NAVAL AIR TRAINING COMMAND

NAS CORPUS CHRISTI, TEXAS CNATRA P-816 (REV. 06-97) PAT

CV PROCEDURES

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DEPARTMENT OF THE NAVY
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1. CNATRA P-816 (Rev. 06-97) PAT, "CV Procedures, Flight Support, Advanced SNFO," is issued for information, standardization of instruction and guidance of instructors and students in the Naval Air Training Command.

2. This publication will be used to implement the academic curriculum at Training Squadron EIGHTY-SIX.

3. Recommendations for changes shall be submitted to Commander, Training Air Wing SIX.

4. CNATRA P-816 (Rev. 09-96) PAT, "CV Procedures, Flight Support, Advanced SNFO," is hereby canceled and superseded.

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Assistant Chief of Staff for
Training and Operations

Distribution:
CNATRA (5)
COMTARWING SIX (495

TRAINEE UNIT GUIDE

CV PROCEDURES

OVERVIEW

Advanced Jet NFOs operate in the carrier environment after receiving their wings. It is essential to their aviation background that they be familiar with the procedures involved in carrier operations for both safety and professional reasons.

SCOPE

This course will help to prepare you for operation in the aircraft carrier environment after completing the VT-86 syllabus. Additionally, this course will provide the necessary information to satisfactorily perform VT-86 trainer evolutions in a simulated carrier environment.

TERMINAL LEARNING OBJECTIVES

Perform CV Departures and Approaches in an aircraft simulator to an accuracy of :

1. Course: +/- 2 degrees
2. Arc: +/- .5 nm
3. Marshal Holding: +/- 15 seconds
4. Voice Reports: without error

LEARNING OBJECTIVES

1. Define the terms that are peculiar to the carrier environment on a written exam.
2. Recall the weather criteria that determine Case I, Case II and Case III operations on a written exam.
3. Describe CV departure procedures on a written exam.
4. Describe CV approach procedures on a written exam.

REFERENCES

1. CV NATOPS, NAVAIR 00-80T-105

MODE OF INSTRUCTION

This text is designed to be utilized in conjunction with the CV Procedures lecture. Room is provided in this guide for lecture notes. It is expected that the guide will be read prior to classroom review and discussion.

FINAL PERFORMANCE CHECK

Synthetic trainers and the midphase and end of course examinations comprise the final performance check. RST 4 for Strike/Strike fighter students will utilize Case III departure and recovery procedures. The midphase and end of course examinations must be passed with an 80% accuracy.

DEFINITIONS

Air Operations - The section of the ship's Operations Department responsible for coordinating all matters pertaining to air operations including the proper functioning of the CATCC.

Angels - Altitude in 1000's of feet.

Ball - Aircrew report indicating that the Fresnel lens (meatball) is in sight.

Base Recovery Course (BRC) - Ship's magnetic heading during flight operations.

Bingo - An order to proceed and land at the field specified, utilizing a bingo profile. Aircraft is considered to be in an emergency/fuel critical situation. Bearing, distance, and destination will be provided.

Bingo Fuel - Aircraft fuel state in sufficient quantity necessary to fly to the bingo field with X lbs. remaining; depends on aircraft type.

Breaking The Deck - First aircraft to land for each cycle.

Carrier Air Traffic Control Center (CATCC) - The shipboard agency responsible for the status keeping of all carrier air operations and control of all airborne aircraft under the ship's Operations Officer's cognizance except those being controlled by the Combat Direction Center (CDC).

Carrier Control Area (CCA) - A circular airspace with a radius of 50 miles around the ship extending from the surface to unlimited altitude under the cognizance of CATCC.

Carrier Control Zone (CCZ) - The airspace within a circular limit defined by a 5 mile radius around the ship, surface up to and including 2500 feet under the cognizance of the air boss during VFR conditions.

Charlie - Signal for aircraft to land aboard the ship. A number suffix indicates time delay before landing.

Cherubs - Altitude in 100's of feet.

Clara - Report from aircrew indicating Fresnel lens (meatball) not in sight.

Clearing Turn - Associated with a Case I or II departure. Immediately after launch, aircraft from bow cats initiate a right turn then a turn to parallel the BRC. Aircraft launched from the waist cats

initiate a left turn then a turn to parallel the BRC. The purpose of these turns is to provide aircraft separation on multiple launches from the carrier.

C.Q. - Carrier qualification.

Delta - A signal given to hold and conserve fuel at an altitude and position appropriate to type aircraft and case recovery in effect.

Divert - An order for an aircraft to proceed and land at the field specified. This is a non-emergency situation.

Emergency Expected Approach Time (EEAT) - The future time, assigned prior to launch, at which an aircraft is cleared to depart inbound or penetrate from a pre-assigned fix under lost communication conditions.

Emergency Marshal - A marshal established by CATCC and given to each pilot prior to launch with an altitude and EEAT. The emergency marshal radial will have a minimum of 30 degrees separation from the primary marshal radial.

Expected Approach Time (EAT) - The future time at which an aircraft is cleared to depart inbound or penetrate from marshal. Aircraft depart and commence approach at assigned time if no further instructions are received.

Final Bearing (FB) - The magnetic bearing assigned by CATCC for final approach (an extension of the landing area centerline); usually BRC minus landing area angle.

Gadget - Radar.

Kilo Report - An aircrew coded report indicating aircraft mission readiness.

LSO - Landing Signal Officer.

Marshal - An area for holding which is a bearing, distance and altitude from which initial approach will commence.

Mother - Aircraft position relative to the CV (radial/DME) i.e. tacan.

Ninety-Nine Aircraft - A collective call to all aircraft in the launch or recovery.

Pigeons - A steer assigned by controllers (usually to the primary bingo or divert field).

Platform - A point of 5000 feet altitude on the approach at which all jet aircraft will decrease rate of descent from 4000 feet per minute to 2000 feet per minute.

Pogo - If voice communications are not established, return to this frequency. For example, "Pogo this" means switch back to me; "Pogo 15" means switch back to Button 15. Hence, "Switch 15, no joy pogo this" means switch Button 15, if no communication established on Button 15, switch back to me.

Popeye - Aircraft in IMC conditions.

Primary Marshal Radial - Usually 180 degrees from Final Bearing.

Ramp Time (Ready Deck) - Anticipated time specified by the air boss that the flight deck will be ready to recover aircraft. Time the first aircraft in Case III recovery is expected to be at the ramp.

Reference Climb Radial (RCR) - A TACAN radial to which all departure radials are referenced. See Squadron Climb Radial (SCR).

Roger Ball - LSO response to your ball call.

Squadron Climb Radial (SCR) - A number in degrees which you apply to the Reference Climb Radial to find your departure radial, e.g. +/- 0, 20, 40, or 60 degrees. Squadron climb radial will be defined in your airwing's tactical notes.

Zip Lip - A condition that may be prescribed for flight operations during day VFR conditions under which positive communications control is waived and radio transmissions between aircraft, pilots, and control agencies are held to the minimum necessary for the safety of flight.

