

大和ロータリークラブ(2026/9/8)

小型飛行機の運行

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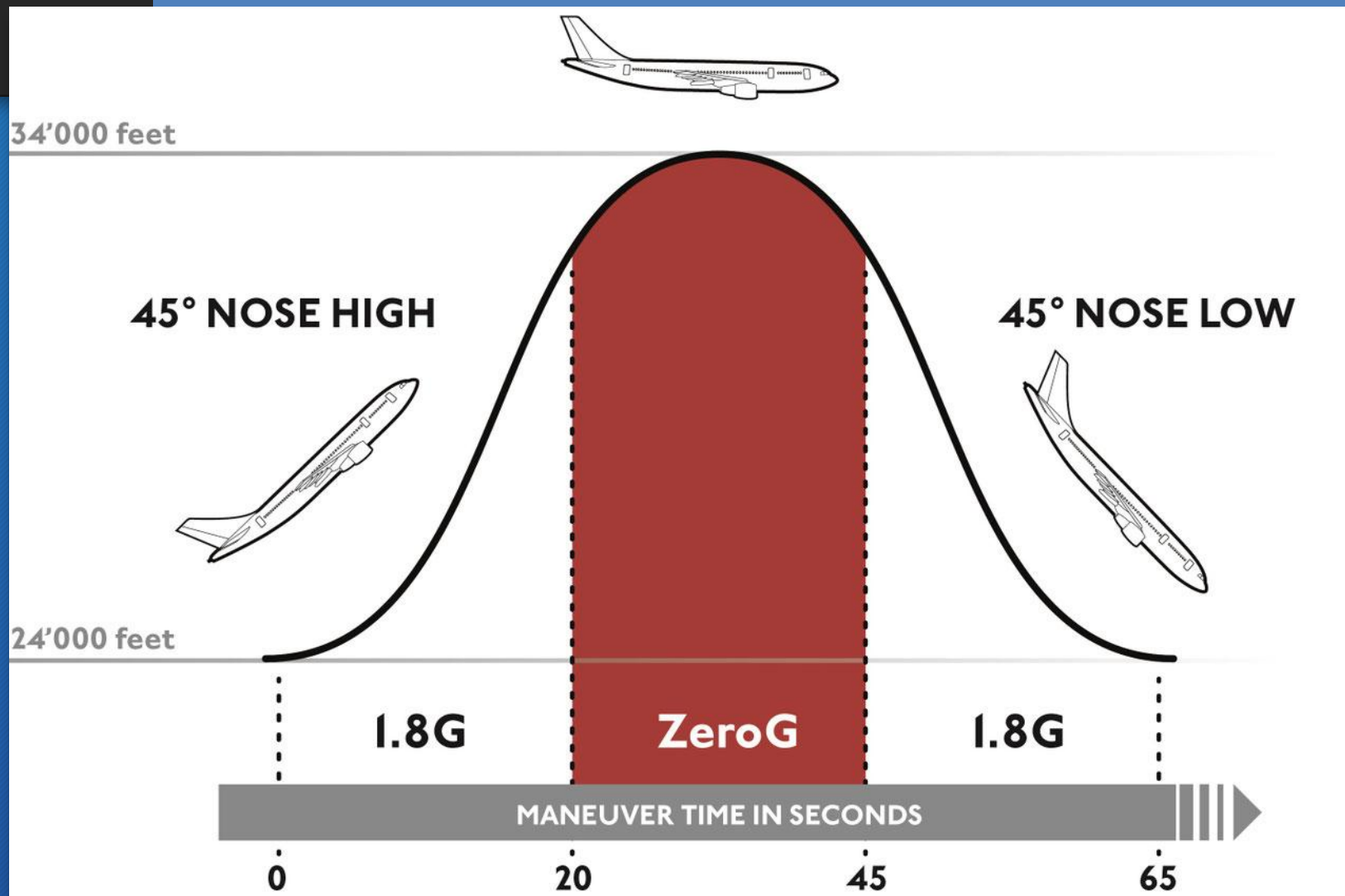


小型飛行機の運行



飛行機の楽しみ

物理現象を体感



飛行機の楽しみ

大きな空港を独り占め



飛行機の楽しみ

自由に飛んで行ける
空からの絶景が広がる



飛行機の楽しみ

雲を間近に迫ったり中に入ったりできる

【天空の城ラピュタ】



飛行機の楽しみ

- 夜の街の明かりは宝石箱のよう
- 空港への着陸は「スターウォーズ」
の世界



飛行機の楽しみ

航空管制システムの利用

航法システムの活用



飛行機の楽しみ

- 調和の取れた準備・飛行・記録
- 体力作りと健康管理
- 頭の体もフル活用で老化防止
- 英語の無線と外国人とコミュニケーション
- Aviator Friends (パイロット仲間)
- 地球との遊び

