Appendix C
Helicopter Instrument Procedures

Figure C-1. IFR Helicopter.

This section presents information on instrument flight rule (IFR) helicopter operations in the National Airspace System (NAS). The ability to operate helicopters under IFR increases their utility, and safety. [Figure C-1]

HELICOPTER IFR CERTIFICATION

For a helicopter to be certified to conduct operations in instrument meteorological conditions (IMC), they must meet the design and installation requirements of Title 14 Code of Federal Regulations (14 CFR) Part 27 Appendix B (Normal Category) and Part 29 Appendix B (Transport Category), which are in addition to the visual flight rule (VFR) requirements.

These requirements are broken down into the categories of flight and navigation equipment, miscellaneous requirements, stability, rotorcraft flight manual limitations, operations specifications, and minimum equipment list (MEL).

FLIGHT AND NAVIGATION EQUIPMENT

The basic installed flight and navigation equipment for helicopter IFR operations is listed under Part 29.1303, with amendments and additions in Appendix B of Parts 27 and 29 under which they are certified, and includes:

- Clock.
- Airspeed indicator.
- Sensitive altimeter.
- Magnetic direction indicator.
- Free-air temperature indicator.
- Rate-of-climb (vertical speed) indicator.
- Magnetic gyroscopic direction indicator.
- Standby bank and pitch (attitude) indicator.
- Non-tumbling gyroscopic bank and pitch (attitude) indicator.
- Speed warning device (if required by Part 29).

MISCELLANEOUS REQUIREMENTS

- Overvoltage disconnect.
- Instrument power source indicator.
- Adequate ice protection of IFR systems.
- Alternate static source (single pilot configuration).
- Thunderstorm lights (transport category helicopters).

STABILITY

In order to meet the stability requirements of Parts 27 and 29, helicopter manufacturers normally use a stabilization and/or Automatic Flight Control System (AFCS). These include:

- **Aerodynamic surfaces**, which impart some stability or control capability that generally is not found in the basic VFR configuration.
- **Trim systems**, which provide a cyclic centering effect. These systems typically involve a magnetic brake/spring device, and may be controlled by a four-way switch on the cyclic. This system supports “hands on” flying of the helicopter.
- **Stability Augmentation Systems (SASs)**, which provide short-term rate damping control inputs to increase helicopter stability. Like trim systems, SAS supports “hands on” flying.
- **Attitude Retention Systems (ATTs)**, which return the helicopter to a selected attitude after a

disturbance. Changes in desired attitude can be accomplished usually through a four-way "beep" switch, or by actuating a "force trim" switch on the cyclic which sets the attitude manually. Attitude retention may be a SAS function, or may be the basic "hands off" autopilot function.

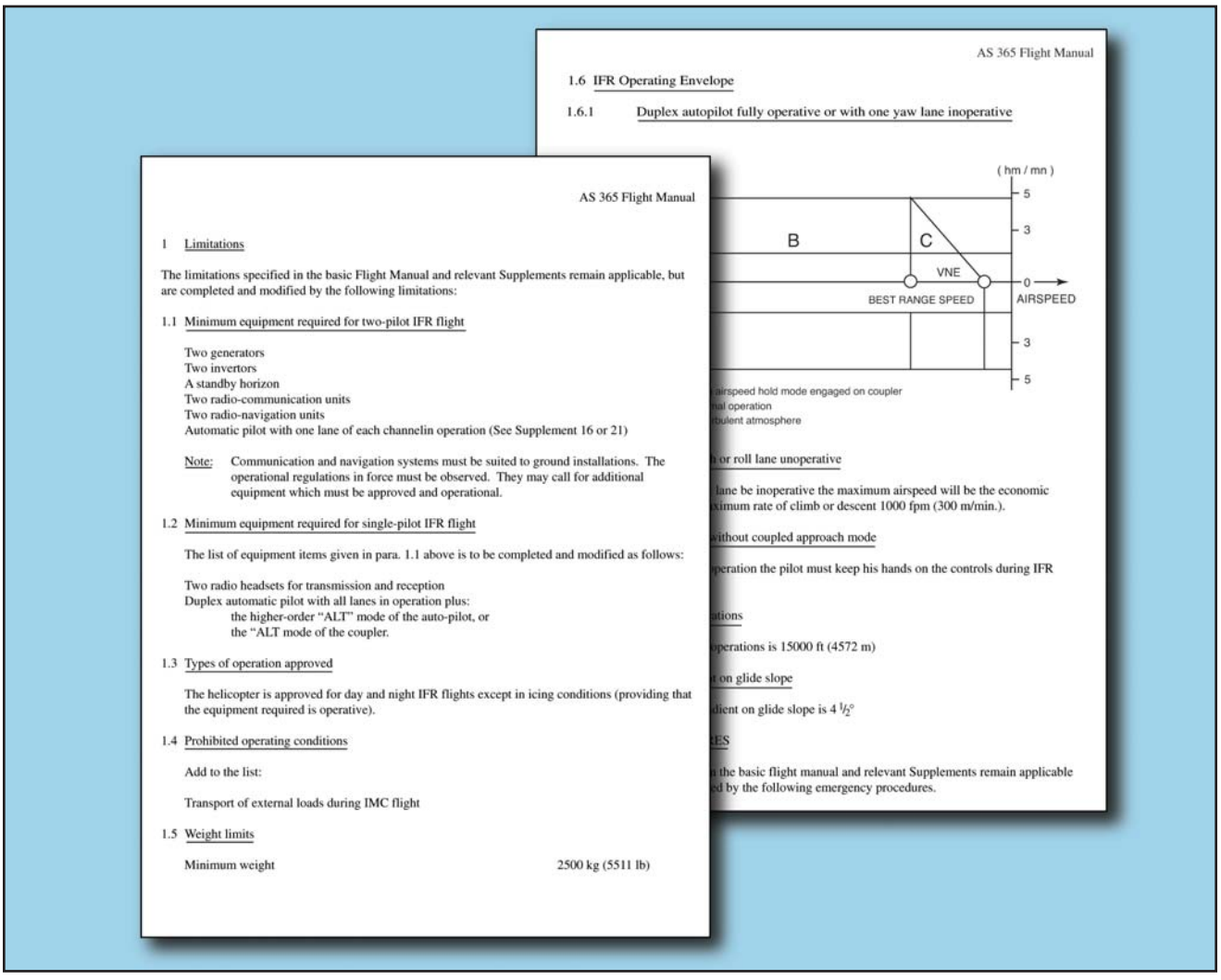
- **Autopilot Systems (APs)** provide for "hands off" flight along specified lateral and vertical paths, including heading, altitude, vertical speed, navigation tracking, and approach. APs typically have a control panel for mode selection, and system for indication of mode status. APs may or may not be installed with an associated flight director (FD). APs typically control the helicopter about the roll and pitch axes (cyclic control) but may also include yaw axis (pedal control) and collective control servos.
- **Flight Directors (FD)**, which provide visual guidance to the pilot to fly selected lateral and vertical modes of operation. The visual guidance is typically provided as either a "dual cue" (commonly known as a "cross-pointer") or "single cue" (commonly known as a "vee-bar") presentation superimposed over the attitude indicator. Some FDs also include a third cue for the collective. The pilot manipulates the helicopter's controls to satisfy these commands, yielding the desired flight path, or may couple the autopilot to the flight director to fly along the desired flight path. Typically, flight director mode control and indication are shared with the autopilot.