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CV PROCEDURES

Introduction

The nature of our business demands that we become thoroughly familiar with the procedures for launching and recovering at the carrier. Regardless of the fact that you just shot down five enemy aircraft or sank the whole enemy fleet, if you screw up at the boat, that is what everybody sees and will remember you for. This is why we introduce you to basic CV procedures at VT-86.

Weather Criteria For Launches/Recoveries

The case launch/recovery is determined by the Air Operations Officer prior to the event based on ship's weather. There are three cases of launches and recoveries. They are listed as follows:

1) CASE I: 3000 feet/5 nm or greater

2) CASE II: less than 3000 feet/5 nm but no lower than 1000 feet/5 nm

3) CASE III: less than 1000 feet/5 nm or at night

I. CV JET DEPARTURE PROCEDURES

These procedures are contained in the CV NATOPS Manual. See departure diagrams at the end of this book.

A. Case I: VFR from Takeoff through Rendezvous.

WX: No instrument conditions during departure and rendezvous. 3000 feet/5 nm minimum.

Procedure: After a clearing turn, proceed straight ahead paralleling the BRC at 500 feet, until 7 nm. Aircraft are then cleared to climb unrestricted in VMC.

B. Case II: Visual Conditions at Ship with a Controlled Climb Required.

WX: 1000 feet/5 nm or greater but less than 3000/5. Launch on Departure Control frequency.

Procedure:

Launch: After a clearing turn, proceed straight ahead at 500 feet paralleling the BRC. At 7 nm, turn to intercept the 10 nm arc, maintaining visual conditions until established on the departure radial. The 500 foot altitude restriction is lifted after 7 nm if the climb can be continued in visual conditions. Departure on Squadron Climb Radial, SCR = RCR +/- _____ (assigned by airwing). Jets shall maintain 300 knots until VMC on top.

Rendezvous:

1) Rendezvous between 20 and 50 miles from the carrier on the left side of the departure radial at a prebriefed altitude (for example, 1000 feet above the cloud layer).

2) First aircraft of each flight shall report "Popeye" to Departure Control passing FL180 if not on top. Departure Control will assign appropriate altitude.

3) If still "Popeye" when the assigned altitude has been reached, all aircraft shall establish holding on outbound radial between 20 - 30 miles and conserve fuel.

4) Once reported in holding, Departure Control will issue clearance to proceed on assigned mission, if required, or continue holding until other returning flights are onboard. Holding aircraft will then be vectored under close control to pre-briefed marshal for recovery.

C. Case III: IFR at Carrier (Controlled Climb Required).

WX: Ceiling and/or visibility below Case II departure minimums (1000feet/5 nm), or during all night operations. Launch on Departure Control frequency.

Procedure:

Launch: Climb straight ahead at 300 kts crossing 5 nm at 1500 feet or above. At 7 nm, turn to fly the 10 mile arc. Continue climbing and intercept assigned departure radial. Minimum launch interval of 30 seconds between aircraft when instrument conditions exist.

Rendezvous: Rendezvous shall follow Case II procedures.

3. Departure radials are used for lateral separation. Minimum separation is 20 degrees under instrument conditions. Each individual squadron will be assigned a specific number of degrees to add or subtract to RCR to determine departure radial (i.e. VS (+0), VFA (-20), VAQ (+20), VF (-40), etc. If RCR was 080, VS would arc as required to 080, VFA to 060, VAQ to 100, VF to 040). RCR is not necessarily equal to BRC.

D. CASE III DEPARTURE PROCEDURES

1. VOICE COMMUNICATIONS

These reports will vary with weather, state of training, EMCON condition and type of operation. The following reports are commonly used: (First BTN (button) = west coast; Second BTN = east coast)

a. Departure Freq BTN 7/14: "Departure, ROKT 570, Airborne."

b. "Departure, ROKT 570, Passing 2.5 (2500 feet)."

c. "Departure, ROKT 570, Arcing."

d. "Departure, ROKT 570, Established outbound." (RCR + preassigned number of degrees = Outbound Radial).

e. "Departure, ROKT 570, Popeye, with altitude." (See note)

f. "Departure, ROKT 570, On top Kilo (with altitude)." (If you break out at 9000 feet call "On top Angels 9" etc.)

g. "Departure, ROKT 570, Switching Strike."

NOTE: If IMC, "Popeye" will be a mandatory report for single aircraft upon reaching assigned departure altitude, or at FL180 for all aircraft. This will alert Departure Control that further instructions are required.

II. CV JET APPROACH PROCEDURES: (SEE APPROACH DIAGRAMS)

A. CASE I: VISUAL DESCENT/APPROACH

This approach may be utilized when flights will not encounter instrument conditions at any time during the descent, break and final approach.

WX: Ceiling of 3000' and 5 miles visibility within carrier control zone.

1. PROCEDURE:

Flight leaders check in with Marshal upon entering control area and report "see you" when ship is in sight and within 10 nm. At this time, Marshal will switch flight to land/launch for tower control.

2. PORT HOLDING PATTERN

a. Pattern shall be a left hand pattern tangent to the BRC with ship at 3 o'clock position. Pattern will be a maximum 5 miles in diameter.

b. Flight shall be established on assigned pattern altitude (aircraft specific) 10 miles prior to entering the pattern (minimum assigned altitude is 2000 feet with a minimum of 1000 feet separation).

3. DESCENTS

a. Descent shall be accomplished only on downwind and crosswind leg aft of ship's beam.

b. Lowest aircraft or flight must descend in time to meet expected ramp time. Arrive at initial point, 3 miles astern, 800 feet wings level, paralleling the BRC. As aircraft vacate the altitude below you, descend to that altitude. (If holding at 3000' and all aircraft below you have descended to 800' for the break, you descend to 2000' and hold until there is room in the pattern for you to descend to the break.)

c. No aircraft shall break more than 4 miles ahead of the ship. A maximum of 6 aircraft shall be in the landing pattern at one time; this number may be modified by the air boss.

4. SPIN PATTERN

a. The spin pattern is a circular pattern within 3 miles of the ship at 1200'.

b. Flights or portions of flights required to spin (i.e. already 6 aircraft in the break pattern) shall climb to 1200 feet until able to enter the break. A spin should normally be initiated at the bow.

c. Descent to break altitude may commence when downwind aft of the ship's beam and proper interval has been established on the flight ahead.

d. Aircraft reentering the break from spin pattern have priority over and will remain inside aircraft entering from port holding pattern.

5. VOICE REPORTS

Flight leaders shall make the following voice reports in low visibility only:

a. Descending from port holding pattern - "Commencing"

b. Three miles astern (initial position) - "Initial"

c. Entering the spin pattern (when applicable) - "Spinning"

d. When 90 deg. from BRC going into the break - "Spin 90"

e. When breaking - "(aircraft type i.e. Prowler) Breaking at (DME)"

6. ZIP LIP

a. Case I procedures apply except for elimination of prescribed voice reports. The flight leader first in recovery order shall observe the deck and plan his recovery to be at the ramp as soon as a ready deck is available.

b. Zip Lip shall be broken any time an apparent safety of flight situation develops.

