Seaplane Oral Questions

General Emphasis Items

1. What is aeronautical decision making?
   Using a systematic approach to making sure the flight has a positive outcome with the least amount of risk.
2. How can you "the Pilot" be a risk to our flight today? Not being fit to fly or having a bad attitude
3. What is the IMSAFE check list?
   1. Illness
   2. Medication
   3. Stress
   4. Alcohol
   5. Fatigue
   6. Eating
4. How can the aircraft be a risk to our flight today?

   Poor maintenance or be improper for our mission

5. How can the environment be a risk to our flight today?

   Poor weather.

6. How can the mission be a risk to our flight today?

   a. Pressure to complete the mission 7. C.F.I.T.

   a. Controlled Flight Into Terrain happens when situational awareness is lost. 8. What is positive aircraft control?

Positive aircraft control is knowing what you want the airplane to do and exactly how to make it do it.

9. How do we exchange flight controls?
   I have, You Have, I Have and visual backup
10. Emergency checklists?
    They should be in your head.
11. Describe why a wing stalls.
    A wing stalls when the **critica**l angle of attack is exceeded.

    It can happen in any attitude.

12. Describe why an airplane spins?
    If you stall an airplane in an uncoordinated manner (slip or skid) then one wing may stall before the other and then a spin may occur
13. What is the first and most important recovery procedure in a spin? Cut power

14. What are the steps to recover from a spin?

    Cut Power
    Neutralize elevator
    Use rudder in the opposite direction of the spin

15. What is a “Hot Spot” at a busy controlled field and where can we find information on them. a. Hot Spots are areas at busy airports where runway incursions have occurred.

    Information can be found in the AFD or the Aircraft Chart Supplement b. They are depicted on the aircraft diagram.

16. What is LAHSO and do you have to accept the clearance.
    a. A LAHSO clearance is “Land and Hold Short”. You do not have to accept it. If you do

    you must know the amount of runway available to you and your aircrafts capabilities

17. What questions would indicate that someone may be up to no good at an airport and security might be an issue.

    Where are aircraft keys kept? Who watches the field at night? Are the aircraft kept fueled? etc

18. What part of wires is most easily identifiable?

    The towers

19. How can we knowingly safely fly over wires

    a. Fly over the towers

20. What are the items on a typical piston engine failure checklist
    1. Check Fuel Level
    2. Check Fuel Selector
    3. Check Primer is in
    4. Check fuel pump Is on if it exists
    5. Check Magnetos
    6. Check for Carb Ice / Carb Heat / Alternate Air

21. How do you avoid the wake of a landing aircraft
    Land beyond its landing spot or wait 5 minutes
22. How do you avoid the wake of a departing aircraft.
    1. Take off before and climb above its glide path

2. Wait 5 minutes

23. How can you maintain situational awareness at an unfamiliar airport?

    a. Keep the airport diagram in your lap.

Airworthiness - Be ready to discuss all the following

1. AVIATES Mnemonic

1. A-Annual Inspection (Every Year) Resets 100hr Inspection
2. V-VOR Checks (Every 30 Days if IFR and Using VORs)
3. 1-100 Hour Inspections (Every 100hrs if commercial operation) Cannot substitute for an Annual Inspection
4. A-Altimeter (Every 24 Months 91.411) and (Airworthines Directives)
5. T-Transponder (Every 24 Months 91.413)
6. E-ELT (Every 12 Months-Usually part of the annual inspection)
7. S-Static Inspection (24 Months 91.411)

2. Airworthiness Directives

   You will need to go over the Ads for the plane with the examiner to verify that the plane is airworthy

3. VOR Checks

   We will usually do this as part of our training. It is not really required for most seaplane checkrides as this is not an instrument ride

4. Annual Inspection

   Must be performed every 12 months on every aircraft by a mechanic that possesses an IA (Inspection Authorization) This resets the 100 hr requirement

5. 100 hr Inspection

   Must be done every 100 hours of engine (Tach) time. This cannot substitute for and annual inspection. See number 9 below to find the Tach time.

6. Pitot Static Checks

   This must be done every 24 months and verifies the validity of the altimeter and airspeed indicators. It is required for IFR Flight (91.411)

7. Transponder Check

   This verifies the functions of the Transponder and is usually done at the same time as the Pitot Static checks (91.413) All aircraft need this to fly in the system.

8. ELT Check

a. This is usually done at the annual

9. Where and how can we find the current Tach Time on the Husky?

a. Turn the master switch on and look at the engine monitor where the Tach readout should be.

Aircraft Legality - Be ready to discuss all the following

AROW

2. Airworthiness Certificate
   This is good for the life of the aircraft as long as the N-Number does not change
3. Registration
   Good for 3 years.
4. POH or Owners Manual
5. Weight and Balance

Pilot Legality Be ready to discuss all of the following

1. BFR
a. To act as PIC of any aircraft the pilot must have had a BFR or a checkride in the last 24 months. BFRs can be administers by a CFI in any category/class/type that the pilot is rated in.

2. Currency
a. To Carry passengers a pilot must have accomplished 3 landing in the last 90 days in the aircraft category class and type.

i. To Carry Passengers at night the landing must be to full stop
ii. To Carry Passengers in a Tailwheel aircraft the landings must be to a full stop.
iii. If you have done tailwheel landings at night you are good to go in nosewheel aircraft during the day.

3. Must Carry
   a. Government Photo ID (Drivers license or Passport)

   b. Medical Certificate

4. Medical

Density and Pressure Altitude

1. What does density altitude mean to you?

a. Density Altitude is pressure altitude adjusted for non-standard temperature and pressure. Low density altitude mean that the airplane operates with enhanced performance.

2. Does a “high density altitude day” mean aircraft performance is better?
   a. High density altitude means that the airplane will act like it is at a high altitude thus aircraft performance is reduced.
3. What parts of the plane are affected by density altitude?
   a. The engine operates with less power at a high-density altitude.
   b. The propeller operates with less efficiency at a high-density altitude c. The wings operate with less efficiency at a high-density altitude.
4. What is pressure altitude?
   a. This is the altitude read off the aircraft altimeter when the pressure is set to 29.92 inches of mercury.
5. How do we find pressure altitude in the plane?

   a. Set the Kollsman window to 29.92.