A helicopter may require the use of one or a combination of these systems for IFR operations.

ROTORCRAFT FLIGHT MANUAL LIMITATIONS

Helicopters are certificated for IFR operations with either one or two pilots. Certain equipment is required to be installed and functional for two-pilot operations and additional equipment is required for single pilot operation.

In addition, the Rotorcraft Flight Manual defines systems and functions that are required to be in operation or engaged for IFR flight in either the single or two pilot configurations [Figure C-2]. Often, in a two-pilot operation, this level of augmentation is less than the full capability of the installed systems. Likewise, a sin-



AS 365 Flight Manual

1 Limitations

The limitations specified in the basic Flight Manual and relevant Supplements remain applicable, but are completed and modified by the following limitations:

1.1 Minimum equipment required for two-pilot IFR flight

Two generators
Two invertors
A standby horizon
Two radio-communication units
Two radio-navigation units
Automatic pilot with one lane of each channelin operation (See Supplement 16 or 21)

Note: Communication and navigation systems must be suited to ground installations. The operational regulations in force must be observed. They may call for additional equipment which must be approved and operational.

1.2 Minimum equipment required for single-pilot IFR flight

The list of equipment items given in para. 1.1 above is to be completed and modified as follows:

Two radio headsets for transmission and reception
Duplex automatic pilot with all lanes in operation plus:
the higher-order "ALT" mode of the auto-pilot, or
the "ALT mode of the coupler.

1.3 Types of operation approved

The helicopter is approved for day and night IFR flights except in icing conditions (providing that the equipment required is operative).

1.4 Prohibited operating conditions

Add to the list:

Transport of external loads during IMC flight

1.5 Weight limits

Minimum weight 2500 kg (5511 lb)

AS 365 Flight Manual

1.6 IFR Operating Envelope

1.6.1 Duplex autopilot fully operative or with one yaw lane inoperative

(hm / mn)
5
3
B
C
VNE
0
BEST RANGE SPEED
AIRSPEED
3
5

Figure C-2. Eurocopter AS365 Flight Manual Limitations Section.

gle-pilot operation may require a higher level of augmentation.

The Rotorcraft Flight Manual also identifies other specific limitations associated with IFR flight. Typically, these limitations include, but are not limited to:

- Minimum equipment required for IFR flight (in some cases, for both single-pilot and two-pilot operations).
- V_{MINI} (minimum speed - IFR).
- V_{NEI} (never exceed speed - IFR).
- Maximum approach angle.
- Weight and center of gravity limits.
- Aircraft configuration limitations (such as aircraft door positions and external loads).
- Aircraft system limitations (generators, inverters, etc.).
- System testing requirements (many avionics and AFCS, AP, and FD systems incorporate a self-test feature).
- Pilot action requirements (for example, the pilot must have hands and feet on the controls during certain operations, such as an instrument approach below certain altitudes).

OPERATIONS SPECIFICATIONS

A Part 135 helicopter operator has minimums and procedures more restrictive than a Part 91 operator as detailed in their operations specifications (OpsSpecs). Figure C-3 is an excerpt from an OpsSpecs detailing the minimums for precision approaches. The inlay in figure C-3 shows the minimums for the instrument landing system (ILS) Rwy 3R approach at Detroit Metro Airport. With all lighting operative, the minimums for helicopter Part 91 operations is 200 feet

U.S. Department of Transportation
Federal Aviation Administration

Operations Specifications

H117. Straight-in Category I Precision Instrument Approach Procedures - All Airports — **HQ Control: 11/22/00** **HQ Revision: 000**

a. Except as provided in this paragraph, the certificate holder shall not use any Category I IFR landing minimum lower than that prescribed by any applicable published instrument approach procedure. The IFR landing minimums prescribed in this paragraph are the lowest authorized (other than Airborne Radar approaches) for use at any airport. Provided that the fastest approach speed used in the final approach segment is less than 91 knots, the certificate holder is authorized to conduct straight-in precision instrument approach procedures using the following:

(1) The published Category A minimum descent altitude (MDA) or decision height (DH), as appropriate.

(2) One-half of the published Category A visibility/RVR minimum or the visibility/RVR minimums prescribed by this paragraph, whichever is higher.

b. Straight-In Category I Precision Approach Procedures. The certificate holder shall not use an IFR landing minimum for straight-in precision approach procedures lower than that specified in the following table. Touchdown zone RVR reports, when available for a particular runway, are controlling for all approaches to and landings on that runway. (See NOTE 2.)

