PAA – Terms, Phrases & Explanations (TPE):

The Terms, Phrases & Explanations, (TPE) manual has been assembled to introduce students to the terms and phrases that they will be hearing throughout their training at Pinnacle Aviation Academy, (PAA). This document should be use, along with the ground and flight course curriculum and countless other training materials which shall include but not be limited to the following:

- Aeronautical Information Manual, (AIM)
  - The AIM contains ten chapters with several sub-sections containing information on a wide range of topics with a glossary of abbreviations / acronym's in the appendix.
- Federal Aviation Regulations, (FAR)
  - The FAR outlines the regulations which pilots are required to comply with in the operation of the aircraft. Parts 61, (Pilot Certification) and 91, (General Operating and Flight Rules) are two key sections within the regulations that provide the guidance for the operation of general aviation aircraft.
- Pilot Information Manual, (PIM)
  - Section 1 which is titled GENERAL and specifically the section noted as "Symbols, Abbreviations and Terminology" provide good information to familiarize the student with the terminology used in this manual.
- Pilot Operating Handbook, (POH)
  - The POH is a combination of the Airplane Flight Manual, (AFM) which is a regulatory document and its contents are prescribed under the section of the regulations the aircraft was certificated under - Part 23, Part 25. The POH is a General Aviation Manufacturers Association, (GAMA) document whose contents meet the regulatory requirements of an AFM, and present other information in a standardized way so that a pilot can operate aircraft from different manufactures with information presented a similar way no matter who the manufacturer is. A POH specific to an aircraft is in each PAA aircraft.
- Chart Supplement
  - A publication designed primarily as a pilot's manual containing a listing of public airports by State. This manual provides a great deal of information about that airport to include but not limited to communications data, navigational facilities and special notices and procedures. It is issued in seven volumes based on a geographic area.
- Airman Certification Standards, (ACS)
  - This publication outlines the minimum requirements / standards which an applicant for a FAA Certificate or Rating must possess the knowledge, the ability to manage risks, and skills consistent with the privileges to the certificate or rating being exercised in order to act as Pilot-In-Command (PIC).
- Advisory Circulars, (AC)
  - Advisory Circulars are typically distributed by the FAA or aircraft manufacturer to an audience of pilots, mechanics, operators, airport managers, manufacturers, and the general public. The subject of Advisory Circulars typically involves aircraft, airports, flight schools, pilots, operations, or maintainers. Advisory Circulars can be directional, informational or descriptive. They often describe how the FAA or manufacturers wants things to be done, the best practices for operations, or clarification of a new regulation.
- Cessna Course Tracking Application, (CTA)
  - This is a great source of information which can be found in the Cessna syllabus training program. This information is accessed by logging on to the Cessna Course Tracking Application and selecting "Documentation" from the tool bar on the upper left side of the screen. Then select "Reference Library" at the bottom of the drop down menu to access the information.

CHECKLIST:

Why do I need to use a checklist?

One of the main contributing factors to aircraft incidents or accidents is due to a pilot's failure to establish and/or deviate from Standard Operating Procedures. A key component to this failure can be directly correlated to the lack of training or lack of discipline in the use of checklists. PAA believes and incorporates the usage of checklists as a key component of it's training process. There are two Federal Aviation Regulations, (FARs) that deal with the use of checklists. FAR 91.503(b) & (c) state specific categories of information must be contained within a checklist. The requirement under FAR 91.13 doesn't specifically address the use of a checklist. However, if an incident or accident were to occur, the investigators from the National Transportation Safety Board, (NTSB) or Federal Aviation Administration, (FAA) will be looking at the operating procedures of the pilot. If it is found that the pilot was not using any or only parts of a checklist, it may be found to be a contributing factor to the incident or accident.

PAA – Terms, Phrases & Explanations (TPE):

What is a Checklist?

The primary function of checklist usage is to ensure that the pilot will properly configure the aircraft for a given phase of flight. Checklists are typically divided into several sections, each of which represents a specific phase of flight. For example: Before Starting; After Starting; Pre Take-Off; Climb; Cruise; Descent; Approach; Landing; After Landing. PAA maintains three types of checklists which are based on the manufacturer's specifications and model of aircraft.

- Preflight Inspection Checklist
- Normal Operation Checklist
- Emergency Checklist

Each of the checklists used at PAA also incorporate the normal and emergency procedures sections from the aircraft Pilot Operating Handbook, (POH) into these checklists.