飛行機の楽しみ

地上から1m浮いたら“宇宙”

- 3次元の自由な世界が待っている
- 美しくて神聖なものが自分中に入ってくる



動画

飛行機の動画



【危機管理】

Engine Failure(エンジン停止)

1. Maintain Best Glide Speed(最良滑空速度維持)
2. Find a Place to Land(不時着場確保)
3. Engine Restart(エンジン再始動)
4. MAYDAY Call(遭難信号): SQ7700、121.5MHz
5. Forced Landing(不時着)

【危機管理】

Lost Communication(無線故障)

1. SQ7600(トランスポンダーコード)

2. Route(飛行ルート)

Assigned(指定)→Vectored(誘導)→Expected(予定)→Filed(計画)

3. Altitude(飛行高度)

以下の中での最高高度(最低計器飛行高度・指定高度・予定高度)

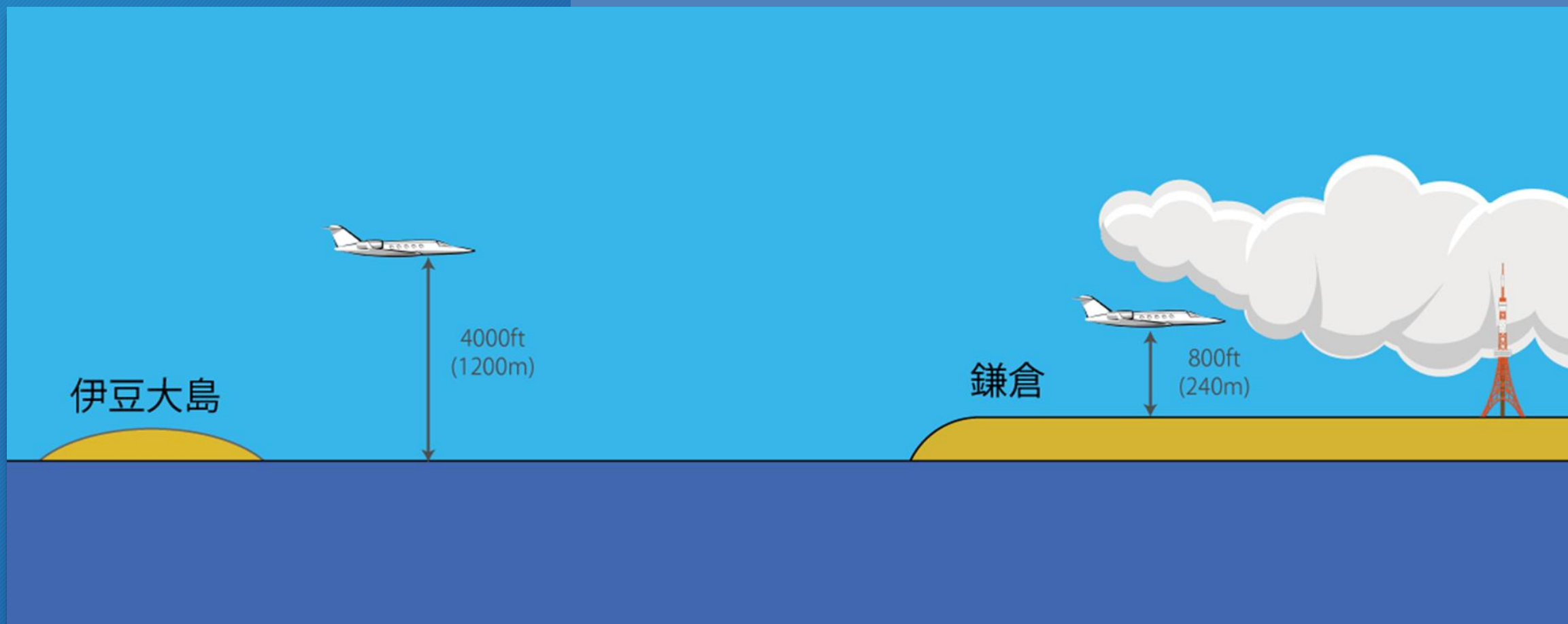
4. Light Gun Signals(信号灯火)

● 着陸許可、● ●(点滅)進入許可、● 上空旋回、● ●(点滅)着陸不可

【危機管理】

鎌倉上空で天候悪化

- ＞雲中で集中豪雨
- ＞レーダー監視拒絶
- ＞横須賀航法設備休止



【危機管理】－教官の言葉(1)－

“Aviation is all about Risk Management”