Precision Approaches	Full ILS (See NOTE 1), MLS, or PAR				
Approach Light Configuration	HAT	Helicopters Operated at Speeds of 90 Knots or Less		Helicopters Operated at Speeds More Than 90 Knots	
		Visibility In SM.	TDZ RVR In Feet	Visibility In SM.	TDZ RVR In Feet
No Lights or ODALS or MALS or SSALS	200	3/4	3500	3/4	4000
MALSR or SSALR or ALSF-1 or ALSF-2	200	1/4	1600	1/2	2400
MALSR with TDZ and CL or SSALR with TDZ and CL or ALSF-1/ALSF-2 with TDZ and CL	200	1/4	1600	1/2	1800

NOTE 1: A full ILS requires an operative LOC, GS, and OM or FAF. A
fix, an NDB, VOR, DME fix, or a published minimum GSIA fix may be
NOTE 2: The Mid RVR and Rollout RVR reports (if available) provide
The Mid RVR report may be substituted for the TDZ RVR report if the T

c. Special Limitations and Provisions for Instrument Approach Procedu
certificate holder is authorized operations at foreign airports, the following criteria apply:

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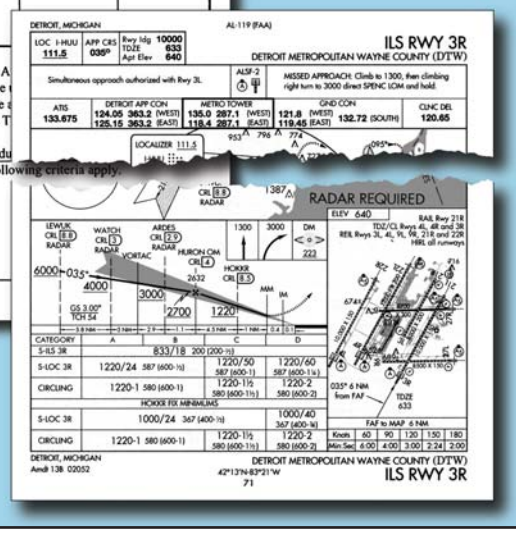

Figure C-3. Operations Specifications.

ceiling, and 1200 feet runway visual range (RVR) (one-half airplane Category A visibility but no less than 1200 RVR). However, as shown in the OpsSpecs, the minimum visibility this Part 135 operator must adhere to is 1600 RVR. Pilots operating under Part 91 are encouraged to develop their own personal OpsSpecs based on their own equipment, training, and experience.

MINIMUM EQUIPMENT LIST

An aircraft operating under Part 135 with certain installed equipment inoperative is prohibited from taking off unless the operation is authorized in the approved MEL. The MEL provides for some equipment to be inoperative if certain conditions are met [Figure C-4]. In many cases, a helicopter configured for single-pilot IFR may depart IFR with certain equipment inoperative, provided a crew of two pilots is used. Under Part 91, a pilot may defer certain items without an MEL if those items are not required by the type certificate, CFRs, or airworthiness directives (ADs), and the flight can be performed safely without them. The item is disabled or removed, marked inoperative, and a logbook entry is made.

PILOT PROFICIENCY

Helicopters of the same make and model may have variations in installed avionics that change the required equipment or the level of augmentation for a particular

MINIMUM EQUIPMENT LIST

AIRCRAFT: MESSERSCHMITT-BOLKOW-BLOHM HELICOPTER MBB-BK 117 SERIES	REVISION NO: 4 b DATE: 12/06/____	PAGE: 28-1

1. SYSTEM & SEQUENCE NUMBERS / ITEM		2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
28 FUEL				
1. Fuel Prime Pump Caution Light	C	1	0	May be inoperative.
2. Main Tank Transfer Pump Caution Lights	C	2	1	One may be inoperative provided respective transfer pump is verified operative. (O) Determine that associated fuel pump operates normally as follows: Apply electrical power, turn on FUEL XFER PUMP switch, listen for fuel pump operation, check that fuel is not coming out of fuel vent system (belly of aircraft), turn system off, turn electrical power off.
3. Main Fuel Tank Quantity Indicator (Main Tank Needle)	B	1	0	Main tank indicator may be inoperative provided: a) Supply Tank Quantity Indicator (Item 28-4) is operative, and b) An approved alternate preflight gauging method is used to determine total fuel quantity, and (O) The pilot will ensure that the aircraft fuel tank is topped off and plan the flight to include a 45 minute reserve at normal cruise power. c) Aircraft shall not depart airport where repairs or replacements can be made.

Figure C-4. Example of a Minimum Equipment List (MEL).

operation. The complexity of modern AFCS, AP, and FD systems requires a high degree of understanding to safely and efficiently control the helicopter in IFR operations. Formal training in the use of these systems is highly recommended for all pilots.

During flight operations, you must be aware of the mode of operation of the augmentation systems, and the control logic and functions employed. For example, during an ILS approach using a particular system in the three-cue mode (lateral, vertical, and collective cues), the flight director *collective cue* responds to glide slope deviation, while the horizontal bar of the "cross-pointer" responds to airspeed deviations. The same system, while flying an ILS in the two-cue mode, provides for the *horizontal bar* to respond to glide slope deviations. This concern is particularly significant when using two pilots. Pilots should establish a set of procedures and responsibilities for the control of flight director/autopilot modes for the various phases of flight. Not only does a full understanding of the system modes provide for a higher degree of accuracy in control of the helicopter, it is the basis for identification of a faulty system.

HELICOPTER VFR MINIMUMS

Helicopters have the same VFR minimums as airplanes with two exceptions. In Class G airspace and under a day or night special visual flight rule (SVFR) clearance, helicopters have no minimum visibility requirement but must remain clear of clouds. Helicopters are also authorized to obtain SVFR clearances at airports with the designation NO SVFR in the *Airport Facility Directory* (A/FD) or on the sectional chart. Unlike airplanes, neither helicopter pilots nor the helicopter are required to be instrument rated for SVFR at night. Figure C-5 shows the visibility and cloud clearance requirements for VFR and SVFR.

Knowledge of all VFR minimums is required in order to determine if a **Point-in-Space (PinS)approach** can be conducted, or if a SVFR clearance is required to continue past the missed approach point (MAP). These approaches and procedures will be discussed in detail later.