7. VFR PATTERN ENTRY

a. Parallel the BRC close aboard starboard side of ship at 800 feet for a level break. Break interval is determined by last aircraft in landing pattern or lead aircraft's break (i.e. seconds after lead breaks, dash 2 breaks). Descend to 600 feet on downwind leg.

b. From launch, bolter, wave-off or touch and go, corrections to parallel the BRC shall not be attempted until a definite climb has been established. Climb to pattern altitude should normally be completed prior to commencing turn to downwind leg. Normal interval shall be taken on other aircraft in the pattern.

c. If a straight-in is requested, it shall be initiated at sufficient distance astern for aircraft to be established on glidepath and approach airspeed at a minimum of 1½ miles and 600 feet.

d. The normal carrier qualification/bolter interval will be established by turning when the aircraft on downwind leg is approximately at your 8 o'clock position. Make a level instrument turn.

B. CASE II: CONTROLLED DESCENT/VISUAL APPROACH

1. PROCEDURE

This approach will be used when weather conditions are such that a flight may encounter instrument conditions during descent. Ship must have minimums of 1000feet/5 nm.

a. Marshal will control descent until VFR conditions are reached.

b. Approaches/Penetrations by formation flights in IMC are limited to flights of two aircraft. Flight leaders shall follow Case III procedures outside 10 nm. At no time will the flights be cleared below 800 feet. When within 10 nm and ship in sight, flight leaders will be shifted to land/launch for tower control and proceed as in Case I.

c. If the flight does not see the ship by five miles, both aircraft shall be vectored into bolter/waveoff patterns and action will be taken to conduct a Case III recovery for the remaining flights.

C. CASE III: CONTROLLED DESCENT/APPROACH

1. PROCEDURE

This approach shall be utilized whenever weather at the ship is below Case II minimums (1000 feet/5 nm) and during flight operations between ½ hour after sunset and ½ hour before sunrise.

2. STRIKE

a. Contact Strike prior to entering the Carrier Control Area (CCA). Upon entering the CCA, Strike will normally switch the aircraft to Marshal. If unable to check in with either Strike, Mission, or Marshall due to communications failure, proceed inbound to emergency marshal at the briefed holding altitude.

b. Flight leader shall provide the following information when checking in with Strike:

(1) Position

(2) Altitude

(3) Fuel state (low state in flight)

(4) Total number of aircraft in flight (lineup)

(5) Type ACLS approach requested

(6) Other pertinent information such as navigational aid status, hung or unexpended ordnance, weather, etc., which may affect recovery.

3. MARSHAL CONTROLLER, after handoff from Strike, shall provide the inbound flight with:

a. Weather and altimeter setting

b. Type of recovery/approach

c. Marshal instructions

d. Expected final approach button

e. Expected approach time (EAT)

f. Expected final bearing (EFB)

g. Additional information such as divert field/fuel data/bingo information.

4. MARSHAL PROCEDURES (plates in back of text)

a. Primary TACAN marshal fix is the 180 degree radial relative to expected final bearing, distance of 1 mile for every 1000 feet of altitude plus 15 miles (Angels + 15). In no case will the assigned base altitude be lower than 6000 feet.

b. Fixed wing aircraft will be separated by a minimum of 1000 feet vertically.

c. Penetrations will be done by single aircraft only, except when the aircraft is experiencing aircraft, radio or NAV equipment problems. Form penetrations by dissimilar aircraft shall not be attempted except in extreme circumstances where no safer options are available to effect a recovery.

d. The following information shall be provided by Marshal prior to commencing the penetration/approach:

(1) Final bearing

(2) Time check

(3) Weather and deck conditions

(4) Divert field/fuel data

(5) Expected final approach button

5. MARSHAL DEPARTURE/PENETRATION

a. When departing Marshal, call commencing. Unless weather or operating circumstances dictate otherwise, aircraft departing marshal will normally be separated by one minute.

b. Jet aircraft shall descend at 250 kts/4000 feet per minute rate of descent until platform is reached, then slow the rate of descent to 2000 feet per minute.

c. Correction to Final Bearing

(1) TACAN/Radar approach: Jet aircraft correct from the marshal radial to final bearing at 20 miles by:

i) Gradual correction when final bearing is within 10 degrees of the reciprocal of marshal radial.

ii) Turn 30 degrees when final bearing is greater than 10 degrees from the reciprocal of the marshal radial. If not established on final bearing at 12 miles, fly the 12 mile arc until intercepting final bearing.

d. Arrive at the 10 mile gate at 1200 feet and 250 knots. Aircraft will commence transition to landing configuration at 10 mile gate unless otherwise directed by CATCC. In no case, will the gear be held after 8 miles.

e. Aircraft shall be at 1200' and 150 KIAS until 6 DME, then slow to approach speed. For TACAN approach, descend at pilot's discretion, after passing the 6 mile fix, to 600 feet. Proceed inbound until reaching minimums or acquiring landing environment. Aircraft will maintain 1200' until intercepting the glideslope (approximately miles, dependent upon glide slope angle utilized) unless otherwise directed.

f. Self Contained Approach. Aircraft should monitor glideslope by comparing TACAN range to altitude. At 3 miles 1200', 2.5 miles 1000', 2 miles 800', etc. If descent below 1200' is required for weather, intercept glideslope at the appropriate range (i.e. cloud layer at 1000', descend to 900' and intercept glideslope at 2.25 miles). Self contained approach should be used to back up all Case III approaches.

g. If a waveoff/missed approach/bolter occurs, climb straight ahead to 1200 feet on extended final bearing. Accelerate to 150 KIAS and await instructions. If no instructions are received within 2 minutes or 4 miles, commence level turn downwind and report abeam. If no instructions are received prior to 2 minutes or 4 miles aft abeam, turn to intercept the final bearing and shoot the approach.

6. CASE III RECOVERY RADIO PROCEDURES

a. 50 MILES: BTN 8/1

YOU: (SHIP'S CALLSIGN), ROKT 570, INBOUND MOTHER'S ____(R°), ___ MILES, ANGELS ___, STATE _____.

STRIKE: ROGER, PROCEED INBOUND.

STRIKE: (APPROX 50 MILES) ROKT 570, SWITCH BTN 17/16, NO JOY POGO THIS.

YOU: ROKT 570, ROGER.

b. ON BUTTON 17/16

YOU: MARSHAL, ROKT 570, INBOUND MOTHER'S ____(R°), ___ MILES, ANGELS ___, STATE _____.

MARSHAL: ROKT 570, ROGER, WX, CASE III RECOVERY, CV1 APPROACH. MARSHAL ON THE ___(R°), ANGELS___, EFB ___. BTN 16/15 OR 18/17, EXPECTED APPROACH TIME ___.