「飛行機はリスク管理に尽きる」

【危機管理】－教官の言葉(2)－

「死ぬ覚悟を持って飛べ。」

「でも、乗客がいたら絶対に生きて帰って来い。」

チェックリスト1

飛行前点検

C172 Checklist N54829



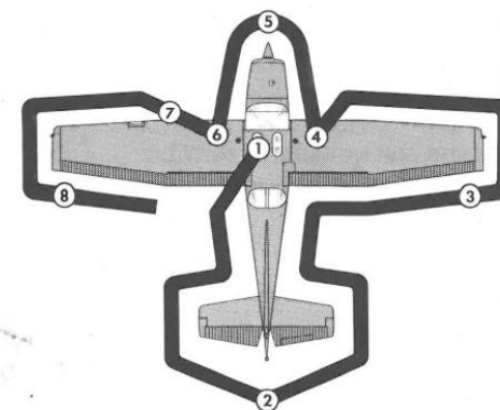
PREFLIGHT	
Weather	Density Altitude
Weight & Balance	Flight Plan
Frequencies & Phone #s	
Papers: AROW (Airworthiness, Registration, Op. Limits, Weight and Balance, Pilot Cert, Current Medical)	
EXTERIOR	
Cockpit:	
Ignition	OFF, Key Removed
Master Switch	ON
Hobbs/Tach	Record
Electrical Switches (Anti-Collision, Nav and Landing Lights, and Pitot Heat)	ON
Flaps	Extended
Walk around and check lights, pitot heat	
Electrical Switches (Anti-Collision, Nav and Landing Lights, and Pitot Heat)	OFF
Master	OFF
Walk around:	
Baggage Door	Check function, closed
EMPENNAGE:	
Horizontal Stabilizer and Elevator	CHECK
Vertical Stabilizer and Rudder	CHECK
Trim Tab	CHECK
Tail Tie Down	Remove
RIGHT WING:	
Flaps and Ailerons	CHECK
Wing Tip	CHECK
Wing Tie-down	DISCONNECT
Fuel Quantity	CHECK VISUALLY
Fuel Tank Sump	CHECK
Main Landing Gear (Tire 28 psi)	CHECK
Air Inlets	CHECK
NOSE:	
Engine Oil Level	Oil 5-7 qts **Do not over tighten cap**
Carburetor Air Inlet	CHECK
Propeller and Spinner	CHECK
Alternator Belt	CHECK

C172 Checklist N54829



Nose Landing Gear (Tire 34 psi)	CHECK
Fuel Strainer	CHECK
LEFT WING:	
Air Inlets	CHECK
Fuel Tank Sump	CHECK
Main Landing Gear (Tire 28 psi)	CHECK
Fuel Tank Vent	CHECK
Stall Warning	CHECK
Wing Tie-down	DISCONNECT
Fuel Quantity	CHECK
Wing Tip	CHECK
Aileron and Flaps	CHECK

BEFORE STARTING ENGINE	
Brakes	Set
Passenger Brief	Complete (SAFETY)
Seat Tracks	Secure
Belts/Harness	Secure
Loose Items	Secure



チェックリスト2

エンジン始動

～エンジン試運転

C172 Checklist N54829



ENGINE START	
Master Switch	ON
Fuel Selector Valve	BOTH
Flaps	RETRACTED
Mixture	Rich
Throttle	Closed
Carb Heat	OFF
Anti-Collision Lights	ON
Circuit Breakers	CHECK IN
Avionics Switch	OFF
Throttle	Pump as needed then open 1/8 inch
Prop Area	CLEAR PROP
Ignition Switch	ON
Throttle	Adjust to 800-1000 RPM, lean for taxi
Oil Pressure	Check GREEN
Ammeter	Check
Avionics Master Switch	ON
Transponder	Standby and VFR

PRE-RUN UP	
Avionics/Radios	On/Set Frequencies
Transponder	ALT
ATIS/AWOS	Listen/Notes
Altimeter	Set
Test and Set:	Brakes, Compass, Altitude, Heading and Turn Indicators, and Inclinator
Landing/Taxi Lights	As Required
Taxi Area	Clear

C172 Checklist N54829



RUN-UP	
Brakes	Set and Hold
Cabin Doors	Closed and Latched
Flight Controls	Free and Correct
Fuel Selector Valve	BOTH, Quantity OK
Elevator Trim	Set for Take Off
Mixture	Rich or as appropriate
Primer	In and Locked
Throttle	1700 RPM
Check:	MAGS – R, B, L, B (Up to 150 RPM drop in either or 50 RPM differential) CARB HEAT Amps/Volts – In Green Oil Pressure and Temp – In GREEN
Throttle	800-1000 RPM
Flight Plan	Set

チェックリスト3

離陸前点検 ～着陸時点検

C172 Checklist N54829



BEFORE TAKE OFF	
Radio Frequency	CHECK
Fuel Selector Valve	BOTH
Mixture	Full Rich
Lights	As required
Take Off and Abort Plan	Complete
Traffic	Check

