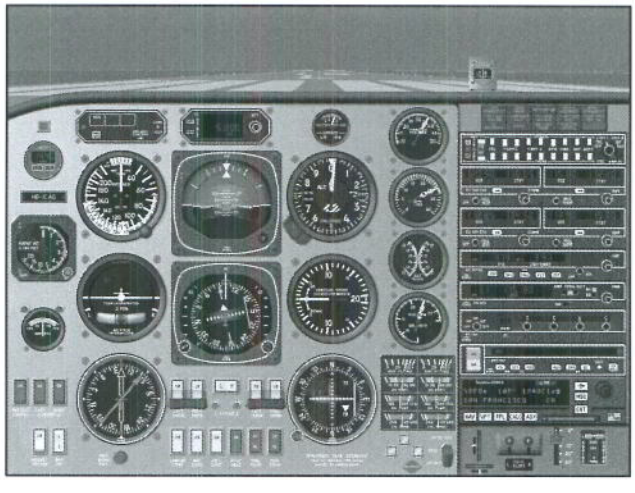
Standard Operating Procedures

Elite Seneca PA-34



Exeter Air Service

June 3, 2009

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STANDARD OPERATING PROCEDURES

GENERAL

The Captain has the final authority and responsibility for the safe completion of the flight.

Standard Operating Procedures (SOPs) are established to organize and integrate the assigned specific duties of each crewmember in a multi-crew environment.

The Captain has the final authority to deviate from the SOPs in the interest of safety, but only if and when unusual circumstances require him to do so.

SOPs establish the sequence in which the designated steps are accomplished and assign which crewmember normally accomplish the steps.

SOPs are a guide to the correct conduct of a flight and required in depth knowledge of the aircraft flying performance and systems.

Correct conduct of a flight requires that the following items be followed:

- The primary duty of the pilot-flying (PF) is to concen rate on that activity. This includes when taxiing the aircraft.
- The PF will ensure that all Air Traffic Cont o (ATC) clearances and instructions are ful y complied with.
- The primary duty of the pilot-not-flying PNF) is to perform the supporting tasks such as communications, reading checklists and systems operation to prevent distractions for the PF.
- The PNF will monitor the engine and light i struments. Any abnormal indications or s gnificant dev ations from the planned flight path must immediately be brought to the PF's attentio .
- The PF and PNF wi work together and back one another up dur'ng important tasks such as checklist completion, determining decis'on heig t and cold weather alt'meter corrections.
- The PNF will inform the PF when switching communications to other than ATC such as ATIS.
- Company communications will no be conduc ed below 10,000 feet or cruising altitude, whichever is ower.
- Only GPS qualified crews may use the Global Pos'tioning System.
- All actions called for by the PF wil have a verbal response by the PNF confirming the action has been

PROCEDURE A:	
If fire, or if below 1000' AGL, call "FIRE DRILL _____ (left/right) ENGINE."	If fire, perform FIRE DRILL _____ (left/right) engine: Boost Pump—Off. Fuel Tank Selector—Operating Engine. Throttle—Idle. Propeller Lever—Full RPM decrease. Mixture—Full Lean.
Instruct PNF to declare an Emergency.	Declares an Emergency. Check weather, request clearance. Tune/identify NAV radios.
Call for ENGINE FIRE/SEVERE DAMAGE CHECKLIST.	Reads ENGINE FIRE/SEVERE DAMAGE CHECKLIST, and calls complete. Brief passengers.
Brief approach, Flaps 10 Landing.	

PROCEDURE B:	
If no fire, and aircraft above 1000' AGL, call "CAUSE CHECK _____ (left/right) ENGINE."	If no fire, perform CAUSE CHECK and observe for engine restoration: Magnetos—Left, Right, Both. Alternate Air—Full Open. Fuel Boost—On. Fuel Selector—Both.
If no restart, call "FIRE DRILL _____ (left/right) ENGINE."	Perform FIRE DRILL _____ (left/right) engine: Boost Pump—Off. Fuel Tank Selector—Operating Engine. Throttle—Idle. Propeller Lever—Full RPM decrease. Mixture—Full Lean.
Instruct PNF to declare an Emergency.	Declares an Emergency. Check weather, request clearance. Tune/identify NAV radios.
Call for ENGINE FIRE/SEVERE DAMAGE CHECKLIST.	Reads ENGINE FIRE/SEVERE DAMAGE CHECKLIST, and calls complete. Brief passengers.
Brief approach, Flaps 10 Landing.	

ENGINE FIRE IN FLIGHT	
Pilot-flying	**Pilot-not-flying**
A crewmember observing engine-fire indications shall call "ENGINE FIRE."	
Confirmed by visual inspection. Call "CONFIRMED _____ (left/right) ENGINE FIRE."	
Call "FIRE DRILL _____ (left/right) ENGINE."	Perform FIRE DRILL _____ (left/right) engine: Boost Pump—Off. Fuel Tank Selector—Operating Engine. Throttle—Idle. Propeller Lever—Full RPM decrease. Mixture—Full Lean.
Maintain control of the aircraft by use of rudder and aileron. Calls "MAX POWER."	Perform for remaining engine: Mixture Control—Full Rich. Propeller Lever—Full Increase. Throttle Lever—Max Power. Respond "MAX POWER SET."
Call "FLAPS UP."	Select flaps up and respond "SELECTED."
Call "GEAR UP."	Select gear up and respond "SELECTED."
Instruct PNF to declare an Emergency. Call for ENGINE FIRE/SEVERE DAMAGE CHECKLIST. Brief approach, Flaps 10 Landing.	Declares an Emergency. Check weather, request clearance. Tune/identify NAV radios. Reads ENGINE FIRE/SEVERE DAMAGE CHECKLIST, and calls complete. Brief passengers.

PASSENGER EVACUATION

The procedures for passenger evacuation are to be followed when a condition potentially endangering life or the physical well being of passengers and crew exists. When commanded by the Captain, each crew will simultaneously accomplish their individual recall items. Each crewmember must be aware of the possibility of the other pilot being incapacitated and of the requirement for one crewmember to perform all the items on the checklist.

PASSENGER EVACUATION	
Captain	**First Officer**
Calls "PASSENGER EVACUATION."	Notify ATC of passenger evacuation.
Perform Engine shutdown: Boost Pumps—Off. Fuel Tank Selector—Off. Throttles—Idle. Mixtures—Full Lean. Battery Master—Off.	Monitor actions.
Calls "EVACUATE—EVACUATE."	Obtain fire extinguisher.
Assist remaining passengers and direct away from aircraft.	Assist passengers.

EMERGENCY DESCENT

The Emergency Descent procedure will be performed in the event of suspected pilot oxygen problems or when instructed of a threat by ATC.

EMERGENCY DESCENT	
Pilot-flying	**Pilot-not-flying**
Calls "EMERGENCY DESCENT."	Notify ATC of emergency descent. Request Altimeter and Minimum En route Altitude (MEA).
Throttles—Close Speed—130 KTS. Gear Selector—Down.	Monitor actions.
Upon level off, restore cruise thrust, gear up. Brief passengers and obtain clearance.	

Appendix 1—Normal Checklist

See Next Page

EXETER AIR SERVICE
03 JUN 09

ELITE SENECA PA-34 NORMAL CHECKLIST

CONFIGURATION SAFETY CHECKLIST

FLIGHT CONTROL LOCK	REMOVE
MAGNETO SWITCHES	OFF
GEAR LEVER	DOWN
FLAP LEVER	MATCH FLAP POSITION
TRIM INDICATORS	RUDDER SET TO NEUTRAL ELEVATOR SET TO T/O
BATTERY MASTER	ON
AVIONICS MASTER	ON
LANDING GEAR LIGHTS	THREE GREEN
COWL FLAPS	OPEN

PRELIMINARY FLIGHT COMPARTMENT CHECKLIST

MAGNETOS	OFF
BATTERY MASTER	ON
ALTERNATORS	OFF
AVIONICS MASTER	ON
LANDING GEAR	THREE GREEN
RUDDER TRIM	FREE AND ZERO
ELEVATOR TRIM	FREE AND TAKEOFF
THROTTLES	CLOSED
PROPELLER LEVERS	FULL INCREASE
MIXTURE CONTROL	FULL LEAN
FLAPS	UP
COWL FLAPS	OPEN
LIGHTS	OFF
PARKING BRAKE	SET ON
ALTERNATE AIR	CLOSED
PITOT HEAT	OFF
FUEL BOOST	OFF
FUEL TANK SELECTOR	OFF
FLIGHT INSTRUMENTS	SET AND CROSS-CHECKED
ENGINE GAUGES	CHECKED
ANNUNCIATOR PANEL	CHECKED
COMM	SET
ADF	ADF POSITION
DME	SET FOR DEPARTURE
TRANSPONDER	SET
AUTOPILOT	OFF
GPS	OFF
ALTITUDE PRESELECT	ALT MODE
CLOCK	SET UTC

BEFORE START CHECKLIST

STROBE LIGHT	ON
PASSENGERS	BRIEFED
PARKING BRAKE	SET ON
TANK SELECT	LEFT

START LEFT ENGINE CHECKLIST

LEFT MAGNETO	BOTH
LEFT FUEL BOOST	ON
LEFT AUX FUEL ON LIGHT	ON
LEFT MIXTURE	FULL RICH
LEFT FUEL FLOW	INDICATING

START RIGHT ENGINE CHECKLIST

RIGHT MAGNETO	BOTH
RIGHT FUEL BOOST	ON
RIGHT AUX FUEL ON LIGHT	ON
RIGHT MIXTURE	FULL RICH
RIGHT FUEL FLOW	INDICATING

AFTER START CHECKLIST

FUEL BOOST	OFF
TANK SELECT	RIGHT
HARNESS/HATCH/SEAT	CHECK SECURE

RUN-UP CHECKLIST

SET THROTTLES	1000 RPM
INSTRUMENT AIR SOURCE	5 ± 1"HG
LANDING/NAV LIGHTS	ON
ALTERNATORS	CHECKED
LANDING/NAV LIGHTS	OFF
FUEL SELECT	BOTH
SET THROTTLES	2000 RPM
MAGNETOS	DROP/DIFF CHECKED
MAGNETOS	BOTH
OIL PRESS/TEMP	GREEN
PROPELLERS	CYCLE CHECKED
PROPELLER GOVERNORS	CHECKED
MIXTURES	CHECKED
SET THROTTLES	1500 RPM
PROPELLER FEATHERING	CHECKED
SET THROTTLES	1000 RPM