YOU: ROKT 570, ROGER.

c. Aircraft proceed direct to marshal fix (point-to-point) and must be at assigned marshal altitude 10 miles prior to marshal fix. Marshal fix DME is "Angels + 15". (Example: assigned angels 10; DME should be 25 miles)

d. Enter holding using direct, teardrop or outbound parallel entries. You may offset to enable direct entry. Crossing marshal fix on any heading constitutes "established."

e. YOU: ROKT 570, ESTABLISHED ANGELS ___, STATE ____.

MARSHAL: NINETY-NINE AIRCRAFT, TIME _____.

f. Marshal pattern is a 6 minute left hand racetrack pattern with the inbound leg passing over the marshal fix. Pattern leg length must be adjusted to reach the marshal fix at the exact EAT. Early or late commencement (> +/- 10 seconds) will be reported to Marshal upon commencing the approach.

g. AT PUSH TIME, BTN 17/16

YOU: ROKT 570, COMMENCING, STATE ____, ALTIMETER _____, (____ SECONDS LATE OR EARLY IF GREATER THAN 10 SECONDS ERROR)

YOU: ROKT 570, PLATFORM (PASSING 5000')

MARSHAL: ROKT 570, SWITCH APPROACH.

YOU: ROKT 570, ROGER.

h. APPROX 20 DME, BTN 15/16 OR 17/18

YOU: ROKT 570, 10 MILES.

FINAL: ROKT 570, ROGER.

FINAL: (APPROX 3½-5 MILES) ROKT 570, SAY NEEDLES.

YOU: ROKT 570, UP AND RIGHT, ETC.

FINAL: ROGER, CONTINUE MODE II.

FINAL: ROKT 570, 3/4 MILES, CALL THE BALL.

YOU: ROKT 570, SABRELINER, BALL (OR CLARA), STATE ____.

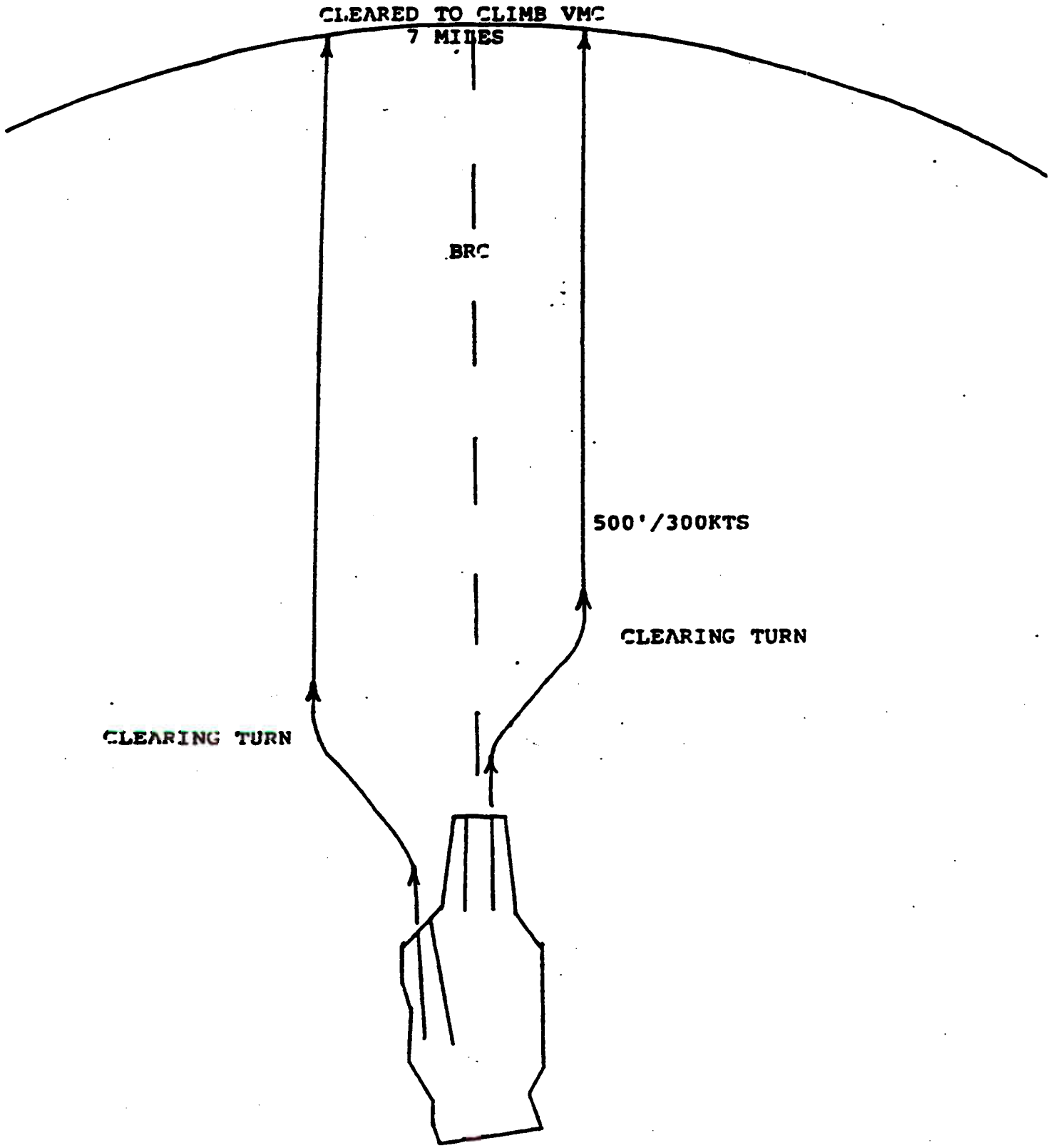
LSO: ROKT 570, ROGER BALL, SABRELINER, POWER, WAVEOFF, ETC.