FLIGHT	
NORMAL TAKE OFF	
Flaps and Trim	0° - 10° and take off
Elevator	Rotate at 55 KIAS
Normal Climb Out Vy	76 KIAS
Flaps	Retract slowly at safe altitude

SHORT FIELD TAKE OFF	
Flaps	10°
Elevator	Rotate at 55 KIAS
Initial Climb Speed Vx	60 KIAS until clear 50' obstacle
Climb Speed Vy	76 KIAS
Flaps	Retract slowly at safe altitude

SOFT FIELD TAKE OFF	
Flaps	10°
Elevator	Rotate at a controllable airspeed
Initial Climb Speed Vx	60 KIAS until clear 50' obstacle
Climb Speed Vy	76 KIAS
Flaps	Retract slowly at safe altitude

CLIMB	
Airspeed	75-85 KIAS
Throttle	Full Open
Mixture	Rich
Engine Instruments	Check
Landing/Taxi Lights	As required

C172 Checklist N54829



CRUISE	
Throttle	As needed (75% power)
Mixture	Lean
Elevator Trim	Adjust as needed
Engine and Flight Instruments	Check
Heading Indicator	Adjust to Compass

DESCENT	
Mixture	Adjust as needed
CARB Heat	As Required
Pitot Heat	As Required
ATIS/AWOS	Listen
Altimeter	Set
Landing/Taxi Lights	As Required

LANDING CHECKLIST	
Fuel Selector Valve	BOTH
Flaps	As needed
Mixture	RICH
CARB Heat	ON
Oil	Pressure and Temp OK
Hatches and Harnesses	Secure and Tightened
Landing/Taxi Lights	ON

LANDING	
Extend Flaps	As Required
Normal	65 KIAS
Short Field	60 KIAS
Soft Field	60 KIAS
Brakes	As Required

GO AROUND	
Throttle	Full OPEN
CARB Heat	OFF
Airspeed	60 KIAS
Flaps	Retract Slowly

チェックリスト4

着陸後点検

～エンジン停止点検

【非常事態手順】

C172 Checklist N54829



AFTER LANDING	
Radio Frequency	CHECK
Flaps	RETRACTED
CARB Heat	OFF
Landing/Taxi Lights	As Required
Trim	Set for Take Off

SHUT DOWN	
Hobbs/Tach	Record
Avionics/Electrical Switches	OFF
Mixture	Idle Cut Off
Master Switch	OFF
Ignition Switch	OFF, Key Out
Fuel Selector Valve	RIGHT tank
Secure	Chocks/Tie Downs Hangar Door Closed and Locked

C172 Checklist N54829



EMERGENCY PROCEDURES	
Best Glide 65 KIAS	Radios 121.5 Squawk 7700
ENGINE FAILURE DURING FLIGHT (Restart Procedures)	
Airspeed Vg	65 KIAS
Fuel Selector Valve	BOTH or Fullest Tank
Mixture	RICH
Carb Heat	ON
Ignition	BOTH (or START if prop is stopped)
Primer	IN and LOCKED

EMERGENCY LANDING WITHOUT ENGINE POWER	
Airspeed Vg	65 KIAS (Flaps Up) 60 KIAS (Flaps Down)
Fuel Selector Valve	OFF
Mixture	IDLE Cut-Off
Carb Heat	OFF
Ignition	OFF, key out
Once Landing Assured	
Flaps	As Required
Master Switch	OFF
Doors	Unlatched

ENGINE FIRE DURING START	
Starter	Keep Cranking
Mixture	IDLE CUT-OFF
Throttle	FULL OPEN
Fuel Selector	OFF

FIRE DURING FLIGHT	
Electrical (Smoke in Cabin)	
Master Switch	OFF
Vents	OPEN
Cabin Heat	OFF
Engine Fire	
Fuel Selector	OFF
Mixture	IDLE CUT-OFF
Throttle	CLOSED
Emergency Decent	Airspeed 100+ KIAS UNTIL FIRE IS OUT
DO NOT ATTEMPT RESTART	

計器パネル

姿勢計を中心に他計器を常にモニター

電子化により計器の数が半減



計器パネル(電子化)



飛行経路

ペインフィールド(PAE)

