a pilot seat on each aircraft conducting initial LAT qualification.

d. Minimum delivery altitudes listed at paragraph 5001.4 apply.

e. All LAT flights shall be thoroughly briefed and include the LAT training rules at Appendix E.

2. LAT Training Concepts. The following concepts apply to all aircrew:

a. Comfort Level (CL). The lowest altitude at which aircrew can accommodate task loading and maintain safe terrain clearance. A perceptual concept, comfort level concedes individual differences and is never a hard altitude. It will vary according to terrain, aircrew skill, currency, and degree of training in the low altitude environment.

b. Minimum Altitude Capability (MAC). MAC is a single aircraft only maneuver. This altitude, below comfort level, is flown as a defensive response to engagement by a threat and during speed rush baseline training. At this altitude, the aircrew prioritizes terrain clearance tasks above all other tasks.

NOTE: **Minimum Altitude Capable (MAC) is not authorized.** Current direction from HQMC prohibits MAC. Under this prohibition, the minimum altitudes for fixed-wing aircraft are 300′ AGL for HUD equipped aircraft, 500′ AGL for non-HUD equipped aircraft.

c. Climb to Cope. Aircrew shall employ climb to cope when situational awareness or mission performance is degraded. The climb to cope may be executed to adjust comfort level or as a response to a "knock it off." The response to a "knock it off" shall be an immediate wings level climb to a prebriefed altitude. Any aircrew may call "knock it off" for any unsafe situation, loss of situational awareness, or comfort level.

d. Terminate. For procedural errors where safety of flight is not a factor, crewmembers shall use the term "terminate." The response to "terminate" shall be an immediate roll to wings level, leveling off at present altitude.

3. LAT Certification. The Commanding Officer shall designate aircrew as LAT qualified at the completion of the appropriate Volume 2 syllabus. Chapter 6 of the T&R manual defines certification procedures.

4. Fixed-Wing Minimum Altitudes. Appendix E contains the current guidelines for fixed-wing aircraft minimum altitudes.

5. LAT Rules of Conduct (ROC). In aircraft requiring two or more aircrew, the most restrictive aircrew's currency interval applies to the aircraft. In flights of two or more aircraft, the most restrictive aircrew currency interval applies to the flight. Aircrew must be day LAT qualified prior to commencing night NVG LAT training. **Night Systems LAT without NVG's is prohibited. NS LAT shall not be conducted in Lot 11 and earlier model F/A-18s.** Appendix E contains the current guidance for LAT training rules.

6. Ordnance Dive Delivery Altitudes

a. The minimum dive delivery recovery altitude shall be the applicable TACMAN altitude as defined for the specific ordnance being employed.

b. The minimum altitude shall be the result of an appropriate release altitude that accounts for frag avoidance, terrain clearance and fuse arming time.

c. During aided night deliveries or unaided night deliveries, the same dive delivery recovery considerations as outlined above apply however, in no case shall the minimum altitude be lower than 1000 ft AGL.

7. The following amplification of, and procedures for, "knock it off" apply to all MAG-12 squadrons:

a. If any aircraft is observed in a descending altitude turn and the angle of bank is not decreasing, a "knock-it-off" shall be called.

b. A "knock-it-off" shall be called if any aircraft descends below the minimum briefed altitude.

c. In the event of lost communication, or a loss of SA, a "knock-it-off" call shall be made and a climb-to-cope maneuver will be performed. In the event the lead aircraft does not respond to the "knock-it-off" call, the chase aircraft shall fly in front, maintain safe separation, and lead the flight to a safe altitude.

d. Following all "knock-it-off" calls LAT shall not be resumed without verbal coordination with, and the specific permission of, the LAT(I).

6004. LAT TRAINING ROUTE CERTIFICATION

1. LAT training shall be conducted in restricted airspace, MOAs, published military training routes (MTRs), or other training areas which have been approved for LAT training. The route must be suitable to perform terrain masking, ridgeline crossing, MAC, snake turns, break turns, and beam crossing. Additionally, it must be free of vertical obstacles that could pose a hazard to low-level flight. There are currently no approved areas for LAT training in Japan or the Republic of Korea.

2. Squadron Commanding Officers shall ensure that the planned route meets the requirements for LAT flight, and that the route has been verified for LAT flights by the squadron's LAT(I) within 3 days of commencing LAT operations.

3. Squadron Commanding Officers shall maintain a list of LAT routes that have been verified by the squadron LAT(I), along with the date of verification.

6005. LOW-LEVEL PLANNING

1. Thorough flight planning and preparation shall be completed prior to each low-level flight. A properly prepared kneeboard card, and appropriately annotated navigational charts of the published route, shall be carried by each aircrew in the flight.

2. Flight members shall be thoroughly briefed on all regulations, restrictions, and route to target information. Squadrons shall compile and maintain target/route information files to include aerial hazards and avoidance areas on approved MTRs/JNTRs in accordance with current GruBul 3500.

3. Briefings shall include bird strike avoidance procedures, separation between aircraft, inadvertent IMC, maximum terrain elevation on the route, and lost wingman procedures. Specifically, procedures to terminate the route or rejoin the flight shall be briefed in detail.

4. Operations to and from MTRs/JNTRs should be conducted on an IFR flight plan. To aid in the prevention of near mid-air collisions, TCAS alerts and flight violations, flight leads shall brief and adhere to fix/radial/DME requirements at entry and exit points when utilizing MTRs/JNTRs.

6006. ENROUTE PROCEDURES

1. Low altitude navigation flights shall be conducted only on approved/ published JNTRs/MTRs and shall conform to the direction of flow and altitudes indicated in the applicable route description.

2. Pilots shall squawk Mode 3 Code 4000 while on JNTRs unless otherwise directed.

3. Night low-level operations shall maintain a minimum altitude of 3000 feet AGL except when NVGs are used. Minimum altitude for NS flight is contained in Chapter 7.

4. Clearance to enter warning/restricted areas or MOAs on MTRs shall be obtained from the appropriate controlling agency prior to penetration.

5. In the event of a deviation from a JNTR over land, climb to, and remain above, at least 1000 feet AGL during day operation and 5000' AGL during night operations until re-established on the JNTR. If inadvertent IFR conditions are encountered on the route, climb to at least 1000' above the maximum terrain elevation figure for the route.

6. JNTRs shall not be entered or continued if the ceiling is less than 3000 feet and/or the visibility is less than five nautical miles.

# CHAPTER 7

# NIGHT SYSTEMS (NS) OPERATIONS


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# CHAPTER 7

# NIGHT SYSTEMS (NS) OPERATIONS

7000. GENERAL. The development of an improved "Night Attack" capability through the use of night vision goggles (NVGs) and other electro-optical devices represents a significant advancement in the capability of fixed-wing assets to support the MAGTF during the hours of darkness. However, the enhanced night systems (NS) associated with these aircraft also present new challenges in meeting training requirements and the goals of the flight safety program within MAG-12 and the Marine Corps. The purpose of this chapter is to outline specific guidelines for the safe and effective conduct of NS operations during peacetime training in MAG-12.

7001. DEFINITIONS

1. Circadian Rhythm. Normal daily cycle of over 50 physiological functions, affected by at least 40 environmental variables, which tends to regulate each individual to function at their peak during the day.

2. Degoggle. The act of removing NVGs from a crewmember's helmet and/or returning the NVGs to the stowed position.

3. Donning. The act of installing NVGs to a crewmember's helmet or transitioning from the stowed position for use.

4. LUX. A measure of illumination; specifically the luminance produced from the flux of one lumen against a surface. LUX levels may restrict the conduct of NS operations under certain conditions.

5. Night Systems (NS). Any system primarily designed or utilized to enhance a crewmember's ability to operate his aircraft utilizing VMC techniques during periods of darkness. For the purpose of this Order, NS shall include, but not be limited to, NVGs and FLIR devices.

6. Night Systems LAT. Intent for flight at or below 500 feet AGL utilizing NVGs shall be considered Night Systems LAT. Strict criteria shall govern the use of NVGs in this environment.

7. Fixed-Wing Qualifications and Designations

a. Night Systems Qualified (NSQ). Aircrew are NSQ qualified when they have satisfactorily completed the specific qualification sorties in the appropriate T&R syllabus and are designated NSQ in writing by the squadron Commanding Officer.

b. F/A-18 Night Systems Qualified (NSQ)

(1) High Altitude (NSQ HI). Aircrew is NSQ HI qualified when they have satisfactorily completed the T&R prescribed NSQ High Altitude syllabus under the supervision of a NSI. High Altitude is defined as flight at or above 1000' AGL for F/A-18 aircraft.