i. AFTER BOLTER

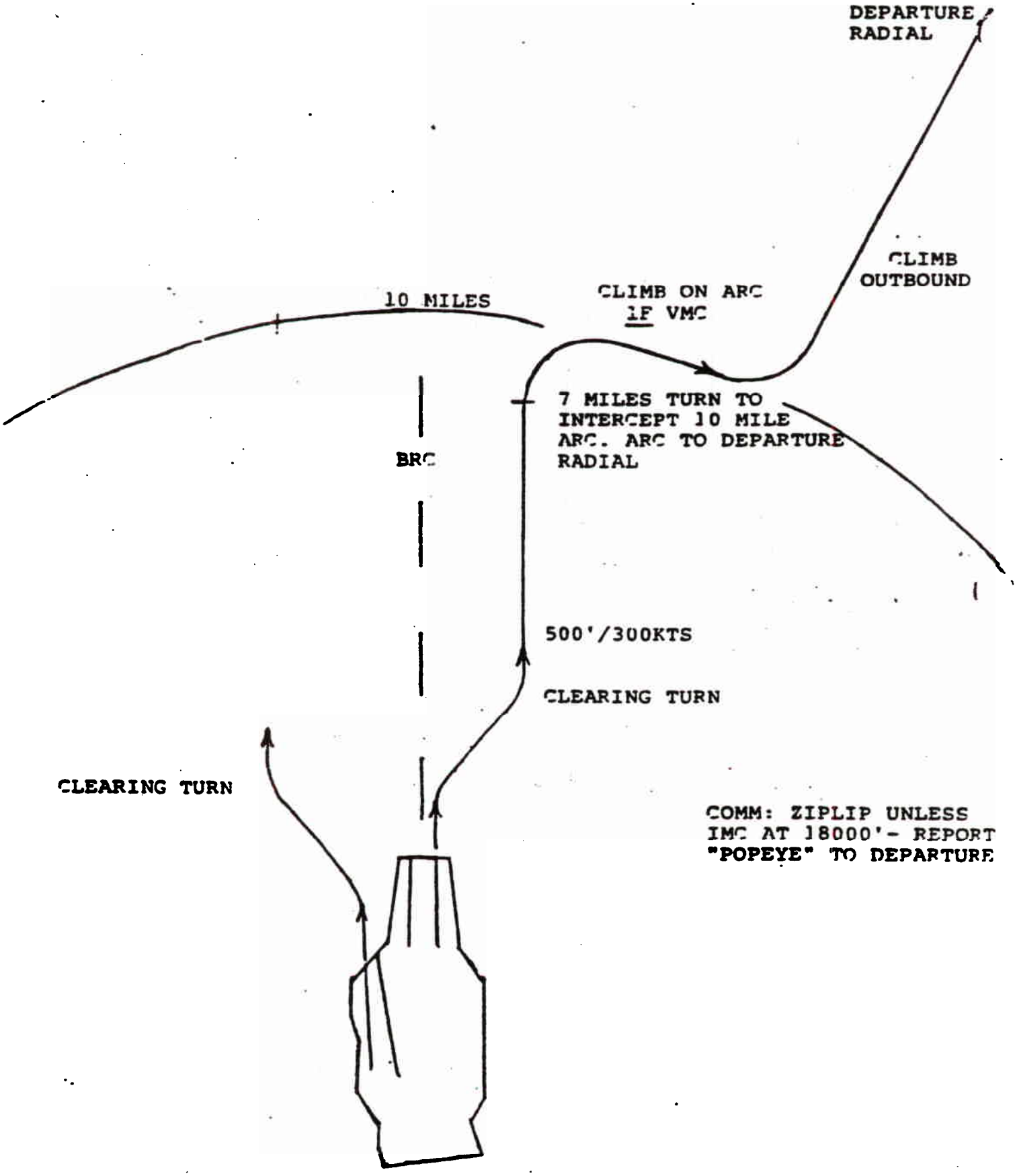
APPROACH: ROKT 570, CLIMB STRAIGHT AHEAD 1200', AT 2 MILES TURN LEFT FOR DOWNWIND.

YOU: (DOWNWIND AT ABEAM POSITION) ROKT 570, ABEAM, STATE ____.