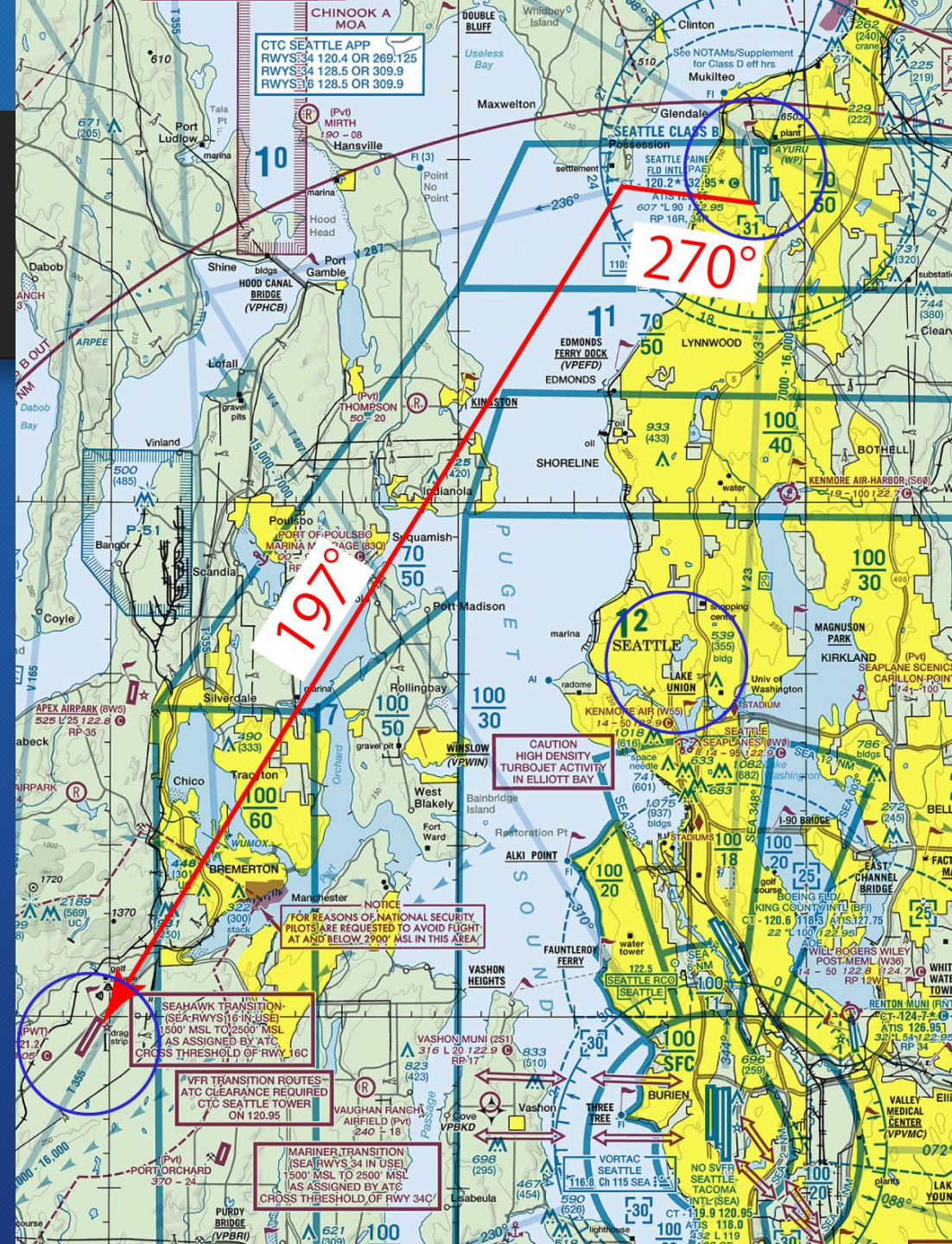
→ブレマートン(PWT)

距離: 32NM(60km)

飛行速度: 100kts(182km/h)