(2) Low Altitude (NSQ LOW). Aircrew are NSQ LOW qualified when they have satisfactorily completed the NS Familiarization course conducted by the FRS and the T&R prescribed NSQ Low Altitude syllabus under the supervision of a NSI. NS LOW training is prohibited in Lot 11 and earlier model F/A-18s.

c. Night Systems Instructor (NSI). Aircrew certified by a MAWTS-1 instructor as completing the Night Systems Instructor Course contained in the MAWTS-1 Course Catalog and designated by the squadron Commanding Officer. The NSI is qualified to instruct in all fixed-wing phases of night system training.

8. Non-Night Systems Qualified (Non-NSQ). Aircrew who have yet to complete the T&R requirements to be designated IAW subparagraph 7b above.

7002. NIGHT FLIGHT REQUIREMENTS. The minimum essential equipment for all night flights shall be in accordance with OPNAVINST 3710.7, NATOPS and the T&R Manual. While NS training should normally require a "full-up system," there are instances where the objectives of training can be safely accomplished with less than the full NS avionics suite. Therefore, based on the mission, weather, environmental conditions, terrain, operating area, and pilot experience, NS operations can be conducted with less than full NS avionics with the approval of the squadron Commanding Officer. Under these conditions, the following equipment shall be considered the minimum safety of flight items required for NS operations:

1. AN/AVS-9 (all crewmembers) or Cats Eyes NVGs (all crewmembers).

2. NVG compatible cockpit lighting.

3. Accurate INS with velocity vector.

4. HUD.

5. Radar altimeter.

6. Operable anti-collision light.

7. Digital moving map is required for night LAT.

8. Operable ICS (F/A-18D only).

7003. AIRCREW CURRENCY. Currency requirements shall be per the T&R Manual. Other than T&R syllabus flights with a qualified and current NSI, NS flights shall be limited to the T&R currency minimums of the least qualified crewmember in the aircraft/flight. No pilot shall sign for an aircraft for a night flight that has not flown that model aircraft within the previous 7 days. NVG refresher training at an approved NITE Lab facility shall be conducted annually. Annual NVG refresher training will include the following:

1. NVD Technology Update.

2. NVD Mishap Lessons Learned.

3. Sensor Integration.

4. Misperceptions and Illusions.

5. NVG Focusing Procedures.

6. Terrain Board Demonstration.

7004. ALTITUDE MINIMA AND LUX LEVELS

1. Minimum altitude for Lot 11 and earlier model F/A-18s with NVG compatible cockpit lighting is 1000 feet AGL. NS LAT shall not be conducted in Lot 11 and earlier model F/A-18s.

2. NS LAT may be conducted by NSQ-LOW qualified crewmembers or NSQ-HI crewmembers provided that a NSI-LOW pilot is in the flight.

3. Day LAT currency requirements and Rules of Conduct apply to night LAT. Night LAT may update day LAT currency, but day LAT shall not update night LAT currency.

4. The minimum altitude for NS flights conducted during periods of less than 0.0022 LUX is comfort level, but no lower than 1000 feet AGL.

5. A minimum safe altitude shall be briefed for all portions of the route of flight.

7005. WEATHER CONDITIONS

1. NVG performance is degraded based on deterioration of ambient light conditions. Regardless of moon phase, adverse weather conditions shall be thoroughly avoided whenever possible. Overcast conditions, rain, fog, and blowing dust can severely degrade NVG performance and should be briefed, approached and treated as a mean starlight or inadvertent IMC condition, which ever is applicable.

2. A ceiling can reduce ambient light conditions to unacceptable levels regardless of moon phase elevation. NVG flight may continue beneath broken or temporary overcast ceilings at the discretion of the Pilot in Command. In no case shall NVG operations be conducted below observed or measured weather conditions less than 3000 feet and 5 NM visibility.

3. Day weather minimums in specific mission areas shall also apply to NS flights in the same mission area.

7006. MOON CONDITIONS

1. The Solar/Lunar Almanac Prediction (SLAP) program shall be used for determining percent of lunar illumination, angle of the moon above the horizon, and LUX level for all flights involving NVG operations. The data obtained from this program must be tempered with sound judgment because the program does not adjust for the degrading effects of cloud cover, humidity, haze, dust, smoke, low moon angle, terrain, and shadowing on the operations of the NVGs. The minimum illumination authorized for NVG qualified aircrew to conduct NVG training below 1000 feet AGL is 0.0022 LUX.

2. Night LAT. All night LAT flights shall be conducted from one hour after sunset to one hour prior to sunrise with a minimum of 0.0022 LUX.

7007. ROUTE SURVEY. Prior to NVG flight on an unfamiliar low altitude route or range, a daylight flight shall be conducted to identify uncharted obstructions and to note terrain features, towns, and cities.

7008. AIRCRAFT LIGHTING REQUIREMENTS. Understanding the limitations of the NS sensors and how external lighting effects those sensors is critical to flight in the NS environment. Extreme caution is advised in the use of the Navigation/Position lights because these lights may create a halo effect which can obscure the aircraft platform and thus deny visual cues of distance and closure when viewed with NVGs from the back of the formation. OPNAVINST 3710.7 defines external light requirements and allows for deviation when the nature of operations require something different.

1. Covert Infrared (IR) Lighting. Covert IR lighting shall only be used within the confines of restricted airspace. IR lighting may only be used when all aircraft in that restricted airspace are operating with NVGs. All aircrew shall be briefed on the decreased visual signature of IR lighting particularly when viewed from the forward quarter with NVGs. Due to reduced reaction times created by potentially high closure rates and the decreased visual signature of IR lighting, particular attention should be given to positive airspace and flight deconfliction.

2. Members of a NS flight shall be cognizant of the external lighting setup of each member of the flight before separation and rejoin of a section is conducted.

7009. CREW DAY/FLIGHT LIMITATIONS. Crewmembers involved in NS operations shall closely monitor their crew rest and be cognizant of the degrading effects in performance associated with changes in circadian rhythm during the shift to and from NS operations. The following limitations shall be observed by all crewmembers participating in NS training operations.

1. Crew day limitations are contained in paragraph 3003.

2. Crewmembers scheduled for night systems flight are limited to two flights per crew day.

3. Crewmembers shall not be scheduled for more than two consecutive days of two NS flights, or five consecutive days of NS flights (i.e. 2, 2, 1, 2, 2, day of rest), without approval from their squadron Commanding Officer.

7010. NIGHT ATTACK BRIEFING. In addition to normal preflight planning procedures outlined in appropriate aircraft NATOPS Flight Manuals, the following additional requirements are mandatory.

1. Night Systems training rules at Appendix F.

2. When conducting NS LAT scheduled sorties, LAT training rules at Appendix E.

3. Review of the route shall be conducted to identify areas of known sources of cultural lighting (towers, installations, cities, etc.) and ambient illumination. While cultural lighting sources provide ambient illumination, over flight of noise sensitive areas shall be avoided whenever possible.

4. In addition to standard low level chart markings, power lines, significant terrain and inhabited areas shall be clearly marked and briefed prior to each flight.

5. Sunset, moonrise, moonset, projected moon angle, moon phase and sunrise (if applicable) along with current and forecast weather and its effects shall be briefed prior to every flight.

6. Crew coordination and ejection procedures shall be briefed prior to each flight.

7011. PREFLIGHT, START, TAXI, TAKEOFF PROCEDURES. In addition to the standard NATOPS preflight procedures, the following NVG procedures apply:

1. Prior to man-up, aircrew shall engage and disengage NVGs to their helmet, checking for NVG/helmet compatibility while practicing NVG emergency quick disconnect. While attached to the helmet, optimally align the NVGs using the appropriate adjustments. An eye lane or Hoffman 20/20 box should be used to adjust and align the goggles and to verify intensifier tube performance prior to each NVG flight.

NOTE: Do not turn the NVGs on until in the darkened eye lane.

2. NVGs should remain in their carrying cases while manning up. Aircrew shall stow the NVGs so as not to become a potential FOD hazard. Care will be taken in stowing the NVGs in order to prevent damage.

3. Preflight. Preflights should be conducted per normal procedures. The use of a flash light is required during night preflights. Because night ground operations are usually more time consuming, walk times should be adjusted.

4. Line Procedures. Line procedures are conducted in the same manner as daylight operations.

5. Taxiing or takeoffs with Cats Eye NVGs is not permitted. Taxiing or takeoffs with AN/AVS-9 NVGs in the stowed position is permitted.

7012. AIRBORNE PROCEDURES

1. Donning Goggles in Flight. The following procedures shall be utilized in donning NVGs and preparing the aircraft for NS operations.

a. Aircrew shall not don NVGs until the aircraft is established in stabilized flight, at an altitude greater than 3000 feet AGL, and in VMC conditions. In addition, donning should not be attempted during maneuvering phases of flight such as rendezvous. Use of the Automatic Flight Control System altitude hold function is highly recommended while donning goggles.

b. Aircrew shall don goggles separately. Each crewmember shall keep the other member informed of their progress during goggle donning.

c. In multi-crew aircraft, both aircrew shall not goggle or degoggle at the same time and one aircrew shall be heads out of the cockpit for collision avoidance.