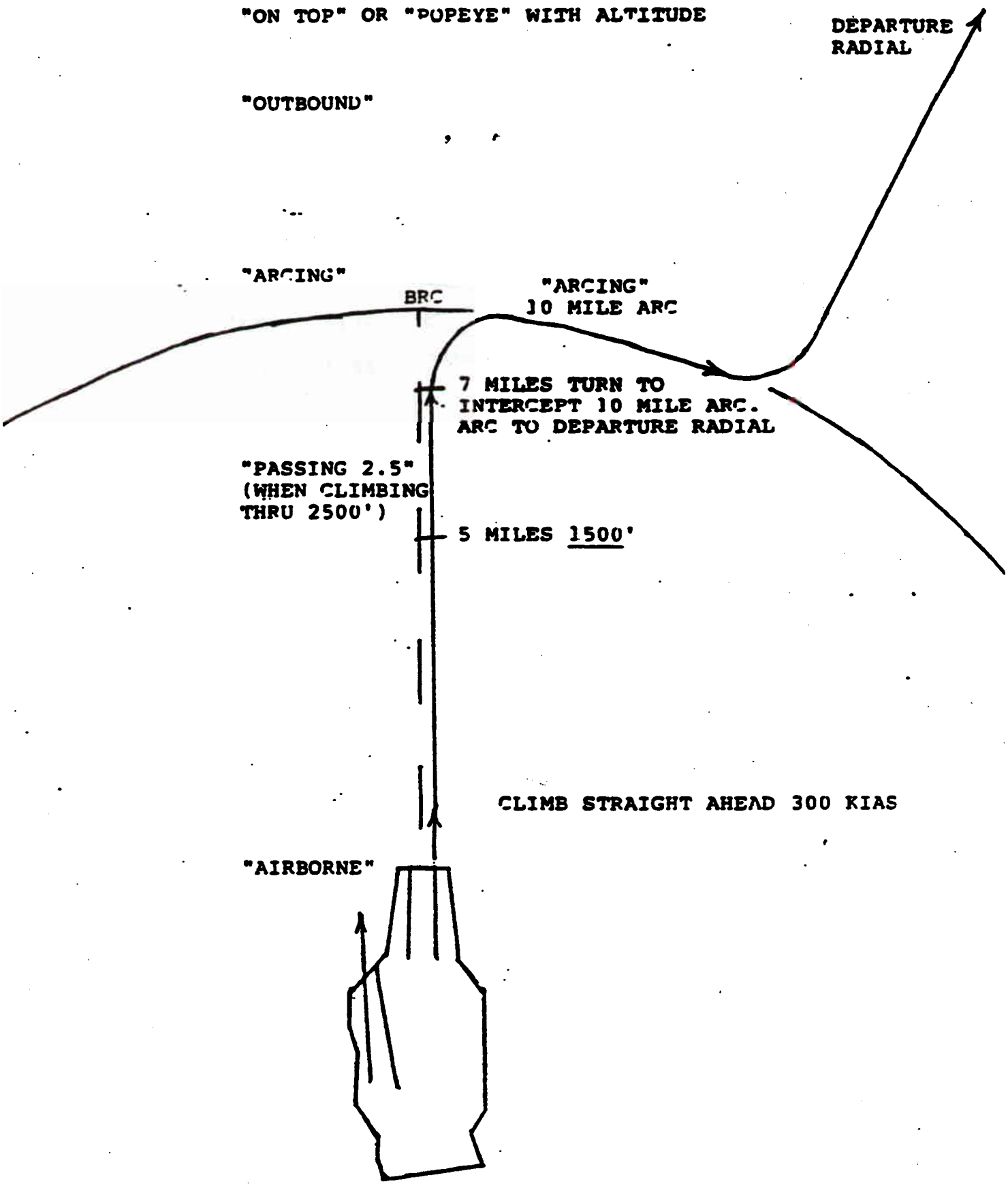
CV CASE I DEPARTURE



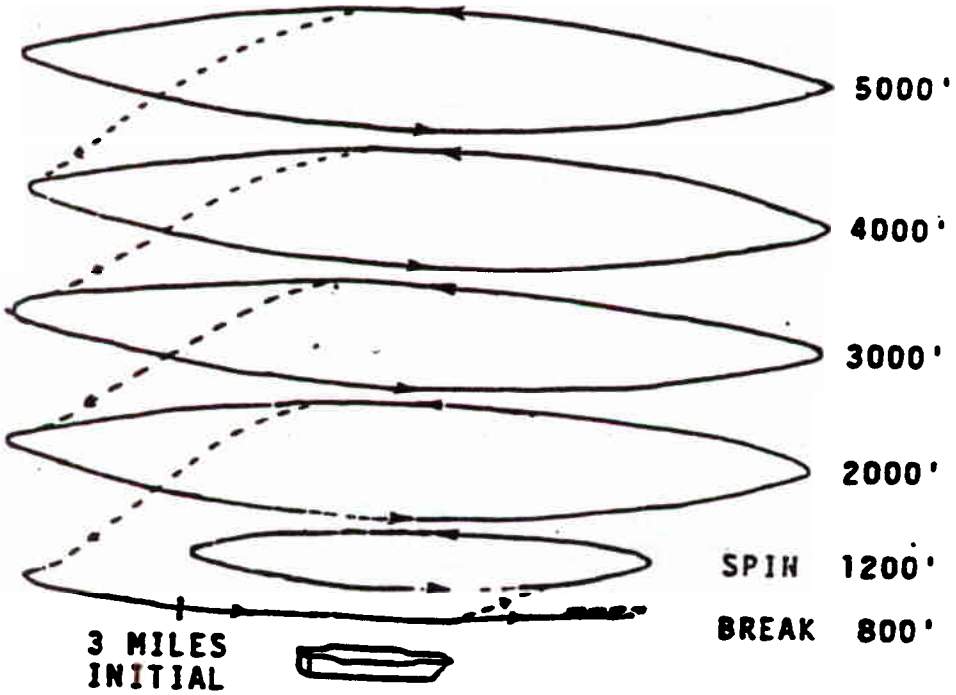
CV CASE II DEPARTURE



CV CASE III DEPARTURE

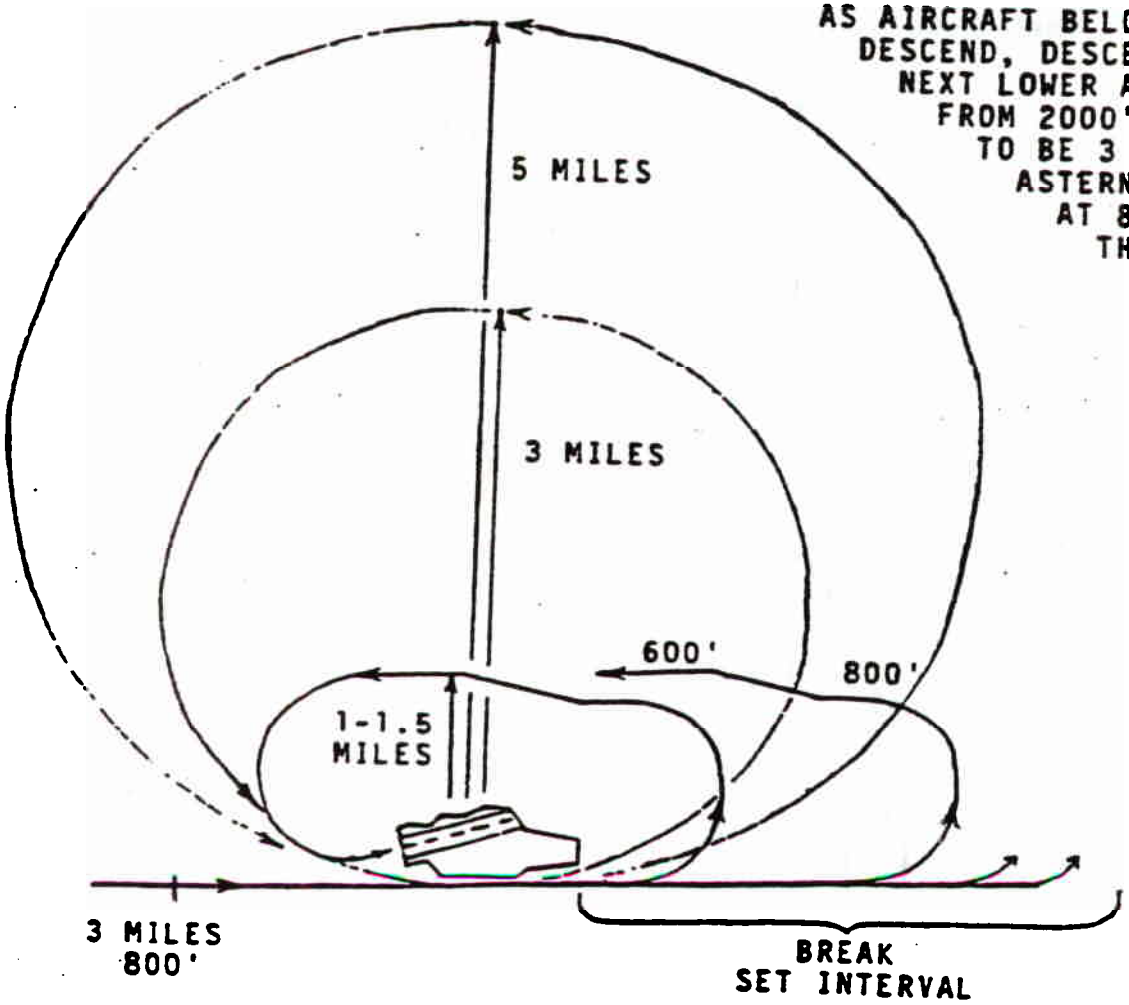


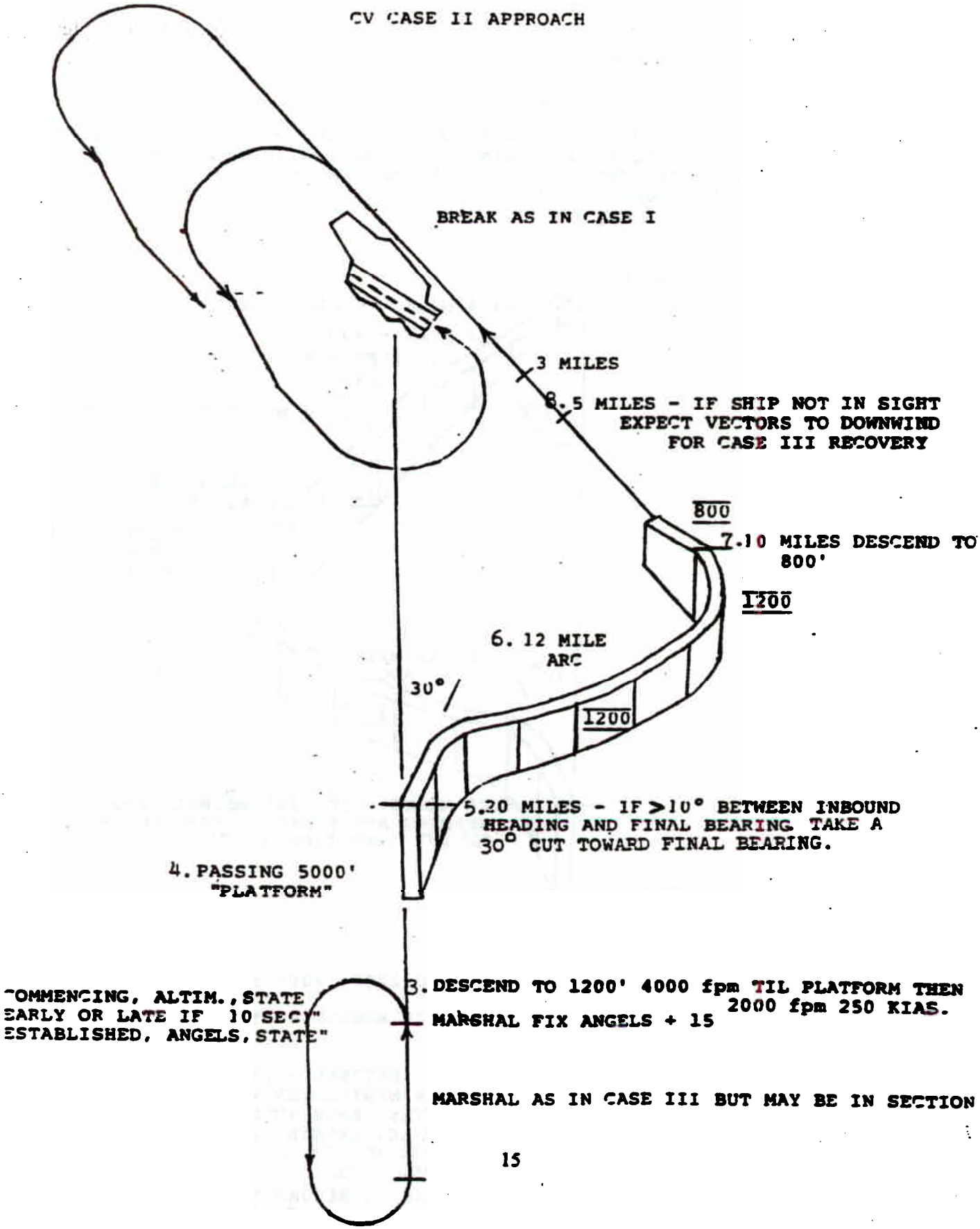