6. How do you calculate density altitude? a. See the following chart...

ALTITUDE CONVERSION CHART

** NOTE **

THIS CHART SHOULD BE USED TO DETERMINE DENSITY ALTITUDE FROM EXISTING TEMPERATURE AND PRESSURE ALTITUDE CONDITIONS.

FOR USE WITH THE ACCOMPANYING PERFORMANCE CHARTS.

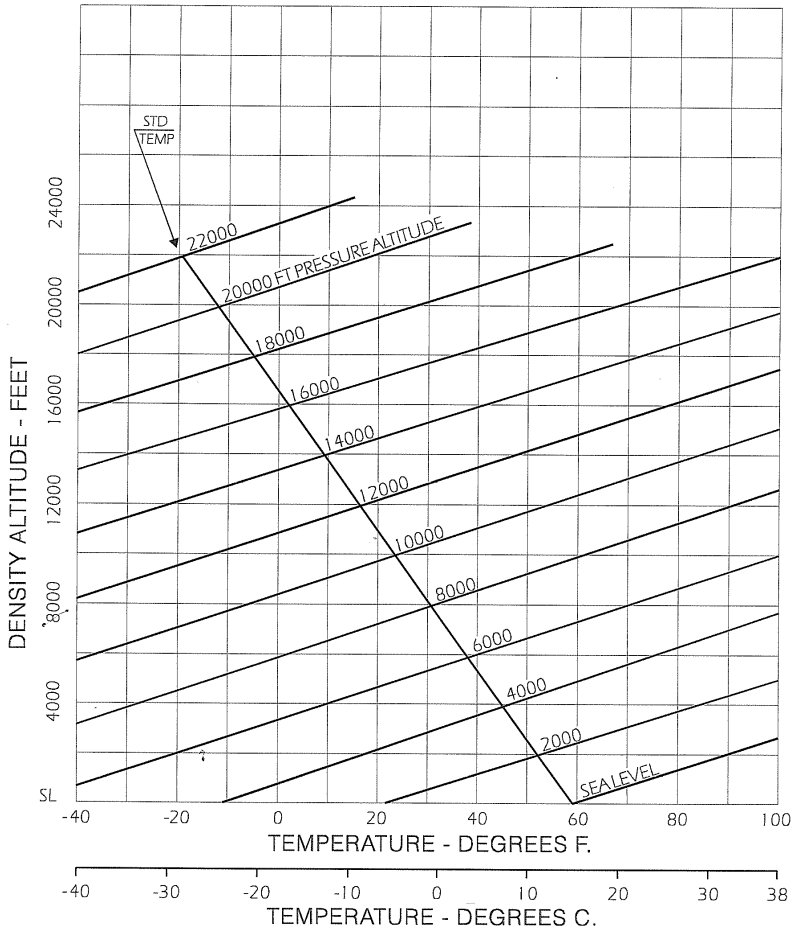


FIGURE 5-01

7. How can you find the airport's density altitude? a. Listen to the AWOS.

8. Is a "high density altitude day" a good day to fly? a. No. Aircraft performance is diminished.

Seaplane Bases

1. Where in the AFD (Airport Facilities Directory) now called the Chart Supplement is the list of seaplane bases listed.

a. Very close to the front of the book. Like page 3. See the table of contents.

2. What are the colors of a lighted seaplane base beacon? a. Amber and White

3. Where relatively nearby can we find a lighted seaplane base? Hint (New Iberia, La) a. New Iberia, LA KARA has a sea lane next to the main runway.

4. What are the runway colors of a lighted seaplane base? (See the AFD for new Iberia, La) a. Runway end lights are amber with green runway edge lights

See the following excerpt...

NEW IBERIA

ACADIANA RGNL (ARA)(KARA) 4 NW UTC–6(–5DT) N30°02.27′ W91°53.03′ **HOUSTO**
24 B TPA—1024(1000) Class IV, ARFF Index A NOTAM FILE ARA **H–7D, L–21B, 22E, GOM**
IAP, A

RWY 17–35: H8002X200 (CONC–GRVD) D–105, 2S–133, 2D–163, 2D/2D2–400 PCN 39 R/B/W/T HIRL
RWY 17: ODALS. PAPI(P4L)—GA 3.0° TCH 51′.
RWY 35: MALSR. PAPI(P4L)—GA 3.0° TCH 52′. Rgt tfc.

RUNWAY DECLARED DISTANCE INFORMATION
RWY 17: TORA–8002 TODA–8002 ASDA–8002 LDA–8002
RWY 35: TORA–8002 TODA–8002 ASDA–8002 LDA–8002

SERVICE: S2 **FUEL** 100LL, JET A **OX** 4 **LGT** Dusk–Dawn. When twr closed HIRL Rwy 17–35 preset low ints, to increase ints and ACTIVATE MALSR Rwy 35—CTAF.

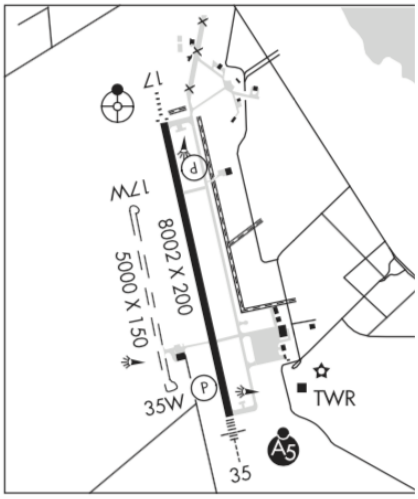
AIRPORT REMARKS: Attended 1300–0300Z‡. For fuel after hrs call 337–367–1401, FAX 337–367–1404. Seaplane landing area (water channel) West of and adjacent/parallel to runway. Bird activity on and invof arpt. ARFF PPR for more than 30 passenger seats call arpt manager 337–365–7202. Rotor wing movement and landing area between the rwy and seaway. Intensive helicopter training. Compass rose not avbl.

AIRPORT MANAGER: (337) 365-7202

WEATHER DATA SOURCES: ASOS 133.325 (337) 365–0128.

COMMUNICATIONS: CTAF 125.0 **UNICOM** 122.95
Ⓡ **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 svc 1200–0300Z‡ other times CLASS G.