EXETER AIR SERVICE
03 JUN 09

ELITE SENECA PA-34 NORMAL CHECKLIST

BEFORE TAKEOFF CHECKLIST

CONTROLS	CHECKED
FLAPS	"_____" (takeoff flap)

POSITION FOR TAKEOFF CHECKLIST

PITOT HEAT	ON
FUEL BOOST	ON
TRANSPONDER	ALT

AFTER TAKEOFF CHECKLIST

GEAR	UP, NO LIGHTS
FLAPS	UP
NAVIGATION LIGHTS	ON
FUEL BOOST	OFF

PRE-DESCENT CHECKLIST

APPROACH BRIEFING	COMPLETED
ALTIMETER AND INSTRUMENTS	CHECKED AND SET
RADAR ALTIMETER	SET 2000 FEET
PASSENGERS	BRIEFED
HARNESS	ON

BEFORE LANDING CHECKLIST

BOOST PUMPS	ON
PROPELLER RPMS	FULL INCREASE
MIXTURES	FULL RICH
ANNUNCIATOR	CHECKED
GEAR	DOWN, 3 GREEN
FLAPS	"_____" (landing flap)

TERMINATING CHECKLIST

MAGNETOS	OFF
ALTERNATORS	OFF
AVIONICS MASTER	OFF
ALL LIGHTS	OFF
PARKING BRAKE	RELEASED
FUEL TANK SELECTOR	OFF
BATTERY MASTER	OFF

LIMITATIONS

V_{NE}	205 KTS
V_{YSE}	92 KTS
V_{MC}	66 KTS
V_{SL}	67 KTS
V_{SO}	64 KTS
V_{FE} (FLAPS 10)	140 KTS
V_{FE} (FLAPS 40)	115 KTS

POWER SETTINGS

	ALT	MP	RPM
cruise	8000	32	2400
	10000	31	2400
	12000	30	2400
	Climb	30	2500
	Descent (1000'/min)	20	2400

LANDING V_{REF}

V_{REF} FLAPS 10	95 KTS
V_{REF} FLAPS 25	85 KTS
V_{REF} FLAPS 40	80 KTS

Appendix 2—Non-Normal Checklist

See Next Page

EXETER AIR SERVICE
03 JUL 09

ELITE SENECA PA-34 NON-NORMAL CHECKLIST

ENGINE FIRE DRILL

BOOST PUMP	OFF
FUEL TANK SELECTOR	
	OPERATING ENGINE
THROTTLE	IDLE
PROPELLER RPM	FULL RPM DECREASE
MIXTURE	FULL LEAN

Land at nearest suitable airport.

ENGINE CAUSE CHECK

Observe engine for re-start indications.

MAGNETOS	LEFT, RIGHT, BOTH
ALTERNATE AIR	FULL OPEN
FUEL BOOST	ON
FUEL SELECTOR	BOTH

If re-start, continue flight if failure cause known.
If no re-start, failure cause unknown, perform engine FIRE DRILL. Land at nearest suitable airport.

ENGINE FIRE/SEVERE DAMAGE

Perform engine FIRE DRILL.

BOOST PUMP	OFF
FUEL TANK SELECTOR	
	OPERATING ENGINE
THROTTLE	IDLE
PROPELLER RPM	FULL RPM DECREASE
MIXTURE	FULL LEAN

MAX POWER	SET
FLAPS	UP
GEAR	UP

Land at nearest suitable airport.

PASSENGER EVACUATION

BOOST PUMPS	OFF
FUEL TANK SELECTOR	OFF
THROTTLES	IDLE
MIXTURES	FULL LEAN
BATTERY MASTER	OFF

Leave aircraft, assist passengers.

ENGINE FAIL/FIRE CAUSING REJECTED TAKEOFF

BOOST PUMP	OFF
FUEL TANK SELECTOR	
	OPERATING ENGINE
THROTTLE	IDLE
PROPELLER RPM	FULL RPM DECREASE
MIXTURE	FULL LEAN

If fire exists, accomplish PASSENGER EVACUATION.

BOOST PUMPS	OFF
FUEL TANK SELECTOR	OFF
THROTTLES	IDLE
MIXTURES	FULL LEAN
BATTERY MASTER	OFF

ENGINE FEATHER DRILL

THROTTLE	IDLE
PROPELLER RPM	FULL RPM DECREASE
MIXTURE	FULL LEAN

EMERGENCY DESCENT

THROTTLES	CLOSED
SPEED	130 KTS
GEAR SELECTOR	DOWN

Appendix 3—Standard Calls

RADIO NAVIGATION SETTINGS

ADF:

"NUMBER 1 ADF IDENTIFIED ON _____ (NDB identifier), ON ADF."

VOR:

"NUMBER 2 VOR IDENTIFIED ON _____ (VOR identifier), TRACK SET _____ (degrees)."

ILS:

"NUMBER 1 VOR IDENTIFIED ON ILS _____ (runway number), TRACK SET _____ (final approach course)."

EMERGENCY REVIEW

The Rejected Takeoff Briefing (RTO) will be completed on first flight of day. Engine Fire/Fail Briefing (see PREFLIGHT, p.9) will be conducted by the Captain on odd number flights, and by the First Officer on even number flights, only done on first flight of day.

ALTITUDE CLEARANCES AND DEVIATIONS

Pilot-flying	Pilot-not-flying
CLEARANCES:	
"LEAVING _____ (current altitude) FOR _____ (cleared altitude)."	"ROGER."
"Set and arm _____ (cleared altitude)."	"_____ (cleared altitude) set and armed."
DEVIATIONS:	
Acknowledge altitude deviation calls by responding "ROGER."	Alert the PF as to any significant deviation in altitude, use the phrase "ALTITUDE."

AUTOPILOT AND ALTITUDE PRE-SELECT OPERATIONS

Pilot-flying	Pilot-not-flying
ENGAGEMENT: "AUTOPILOT ON."	"ROGER."
DISENGAGEMENT: "AUTOPILOT OFF."	"ROGER."

APPROACH (GENERAL)	
Pilot-flying	**Pilot-not-flying**
Acknowledge/Alert the PNF to the initial movement and capture of Localizer/Glideslope indications, using the phrases "ALIVE" and "CAPTURE." Acknowledge deviation calls by responding "ROGER."	Acknowledge/Alert the PF to the initial movement and capture of Localizer/Glideslope indications, using the phrases "ALIVE" and "CAPTURE." Alert the PF as to any significant flight or navigation deviations, using the phrases "GLIDESLOPE," "LOCALIZER", or "AIRSPEED."

FINAL APPROACH FIX (FAF)	
Pilot-flying	**Pilot-not-flying**
Upon passage, call "_____ (name of FAF)" or "FINAL APPROACH FIX" if the FAF is not named.	Respond "_____ (charted altitude of FAF)."

100' ABOVE DECISION HEIGHT	
Pilot-flying	**Pilot-not-flying**
Respond "ROGER."	Call "100 FEET ABOVE."

DECISION HEIGHT	
Pilot-flying	**Pilot-not-flying**
Respond "LANDING" or "GO-AROUND."	"MINIMUM, NO CONTACT"; or "MINIMUM, LIGHTS ONLY"; or "MINIMUM, RUNWAY IN SIGHT".