CV CASE I APPROACH



DESCEND AFT OF ABEAM
CLIMB FORWARD OF ABEAM

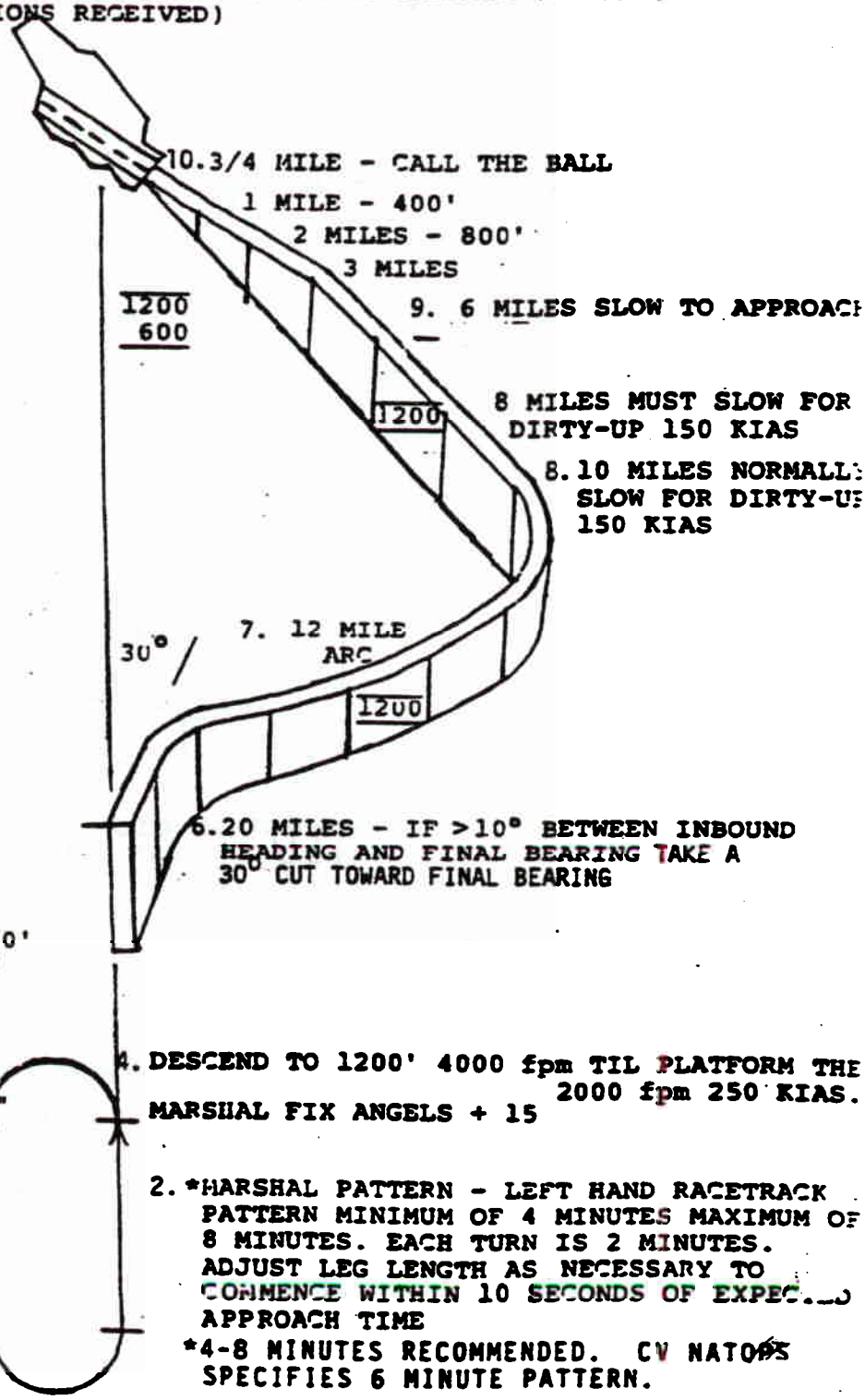
AS AIRCRAFT BELOW YOU DESCEND, DESCEND TO NEXT LOWER ALTITUDE. FROM 2000' DESCEND TO BE 3 MILES ASTERN INBOUND AT 800' FOR THE BREAK