CONTINUED ON NEXT PAGE

CONTINUED FROM PRECEDING PAGE

RADIO AIDS TO NAVIGATION: NOTAM FILE LFT.
LAFAYETTE (L) VORTACW 109.8 LFT Chan 35 N30°11.63′ W91°59.55′ 146° 10.9 NM to fld. 36/3E.
TACAN AZIMUTH unusable:
295°–320° blo 4,000′
ACADI NDB (MHW/LOM) 269 AR N29°57.38′ W91°51.80′ 348° 5.0 NM to fld. 6/0E. NOTAM FILE ARA.
ILS/DME 108.9 I–ARA Chan 26 Rwy 35. Class IE. LOM ACADI NDB.

WATERWAY 17W–35W: 5000X150 (WATER) MIRL
WATERWAY 17W: Rgt tfc.

RUNWAY DECLARED DISTANCE INFORMATION
RWY 17W: TORA–5000 TODA–5000 ASDA–5000 LDA–5000
RWY 35W: TORA–5000 TODA–5000 ASDA–5000 LDA–5000

SEAPLANE REMARKS: Waterway 17–35 NSTD seaway edge lgts green, thld lgts amber. ACTIVATE seaway edge lgts Waterway 17–35—122.7. 3 clicks on 7 clicks off.

Super Petrel Specific Questions:

1. How many bulkheads does the Petrel have?
    a. 4
    b. Seaplanes need a minimum of 4
2. What are the two basic types of seaplanes?

   Float- Husky

   Flying Boat (lands on hull)- Petrel
3. What is the center of buoyancy?

   It is how the aircraft pivots on the water. This can be changed with power, and it revolves around the yaw and pitch axes.
4. Why is it easier to turn downwind while in a plow taxi?

   The center of buoyancy is moved aft in a plow taxi, which reverses the weathervane tendency.
5. What causes the aircraft to skip on the water?
    a. Too much airspeed
    b. Improper pitch attitude
6. How is a rough water takeoff procedure different from that of a normal takeoff?
    a. Higher pitch attitude (stick more aft) to prevent the nose from digging into waves
7. What is the maximum recommended wave height for the petrel?
    a. 10 inches
8. If the waves are 10 inches or higher, indicating very rough water, what should you do?
    a. Consider not flying
    b. If you must land, use rough water landing procedure
9. When beaching a seaplane, what considerations should the pilot make concerning wind conditions?
    a. Figure out the weathervane tendency
    b. The plane will move on the water even if not under power
    c. Consider wind speed and if it would still be a safe maneuver
10. What speed and power setting are best suited to a step taxi?
    a. Around 4000 rpm and 33 knots

11. V speeds for petrel
    a. Vy: 61kts
    b. Vx: 56 kts
    c. Va: 73 kts
    d. Vne: 113 kts
    e. Vg: 60 kts
    f. Approach speed: 65-70 kts
12. If you suddenly lost power on the engine in the Petrel, what can you expect the initial pitch tendency to be?
    a. Initial pitch up tendency because the engine is behind and slightly above you
13. What is fuel capacity in petrel?
    a. 25 total, 24 usable, wings each hold 10 ad header tank holds 5 gal
14. What is the maximum gross weight for the petrel on land?
    a. 1430
15. What is the maximum gross weight for the petrel on water? Why is it different?
    a. 1320
    b. Different due to displacement of water
16. What types of engines are on the petrel?
    a. Rotax 914 (turbo)
17. Is the petrel certified for aerobatic flight?
    a. No
18. What is the max crosswind that the petrel should fly in? And, is that a limitation?
    a. 12 knots
    b. No, but it is advisable
19. Is the petrel certified for IMC flight?
    a. No
20. How is fuel level checked in the Petrel?
    a. Visually check wing tanks and header tank
    b. PFD shows amount in the wing for which the fuel selector is pointed toward
21. How is oil level checked in Petrel?

a. You must “burp the engine” before first flight of the day
b. Take oil cap off and take dipstick out and lay on top of tray
c. Hand prop it (follow silver edge of prop upward) until you hear it drain out. This brings oil from the engine bottom to the oil reservoir

22. Does the petrel have generator or alternator?
    a. Alternator
    b. If loss of electrical power occurs, you will lose electrically driven fuel pumps and ultimately engine power
23. What is typical fuel burn for the Petrel?
    a. About 3.5-4 gph
24. What is the minimum pilot weight with passenger?
    a. 120 pounds
25. What is the voltage and amperage of battery?
    a. 12 volts
    b. 18-amp hr sealed lead acid battery
    c. 2 alternators
26. How can we get water out of the hull?
    a. Operate the bilge pump
27. What is the oil capacity? 3 liters
28. What is used for ballast? Water (use the garden hose to fill to necessary level)
29. What are the control inputs for sailing?
    a. Aileron in the direction you want and opposite ruder (opposite of step taxi controls)

Float Anatomy

1. Where is the step and what is its purpose?

   The step is a on the bottom of the float about halfway to the back where the bottom raises an inch or two and then begins an upward (shallower) section. The step breaks the water tension at that point creating a low drag portion of the float behind it. It is also usually a very strong part of the float.

2. What are the float bulkheads and give three reasons that they exist?

The bulkheads are generally watertight and create strong sections in the float like the top and bottoms of a soda can. The watertight compartments keep water from filling the entire float should a breach occur, and they keep water from flowing from front to back creating havoc with your C.G.

3. Describe the chine.

   The Chine makes up the joint where the top and bottom of the float come together on the sides. It too is a strong part on the float.

4. Describe the keel.

   The Keel is a heavy metal strip that runs down the center of the bottom of the float. It provides stiffness and structure to the entire float. It is strong enough to support the entire plane.

5. Why do floats leak?

   Aluminum floats are put together with thousands of rivets. Each time we land the float s flex a little and the rivets and seams leak a little. Floats will also leak some when just sitting in the water.

6. What is the purpose of the flying wires?

   The flying wires on a float plane keep everything taught and in line. The struts provide the general strength, but the flying wires provide the rigidity. They work a lot like the cross wires on an old wooden screen door. If you take the wires off the screen door it will get out of square and be floppy.

7. Why are the rudders retractable?

   The water rudders of a floatplane are for low-speed use only. They are not meant to be used at speed and will be damaged.