PILOT INCAPACITATION

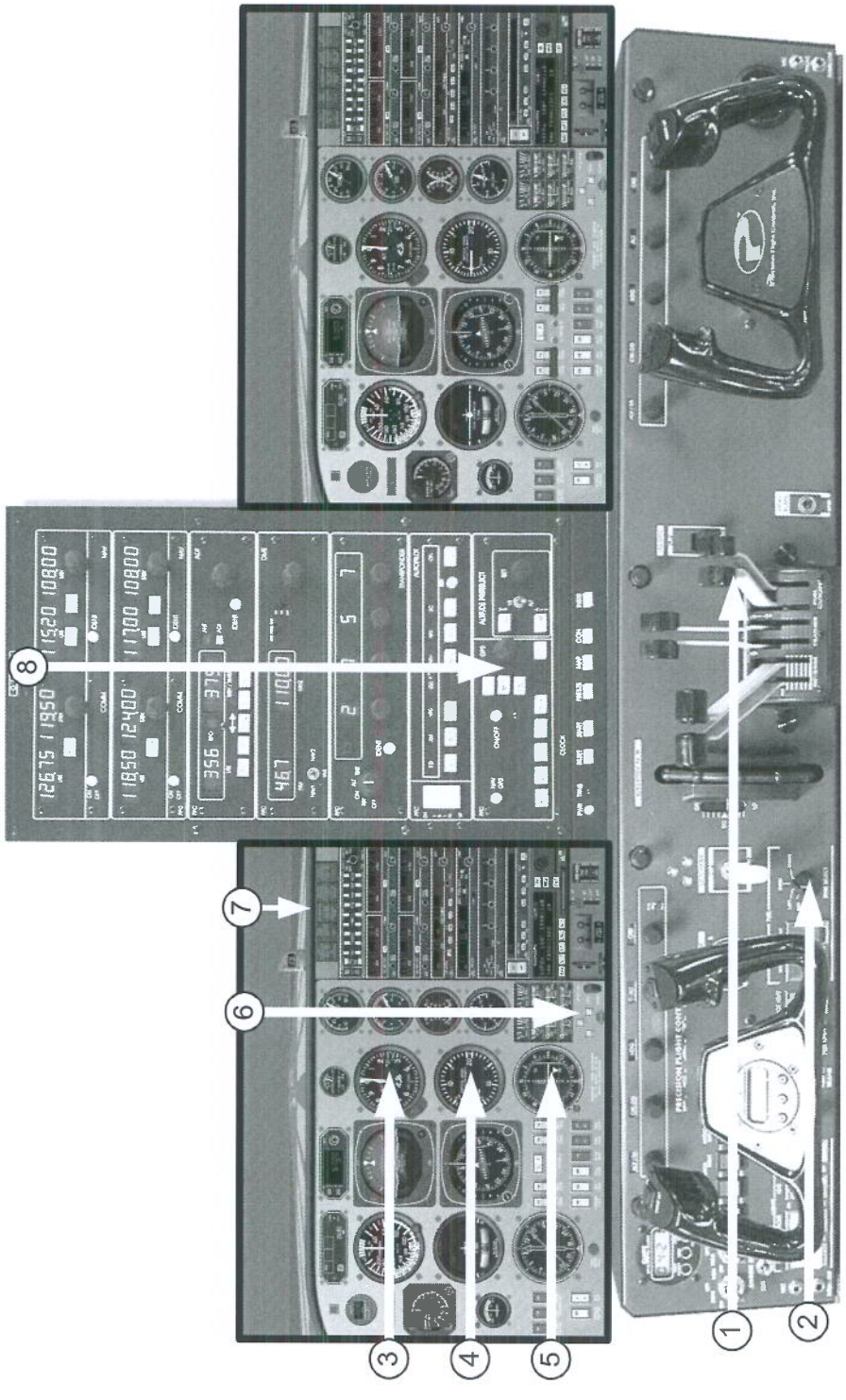
The possibility of pilot incapacitation exists when:

1. The PF does not respond intelligently to two communications; or
2. the PF does not respond to a single verbal challenge when a significant deviation from the standard or normal flight profile occurs.

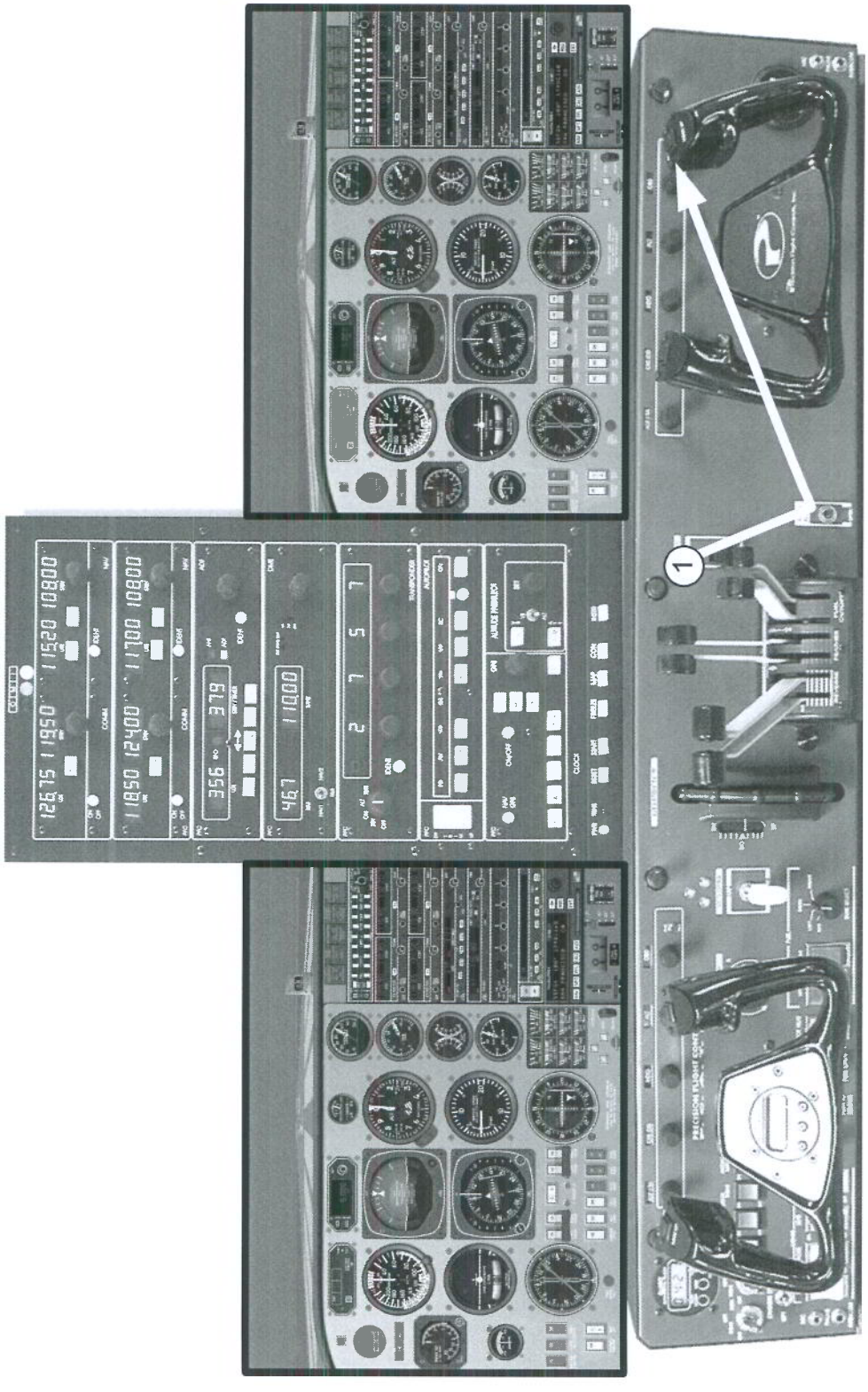
If the PF is incapacitated, or persists in deviating significantly from the standard flight profile, the PNF will:

1. State "I HAVE CONTROL" and simultaneously control the aircraft to ensure that a safe flight profile is maintained.
2. Restrain the incapacitated pilot from interfering with the normal operation of the aircraft.
3. If practical, remove the incapacitated pilot from the seat.