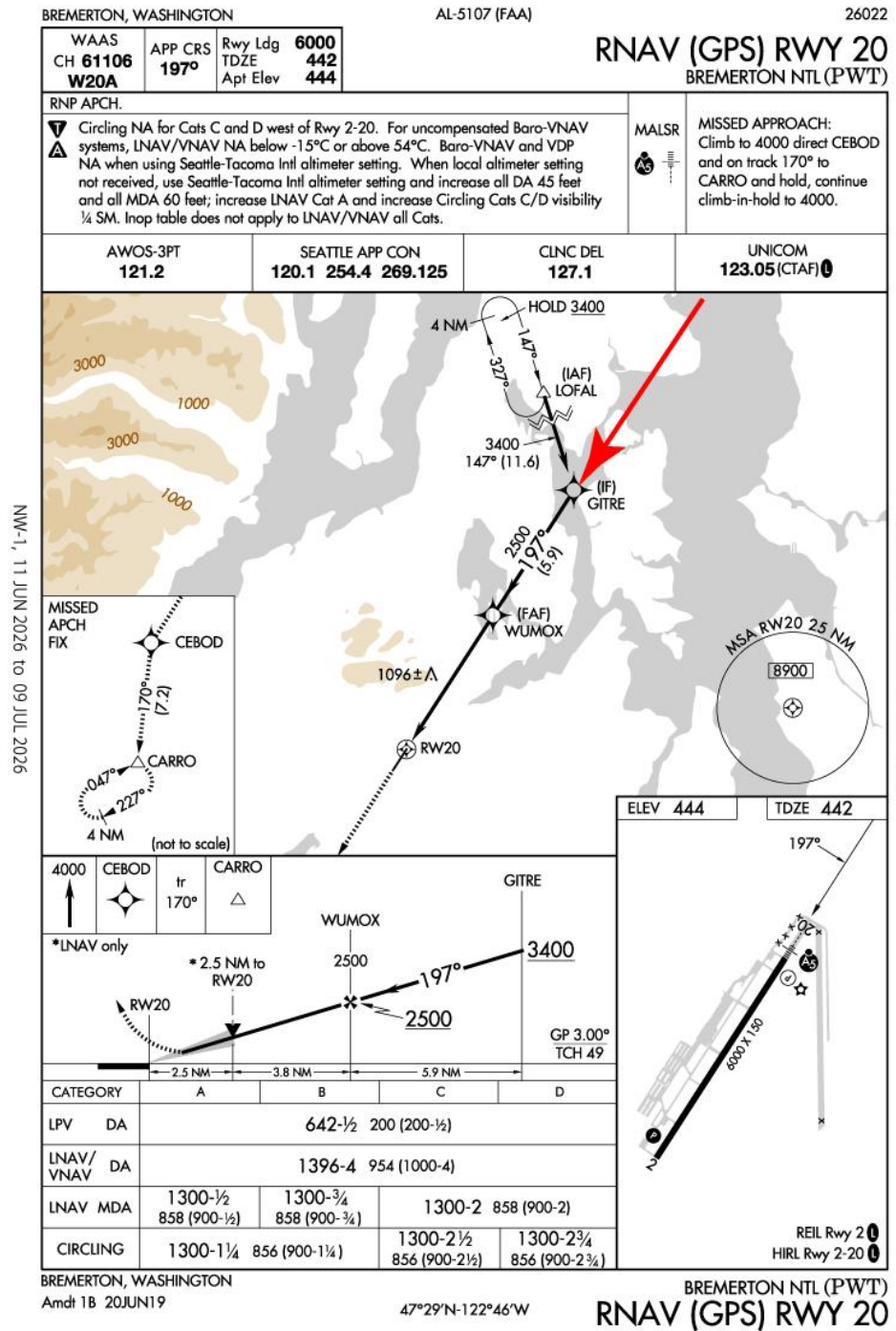
飛行高度: 3000ft(900m)

飛行時間: 20分



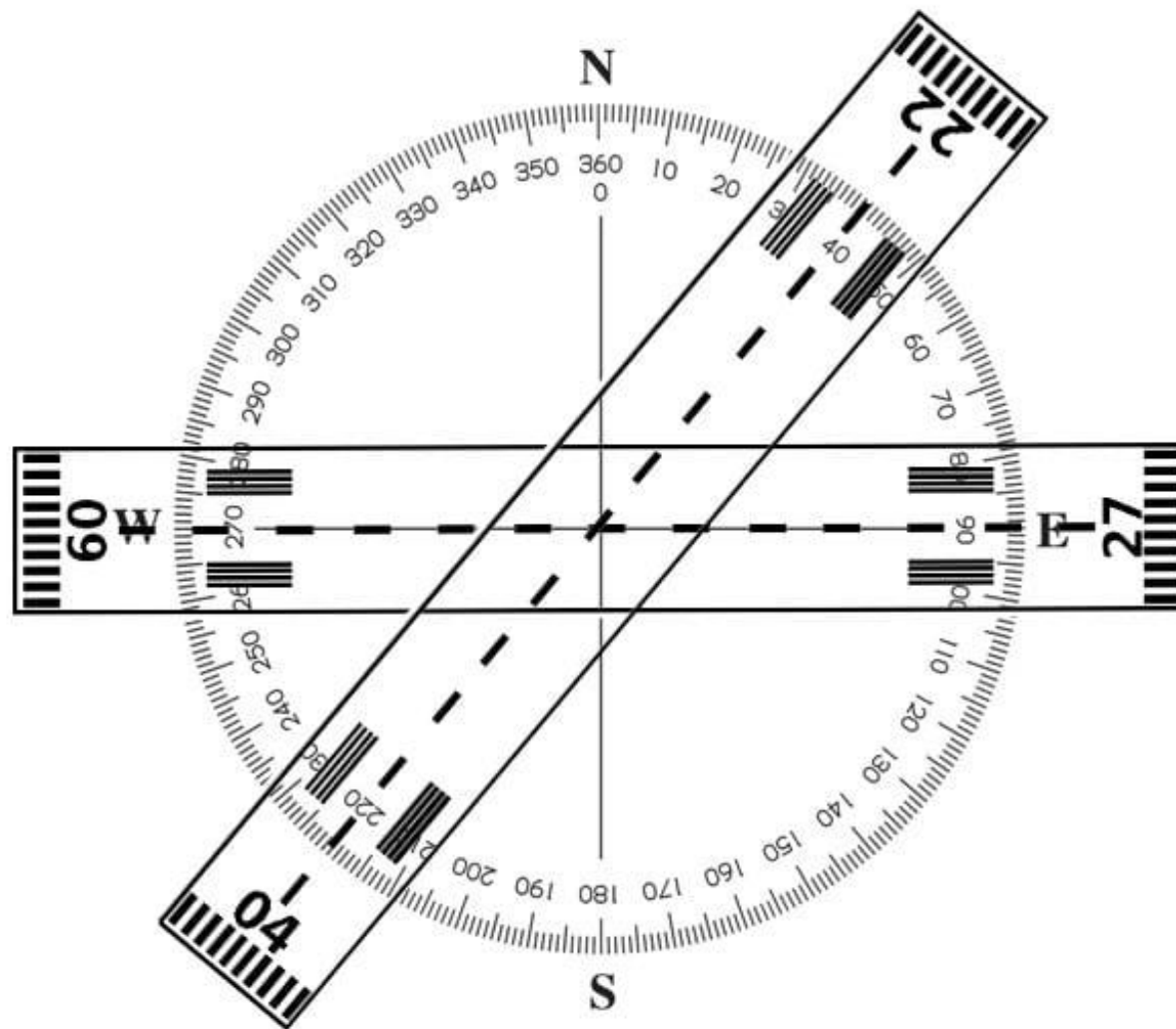
計器飛行(IFR)