8. Describe the skeg and what is its purpose?

The skeg is a fin like protrusion just aft of the step on the bottom of the float. The skeg has a couple of purposes. On the ground it serves as a hard point and an extension of the keel to keep the plane from tipping backwards. Amphibs may not have a skeg because the main gear suffices. In the water it adds a little directional stability.

9. Are the skins of the floats thick or thin?
Floats skins in general are paper thin and thus must be cared for accordingly.

10. What are the strong points on a float. a. The Keel.

b. The Bow and Stern. c. The Bulkheads.
d. The Skeg.
e. The Chine.

11. What are spreader bars?

(List 5 parts)

The spreader bars look like struts but are run horizontally between the floats spreading them apart and holding them together.

12. How are the water rudders actuated?

    There is a handle in the cockpit that the pilot can pull on to raise the rudders and can release to lower them. A cable attaches to the top of each rudder and runs to the handle in the cockpit.

13. How many watertight compartments do the Cessna Floats have? 5 on each float.
14. How many watertight compartments do the Husky floats have? 8 on each float
15. What are spray rails and why are they there?

    Spray rails are metal water deflectors on the inner front of each float to keep water spray off of the propeller, which erodes the blades.

Seaplane Anatomy

1. What is the purpose of the ventral fin?

   The ventral fin restores some of the yaw stability lost to the floats sticking out in front of the center of lift.

2. Why do seaplanes need special bracing?
   Seaplanes take a beating from the waves and hard water landings.

3. What is the difference between a regular prop and a seaplane prop? A seaplane prop is flatter in pitch and longer in length.

Preflight Planning

1. What amount of wind is too much for a small seaplane?

   It varies by the seaplane but the 150 and the Husky are in trouble above 15kts.

2. What effect does density altitude have on seaplanes?

Since seaplanes have water drag to contend with and water drag increases at the square of water speed, and with an increased density altitude you need more ground speed for a given lift off airspeed, so there is a density altitude that will make take off impossible. Engine horsepower is diminished just like a landplane.

3. What are our visibility and cloud clearances in Class G airspace? Clear of clouds and 1 mile of visibility.
4. What are the extents of class G airspace?

   Surface to 1200 feet or the bottom of class E airspace which might be 700 around some airports.

5. Where can we find fuel and what considerations do we have?

   We may need to call ahead. We can generally use boat gas if needed. Some seaplane bases have avgas or can get it for you. Some FBOs may bring avgas to a nearby dock. In short, you must call around to make sure that fuel will be available when you need it. You should also look at any potential marinas on Google earth to make sure that they look seaplane friendly.

6. How do we know if the places that we intend to land are legal?

   Official seaplane bases in the AFD is one spot. The next is the "Seaplane Landing Directory" online and published by the Seaplane Pilots Association. www.seaplanes.org

7. How can we determine whether a place that we intend to land is long enough?

   You can over fly the area at a specified speed and time the run to estimate the length of the landing zone.

8. Why does time of day affect or decision to depart?

   If you are in a straight floatplane, it is important to be at your destination before dark. Also density altitude may be a factor in getting safely airborne.

9. What effect does time of day have on density altitude?

   Density altitude is affected by temperature and humidity which will be lower in the morning and the evening.

10. What effect does time of day have on winds?
    Winds tend to be less in the mornings and the evenings.
11. Why is darkness a problem for straight float equipped aircraft? We need to be able to see our runway.
12. What FAA Publications list seaplane bases.
    The AFD. Sectionals also portray seaplane bases.
13. How much wind will cause white caps to form? 8-12 mph
14. Can floatplanes capsize forward? How? Yes.
    1. Poor pitch control at speed.

2. Taxiing in a strong tailwind
3. Landing downwind, too fast, or into the current.
4. Landing with the gear down.
5. Improper C.G.
6. Not flaring on landing.

15. Can floatplanes capsize to the side? How? Yes.
    1. Strong crosswind.
    2. Downwind to upwind step taxi turn.
    3. Poor step taxi technique
16. Can floatplanes capsize to the rear? How? Yes.

    a. Poor elevator control while sailing.
17. How are seaplane bases shown on a sectional chart?

They are depicted with an anchor. If they have fuel then a circle with nobbles will surround the anchor.

Preflight

1. Why is it important to pump the floats before every flight? (3 main reasons)

    a. Weight.
    b. C.G.
    c. To determine if any float compartment has been compromised.

2. Why is it so important to note the wind direction and obstacles on and around the dock before untying the plane?

    You must plan your exit from the dock according to wind and obstacles as well as plan for contingencies like the engine quitting or not starting in first place.

3. Why is a clean and organized cockpit so important before departure?

    You will be busy getting the plane under power and thus under control once you cast off.

4. What kind of wind is too much for seaplane flying?

    It really depends on the airplane and the skill/experience level of the pilot and the location, but 12 mph is a good indicator that caution should be observed.

5. Why does the propeller deserve a close look?

    The prop gets beaten up (pitted) by the spray from the floats. This pitting can develop into cracks if untended to.

6. Why would a seaplane prop ever get damaged? How can this be abated?

The prop gets beaten up by spray from the floats. You can avoid rough water and keep engine RPM below 1000 while idle taxiing.

7. What is your plan if you do not get a good start?

   This will depend on the dock situation, but the plane will be moving backwards toward whatever might be in its path. You should be ready with a plan.

8. Why is it important to trace and verify the water rudder cables?

   The water rudder cables connect directly to the air rudder, so if they were to jam then the air rudder would probably be jammed as well.

9. What happens if you lose a water rudder cable?
   You would lose maneuverability on the water, making docking or beaching tough.

10. What happens if a water rudder cable jams?

    The water rudder cables connect directly to the air rudder, so if they were to jam then the air rudder would probably be jammed as well.

11. List several ways that we can determine wind direction at the dock?
    1. We can look for flags or smoke.
    2. We can look at the ripples and know that the wind is perpendicular to the ripples.
    3. There should be a shiny spot on the windward side of the lake.
12. What might be indicated if some of the flying wires are not taught?

    There could be damage to some of the float attach points. Look for the source of the trouble.

13. What might be indicated if there is a black sooty mark aft of a bolt?

    The sooty marks are a sign that metal is rubbing. The bolt may be loose, or the bolt hole might be getting larger allowing the bolt to move in the hole. A closer look is in order.