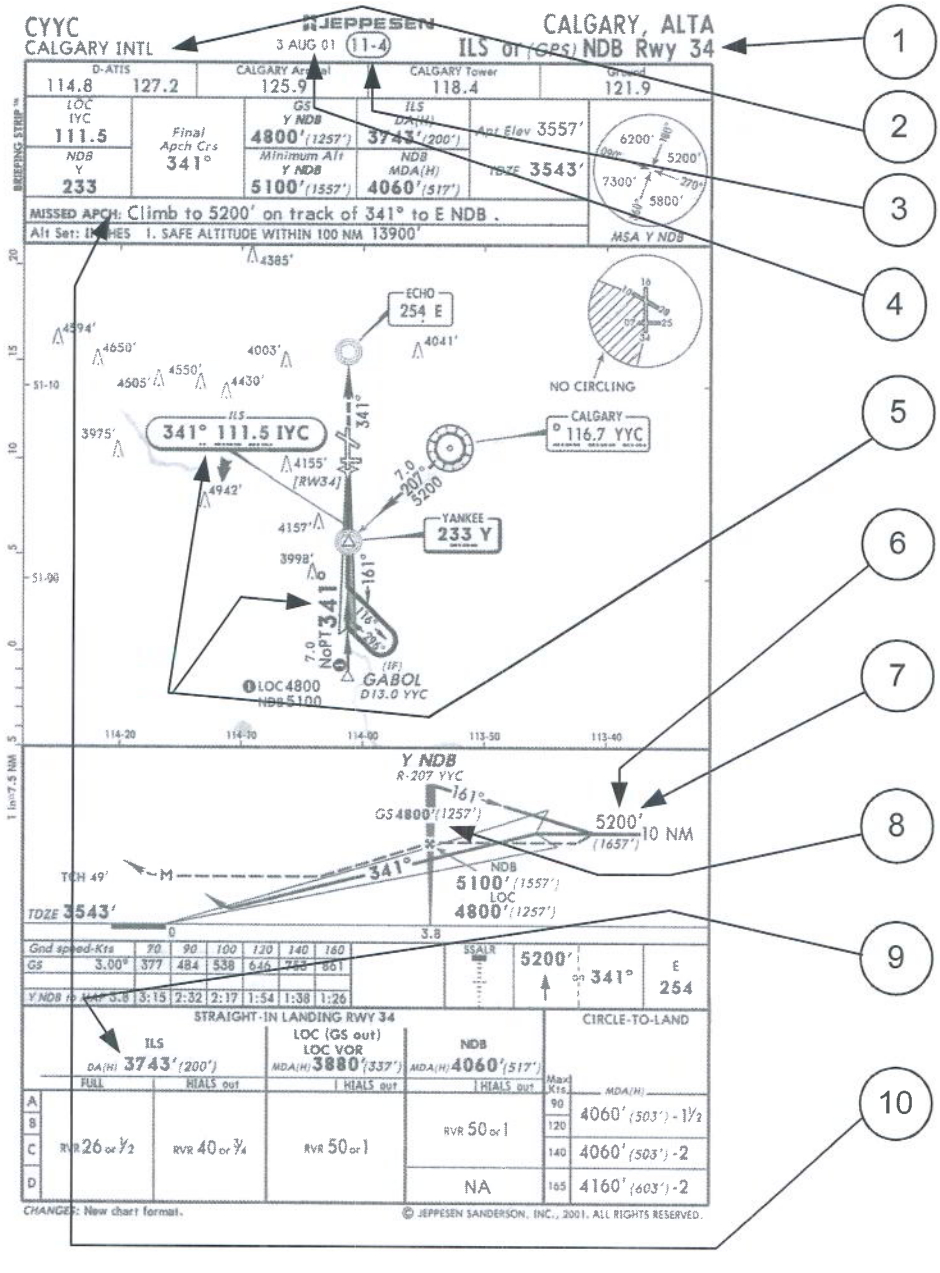
Appendix 4—Captain's Geographic Scan



Appendix 5—First Officer's Geographic Scan



Appendix 6—Standard Approach Plate Briefing

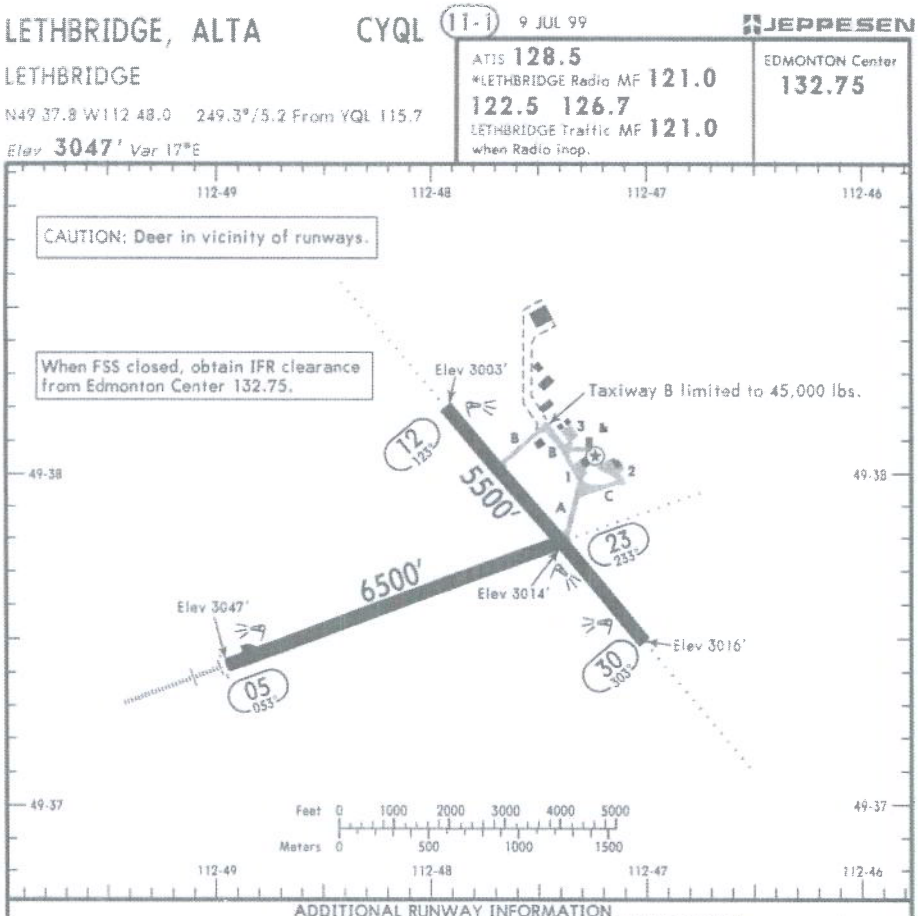


1. Approach and Runway Number
2. Airport Name
3. Chart Page Number
4. Chart Date/Effective Date
5. Final Approach Course, ILS Frequency and Identifier
6. Procedure Turn Altitude
7. Final Approach Altitude to FAF
8. Glideslope Altitude at FAF
9. Decision Height Altitude
10. Missed Approach Altitude and Track

Sample Briefing:

"ILS Runway 34. Calgary International, Page 11-4, Dated 3 August 01. 341°, 111.5 IYC. 5200. 5200. Yankee at 4800. ILS minimum 3743. Call me 100 above and Minimum. I will reply with 'Landing' or 'Go-around.' In the event of a Go-around, I will climb to 5200 on track of 341° to Echo NDB. Alternate is Lethbridge."

Appendix 7—Airport Approach Plates and Map



ADDITIONAL RUNWAY INFORMATION

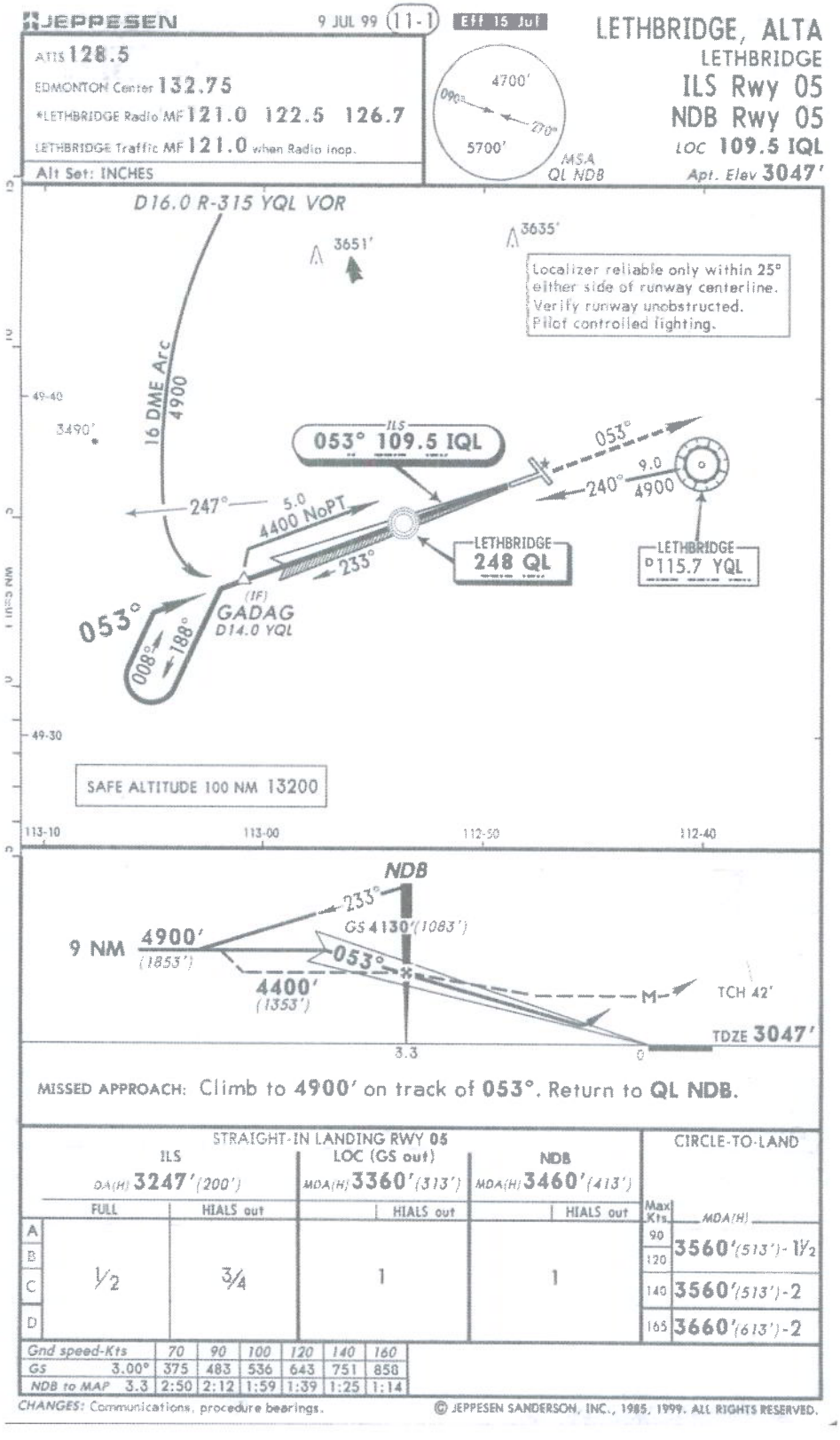
RWY		USABLE LENGTHS — LANDING BEYOND — Threshold	Glide Slope	TAKE-OFF	WIDTH
05	❶ HIRL ❶ HIALS		5600'		200'
23	❶ HIRL ❶❷ ALS-(yellow) ❶❸ PAPI-L				
12	❶ MIRL ❶ ALS-(yellow)				200'
30					