Preflight Inspection Checklist:

The Pre-Flight inspection conducted by a pilot is a critical first step to ensure the aircraft is fit for flight. This inspection includes but is not limited to making sure the required documentation is in the aircraft. Additionally, pilots visually inspect the exterior of the aircraft to insure that it isn't damaged and legal for flight. Finally, it's a time for the pilot to make calculations in determining if the aircraft can be operated within the operating limitations for that aircraft.

Normal Operation Checklist:

The Normal Operation Checklist is used to verify procedurally that steps have been accomplished during various phases of flight. This checklist serves as the pilot's safety net. If a task is omitted or a control / switch is miss-position, usage of this checklist should reveal that condition so it can be rectified. However, this safety net can only work if the checklist is used by the pilot.

Emergency Checklist:

An Emergency Checklist is used by the pilot to cope with or contain certain abnormal / emergency situations. (examples: total or partial engine failure, fire & electrical issues) It is not possible to cover all occurrences, but the emergency checklist is, with some exceptions, written to address single events as referenced in the examples above. Thus, it is important for the pilot to exercise good situational awareness and aeronautical decision making skills in determining the best and safest course of action.
PAA has bolded on the emergency checklist memory items that a student is REQUIRED to memorize for a specific emergency procedure.

Procedures / Methodology for Checklist Usage:

PAA uses two procedures or a combination of these procedures for the student to follow when using a checklist. The procedures are identified as the "DO / VERIFY" and the "READ / DO". It is important for the student to develop the discipline and get into the habit of using checklists during their flight training experience at PAA and thereafter.

"DO / VERIFY" or it is also known as the "call-do-response". The "DO" component of this methodology is accomplished through the use of a "Flow Pattern". Pilots would conduct the flow pattern from MEMORIZATION or with the aid of a MNENONIC to prompt the pilot to conduct a "Flow Pattern". The "VERIFY" portion is accomplished when the actual checklist is read and reviewed in a "step by step" format to ensure that each element conducted through the "Flow Pattern" has been addressed. If an item(s) were missed during the "DO" portion, corrective action can be taken to the missed item(s). Once the VERIFY portion has been completed, the pilot is REQUIRED to state verbally, "Checklist Complete". Practice makes perfect in the accomplishment of the DO / VERIFY methodology. Thus, the successful execution of a "Flow Pattern" is a learned behavior through memorization that must be done through practice. Students will need to take on the responsibility to practice on a continuous basis each required "Flow Pattern" and demonstrate during ground and flight operations that they can successfully execute a "Flow Pattern".

"READ / DO" or it is also known as the "challenge-response". This checklist procedure is typically used during critical phases of ground and flight operations. This procedure is executed when each item is "READ" separately in a "step by step" process through the checklist. The "DO" part of the procedure is after each item is AUDIBLY VERBILIZED and the task has been done and VERIFIED before moving on to the next item. Once all the items on the checklist have been read, the pilot is REQUIRED to state verbally, "Checklist Complete". Here are two examples of how the: READ / DO" checklist is performed.
The item is READ from the Checklist - Landing Light ON, then ACTUALLY turning the landing light ON and AUDIBLY VERBILIZING - "Landing light On" VARIFYING that the landing light switch has been positioned.
The item is READ from the Checklist - Flaps 10° then ACTUALLY moving the flap control to 10° and AUDIBLY VERBILIZING - "Flaps 10°" VARIFYING that the Flap switch is on 10°. When there is a checklist item noted as "SET" the pilot's response should be how it will be set. For example, Landing Light or Pitot Heat - "SET". This could be either turned ON or OFF. Thus, the Pilot will need to state at which position are they placing the item.

PAA – Terms, Phrases & Explanations (TPE):

What Procedures / Methodology should be use in an Emergency?

Pilots may use either the DO / VERIFY or the READ / DO or a COMBINATION of both methodologies. When determining which procedure / methodology should be use in dealing with a situation, it will depend on how much time is available. The DO / VARIFY procedure is typically used to address those items which require prompt or immediate action is needed in the handling of a situation. Thus, conducting a "Flow Pattern" can be done quickly to save valuable time. Once completed, the "Flow Pattern" should be followed-up with a review of the "Emergency Checklist".

It is important to have several conversations with your flight instructor and review a variety of scenarios to decide which methodology or when a combination of both should be used in the handling of a situation. On the other hand, there are situations where the READ / DO methodology is a better tool to use. For example, there are situations which dictate that it is very important to carefully go step by step through the checklist to ensure that each step is done sequentially to achieve the desired result.

