



DINAC

DIRECCIÓN NACIONAL DE AERONÁUTICA CIVIL

**SUBDIRECCIÓN DE NORMAS DE VUELO
GERENCIA DE LICENCIAS AL PERSONAL AERONÁUTICO**

BANCO DE FIGURAS

HABILITACIÓN DE VUELO POR INSTRUMENTOS

Primera Edición – Año 2026

8		GENERAL INFORMATION	
Abbreviation	Description	Abbreviation	Description
mt	mount, mountain	ODALS	Omnidirectional Approach Lighting System
MTAF	Mandatory Traffic Advisory Frequency	ODO	Operations Duty Officer
MTCA	Military Terminal Control Area	offl	official
mtbly	monthly	OIC	Officer In Charge
MUAC	Military Upper Area Control	OLF	Outlying Field
munl	municipal	OLS	Optical Landing System
MWARA	Major World Air Route Area	OM	Outer Marker, ILS
		opr	operate, operator, operational
N	North	QPS, ops	operations
N/A	not applicable	orig	original
NA	not authorized (For Instrument Approach Procedure take-off and alternate MINIMA only)	OROCA	Off Route Obstruction Clearance Altitude
NAAS	Naval Auxiliary Air Station	ORTCA	Off Route Terrain Clearance Altitude
NADC	Naval Air Development Center	OT	other times
NADEP	Naval Air Depot	OTS	out of service
NAEC	Naval Air Engineering Center	outbd	outbound
NAES	Naval Air Engineering Station	ovfl	overflight
NAF	Naval Air Facility	ovrn	overrun
NALCO	Naval Air Logistics Control Office	OK	oxygen
NALF	Naval Auxiliary Landing Field		
NALO	Navy Air Logistics Office	P/L	plain language
NAS	Naval Air Station	PAC	Pacific (ICAO Region)
NAT	North Atlantic (ICAO Region)	PAEW	personnel and equipment working
nafl	national	PALS	Precision Approach and Landing System (NAVY)
nav	navigation	PAPI	Precision Approach Path Indicator
navaid	navigation aid	PAR	Precision Approach Radar
NAVMTQ	Navy Material Transportation Office	para	paragraph
NAWC	Naval Air Warfare Center	parl	parallel
NAWS	Naval Air Weapons Station	pat	pattern
NCRP	Non-Compulsory Reporting Point	PAX	Passenger
NDB	Non-Directional Radio Beacon	PCL	pilot controlled lighting
NE	Northeast	pent	penetrate
nec	necessary	perm	permanent
NEW	Net Explosives Weight	perms	permission
ngt	night	pers	personnel
NM	nautical miles	PFC	Porous Friction Courses
nml	normal	PJE	Parachuting Activities/Exercises
NMR	nautical mile radius	p-line	power line
No or Nr	number	Pm	Post meridian, noon till midnight
NOLF	Naval Outlying Field	PMRF	Pacific Missile Range Facility
NORDO	Last communications or no radio installed/available in aircraft	PMESV	Pilot-to-Metro Service
NOTAM	Notice to Airmen	PN	prior notice
Nov	November	POB	persons on board
npl	non precision instrument	POL	Petrol, Oils and Lubricants
Nr or No	number	posn	position
NS	Naval Station	PPR	prior permission required
NS ABTMT	Noise Abatement	prcht	parachute
NSA	Naval Support Activity	pref	prefer
NSF	Naval Support Facility	prev	previous
NSTD, nsld	nonstandard	prim	primary
ntc	notice	prk	park
NVD	Night Vision Devices	PRM	Precision Runway Monitor
NVG	Night Vision Goggles	pro	procedure
NW	Northwest	proh	prohibited
NWC	Naval Weapons Center	pt	point
		PTD	Pilot to Dispatcher
Q/A	On or about	pub	publication
Q/S	out of service	publ	publish
Q/R	On Request	PVASI	Pulsating Visual Approach Slope Indicator
OAT	Operational Air Traffic	pvt	private
obsn	observation	PWR	power
obst	obstruction		
OCA	Oceanic Control Area	QFE	Altimeter Setting above station
occl	occasional		
Oct	October		

Legend 1D. Abbreviations.

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Abbreviation	Description	Abbreviation	Description
QNE	Altimeter Setting of 29.92 Inches which provides height above standard datum plane	SAR	Search and Rescue
QNH	Altimeter Setting which provides height above mean sea level	Sat	Saturday
qtrs	quarters	SAVASI	Simplified Abbreviated Visual Approach Slope Indicator
quad	quadrant	SAWRS	Supplement Aviation Weather Reporting Station
R/T	Radiotelephony	stdy	standby
R/W	Rotary/Wing	Sched	scheduled services
RACON	Radar Beacon	scfr	sector
rad	radius, radial	SDF	Simplified Directional Facility
RAIL	Runway Alignment Indicator Lights	SE	Southeast
RAMCC	Regional Air Movement Control Center	sec	second, section
R-AOE	Regular Airport of Entry	secd	secondary
RAPCON	Radar Approach Control (USAF)	SELCAL	Selective Calling System
RATCF	Radar Air Traffic Control Facility (Navy)	SELF	Strategic Expeditionary Landing Field
RCAG	Remote Center Air to Ground Facility	SEng	Single Engine
RCAGL	Remote Center Air to Ground Facility Long Range	Sep	September
RCL	runway centerline	SFA	Single Frequency Approach
RCLS	Runway Centerline Light System	sfic	surface
RCO	Remote Communications Outlet	SFL	Sequence Flashing Lights
rcpt	reception	SFRA	Special Flight Rules Area
RCR	Runway Condition Reading	SID	Standard Instrument Departure
rcv	receive	SIDA	Secure Identification Display Area
rcvr	receiver	SIF	Selective Identification Feature
rdp	radio	sked	schedule
reconst	reconstruct	SM	statute miles
reful	refueling	SOAP	Spectrometric Oil Analysis Program
reg	regulation, regular	SOF	Supervisor of Flying
REIL	Runway End Identifier Lights	SPB	Seaplane Base
rel	reliable	SR	sunrise
reldd	relocated	SRE	Surveillance Radar Element of GCA (Instrument Approach Procedures Identification only)
REP	Reporting Point	SS	sunset
req	request	SSALS/R	Simplified Short Approach Lighting System/with RAIL
RETL	Rapid Exit Taxiway Indicator Light	SSB	Single Sideband
Rgn	Region	SSR	Secondary Surveillance Radar
Rgnl	Regional	STA	Straight-In Approach
rgt	right	std	standard
rgt tlc	right traffic	stn	station
rgnl	realigned	stor	storage
RLLS	Runway Lead-In Light System	str-in	Straight-In
rmk	remark	stu	student
rng	range, radio range	subj	subject
RNP	Required Navigation Performance	sum	summer
RON	Remain Overnight	Sun	Sunday
Rot Lt or Bcn	Rotating Light or Beacon	sur	surround
RPI	Runway Point of Intercept	survl	survival, surveillance
rpt	report	suspd	suspended
rqr	require	svc	service
RR	Railroad	svcg	servicing
RRP	Runway Reference Point	SW	Southwest
RSC	Runway Surface Condition	sys	system
RSDU	Radar Storm Detection Unit	TA	Transition Altitude
RSE	Runway Starter Expansion/Starter Strip	TAC	Tactical Air Command
RSRS	Reduced Same Runway Separation	TAF	Aerodrome (terminal or alternate) forecast in abbreviated form
rsld	restricted	TALCE	Tanker Aircraft Control Element
rte	route	TCA	Terminal Control Area
ruf	rough	TCH	Threshold Crossing Height
RVR	Runway Visual Range	TCTA	Transcontinental Control Area
RVSM	Reduced Vertical Separation Minima	TD	Touchdown
rwy	runway	TDWR	Terminal Doppler Weather Radar
S	South	TDZ	Touchdown Zone
S/D	Seadrome	TDZL	Touchdown Zone Lights
SALS	Short Approach Lighting System		

Legend 1E. Abbreviations.

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GENERAL INFORMATION

Abbreviation	Description	Abbreviation	Description
trc	traffic	vicinity	vicinity
thld	threshold	VDF	Very High Frequency Direction Finder
thou	thousand	veh	vehicle
thru	through	vert	vertical
Thu	Thursday	VFR	Visual Flight Rules
tl	tall	VFR-S	FLIP VFR Supplement
tkf, tkof	take-off	VHF	Very High Frequency (30 to 300 MHz)
TLx	Transition Level	VIP	Very Important Person
tmpy	temporary	vis	visibility
TODA	Take-Off Distance Available	VMC	Visual Meteorological Conditions
TORA	Take-Off Run Available	VOIP	Voice Over Internet Protocol
TP	Time Pressure	VOLMET	Meteorological Information for Aircraft in Flight
TPA	Traffic Pattern Altitude	VOT	VOR Receiver Testing Facility
TRACON	Terminal Radar Approach Control (FAA)		
tran	transient	W	Warning Area (followed by identification), Watts, West, White
trans	transmit	WCH	Wheel Crossing Height
trml	terminal	Wed	Wednesday
trng	training	Wg	Wing
trns	transition	WIE	with immediate effect
TRSA	Terminal Radar Service Area	win	winter
Tue	Tuesday	WIP	work in progress
TV	Television	WSO	Weather Service Office
TWCB	Transcribed Weather Broadcast	WSFO	Weather Service Forecast Office
twr	tower	wk	week
twy	taxiway	wkd	weekday
		wkly	weekly
UACC	Upper Area Control Center (used outside US)	wng	warning
UAS	Unmanned Aerial Systems	wo	without
UC	Under Construction	WSIP	Weather System Processor
UCN	Urgent Change Notice	wt	weight
UDA	Upper Advisory Area	wx	weather
UDF	Ultra High Frequency Direction Finder	yd	yard
UFN	until further notice	yr	year
UHF	Ultra High Frequency (300 to 3000 MHz)		
UIR	Upper Flight Information Region	Z	Greenwich Mean Time (time groups only)
unauthd	unauthorized		
unavbl	unavailable		
unctl	uncontrolled		
unk	unknown		
unlght	unlighted		
unltd	unlimited		
unmrk	unmarked		
unmto	unmonitored		
unrel	unreliable		
unrsd	unrestricted		
unsatfy	unsatisfactory		
unshed	unscheduled		
unsvc	unservicable		
unuse, unusbl	unusable		
USA	United States Army		
USAF	United States Air Force		
USB	Upper Side Band		
USCG	United States Coast Guard		
USMC	United States Marine Corps		
USN	United States Navy		
UTA	Upper Control Area		
UTC	Coordinated Universal Time		
V	Defense Switching Network (telephone, formerly AUTOVON)		
VSTOL	Vertical and Short Take-off and Landing aircraft		
VAL	Visiting Aircraft Line		
var	variation (magnetic variation)		
VASI	Visual Approach Slope Indicator		

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Abbreviation	Description	Abbreviation	Description
instl	install	LSB	lower side band
instr	instruction	ltd	limited
int	intersection		
Interdl	Intercontinental	M	meters, magnetic (after a bearing), Military Circuit (Telephone)
Intcp	Intercept	MACC	Military Area Control Center
intl	international	mag	magnetic
intmt	intermittent	maint	maintain, maintenance
ints	intense, intensity	maj	major
Invof	in the vicinity of	MALS	Medium Intensity Approach Lighting System
Irreg	irregularly	MALSF	MALS with Sequenced Flashers
		MALSR	MALS with Runway Alignment Indicator Lights
Jan	January	Mar	March
JASU	Jet Aircraft Starting Unit	MARA	Military Activity Restricted Area
JATO	Jet Assisted Take-Off	MATO	Military Air Traffic Operations
JOAP	Joint Oil Analysis Program	MATZ	Military Aerodrome Traffic Zone
JOSAC	Joint Operational Support Airlift Center	max	maximum
JRB	Joint Reserve Base	mb	millibars
Jul	July	MCAC	Military Common Area Control
Jun	June	MCAF	Marine Corps Air Facility
		MCALF	Marine Corps Auxiliary Landing Field
K or Kt	Knots	MCAS	Marine Corps Air Station
KHz	Kilohertz	MCB	Marine Corps Base
KIAS	Knots Indicated Airspeed	MCC	Military Climb Corridor
KLIZ	Korea Limited Identification Zone	MCOLF	Marine Corps Outlying Field
km	Kilometer	MDA	Minimum Descent Altitude
kw	kilowatt	MEA	Minimum Enroute Altitude
		med	medium
L	Compass locator (Component of ILS system) under 25 Watts, 1.5 NM, Enroute Low Altitude Chart (followed by identification)	MEHT	Minimum Eye Height over Threshold
L	Local Time	mem	memorial
LAA	Local Airport Advisory	MET	Meteorological, Meteorology
LAHSO	Land and Hold-Short Operations	METAR	Aviation Routine Weather Report (in international MET figure code)
L-AOE	Limited Airport of Entry	METRO	Pilot-to-Metro voice call
LAWRS	Limited Aviation Weather Reporting Station	MF	Medium Frequency (300 to 3000 KHz), Mandatory Frequency (Canada)
lb, lbs	pound (weight)	MFA	Minimum Flight Altitude
LC	local call	mgmt	Management
lcl	local	mgr	manager
LCP	French Peripheral Classification Line	MHz	Megahertz
lclcd	located	mi	mile
lcltn	location	MID/ASIA	Middle East/Asia (ICAO Region)
lcltr	locator	MII	Misconing, Intrusion, Jamming, and Interference
LCVASI	Low Cost Visual Approach Slope Indicator	mil, mil	military
lclzr	localizer	min	minimum, minute
LD	long distance	MIRL	Medium Intensity Runway Lights
LDA	Landing Distance Available	mlsl	missile
ldg	landing	mkr	marker (beacon)
LDIN	Lead-in Lights	MM	Middle Marker of ILS
LDOPF	Long Distance Operations Control Facility	mmr	monitor
len	length	MOA	Military Operations Area
lgt, lgtd, lgts	light, lighted, lights	MOCA	Minimum Obstruction Clearance Altitude
LIRL	Low Intensity Runway Lights	mod	modify
LLWAS	Low-Level Wind Shear Alert System	MOG	Maximum (aircraft) on the Ground
LLZ	Localizer (Instrument Approach Procedures Identification only)	Mon	Monday
LNM	Compass locator at Middle Marker ILS	MP	Maintenance Period
low	low	MR	Medium Range
LoALT or LA	Low Altitude	MRA	Minimum Reception Altitude
LDC	Localizer	mrk	mark, marker
LOM	Compass locator at Outer Marker ILS	MSAW	minimum safe altitude warning
LR	Long Range, Lead Radial	msg	message
LRA	Landing Rights Airport	MSL	Mean Sea Level
LRRS	Long Range RADAR Station	mm	Mission

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GENERAL INFORMATION

ABBREVIATIONS

The following abbreviations/acronyms are those commonly used within this Directory. Other abbreviations/acronyms may be found in the Legend and are not duplicated below. The abbreviations presented are intended to represent grammatical variations of the basic form. (Example—"req" may mean "request", "requesting", "requested", or "requests").

Abbreviation	Description
A/G	air/ground
AAF	Army Air Field
AAS	Airport Advisory Service
AB	Airbase
abm	abeam
ABN	Aerodrome Beacon
abv	above
ACC	Air Combat Command Area Control Center
acft	aircraft
ACLS	Automatic Carrier Landing System
act	activity
ACWS	Aircraft Control and Warning Squadron
ADA	Advisory Area
ADCC	Air Defense Control Center
ADCUS	Advise Customs
addn	addition
ADF	Automatic Direction Finder
adj	adjacent
admin	administration
ADR	Advisory Route
adv	advise
advy	advisory
AEIS	Aeronautical Enroute Information Service
AER	approach end rwy
AFA	Army Flight Activity
AFB	Air Force Base
aft	affect
AFFF	Aqueous Film Forming Foam
AFHP	Air Force Heliport
AFIS	Aerodrome Flight Information Service
aftld	airfield
AFOD	Army Flight Operations Detachment
AFR	Air Force Regulation
AFRC	Armed Forces Reserve Center/Air Force Reserve Command
AFRS	American Forces Radio Stations
AFS	Air Force Station
AFSS	Automated Flight Service Station
AFTN	Aeronautical Fixed Telecommunication Network
AG	Agriculture
A-G, A-GEAR	Arresting Gear
agcy	Agency
AGL	above ground level
AHP	Army heliport
AID	Airport Information Desk
AIS	Aeronautical Information Services
AL	Approach and Landing Chart
ALF	Auxiliary Landing Field
ALS	Approach Light System
ALSF-1	High Intensity ALS Category I configuration with sequenced Flashers (code)
ALSF-2	High Intensity ALS Category II configuration with sequenced Flashers (code)
alt	altitude
altm	alternate

Abbreviation	Description
AM	Amplitude Modulation, midnight til noon
AMC	Air Mobility Command
amdt	amendment
AMSL	Above Mean Sea Level
ANGS	Air National Guard Station
ant	antenna
AOE	Airport/Aerodrome of Entry
AP	Area Planning
APAPI	Abbreviated Precision Approach Path Indicator
apch	approach
apn	apron
APP	Approach Control
Apr	April
aprx	approximate
APU	Auxiliary Power Unit
apv, apvl	approve, approval
ARB	Air Reserve Base
ARCAL (CANADA)	Aircraft Radio Control of Aerodrome Lighting
ARFF	Aircraft Rescue and Fire Fighting
ARINC	Aeronautical Radio Inc
arng	arrange
arpt	airport
arr	arrive
ARS	Air Reserve Station
ARSA	Airport Radar Service Area
ARSR	Air Route Surveillance Radar
ARTCC	Air Route Traffic Control Center
AS	Air Station
ASAP	as soon as possible
ASDA	Accelerate-Stop Distance Available
ASDE	Airport Surface Detection
ASDE-X	Airport Surface Detection Equipment-Model X
asn	assign
ASL	Above Sea Level
ASOS	Automated Surface Observing System
ASR	Airport Surveillance Radar
ASSC	Airport Surface Surveillance Capability
ASU	Aircraft Starting Unit
ATA	Actual Time of Arrival
ATC	Air Traffic Control
ATCC	Air Traffic Control Center
ATCT	Airport Traffic Control Tower
ATD	Actual Time of Departure Along Track Distance
ATIS	Automatic Terminal Information Service
ATS	Air Traffic Service
attn	attention
Aug	August
auth	authority
auto	automatic
AUW	All Up Weight (gross weight)
aux	auxiliary
AVASI	abbreviated VASI
avbl	available
AvGas	Aviation gasoline
avn	aviation
AvOil	aviation oil

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Abbreviation	Description
AWOS	Automatic Weather Observing System
AWSS	Automated Weather Sensor System
awt	await
awy	airway
az	azimuth

BA	braking action
BASH	Bird Aircraft Strike Hazard
BC	back course
bcon	beacon
bcast	broadcast
bdry	boundary
bldg	building
blkd	blocked
blw, b/w	below
BOQ	Bachelor Officers Quarters
brg	bearing
btw	between
bus	business
beyond	beyond

C	Commercial Circuit (Telephone)
CAC	Centralized Approach Control
cap	capacity
cat	category
CAT	Clear Air Turbulence
CCW or c/w	counterclockwise
ceil	ceiling
CERAP	Center Radar Approach Control
CG	Coast Guard
CGAF	Coast Guard Air Facility
CGAS	Coast Guard Air Station
CH, chan	channel
CHAPI	Chase Helicopter Approach Path Indicator

chg	change
cht	chart
cir	circle, circling
CIV, civ	Civil, civil, civilian
ck	check
CL	Centerline Lighting System
cl	class
clnc	clearance
clsd	closed
CNATRA	Chief of Naval Air Training
cnl	cancel
cntr	center
cntrl	centerline
Co	Company, County
CO	Commanding Officer
com	communication
cmd	command
Comdr	Commander
coml	commercial
compul	compulsory
comsn	commission
conc	concrete
cond	condition
const	construction
cont	continue
CONUS	Continental United States
convl	conventional
coord	coordinate
copter	helicopter
corr	correct
CPDLC	Controller Pilot Data Link Communication

Abbreviation	Description
corr	corridor
cross	cross
CRP	Compulsory Reporting Point
CIS	course
CS	call sign
CSTM	Customs
CTA	Control Area
CTAF	Common Traffic Advisory Frequency
c/c	contact
cl	control
CTLZ	Control Zone
CVFR	Controlled Visual Flight Rules Areas
CW	Clockwise, Continuous Wave, Carrier Wave

daylt	daylight
D-ARIS	Digital Automatic Terminal Information Service
daylt	daylight
db	decibel
DCL	Departure Clearance
Dec	December
decom	decommission
deg	degree
del	delivery
dep	depart
DEP	Departure Control
destn	destination
det	detachment
DF	Direction Finder
DH	Decision Height
DIAP	DoD Instrument Approach Procedure
direc	directional
disem	disseminate
displ	displace
dist	district, distance
div	division
DL	Direct Line to FSS
dl	delete
diy	daily
DME	Distance Measuring Equipment (UHF standard, TACAN compatible)
DNVT	Digital Non-Secure Voice Telephone
DoD	Department of Defense
direct	direct
DSN	Defense Switching Network (Telephone)
DSN	Defense Switching Network
displcd	displaced
DT	Daylight Savings Time
dur	during
durn	duration
DV	Distinguished Visitor

E	East
ea	each
EAT	Expected Approach Time
ECN	Enroute Change Notice
EFAS	Enroute Flight Advisory Service
eff	effective, effect
E-HA	Enroute High Altitude
E-LA	Enroute Low Altitude
elev	elevation
ELT	Emergency Locator Transmitter

EMAS	Engineered Material Arresting System
emerg	emergency
eng	engine

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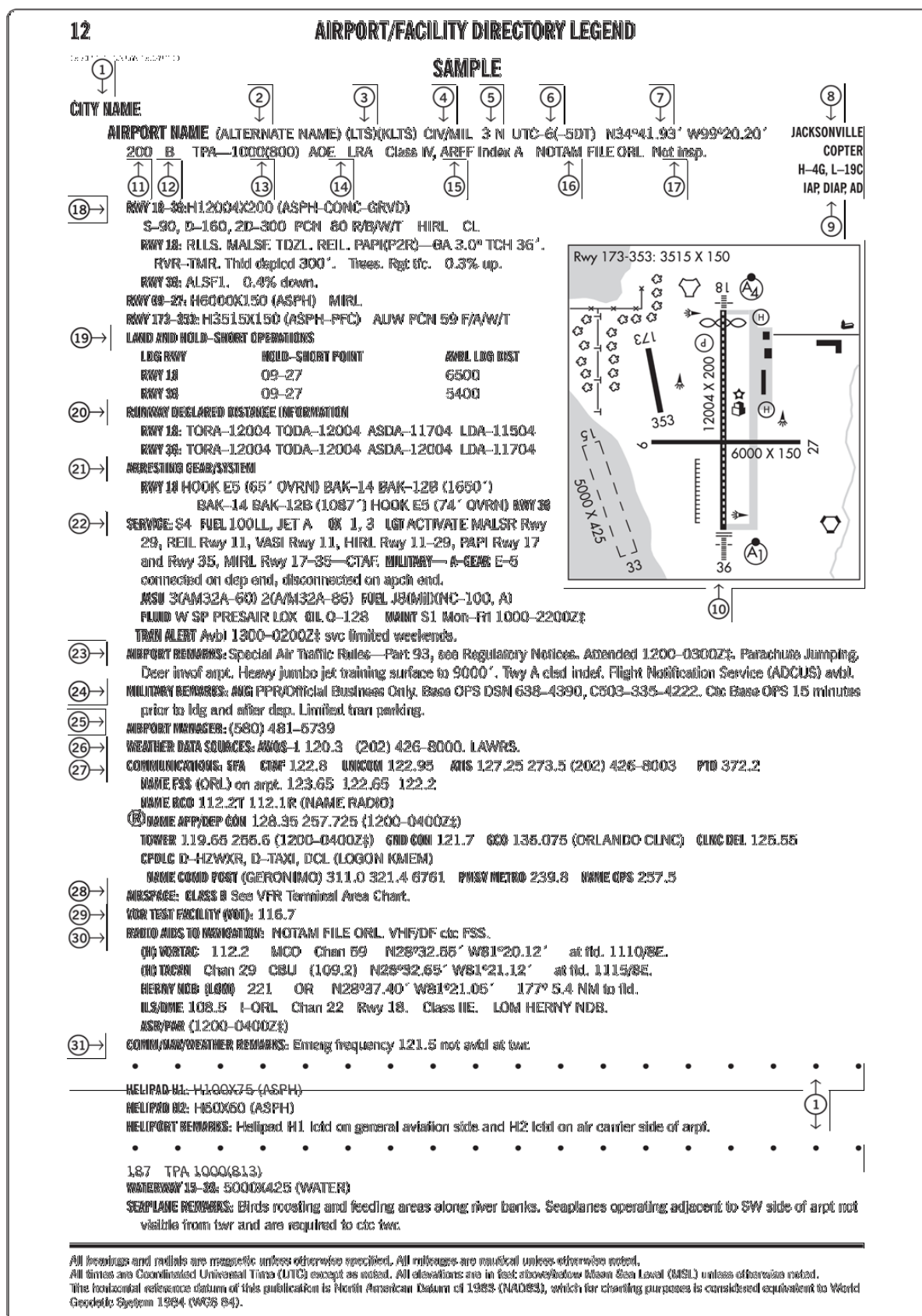
GENERAL INFORMATION

Abbreviation	Description
EOR	End of Runway
eqpt	equipment
ERDA	Energy Research and Development Administration
E-S	Enroute Supplement
est	estimate
estab	establish
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
ETE	Estimated Time Enroute
ETS	European Telephone System
EUR	European (ICAO Region)
ev	every
evac	evacuate
exc	except
excl	exclude
exerc	exercise
exm	exempt
exp	expect
extd	extend
extn	extension
extv	extensive
FW	Fixed Wing
FAA	Federal Aviation Administration
fac	facility
FAWS	Flight Advisory Weather Service
fax	facsimile
FBO	Fixed Base Operator
FCC	Flight Control Center
FCG	Foreign Clearance Guide
FCLP	field carrier landing practice
fcst	forecast
Feb	February
FIG	Flight Information Center
FIH	Flight Information Handbook
FIR	Flight Information Region
FIS	Flight Information Service
FL	flight level
fld	field
flg	flashing
FLIP	Flight Information Publication
fl	flight
flw	follow
FM	Fan Marker; Frequency Modulation
FOC	Flight Operations Center
FOD	Foreign Object Damage
fone	telephone
FPL	Flight Plan
fpm	feet per minute
fr	from
freq	frequency, frequent
Fri	Friday
fmg	firing
FSC	Flight Service Center
FSS	Flight Service Station
ft	foot
ftr	flightier
GA	Glide Angle
gal	gallon
GAT	General Air Traffic (Europe-Asia)
GCA	Ground Control Approach
GCO	Ground Communication Outlet
gldr	glider
GND	Ground Control
gnd	ground

Abbreviation	Description
govt	government
GP	Glide Path
Gp	Group
GPI	Ground Point of Intercept
grad	gradient
grd	guard
GS	glide slope
GWT	gross weight
H	Enroute High Altitude Chart (followed by identification)
H+	Hours or hours plus...minutes past the hour
H24	continuous operation
HAA	Height Above Airport/Aerodrome
HAL	Height Above Landing Area
HAR	Height Above Runway
HAT	Height Above Touchdown
haz	hazard
hdg	heading
HDTA	High Density Traffic Airport/Aerodrome
HF	High Frequency (3000 to 30,000 KHz)
hgr	hangar
hgt	height
hi	high
HIRL	High Intensity Runway Lights
HIWAS	Hazardous Inflight Weather Advisory Service
HO	Service available to meet operational requirements
hol	holiday
HOLF	Helicopter Outlying Field
hosp	hospital
HQ	Headquarters
hr	hour
HS	Service available during hours of scheduled operations
hsg	housing
hvy	heavy
HW	Heavy Weight
hwy	highway
HO	station having no specific working hours
Hz	Hertz (cycles per second)
I	Island
IAP	Instrument Approach Procedure
IAS	Indicated Air Speed
IAW	in accordance with
ICAO	International Civil Aviation Organization
ident	identification
IFF	Identification, Friend or Foe
IFR	Instrument Flight Rules
IFR-S	IFR Supplement
IFSS	International Flight Service Station
ILS	Instrument Landing System
IM	Inner Marker
IMC	Instrument Meteorological Conditions
IMG	Immigration
immed	immediate
inbd	inbound
inc	incorporated
Incl	include
incr	increase
Indef	indefinite
Info	information
inop	inoperative
inst	instrument

VALID 1600Z FOR USE 0900-1500Z, TEMPS NEG ABV 24000									
FT	3000	6000	9000	12000	18000	24000	30000	34000	38000
EMI	2807	2715-07	2728-10	2842-13	2867-21	2891-30	751041	771150	780855
ALB	0210	9900-07	2714-09	2728-12	2656-19	2777-28	781842	760150	269658
PSB		1509+04	2119+01	2233-04	2262-14	2368-26	781939	760850	780456
STL	2308	2813+02	2422-03	2431-08	2448-19	2461-30	760142	782650	760559

Figure 2. Wind and Temperatures Aloft Forecast. QASA



Legend 2. Airport/Facility Directory.

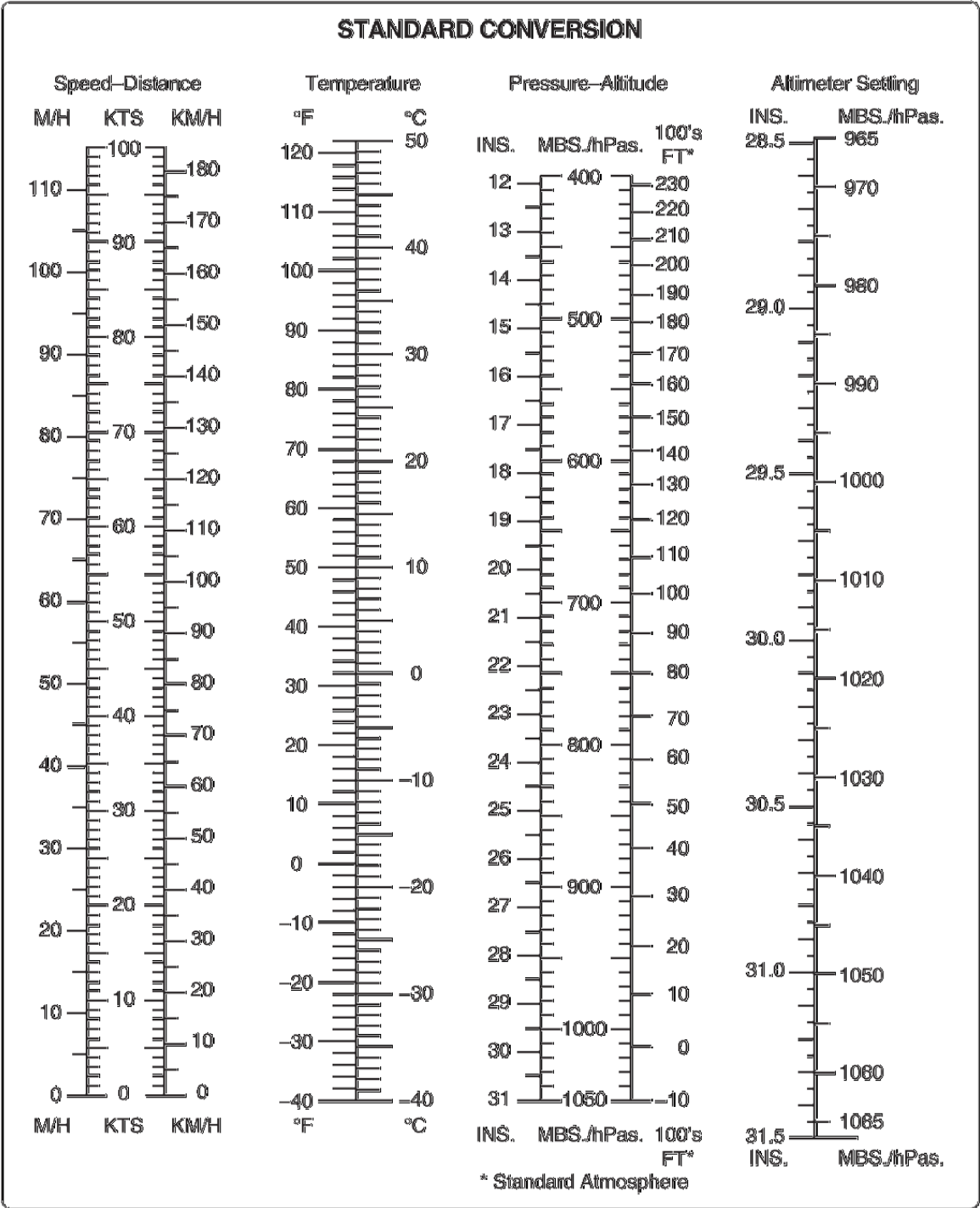
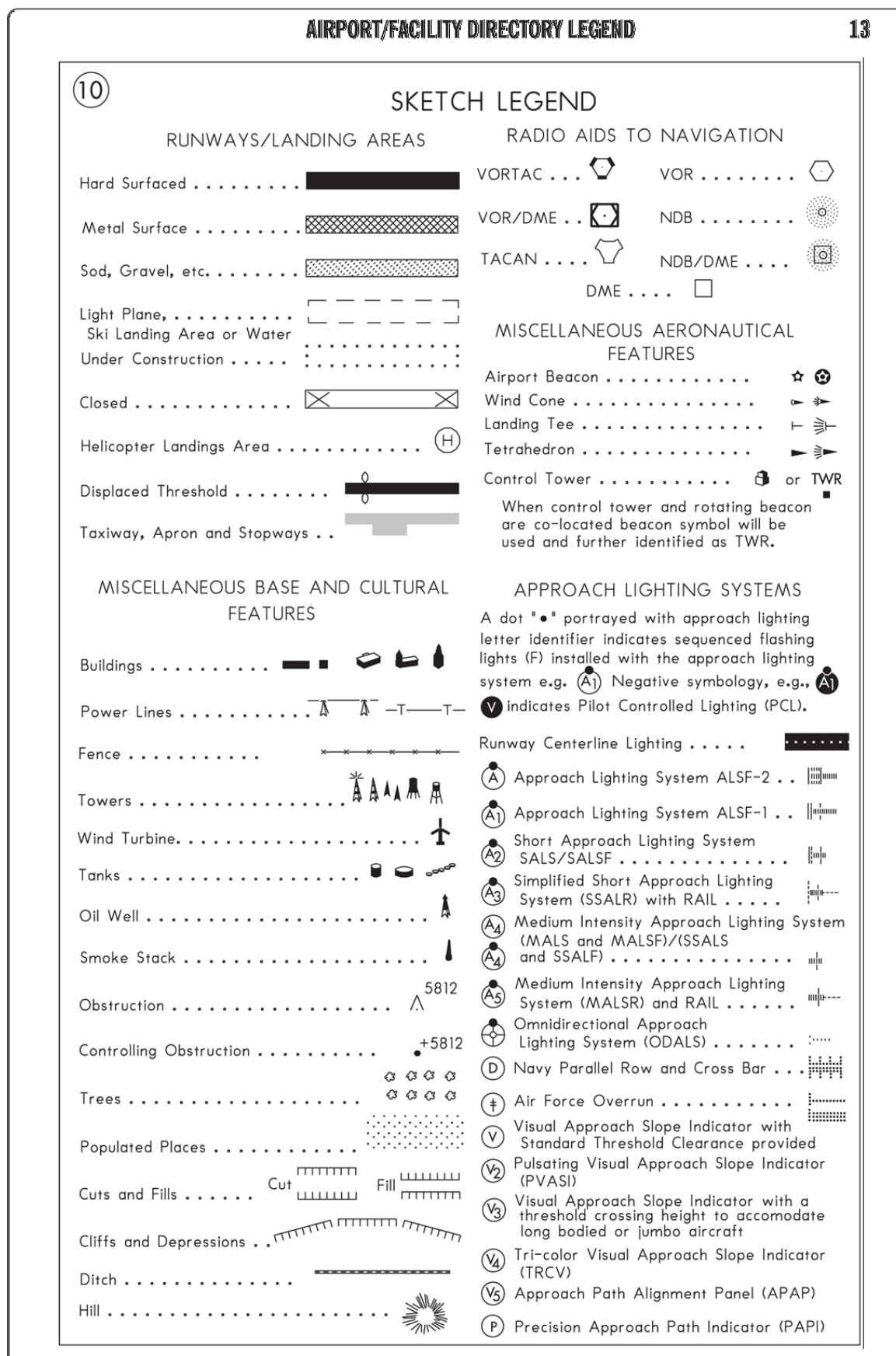


Figure 3. Standard Conversion Chart.



Legend 3. Airport/Facility Directory.

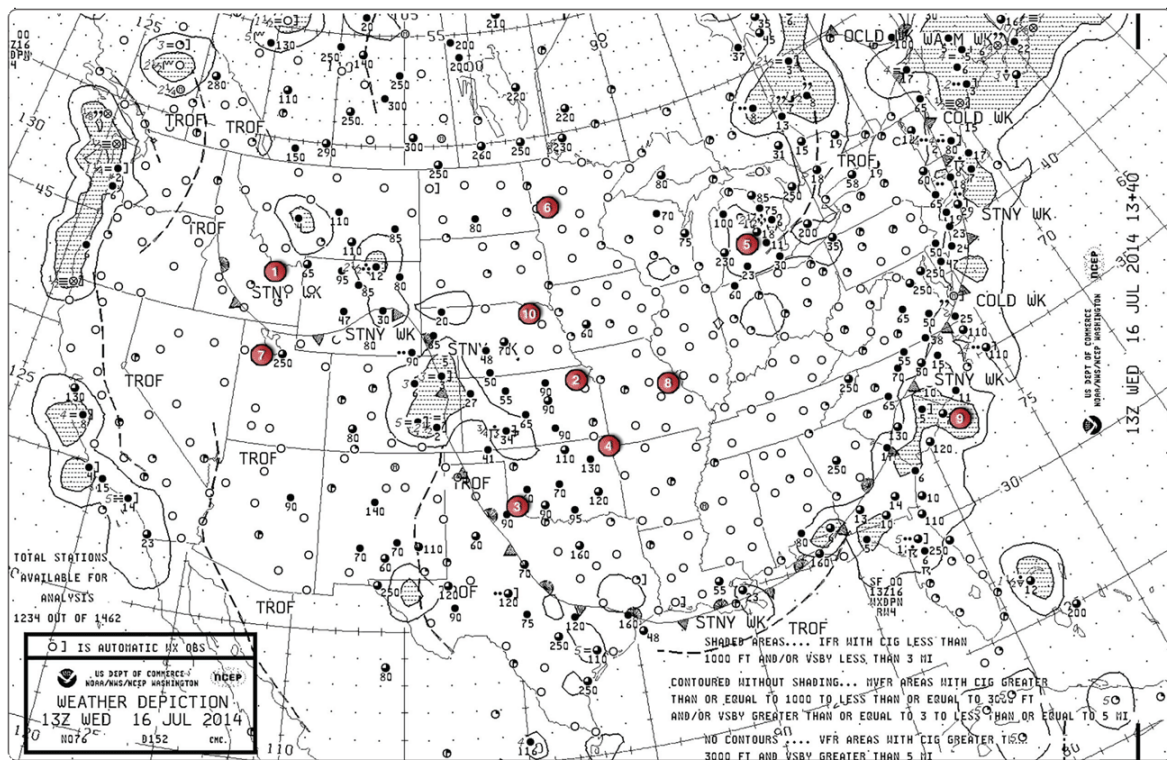


Figure 4. Weather Depiction Chart.

CASA

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AIRPORT/FACILITY DIRECTORY LEGEND

LEGEND

This directory is a listing of data on record with the FAA on public-use airports, military airports and selected private-use airports specifically requested by the Department of Defense (DoD) for which a DoD Instrument Approach Procedure has been published in the U.S. Terminal Procedures Publication. Additionally this listing contains data for associated terminal control facilities, air route traffic control centers, and radio aids to navigation within the conterminous United States, Puerto Rico and the Virgin Islands. Civil airports and joint Civil/Military airports which are open to the public are listed alphabetically by state, associated city and airport name and cross-referenced by airport name. Military airports and private-use (limited civil access) joint Military/Civil airports are listed alphabetically by state and official airport name and cross-referenced by associated city name. Navstads, flight service stations and remote communication outlets that are associated with an airport, but with a different name, are listed alphabetically under their own name, as well as under the airport with which they are associated.

The listing of an airport as open to the public in this directory merely indicates the airport operator's willingness to accommodate transient aircraft, and does not represent that the airport conforms with any Federal or local standards, or that it has been approved for use on the part of the general public. Military airports, private-use airports, and private-use (limited civil access) joint Military/Civil airports are open to civil pilots only in an emergency or with prior permission. See Special Notice Section, Civil Use of Military Fields.

The information on obstructions is taken from reports submitted to the FAA. Obstruction data has not been verified in all cases. Pilots are cautioned that objects not indicated in this tabulation (or on the airports sketches and/or charts) may exist which can create a hazard to flight operation. Detailed specifics concerning services and facilities tabulated within this directory are contained in the Aeronautical Information Manual, Basic Flight Information and ATC Procedures.

The legend items that follow explain in detail the contents of this Directory and are keyed to the circled numbers on the sample on the preceding pages.

① CITY/AIRPORT NAME

Civil and joint Civil/Military airports which are open to the public are listed alphabetically by state and associated city. Where the city name is different from the airport name the city name will appear on the line above the airport name. Airports with the same associated city name will be listed alphabetically by airport name and will be separated by a dashed rule line. A solid rule line will separate all others. FAA approved helipads and seaplane landing areas associated with a land airport will be separated by a dotted line. Military airports and private-use (limited civil access) joint Military/Civil airports are listed alphabetically by state and official airport name.

② ALTERNATE NAME

Alternate names, if any, will be shown in parentheses.

③ LOCATION IDENTIFIER

The location identifier is a three or four character FAA code followed by a four-character ICAO code, when assigned, to airports. If two different military codes are assigned, both codes will be shown with the primary operating agency's code listed first. These identifiers are used by ATC in lieu of the airport name in flight plans, flight strips and other written records and computer operations. Zeros will appear with a slash to differentiate them from the letter "O".

④ OPERATING AGENCY

Airports within this directory are classified into two categories, Military/Federal Government and Civil airports open to the general public, plus selected private-use airports. The operating agency is shown for military, private-use and joint use airports. The operating agency is shown by an abbreviation as listed below. When an organization is a tenant, the abbreviation is enclosed in parenthesis. No classification indicates the airport is open to the general public with no military tenant.

A	US Army	MC	Marine Corps
AFRC	Air Force Reserve Command	MIL/CIV	Joint Use Military/Civil Limited Civil Access
AF	US Air Force	N	Navy
ANG	Air National Guard	NAF	Naval Air Facility
AR	US Army Reserve	NAS	Naval Air Station
ARNG	US Army National Guard	NASA	National Air and Space Administration
CG	US Coast Guard	P	US Civil Airport Wherein Permit Covers Use by Transient Military Aircraft
CIV/MIL	Joint Use Civil/Military Open to the Public	PVT	Private Use Only (Closed to the Public)
DND	Department of National Defense Canada		

⑤ AIRPORT LOCATION

Airport location is expressed as distance and direction from the center of the associated city in nautical miles and cardinal points, e.g., 4 NE.

⑥ TIME CONVERSION

Hours of operation of all facilities are expressed in Coordinated Universal Time (UTC) and shown as "Z" time. The directory indicates the number of hours to be subtracted from UTC to obtain local standard time and local daylight saving time UTC-5(-4DT). The symbol § indicates that during periods of Daylight Saving Time (DST) effective hours will be one hour earlier than shown. In those areas where daylight saving time is not observed the (-4DT) and § will not be shown. Daylight saving time is in effect from 0200 local time the second Sunday in March to 0200 local time the first Sunday in November. Canada and all U.S. Conterminous States observe daylight saving time except Arizona and Puerto Rico, and the Virgin Islands. If the state observes daylight saving time and the operating times are other than daylight saving times, the operating hours will include the dates, times and no § symbol will be shown, i.e., April 15-Aug 31 0630-1700Z, Sep 1-Apr 14 0600-1700Z.

AIRPORT/FACILITY DIRECTORY LEGEND

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⑦ GEOGRAPHIC POSITION OF AIRPORT—AIRPORT REFERENCE POINT (ARP)

Positions are shown as hemisphere, degrees, minutes and hundredths of a minute and represent the approximate geometric center of all usable runway surfaces.

⑧ CHARTS

Charts refer to the Sectional Chart and Low and High Altitude Enroute Chart and panel on which the airport or facility is located. Helicopter Chart locations will be indicated as COPTER. IFR Gulf of Mexico West and IFR Gulf of Mexico Central will be depicted as GOMW and GOMC.

⑨ INSTRUMENT APPROACH PROCEDURES, AIRPORT DIAGRAMS

IAP indicates an airport for which a prescribed (Public Use) FAA Instrument Approach Procedure has been published. DIAP indicates an airport for which a prescribed DoD Instrument Approach Procedure has been published in the U.S. Terminal Procedures. See the Special Notice Section of this directory, Civil Use of Military Fields and the Aeronautical Information Manual 5-4-5 Instrument Approach Procedure Charts for additional information. AD indicates an airport for which an airport diagram has been published. Airport diagrams are located in the back of each Chart Supplement volume alphabetically by associated city and airport name.

⑩ AIRPORT SKETCH

The airport sketch, when provided, depicts the airport and related topographical information as seen from the air and should be used in conjunction with the text. It is intended as a guide for pilots in VFR conditions. Symbolology that is not self-explanatory will be reflected in the sketch legend. The airport sketch will be oriented with True North at the top. Airport sketches will be added incrementally.

⑪ ELEVATION

The highest point of an airport's usable runways measured in feet from mean sea level. When elevation is sea level it will be indicated as "00". When elevation is below sea level a minus "-" sign will precede the figure.

⑫ ROTATING LIGHT BEACON

B indicates rotating beacon is available. Rotating beacons operate sunset to sunrise unless otherwise indicated in the AIRPORT REMARKS or MILITARY REMARKS segment of the airport entry.

⑬ TRAFFIC PATTERN ALTITUDE

Traffic Pattern Altitude (TPA)—The first figure shown is TPA above mean sea level. The second figure in parentheses is TPA above airport elevation. Multiple TPA shall be shown as "TPA—See Remarks" and detailed information shall be shown in the Airport or Military Remarks Section. Traffic pattern data for USAF bases, USN facilities, and U.S. Army airports (including those on which AOC or U.S. Army is a tenant) that deviate from standard pattern altitudes shall be shown in Military Remarks.

⑭ AIRPORT OF ENTRY, LANDING RIGHTS, AND CUSTOMS USER FEE AIRPORTS

U.S. CUSTOMS USER FEE AIRPORT—Private Aircraft operators are frequently required to pay the costs associated with customs processing.

AOE—Airport of Entry. A customs Airport of Entry where permission from U.S. Customs is not required to land. However, at least one hour advance notice of arrival is required.

LRA—Landing Rights Airport. Application for permission to land must be submitted in advance to U.S. Customs. At least one hour advance notice of arrival is required.

NOTE: Advance notice of arrival at both an AOE and LRA airport may be included in the flight plan when filed in Canada or Mexico. Where Flight Notification Service (ADCUS) is available the airport remark will indicate this service. This notice will also be treated as an application for permission to land in the case of an LRA. Although advance notice of arrival may be relayed to Customs through Mexico, Canada, and U.S. Communications facilities by flight plan, the aircraft operator is solely responsible for ensuring that Customs receives the notification. (See Customs, Immigration and Naturalization, Public Health and Agriculture Department requirements in the International Flight Information Manual for further details.)

U.S. CUSTOMS AIR AND SEA PORTS, INSPECTORS AND AGENTS

Northeast Sector (New England and Atlantic States—ME to MD)	407-975-1740
Southeast Sector (Atlantic States—DC, WV, VA to FL)	407-975-1780
Central Sector (Interior of the US, including Gulf states—MS, AL, LA)	407-975-1760
Southwest East Sector (OK and eastern TX)	407-975-1840
Southwest West Sector (Western TX, NM and AZ)	407-975-1820
Pacific Sector (WA, OR, CA, HI and AK)	407-975-1800

⑮ CERTIFICATED AIRPORT (14 CFR PART 139)

Airports serving Department of Transportation certified carriers and certified under 14 CFR part 139 are indicated by the Class and the ARFF Index; e.g. Class I, ARFF Index A, which relates to the availability of crash, fire, rescue equipment. Class I airports can have an ARFF Index A through E, depending on the aircraft length and scheduled departures. Class II, III, and IV will always carry an Index A.

AIRPORT CLASSIFICATIONS

Type of Air Carrier Operation	Class I	Class II	Class III	Class IV
Scheduled Air Carrier Aircraft with 31 or more passenger seats	X			
Unscheduled Air Carrier Aircraft with 31 or more passengers seats	X	X		X
Scheduled Air Carrier Aircraft with 10 to 30 passenger seats	X	X	X	

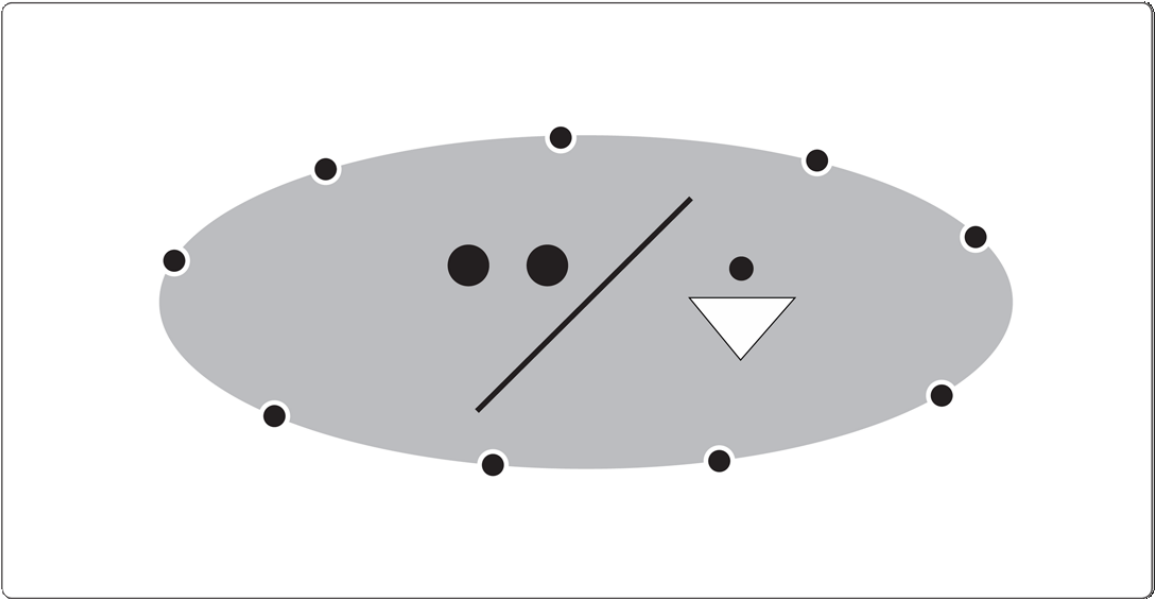


Figure 5. Symbol Used on Low-Level Significant Weather Prognostic Chart.

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AIRPORT/FACILITY DIRECTORY LEGEND

INDICES AND AIRCRAFT RESCUE AND FIRE FIGHTING EQUIPMENT REQUIREMENTS

Airport Index	Required No. Vehicles	Aircraft Length	Scheduled Departures	Agent + Water for Foam
A	1	<90'	≥1	500#DC or HALON 1211 or 450#DC + 100 gal H ₂ O
B	1 or 2	≥90', <126' _____ _____ ≥126', <159'	≥5 _____ _____ ≤5	Index A + 1500 gal H ₂ O
C	2 or 3	≥126', <159' _____ _____ ≥159', <200'	≥5 _____ _____ ≤5	Index A + 3000 gal H ₂ O
D	3	≥159', <200' _____ _____ ≥200'	_____ _____ _____ ≤5	Index A + 4000 gal H ₂ O
E	3	≥200'	≥5	Index A + 6000 gal H ₂ O

> Greater Than; < Less Than; ≥ Equal or Greater Than; ≤ Equal or Less Than; H₂O—Water; DC—Dry Chemical.

NOTE: The listing of ARFF index does not necessarily assure coverage for non-air carrier operations or at other than prescribed times for air carrier. ARFF Index Ltd.—indicates ARFF coverage may or may not be available, for information contact airport manager prior to flight.

16 NOTAM SERVICE

All public use landing areas are provided NOTAM service. A NOTAM FILE identifier is shown for individual landing areas, e.g., "NOTAM FILE BNA". See the AIM, Basic Flight Information and ATC Procedures for a detailed description of NOTAMs. Current NOTAMs are available from flight service stations at 1-800-WX-BRIEF (992-7433) or online through the FAA PilotWeb at <https://pilotweb.nas.faa.gov>. Military NOTAMs are available using the Defense Internet NOTAM Service (DINS) at <https://www.notams.faa.gov>. Pilots flying to or from airports not available through the FAA PilotWeb or DINS can obtain assistance from Flight Service.

17 FAA INSPECTION

All airports not inspected by FAA will be identified by the code: Not insp. This indicates that the airport information has been provided by the owner or operator of the field.

18 RUNWAY DATA

Runway information is shown on two lines. That information common to the entire runway is shown on the first line while information concerning the runway ends is shown on the second or following line. Runway direction, surface, length, width, weight bearing capacity, lighting, and slope, when available, are shown for each runway. Multiple runways are shown with the longest runway first. Direction, length, width, and lighting are shown for sea-lanes. The full dimensions of helipads are shown, e.g., 50X150. Runway data that requires clarification will be placed in the remarks section.

RUNWAY DESIGNATION

Runways are normally numbered in relation to their magnetic orientation rounded off to the nearest 10 degrees. Parallel runways can be designated L (left)/R (right)/C (center). Runways may be designated as Ultralight or assault strips. Assault strips are shown by magnetic bearing.

RUNWAY DIMENSIONS

Runway length and width are shown in feet. Length shown is runway end to end including displaced thresholds, but excluding those areas designed as overruns.

RUNWAY SURFACE AND SURFACE TREATMENT

Runway lengths prefixed by the letter "H" indicate that the runways are hard surfaced (concrete, asphalt, or part asphalt-concrete). If the runway length is not prefixed, the surface is sod, clay, etc. The runway surface composition is indicated in parentheses after runway length as follows:

(AFSC)—Aggregate friction seal coat
(AM2)—Temporary metal planks coated with nonskid material
(ASPH)—Asphalt
(CONC)—Concrete
(DIRT)—Dirt
(GRVD)—Grooved

(GRVL)—Gravel, or cinders
(MATS)—Pierced steel planking, landing mats, membranes
(PEM)—Part concrete, part asphalt
(PFC)—Porous friction courses
(PSP)—Pierced steel plank
(RFSC)—Rubberized friction seal coat

(SAND)—Sand
(TURF)—Turf
(TRTD)—Treated
(WC)—Wire combed

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RUNWAY WEIGHT BEARING CAPACITY

Runway strength data shown in this publication is derived from available information and is a realistic estimate of capability at an average level of activity. It is not intended as a maximum allowable weight or as an operating limitation. Many airport pavements are capable of supporting limited operations with gross weights in excess of the published figures. Permissible operating weights, insofar as runway strengths are concerned, are a matter of agreement between the owner and user. When desiring to operate into any airport at weights in excess of those published in the publication, users should contact the airport management for permission. Runway strength figures are shown in thousand of pounds, with the last three figures being omitted. Add 000 to figure following S, D, 2S, 2T, AUW, SWL, etc., for gross weight capacity. A blank space following the letter designator is used to indicate the runway can sustain aircraft with this type landing gear, although definite runway weight bearing capacity figures are not available, e.g., S, D. Applicable codes for typical gear configurations with S=Single, D=Dual, T=Triple and Q=Quadruple:

CURRENT	NEW	NEW DESCRIPTION
S	S	Single wheel type landing gear (DC3), (C47), (F15), etc.
D	D	Dual wheel type landing gear (BE1900), (B737), (A319), etc.
T	D	Dual wheel type landing gear (F3, C9).
ST	2S	Two single wheels in tandem type landing gear (C130).
TRT	2T	Two triple wheels in tandem type landing gear (C17), etc.
DT	2D	Two dual wheels in tandem type landing gear (B707), etc.
TT	2D	Two dual wheels in tandem type landing gear (B757, KC135).
SETT	2D/D1	Two dual wheels in tandem/dual wheel body gear type landing gear (KC10).
None	2D/2D1	Two dual wheels in tandem/two dual wheels in tandem body gear type landing gear (A340-600).
DDT	2D/2D2	Two dual wheels in tandem/two dual wheels in double tandem body gear type landing gear (B747, E4).
TTT	3D	Three dual wheels in tandem type landing gear (B777), etc.
TT	D2	Dual wheel gear two struts per side main gear type landing gear (B52).
TDT	Q5	Complex dual wheel and quadruple wheel combination landing gear (C5).

AUW—All up weight. Maximum weight bearing capacity for any aircraft irrespective of landing gear configuration.

SWL—Single Wheel Loading. (This includes information submitted in terms of Equivalent Single Wheel Loading (ESWL) and Single Isolated Wheel Loading).

PSI—Pounds per square inch. PSI is the actual figure expressing maximum pounds per square inch runway will support, e.g., (SWL 600/PSI 535).

Omission of weight bearing capacity indicates information unknown.

The ACN/PCN System is the ICAO standard method of reporting pavement strength for pavements with bearing strengths greater than 12,800 pounds. The Pavement Classification Number (PCN) is established by an engineering assessment of the runway. The PCN is for use in conjunction with an Aircraft Classification Number (ACN). Consult the Aircraft Flight Manual, Flight Information Handbook, or other appropriate source for ACN tables or charts. Currently, ACN data may not be available for all aircraft. If an ACN table or chart is available, the ACN can be calculated by taking into account the aircraft weight, the pavement type, and the subgrade category. For runways that have been evaluated under the ACN/PCN system, the PCN will be shown as a five-part code (e.g. PCN 80 R/B/W/T). Details of the coded format are as follows:

NOTE: Prior permission from the airport controlling authority is required when the ACN of the aircraft exceeds the published PCN or aircraft tire pressure exceeds the published limits.

- (1) The PCN NUMBER—The reported PCN indicates that an aircraft with an ACN equal or less than the reported PCN can operate on the pavement subject to any limitation on the tire pressure.
- (2) The type of pavement:
R — Rigid
F — Flexible
- (3) The pavement subgrade category:
A — High
B — Medium
C — Low
D — Ultra-low
- (4) The maximum tire pressure authorized for the pavements:
W — Unlimited, no pressure limit
X — High, limited to 254 psi (1.75 MPa)
Y — Medium, limited to 181 psi (1.25 MPa)
Z — Low, limited to 73 psi (0.50 MPa)
- (5) Pavement evaluation method:
T — Technical evaluation
U — By experience of aircraft using the pavement

RUNWAY LIGHTING

Lights are in operation sunset to sunrise. Lighting available by prior arrangement only or operating part of the night and/or pilot controlled lighting with specific operating hours are indicated under airport or military remarks. At USN/USMC facilities lights are available only during airport hours of operation. Since obstructions are usually lighted, obstruction lighting is not included in this code. Unlighted obstructions on or surrounding an airport will be noted in airport or military remarks. Runway lights nonstandard (NSTD) are systems for which the light fixtures are not FAA approved L-800 series; color, intensity, or spacing does not meet FAA standards. Nonstandard runway lights, VASI, or any other system not listed below will be shown in airport remarks or military

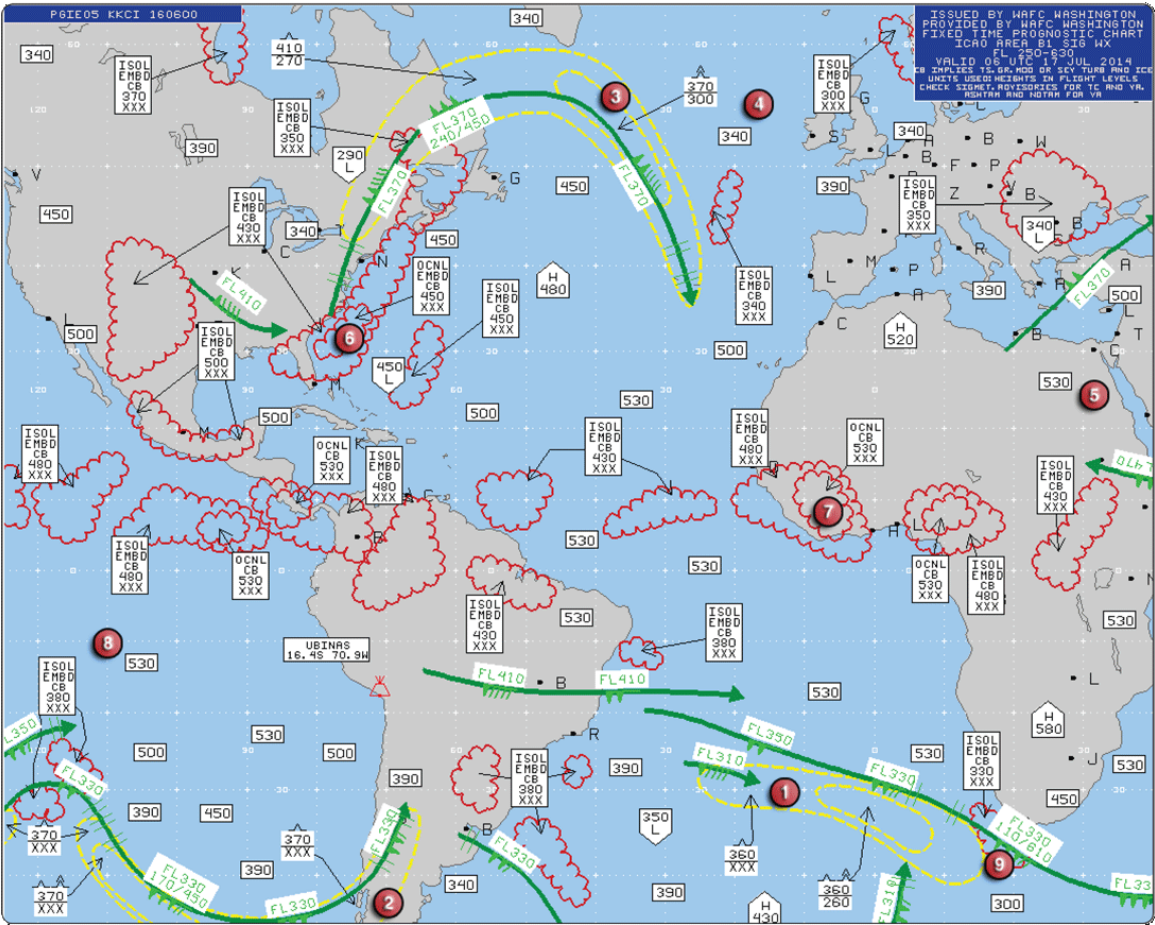


Figure 7. High-Level Significant Weather Prognostic Chart.

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service. Temporary, emergency or limited runway edge lighting such as flares, smudge pots, lanterns or portable runway lights will also be shown in airport remarks or military service. Types of lighting are shown with the runway or runway and they serve.

NSTD—Light system fails to meet FAA standards.

LIRL—Low Intensity Runway Lights.

MIRL—Medium Intensity Runway Lights.

HIRL—High Intensity Runway Lights.

RAIL—Runway Alignment Indicator Lights.

REIL—Runway End Identifier Lights.

CL—Centerline Lights.

TDZL—Touchdown Zone Lights.

ODALS—Omni Directional Approach Lighting System.

AF OVRN—Air Force Overrun 1000' Standard Approach Lighting System.

MALS—Medium Intensity Approach Lighting System.

MALSF—Medium Intensity Approach Lighting System with Sequenced Flashing Lights.

MALSRL—Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights.

RLS—Runway Lead-in Light System

SALS—Short Approach Lighting System.

SALSF—Short Approach Lighting System with Sequenced Flashing Lights.

SSALS—Simplified Short Approach Lighting System.

SSALF—Simplified Short Approach Lighting System with Sequenced Flashing Lights.

SSALR—Simplified Short Approach Lighting System with Runway Alignment Indicator Lights.

ALSAF—High Intensity Approach Lighting System with Sequenced Flashing Lights.

ALSF1—High Intensity Approach Lighting System with Sequenced Flashing Lights, Category I, Configuration.

ALSF2—High Intensity Approach Lighting System with Sequenced Flashing Lights, Category II, Configuration.

SF—Sequenced Flashing Lights.

OLS—Optical Landing System.

WAVE-OFF.

NOTE: CMI ALSF2 may be operated as SSALR during favorable weather conditions. When runway edge lights are positioned more than 10 feet from the edge of the usable runway surface a remark will be added in the "Remarks" portion of the airport entry. This is applicable to Air Force, Air National Guard and Air Force Reserve Bases, and those joint use airfields on which they are tenants.

VISUAL GUIDESLOPE INDICATORS

APAP—A system of panels, which may or may not be lighted, used for alignment of approach path.

PNIL APAP on left side of runway

PNIR APAP on right side of runway

PAPI—Precision Approach Path Indicator

P2L 2-identical light units placed on left side of runway

P4L 4-identical light units placed on left side of runway

P2R 2-identical light units placed on right side of runway

P4R 4-identical light units placed on right side of runway

PVASI—Pulsating/steady burning visual approach slope indicator, normally a single light unit projecting two colors.

PSIL PVASI on left side of runway

PSIR PVASI on right side of runway

SAVASI—Simplified Abbreviated Visual Approach Slope Indicator

S2L 2-box SAVASI on left side of runway

S2R 2-box SAVASI on right side of runway

TRCV—Tri-color visual approach slope indicator, normally a single light unit projecting three colors.

TRIL TRCV on left side of runway

TRIR TRCV on right side of runway

VASI—Visual Approach Slope Indicator

V2L 2-box VASI on left side of runway

V6L 6-box VASI on left side of runway

V2R 2-box VASI on right side of runway

V6R 6-box VASI on right side of runway

V4L 4-box VASI on left side of runway

V12 12-box VASI on both sides of runway

V4R 4-box VASI on right side of runway

V16 16-box VASI on both sides of runway

NOTE: Approach slope angle and threshold crossing height will be shown when available; i.e., -GA 3.5° TCH 37'.

PILOT CONTROL OF AIRPORT LIGHTING

Key Mils

7 times within 5 seconds

5 times within 5 seconds

3 times within 5 seconds

Function

Highest intensity available

Medium or lower intensity (Lower REIL or REIL-OFF)

Lowest intensity available (Lower REIL or REIL-OFF)

Available systems will be indicated in the Service section, e.g., L&T ACTIVATE HIRL Rwy 07-25, MALSR Rwy 07, and VASI Rwy 07-122.8.

Where the airport is not served by an instrument approach procedure and/or has an independent type system of different specification installed by the airport sponsor, descriptions of the type lights, method of control, and operating frequency will be explained in clear text. See AIM, "Basic Flight Information and ATC Procedures," for detailed description of pilot control of airport lighting.

RUNWAY SLOPE

When available, runway slope data will be provided. Runway slope will be shown only when it is 0.3 percent or greater. On runways less than 8000 feet, the direction of the slope up will be indicated, e.g., 0.3% up NW. On runways 8000 feet or greater, the slope will be shown (up or down) on the runway end line, e.g., RWY 13: 0.3% up., RWY 31: Pole. Rgt. t/c. 0.4% down.

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RUNWAY END DATA

Information pertaining to the runway approach end such as approach lights, touchdown zone lights, runway end identification lights, visual glideslope indicators, displaced thresholds, controlling obstruction, and right hand traffic pattern, will be shown on the specific runway end. "Right tie"—Right traffic indicates right turns should be made on landing and takeoff for specified runway end. Runway Visual Range shall be shown as "RVR" appended with "T" for touchdown, "M" for midpoint, and "R" for rollout; e.g., RVR-TMR.

(19) LAND AND HOLD—SHORT OPERATIONS (LAHSO)

LAHSO is an acronym for "Land and Hold—Short Operations." These operations include landing and holding short of an intersection runway, an intersecting taxiway, or other predetermined points on the runway other than a runway or taxiway. Measured distance represents the available landing distance on the landing runway, in feet. Specific questions regarding these distances should be referred to the air traffic manager of the facility concerned. The Aeronautical Information Manual contains specific details on hold-short operations and markings.

(20) RUNWAY DECLARED DISTANCE INFORMATION

TORA—Take-off Run Available. The length of runway declared available and suitable for the ground run of an airplane take-off.
TODA—Take-off Distance Available. The length of the take-off run available plus the length of the clearway, if provided.
ASDA—Accelerate-Stop Distance Available. The length of the take-off run available plus the length of the stopway, if provided.
LDA—Landing Distance Available. The length of runway which is declared available and suitable for the ground run of an airplane landing.

(21) ARRESTING GEAR/SYSTEMS

Arresting gear is shown as it is located on the runway. The a-gear distance from the end of the appropriate runway (or into the overrun) is indicated in parentheses. A-Gear which has a bi-direction capability and can be utilized for emergency approach and engagement is indicated by a (B). Up to 15 minutes advance notice may be required for rigging A-Gear for approach and engagement. Airport listing may show availability of other than US Systems. This information is provided for emergency requirements only. Refer to current aircraft operating manuals for specific engagement weight and speed criteria based on aircraft structural restrictions and arresting system limitations.

Following is a list of current systems referenced in this publication identified by both Air Force and Navy terminology:

BI-DIRECTIONAL CABLE (B)

TYPE	DESCRIPTION
BAK-9	Rotary friction brake.
BAK-12A	Standard BAK-12 with 950 foot run out, 1-Inch cable and 40,000 pound weight setting. Rotary friction brake.
BAK-12B	Extended BAK-12 with 1200 foot run, 1¼ inch Cable and 50,000 pounds weight setting. Rotary friction brake.
E28	Rotary Hydraulic (Water Brake).
M21	Rotary Hydraulic (Water Brake) Mobile.

The following device is used in conjunction with some aircraft arresting systems:

BAK-14	A device that raises a hook cable out of a slot in the runway surface and is remotely positioned for engagement by the tower on request. (In addition to personnel reaction time, the system requires up to five seconds to fully raise the cable.)
H	A device that raises a hook cable out of a slot in the runway surface and is remotely positioned for engagement by the tower on request. (In addition to personnel reaction time, the system requires up to one and one-half seconds to fully raise the cable.)

UNI-DIRECTIONAL CABLE

TYPE	DESCRIPTION
MB60	Textile brake—an emergency one-time use, modular braking system employing the tearing of specially woven textile straps to absorb the kinetic energy.
ES/ES-1/ES-3	Chain Type. At USN/USMC stations E-5 A-GEAR systems are rated, e.g., E-5 RATING-13R-1100 HW (DRY), 31L/R-1200 STD (WET). This rating is a function of the A-GEAR chain weight and length and is used to determine the maximum aircraft engaging speed. A dry rating applies to a stabilized surface (dry or wet) while a wet rating takes into account the amount (if any) of wet overrun that is not capable of withstanding the aircraft weight. These ratings are published under Service/Military/A-Gear in the entry.

FOREIGN CABLE

TYPE	DESCRIPTION	US EQUIVALENT
44B-3H	Rotary Hydraulic (Water Brake)	
CHAG	Chain	E-5

UNI-DIRECTIONAL BARRIER

TYPE	DESCRIPTION
MA-1A	Web barrier between stanchions attached to a chain energy absorber.
BAK-15	Web barrier between stanchions attached to an energy absorber (water squeezer, rotary friction, chain). Designed for wing engagement.

NOTE: Landing short of the runway threshold on a runway with a BAK-15 in the underrun is a significant hazard. The barrier in the down position still protrudes several inches above the underrun. Aircraft contact with the barrier short of the runway threshold can cause damage to the barrier and substantial damage to the aircraft.

OTHER

TYPE	DESCRIPTION
EMAS	Engineered Material Arresting System, located beyond the departure end of the runway, consisting of high energy absorbing materials which will crush under the weight of an aircraft.

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22 SERVICE

S1: Minor airframe repairs.
S2: Minor airframe and minor powerplant repairs.
S3: Major airframe and minor powerplant repairs.
S4: Major airframe and major powerplant repairs.

SERVICING—CIVIL

S5: Major airframe repairs.
S6: Minor airframe and major powerplant repairs.
S7: Major powerplant repairs.
S8: Minor powerplant repairs.

CODE	FUEL	CODE	FUEL
80	Grade 80 gasoline (Red)	A1+	Jet A-1, Kerosene with FS-II*, FP** minus 47° C.
100	Grade 100 gasoline (Green)	B	Jet B, Wide-cut, turbine fuel without FS-II*, FP** minus 50° C.
100LL	100LL gasoline (low lead) (Blue)	B+	Jet B, Wide-cut, turbine fuel with FS-II*, FP** minus 50° C.
115	Grade 115 gasoline (115/145 military specification) (Purple)	J4 (JP4)	JP-4 military specification) FP** minus 58° C.
A	Jet A, Kerosene, without FS-II*, FP** minus 40° C.	J5 (JP5)	JP-5 military specification) Kerosene with FS-II, FP** minus 46° C.
A+	Jet A, Kerosene, with FS-II*, C/LI [®] , SDA [®] , FP** minus 40° C.	J8 (JP8)	JP-8 military specification) Jet A-1, Kerosene with FS-II*, C/LI [®] , SDA [®] , FP** minus 47° C.
A++	Jet A, Kerosene, with FS-II*, C/LI [®] , SDA [®] , FP** minus 40° C.	J8+100	JP-8 military specification) Jet A-1, Kerosene with FS-II*, C/LI [®] , SDA [®] , FP** minus 47° C, with +100 fuel additive that improves thermal stability characteristics of kerosene jet fuels.
A++100	Jet A, Kerosene, with FS-II*, C/LI [®] , SDA [®] , FP** minus 40° C, with +100 fuel additive that improves thermal stability characteristics of kerosene jet fuels.	J	(Jet Fuel Type Unknown)
A1	Jet A-1, Kerosene, without FS-II*, FP** minus 47° C.	MOGAS	Automobile gasoline which is to be used as aircraft fuel.

* (Fuel System Icing Inhibitor) ** (Freeze Point) [®] (Corrosion Inhibitors/Lubricity Improvers) [®] (Static Disruptor Additive)

NOTE: Certain automobile gasoline may be used in specific aircraft engines if a FAA supplemental type certificate has been obtained. Automobile gasoline, which is to be used in aircraft engines, will be identified as "MOGAS", however, the grade/type and other octane rating will not be published.

Data shown on fuel availability represents the most recent information the publisher has been able to acquire. Because of a variety of factors, the fuel listed may not always be obtainable by transient civil pilots. Confirmation of availability of fuel should be made directly with fuel suppliers at locations where refueling is planned.

OXYGEN—CIVIL

OX 1 High Pressure
OX 2 Low Pressure
OX 3 High Pressure—Replacement Bottles
OX 4 Low Pressure—Replacement Bottles

SERVICE—MILITARY

Specific military services available at the airport are listed under this general heading. Remarks applicable to any military service are shown in the individual service listing.

JET AIRCRAFT STARTING UNITS (JASU)—MILITARY

The numeral preceding the type of unit indicates the number of units available. The absence of the numeral indicates ten or more units available. If the number of units is unknown, the number one will be shown. Absence of JASU designation indicates non-availability.

The following is a list of current JASU systems referenced in this publication:

USAF ASU (For variations in technical data, refer to TO 28-1-7.)

ELECTRICAL STARTING UNITS:

AM32A-86	AC: 115/200v, 3 phase, 90 kva, 0.8 pf, 4 wire DC: 28v, 1500 amp, 72 kw (with TR pack)
MC-1A	AC: 115/208v, 400 cycle, 3 phase, 37.5 kva, 0.8 pf, 108 amp, 4 wire DC: 28v, 500 amp, 14 kw
MD-3	AC: 115/208v, 400 cycle, 3 phase, 60 kva, 0.75 pf, 4 wire DC: 28v, 1500 amp, 45 kw, split bus
MD-3A	AC: 115/208v, 400 cycle, 3 phase, 60 kva, 0.75 pf, 4 wire DC: 28v, 1500 amp, 45 kw, split bus
MD-3M	AC: 115/208v, 400 cycle, 3 phase, 60 kva, 0.75 pf, 4 wire DC: 28v, 500 amp, 15 kw
MD-4	AC: 120/208v, 400 cycle, 3 phase, 62.5 kva, 0.8 pf, 175 amp, "WYE" neutral ground, 4 wire, 120v, 400 cycle, 3 phase, 62.5 kva, 0.8 pf, 303 amp, "DELTA" 3 wire, 120v, 400 cycle, 1 phase, 62.5 kva, 0.8 pf, 520 amp, 2 wire

AIRPORT/FACILITY DIRECTORY LEGEND

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AIR STARTING UNITS

AM32-95	150 +/- 5 lb/min (2055 +/- 68 cfm) at 51 +/- 2 psia
AM32A-95	150 +/- 5 lb/min @ 49 +/- 2 psia (35 +/- 2 psig)
LASS	150 +/- 5 lb/min @ 49 +/- 2 psia
MA-1A	82 lb/min (1123 cfm) at 130° air inlet temp, 45 psia (min) air outlet press
MC-1	15 cfm, 3500 psia
MC-1A	15 cfm, 3500 psia
MC-2A	15 cfm, 200 psia
MC-11	8,000 cu in cap, 4000 psig, 15 cfm

COMBINED AIR AND ELECTRICAL STARTING UNITS:

AGPU	AC: 115/200v, 400 cycle, 3 phase, 30 kw gen DC: 28v, 700 amp AIR: 60 lb/min @ 40 psig @ sea level
AM32A-60*	AIR: 120 +/- 4 lb/min (1644 +/- 55 cfm) at 49 +/- 2 psia AC: 120/208v, 400 cycle, 3 phase, 75 kva, 0.75 pf, 4 wire, 120v, 1 phase, 25 kva DC: 28v, 500 amp, 15 kw
AM32A-60A	AIR: 150 +/- 5 lb/min (2055 +/- 68 cfm) at 51 +/- 2 psia AC: 120/208v, 400 cycle, 3 phase, 75 kva, 0.75 pf, 4 wire DC: 28v, 200 amp, 5.6 kw
AM32A-60B*	AIR: 130 lb/min, 50 psia AC: 120/208v, 400 cycle, 3 phase, 75 kva, 0.75 pf, 4 wire DC: 28v, 200 amp, 5.6 kw

*NOTE: During combined air and electrical loads, the pneumatic circuitry takes preference and will limit the amount of electrical power available.

USN JMSU

ELECTRICAL STARTING UNITS:

NC-8A/A1	DC: 500 amp constant, 750 amp intermittent, 28v; AC: 60 kva @ .8 pf, 115/200v, 3 phase, 400 Hz.
NC-10A/A1/B/C	DC: 750 amp constant, 1000 amp intermittent, 28v; AC: 90 kva, 115/200v, 3 phase, 400 Hz.

AIR STARTING UNITS:

GTC-85/GTE-85	120 lbs/min @ 45 psi.
MSU-200NAW/AU47A-8	204 lbs/min @ 56 psia.
WELLS AIR START SYSTEM	180 lbs/min @ 75 psi or 120 lbs/min @ 45 psi. Simultaneous multiple start capability.

COMBINED AIR AND ELECTRICAL STARTING UNITS:

NCPP-105/RCPT	180 lbs/min @ 75 psi or 120 lbs/min @ 45 psi. 700 amp, 28v DC. 120/208v, 400 Hz AC, 30 kva.
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ARMY JMSU

59B2-1B	28v, 7.5 kw, 280 amp.
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OTHER JMSU

ELECTRICAL STARTING UNITS (DND):

CE12	AC 115/200v, 140 kva, 400 Hz, 3 phase
CE13	AC 115/200v, 60 kva, 400 Hz, 3 phase
CE14	AC/DC 115/200v, 140 kva, 400 Hz, 3 phase, 28vDC, 1500 amp
CE15	DC 22-35v, 500 amp continuous 1100 amp intermittent
CE16	DC 22-35v, 500 amp continuous 1100 amp intermittent soft start

AIR STARTING UNITS (DND):

CA2	ASA 45.5 psig, 116.4 lb/min
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COMBINED AIR AND ELECTRICAL STARTING UNITS (DND)

CEA1	AC 120/208v, 60 kva, 400 Hz, 3 phase DC 28v, 75 amp AIR 112.5 lb/min, 47 psig
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ELECTRICAL STARTING UNITS (OTHER)

C-26	28v 45kw 115-200v 15kw 380-800 Hz 1 phase 2 wire
C-26-B, C-26-C	28v 45kw Split Bus 115-200v 15kw 380-800 Hz 1 phase 2 wire
E3	DC 28v/10kw

AIR STARTING UNITS (OTHER):

A4	40 psi/2 lb/sec (LPAS Mk12, Mk12L, Mk12A, Mk1, Mk2B)
MA-1	150 Air HP; 115 lb/min 50 psia
MA-2	250 Air HP; 150 lb/min 75 psia

CARTRIDGE:

MRU-4A	USAF
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Legend 11. Airport/Facility Directory.

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AIRPORT/FACILITY DIRECTORY LEGEND

FUEL—MILITARY

Fuel available through US Military Base supply, DESC Into-Plane Contracts and/or reciprocal agreement is listed first and is followed by (MIL). At commercial airports where Into-Plane contracts are in place, the name of the refueling agent is shown. Military fuel should be used first if it is available. When military fuel cannot be obtained but Into-Plane contract fuel is available, Government aircraft must refuel with the contract fuel and applicable refueling agent to avoid any breach in contract terms and conditions. Fuel not available through the above is shown preceded by NC (no contract). When fuel is obtained from NC sources, local purchase procedures must be followed. The US Military Aircraft Identaplates DD Form 1896 (Jet Fuel), DD Form 1897 (Avgas) and AF Form 1246 (Avgas) are used at military installations only. The US Government Aviation Into-Plane Reimbursement (AIR) Card (currently issued by AWCARD) is the instrument to be used to obtain fuel under a DESC Into-Plane Contract and for NC purchases if the refueling agent at the commercial airport accepts the AWCARD. A current list of contract fuel locations is available online at https://che.energy.dla.mil/va_cbf. See legend item 14 for fuel code and description.

SUPPORTING FLUIDS AND SYSTEMS—MILITARY

CODE:

ADI Anti-Detonation Injection Fluid—Reciprocating Engine Aircraft.
W Water Thrust Augmentation—Jet Aircraft.
WAI Water-Alcohol Injection Type, Thrust Augmentation—Jet Aircraft.
SP Single Point Refueling.
PRESAIR Air Compressors rated 3,000 PSI or more.
De-Ice Anti-Icing/De-Icing/Deicing Fluid (MIL-A-8243).

OXYGEN:

LPOK Low pressure oxygen servicing.
HPOK High pressure oxygen servicing.
LHOK Low and high pressure oxygen servicing.
LOK Liquid oxygen servicing.
OBRB Oxygen replacement bottles. (Maintained primarily at Naval stations for use in aircraft where oxygen can be replenished only by replacement of cylinders.)
OK Indicates oxygen servicing when type of servicing is unknown.
NOTE: Combinations of above items is used to indicate complete oxygen servicing available;
LHOKRB Low and high pressure oxygen servicing and replacement bottles;
LPOKRB Low pressure oxygen replacement bottles only, etc.

NOTE: Aircraft will be serviced with oxygen procured under military specifications only. Aircraft will not be serviced with medical oxygen.

NITROGEN:

LPNIT — Low pressure nitrogen servicing.
HPNIT — High pressure nitrogen servicing.
LHPNIT — Low and high pressure nitrogen servicing.

OIL—MILITARY

US AVIATION OILS (MIL SPECS):

CODE	GRADE TYPE
C-119	1065, Reciprocating Engine Oil (MIL-L-6082)
C-117	1100, Reciprocating Engine Oil (MIL-L-6082)
C-117+	1100, C-117 plus cyclohexanone (MIL-L-6082)
C-129	1065, (Dispersant), Reciprocating Engine Oil (MIL-L-22851 Type II)
C-128	1100, (Dispersant), Reciprocating Engine Oil (MIL-L-22851 Type II)
C-132	1005, Jet Engine Oil (MIL-L-6081)
C-139	1010, Jet Engine Oil (MIL-L-6081)
C-147	None, MIL-L-6085A Lubricating Oil, Instrument, Synthetic
C-148	None, MIL-L-7808 (Synthetic Base) Turbine Engine Oil
C-149	None, Aircraft Turbine Engine Synthetic, 7.5c St
C-155	None, MIL-L-6085C, Aircraft, Medium Grade
C-156	None, MIL-L-23699 (Synthetic Base), Turboprop and Turbojet Engines
JOAP/SOAP	Joint Oil Analysis Program. JOAP support is furnished during normal duty hours, other times on request. (JOAP and SOAP programs provide essentially the same service, JOAP is now the standard joint service supported program.)

TRANSIENT ALERT (TRANSALERT)—MILITARY

Trans Alert service is considered to include all services required for normal aircraft turn-around, e.g., servicing (fuel, oil, oxygen, etc.), debriefing to determine requirements for maintenance, minor maintenance, inspection and parking assistance of transient aircraft. Drag chute repack, specialized maintenance, or extensive repairs will be provided within the capabilities and priorities of the base. Delays can be anticipated after normal duty hours/holidays/weekends regardless of the hours of transient maintenance operation. Pilots should not expect aircraft to be serviced for TURN-AROUNDS during time periods when servicing or maintenance manpower is not available. In the case of airports not operated exclusively by US military, the servicing indicated by the remarks will not always be available for US military aircraft. When transient alert services are not shown, facilities are unknown. **NO PRIORITY BASIS**—means that transient alert services will be provided only after all the requirements for mission/critical assigned aircraft have been accomplished.

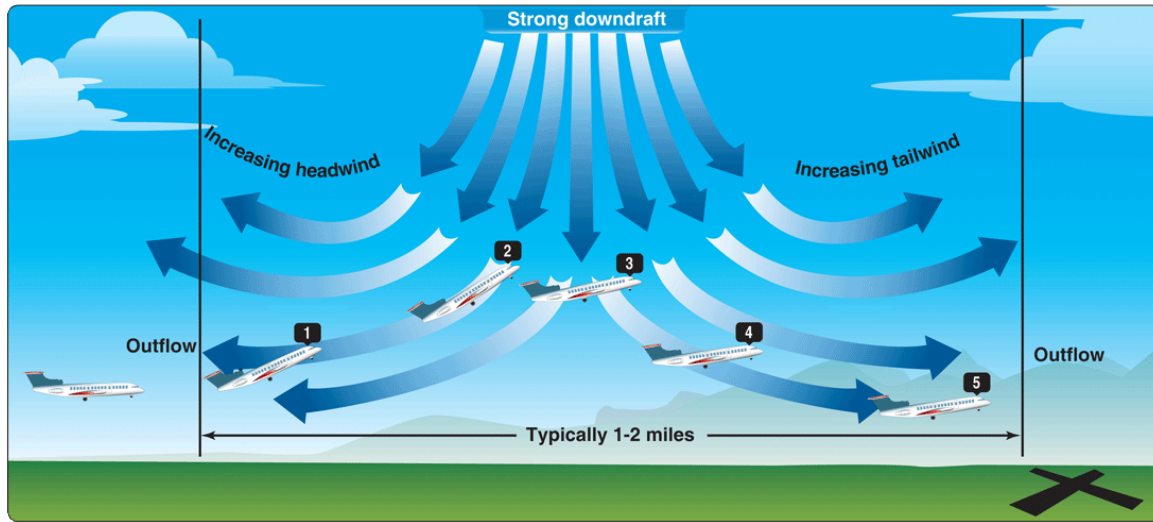


Figure 13. Microburst Section Chart.

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AIRPORT/FACILITY DIRECTORY LEGEND

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23 | AIRPORT REMARKS

The Attendance Schedule is the months, days and hours the airport is actually attended. Airport attendance does not mean watchman duties or telephone accessibility, but rather an attendant or operator on duty to provide at least minimum services (e.g., repairs, fuel, transportation).

Airport Remarks have been grouped in order of applicability. Airport remarks are limited to those items of information that are determined essential for operational use, i.e., conditions of a permanent or indefinite nature and conditions that will remain in effect for more than 30 days concerning aeronautical facilities, services, maintenance available, procedures or hazards, knowledge of which is essential for safe and efficient operation of aircraft. Information concerning permanent closing of a runway or taxiway will not be shown. A note "See Special Notices" shall be applied within this remarks section when a special notice applicable to the entry is contained in the Special Notices section of this publication.

Parachute Jumping indicates parachute jumping areas associated with the airport. See Parachute Jumping Area section of this publication for additional information.

Landing Fee indicates landing charges for private or non-revenue producing aircraft. In addition, fees may be charged for planes that remain over a couple of hours and buy no services, or at major airline terminals for all aircraft.

Note: Unless otherwise stated, remarks including runway ends refer to the runway's approach end.

24 | MILITARY REMARKS

Joint Civil/Military airports contain both Airport Remarks and Military Remarks. Military Remarks published for these airports are applicable only to the military. Military and joint Military/Civil airports contain only Military Remarks. Remarks contained in this section may not be applicable to civil users. When both sets of remarks exist, the first set is applicable to the primary operator of the airport. Remarks applicable to a tenant on the airport are shown preceded by the tenant organization, i.e., (A) (AF) (N) (ANG), etc. Military airports operate 24 hours unless otherwise specified. Airport operating hours are listed first (airport operating hours will only be listed if they are different than the airport attended hours or if the attended hours are unavailable) followed by pertinent remarks in order of applicability. Remarks will include information on restrictions, hazards, traffic pattern, noise abatement, customs/agriculture/immigration, and miscellaneous information applicable to the Military.