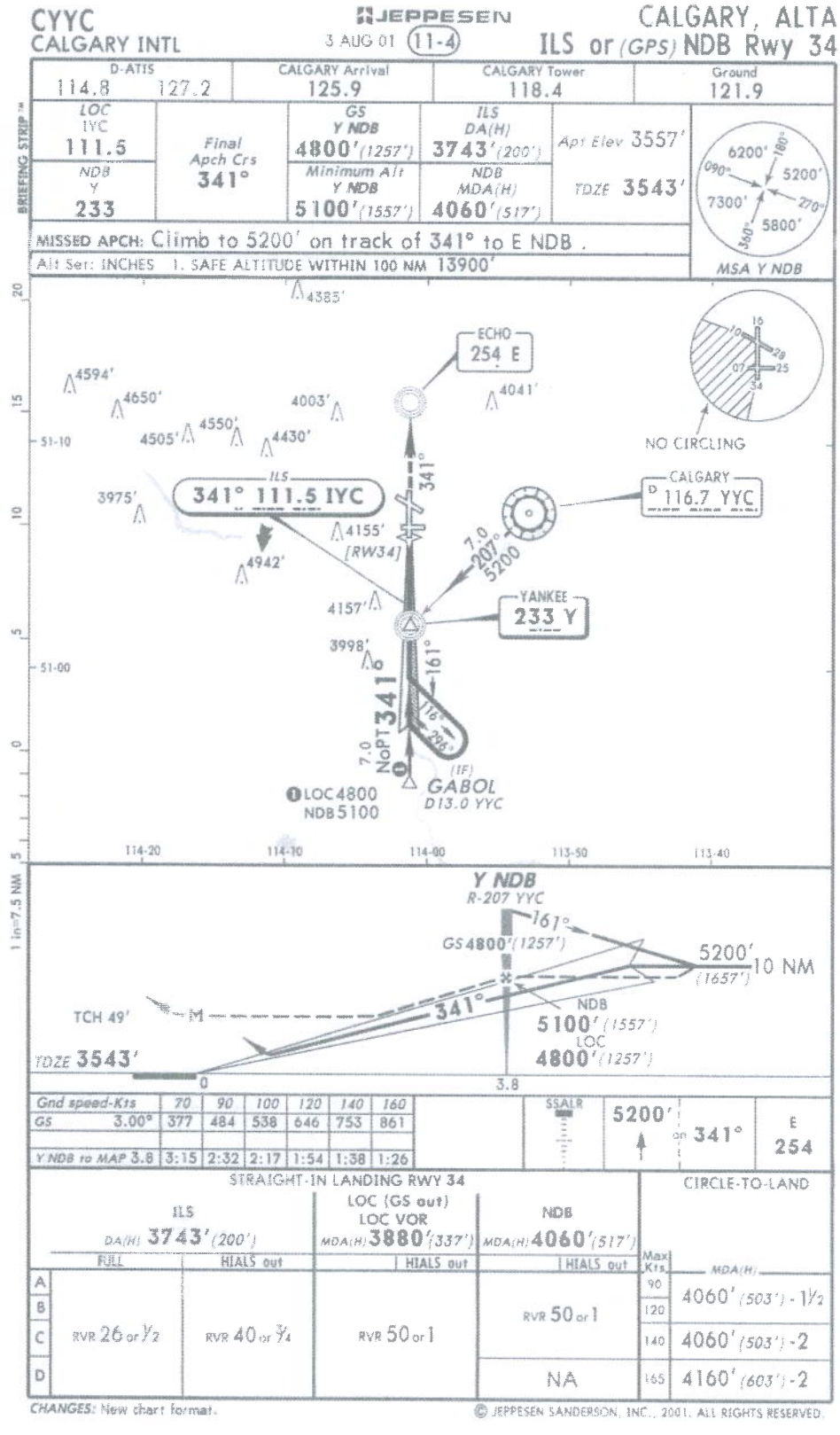
❶ Activate on 121.0.
❷ Non-std 2800'.
❸ For aircraft with eye-to-wheel height up to 25'. Angle 3.0°.

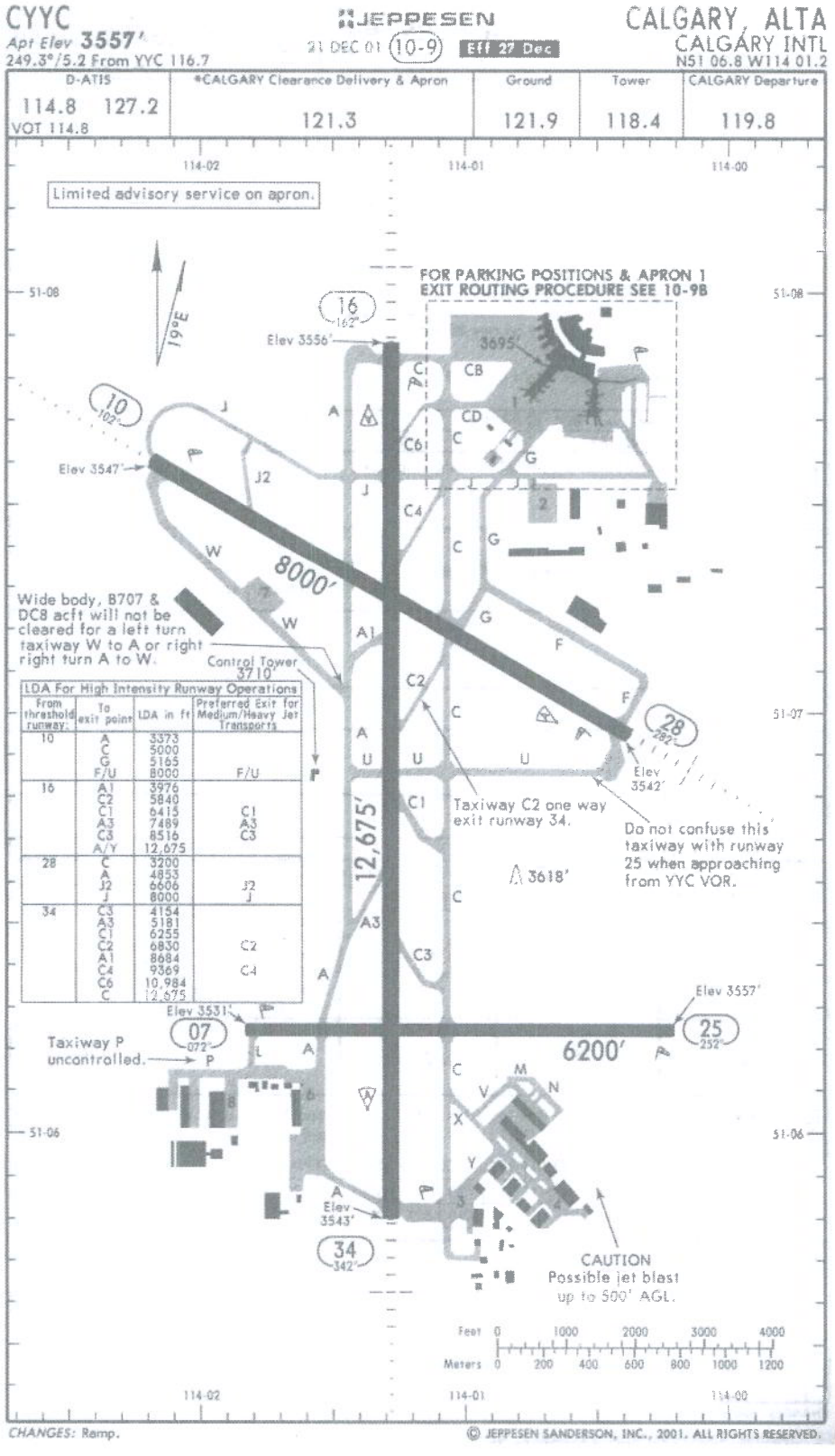
	❶❷ TAKE-OFF
	All Rwys
A	1/2
B	
C	
D	

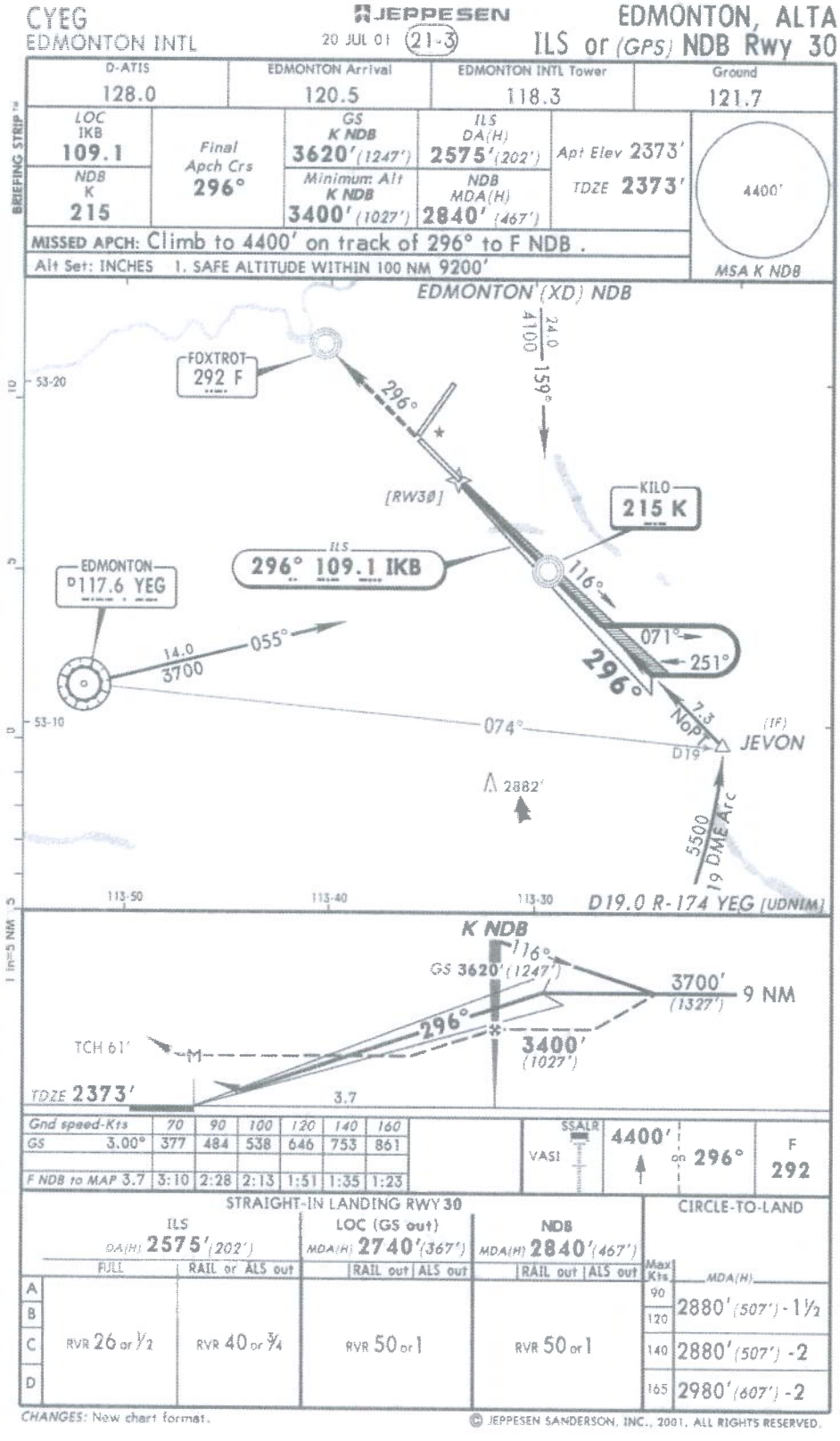
❶ CDN, CRA, MPH authorized: 1/4.
❷ NWA authorized: runways 05, 23 RVR 16 or 1/4.