Positive Exchange of Flight Controls:

From your very first flight lesson, there needs to be a clear understanding of who has control of the aircraft. Is it you or is it your instructor? Prior to each flight, the pilots involved should conduct a briefing that includes reviewing the procedures for exchanging the flight controls. The FAA recommends and PAA supports the use of a positive three step process for the exchange of the flight controls between pilots.

(1) When a pilot seeks to have the other pilot take control of the aircraft, he or she says:
"Your controls".
(2) The second pilot acknowledges that they have the flight controls by saying:
"My controls".
(3) The first pilot says:
"You have the controls".

PILOT OPERATING HANDBOOK (POH):

What is the Difference between the aircraft Pilot Operating Handbook (POH) VS the Pilot Information Manual (PIM)?

The POH is a handbook that MUST be in the aircraft at all times and it is specific to that aircraft with a notation of the serial and N number of that specific aircraft written or typed on a page near the front of the handbook. This is the same information that is Also required to be on the Airworthiness Certificate and Aircraft Registration documents which should also be in the aircraft. The information on all three of these documents should match. If anyone of these three documents are not in the aircraft or the information doesn't match, that aircraft is not legal for flight. Under NO circumstances should ANY of these three documents be removed by anyone from the aircraft. The PIM is an information manual containing the same information as is in the POH but it is NOT specific to that aircraft. Pilots should use the PIM as a reference manual to obtain information about the aircraft's specifications, performance charts and information, critical airspeeds, systems, normal operating and emergency procedures.

Leaning Procedures:

Leaning procedures are introduced to enhance the performance of the aircraft engine and provide greater range on cross country flights. Subject to a review of the aircraft (POH) leaning procedures are conducted when operating at altitudes typically starting at 3,000 Mean Sea Level, MSL for the purpose of maintaining the proper fuel / air ratio for efficient engine operation. When the term LEAN or LEANING is used, the mixture is manipulated, by reducing the amount of fuel going to the engine. Thus, when climbing to higher altitudes, there are less air molecules and we need to reduce the amount of fuel going to the engine in order to maintain the proper air / fuel ratio for efficient engine operations. Conversely, as we descend to lower altitudes, the number of air molecules in the atmosphere are increasing which require the need to increase the amount of fuel going to the engine to maintain the proper air / fuel ratio for efficient engine operation. The leaning process of LEANING or ENRICHINING the mixture is done through the manipulation of the cockpit MIXTURE control by moving it in and out as needed. To obtain the proper leaning procedure at cruise flight for the model of aircraft being flown, review Enroute Climb and Cruise in Section 4 and the Cruise Performance charts in Section 5 of the POH. The leaning procedure when operating during a climb to the cruising altitude or descent from cruising altitudes also need to be managed for efficient engine operation. For a climb, students should lean the mixture to 1" – 1½" at 3,000 MSL. For every 1,000 feet of altitude gain over 3,000 feet MSL, twist the mixture control one-half turn counterclockwise. For a descent, the student should manipulate the mixture control by making a one-half turn clockwise so that the mixture will be leaned approximately 1" – 1½" upon reaching 3,000 feet MSL. Any operations below 3,000 on a climb or descent the mixture should be full rich unless otherwise specified in the POH.

Pitot Heat:

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Pitot heat should be turned ON to prevent any ice formation when air temperatures are below 5° C / 40° F and visible moisture can be observed or if in a cloud(s). Additionally, visible moisture doesn't need to be present and it is possible to have ice crystals enter the pitot tube with air temperatures below freezing. Thus, when this condition exists, it may be a good idea to turn the Pitot Heat ON as a preventative measure.

STERILE COCKPIT:

What is a Sterile Cockpit?

The concept of a sterile cockpit started in commercial airline operations back in the 70's. Intuitively, most people know when someone is busy and/or when a distraction(s) are noticeable. Safe flight operations can be significantly increased by reducing cockpit distractions from a passenger(s). A reduction of these distractions begins with a "Pilot Briefing" of the passenger(s) before starting the engine. A simple discussion with your passenger(s) advising them that there are specific phases of flight that you need to hear and respond to radio calls and look out for other aircraft should provide your passenger(s) with an explanation why a sterile cockpit procedure is employed. Here are a few tips that you can weave into a pilot briefing with your passenger(s):

- **Any movement of the aircraft while on the ground:**
  This would include the following operations.
  - Starting the engine and taxiing to the active runway.
  - Landing and taxiing the aircraft until engine shutdown.
- **Airborne during takeoff and initial climb out or descent, approach and landing.**
  This would include the following operations.
  - During takeoff and initial climb to 3,000 feet AGL.
  - During descent when below 3,000 AGL.
  - During any approach and landing.
  - During traffic pattern operations.