14. What might be indicated if there is significant water in one of the float compartments? Check for leaks.

Passenger Briefing
1. How do our life jackets work?

For the vest type jackets... If you pull off the right breast pocket there is a pull string to puncture a CO2 cartridge that will inflate the vest. There is also a manual blow up tube. Be sure to explain to passenger that they should not inflate the vest in the cockpit.

2. What is the primary cause of death in seaplane accidents?

   Drowning while trying to exit the plane or while trying to rescue other passengers.

3. When should the life jackets be inflated?

   After you are out and away from the plane.
4. Do life jackets have to be worn? Not legally, but it is a good idea.
5. How many exits are there on the plane? Any window or door is a potential exit.
6. Where should passengers be when the engine is running? Inside the aircraft.
7. What can passengers do to help during flight?

   In general, they should point out other traffic or obstacles in the air and on the water.
8. Why is it important to show passengers reference points in the plane?

   If by some unhappy happenstance the airplane ends up upside down in the water it is a life and death critical situation that passengers know where the exits are. They should hang on to a reference point if possible during the upset.

9. Why is it important to show passengers how to use the seatbelts and make sure they know how to unbuckle them.

   They cannot exit the plane unless they can get their belt loose.

10. Why It important to visually check passenger's seatbelts?

    They could have the buckle facing inward such that they will not be able to find it if needed.

Taxiing

1. Once you cast off what direction will the nose of the plane point?

   It will point in the wind.

2. Once you cast off what direction will the plane begin to head until the engine gets started?

   Backwards and downwind.

3. Why do we delay getting seat belts on until we are under power?

   The primary goal once we cast of is to get the plane pointed in the right direction, get the water rudders down, and get the engine started to that we are under positive control. Once we are under control and headed in the right direction with some room to spare, we can take care of getting organized for flight like seat belts and run up.

4. What is our maximum RPM on the water under idle power and why?

   1000 RPM to reduce water spray into the prop and to reduce prop erosion.

5. Will the radius of a turn be greater with more speed?

   Just like in flight our radius of turn is increased with increase speed and power.

6. How can you reduce rpm below regular idle power so slow the plane?
    1. We can apply carb heat.
    2. We can run on alternately the left or the right magneto.

7. Will a turn be tighter from downwind to upwind or upwind to downwind?

   The downwind to upwind turn is much tighter (considering the amount of wind) because the plane wants to weathervane into the wind anyway.

8. In a no wind situation will the plane turn tighter to the right or to the left. Why?

   It should turn tighter to the left because of P-Factor, Engine torque, Spiraling Slipstream etc. The same things that make us hold right rudder on takeoff. Inconsistencies in water rudder cabling and other factors might make this vary from plane to plane.

9. What is the easiest and most reliable way to determine wind direction?

   Cut power and raise the water rudders. The plane will weathervane into the wind.

10. How should one approach a big wave?

    Generally, the least trouble comes from approaching a wave at a 45-degree angle into the wave.

11. If confronted with an obstacle that is going to hit the wing, how can you delay or mitigate the collision?

    Kill the engine with the mixture and turn toward the obstacle, thus delaying contact with the wing.

12. How should the stick/yoke be held while taxiing?

    All the way back nearly all the time. The exception might be taxiing down wind. You can see what effect forward or rearward stick has by experimenting and watching the nose rise and fall.

13. What is the attitude called on the water when idle taxiing? Displacement.
14. Do boats or airplanes have the right of way on the water?

Generally, boats and airplanes are on the same footing. The rule of thumb is that the less maneuverable craft has the right of way. All that being said, we should always give way to boaters because they just don't understand our maneuverability and thus cannot recognize it.

15. If a boat is approaching from your right who has the right of way? The boat.
16. If a boat is coming straight at you what should happen? Both craft should divert to the right.
17. What is the general rule of thumb regarding right of way on the water? The less maneuverable craft has the right of way.

Plow Taxi

1. When would you use a plow taxi?

We transit through a plow taxi on every take off. We can also use the plow taxi while trying to go downwind in a stiff breeze because the weathervane tendency of the seaplane is reversed in a plow.

2. Should the water rudders be deployed in a plow taxi? Yes. If you need them.

3. What does the plow taxi do for engine cooling?

Plow taxiing is tough on engine cooling. We are generating a lot of horsepower to stay in the plow and there is little airspeed to cool the engine.

4. What does the plow taxi do for prop spray?

Plow taxi is tough on the prop because we have high RPMs and we are going slow enough that the spray can get into the prop.

5. What is center of buoyancy?

Center of buoyancy is the where the plane will pivot in a turn on the water. back in the plow and forward in the displacement or step attitude.

6. Where does the center of buoyancy move when in the plow taxi? It moves aft.
7. What is the effect of an aft center of buoyancy? The weathervaning tendency is reversed.

Plow Turn

1. When would you need a plow turn?

a. When you have gotten into too much wind to get the plane turned downwind and you need to go downwind.

2. What are the steps to execute a plow turn?

1. Deploy water rudders if they are not.
2. Turn hard right using rudders.
3. Apply 1500 rpm
4. Turn the plane hard left, using rudders, keeping ailerons in the proper orientation for the wind angle.

e. Once downwind, pull power to idle and maintain direct downwind.

3. What direction do we always make plow turns? Why?

   Left, because of P-Factor, Torque, Spiraling slipstream

4. Why do we cock the plane to the right as the first step to a left plow turn?

a. To Gain momentum for the left turn. 5. Why is the plow turn bad for the airplane?

a. Bad engine cooling, Spray into the prop, Poor Visibility
6. What happens to the center of buoyancy when entering a plow turn?

a. It moves aft, reversing the weathervaning tendency

Step Taxi

1. Why is prop spray not much of an issue during step taxi?

   We are going fast enough that the spray is behind the prop.

2. Should the water rudders be retracted for step taxi?

   Absolutely. Damage can occur to the rudders and the floats at speed.

3. How is step taxi for engine cooling?

   Fine. We have enough air moving over the engine.

4. What turns need to be avoided during step taxi?

   Downwind to upwind turns are dangerous because of centrifugal force and the high center of gravity.