Type of restrictions:

CLOSED: When designated closed, the airport is restricted from use by all aircraft unless stated otherwise. Any closure applying to specific type of aircraft or operation will be so stated. USN/USMC/USAF airports are considered closed during non-operating hours. Closed airports may be utilized during an emergency provided there is a safe landing area.

OFFICIAL BUSINESS ONLY: The airfield is closed to all transient military aircraft for obtaining routine services such as fueling, passenger drop off or pickup, practice approaches, parking, etc. The airfield may be used by aircrews and aircraft if official government business (including civilian) must be conducted on or near the airfield and prior permission is received from the airfield manager.

AF OFFICIAL BUSINESS ONLY OR NAVY OFFICIAL BUSINESS ONLY: Indicates that the restriction applies only to service indicated.

PRIOR PERMISSION REQUIRED (PPR): Airport is closed to transient aircraft unless approval for operation is obtained from the appropriate commander through Chief, Airfield Management or Airfield Operations Officer. Official Business or PPR does not preclude the use of US Military airports as an alternate for IFR flights. If a non-US military airport is used as a weather alternate and requires a PPR, the PPR must be requested and confirmed before the flight departs. The purpose of PPR is to control volume and flow of traffic rather than to prohibit it. Prior permission is required for all aircraft requiring transient alert service outside the published transient alert duty hours. All aircraft carrying hazardous materials must obtain prior permission as outlined in AFM 11-204, AR 95-27, OPNAVINST 3710.7.

Note: OFFICIAL BUSINESS ONLY AND PPR restrictions are not applicable to Special Air Mission (SAM) or Special Air Resource (SPAR) aircraft providing person or persons on board are designated Code 6 or higher as explained in AFJMAN 11-213, AR 95-11, OPNAVINST 3722-8J. Official Business Only or PPR do not preclude the use of the airport as an alternate for IFR flights.

25 | AIRPORT MANAGER

The phone number of the airport manager.

26 | WEATHER DATA SOURCES

Weather data sources will be listed alphabetically followed by their assigned frequencies and/or telephone number and hours of operation.

ASOS—Automated Surface Observing System. Reports the same as an AWOS-3 plus precipitation identification and intensity, and freezing rain occurrence;

AWOS—Automated Weather Observing System

AWOS-A—reports altimeter setting (all other information is advisory only).

AWOS-AV—reports altimeter and visibility.

AWOS-1—reports altimeter setting, wind data and usually temperature, dew point and density altitude.

AWOS-2—reports the same as AWOS-1 plus visibility.

AWOS-3—reports the same as AWOS-1 plus visibility and cloud/ceiling data.

AWOS-3P reports the same as the AWOS-3 system, plus a precipitation identification sensor.

AWOS-3PT reports the same as the AWOS-3 system, plus precipitation identification sensor and a thunderstorm/lightning reporting capability.

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AIRPORT/FACILITY DIRECTORY LEGEND

AWOS-3T reports the same as AWOS-3 system and includes a thunderstorm/lightning reporting capability.

See AIM, Basic Flight Information and ATC Procedures for detailed description of Weather Data Sources.

AWOS-4—reports same as AWOS-3 system, plus precipitation occurrence, type and accumulation, freezing rain, thunderstorm and runway surface sensors.

HIWAS—See RADIO AIDS TO NAVIGATION

LAWRS—Limited Aviation Weather Reporting Station where observers report cloud height, weather, obstructions to vision, temperature and dewpoint (in most cases), surface wind, altimeter and pertinent remarks.

LLWAS—Indicates a Low Level Wind Shear Alert System consisting of a center field and several field perimeter anemometers.

SAWRS—identifies airports that have a Supplemental Aviation Weather Reporting Station available to pilots for current weather information.

SWSL—Supplemental Weather Service Location providing current local weather information via radio and telephone.

TOWER—Indicates airports that have Terminal Doppler Weather Radar.

WSP—Indicates airports that have Weather System Processor.

When the automated weather source is broadcast over an associated airport NAVAID frequency (see NAVAID line), it shall be indicated by a bold ASOS, AWOS, or HIWAS followed by the frequency, identifier and phone number, if available.

27 COMMUNICATIONS

Airport terminal control facilities and radio communications associated with the airport shall be shown. When the call sign is not the same as the airport name the call sign will be shown. Frequencies shall normally be shown in descending order with the primary frequency listed first. Frequencies will be listed, together with sectorization indicated by outbound radials, and hours of operation. Communications will be listed in sequence as follows:

Single Frequency Approach (SFA), Common Traffic Advisory Frequency (CTAF), Aeronautical Advisory Stations (UNICOM) or (AUNICOM), and Automatic Terminal Information Service (ATIS) along with their frequency is shown, where available, on the line following the heading "COMMUNICATIONS." When the CTAF and UNICOM frequencies are the same, the frequency will be shown as CTAF/UNICOM 122.8.

The FSS telephone nationwide is toll free 1-800-WX-BRIEF (1-800-992-7433). When the FSS is located on the field it will be indicated as "on aprt". Frequencies available at the FSS will follow in descending order. Remote Communications Outlet (RCO) providing service to the airport followed by the frequency and FSS RADIO name will be shown when available. FSS's provide information on airport conditions, radio aids and other facilities, and process flight plans. Airport Advisory Service (AAS) is provided on the CTAF by FSS's for select non-tower airports or airports where the tower is not in operation.

(See AIM, Para 4-1-9 Traffic Advisory Practices at Airports Without Operating Control Towers or AC 90-42C.)

Aviation weather briefing service is provided by FSS specialists. Flight and weather briefing services are also available by calling the telephone numbers listed.

Remote Communications Outlet (RCO)—An unmanned air/ground communications facility that is remotely controlled and provides UHF or VHF communications capability to extend the service range of an FSS.

Civil Communications Frequencies—Civil communications frequencies used in the FSS air/ground system are operated on 122.0, 122.2, 123.6; emergency 121.5; plus receive-only on 122.1.

- 122.0 is assigned as the Enroute Flight Advisory Service frequency at selected FSS RADIO outlets.
- 122.2 is assigned as a common enroute frequency.
- 123.6 is assigned as the airport advisory frequency at select non-tower locations. At airports with a tower, FSS may provide airport advisories on the tower frequency when tower is closed.
- 122.1 is the primary receive-only frequency at VOR's.
- Some FSS's are assigned 50 MHz frequencies in the 122-126 MHz band (eg. 122.45). Pilots using the FSS A/G system should refer to this directory or appropriate charts to determine frequencies available at the FSS or remote facility through which they wish to communicate.

Emergency frequency 121.5 and 243.0 are available at all Flight Service Stations, most Towers, Approach Control and RADAR facilities.

Frequencies published followed by the letter "T" or "R", indicate that the facility will only transmit or receive respectively on that frequency. All radio aids to navigation (NAVAID) frequencies are transmit only.

TERMINAL SERVICES

SFA—Single Frequency Approach.

CTAF—A program designed to get all vehicles and aircraft at airports without an operating control tower on a common frequency.

ATIS—A continuous broadcast of recorded non-control information in selected terminal areas.

D-ATIS—Digital ATIS provides ATIS information in text form outside the standard reception range of conventional ATIS via landline & data link communications and voice message within range of existing transmitters.

AUNICOM—Automated UNICOM is a computerized, command response system that provides automated weather, radio check capability and airport advisory information selected from an automated menu by microphone clicks.

UNICOM—A non-government air/ground radio communications facility which may provide airport information.

PTD—Pilot to Dispatcher.

APP CON—Approach Control. The symbol  indicates radar approach control.

TOWER—Control tower.

GCA—Ground Control Approach System.

GND CON—Ground Control.

AIRPORT/FACILITY DIRECTORY LEGEND

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GCO—Ground Communication Outlet—An unstaffed, remotely controlled, ground/ground communications facility. Pilots at uncontrolled airports may contact ATC and FSS via VHF to a telephone connection to obtain an instrument clearance or class a VFR or IFR flight plan. They may also get an updated weather briefing prior to takeoff. Pilots will use four "key clicks" on the VHF radio to contact the appropriate ATC facility or six "key clicks" to contact the FSS. The GCO system is intended to be used only on the ground.

DEP CON—Departure Control. The symbol  indicates radar departure control.

CLNC DEL—Clearance Delivery.

CPDLC—Controller Pilot Data Link Communication. FANS ATC data communication capability from the aircraft to the ATC Data Link system.

PRE TAXI CLNC—Pre taxi clearance.

VFR ADVSY SVC—VFR Advisory Service. Service provided by Non-Radar Approach Control. Advisory Service for VFR aircraft (upon a workload basis) c/c APP CON.

COMD POST—Command Post followed by the operator call sign in parenthesis.

PMSV—Pilot-to-Metro Service call sign, frequency and hours of operation, when full service is other than continuous. PMSV installations at which weather observation service is available shall be indicated, following the frequency and/or hours of operation as "Wx obsn svc 1900-0000Z" or "other times" may be used when no specific time is given. PMSV facilities manned by forecasters are considered "Full Service". PMSV facilities manned by weather observers are listed as "Limited Service".

OPS—Operations followed by the operator call sign in parenthesis.

CON

RANGE

FLT FLW—Flight Following

MEDVAC

NOTE: Communication frequencies followed by the letter "X" indicate frequency available on request.

(28) AIRSPACE

Information concerning Class B, C, and part-time D and E surface area airspace shall be published with effective times, if available.

CLASS B—Radar Sequencing and Separation Service for all aircraft in CLASS B airspace.

CLASS C—Separation between IFR and VFR aircraft and sequencing of VFR arrivals to the primary airport.

TRSA—Radar Sequencing and Separation Service for participating VFR Aircraft within a Terminal Radar Service Area.

Class C, D, and E airspace described in this publication is that airspace usually consisting of a 5 NM radius core surface area that begins at the surface and extends upward to an altitude above the airport elevation (charted in MSL for Class C and Class D).

Class E surface airspace normally extends from the surface up to but not including the overlying controlled airspace.

When part-time Class C or Class D airspace defaults to Class E, the core surface area becomes Class E. This will be formatted as:

AIRSPACE: CLASS C s/c "times" c/c APP CON other times CLASS E;

or

AIRSPACE: CLASS D s/c "times" other times CLASS E.

When a part-time Class C, Class D or Class E surface area defaults to Class G, the core surface area becomes Class G up to, but not including, the overlying controlled airspace. Normally, the overlying controlled airspace is Class E airspace beginning at either 700' or 1200' AGL and may be determined by consulting the relevant VFR Sectional or Terminal Area Charts. This will be formatted as:

AIRSPACE: CLASS C s/c "times" c/c APP CON other times CLASS G, with CLASS E 700' (or 1200') AGL & abv;

or

AIRSPACE: CLASS D s/c "times" other times CLASS G with CLASS E 700' (or 1200') AGL & abv;

or

AIRSPACE: CLASS E s/c "times" other times CLASS G with CLASS E 700' (or 1200') AGL & abv.

NOTE: AIRSPACE S/C "TIMES" INCLUDE ALL ASSOCIATED ARRIVAL EXTENSIONS. Surface area arrival extensions for instrument approach procedures become part of the primary core surface area. These extensions may be either Class D or Class E airspace and are effective concurrent with the times of the primary core surface area. For example, when a part-time Class C, Class D or Class E surface area defaults to Class G, the associated arrival extensions will default to Class G at the same time. When a part-time Class C or Class D surface area defaults to Class E, the arrival extensions will remain in effect as Class E airspace.

NOTE: CLASS E AIRSPACE BEGINNING UPWARD FROM 700 FEET OR MORE ABOVE THE SURFACE, DESIGNATED IN CONJUNCTION WITH AN AIRPORT WITH AN APPROVED INSTRUMENT PROCEDURE.

Class E 700' AGL (shown as magenta vignette on sectional charts) and 1200' AGL (blue vignette) areas are designated when necessary to provide controlled airspace for transitioning to/from the terminal and enroute environments. Unless otherwise specified, these 700'/1200' AGL Class E airspace areas remain in effect continuously, regardless of airport operating hours or surface area status. These transition areas should not be confused with surface areas or arrival extensions.

(See Chapter 3, AIRSPACE, in the Aeronautical Information Manual for further details)

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AIRPORT/FACILITY DIRECTORY LEGEND

(29) VOR TEST FACILITY (VOT)

The VOT transmits a signal which provided users a convenient means to determine the operational status and accuracy of an aircraft VOR receiver while on the ground. Ground based VOTs and the associated frequency shall be shown when available. VOTs are also shown with identifier, frequency and referenced remarks in the VOR Receiver Check section in the back of this publication.

(30) RADIO AIDS TO NAVIGATION

The Airport/Facility Directory section of the Chart Supplement lists, by facility name, all Radio Aids to Navigation that appear on FAA, Aeronautical Information Services Visual or IFR Aeronautical Charts and those upon which the FAA has approved an Instrument Approach Procedure, with exception of selected TACANs. All VOR, VORTAC, TACAN and ILS equipment in the National Airspace System has an automatic monitoring and shutdown feature in the event of malfunction. Unmonitored, as used in this publication, for any navigational aid, means that monitoring personnel cannot observe the malfunction or shutdown signal. The NAVAID NOTAM file identifier will be shown as "NOTAM FILE IAD" and will be listed on the Radio Aids to Navigation line. When two or more NAVAIDS are listed and the NOTAM file identifier is different from that shown on the Radio Aids to Navigation line, it will be shown with the NAVAID listing. NOTAM file identifiers for ILSs and its components (e.g., NDB (LOM) are the same as the associated airports and are not repeated. Automated Surface Observing System (ASOS), Automated Weather Observing System (AWOS), and Hazardous Inflight Weather Advisory Service (HIWAS) will be shown when this service is broadcast over selected NAVAIDS.

NAVAID information is tabulated as indicated in the following sample:

NAME (L) ABVORTAC		TACAN/DME Channel		Geographical Position		Site Elevation		Magnetic Variation	
Class	Frequency	Identifier		Bearing and distance facility to center of airport		Automated Weather Observing System		Hazardous Inflight Weather Service	
117.55	ABE	Chan 122(Y)	N40°43.60' W75°27.30'	180° 4.1 NM to fld.	1110/8E	AWOS. HIWAS.			
VOR unusable 020°-060° byd 26 NM blo 3,500'									
Restriction within the normal altitude/range of the navigational aid (See primary alphabetical listing for restrictions on VORTAC and VOR/DME).									

Note: Those DME channel numbers with a (Y) suffix require TACAN to be placed in the "Y" mode to receive distance information.

HIWAS—Hazardous Inflight Weather Advisory Service is a continuous broadcast of inflight weather advisories including summarized SIGMETs, convective SIGMETs, AIRMETs and urgent PIREPs. HIWAS is presently broadcast over selected VORs throughout the U.S.
ASR/PAR—Indicates that Surveillance (ASR) or Precision (PAR) radar instrument approach minimums are published in the U.S. Terminal Procedures. Only part-time hours of operation will be shown.

AIRPORT/FACILITY DIRECTORY LEGEND

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RADIO CLASS DESIGNATIONS VOR/DME/TACAN Standard Service Volume (SSV) Classifications

SSV Class	Altitudes	Distance (NM)
(T) Terminal	1,000' to 12,000'	25
(L) Low Altitude	1,000' to 18,000'	40
(H) High Altitude	1,000' to 14,500'	40
	14,500' to 18,000'	100
	18,000' to 45,000'	130
	45,000' to 60,000'	100

NOTE: Additionally, (H) facilities provide (L) and (T) service volume and (L) facilities provide (T) service. Altitudes are with respect to the station's site elevation. Coverage is not available in a cone of airspace directly above the facility.

The term VOR is, operationally, a general term covering the VHF omnidirectional bearing type of facility without regard to the fact that the power, the frequency protected service volume, the equipment configuration, and operational requirements may vary between facilities at different locations.

AB _____	Automatic Weather Broadcast.
DF _____	Direction Finding Service.
DME _____	UHF standard (TACAN compatible) distance measuring equipment.
DME(Y) _____	UHF standard (TACAN compatible) distance measuring equipment that requires TACAN to be placed in the "Y" mode to receive DME.
GS _____	Glide slope.
H _____	Non-directional radio beacon (homing), power 50 watts to less than 2,000 watts (50 NM at all altitudes).
HH _____	Non-directional radio beacon (homing), power 2,000 watts or more (75 NM at all altitudes).
H-SAB _____	Non-directional radio beacons providing automatic transcribed weather service.
ILS _____	Instrument Landing System (voice, where available, on localizer channel).
IM _____	Inner marker.
LDA _____	Localizer Directional Aid.
LMM _____	Compass locator station when installed at middle marker site (15 NM at all altitudes).
LOM _____	Compass locator station when installed at outer marker site (15 NM at all altitudes).
MH _____	Non-directional radio beacon (homing) power less than 50 watts (25 NM at all altitudes).
MM _____	Middle marker.
OM _____	Outer marker.
S _____	Simultaneous range homing signal and/or voice.
SABH _____	Non-directional radio beacon not authorized for IFR or ATC. Provides automatic weather broadcasts.
SDF _____	Simplified Direction Facility.
TACAN _____	UHF navigational facility-omnidirectional course and distance information.
VOR _____	VHF navigational facility-omnidirectional course only.
VOR/DME _____	Collocated VOR navigational facility and UHF standard distance measuring equipment.
VORTAC _____	Collocated VOR and TACAN navigational facilities.
W _____	Without voice on radio facility frequency.
Z _____	VHF station location marker at a LF radio facility.

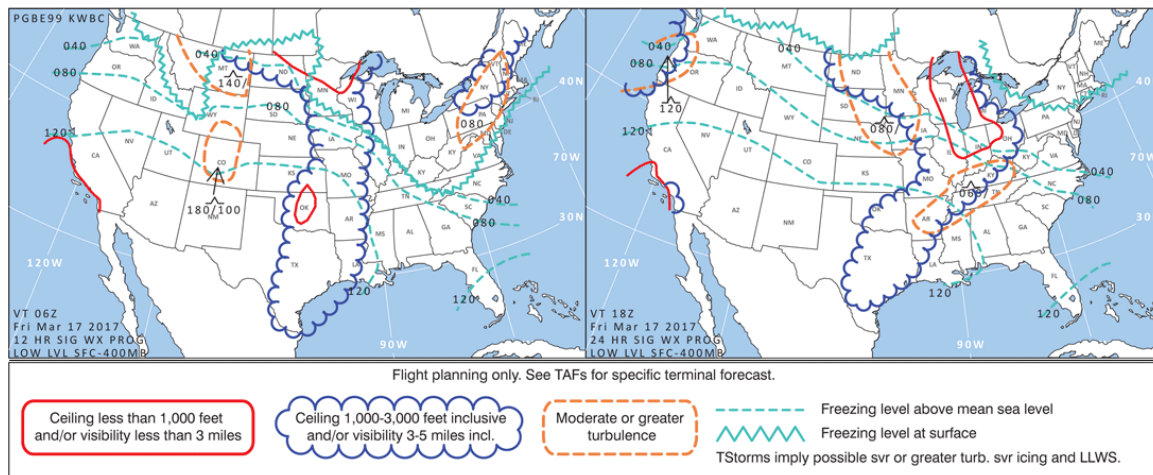


Figure 18. U.S. Low-Level Significant Weather Prognostic Charts.

CASA

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AIRPORT/FACILITY DIRECTORY LEGEND **ILS FACILITY PERFORMANCE CLASSIFICATION CODES**

Codes define the ability of an ILS to support instrument operations. The two portions of the code represent Official Category and farthest point along a Category I, II, or III approach that the Localizer meets Category III structure tolerances.

Official Category: I, II, or III; the lowest minimum on published or unpublished procedures supported by the ILS.

Farthest point of satisfactory Category III Localizer performance for Category I, II, or III approaches: A – 4 NM prior to runway threshold, B – 3500 ft prior to runway threshold, C – glide angle dependent but generally 750–1000 ft prior to threshold, T – runway threshold, D – 3000 ft after runway threshold, and E – 2000 ft prior to stop end of runway.

ILS information is tabulated as indicated in the following sample:

ILS/DME 108.5 I-ORL Chan 22 Rwy 18. Class IIE. LOW HERNY NDB.

ILS Facility Performance
Classification Code

FREQUENCY PAIRING TABLE

VHF FREQUENCY	TACAN CHANNEL	VHF FREQUENCY	TACAN CHANNEL	VHF FREQUENCY	TACAN CHANNEL	VHF FREQUENCY	TACAN CHANNEL
108.10	18X	108.55	22Y	111.05	47Y	114.85	95Y
108.30	20X	108.65	23Y	111.15	48Y	114.95	96Y
108.50	22X	108.75	24Y	111.25	49Y	115.05	97Y
108.70	24X	108.85	25Y	111.35	50Y	115.15	98Y
108.90	26X	108.95	26Y	111.45	51Y	115.25	99Y
109.10	28X	109.05	27Y	111.55	52Y	115.35	100Y
109.30	30X	109.15	28Y	111.65	53Y	115.45	101Y
109.50	32X	109.25	29Y	111.75	54Y	115.55	102Y
109.70	34X	109.35	30Y	111.85	55Y	115.65	103Y
109.90	36X	109.45	31Y	111.95	56Y	115.75	104Y
110.10	38X	109.55	32Y	112.05	57Y	115.85	105Y
110.30	40X	109.65	33Y	112.15	58Y	115.95	106Y
110.50	42X	109.75	34Y	112.25	59Y	116.05	107Y
110.70	44X	109.85	35Y	112.35	60Y	116.15	108Y
110.90	46X	109.95	36Y	112.45	61Y	116.25	109Y
111.10	48X	110.05	37Y	112.55	62Y	116.35	110Y
111.30	50X	110.15	38Y	112.65	63Y	116.45	111Y
111.50	52X	110.25	39Y	112.75	64Y	116.55	112Y
111.70	54X	110.35	40Y	112.85	65Y	116.65	113Y
111.90	56X	110.45	41Y	112.95	66Y	116.75	114Y
108.05	17Y	110.55	42Y	113.05	67Y	116.85	115Y
108.15	18Y	110.65	43Y	113.15	68Y	116.95	116Y
108.25	19Y	110.75	44Y	113.25	69Y	117.05	117Y
108.35	20Y	110.85	45Y	113.35	70Y	117.15	118Y
108.45	21Y	110.95	46Y	113.45	71Y	117.25	119Y

FREQUENCY PAIRING TABLE

The following is a list of paired VOR/ILS VHF frequencies with TACAN channels.

TACAN CHANNEL	VHF FREQUENCY	TACAN CHANNEL	VHF FREQUENCY	TACAN CHANNEL	VHF FREQUENCY	TACAN CHANNEL	VHF FREQUENCY
2X	134.5	25X	108.80	36X	109.90	47X	111.00
2Y	134.55	25Y	108.85	36Y	109.95	47Y	111.05
11X	135.4	26X	108.90	37X	110.00	48X	111.10
11Y	135.45	26Y	108.95	37Y	110.05	48Y	111.15
12X	135.5	27X	109.00	38X	110.10	49X	111.20
12Y	135.55	27Y	109.05	38Y	110.15	49Y	111.25
17X	108.00	28X	109.10	39X	110.20	50X	111.30
17Y	108.05	28Y	109.15	39Y	110.25	50Y	111.35
18X	108.10	29X	109.20	40X	110.30	51X	111.40
18Y	108.15	29Y	109.25	40Y	110.35	51Y	111.45
19X	108.20	30X	109.30	41X	110.40	52X	111.50
19Y	108.25	30Y	109.35	41Y	110.45	52Y	111.55
20X	108.30	31X	109.40	42X	110.50	53X	111.60
20Y	108.35	31Y	109.45	42Y	110.55	53Y	111.65
21X	108.40	32X	109.50	43X	110.60	54X	111.70
21Y	108.45	32Y	109.55	43Y	110.65	54Y	111.75
22X	108.50	33X	109.60	44X	110.70	55X	111.80
22Y	108.55	33Y	109.65	44Y	110.75	55Y	111.85
23X	108.60	34X	109.70	45X	110.80	56X	111.90
23Y	108.65	34Y	109.75	45Y	110.85	56Y	111.95
24X	108.70	35X	109.80	46X	110.90	57X	112.00
24Y	108.75	35Y	109.85	46Y	110.95	57Y	112.05

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TACAN CHANNEL	VHF FREQUENCY	TACAN CHANNEL	VHF FREQUENCY	TACAN CHANNEL	VHF FREQUENCY	TACAN CHANNEL	VHF FREQUENCY
58X	112.10	77X	113.00	96X	114.90	115X	116.80
58Y	112.15	77Y	113.05	96Y	114.95	115Y	116.85
59X	112.20	78X	113.10	97X	115.00	116X	116.90
59Y	112.25	78Y	113.15	97Y	115.05	116Y	116.95
60X	113.30	79X	113.20	98X	115.10	117X	117.00
60Y	113.35	79Y	113.25	98Y	115.15	117Y	117.05
61X	113.40	80X	113.30	99X	115.20	118X	117.10
61Y	113.45	80Y	113.35	99Y	115.25	118Y	117.15
62X	113.50	81X	113.40	100X	115.30	119X	117.20
62Y	113.55	81Y	113.45	100Y	115.35	119Y	117.25
63X	113.60	82X	113.50	101X	115.40	120X	117.30
63Y	113.65	82Y	113.55	101Y	115.45	120Y	117.35
64X	113.70	83X	113.60	102X	115.50	121X	117.40
64Y	113.75	83Y	113.65	102Y	115.55	121Y	117.45
65X	113.80	84X	113.70	103X	115.60	122X	117.50
65Y	113.85	84Y	113.75	103Y	115.65	122Y	117.55
66X	113.90	85X	113.80	104X	115.70	123X	117.60
66Y	113.95	85Y	113.85	104Y	115.75	123Y	117.65
67X	114.00	86X	113.90	105X	115.80	124X	117.70
67Y	114.05	86Y	113.95	105Y	115.85	124Y	117.75
68X	114.10	87X	114.00	106X	115.90	125X	117.80
68Y	114.15	87Y	114.05	106Y	115.95	125Y	117.85
69X	114.20	88X	114.10	107X	116.00	126X	117.90
69Y	114.25	88Y	114.15	107Y	116.05	126Y	117.95
70X	112.30	89X	114.20	108X	116.10		
70Y	112.35	89Y	114.25	108Y	116.15		
71X	112.40	90X	114.30	109X	116.20		
71Y	112.45	90Y	114.35	109Y	116.25		
72X	112.50	91X	114.40	110X	116.30		
72Y	112.55	91Y	114.45	110Y	116.35		
73X	112.60	92X	114.50	111X	116.40		
73Y	112.65	92Y	114.55	111Y	116.45		
74X	112.70	93X	114.60	112X	116.50		
74Y	112.75	93Y	114.65	112Y	116.55		
75X	112.80	94X	114.70	113X	116.60		
75Y	112.85	94Y	114.75	113Y	116.65		
76X	112.90	95X	114.80	114X	116.70		
76Y	112.95	95Y	114.85	114Y	116.75		

(31) **COMM/NAV/WEATHER REMARKS:** These remarks consist of pertinent information affecting the current status of communications, NAVAIDs and weather.

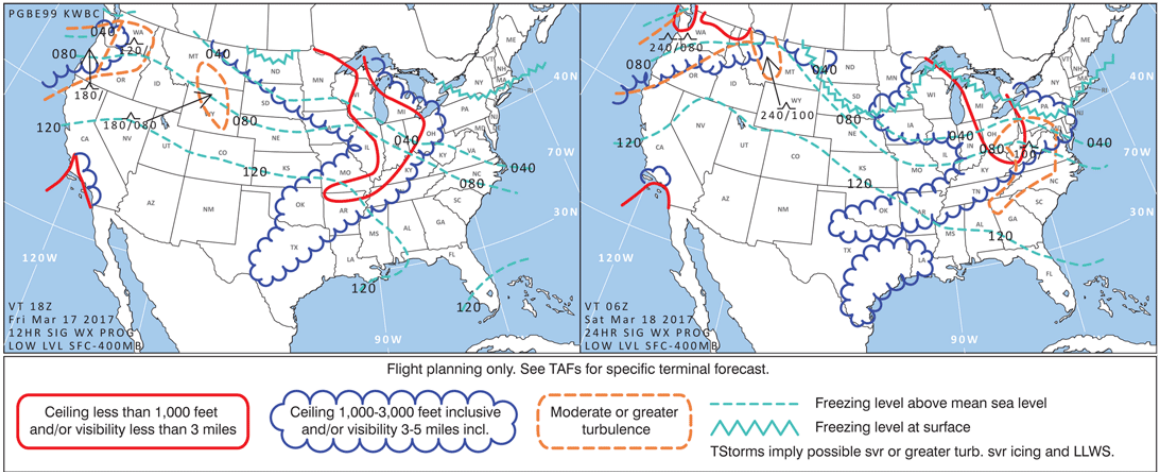


Figure 19. U.S. Low-Level Significant Weather Prognostic Charts. ©ASA

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TERMS/LANDING MINIMA DATA

IFR LANDING MINIMA

The United States Standard for Terminal Instrument Procedures (TERPS) is the approved criteria for formulating instrument approach procedures. Landing minima are established for six aircraft approach categories (ABCDE and COPTER). In the absence of COPTER MINIMA, helicopters may use the CAT A minima of other procedures.

LANDING MINIMA FORMAT

In this example airport elevation is 1179, and runway touchdown zone elevation is 1152.

	DA	Visibility (RVR 100's of feet)	Aircraft Approach Category HAT/HATh	
Category	A	B	C	D
S-ILS 27	1352/24	200	(200-½)	
S-LOC 27	1440/24	288	(300-½)	1440/50 288 (300-1)
CIRCLING	1540-1 361 (400-1)	1640-1 461 (500-1)	1640-1½ 461 (500-1½)	1740-2 561 (600-2)

MDA HAA Visibility in Statute Miles

Labels: Straight-in ILS to Runway 27, Straight-in with Glide Slope Inoperative or not used to Runway 27, All weather minimums in parentheses not applicable to Civil Pilots, Military Pilots refer to appropriate regulations.

COPTER MINIMA ONLY

CATEGORY	COPTER
H-176°	680-½ 363 (400-½)

Labels: Copter Approach Direction, Height of MDA/DA Above Landing Area (HAL), No circling minima are provided

RNAV (GPS) MINIMA EXAMPLE

CATEGORY	A	B	C	D
LPV DA	1540/24	258 (300-½)		
LNAV/VNAV DA	1600/24	318 (400-½)		1600/40 318 (400-¾)
LNAV MDA	1840/24 558 (600-½)		1840/50 558 (600-1)	1840/60 558 (600-1¼)
CIRCLING	1840-1 545 (600-1)		1840-1½ 545 (600-1½)	1860-2 565 (600-2)

NOTE: The **W** symbol indicates outages of the WAAS vertical guidance may occur daily at this location due to initial system limitations. WAAS NOTAMS for vertical outages are not provided for this approach. Use LNAV minima for flight planning at these locations, whether as a destination or alternate. For flight operations at these locations, when the WAAS avionics indicate that LNAV/VNAV or LPV service is available, then vertical guidance may be used to complete the approach using the displayed level of service. Should an outage occur during the procedure, reversion to LNAV minima may be required. As the WAAS coverage is expanded, the **W** will be removed.

RNAV minima are dependent on navigation equipment capability, as stated in the applicable AFM, AFMS, or other FAA approved document. See AIM paragraph 5-4-5, AC 90-105 and AC 90-107 for detailed requirements for each line of minima.

AIRCRAFT APPROACH CATEGORIES

Aircraft approach category indicates a grouping of aircraft based on a speed of VREF, if specified, or if VREF not specified, 1.3 VSO at the maximum certificated landing weight. VREF, VSO, and the maximum certificated landing weight are those values as established for the aircraft by the certification authority of the country of registry. Helicopters are Category A aircraft. An aircraft shall fit in only one category. However, if it is necessary to operate at a speed in excess of the upper limit of the speed range for an aircraft's category, the minima for the category for that speed shall be used. For example, an airplane which fits into Category B, but is circling to land at a speed of 145 knots, shall use the approach Category D minima. As an additional example, a Category A airplane (or helicopter) which is operating at 130 knots on a straight-in approach shall use the approach Category C minima. See following category limits:

MANEUVERING TABLE

Approach Category	A	B	C	D	E
Speed (Knots)	0-90	91-120	121-140	141-165	Abv 165

TERMS/LANDING MINIMA DATA

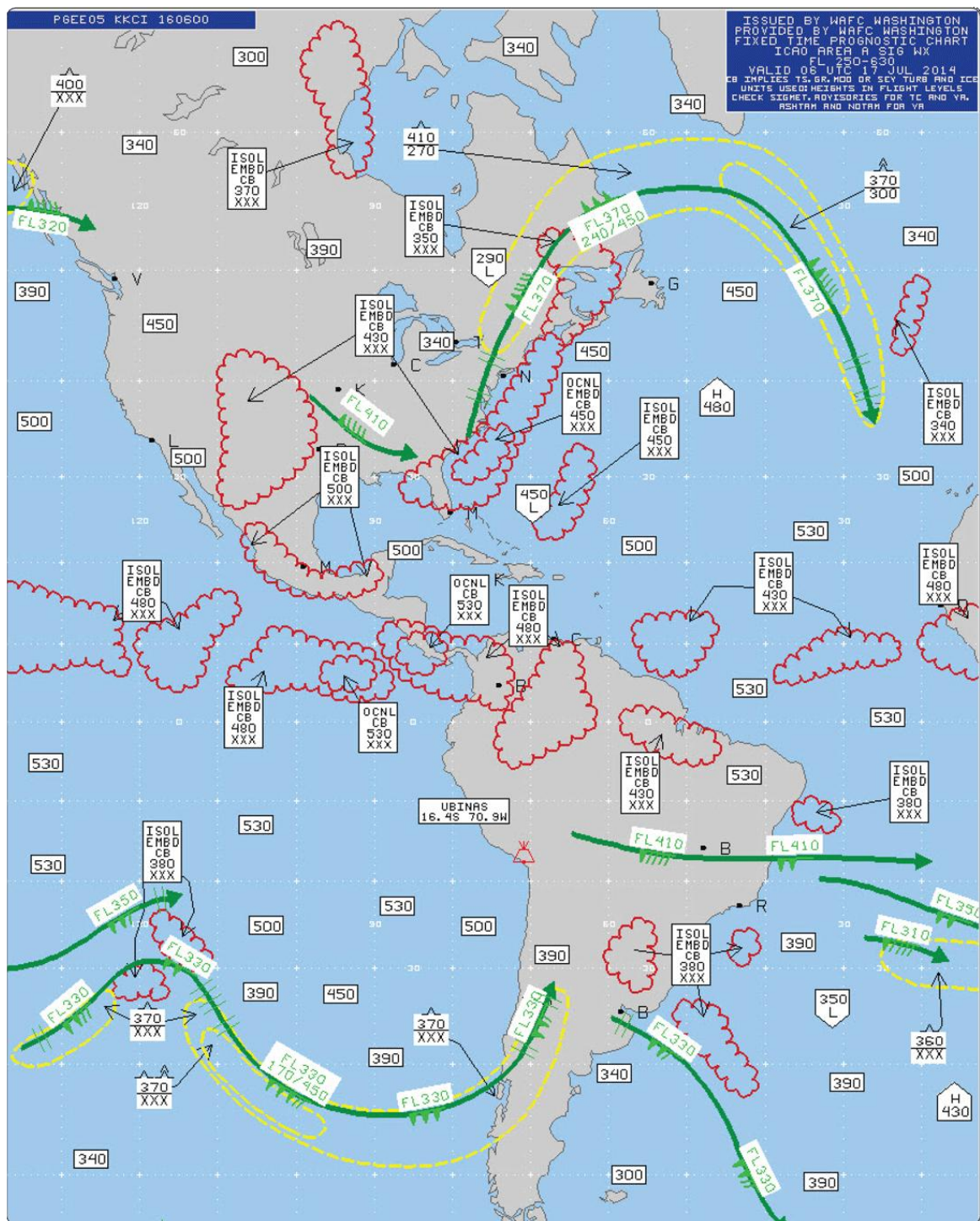


Figure 20. High-Level Significant Weather Prognostic Chart.

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TERMS/LANDING MINIMA DATA

CIRCLING APPROACH OBSTACLE PROTECTED AIRSPACE

The circling MDA provides vertical clearance from obstacles when conducting a circle-to-land maneuver within the obstacle protected area. Circling approach obstacle protected areas extend laterally and longitudinally from the centerlines and ends of all runways at an airport by the distances shown in the following tables. The areas are technically defined by the tangential connection of arcs drawn at the radius distance shown from each runway end.

STANDARD CIRCLING APPROACH MANEUVERING RADIUS

Circling approach protected areas developed prior to late 2012 used the radius distances shown in the following table, expressed in nautical miles (NM), dependent on aircraft approach category. The approaches using standard circling approach areas can be identified by the absence of the **C** symbol on the circling line of minima.

Circling MDA in feet MSL	Approach Category and Circling Radius (NM)				
	CAT A	CAT B	CAT C	CAT D	CAT E
All Altitudes	1.3	1.5	1.7	2.3	4.5

C EXPANDED CIRCLING APPROACH MANEUVERING AIRSPACE RADIUS

Circling approach protected areas developed after late 2012 use the radius distance shown in the following table, expressed in nautical miles (NM), dependent on aircraft approach category, and the altitude of the circling MDA, which accounts for true airspeed increase with altitude. The approaches using expanded circling approach areas can be identified by the presence of the **C** symbol on the circling line of minima.

Circling MDA in feet MSL	Approach Category and Circling Radius (NM)				
	CAT A	CAT B	CAT C	CAT D	CAT E
1000 or less	1.3	1.7	2.7	3.6	4.5
1001-3000	1.3	1.8	2.8	3.7	4.6
3001-5000	1.3	1.8	2.9	3.8	4.8
5001-7000	1.3	1.9	3.0	4.0	5.0
7001-9000	1.4	2.0	3.2	4.2	5.3
9001 and above	1.4	2.1	3.3	4.4	5.5

Comparable Values of RVR and Visibility

The following table shall be used for converting RVR to ground or flight visibility. For converting RVR values that fall between listed values, use the next higher RVR value; do not interpolate. For example, when converting 1800 RVR, use 2400 RVR with the resultant visibility of ½ mile.

RVR (feet)	Visibility (statute miles)	RVR (feet)	Visibility (statute miles)
1600	¼	4500	¾
2400	½	5000	1
3200	⅝	6000	1¼
4000	¾		

RADAR MINIMA

	RWY	GS/TCH/RPI	CAT	DA/ MDA-VIS	HAT/ HAA	CEIL-VIS	CAT	DA/ MDA-VIS	HAT/ HAA	CEIL-VIS
PAR	10	2.5°/42/1000	ABCDE	195/16	100	(100-¼)				
	28	2.5°/48/1068	ABCDE	187/16	100	(100-¼)				
ASR	10		ABC	560/40	463	(500-¾)	DE	560/50	463	(500-1)
	28		AB	600/50	513	(600-1)	CDE	600/60	513	(600-1¼)
CIR	10		AB	560-1¼	463	(500-1¼)	CDE	560-1½	463	(500-1½)
	28		AB	600-1¼	503	(600-1¼)	CDE	600-1½	503	(600-1½)

Visibility in Statute Miles

All minimums in parentheses not applicable to Civil Pilots. Military Pilots refer to appropriate regulations.

Radar Minima:

- Minima shown are the lowest permitted by established criteria. Pilots should consult applicable directives for their category of aircraft.
- The circling MDA and weather minima to be used are those for the runway to which the final approach is flown- not the landing runway. In the above RADAR MINIMA example, a category C aircraft flying a radar approach to runway 10, circling to land on runway 28, must use an MDA of 560 feet with weather minima of 500-1½.

NOTE: Military RADAR MINIMA may be shown with communications symbology that indicates emergency frequency monitoring capability by the radar facility as follows:

(E) VHF and UHF emergency frequencies monitored

(V) VHF emergency frequency (121.5) monitored

(U) UHF emergency frequency (243.0) monitored

Additionally, unmonitored frequencies which are available on request from the controlling agency may be annotated with an "x".

⚠ Alternate Minimums not standard. Civil users refer to tabulation. USA/USN/USAF pilots refer to appropriate regulations.

⚠ NA Alternate minimums are Not Authorized due to unmonitored facility or absence of weather reporting service.

⚠ Takeoff Minimums not standard and/or Departure Procedures are published. Refer to tabulation.

TERMS/LANDING MINIMA DATA

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GENERAL INFO

GENERAL INFORMATION

This publication is issued every 56 days and includes Standard Instrument Approach Procedures (SIAPs), Standard Instrument Departures (SIDs), Standard Terminal Arrivals (STARs), IFR Takeoff Minimums and (Obstacle) Departure Procedures (ODPs), IFR Alternate Minimums, and Radar Instrument Approach Minimums for use by civil and military aviation. The organization responsible for SIAPs, Radar Minimums, SIDs, STARs and graphic ODPs is identified in parentheses in the top margin of the procedure; e.g., (FAA), (FAA-O), (USA), (USAF), (USN). SIAPs with the (FAA) and (FAA-O) designation are regulated under 14 CFR, Part 97. SIAPs with the (FAA-O) designation have been developed under Other Transaction Agreement (OTA) by private providers and have been certified by the FAA. See 14 CFR, Part 91.175 (a) and the AIM for further details. 14 CFR, Part 91.175 (g) and the Special Notices section of the Airport/Facility Directory contains information on civil operations at military airports.

STANDARD TERMINAL ARRIVALS AND DEPARTURE PROCEDURES

The use of the associated codified STAR/DP and transition identifiers are requested of users when filing flight plans via teletype and are required for users filing flight plans via computer interface. It must be noted that when filing a STAR/DP with a transition, the first three coded characters of the STAR and the last three coded characters of the DP are replaced by the transition code. Examples: ACTON SIX ARRIVAL, file (AQN.AQN6); ACTON SIX ARRIVAL, EDNAS TRANSITION, file (EDNAS.AQN6). FREEHOLD THREE DEPARTURE, file (FREQ3.RBV), FREEHOLD THREE DEPARTURE, ELWOOD CITY TRANSITION, file (FREQ3.EWC).

RNAV DP and STAR. Effective March 15, 2007, these procedures, formerly identified as Type-A and Type-B, will be designated as RNAV 1 in accordance with amended Advisory Circular (AC) and ICAO terminology.

Refer to AC 90-100A U.S. TERMINAL AND EN ROUTE AREA NAVIGATION (RNAV) OPERATIONS and the Aeronautical Information Manual for additional guidance regarding these procedures.

Standard RNAV 1 Procedure Chart Notes

NOTE: RNAV 1

NOTE: DME/DME/IRU or GPS required

Some procedures may require use of GPS and will be identified by a "GPS required" note.

RNAV 1 Procedure Characteristics and Operations

1. Require use of an RNAV system with DME/DME/IRU, and/or GPS inputs.
2. Require use of a CDI, flight director, and/or autopilot, in lateral navigation mode, for flight guidance while operating on RNAV paths (track, course, or direct leg). Other methods providing an equivalent level of performance may be acceptable.
3. RNAV paths may start as low as 500 feet above airport elevation.

GENERAL INFO

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GENERAL INFO

ABBREVIATIONS

R.....	Radial
RA.....	Radio Altimeter setting height
RAIL.....	Runway Alignment Indicator Lights
RCLS.....	Runway Centerline Light System
REIL.....	Runway End Identifier Lights
RF.....	Radius-to-Fix
RLLS.....	Runway Lead-in Light System
RNAV.....	Area Navigation
RNP.....	Required Navigation Performance
RPI.....	Runway Point of Intercept(ion)
RRL.....	Runway Remaining Lights
Rwy.....	Runway
RVR.....	Runway Visual Range
S.....	Straight-in
SALS.....	Short Approach Light System
SSALR.....	Simplified Short Approach Light System with RAIL
SDF.....	Simplified Directional Facility
SM.....	Statute Mile
SOIA.....	Simultaneous Offset Instrument Approach
TAA.....	Terminal Arrival Area
TAC.....	TACAN
TCH.....	Threshold Crossing Height (height in feet Above Ground level)
TDZ.....	Touchdown Zone
TDZE.....	Touchdown Zone Elevation
TDZ/CL.....	Touchdown Zone and Runway Centerline Lighting
TDZL.....	Touchdown Zone Lights
THR.....	Threshold
THRE.....	Threshold Elevation
TODA.....	Takeoff Distance Available
TORA.....	Takeoff Run Available
TR.....	Track
VASI.....	Visual Approach Slope Indicator
VCOA.....	Visual Climb Over Airport
VDP.....	Visual Descent Point
VGSI.....	Visual Glide Slope Indicator
VNAV.....	Vertical Navigation
WAAS.....	Wide Area Augmentation System
WP/WPT.....	Waypoint (RNAV)

GENERAL INFO

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GENERAL INFO

ABBREVIATIONS

AAUP.....	Attention All Users Page	HAA.....	Height above Airport
ADF.....	Automatic Direction Finder	HAL.....	Height above Landing
AFIS.....	Automatic Flight Information Service	HAT.....	Height above Touchdown
ALS.....	Approach Light System	HATh.....	Height Above Threshold
ALSF.....	Approach Light System with Sequenced Flashing Lights	HGS.....	Head-up Guidance System
AP.....	Autopilot System	HIRL.....	High Intensity Runway Lights
APCH.....	Approach	HUD.....	Head-up Display
APP CON.....	Approach Control	IAF.....	Initial Approach Fix
ARR.....	Arrival	ICAO.....	International Civil Aviation Organization
ASOS.....	Automated Surface Observing System	IF.....	Intermediate Fix
ASR/PAR.....	Published Radar Minimums at this Airport	IM.....	Inner Marker
ATIS.....	Automatic Terminal Information Service	INT.....	Intersection
AUNICOM.....	Automated UNICOM	LAAS.....	Local Area Augmentation System
AWOS.....	Automated Weather Observing System	LDA.....	Localizer Type Directional Aid Landing
AZ.....	Azimuth	Ldg.....	Landing
BC.....	Back Course	LRL.....	Low Intensity Runway Lights
BND.....	Bound	LNAV.....	Lateral Navigation
C.....	Circling	LOC.....	Localizer
CAT.....	Category	LP.....	Localizer Performance
CCW.....	Counter Clockwise	LPV.....	Localizer Performance with Vertical Guidance
CDI.....	Course Deviation Indicator	LR.....	Lead Radial. Provides at least 2 NM (Copter 1 NM) of lead to assist in turning onto the intermediate/final course.
Chan.....	Channel	MAA.....	Maximum Authorized Altitude
CIR.....	Circling	MALS.....	Medium Intensity Approach Light System
CLNC DEL.....	Clearance Delivery	MALSR.....	Medium Intensity Approach Light System with RAIL
CNF.....	Computer Navigation Fix	MAP.....	Missed Approach Point
CTAF.....	Common Traffic Advisory Frequency	MDA.....	Minimum Descent Altitude
CW.....	Clockwise	MIRL.....	Medium Intensity Runway Lights
DA.....	Decision Altitude	MLS.....	Microwave Landing System
DER.....	Departure End of Runway	MM.....	Middle Marker
DH.....	Decision Height	MRA.....	Minimum Reception Altitude
DME.....	Distance Measuring Equipment	N/A.....	Not Applicable
DTHR.....	Displaced Threshold	NA.....	Not Authorized
ELEV.....	Elevation	NDB.....	Non-directional Radio Beacon
EMAS.....	Engineered Material Arresting System	NFD.....	National Flight Database
FAF.....	Final Approach Fix	NM.....	Nautical Mile
FD.....	Flight Director System	NoPT.....	No Procedure Turn Required (Procedure Turn shall not be executed without ATC clearance)
FM.....	Fan Marker	ODALS.....	Omnidirectional Approach Light System
FMS.....	Flight Management System	ODP.....	Obstacle Departure Procedure
GCO.....	Ground Communications Outlet	OM.....	Outer Marker
GLS.....	Ground Based Augmentation System Landing System	PRM.....	Precision Runway Monitor
GPI.....	Ground Point of Interception		
GPS.....	Global Positioning System		
GS.....	Glide Slope		

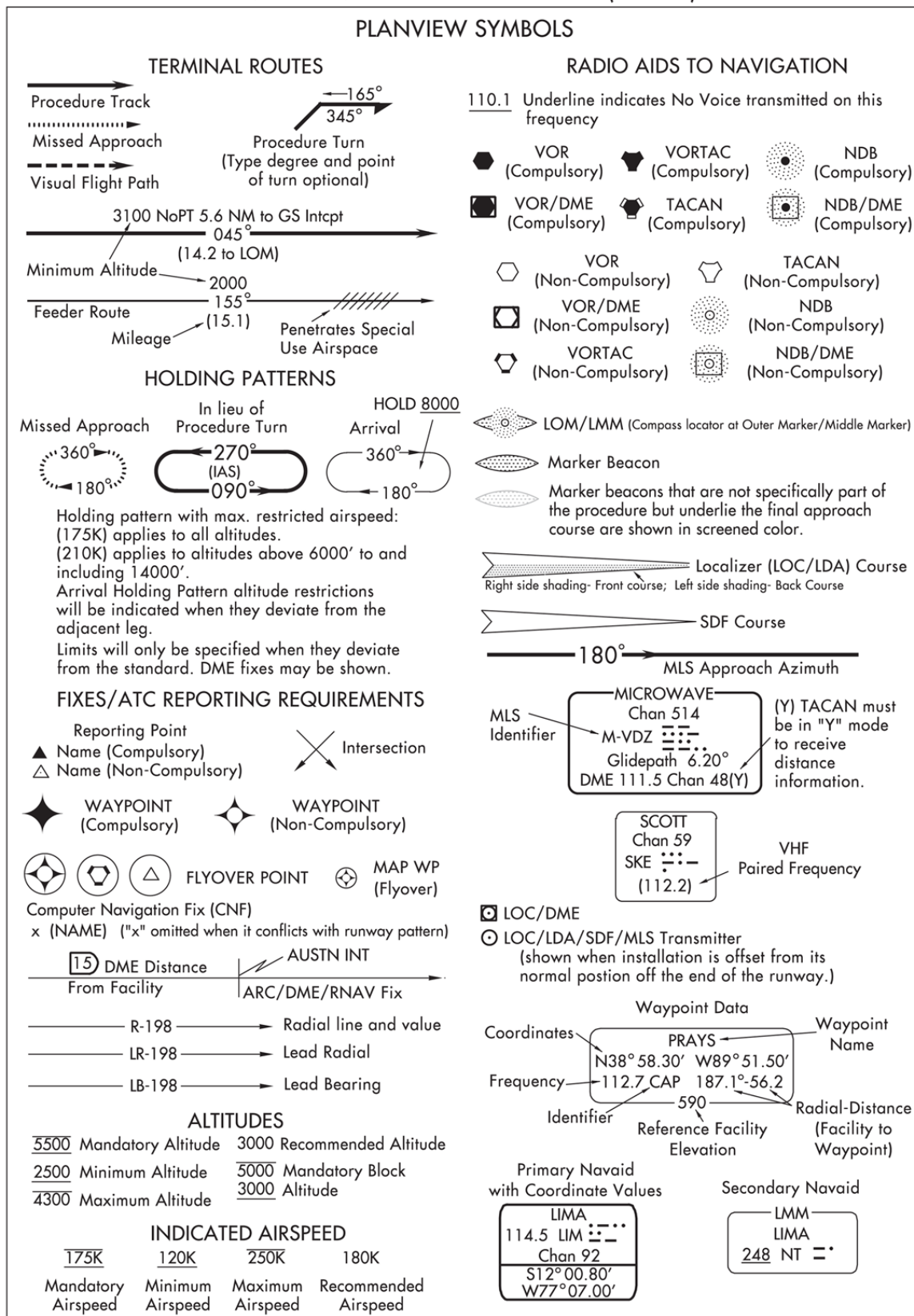
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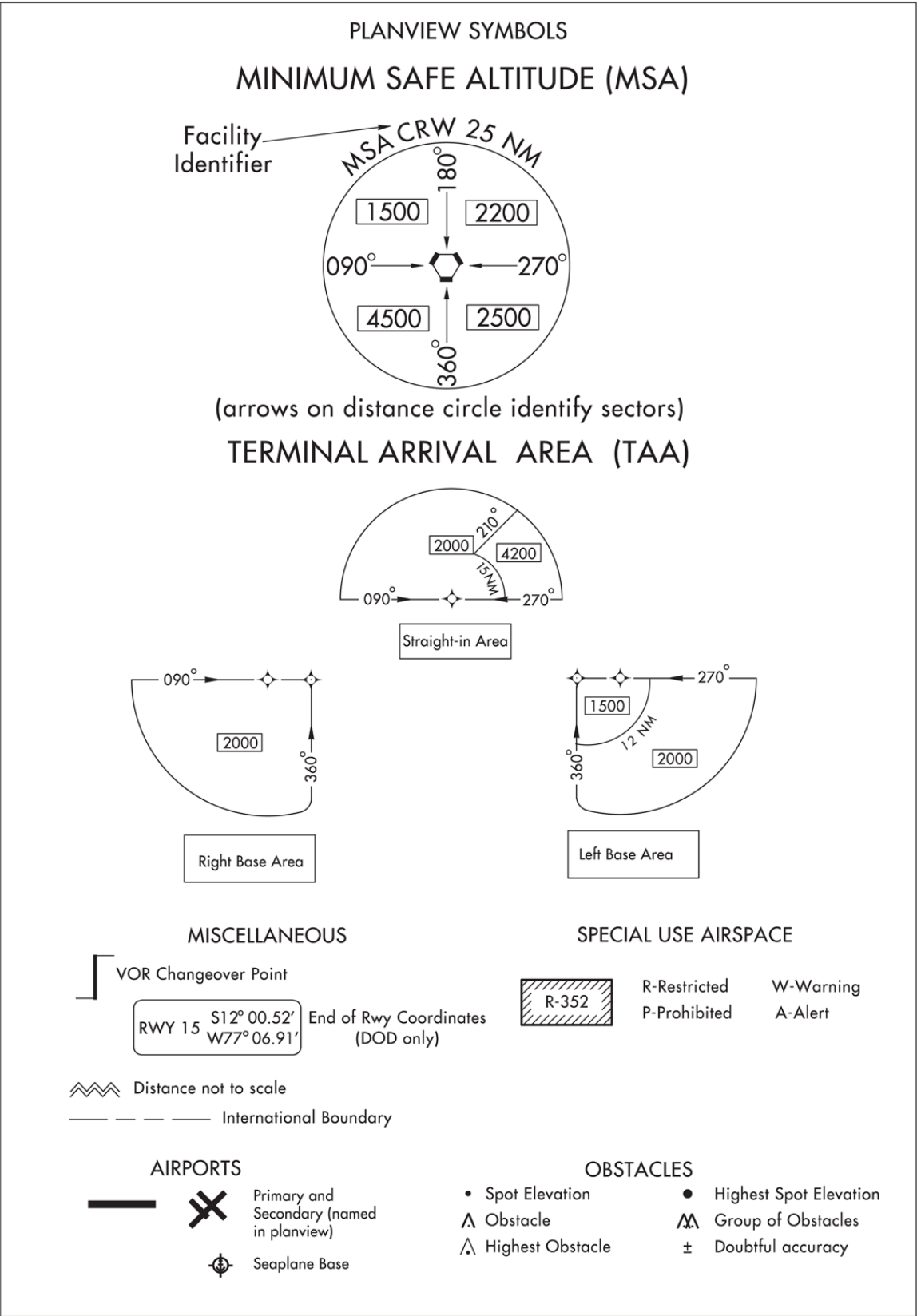
INSTRUMENT APPROACH PROCEDURES (CHARTS)



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LEGEND

INSTRUMENT APPROACH PROCEDURES (CHARTS)



LEGEND

Legend 25. Instrument Approach Procedures (Symbols).

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LEGEND

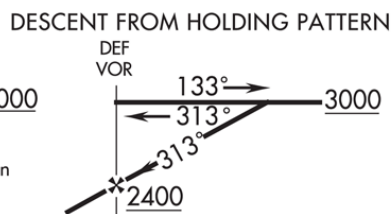
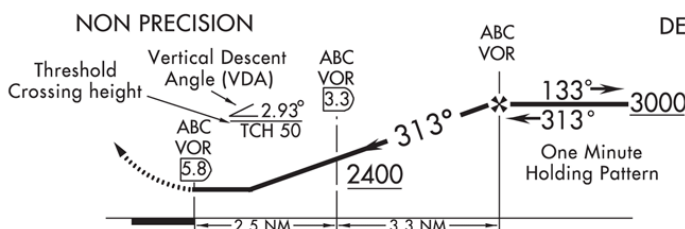
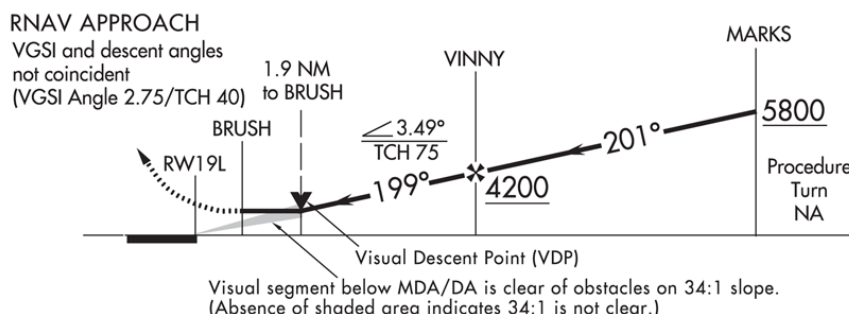
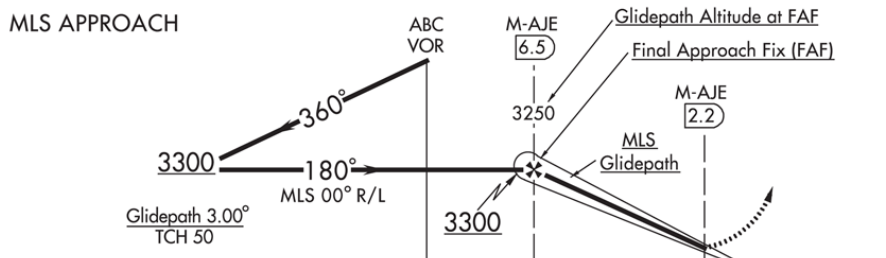
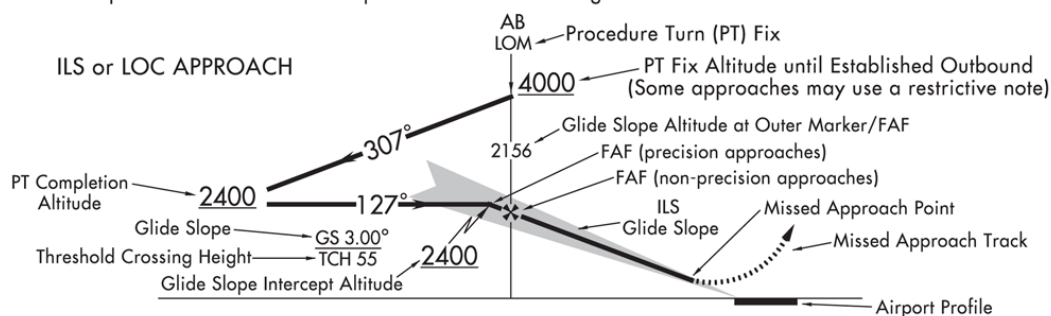
INSTRUMENT APPROACH PROCEDURES (CHARTS)

PROFILE VIEW

Two different methods are used for vertical guidance:

a. "GS" indicates an electronic glide slope or barometric vertical guidance is present. In the case of an Instrument Landing System (ILS) and Wide Area Augmentation System (WAAS) LPV approach procedures, an electronic signal provides vertical guidance. Barometric vertical guidance is provided for RNP and LNAV/VNAV instrument approach procedures. All ILS, LPV, RNP, and LNAV/VNAV will be in this format $\text{GS } 3.00^\circ$, located in the lower left or right corner.

b. Other charts without electronic or barometric vertical guidance will be in this format $\text{TCH } 55$, indicating a non-precision vertical descent angle to assist in preventing controlled flight into terrain. On Civil (FAA) procedures, this information is placed above or below the procedure track following the fix it is based on.



ALTITUDES

5500	Mandatory Altitude	3000	Recommended Altitude
2500	Minimum Altitude	5000	Mandatory Block Altitude
4300	Maximum Altitude	3000	Altitude

PROFILE SYMBOLS

	Glide Slope/Glide Path Intercept Altitude and final approach fix for vertically guided approach procedures.		Visual Flight Path
	Visual Descent Point (VDP)		Note: Facilities and waypoints are depicted as a solid vertical line while fixes and intersections are depicted as a dashed vertical line.

LEGEND

13346

CLIMB/DESCENT TABLE 10042

INSTRUMENT TAKEOFF OR APPROACH PROCEDURE CHARTS RATE OF CLIMB/DESCENT TABLE (ft. per min)												
A rate of climb/descent table is provided for use in planning and executing climbs or descents under known or approximate ground speed conditions. It will be especially useful for approaches when the localizer only is used for course guidance. A best speed, power, altitude combination can be programmed which will result in a stable glide rate and altitude favorable for executing a landing if minimums exist upon breakout. Care should always be exercised so that minimum descent altitude and missed approach point are not exceeded.												
CLIMB/ DESCENT ANGLE (degrees and tenths)	ft/NM	GROUND SPEED (knots)										
		60	90	120	150	180	210	240	270	300	330	360
2.0	210	210	320	425	530	635	743	850	955	1060	1165	1275
2.5	265	265	400	530	665	795	930	1060	1195	1325	1460	1590
VERTICAL PATH ANGLE	2.7	287	287	430	574	717	860	1003	1147	1290	1433	1576
	2.8	297	297	446	595	743	892	1041	1189	1338	1486	1635
	2.9	308	308	462	616	770	924	1078	1232	1386	1539	1693
	3.0	318	318	478	637	797	956	1115	1274	1433	1593	1752
	3.1	329	329	494	659	823	988	1152	1317	1481	1646	1810
	3.2	340	340	510	680	850	1020	1189	1359	1529	1699	2039
	3.3	350	350	526	701	876	1052	1227	1402	1577	1752	2103
	3.4	361	361	542	722	903	1083	1264	1444	1625	1805	2166
3.5	370	370	555	745	930	1115	1300	1485	1670	1860	2045	2230
4.0	425	425	640	850	1065	1275	1490	1700	1915	2125	2340	2550
4.5	480	480	715	955	1195	1435	1675	1915	2150	2390	2630	2870
5.0	530	530	795	1065	1330	1595	1860	2125	2390	2660	2925	3190
5.5	585	585	880	1170	1465	1755	2050	2340	2635	2925	3220	3510
6.0	640	640	960	1275	1595	1915	2235	2555	2875	3195	3510	3830
6.5	690	690	1040	1385	1730	2075	2425	2770	3115	3460	3805	4155
7.0	745	745	1120	1490	1865	2240	2610	2985	3355	3730	4105	4475
7.5	800	800	1200	1600	2000	2400	2800	3200	3600	4000	4400	4800
8.0	855	855	1280	1710	2135	2560	2990	3415	3845	4270	4695	5125
8.5	910	910	1360	1815	2270	2725	3180	3630	4085	4540	4995	5450
9.0	960	960	1445	1925	2405	2885	3370	3850	4330	4810	5295	5775
9.5	1015	1015	1525	2035	2540	3050	3560	4065	4575	5085	5590	6100
10.0	1070	1070	1605	2145	2680	3215	3750	4285	4820	5355	5890	6430

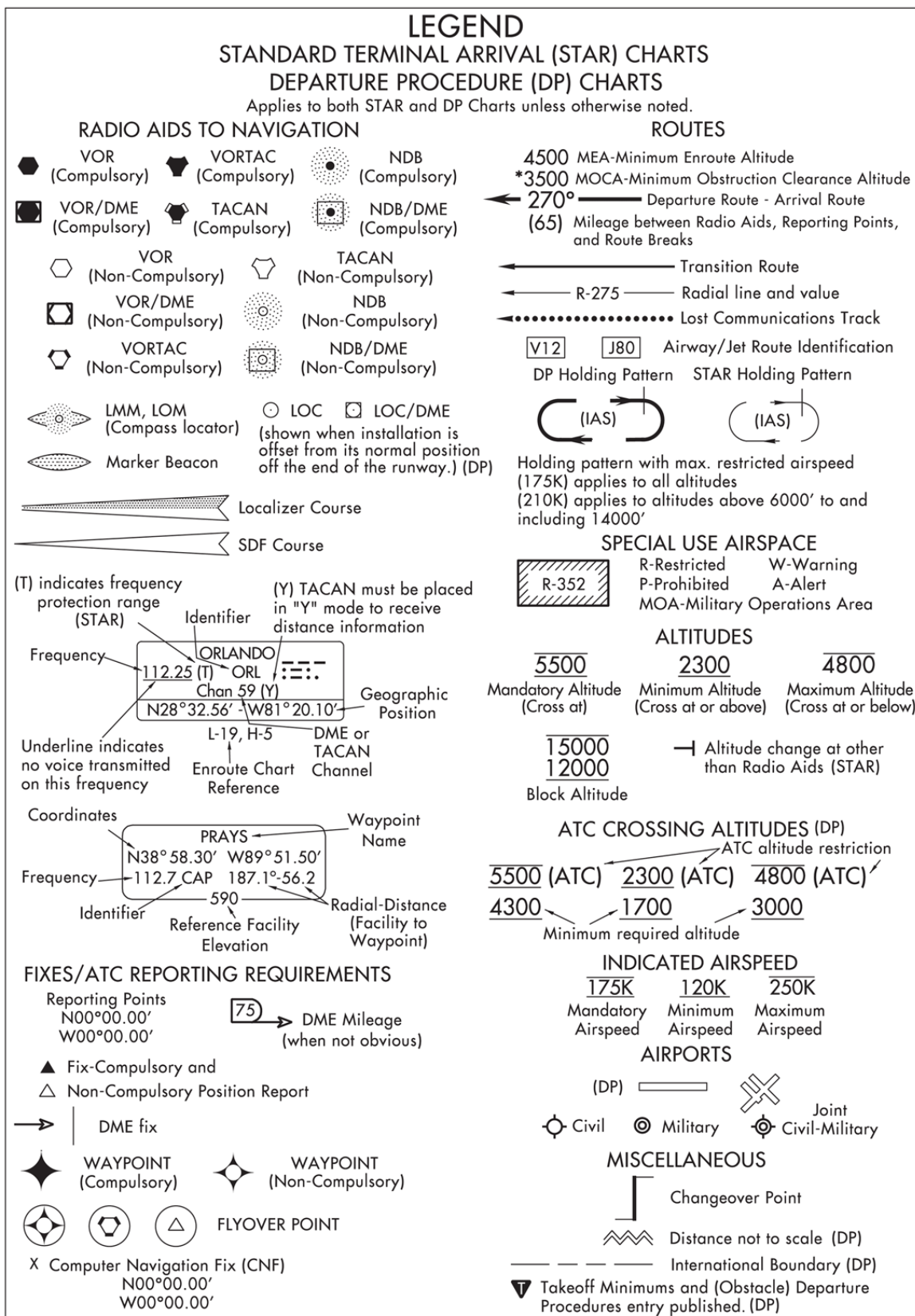
CLIMB/DESCENT TABLE 10042

Legend 27. Instrument Takeoff or Approach Procedures
Charts, Rate-of-Climb/Descent Table.

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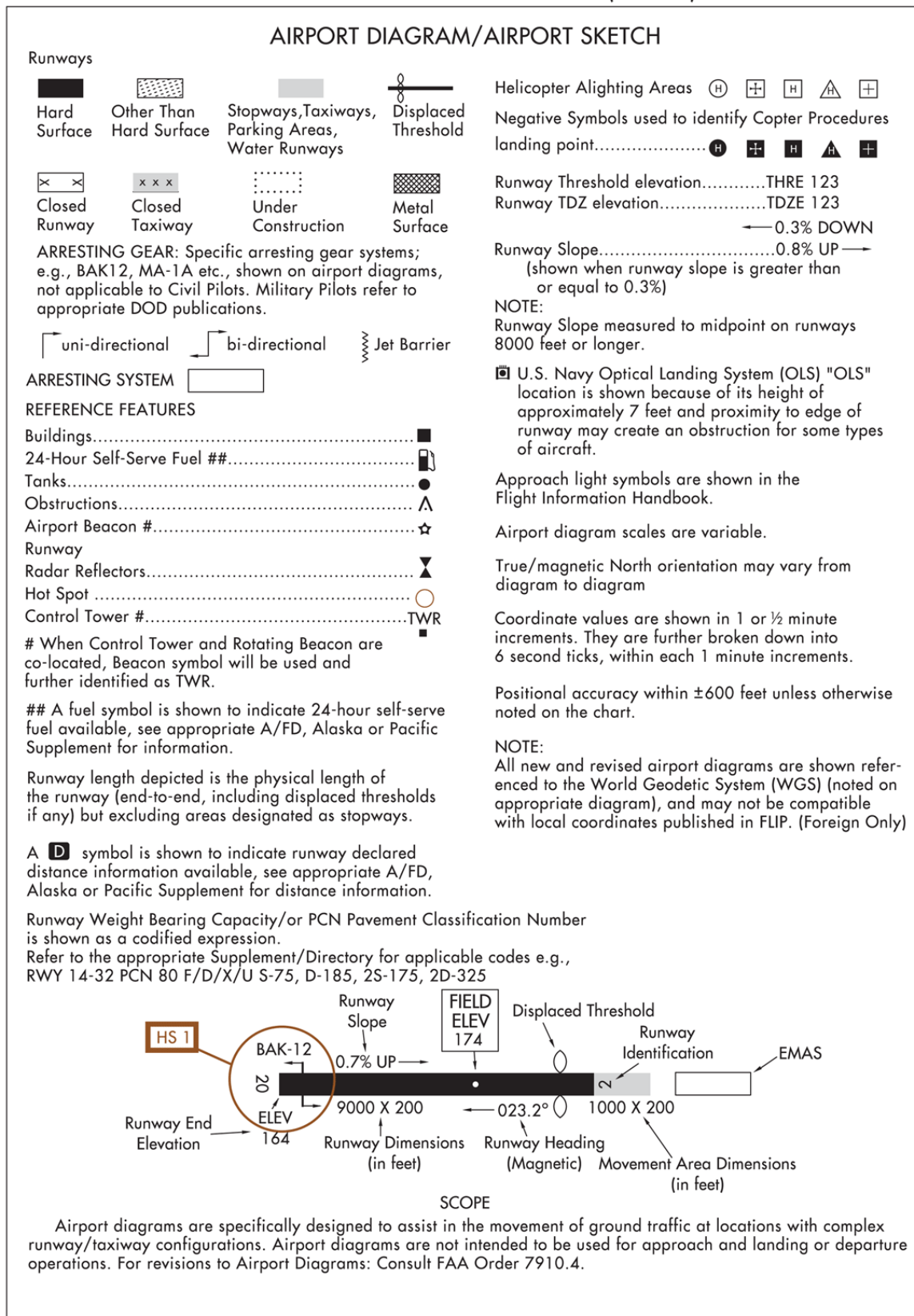
Legend 28. Standard Arrival/Departure Charts.

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LEGEND

INSTRUMENT APPROACH PROCEDURES (CHARTS)



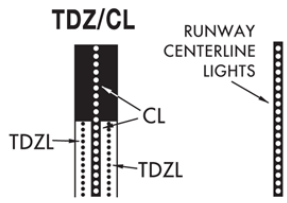
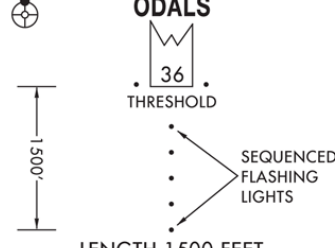
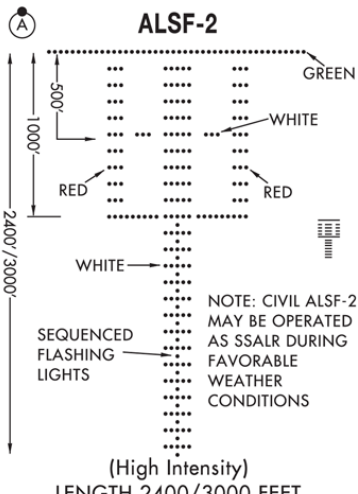
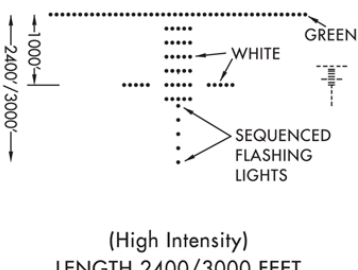
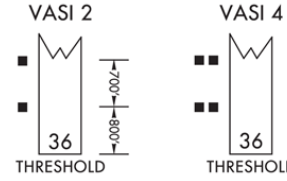
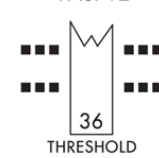
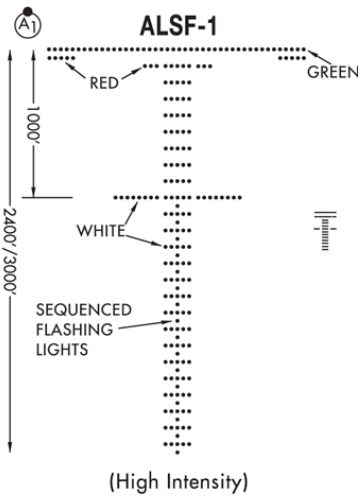
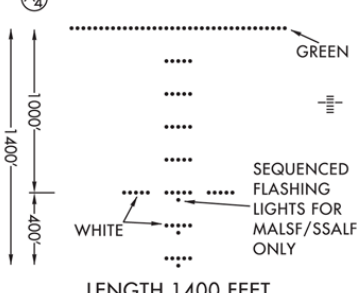
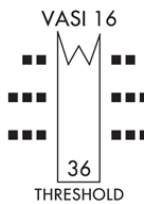
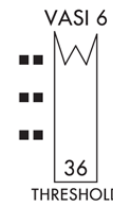
LEGEND

Legend 29. Airport Diagram.

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INSTRUMENT APPROACH PROCEDURES (CHARTS) APPROACH LIGHTING SYSTEM - UNITED STATES

Approach lighting and visual glide slope systems are indicated on the airport sketch by an identifier, e.g., (A₂), (V), etc. A dot "•" portrayed with approach lighting letter identifier indicates sequenced flashing lights (F) installed with the approach lighting system e.g., (A₁). Negative symbology, e.g., (A₁), (V) indicates Pilot Controlled Lighting (PCL).		
RUNWAY TOUCHDOWN ZONE AND CENTERLINE LIGHTING SYSTEMS  TDZL CL RUNWAY CENTERLINE LIGHTS AVAILABILITY of TDZ/CL will be shown by NOTE in SKETCH e.g. "TDZ/CL Rwy 15"	SHORT APPROACH LIGHTING SYSTEM (A₂) SALS/SALSF (High Intensity) SAME AS INNER 1500' OF ALSF-1	OMNIDIRECTIONAL APPROACH LIGHTING SYSTEM (A₂) ODALS  THRESHOLD 36 SEQUENCED FLASHING LIGHTS LENGTH 1500 FEET
APPROACH LIGHTING SYSTEM (A) ALSF-2  500' 1000' 2400/3000' RED WHITE GREEN SEQUENCED FLASHING LIGHTS NOTE: CIVIL ALSF-2 MAY BE OPERATED AS SSALR DURING FAVORABLE WEATHER CONDITIONS (High Intensity) LENGTH 2400/3000 FEET	SIMPLIFIED SHORT APPROACH LIGHTING SYSTEM with Runway Alignment Indicator Lights (A₃) SSALR  1000' 2400/3000' WHITE GREEN SEQUENCED FLASHING LIGHTS (High Intensity) LENGTH 2400/3000 FEET	(V) VISUAL APPROACH SLOPE INDICATOR VASI VISUAL APPROACH SLOPE INDICATOR WITH STANDARD THRESHOLD CLEARANCE PROVIDED. ALL LIGHTS WHITE — TOO HIGH FAR LIGHTS RED — ON GLIDE SLOPE NEAR LIGHTS WHITE — ON GLIDE SLOPE ALL LIGHTS RED — TOO LOW VASI 2 VASI 4  THRESHOLD 36 700' 800' VASI 12  THRESHOLD 36
APPROACH LIGHTING SYSTEM (A₁) ALSF-1  1000' 2400/3000' RED WHITE GREEN SEQUENCED FLASHING LIGHTS (High Intensity) LENGTH 2400/3000 FEET	MEDIUM INTENSITY (MALS and MALSF) OR SIMPLIFIED SHORT (SSALS and SSALF) APPROACH LIGHTING SYSTEMS (A₄)  1000' 1400' 400' WHITE GREEN SEQUENCED FLASHING LIGHTS FOR MALSF/SSALF ONLY LENGTH 1400 FEET	VASI 16  THRESHOLD 36
	MEDIUM INTENSITY APPROACH LIGHTING SYSTEM with Runway Alignment Indicator Lights (A₅) MALSR SAME LIGHT CONFIGURATION AS SSALR.	VASI 6  THRESHOLD 36

LEGEND

Legend 30. Approach Lighting Systems.

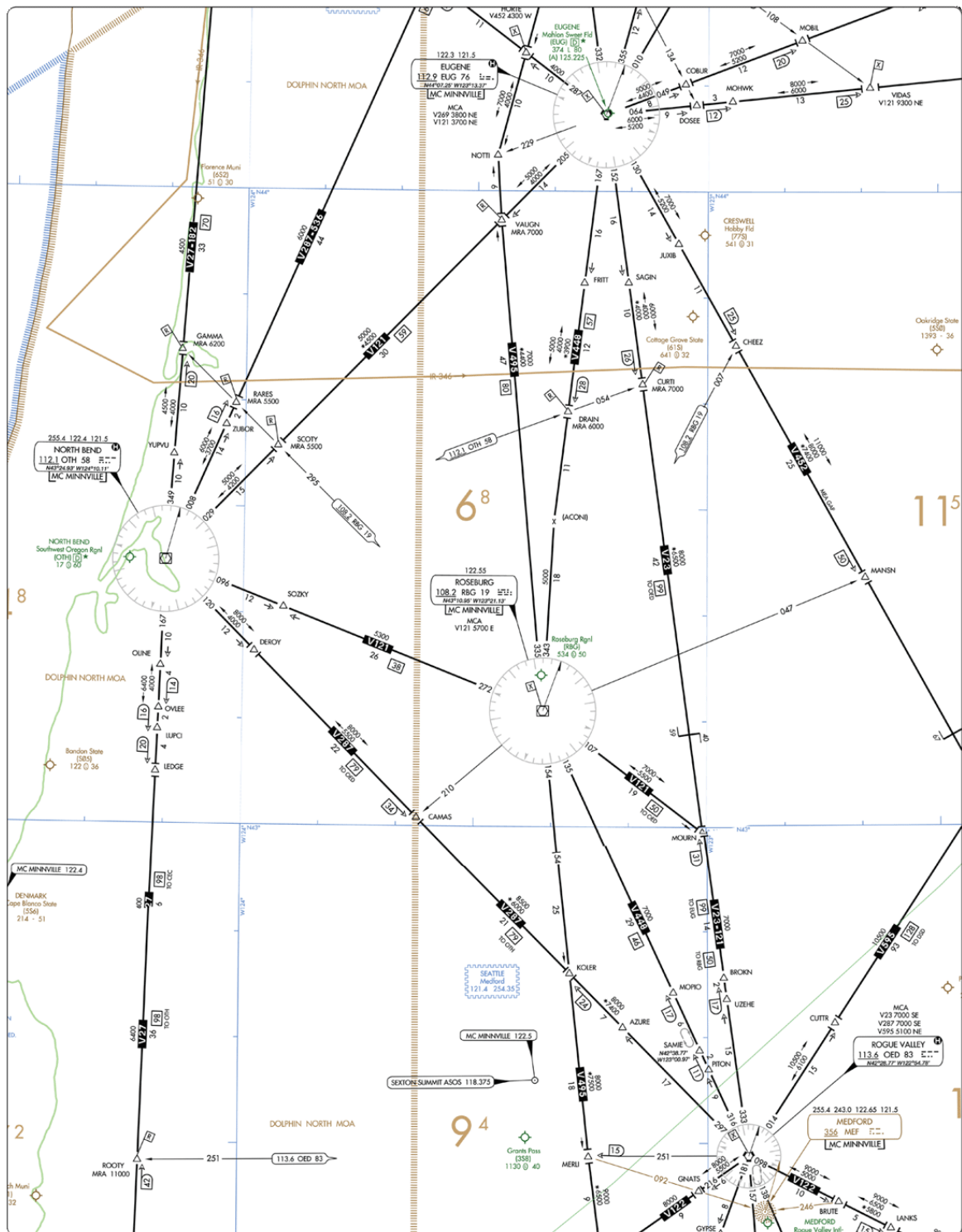
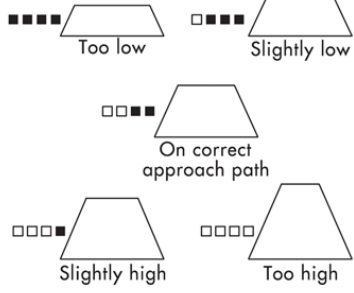
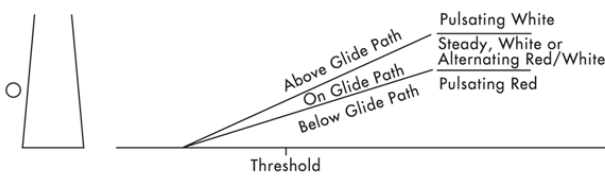
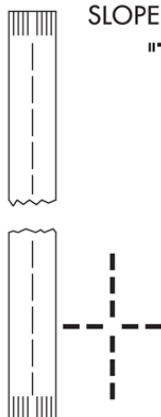
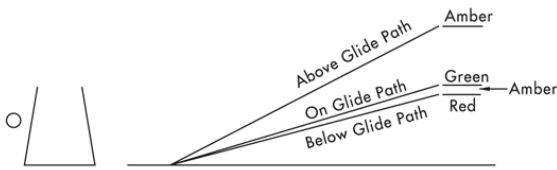
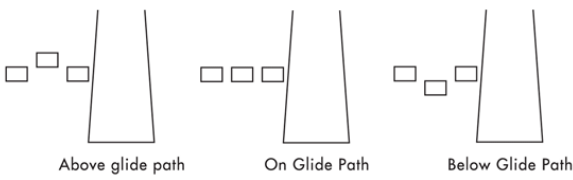


Figure 31. En Route Low-Alatitude Chart Segment.
*NOTE: Chart is not to scale and should not be used for navigation.
Chart is for testing purposes only.*

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LEGEND

INSTRUMENT APPROACH PROCEDURES (CHARTS)
APPROACH LIGHTING SYSTEM - UNITED STATES

Approach lighting and visual glide slope systems are indicated on the airport sketch by an identifier, (A₂), (V) etc. A dot "•" portrayed with approach lighting letter identifier indicates sequenced flashing lights (F) installed with the approach lighting system e.g., (A₁). Negative symbology, e.g., (A₁), (V) indicates Pilot Controlled Lighting (PCL).	
(P) PRECISION APPROACH PATH INDICATOR PAPI  Legend: □ White ■ Red	(V₂) PULSATING VISUAL APPROACH SLOPE INDICATOR PVASI  CAUTION: When viewing the pulsating visual approach slope indicators in the pulsating white or pulsating red sectors, it is possible to mistake this lighting aid for another aircraft or a ground vehicle. Pilots should exercise caution when using this type of system.
(V₁) "T"-VISUAL APPROACH SLOPE INDICATOR "T"-VASI  "T" ON BOTH SIDES OF RWY ALL LIGHTS VARIABLE WHITE. CORRECT APPROACH SLOPE- ONLY CROSS BAR VISIBLE. UPRIGHT "T"- FLY UP. INVERTED "T"- FLY DOWN. RED "T"- GROSS UNDERSHOOT.	(V₄) TRI-COLOR VISUAL APPROACH SLOPE INDICATOR TRCV  CAUTION: When the aircraft descends from green to red, the pilot may see a dark amber color during the transition from green to red.
	(V₅) ALIGNMENT OF ELEMENTS SYSTEMS APAP  Painted panels which may be lighted at night. To use the system the pilot positions the aircraft so the elements are in alignment.

LEGEND

13122

INOP COMPONENTS

INOPERATIVE COMPONENTS OR VISUAL AIDS TABLE

Landing minimums published on instrument approach procedure charts are based upon full operation of all components and visual aids associated with the particular instrument approach chart being used. Higher minimums are required with inoperative components or visual aids as indicated below. If more than one component is inoperative, each minimum is raised to the highest minimum required by any single component that is inoperative. ILS glide slope inoperative minimums are published on the instrument approach charts as localizer minimums. This table may be amended by notes on the approach chart. Such notes apply only to the particular approach category(ies) as stated. See legend page for description of components indicated below.

(1) ILS, MLS, PAR and RNAV (LPV line of minima)

Inoperative Component or Aid	Approach Category	Increase Visibility
ALSF 1 & 2, MALSR, & SSALR	ABCD	1/4 mile

(2) ILS with visibility minimum of 1,800 RVR

ALSF 1 & 2, MALSR, & SSALR	ABCD	To 4000 RVR
TDZL RCLS	ABCD	To 2400 RVR*
RVR	ABCD	To 1/2 mile

*1800 RVR authorized with the use of FD or AP or HUD to DA.

(3) VOR, VOR/DME, TACAN, LOC, LOC/DME, LDA, LDA/DME, SDF, SDF/DME, GPS, ASR and RNAV (LNAV/VNAV, LP, LNAV lines of minima)

Inoperative Visual Aid	Approach Category	Increase Visibility
ALSF 1 & 2, MALSR, & SSALR	ABCD	1/2 mile
SSALS, MALSR, & ODALS	ABC	1/4 mile

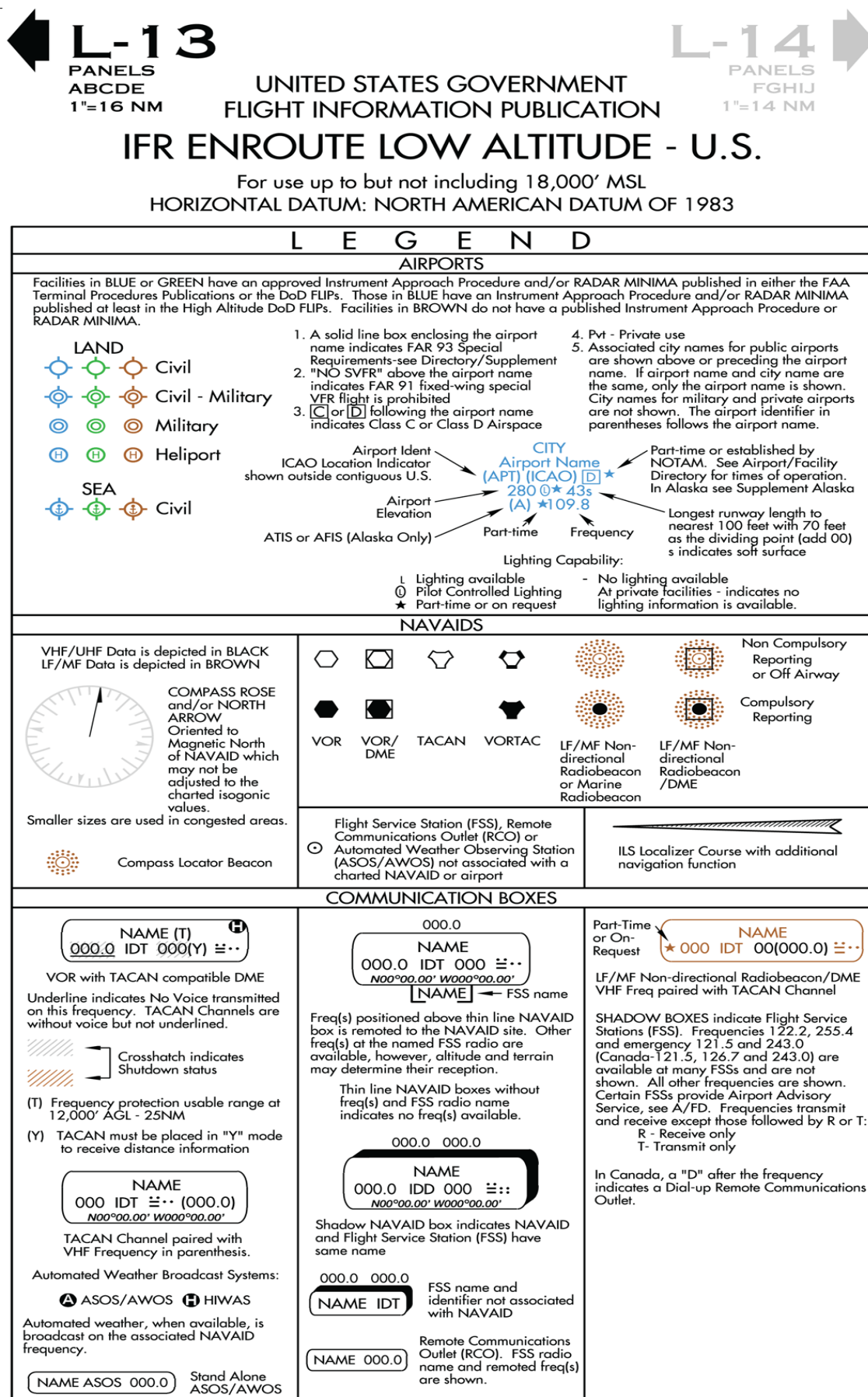
(4) NDB

ALSF 1 & 2, MALSR, & SSALR	C	1/2 mile
MALS, SSALS, ODALS	ABD	1/4 mile
	ABC	1/4 mile

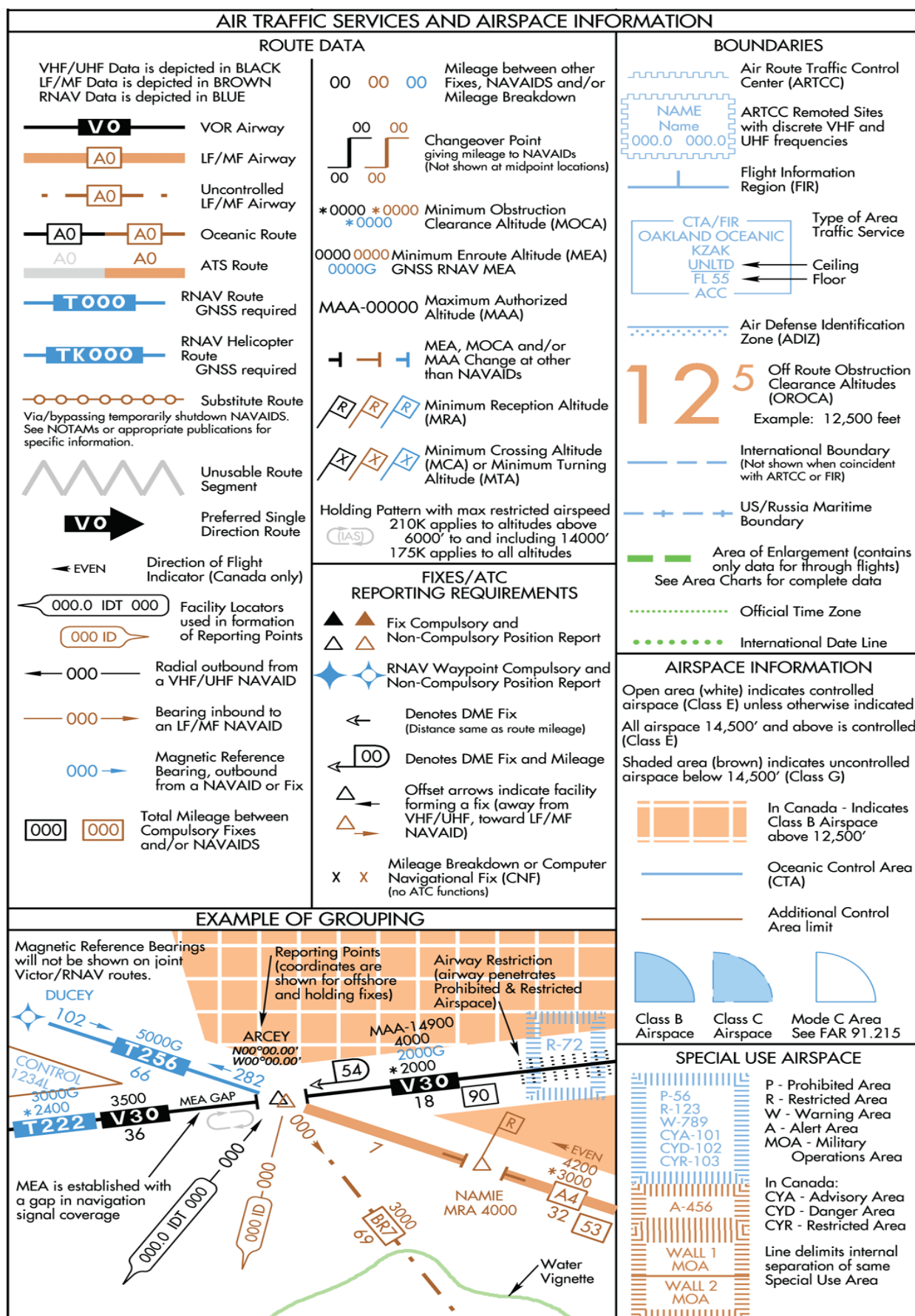
INOP COMPONENTS

Legend 32. Inoperative Components or Visual Aids Table.