**WARNING:** FOR MULTI-CREW AIRCRAFT, BOTH AIRCREW SHOULD BE SIMILARLY CONFIGURED AT ALL TIMES; I.E., BOTH GOGGLED OR DEGOGGLED. IN SITUATIONS WHERE ONLY ONE AIRCREW IS GOGGLED, SUFFICIENT INTRA-COCKPIT COMMUNICATION WILL TAKE PLACE TO ENSURE FLIGHT SAFETY.

2. Enroute

a. Wearing goggles at altitude prior to entering the low altitude regime is important in order to properly adjust the goggles and develop a proper instrument scan.

b. Radar altimeters shall be checked at 5000′ AGL in the descent. Extreme caution shall be exercised while continuing the descent to the prebriefed altitude.

c. The radar altimeter shall be set at 10 percent below the minimum altitude for the route of flight.

3. Air Combat Maneuvering/Intercepts

a. ACM with NVGs is prohibited.

b. Intercepts may be conducted to 180 degrees of turn.

c. During intercepts, altitude blocks, to include deconfliction between members of the same flight (i.e. section), shall be established and strictly adhered to until positive visual ID has been established.

4. Environmental Evaluation. Each pilot shall conduct an airborne environment evaluation prior to conducting night LAT. A pre-briefed maneuver consisting of two 180 degree level turns at 5000 feet AGL, four Gs, 420 KCAS in the same direction shall be performed to evaluate the following:

a. NVG fit and overall performance.

b. Lunar azimuth and associated white out zones.

c. Dynamic shadowing.

d. Visibility and ground texture.

e. Horizon definition.

f. Ambient light levels.

g. Ceiling.

h. FLIR performance and bore-sight accuracy.

i. Optimum adjustment of FLIR, NVG HUD, and MPCD contrast and brightness levels.

j. Radar altimeter test of audio and visual warnings.

NOTE: After evaluation of the environment has been conducted, the flight may proceed at an altitude designated by the Flight Leader and consistent with NSQ aircrew qualification/designation.

5. Strike Delivery Procedures

a. Paragraph 5001.4 contains specific altitude restrictions relating to NVG ordnance delivery.

b. VMC weather restrictions apply for all types of NVG weapon deliveries.

7013. FORMATION PROCEDURES. NS formation flights of up to four aircraft are permitted.

1. Administrative Formations

a. Section. Section administrative formation shall be Goggle TACWING or Goggle Cruise as described in the applicable T/M/S TACMAN.

b. Division. Division administrative formations shall be Goggle Fluid Four as described in the applicable T/M/S TACMAN.

2. Tactical Formations

a. Section. In the low altitude environment, standard section formations for NS flights are Goggle TACWING or Goggle Spread.

b. Division. In the low or high altitude environment, standard division formation shall be limited to Goggle Box or Goggle Fluid Four as described in the applicable T/M/S TACMAN.

**WARNING:** WINGMEN ARE RESPONSIBLE FOR THEIR OWN TERRAIN CLEARANCE AND SHOULD NOT DEPEND ON THE FLIGHT LEAD FOR PROPER CLEARANCE. A GOOD INSTRUMENT SCAN IS CRITICAL TO AIRCRAFT SAFETY.

**WARNING:** IN LOW ALTITUDE FORMATIONS, WINGMEN SHALL ALWAYS FLY A POSITION STEPPED UP FROM LEAD'S AIRCRAFT.

**WARNING:** DISTANCES BETWEEN AIRCRAFT ARE BASED ON THE ABILITY TO SEE AN AIRCRAFT'S PROFILE/PLATFORM AND NOT JUST THE EXTERNAL LIGHTS. THE ABILITY TO VIEW THE ACTUAL AIRCRAFT ENABLES AIRCREW TO JUDGE THE NOSE POSITION OF LEAD AIRCRAFT MAKING POSITION KEEPING MORE MANAGEABLE AND LESS TASKING.

7014. APPROACH/LANDING PROCEDURES (F/A-18 aircraft only)

1. Landing while wearing NVGs is prohibited except when required by the T&R manual.

2. During VFR recoveries, goggles shall not be worn below 3000 feet AGL.

3. During IFR recoveries (practice or actual), aircrew shall remove and stow NVGs prior to commencing an approach to a field or carrier.

4. AV-8B aircraft shall comply with their T&R syllabus.

7015. CREW COORDINATION

1. A constant two-way dialogue must be established between aircrew in multi-place aircraft while conducting NVG low level training flights. Failure of the ICS system before, or during, a NS flight is an abort criteria. Should ICS fail during the NVG low level portion of the flight, the aircraft will begin an immediate climb to the emergency safe altitude and terminate the training.

2. If at any time while conducting NVG low level training, either aircrew is not certain of the interpretation of visual phenomena presented through the NVGs, an immediate climb to emergency safe altitude shall be initiated.

3. IT IS EXTREMELY HAZARDOUS TO EJECT WHILE WEARING NVGs AND MAY CAUSE SERIOUS INJURY OR DEATH. Aircrew shall be intimately familiar with the NVG emergency disconnect procedure. This procedure shall be practiced by NVG aircrew prior to every NVG training flight and periodically in conjunction with cockpit egress drills. If an ejection situation should arise and time permits, PRIOR TO EJECTION INITIATION, the call to eject shall be: "GOGGLES, GOGGLES, GOGGLES, EJECT."

7016. NVG FAILURE OR INADVERTENT IFR. Pilots shall not attempt to continue a NS flight while encountering IMC. Immediate transition to an instrument scan is imperative for safe flight. The following procedures shall be adhered to if entering IMC or experiencing NVG failure:

1. Immediate transition to instrument scan.

2. Initiate climb to emergency safe altitude.

3. Transmit, "Call sign, knock it off IMC, heading."

4. If IMC persists, abort NS Mission.

7017. NVG FAMILIARIZATION FLIGHTS

1. Familiarization flights involving non-NVG qualified aircrew shall be approved only on a case-by-case basis by the squadron Commanding Officer.

2. For multi-place aircraft, non-NVG qualified aircrew on familiarization flights shall occupy only the rear cockpit.

3. Familiarization flights may be conducted provided the following criteria are met:

a. The pilot is a NSI.

b. Optimum weather conditions (clear and 7 miles visibility) exist along the entire route of flight.

c. Moon illumination of 0.0022 LUX.

d. Minimum altitude of 500 feet AGL.

7018. SAFETY. Given the demanding nature of night flying utilizing NS devices, it is imperative that each crewmember perform a self evaluation to ensure that they are physically and mentally alert, and properly prepared for each flight. The primary goal of each NS flight is gaining and maintaining operational readiness. If for whatever reason that goal cannot be assured of being met, the event shall be cancelled.

# CHAPTER 8

## POLICY AND PROCEDURES FOR CROSS-COUNTRY TRAINING FLIGHTS


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# CHAPTER 8

# POLICY AND PROCEDURES FOR CROSS-COUNTRY TRAINING FLIGHTS

## 8000. GENERAL

1. The purpose of the Cross-Country Program is to facilitate aircrew training and proficiency as established by the current edition of MCO 3500 series (T&R).

2. The MAG-12 CO is the approving authority for section RON cross-country flights. Single ship cross-countries are not authorized excepting EA-6Bs. The MAG CO may authorize a squadron to have one section on cross-country flights during any given period. Two nights is the maximum duration for any cross-country.

3. Requests for more than a section cross-country require CG 1st MAW approval.

4. Cross country requests shall be submitted to the Group S-3 NLT close of business on Monday (five days prior) of the week for a weekend cross country, and a minimum of five working days prior for a weekday cross country. The Group Commander will consider exceptions on a case-by-case basis.

5. Cross-country training flights may be conducted during squadron deployments.

## 8001. SPECIAL INSTRUCTIONS

1. Aircrew are normally limited to two sorties per day. If a flight is to terminate at any airfield other than home field or deployed location with a landing after sunset, the landing shall be limited to one straight-in instrument or visual approach to a full stop.

2. Security of aircraft away from home base shall be per the current edition of reference (e) and paragraph 8005 of this order.

3. Flight leaders of cross-country training flights shall call the Squadron Duty Officer at the completion of flight operations each day of the cross-country and advise the Squadron Duty Officer of the location and status of the aircraft, flight hours/sorties flown that day, and any anticipated changes to the itinerary for the

following day. Flight leaders shall also leave a telephone number (DSN preferable) where the Duty Officer can either contact him or leave a message for him.