- Radar Vector
- →ブレマートン(PWT)、RNAV(GPS) RWY20
- ファイナルコース: 197°
- 空港高度: 444ft
- アプローチ: Seattle APP 120.1Mhz
- タワー: UNICOM 123.05Mhz
- 決定高度: DA 642ft
- 着陸再履行: 4000ft/CEBOD/TR170° /CARRO/HLD



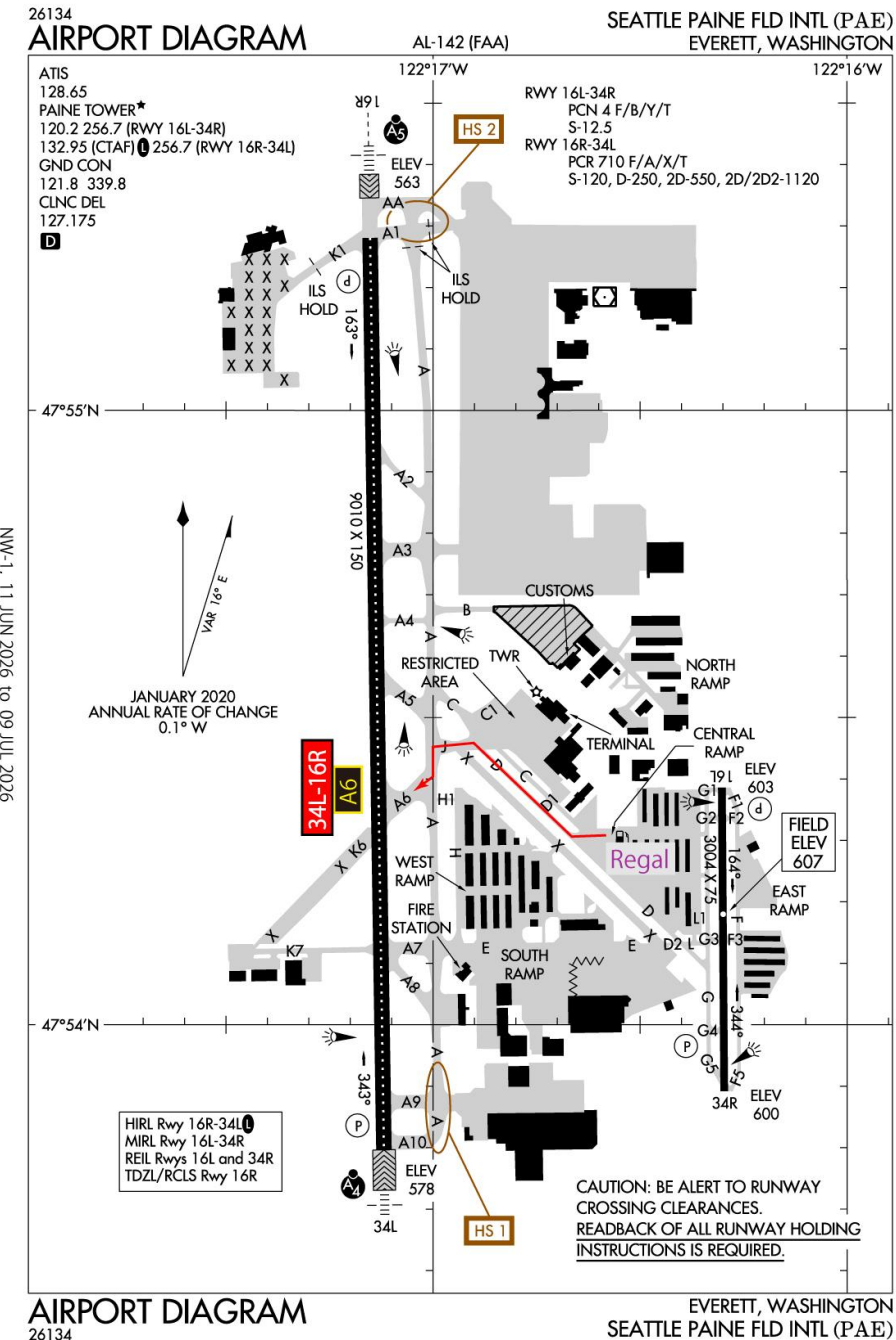
滑走路番号

磁方位に向かっている
(Magnetic Heading)



空港案内図

- ペインフィールド (PAE)
- Frequencies (周波数)
- Runway Number (滑走路番号)
- Taxiway (誘導路)
- Airport Facilities (空港施設)
- 他



滑走路(Runway)



滑走路標識



航空無線 (Air Traffic Control)

地上滑走 (Ground Control)

Pilot: Pain Ground Cessna 61677 at Regal
Ready to Taxi Westbound Departure with A

Ground: Cessna 61677 Pain Ground
Taxi to RWY16R at A6 via D, J, A

Pilot: Taxi to 16R at A6 via D, J, A



航空無線 (Air Traffic Control)