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Legend 33. IFR En Route Low Altitude (U.S.)



Legend 34. IFR En Route Low Altitude (U.S.)

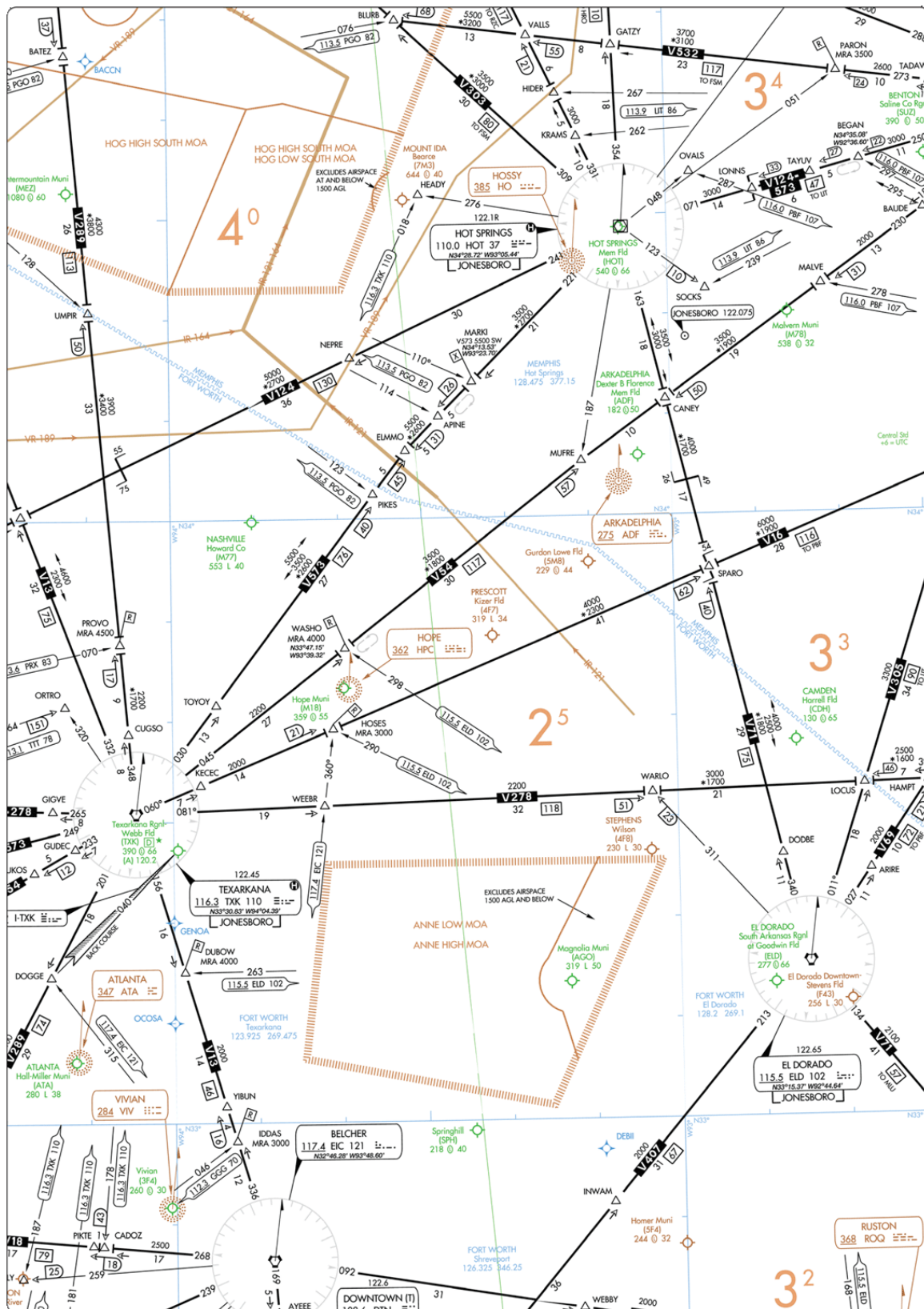
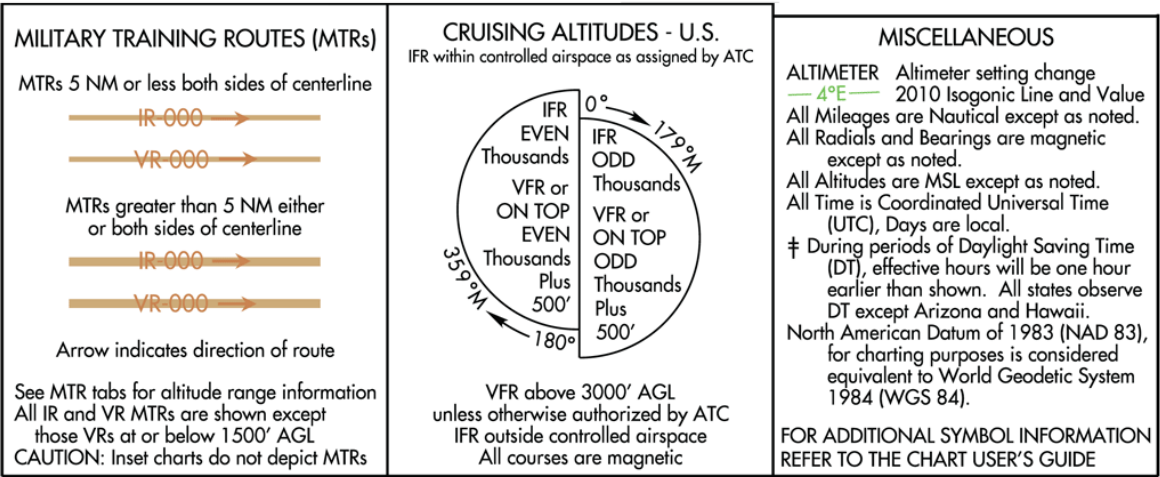


Figure 34. En Route Low-Altitude Chart Segment.
NOTE: Chart is not to scale and should not be used for navigation.
Chart is for testing purposes only.

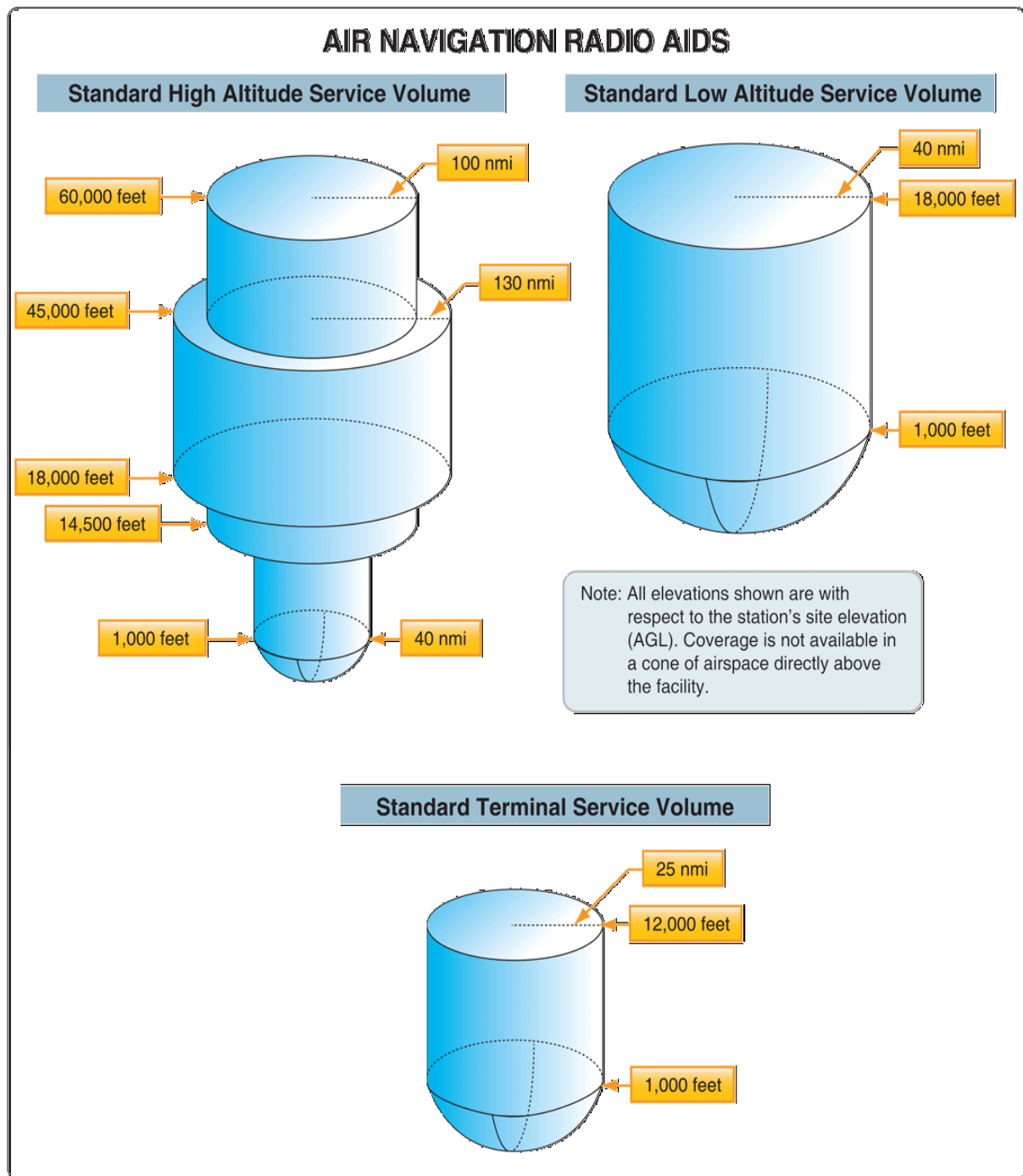


Legend 35. IFR En Route Low Altitude (U.S.)

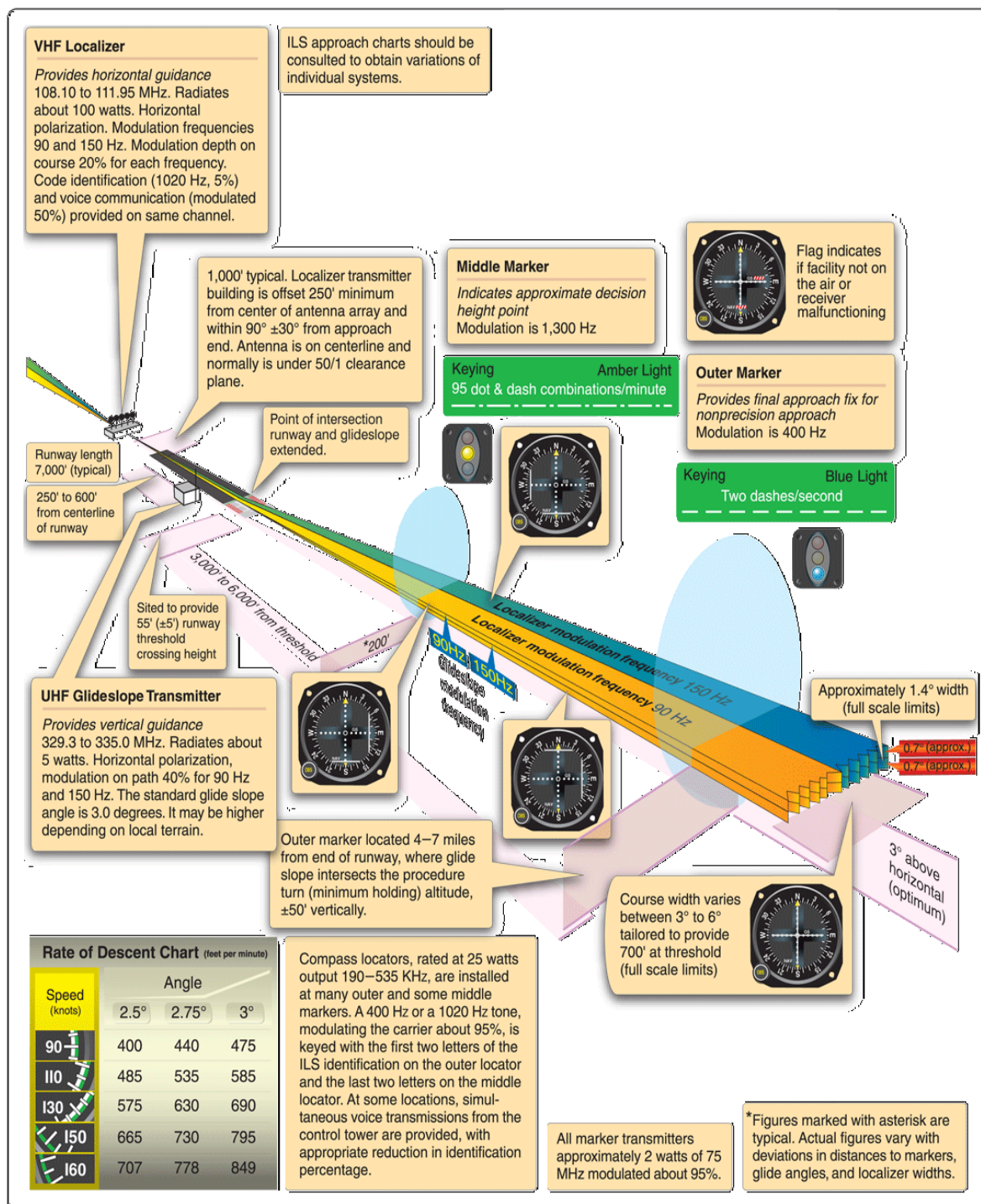


AIRCRAFT EQUIPMENT SUFFIXES	
SUFFIX	Aircraft Equipment Suffixes
	NO DME
/X	No transponder
/T	Transponder with no Mode C
/U	Transponder with Mode C
	DME
/D	No transponder
/B	Transponder with no Mode C
/A	Transponder with Mode C
	TACAN ONLY
/M	No transponder
/N	Transponder with no Mode C
/P	Transponder with Mode C
	AREA NAVIGATION (RNAV)
/Y	LORAN, VOR/DME, or INS with no transponder
/C	LORAN, VOR/DME, or INS, transponder with no Mode C
/I	LORAN, VOR/DME, or INS, transponder with Mode C
	ADVANCED RNAV WITH TRANSPONDER AND MODE C (if an aircraft is unable to operate with a transponder and/or Mode C, it will revert to the appropriate code listed above under Area Navigation.)
/E	Flight Management System (FMS) with en route, terminal, and approach capability. Equipment requirements are: (a) Dual FMS which meets the specifications of AC 25-15, Approval of Flight Management Systems in Transport Category Airplanes; AC 20-129, Airworthiness Approval of Vertical Navigation (VNAV) Systems for use in the U.S. NAS and Alaska; AC 20-130, Airworthiness Approval of Navigation or Flight Management Systems Integrating Multiple Navigation Sensors; or equivalent criteria as approved by Flight Standards. (b) A flight director and autopilot control system capable of following the lateral and vertical FMS flight path. (c) At least dual inertial reference units (IRU's). (d) A database containing the waypoints and speed/altitude constraints for the route and/or procedure to be flown that is automatically loaded into the FMS flight plan. (e) An electronic map. (U.S. and U.S. territories only unless otherwise authorized.)
/F	A single FMS with en route, terminal, and approach capability that meets the equipment requirements of /E, (a) through (d), above. (U.S. and U.S. territories only unless otherwise authorized.)
/G	Global Positioning System (GPS)/Global Navigation Satellite System (GNSS) equipped aircraft with en route and terminal capability.
/R	Required Navigational Performance (Denotes capability to operate in RNP designated airspace and routes)
/W	Reduced Vertical Separation Minima (RVSM)

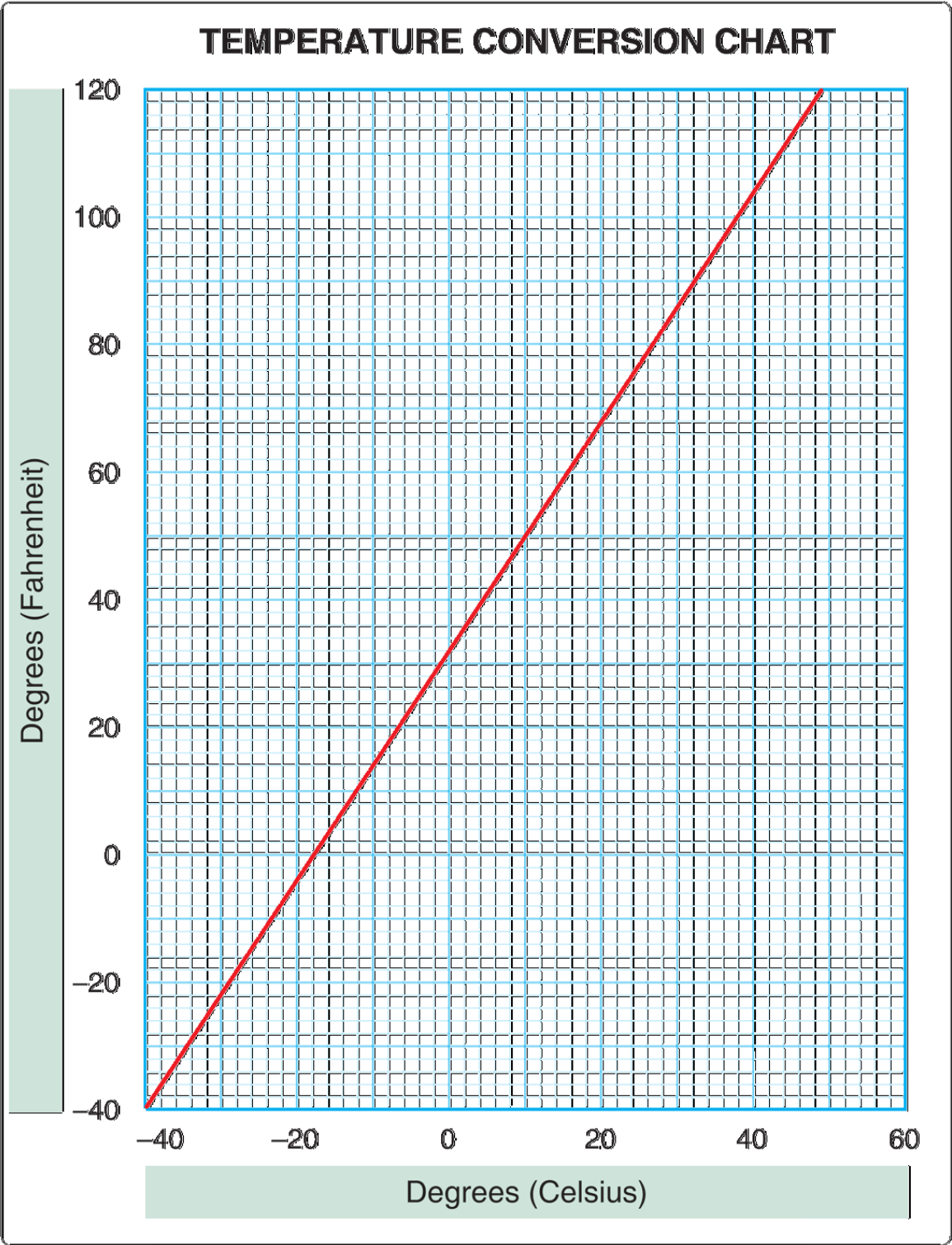
Legend 36. Aircraft Equipment Suffixes.



Legend 37. Air Navigation Radio Aids.



Legend 38. ILS Standard Characteristics and Terminology.



Legend 39. Temperature Conversion Chart.

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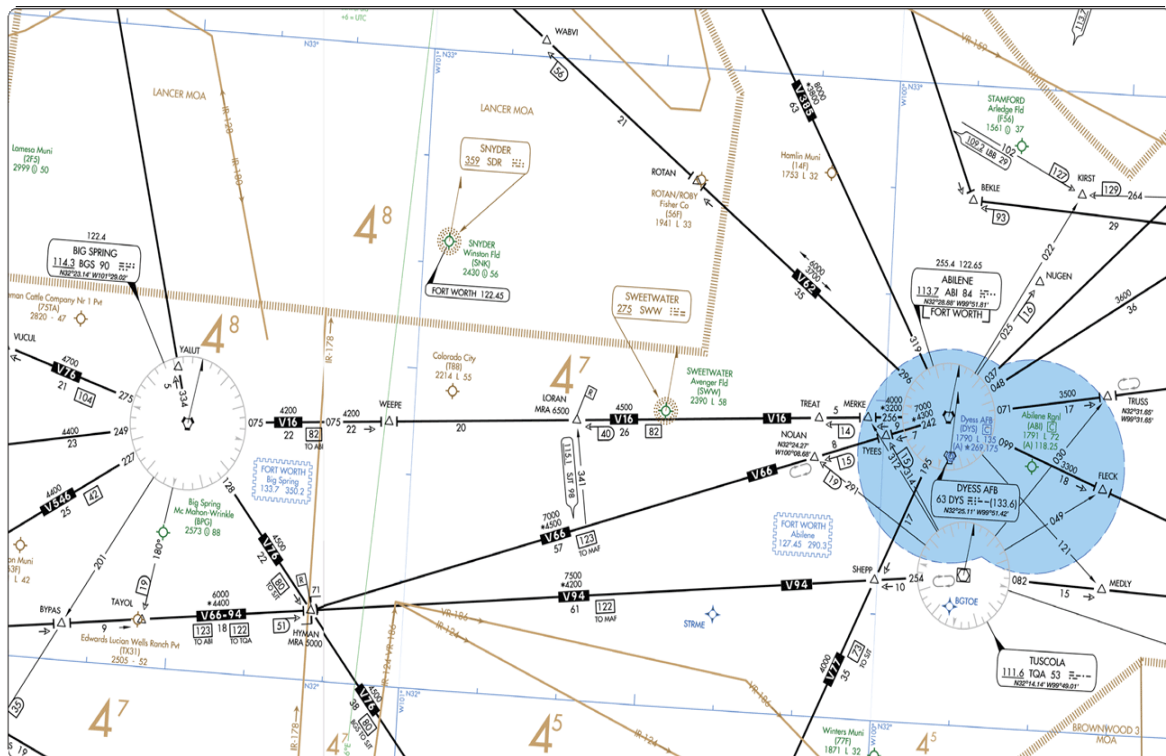


Figure 40. En Route Low-Altitude Chart Segment.
*NOTE: Chart is not to scale and should not be used for navigation.
Chart is for testing purposes only.*

CASA



Figure 47. En Route Low-Altitude Chart Segment.
NOTE: Chart is not to scale and should not be used for navigation.
Chart is for testing purposes only.



Figure 48. CDI—NAV 1.

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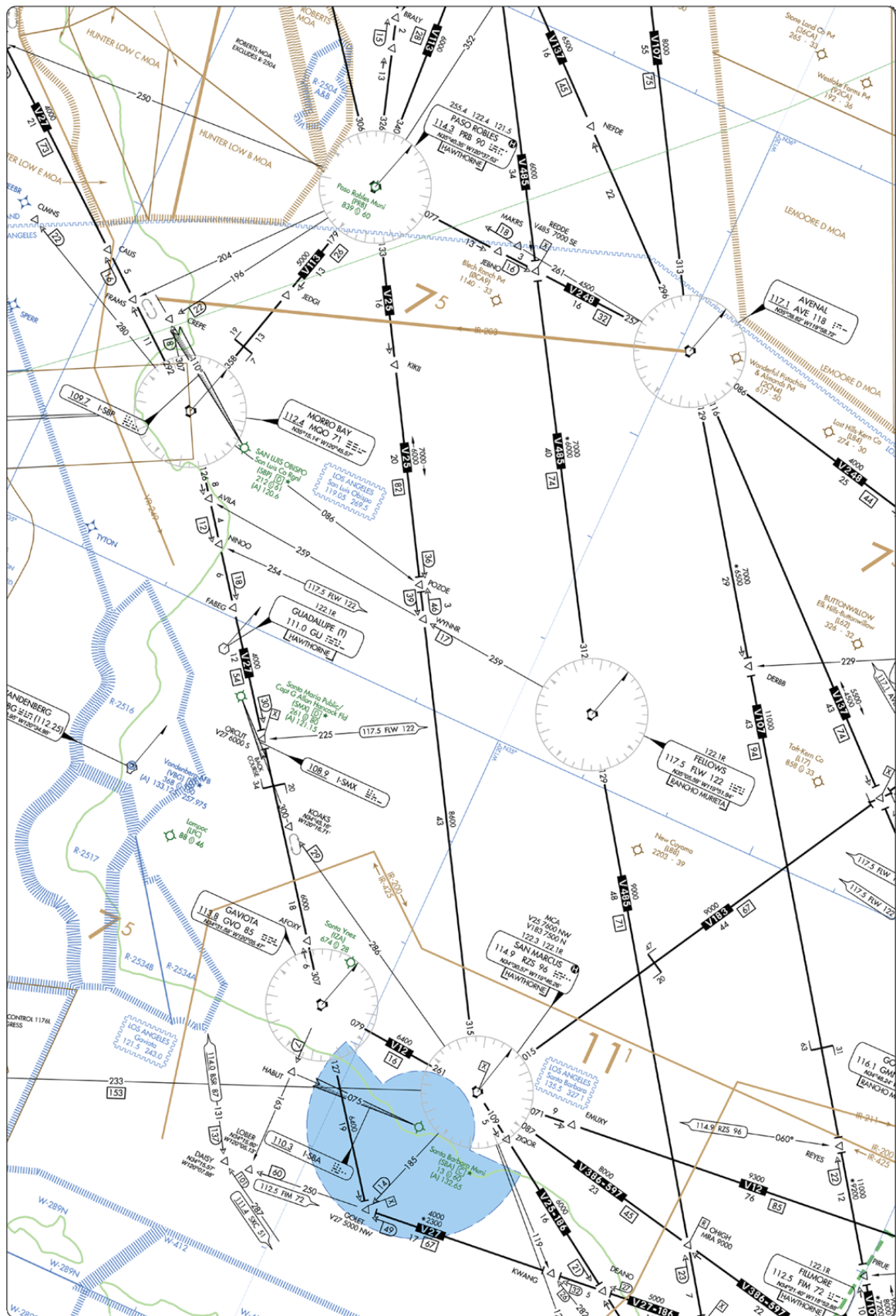


Figure 53. En Route Low-Altitude Chart Segment.
NOTE: Chart is not to scale and should not be used for navigation.
Chart is for testing purposes only.

CASA

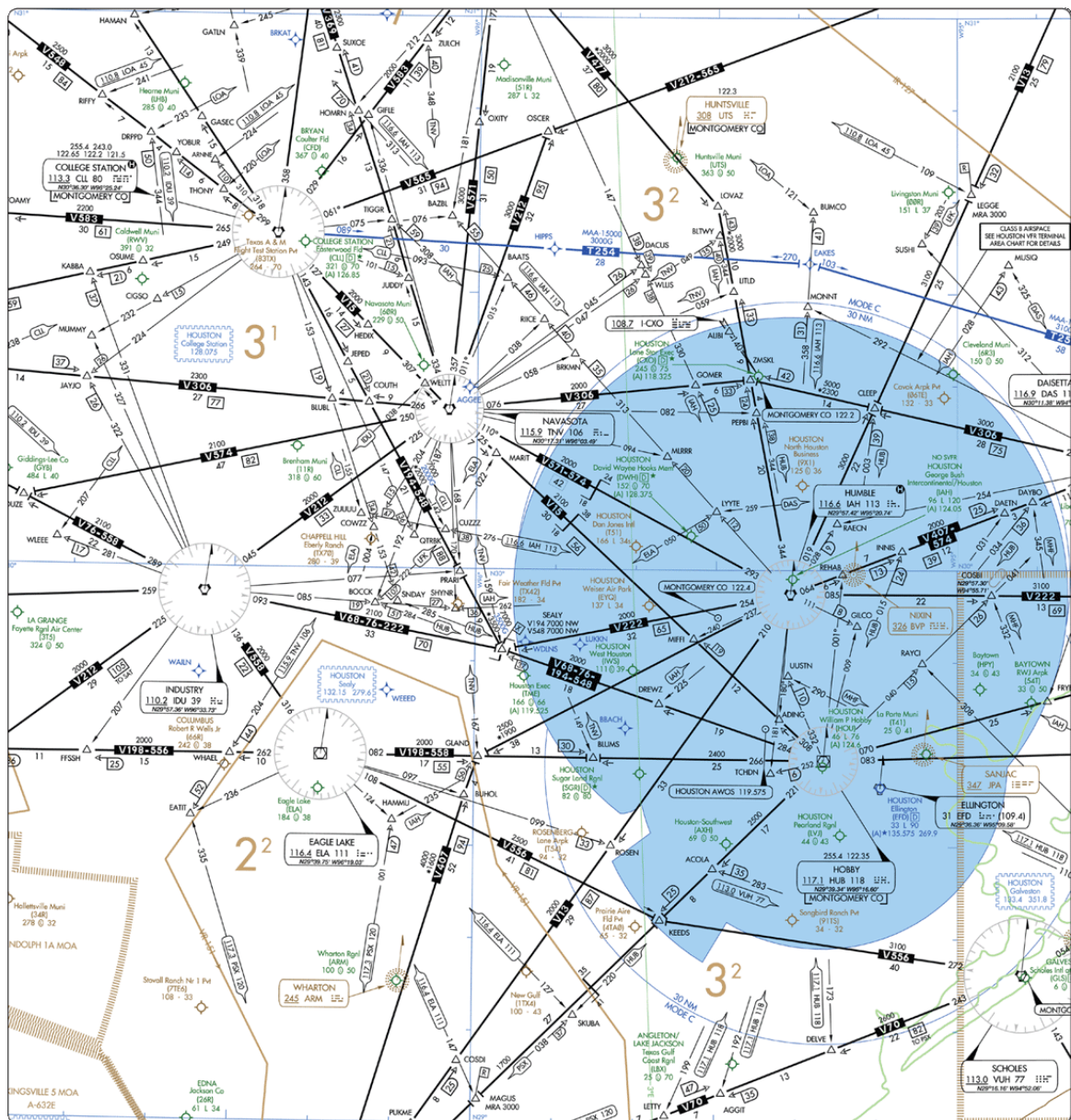


Figure 59. En Route Low-Altitude Chart Segment.
NOTE: Chart is not to scale and should not be used for navigation.
Chart is for testing purposes only.

QASA



LOUISIANA VOR RECEIVER CHECKPOINTS					
Facility Name (Arpt Name)	Freq/Ident	Type Check Pt. Gnd. AB/ALT	Azimuth from Fac. Mag	Dist. from Fac. N.M.	Checkpoint Description
Alexandria (Alexandria Intl)	116.1/AEX	G	328	4.3	On runup Rwy 32.
Baton Rouge (Baton Rouge Metro, Ryan)	116.5/BTR	A/1500	068	7.2	Over water tank W side of arpt.
Lafayette (Lafayette Rgnl/Paul Fournet Fld)	109.8/LFT	A/1000	343	22.1	Over rotating beacon at St. Landry Parish-Ahart Fld. arpt.
	109.8/LFT	G	355	0.5	On Twy F run up area Rwy 04L.
	109.8/LFT	G	341	0.9	On Twy B run up area Rwy 11.
	109.8/LFT	G	025	1.4	On Twy J run up area Rwy 22L.
	109.8/LFT	G	039	0.8	On Twy B run up area Rwy 29.
Lake Charles (Lake Charles Rgnl)	113.4/LCH	A/1000	253	6.2	Over rotg bcn on twr.
Monroe (Monroe Rgnl)	117.2/MLU	G	212	0.7	On Twy G South of twr.
Natchez (Concordia Parish)	110.0/HEZ	A/1000	247	10.5	Over hangar NW end of fld.
Reserve (St John The Baptist Parish)	110.8/RQR	A/1500	270	16.8	Over center of bridge.
Tibby (Houma-Terrebonne)	112.0/TBD	A/1000	121	10.7	Over intersection of Rwy 18-36 and 12-30.
Tibby (Thibodaux Muni)	112.0/TBD	A/1000	856	5.0	Over microwave twr near arpt.

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LOUISIANA

LAFAYETTE RGNL (LFT) 2 SE UTC-6(-5DT) N30°12.30' W91°59.27'
42 B S4 FUEL 100LL, JET A QX 1, 4 Class I, ARFF Index B NOTAM FILE LFT
RWY 04R-22L: H8001X150 (ASPH-GRVD) S-140, D-170, 2S-175, 2D-290 MRL
RWY 04R: REIL. PAPI(P4L)-GA 3.0° TCH 53'. Pole. Rgt tlc.
RWY 22L: MALSR. PAPI(P4L)-GA 3.0° TCH 52'. Thld displd 342'. Trees.
RWY 11-29: H5401X148 (ASPH-GRVD) S-85, D-110, 2S-140, 2D-175 MRL
RWY 11: REIL. PAPI(P4L)-GA 3.0° TCH 35'. Trees. Rgt tlc.
RWY 29: REIL. PAPI(P4L)-GA 3.0° TCH 35'. Tree.
RWY 04L-22R: H4099X75 (ASPH) S-25, D-32 MRL
RWY 04L: REIL. PAPI(P2L)-GA 3.0° TCH 26'. Tree.
RWY 22R: REIL. PAPI(P2L)-GA 3.0° TCH 27'. Tree. Rgt tlc.

RUNWAY DECLARED DISTANCE INFORMATION
RWY 04L:TORA-4099 TODA-4099 ASDA-4099 LDA-4099
RWY 04R:TORA-8001 TODA-8001 ASDA-8001 LDA-8001
RWY 11:TORA-5401 TODA-5401 ASDA-5401 LDA-5401
RWY 22L:TORA-8001 TODA-8001 ASDA-8001 LDA-7659
RWY 22R:TORA-4099 TODA-4099 ASDA-4099 LDA-4099
RWY 29:TORA-5401 TODA-5401 ASDA-5401 LDA-5401

ARRESTING GEAR/SYSTEM

RWY 04R: EMAS
RWY 22L: EMAS

AIRPORT REMARKS: Attended continuously. Numerous birds on and in/vol arpt. PPR for unscheduled air carrier ops with more than 30 passenger seats call arpt manager 337-266-4400. Rwy 04L-22R not avbl for air carrier ops with more than 30 passenger seats. Ctc ground control prior to push back from terminal. 155' oil rig 1 NM southeast of arpt. Rwy 22L runway visual range touchdown avbl. Twy B between Twy C and Twy D clsd to acft with wingspan over 80'. Twy F south of Twy B clsd to single wheel acft over 25,000 lbs and dual wheel acft over 32,000 lbs. Twy F south of Twy B reduces to 40' wide. When twr clsd ACTIVATE MALSR Rwy 22L-CTAF, MRL Rwy 04L-22R not avbl.

WEATHER DATA SOURCES: ASOS (337) 237-8153 HIRWS 109.8 LFT.

COMMUNICATIONS: CTAF 118.5 ATIS 134.05 UNICOM 122.95

RCO 122.35 (DE RIDDER RADIO)

APP/DEP CON 121.1 (020°-210°) 128.7 (211°-019°) (1130-0430Z)

HOUSTON CENTER APP/DEP CON 126.35 (0430-1130Z)

TOWER 118.5 (1130-0430Z) GND CON 121.8 (CLNC DEL 125.55

AIRSPACE: CLASS C svc ctc APP CON svc 1130-0430Z; other times CLASS E.

RADIO AIDS TO NAVIGATION: NOTAM FILE LFT.

(L) VORTAWE 109.8 LFT Chan 35 N30°11.63' W91°59.55' at fld. 36/3E. HIRWS.

LAFFS NDB (LOM) 375 LF N30°17.36' W91°54.48' 216° 6.5 NM to fld. Unmonitored when ATCT clsd.

ILS/OME 110.9 I-TYN Chan 46 Rwy 04R. Class IE.

ILS/OME 109.5 I-LFT Chan 32 Rwy 22L. Class IE. LOM LAFFS NDB. ILS and LOM unmonitored when ATCT clsd.

ASR (1130-0430Z)

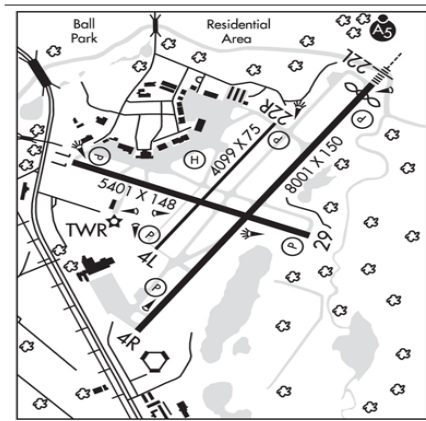


Figure 64. Excerpt from Chart Supplement (LFT).

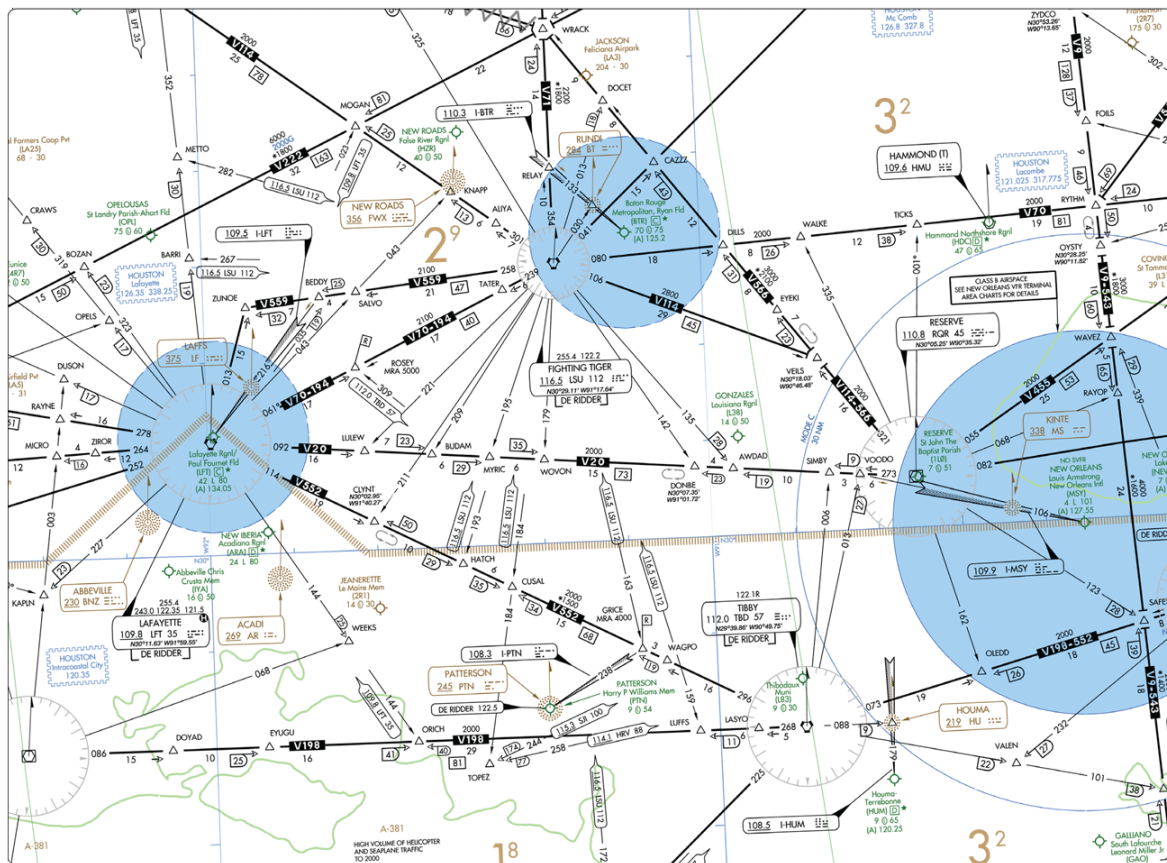


Figure 65. En Route Low-Altitude Chart Segment.
NOTE: Chart is not to scale and should not be used for navigation.
Chart is for testing purposes only.

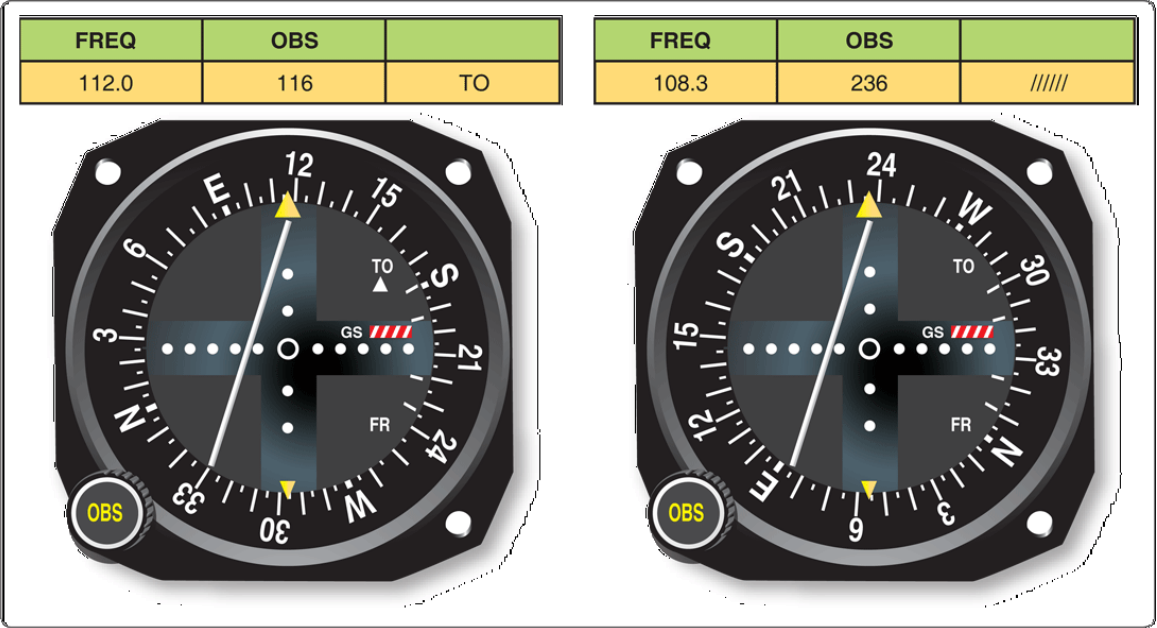


Figure 66. CDI and OBS Indicators.

©ASA

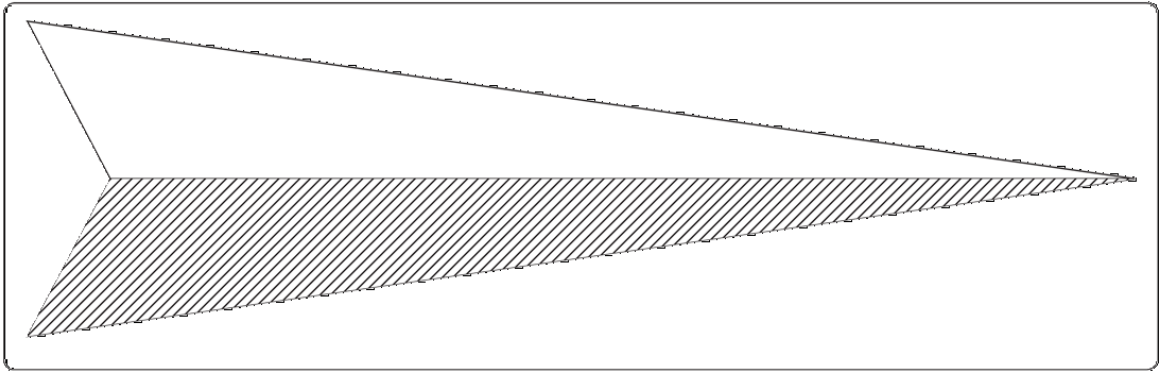


Figure 67. Localizer Symbol.

©ASA

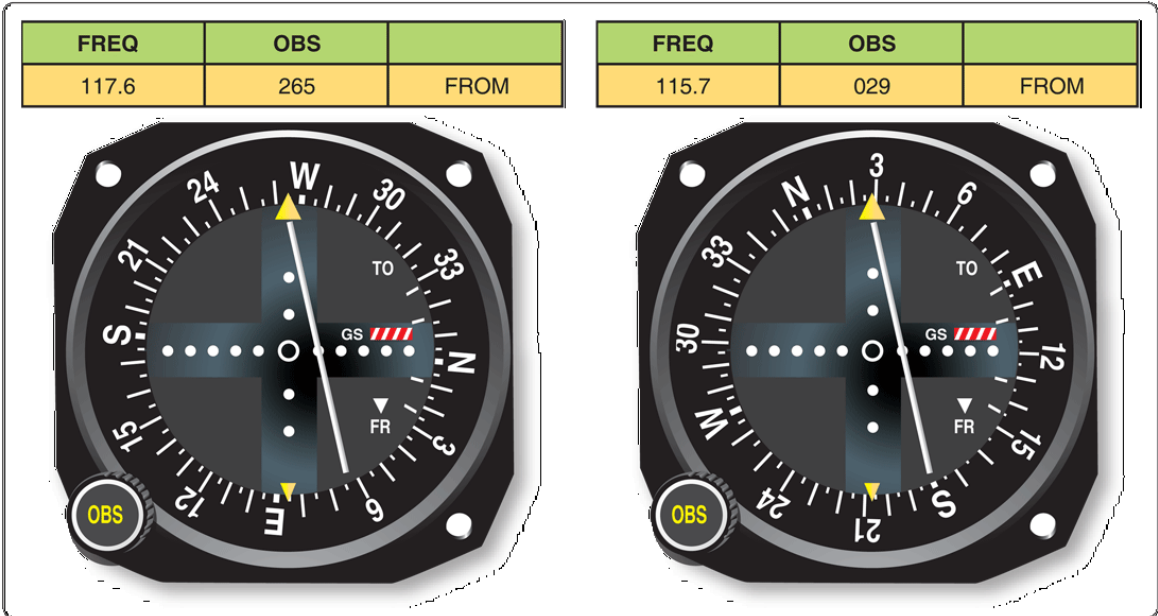


Figure 71A. CDI and OBS Indicators.

©ASA



Chart is for testing purposes only.

A

B

C

D





Figure 81. Dual VOR System, VOT Check.

©ASA



Figure 82. Dual VOR System, Accuracy Check.

©ASA

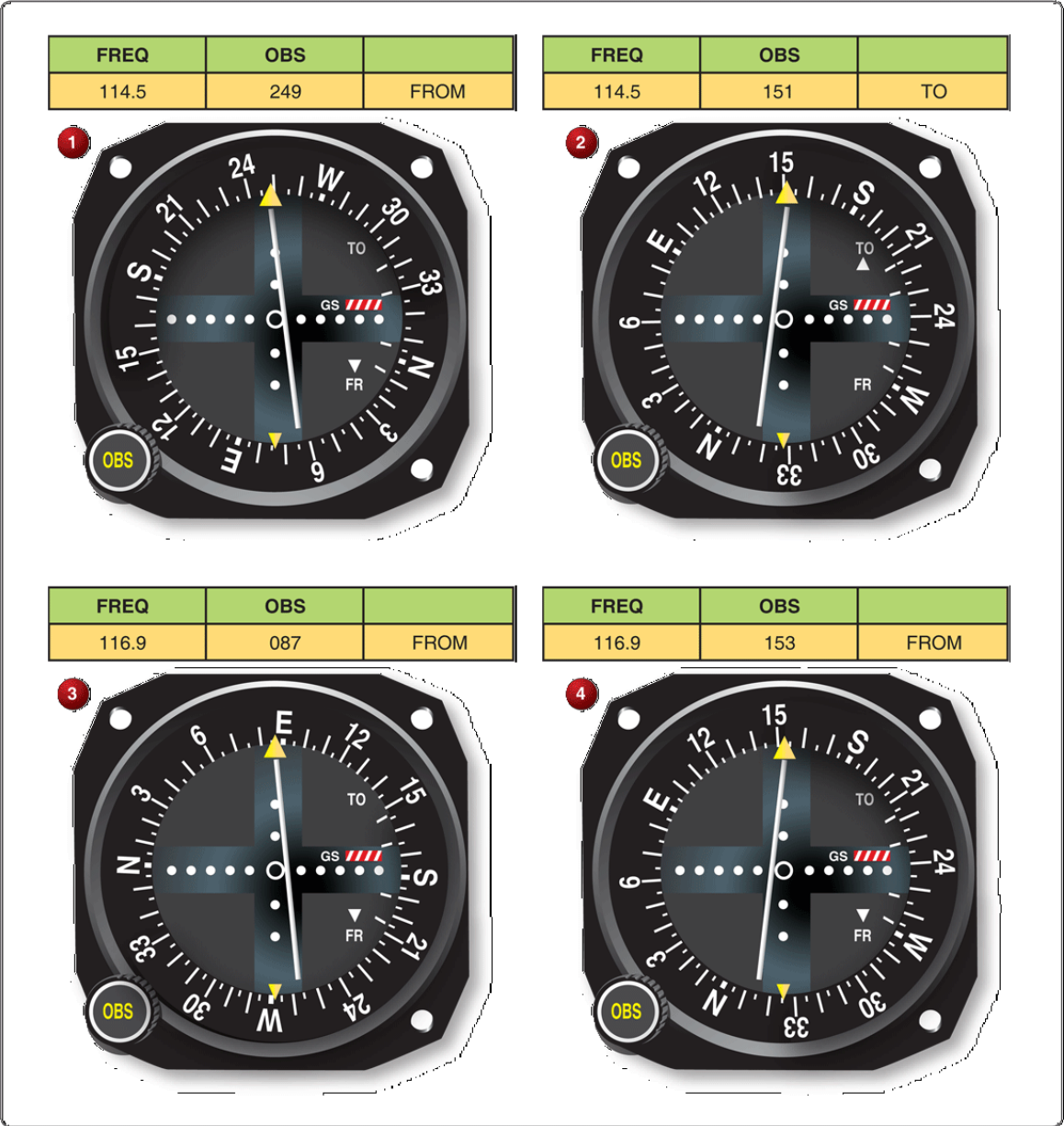


Figure 86. CDI and OBS Indicators.

©ASA

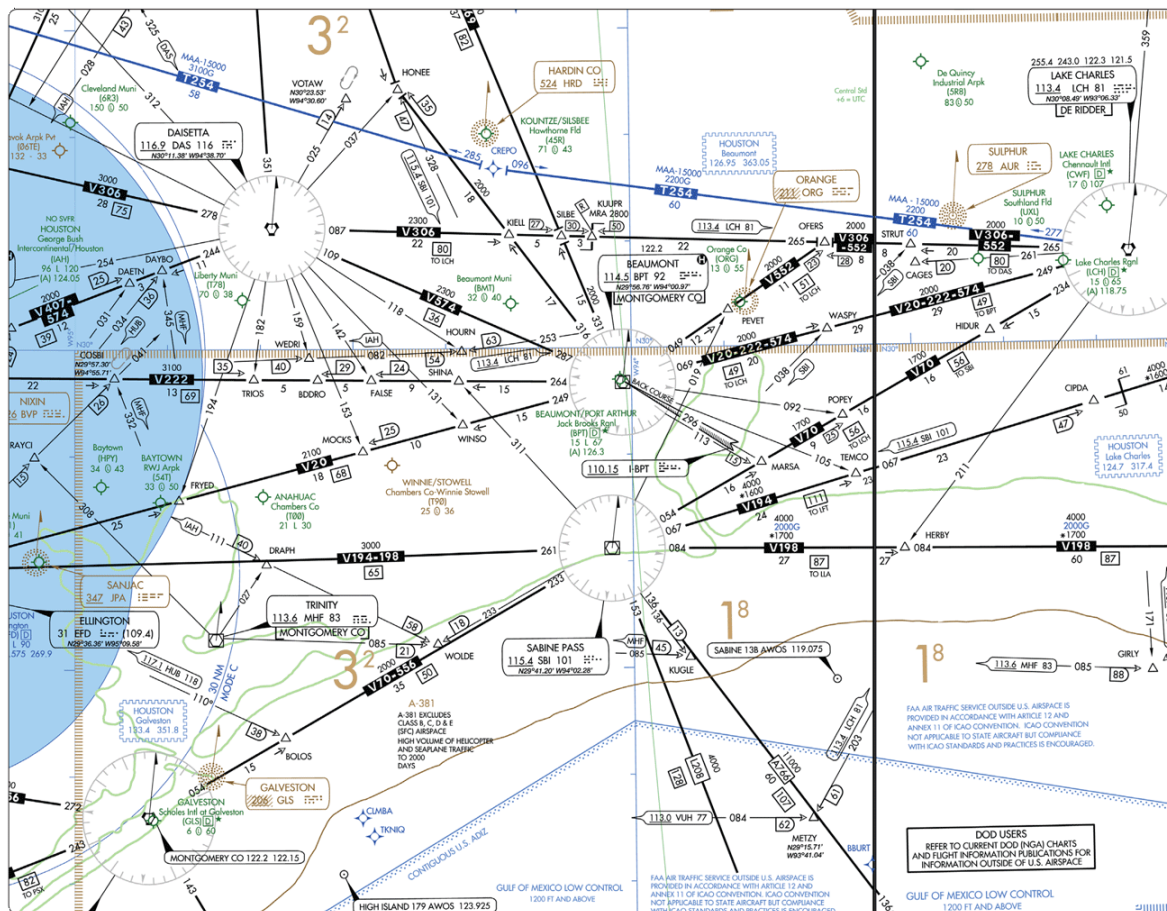


Figure 87. En Route Low-Altitude Chart Segment.
NOTE: Chart is not to scale and should not be used for navigation.
Chart is for testing purposes only.

CASA

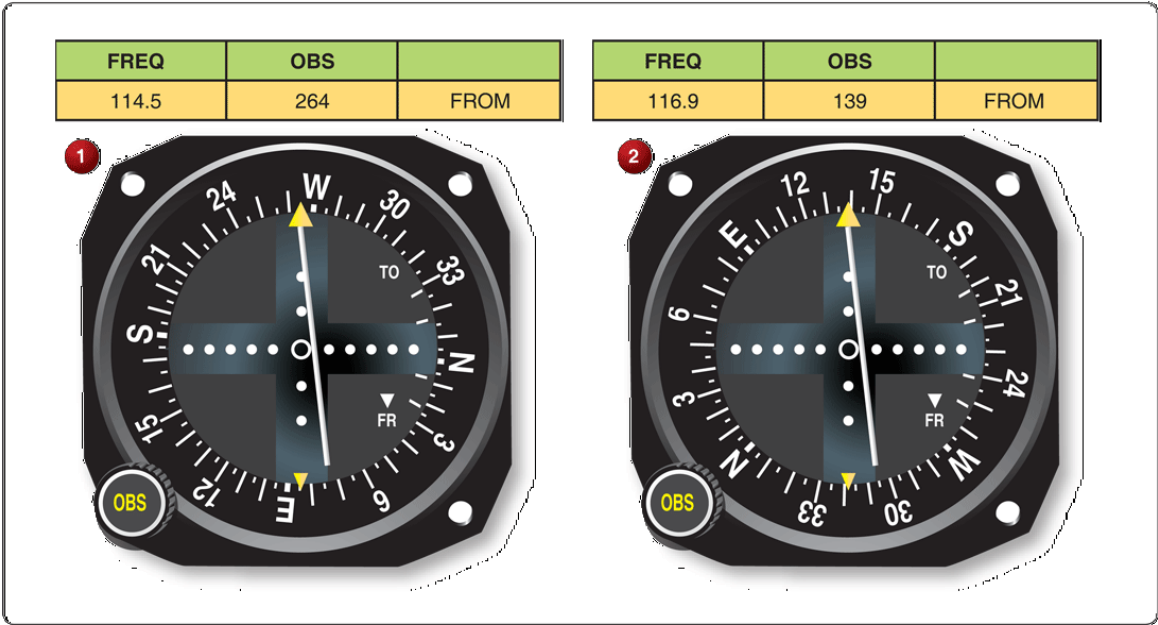


Figure 88. CDI and OBS Indicators.

CASA



Figure 89. En Route Low-Altitude Chart Segment.
NOTE: Chart is not to scale and should not be used for navigation.
Chart is for testing purposes only.

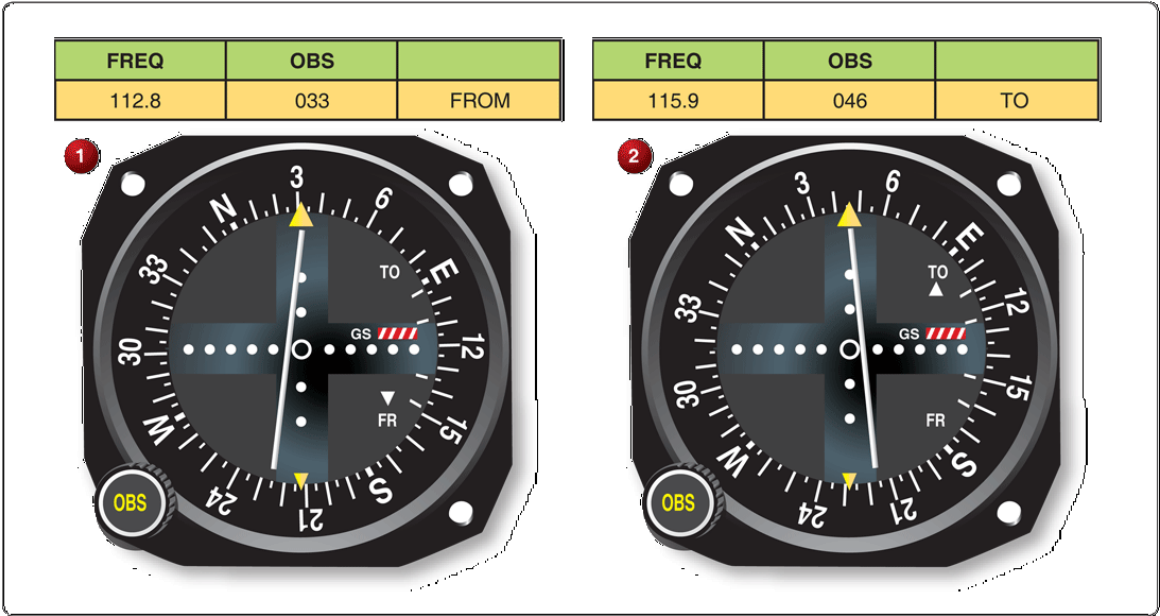


Figure 90. CDI/OBS Indicators.

©ASA



CASA

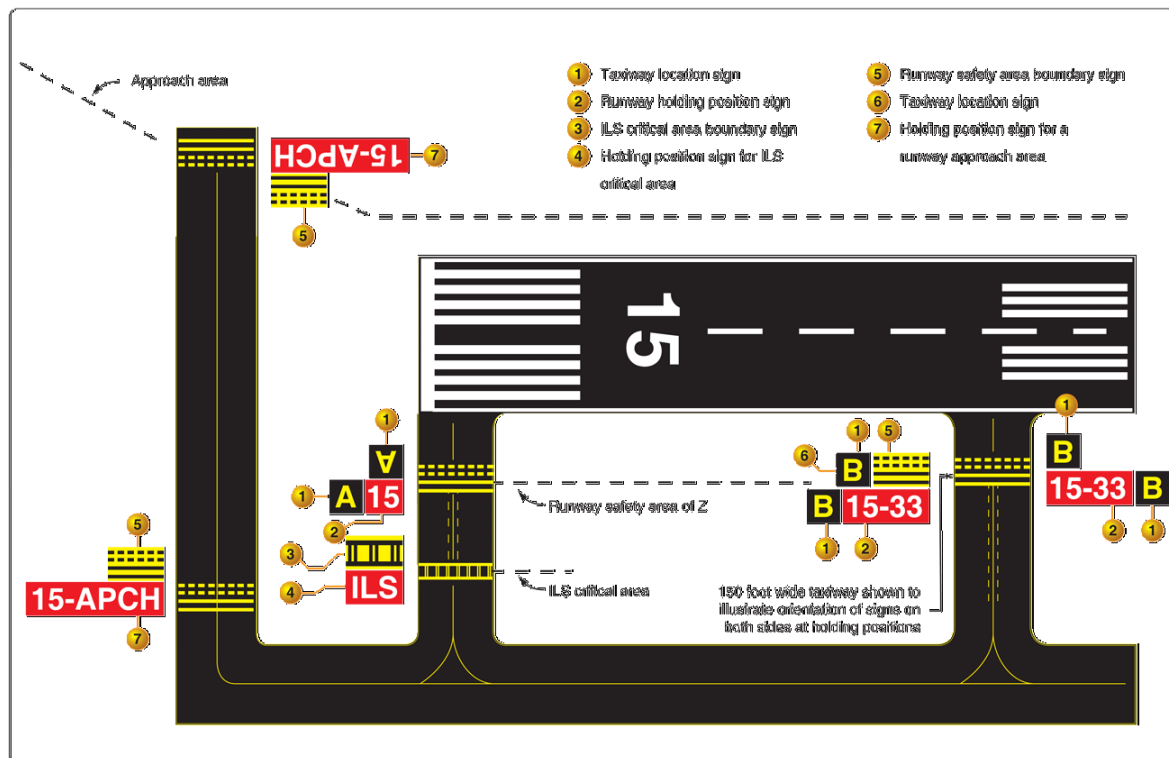


Figure 94. Application Examples for Holding Positions.

©ASA

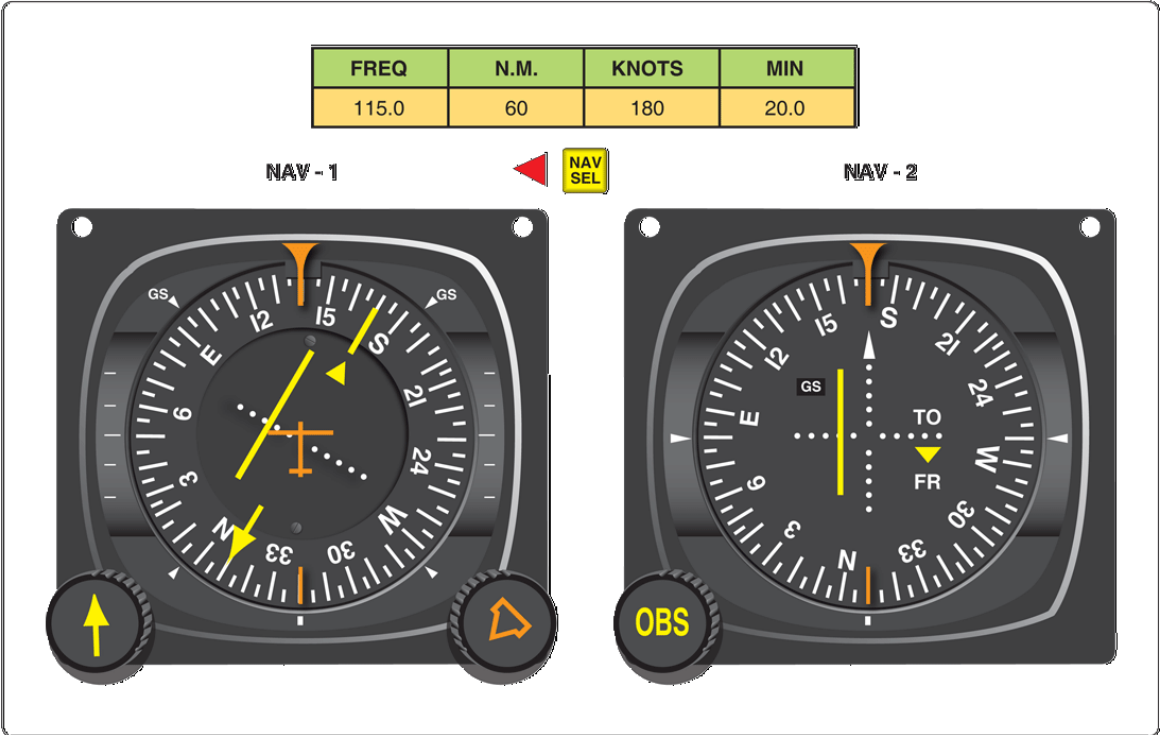


Figure 95. No. 1 and No. 2 NAV Presentation.

CASA

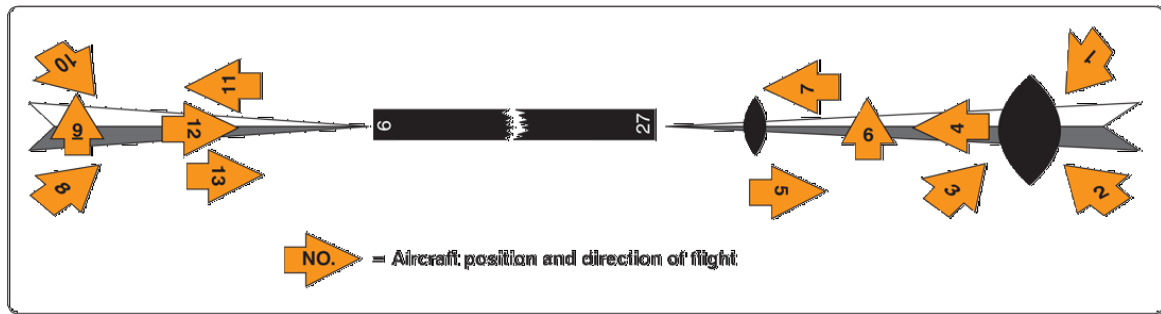


Figure 96. Aircraft Position and Direction of Flight.

©ASA



Figure 97. HSI Presentation.

©ASA

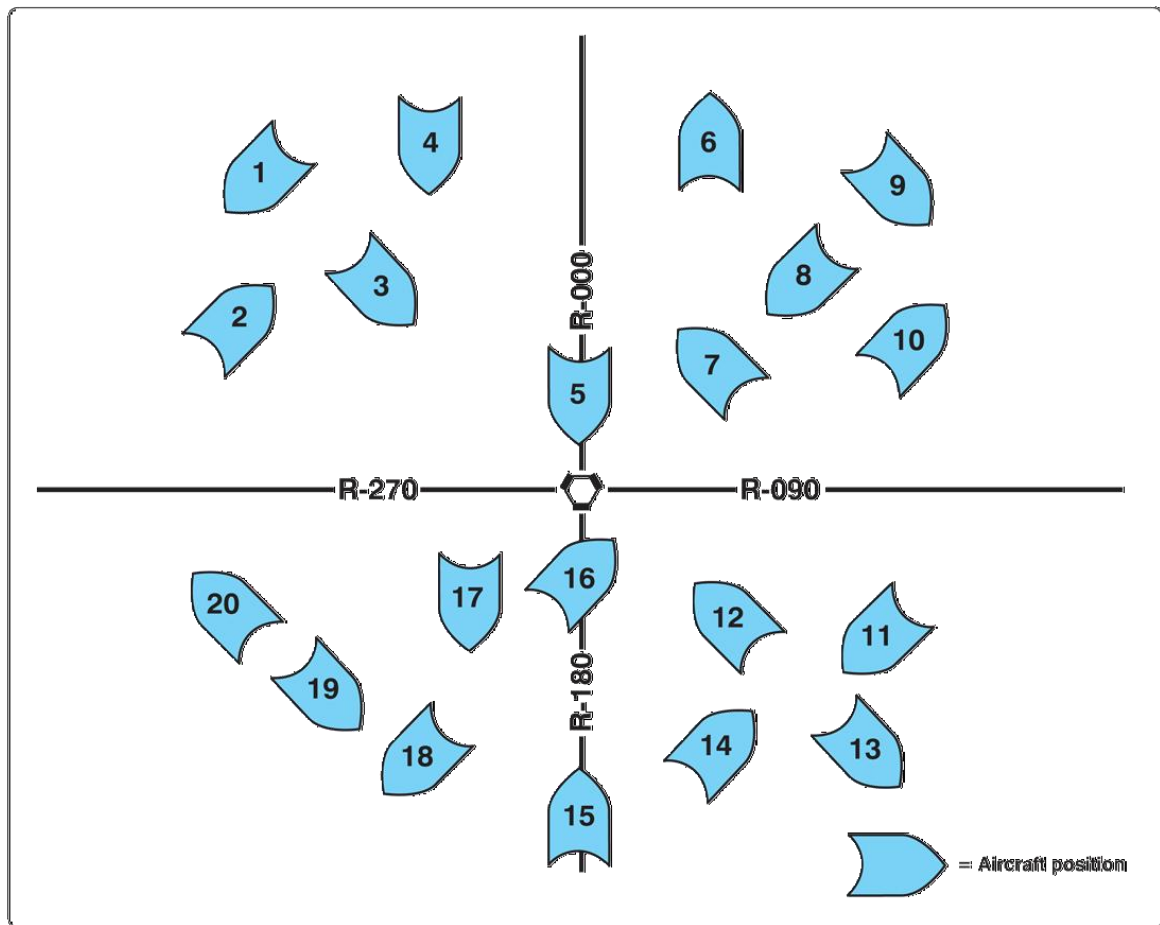


Figure 98. Aircraft Position.

©ASA



Figure 99. HSI Presentation.

©ASA

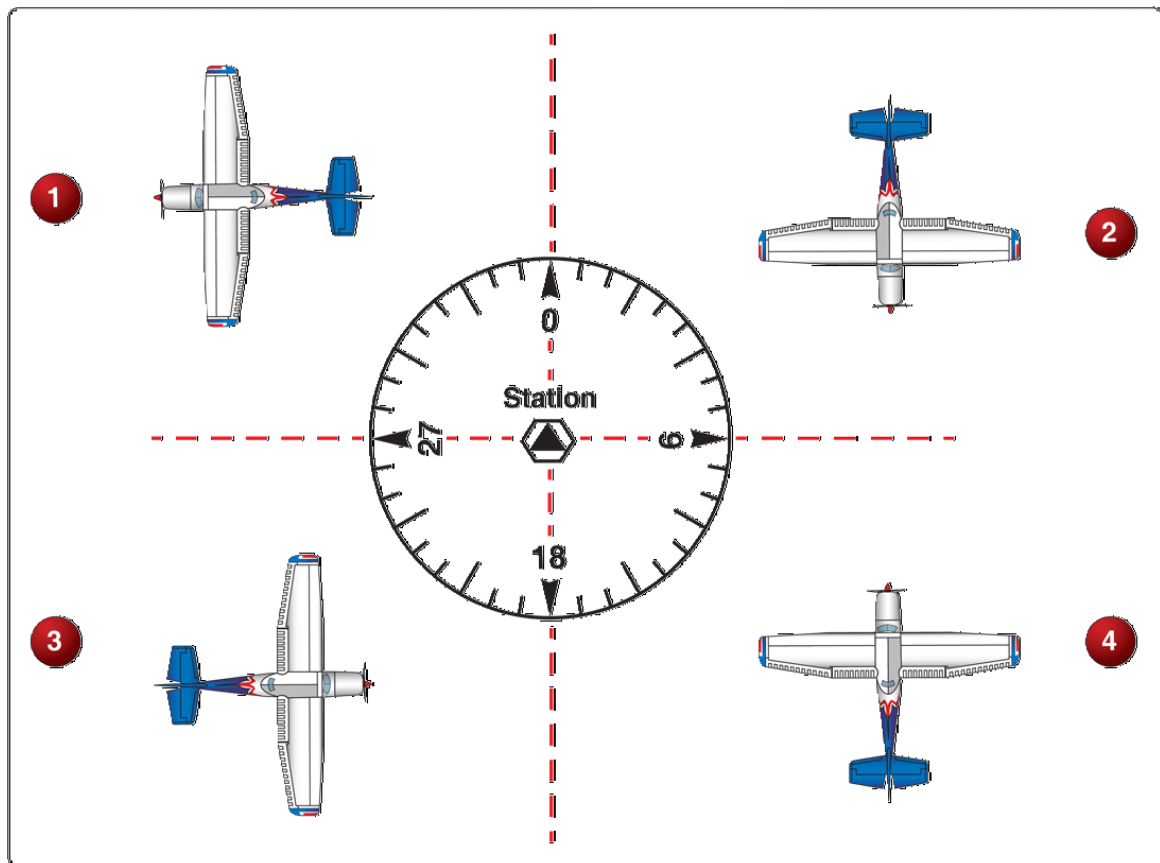


Figure 106. Aircraft Location Relative to VOR.

©ASA



Figure 109. CDI Direction from VORTAC.

©ASA





Figure 111. CDI Direction from VORTAC.

©ASA

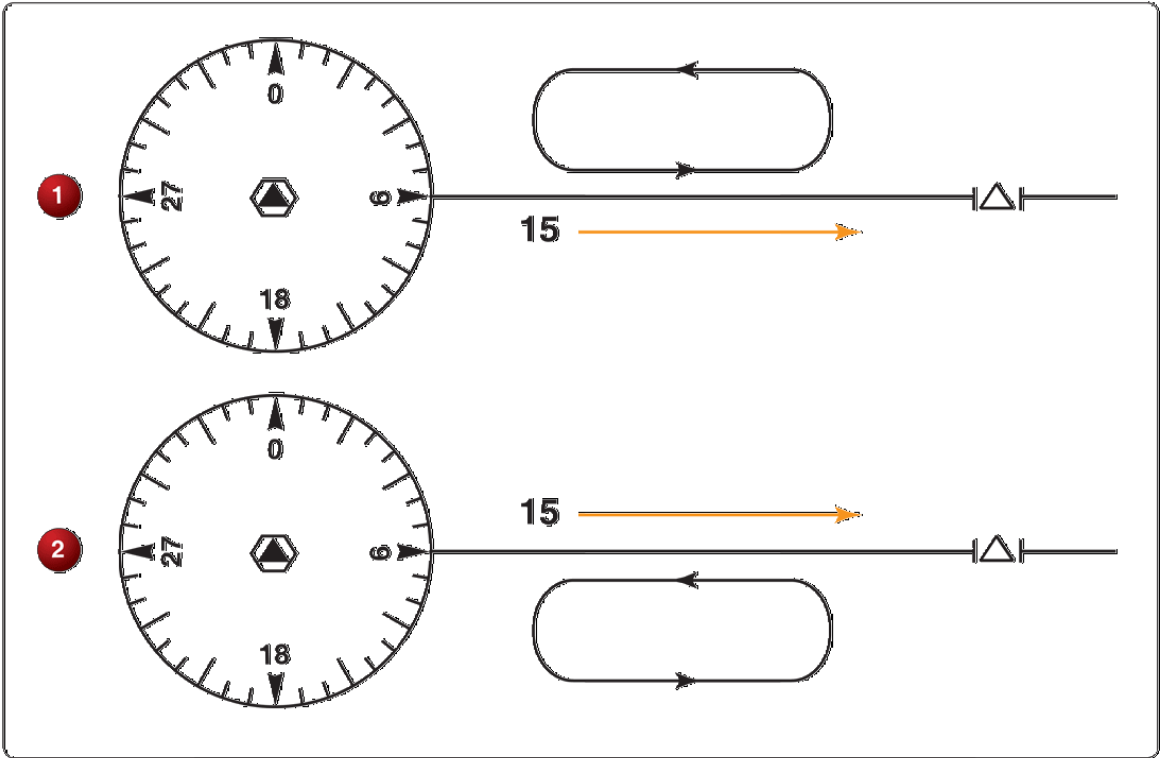


Figure 112. Holding Entry Procedure.

©ASA



Figure 113. Aircraft Course and DME Indicator. ©ASA



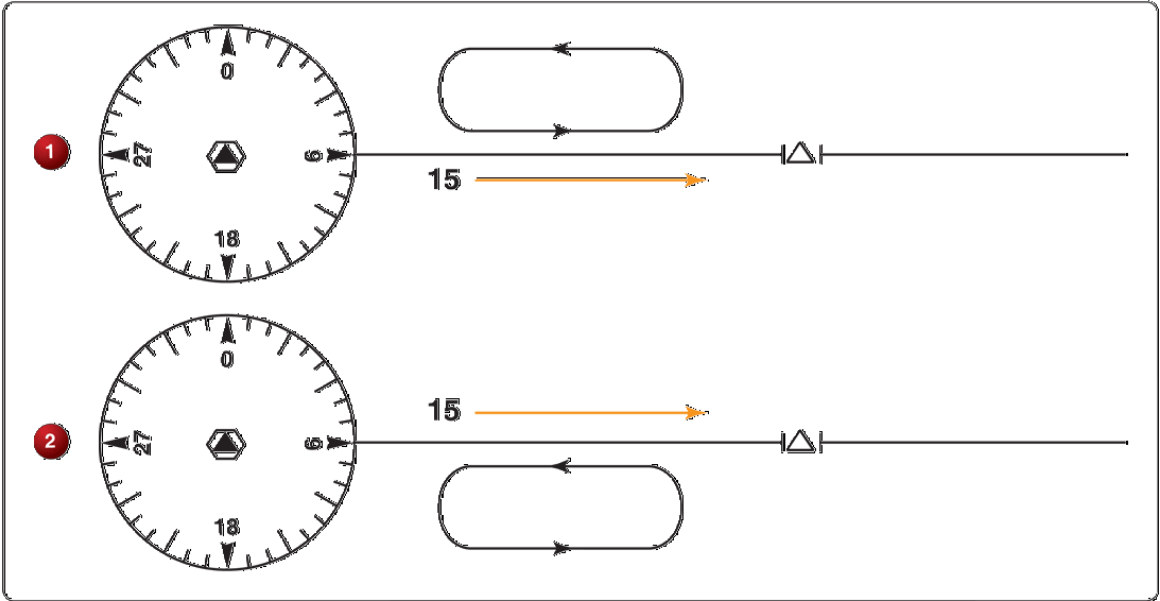


Figure 115. DME Fix with Holding Pattern.

©ASA

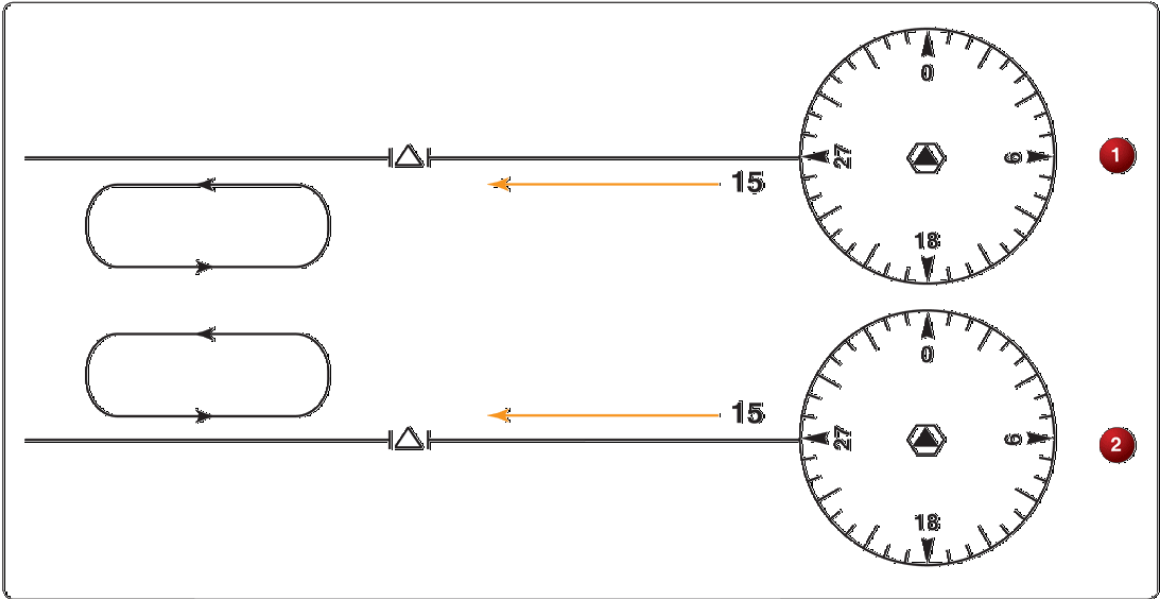


Figure 116. Holding Entry Procedure.

©ASA



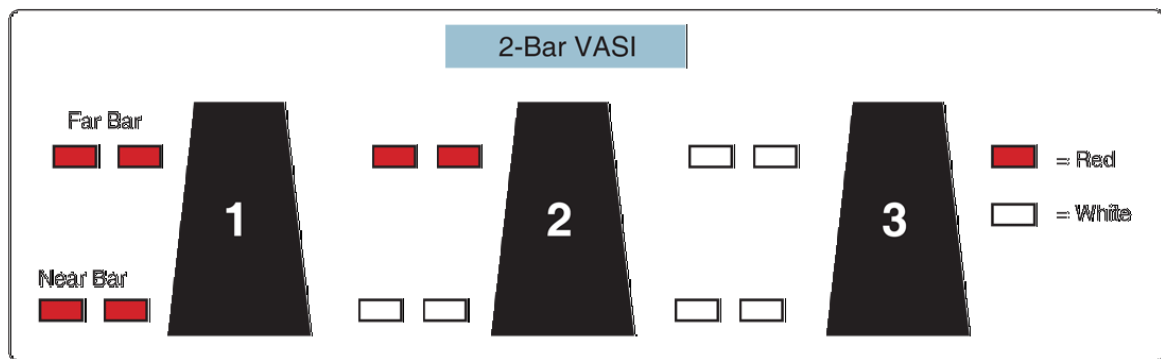


Figure 134. 2-BAR VASI.

©ASA

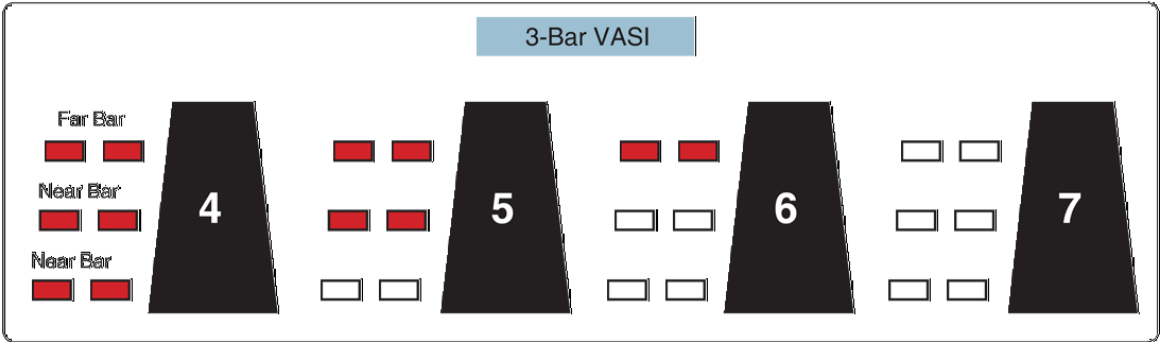


Figure 135. 3-BAR VASI.

©ASA

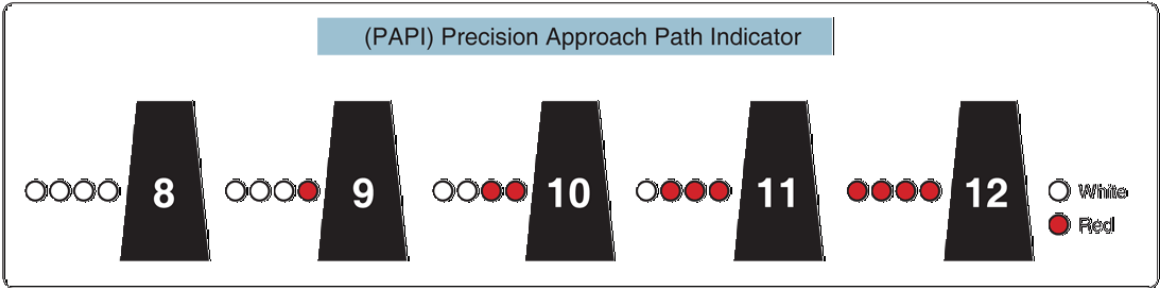


Figure 136. Precision Approach Path Indicator (PAPI).

©ASA

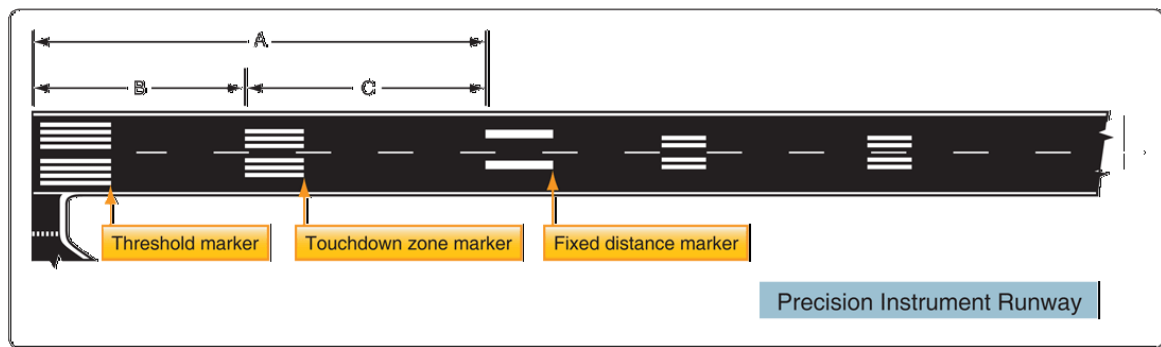


Figure 137. Precision Instrument Runway.