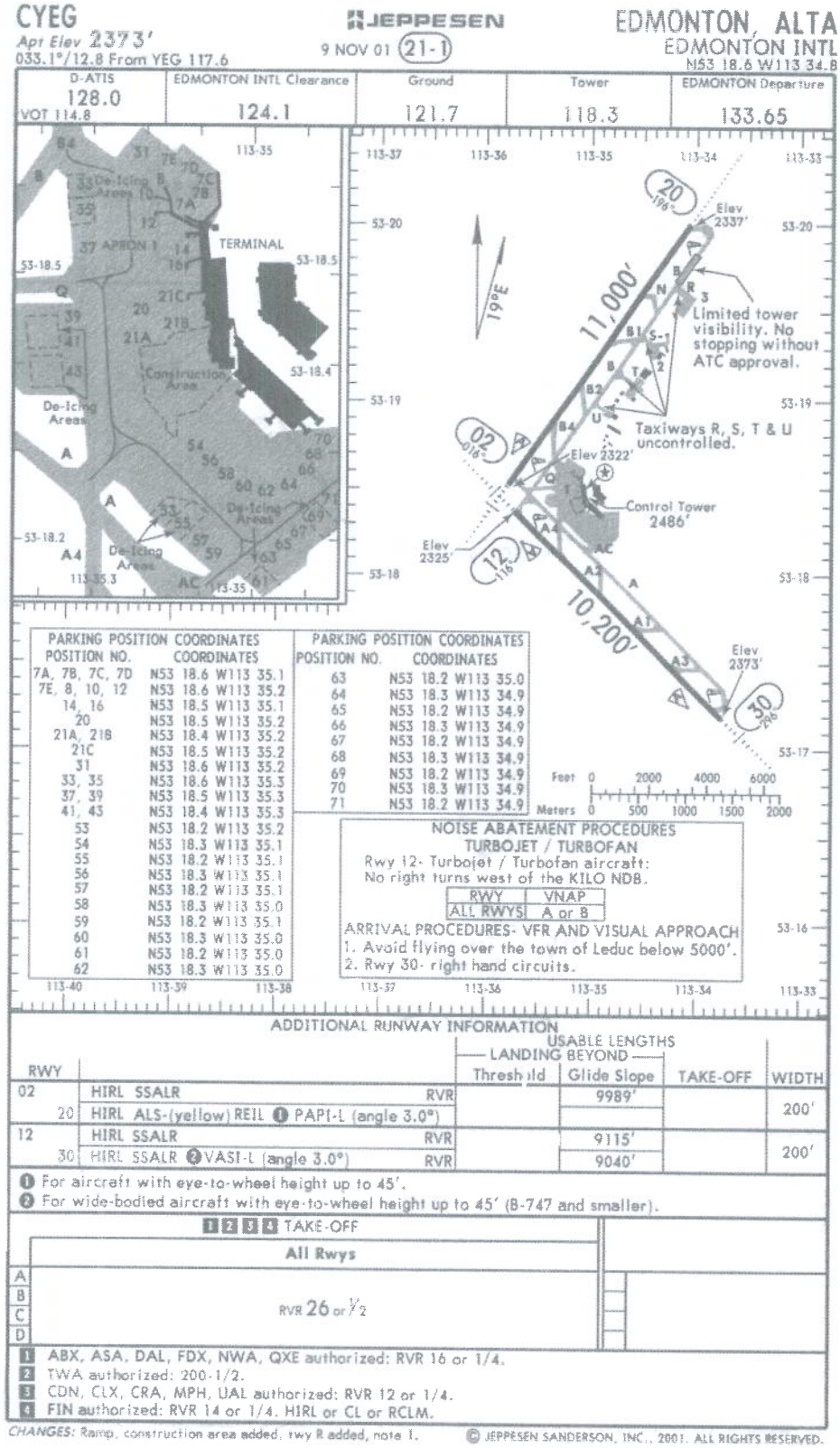
CHANGES: Communications.