HELICOPTER TAKEOFF MINIMUMS

A pilot operating under Part 91, has no takeoff minimums with which to comply other than the requirement

Helicopter VFR Minimums

Airspace	Flight visibility	Distance from clouds
Class A	Not applicable	Not Applicable.
Class B	3 SM	Clear of Clouds.
Class C	3 SM	500 feet below. 1,000 feet above. 2,000 feet horizontal.
Class D	3 SM	500 feet below. 1,000 feet above. 2,000 feet horizontal.
Class E: Less than 10,000 feet MSL	3 SM	500 feet below. 1,000 feet above. 2,000 feet horizontal.
At or above 10,000 feet MSL	5 SM	1,000 feet below. 1,000 feet above. 1 statute mile horizontal.
Class G: 1,200 feet or less above the surface (regardless of MSL altitude).		
Day, except as provided in §91.155(b)	None	Clear of clouds.
Night, except as provided in §91.155(b)	None	Clear of clouds.
More than 1,200 feet above the surface but less than 10,000 feet MSL		
Day	1 SM	500 feet below. 1,000 feet above. 2,000 feet horizontal.
Night	3 SM	500 feet below. 1,000 feet above. 2,000 feet horizontal.
More than 1,200 feet above the surface and at or above 10,000 feet MSL	5 SM	1,000 feet below. 1,000 feet above. 1 statute mile horizontal.
B, C, D, E Surface Area Airspace SVFR Minimums		
Day	None	Clear of clouds.
Night	None	Clear of clouds.

Figure C-5. Helicopter VFR Minimums.

to attain V_{MINI} before entering instrument meteorological conditions (IMC). For most helicopters this requires 1/2 nautical mile (NM) and an altitude of 100 feet. Also, for safety, consider using the Part 135 operator standard takeoff visibility minimum of 1/2 statute mile (SM) or the charted departure minima whichever is higher. A charted departure to provide protection from obstacles will either have a higher visibility, climb gradient, and/or departure path. Part 135 operators are required to adhere to the takeoff minimums prescribed in the instrument approach procedures (IAPs) for the airport.

HELICOPTER IFR ALTERNATES

The pilot must file an alternate if weather reports and forecasts at the proposed destination do not meet certain minimums. These minimums differ for Part 91 and Part 135 operators.

PART 91 OPERATORS

Part 91 operators are not required to file an alternate if at the estimated time of arrival (ETA) and for 1 hour after, the ceiling will be at least 1,000 feet above the airport elevation or 400 feet above the lowest applicable approach minima, whichever is higher, and the visibility is at least 2 SM. If an alternate is required, an airport can be used if the ceiling is at least 200 feet above the minimum for the approach to be flown, and visibility at least 1 SM but never less than the minimum for the approach to be flown. If no instrument approach procedure has been published for the alternate airport, the ceiling and visibility minima are those allowing descent from the MEA, approach, and landing under basic VFR.

PART 135 OPERATORS

Part 135 operators are not required to file an alternate if for at least 1 hour before and 1 hour after the ETA, the ceiling will be at least 1,500 feet above the lowest circling approach minimum descent altitude (MDA). If a circling instrument approach is not authorized for the airport, the ceiling must be at least 1,500 feet above the lowest published minimum or 2,000 feet above the airport elevation, whichever is higher. For the instrument approach procedure to be used at the destination airport, the forecasted visibility for that airport must be at least 3 SM, or 2 SM more than the lowest applicable visibility minimums, whichever is greater.

Alternate landing minimums for flights conducted under Part 135 are described in the OpsSpecs for that operation. All helicopters operated under IFR must carry enough fuel to fly to the intended destination, fly from that airport to the filed alternate, and continue for 30 minutes at normal cruising speed.

HELICOPTER INSTRUMENT APPROACHES

Helicopter instrument flight is relatively new when compared to airplane instrument flight. Therefore, very few helicopter specific procedures exist. However, developing technologies, including global positioning system (GPS), are bringing approach procedures to heliports around the country.

STANDARD INSTRUMENT APPROACH PROCEDURES TO AN AIRPORT

Helicopters flying standard instrument approach procedures (SIAPs) must adhere to the Category A MDA, decision altitude (DA), or decision height (DH), and may reduce the airplane Category A visibility by 1/2 but not less than 1/4 SM or 1200 RVR. The approach can be initiated at any speed up to the highest approach category authorized; however, the speed on final must be reduced to the Category A speeds of less than 91 knots before the MAP in order to apply the visibility reduction. However, for safety, a constant airspeed is recommended on the final approach segment to comply with the stabilized approach concept. A decelerating approach may make early identification of wind shear on the approach path difficult or impossible. [Figure C-6]

Use the Inoperative Components and Visual Aids Table provided in the front cover of Order 8260.3 (latest edition) for Category A minimums when required to derive visibility minimums for helicopters. When visibility minimums have been increased for inoperative components or visual aids, the visibility for helicopters with the application of the table must be no lower than Category A aircraft and the one-half reduction rule for visibility stated above does not apply. Also be aware that a published visibility may be increased above standard criteria due to a penetration of the 20:1 or 34:1 surfaces in the final approach and the obstacle clear-

Helicopter Use of Standard Instrument Approach Procedures

Procedure	Helicopter Visibility Minima	Helicopter MDA/DA	Maximum Speed Limitations
Conventional (non-Copter)	The greater of: one half the Category A visibility minima, 1/4 statute mile visibility, or 1200 RVR	As published for Category A	The helicopter may initiate the final approach segment at speeds up to the upper limit of the highest Approach Category authorized by the procedure, but must be slowed to no more than 90 KIAS at the MAP in order to apply the visibility reduction.
Copter Procedure	As published	As published	90 KIAS when on a published route/track.
GPS Copter Procedure	As published	As published	90 KIAS when on a published route or track, EXCEPT 70 KIAS when on the final approach or missed approach segment and, if annotated, in holding. Military procedures are limited to 90 KIAS for all segments.