©ASA

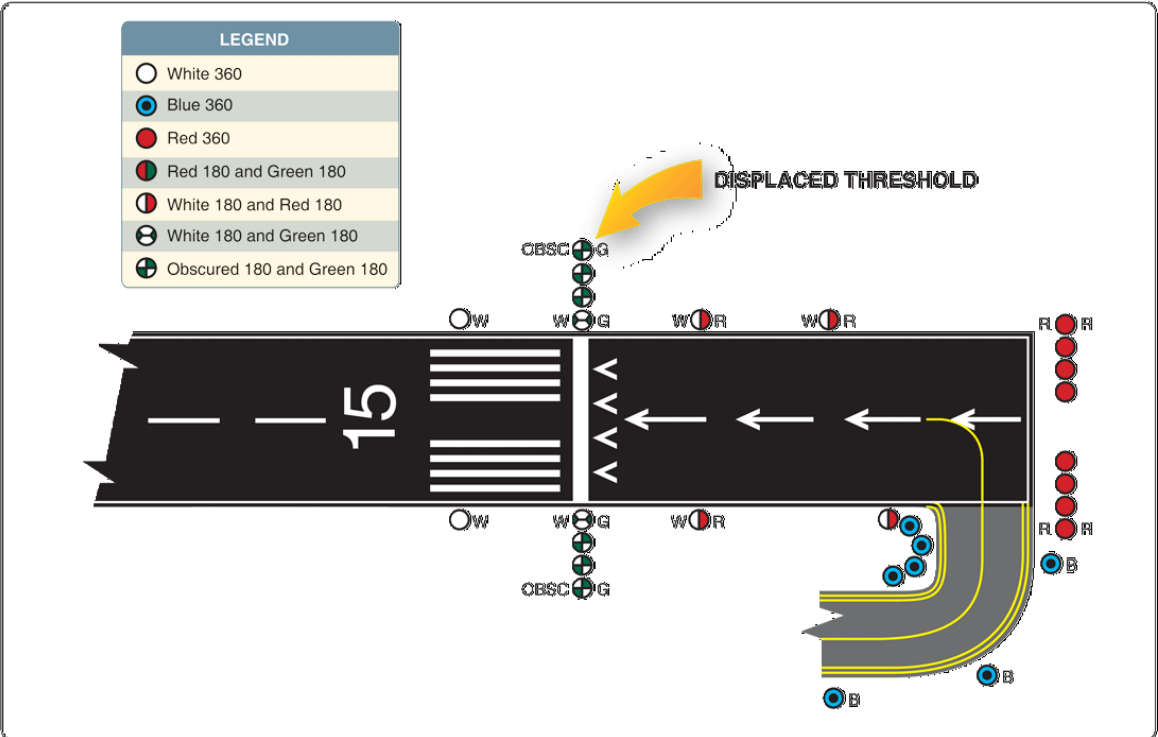


Figure 138. Runway Legend.

CASA

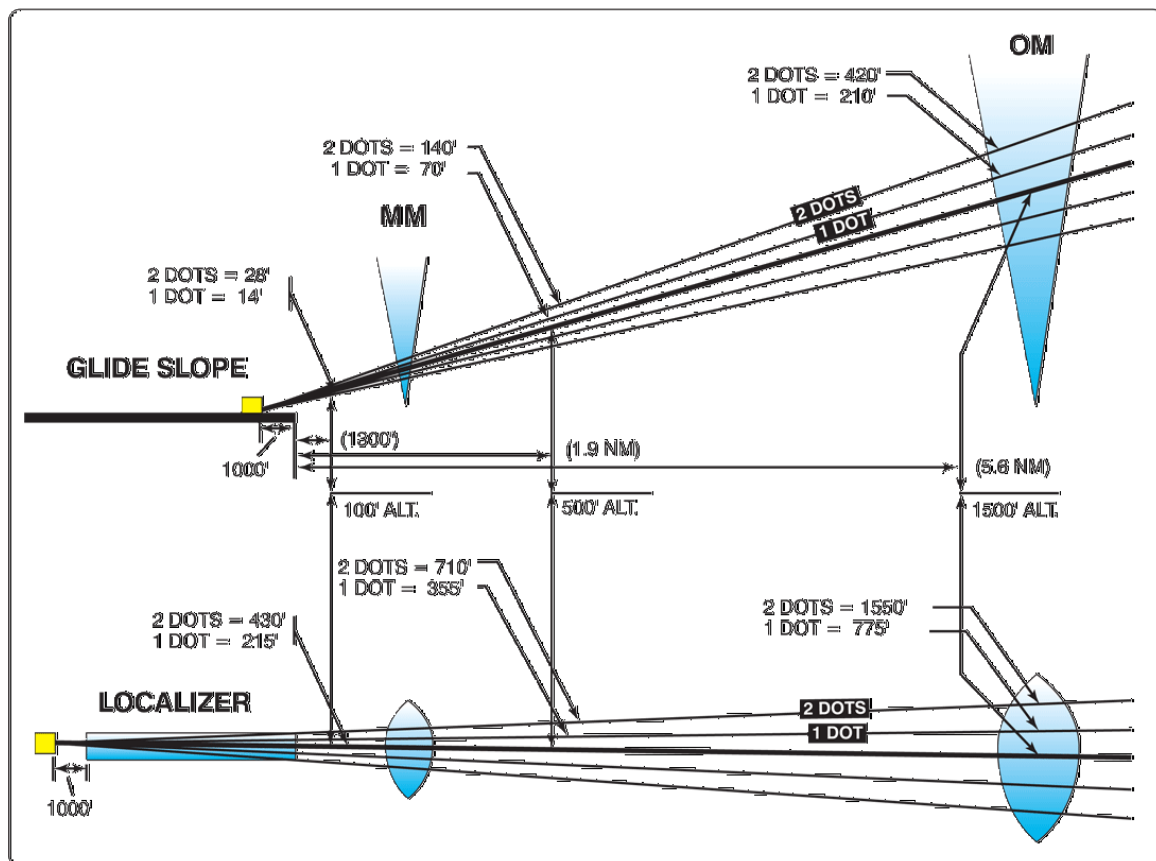


Figure 139. Glide Slope and Localizer Illustration.

©ASA





Figure 141. OBS, ILS, and GS Displacement.

©ASA



Figure 142. OBS, ILS, and GS Displacement.

©ASA

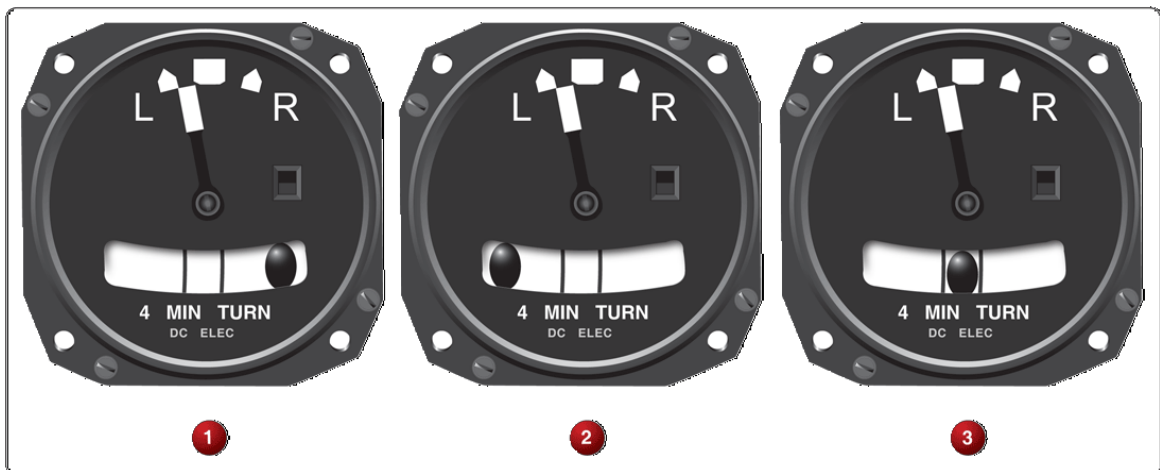


Figure 144. Turn-and-Slip Indicator.

©ASA



Figure 145. Instrument Sequence (Unusual Attitude).

CASA



Figure 146. Instrument Sequence (System Failed).

©ASA



Figure 147. Instrument Sequence (Unusual Attitude).

CASA



Figure 148. Instrument Interpretation (System Malfunction).

©ASA



Figure 149. Instrument Interpretation (System Malfunction).

CASA



Figure 150. Instrument Interpretation (Instrument Malfunction).

CASA



Figure 151. Instrument Interpretation (Instrument Malfunction).

CASA

(JNC6.JNC) 12320

SL-634 (FAA)

GRAND JUNCTION SIX DEPARTURE

GRAND JUNCTION RGNL (GJT)
GRAND JUNCTION, COLORADO

ATIS 118.55

GND CON 121.7 257.8

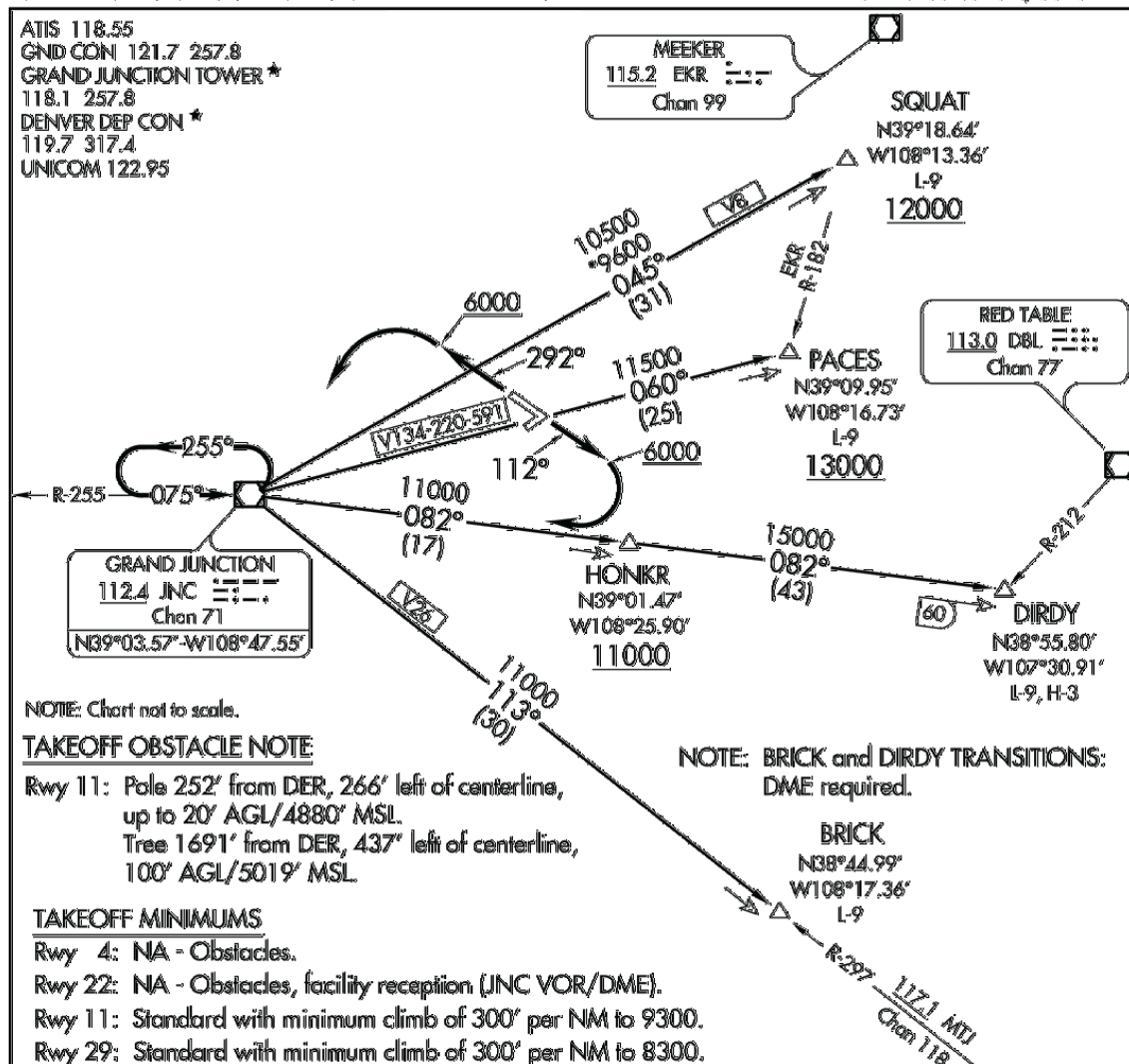
GRAND JUNCTION TOWER *

118.1 257.8

DENVER DEP CON *

119.7 317.4

UNICOM 122.95



DEPARTURE ROUTE DESCRIPTION

TAKEOFF RUNWAY 11: Climb heading 112° to 6000, then climbing right turn direct JNC VOR/DME, thence. . .

TAKEOFF RUNWAY 29: Climb heading 292° to 6000, then climbing left turn direct JNC VOR/DME, thence. . .

. . . on transition/route.

BRICK TRANSITION (JNC6.BRICK): From over JNC VOR/DME via JNC R-113 to BRICK/JNC 30 DME.

DIRDY TRANSITION (JNC6.DIRDY): From over JNC VOR/DME via JNC R-082 to DIRDY INT/JNC 60 DME.

PACES TRANSITION (JNC6.PACES): From over JNC VOR/DME via JNC R-060 to PACES INT/JNC 25 DME.

SQUAT TRANSITION (JNC6.SQUAT): From over JNC VOR/DME via JNC R-045 to SQUAT INT/JNC 31 DME.

GRAND JUNCTION SIX DEPARTURE

(JNC6.JNC) 12320

GRAND JUNCTION, COLORADO
GRAND JUNCTION RGNL (GJT)

Figure 155. Grand Junction Six Departure (JNC6.JNC).

HOT SPOTS		
An "airport surface hot spot" is a location on an aerodrome movement area with a history or potential risk of collision or runway incursion, and where heightened attention by pilots/drivers is necessary. A "hot spot" is a runway safety related problem area on an airport that presents increased risk during surface operations. Typically it is a complex or confusing taxiway/taxiway or taxiway/runway intersection. The area of increased risk has either a history of or potential for runway incursions or surface incidents, due to a variety of causes, such as but not limited to: airport layout, traffic flow, airport marking, signage and lighting, situational awareness, and training. Hot spots are depicted on airport diagrams as open circles or polygons designated as "HS 1", "HS 2", etc. and tabulated in the list below with a brief description of each hot spot. Hot spots will remain charted on airport diagrams until such time the increased risk has been reduced or eliminated.		
CITY/AIRPORT	HOT SPOT	DESCRIPTION*
ALAMOGORDO, NM HOLLOMAN AFB (HMN)	HS1	Twy R, Twy G, and Twy L have multiple hold lines for Rwy 07-25 and Rwy 04-22. Contact tower if confused or lost.
	HS2	Hold line on Twy/EOR A and Twy/EOR H have multiple POV access roads, possibility of high vehicle traffic.
	HS3	Hold line on Twy/EOR B and Twy C for Rwy 07-25 have multiple POV access roads, possibility of high vehicle traffic.
	HS4	Multiple hold lines at intersecting rwys. Landing/departing aircraft disregard hold lines, taxiing aircraft contact tower prior to crossing hold lines.
	HS5	Multiple hold lines where rwys intersect. Hold line also at Twy D. Contact tower if confused or lost.
	HS6	POV crossing controlled by tower. Hold line located on each side of Rwy 07-25. Possibility of high vehicular traffic.
ALBUQUERQUE, NM ALBUQUERQUE INTL SUNPORT (ABQ)	HS 1	Hold Position Marking on Twy E1 for Rwy 08 and Rwy 12.
	HS 2	Twy G1 from Cutter Aviation ramp and Rwy 12-30.
	HS 3	Complex int at Twy F, Twy C, Twy G. Twy G and Rwy 03-21
ASPEN, CO ASPEN-PITKIN COUNTY / SARDY FIELD (ASE)	HS 1	Twy A2. Short taxi distance from ramp to rwy.
	HS 2	Twy A3. Short taxi distance from ramp to rwy.
	HS 3	Twy A4. Short taxi distance from ramp to rwy.
COLORADO SPRINGS, CO CITY OF COLORADO SPRINGS (COS)	HS 1	The apch ends of Rwy 13 and Rwy 17R; and Twy A1.
	HS 2	Twy A4 and Twy G at Rwy 17R-35L.
	HS 3	Int of Twy E4, Twy G, Twy H and Twy E.
	HS 4	Apch ends of Rwy 35R and Rwy 35L.
DENVER, CO CENTENNIAL (APA)	HS 1	Rwy 17L at Twy A1.
	HS 2	Twy A, Twy A8, Twy A9 and Twy C1 congested INT.
	HS 3	Twy C1 and Twy D1 close proximity to Rwy 10.
DENVER, CO DENVER INTL (DEN)	HS 1	Rwy 35L hold signs may not be visible from Twy SC or Twy A until entering Twy M, pilots sometimes enter Rwy 35L without authorization.
	HS 2	Rwy 17R Apch Hold Position.
DENVER, CO ROCKY MOUNTAIN METROPOLITAN (BJC)	HS 1	Frequent helicopter operations.
	HS 2	Multiple hold lines in close proximity. Hold line on Twy B south of Rwy 11R-29L is prior to Twy D.
EAGLE, CO EAGLE COUNTY RGNL (EGE)	HS 1	High density parking area.
GRAND JUNCTION, CO GRAND JUNCTION RGNL (GJT)	HS 1	Rwy 22 and Rwy 29 close proximity, wrong rwy departure risk.

Figure 156. Grand Junction Hot Spots.

GRAND JUNCTION, COLORADO

AL-634 (FAA)

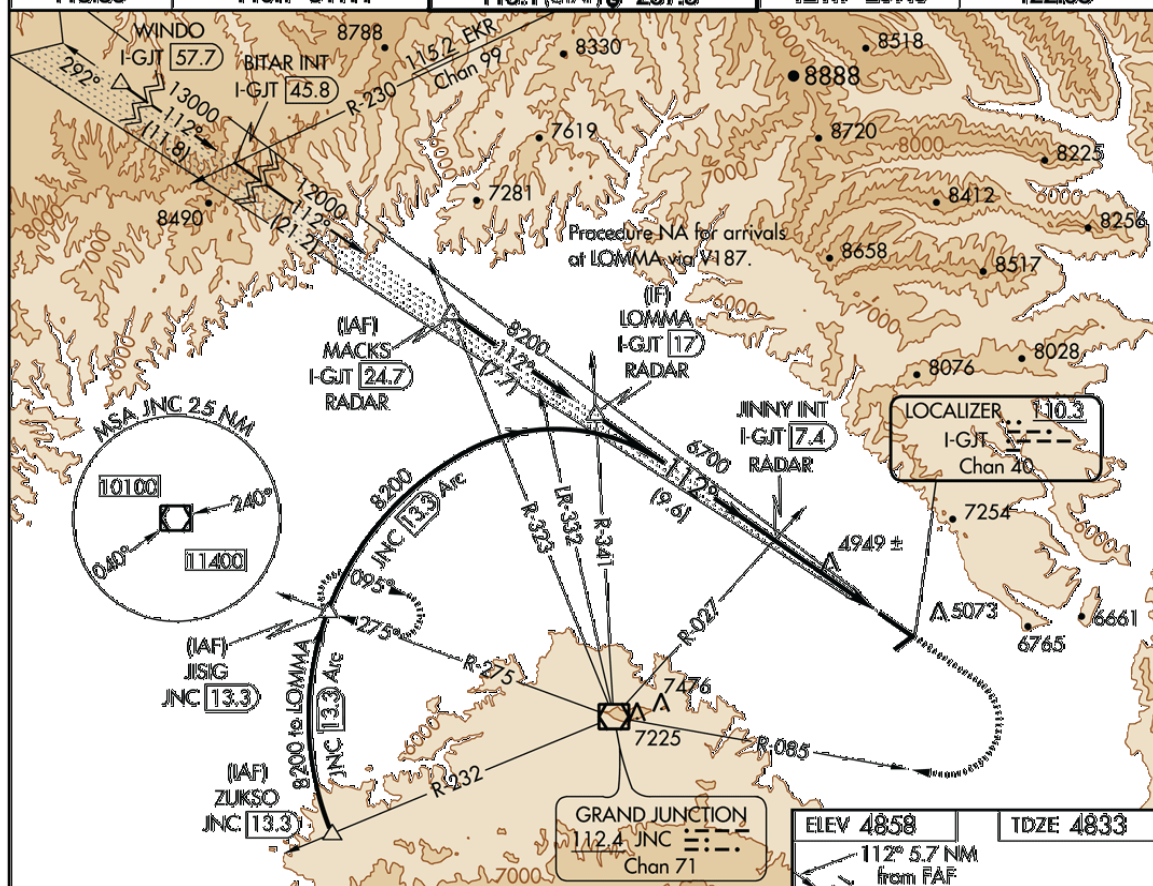
13150

LOC/DME I-GJT 110.3 Chan 40	APP CRS 112°	Rwy Idg 10501 TDZE 4833 Apt Elev 4858
--	------------------------	---

ILS or LOC RWY 11 GRAND JUNCTION RGNL (GJT)

⚠ DME required. ⚠ *RVR 1800 authorized with the use of FD or AP or HUD to DA. VDP NA with Rifle altimeter setting. When local altimeter setting not received, use Rifle altimeter setting and increase DA and all MDA 200 feet, increase S-ILS all Cats visibility to RVR 5000, S-LOC visibility Cat C to RVR 5000, Cat D to RVR 6000, Circling visibility Cat C to 2 1/4 and Cat D to 3.	MALSR MISSED APPROACH: Climb to 6700 then climbing right turn to 9000 via JNC VOR/DME R-085 to JNC VOR/DME then via JNC VOR/DME R-275 to JISIG/JNC 13.3 DME and hold.
---	---

ATIS 118.55	DENVER APP CON* 119.7 317.4	GRAND JUNCTION TOWER* 118.1 (CTAF) 257.8	GND CON 121.7 257.8	UNICOM 122.95
-----------------------	---------------------------------------	--	-------------------------------	-------------------------



LOMMA I-GJT 17 RADAR		Procedure Turn NA		JINNY INT I-GJT 7.4 RADAR		6700 ↑		9000 JNC R-085		JNC □		JNC R-275		JISIG △	
8200		112°		6700		VGSI and ILS glidepath not coincident (VGSI Angle 3.00/TCH 30).		# I-GJT 2.9		I-GJT 1.8		# LOC only			
GS 3.00° TCH 50															
9.6 NM				4.5 NM		1.1 NM									
CATEGORY		A		B		C		D							
S-ILS 11				*5033/24 200 (200-½)											
S-LOC 11		5200/24 367 (400-½)				5200/40 367 (400-¾)									
CIRCLING		5360-1 502 (600-1)		5380-1 522 (600-1)		5440-1½ 582 (600-1½)		5540-2¼ 682 (700-2¼)							

AS

0.4% UP

0.3% DOWN

7000 X 150

TWR
4942

4921±

4880

5802 X 75

HIRL Rwy 11-29 **1**

MIRL Rwy 4-22

REIL Rws 4, 22 and 29

FAF to MAP 5.7 NM

Knots	60	90	120	150	180
Min:Sec	5:42	3:48	2:51	2:17	1:54

GRAND JUNCTION, COLORADO

Amch 16A 30MAY13

39°07'N-108°32'W

GRAND JUNCTION RGNL (GJT)
ILS or LOC RWY 11

Figure 157. ILS RWY 11 (GJT).

©ASA

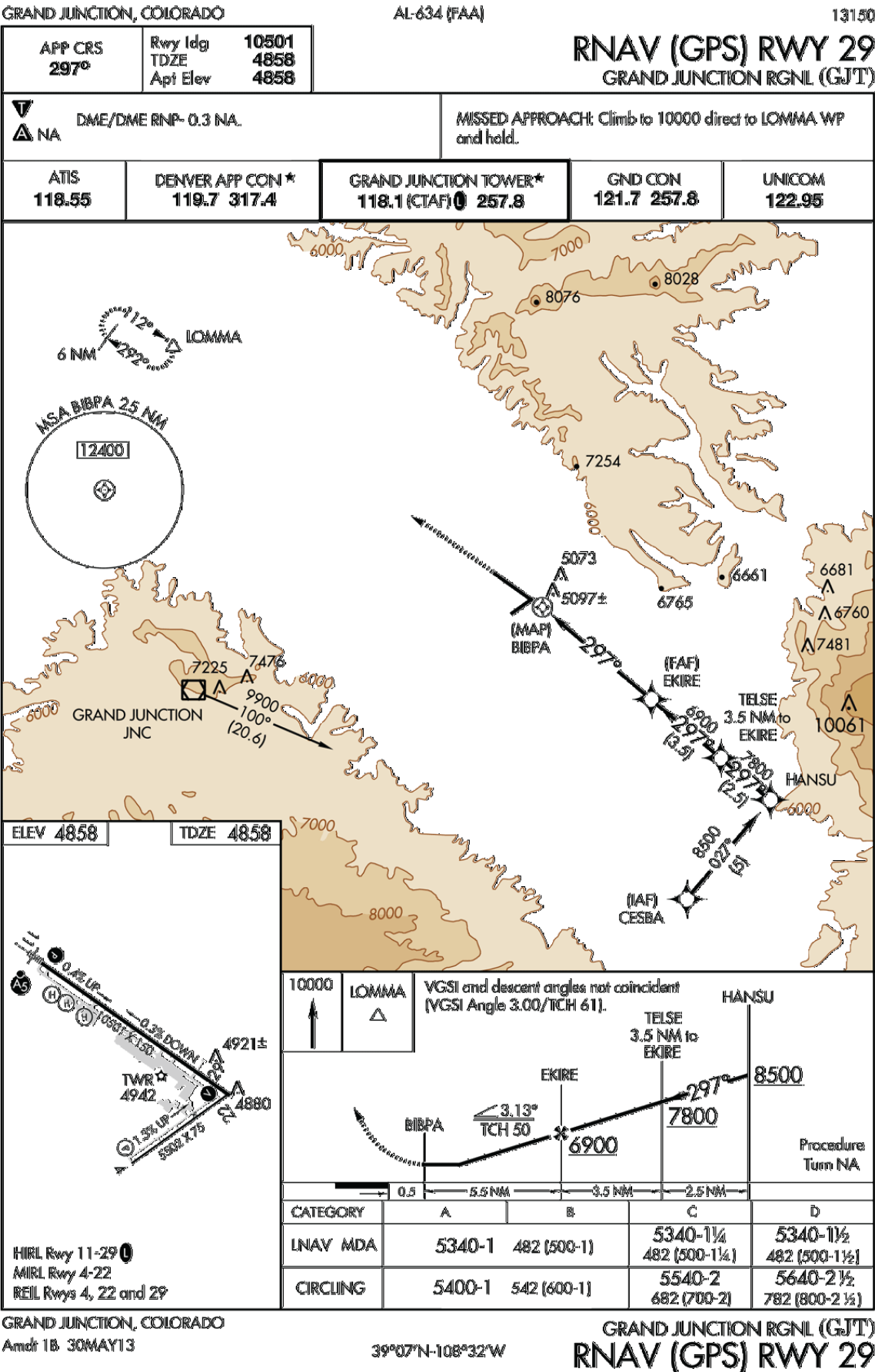


Figure 158. ILS RWY 11 (GJT).

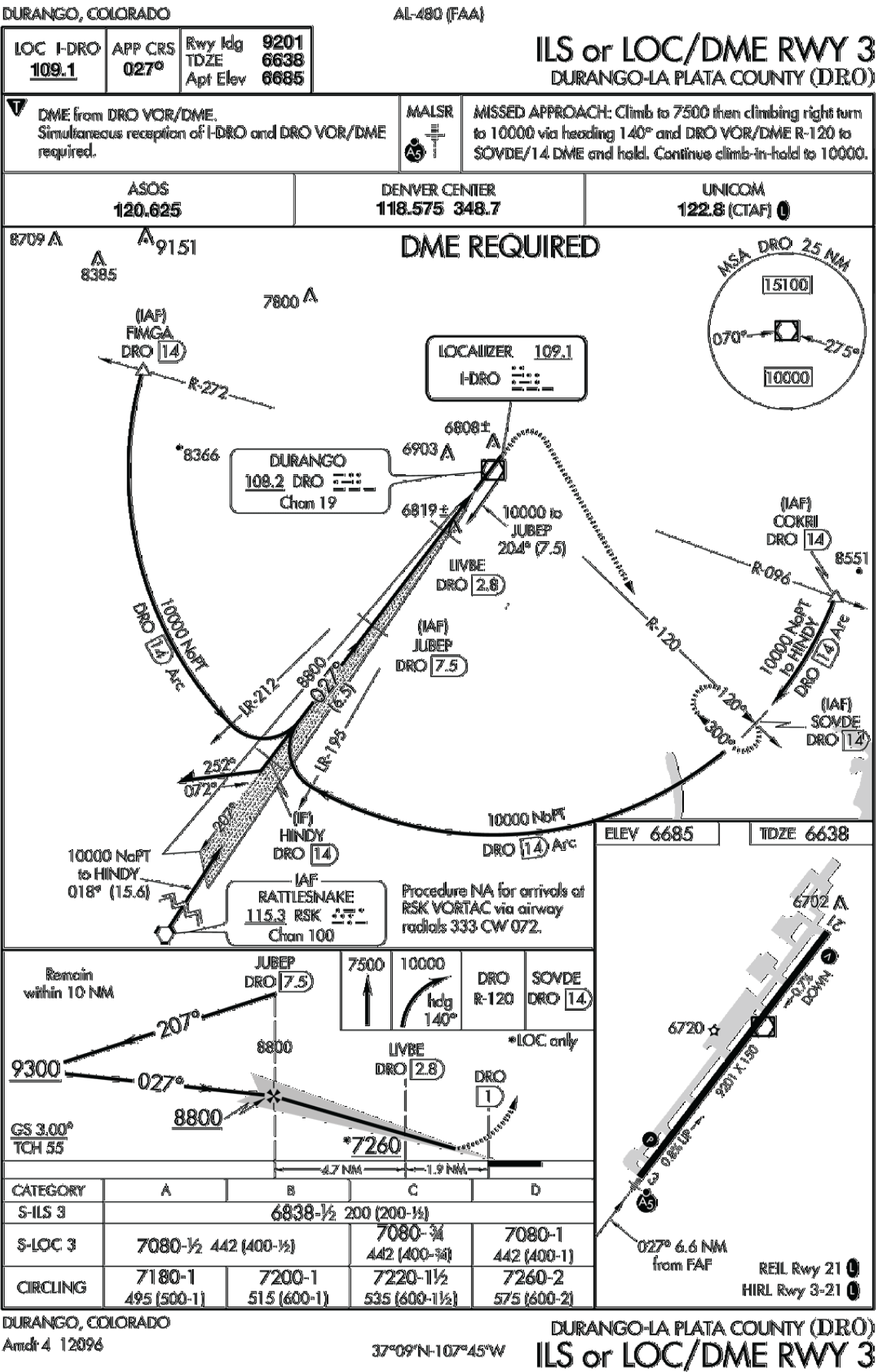


Figure 159. ILS/DME RWY 3 (DRO).

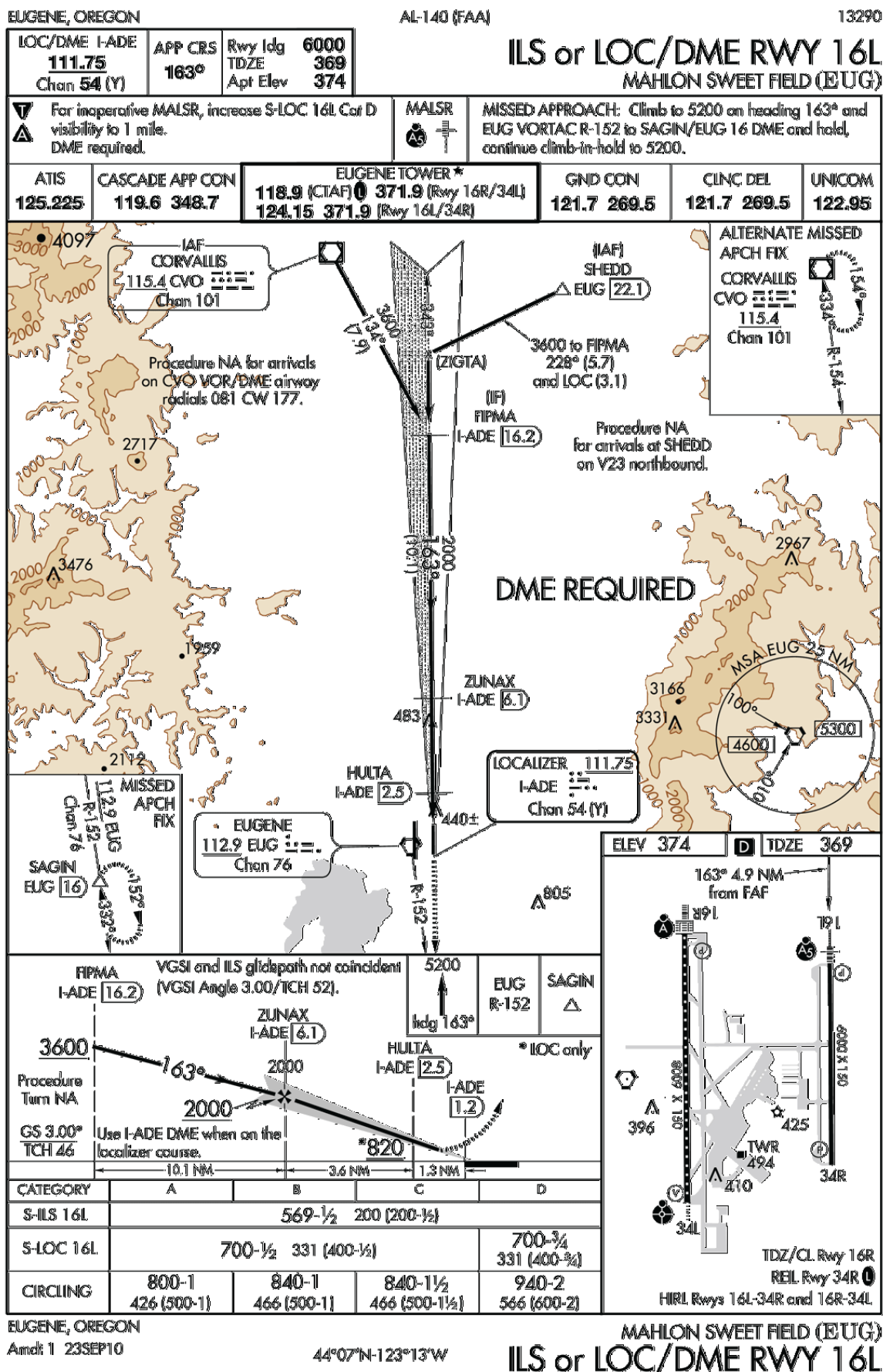


Figure 160. ILS or LOC/DME RWY 16L (EUG).



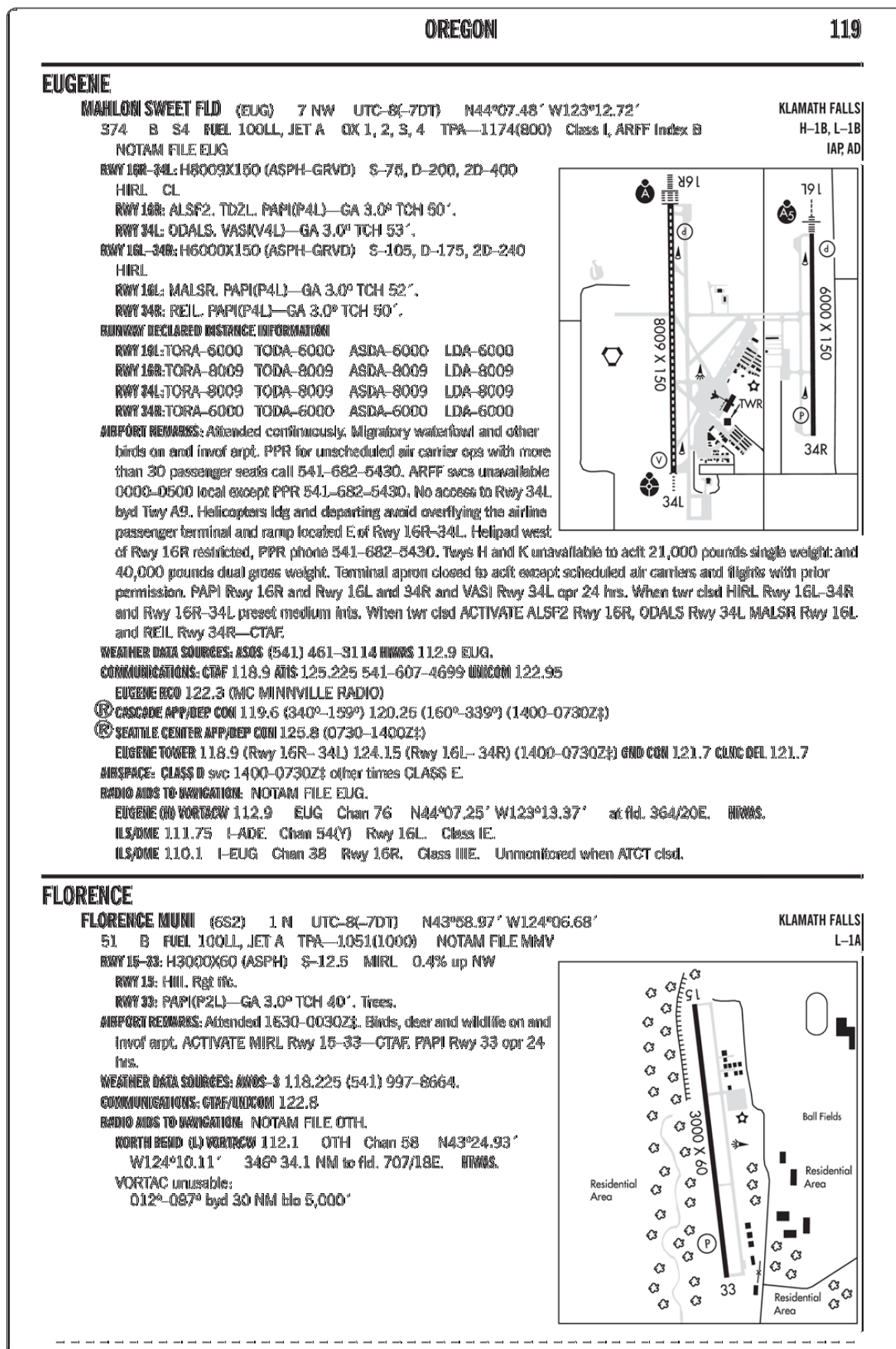
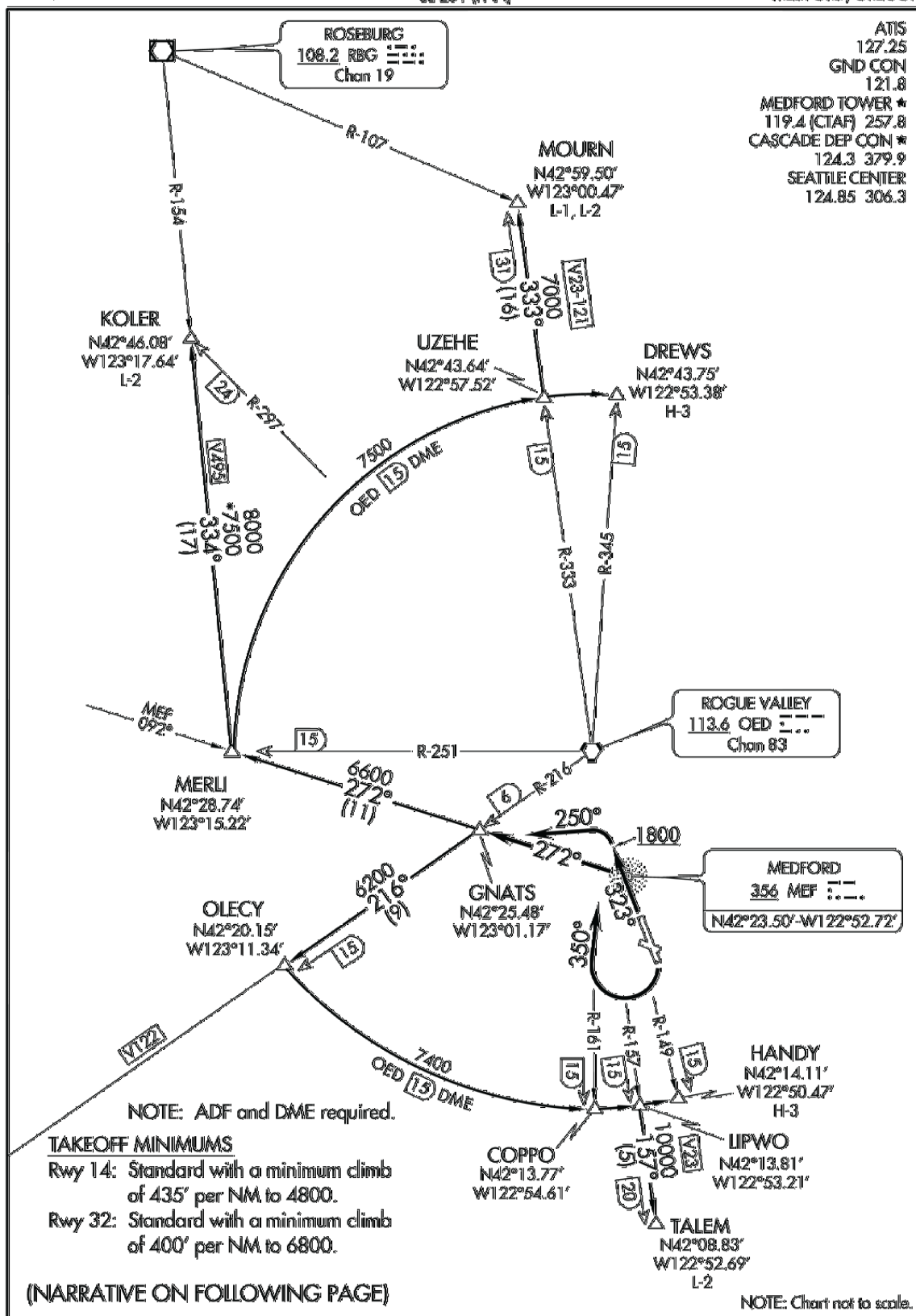


Figure 162. Excerpt from Chart Supplement.

(GNATS6.GNATS) 13290
GNATS SIX DEPARTURE

SL-251 (FAA)

ROGUE VALLEY INTL-MEDFORD (MFR)
MEDFORD, OREGON



GNATS SIX DEPARTURE
(GNATS6.GNATS) 13290

MEDFORD, OREGON
ROGUE VALLEY INTL-MEDFORD (MFR)

Figure 163. GNATS Six Departure (GNATS6.GNATS).

(GNATS6.GNATS) 13290
GNATS SIX DEPARTURE

SL-251 (FAA)

ROGUE VALLEY INTL-MEDFORD (MFR)
MEDFORD, OREGON



DEPARTURE ROUTE DESCRIPTION

TAKEOFF RUNWAY 14: Climbing right turn on heading 350° to intercept bearing 272° from MEF NDB to GNATS INT. Thence

TAKEOFF RUNWAY 32: Climb on heading 323° to 1800 then climbing left turn on heading 250° to intercept bearing 272° from MEF NDB to GNATS INT. Thence

. . . . via (transition) or (assigned route). Maintain 11000 or assigned lower altitude.

COPPO TRANSITION (GNATS6.COPPO): From over GNATS INT via OED VORTAC R-216 to OLECY DME, then via the OED VORTAC 15 DME Arc CCW to COPPO DME.

DREWS TRANSITION (GNATS6.DREWS): From over GNATS INT via MEF NDB 272° to MERLI INT, then via the OED VORTAC 15 DME Arc CW to DREWS DME.

HANDY TRANSITION (GNATS6.HANDY): From over GNATS INT via the OED VORTAC R-216 to OLECY DME, then via the OED VORTAC 15 DME Arc CCW to HANDY DME.

KOLER TRANSITION (GNATS6.KOLER): From over GNATS INT via MEF NDB 272° to MERLI INT, then via RBG VOR/DME R-154 to KOLER INT.

MOURN TRANSITION (GNATS6.MOURN): From over GNATS INT via MEF NDB 272° to MERLI INT, then via the OED VORTAC 15 DME Arc CW to UZEHE DME, then via OED VORTAC R-333 to MOURN INT.

TALEM TRANSITION (GNATS6.TALEM): From over GNATS INT via OED VORTAC R-216 to OLECY DME, then via the OED VORTAC 15 DME Arc CCW to LIPWO DME, then via OED VORTAC R-157 to TALEM DME.

GNATS SIX DEPARTURE
(GNATS6.GNATS) 13290

MEDFORD, OREGON
ROGUE VALLEY INTL-MEDFORD (MFR)

Figure 164. GNATS Six Departure (GNATS6.GNATS).

©ASA

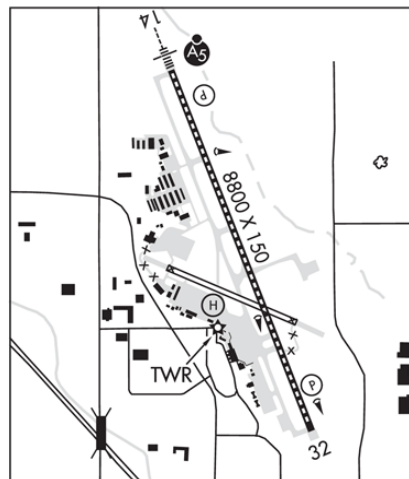
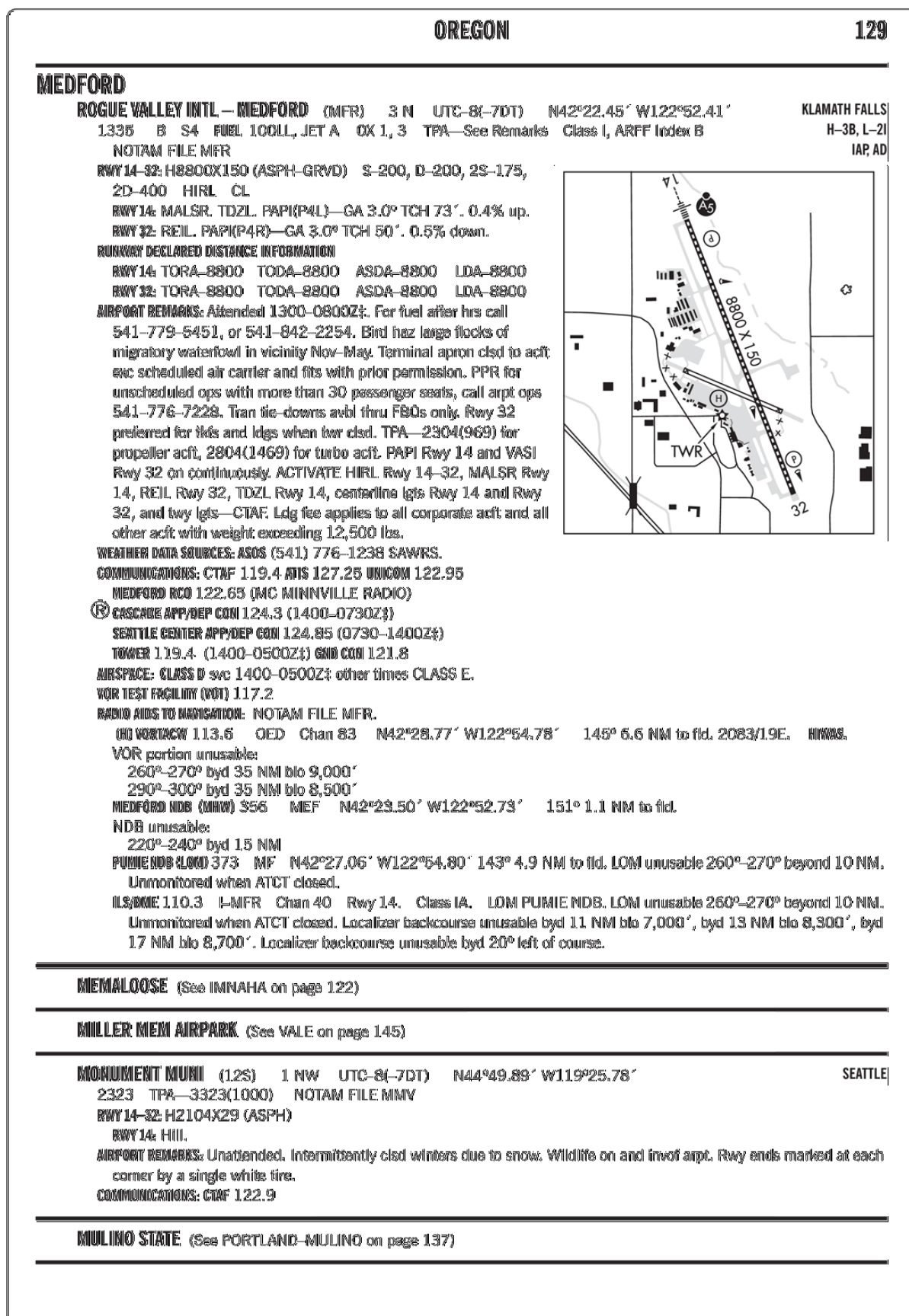


Figure 165. Excerpt from Chart Supplement.

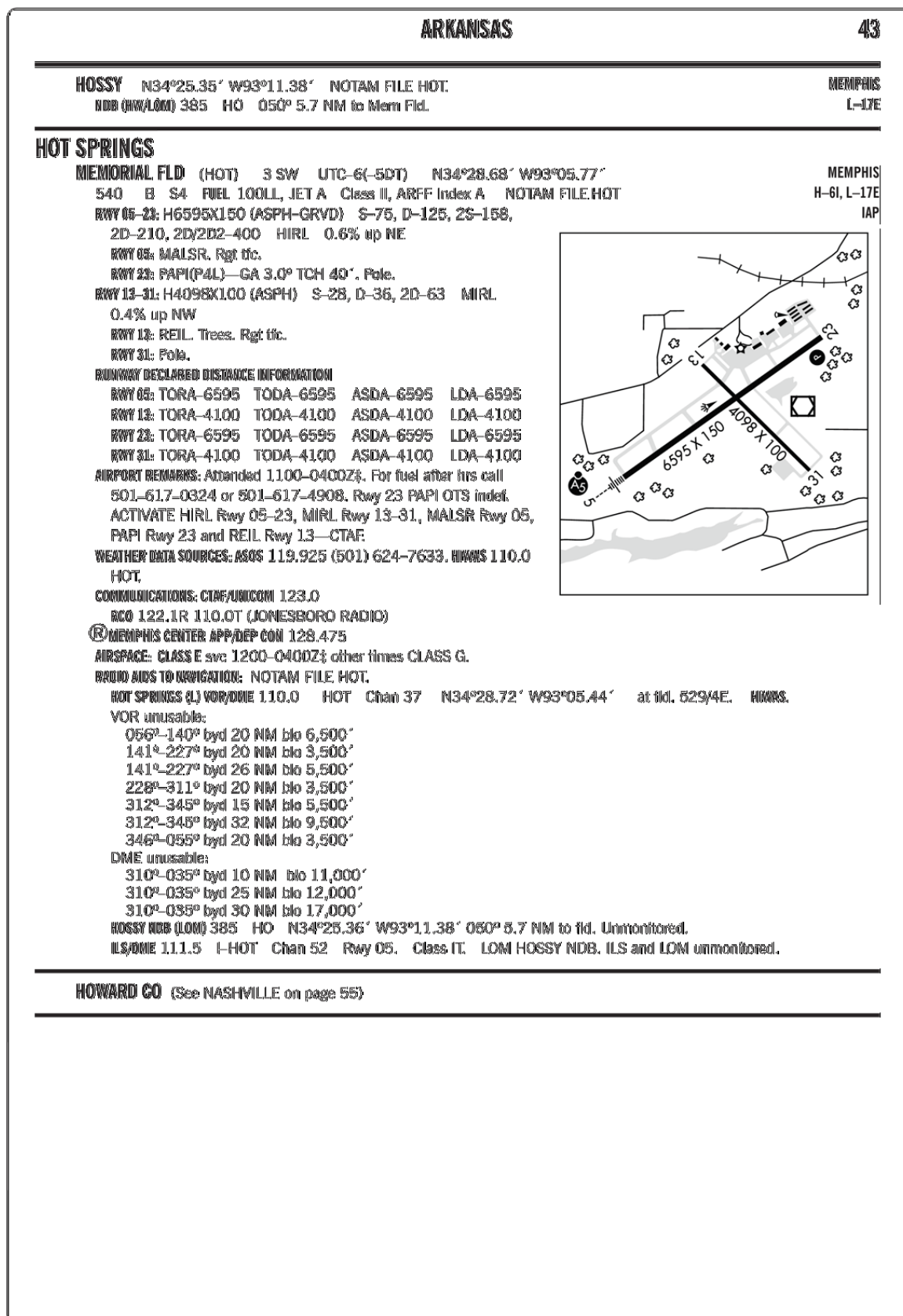


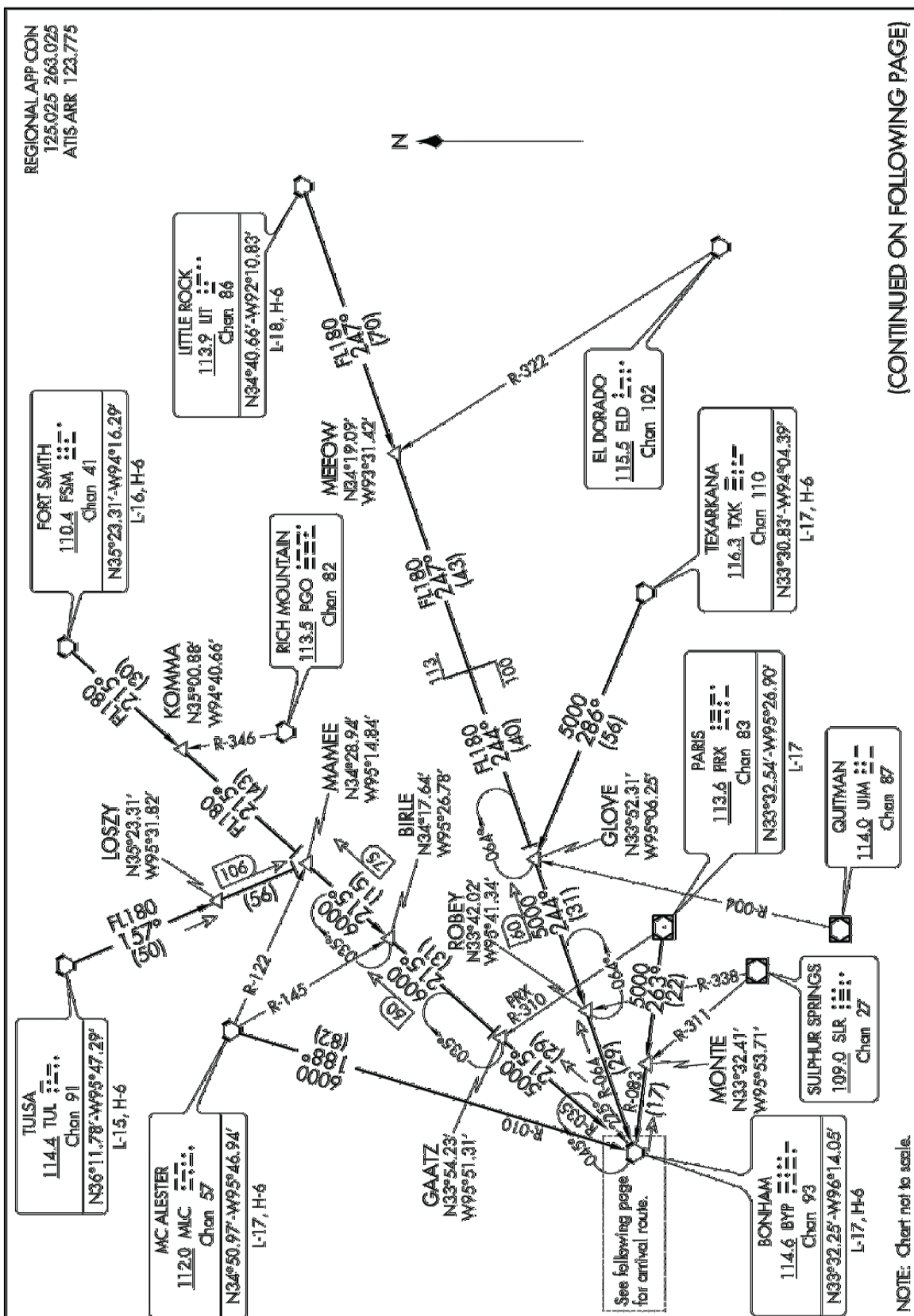
Figure 166. Chart Supplement (HOT).

(BYP.BYP6) 13178

ST-6039 (FAA)

BONHAM SIX ARRIVAL Transition Routes

DALLAS-FORT WORTH INTL (DFW)
DALLAS-FORT WORTH, TEXAS



(CONTINUED ON FOLLOWING PAGE)

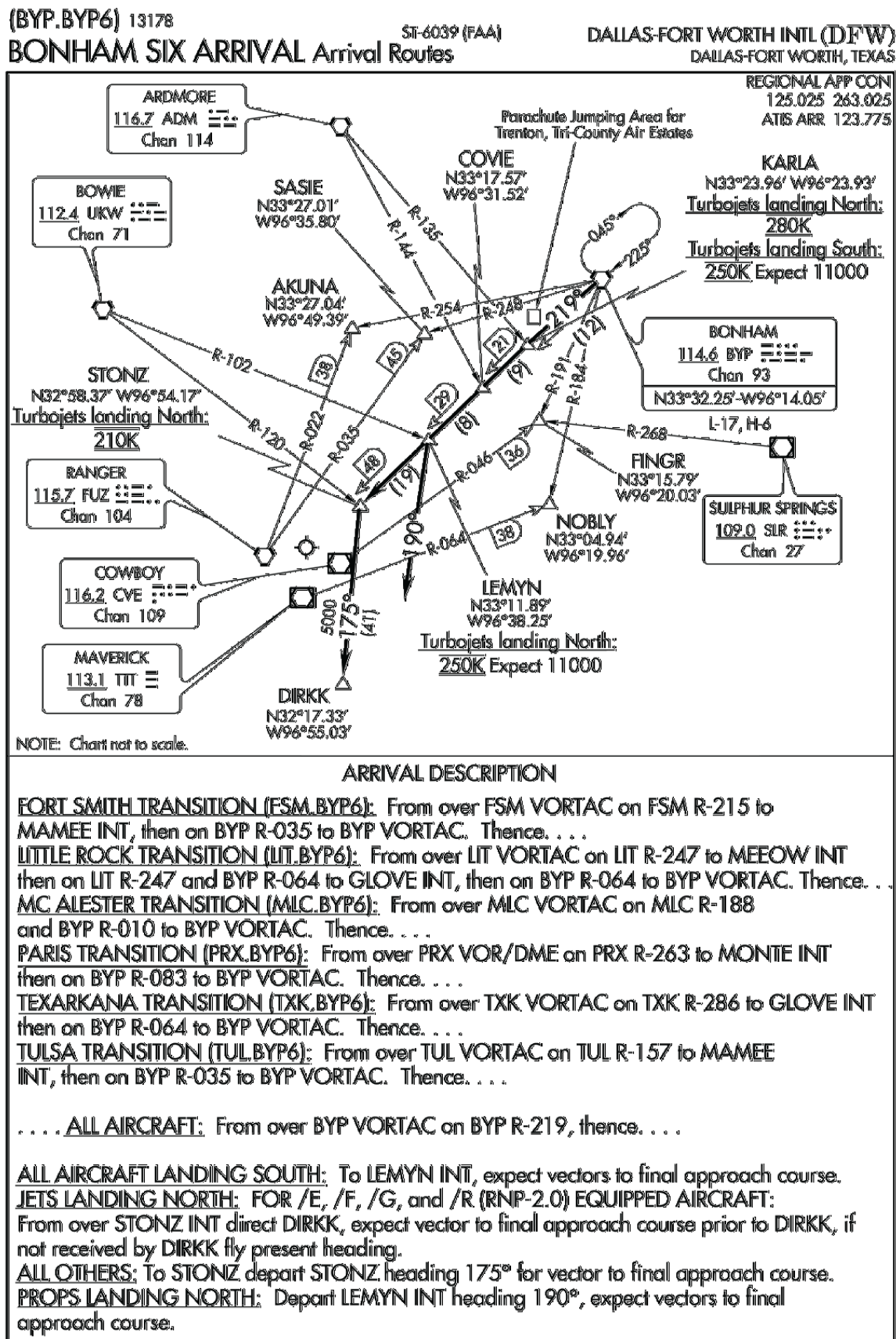
BONHAM SIX ARRIVAL Transition Routes

(BYP.BYP6) 13178

DALLAS-FORT WORTH, TEXAS
DALLAS-FORT WORTH INTL (DFW)

Figure 167. BONHAM Six Arrival Transition Routes (BYP.BYP6) (DFW).

©ASA



BONHAM SIX ARRIVAL Arrival Routes
(BYP.BYP6) 13178

DALLAS-FORT WORTH, TEXAS
DALLAS-FORT WORTH INTL (DFW)

Figure 168. BONHAM Six Arrival Routes (BYP.BYP6) (DFW).

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240

TEXAS

DALLAS

ADDISON (ADS) 9 N UTC-6(-5DT) N32°58.11' W96°50.19'

645 B S4 FUEL 100LL, JET A QX 2, 3 TPA—See Remarks LRA NOTAM FILE ADS

RWY 15-33: H7203X100 (ASPH-GRVD) S-60, D-120 HIRL

RWY 15: MALSR. PAPI(P4R)—GA 3.0° TCH 60'. Thld dspcd 979'.

Pole.

RWY 33: REIL. PAPI(P4L)—GA 3.0° TCH 60'. Thld dspcd 772'. Bldg.

RUNWAY DECLARED DISTANCE INFORMATION

RWY 15: TORA-7202 TODA-7202 ASDA-6592 LDA-5613

RWY 33: TORA-7202 TODA-7202 ASDA-7202 LDA-6431

AIRPORT REMARKS: Attended continuously. Birds on and in/of arpt. No touch and go landings without arpt managers approval. Numerous 200' buildings within 1 mile East, and South of arpt, transmission towers and water tanks West of arpt. Noise sensitive areas surround arpt. Pilots requested to use NBAA std noise procedures. TPA—1600 (936) for light acft, 2000 (1356) for large acft. Be alert: Rwy holding position markings located at the west edge of Twy A. ACTIVATE HIRL Rwy 15-33 and MALSR Rwy 15—CTAF. Flight Notification Service (ADCUS) available.

WEATHER DATA SOURCES: AWOS-3 (972) 386-4855 LAWRS.

COMMUNICATIONS: CTAF 126.0 ATIS 133.4 972-628-2439

UNICOM 122.95

REGIONAL APP/DEP CON 124.3

TOWER 126.0 (1200-0400Z) GND CON 121.6 CLNC DEL 119.55

AIRSPACE: CLASS D svc 1200-0400Z, other times CLASS G.

RADIO AIDS TO NAVIGATION: NOTAM FILE FTW.

MAVERICK (HO VOR/DME 113.1 TTT Chan 78 N32°52.15' W97°02.43' 054° 11.9 NM to fld. 540/6E.

All acft arriving DFW are requested to turn DME off until departure due to traffic overload of Maverick DME.

ILS/DME 110.1 I-ADS Chan 38 Rwy 15. Class IT. Unmonitored when ATCT closed. DME also serves Rwy 33.

ILS/DME 110.1 I-TBQ Chan 38 Rwy 33. Class IB. Localizer unmonitored when ATCT closed. DME also serves Rwy 15.



DALLAS-FT WORTH

COPTER

H-6H, L-17C, A

IAP, AD

AIR PARK-DALLAS (F69) 16 NE UTC-6(-5DT) N33°01.41' W96°50.22'

695 S4 FUEL 100LL TPA—1890(1195) NOTAM FILE FTW

RWY 16-34: H3080X30 (ASPH) LIRL(NSTD)

RWY 16: Thld dspcd 300'. Pole.

RWY 34: Tree. Rgt tlc.

AIRPORT REMARKS: Unattended. For fuel call 972-248-4265 prior to arrival. Rwy 16-34 extensive cracking, loose asph and stones rwy. Rwy 16-34 NSTD LIRL, south 2780' of rwy lgt. Rwy 16 and Rwy 34 NSTD centerline marking incorrect size and spacing, dspcd thld yellow. Rwy numbers 25' tall. ACTIVATE LIRL Rwy 16-34—CTAF.

COMMUNICATIONS: CTAF 122.9

RADIO AIDS TO NAVIGATION: NOTAM FILE FTW.

MAVERICK (HO VOR/DME 113.1 TTT Chan 78 N32°52.15' W97°02.43' 042° 13.8 NM to fld. 540/6E.

All acft arriving DFW are requested to turn DME off until departure due to traffic overload of Maverick DME.

AIRPARK EAST (1F7) 23 E UTC-6(-5DT) N32°48.78' W96°21.12'

510 B S4 NOTAM FILE FTW

RWY 13-31: H2630X30 (ASPH) LIRL

RWY 13: Tree. Rgt tlc.

RWY 31: Tree.

AIRPORT REMARKS: Unattended. ACTIVATE LIRL Rwy 13-31—122.9.

COMMUNICATIONS: CTAF/UNICOM 122.7

DALLAS-FT WORTH

COPTER

L-17C, A

DALLAS-FT WORTH

COPTER

Figure 169. Excerpt from Chart Supplement (ADS).

CASA

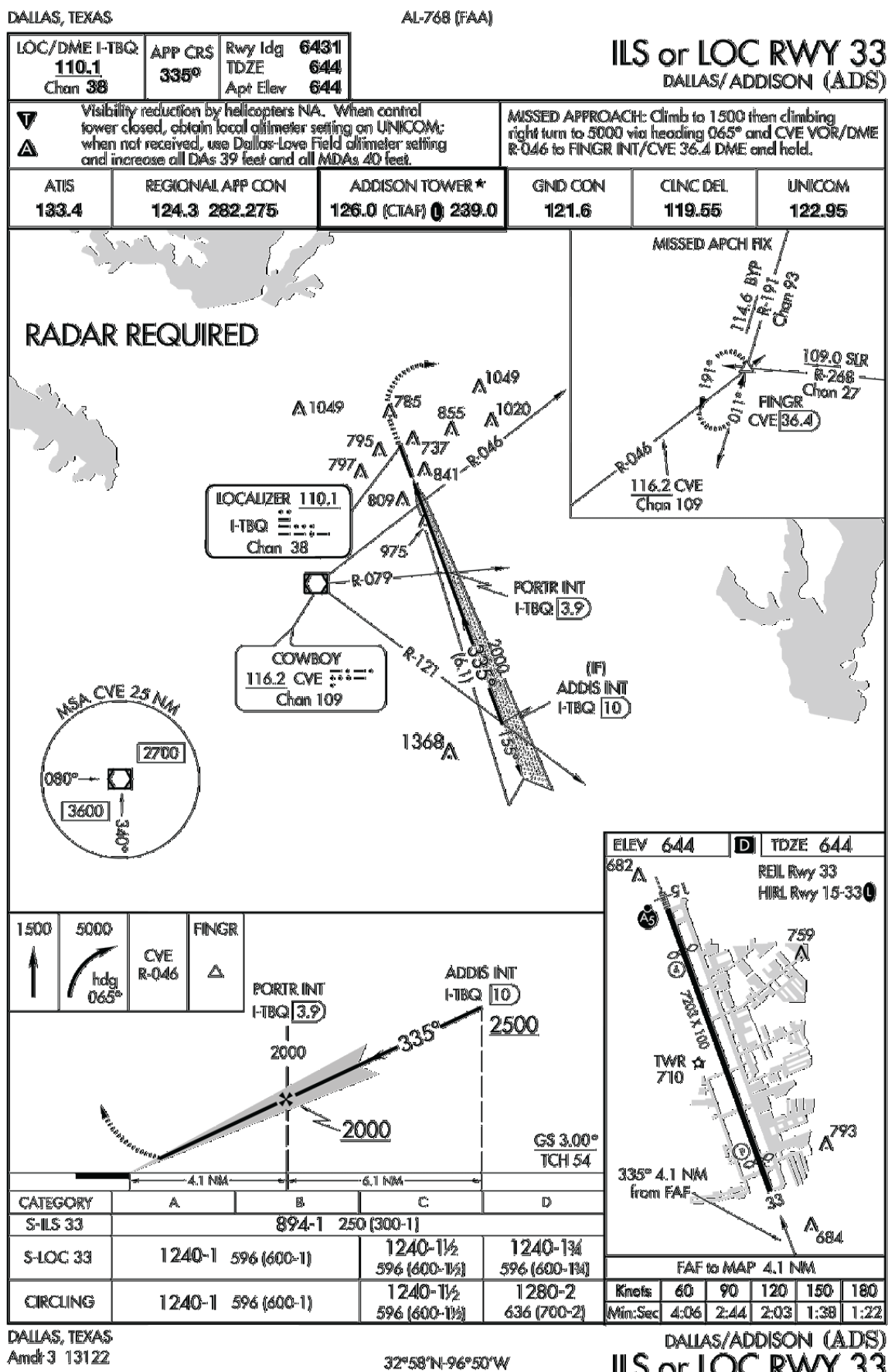


Figure 170. ILS or LOC RWY 33 (ADS).



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MONTANA

HELENA RGNL (HLN)(KHLN) P (ARNG) 2 NE UTC-7(-6DT) N46°36.41' W111°58.97' GREAT FALLS
3877 B S4 FUEL 80, 100, 100LL, JET A OK 1, 3 LRA Class I, ARFF Index B NOTAM FILE HLN H-1D, L-13C
RWY 09-27: H9000X150 (ASPH-PFC) S-100, D-160, 2S-175, IAP, DIAP, AD
2D-250 HIRL
RWY 09: REIL VASI(V4L)—GA 3.0° TCH 45'. Ground. 0.3% down.
RWY 27: MALSR, VASI(V4L)—GA 3.0° TCH 47'. Rgt tic.
RWY 05-23: H4644X75 (ASPH-PFC) S-21, D-30 MIRL 1.2% up SW
RWY 05: Road.
RWY 23: PAPI(P2L)—GA 3.0° TCH 49'. Fence. Rgt tic.
RWY 17-35: H2989X75 (ASPH-PFC) S-21, D-30 MIRL 1.7% up SE
RWY 35: Ground. Rgt tic.
MILITARY SERVICE: Lgt When twr clsd, ACTIVATE-HIRL Rwy 09-27, MIRL
Rwy 05-23 and 16-34, REIL Rwy 09, MALSR Rwy 27—CTAF. FUEL
A+, JB (C406-442-2190. Opr 1200-0600Z, OT \$150 fee, 90 min
PPR.) (NC-80, 100, 100LL)
AIRPORT REMARKS: Attended 1200-0600Z. ARFF coverage provided for
scheduled Part 121 air carriers only exc with prior approval, call
406-442-2821. Ldg rights customs avbl call 406-449-5506. Rwy
17-35 and Rwy 05-23 (exc between Twy F and Rwy 09-27) not avbl
for air carrier use by acft with greater than 30 passenger seats. Twy A,
Twy B, and Twy C between Twy A and Rwy 35 not avbl for air carrier
use by acft with greater than 30 passenger seats. When twr clsd
ACTIVATE HIRL Rwy 09-27, MIRL Rwy 05-23 and Rwy 17-35, REIL Rwy 09, MALSR Rwy 27—CTAF. Ldg fee for all
commercial acft and all acft over 10,000 lbs. Flight Notification Service (ADCUS) avbl. NOTE: See SPECIAL NOTICE.
MILITARY REMARKS: ARNG Opr Mon-Fri 1400-0030Z, exc holidays. Exercise caution while taxiing, AASF ramp not stressed
for large acft. Ctc fit ops for ramp advisory 126.2, DSN 324-3055/56, C406-324-3055/56. No tran svc Sat, Sun,
holidays or after 2300Z Mon-Fri.
WEATHER DATA SOURCES: ASOS (406) 443-4317
COMMUNICATIONS: CTAF 118.3 ATIS 120.4 UNICOM 122.95
RCO 122.55 255.4 (GREAT FALLS RADIO)
APP/DEP CON 119.5 229.4 (1300-0500Z)
SALT LAKE CENTER APP/DEP CON 133.4 285.4 (0500-1300Z)
TOWER 118.3 257.8 (1300-0500Z) GND CON 121.9
ARRG OPS 40.65 126.2 321.45
AIRSPACE: CLASS D svc 1300-0500Z; other times CLASS E.
RADIO AIDS TO NAVIGATION: NOTAM FILE HLN.
(M) VORTACW 117.7 HLN Chan 124 N46°36.41' W111°57.21' 254° 1.2 NM to fld. 3823/16E.
VOR portion unusable:
035°-050° byd 35 NM bto 12,000'
105°-165° byd 25 NM bto 17,000'
165°-185° byd 25 NM bto 13,500'
185°-230° byd 25 NM bto 17,500'
203°-213° byd 22 NM bto 13,000'
230°-270° byd 25 NM bto 12,500'
TACAN AZIMUTH and DME unusable:
035°-070° byd 35 NM bto 13,000'
165°-185° byd 25 NM bto 13,500'
250°-300° byd 25 NM bto 14,000'
320°-035° byd 25 NM bto 13,000'
TACAN DME unusable:
035°-070° byd 35 NM bto 13,000'
105°-150° byd 25 NM
105°-210° byd 15 NM bto 11,100'
105°-210° byd 20 NM bto 12,000'
150°-165° byd 25 NM bto 17,000'
165°-185° byd 25 NM bto 13,500'
185°-210° byd 25 NM
203°-213° byd 22 NM bto 13,000'
210°-250° byd 15 NM bto 12,000'
210°-250° byd 25 NM bto 17,500'
250°-300° byd 25 NM bto 14,000'
320°-035° byd 25 NM bto 13,000'
TACAN AZIMUTH unusable:
105°-150° byd 15 NM
150°-165° byd 15 NM bto 17,000'
185°-210° byd 15 NM
210°-250° byd 15 NM bto 17,500'



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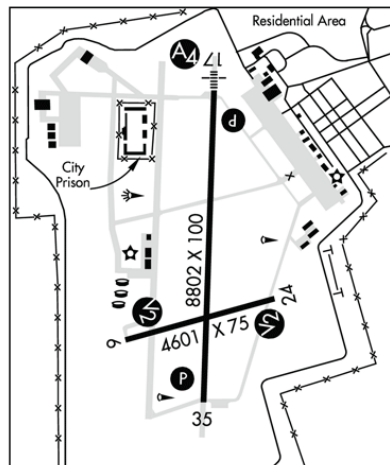
Figure 172. Excerpt from Chart Supplement.

OASA

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TEXAS

BIG SPRING MC MAHON-WRINKLE (BPG) 2 SW UTC-6(-5DT) N32°12.76' W101°31.30' DALLAS-FT WORTH
2573 B S4 FUEL 100LL, JET A NOTAM FILE BPG H-6G, L-6H
RWY 17-35: H8802X100 (CONC) S-60, D-150, 2D-200 MIRL IAP
RWY 17: SSALS, PAPI(P4L)—GA 3.0° TCH 45'. Rgt tlc.
RWY 35: PAPI(P4L)—GA 3.0° TCH 36'.
RWY 06-24: H4601X75 (ASPH) MIRL 0.6% up NE.
RWY 06: PVASI(PSIL)—GA 2.97° TCH 47'. Rgt tlc.
RWY 24: PVASI(PSIL)—GA 3.55° TCH 35'.
AIRPORT REMARKS: Attended Mon-Sat 1400-2300Z. For fuel after hours call 432-267-8952 or 432-935-3395. Prairie dogs on rwy and twys. Extensive agricultural ops invof airt. Sandhill Cranes crossing in the spring and fall. MIRL Rwy 06-24 and Rwy 17-35 preset low lnts, to increase lnts and ACTIVATE SSALS Rwy 17 and PVASI Rwy 06, Rwy 24, and PAPI Rwy 17 and Rwy 35—CTAF.
WEATHER DATA SOURCES: ANOS-3 118.025 (432) 263-3842.
COMMUNICATIONS: CTAF/UNCOM 122.8
RCO 122.4 (SAN ANGELO RADIO)
FORT WORTH CENTER APP/DEP COM 133.7
RADIO AIDS TO NAVIGATION: NOTAM FILE BPG.
(L) VORTACW 114.3 BGS Chan 90 N32°23.14' W101°29.02' 180° 10.5 NM to fld. 2670/11E.



BIGGS AAF (FORT BLISS) (BIF)(KBIF) A 5 NE UTC-7(-6DT) N31°50.97' W106°22.80' EL PASO
3948 B TPA—See Remarks NOTAM FILE ABQ Not insp. H-4L, L-6F
RWY 03-21: H13554X150 (PEM) PCN 120 R/C/W/T HIRL DIAP AD
RWY 03: PAPI(P4L)—GA 3.0° TCH 71'.
RWY 21: ALSF1, PAPI(P4L)—GA 3.0° TCH 71'. Rgt tlc, 0.3% down.
MILITARY SERVICE: IGT When unattended ACTIVATE 3-step HIRL Rwy 03-21, High Intensity ALS Category I configuration with sequenced flashers (code) Rwy 21 and PAPI Rwy 21-127.9. INSU 4(A/M32A-86) 2(A/M32-95) FUEL A+ (Atlantic Awn, 1200-0400Z; Mon-Sun, C915-779-2831, 1 hr prior notice, after hr C915-851-2390, after hr call out fee \$100.)
FLUID SP TRAN ALERT 1300-0500Z; Mon-Sun, exc holidays.
MILITARY REMARKS: Attended Mon-Sun 1300-0500Z; except holidays. See FLIP AP/1 Supplementary Airt Remark. BSTD PPR all airt, 24 hr prior notice, etc Airfield Ops DSN 621-8811/8330, C915-744-8811/8330, Twr and svcs avbl for all airt with PPR. PPR time valid +/- 1 hr. All airt etc Airt Ops via PTD 30 min prior to arr. Twr and svcs unavbl before 1 hr prior to PPR sled arr. CAUTION El Paso Intl Rwy 22 2 NM SE can be mistaken for Rwy 21. Coyote hazard. TFC PMT Fixed Wing 5002(1054), Fixed Wing Category BCDE turbo prop 5502(1554), Rotary Wing 4502(554), Jet 6002(2054). NS ABTMT VFR w/dep via mountain pass 15 NM NW of Biggs AAF. Avoid VFR over flight of city. Fly 1500' AGL, 1500' horizontal distance from mountain dwellings. BISC Approval required for access to ramp. Temporary storage of classified material avbl at Airt Ops. Intl garbage cap fld. Expect delays unless placed in garbage bags prior to arrival. Hangar space extremely limited for transient airt. KBIF manual obsn and wx forecaster avbl Mon-Fri 1300-0500Z; clsd holidays. DSN 621-1215/1214, C915-744-1215/1214, OT 25th OWS, Davis Monthan AFB, DSN 228-6598/6599.
COMMUNICATIONS: ATIS 120.0 254.3 (C915-772-9412) PTD 122.7
(R) EL PASO APP COM 119.15 353.5 (South of V16) 124.25 298.85 (North of V16)
TOWER 127.9 342.25 (Mon-Sun 1300-0500Z; except holidays). Advisory svc twr freq other times.
(R) EL PASO DEP COM 121.3 263.0
EL PASO CLNC DEL 125.0 379.1
AIRSPACE: CLASS D svc 1300-0500Z; Mon-Sat except holidays other times CLASS E.
RADIO AIDS TO NAVIGATION: NOTAM FILE ABQ.
MEXIMAN (L) VORTACW 112.4 EWM Chan 71 N31°57.18' W106°16.34' 210° 8.2 NM to fld. 4040/12E.
DME portion unusable:
220°-256° byd 25 NM to 12,000'
COMM/NAV/WEATHER REMARKS: Radar—See Terminal FLIP for Radar Minima.

BIRD DOG AIRFIELD (See KRUM on page 297)

BISHOP (See DECATUR on page 245)

Figure 172A. Excerpt from Chart Supplement.

CASA

MONTANA

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CONTINUED FROM PRECEDING PAGE

CAPITOL NDB (HW) 335 CVP N46°36.40' W111°56.23' 258° 1.9 NM to fld. NDB unmonitored when ATCT clsd.
 HAUSER NDB (HW) 386 HAU N46°34.13' W111°45.48' 268° 9.6 NM to fld. NDB unmonitored when HLN
 ATCT clsd.
 ILS 110.1 I-HLN Rwy 27. Unmonitored when ATCT closed. Localizer backcourse unusable btyd 22° rgt of course,
 unusable within 2.7 DME.

HINSDALE (6U5) 0 SE UTC-7(-6DT) N48°23.28' W107°05.00' BILLINGS
 2220 NOTAM FILE 6TF
 RWY 07-25: 2200X75 (TURF) LIRL(NSTD) 0.7% up W
 RWY 07: Road.
 RWY 10-28: 2160X200 (TURF) 0.3% up W
 RWY 10: Road.
 RWY 18-34: 1960X75 (TURF) 1.5% up S
 RWY 18: P-line.
 RWY 34: Fence.
 AIRPORT REMARKS: Unattended. Rwys soft when wet. Hay bales and farm equipment adjacent to rwy. Rwys not clearly defined.
 Rwy 16-34, Rwy 07-25 and Rwy 10-28 marked with white cones full length of rwy. Rwy 16 p-lines marked with globes.
 Rwy 07-25 NSTD LIRL 335' spacing between lgts, one thld lgt each end. For rwy lgts phone 406-364-2272/2387.
 COMMUNICATIONS: CTAF 122.9

HOGELAND (6U6) 1 NW UTC-7(-6DT) N48°51.61' W108°39.66' BILLINGS
 3139 B NOTAM FILE 6TF
 RWY 07-25: 3140X60 (TRTD) 0.6% up W
 RWY 16-34: 1230X50 (TURF)
 RWY 34: Bldg.
 AIRPORT REMARKS: Unattended. Rwy 16-34 for emerg use only, road and drainage ditch parallel rwy on east side. Rwy 07-25
 patches of loose aggregate and grvl.
 COMMUNICATIONS: CTAF 122.9

HOT SPRINGS (S89) 2 E UTC-7(-6DT) N47°36.75' W114°36.81' GREAT FALLS
 2763 B NOTAM FILE 6TF
 RWY 06-24: H3550X45 (ASPH-TRTD) MIRL
 RWY 24: Thld displd 411'. Road.
 AIRPORT REMARKS: Unattended. Ufbalights on and in vicinity of arpt. Occasional snow removal. Rwy 06-24 asph grvl
 composition full length. Rwy 24 has 411' unlighted, 2169' lgt at ngt. Rwy 06-24 cones adjacent to MIRL full length
 and displd thld marked with white cones. Rwy 06 and Rwy 24 numbers 4'x 8' in measure, thld line and rwy lines NSTD.
 COMMUNICATIONS: CTAF 122.9

HYSHAM (6U7) 2 E UTC-7(-6DT) N46°17.61' W107°11.60' BILLINGS
 2624 B NOTAM FILE 6TF
 RWY 07-25: H3060X45 (ASPH-TRTD) LIRL
 AIRPORT REMARKS: Unattended. 1030' dirt extension east of Rwy 07 thld soft when wet. Rwy 07 basic markings NSTD
 numbers and stripes, markings are faded. Rwy 25 basic markings NSTD small numbers and stripes, markings are faded.
 Numerous rwy lgts inop. ACTIVATE LIRL Rwy 07-25—CTAF.
 COMMUNICATIONS: CTAF 122.9

JORDAN (JDN) 2 NW UTC-7(-6DT) N47°19.73' W106°57.16' BILLINGS
 2662 B NOTAM FILE JDN L-130
 RWY 10-28: H4300X75 (ASPH-PFC) S-12.5 MIRL
 RWY 28: PAPI(P2L)—GA 3.0° TCH 29'.
 AIRPORT REMARKS: Unattended. ACTIVATE MIRL Rwy 10-28 and PAPI Rwy 28—CTAF.
 COMMUNICATIONS: CTAF 122.9
 RADIO AIDS TO NAVIGATION: NOTAM FILE GGW.
 GLASGOW (H) VOR/DME 113.9 GGW Chan 86 N48°12.92' W106°37.53' 180° 54.8 NM to fld. 2283/14E.
 NDB (HW) 263 JDN N47°20.00' W106°56.29' at fld. NOTAM FILE JDN. VFR only.

JUDITH MOUNTAIN N47°13.03' W109°13.31' GREAT FALLS
 REQ 122.2 (GREAT FALLS RADIO) L-130

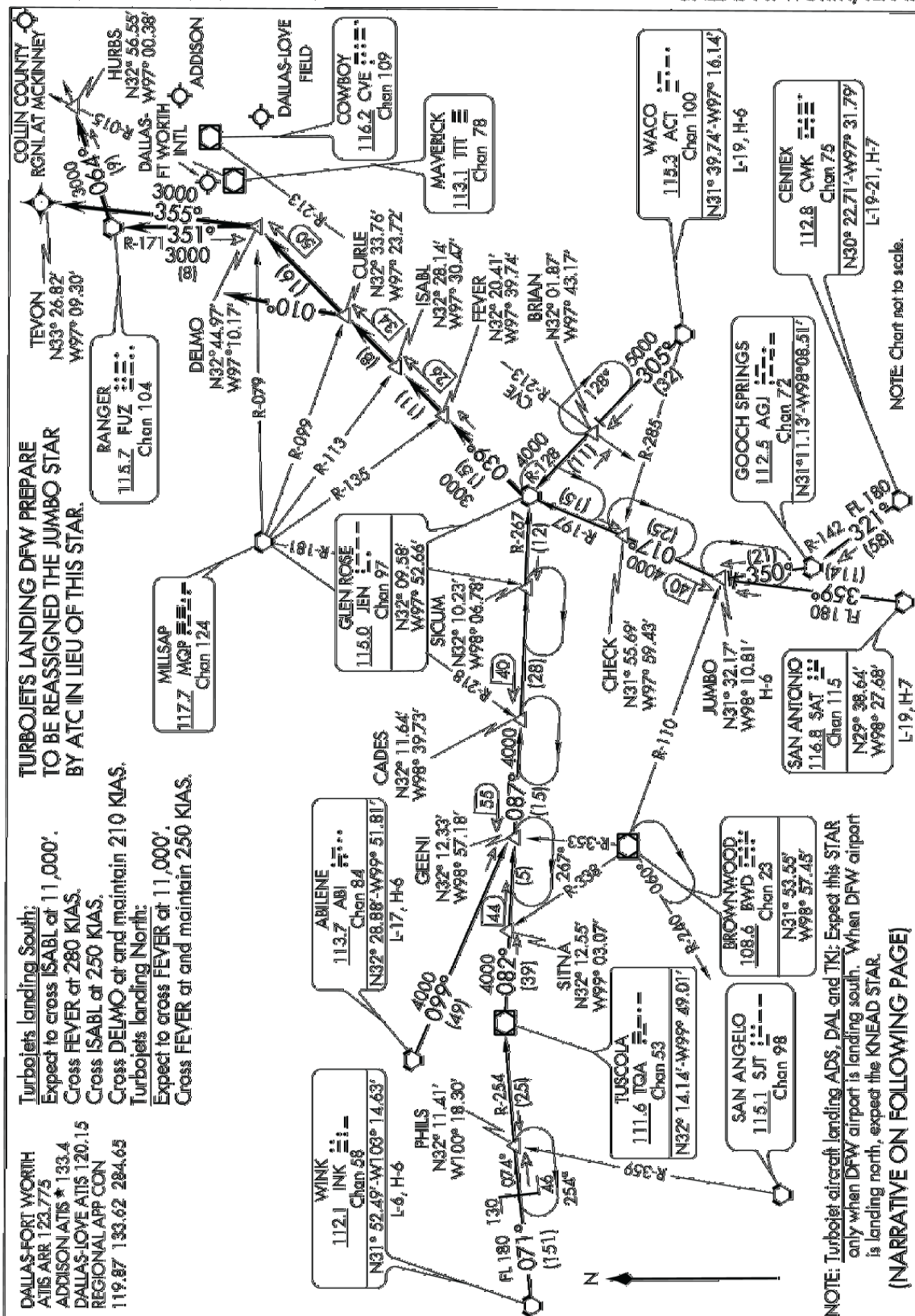
Figure 173. Excerpt from Chart Supplement.

(JEN.JEN9) 09351

GLEN ROSE NINE ARRIVAL

ST-6039 (FAA)

DALLAS-FT. WORTH, TEXAS



GLEN ROSE NINE ARRIVAL

DALLAS-FT. WORTH, TEXAS

(JEN.JEN9) 09351

Figure 174. GLEN ROSE Nine Arrival (JEN.JEN9).

©ASA

(JEN.JEN9) 09351

GLEN ROSE NINE ARRIVAL

ST-6039 (FAA)

DALLAS-FT. WORTH, TEXAS

ARRIVAL DESCRIPTION

ABILENE TRANSITION (ABI.JEN9): From over ABI VORTAC via R-099 to GEENI INT, then via JEN R-267 to JEN VORTAC. Thence. . . .

CENTEX TRANSITION (CWK.JEN9): From over CWK VORTAC via CWK R-321 and AGJ R-142 to AGJ VORTAC, then via AGJ R-350 to JUMBO INT, then via JEN R-197 to JEN VORTAC. Thence

JUMBO TRANSITION (JUMBO.JEN9): From over JUMBO INT via JEN R-197 to JEN VORTAC. Thence

SAN ANTONIO TRANSITION (SAT.JEN9): From over SAT VORTAC via SAT R-359 to JUMBO INT, then via JEN R-197 to JEN VORTAC. Thence

WACO TRANSITION (ACT.JEN9): From over ACT VORTAC via ACT R-305 and JEN R-128 to JEN VORTAC. Thence. . . .

WINK TRANSITION (INK.JEN9): From over INK VORTAC via INK R-071 and TQA R-254 to TQA VOR/DME, then via TQA R-082 to GEENI INT, then via JEN R-267 to JEN VORTAC. Thence. . . .

. . . . ALL AIRCRAFT: From over JEN VORTAC via JEN R-039, thence

ALL AIRCRAFT LANDING NORTH: To CURLE INT, expect vectors to final approach course.

JETS LANDING SOUTH: To DELMO, depart DELMO heading 355°.

For /E, /F, /G and /R (RNP 2.0) EQUIPMENT SUFFIXED AIRCRAFT: From over DELMO WP direct TEVON WP, expect vector to final approach course prior to TEVON WP. If not received by TEVON fly present heading.

NON TURBOJETS LANDING SOUTH: To CURLE INT, depart CURLE heading 010° for vectors to final approach course.

AIRCRAFT LANDING DAL, ADS, TKI: To DELMO INT, depart DELMO via FUZ R-171 to FUZ VORTAC then FUZ R-064 to HURBS INT, expect vectors to final approach course.