STABILIZED APPROACH:

What is a Stabilized Approach?

A stabilized approach is one in which the pilot establishes and maintains a constant Angle / Glide Path or Rate of Descent towards a predetermined point on the landing runway. Additionally, it depends on if the approach is conducted as a visual, (VFR) procedure or Instrument, (IFR) procedure. No matter if the approach is VFR or IFR, the elements that make up a stabilize approach remain the same. The only difference is the altitude when the stabilized approach is required. For a VFR approach, this point is at 500 feet AGL or the aircraft would be approximately ½ - ¾ miles out from the runway threshold.
For an IFR approach, a stabilized approach should be established and maintained at a point commencing at 1,000 feet AGL. Depending on the type of instrument approach being conducted, this typically would happen approximately 2 – 3 miles from the runway threshold. Good planning prior to the two altitudes referenced above is the key for execution of a good approach and landing. The questions that need to be ASKED and ANSWERED prior to getting to the stabilized approach point should include at a minimum the following:

- What **TYPE** of approach will be used? VFR, IFR,
- What **TYPE** of landing will be used? normal, short field, soft field
- Where is the **WIND**?
  - Is it down the runway or a crosswind, gusting or variable and at what velocity?
  - If it is a crosswind, is it from the left or right and what angle to the landing runway?
  - How will the wind affect my ground track and ground speed in various segments of the traffic pattern?
- What is my **FINAL** target approach airspeed, FLAP setting, FIELD elevation?
- What is the **AIMING** and **TOUCHDOWN** points? At minimum, the touchdown point should be the LESSOR of the first 1/3 of the runway OR the first 1,000 feet of the landing runway.
- What **FLAP CONFIGURATION** should I set up the aircraft for approach and landing? (full / partial flaps)
- **WHERE** should the following happen: Gear Down; Flaps Settings; Approach & Landing Airspeeds

PAA – Terms, Phrases & Explanations (TPE):

TRAFFIC PATTERN:

Language of the Traffic Pattern:

The following terms need to be REVIEWED with your instructor. It is important that the student understand when conducting flight operations to a landing, what adjustments may need to be made when a normal traffic pattern can't be flown.

- **Extend Down Wind** – An extension of the downwind leg past the point where a turn to base would normally be initiated.
- **Short Approach** – A shortening of the downwind leg prior to the point where a turn to base would normally be initiated. If the pilot not able to comply and/or doesn't want to accept a short approach, advise the controller by saying, UNABLE.
- **"S" Turns on Final** – A maneuver on final to lengthen the separation between aircraft.
- **"360° Turn** - A maneuver that is done on downwind and/or final to sequence an aircraft into the traffic pattern or lengthen the spacing between aircraft.
- **Forward Slip** – A maneuver to decrease altitude rapidly while maintaining a desired airspeed with pitch. Check the aircraft POH for what wing flap position can be used while performing this maneuver.
- **Side Slip** – This maneuver has two functions depending on the amount of aileron and rudder deflection. First, it can be used to decrease altitude rapidly while maintaining a desired airspeed just as in the forward slip. Second and more importantly, it MUST be used to align the longitudinal axes of the airplane down the centerline of the runway while landing in a crosswind.
- **Gust Factor -** A calculation used when gusting wind conditions exist**.**
  When using a gust factor, there will be a slightly higher approach airspeed to provide a cushion against the sudden loss of lift resulting in an increase in the rate of descent. The gust factor is computed by finding the difference between the REPORTED wind velocity and the MAXIMUM gust velocity.
  (Example: winds 280 @ 8 kts gusting 16 kts)
  - The approach airspeed would be increased by ½ of the gust factor.
  - For this example, the gust factor is 8 kts. So the increase in approach airspeed would be 4 kts.
- **Balked / Rejected Landing**: A balked or rejected landing is executed when the airplane is in the round out or flair segment of a landing. Airspeed will typically be well below Vy or Vx, and the aircraft is in ground effect, close to a stall. After applying full throttle and retracting the first 10° of flaps, PITCH control is critical in order to establish the climb airspeed per the POH. Any further retraction of flaps or an abrupt pitch movement to initiate a climb could stall the airplane causing a continuation of the descent to the runway.
- **Missed Approach / Go-Around**: These maneuvers are similar in the respect that they are typically executed for the same reasons but done during different flight operations. A Missed Approach is a procedure that is done when an instrument approach when the approach cannot be completed to a landing. A Go-Around is done in VFR conditions anytime an approach to a landing cannot be completed.
  For a VFR Go-Around the pilot should offset to the right side of the runway to avoid any conflict with an aircraft departing from the runway. For an IFR Missed Approach, each approach has specific instructions to be flown by the pilot. Outlined below are some reasons for executing a Missed Approach or Go-Around.
  - Aircraft is not properly configured for landing.
  - Aircraft is not aligned with the runway.
  - The pilot is not able to touchdown at the:
    - Desired landing point,
      Or the LESSOR of:
    - First 1/3 of the runway,
      Or
    - The first 1,000 feet of the runway.
  - A hazard(s) exist on final or on the runway.
  - Improper altitude or rate of descent for the approach.
  - Improper airspeed for the approach.
  - Improper assessment of the wind conditions and its effects.
  - Communications distractions with ATC or passenger(s).