5. Why are seaplanes such bad high-speed boats?
   Because they have a high center of gravity which make them unstable.
6. When would you use a step taxi?

   To get safely and efficiently from one spot to another and to get downwind to setup for an upwind take off.

7. After step taxiing downwind to make room to takeoff into the wind, what technique should be used to get turned around into the wind?

   Cut power and get to idle. The plane will weathervane into the wind.

8. Does the floatplane's yaw stability vary depending on pitch on the step? Why?

   Yes. The yaw stability is greater with an aft center of pressure and less with a forward center of pressure. This is analogous to moving the main gear forward or aft of the plane's C.G. Like a taildragger vs tricycle gear.

9. As the center of pressure moves back what happens to yaw stability?

   The yaw stability is greater with an aft center of pressure and less with a forward center of pressure. This is analogous to moving the main gear forward or aft of the plane's C.G. Like a taildragger vs tricycle gear.

Normal Takeoff

1. What position do the water rudders need to be in for takeoff?

   Up,

2. What is the standard seaplane checklist for takeoff?

   C : Carb Heat off
   A: Area Clear
   R: Water Rudders Up S: Stick Back

3. What should you do if the plane begins porpoising? (Two actions)
   1. Undo whatever you just did to cause the porpoise.
   2. Cut power.
4. How many degrees of flaps are used for a normal take off? Husky = 2 notches
5. What should you do if you encounter an un-commanded turning tendency during the plow phase of the take off?

   Cut Power.

6. What should you do if it looks like you do not have enough runway for takeoff?

Cut Power before it is too late.

7. Why is it important not to rotate on a seaplane takeoff?

   Generally, it is bad form because rotating puts the after bodies of the float back into contact with the water slowing acceleration or in some case causing deceleration.

8. Why is pitch so important?

Proper pitch can mean the difference between accelerating and decelerating. Really improper pitch can flip the airplane.

9. What does being “On the step” mean?

   It means that the floats are riding on a tiny percentage of their bottom surface. The less surface area contacting the water the less hydrodynamic drag we will have to overcome to take off.

10. Why is it important to be into the wind?

    Hydrodynamic drag increases with the square of water speed. We fly with airspeed. When we fly into the wind we increase airspeed and decrease water speed.

11. In a no wind situation, in a river, should you takeoff downstream or upstream? Explain why?

    Downstream. We want to reduce water speed and increase airspeed.

12. Explain the effects of a forward C.G. on takeoff?

    A forward C.G. might make it impossible to get a proper attitude on the water.

13. Explain the effects of a rearward C.G. on takeoff?

    A rearward C.G. might make it impossible to get onto the step.

14. Why does the plane turn to the left when coming onto the step?

    Gyroscopic forces acting on the prop as the angle goes from upward to level. Gyroscopic forces act 90 degrees to the changes in angle.

Glassy Water Takeoff

1. Why is glassy water trickier on takeoff?

   Since the water is stickier, your pitch control is critical to minimize the wetted area on the bottoms of the floats.

2. What flap setting is used for a glassy takeoff? Husky = 2 notches
3. Why is glassy water stickier?

   Since waves and even wavelets reduce surface tension on the water and add air under the floats reducing wetted area, there is more drag.

4. What can we do to help the glassy water takeoff happen?
    1. We can lighten the plane as much as possible and fly when density altitude is at its lowest

2. We can step taxi around to make some waves.

5. What is your greatest danger right after a glassy takeoff?

   Flying back into the surface of the sticky water.

6. When should a one float takeoff be used?

   When heavy, dealing with a high-density altitude, or in glassy water conditions.

7. In a one float takeoff, which float should be raised, or does it matter? (Left Crosswind)

   It does matter. The downwind float should be raised, thus limiting the water looping potential and mitigating some of the crosswind.

8. What is the mistake that most pilots make on a one float takeoff?

   Many pilots feel an uncontrollable need to raise the nose when on one float, thus placing more of the after body of the float back into the water and slowing acceleration.

Rough Water Takeoff

1. What are the flap settings for a rough water takeoff?

   Husky = 2 notches

2. Why should the pitch attitude be higher on a rough water takeoff?

   To keep the bows of the floats out of the waves and since there is plenty of air under the floats, pitch is less critical to drag, and we want to get airborne as soon as possible.

3. Why is exact pitch angle less critical on a rough water takeoff? Because there is more air under the float lessening water drag.
4. Once airborne on a rough water takeoff what is the procedure?
   Remain above the surface in ground effect until we get real flying speed.
5. It a one float takeoff a good idea in rough water?
   It does not help enough to justify the beating that the one float would take.

Floatplane

1. What is adverse yaw, and why is it more prevalent in floatplanes?

When you turn the yoke or deflect the stick to the right, you are lowering the left aileron to increase the lift on the left wing to bank the airplane right. This happens by increasing the angle of attack on the left wing. When we increase the angle of attack we increase induced drag. So while we are trying to turn right the higher induced drag on the left wing, and the reduced induced drag on the right wing conspire to turn us left. This is why we use rudder in a turn.

2. What effect do the floats have on yaw stability?

   The yaw stability is greater with an aft center of pressure and less with a forward center of pressure. This is analogous to moving the main gear forward or aft of the plane's C.G. Like a taildragger vs tricycle gear.

3. What effect do the floats have on stall speed?

   The floats actually create some lift thus reducing stall speed as much as several knots.

4. Why might a seaplane be more susceptible to a drag increase due to poor rudder control?

   Since there is more structure (the floats) then there is more side area of the plane to cause drag if the plane is not flying straight.

5. How low should we be over the water?

   The rule over open water is 0 feet. The general common-sense rule is 500 feet.

6. How low should we be over the land?

   The rule here is 500 above unpopulated areas, except when taking off or landing.

7. How far are we supposed to stay from vehicles, personnel, and structures?

   The rule is 500 feet vertically and horizontally.

8. How does the floatplane's glide ratio compare to a land plane?

   The floatplane has a lot more structure and thus more drag so it comes down quicker.

9. What is a Wildlife Refuge and how low can we fly over one?

   a. 2000 feet agl

10. What does a Wildlife Refuge look like on a sectional?

Look just below Huntsville airport at the Wheeler National Wildlife Refuge. with dots in it.