GLEN ROSE NINE ARRIVAL

DALLAS-FT. WORTH, TEXAS

(JEN.JEN9) 09351

Figure 175. GLEN ROSE Nine Arrival (JEN.JEN9).

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TEXAS

CONTINUED FROM PRECEDING PAGE

AIRPORT REMARKS: Attended continuously. Rwy 17L-35R CLOSED 0400-1200Z except PPR. Rwy 13R-31L CLOSED 0400-1200Z except PPR. Rwy 13L-31R CLOSED 0400-1200Z except PPR. Rwy 31R last 625' CLOSED indef. Visual screen 20' AGL 1180' south AER 35C. Visual screen 22' AGL 1179' south AER 35L. ASDE-X SURVEILLANCE system in use; Pilots should opr transponders with mode C on all twys and rwys. PPR for acft with wingspan 215' or greater (GROUP VD), call apt ops 972-973-3112 for follow me services while taxiing to and from ramp and rwys. Rwy 13L, Rwy 17L, Rwy 31R, and Rwy 35R rwy visual range touchdown, midpoint and rollout avbl. Rwy 31L and Rwy 31R runway visual range touchdown and rollout avbl. Arpt under construction, PAEW in movement areas. Birds on and in vicinity of arpt. Txf distance for Rwy 17L from Twy Q2 is 8196'. Txf distance for Rwy 35R from Twy Q9 is 8196'. Txf distance for Rwy 17R from Twy EQ is 13082' and from Twy EH is 12816'. Txf distance for Rwy 35L from Twy EQ is 13084' and from Twy EP is 12811'. Txf distance for Rwy 36R from Twy WP is 12815', from Twy WQ is 13082'. Txf distance for Rwy 18L from Twy WG is 13082', from Twy WH is 12815'. Txf distance for Rwy 17C from Twy EG is 13,082'. Txf distance for Rwy 18R from Twy WG is 13,082'. Land and hold-short signs on Rwy 17C at Twy B 10,460' south of Rwy 17C thld, Rwy 18R at Twy B 10,100' south of Rwy 18R thld, Rwy 35C at Twy EJ 9050' north of Rwy 35C thld, Rwy 36L at Twy Z 10,650' north of Rwy 36L thld, lgtl and marked with in-pavement pulsating white lgt. Twy G11 east of Twy G clsd to acft with wingspan 125' and greater. Acft using gates D6-D17 must obtain approval from DFW ramp twr 129.95 prior to entering ramp and prior to pushback 1130-0430Z. Use extreme care at other times. Apron Terminal E ramp work in progress, ctc DFW ramp on 131.0 1530-1200Z for Terminal E procedure change. Apron entrance/exit Points 32, 33, 34, 35, 36, 37, 38 and 39 clsd to acft with wingspan greater than 135'. Acft pushing back or powering back on Terminal B Apron have right of way. Frequent ground support equip under escort crossing Twys A and B at Twy HA. Apron entrance/exit points 5, 7, 42 and 44 clsd to acft with wingspan 118' and greater. Apron entrance/exit points 42 and 44 clsd to acft with wingspan greater than 118'. Terminal B apron taxiway b/n apron entrance/exit point taxiways 110 and 115 clsd to acft with wingspan 118' and greater. Apron entrance/exit points 22, 24, 105, 107 and 122 clsd to acft with wingspan 125' and greater. Apron entrance/exit point 124 clsd to acft with wingspan 200' and greater. Twy A5 clsd to acft with wingspan 171' and greater. Twys may require judgemental oversteering for large acft. Apron entrance/exit points 52 and 53 clsd to acft with wingspan 171' and greater. Acft exiting via apron entrance/exit points 42, 43 and 44 ctc Gnd Con prior to taxiing. PPR general aviation ops 0400-1200Z, call apt ops 972-973-3112. PPR from apt ops for general aviation acft to proceed to airline terminal gate except to general aviation facility. PPR from the primary tenant airlines to operate within the central terminal area. Proper minimum object free area distances may not be maintained for ramp/apron taxi lanes. Twy edge reflectors along all twys. Landing fee. Flight Notification Service (ADCUS) available. NOTE: See Land and Hold Short Operations, Intersection Departures During Periods of Darkness, Noise Abatement Procedures and Continuous Power Facilities.

WEATHER DATA SOURCES: ASOS (972) 453-0992 LLWAS.

COMMUNICATIONS: D-ATIS ARR 123.775 (972) 615-2701 D-ATIS DEP 135.925 (972) 615-2701 UNICOM 122.95

① **RGNL APP COM** 125.025 133.525 (E) 119.875 133.525 (W)

DFW TOWER 126.55 127.5 (E) 124.15 134.9 (W) GND COM 121.65 121.8 (E) 121.85 (W)

CLNC DEL 128.25

① **RGNL DEP COM** 118.55 (E) 126.475 (W) 124.825 (N) 125.125 (S)

AIRSPACE: CLASS B See VFR Terminal Area Chart

RADIO AIDS TO NAVIGATION: NOTAM FILE FTW.

MAVERICK (H) VOR/DME 113.1 TTT Chan 78 N32°52.15' W97°02.43' 358° 1.7 NM to fld. 540/6E.

ILS/DME 109.5 I-LWN Chan 32 Rwy 13R. Class IE.

ILS/DME 110.3 I-FLQ Chan 40 Rwy 17C. Class IIIE. DME also serves Rwy 35C.

ILS/DME 111.75 I-PPZ Chan 54(Y) Rwy 17L. Class IIIE. DME also serves Rwy 35R.

ILS/DME 111.35 I-JHZ Chan 50(Y) Rwy 17R. Class IE. DME also serves Rwy 35L.

ILS/DME 110.55 I-CIX Chan 42(Y) Rwy 18L. Class IE. DME also serves Rwy 36R.

ILS/DME 111.9 I-VYN Chan 56 Rwy 18R. Class IIIE. DME also serves Rwy 36L.

ILS/DME 110.9 I-PRA Chan 46 Rwy 31R. Class IE.

ILS/DME 110.3 I-PKQ Chan 40 Rwy 35C. Class IIIE. DME also serves Rwy 17C. OM/Comlo also serves Rwy 35L.

ILS/DME 111.35 I-UWX Chan 50(Y) Rwy 35L. Class IE. OM/Comlo also serves Rwy 35R. LOC unusable byd 14 NM bto 3,400'. DME also serves Rwy 17R.

ILS/DME 111.75 I-AJQ Chan 54(Y) Rwy 35R. Class IIIE. DME also serves Rwy 17L. LOC unusable byd 16 NM 5° right of course.

ILS/DME 111.9 I-BXN Chan 56 Rwy 36L. Class ID. DME also serves Rwy 18R. OM also serves Rwy 36R. LOC unusable byd 15 NM 5° right of course.

ILS/DME 110.55 I-FJN Chan 42(Y) Rwy 36R. Class IE. OM also serves Rwy 36L. DME also serves Rwy 18L.

COMM/HW/WEATHER REMARKS: All acft enrvng DFW are requested to turn DME off until dep due to t/c overload of Maverick DME.

DALLAS/FORT WORTH INTL. (See DALLAS-FORT WORTH on page 243)

DAN E RICHARDS MUNI. (See PADUCAH on page 325)

DAN JONES INTL. (See HOUSTON on page 279)

Figure 176A. ILS-1 RWY 36L, Dallas-Fort Worth Intl.

©ASA

TEXAS

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DALLAS—FORT WORTH

DALLAS/FORT WORTH INTL. (DFW) 12 NW UTC-6(-5DT) N32°53.81' W97°02.28'

DALLAS—FT WORTH

607 B FUEL 100LL, JET A OX 1, 3 AOE Class I, ARFF Index E NOTAM FILE DFW

COPTER

RWY 17C-35C: H13401X150 (CONC-GRVD) S-120, D-200, 2S-175, 2D-600, 2D/2D2-850 HIRL

H-6H, L-17C, A

CL

IAP, AD

RWY 17C: ALSF2. TDZL. PAPI(P4L)—GA 3.0° TCH 74'.

RWY 35C: ALSF2. TDZL. PAPI(P4L)—GA 3.0° TCH 76'.

RWY 17R-35L: H13401X200 (CONC-GRVD) S-120, D-200, 2S-175, 2D-600, 2D/2D2-850 HIRL CL

RWY 17R: MALSR. TDZL. PAPI(P4L)—GA 3.0° TCH 68'.

RWY 35L: MALSR. TDZL. PAPI(P4L)—GA 3.0° TCH 63'.

RWY 18L-38R: H13400X200 (CONC-GRVD) S-120, D-200, 2S-175, 2D-600, 2D/2D2-850 HIRL CL

RWY 18L: MALSR. TDZL. PAPI(P4L)—GA 3.0° TCH 70'.

RWY 38R: MALSR. TDZL. PAPI(P4L)—GA 3.0° TCH 66'.

RWY 18R-36L: H13400X150 (CONC-GRVD) S-120, D-200, 2S-175, 2D-600, 2D/2D2-850 HIRL CL

RWY 18R: ALSF2. TDZL. PAPI(P4L)—GA 3.0° TCH 74'.

RWY 36L: MALSR. TDZL. PAPI(P4L)—GA 3.0° TCH 72'.

RWY 19R-31L: H9301X150 (CONC-GRVD) S-120, D-200, 2S-175, 2D-600, 2D/2D2-850 HIRL CL

RWY 19R: MALSR. TDZL. PAPI(P4L)—GA 3.0° TCH 71'.

RWY 31L: REIL. PAPI(P4L)—GA 3.13° TCH 72'.

RWY 13L-31R: H9000X200 (CONC-GRVD) S-120, D-200, 2S-175, 2D-600, 2D/2D2-850 HIRL CL

RWY 13L: REIL. PAPI(P4L)—GA 3.0° TCH 82'. Thld displcd 625'. 0.6% down.

RWY 31R: MALSR. TDZL. PAPI(P4L)—GA 3.0° TCH 69'. 0.5% up.

RWY 17L-35R: H8500X150 (CONC-GRVD) S-120, D-200, 2S-175, 2D-600, 2D/2D2-850 HIRL CL

RWY 17L: ALSF2. TDZL. PAPI(P4L)—GA 3.0° TCH 77'. Antenna. 0.6% up.

RWY 35R: ALSF2. TDZL. PAPI(P4R)—GA 3.0° TCH 73'. 0.6% down.

LAND AND HOLD—SHORT OPERATIONS

LOG RWY	HOLD—SHORT POINT	AVBL LOG DIST
RWY 17C	TWY B	10460
RWY 18R	TWY B	10100
RWY 35C	TWY EJ	9050
RWY 36L	TWY Z	10650

RUNWAY DECLARED DISTANCE INFORMATION

RWY 13L:TORA-9000 TODA-9000 ASDA-9000 LDA-8375
RWY 13R:TORA-9301 TODA-9301 ASDA-9301 LDA-9301
RWY 17C:TORA-13401 TODA-13401 ASDA-13401 LDA-13401
RWY 17L:TORA-8500 TODA-8500 ASDA-8500 LDA-8500
RWY 17R:TORA-13401 TODA-13401 ASDA-13401 LDA-13401
RWY 18L:TORA-13400 TODA-13400 ASDA-13400 LDA-13400
RWY 18R:TORA-13400 TODA-13400 ASDA-13400 LDA-13400
RWY 31L:TORA-9301 TODA-9301 ASDA-9301 LDA-9301
RWY 31R:TORA-8375 TODA-8375 ASDA-8375 LDA-8375
RWY 35C:TORA-13401 TODA-13401 ASDA-13401 LDA-13401
RWY 35L:TORA-13401 TODA-13401 ASDA-13401 LDA-13401
RWY 35R:TORA-8500 TODA-8500 ASDA-8500 LDA-8500
RWY 36L:TORA-13400 TODA-13400 ASDA-13400 LDA-13400
RWY 36R:TORA-13400 TODA-13400 ASDA-13400 LDA-13400

CONTINUED ON NEXT PAGE

Figure 176. ILS-1 RWY 36L, Dallas-Fort Worth Intl.

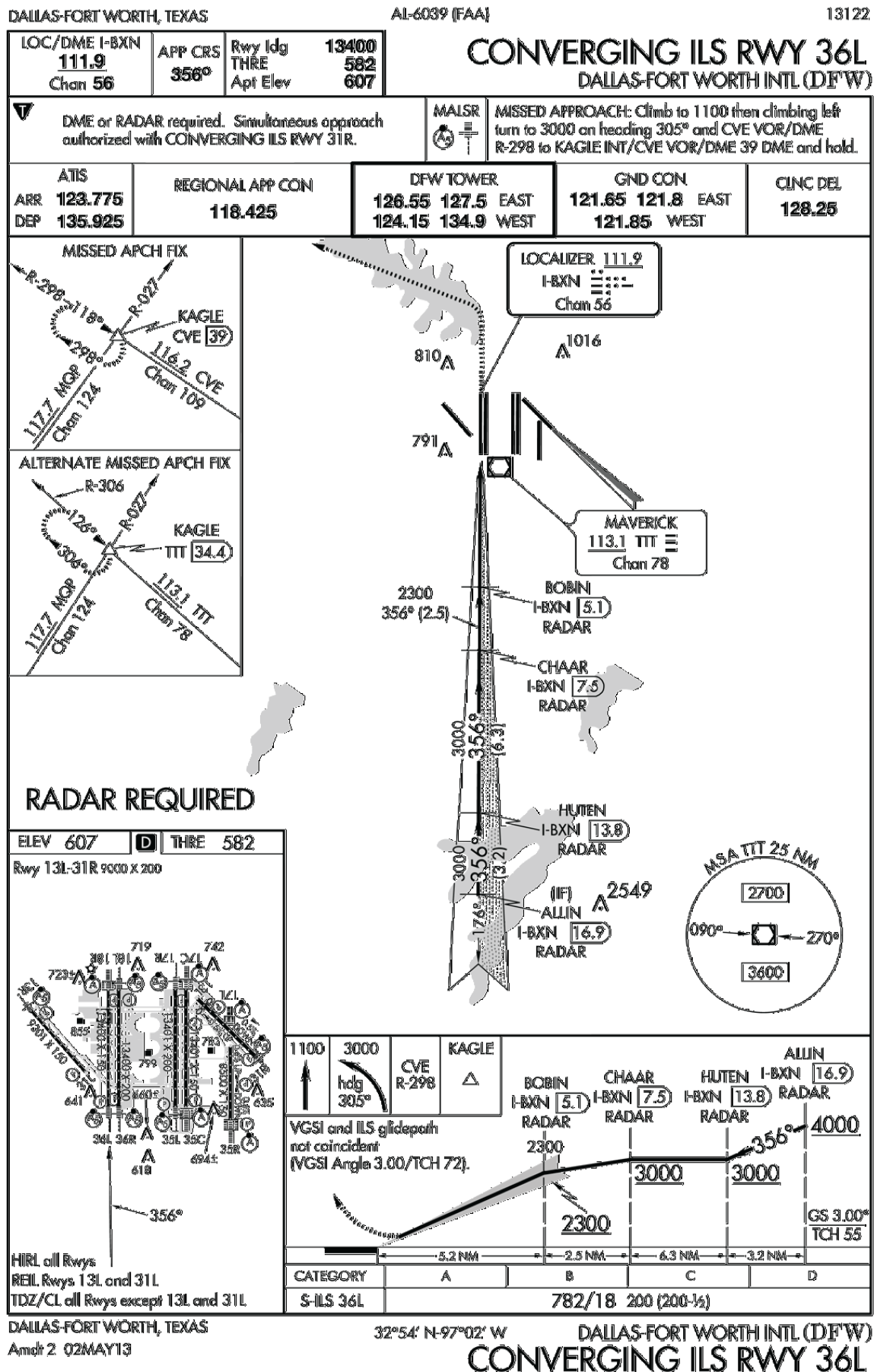
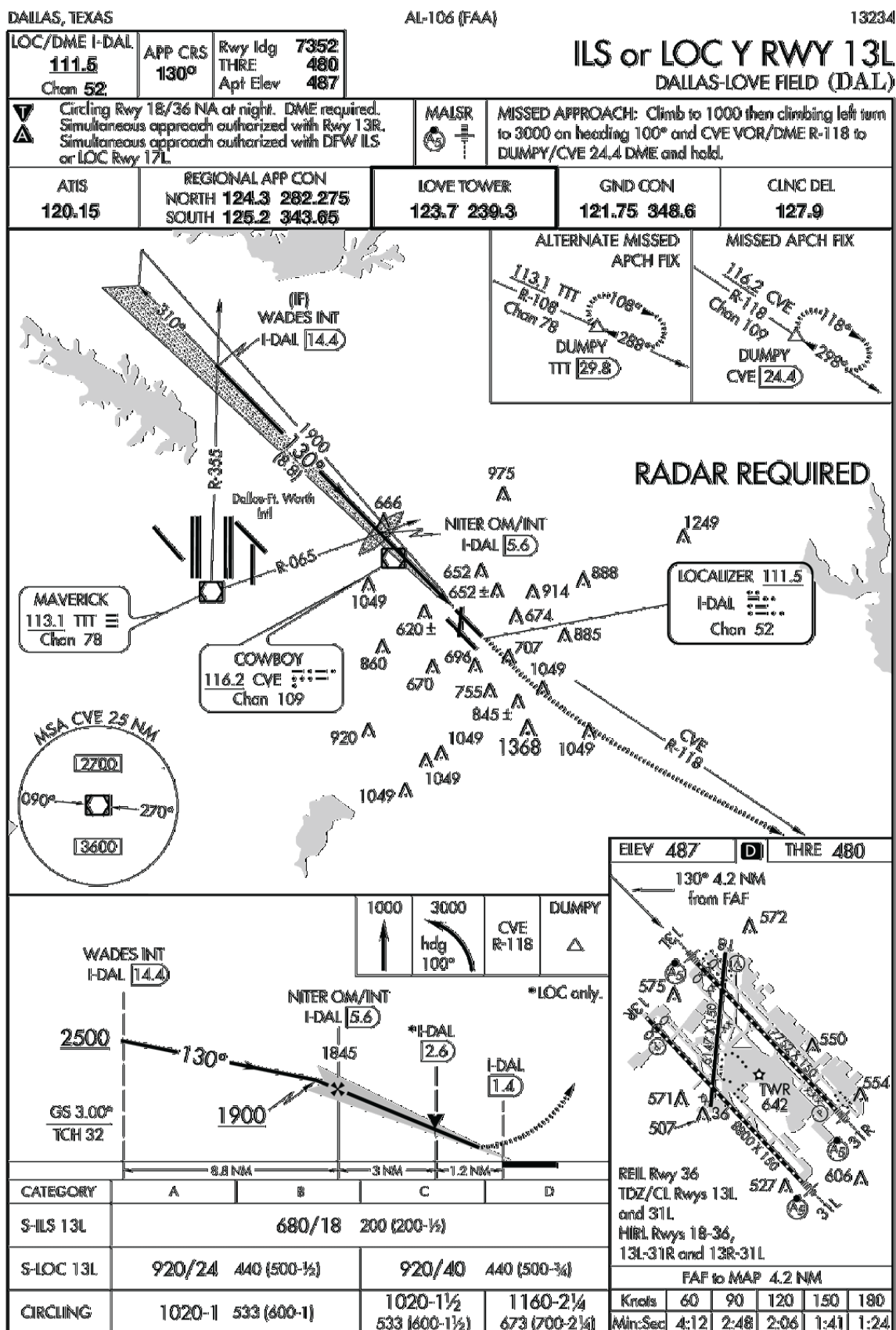


Figure 177. Converging ILS RWY 36L (DFW).



DALLAS, TEXAS
Amdt 32 27JUN13

32°51'N-96°51'W

DALLAS-LOVE FIELD (DAL)
ILS or LOC Y RWY 13L

©ASA

Figure 178. ILS or LOC Y RWY 13L (DAL).

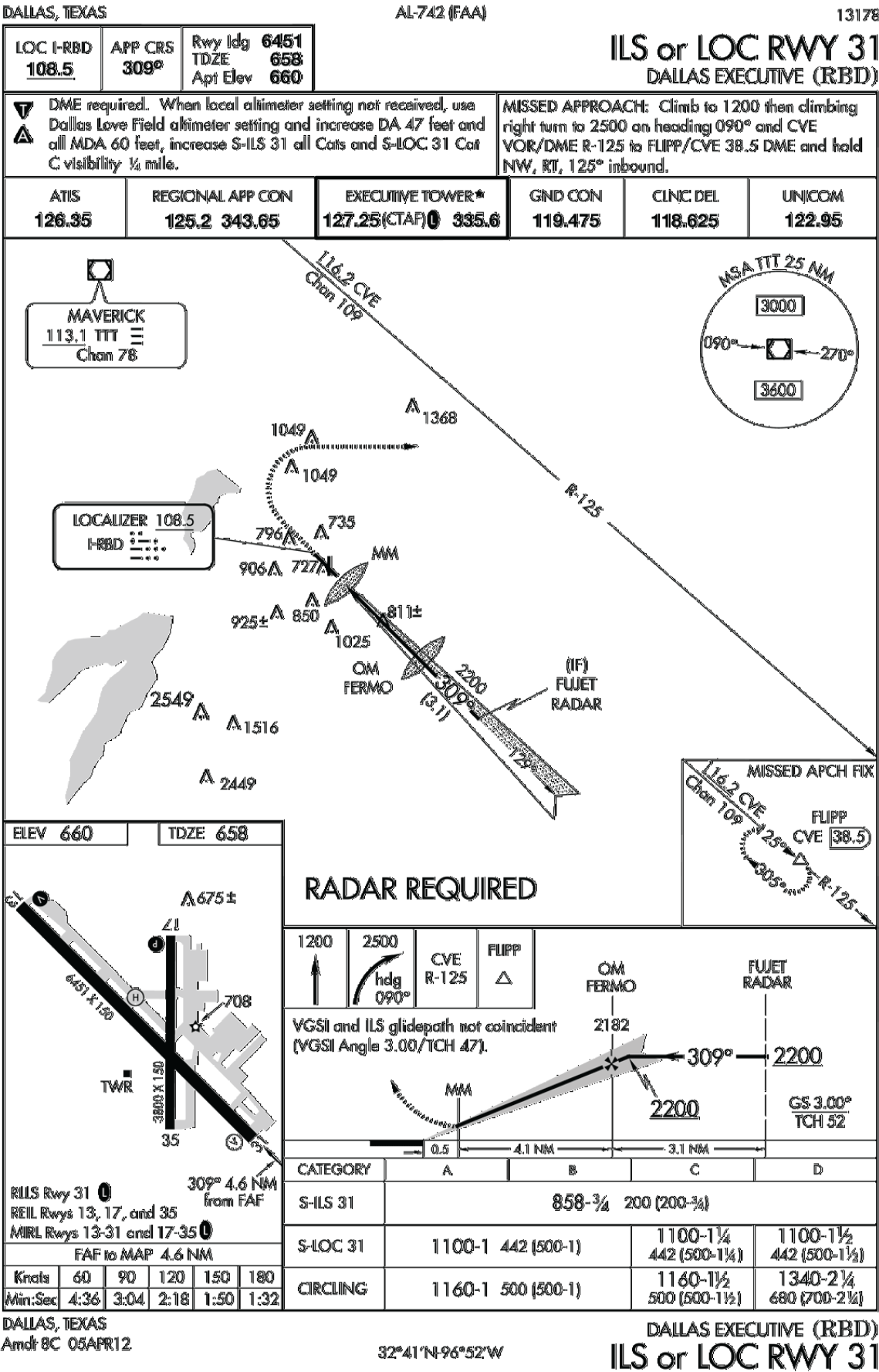


Figure 179. ILS or LOC RWY 31 (RBD).

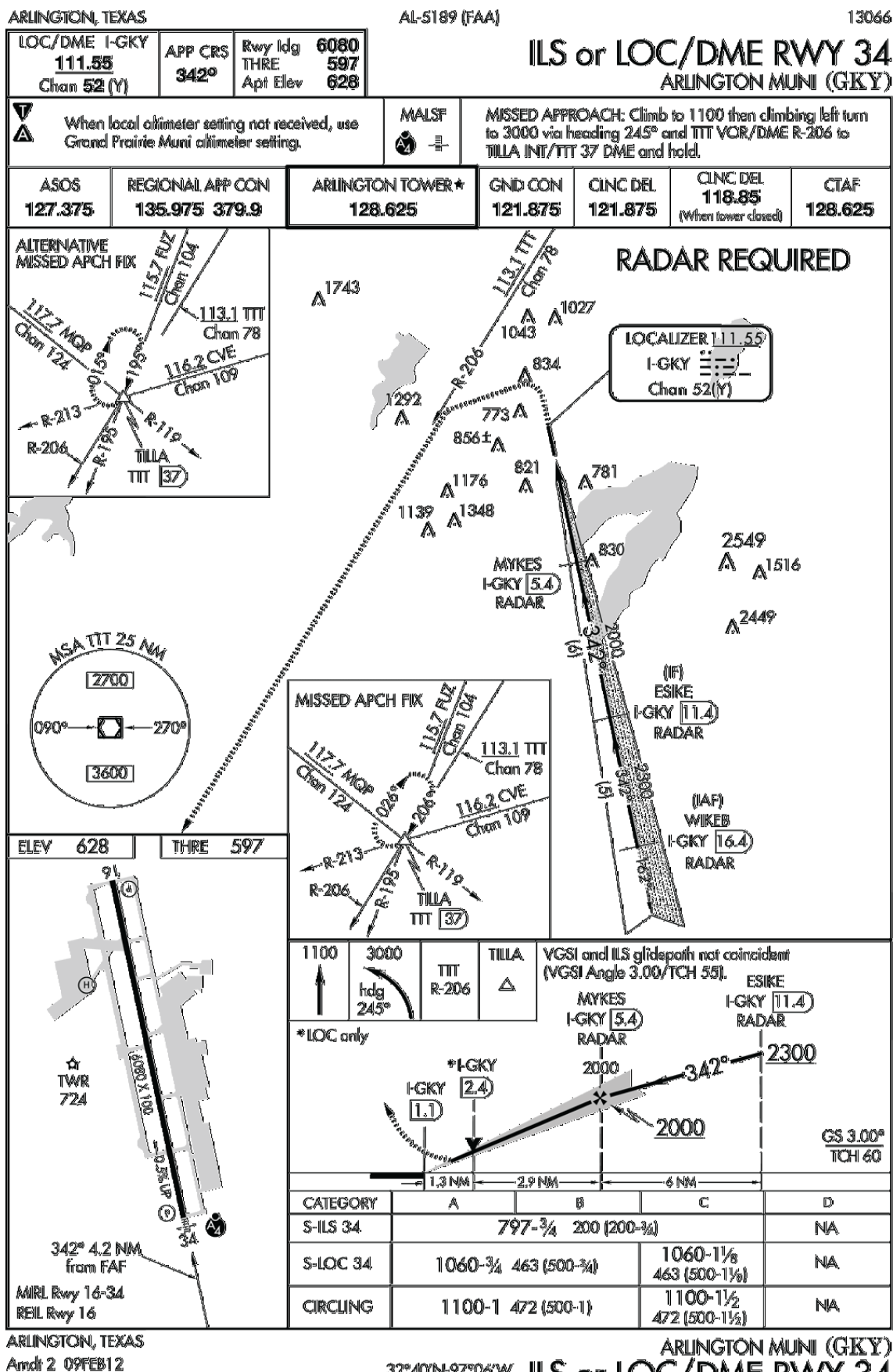


Figure 180. ILS or LOC/DME RWY 34 (GKY).

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TEXAS

ARCHER CITY MUNI (T39) 1 SE UTC-6(-5DT) N33°34.94' W98°37.12'

DALLAS-FT WORTH

1065 S2 NOTAM FILE FTW

L-17B

RWY 17-35: H3200X60 (ASPH) S-12.5

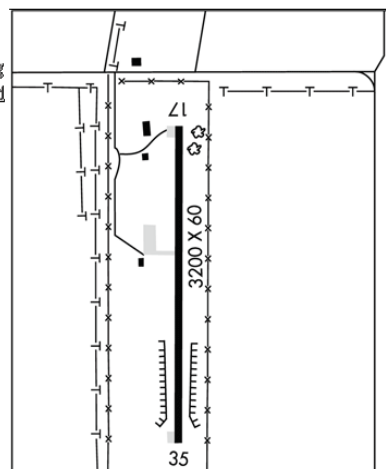
RWY 17: Road.

AIRPORT REMARKS: Unattended. Wildlife on and in/ovt arpt. 70' AGL drilling rig 700' northwest of Rwy 17-35. Rwy 17-35 loose gravel, tall grass and pot holes on rwy.

COMMUNICATIONS: CTAF 122.9

RADIO AIDS TO NAVIGATION: NOTAM FILE SPS.

WICHITA FALLS (H) VORTAC 112.7 SPS Chan 74 N33°59.24' W98°35.61' 173° 24.3 NM to fld. 1133/10E.



ARDYTH N27°38.54' W99°27.48' NOTAM FILE S.JT.

BROWNSVILLE

NDB (MHW) 405 AGH 174° 5.9 NM to Laredo Intl.

L-20G

ARLEGE FLD (See STAMFORD on page 351)

ARLINGTON MUNI (GKY) 4 S UTC-6(-5DT) N32°39.83' W97°05.66'

DALLAS-FT WORTH

628 B S4 FUEL 100LL, JET A OX 4 TPA-1628(1000) NOTAM FILE GKY

COPTER

RWY 16-34: H6080X100 (CONC) S-60 MIRL 0.5% up NW

H-6H, L-17C, A

RWY 16: REIL. PAPI(P4L)-GA 3.0° TCH 42'.

IAP, AD

RWY 34: MALSF. PAPI(P4L)-GA 3.0° TCH 55'.

AIRPORT REMARKS: Attended continuously. Self serve fuel with major credit card. Helicopter test facility at arpt mostly from private helipad adjoining fdg area. Extensive helicopter traffic west of rwy. Rwy 34 PAPI unusable byrd 8° right of centerline. MIRL Rwy 16-34 preset medium ints, higher ints by twr request. When twr clsd ACTIVATE MALSF Rwy 34-CTAF. PAPI Rwy 16 and Rwy 34 opr continuously.

WEATHER DATA SOURCES: ASOS 127.375 (817) 557-0251.

COMMUNICATIONS: CTAF 128.625

REGIONAL APP/DEP CON 135.975

TOWER: 128.625 (1300-0300Z\$) GND CON/CLNC DEL 121.875

CLNC DEL: 118.85 (RGNL APP CON when twr clsd)

AIRSPACE: CLASS D syc 1300-0300Zt other times CLASS G.

RADIO AIDS TO NAVIGATION: NOTAM FILE FTW.

MAVERICK (H) VORTAC/DME 113.1 TTT Chan 78 N32°52.15'

W97°02.43' 186° 12.6 NM to fld. 540/6E.

All a/cft arriving DFW are requested to turn DME off until departure due to traffic overload of Maverick DME.

ILS/DME 111.55 I-GKY Chan 52(Y) Rwy 34. Class IE. LOC

unusable byrd 15° right of course. Unmonitored when ATCT clsd.

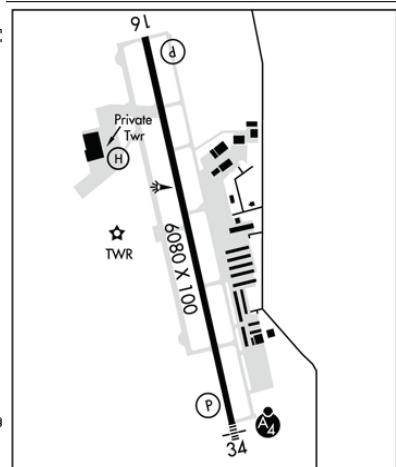


Figure 181. Excerpt from Chart Supplement.

©ASA



(GROMO3.GROMO) 12208

GROMO THREE DEPARTURE

YAKIMA AIR TERMINAL/MCALLISTER FIELD (YKM)
SL-465 (FAA) YAKIMA, WASHINGTON



DEPARTURE ROUTE DESCRIPTION

TAKEOFF RUNWAY 9,27: Climbing left turn thence. . . .

TAKEOFF RUNWAY 22: Climbing right turn thence. . . .

. . . . intercept and proceed via YKM R-250 to GROMO/YKM 9 DME,
then on assigned transition.

GUBSE TRANSITION (GROMO3.GUBSE): From over GROMO DME Fix via YKM 9 DME
Arc to OGZOF DME fix and YKM VORTAC R-187 to GUBSE DME fix.

HITCH TRANSITION (GROMO3.HITCH): From over GROMO DME Fix via YKM 9 DME
Arc to OGXOB DME fix and YKM VORTAC R-206 to HITCH DME fix.

PAPPS TRANSITION (GROMO3.PAPPS): From over GROMO DME Fix via YKM 9 DME
Arc to OKHAR DME fix and YKM VORTAC R-087 to PAPPS DME fix.

SIMCO TRANSITION (GROMO3.SIMCO): From over GROMO DME Fix via YKM 9 DME
Arc to OGFOW DME fix and YKM VORTAC R-221 to SIMCO INT.

SUNED TRANSITION (GROMO3.SUNED): From over GROMO DME Fix via 9 DME
Arc to OHAWY DME fix and KM R-108 to SUNED INT.

TAMPO TRANSITION (GROMO3.TAMPO): From over GROMO DME Fix via
YKM VORTAC R-250 to TAMPO INT.

TAKEOFF OBSTACLE NOTES

Rwy 9: OL on building 27' from DER, 507' right of centerline, 34' AGL/1074' MSL.

Pole 388' from DER, 561' right of centerline, 34' AGL/1073' MSL.

Trees beginning 586' from DER, 550' right of centerline, up to 100' AGL/1139' MSL.

Rwy 22: Fence beginning 27' from DER, 435' right of centerline, up to 10' AGL/1085' MSL.

Trees beginning 570' from DER, 228' left of centerline, up to 100' AGL/1199' MSL.

Trees beginning 3195' from DER, 202' right of centerline, up to 100' AGL/1199' MSL.

Trees beginning 1 NM from DER, 732' left of centerline, up to 100' AGL/1239' MSL.

Rwy 27: Ant on building 398' from DER, 282' left of centerline, 15' AGL/1117' MSL.

Trees beginning 3893' from DER, 1341' right of centerline, up to 100' AGL/1239' MSL.

GROMO THREE DEPARTURE

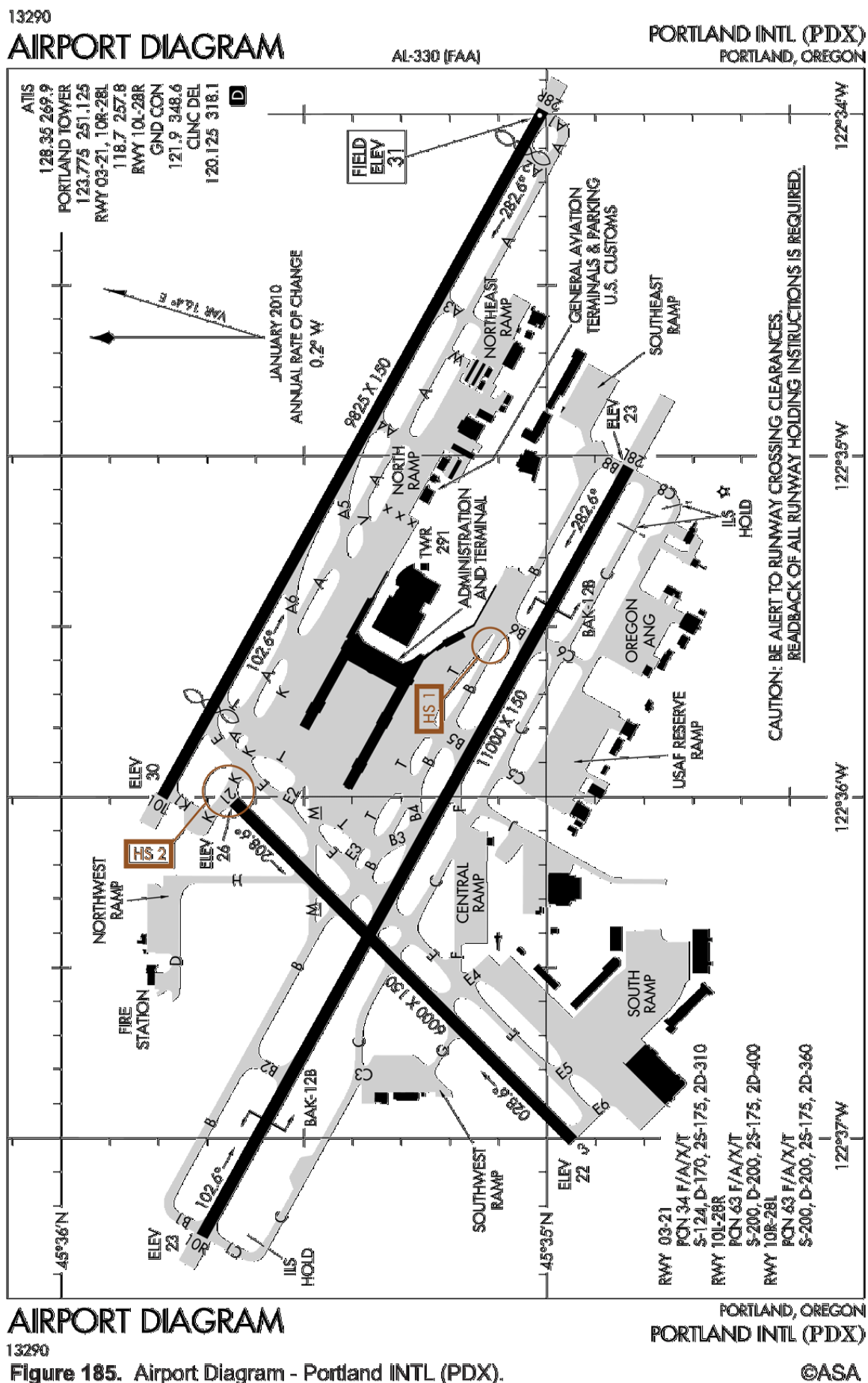
(GROMO3.GROMO) 12208

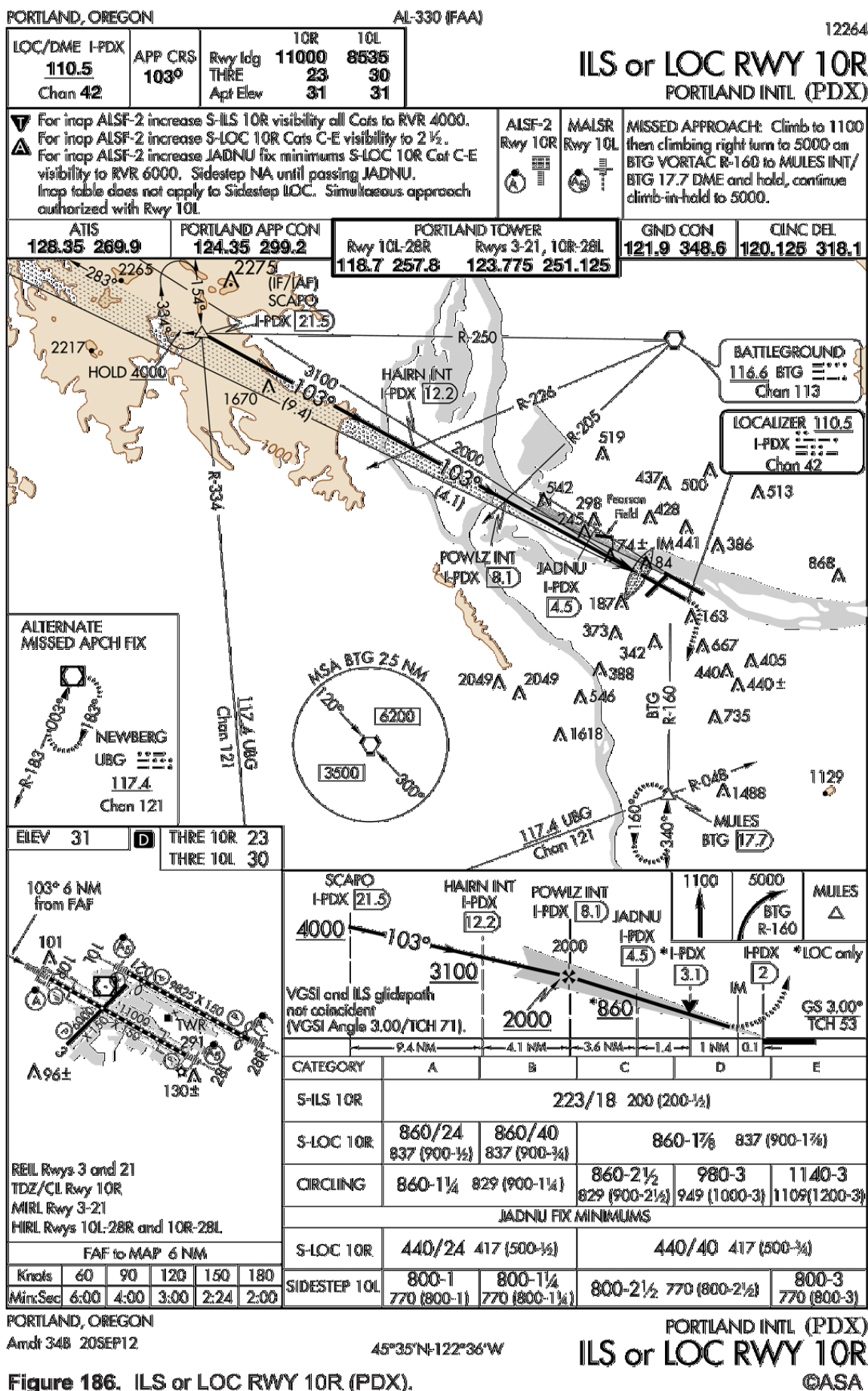
YAKIMA AIR TERMINAL/MCALLISTER FIELD (YKM)
YAKIMA, WASHINGTON

Figure 183.. GROMO Three Departure (GROMO3.GROMO).

200	WASHINGTON
YAKIMA AIR TERMINAL/MICALLISTER FLD (YKM) 3 S UTC-8(-7DT) N46°34.09' W120°32.64'	
1099 B S4 FUEL 100LL, JET A OX 1, 3 Class I, ARFF Index A NOTAM FILE YKM	SEATTLE H-1C, L-13A
RWY 09-27: H7604X150 (ASPH-GRVD) S-95, D-160, 2S-175, 2D-220, 2D/2D2-550 PCN 33 F/C/X/T	IAP, DIAP, AD
HIRL 0.7% up W	
RWY 09: REIL VASI(V4L)—GA 3.0° TCH 50'.	
RWY 27: MALSR PAPI(P4L)—GA 3.0° TCH 57'.	
RWY 04-22: H3835X150 (ASPH-PFC) S-70, D-80, 2S-102, 2D-120 PCN 28 F/C/X/T MRL 0.5% up SW	
RWY 04: REIL PAPI(P4L)—GA 3.0° TCH 57'.	
RWY 22: REIL PAPI(P4L)—GA 3.0° TCH 45'.	
RUNWAY DECLARED DISTANCE INFORMATION	
RWY 04: TORA-3835 TODA-3835 ASDA-3835 LDA-3835	
RWY 09: TORA-7604 TODA-7604 ASDA-7604 LDA-7604	
RWY 22: TORA-3835 TODA-3835 ASDA-3535 LDA-3835	
RWY 27: TORA-7604 TODA-7604 ASDA-7604 LDA-7604	
AIRPORT REMARKS: Attended 1400-0400Z. Sfc conditions unmonitored 0800-1330Z. Be alert, birds in vol Yakima River 5 NM east of apch to Rwy 27. Reflectors on Twy C only. Rwy 04-22 some spalling and raveling. PPR for unscheduled air carrier ops with more than 30 passenger seats, call arpt manger 509-575-6149/6150. Twy B from apch end of Rwy 22 to Twy A used to acct with wingspans 79' or less. MRL Rwy 04-22, REIL Rwy 04 and Rwy 22, PAPI Rwy 04 and Rwy 22 OTS when twr clsd. Twy B1 and Twy B2 twy lgs OTS when twr clsd. Twy B lgs south of Rwy 09-27 OTS when twr clsd. When twr clsd ACTIVATE HIRL Rwy 09-27 and MALSR Rwy 27—CTAF.	
WEATHER DATA SOURCES: ASOS (509) 248-1502	
COMMUNICATIONS: CTAF 133.25 ATIS 125.25 UNICOM 122.95	
R00 122.5 (SEATTLE RADIO)	
CHINOOK APP/DEP CON 123.8 (1400-0600Z)	
SEATTLE CENTER APP/DEP CON 132.6 (0600-1400Z)	
TOWER 133.25 (1400-0600Z) GND CON 121.9 CLNC DEL 121.9	
AIRSPACE: CLASS D svc 1400-0600Z; other times CLASS E.	
RADIO AIDS TO NAVIGATION: NOTAM FILE YKM.	
HD VORTACW 116.0 YKM Chan 107 N46°34.21' W120°26.68' 247° 4.1 NM to fld. 984/21E.	
DME unusable:	
095°-115° byd 26 NM bto 8,000'	
095°-115° byd 35 NM	
115°-207° byd 20 NM bto 8,500'	
115°-207° byd 36 NM bto 10,000'	
207°-230° byd 20 NM bto 10,000'	
290°-315° byd 20 NM bto 11,000'	
315°-080° byd 12 NM bto 15,000'	
VOR portion unusable:	
025°-035° byd 5 NM bto 6,000'	
080°-105° byd 35 NM bto 6,000'	
105°-107° byd 25 NM bto 6,000'	
109°-135° byd 25 NM bto 6,000'	
135°-180° byd 30 NM bto 7,500'	
195°-225° byd 30 NM bto 8,500'	
305°-335° byd 30 NM bto 9,000'	
350°-080° byd 25 NM bto 9,000'	
DONNY NDB (LOMO 371 YK N46°31.54' W120°22.33' 274° 7.6 NM to fld. Unmonitored when ATCT closed.	
ILS 110.1 I-YKM Rwy 27. LOM DONNY NDB. Unmonitored when ATCT closed.	
COMM/DIV/WEATHER REMARKS: During hrs twr is clsd all ops in vicinity of arpt used to acct with VHF radio capability, unless an emerg exist necessitating UHF equipped acct to land.	

Figure 184. Excerpt from Chart Supplement.





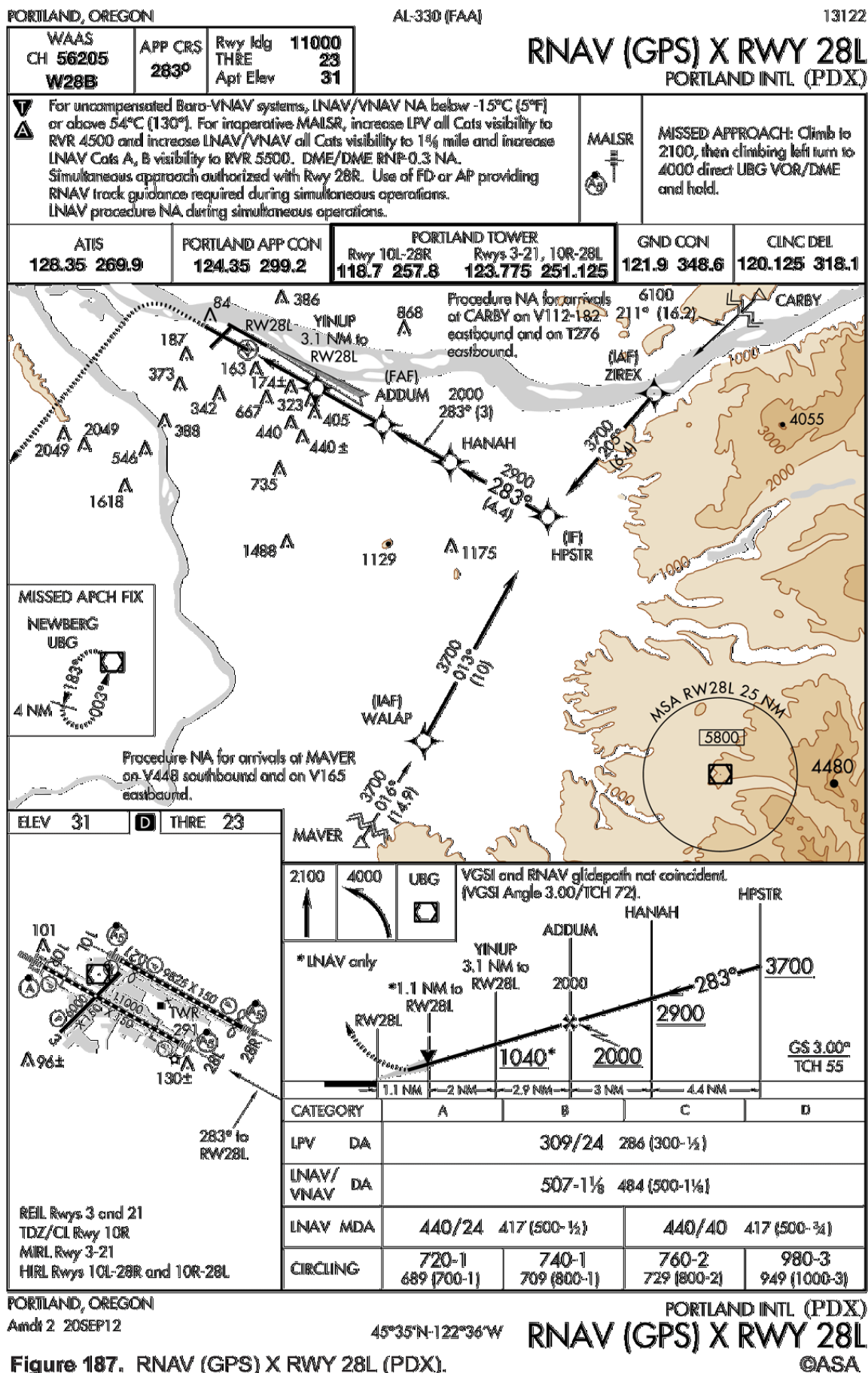


Figure 187. RNAV (GPS) X RWY 28L (PDX).



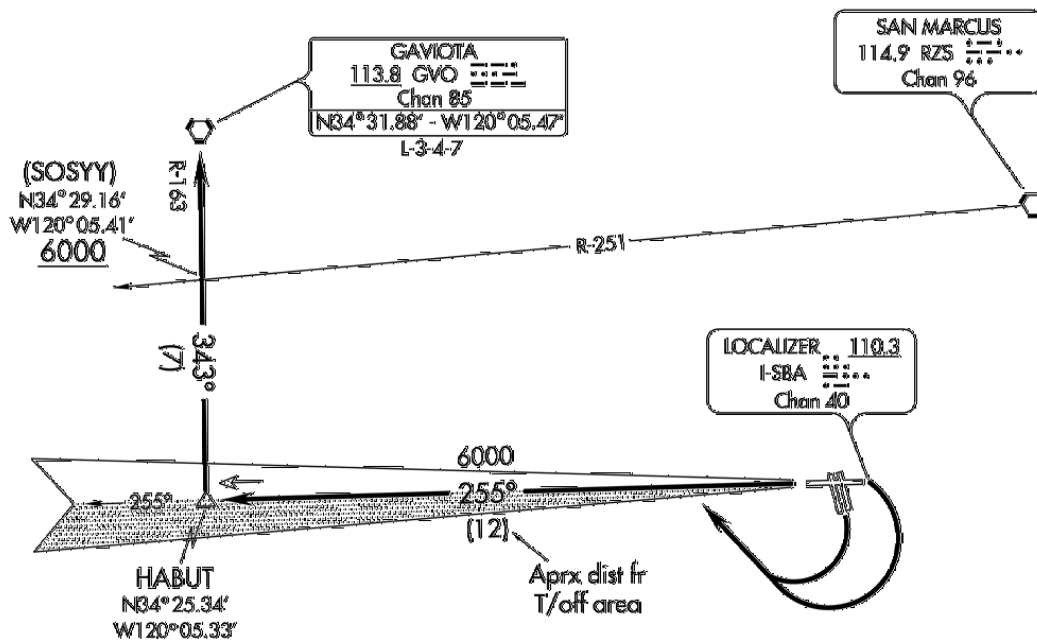
(HABUT4.GVO) 13122

HABUT FOUR DEPARTURE

SL-378 (FAA)

SANTA BARBARA MUNI (SBA)
SANTA BARBARA, CALIFORNIA

ATIS 132.65
CLNC DEL
132.9
GND CON
121.7
SANTA BARBARA TOWER*
119.7 (CTAF) 254.35
SANTA BARBARA DEP CON
120.55 319.15



NOTE: IFR departure Rwy 33L/R not authorized.

NOTE: Minimum (ATC) climb of 385' per NM to 6000.

NOTE: Chart not to scale.



DEPARTURE ROUTE DESCRIPTION

TAKE-OFF RUNWAYS 7 and 15L/R: Turn right, intercept I-SBA west course to HABUT INT, thence via GVO R-163 to GVO VORTAC. Cross RZS R-251 at or above 6000'.

TAKE-OFF RUNWAY 25: Intercept I-SBA west course to HABUT INT, thence via GVO R-163 to GVO VORTAC. Cross RZS R-251 at or above 6000'.

HABUT FOUR DEPARTURE

(HABUT4.GVO) 13122

SANTA BARBARA, CALIFORNIA
SANTA BARBARA MUNI (SBA)

Figure 189. HABUT Four Departure (HABUT4.GVO) (SBA).

©ASA

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CALIFORNIA

SANTA BARBARA MUNI (SBA) 7 W UTC-8(-7DT) N34°25.57' W119°50.49' LOS ANGELES
13 B \$4 FUEL 100LL, JET A OK 1, 2, 3, 4 TPA—See Remarks LRA Class I, ARFF Index C H-4H, L-3D, 4E, 7A
NOTAM FILE SBA IAP, AD

RWY 07-25: H6052X150 (ASPH-PFC) S-110, D-160, 2S-175,
2D-245 HIRL.

RWY 07: MALSR. Tree. Rgt tlc.

RWY 25: REIL. PAPI(P4L)—GA 3.0° TCH 50'. Fence.

RWY 15R-33L: H4184X100 (ASPH) S-48, D-63, 2S-80, 2D-100
HIRL.

RWY 15R: REIL. Tree.

RWY 33L: Tree. Rgt tlc.

RWY 15L-33R: H4178X75 (ASPH) S-36, D-41, 2S-80, 2D-63

RWY 15L: Thld displd 217'. Bldg.

RWY 33R: Rgt tlc.

AIRPORT REMARKS: Attended 1330-0600Z. 100LL fuel 24 hr credit card
svc avbl. Fee for Jet A fuel after hrs call 805-964-6733 or 967-5608.
Numerous flocks of birds on and inwof apt. Deep creek located 300'
from rwy and Rwy 07, Rwy 33L and Rwy 33R. Rwy 15L-33R dalgit
hrs only. Arpt has noise abatement procedures ctc arpt ops
805-692-6005. Due to ltd ramp space at the airline terminal
non-scheduled transport category acft with more than 30 passenger
seats are required to ctc arpt ops 805-692-6005 24 hour PPR to
arrival. Commercial airline ramp cld to all General Aviation acft. No customs personnel or facilities are avbl and
International acft will not be allowed to land unless an emerg exists. TPA—1003(990) small acft, 1503(1490) large acft.
Pure jet touch/go or low approaches prohibited. When twr cldd ACTIVATE MRL Rwy 15R-33L, REIL Rwy 15R—CTAF.
MALSR Rwy 07, PAPI Rwy 25 and REIL Rwy 25 opr continuously. CTAF. Ldg fee for all PART 135 opr and transient acft
with maximum gross weight 10,000 lbs or more. Fees collected at FBO.

WEATHER DATA SOURCES: ASOS (805) 681-0583

COMMUNICATIONS: CTAF 119.7 ATIS 132.65 UNICOM 122.95

① APP/DEP CON 120.55 (151°-329°) 125.4 (330°-150°) 124.15 127.725 (1400-0700Z)

① L.A. CENTER APP/DEP CON 119.05 (0700-1400Z)

TOWER 119.7 (1400-0700Z) GND CON 121.7 CLNC DEL 132.9

AIRSPACE: CLASS C svc ctc APP CON svc 1400-0700Z; other times CLASS E.

RADIO AIDS TO NAVIGATION: NOTAM FILE HHR.

SAN MARCUS (M) VORTAC 114.9 RZS Chan 96 N34°30.57' W119°46.26' 201° 6.1 NM to fld. 3623/14E.
HIRVAS.

VOR unusable:

140°-178° byd 27 NM

CANYON (L) VORTACW 113.8 GVO Chan 85 N34°31.88' W120°05.47' 101° 13.9 NM to fld. 2616/16E.

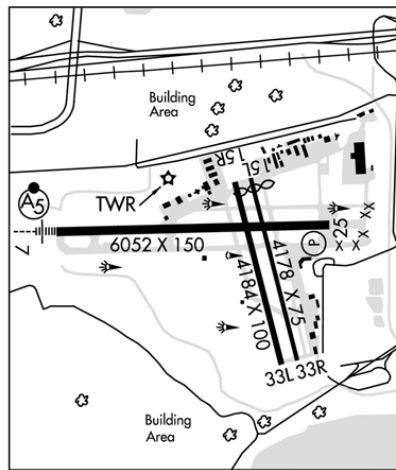
VORTAC unusable:

117°-137° byd 35 NM

310°-096° byd 10 NM blo 8,500'

360°-096° byd 20 NM blo 12,500'

ILS/DME 110.3 I-SBA Chan 40 Rwy 07. Class IA. Unmonitored when ATCT cld.



SANTA CATALINA N33°22.50' W118°25.19' NOTAM FILE HHR.
(L) VORTACW 111.4 SXC Chan 51 352° 1.8 NM to Catalina. 2090/15E.

LOS ANGELES
H-4H, L-3E, 4G

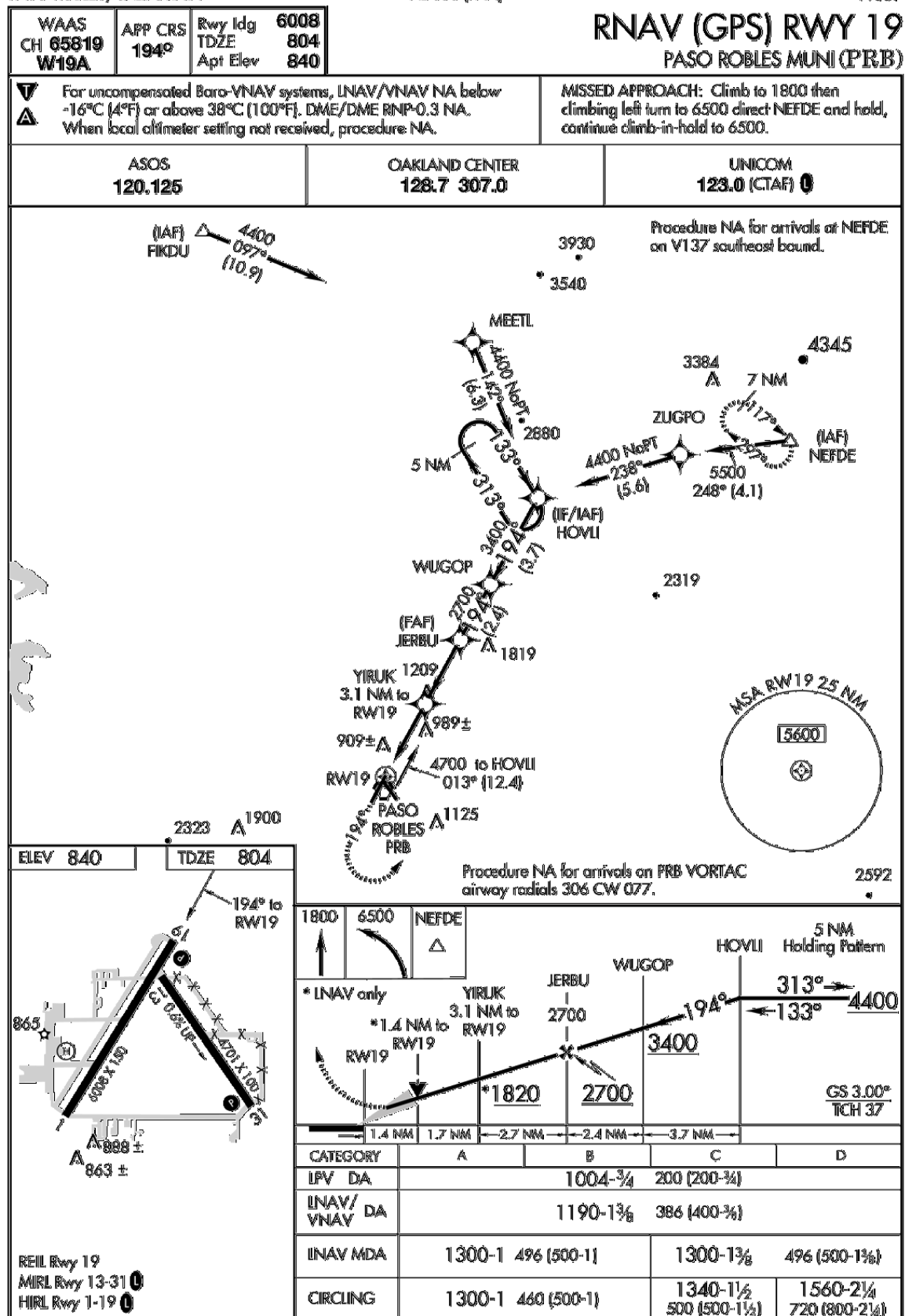
Figure 190. Excerpt from Chart Supplement.

©ASA

PASO ROBLES, CALIFORNIA

AL-858 (FAA)

11069



PASO ROBLES, CALIFORNIA

Amdr 1 13JAN11

35°40'N-120°38'W

PASO ROBLES MUNI (PRB)

RNAV (GPS) RWY 19

Figure 191. RNAV (GPS) RWY 19 (PRB).

©ASA

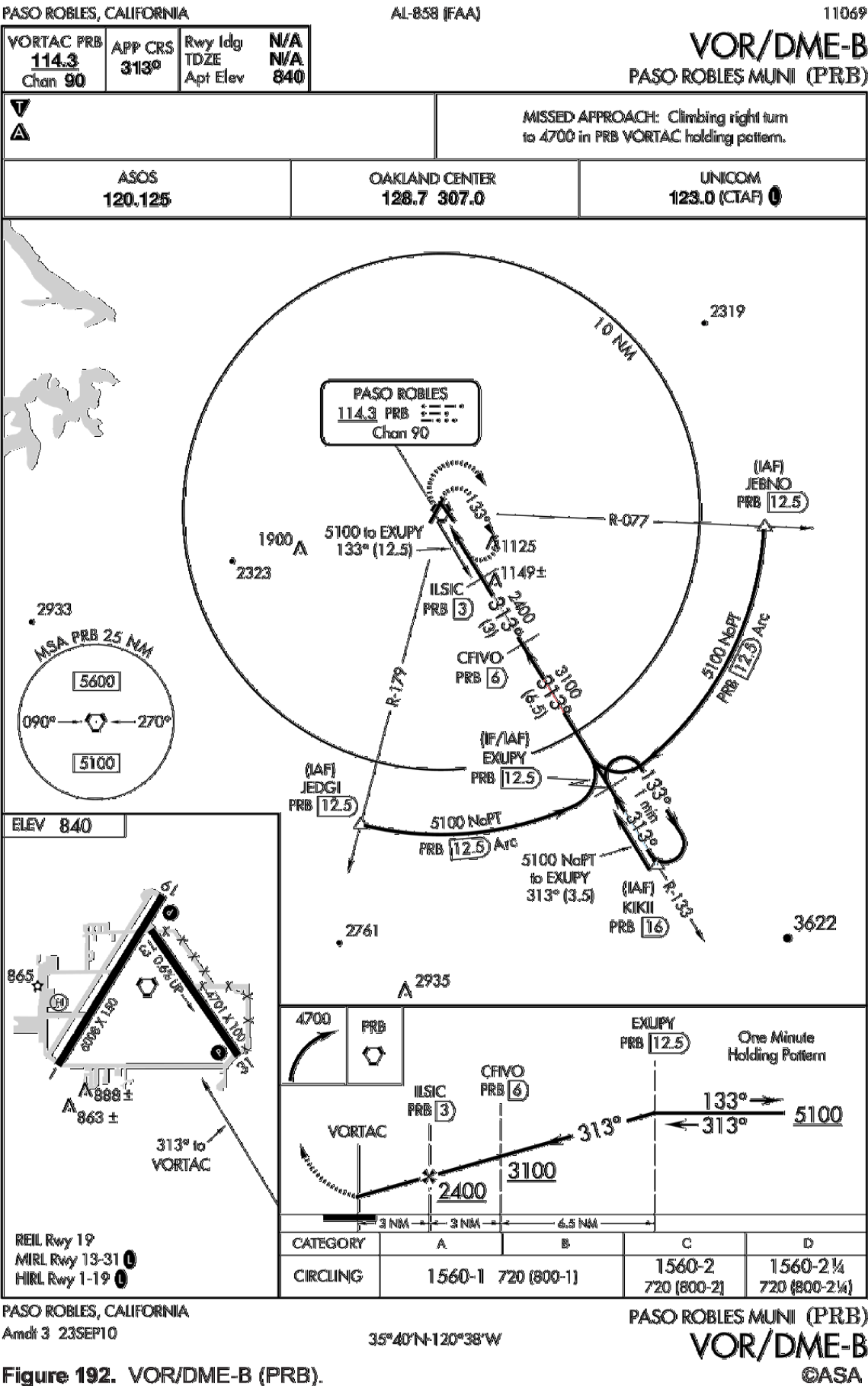
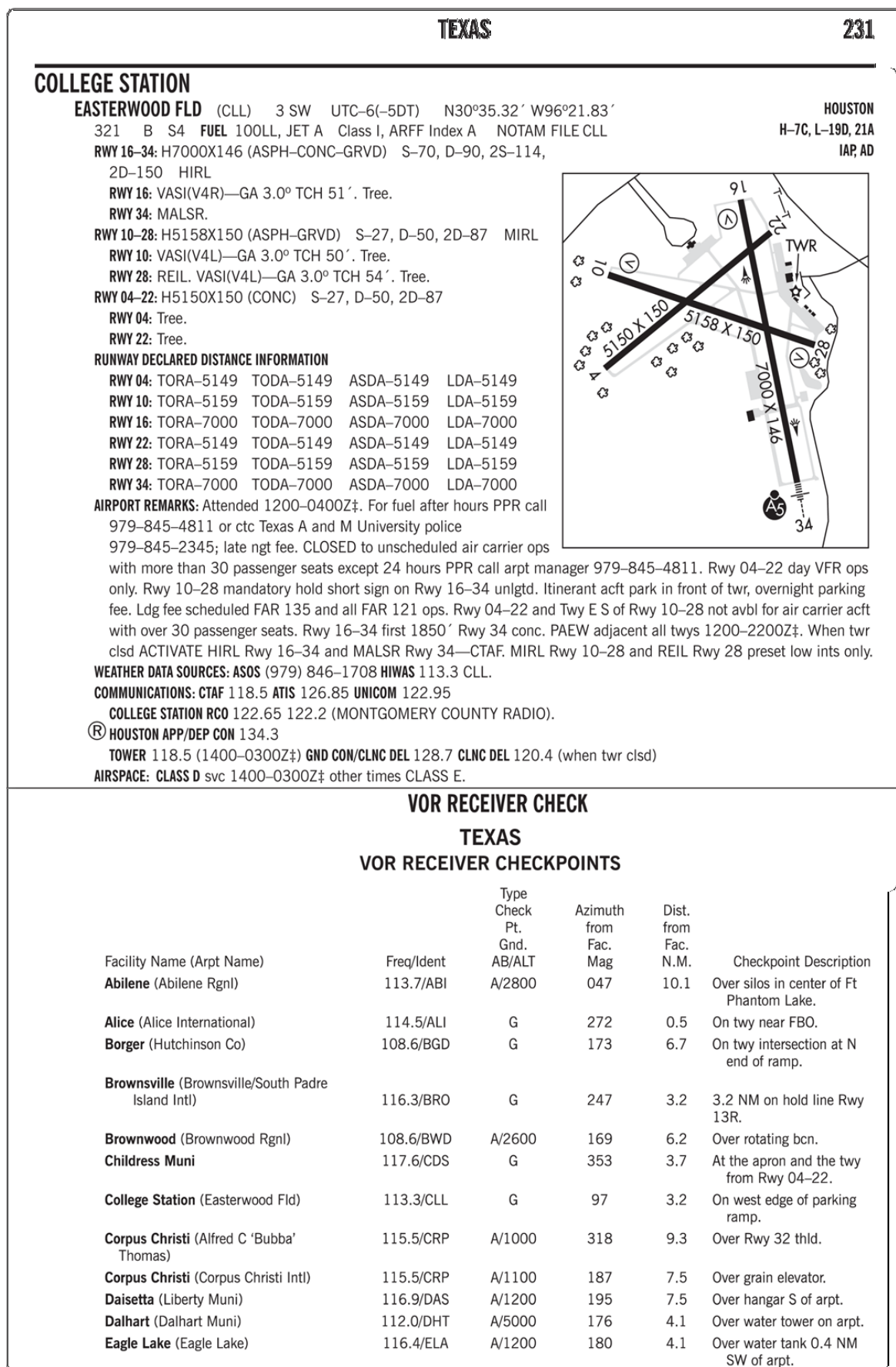


Figure 192. VOR/DME-B (PRB).



VOR RECEIVER CHECK

TEXAS

VOR RECEIVER CHECKPOINTS

Facility Name (Arpt Name)	Freq/Ident	Type Check Pt. Gnd. AB/ALT	Azimuth from Fac. Mag	Dist. from Fac. N.M.	Checkpoint Description
Abilene (Abilene Rgnl)	113.7/ABI	A/2800	047	10.1	Over silos in center of Ft Phantom Lake.
Alice (Alice International)	114.5/ALI	G	272	0.5	On twy near FBO.
Borger (Hutchinson Co)	108.6/BGD	G	173	6.7	On twy intersection at N end of ramp.
Brownsville (Brownsville/South Padre Island Intl)	116.3/BRO	G	247	3.2	3.2 NM on hold line Rwy 13R.
Brownwood (Brownwood Rgnl)	108.6/BWD	A/2600	169	6.2	Over rotating bcn.
Childress Muni	117.6/CDS	G	353	3.7	At the apron and the twy from Rwy 04-22.
College Station (Easterwood Fld)	113.3/CLL	G	97	3.2	On west edge of parking ramp.
Corpus Christi (Alfred C 'Bubba' Thomas)	115.5/CRP	A/1000	318	9.3	Over Rwy 32 thld.
Corpus Christi (Corpus Christi Intl)	115.5/CRP	A/1100	187	7.5	Over grain elevator.
Daisetta (Liberty Muni)	116.9/DAS	A/1200	195	7.5	Over hangar S of arpt.
Dalhart (Dalhart Muni)	112.0/DHT	A/5000	176	4.1	Over water tower on arpt.
Eagle Lake (Eagle Lake)	116.4/ELA	A/1200	180	4.1	Over water tank 0.4 NM SW of arpt.

Figure 193. Excerpt from Chart Supplement.

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TEXAS

CONTINUED FROM PRECEDING PAGE

RADIO AIDS TO NAVIGATION: NOTAM FILE CLL.

COLLEGE STATION (L) VORTACW 113.3 CLL Chan 80 N30°36.30' W96°25.24' 1.00° 3.1 NM to fld. 264/8E.
HUMAS.

DME unusable:

101°-130° byd 25 NM blo 2,500'

131°-148° byd 30 NM blo 2,500'

149°-180° byd 30 NM blo 2,000'

325°-349° byd 30 NM blo 2,500'

350°-100° byd 25 NM blo 3,500'

VOR portion unusable:

131°-189° blo 7,000'

ROWDY NDB (LOM) 260 CL N30°29.62' W96°20.26' 341° 5.8 NM to fld. Unmonitored when ATCT clsd.

ILS/DME 111.7 I-CLL Chan 54 Rwy 34. Class IB. LOM ROWDY NDB. Unmonitored when ATCT clsd. DME unmonitored. Glideslope unusable for coupled apchs blo 1,050' MSL.

COLLIN CO REGNL AT MC KINNEY (See DALLAS on page 241)

COLLINSVILLE

SUDDEN STOP (T32) 1 NE UTC-6(-5DT) N33°34.29' W96°54.43'

DALLAS-FT WORTH

720 NOTAM FILE FTW

RWY 17-35: 1550X60 (TURF)

RWY 17: Trees.

RWY 35: Road.

AIRPORT REMARKS: Attended continuously. Student training prohibited.

COMMUNICATIONS: CTAF 122.9

COLORADO CITY (T88) 6 NW UTC-6(-5DT) N32°28.11' W100°55.27'

DALLAS-FT WORTH

2214 B NOTAM FILE FTW

H-6G, L-17A

RWY 17-35: H5479X60 (ASPH) S-50 LIRL

RWY 35: Tree.

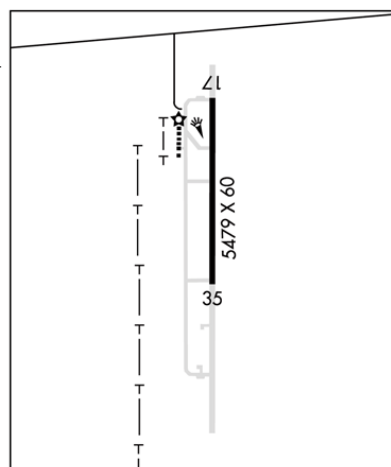
AIRPORT REMARKS: Attended irregularly. Rwy 17-35 pavement from Rwy 35 thld lgs southward used as a fwy and not maintained.

COMMUNICATIONS: CTAF 122.9

RADIO AIDS TO NAVIGATION: NOTAM FILE BPG.

BIG SPRING (L) VORTACW 114.3 BGS Chan 90 N32°23.14'

W101°29.02' 069° 29.0 NM to fld. 267Q/11E.



COLUMBUS

ROBERT R WELLS JR (66R) 3 S UTC-6(-5DT) N29°38.49' W96°30.96'

HOUSTON

242 B FUEL 100LL, JET A NOTAM FILE CXO

L-19D, 21A

RWY 15-33: H3800X60 (ASPH) S-12.5 MIRL

RWY 15: REIL. PAPI(P2L). Thld dspcd 305'. Fence.

RWY 33: REIL. PAPI(P2L). Thld dspcd 177'. Brush.

AIRPORT REMARKS: Unattended. Self-svc fuel with major credit card. Ultra-light activity on and in vol arpt. Rwy 33 REIL OTS Incl: ACTIVATE MIRL Rwy 15-33-CTAF.

COMMUNICATIONS: CTAF 122.9

RADIO AIDS TO NAVIGATION: NOTAM FILE CXO.

INDUSTRY (L) VORTACW 110.2 IDU Chan 39 N29°57.36' W96°33.73' 165° 19.0 NM to fld. 419/8E.

Figure 194. Excerpts from Chart Supplement.

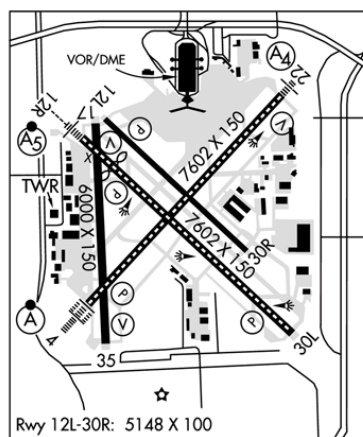
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TEXAS

WESTHEIMER AIR PARK (OAT) 20 W UTC-6(-5DT) N29°41.68' W95°47.68' HOUSTON
117 B S2 FUEL 100LL NOTAM FILE CXO
RWY 11-29: H2500X28 (CONC) IRL
RWY 11: Trees.
RWY 29: Trees.
AIRPORT REMARKS: Attended 1400-0000Z. 90' P-line 1500' from Rwy 11 thld. Grass in cracks on rwy slt. ACTIVATE rotating bcn—CTAF. ACTIVATE IRL Rwy 11-29—CTAF.
COMMUNICATIONS: CTAF/UNICOM 122.7

WILLIAM P HOBBY (HOU) 8 SE UTC-6(-5DT) N29°38.73' W95°16.73' HOUSTON
46 B S2 FUEL 100LL, JET A, A1 QX 1, 2, 3, 4 LRA Class I, ARFF Index C COPTER
NOTAM FILE HOU H-7C, L-19E, 21A, GOMW
RWY 04-22: H7602X150 (CONC-GRVD) S-75, D-200, 2S-168, IAP AD
2T-461, 2D-400, 2D/D1-444, C5-717 HIRL CL
RWY 04: ALSF2. TDZL. PAPI(P4R)—GA 3.0° TCH 57'.
RWY 22: MALS. VASI(V4L)—GA 3.0° TCH 52'. Pole.
RWY 12R-30L: H7602X150 (ASPH-GRVD) S-75, D-195, 2S-168,
2T-461, 2D-220, 2D/D1-444, C5-717 HIRL CL
RWY 12R: MALS. TDZL. PAPI(P4R)—GA 3.0° TCH 52'. Thld depicted
1034'. Pole.
RWY 30L: TDZL. REIL. PAPI(P4L)—GA 3.0° TCH 71'. Road.
RWY 17-35: H6000X150 (ASPH-CONC-GRVD) S-75, D-121, 2S-153,
2D-195 HIRL
RWY 17: VASI(V4L)—GA 3.0° TCH 38'. Antenna.
RWY 35: REIL. VASI(V4R)—GA 3.0° TCH 41'. Bldg.
RWY 12L-30R: H5148X100 (CONC-GRVD) S-30, D-45, 2D-80 HIRL
RWY 12L: PAPI(P4L)—GA 3.0° TCH 60'.
RUNWAY DECLARED DISTANCE INFORMATION
RWY 04: TORA-7602 TODA-7602 ASDA-7602 LDA-7602
RWY 12L: TORA-5148 TODA-5148 ASDA-5148 LDA-5148
RWY 12R: TORA-7602 TODA-7602 ASDA-7602 LDA-5668
RWY 17: TORA-6000 TODA-6000 ASDA-6000 LDA-6000
RWY 22: TORA-7602 TODA-7602 ASDA-7602 LDA-7602
RWY 30L: TORA-7602 TODA-7602 ASDA-7602 LDA-7602
RWY 30R: TORA-5148 TODA-5148 ASDA-5148 LDA-5148
RWY 35: TORA-6000 TODA-6000 ASDA-6000 LDA-6000



AIRPORT REMARKS: Attended continuously. Arpt CLOSED to acft with wingspan over 125' except 24 hours PPR, call arpt manager 713-640-3000. Numerous birds on and in/vol arpt. ASDE-X Surveillance System in use; pilots should operate transponders with Mode C on all twys and rwys. Customs ramp has multiple obstructions, recommend large acft use customs overflow ramp. Acft in thld position on Rwy 22 be alert for possible radio interference or null on frequency 118.7. Use upper antenna if so equipped. Rwy 04 runway visual range touchdown, midfield, rollout avbl. Rwy 22 runway visual range touchdown, midfield, rollout avbl. Rwy 12R runway visual range touchdown avbl. Rwy 30L runway visual range touchdown avbl. Twy G centerline to parked acft on W side only 68'. Twy G centerline to edge of adjacent svc vehicle road on W side only 48'. Due to complex rwy configuration, when taxiing to thlds 12L and 12R and 17 check compass heading before departing. Acft southbound on Twy C to Rwy 30L thld use extreme care, Twy C makes a 45° dogleg to the left crossing Twy K. PAPI Rwy 30L unusable bnd 8° left and right of course. Flight Notification Service (ADCUS) available.
NOTE: See Special Notices—U.S. Special Customs Requirement.

WEATHER DATA SOURCES: ASOS (713) 847-1462 TDWR.

COMMUNICATIONS: D-ATIS 124.6 (713) 847-1491 UNICOM 122.95

HOBBY R60 122.35 (MONTGOMERY COUNTY RADIO)

HOUSTON APP CON 134.45 (South) 124.35 (West) 120.05 (East)
HOBBY TOWER 118.7

HOUSTON GND CON 121.9 CLNC-DEL 125.45 PRE-TAXI CLNC 125.45

HOUSTON DEP CON 134.45 (South) 123.8 (West) 119.7 (North)

AIRSPACE: CLASS B See VFR Terminal Area Chart

VOR TEST FACILITY (VOT) 108.4

RADIO AIDS TO NAVIGATION: NOTAM FILE HOU.

HOBBY (H) VOR/DME 117.1 HUB Chan 118 N29°39.34' W95°16.60' at thld. 47/SE.

ILS/DME 109.9 I-HUB Chan 36 Rwy 04. Class III. DME also serves Rwy 22.

ILS/DME 111.3 I-PRQ Chan 50 Rwy 12R. Class IE. DME also serves Rwy 30L.

LOC/DME 109.9 I-OIB Chan 36 Rwy 22. DME also serves Rwy 04. DME unusable bnd 17° right of course.

ILS/DME 111.3 I-UPU Chan 50 Rwy 30L. Class IE. DME also serves Rwy 12R.

HOUSTON MCJ N29°42.83' W95°23.80'
AWOS-S 119.575

HOUSTON
H-7C, L-19E, 21A, GOMW

FIGURE 195.—Excerpt from Chart Supplement.

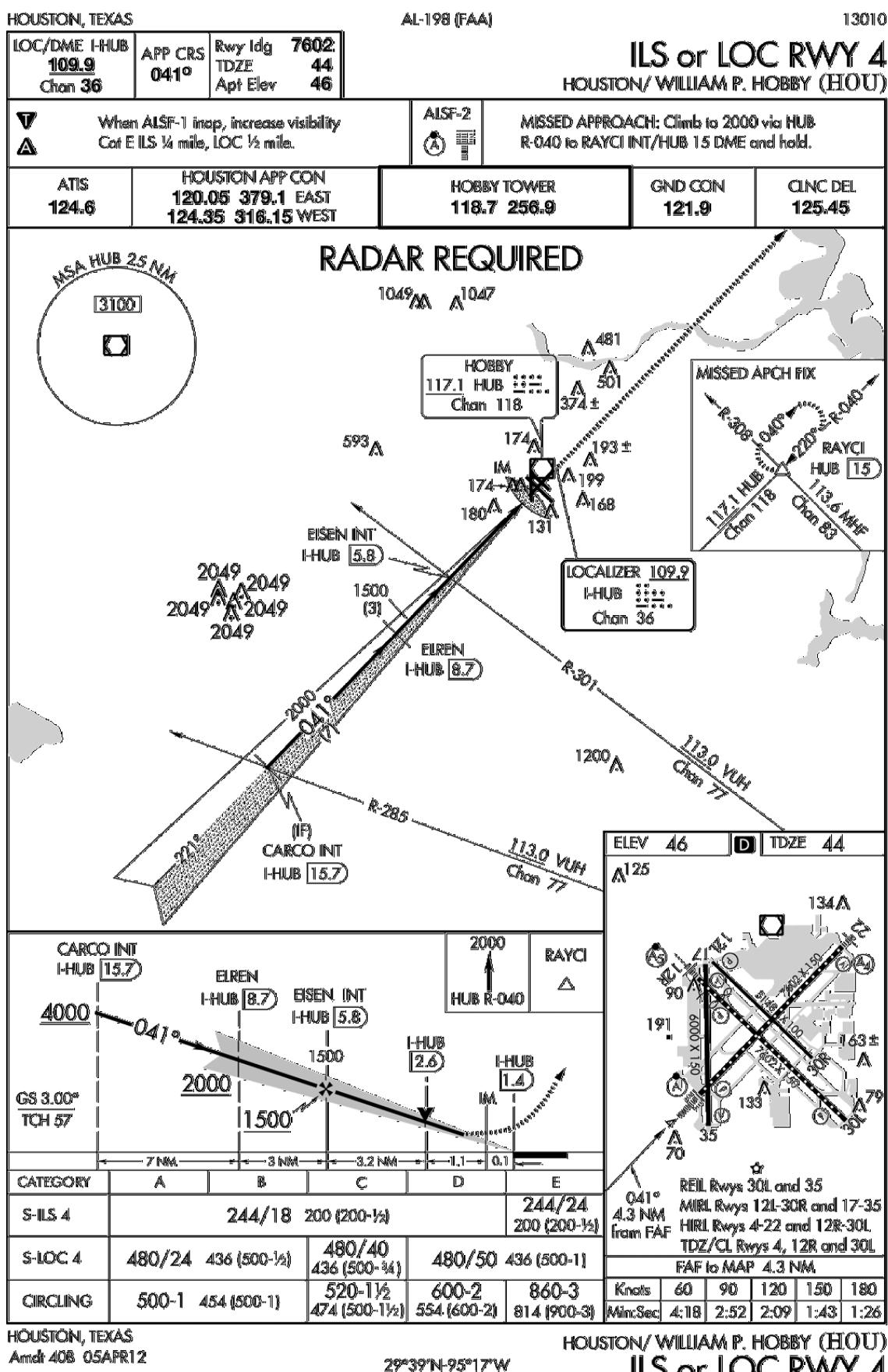


Figure 196. ILS or LOC RWY 4 (HOU).

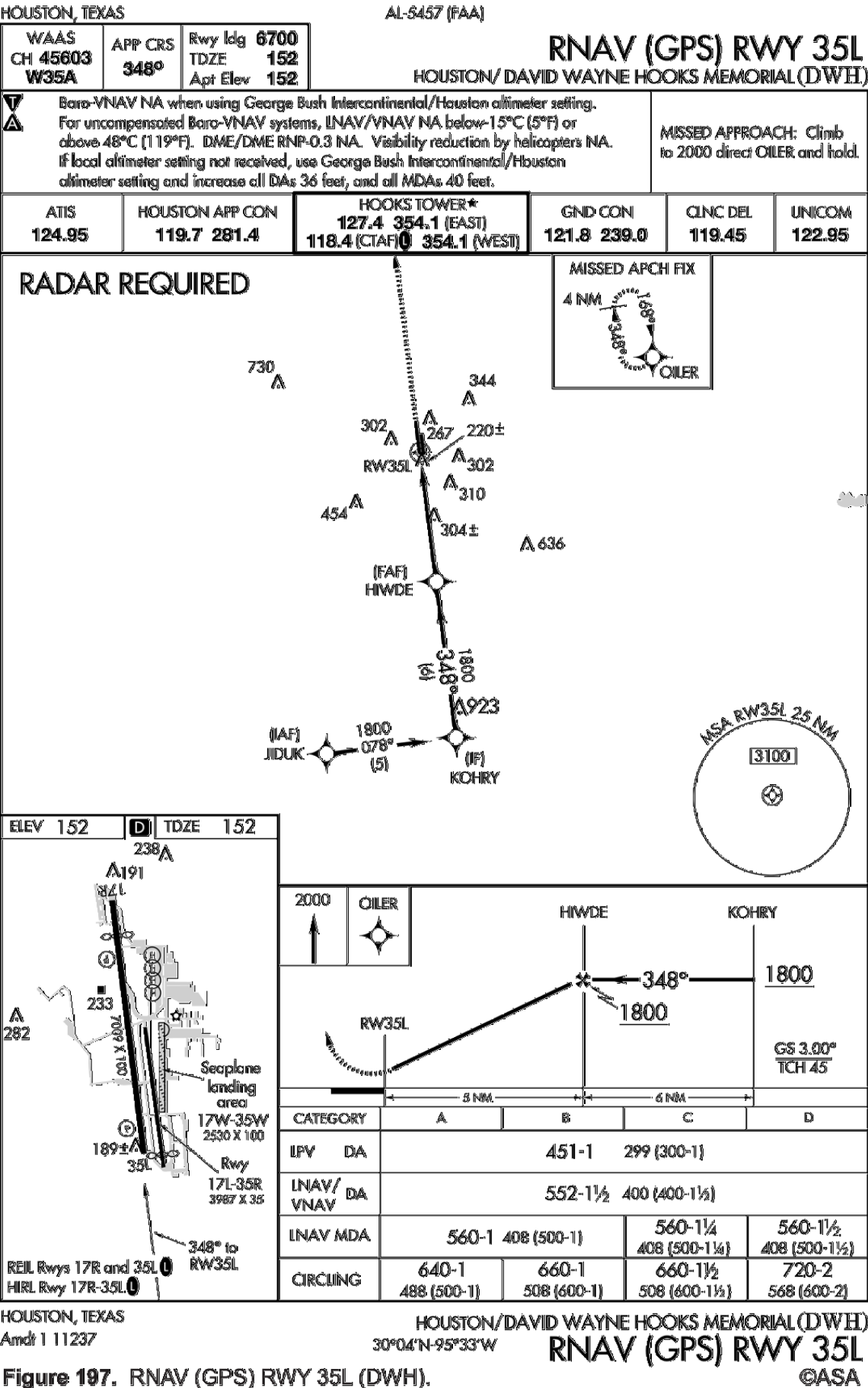


Figure 197. RNAV (GPS) RWY 35L (DWH).

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LOUISIANA

LAFAYETTE RGNL (LFT) 2 SE UTC-6(-5DT) N30°12.30' W91°59.27'

42 B S4 FUEL 100LL, JET A OX 1, 4 Class I, ARFF Index B NOTAM FILE LFT

RWY 04R-22L: H8001X150 (ASPH-GRVD) S-140, D-170, 2S-175,

2D-290 MIRL

RWY 04R: REIL, PAPI(P4L)—GA 3.0° TCH 53'. Pole, Rgt tlc.

RWY 22L: MALSR, PAPI(P4L)—GA 3.0° TCH 52'. Thld dplcd 342'.
Trees.

RWY 11-29: H5401X148 (ASPH-GRVD) S-85, D-110, 2S-140,

2D-175 MIRL

RWY 11: REIL, PAPI(P4L)—GA 3.0° TCH 35'. Trees, Rgt tlc.

RWY 29: REIL, PAPI(P4L)—GA 3.0° TCH 35'. Tree.