Figure C-6. Helicopter Use of Standard Instrument Approach Procedures.

ance surface (OCS) in the missed approach (see Chapter 5). When there are penetrations of these surfaces, you must take precautions to avoid these obstacles when operating in the visual segment.

maximum airspeed is 90 knots indicated airspeed (KIAS) on any segment of the approach or missed approach. Figure C-7 illustrates a helicopter only ILS runway 32 approach at St. Paul, Minnesota.

COPTER ONLY APPROACHES TO AN AIRPORT OR HELIPORT

Pilots flying Copter standard instrument approach procedures (SIAPs) other than GPS may use the published minima with no reductions in visibility allowed. The

While there are Copter ILS precision approaches to CAT I facilities with DAs no lower than a 200-foot height above touchdown (HAT), there are also Copter approaches to CAT II facilities with a 100-foot HAT and 1/4 SM visibility. These approaches with a HAT

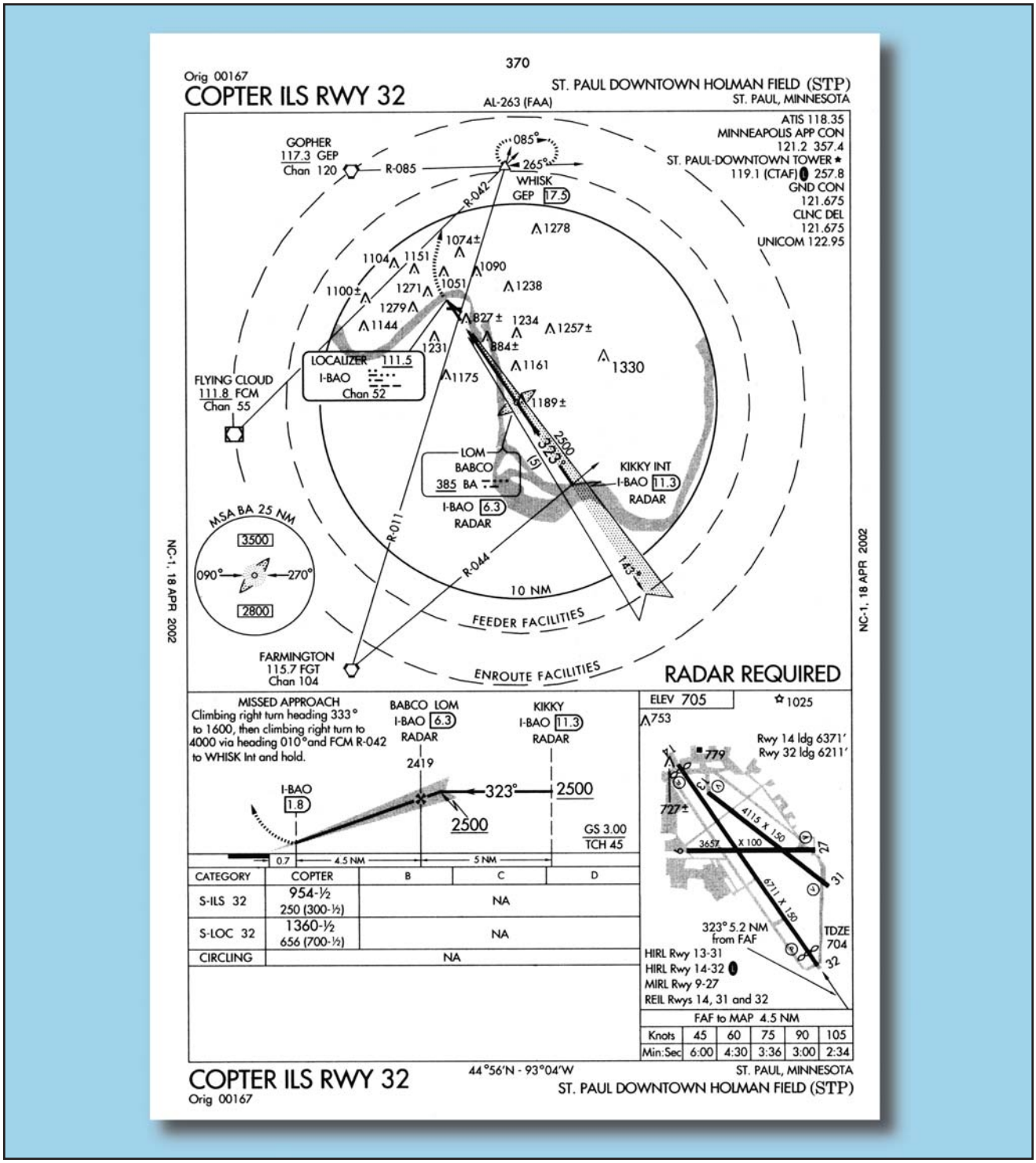

Figure C-7. KSTP Copter ILS Rwy 32.

below 200 foot require special aircrew and aircraft certification. The procedure to apply for this certification is available from your local Flight Standards District Office. [Figure C-8 on page C-9]

COPTER GPS APPROCHES TO AN AIRPORT OR HELIPORT

Helicopters flying Copter GPS SIAPs must limit indicated airspeed to 90 knots on any segment of the approach, but the speed must be reduced to no more than 70 knots on the final and missed approach segments. If annotated, holding may also be limited to no more than 70 knots. The published minimums are to be used with no visibility reductions allowed. Figure C-9 is an example of a Copter GPS PinS approach that allows the helicopter to fly VFR from the MAP to the heliport.