4. Consistent with flight safety, all cross-country training flights shall adhere to the approved enroute stops. Deviations from approved itinerary for reasons other than weather, mechanical problems, or only the Squadron Commanding Officer shall approve emergencies. Deviations from planned training may not include a change to a higher training code. The MAG-12 Duty Officer shall be informed of any deviation and shall inform the CO MAG-12 of deviations on the first workday following notification.

8002. ACM/DEFTAC/DACT FLIGHTS

1. ACM/DEFTAC/DACT may be conducted on cross-country training flights. In all cases, common sense and good judgment shall be exercised when planning and performing these missions. Face to face briefs shall be conducted when practical.

2. Cross-country flights involving ACM/DEFTAC/DACT with USAF or USN with whom no prior letter of agreement exists, require notification of CG 1st MAW, and must be submitted to MAG-12 (S-3) along with the cross-country request per reference (e). See format at Appendix A and existing LOAs.

8003. NIGHT VISION GOGGLE (NVG) USE. NVGs may be used on cross-country training flights.

8004. CROSS COUNTRY REQUIREMENTS The following requirements shall be met for all cross country flights:

1. Completion of squadron aircraft servicing lecture by qualified maintenance personnel.

2. Aircrew are responsible for ensuring that all enroute airfields have proper servicing and ground support equipment available. (Use FLIP, NOTAMS, and DSN as necessary).

3. PPR numbers, if required, shall be included on all cross-country request forms.

4. All cross-country flights shall carry one cross-country packet per aircraft.

5. All completed fuel chits shall be attached to NAVFLIRS/NALCOMIS forms at the termination of the cross-country. These forms, along with cross-country packets, shall be turned in to the Squadron Operations/Maintenance Department.

6. All MAG-12 aircraft will ensure that after the fourth leg of a cross country, both the aircraft hydraulic and oil systems will be serviced.

8005. SECURITY OF AIRCRAFT AWAY FROM HOME BASE. On cross-country flights, aircrew shall ensure airplane security by performing, in order, the following procedures:

1. Ensure seat and canopy jettison pins installed after engine shutdown.

2. Close canopy fully.

3. Pull canopy and APU circuit breakers (aircraft dependent).

4. Install landing gear and hook pins, intake and exhaust covers.

5. Secure all avionics bay doors.

6. Verify appropriate physical security is available.

7. FOD walk around aircraft and dive the intakes prior to engine start.

# CHAPTER 9

## PROCEDURES FOR STATIC DISPLAYS/AIRSHOWS


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# CHAPTER 9

## PROCEDURES FOR STATIC DISPLAYS/AIRSHOWS

9000. GENERAL. When presented in a professional manner, static display of MAG-12 aircraft at authorized military and civilian events can project a very favorable impression of Marine Aviation to the public. Unprofessional appearance or performance by static display aircrews or aircraft will have the opposite effect. Air shows or flight demonstrations, by MAG-12 aircrew and aircraft shall only be conducted on specific direction of Higher Headquarters.

9001. ACTION. Basic guidance concerning static display of Naval aircraft is contained in reference (e). Squadron Commanders shall ensure that maintenance personnel and aircrews are thoroughly familiar with the contents of the current edition of MCO 5720.73 and reference (e) prior to an aircraft being placed on display to the public. MAG-12 aircraft will not be placed on display to the public without approval from the Group Commanding Officer. Informal displays of equipment/aircraft in squadron areas shall be made only on the authority of the squadron Commander.

1. Squadron Commanding Officer. Squadron Commanding Officers shall ensure that the aircraft scheduled for static display are clean, well painted and carefully prepared for viewing by the public, and that all aircrew meet the appropriate Marine Corps grooming standards.

2. Aircraft Commander. Aircraft Commanders on static display missions shall ensure strict adherence to the following guidelines:

a. MAG-12 aircraft must be in place, with engines secured and all safety pins, intake covers, and chocks installed prior to the assembly of spectators in the display area. Engines shall not be started while spectators are in the display area.

b. MAG-12 aircraft shall be displayed with the canopy closed and appropriate circuit breakers pulled.

c. The following covers shall be used: intake, exhaust, pitot tube, AOA probe, ejection seat, and HUD.

d. The following pins shall be installed: landing gear, hook, seat, and canopy jettison.

e. No aircraft shall be entered at anytime during the display.

f. During the hours of the static display, qualified aircrew shall be physically present to explain the MAG-12 mission, to answer questions and to ensure spectator safety while viewing the aircraft. The aircraft shall not be left unattended at anytime during the display period.

g. Spectator safety must be maintained at all times. Pilots must be familiar with the potential hazards of, and to, their aircraft, and take those actions necessary to ensure safety under all situations. Access to the aircraft must be carefully controlled. The weight bearing capacity of any viewing stands provided must be considered as well as the space available on the stand.

h. When the display period has terminated, a complete inspection of the aircraft and access panels shall be performed, with special attention to potential FOD around and in the intakes and wheel wells. Pilots shall ensure that systems that were disabled for the display are properly serviced or rearmed prior to application of electrical power or starting air.

i. To the maximum extent practical aircraft shall be roped off to protect the general public from potential injury. Squadrons shall develop and use a static display checklist to assist pilots in accomplishing all assigned and required tasks.

3. Aircrew. Unless otherwise directed, aircrew shall wear a green NOMEX flight suit, green "T" shirt, USMC/USN standard black leather nametag, garrison cap, and display full flight gear.

9002. FLIGHT DEMONSTRATIONS INVOLVING ORDNANCE. Flight demonstrations involving deliveries of live or inert ordnance shall be conducted in accordance with the following guidelines:

1. The event shall be flown by qualified aircrew that is current in the type of delivery employed. Flight demonstrations shall not be used as training events.

2. Run-in headings shall be parallel to the viewing crowd line and all turns shall be made away from the spectators and inhabited/ occupied facilities.

3. In pre-flight planning, pilots shall ensure that the viewing area is at a safe distance from the impact area. Type of ordnance to be delivered will determine the safety margin required. In all

cases, the impact point shall be no closer than 2000 meters from the viewing area.

4. Positive visual identification of the target shall be accomplished regardless of delivery. If there is any doubt concerning the ordnance impact point the run shall be aborted until all doubts or questions are resolved.

5. Ultimate responsibility for the safe conduct of each flight rests with the pilot in command and/or designated flight leader.

6. 2-way communications between aircrew and ground personnel shall be maintained throughout the demonstration.

# CHAPTER 10

## TRAINING DEPLOYMENT REQUIREMENTS


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# CHAPTER 10

# TRAINING DEPLOYMENT REQUIREMENTS

## 10000. TRAINING DEPLOYMENTS/DETACHMENTS OF TACTICAL SQUADRONS

1. Deployments. Deployment of more than eight aircraft constitutes a squadron deployment and requires the deployment of the squadron command element. Squadrons will deploy commensurate with unit training and exercise requirements, and as scheduled in the MAG's Training Exercise and Employment Plan (TEEP).

2. Turn Detachments. A detachment is defined as three to eight aircraft operating from a deployment base for more than one day. The unit Command Element remains at Iwakuni along with the preponderance of unit personnel. All turn detachments shall be planned and conducted in accordance with the current edition of WgO 3550.1 (TRAINING DEPLOYMENT AND EXERCISE EMPLOYMENT OF 1ST MAW UNITS/DETACHMENTS).

3. TURN CREW. A small detachment of personnel deployed to an operating site to service those unit aircraft operating there without the intention of regularly remaining overnight.

4. Planning Checklists, Reports, OPLANS/Letters of Instruction (LOI)

a. Pre-deployment/detachment planning shall be in accordance with reference (f).

b. All deployments/detachments shall publish either an OPLAN or an LOI detailing the planned operation. Included within this document shall be a Safety annex.

c. Following the deployment, squadrons shall submit a deployment after action report within 10 working days utilizing the MCLLS format.

5. Deployment Request. Deployment requests shall be submitted via the Commanding Officer, MAG-12 in accordance with the current edition of reference (f) and this SOP.

6. Training, Exercise and Employment Plan (TEEP)

a. This Headquarters will publish a TEEP as required to assist

# CHAPTER 11

## FORWARD BASED OPERATIONS


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# CHAPTER 11

# FORWARD BASED OPERATIONS

11000. INTRODUCTION. The MAGTF requires responsive air support during all operational phases. Aviation's ability to respond is a key measure of its effectiveness. MAGTF aviation operates from sea or shore-based airfields close to, or in, areas of operation. Shore-based operations conducted in an expeditionary environment require extensive use of existing facilities. MAGTF aviation uses forward base operations (FBO) to support VSTOL tactical operations without establishing full support facilities when required. If facilities are inadequate or nonexistent, construction forces employ prefabricated material (expeditionary airfield matting) to complete forward bases. Forward bases increase responsiveness through basing flexibility and aircraft dispersal and by decreasing distances to support areas.