CV CASE II APPROACH
BREAK AS IN CASE I
3 MILES
8.5 MILES - IF SHIP NOT IN SIGHT
EXPECT VECTORS TO DOWNWIND
FOR CASE III RECOVERY
800
7.10 MILES DESCEND TO
800'
1200
6. 12 MILE
ARC
30°
1200
5.20 MILES - IF >10° BETWEEN INBOUND
HEADING AND FINAL BEARING TAKE A
30° CUT TOWARD FINAL BEARING.
4. PASSING 5000'
"PLATFORM"
3. DESCEND TO 1200' 4000 fpm TIL PLATFORM THEN
2000 fpm 250 KIAS.
MARSHAL FIX ANGELS + 15
MARSHAL AS IN CASE III BUT MAY BE IN SECTION

CV CASE III APPROACH

BOLTER/WAVEOFF/MISSED APPROACH - CLIMB TO 1200', 150 KTS ON FINAL BEARING LEVEL TURN DOWNWIND (4 MILES OR 2 MINUTES IF NO INSTRUCTIONS RECEIVED) REPORT ABEAM WITH STATE TURN INBOUND TO FINAL BEARING (4 MILES OR 2 MINUTES IF NO INSTRUCTIONS RECEIVED)



"COMMENCING, ALTIM., STATE (EARLY OR LATE IF 10 SEC)"
"ESTABLISHED, ANGELS, STATE"

CALL ESTABLISHED FIRST TIME YOU CROSS THE MARSHAL FIX REGARDLESS OF HEADING

PLANVIEW SYMBOLS

Procedural Track

Penetration Track (high-altitude procedures only)

180° Bearing line and value

Arrival Holding Pattern

6 DME Tacan DME Fix

✱ Final Approach Fix

Missed Approach Track

PROFILE

✱ Final Approach Fix (for nonprecision approaches)

Fix

NDB Tacan

Level Turn

1800 Mandatory Altitude

1300 Minimum Altitude

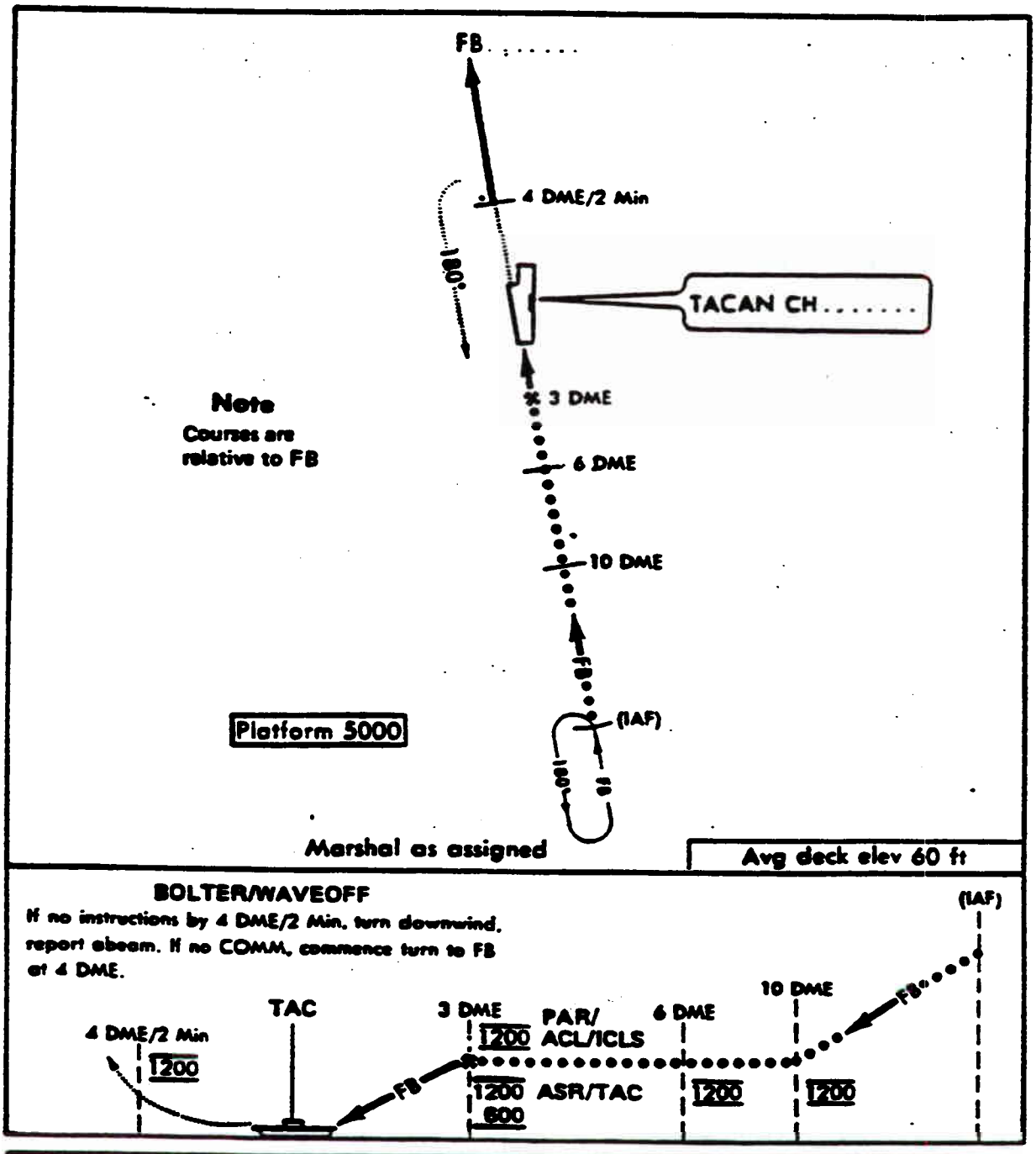
(altitudes precede fix)

GENERAL INFORMATION & ABBREVIATIONS

All distances in nautical miles (except Visibility Data which is in statute miles).
Elevations in feet above MSL.
All radial/bearings are magnetic.

ACL. . . . Automatic Carrier Landing System (ACLS): Modes Ia, II, and III only.
ASR. . . . Air Surveillance Radar
BRC. . . . Base Recovery Course (magnetic heading of ship)
CH. . . . . Channel
DH. . . . . Decision Height (for precision approaches only; that is, PAR, ACL)
DME . . . Distance Measuring Equipment
FAF. . . . Final Approach Fix
FB . . . . . Final Bearing
IAF . . . . Initial Approach Fix
ICLS . . . Instrument Carrier Landing System
MDA . . . Minimum Descent Altitude (for nonprecision approaches only; that is, ASR, tacan, NDB)
MSL . . . Mean Sea Level
NDB . . . Nondirectional Radio Beacon
PAR . . . Precision Radar Approach
TAC. . . . Tacan

Figure 5-1. Legend Chart Aircraft Carrier Instrument Approach Procedure Charts



CATEGORY	JET		TURBOPROP	
ICLS	360-3/4		300 (300-3/4)	
ICLS with PAR monitor	(Mode 1 — As Certified)			
S—PAR	280-1/2		200 (200-1/2)	
S—ACL				
S—ASR	600-1-1/4	540 (600-1-1/4)	400-1	340 (400-1)
S—TAC				

NS/SS

Figure 5-2. Approach Chart CV-1 Tacan (Jet and Turboprop)