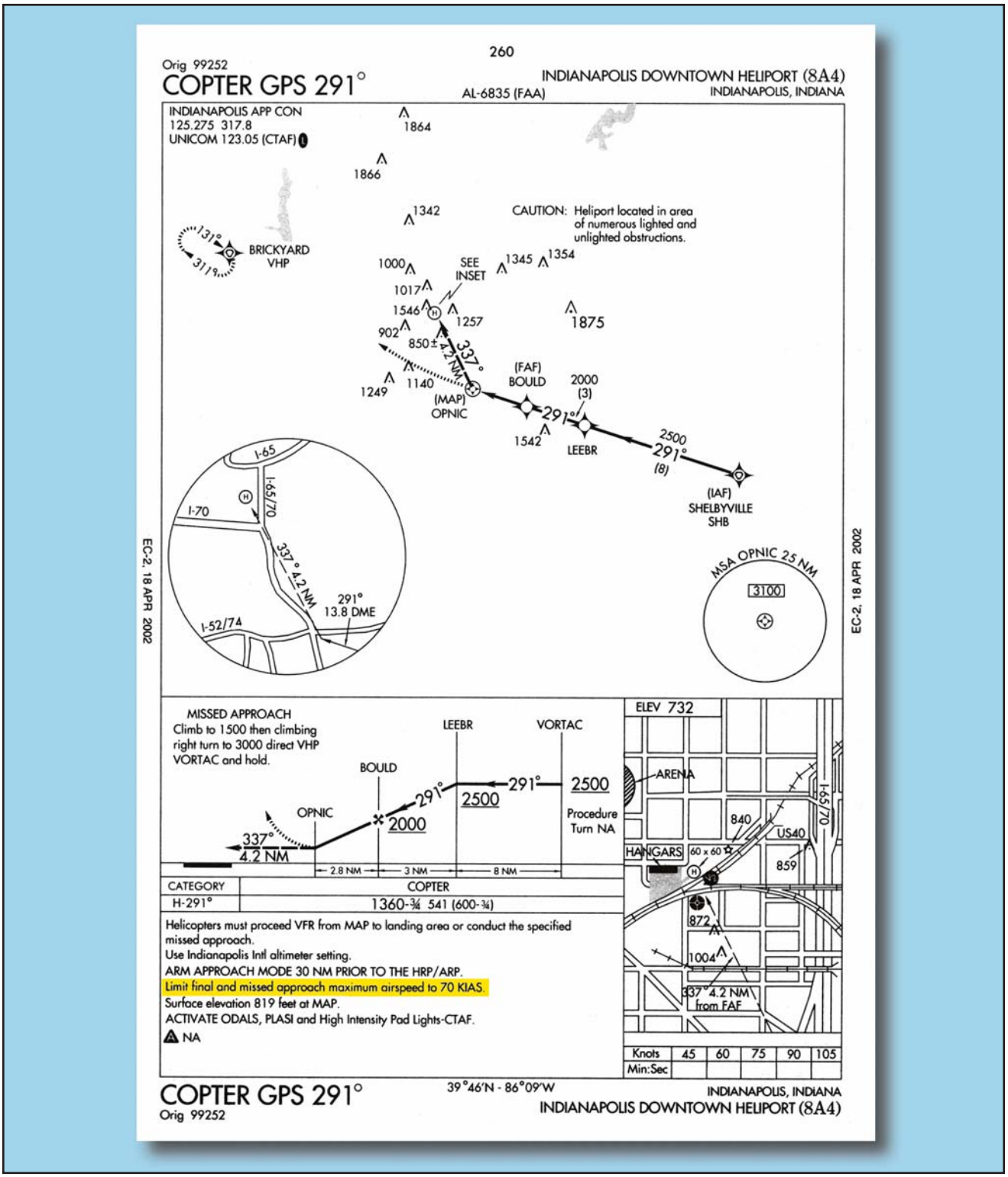

Figure C-9. Indianapolis Heliport Copter GPS 291°.

97.3 SYMBOLS AND TERMS USED IN PROCEDURES

(d) (1) "Copter procedures" means helicopter procedures, with applicable minimums as prescribed in §97.35 of this part. Helicopters may also use other procedures prescribed in Subpart C of this part and may use the Category A minimum descent altitude (MDA) or decision height (DH). The required visibility minimum for Category A aircraft, but in no case may it be reduced to less than one-quarter mile or 1,200 feet RVR.

Figure C-8. Part 91 Excerpt.

Failure to adhere to the 70 knot limitation could result in the helicopter flying outside the protected airspace for the approach e.g., a turn flown at 90 knots may exceed the protected airspace. If a helicopter has a V_{MINI} greater than 70 knots, then it will not be capable of conducting this type of approach. Similarly, if the autopilot in "go-around" mode climbs at a V_{YI} greater than 70 knots, then that mode cannot be used. It is the responsibility of the pilot to determine compliance with climb gradient requirements when operating at speeds other than V_Y or V_{YI}. Missed approaches that specify an "IMMEDIATE CLIMBING TURN" have no provision for a straight ahead climbing segment before turning. A straight segment will result in exceeding the protected airspace limits.

Protected obstacle clearance areas and surfaces for the missed approach are established on the assumption that the missed approach is initiated at the DA point and for nonprecision approaches no lower than the MDA at the MAP (normally at the threshold of the approach end of the runway). The pilot must begin the missed approach at those points! Flying beyond either point before beginning the missed approach will result in flying below the protected obstacle clearance surface (OCS) and can result in a collision with an obstacle. The missed approach segment TERPS criteria for all Copter approaches takes advantage of the helicopter's climb capabilities at slow airspeeds resulting in high climb gradients. [Figure C-10] The OCS used to evaluate the missed approach is a 20:1 inclined plane. This surface is twice as steep for the helicopter as the OCS used to evaluate the airplane missed approach segment. The helicopter climb performance is therefore anticipated to be double the airplane's gradient. A minimum climb gradient of at least 400 feet per NM is required unless a higher gradient is published on the approach chart; e.g. a helicopter with a ground speed of 70 KIAS is required to climb at a rate at 467 feet per minute (FPM)*. The advantage of using the 20:1 OCS for the Copter missed approach segment instead of the 40:1 OCS used for the airplane is that obstacles in the 40:1