離着陸 (Tower Control)

Pilot: Pain Tower Cessna 61677
Ready for Departure 16R at A6 Westbound Departure

Tower: Cessna 61677 Pain Tower **Cleared for Takeoff**
RWY16R at A6 Westbound Departure Approved

Pilot: **Cleared for Takeoff** 16R at A6
Westbound Departure Approved 677

Tower: Cessna 67677 Pain Tower
Frequency Change Approved

Pilot: Frequency Change Approved Good Day

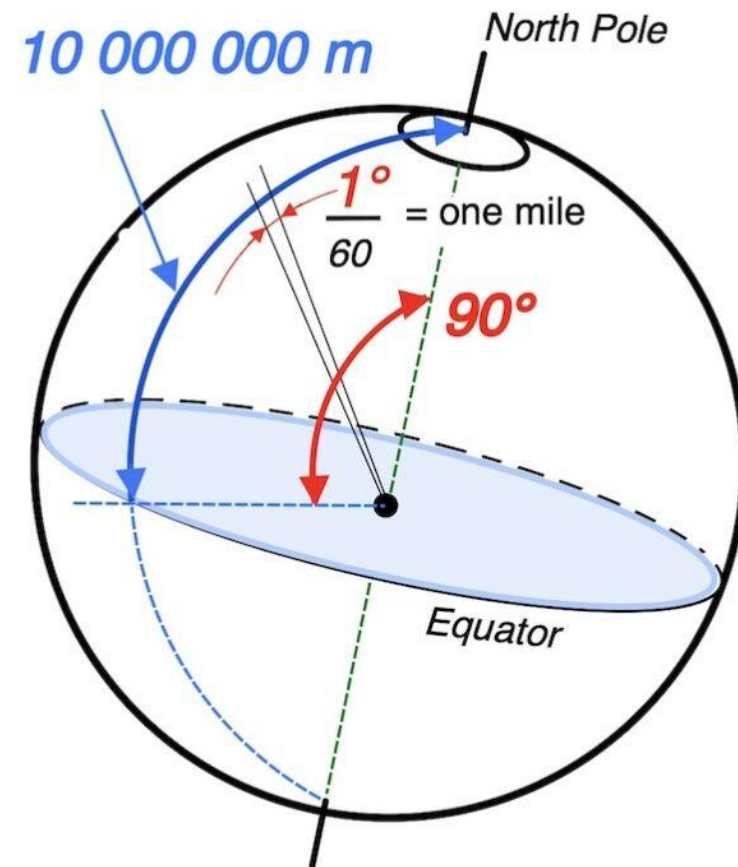


海里とノット

1時間で1NM=1kts(ノット)
=1分/h

EX) 60NM/h=60kts
=1° /h

旅客機は追い風600kts
600kts=10° /h
(赤道→北極9時間)



90° = 10 000 000 m

1° = 11111,1111 m

1° = 1 852 m = one mile

(1分) $\frac{1}{60}$ NM(Nautical Mile) = 海里

ご清聴ありがとうございました

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