1. In order of priority, FBOs consist of:

a. Friendly host government airfields, if available and tactically acceptable.

b. Abandoned or captured airfields that reduce construction and support equipment deployment requirements.

c. Roadways or highways, if existing airfields are not available in sufficient quantity or are unsuitably located.

d. Expeditionary airfield (EAF) construction.

2. Confusion exists surrounding FBOs and EAF terminology. EAF is a construction concept and uses prefabricated material. It should not be confused with Marine aviation's employment concept.

11001. ORGANIZATION. Forward bases will normally be prepared by USMC Wing support units. Squadron personnel will be required to staff and supervise site operations, using resources from Wing/ Group assets.

11002. MAIN AIR BASE. A main air base is a secure airfield, whose main function is to support sustained operations ashore. It handles all types of aircraft up to and including theater lift assets. Task organization requirements determine support agencies and required facilities. At a minimum, a main air base includes

intermediate maintenance activity (IMA) support and engineering functions required to support current and anticipated needs.

11003. AIR FACILITY

1. An air facility is a secure airfield from which air operations are conducted. It can be an airfield, road segment, matted runway, or clear, level ground. An air facility can support an aircraft squadron or detachment and associated organizational maintenance activities (OMAs), however, it does not normally perform major maintenance. It can sustain operations at a combat sortie rate and support staging and replenishing of forward sites. Additionally, an air facility stages aviation ordnance. Rough terrain-capable support equipment moves and maintains aircraft and load ordnance.

2. Specifics

a. Size: As determined by aircraft performance, obstacles and expected ordnance loads.

b. Surface: Existing runway, AM-2 matting, a roadway, an unprepared surface, or a combination of any of these.

c. Complement: Fourteen to twenty AV-8Bs.

d. Operations: Day/Night VMC with adequate lighting, and all weather with adequate NAVAIDS.

e. Maintenance: OMA level, full ordnance capability, fuel and water.

3. General

a. All unprepared surfaces used shall have a minimum of 8% bearing ratio at 3 inches below the surface.

b. Roads should be at least 25 feet wide, with smooth shoulders. Normally, class "C" roads are used and should be 32 feet wide.

c. 50 feet either side, and 100 feet either end, of a landing strip should be a cleared area. At least 150 feet around a Vertical Landing pad should be a cleared area. Additionally, all landing sites should be free of any obstacle over 50 feet within these cleared areas.

11004. AIR SITE

1. An air site is a secure location, from which combat aircraft are prepositioned to reduce response time. Air sites must be suitable for fully loaded and armed aircraft to land and await preplanned or immediate missions. Operations are usually limited to receiving and launching previously loaded aircraft. Although air sites can stage fuel and ordnance, the site does not normally receive routine logistic support, and it contains minimum personnel.

2. Operational requirements determine air site capability. Upon completion of a mission from an air site, aircraft return to either a main air base or air facility for refueling, weapons loading, and SOP maintenance.

3. Specifics

a. Size: As determined by aircraft performance, obstacles and expected ordnance loads.

b. Surface: AM-2 matting, a roadway, an unprepared surface, or a combination of any of these.

c. Complement: One to four AV-8Bs.

d. Operations: Day/Night VMC with adequate lighting.

e. Maintenance: Very limited maintenance performed, limited ordnance, fuel and water.

11005. LANDING SITE SUPERVISOR (LSS). Forward based operations require an LSS. The LSS shall be an experienced AV-8B pilot, knowledgeable in FBO site operations, and designated in writing by the Commanding Officer after having met the prerequisites for LSS qualification. The LSS is the CO's direct representative at a forward base during takeoff and landing operations. He shall ensure that all pilots are adequately prepared for FBO. Additionally, he is responsible for visual aid layout and site safety certification. The LSS shall supervise all takeoffs and landings at the site.

11006. FLIGHT OPERATIONS. Restricted site operations should be considered maximum performance maneuvers. All FBO patterns will adhere to the published patterns (day/night) for that particular site.

1. Communications. Two-way radio communication between the pilot and the LSS is required for takeoff. NORDO aircraft shall comply with squadron lost communication procedures. Emergency wave-off signal is red smoke or flares.

2. Taxi/Pre-Takeoff Checks. When taxiing in confined areas, "HOT" nose wheel steering should be selected. Ten degrees of nozzles and four degrees nose down trim should be utilized, except when other aircraft are behind, then nozzles aft should be utilized. Engine accelerated checks should be conducted on a FOD-free surface to the maximum extent practicable. Flaps and duct pressure checks should be conducted on a hard FOD-free surface. Flap checks can be conducted at idle RPM.

3. VTOL

a. Vertical takeoffs from restricted sites shall continue vertically until well clear of obstacles prior to commencing the accelerating transition.

b. Decelerating approaches should be into the wind with a slight offset and no lower than 150 feet AGL.

c. Transition over the landing site and descent to landing will be made with help from the LSS.

4. RVTOL/STOL

a. Short takeoffs from grass or unprepared surfaces require a rolling/slam technique. The pilot will begin his roll at idle to check line-up, then setting 55% (406)/ 60% (408), then selecting full throttle at the "SLAM" marker. A Short Takeoff (STO) stop will be selected at a "GO" marker or at a preplanned Nozzle Rotation Air Speed (NRAS). Auto flaps should be used. A minimum NRAS of 60 KCAS should be used.

b. A minimum ground speed of 60 knots is required for landings on unprepared surfaces. Glide slope and intended point of landing should be selected with reference to terrain in the approach corridor, landing surface condition and length, and aircraft performance.

c. Short takeoffs from minimum length hard surface strips require a maximum performance takeoff. This includes utilization of Short Takeoff Landing (STOL) Flaps, tire skid brake release technique and 14 degrees pitch carets.

11007. VISUAL AIDS. There are no fixed rules for laying out visual aids. The LSS may use colored panels, barrels or lights to provide line-up and touchdown cues. At night aircraft shall not descend below 250 feet AGL until cleared by the LSS. Sites for night operations shall have sufficient lighting to provide lateral/directional cues.

11008. INCLEMENT WEATHER OPERATIONS. IFR minimums will be determined by approach aids available and surrounding terrain.

11009. LSS KIT. Prior to conducting FBO operations, the squadron Operations Department shall ensure that the following equipment is readily available (Items 1 through 5 are organic to MWSS and Station Weather):

1. Lensatic compass.

2. Maps.

3. Thermometer and altimeter, if available.

4. Anemometer.

5. Cone penetrometer.

6. Colored panels.

7. Pyrotechnics.

8. NATOPS manual and NATOPS emergency check list.

9. Flare pistol with flares.

10. Goggles and sound suppressers, or HST helmet.

11. Adequate VHF/FM and UHF communications equipment for operational situations. Land/launch should be a discrete frequency.

11010. FOD PREVENTION. The potential for FOD is much greater in a restricted site environment, thereby necessitating a continuing program of site inspections. Consideration should be given to the integrity of the landing surface as well as the FOD hazard in the immediate area.

# CHAPTER 12

# OUT OF CONTROL FLIGHT PREVENTION POLICY


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# CHAPTER 12

# OUT OF CONTROL FLIGHT PREVENTION POLICY

12000. Introduction. 13 Navy and 4 Marine Corps F/A-18s, 3 of which were F/A-18Ds, have been lost over the history of the F/A-18 due to Out of Control Flight (OOCF). This chapter will cover the requirements for Basic Fighter Maneuver (BFM) and Fighter Weapons (FW) flights within MAG-12 in regard to aircraft configuration, refresher training and training rules.

12001. Contributing Factors

1. Analysis of the mishaps has identified the following as common contributing factors:

a. Flight into known departure prone regions.

(1) High Angle of Attack (AOA)/low airspeed.

(2) Low AOA/low airspeed.

(3) High AOA/high subsonic mach.

b. Lack of experience in the Type/Model/Series (T/M/S) being flown.

c. Incorrect flight control inputs.

d. Improper analysis of situation and execution of procedures.

e. Aircraft configurations that have departure resistance weakened by the presence of a centerline fuel tank only and/or asymmetric loading of the wingtip stations.

2. Given the information provided above, action was initiated to mitigate the dangers associated with flying the F/A-18 into known departure prone flight regions. There appears to be a lack of knowledge and experience associated with OOCF and a lack of familiarity with OOCF characteristics of the F/A-18. Additionally, there seems to be little understanding of the relationship between aircraft configurations, airframe condition/integrity and F/A-18 departure characteristics.

12002. OOCF Prevention. In an attempt to decrease the likelihood of entering an OOCF situation the following procedures are directed within all MAG-12 F/A-18 squadrons:

1. A discussion of flight characteristics relative to departures and OOCF will be incorporated into each BFM/FW brief with emphasis on the model and configuration of the aircraft assigned.