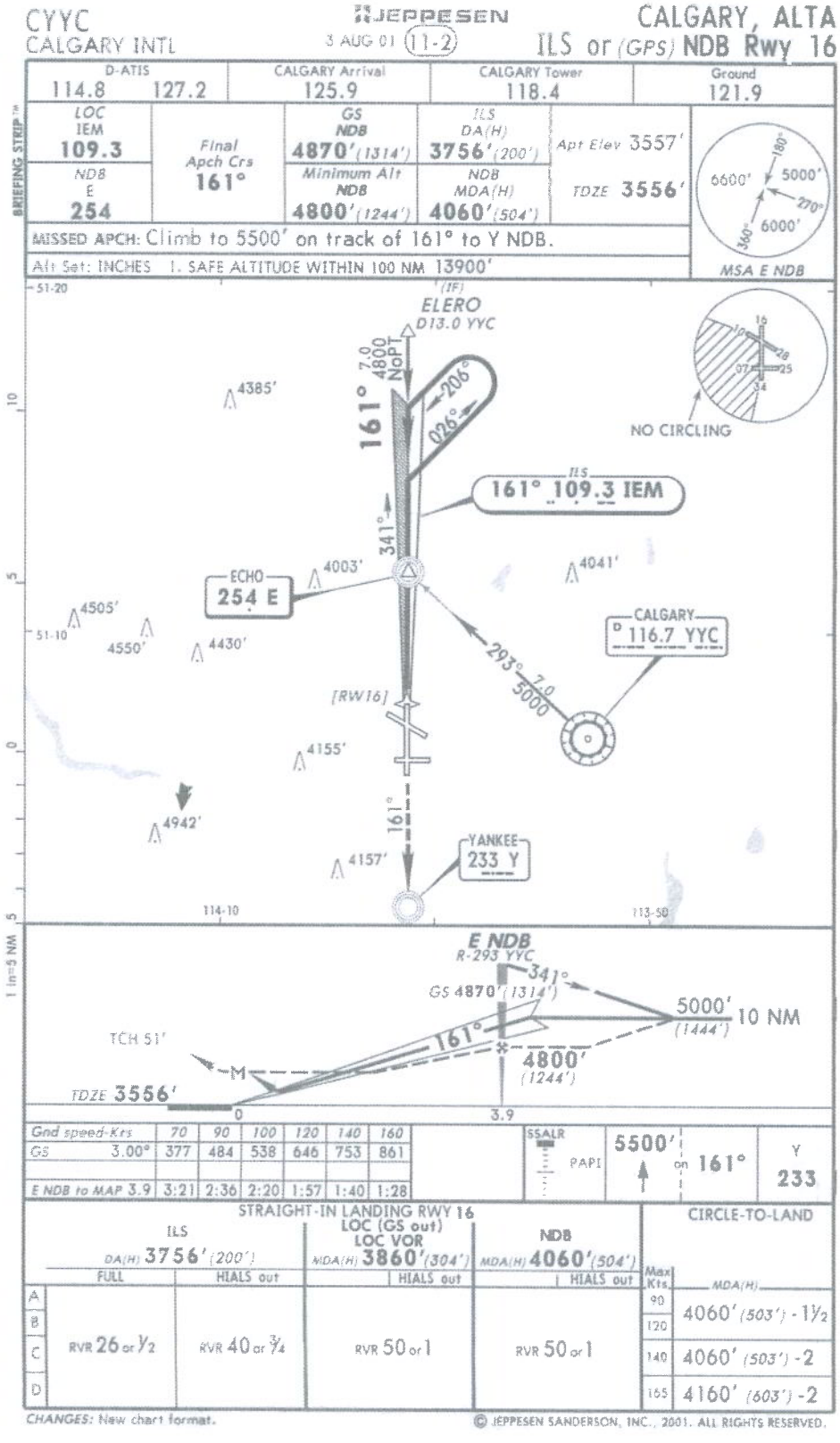




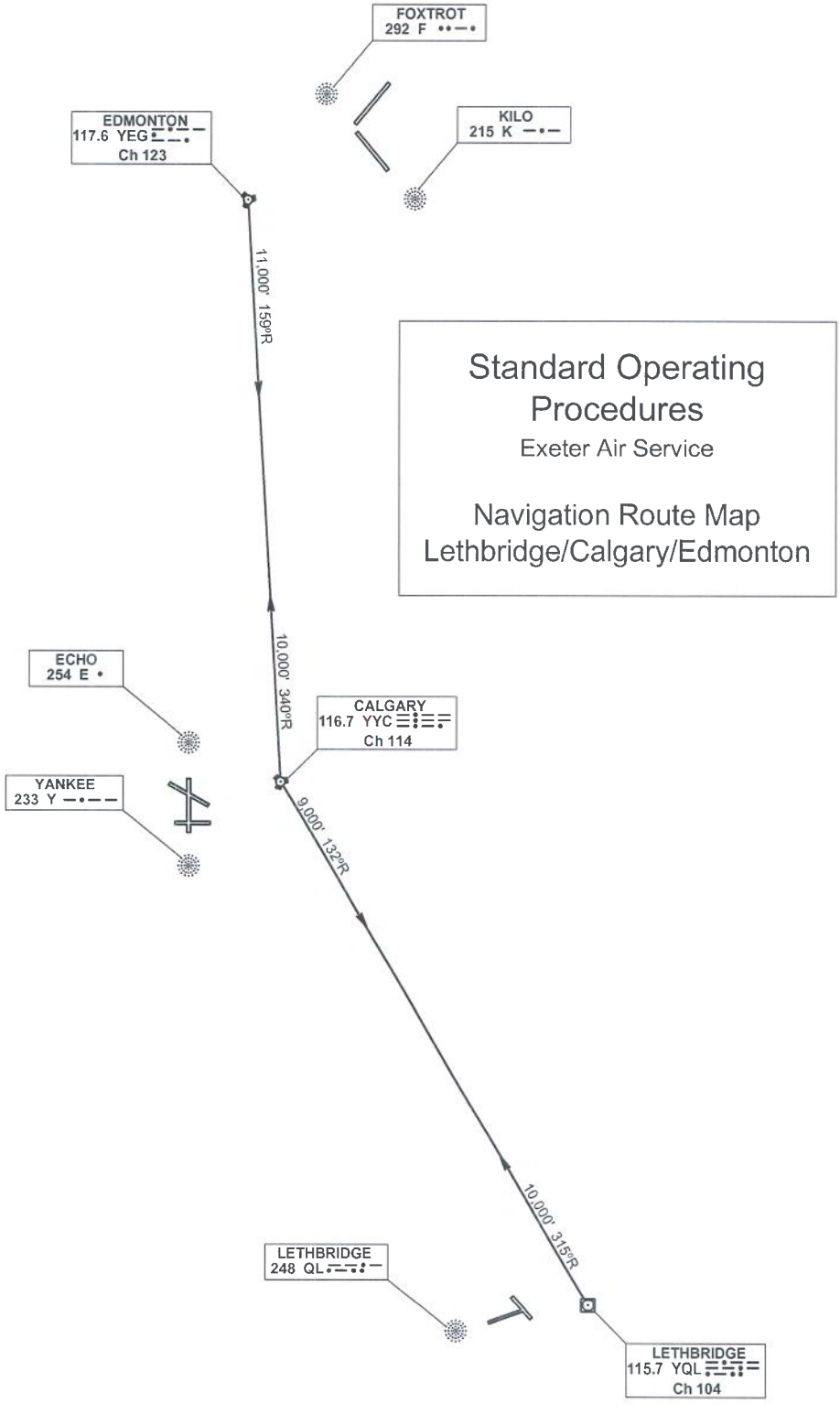








Appendix 8—Navigation Route Map



Appendix 9—Takeoff and Landing Data Sheet

EXETER AIR SERVICES

FLAP 10 TAKEOFF DATA SHEET

DATE:

EXETER FLT #:

V_1: 75

V_R: 80

V_2: 92

ATIS:

EXETER AIR SERVICES

LANDING DATA SHEET

DATE:

EXETER FLT #:

V_{REF}:

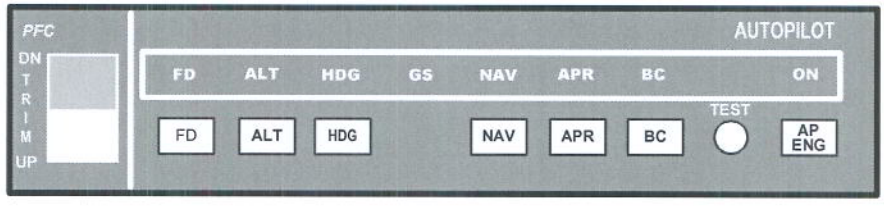
FLAP:

ATIS:

Appendix 10—Autopilot Operation

The KFC 150 Autopilot is a two-axis automatic pilot that provides pitch and roll stabilization as well as response to automatic modes selected. Autopilot use is encouraged by the company to allow the pilots to concentrate on overall flight management. **During departure, autopilot use is restricted to above 1000'.** The autopilot will automatically land the aircraft during a coupled ILS approach. During autopilot-assisted landings, the pilot must adjust airspeed using throttle variations.

AUTOPILOT DISPLAY



AUTOPILOT MODES

The autopilot is turned on by pressing the test button. An audible tone will sound, and the illuminations that appear above the mode selector buttons will activate.

FD — FD (flight director) mode engages the display of command bars on the attitude indicator. FD mode may be selected with or without the autopilot engaged. Without the autopilot engaged, the command bars will display the correct placement of the wing bars, depending on the modes that have been simultaneously selected (i.e., HDG, NAV, APR, or ALT). Without the autopilot engaged, the pilot must manually align the wing bars with command bars. With the autopilot engaged, the wing bars will be automatically aligned with the command bars by the autopilot. The use of FD mode is recommended whenever the autopilot is engaged.

HDG — By activating the HDG (heading) mode, the autopilot will maintain the heading that has been selected by the heading bug (displayed on the HSI). **Caution:** ensure the heading bug is aligned with the lubber line of the HSI prior to engagement; failure to do so will result in the aircraft immediately initiating a turn to the heading indicated by the bug position.

AP ENG — Once the autopilot is turned on, the AP ENG (autopilot engage) is the basic mode of operation. Activation of this mode will maintain pitch attitude at time of engagement, and maintain the wings level. Aircraft pitch may be adjusted in this mode using the UP/DN rocker switch that appears on the left side of the display.

NAV — The NAV (navigation) mode enables the autopilot to intercept and track a VOR course selected using the heading bug (interception) and HSI course selector (tracking). To activate course interception and tracking, first adjusts the course SET knob on the HSI to the desired course. Then set the heading bug on the desired intercept heading. Engage HDG mode; then engage NAV mode. The autopilot will maintain the heading selected until course intercepted. When the NAV mode is selected, the NAV light (above the NAV button) will flash to show the mode is armed; upon interception of the track, the NAV light will switch to steady illumination, showing capture of the desired course.

APR

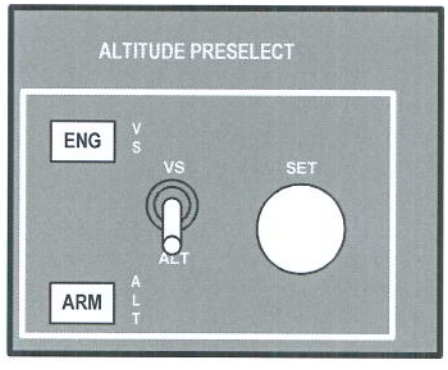
The APR (approach) mode will enable the autopilot to intercept and fly an ILS localizer and glideslope to touchdown. To activate APR mode, first tune and identify the ILS frequency to be used. Then, using the course SET knob for the HSI, set the HSI to the final approach course. After the heading bug is placed on the intercept heading, engage HDG mode. Finally, engage the APR mode, and the autopilot will maintain the selected heading until interception of the final course. The APR light will flash to show the mode is armed; upon intercepting the final approach course, the APR will show steady illumination to confirm capture of the localizer. GS will appear on annunciator at glideslope capture.

ALT

When ALT (altitude) mode is selected, the autopilot will maintain the aircraft in level flight at the altitude indicated at the time the mode is activated. Altitude may be adjusted by using UP/DN switch, and the autopilot will maintain the altitude indicated when the UP/DN switch is released.

ALTITUDE/VERTICAL SPEED SELECTOR

The KAS 297B offers the user the ability to pre-select altitudes and control vertical speeds when the autopilot is engaged. The cockpit control for the Altitude/Vertical Speed Selector has two mode selector buttons, VS ENG and ALT ARM. VS or ALT values are selected using the SET knob, depending on the position of a toggle switch (marked ALT/VS) located to the left of the SET knob. The display for the Altitude/Vertical Speed Selector is located at the top-centre of the instrument panel, just below the glareshield. The display contains five annunciators—VS, ARM, CAPT, FT/MIN and ALERT.



Altitude Pre-select

When the aircraft is in an established climb or descent, the Altitude Pre-select can be activated to command the autopilot to establish level flight at a specified altitude. To pre-select an altitude, first set the toggle switch to ALT, and then use the SET knob to select the desired altitude. Then, press ARM to arm the altitude capture mode; when the pre-selected altitude is armed, the ARM annunciator will appear on the display. Use the VS mode (described below) or pitch altitude hold to guide aircraft to the desired altitude.

Vertical Speed Pre-select

To utilize Vertical Speed (VS) Pre-select, first set the toggle switch to VS. Then use the SET knob to select the desired vertical speed in feet-per-minute. The display will indicate up or down arrows to show whether a climb or a descent has been selected. Once the desired vertical speed is selected, press ENG (engage) button ENG button. When the ENG button is pressed, the VS annunciator will appear on the display. To change vertical speed once engaged, rotate the SET knob to the new vertical speed rate, or adjust the vertical speed rate using the UP/DN rocker switch on the autopilot control, simultaneously monitoring the rate change on the display.

Altitude Alerting A two-second aural alert tone will sound when 1000' from the pre-selected altitude. Also passing the 1000' mark, the ALERT annunciator illuminates, and remains on until the aircraft approaches 300' from the pre-selected altitude. When the 300'-mark is passed, the ALERT annunciator extinguishes. A two-second aural tone will sound again when the selected altitude is reached. A safety aural warning will sound if the aircraft's altitude varies more than 300 feet from the selected level off altitude.

OPERATIONS

Climb To initiate use of the autopilot in an established climb, press TEST button and wait for test completion; then press FD mode and HDG mode. To engage, press AP ENG. Annunciator light will come on to confirm engagement. Aircraft will maintain present climb-pitch attitude and selected heading. To adjust airspeed during the climb, use UP/DN switch to change pitch attitude. Ensure heading bug is under lubber line prior to engaging HDG mode. Use heading select knob to set desired heading.