PAA – Terms, Phrases & Explanations (TPE):

Facts to consider for a CROSSWIND operation:

What is a Crosswind?

- If the winds are greater than 5° from the heading of the runway.

Flap Selection:

- For takeoff and landing, use the flap setting designated in the aircraft POH, "Normal Procedures" section Crosswind Landing.
- For landing and subject to the amount of gust factor, a reduction in the amount of flaps may be used for the approach and landing will result in a greater landing distance.

Maximum Demonstrated Crosswind:

- The maximum demonstrated crosswind velocity for takeoff and landing designated in the aircraft POH.

Ground Track:

- Crabbing into the wind will be necessary to maintain the proper GROUND TRACK while operating in the traffic pattern. In a crosswind landing, a side slip configuration should be implemented on short final which is defined as ¼ to ½ mile from the runway threshold with the longitudinal axis of the airplane aligned down the centerline of the runway for the round out, flair, touchdown and rollout.

What is Crosswind?

A crosswind is a wind which is not parallel with a runway or the heading of an airplane. If the wind is GREATER than 5° left or right of the runway heading, this is considered a crosswind. The numbers you see on a runway corresponds with the approximate magnetic heading of the magnetic compass. During takeoff and landing operations, the pilot will need to be cognizant of the existence of any crosswind and deal accordingly in order to keep the longitudinal axis of the airplane aligned down the centerline of the runway when departing or landing. This is what is referred to as being "Crosswind Correct". If the aircraft departs and/or lands and it is NOT crosswind correct, the airplane will move sideways across the runways that could result in damage to the tires, wheels and the main or nose landing gear. In severe cases, and if improper control input are not used, the aircraft could move off the side of the runways resulting in the collapse of the gear causing significant structural damage to the aircraft. Thus, it is important to remember the following information:

- Look at the wind sock on short final to get an idea of where the wind is coming from.
- Look at the longitudinal axis and ground track of the airplane to the centerline of the runway in order to make the appropriate control inputs.
- A METAR, Terminal Area Forecasts, (TAF) reports are given in the direction of TRUE North NOT magnetic North.
- ATIS, ASOS, and AWOS are reports given in the direction of MAGNETIC North NOT from True North.

What is Crosswind Component?

A crosswind component is an angle from the to the runway or the of an airplane to the runway. In order to determine the crosswind component, most POH's have a crosswind chart but it is NOT specific to an aircraft. Thus, you can use any crosswind component chart published for general aviation aircraft. Also noted in the POH is the maximum demonstrated crosswind velocity published for that model of aircraft. Please be perfectly clear that this may NOT be the maximum crosswind that the airplane could perform at but the aircraft was tested up to the maximum velocity published for that model of aircraft. Also, please keep in mind that the pilot doing the testing is a very experienced pilot. Every pilot will need to assess their personal minimums before going out to attempt crosswind landings. All student pilots training at PAA will have a restriction placed on their solo endorsements limiting the amount of crosswind that they are approved to operate.

PAA – Terms, Phrases & Explanations (TPE):

Communications:

Positive Exchange of Flight Controls:

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