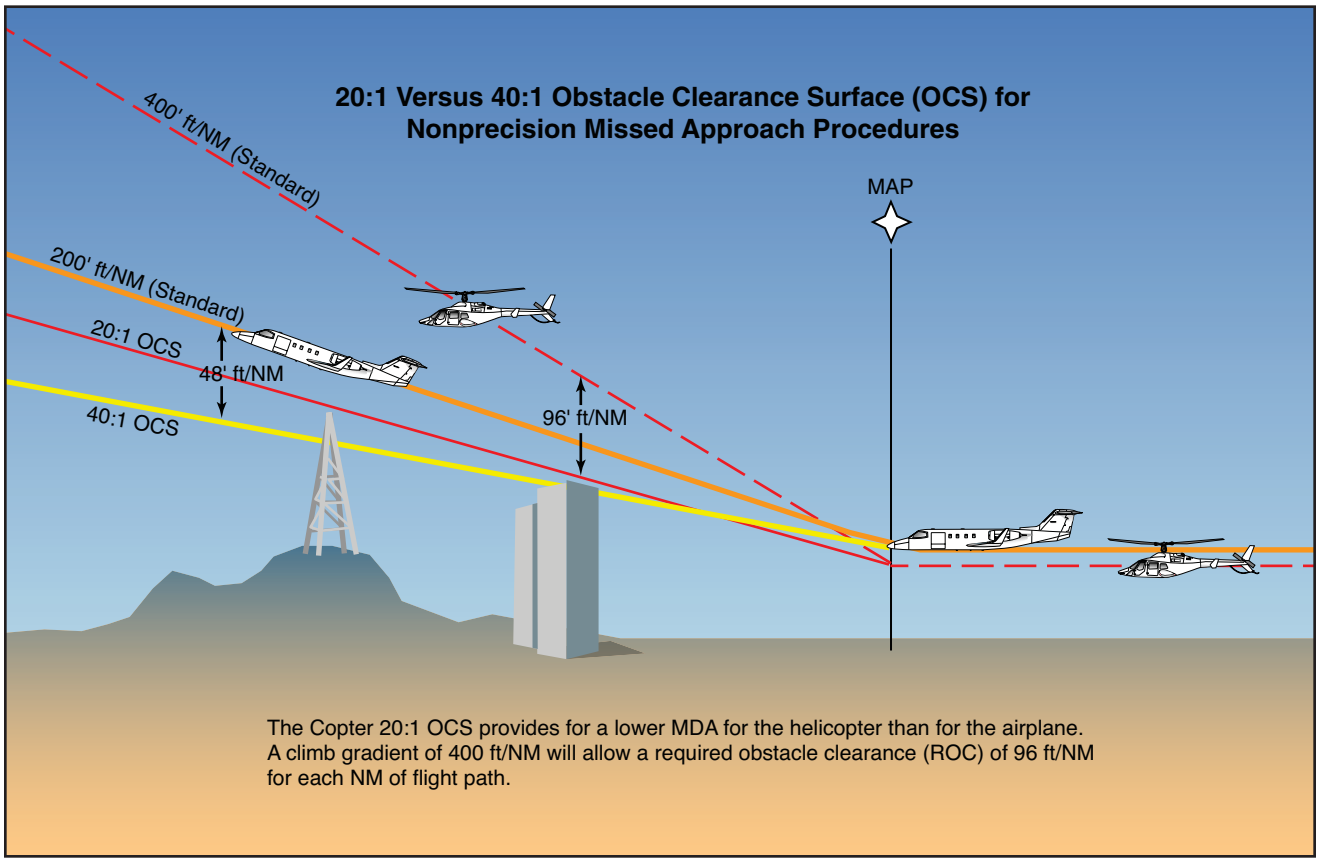

Figure C-10. Obstacle Clearance Surface.

missed approach segment do not have to be considered, and the MDA may be lower for helicopters than for other aircraft. The minimum required climb gradient of 400 feet per NM for the helicopter in a missed approach will provide 96 feet of required obstacle clearance (ROC) for each NM of flight path.

*467 FPM = 70 KIAS x 400 feet per NM/60 seconds

COPTER POINT-IN-SPACE APPROACHES TO A HELIPORT

PinS approaches are normally developed for heliports that do not meet the design standards for an IFR heli-