Before Landing

1. Describe high recon?

High recon Is done at at least 500 feet to get the general lay of the land and to spot big obstacles and to make a landing plan.

2. Describe low recon?

   Low recon is to spot specific obstacles and to adjust our plan accordingly. flown at 200-300 feet.

3. What are the tell tales of underwater obstructions in a moving river? There will usually be a disturbance in the waves over the object.
4. What are the easiest things to spot on power lines? The poles.
5. Where are power lines most likely to be pulled across water? Through coves and any narrow part of the water.
6. How do you detect shallow water from the air?

   Look for disturbances in the water flow and you can often see the bottom in a clear lake,

7. What are the dangers of murky rivers?
   You may not be able to see shallow spots or obstacles under the surface.
8. When are obstacles in the water most likely to be present?
   When the water level has just changed or when a storm has just passed.
9. How can we determine wind direction on the water from the air?
    1. If there is a lot of wind, then there will be streaks on the water. The wind will be parallel to the streaks.
    2. There should be shiny water next to the windward shore and any islands. The wind will be coming from the shiny area.
    3. Wind should be generally perpendicular to the waves and travelling in the direction of the waves.
10. How can we determine wind velocity on the water?
    If the water is glassy then the wind is calm to 3mph
    If there are white caps starting to form, then the wind is probably 10mph or more
11. What are “Cat;s Paws”, and what do they tell us?

"Cat's Paws" are dark patches on the water moving with the wind that are either sharp or rounded ant the back side and generally have multiple sharp fingers coming out of the front side. These indicate a gust on the water.

12. What are wind streaks and what do they tell us?

    Wind Streaks indicate that the wind is probably 7 mph or more and the wind direction is parallel to the streaks.

13. What is "Fetch"?

    Fetch is the distance that the wind is blowing across the lake. The water will be glassy on the windward side and rougher on the leeward side. Generally, the longer the fetch and the further towards the leeward side of the water the bigger the waves.

14. Where will the waves be the smallest on a lake, the upwind (windward) side or the downwind (leeward) side?

    Smallest upwind and Largest downwind.

15. At what wind speed do ripples tend to form on the water?

    About 3-4 mph Normal Landing

1. What is the standard seaplane landing checklist? G: Gear

P: Prop
F: Flaps
C: Carburetor Heat on A: Area Clear
R: Water Rudders Up. S: Stick/Yoke in hand

GPFCARS

2. What is the amphibious seaplane landing checklist? Wheels up for water landing

   GUMPS is good too.

3. What flap setting is used for a normal landing?

   Husky = 2 notches

4. Why must we be extra vigilant on busy boating weekends?

   You must watch out for our 2 dimensionally challenged boating friends.
   know we are up there. They cannot hear us and they don't know to look up for us. We must

endeavor not frighten anyone on the water. Be especially wary of PWC. The are very fast, maneuverable, and often driven by children.

5. Why would a nose low attitude be very bad on landing a float plane?

   A low bow attitude on landing will cause extreme drag and a nose over tendency with risk of capsizing.

6. What could happen if you were to drop the yoke/stick just after landing?

   A low bow attitude on landing will cause extreme drag and a nose over tendency with risk of capsizing.

7. Do you have right of way over a plane taking off?

   No. The plane in the air has more maneuverability and a better view of the situation than a plane taking off from the water.

8. What is the danger of landing on the water too fast?

   Water drag increases at the square of speed, thus if you land too fast on the water you will create a lot of drag very low on the aircraft causing a nose over tendency possibly flipping the plane.

9. What is the danger of landing downwind?

   This increases water speed and drag increases at the square of water speed, causing a lot of drag very low on the airframe causing a nose over tendency.

10. Would you ever land the plane downwind?

    You might if the current in the river demanded it or the wind was light enough not to cause a capsizing risk.

Rough Water Landing

1. What is the flap setting for a rough water landing?

   Husky = 2 notches.

2. Should power be used in the flare for a rough water landing?

   Yes. You should go to 1500 rpm in the flare to allow for a higher pitch attitude on landing and a lower stalling speed.

3. Why do we use a little power on a rough water landing?

This lowers stall/landing speed and allows for a higher pitch. This keeps the tips of the floats out of the water and submits the plane to less trauma when hitting the rough water.

4. Why is it important to get the power off as soon as we touch down on rough water?

   Once we touch down we want to get to the idle attitude as quickly as possible to ease the stresses on the plane and limit the spray into the prop.

Glassy Water Landing

1. What is the primary danger of landing on glassy water?

   Since you cannot accurately judge your height above the surface you cannot accurately flare. The glassy surface is extra sticky in general so if you hit it at a low pitch angle there is significant danger of flipping the plane.

2. What is the drag profile for glassy water?

   Glassy water is very draggy.

3. What is a “Last visual reference point”?

   Since we cannot really judge our height above the water, we use a low last visual reference point to setup or final approach. It is a point in space for us to judge our height.

4. What do we do at the “Last visual reference point”?

   We bring our pitch to landing attitude (just a little higher than normal flight) and we set our power. C150 = 1900 rpm Husky = 15 inches

5. What is the flap setting for a glassy water landing

   a. Husky = 2 notches

6. What is the power setting past the last visual reference point?

   Husky = 16 inches

7. What are some of the factors that we look for in choosing a last visual reference point? a. It should close enough to our landing point to be of good use in judging our height

   b. It should be low enough not to cause us to have to fly for a long time in the descent

   c. It should not be a building, boat, or other illegal to fly near structure

8. What defines glassy water?
   Any surface that might make height judgment difficult.

Low Light Flat Light

Reflective Surface

9. Can landing into the sun be like glassy water?
   Absolutely

10. Can landing in low light conditions be like glassy water?
    Absolutely

11. Where should your eyes be after passing the last visual reference point?

    Outside maintaining your attitude.

12. What should the descent rate be after passing the last visual reference point?

    50-150 / minute Confined Area Landing

13. What flap setting should be used for a confined area landing? Full Flaps

    Can we slip this airplane? Yes.

    What power setting do we use for a confined area landing? Idle power after passing our last obstacle.

1. When might we use a confined area landing?

    1. When we need to get into a tight area of the lake.
    2. When we need to utilize the calmer waters next to the windward shore.