RWY 04L-22R: H4099X75 (ASPH) S-25, D-32 MIRL

RWY 04L: REIL, PAPI(P2L)—GA 3.0° TCH 26'. Tree.

RWY 22R: REIL, PAPI(P2L)—GA 3.0° TCH 27'. Tree, Rgt tlc.

RUNWAY DECLARED DISTANCE INFORMATION

RWY 04L:TORA-4099 TODA-4099 ASDA-4099 LDA-4099

RWY 04R:TORA-8001 TODA-8001 ASDA-8001 LDA-8001

RWY 11:TORA-5401 TODA-5401 ASDA-5401 LDA-5401

RWY 22L:TORA-8001 TODA-8001 ASDA-8001 LDA-7659

RWY 22R:TORA-4099 TODA-4099 ASDA-4099 LDA-4099

RWY 29:TORA-5401 TODA-5401 ASDA-5401 LDA-5401

ARRESTING GEAR/SYSTEM

RWY 04R: EMAS

RWY 22L: EMAS

AIRPORT REMARKS: Attended continuously. Numerous birds on and in/vof airt. PPR for unscheduled air carrier ops with more than 30 passenger seats call airt manager 337-266-4400. Rwy 04L-22R not avbl for air carrier ops with more than 30 passenger seats. Ctc ground control prior to push back from terminal. 155' oil rig 1 NM southeast of airt. Rwy 22L runway visual range touchdown avbl. Twy B between Twy C and Twy D clsd to acft with wingspan over 80'. Twy F south of Twy B clsd to single wheel acft over 25,000 lbs and dual wheel acft over 32,000 lbs. Twy F south of Twy B reduces to 40' wide. When twr clsd ACTIVATE MALSR Rwy 22L—CTAF, MIRL. Rwy 04L-22R not avbl.

WEATHER DATA SOURCES: ASOS (337) 237-8153 HIWAS 109.8 LFT.

COMMUNICATIONS: CTAF 118.5 ATIS 134.05 UNICOM 122.95

RCO 122.35 (DE RIDDER RADIO)

Ⓡ APP/DEP CON 121.1 (020°-210°) 128.7 (211°-019°) (1130-0430Z)

Ⓡ HOUSTON CENTER APP/DEP CON 126.35 (0430-1130Z)

TOWER 118.5 (1130-0430Z) GND CON 121.8 CLNC DEL 125.55

AIRSPACE: CLASS C svc ctr APP CON svc 1130-0430Z; other times CLASS E.

RADIO AIDS TO NAVIGATION: NOTAM FILE LFT.

(L) VORTACW 109.8 LFT Chan 35 N30°11.63' W91°59.55' at fld. 36/SE. HIWAS.

LAFFS NDB (LOM) 375 LF N30°17.36' W91°54.48' 216° 6.5 NM to fld. Unmonitored when ATCT clsd.

ILS/DME 110.9 I-TYN Chan 46 Rwy 04R. Class IE.

ILS/DME 109.5 I-LFT Chan 32 Rwy 22L. Class IE. LOM LAFFS NDB. ILS and LOM unmonitored when ATCT clsd.
ASR (1130-0430Z)

HELIPAD H1: H50X50 (ASPH)

HELIPAD H1: RLLS.

HELIPORT REMARKS: Rwy H1 circular pad. Helipad H1 perimeter lgts. Heliport ops to/from helipad between Twys B and F and the terminal ramp, avoid overflight of the terminal and other buildings in the 270°-020° quadrant from the helipad. Lead-in lgts two ingress paths. Helicopter parking pads avbl.

LAFFS N30°17.36' W91°54.48' NOTAM FILE LFT.

NDB (LOM) 375 LF 216° 6.5 NM to Lafayette Rgnl. Unmonitored when ATCT clsd.

HOUSTON

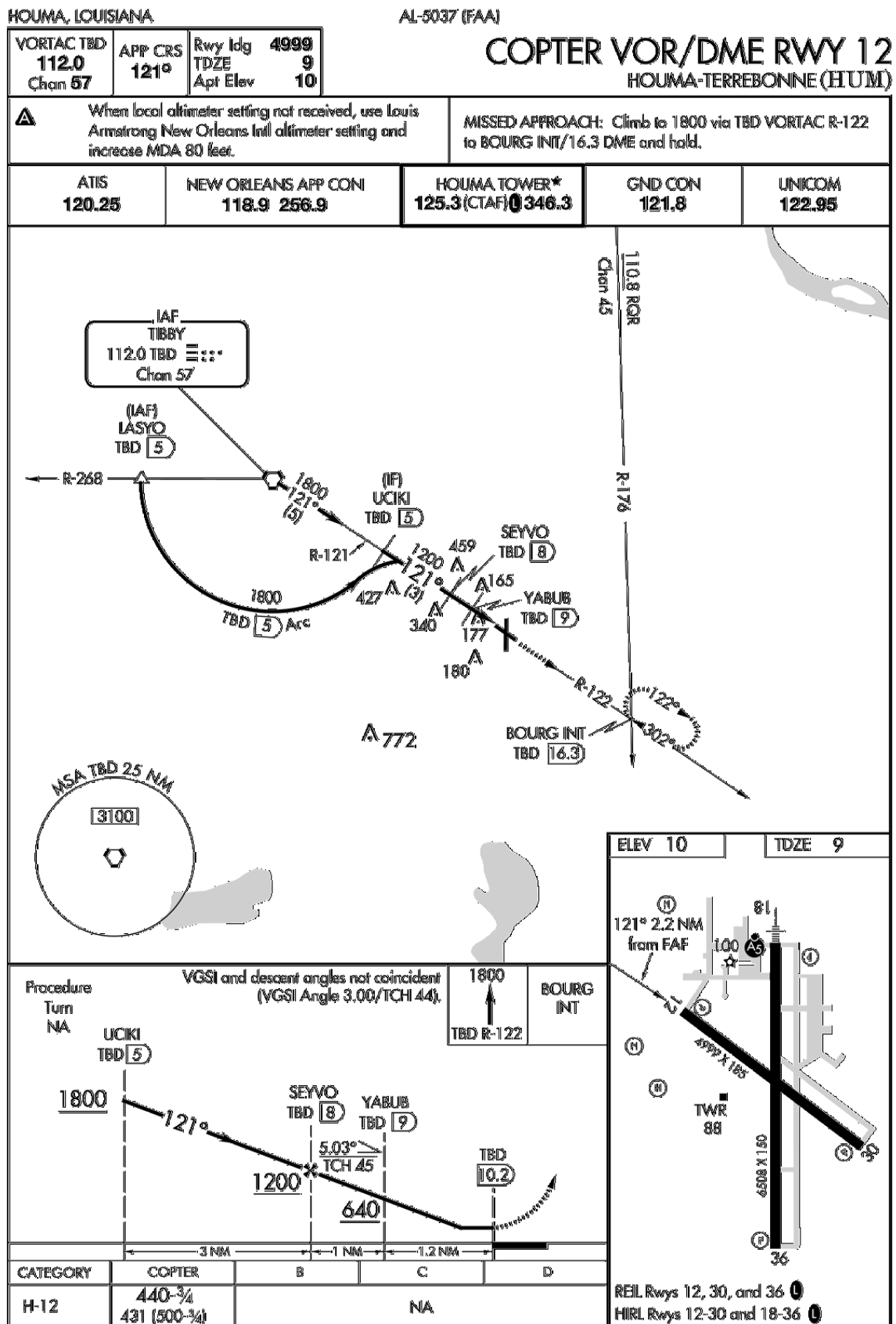
H-7D, L-21B, 22E, GOMC

IAP, AD



Figure 198. Excerpt from Chart Supplement.

GASA



HOUMA, LOUISIANA
Amch 4 12264

29°34'N-90°40'W

HOUMA-TERREBONNE (HUM)
COPTER VOR/DME RWY 12

Figure 199. COPTER VOR/DME RWY 12 (HUM).

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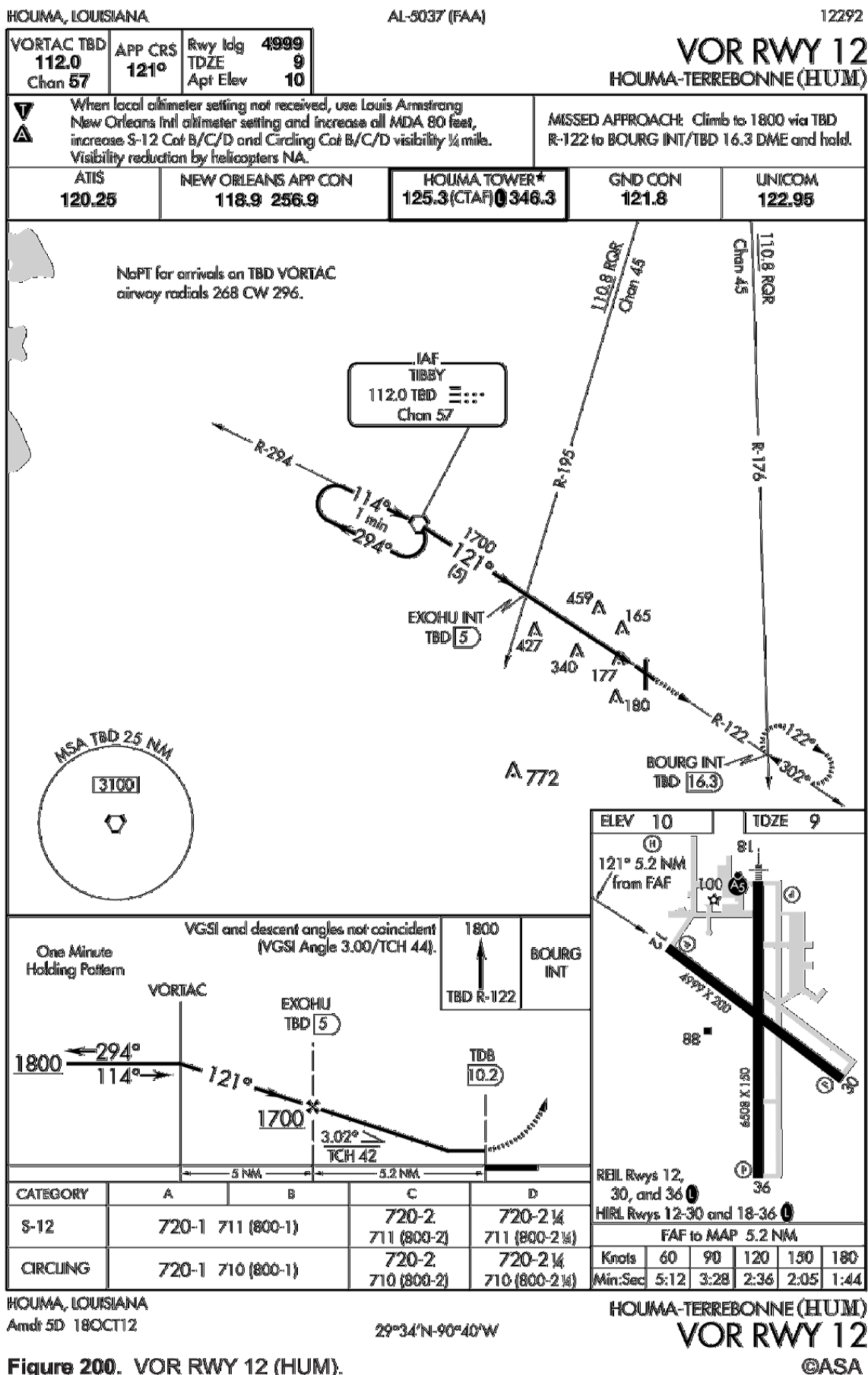


Figure 200. VOR RWY 12 (HUM).

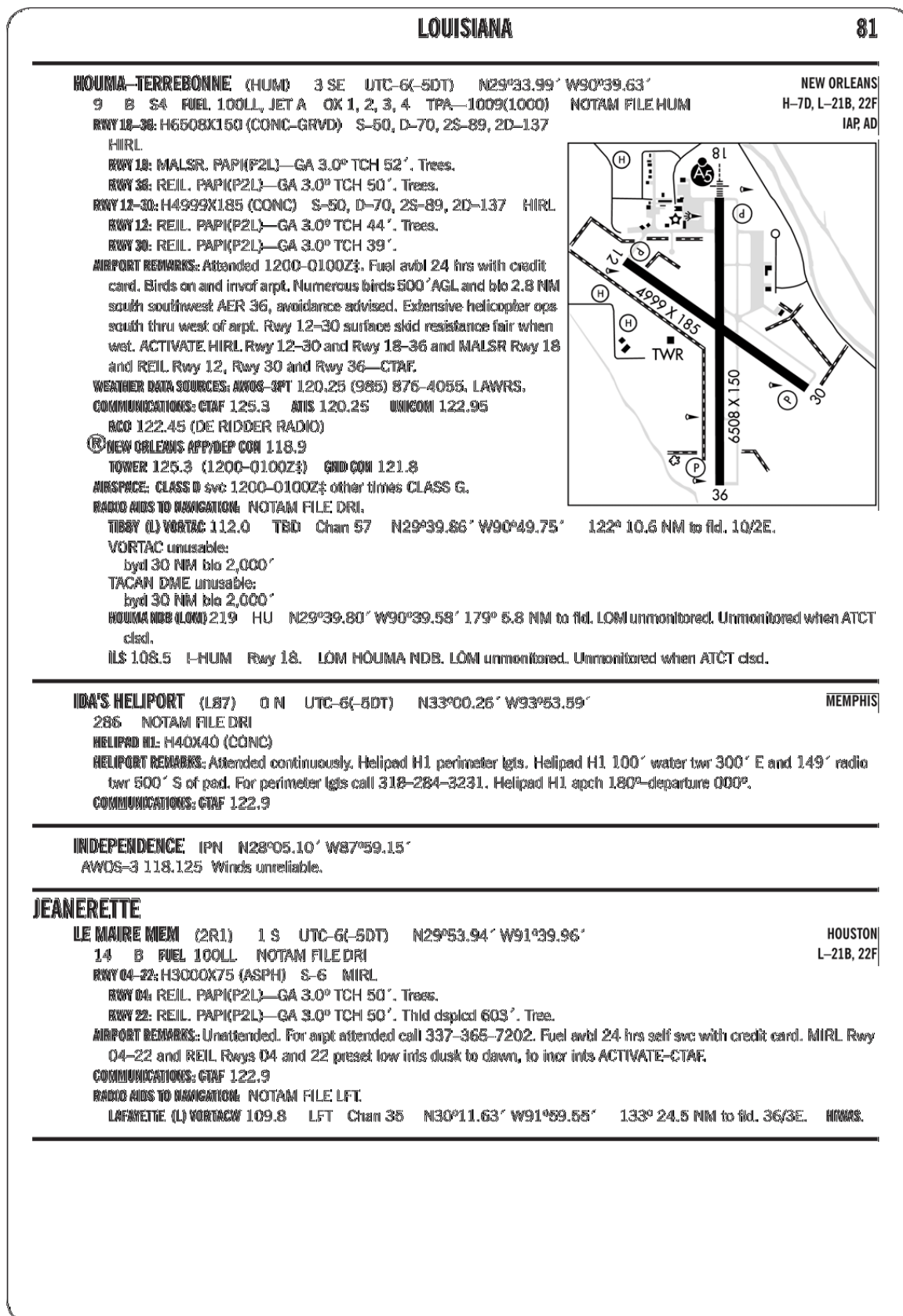


Figure 201. Excerpt from Chart Supplement.

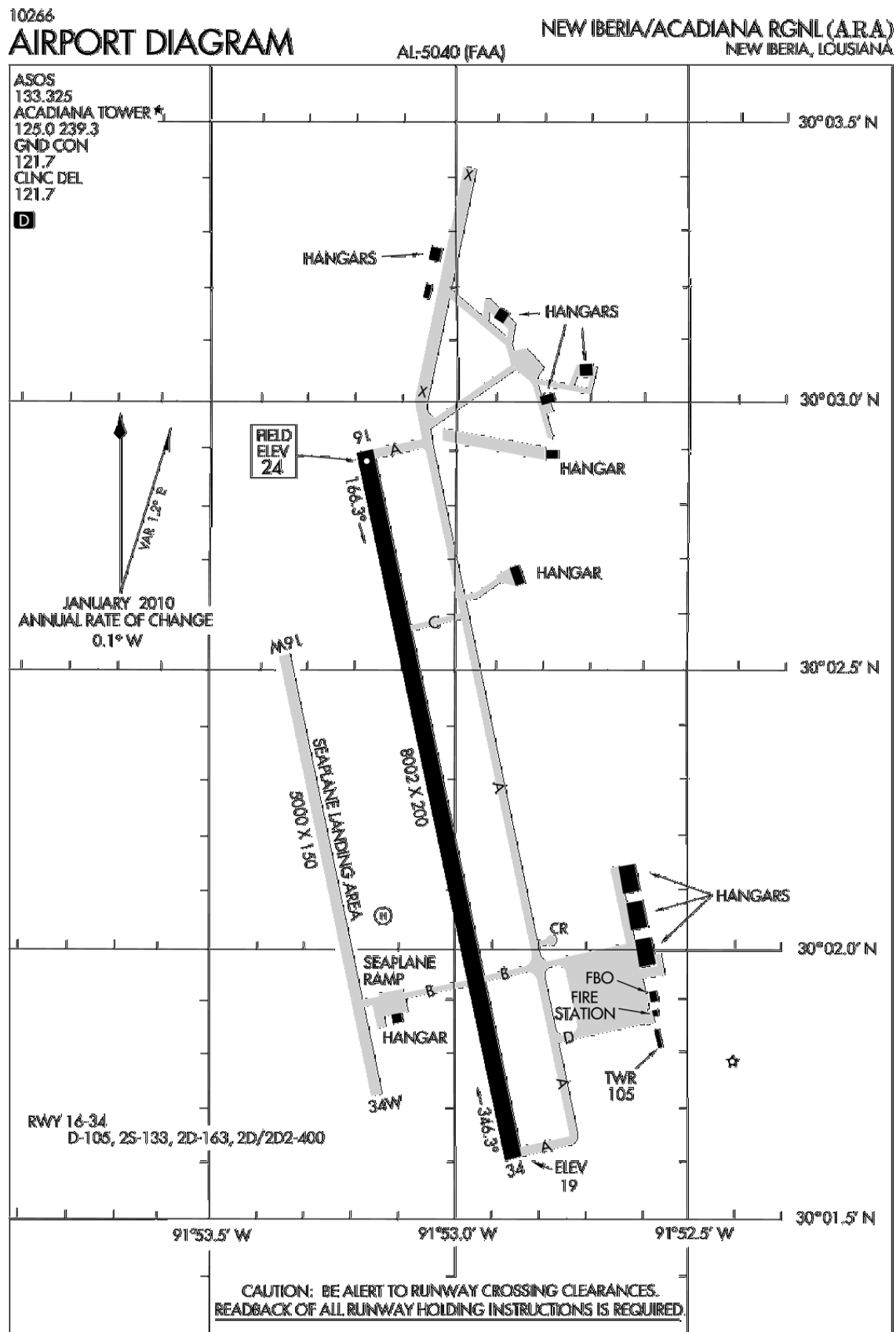


Figure 202. Airport Diagram: New Iberia/AcadianaRGNL (ARA).

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LOUISIANA

NATCHITOCHES RGNL (IER) 2 S UTC-6(-5DT) N31°44.14' W93°05.95'

121 B S4 FUEL 100LL, JET A1+ NOTAM FILE IER

Rwy 17-35: H5003X150 (ASPH) S-30 MIRL

Rwy 17: REIL. PAPI(P4L)—GA 3.0° TCH 45'. Trees.

Rwy 35: ODALS. PAPI(P4L)—GA 3.0° TCH 43'. Trees.

Rwy 07-25: H4000X100 (ASPH) S-21 MIRL

Rwy 07: Trees.

Rwy 25: P-line.

AIRPORT REMARKS: Attended dawn-dusk. For arpt attendant after hrs call 318-471-2106. Fuel avtd 24 hr with credit card. MIRL Rwy 17-35 and REIL Rwy 17 preset low lnts dusk to dawn, to increase lnts and ACTIVATE MIRL Rwy 07-25—CTAF. Rwy 35 ODALS operate low lnts continuously, to increase lnts ACTIVATE—CTAF.

WEATHER DATA SOURCES: ANOS-3 119.025 (318) 352-1575.

COMMUNICATIONS: CTAF/UNICOM 122.8

① POLK APP/DEP CON 125.4

GEO 135.075 (FORT POLK APCH AND DE RIDDER FSS)

RADIO AIDS TO NAVIGATION: NOTAM FILE AEX.

ALEXANDRIA (NO VORTAC) 116.1 AEX Chan 10B N31°15.40'

W92°30.06' 310° 42.0 NM to fld. 80/SE. HIRMS.

VOR unusable:

035°-065° bto 2,000'

066°-094° btd 35 NM bto 3,000'

185°-200° btd 35 NM bto 3,000'

201°-214° btd 35 NM bto 2,000'

215°-260° bto 2,000'

261°-285° btd 35 NM bto 2,000'

357°-034° btd 35 NM bto 3,000'

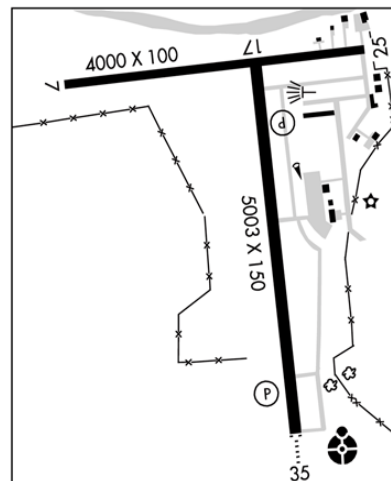
NDB (MHF) 407 OOC N31°39.45' W93°04.66' 343° 4.8 NM to fld. NOTAM FILE IER.

LOC 110.5 I-IER Rwy 35. LOC unmonitored 0000-1200Z†.

HOUSTON

H-61, L-22E

IAP



NEW IBERIA

ACADIANA RGNL (ARA) 4 NW UTC-6(-5DT) N30°02.27' W91°53.03'

24 B S2 FUEL 100LL, JET A OX 4 TPA-1024(1000) Class IV, ARFF Index A

NOTAM FILE ARA

Rwy 16-34: H8002X200 (CONC) D-105, 2S-133, 2D-163,

2D/2D2-400 HIRL

Rwy 16: ODALS. PAPI(P4L)—GA 3.0° TCH 51'.

Rwy 34: MALSR. PAPI(P4L)—GA 3.0° TCH 52'. Rgt tlc.

RUNWAY DECLARED DISTANCE INFORMATION

Rwy 16: TORA-8002 TODA-8002 ASDA-8002 LDA-8002

Rwy 34: TORA-8002 TODA-8002 ASDA-8002 LDA-8002

AIRPORT REMARKS: Attended 1300-0300Z†. For fuel after hrs call 337-367-1401, FAX 337-367-1404. Seaplane landing area (water channel) West of and adjacent/parallel to runway. Rwy 16W-34W seaway edge lghts green; thld lghts amber. Bird activity on and inwof arpt. ARFF PPR for more than 30 passenger seats call arpt manager 337-365-7202. Rotor wing movement and landing area between the rwy and seaway. Intensive helicopter training. When twr closed HIRL. Rwy 16-34 preset low lnts, to increase lnts and ACTIVATE MALSR Rwy 34—CTAF.

WEATHER DATA SOURCES: ASOS 133.325 (337) 368-0128.

COMMUNICATIONS: CTAF 125.0 UNICOM 122.95

① LAFAYETTE APP/DEP CON 121.1 (1130-0430Z†)

HOUSTON CENTER APP/DEP CON 126.35 (0430-1130Z†)

TOWER 125.0 (1200-0300Z†) GND CON 121.7 CLNC DEL 121.7

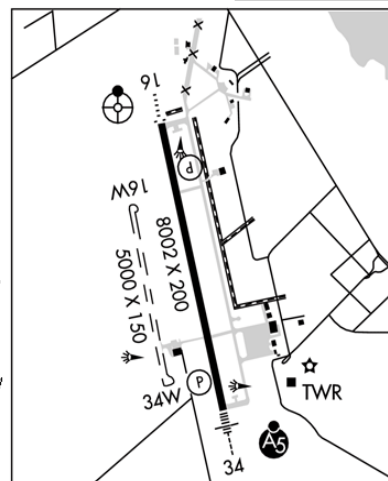
LAFAYETTE CLNC DEL 118.05

AIRSPACE: CLASS D svt 1200-0300Z†; other times CLASS G.

HOUSTON

H-7D, L-21B, 22E, GOMC

IAP, AD



CONTINUED ON NEXT PAGE

Figure 203. Excerpt from Chart Supplement.

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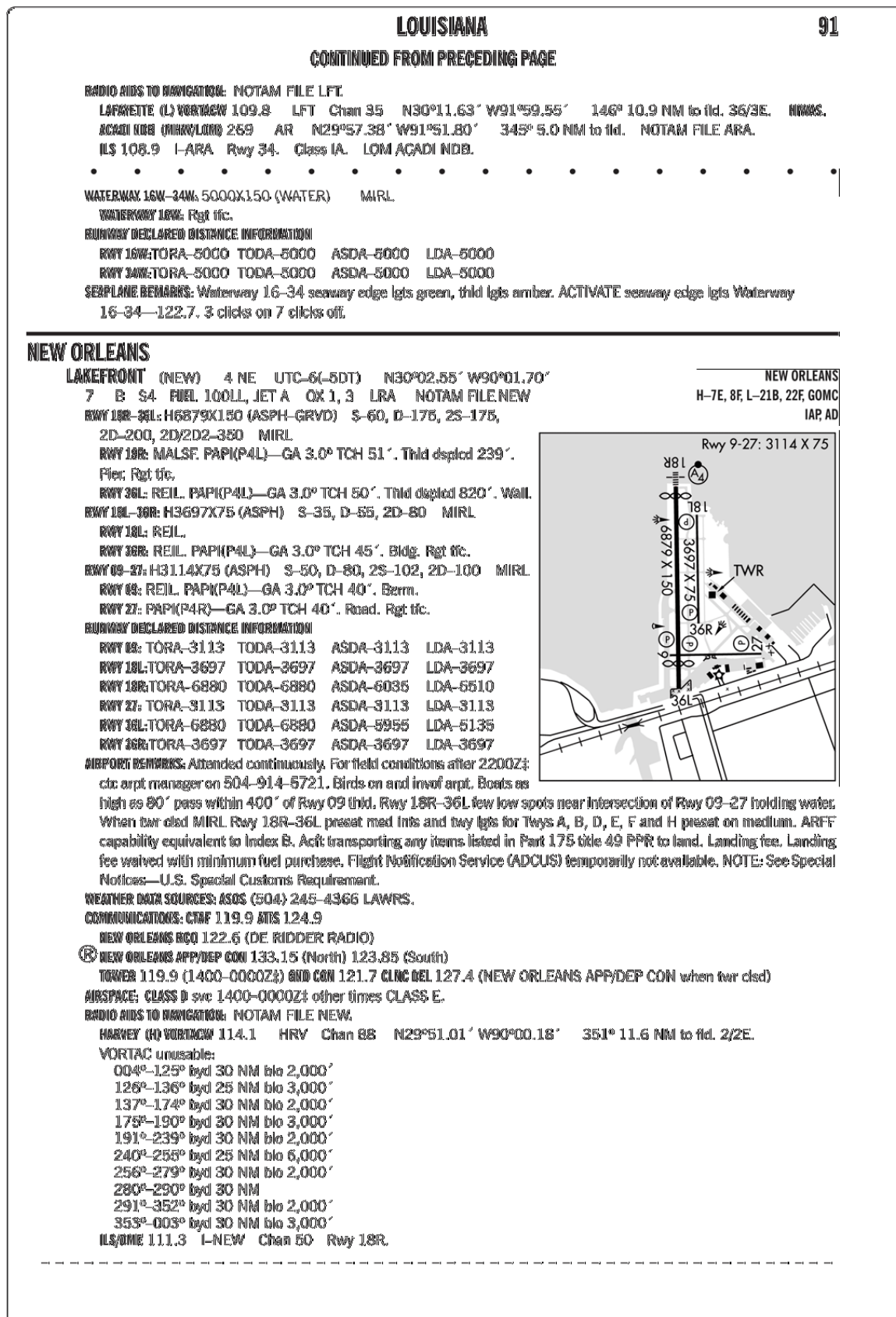
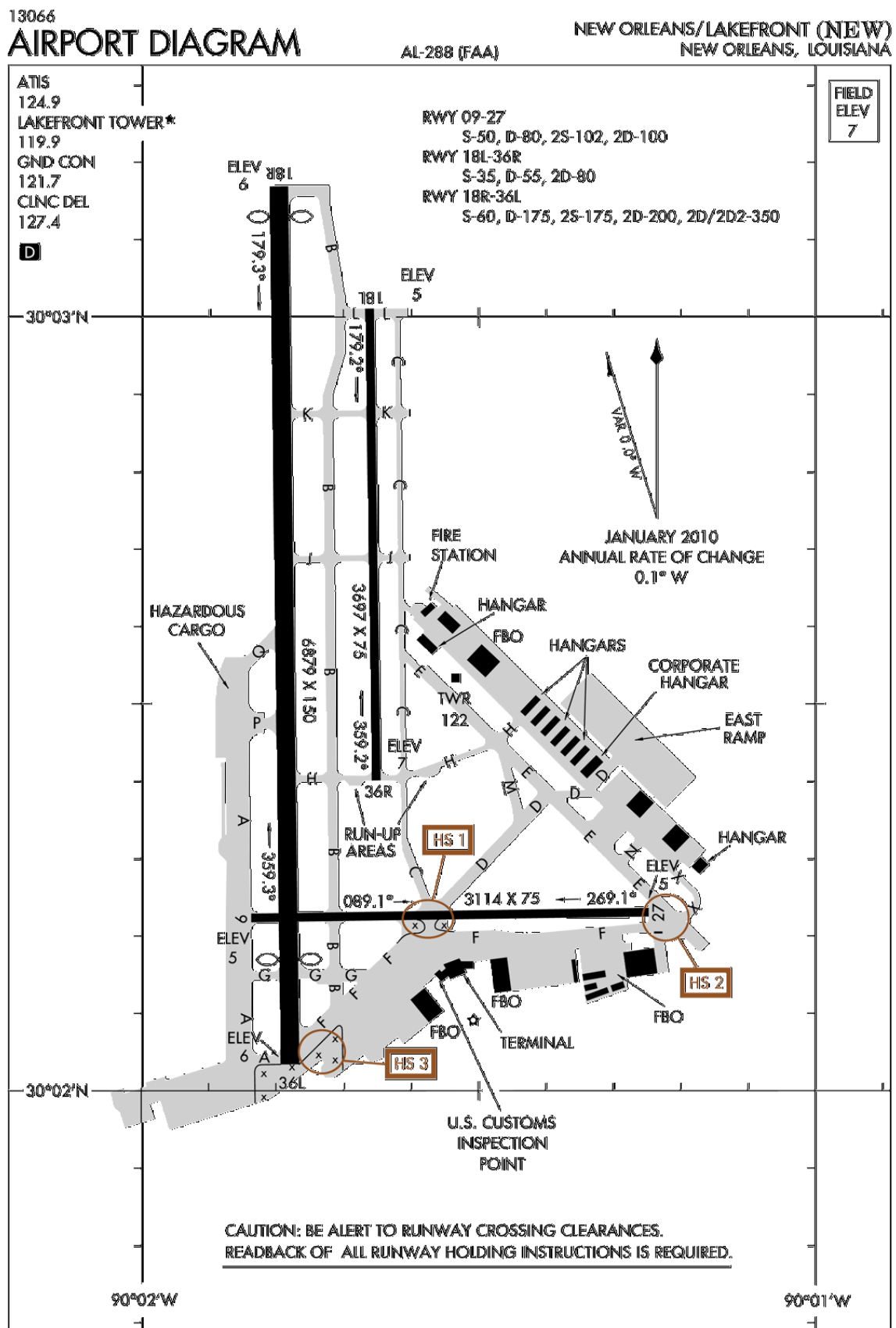


Figure 203A. Excerpt from Chart Supplement.

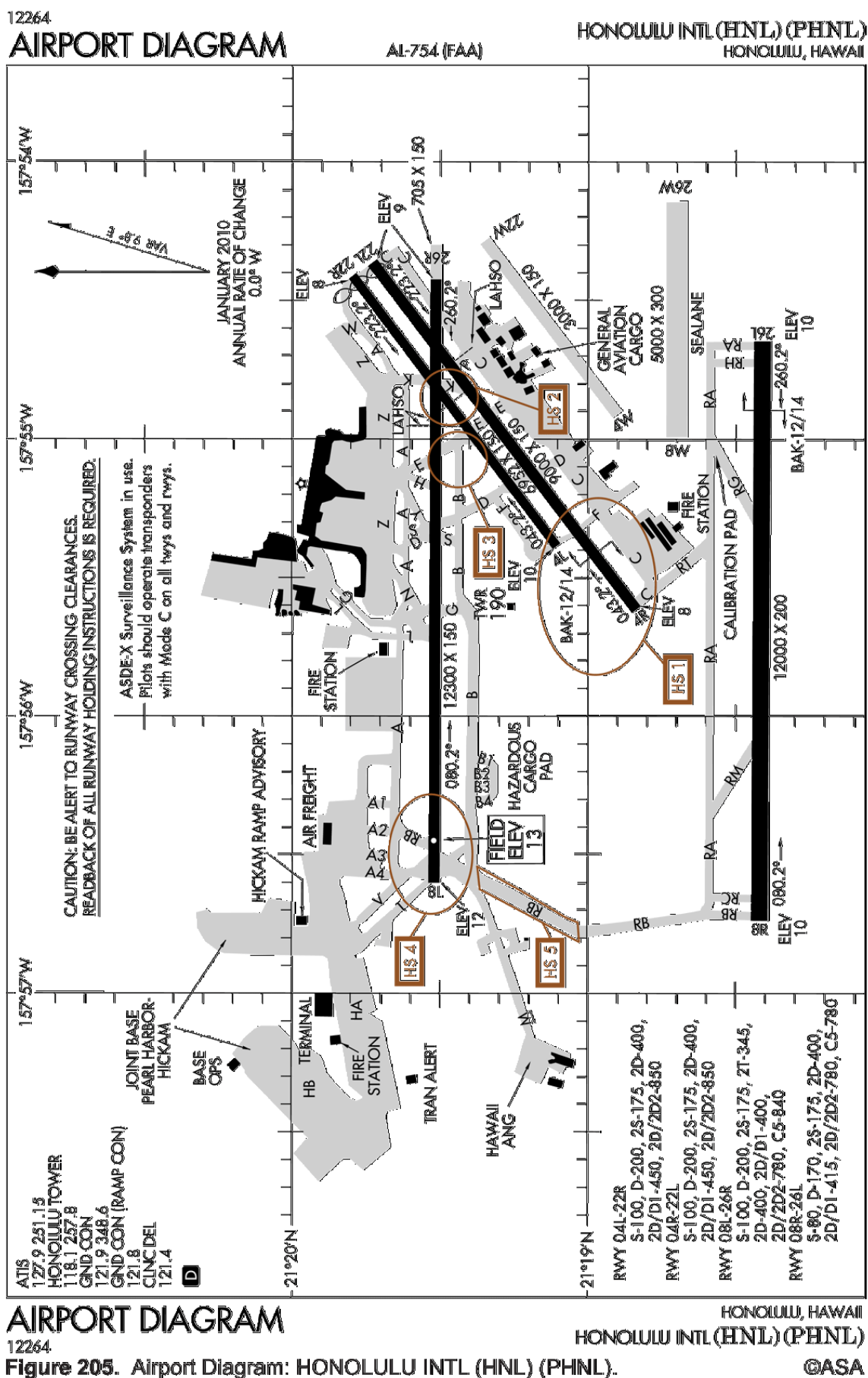


AIRPORT DIAGRAM

13066

Figure 204. Airport Diagram: NEW ORLEANS/LAKEFRONT (NEW).

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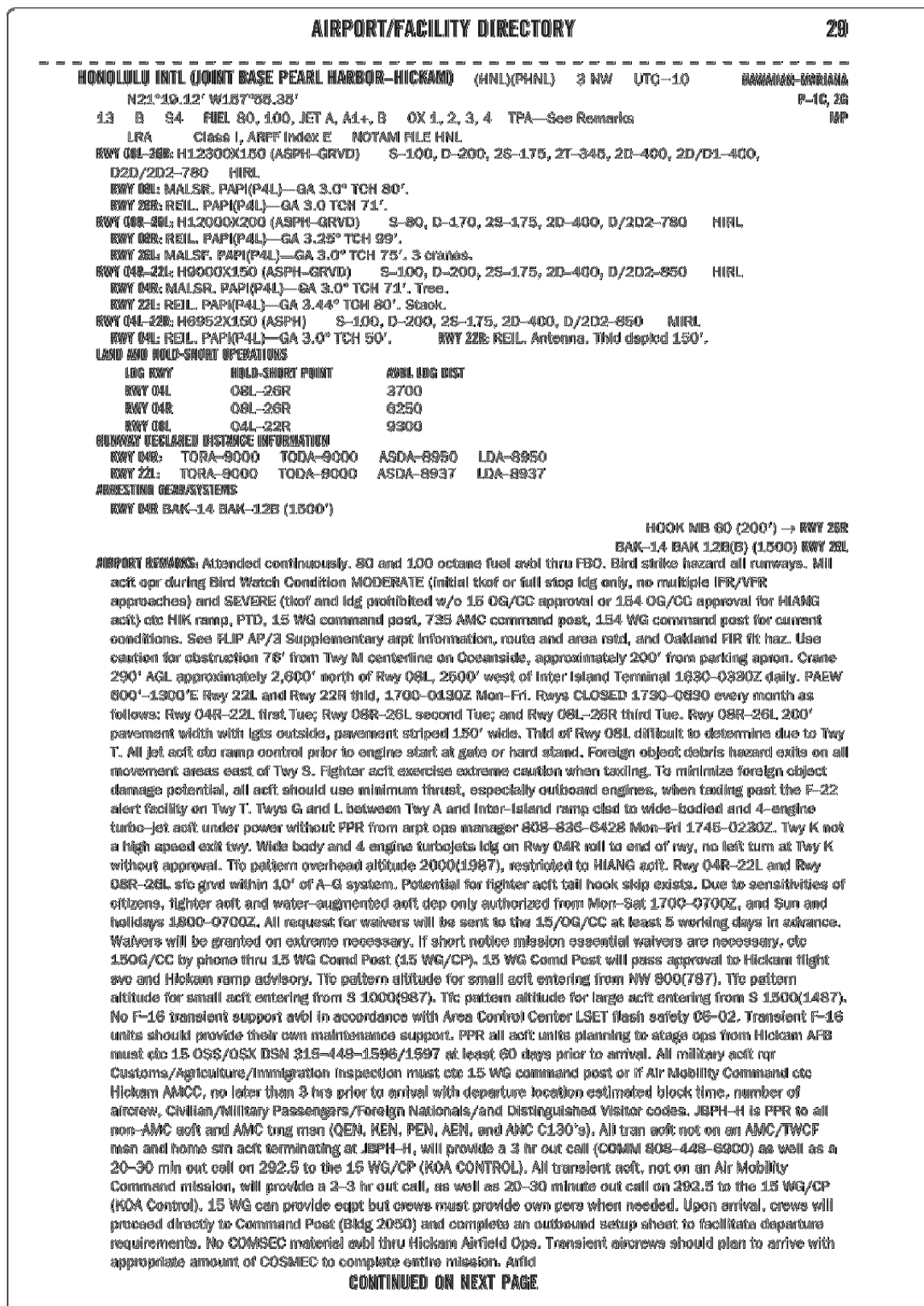


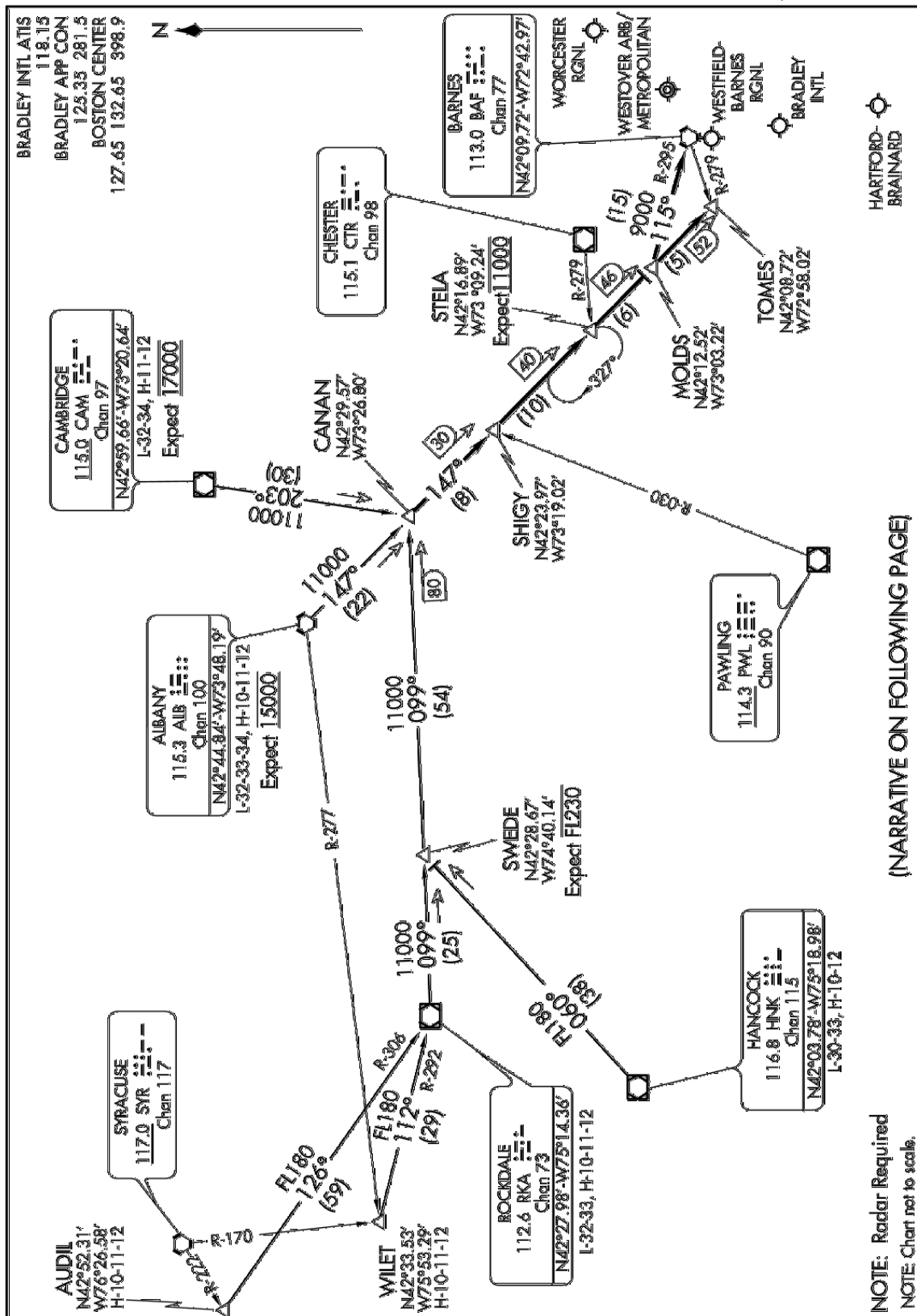
Figure 206. Excerpt from Chart Supplement.

(STELA.STELA1) 16259

ST-460 (FAA)

STELA ONE ARRIVAL

WINDSOR LOCKS, CONNECTICUT



STELA ONE ARRIVAL

WINDSOR LOCKS, CONNECTICUT

(STELA.STELA1) 31MAY12

Figure 208. STELA ONE ARRIVAL (STELA.STELA1).

©ASA

(STELA.STELA1) 16259

ST-460 (FAA)

STELA ONE ARRIVAL

WINDSOR LOCKS, CONNECTICUT

ARRIVAL ROUTE DESCRIPTION

ALBANY TRANSITION (ALB.STELA1): From over ALB VORTAC via ALB R-147 to CANAN INT. Thence. . . .

AUDIL TRANSITION (AUDIL.STELA1): From over AUDIL INT via RKA R-306 to RKA VOR/DME, then via RKA R-099 to CANAN INT. Thence. . . .

CAMBRIDGE TRANSITION (CAM.STELA1): From over CAM VOR/DME via CAM R-203 to CANAN INT. Thence. . . .

HANCOCK TRANSITION (HNK.STELA1): From over HNK VOR/DME via HNK R-060 to SWEDE INT, then via RKA R-099 to CANAN INT. Thence. . . .

WILET TRANSITION (WILET.STELA1): From over WILET INT via RKA R-292 to RKA VOR/DME, then via RKA R-099 TO CANAN INT. Thence. . . .

KBDL and KHFD ARRIVALS: From over CANAN INT via ALB R-147 to TOMES INT. Expect radar vectors to final approach course prior to TOMES INT.

KBAF, KCEF and KORH ARRIVALS: From over CANAN INT via ALB R-147 to MOLDS INT. Then via BAF R-295 to BAF VORTAC. Expect radar vectors to final approach course prior to BAF VORTAC.

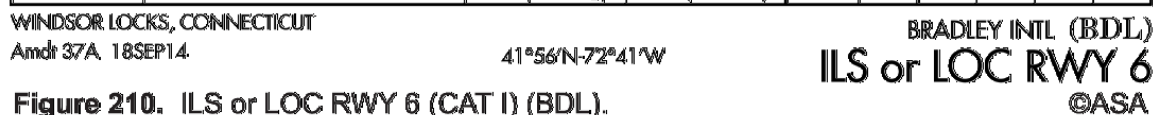
STELA ONE ARRIVAL

WINDSOR LOCKS, CONNECTICUT

(STELA.STELA1) 31MAY12

Figure 209. STELA ONE ARRIVAL (STELA.STELA1).

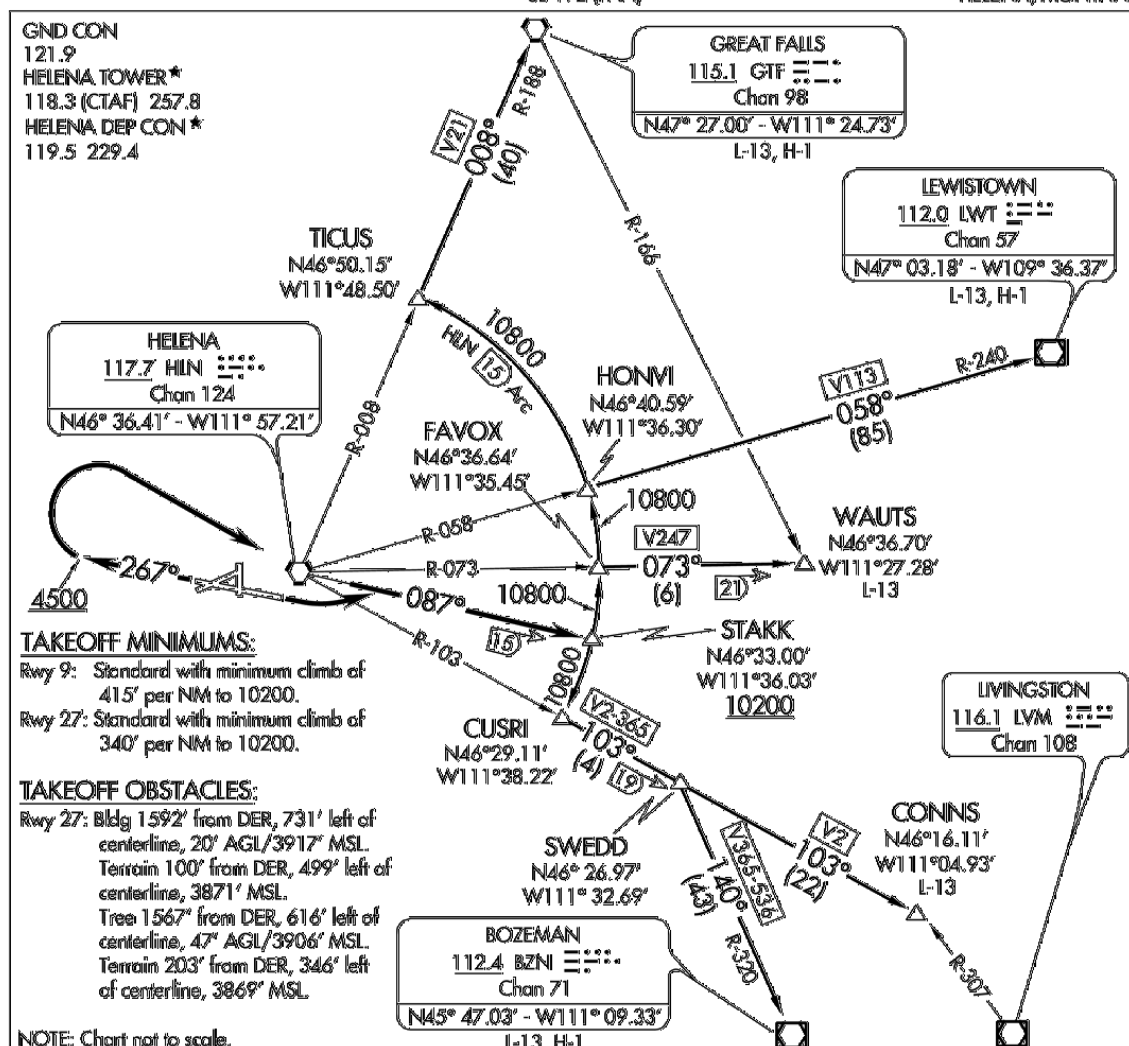
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(STAKK3.STAKK) 12040

STAKK THREE DEPARTURE

HELENA RGNL (HLN)
HELENA, MONTANA



DEPARTURE ROUTE DESCRIPTION

TAKEOFF RUNWAY 9: Climbing left turn to intercept HLN R-087 to cross STAKK at or above 10200. Thence via transition.

TAKEOFF RUNWAY 27: Climb heading 267° to 4500 then climbing right turn direct HLN VORTAC. Continue climb on HLN R-087 to cross STAKK at or above 10200. Thence via transition.

BOZEMAN TRANSITION (STAKK3.BZN): From over STAKK via 15 DME Arc to CUSRI INT, then via HLN R-103 to SWEDD INT, then via BZN R-320 to BZN VOR/DME.

CONNS TRANSITION (STAKK3.CONNS): From over STAKK via 15 DME Arc to CUSRI INT, then via HLN R-103 to SWEDD INT, then via HLN R-103 to CONNS INT.

GREAT FALLS TRANSITION (STAKK3.GTF): From over STAKK via 15 DME Arc to FAVOX, then via 15 DME Arc to HONVI, then via 15 DME Arc to TICUS, then via HLN R-008 and GTF R-188 to GTF VORTAC.

LEWISTOWN TRANSITION (STAKK3.LWT): From over STAKK via 15 DME Arc to FAVOX, then via 15 DME Arc to HONVI, then via HLN R-058 and LWT R-240 to LWT VOR/DME.

WAITS TRANSITION (STAKK3.WAITS): From over STAKK via 15 DME Arc to FAVOX, then via HLN R-073 to WAITS INT.

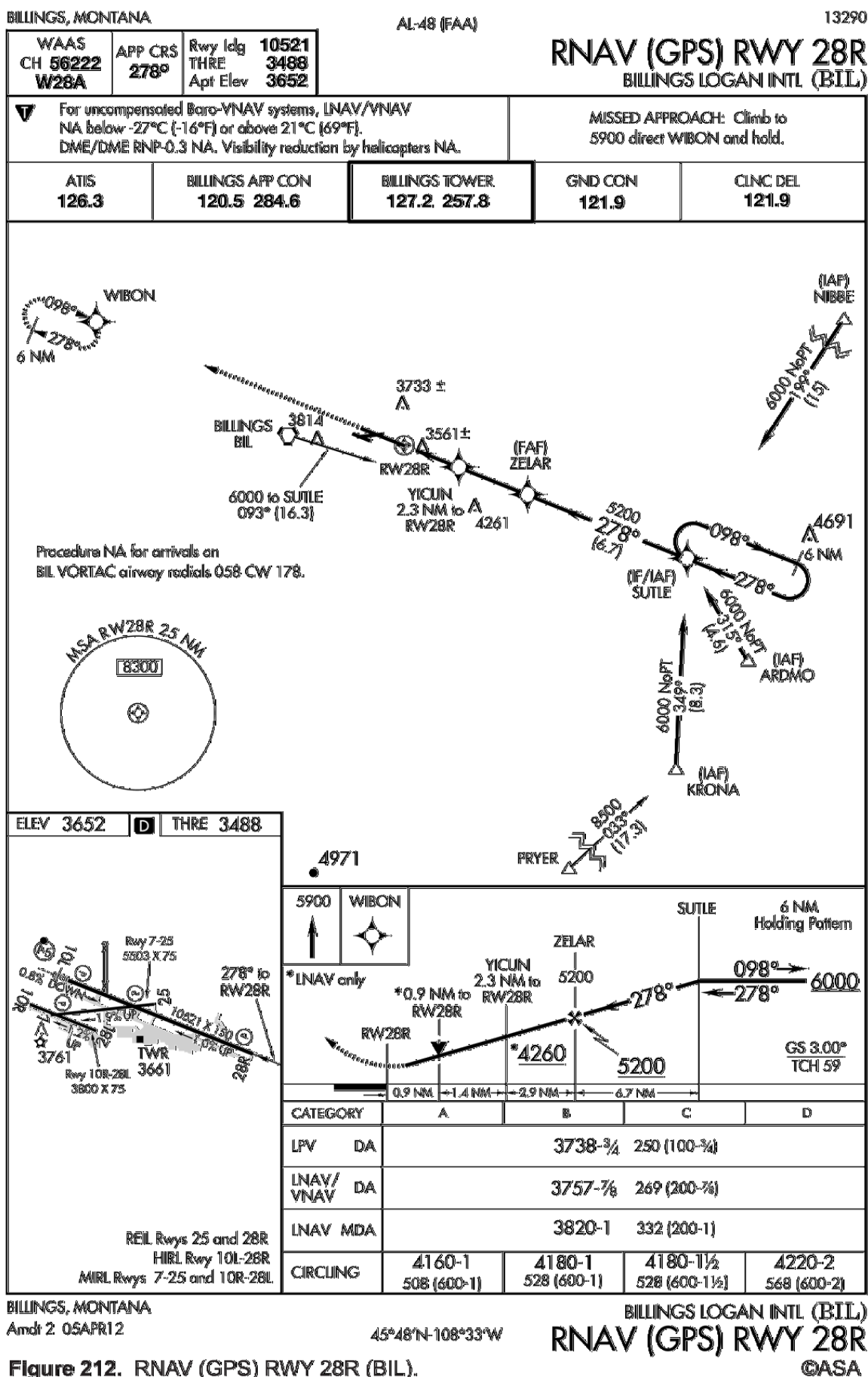
STAKK THREE DEPARTURE

(STAKK3.STAKK) 12040

HELENA, MONTANA
HELENA RGNL (HLN)

Figure 211. STAKK THREE DEPARTURE (STAKK3.STAKK) (HLN).

©ASA



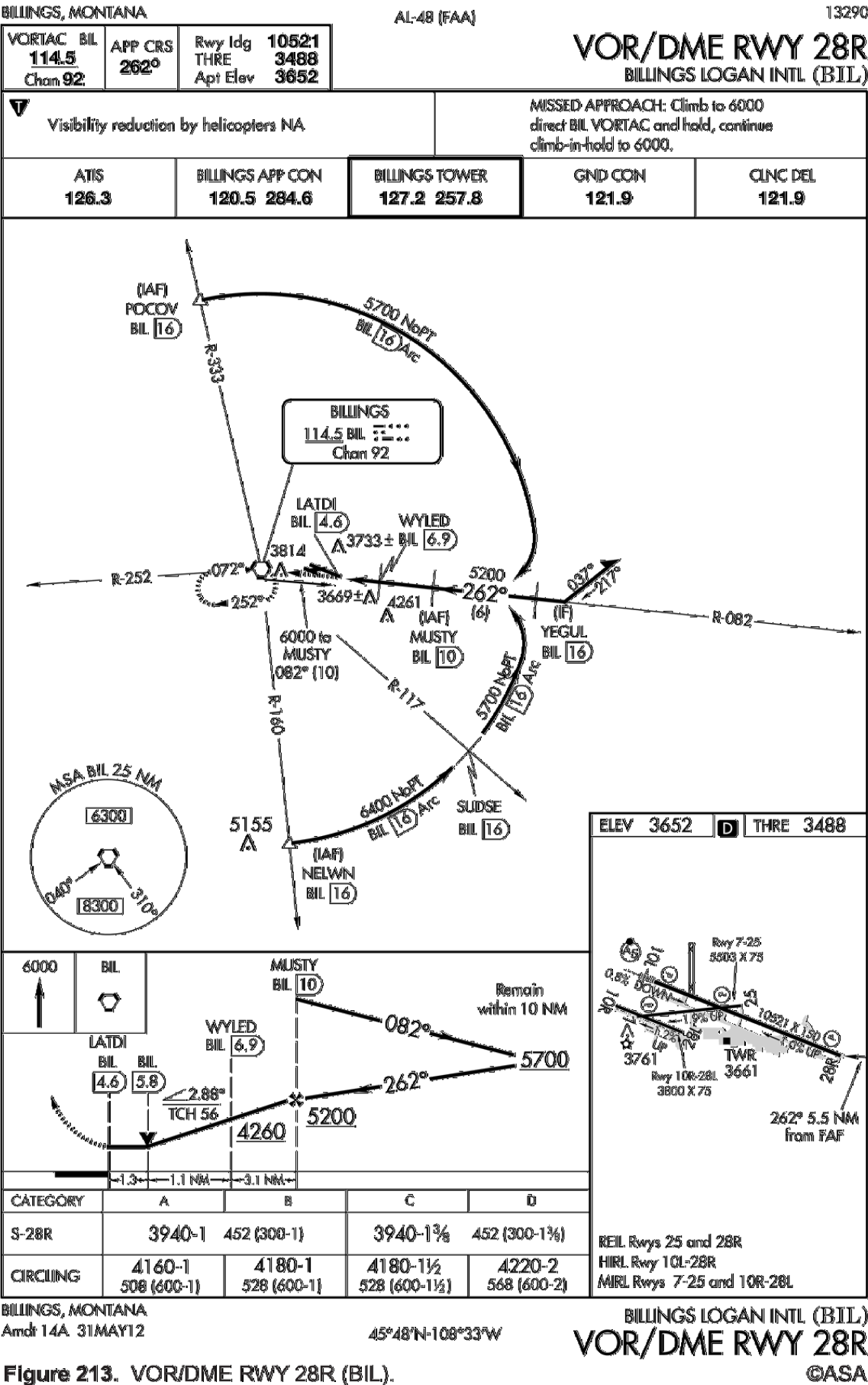


Figure 213. VOR/DME RWY 28R (BIL).

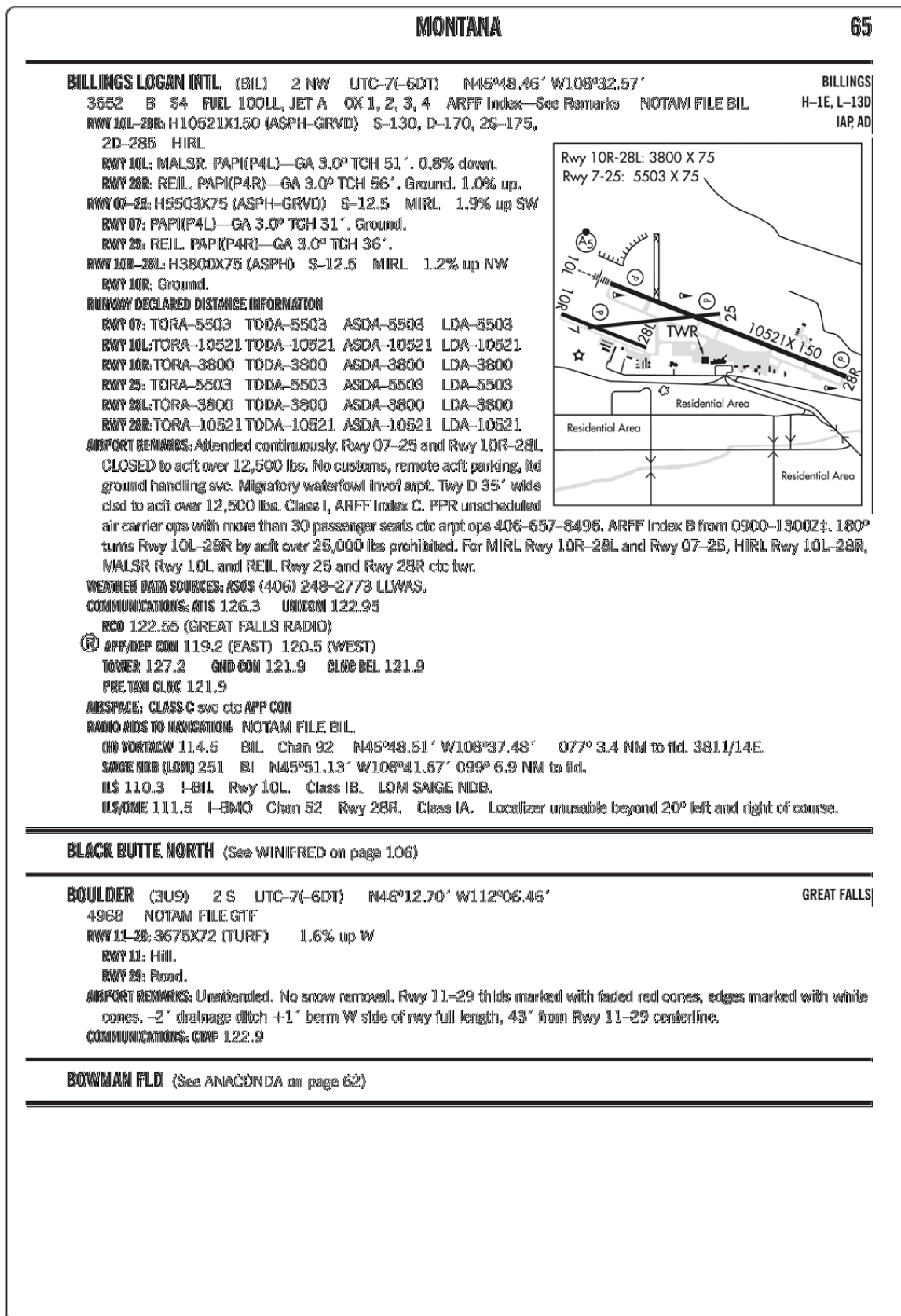


Figure 214. Excerpt from Chart Supplement.

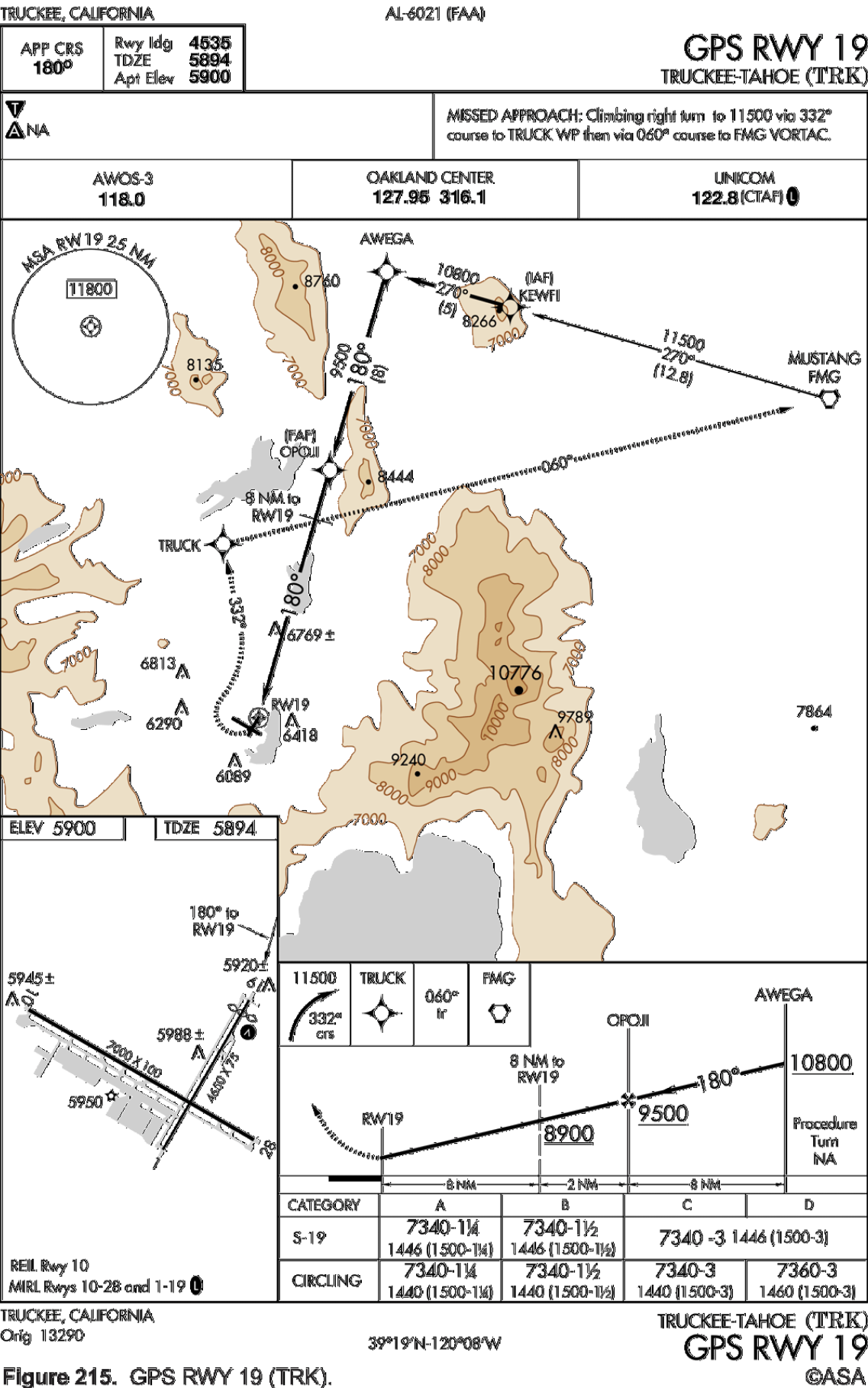


Figure 215. GPS RWY 19 (TRK).

(RENO9.FMG) 16035

RENO NINE DEPARTURE

SL-346 (FAA)

RENO/TAHOE INTL (R.NO)
RENO, NEVADA



DEPARTURE ROUTE DESCRIPTION

TAKEOFF RUNWAYS 16L/R: Climb on heading 164° and I-RNO localizer south course.

Thence. . . .

TAKEOFF RUNWAY 25: Climb heading 254° to 5000 then climbing right turn heading 340°.

Thence. . . .

TAKEOFF RUNWAYS 34L/R: Climb heading 330° CW 360° as assigned by ATC.

Thence. . . .

. . . .All aircraft maintain FL190 or assigned altitude. Expect clearance to requested altitude 5 minutes after departure. Expect RADAR vectors to assigned route/fix.

LOST COMMUNICATIONS: If not in contact with departure control within one minute after takeoff, maintain assigned heading until passing 10000, thence. . . .

. . . .RUNWAYS 16L/R DEPARTURES: Turn left direct FMG VORTAC, then via assigned route.

. . . .RUNWAYS 25 and 34L/R DEPARTURES: Turn right direct FMG VORTAC, then via assigned route.

RENO NINE DEPARTURE

(RENO9.FMG) 04FEB16

RENO, NEVADA
RENO/TAHOE INTL (R.NO)

Figure 216A. RENO NINE DEPARTURE (RENO9.FMG) (RNO).

©ASA

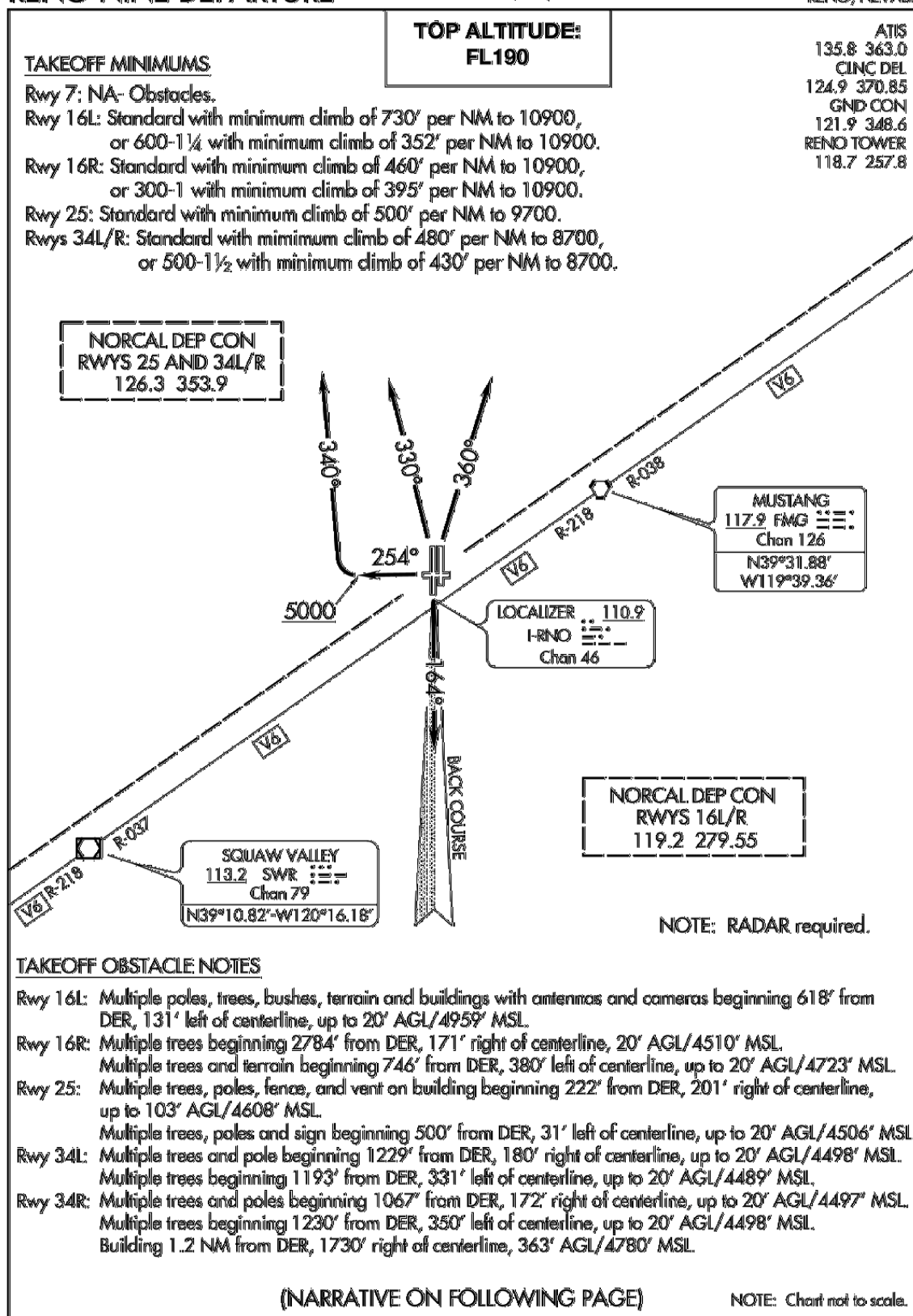
(RENO9.FMG) 16035

RENO NINE DEPARTURE

SL-346 (FAA)

RENO/TAHOE INTL (RNO)

RENO, NEVADA



RENO NINE DEPARTURE

(RENO9.FMG) 04FEB16

RENO, NEVADA
RENO/TAHOE INTL (RNO)

Figure 216. RENO NINE DEPARTURE (RENO9.FMG) (RNO).

©ASA

DES MOINES, IOWA

AL-117 (FAA)

13290

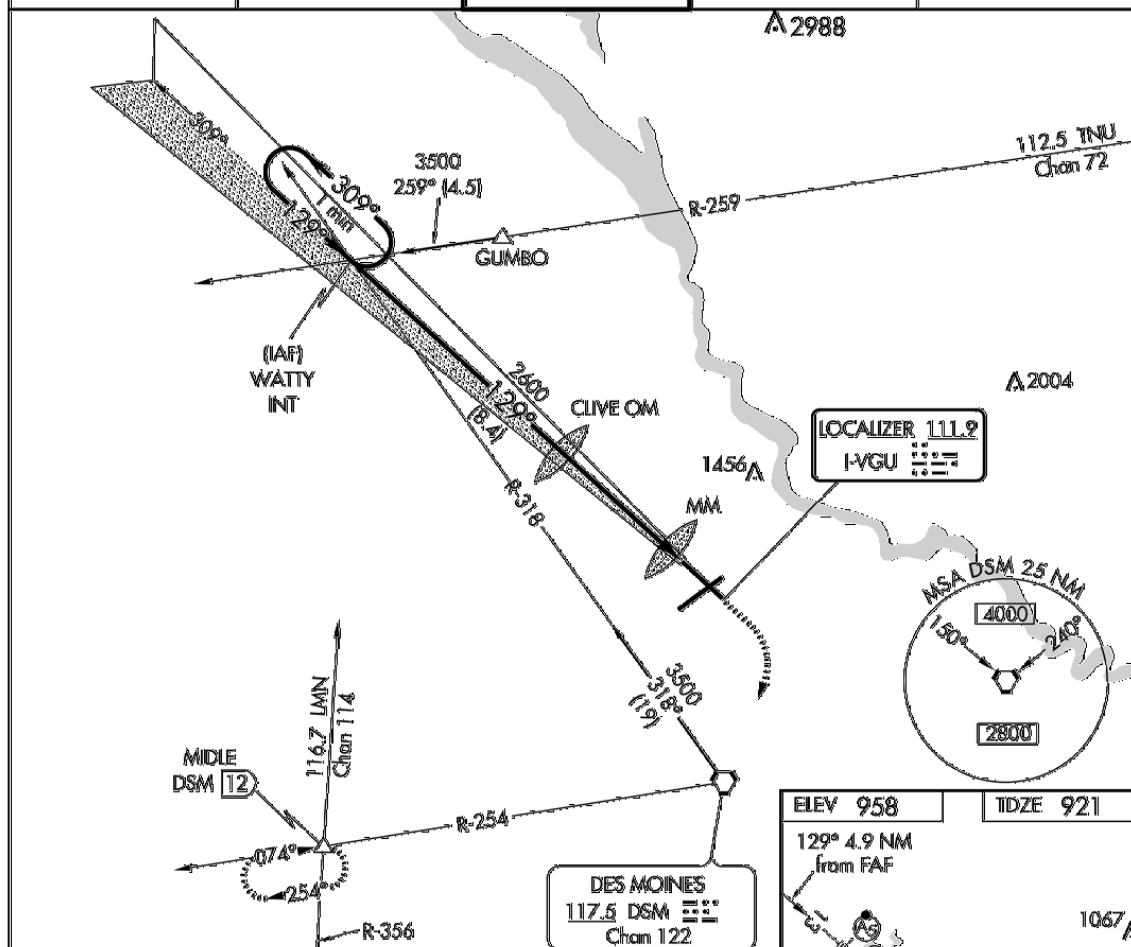
LOC I-VGU 111.9	APP CRS 129°	Rwy Idg 9002 TDZE 921 Apt Elev 958	ILS or LOC RWY 13 DES MOINES INTL (DSM)	
---------------------------	------------------------	--	---	--

▼ For inoperative MALSR increase S-ILS 13 Cat E visibility to RVR 4000 and S-LOC 13 Cat E visibility to 1½ mile.
▲

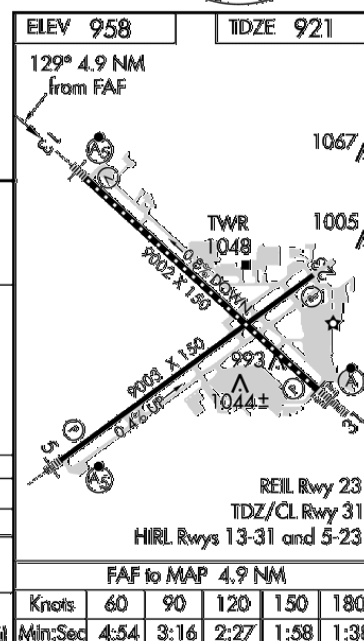


MISSED APPROACH: Climb to 1600 then climbing right turn to 3000 direct DSM VORTAC then via DSM R-254 to MIDDLE Int/DSM 12 DME and hold.

ATIS 119.55 251.05	DES MOINES APP CON 123.9 307.15	DES MOINES TOWER 118.3 257.8	GND CON 121.9 348.6	CINC DEL 134.15 317.55
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One Minute Holding Pattern	WATTY INT		1600 ↑	3000 ↷	DSM 	DSM R-254	MIDDLE 
	3500 ← 309° 129° →		CLIVE OM 2548 2600		MM		
	GS 3.00° TCH 57		8.4 NM 4.3 NM 0.6				
CATEGORY	A	B	C	D	E		
S-ILS 13	1121/24 200 (200-½)						
S-LOC 13	1380/24	459 (500-½)	1380/40 459 (500-1½)	1380/50	459 (500-1)		
CIRCLING	1420-1	462 (500-1)	1420-1½ 462 (500-1½)	1520-2 562 (600-2)	1760-2¾ 802 (900-2¾)		



DES MOINES, IOWA

Amdt 9B 23AUG12

41°32'N-93°40'W

DES MOINES INTL (DSM)
ILS or LOC RWY 13

©ASA

Figure 217. ILS or LOC RWY 13 (DSM).

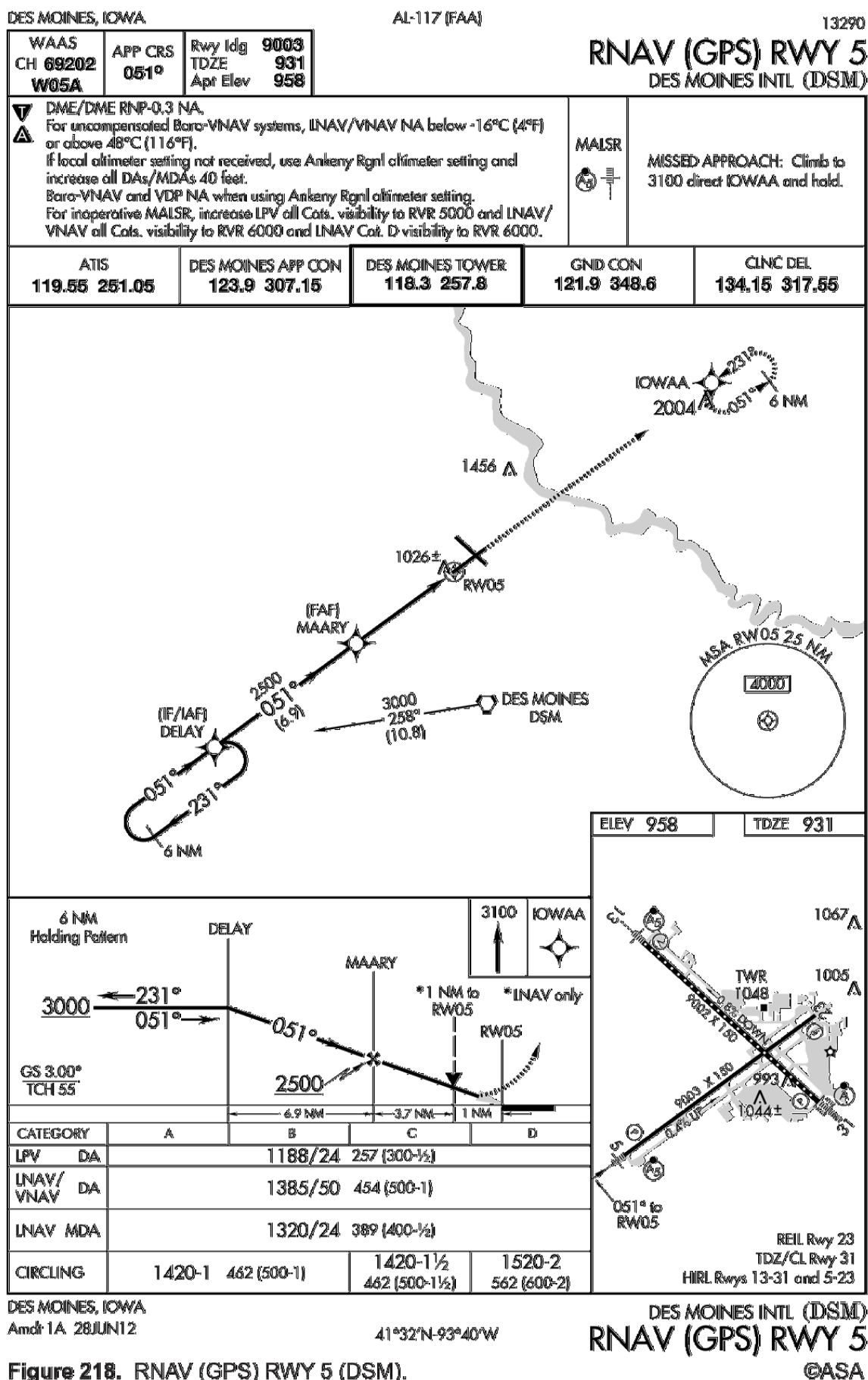
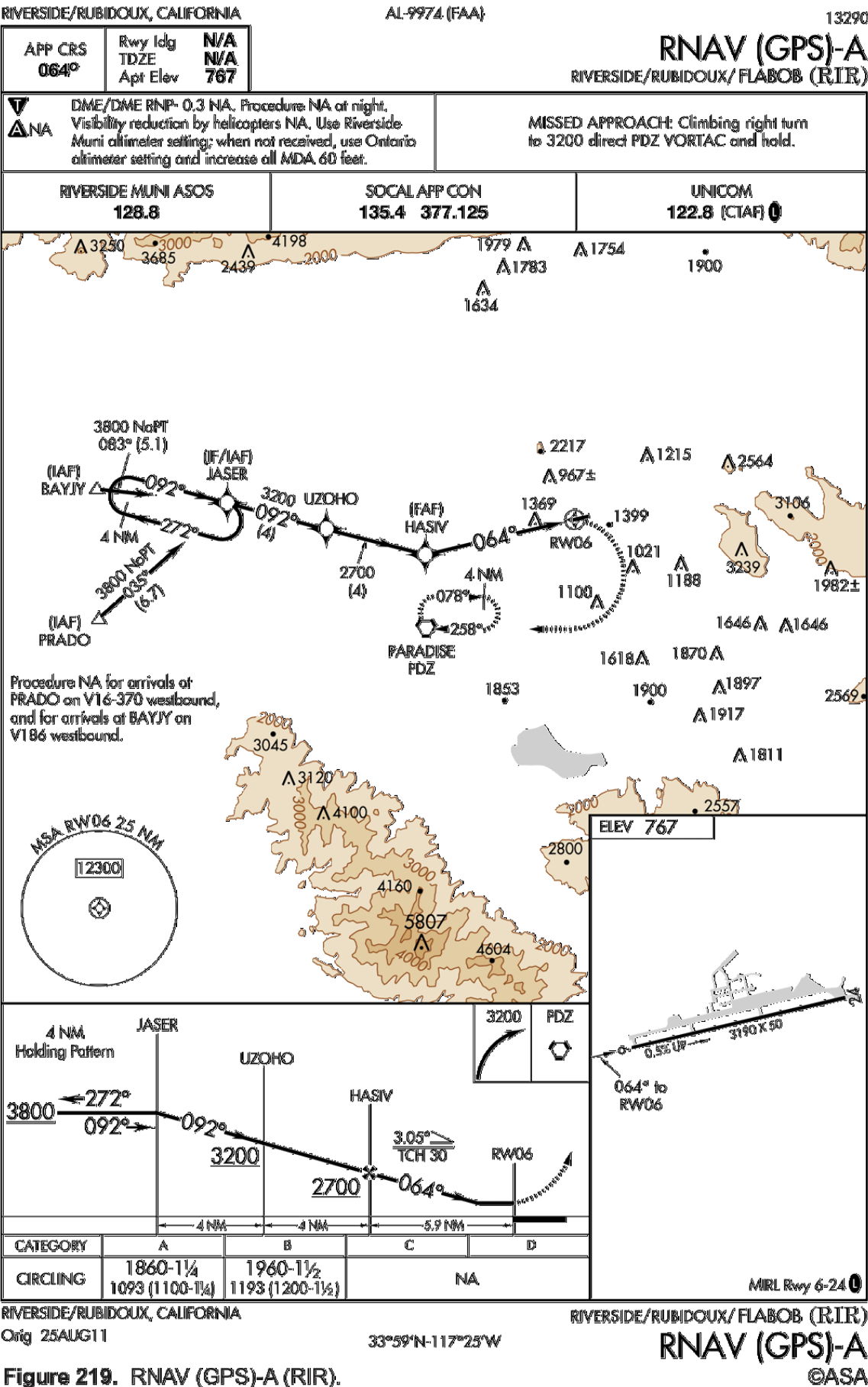


Figure 218. RNAV (GPS) RWY 5 (DSM).



L11



TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES



13234

RIVERSIDE/RUBIDOUX, CA
FLABOB (RIR)
ORIG 11181 (FAA)

TAKEOFF MINIMUMS: Rwy 6, std. w/min. climb of 670' per NM to 4000 or 400-2 w/min. climb of 460' per NM to 4000 or 2100-3 for climb in visual conditions. Rwy 24, std. w/min. climb of 630' per NM to 3000 or 800-2½ w/min. climb of 305' per NM to 4600 or 2100-3 for climb in visual conditions.

DEPARTURE PROCEDURE: Rwy 6, climb via heading 064° to 4000 then right turn direct PDZ VORTAC, or for climb in visual conditions cross Flabob Airport Southwest bound at or above 2700 then via PDZ R-039 to PDZ VORTAC. Rwy 24, climb via heading 244° and PDZ R-031 to PDZ VORTAC, or for climb in visual conditions cross Flabob Airport Southwest bound at or above 2700 then via PDZ R-039 to PDZ VORTAC.

All aircraft climb in PDZ VORTAC holding pattern (hold East, right turns, 258° inbound) to cross PDZ VORTAC at or above MEA for direction of flight before proceeding on course.

NOTE: Rwy 6, trees beginning 3763' from DER, 1152' right of centerline, up to 40' AGL/1119' MSL. Rwy 24, antenna on tank 6193' from DER, 2057' right of centerline, 38' AGL/1237' MSL. Trees beginning 2484' from DER, 434' right of centerline, up to 40' AGL/1519' MSL. Pole 6261' from DER, 1950' right of centerline, 30' AGL/1230' MSL. Building 1.52 NM from DER, 1154' right of centerline, up to 29' AGL/1369' MSL. Antenna on tank 1.26 NM from DER, 2047' right of centerline, 54' AGL/1254' MSL. Tank 4043' from DER, 794' right of centerline, 86' AGL/861' MSL. Tree 1.79 NM from DER, 434' right of centerline, 68' AGL/1138' MSL.

SAN BERNARDINO, CA
SAN BERNARDINO INTL (SBD)
ORIG 93343 (FAA)

TAKEOFF MINIMUMS: Rwy 6, CAT A,B 2100-2 or std. with a min. climb of 340' per NM to 3700. CAT C,D 3100-2 or std. with a min. climb of 480' per NM to 4600.

DEPARTURE PROCEDURE: Rwy 6, climbing right turn. Rwy 24, climbing left turn. All aircraft climb direct PDZ VORTAC. Aircraft departing PDZ R-091 CW R-140 and R-231 CW R-280 climb on course. All others continue climb in PDZ holding pattern (Hold NE, right turns, 210° inbound) to cross PDZ VORTAC at or above: R-281 CW R-090, 7700; R-141 CW R-230, 4800.

SAN CLEMENTE ISLAND NALF
(FREDERICK SHERMAN FLD)(KNUC)
SAN CLEMENTE ISLAND, CA 12208

Rwy 5: Diverse departures authorized 090° to 233° CW.

Rwy 23: Diverse departures authorized 180° to 053° CW.

TAKE-OFF OBSTACLES: Rwy 5, Pylon 198' MSL, 44' from DER, 274' left of centerline. Terrain 192' MSL, 50' from DER, 500' right of centerline. Terrain 194' MSL, 264' from DER, 509' right of centerline. Terrain 209' MSL, 824' from DER, 721' right of centerline. Terrain 199' MSL, 957' from DER, 612' right of centerline.

SAN DIEGO, CA
BROWN FIELD MUNI (SDM)
AMDT 4 10154(FAA)

TAKEOFF MINIMUMS: Rwy 8L, std. w/ min. climb of 570' per NM to 3100. Rwy 8R, 26L, NA - ATC.

DEPARTURE PROCEDURE: Rwy 8L, climbing left turn, thence...Rwy 26R, climbing right turn, thence... via heading 280° to intercept MZB R-160 to MZB VORTAC.

NOTE: Rwy 26R, tree 1284' from DER, 778' left of centerline, 52' AGL/561' MSL.

MONTGOMERY FIELD (MYF)
AMDT 3A 10210 (FAA)

TAKEOFF MINIMUMS: Rwy 5, 1500-2 or std. with a min. climb of 290' per NM to 1700.

DEPARTURE PROCEDURE: Rwy 5, 10L/R, climbing right turn. Rwy 28L/R, climbing left turn. All aircraft climb direct to MZB VORTAC. Aircraft departing MZB R-090 CW R-360 climb on course. All others climb in MZB holding pattern (W, right turns, 075° inbound) to cross MZB VORTAC at or above 1800.