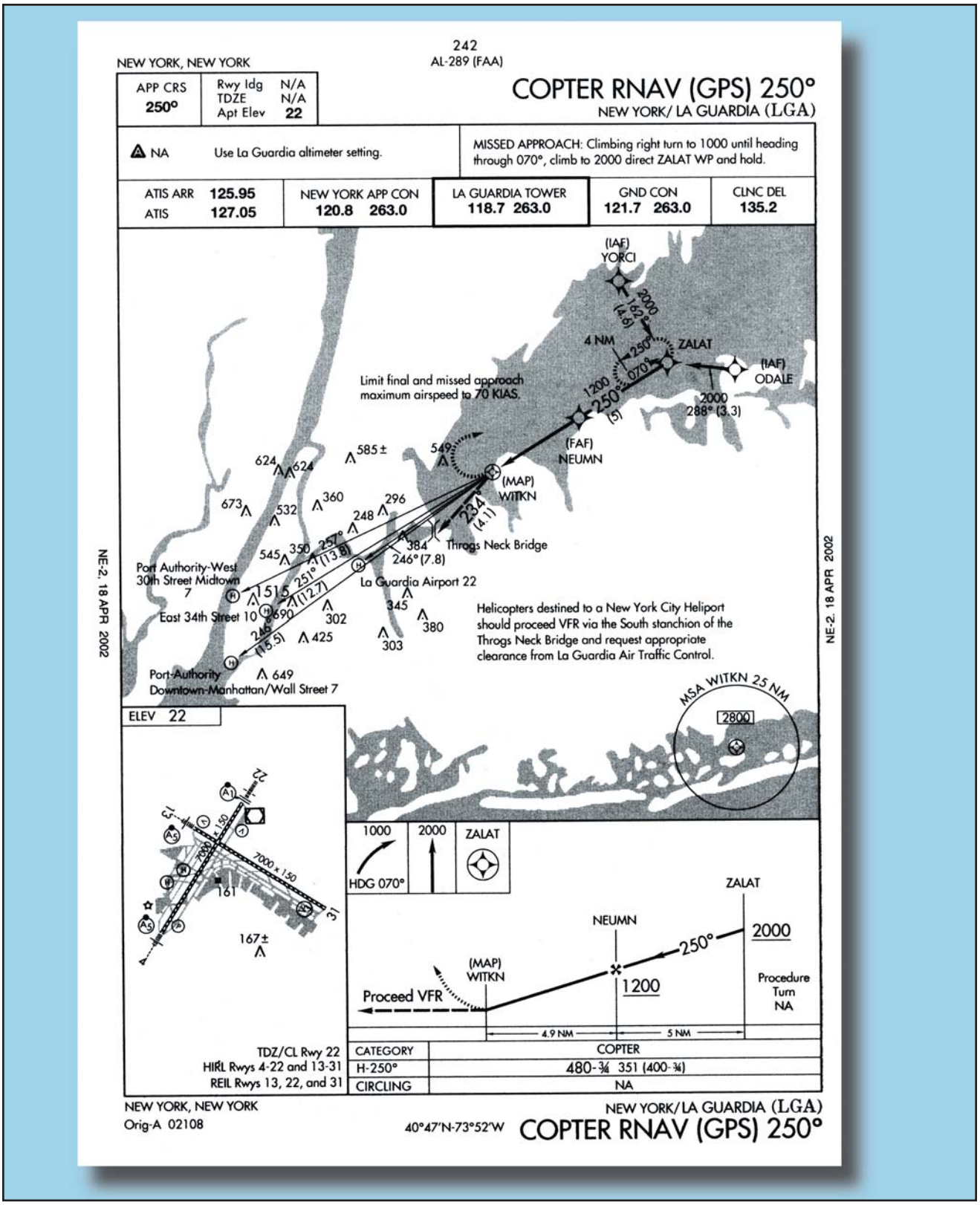

Figure C-12. KLGA Copter RNAV (GPS) 250°.

port but meet the standards for a VFR heliport. A helicopter PinS approach can be developed from conventional ground based navigational aids (NAVAIDs) or area navigation (RNAV) systems. These procedures involve a VFR segment between the MAP and the landing area. The procedure will specify a course and distance from the MAP to the available heliports in the area.

The note associated with this procedure is:

"PROCEED VFR FROM (NAMED MAP) OR CONDUCT THE SPECIFIED MISSED APPROACH."

Conduct the approach as published and, prior to the MAP, determine if the flight visibility meets the basic VFR minimums. If VFR minimums do not exist, then the published missed approach procedure must be executed. However, in Class B, C, D, and E surface area airspace, a SVFR clearance may be obtained if SVFR minimums exist. [Figure C-11] At the MAP, if VFR conditions exist, the pilot advises ATC of the intent to proceed VFR and cancel IFR. Pilots are then responsible for obstacle clearance during the VFR segment. Figure C-12 on page C-10 is an example of a PinS approach that allows the pilot to fly to one of four heliports after reaching the MAP.

On your flight plan, enter in the remarks sections "Request SVFR Clearance after the MAP" to give ATC a heads up as to your intentions.

Figure C-11. Flight Plan Suggestion

The pilot operating under Part 135 is not allowed to initiate an approach unless the reported weather conditions are at or above the authorized approach minimums. Figure C-13 provides examples of the procedures used during a PinS approach for Part 91 and Part 135 operations.

SPECIAL APPROACHES

Special procedures may include approaches to hospitals, oilrigs, private heliports, etc. Special approach procedures require Flight Standards approval by a Letter of Authorization for Part 91 operators or by OpsSpecs for Part 135 operators.

Currently most of the PinS approaches in the United States are for emergency medical service (EMS) and are to VFR heliports located 10,500 feet or less from the MAP. These procedures involve a visual segment between the MAP and the heliport. The note associated with these PinS approaches is:

"PROCEED VISUALLY FROM (NAMED MAP) OR CONDUCT THE SPECIFIED MISSED APPROACH."

(a) This procedure requires the pilot to acquire and maintain visual contact with the heliport at or prior to the MAP, or execute a missed approach. The visibility minimum is based on the distance from the MAP to the heliport, among other factors, e.g., height above surface MDA at the MAP.

(b) The pilot is required to maintain the published minimum visibility throughout the visual segment.

Point in Space Approach Examples

Example 1:

Under Part 91 the operator flies the published IFR PinS approach procedure that has a charted MDA of 340 mean sea level (MSL) and visibility of 3/4 SM. When approaching the MAP at an altitude of 340 feet MSL the pilot transitions from Instrument Meteorological Conditions (IMC) to Visual Meteorological Conditions (VMC) and determines that the flight visibility is 1/2 SM. The pilot must determine prior to the MAP whether the applicable basic VFR weather minimums can be maintained from the MAP to the heliport or execute a missed approach. If the pilot determines that the applicable basic VFR weather minimums can be maintained to the heliport the pilot may proceed VFR. If the visual segment is in Class B, C, D, or the surface area of Class E airspace, it may require the pilot to obtain a Special VFR clearance.

Example 2:

For an operator to proceed VFR under Part 135, a minimum visibility of 1/2 SM during the day and 1 SM at night with a minimum ceiling of 300 feet. If prior to commencing the approach the pilot determines the reported visibility is 3/4 SM during the day the pilot descends IMC to an altitude no lower than the MDA and transitions to VMC. If the pilot determines prior to the MAP that the flight visibility is less than 1/2 SM in the visual segment a missed approach must be executed at the MAP.

Figure C-13. Point in Space Approach Examples.

(c) IFR obstruction clearance areas are not applied to the visual segment of the approach and the missed approach segment protection is not provided between the MAP and the heliport.

(d) Obstacle or terrain avoidance from the MAP to the heliport is the responsibility of the pilot.

(e) Upon reaching the MAP defined on the approach procedure, or as soon as practicable after reaching the MAP, the pilot advises ATC whether proceeding visually and canceling IFR or complying with the missed approach instructions.

COPTER APPROACH TO AN IFR HELIPORT

A heliport that meets the design standards for an IFR heliport may have nonprecision approaches to the heliport. At present, there are a few IFR approach procedures to civil IFR heliports in the U.S. and the military has several.