2. The definition of "High angle of attack (AOA)/slow-speed maneuvering" quoted in reference (a), para 5.1.10.6b, shall be 150 KIAS **OR** 35 degrees AOA.

3. Aircraft with the following configurations or maintenance deficiencies shall not be used.

Note: 1v1 AWIs are not included as BFM/FW sorties, and as such, are not restricted to the below regulations.

a. BFM/FW sorties in the F/A-18D with a single wing tip station store are not authorized. The aircraft must be configured with 2 wingtip missiles loaded or no wingtip missiles loaded. Additionally, F/A-18D aircraft will have either an external wing tank on both stations 3 and 7 **or** have no external tanks on any station to conduct BFM/FW sorties. F/A-18D aircraft will **not** conduct BFM with only a centerline external tank.

b. BFM/FW sorties will not be flown in the F/A-18A/C/D with any air-to-ground ordnance or racks loaded.

c. BFM/FW sorties shall not be flown in aircraft that have:

(1) Missing or damaged upper or lower wing fold "clamshells."

(2) Significantly degraded or torn leading edge tape.

(3) Significant nicks, gouges, scratches or other damage to the radome or metal radome caps.

12003. Simulator Training. All aircrew shall receive annual OOCF training to include, but not limited to:

1. OOCF video.

2. Departure/OOCF simulator as prescribed in appendix H. This simulator may be combined with other required evaluations (NATOPS

# APPENDIX A

## DACT WORKSHEET

PTTUZYUW RUAYFFK0001 2780801-UUUU--RHMCSUU RUAYFFK
ZNR UUUUU
P 290818Z JUN 00
FM MAG TWELVE//S-3//
TO CG FIRST MAW//G-3//
MACG EIGHTEEN//S-3//
INFO VMFA AW TWO FOUR TWO
BT
UNCLAS //N03000//
MSGID/GENADMIN/MAG-12 S-3//
SUBJ/DACT NOTIFICATION//
REF/A/DOC/1ST MAW/27OCT86//
REF/B/DOC/CNO/1DEC92//
REF/C/DOC/1ST MAW/7JUL95//
AMPN/REF A IS WGO 3710.25A. REF B IS OPNAVINST 3710.7R.
REF C IS 1ST MAW MEMO//
POC/SCHEDULING, I. M./CAPT/MAG-12 S-3/-/TEL:253-5377//
RMKS/1. THE FOL INFO IS PROVIDED:
A. (REQ UNIT(S))
B. (DACT DATES)
C. (BASE OPERATING FROM)
D. (SORTIES PER DAY)
E. (TYPE TRNG TO BE CONDUCTED)
F. (A/C TYPE AND MODEL)
G. (OPAREA(S))
H. (ADVERSARY UNIT(S), A/C TYPE MODEL, SERIES)
I. (ADVERSARY POC)
J. DACT WILL BE CONDUCTED IAW REF A.//

# APPENDIX B

## TRAINING RULES: AIR-TO-AIR

1. All aircrew in the flight must be qualified and current.

2. ACM shall be scheduled and flown in a designated area.

3. Weather Requirements. Day VMC with 5 miles visibility and defined horizon, cloud separation of 2000 feet vertically and 1 mile horizontally at all times. ACM shall not be conducted through or into an overcast or undercast.

4. G awareness maneuver shall be performed prior to engaging.

5. Top of a broken or overcast layer is the simulated ground level.

6. Hard Deck. 5000 ft AGL or 5000 ft above the highest cloud layer.

7. Soft Deck. 10000 ft AGL or 10000 ft above the highest cloud layer. No sustained maneuvering below 150 knots or above 35 degrees alpha, and no guns defense below the soft deck.

8. Comm requirements. All aircraft will have operable UHF/VHF, ICS (multi-place aircraft), and monitor guard. 1 V 1 flights must use a common frequency; all other flights may use separate frequencies if SOF monitoring GCI controllers or RTO controlling on TACTS Range.

9. Safety Bubble. 500 feet; 1000 feet guns tracking. 1000 feet for C-130.

10. Always assume the other aircraft does not see you.

11. No blind lead turns.

12. Head on pass, clear to the right for a left-to-left pass or maintain existing trend. If unsure of the pass, transmit your own intentions on SOF frequency or exaggerate aircraft movements if on separate frequency.

13. Inside 1.5 NM, devote full attention to the other aircraft. No head on missiles within $20^0$ of the target's nose inside 9000 feet (off bore-sight attacks may be prosecuted down to missile minimum range as long as deconfliction has been established).

14. Nose high goes high in dispute for the same airspace. If unable due to energy state or aircraft performance, transmit your intentions. The low or nose-low aircraft is responsible for flight separation.

15. Aircraft in the sun maintain separation. If blind, fly a predictable flight path. If blind on an aircraft in the sun, break off the attack and lag the up sun aircraft's last known position.

16. Downhill chaser monitor defensive aircraft's altitude and break off the attack with a 90-degree turn prior to hard deck.

17. No head on guns inside 45 degrees of target's nose.

18. No flares as part of a guns defense maneuver.

19. Block altitude deconfliction plan shall be briefed and utilized. With low or no situational awareness, be established in your assigned altitude block by 10 miles from the merge.

20. ACM will cease when any training rule is violated or a knock-it-off/terminate is called. Knock-it-off ceases an engagement and stops the exercise. Terminate call ceases only a local engagement.

21. "Knock it off" call can be made by anyone and all must acknowledge for:

a. Unsafe situation or loss of SA

b. Training rules violated

c. Interloper

d. Out of control/departure/ballistic flight

e. Overstress

f. NORDO (aircraft wing rock in 1G flight)

g. Bingo fuel

h. Inadvertent IFR

i. Aircraft malfunction occurs

j. Learning objectives/stalemate reached

22. Brief altimeter warning settings for hard and soft deck.

23. Brief spin/departure for each type aircraft.

<u>Low Altitude ROE (< 5000 feet AGL)</u>

1. No sustained maneuvering below the hard deck

2. Minimum altitude 300 feet if LAT qualified and current (500 feet if not).

3. Defensive aircraft A/C. Wing rock, extension/separation maneuver or a level/climbing turn not to exceed 180 degrees, roll reversal terminates engagement.

4. Engagements shall be terminated when any aircraft turns a maximum of 180 degrees.

5. If initial turn takes aircraft above hard deck, continue to maneuver as appropriate.

6. Maneuvering below 500 feet brief LAT ROC.

7. Avoid dead six--beware jet wash.

Ordnance. Aircraft carrying external A/G ordnance are limited to 180 degrees of turn.

FW vs. Ground Attack Interface

1. Aggressors briefed on target location, type ordnance, delivery maneuver.

2. No attacks below 10,000 feet within 3 NM of target area.

3. No ACM for aircraft with live or heavy inert ordnance.

4. No attack on aircraft in weapons delivery maneuver.

5. Min altitude for attacker 500 feet.

6. Aircraft simulating carrying A/G ordnance shall not climb though 5000 feet AGL to engage in ACM.

7. Aggressor aircraft will discontinue attacks on strike aircraft following the strike aircraft's wing rock and/or defensive turn for as maximum of 180 degrees above 5000 feet or 90 degrees below 5000 feet.

8. Aggressor aircraft shall not descend below the altitude of any strike aircraft (below 500 feet) during an attack.

FW vs. HELO

1. Initial LAT qual is required. Min Wx: 3000/5 with a defined horizon.

2. No slow speed/high AOA maneuvering below 10,000 feet AGL.

3. Minimum altitude:

   a. 0-10 degree dive: 500 feet AGL
   b. 10 degree dive and greater: 1000 feet AGL

4. Supersonic flight is not authorized.
5. Do not directly over fly Helos.
6. Lost sight requires climb above 3000 feet AGL.
7. Gun attacks shall be broken off at 1000'.

# APPENDIX C

## TRAINING RULES: AIR-TO-SURFACE

1. All aircrew in the flight must be qualified and current.

2. Ordnance deliveries shall be scheduled and flown in a designated area.

3. Weather Requirements. VMC with 5NM visibility and suitable maneuvering airspace to allow target attacks. Ceiling minimums as follows:

   a. 2000′ for level lay-down attacks

   b. 5000′ for $10^0$ - $20^0$ dive delivery attacks

   c. 10000′ for $30^0$ - $40^0$ dive delivery attacks

   d. 15000′ for $45^0$ - $60^0$ dive delivery attacks

   e. During loft deliveries, the aircraft and delivered ordnance will remain in VMC conditions throughout the delivery and recovery maneuver.

4. Comm requirements. All aircraft will have operable UHF/VHF, ICS (multi-place aircraft), and monitor guard. All aircraft will monitor the same range/terminal control frequency. NORDO aircraft will maintain VFR, climb to the minimum safe altitude, and proceed with the lost comm/lost sight plan.