NOTE: Rwy 5, trees and bushes beginning 244' from DER, 161' left of centerline, up to 99' AGL/524' MSL. Tree 1287' from DER, 103' right of centerline, up to 49' AGL/474' MSL. Rwy 23, tree, flag pole, and transmission towers beginning 1594' from DER, 82' right of centerline, up to 125' AGL/545' MSL. Transmission towers beginning 2627' from DER, 414' left of centerline up to 125' AGL/524' MSL. Rwy 10L, trees beginning 230' from DER, 494' left of centerline, up to 57' AGL/486' MSL. Trees beginning 1172' from DER, 591' right of centerline, up to 69' AGL/488' MSL. Rwy 10R, rod on electrical equipment 40' from DER, 86' left of centerline, 7' AGL/426' MSL. Trees beginning 2107' from DER, 199' right of centerline, up to 69' AGL/488' MSL. Rwy 28L, bushes and poles beginning 35' from DER, 160' right of centerline, up to 37' AGL/451' MSL. Trees beginning 1008' from DER, 7' left of centerline, up to 37' AGL/451' MSL. Rwy 28R, bushes, trees, and poles beginning 34' from DER, 162' left of centerline, up to 38' AGL/451' MSL. Trees, signs, and poles beginning 768' from DER, 98' right of centerline, up to 67' AGL/488' MSL.

13234



TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES

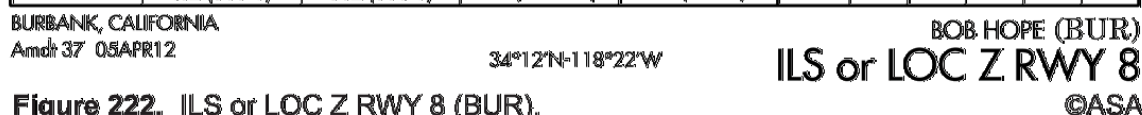


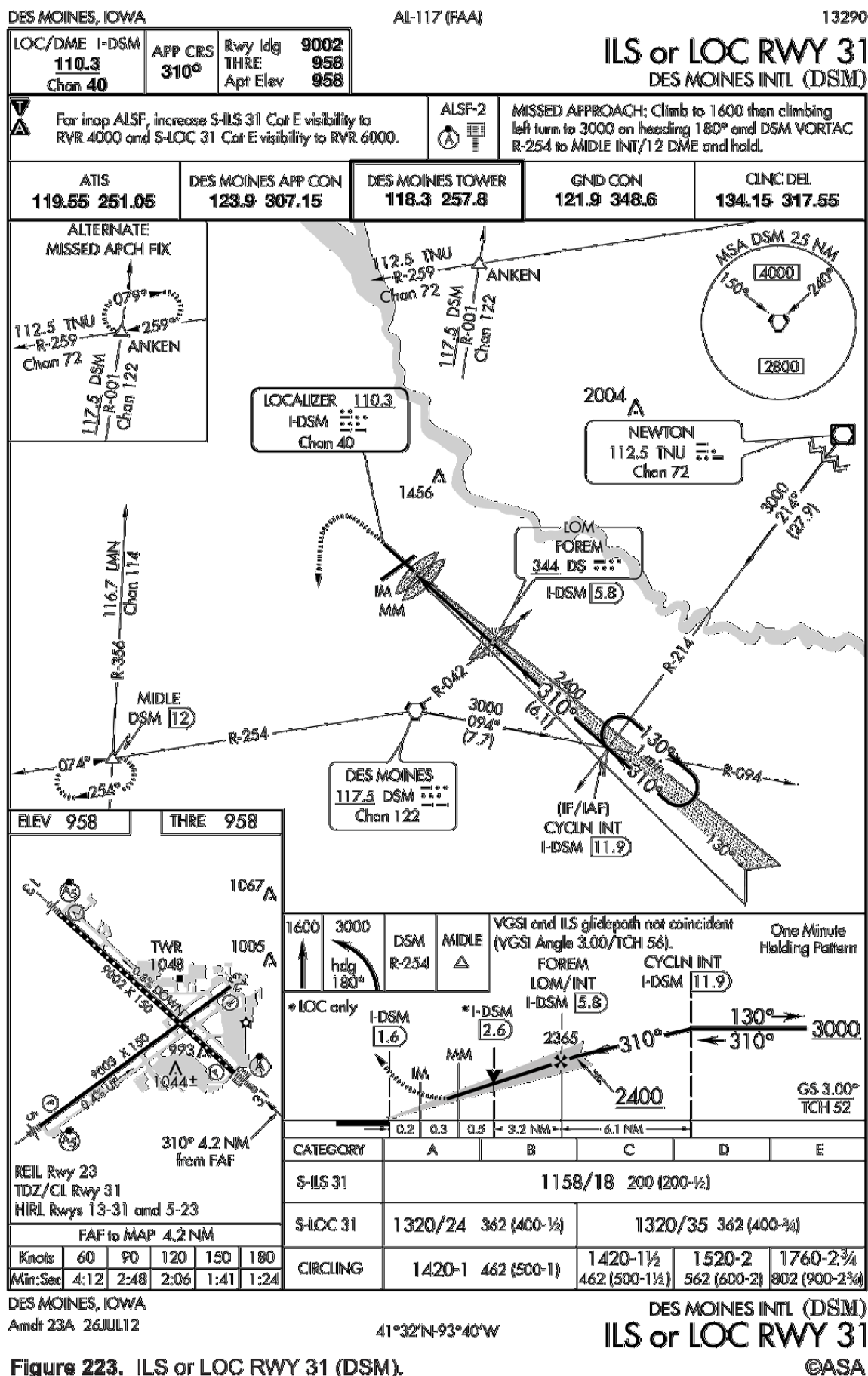
Figure 220. Takeoff Minimums and (Obstacle) Departure Procedures.

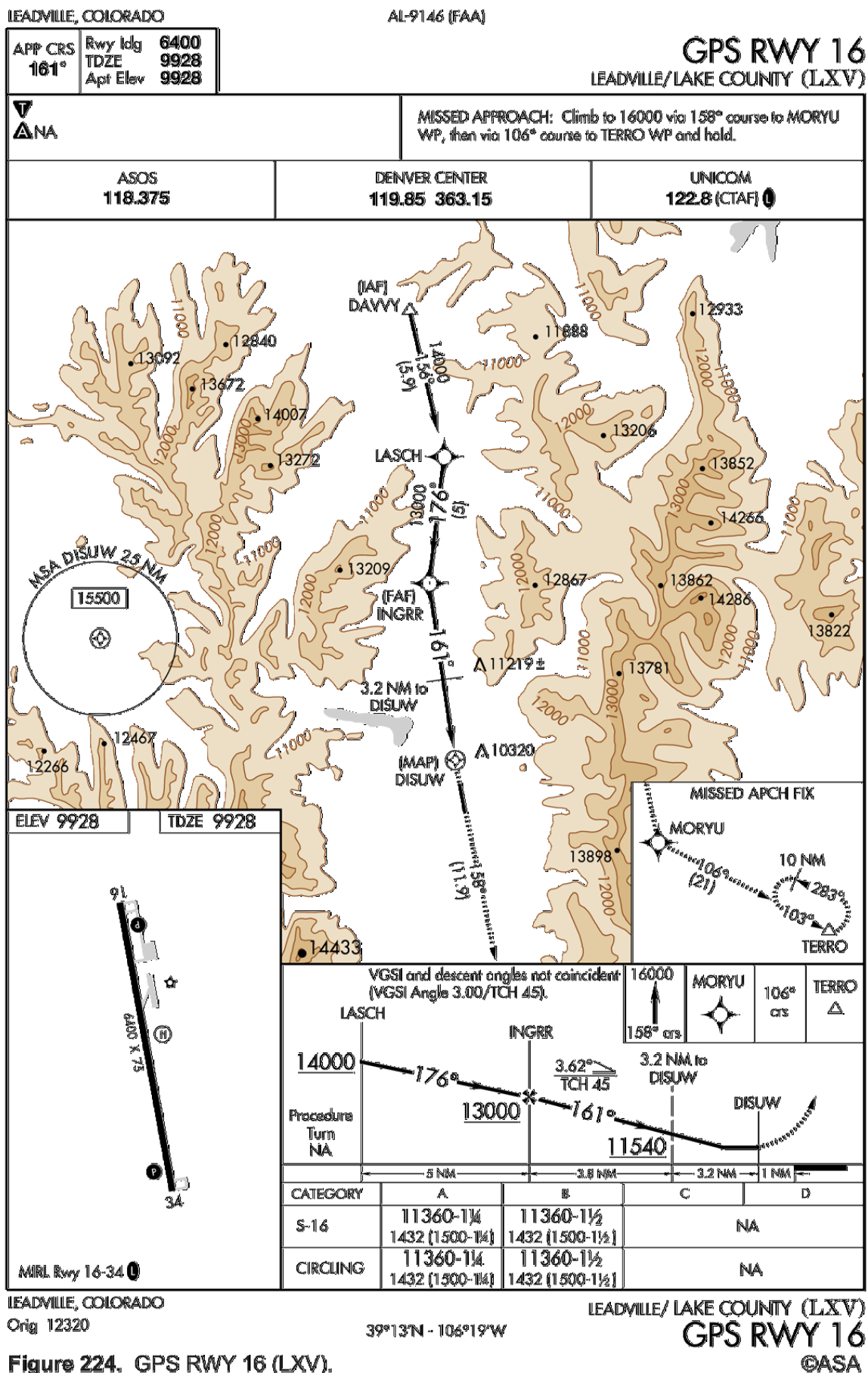


Figure 221. ILS or LOC RWY 24R (LAX).

©ASA







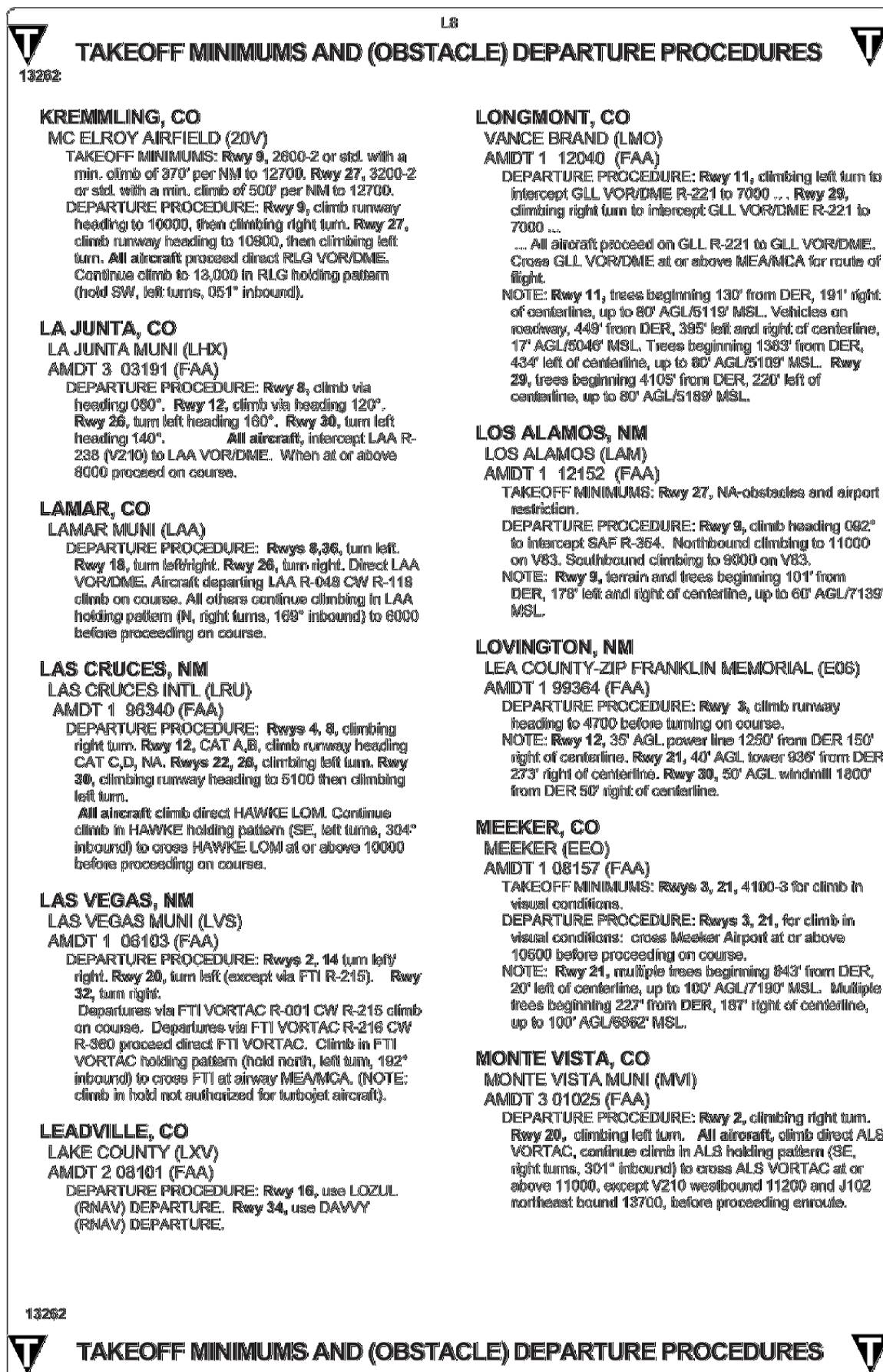


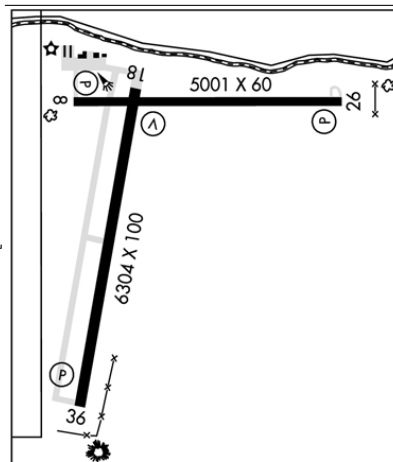
Figure 225. Takeoff Minimums and (Obstacle) Departure Procedures.

242

COLORADO

LAMAR MUNI (LAA) 3 SW UTC-7(-6DT) N38°04.18' W102°41.31'
3706 B S4 FUEL 100LL, JET A OK 1, 3 NOTAM FILE LAA
RWY 18-36: H6304X100 (CONC-GRVD) S-45, D-55, 2D-100 MIRL
0.4% up S
RWY 18: REIL VASI(V41)—GA 3.0° TCH 45'. Road.
RWY 36: REIL PAPI(P41)—GA 3.0° TCH 45'. Hill.
RWY 08-26: H5001X60 (ASPH-PFC) S-35, D-50, 2D-95 MIRL
RWY 08: PAPI(P21)—GA 3.0° TCH 30'. Road.
RWY 26: REIL PAPI(P21)—GA 3.0° TCH 31'. Fence.
AIRPORT REMARKS: Attended 1500-0100Z. For svc after hrs phone 719-336-7701. Be alert, intensive USAF student training in vol Colorado Springs and Pueblo Colorado. Rwy 18-36 now has distance remaining signs. Twr 500' AGL 4.5 mile SE unlighted. **ACTIVATE MIRL** Rwy 08-26 and Rwy 18-36—CTAF. **NOTE:** See Special Notices—Aerobatic Operations In Colorado. USAF 306 FTG Flight Training Areas, Vicinity of Colorado Springs and Pueblo Colorado.
WEATHER DATA SOURCES: ASOS 135.625 (719) 336-3854.
COMMUNICATIONS: CTAF/UNICOM 122.8
DENVER CENTER APP/DEP CON 133.4
RADIO AIDS TO NAVIGATION: NOTAM FILE LAA.
(H) VOR/DME 116.9 LAA Chan 116 N38°11.83' W102°41.25' 168° 7.6 NM to fld. 3944/12E.

WICHITA
H-5A, L-10G
IAP



LAS ANIMAS

CITY OF LAS ANIMAS — BENT CO (7V9) 1 S UTC-7(-6DT) N38°03.24' W103°14.31'
3915 S4 NOTAM FILE DEN
RWY 08-26: H3870X40 (ASPH) S-5 HIRL 0.4% up W
RWY 08: REIL Fence.
RWY 26: REIL Road.
AIRPORT REMARKS: Attended Mon-Sat 1500-0000Z. Be alert, intensive USAF student training in vol Colorado Springs and Pueblo Colorado. Rwy 26 has +30' poles 105' from thld 210' left of extd rwy centerline, +15' tank 321' from rwy end 270' right of centerline. Thld lgt NSTD; three lgt each end. Thld lgt OTS indef. Rwy 08 thld lgt 23' from thld. Rwy 26 thld lgt 12' from thld. Rwy 08 numbers located 216' from pavement end, Rwy 08-26 numbers smaller than standard, no centerline markings. **ACTIVATE HIRL** Rwy 08-26—CTAF. Mod lnts 5 clicks, high lnts 7 clicks. See Special Notices—USAF 306 FTG Flight Training Areas, Vicinity of Colorado Springs and Pueblo Colorado.
COMMUNICATIONS: CTAF 122.9
RADIO AIDS TO NAVIGATION: NOTAM FILE LAA.
LAMAR (H) VOR/DME 116.9 LAA Chan 116 N38°11.83' W102°41.25' 240° 27.5 NM to fld. 3944/12E.

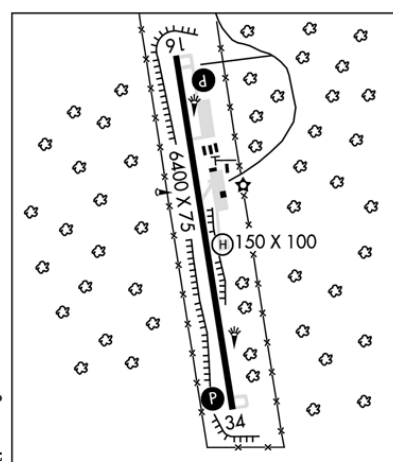
WICHITA
L-10F

LEACH (See CENTER on page 220)

LEADVILLE

LAKE CO (LXV) 2 SW UTC-7(-6DT) N39°13.17' W106°18.99'
9934 B FUEL 100LL, JET A NOTAM FILE LXV
RWY 16-34: H6400X75 (ASPH) S-20, D-20 MIRL
RWY 16: PAPI(P21)—GA 3.0° TCH 45'. Rgt Hc.
RWY 34: PAPI(P21)—GA 3.0° TCH 45'.
AIRPORT REMARKS: Attended May-Oct 1430-2330Z. Nov-Apr 1500-2330Z. For svc after hrs call sheriff dispatch 719-486-1249. PPR for svc after hrs call 719-293-5110. Rwy 34 has +50' power lines 750' from right of thld. Twy C and old ramp have potholes and loose aggregate. All bays and new ramp area marked with blue and white reflectors. **ACTIVATE MIRL** Rwy 16-34 and PAPI Rwy 16 and Rwy 34—CTAF.
WEATHER DATA SOURCES: ASOS 118.375 (719) 486-2735.
COMMUNICATIONS: CTAF/UNICOM 122.8
DENVER CENTER APP/DEP CON 119.85
RADIO AIDS TO NAVIGATION: NOTAM FILE DEN.
RED TABLE (H) VOR/DME 113.0 DBL Chan 77 N39°26.36' W106°53.68' 104° 30.0 NM to fld. 11800/12E.

DENVER
H-3F, 5A, L-9E
IAP



HELIPAD H1: H150X100 (ASPH-CONC)

HELIPORT REMARKS: Rwy H1 has 6-8 inch lip all around edges, concrete has longitudinal and corner cracking. Rwy H1 has 20' to 30' trees 130' east of pad.

Figure 226. Excerpt from Chart Supplement.

©ASA

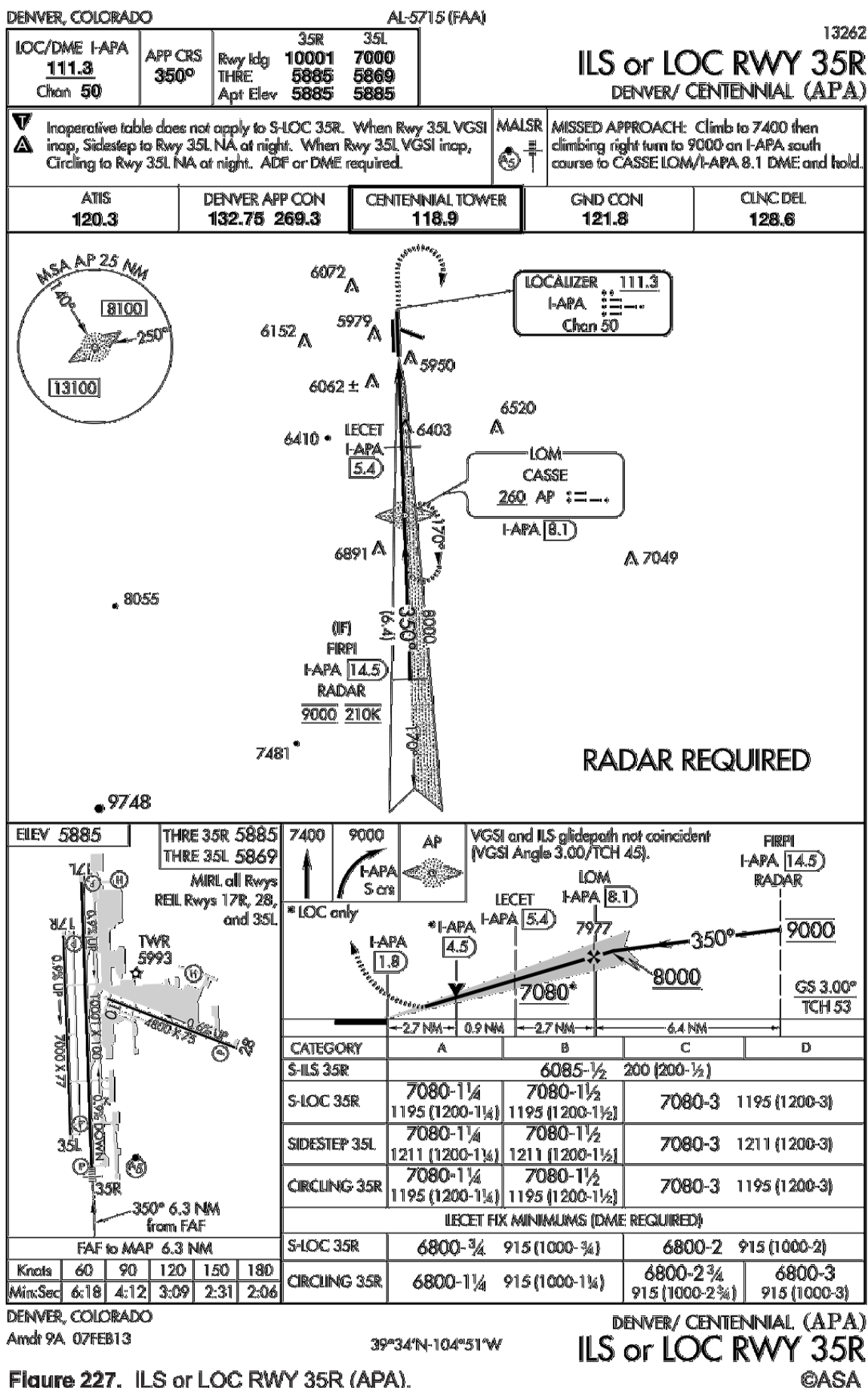


Figure 227. ILS or LOC RWY 35R (APA).

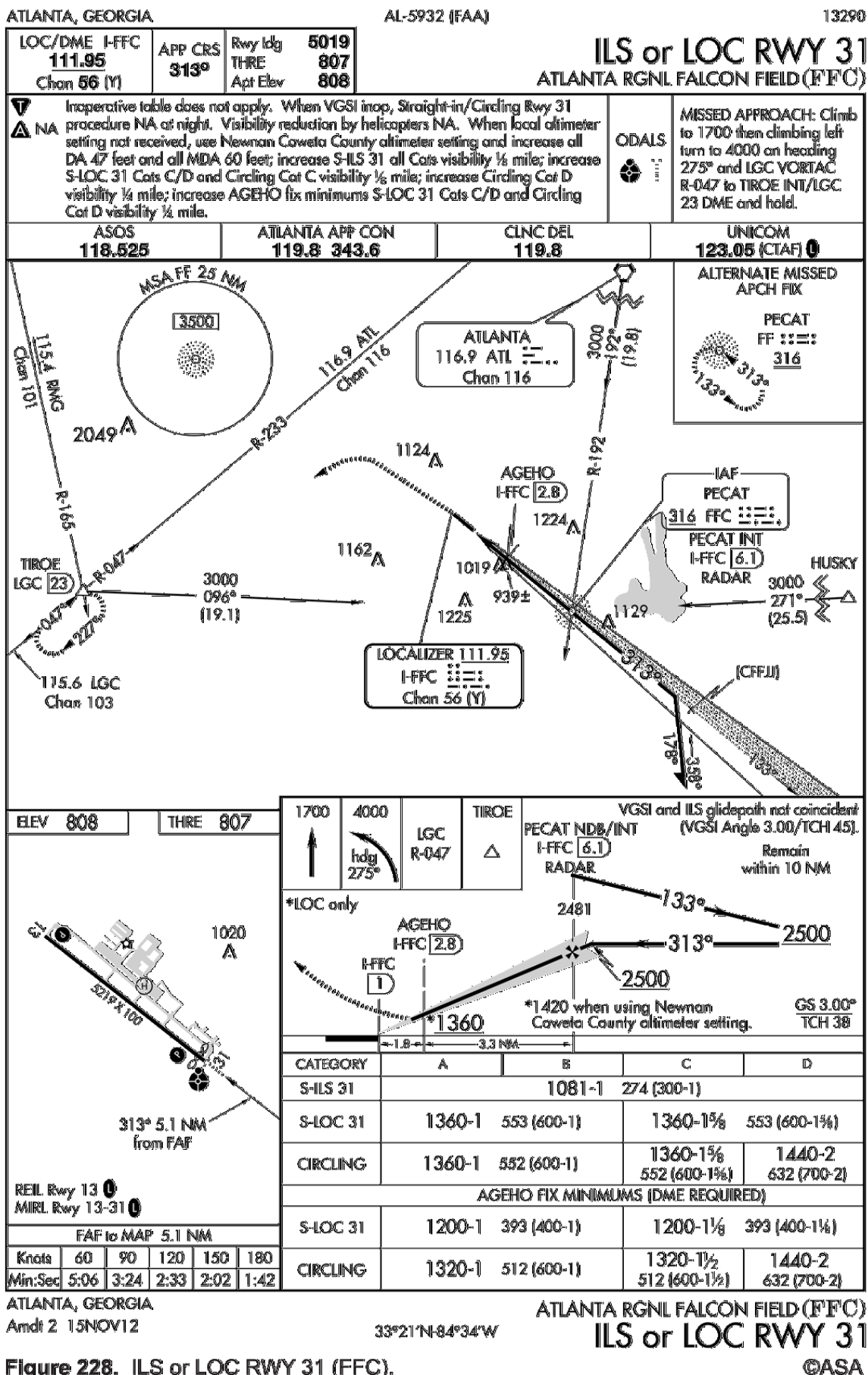
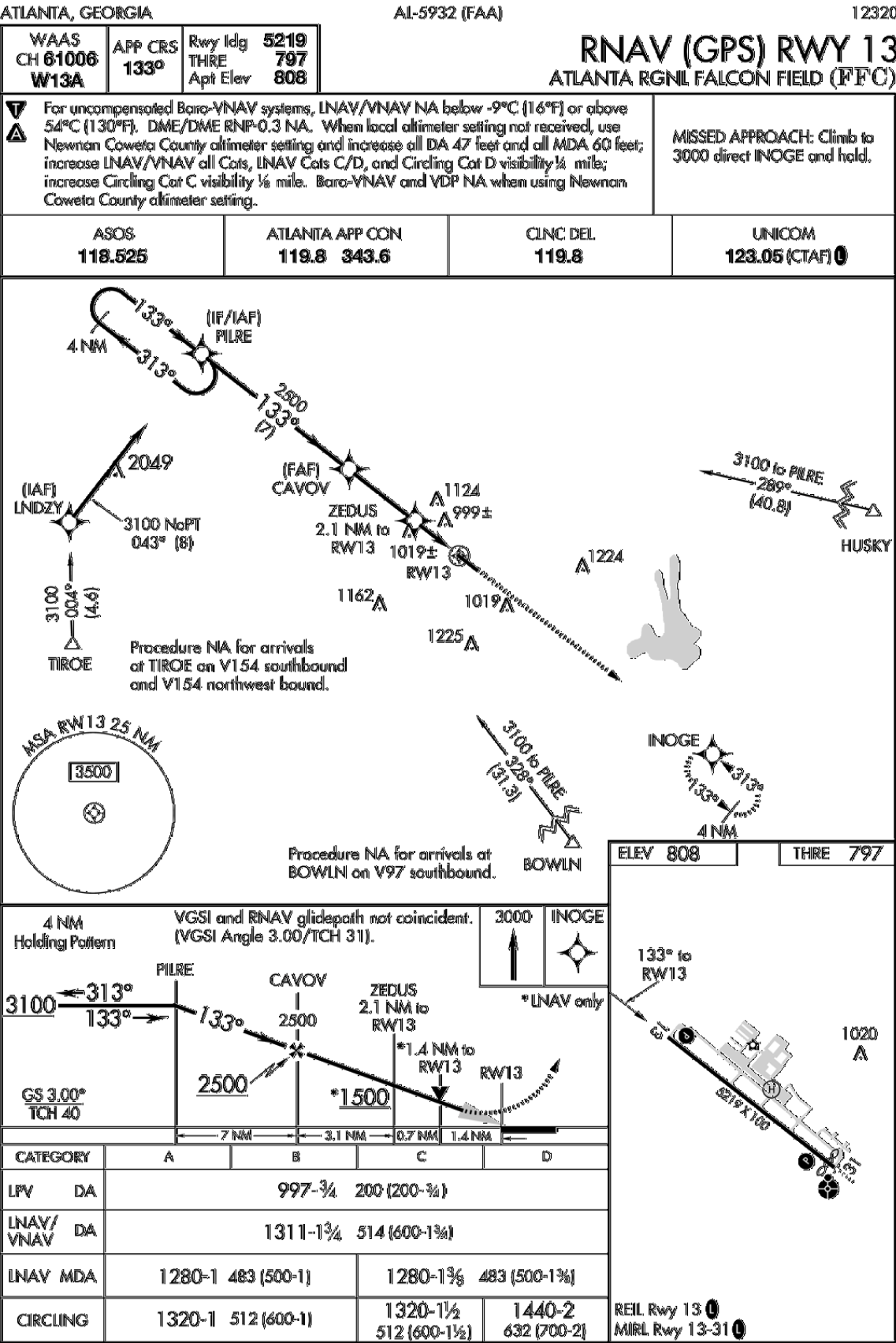


Figure 228. ILS or LOC RWY 31 (FFC).



ATLANTA, GEORGIA

Amdt 2 15NOV12

33°21'N-84°34'W

ATLANTA RGNL FALCON FIELD (FFC)

RNAV (GPS) RWY 13

©ASA

Figure 229. RNAV (GPS) RWY 13 (FFC).

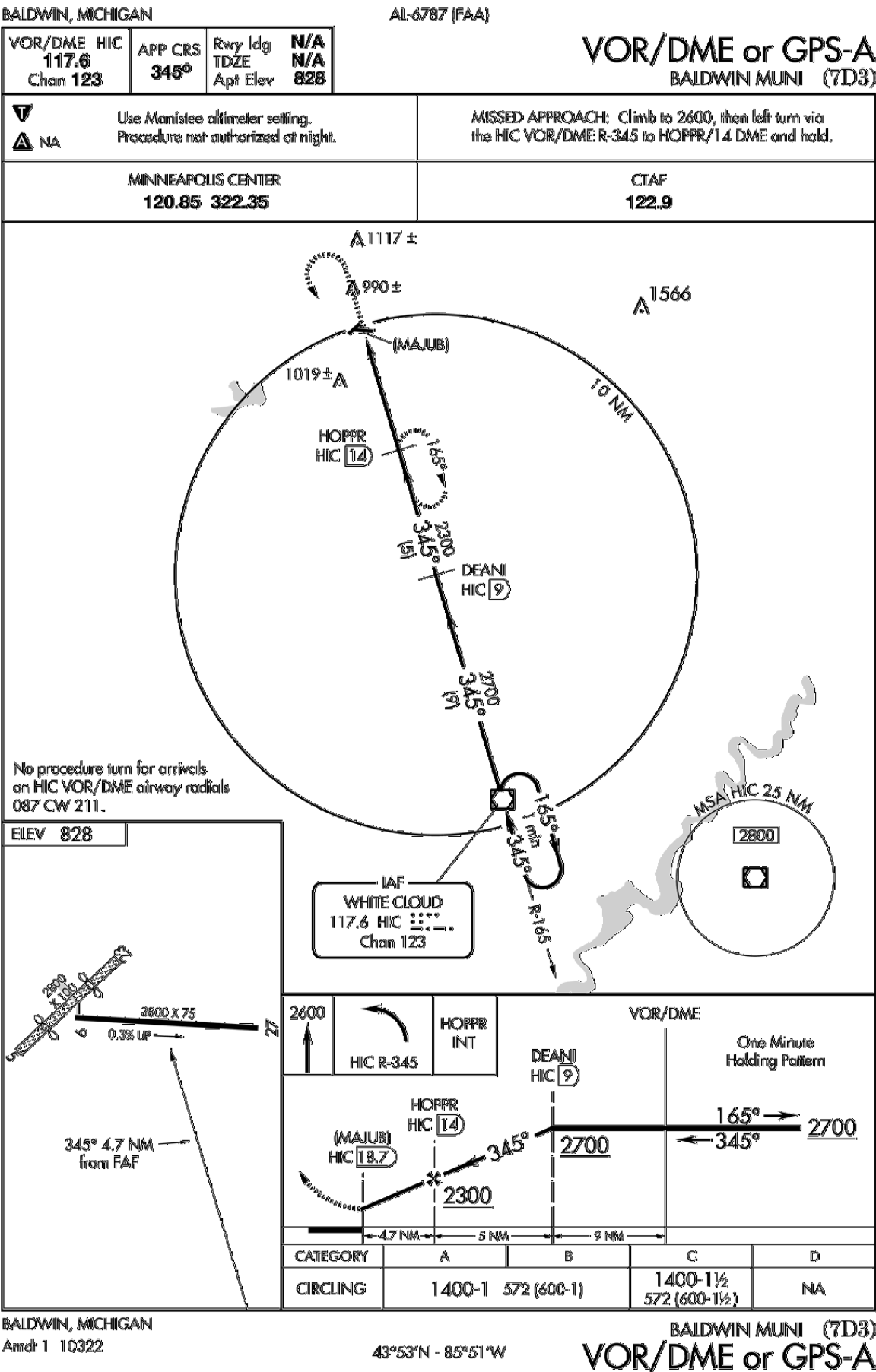


Figure 230. VOR/DME or GPS-A (7D3).

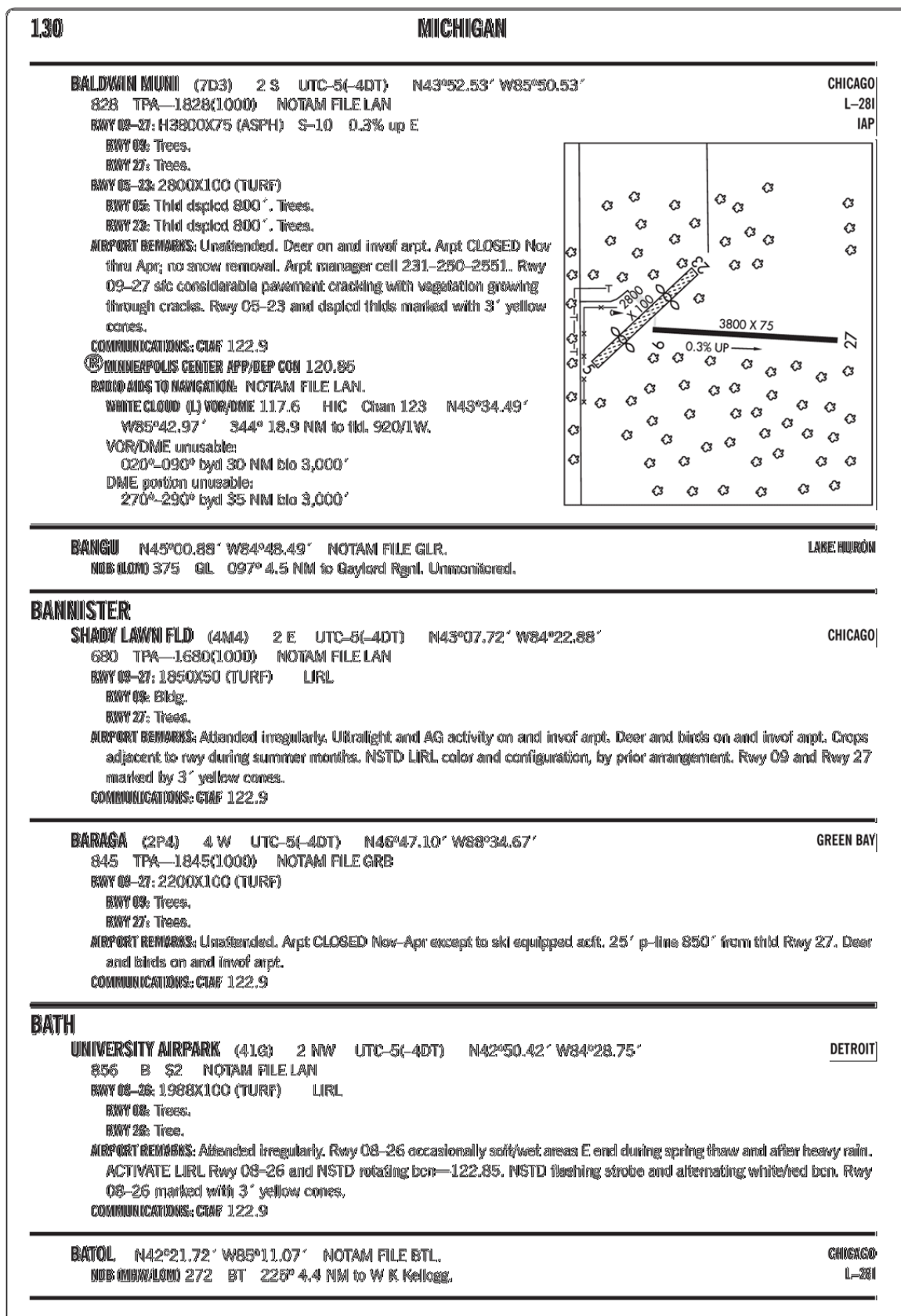
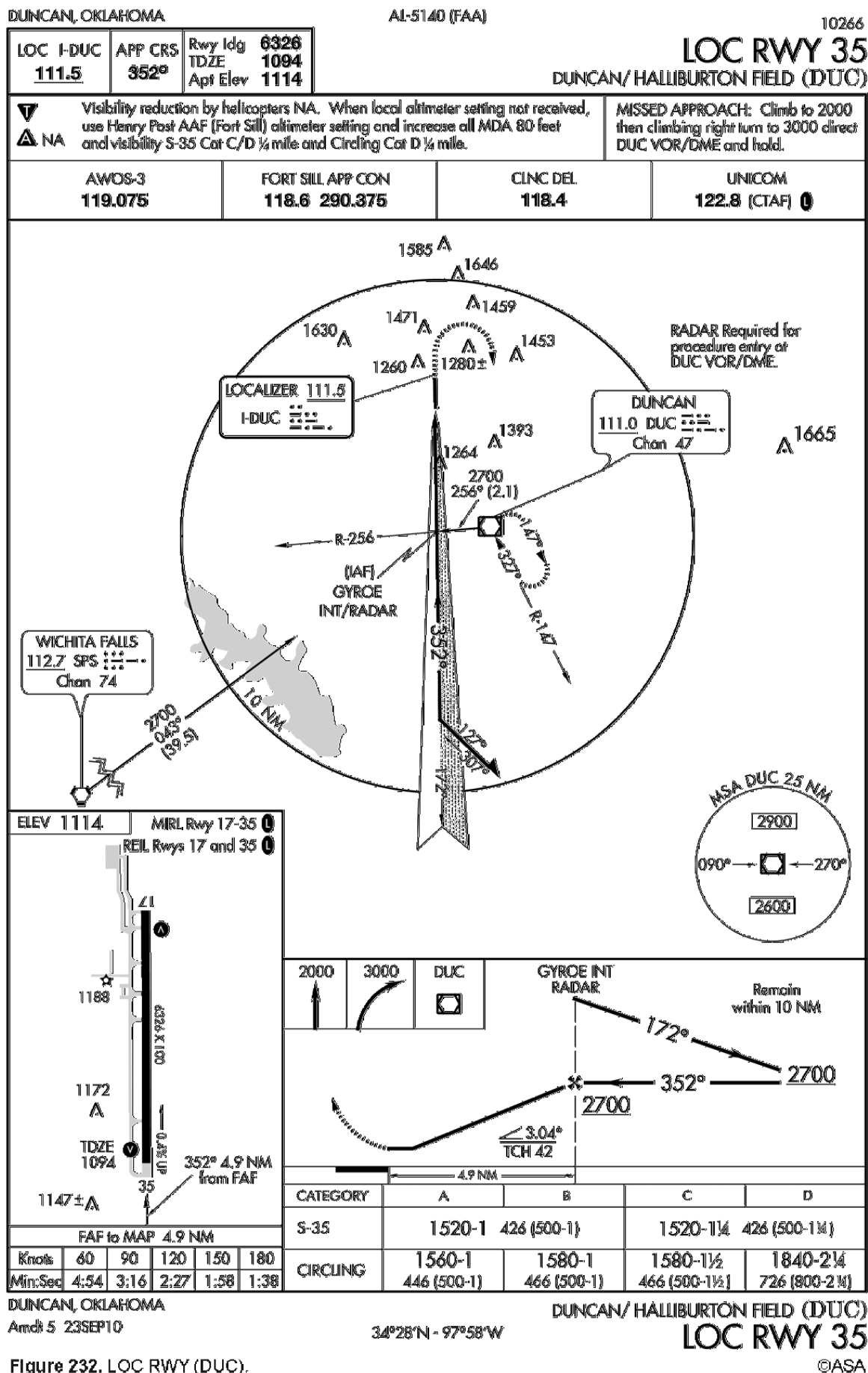


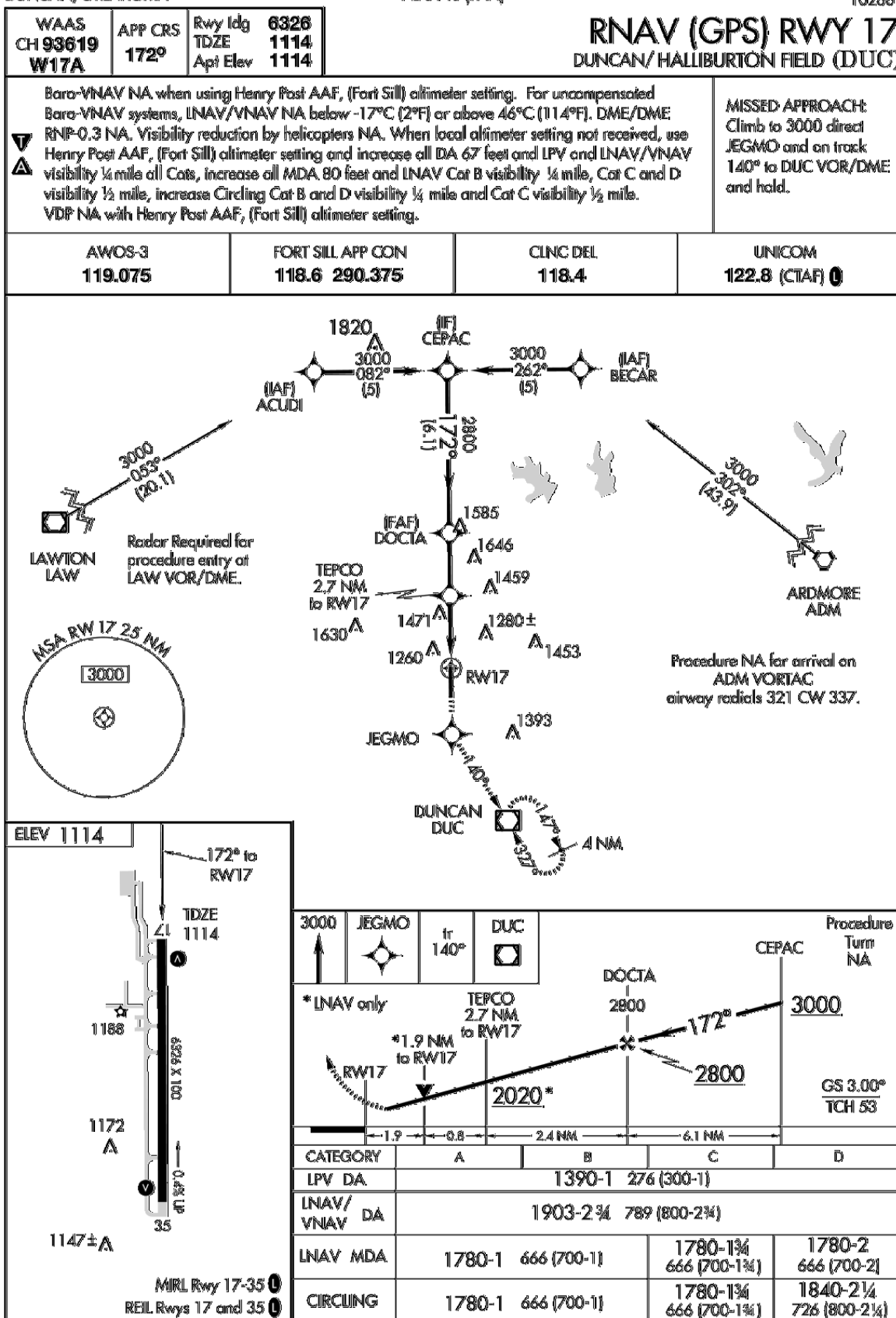
Figure 231. Excerpt from Chart Supplement.



DUNCAN, OKLAHOMA

AL-5140 (FAA)

10266



DUNCAN, OKLAHOMA

Amcl 1 23SEP10

34°28'N - 97°58'W

DUNCAN/HALLIBURTON FIELD (DUC)

RNAV (GPS) RWY 17

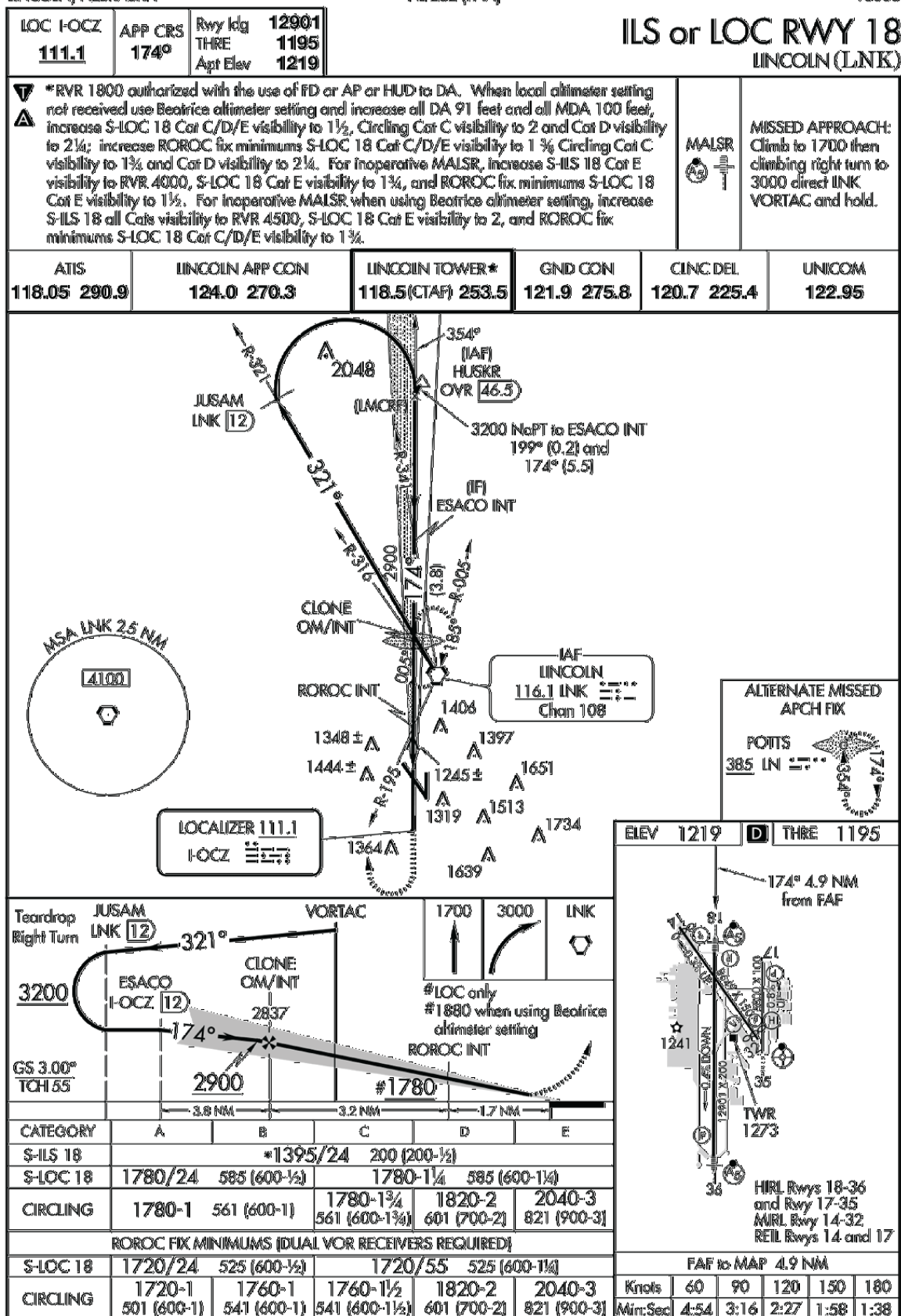
©ASA

Figure 233. RNAV (GPS) RWY 17 (DUC).

LINCOLN, NEBRASKA

AL-232 (FAA)

13066



LINCOLN, NEBRASKA

Amth 7 05APR12

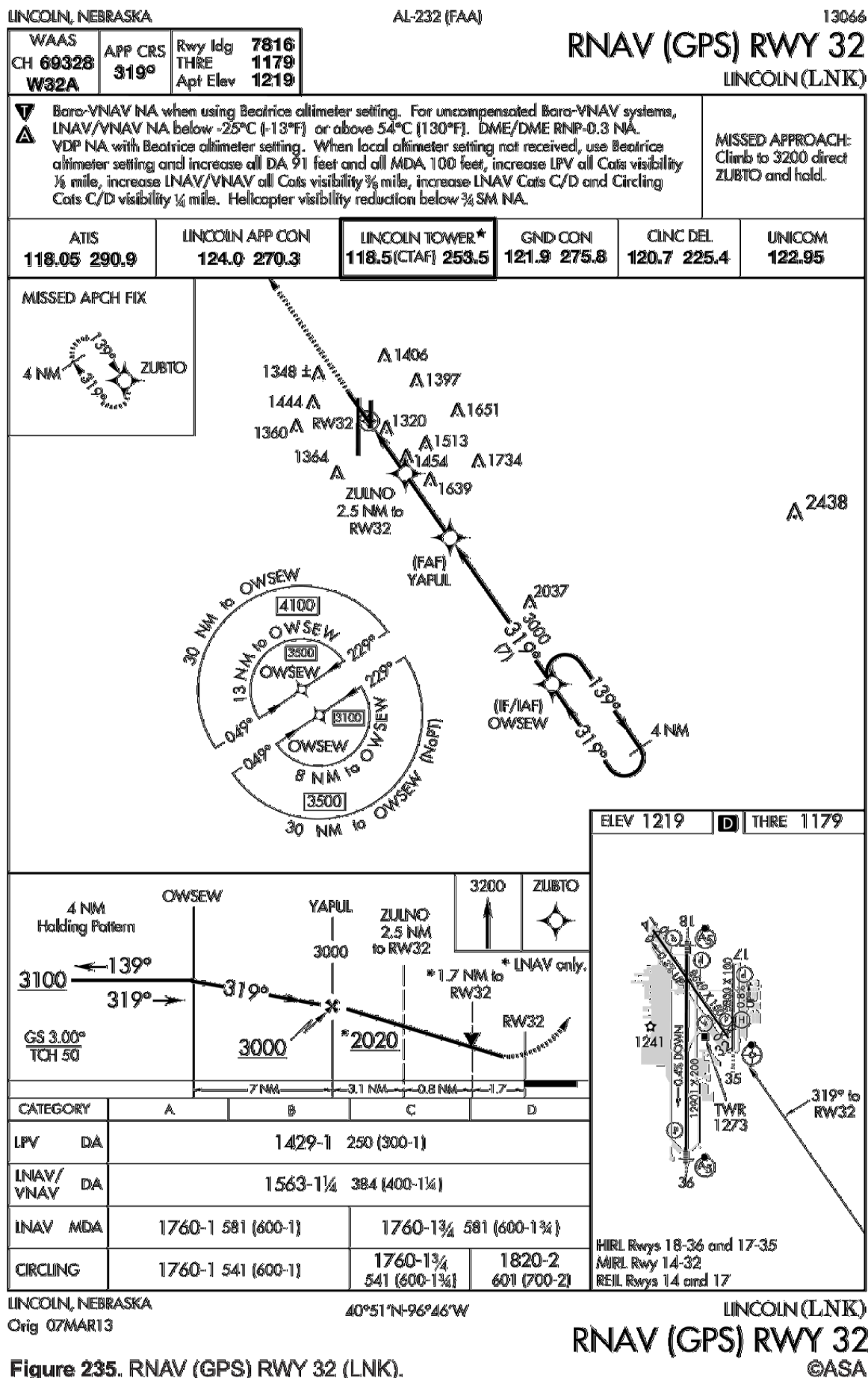
40°51'N-96°46'W

LINCOLN (LNK)

ILS or LOC RWY 18

©ASA

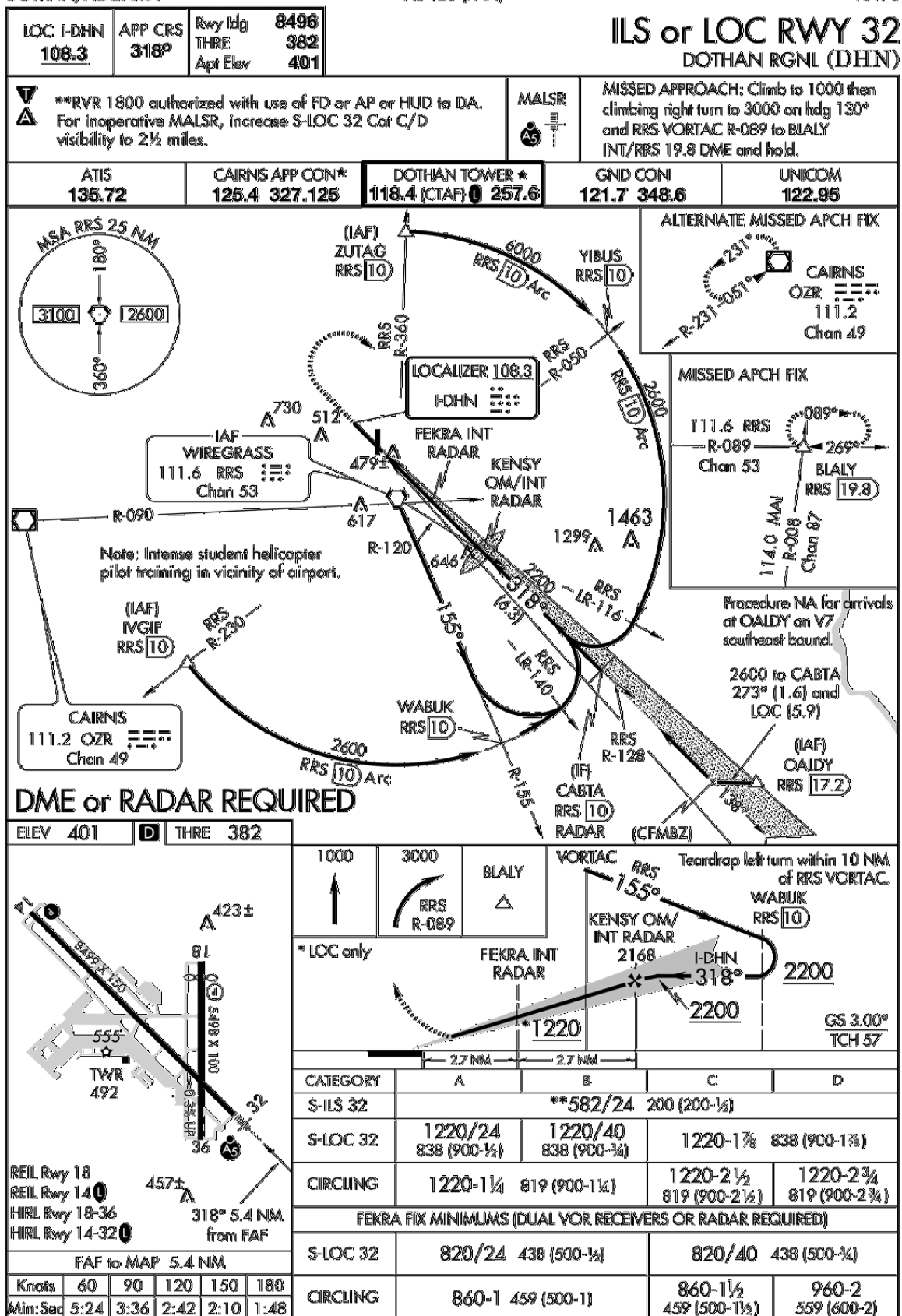
Figure 234. ILS or LOC RWY 18 (LNK).



DOTHAN, ALABAMA

AL-123 (FAA)

13178



DOTHAN, ALABAMA

Amr 9 26JUL12

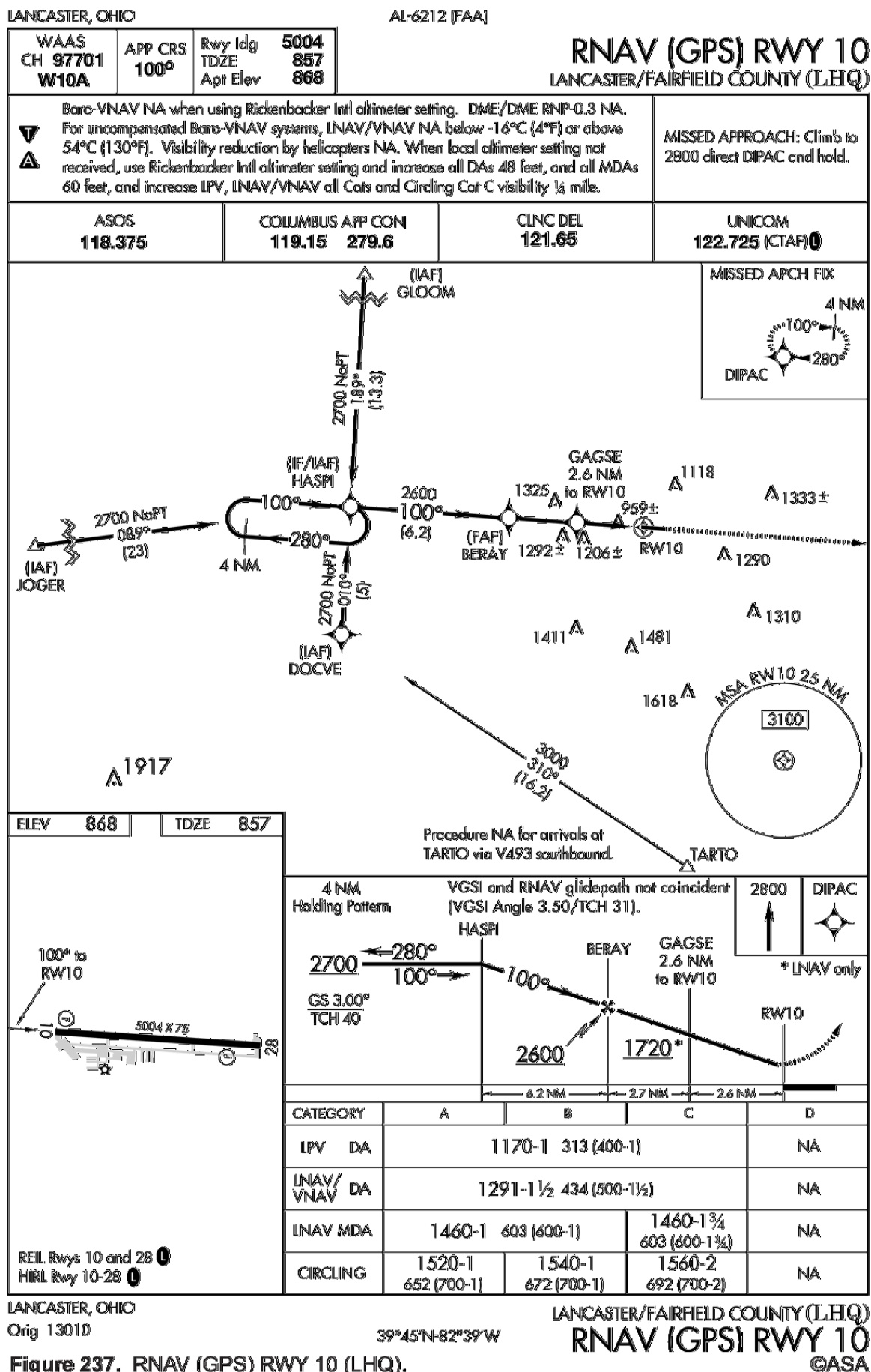
31°19'N-85°27'W

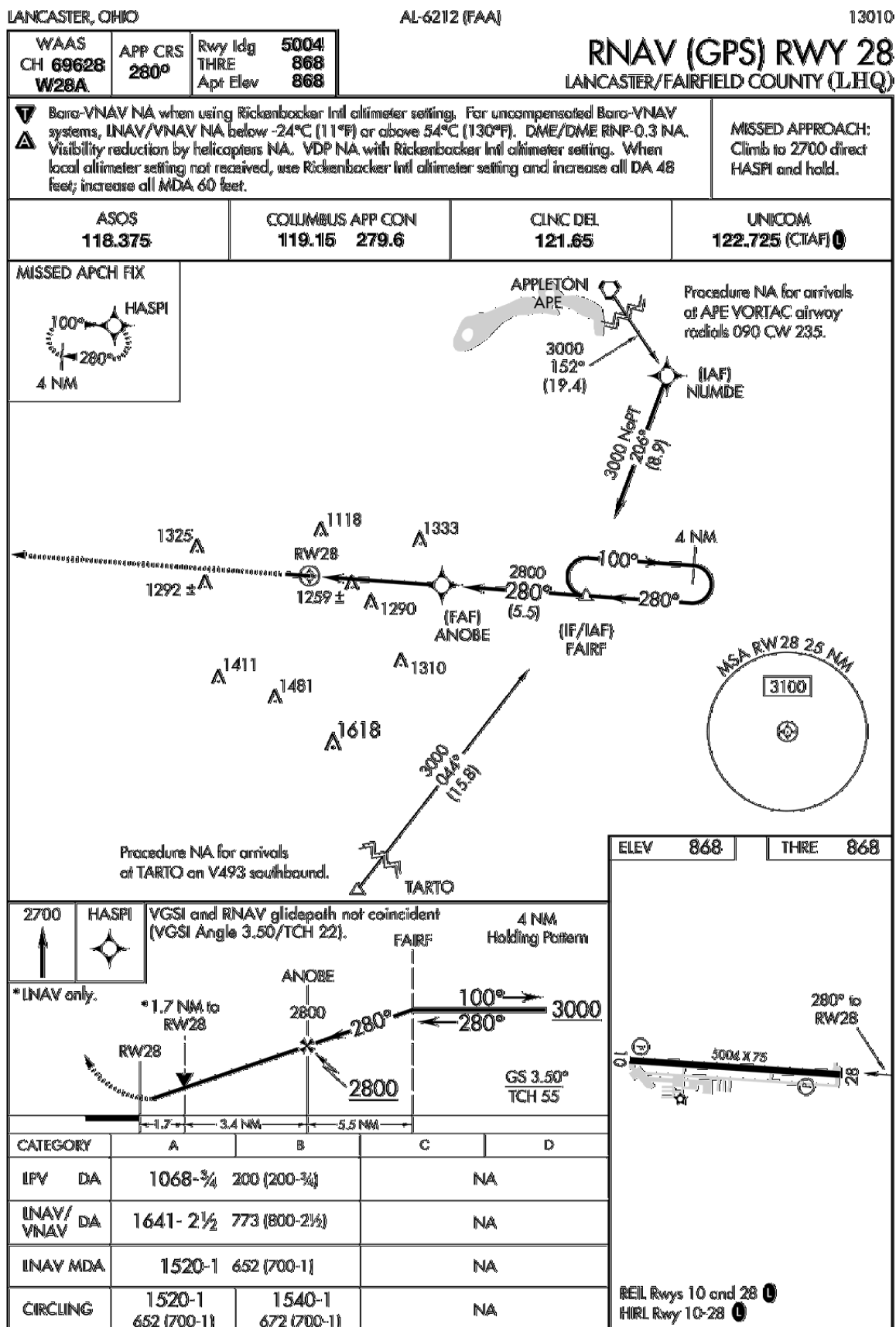
DOTHAN RGNL (DHN)

ILS or LOC RWY 32

©ASA

Figure 236. ILS or RWY 32 (DHN).



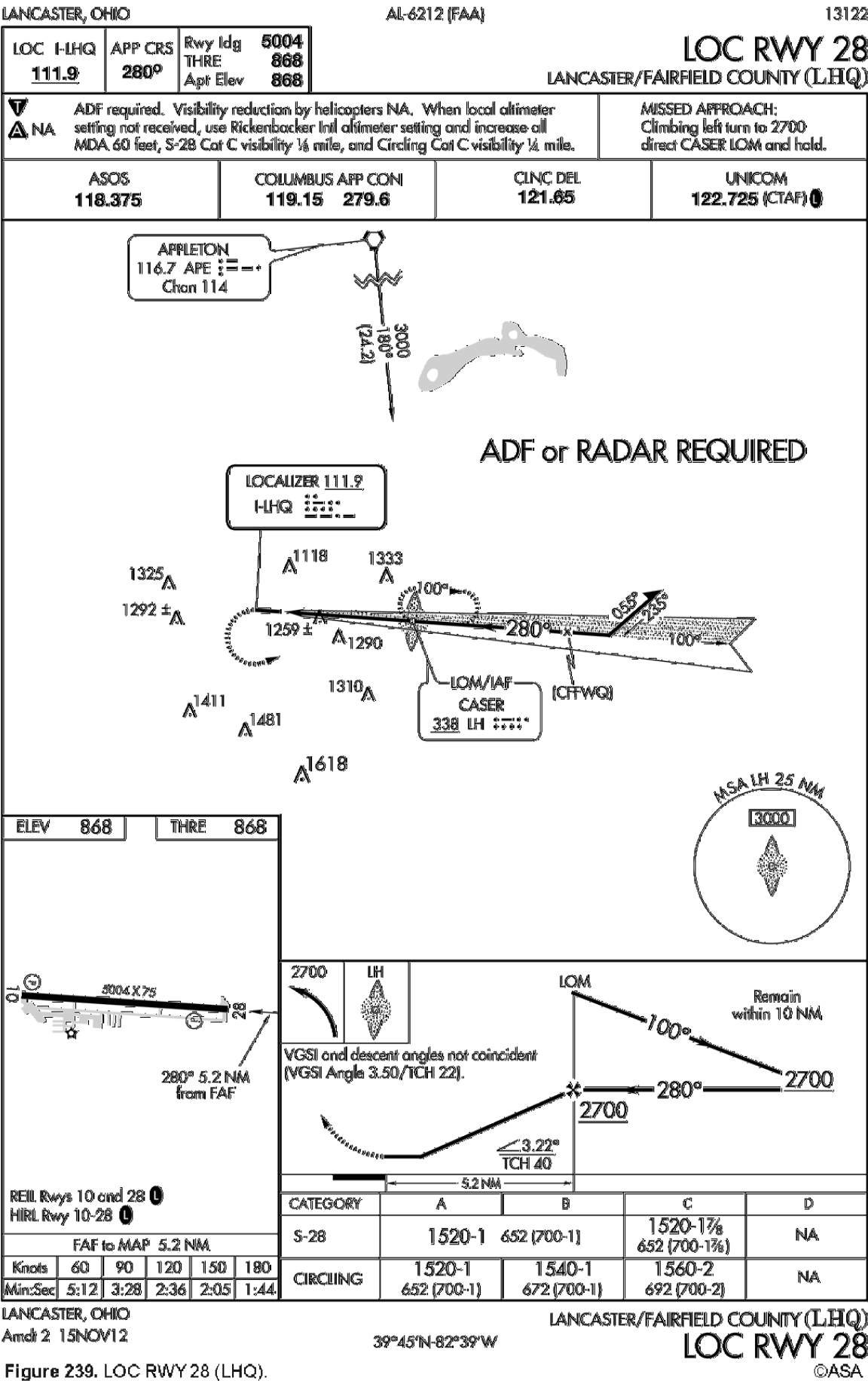


LANCASTER, OHIO
Amdt 1 15NOV12

39°45'N-82°39'W

LANCASTER/FAIRFIELD COUNTY (LHQ)
RNAV (GPS) RWY 28
©ASA

Figure 238. RNAV (GPS) RWY 28 (LHQ).



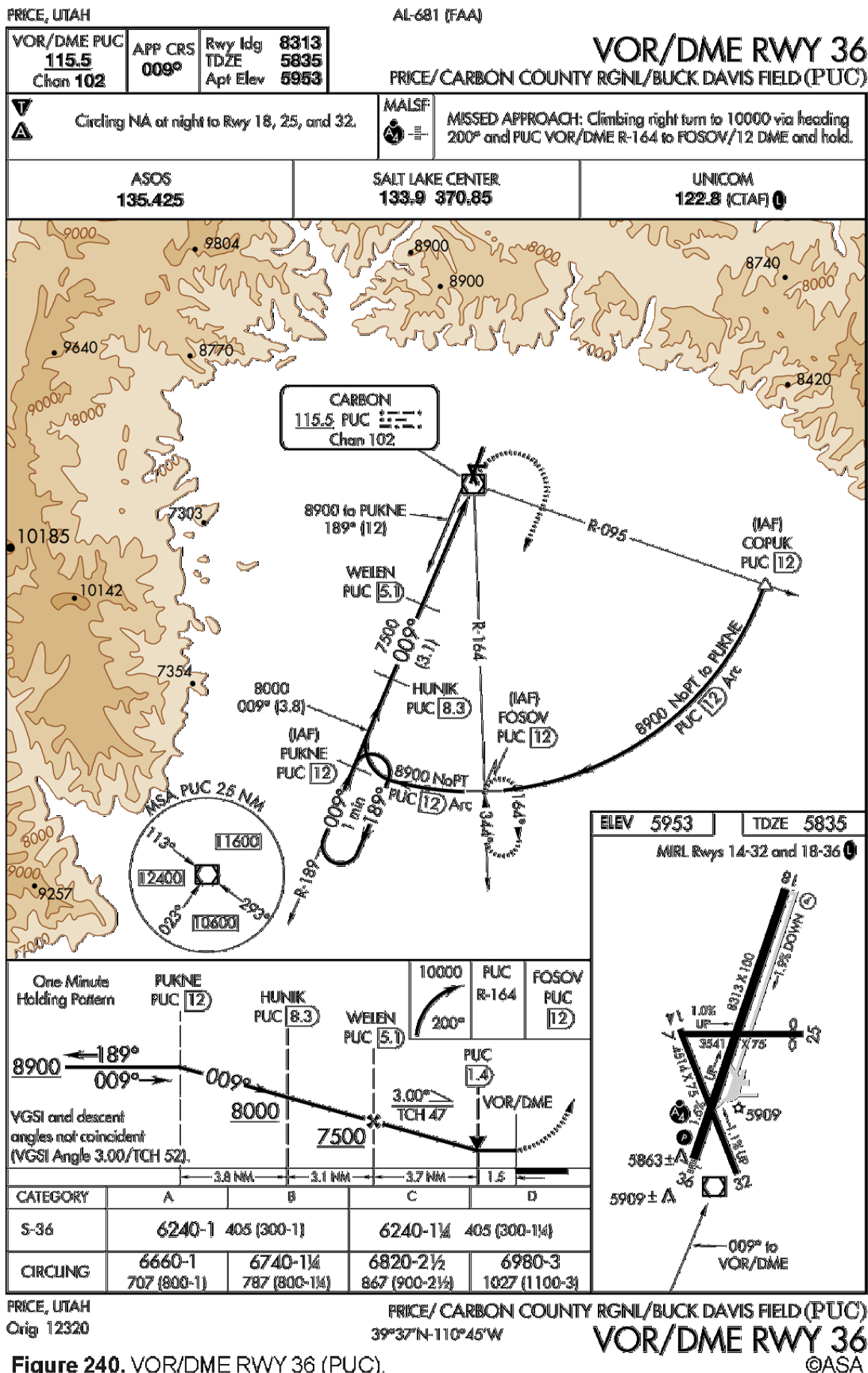
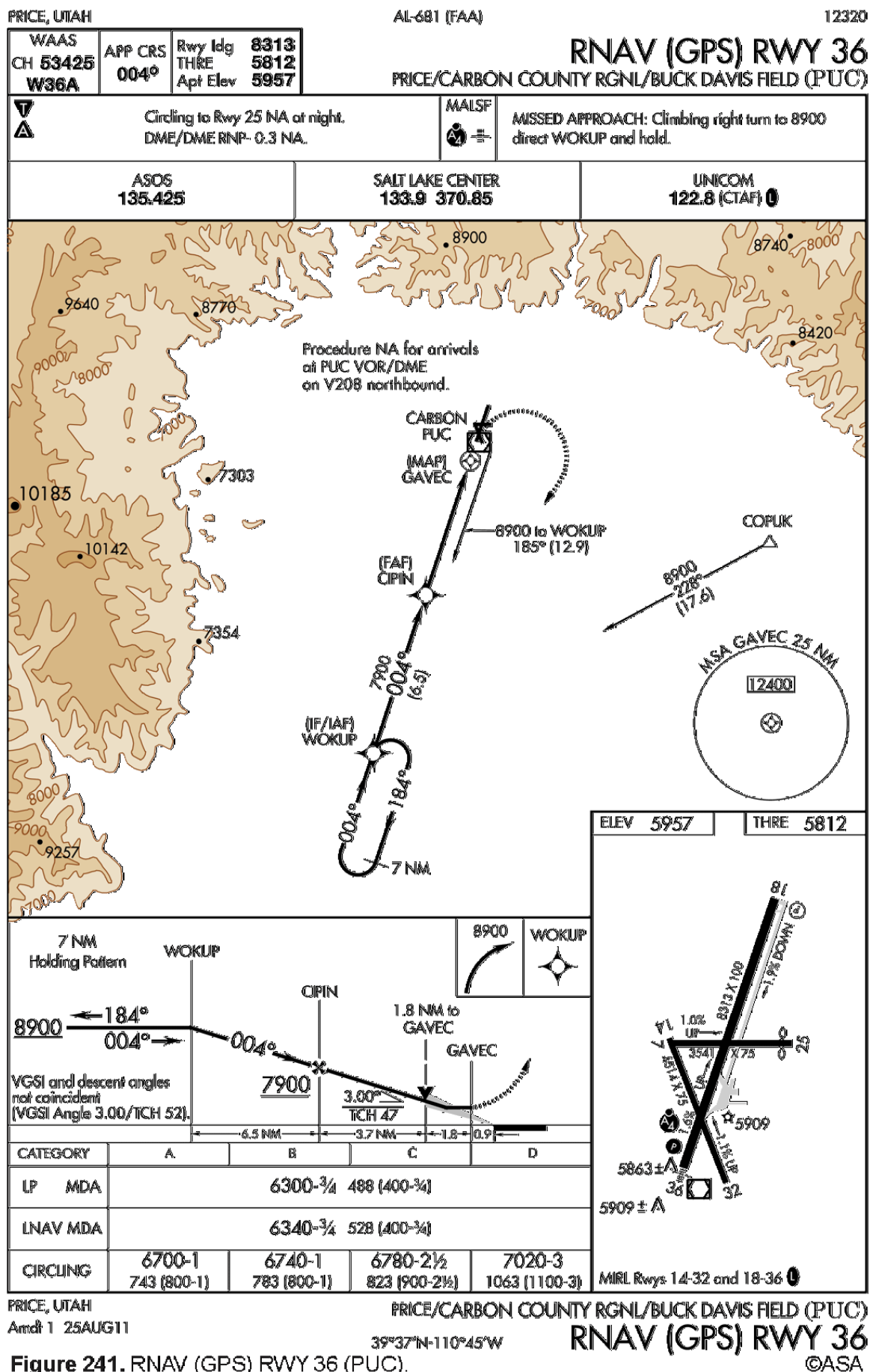
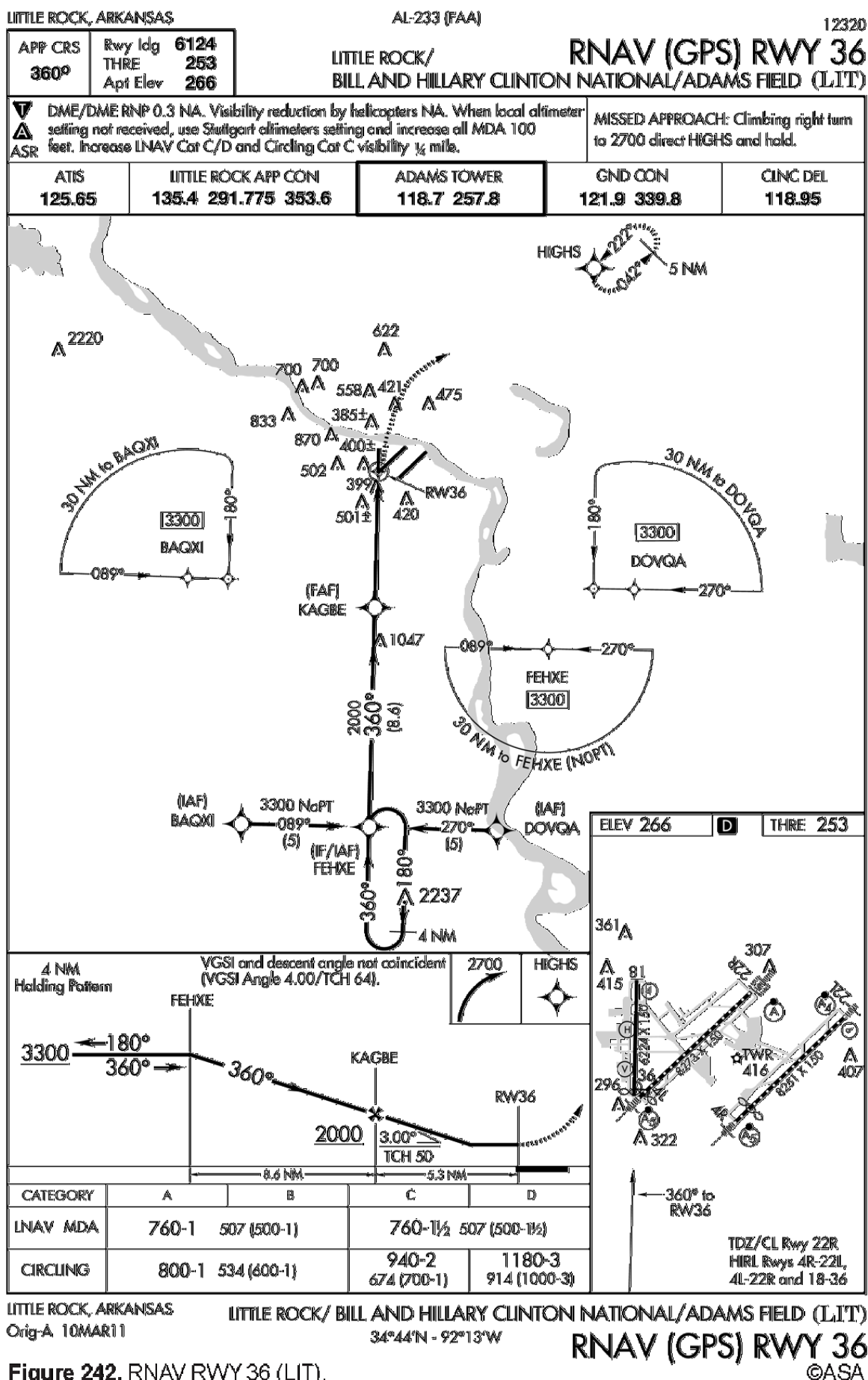
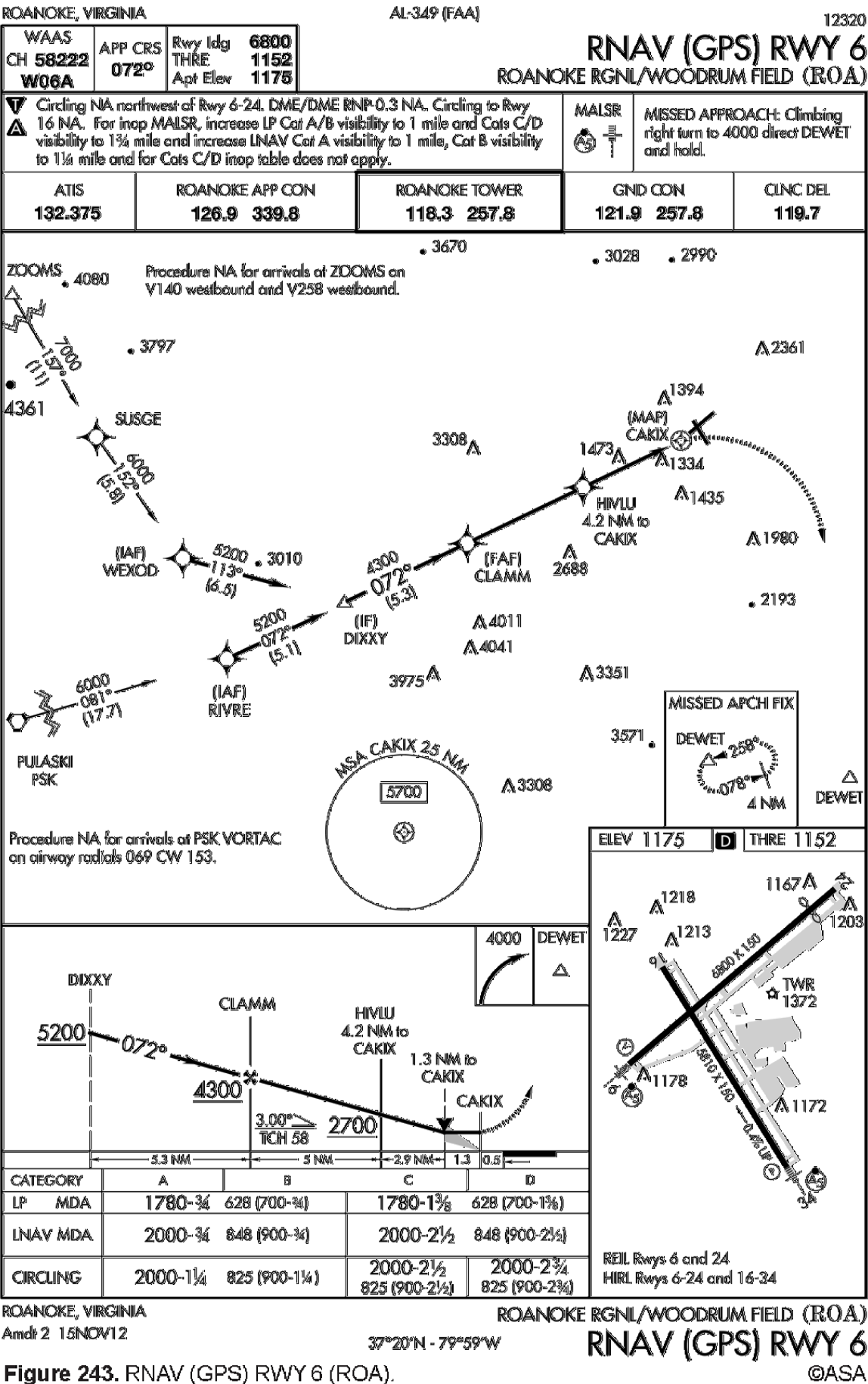


Figure 240. VOR/DME RWY 36 (PUC).