Course Interception Set heading bug on intercept heading. Ensure VOR course is set on the HSI. Then engage NAV mode.

Levelling Off Set altitude pre-select toggle switch to ALT position. Use knob to set desired level-off altitude. Press ARM button. ARM will appear on annunciator. The use of the UP/DN switch to adjust *airspeed* in the climb is recommended rather than the VS mode due to the danger of the aircraft maintaining a rate of climb in spite of decreasing airspeed. Holding the UP/DN switch will establish a climb rate of 500'/min.

At altitude capture or level off the ALT light will come on steady. Set cruise thrust.

Descent Set altitude pre-select toggle switch to ALT position. Use SET knob to set the desired altitude. Push ARM button and observe ARM annunciator. Set toggle switch to VS position. Set 1000 feet per minute down. Push VS button and observe VS annunciator and *down* arrow. Set throttles at 20" MP and propeller RPM at 2400; the IAS during the descent will be around 140 KTS. Ensure heading bug is under lubber line at all times. Engage HDG mode when being vectored for final approach.

Approach Tune and identify the ILS and set final approach course on the HSI. Engage APR mode when cleared for the approach, checking to ensure a flashing APR armed light appears. Upon capture of the localizer the APR light will remain steady. Upon capture of glideslope, a GS light appears on annunciator. Adjust speed with throttle and fly the SOP profile for the ILS approach. Disengage autopilot at Decision Height for manual landing, and use normal technique to bring aircraft to taxi speed on runway.

Notes When the PF is flying the aircraft using the autopilot he/she will handle the mode changes and the vertical speed selector. The PF will request the PNF to set the Altitude Alert while using the autopilot. When the PF is manually flying the aircraft using the command bars he/she will call the PNF to set required items, such as heading, vertical rates, altitude pre-select, ILS frequencies, and final approach course. The PNF will confirm that he/she has set them as requested.

Appendix 11—PA34 Power Settings

CLIMB POWER	30" and 2500 RPM		
DESCENT POWER	20" and 2400 RPM	140 KTS	
APPROACH	25" and 2500 RPM	120 KTS	FLAP 10
	23" and 2500 RPM	100 KTS	FLAP 25
	18" and FULL INCREASE	85 KTS	FLAPS 40

Appendix 12—Summary of SOP Calls

TAKEOFF CALLS	
Pilot-flying	**Pilot-not-flying**
SET MAX POWER	POWER SET
ROGER	60 KNOTS
	V_1
	ROTATE
	POSITIVE RATE
GEAR UP	GEAR SELECTED UP
	400 FEET
FLAPS UP, SET CLIMB POWER	FLAPS UP, POWER SET
AFTER TAKEOFF CHECKLIST	AFTER TAKEOFF CHECKLIST COMPLETE

APPROACH AND LANDING CALLS	
Pilot-flying	**Pilot-not-flying**
2000 FEET, (altimeter setting)	2000 FEET, (altimeter setting)
LOCALIZER ALIVE	LOCALIZER ALIVE
LOC CAPTURE	LOC CAPTURE
GLIDESLOPE ALIVE	GLIDESLOPE ALIVE
GEAR DOWN, FLAPS 25, BEFORE LANDING CHECKLIST DOWN TO FLAPS	HOLDING AT FLAPS
GLIDESLOPE CAPTURE	GLIDESLOPE CAPTURE
	MISSED APPROACH (altitude) SET
FLAPS 40, COMPLETE THE BEFORE LANDING CHECKLIST	FLAPS?
40	BEFORE LANDING CHECKLIST COMPLETE
BY (fix)	(beacon-crossing altitude)
ROGER	100 ABOVE
	MINMUM, NO CONTACT MINIMUM, LIGHTS ONLY MINIMUM, RUNWAY IN SIGHT
LANDING GO-AROUND	

Appendix 13—Groundschool Outline

SESSION 1 Students are introduced to the concepts of *Standard Operating Procedures*, including the *command structure* and the varied *flying roles* that are applied in multi-crew environment of commuter and airline passenger transport. With the emphasis on developing effective and safe *crew-coordination*, students learn how to interpret and operationalize the company's *Standard Operating Procedures* document and related checklists for *normal operations* during the preflight phases of a commercial flight. The session examines the Configuration Safety check, up to and including the Position for Takeoff checks.

SESSION 2 In this session, students examine the application of *Standard Operating Procedures* during the actual flying phases of a multi-crew flight. Students are introduced to the requirements of crew interaction using standard-calls discipline, and the effective specialized roles of the crewmembers with respect to cockpit briefings, flight performance, navigation, and ATC communication. Overall, this session examines normal *Standard Operating Procedures* for the takeoff, departure, en route, and arrival phases of commercial flight.

SESSION 3 This session examines the application of *Standard Operating Procedures* to non-normal flight conditions. Students learn the requirements for the effective coordinated management of in-flight emergencies, including an engine failure during takeoff (rejected takeoff), engine failures during flight, emergency descents, and passenger evacuation.

SESSION 4 In this session, students complete a written examination on the company's normal and non-normal *Standard Operating Procedures*. This is done to ensure students are properly prepared to progress to the simulator instruction, and serves as a final review of company documents for the purpose of clarification. Students are introduced to the flight features and equipment of the Elite Simulator, including autopilot and HSI operations for flying an ILS approach.

Appendix 14—Simulator Training Flights

		STUDENT PAIRING	
FLIGHT SEQUENCE		**STUDENT (A)**	**STUDENT (B)**
FLIGHT 1			
Routing:	Lethbridge (YQL) to Calgary (YYC)		
Description:	Depart Runway 05 at Lethbridge Airport and climb runway heading to 10000 feet. Expect radar vectors to intercept the on course to Calgary Airport, intercepting the 315° Radial outbound from the Lethbridge VOR. Arriving in Calgary Airport, expect radar vectors to intercept the final approach course on the ILS for Runway 34. Flaps 40 will be used for the full-stop landing.	Captain Pilot-flying	First Officer Pilot-not-Flying

FLIGHT 2		**STUDENT (A)**	**STUDENT (B)**
Routing:	Calgary (YYC) to Edmonton (YEG)		
Description:	Depart Runway 34 at CYYC and climb runway heading to 10000 feet. Expect radar vectors to intercept the on course to Edmonton Airport, intercepting the 340° Radial outbound from the Calgary VOR. Expect radar vectors to intercept final approach course for the ILS Runway 30 at Edmonton Airport. Flaps 40 will be used for the full-stop landing.	First Officer Pilot-not-flying	Captain Pilot-flying

FLIGHT 3		STUDENT (A)	STUDENT (B)
Routing:	Edmonton (YEG) to Calgary (YYC)	Captain Pilot-flying	First Officer Pilot-not-flying
Description:	Rejected Takeoff during the departure from Runway 12 at Edmonton Airport, caused by a left-engine failure before Decision Speed (V_1). A normal departure is then made from Runway 12. Climb runway heading to 11000', and expect radar vector to intercept the 159° Radial from the Edmonton VOR (YEG). At Calgary expect radar vectors to intercept the final approach course for the ILS Runway 16. Flaps 25 will be used for a full-stop landing. During the landing roll, and there is an uncontrollable fire in the right engine. The Fire Drill is followed by a Passenger Evacuation.		

FLIGHT 4		STUDENT (A)	STUDENT (B)
Routing:	Calgary (YYC) to Lethbridge (YQL)	First Officer Pilot-not-flying	Captain Pilot-flying
Description:	Rejected Takeoff during the departure from Runway 16 at CYYC. A normal departure is then made from Runway 16 Climb runway heading to 9000', and expect radar vectors to intercept the 132° Radial from the Calgary VOR (YYC). At YQL, expect radar vectors for the ILS Runway 05. Flaps 25 will be used for the full-stop landing. During the landing roll, there is an uncontrollable fire in the right engine, and the Fire Drill is followed by a Passenger Evacuation.		

FLIGHT 5 (Final Evaluation)		STUDENT (A)	STUDENT (B)
Routing:	To be assigned.	To be assigned	To be assigned
Description:	This evaluation flight is based on crewmembers flying a selected sequence of scenarios selected by the Instructor.		

Appendix 15—Evaluation and Study Questions

Determination of Final Grade:

Groundschool Examination	40%
Simulator Training Evaluation	40%
Simulator Final Evaluation	20%

To obtain a *Certification of Completion*, students require a final grade of 60%.

The following are study questions for the Groundschool Examination:

1. What is the purpose of the *Configuration Safety Checklist*?
2. Where is the ATIS recorded?
3. How do you know fuel quantity is sufficient for planned flight?
4. Why is the Low Bus Voltage Light ON during the geographic scan?
5. Why do we set the Altitude pre-select to field elevation?
6. If the First Officer is PF, who selects the flaps up during a rejected takeoff?
7. If the starter-engage light remains on after start what are your actions?
8. When does the First Officer get taxi clearance?
9. What lights, if any, are on for daytime taxi?
10. Where is the Takeoff flap position obtained and crosschecked with?
11. When are the strobe lights turned on?
12. Would the takeoff be rejected for a low vacuum light below V_1?
13. When does the Captain remove his hand from the throttles?
14. What three items happen during departure at 400' AGL?
15. When do you contact departure?
16. Where is the destination ATIS recorded?
17. What are the power settings for descent?

18. Why is the radar altimeter set to 2000'?
19. What is the call made at first positive movement of glideslope?
20. When is the gear selected down during approach?
21. What does the PNF call at the FAF?
22. V_{REF} 40 is ___ KTS?
23. Why is 60 KTS called on the after landing roll?
24. In the event of a go-around who initially advances power levers?
25. Who handles the taxi and landing lights during the taxi-in procedure?