5. Minimum dive recovery altitudes briefed for 5 and 7 G pull.

6. Radar altimeter settings briefed.

7. G awareness maneuver shall be performed prior to air-to-surface maneuvering.

8. 500 feet minimum altitude unless conducting LAT.

9. 350 knots minimum maneuvering airspeed below 5000′ AGL.

10. Terrain clearance tasking takes priority over all other mission tasking.

11. Maintain instrument scan for release parameters to avoid target fixation.

12. After weapons release, a positive rate of climb shall be established prior to any other maneuver.

13. All turns below 1000 feet shall be closely monitored for nose slice and descents below 1000 feet shall be made wings level.

14. Aircraft not involved in ordnance delivery are responsible for deconfliction.

15. Multiple aircraft deliveries and TOT compression require a pre-briefed deconfliction plan.

16. Adequate frag separation shall be briefed and strictly adhered to.

17. At a "knock it off" call, all aircraft shall immediately roll wings level and attain a positive rate of climb.

18. "Knock it off" call can be made by anyone and all must acknowledge for:

a. Any abort call

b. Unsafe situation or loss of SA

c. Training rules violated

d. Tactical abort parameters violated

TACTICAL ABORT CRITERIA. Tactical abort criteria include minimum altitudes, airspeeds, maximum dive angles, minimum dive angles, minimum interval between aircraft, timing, loss of sight at critical points during a maneuver, and loss of situational awareness. Tactical abort parameters specific to the conduct of different tactical missions/maneuvers shall be briefed before each mission. A thorough brief shall include, but not be limited to, the appropriate air-to-surface training rules above. Target weather and specific scenario abort criteria shall be addressed in all operations plans/LOIs/SOPs and/or mission briefs. The following tactical abort criteria for all ordnance deliveries apply:

1. The CAS brief is not fully understood.

2. It is determined that an aircraft will be more than one minute late or more than 30 seconds early to the target.

3. Anyone transmits "abort."

4. When under FAC/FAC(A) control and a "cleared hot" have not been received.

5. Airspeed decays below 350 KIAS.

6. The aircraft apex is inside Minimum Attack Parameters (MAP) or the preplanned dive angel is exceeded by the following criteria:

a. or - 5 degrees for a 10-degree dive

b. or - 7 degrees for a 20-degree dive

c. or - 10 degrees for dives greater than or equal to 30-degree dive.

7. Correction from the mark is more than one half the distance from the target to the position in the direction of friendly positions.

8. The minimum frag avoidance time interval has not been satisfied.

9. Pilot is in doubt concerning any element of information related to safety of flight or safety of release, ordnance shall not be released.

# APPENDIX D

## KADENA ORDNANCE PROCEDURES

1. Definitions.

a. Hung Ordnance: Any item attached to the underside of the aircraft for the purpose of dropping or firing which has failed to release.

b. Hung-Secure: A release attempt has been made, but there is no indication of the release mechanism functioning.

c. Hung-Unsecured: A release attempt has been made and some portion of the release mechanism has functioned. Examples: A bomb with one release lug released; a rocket or missile which has moved in it's tube or launcher.

d. Unexpended Ordnance: Ordnance attached to an aircraft for which no attempt was made to fire, release, launch or jettison.

e. Live Ordnance: Contains high explosive charges.

f. Practice Ordnance: Contains marking charges to facilitate scoring.

g. Inert Ordnance: Contains no explosive or marking charges.

2. Ordnance Emergency Categories:

a. Category 1: Hung live ordnance

b. Category 2: Unexpended live bombs
Hung practice ordnance
Hung inert ordnance
Suspected or actual jammed gun
Runaway gun

3. Procedures in the target area:

a. Alternate release modes shall be attempted.

b. Hung unsecured live bombs present a clear danger to flight safety. After all other release options have failed, jettison of the unsecured live bombs with suspension equipment is authorized.

4. Recovering at Kadena:

a. Safe all switches.

b. Declare hung ordnance emergency. Specify:

(1) Appropriate emergency category.

(2) Type of weapon involved, and

(3) Ordnance explosive type (inert, practice, or live)

c. Make straight-in approach; minimize overland flight.

5. After landing:

a. Taxi to end of runway, then to run-up pads 1, 2, 3, or 4 as directed by tower for dearming.

b. Observe published dearm headings if forward-firing ordnance is involved.

c. After safing, return to ordnance-loading hardstand (CALA) for parking.

# APPENDIX E

## TRAINING RULES: LAT

Day LAT

1. All aircrew in the flight must be qualified and current.

2. LAT shall be scheduled and flown in a designated area.

3. Minimum airspeed of 350 KCAS with RADALT to the HUD.

4. Weather requirements VMC with 5NM visibility/ceiling no lower than 3000'.

5. All aircraft operable radio, ICS (multi-place aircraft), and monitor guard.

6. The wingman never flies below the lead's altitude. The exception to this rule occurs when lead turns into the wingman.

7. The dynamic aircraft (i.e. the aircraft that is turning) is always responsible for collision avoidance. After a "knock it off" call, all aircraft in the flight will roll wings level and establish a "climb to cope" (3000' AGL and VMC).

8. All aircrew shall "knock it off" if any of the following conditions occur:

   a. Any aircraft descends below the minimum briefed altitude.

   b. Aircraft descends in a turn.

   c. Unsafe situation or loss of situational awareness.

   d. Inadvertent IFR.

   e. Any aircraft experiences loss of radios or ICS. In the event the lead aircraft does not respond to the "knock it off" call, the chase shall fly in front, maintaining safe separation and lead the flight to comfort level.

9. Following a "KIO," LAT flight will not be resumed without verbal concurrence of all aircrews participating.

10. No supersonic flight in the target area.

Night LAT

11. Aircrew must be day LAT qualified prior to commencing night NVG LAT training.

12. Night Systems LAT without NVG's is prohibited

13. NS LAT shall not be conducted in Lot 11 and earlier model F/A-18s. Minimum altitude for aircrew equipped with NVGs and operating Lot 11 and earlier model F/A-18s is 3000′ AGL.

14. Illumination

a. With lunar illumination 0.0022 LUX or greater, Night Systems qualified aircrew may conduct NS LAT down to 300′ AGL.

b. With lunar illumination less than 0.0022 LUX, NS LAT is not authorized.

Minimum Altitudes and Altitude Currency Requirements

15. Current direction from HQMC prohibits MAC. Under this prohibition, the minimum altitudes for fixed-wing aircraft are 300′ AGL for HUD equipped aircraft, 500′ AGL for non-HUD equipped aircraft.

16. In aircraft requiring two or more aircrew, the most restrictive aircrew's currency interval applies to the aircraft. In flights of two or more aircraft, the most restrictive aircrew currency interval applies to the flight. Minimum altitudes and altitude currency requirements are as follows:

| | Time Since Last LAT Sortie | | |
|---|---|---|---|
| | 1-15 Days Currency Interval | 16-30 Days Currency Interval | 30+ Days Currency Interval |
| EVENT | COMFORT LEVEL BUT NO LOWER THAN: | | |
| Fixed-Wing | | | |
| Single Aircraft | 300 feet | 300 feet | 500 feet |
| Section | 300 feet | 500 feet | 1000 feet |
| Division | 500 feet | 500 feet | 1000 feet |
| Aerial Refueling Receivers | 1,500 feet | 1,500 feet | 1,500 feet |

NOTES: 1/ Day LAT will not update NS LAT currency requirements.

2/ NS LAT may be used to update day LAT currency requirements.

# APPENDIX F

## TRAINING RULES: NIGHT SYSTEMS

1. REQUIRED OPERATIONAL EQUIPMENT

   a. NVGs with 2 functioning batteries.

   b. NVG compatible cockpit lighting.

   c. Accurate INS with Velocity Vector.

   d. HUD.

   e. RADALT.

   f. Anti-Collision light.

   g. Digital Map System for Night LAT.

   h. Two-way Comm/ICS.

   i. NVG compatible flashlight and/or NVG compatible lens.

2. PREFLIGHT PLANNING

   a. Sunset/Moonrise.

   b. Moon elevation/azimuth/phase.

   c. Beginning/end of nautical twilight.

   d. .0022 LUX Start/End times.

   e. Ceiling and visibility.

   f. Humidity/Temp/Dew point.

   g. NVG eye lane or Hoffman ANV-20/20 NVD Infinity Focus System (Hoffman Box).

3. Radar altimeter settings briefed.

4. ILLUMINATION REQUIREMENTS

   a. With lunar illumination 0.0022 LUX or greater, NS LO missions may be conducted down to 500' AGL.

b. With lunar illumination less than 0.0022 LUX, NS LO missions may be conducted above 1000′ AGL for training down to starlight conditions.