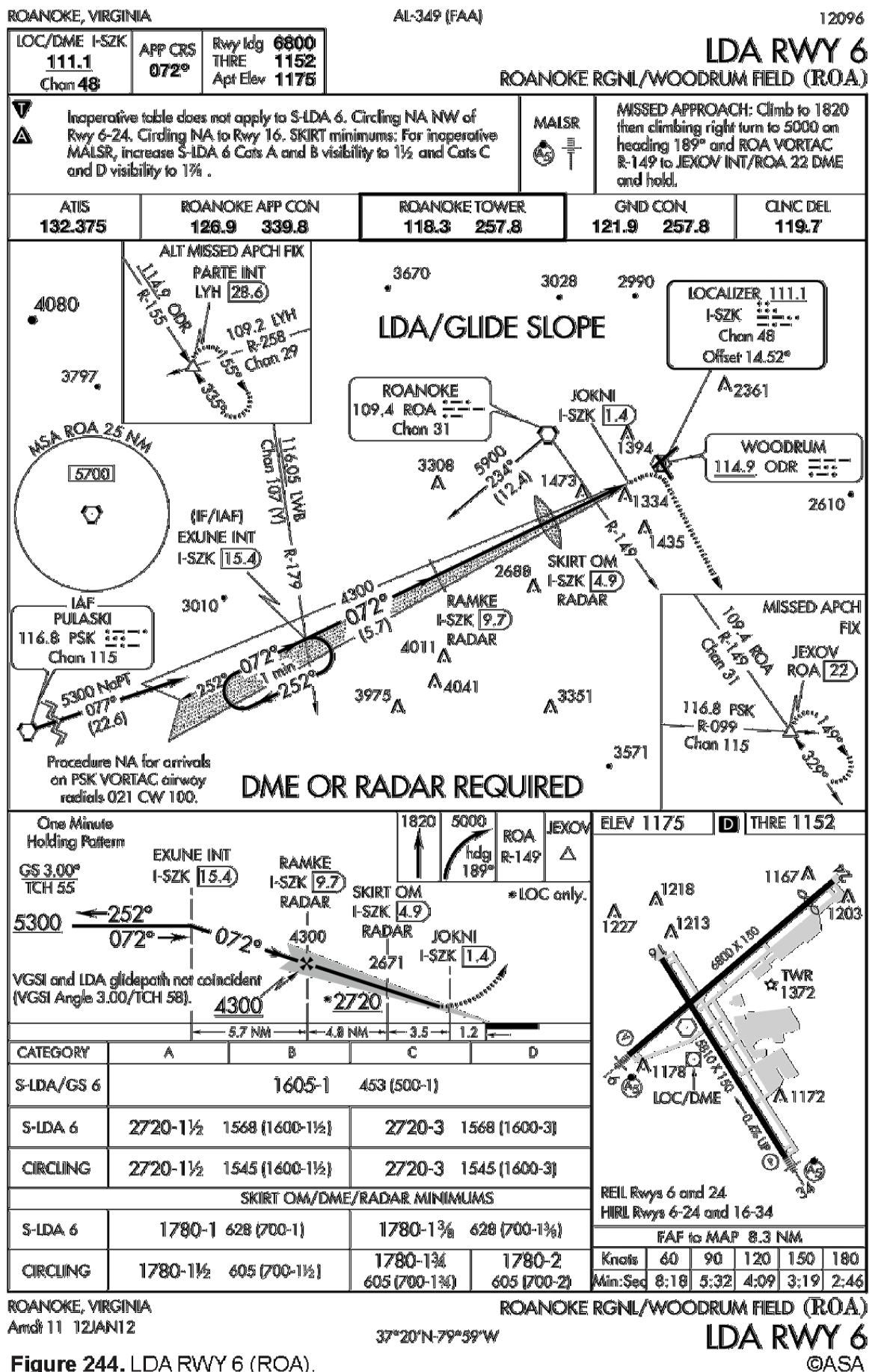
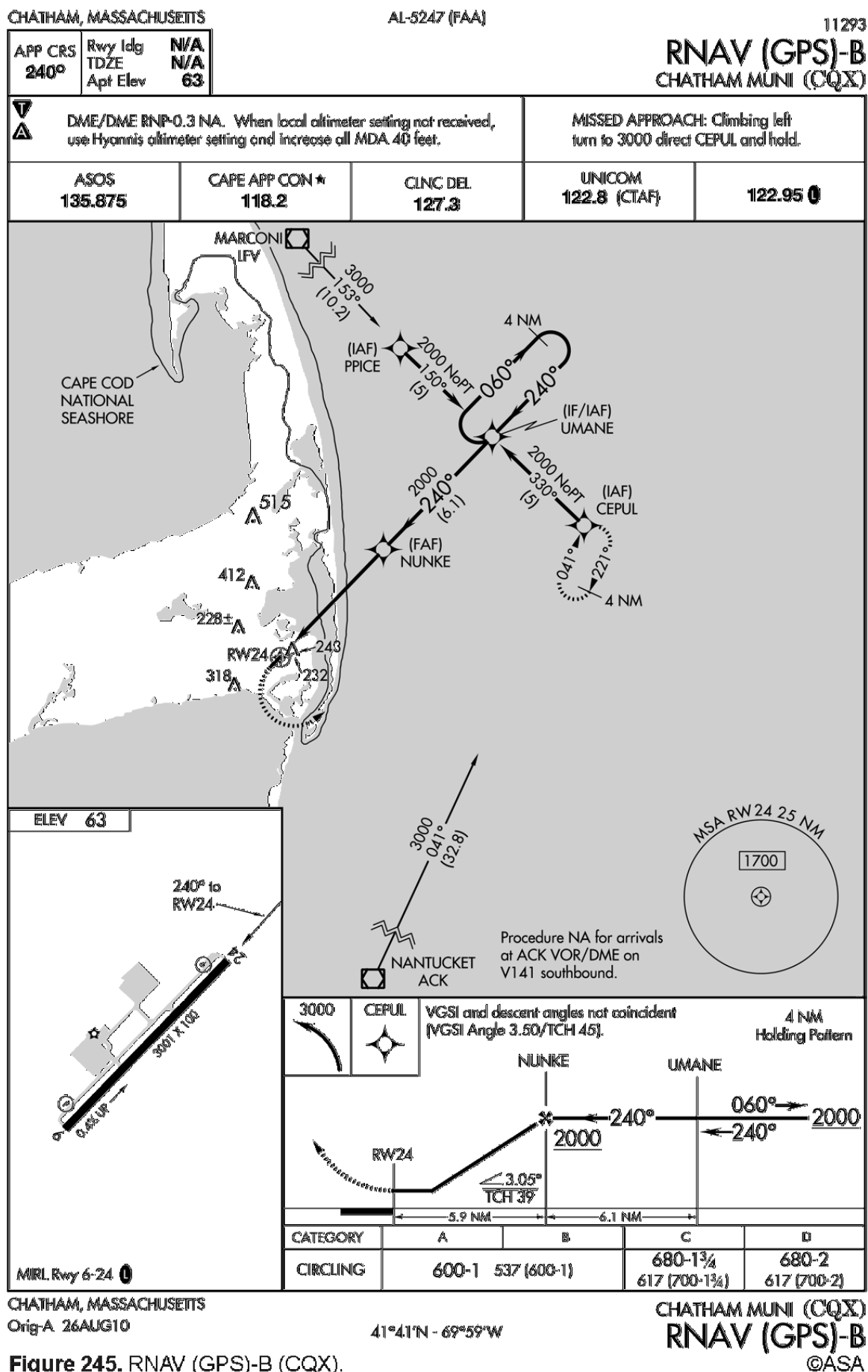


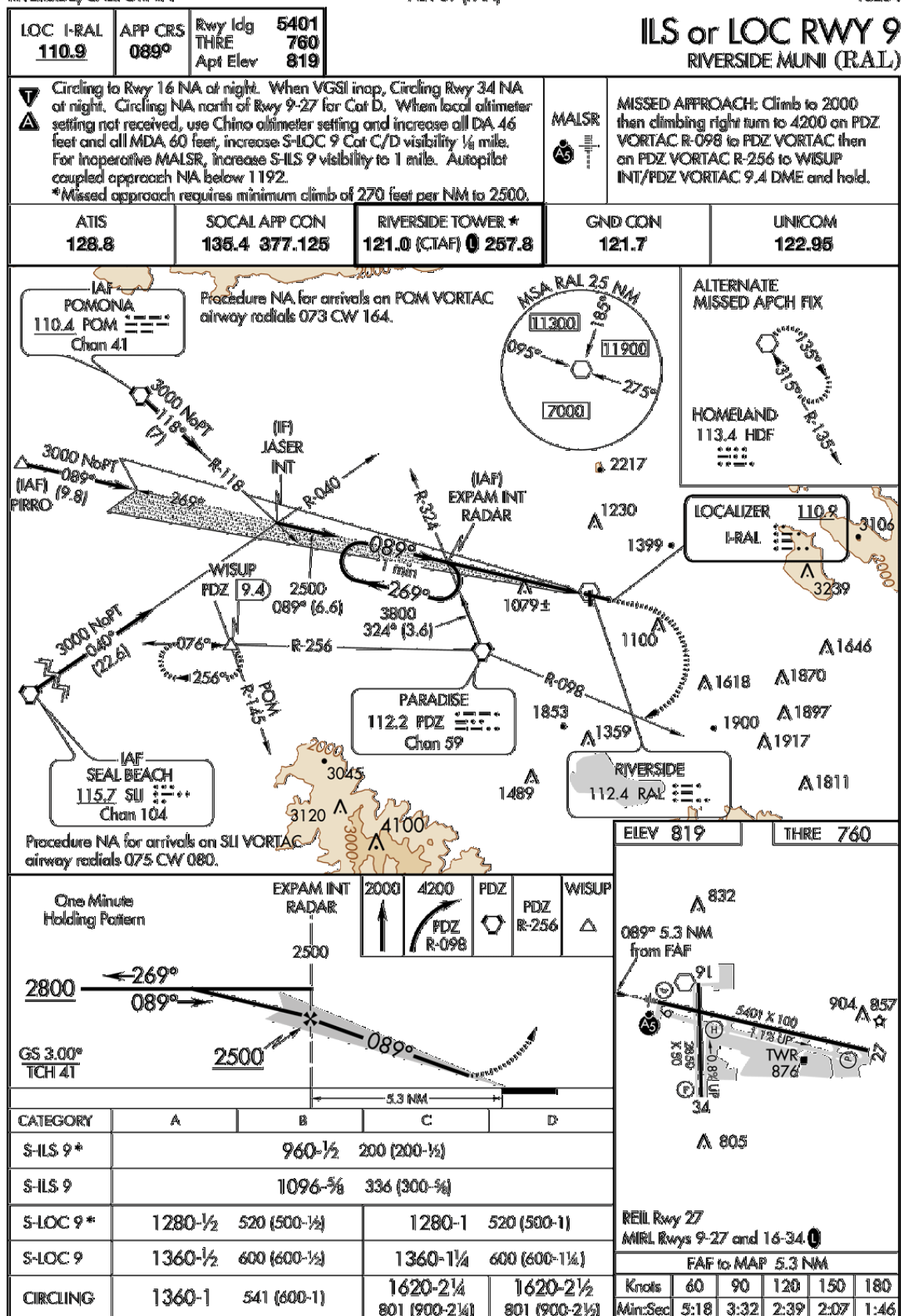
Figure 244. LDA RWY 6 (ROA).



RIVERSIDE, CALIFORNIA

AL-769 (FAA)

13234



RIVERSIDE, CALIFORNIA

Amcl 8A 22AUG13

33°57'N-117°27'W

RIVERSIDE MUNI (RAL)

ILS or LOC RWY 9

©ASA

Figure 247. ILS or RWY 9 (RAL).

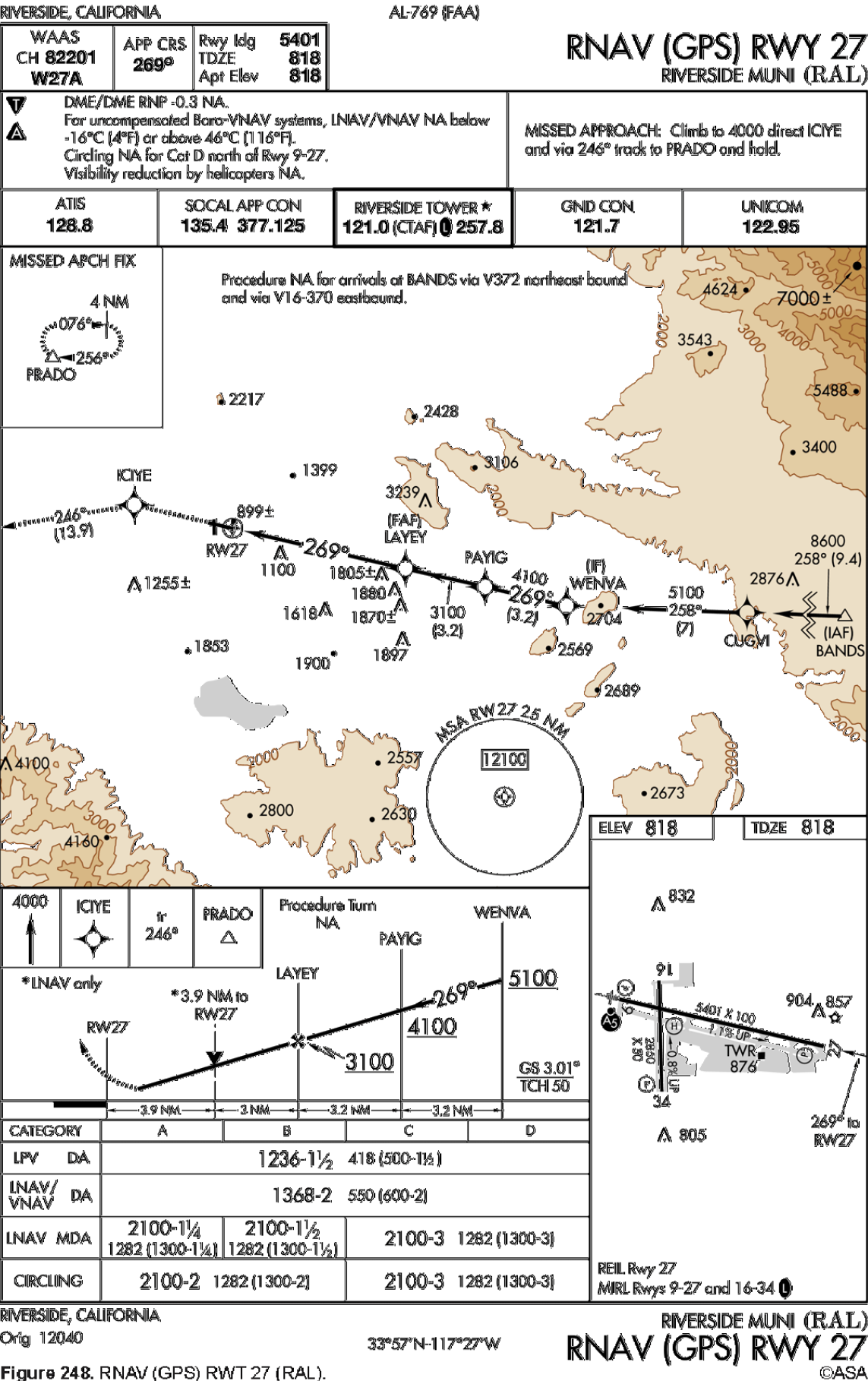
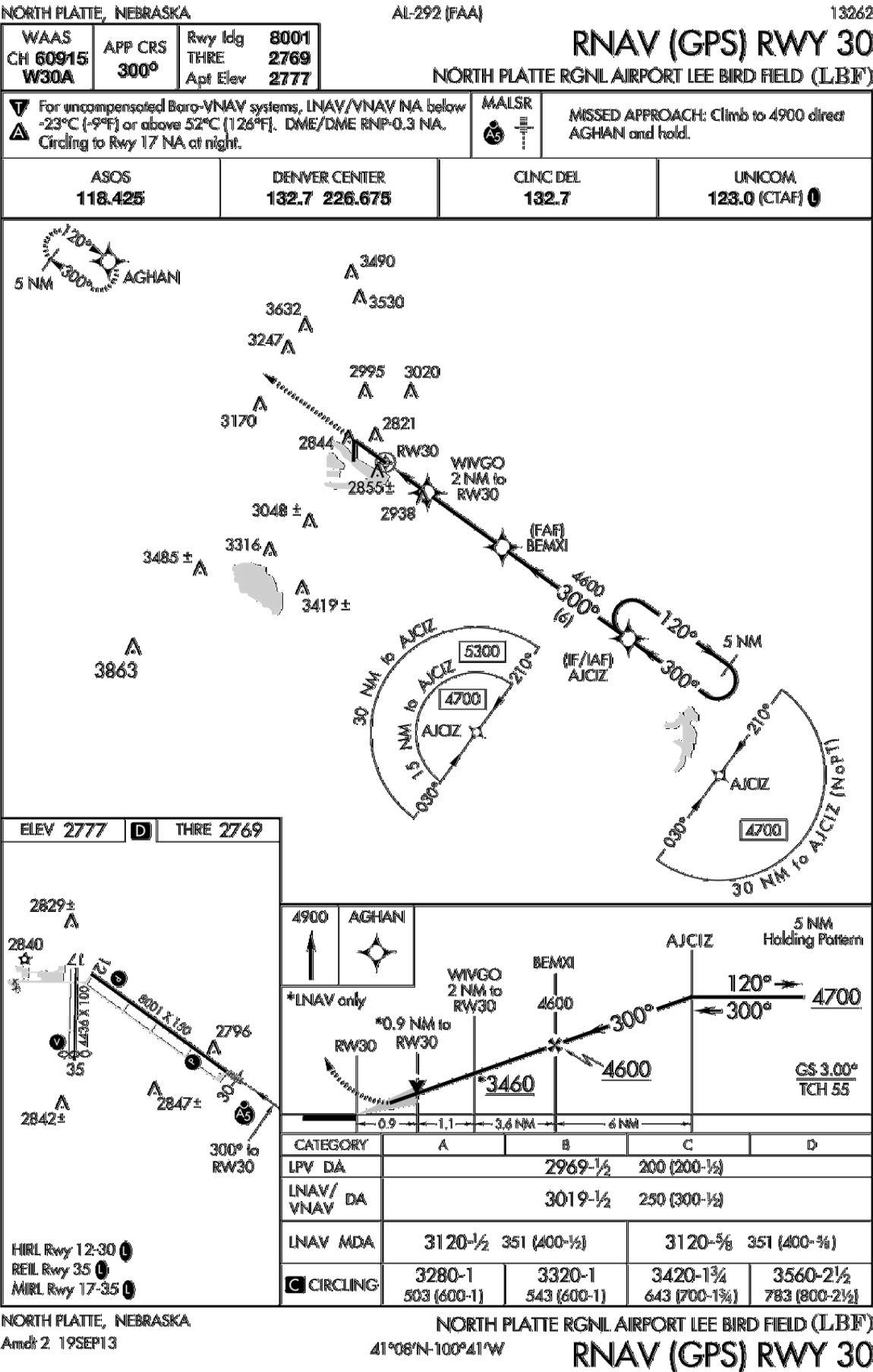


Figure 248. RNAV (GPS) RWT 27 (RAL).



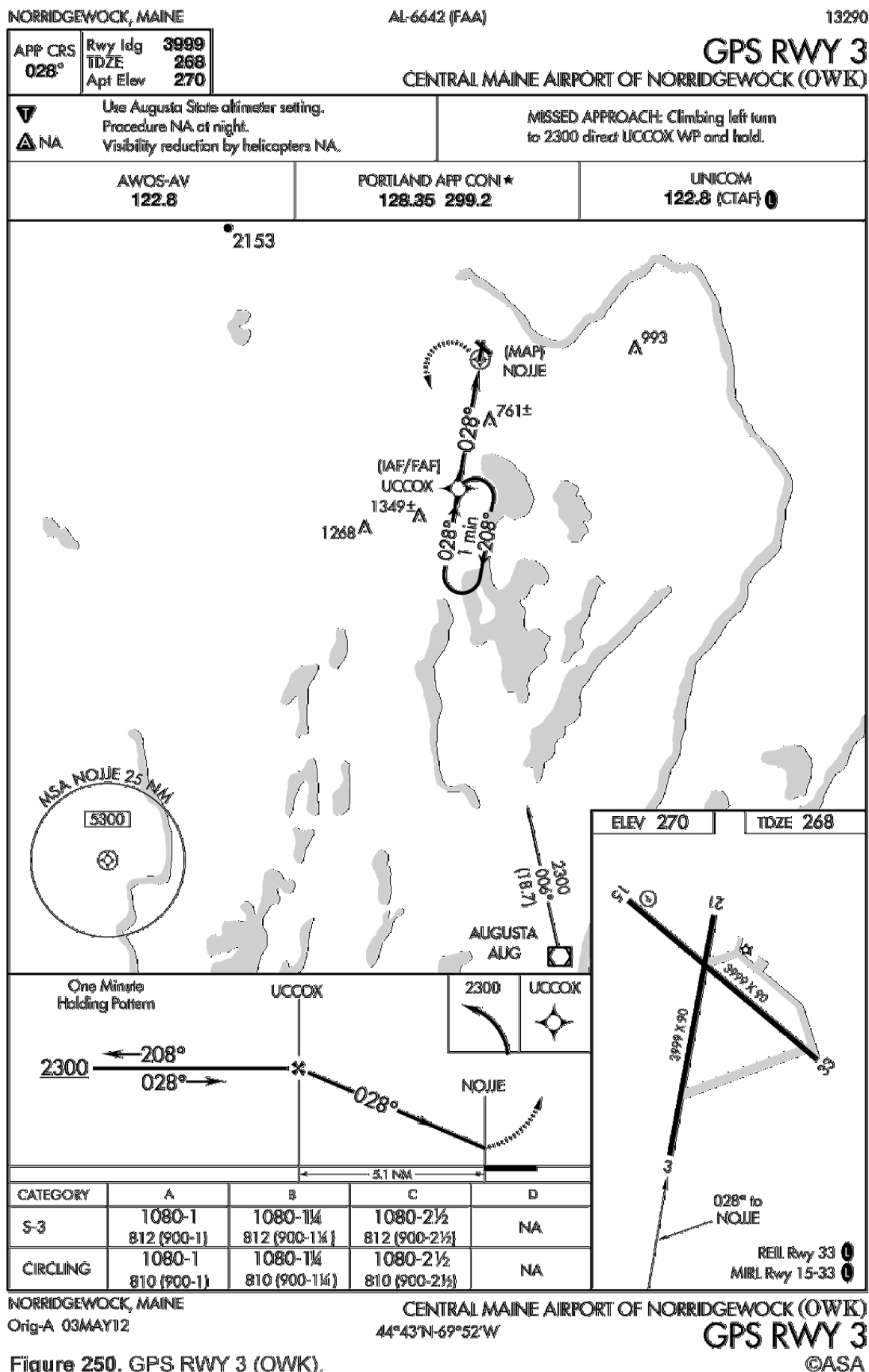
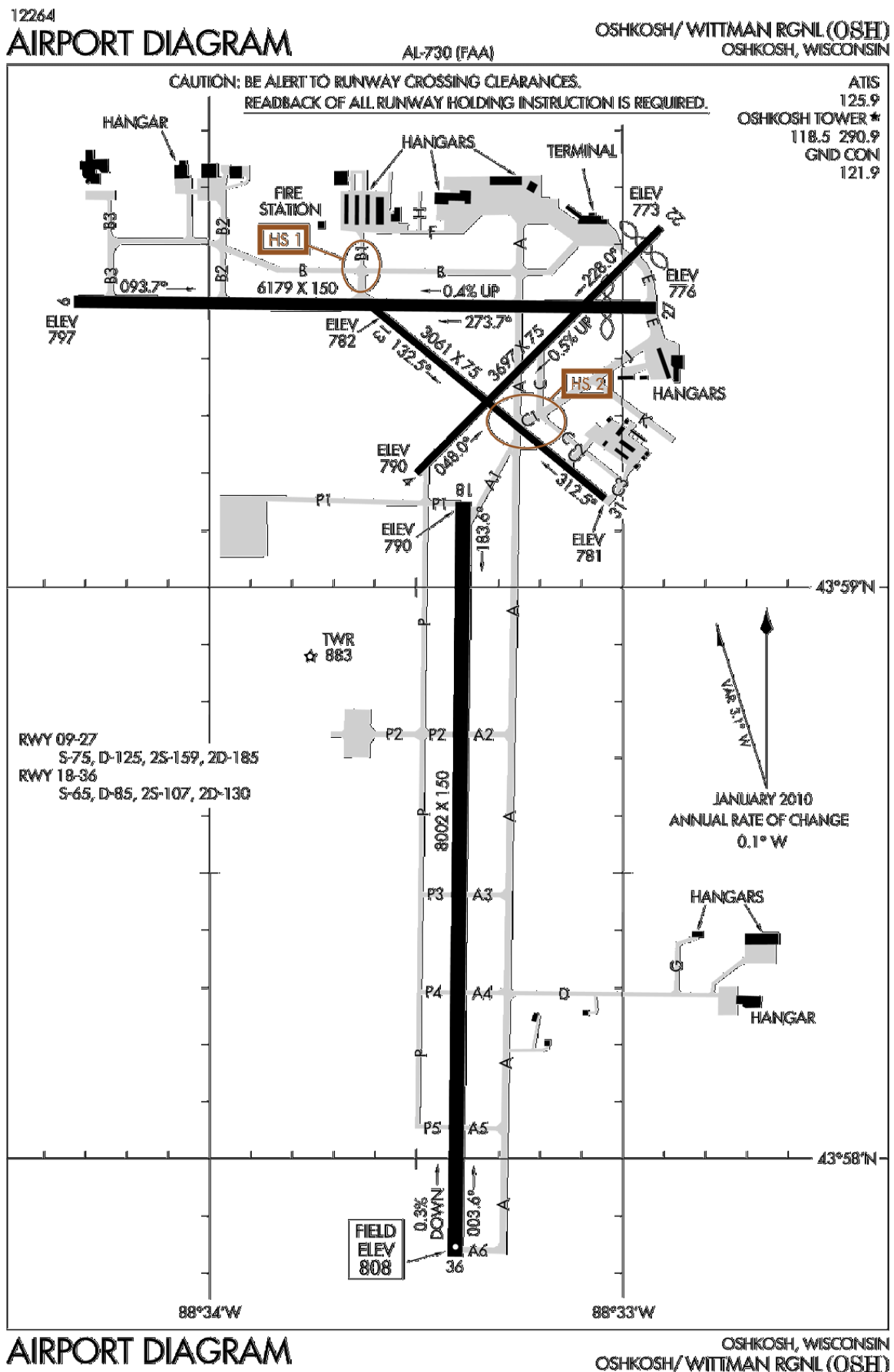


Figure 250. GPS RWY 3 (OWK).



12264
Figure 251. Airport Diagram: Oshkosh/Wittman Regional (OSH).

OSHKOSH, WISCONSIN

AL-730 (FAA)

13234

LOC I-OSH 110.5	APP CRS 004°	Rwy ldg 8002
		THRE 808
		Apt Elev 808

ILS or LOC RWY 36 OSHKOSH/WITTMAN RGNL (OSH)

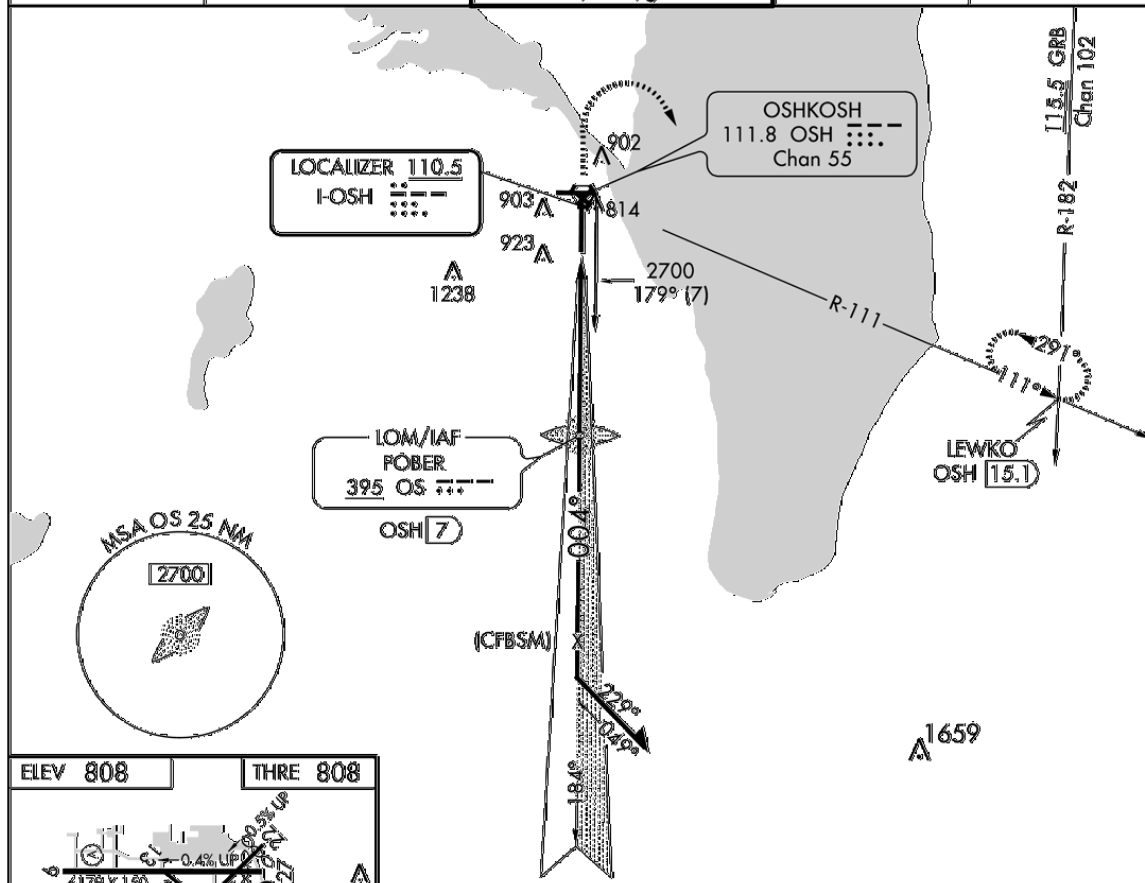
▼ When local altimeter setting not received, use Fond Du Lac altimeter setting and increase DA 31 feet and all MDA 40 feet; increase S-LOC 36 Cat C/D and Circling Cat C/D visibilities ¼ mile. For inop MALSR when using Fond Du Lac altimeter setting, increase S-LOC 36 Cat C/D visibility to 1½ mile. Circling to Rwy 5, 23, and 31 NA at night.
* RVR 1800 authorized with the use of FD or AP or HUD to DA.

MALSR

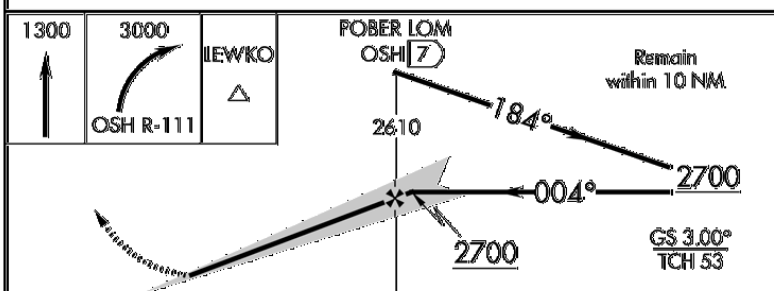
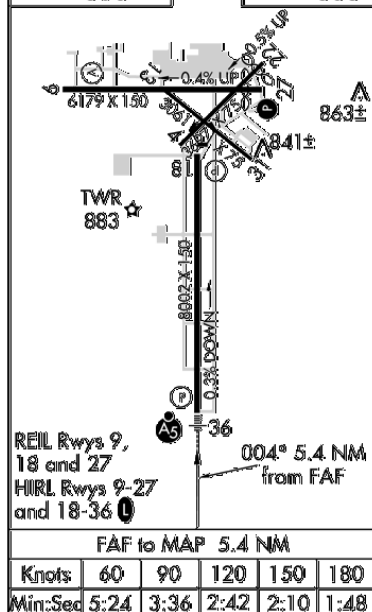


MISSED APPROACH: Climb to 1300 then climbing right turn to 3000 on OSH R-111 to LEWKO INT/OSH 15 DME and hold.

ATIS 125.9	MILWAUKEE APP CON 127.0 263.075	OSHKOSH TOWER * 118.5 (CTAF) 290.9	GND CON 121.9	UNICOM 122.95
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ELEV 808 THRE 808



CATEGORY	A	B	C	D
S-ILS 36 *	1008/24 200 (200-½)			
S-LOC 36	1340/24 532 (600-½)	1340/55 532 (600-1¼)		
CIRCLING	1340-1 532 (600-1)	1360-1½ 552 (600-1½) 1440-2 632 (700-2)		

OSHKOSH, WISCONSIN

Amfi 7 22AUG13

43°59'N-88°33'W

OSHKOSH/WITTMAN RGNL (OSH)

ILS or LOC RWY 36

©ASA

Figure 252. ILS or LOC RWY 36 (OSH).

OSHKOSH, WISCONSIN

AL-730 (FAA)

13234

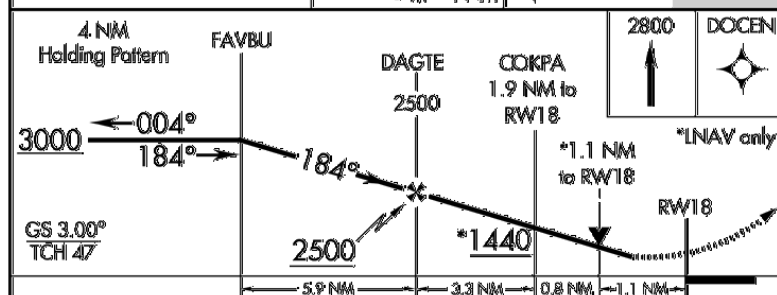
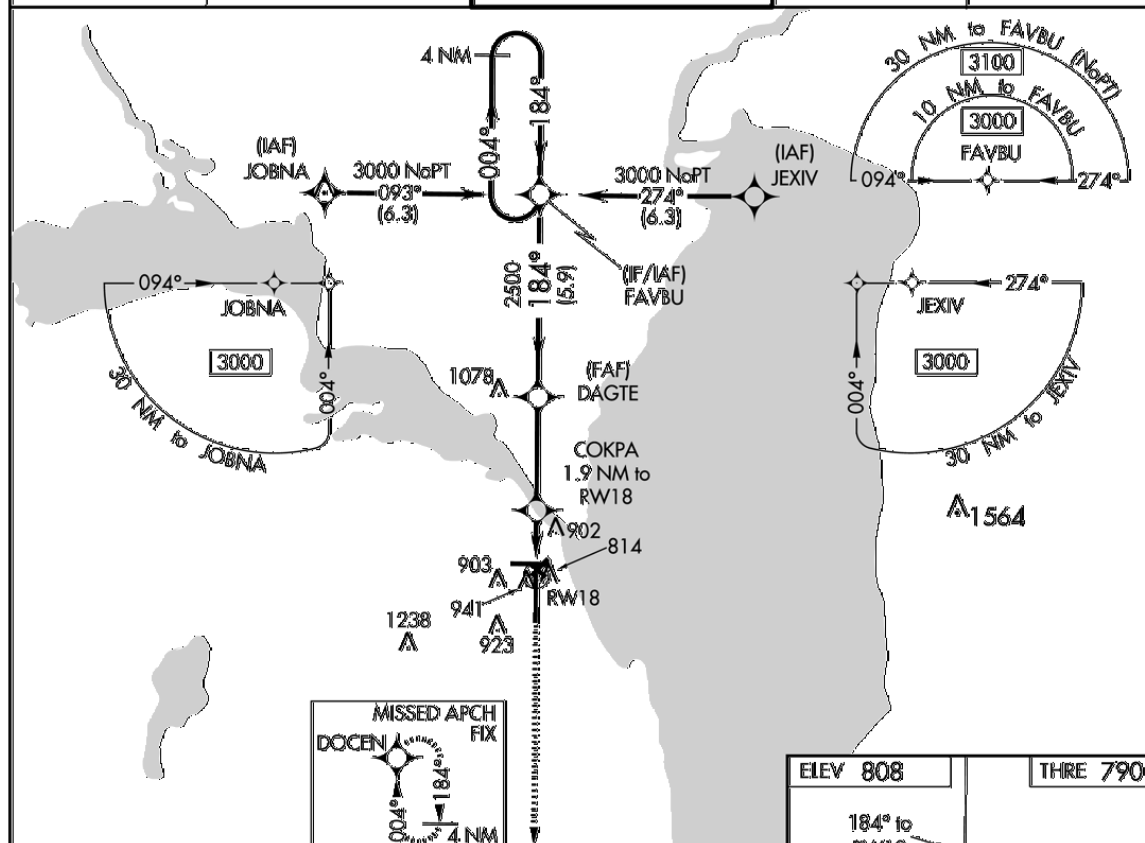
WAAS CH 58333 W18A	APP CRS 184°	Rwy Idg THRE 790 Apt Elev 808
--------------------------	-----------------	--

RNAV (GPS) RWY 18 OSHKOSH/ WITTMAN RGNL (OSH)

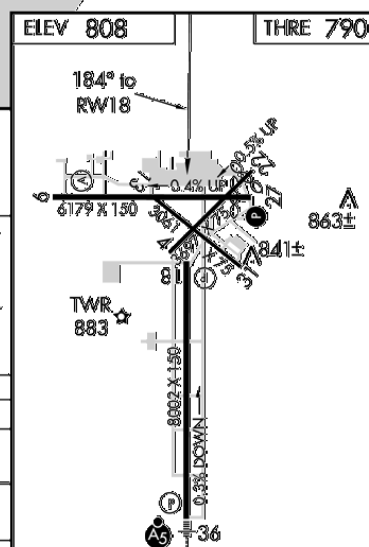
⚠ For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -20°C (-4°F) or above 54°C (130°F). VDP and Baro-VNAV NA when using Fard Du Loc altimeter setting. When local altimeter setting not received, use Fard Du Loc altimeter setting and increase all DA 31 feet and all MDA 40 feet; increase LPV and LNAV/VNAV all Cts visibility ¼ mile, increase LNAV Cts C/D and Circling Cts D visibility ¼ mile. Helicopter visibility reduction below ¼ SM NA. Circling to Rwy 5, 23 and 31 NA at night. DME/DME RNP-0.3 NA.

MISSED APPROACH: Climb to 2800 direct DOCEN and hold.

ATIS 125.9	MILWAUKEE APP CON 127.0 263.075	OSHKOSH TOWER ★ 118.5(CTAF) 290.9	GND CON 121.9	UNICOM 122.95
---------------	------------------------------------	--------------------------------------	------------------	------------------



CATEGORY	A	B	C	D
LPV DA	1040-¾	250 (300-¾)		
LNAV/VNAV DA	1118-1½	328 (400-1½)		
LNAV MDA	1200-1	410 (500-1)	1200-1½	410 (500-1½)
CIRCLING	1280-1 472 (500-1)	1300-1 492 (500-1)	1360-1½ 552 (600-1½)	1440-2 632 (700-2)



OSHKOSH, WISCONSIN

Amdt 1 22AUG13

43°59'N-88°33'W

RNAV (GPS) RWY 18 OSHKOSH/ WITTMAN RGNL (OSH)

©ASA

Figure 253. RNAV (GPS) RWY 18 (OSH).

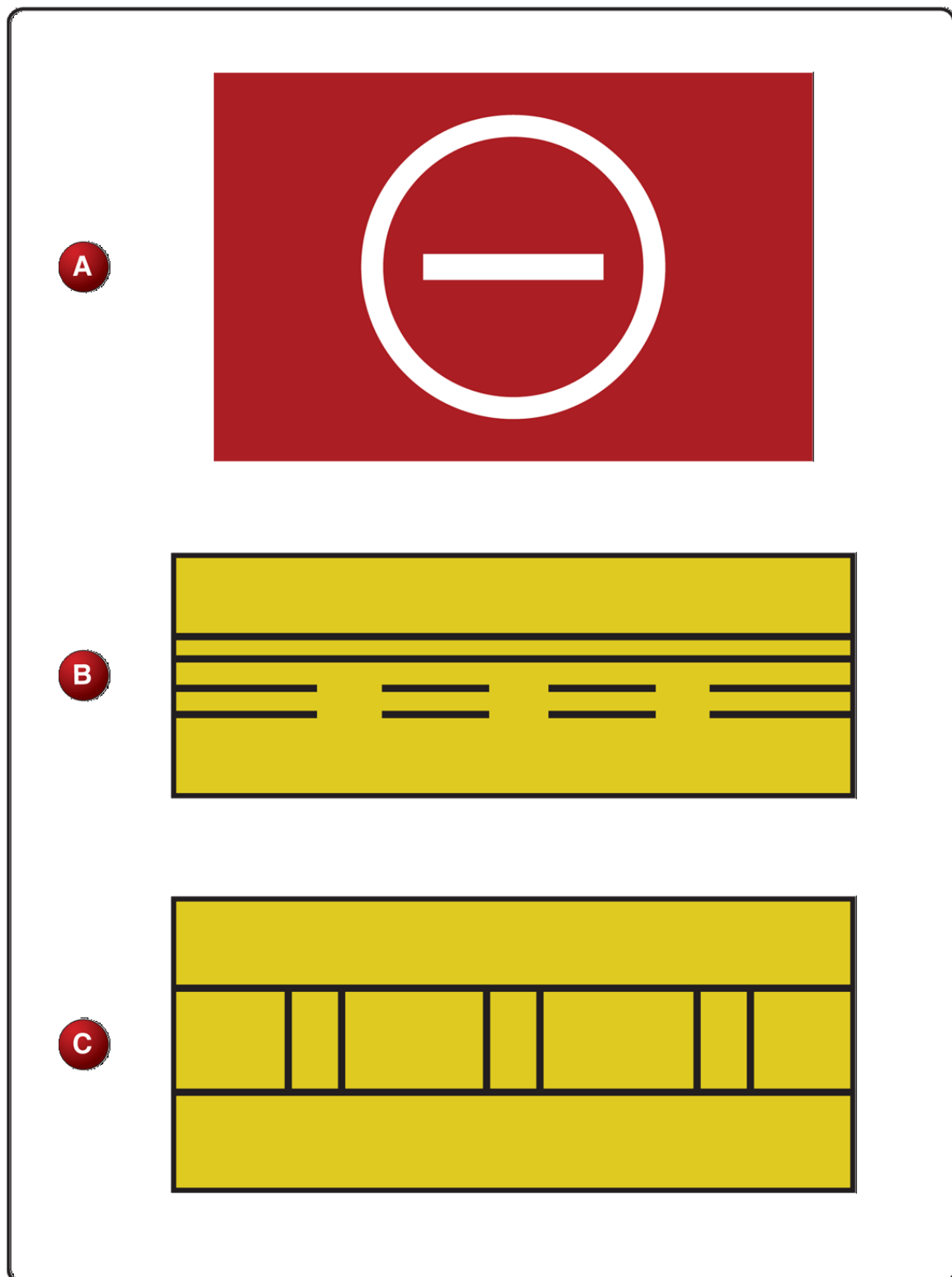


Figure 254. Airport Sign.

©ASA

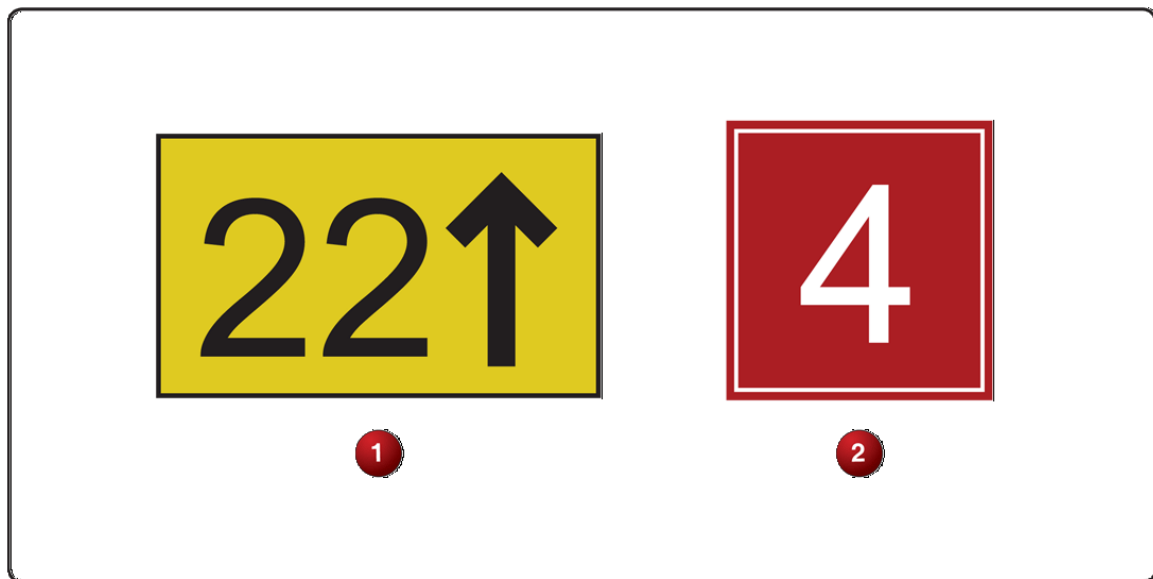


Figure 255. Two Signs.

©ASA

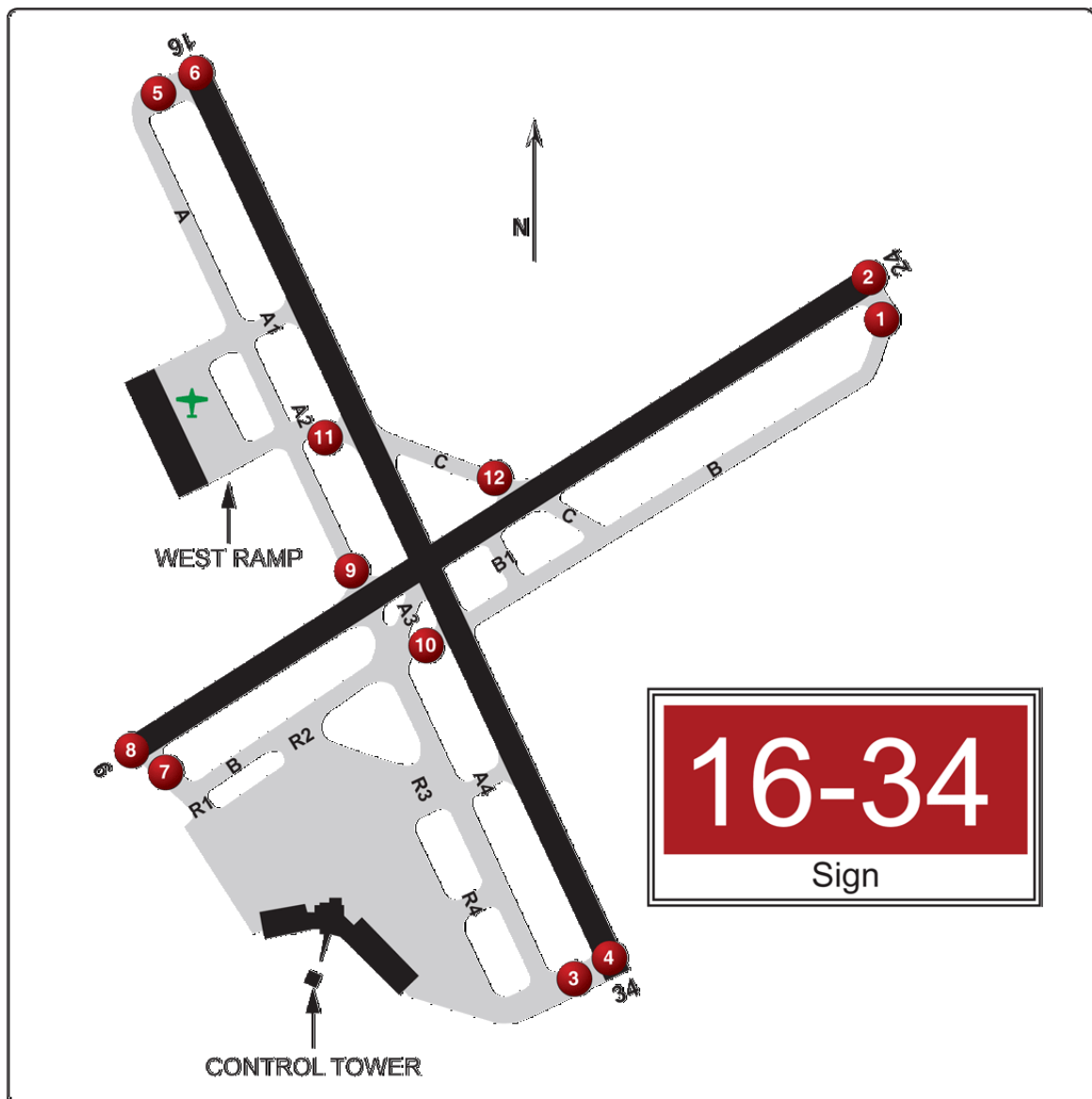


Figure 256. Airport Diagram and Sign.

©ASA

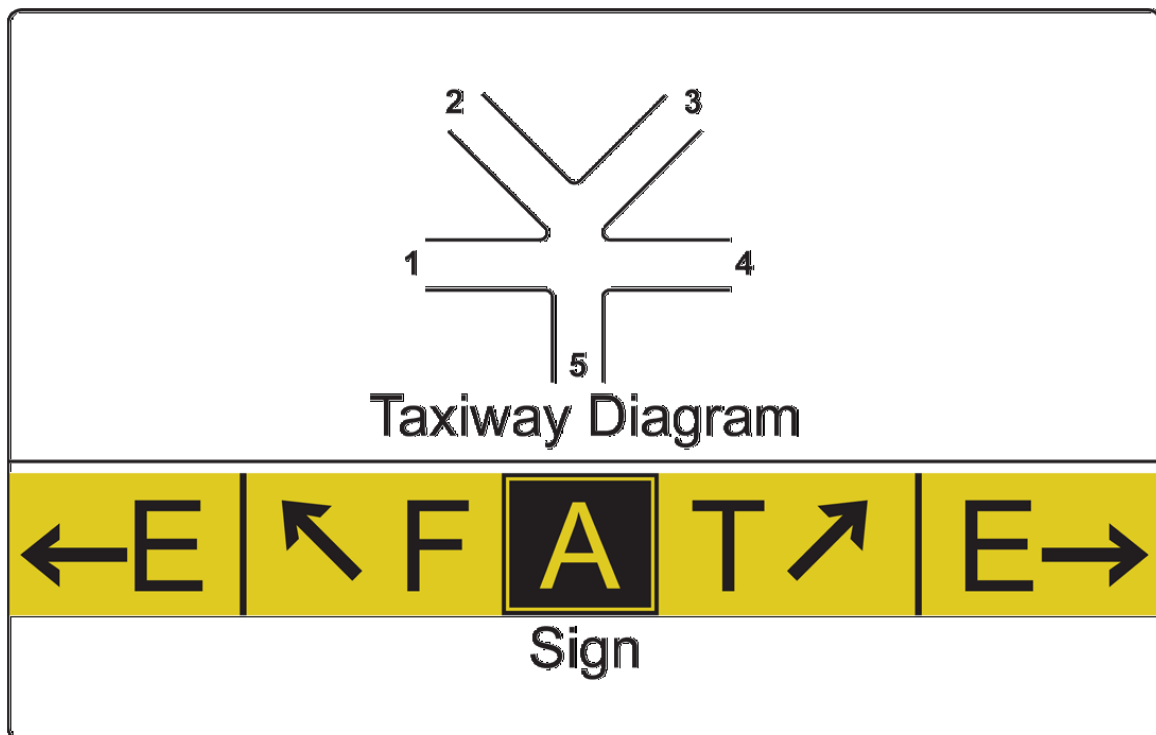


Figure 257. Taxiway Diagram and Sign.

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Figure 258. Instrument Landing System (ILS) Critical Area Markings.

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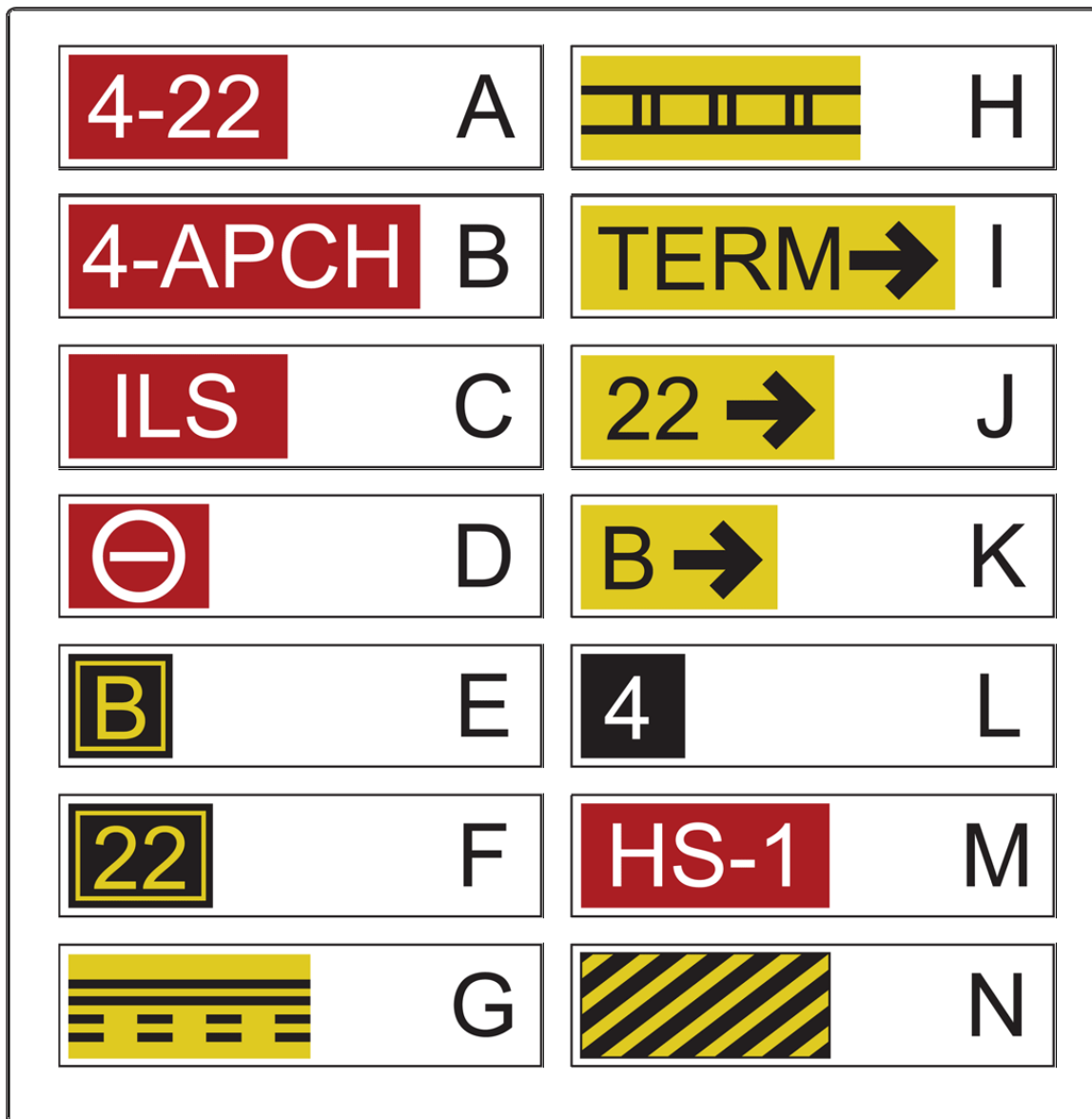


Figure 259. Airport Signs.

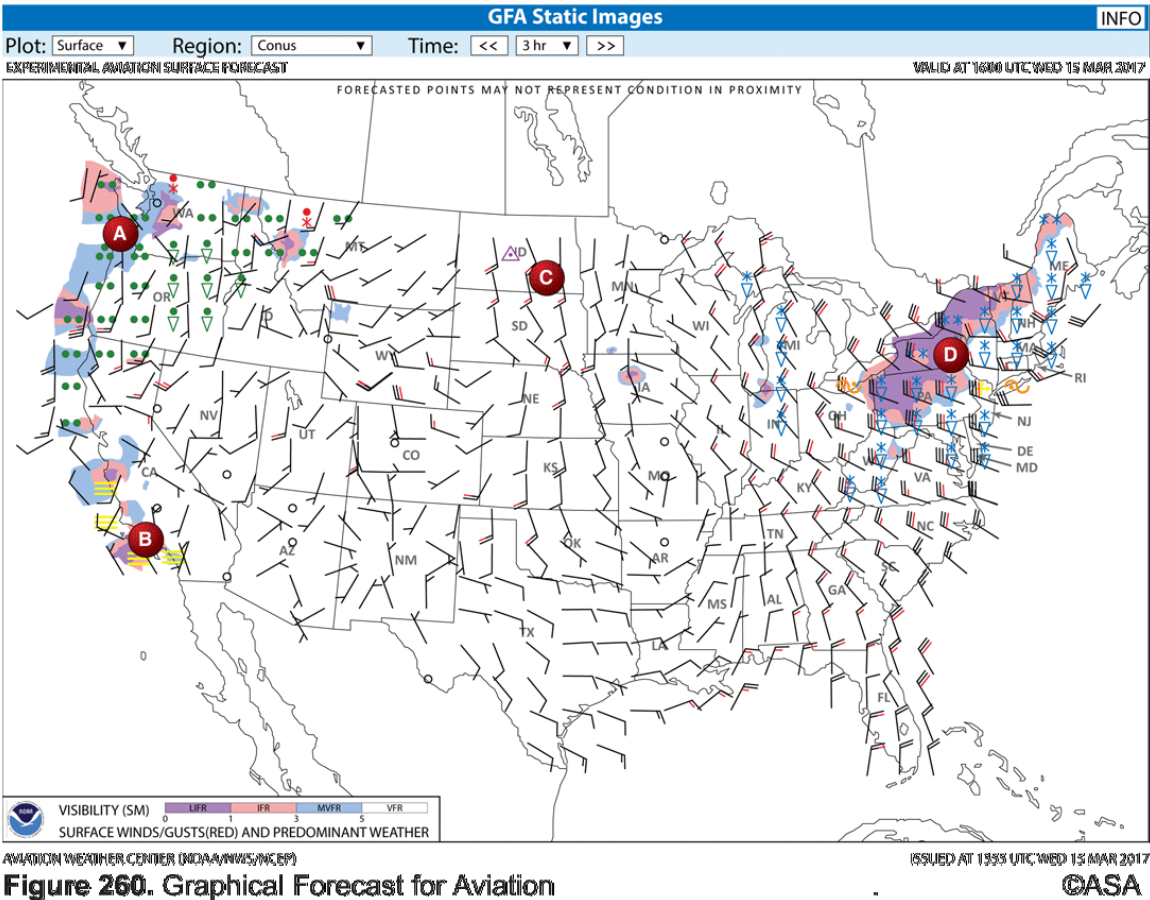


Figure 260. Graphical Forecast for Aviation

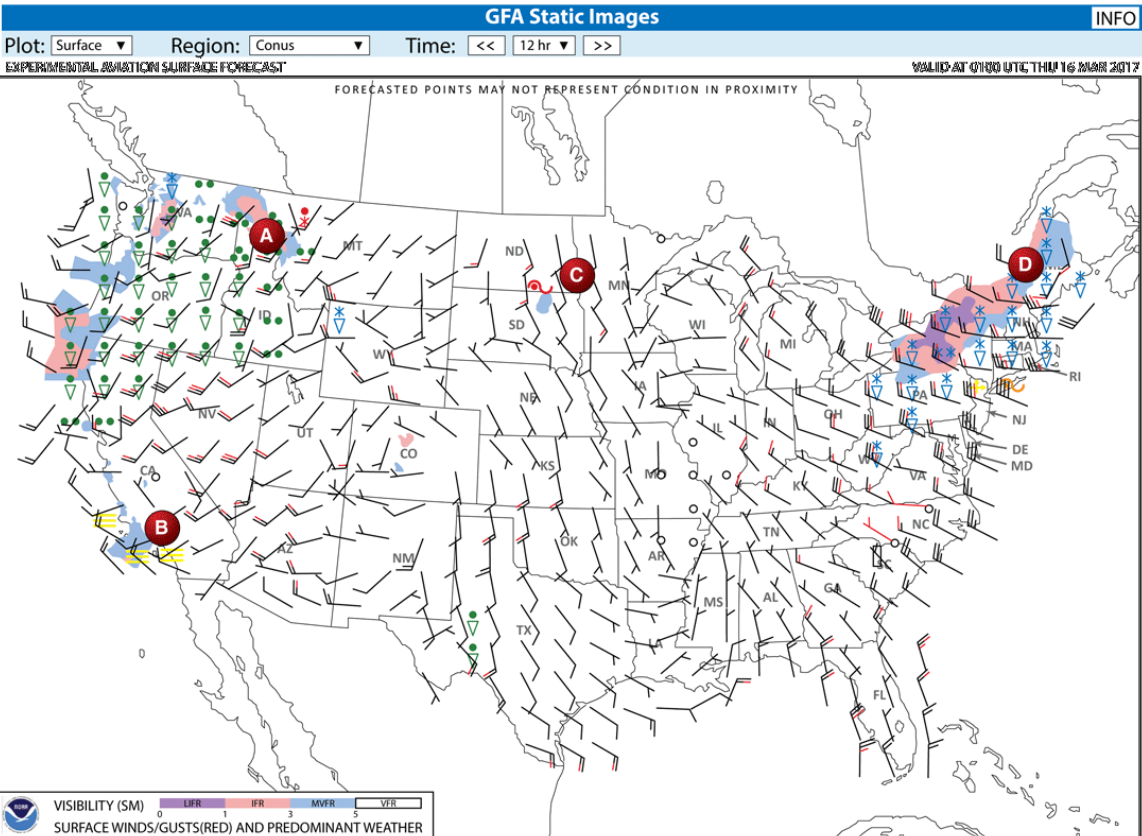
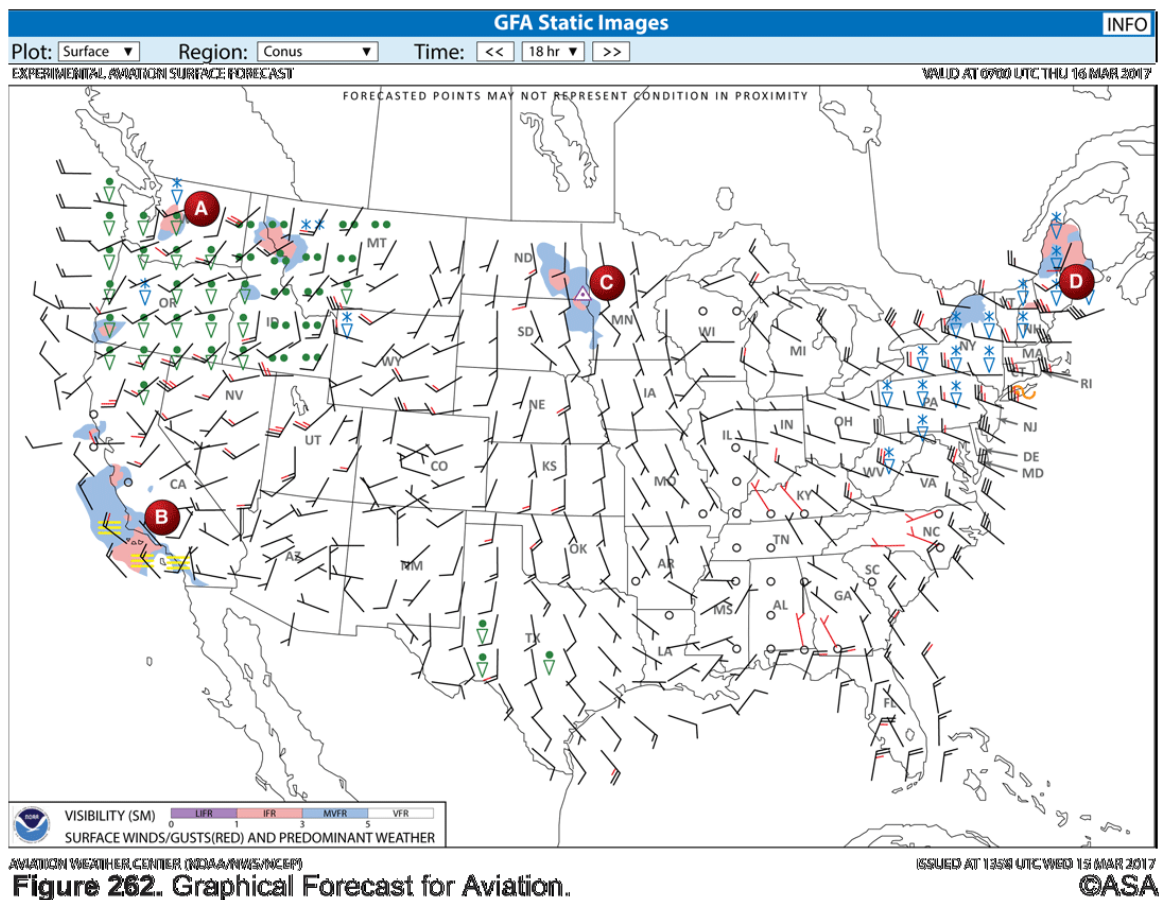
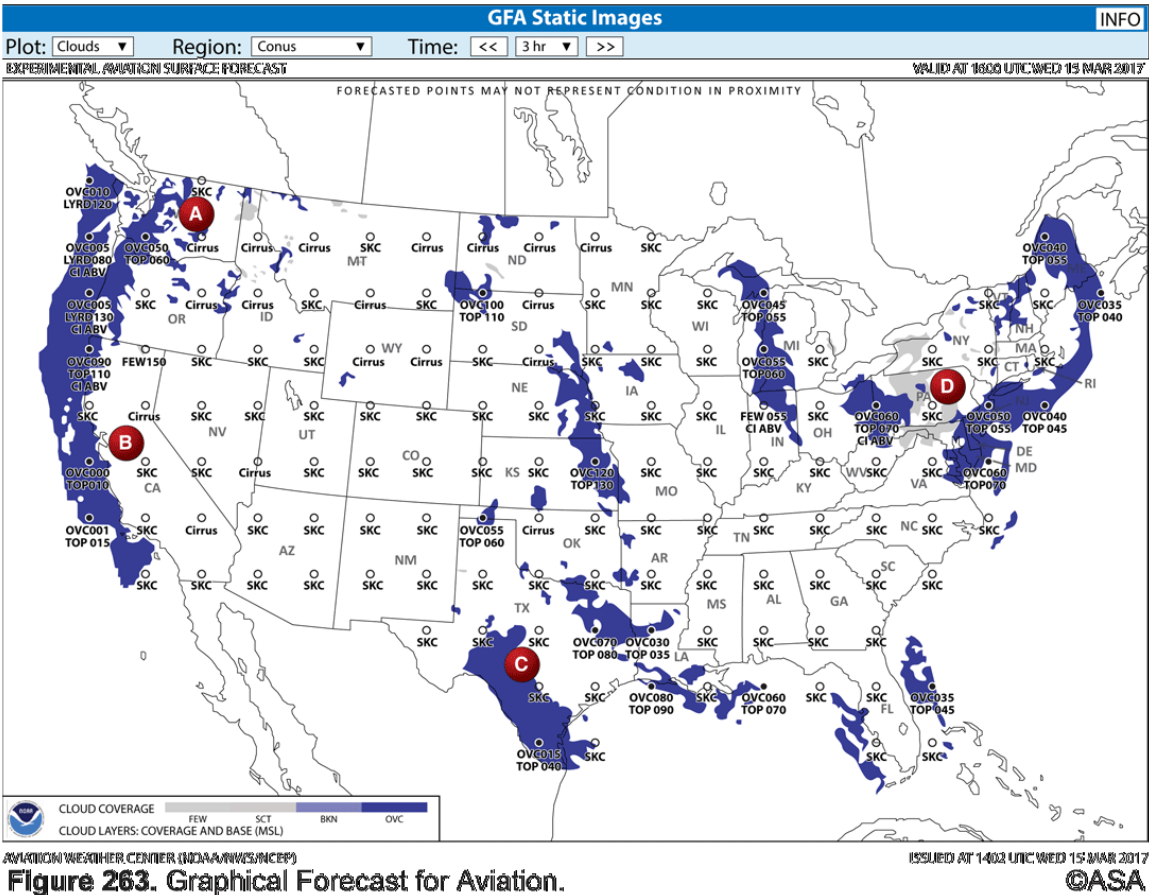


Figure 261. Graphical Forecast for Aviation.

©ASA





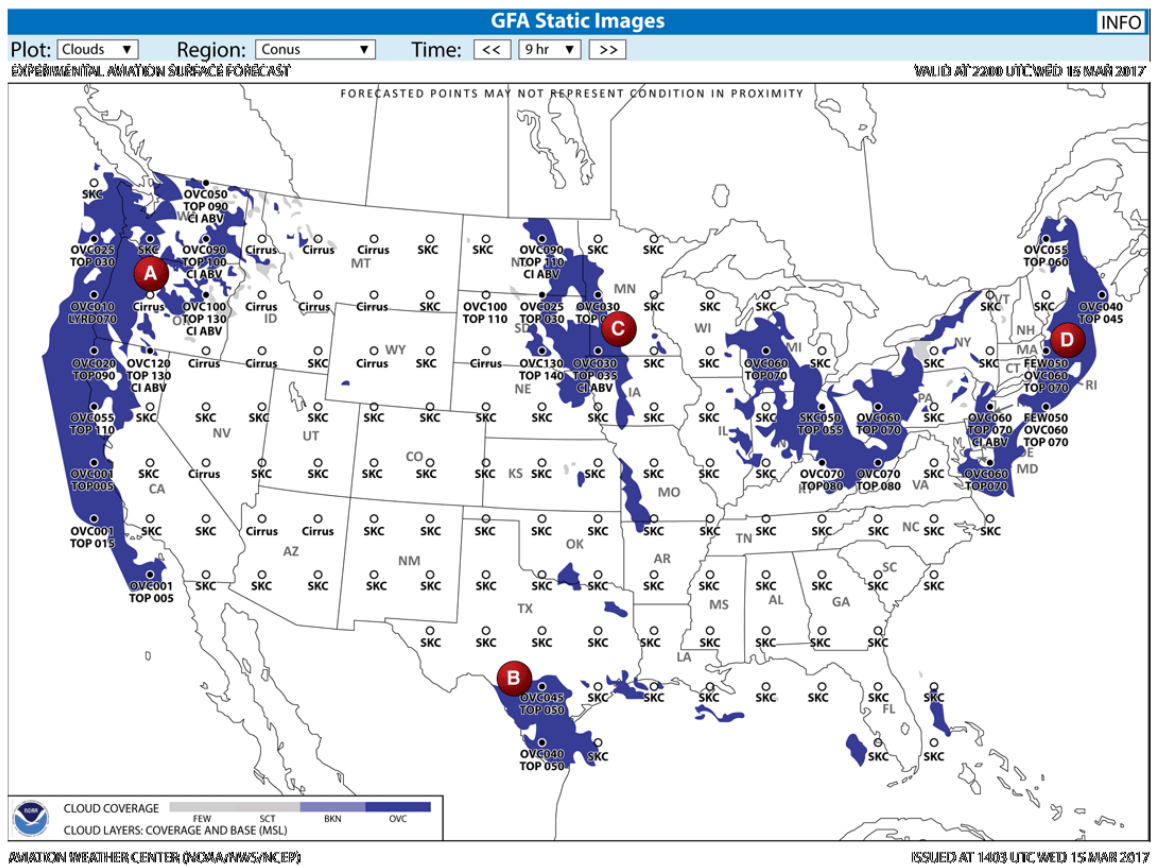


Figure 264. Graphical Forecast for Aviation.

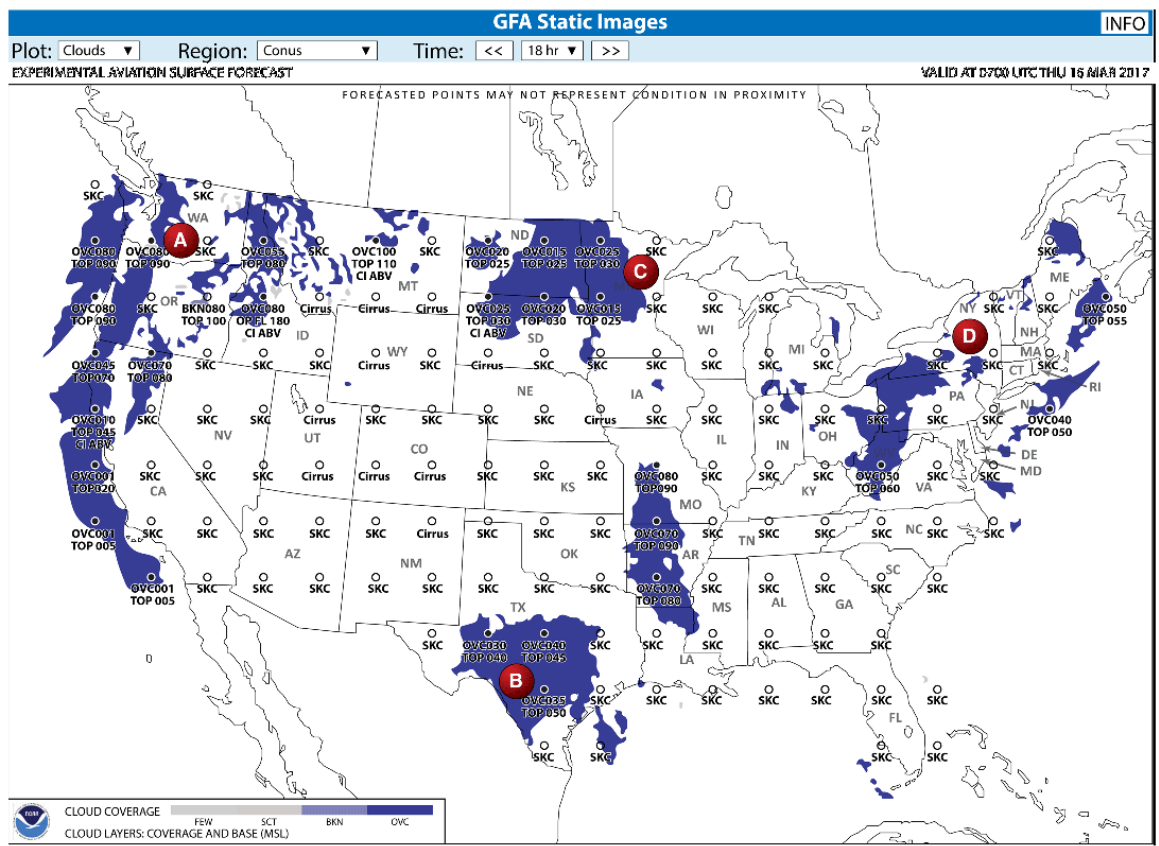
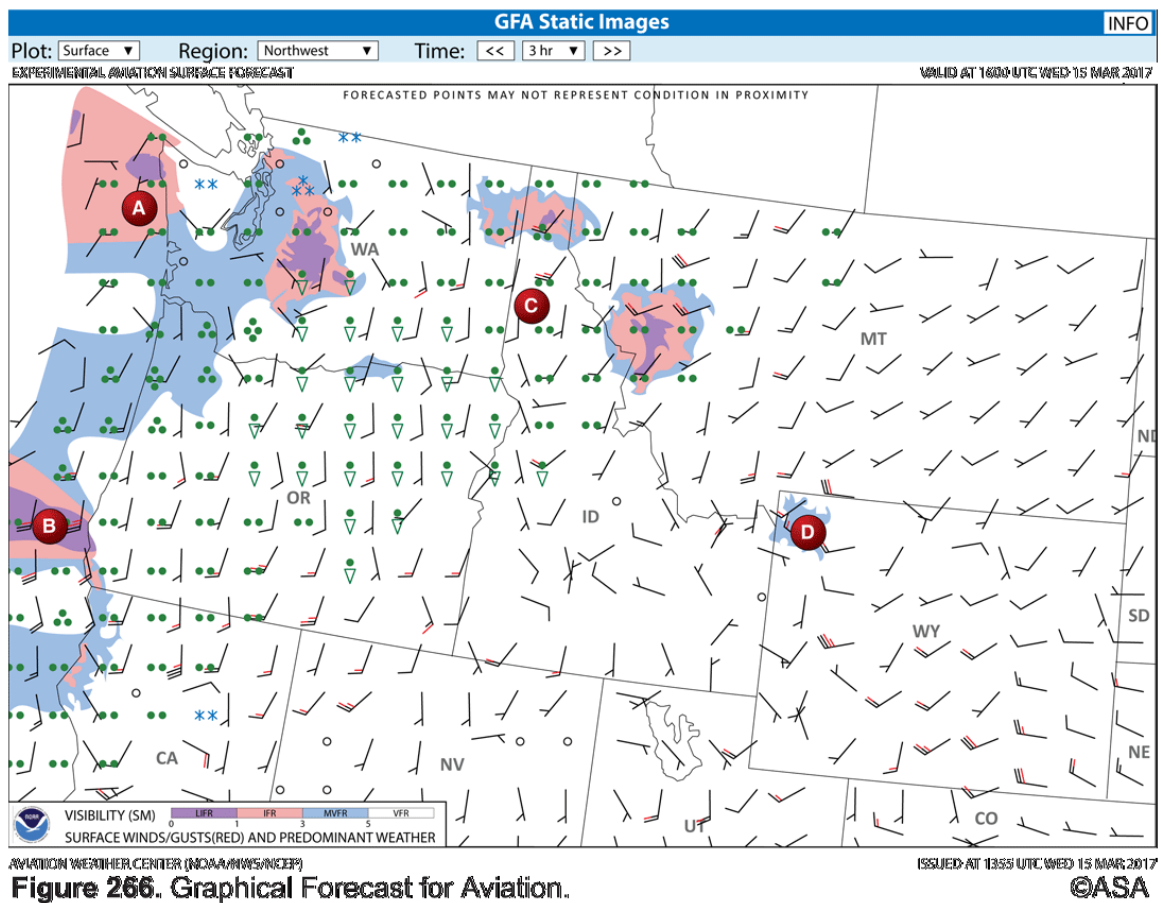


Figure 265. Graphical Forecast for Aviation.

©ASA



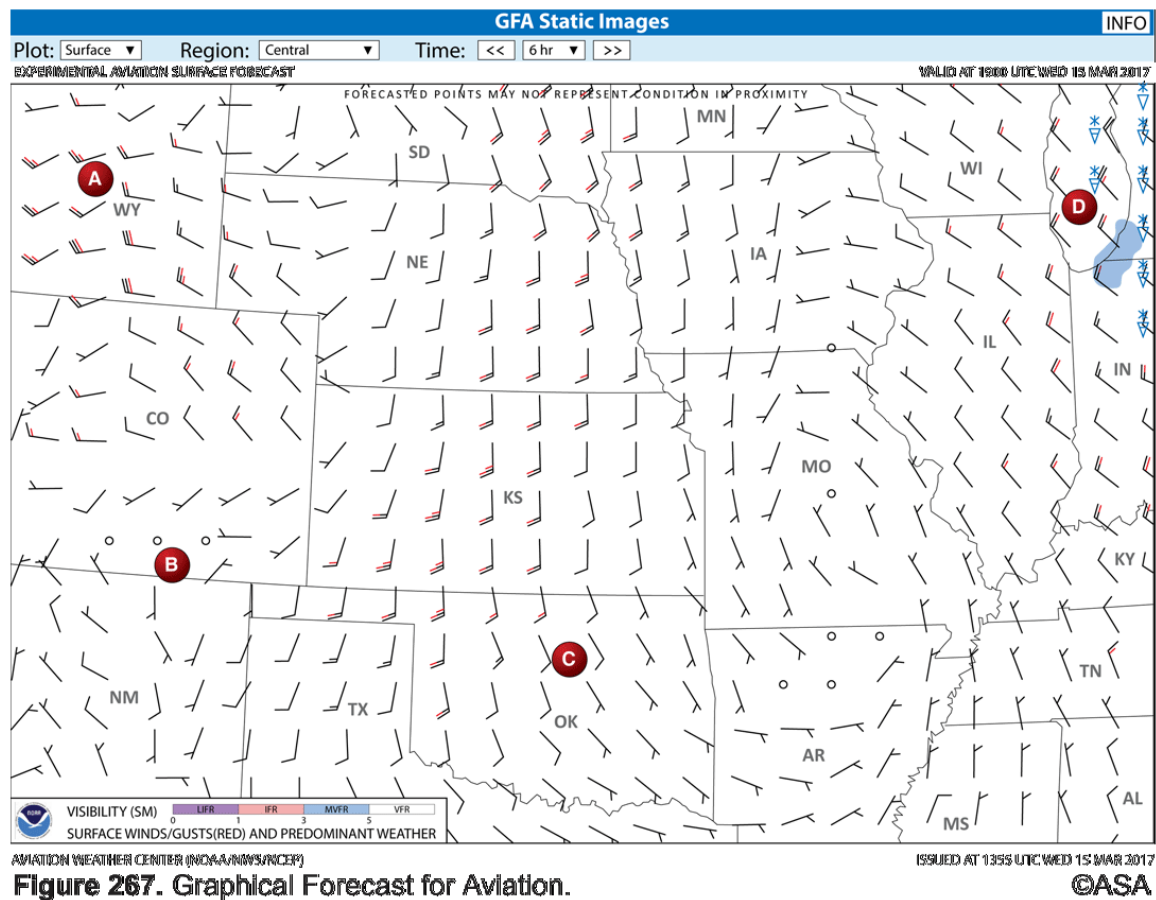
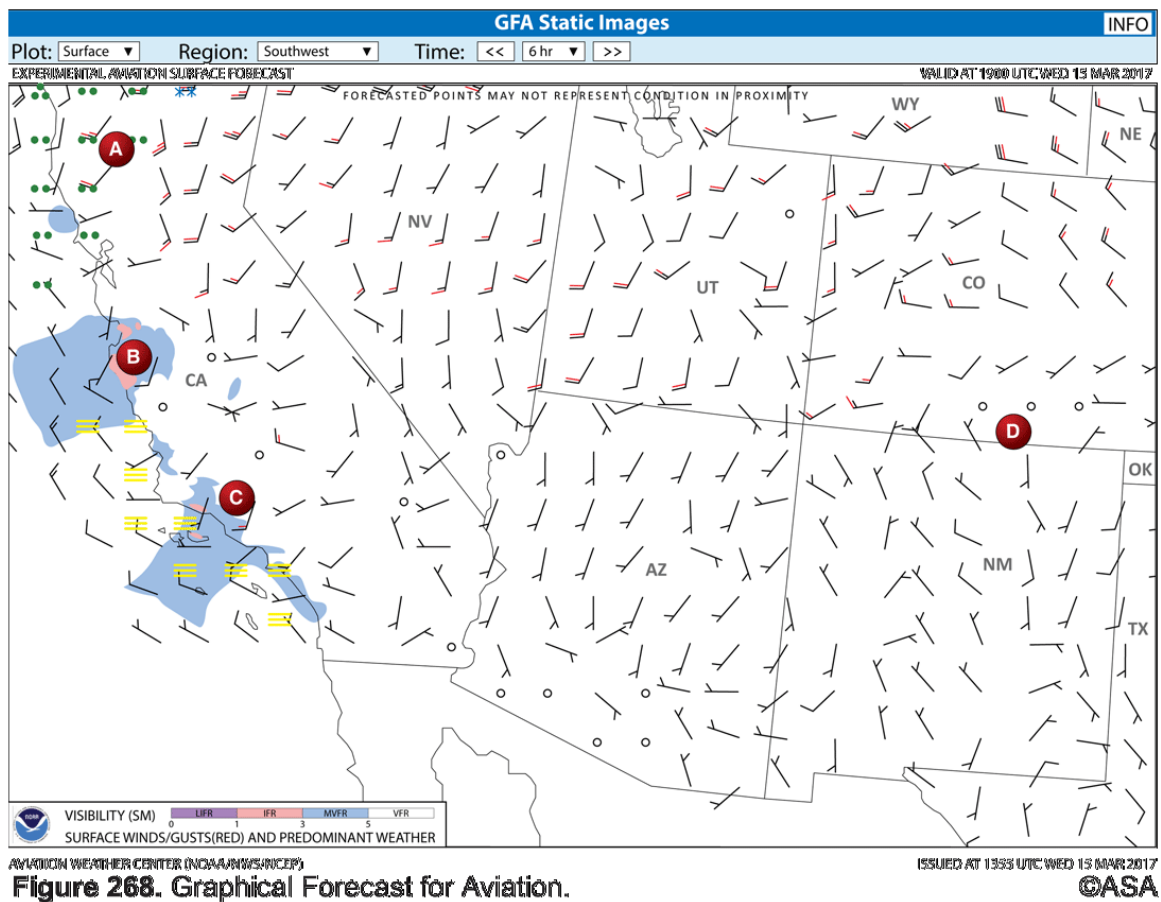
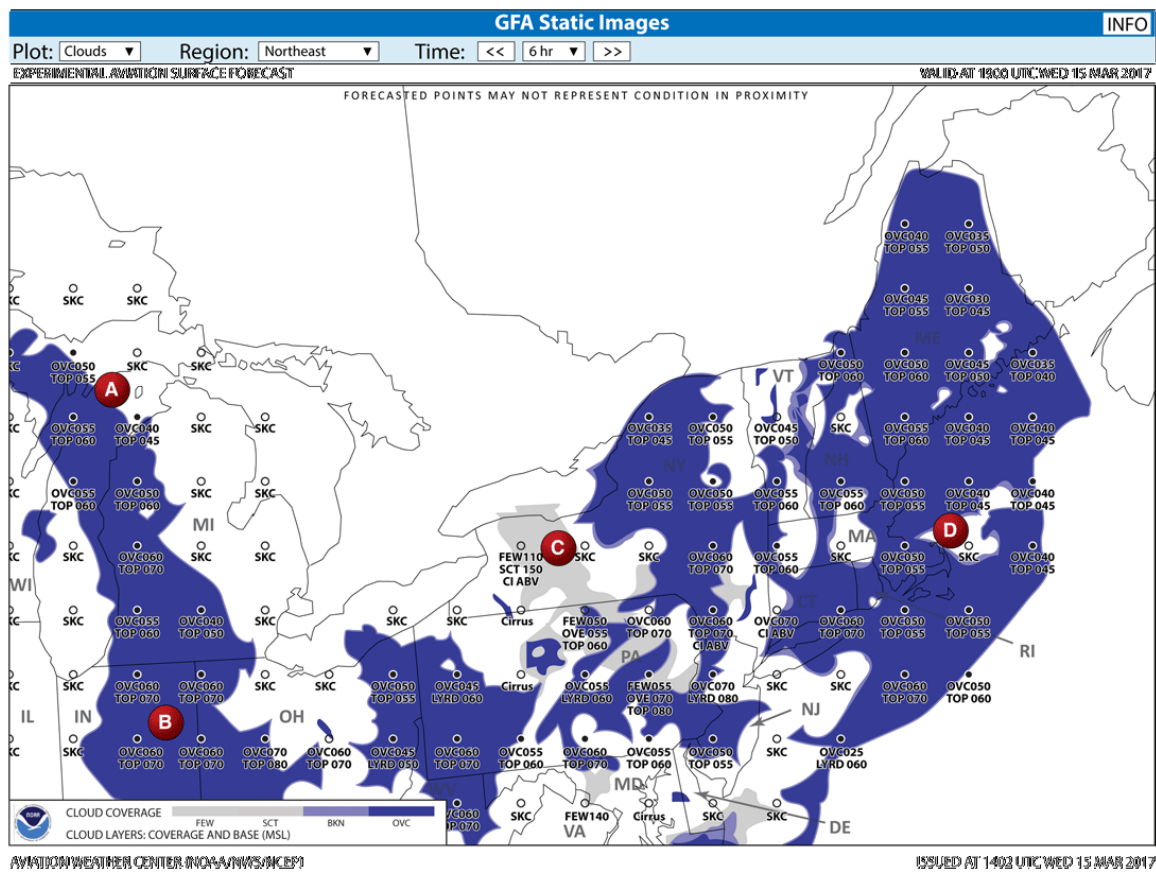


Figure 267. Graphical Forecast for Aviation.





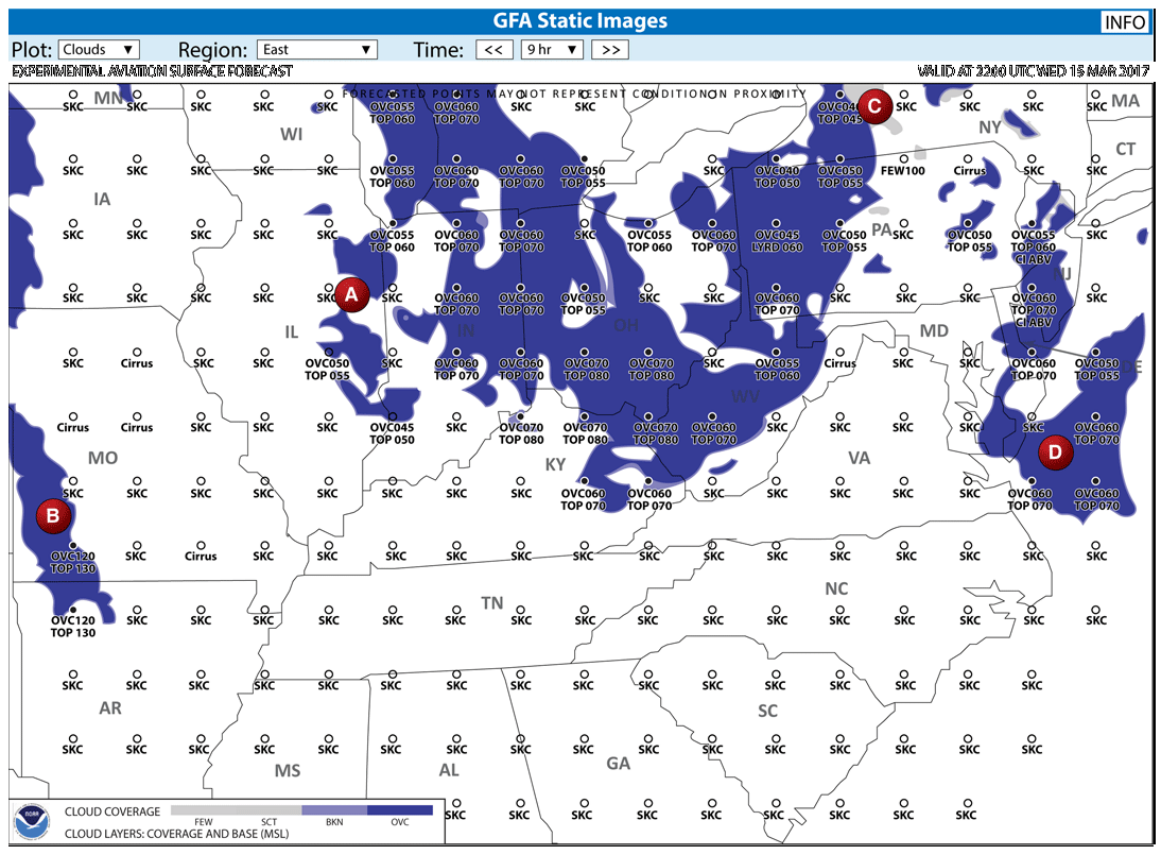


Figure 270. Graphical Forecast for Aviation.

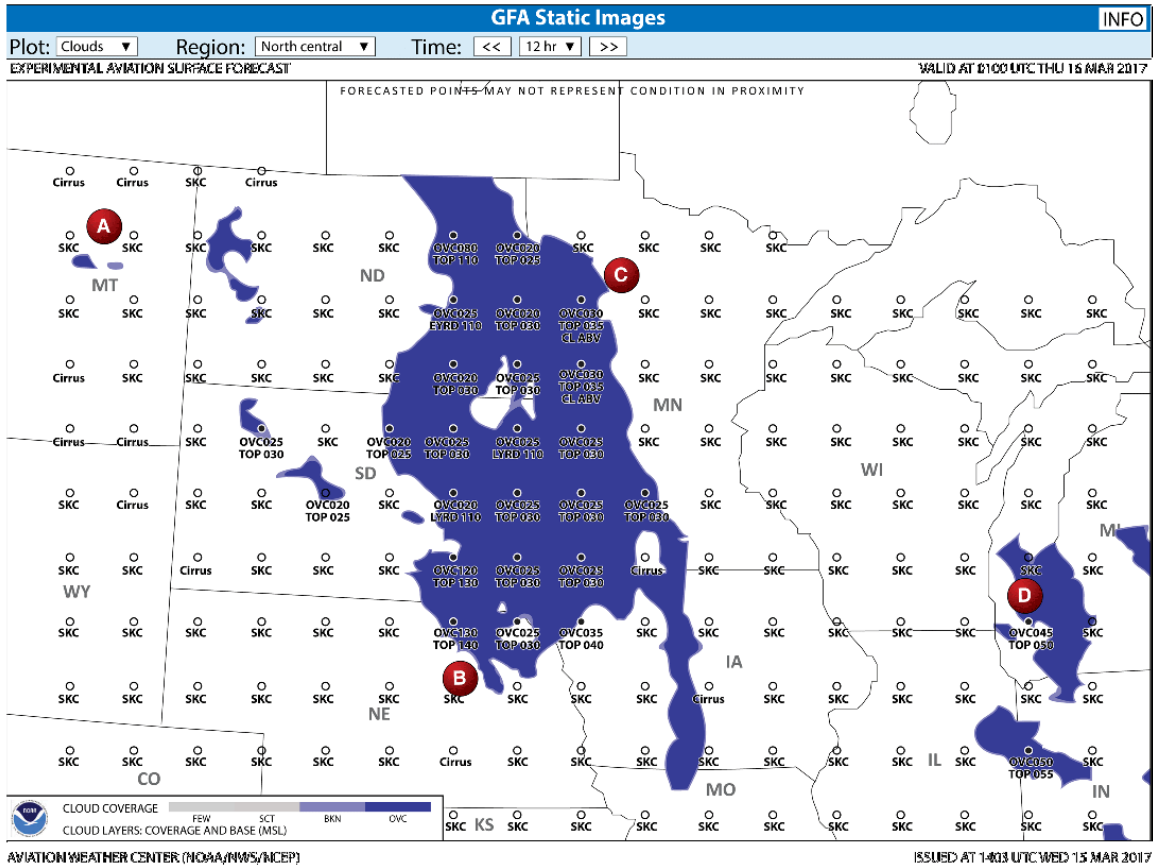


Figure 271. Graphical Forecast for Aviation.