2. Which is greater landing distance or takeoff distance? Take off distance in a float plane is generally longer.

Crosswind Landings

1. When would you do a crosswind landing on water?

    When landing on a river or when it is advantageous to your destination.

2. Should we use a sideslip or a crab to land a seaplane in a crosswind and why?

    A side slip it the proper technique. You cannot have any sideways loading on contacting the water.

3. Why is side loading a bad thing on crosswind landing in a seaplane?

    The floats are very directional and there is a danger of flipping the plane if there is too much sideways motion.

Dead stick landing

1. When should flaps be deployed after an engine failure?

   Not until making it to the landing zone is assured.

2. What is the first order of business after an engine failure?

   Fly the airplane and keep enough airspeed for the flare.

3. What should we look for when picking out a landing site after an engine failure?

   Clear of obstacles

   Landing close enough to shore that we can get to safety.

Night Landings

1. What should we be looking for in a landing zone?
    1. A lighted grass strip
    2. A lighted paved strip
    3. A place on the lake that has a lighted last visual reference point and a lot of clear water beyond it.
2. Will a grass strip work in a pinch? Yes
3. Will a paved strip work in a pinch? Yes
4. What should we look for on a night water landing?

   A place on the lake that has a lighted last visual reference point and a lot of clear water beyond it.

5. What landing technique should be typically used landing on water at night?

   A glassy water landing is in order.

Sailing

1. What position should the flaps be for sailing?

   Up.

2. What is the purpose of sailing?

   To go backwards downwind in a controlled manner.

3. What position should the water rudders be in for sailing (Retracted or Not)?

   Up.

4. Sailing to the right, where should the ailerons be positioned? The rudder? The elevator?

   Ailerons should be for a turn to the right
   Rudder should be for a turn to the left.
   Elevator should be down to keep the afts of the float from digging in.

Docking

1. What do we look for in a dock?

   Nothing that will hit our wings or elevator.

2. How do we approach a dock?

   Upwind at less than a 30-degree angle. Power off 20 feet out.

3. Why is it important to have the power off before reaching the dock?

   It would be extremely bad to have a prop strike any portion of the dock or, worse, personnel at the dock

4. Why is it important to dock into the wind?

   We want to be slowing down and stable when we reach the dock. Going downwind we would have trouble controlling speed and the plane would want to weathervane into the wind.

5. Why is the underwater part of a dock important and possibly hazardous to our floatplane?

   It is good for beaching.

   Our floats are at their widest below the water line. Docks are designed in general for boats, which are widest at a foot or more above the water line.

6. What happens to rudder authority as we slow down and approach the dock? Rudder authority diminishes to nil as speed diminishes to nil.

Beaching

1. At what angle should we approach a beach?

   45 degrees so that we can abort if we see a problem.

2. Why is a low recon a good idea before choosing a beach?

We might be able to see obstacle under the water.

3. What are some hazards at a beach?

   Rocks, Cannibals, Pilings

4. Where should the wind be blowing optimally for a particular beach?

   Optimally the wind would be blowing directly onto the beach allowing a sailing beaching.

5. Why would we want to sail into a beach?
   We are slow and controlled and the prop is safely away from people and stopped.
6. Should water rudders be deployed while sailing into a beach? No

Securing the seaplane

1. Why might it be bad to leave the doors of a seaplane open while it is sitting at a dock?

   The plane will rock in the wares and ware out the hinges. It is also inviting strangers into your plane.

2. Why is it important to check on the seaplane often while it is left at a dock? 1000 terrible things can happen to an unwatched plane.
3. Why might the seaplane be damaged at a beaching spot if the tide changes?

   The tide could come in with tight ropes holding the wings down putting very strong forces on the wings an flooding the floats.

   Alternately the tide could go out stranding the plane.

Buoys

1. What does a “Can” buoy or green buoy signify?

   Green or Can buoys mark the channel and should be on your left returning to harbor or up stream.

2. What does a “Nun” buoy or red buoy signify?
   Red or Nun buoys should be on your right returning to harbor or up stream.
3. What does a buoy with a Diamond on it signify?
   D for diamond and D for DANGER. This buoy is marking a hazard
4. What does a buoy with a Circle on it signify?

   C for Circle and C for CONTROL. This buoy is marking a control zone like “IDLE SPEED ONLY”

5. What does a buoy with a Square on it signify? These are simply informational buoys.

Amphibious Questions

2. What do we say before every landing regarding the gear?
    1. Gear is up for water landing
    2. Gear is down for runway landing
3. How do we verify gear being up or down?

    Look at gear indication on PFD and position of the manual johnson bar

4. What do we do if the gear does nothing when the gear switch is flipped?

    If you switched the gear to extend and nothing happened then reach down below your right knee. You will feel the manual gear extension box. There is a folded handle on the left side of the box. Raise the handle and rotate it horizontally to the rear of the airplane until the gear motor kicks in and begins to extend the gear. Immediately center the lever and fold it back down.

5. What is the procedure for manually extending or retracting the gear?

    If the gear will not move at all or there is a power failure, my first choice if the gear was all the way up would be to land on water and debug the situation in the calm cool waters. Otherwise pull the gear motor breaker against the right side wall of the airplane just below the panel. Reach down to the manual gear extension box below your right knee. Fold out the lever on the left of the box and push the lever all the way aft. Take the red gear extension handle and place it in the socked on the manual gear extension box and pump until the gear is down.

5. Where is the power pack for the gear located?
   It is behind a panel on the left exterior of the plane behind the cockpit..
6. How do we check the hydraulic fluid level in the power pack?

    There is a sight gauge on the pump that should be about 1/3 to 1⁄2 full with the gear down.

7. How do we set the brakes?

    There is a forward facing tab on each brake cylinder on the left and right sides of the front seat. Depress the breaks and pull up on this tab at the same time. Release the brakes and the tabs should hold them in place.

8. Which is worse, landing on pavement with the gear up or landing on water with the gear extended?

    Landing in the water with the gear extended is much much worse. The plane WILL FLIP.

9. How is the gear operated?

    Manual Johnson Bar

10. Is there a squat switch on the amphibious gear preventing retraction of the gear while on land?

    Not in the Petrel

11. How is the hydraulic power pack (gear motor) actuated? Electric or Engine Driven? Neither- Manual