5. Minimum altitude for aircrew equipped with NVGs and operating Lot 11 and earlier model FA-18s is 1000′ AGL.

6. NVG Crewing Considerations. All crewmembers will or will not wear NVGs.

7. Donning

a. Crews will don NVGs above 3000' AGL and call "Goggled."

b. If in formation--maintain a minimum of 1000' between aircraft while donning.

c. Set external lights as briefed.

8. Rendezvous

a. Initial join-ups and post-mission or off-target rendezvous shall be performed with extreme caution.

b. DO NOT place another aircraft within HUD FOV at ranges of 1NM or less.

9. Enroute (low level)

a. Minimum airspeed of 350 KCAS with RADALT to the HUD.

b. Avoid flights of long duration over water if feasible.

c. Thoroughly brief vertical obstructions & cultural lighting considerations with an updated chart & route brief.

d. VFR weather minimums required.

e. Night low-level minimum altitude is 3000′ AGL without NVGs.

10. If for any reason you don't feel up to the mission, cancel. If you fall behind or "something is wrong," climb-to-cope, fly the airplane, and fix the problem or abort.

# APPENDIX G

## SAMPLE CROSS COUNTRY REQUEST

| | | | |
|---|---|---|---|
| T/O DATE: | | LAND DATE: | |
| CALLSIGN: | | # / TYPE A/C: | F/A-18C |

| CREW | RANK | NAME / INITS | CREW | RANK | NAME / INITS |
|---|---|---|---|---|---|
| PILOT | | | PILOT | | |
| PILOT | | | PILOT | | |

| LEG: | 1ST | 2ND | 3RD | 4TH | 5TH | 6TH | 7TH |
|---|---|---|---|---|---|---|---|
| DATE: | | | | | | | |
| DEP ICAP: | | | | | | | |
| FIELD NAME: | | | | | | | |
| ETD: | | | | | | | |
| ARR ICAO: | | | | | | | |
| FIELD NAME: | | | | | | | |
| ETA: | | | | | | | |
| AREA/ROUTE | | | | | | | |
| FUEL: | | | | | | | |
| RON: | | | | | | | |
| PPR: | | | | | | | |
| TNG CODES: | | | | | | | |
| REMARKS: | | | | | | | |

Notes :

Squadron Commanding Officer:

Date Received by MAG-12:

MAG-12 Operations Officer Approval:

Comments:

MAG-12 Commanding Officer Approval:

Comments:

1st MAW, Approval Required: YES: ☐ NO ☐

CG, 1st MAW Approval:

# APPENDIX H

## MAG-12 Out of Control Simulator Syllabus

1. Purpose. To develop aircrew skills in recognizing impending departures and utilizing proper out of control recovery procedures once a departure has occurred.

2. Overview. The simulator syllabus is designed to teach aircrew to observe the clues provided by aircraft instruments and flying qualities that indicate an impending departure, and to demonstrate proper recovery techniques when the aircraft has departed. **The emphasis is on the proper recognition of indicators to prevent aircraft departures.** A variety of scenarios are provided, designed to demonstrate likely scenarios where pilots may experience departures. Pilots and instructors are encouraged to experiment and try different airspeeds, AOA, and attitude combinations to fully explore the edge of the Hornet operating envelope. Simulator flights should be flown with one pilot acting as an instructor at the console and the other pilot at the aircraft controls.

3. Learning Objectives

a. Recognize signs of impending departure and learn how to avoid departing aircraft.

b. Recognize different types of out of control flight and apply proper recovery techniques.

c. Minimize altitude loss during recovery.

4. Required Reading prior to Simulator. F/A-18 NATOPS Chapter 11 pp. 6-14.

# Scenario 1

## Asymmetrical stores: Air-to-Ground

| | |
|---|---|
| Setup: | Initialize trainer with two Mk-84 bombs on outboard pylons. |
| Pilot Action: | Plan on releasing two bombs in Salvo release using a 45-degree dive with 10,000-foot release at 480 kts true. At release, have one bomb not release (just release 1 since the simulator cannot simulate 1 hung) and recover aircraft with asymmetrical stores. Experiment with different pulls on the stick and examine how aircraft behaves with large asymmetry. Note how aircraft will fall off to one side at high angles of attack. Note altitude loss during recovery. |
| Explanation: | According to NATOPS, "The F/A-18 with large lateral asymmetry is significantly more departure prone. NATOPS AOA and Mach limitations must be honored to avoid departure." |

# Scenario 2

## Asymmetrical stores: Air-to-Air

| | |
|---|---|
| Setup: | Setup trainer with one Mk-84 bomb on right outboard station. Aircraft altitude is 10,000 feet. |
| Pilot Action: | To simulate a defensive perch setup, start aircraft in a 60-degree AOB right turn at 350 knots. Pull the aircraft using a maximum performance turn until airspeed has bled to 175 knots. Simulating an attacker overshoot, attempt to reverse the aircraft at > 30 degrees AOA and < 175 knots. Note how aircraft will enter nose slice departure into the light wing. When departure has been recognized, recover. Note altitude loss during recovery. Perform the same departure maneuver without stores and observe how aircraft reacts to control inputs. |
| Explanation: | According to NATOPS, "Nose slice departure into light wing is likely when maneuvering above 30 degrees AOA with lateral asymmetry $\geq$ 6,000 ft-lbs." |

## Scenario 3

## Over the Top Maneuvering

| | |
|---|---|
| Setup: | Single centerline aircraft at 10,000 feet. |
| Pilot Action: | At 10,000 feet and 250 knots, attempt to perform a loop maneuver using military power. Initially, perform a 25-35 degree AOA pull. At 110 degrees of pitch, release controls and observe how the AOA feedback commands nose down stabilator and will not allow the aircraft nose to continue to track down towards the horizon on its own. The pilot must hold backpressure on the stick and maintain a positive AOA in order to drive the aircraft towards the horizon. If at any time the aircraft departs during the demonstration, execute out of control recovery procedures. Attempt maneuver again at 200 knots initially and observe aircraft handling qualities. |
| Explanation: | According to NATOPS, "Starting overhead maneuvers with insufficient airspeed may lead to an inverted, nose high, ballistic condition. This condition most likely results in an uncommanded nose slice departure with increased probability of entering a Falling Leaf or Spin." |

## Scenario 4

## Cross control departure from a bug (F/A-18D)

| | |
|---|---|
| Setup: | Single centerline aircraft at 10,000 feet. Simulation is designed to simulate departure prone regions of F/A-18B/D with centerline tanks. |
| Pilot Action: | Simulating a bug from an engagement, start at 200 knots and 10,000 feet. Unload aircraft to near 0 degrees AOA and feed in full left or right rudder. Move stick in opposite direction simulating partial cross control while attempting to maintain sight during a bug. Observe aircraft handling and note any departure. If aircraft departs, execute recovery procedures. Note altitude loss during recovery. |
| Explanation: | According to NATOPS, "In F/A-18B/D centerline tank loadings at $\leq$ 250 KCAS, excessive lateral stick or rudder input at AOAs below 10 degrees may result in a nose-slice departure." |

## Scenario 5

## Upright Spin Recovery

| | |
|---|---|
| Setup: | Single centerline aircraft at 10,000 feet. |
| Pilot Action: | Establish aircraft in an upright spin by entering a gradual pull up to 70 deg nose high starting at 350 KCAS and 10,000 feet with throttles at idle. Once established nose high and airspeed reading 48 knots in the HUD, advance right throttle to MAX and retard left throttle to idle. Aggressively place stick in full rear right quadrant and full left rudder deflection while maintaining right throttle in MAX and left throttle in MIN. Hold inputs until entering left upright spin. Once spin logic appears, execute OCF procedures. Experiment with different altitude entries. Note altitude loss during recovery at each altitude. |
| Explanation: | According to NATOPS, "A clean or symmetrically loaded aircraft is very reluctant to enter any spin mode with the FCS in CAS." NATOPS further cautions that "With the spin switch in RCVY (SRM engaged), departure susceptibility is greatly increased." |

# Scenario 6

## Unusual Attitude Recovery

| | |
|---|---|
| Setup: | Single centerline aircraft at 10,000 feet. |
| Pilot Action: | Instructor has pilot at controls close eyes. Instructor then directs pilot to unusual attitude. Pilot at controls then opens eyes and recovers on aircraft instruments. Note altitude loss during recovery. |
| Explanation: | According to NATOPS, proper procedures are as follows:<br>1. 1 g roll to nearest horizon.<br>2. Throttles - MAX (MIL if altitude not critical).<br>3. Pull to and maintain 25 to 35 degrees AOA until positive rate of climb established (AOA configuration dependent).<br>4. If aircraft departs dive recovery below 6,000 feet AGL - EJECT. |