PROFESSIONAL LINE SERVICE TRAINING

TRAINER’S GUIDEBOOK
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FORWARD

The NATA Safety 1st Professional Line Service Training (PLST) Online prepared this Trainer’s Guide to be used by the organization’s designated trainer, as a guide, in order to administer the PLST Online program. As your company’s training representative, you will be expected to have a working knowledge of what is presented in each training session. The training curriculum corresponds with each of the online training modules as well as the additional information and checklists. It is critical that the trainer thoroughly review each section of this Trainer’s Guide. In conjunction with viewing each online module, the trainer must also review each Online Module’s additional references information (given in portable document format (PDF) throughout the lessons) and become familiar with the different aircraft contained on the Aircraft Ground Service Online (AGSO) web site at www.nata.aero/agso. We will leave copies of the Aircraft Ground Service Guide and Aircraft Towing Guide until the AGSO is complete, but please be aware the AGSO has the most up-to-date information and is easily printed. (All references may be found online under the Training Resources.) The review of this information must be completed prior to presenting the training program to employee(s).

Every FBO and airport is different and has its own specialized set of operating procedures and policies as dictated by Federal, state, local, municipal codes and regulations. Additionally, the type, size and layout of the airport, type of aircraft operated and supported, the local climate and weather patterns, type of ground support equipment used, and the types and brands of fuel provided, all have a major impact on the specific operational procedures.

Due to many variables and situations that exist, it is impossible to discuss and review every possible training scenario. Therefore, it is the intent of the PLST Trainer’s Guide to provide a means of support to those individuals responsible for the skills development of employees who have been designated to refuel and tow aircraft and provide ancillary ground support services to general aviation and business aircraft.

When using this Trainer’s Guide and all other related PLST training material, please keep in mind that ramp equipment manufacturers, aircraft manufacturers, governmental agencies, and aviation regulatory groups, can and often do, change the policies, procedures, and requirements for performing aviation service functions. The PLST training curriculum, including materials and online lessons contained current information at the time of production. Updates will be made as required. In the event of a discrepancy between data provided herein and data provided by manufacturers, and regulatory agencies; the manufacturer or regulatory agencies shall take precedence.
This Guide is only to be used as an educational support tool. At NATA, we want you to have the most current information available and welcome any recommendations for improving the effectiveness of this training program.

As a current subscriber to NATA’s Safety 1st PLST, you may reproduce materials within this publication for the sole purpose of training company employees and in accordance with the NATA Safety1st PLST Online Program licensing agreement.
# RECORD OF REVISIONS

The following sheet is provided to register all approved revisions of the *Trainers Guide*. As a current subscriber to NATA’s Safety 1st Professional Line Service Training Program, please ensure you have the latest edition by logging into [www.nata.aero/plst](http://www.nata.aero/plst). If you find discrepancies within this publication, please contact Safety 1st at 703-575-2045 or email Safety1st@nata.aero.

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I. INTRODUCTION

A. Program Overview and Components

The NATA Safety 1st Professional Line Service Training (PLST) program is a web-based training program that introduces, reviews and emphasizes the fundamental tasks and responsibilities for personnel working on a general aviation flight line. It thoroughly covers the various "need-to-know" as well as the "nice-to-know" aspects of the line service position. The PLST is designed to consolidate a company’s training efforts while allowing the flexibility to meet specific and individual training needs.

From the trainer's standpoint, the various aspects of the line service position have been clearly identified and thoroughly researched. The program provides the information, direction, and organization necessary to make training objectives simple and straightforward. The PLST has been used by thousands of FBO's, airport operators, aircraft operators and corporate flight departments since the early 80's. The online training and reference materials provide in-depth guidance and a varying amount of intricate details of the line service position. The online module exams, that challenge the student’s knowledge and judgment, are based on the material presented in the online lessons and reference materials/checklists throughout each training module. Drawing on a large bank of in-depth questions, each exam is uniquely selected from random questions as well as random answers.

The complete PLST consists of the following educational components:

I. Trainer's Guide. (References are found online in Training Resources)
II. Additional reference materials and checklists presented as pdf documents throughout the online lessons and in each Module Instruction Plan.
III. Online exams that randomly select questions from a large number of questions and randomize responses, making every exam unique. Questions and concepts are reviewed at the end of the exam to ensure student understanding.
IV. Hands-on procedures and Practical Exams assist with on the ramp OJT.
V. Aircraft Ground Service Online (AGSO) at www.nata.aero/agso, Aircraft Ground Service Guide (AGSG) and Aircraft Towing Guide (ATG). We will leave copies of the AGSG and ATG until the AGSO is complete, but please be aware the AGSO has the most up-to-date information and is easily printed. (All references may be found online under the Training Resources.)
VI. Eight core online training modules that range from 40 minutes to more than two hours in length and include:
   1. INTRODUCTION and GROUND SERVICING
   2. SAFETY
   3. GENERAL FUEL SERVICING
   4. GENERAL TOWING PROCEDURES
In addition to providing the information necessary to train newly hired employees, the PLST offers proven procedures covering nearly all aspects of line service. As such, the PLST is also used as a recurrent or refresher training tool. The PLST provides engaging, self-paced training for everyone on the line.

**B. PLST Objectives**

The primary goal of the PLST program is to teach new employees the basic procedures for the ground servicing and refueling of general aviation aircraft. Fundamentally, the trainer must ensure that each employee develops a “safety first” attitude as well as a professional and positive attitude towards each task and customer. In order to meet this goal, there are a number of objectives that must be met.

These objectives include:

- Introduce newly hired employees to general aviation and airport operations
- Develop the skills necessary to successfully perform the duties of the Line Service Specialist and Customer Service Specialist position
- Promote, establish and maintain a safe ramp and working environment
- Reduce costly accidents through the use of best practices and safe procedures
- Provide a resource for the recurrent training of all employees

Professionalism is not only important but is absolutely critical to the safety of your customers and employees as well as ensuring the financial success and viability of your organization. The professional attitude and performance of your employees, that is so critical to every organization, begins as each new employee walks through your front door. New employees offer the trainer an opportunity to enhance and improve their organization. Well trained and informed employees are the key to developing a safe operation and a strong customer oriented environment. The results of well trained personnel are apparent when the efforts of each person come together to provide the best service each and every time aircraft, passengers and crew members arrive on the ramp.

Throughout this program, the trainer’s objective is to build strong performance skills that will be augmented with well directed “On-the-Job Training” (OJT) and additional follow-up during and after the initial training period. Classroom instruction remains an integral ingredient of the overall training process and is invaluable in terms of assisting the new employee with identifying the key concepts, responsibilities and requirements for their individual operations; however, it must be integrated with specific “OJT” instruction. Specific and supervised “hands-on” experience must be part of every employee’s training in order to reinforce the formal classroom training that the individual has received.
It has been estimated that students remember:

- 10% of what they hear,
- 20% of what they read,
- 30% of what they see; and
- 70% of what they hear and see.

While this scenario may not hold true for all people and all situations, it presents an interesting dilemma for the trainer who believes that the majority of “learning” comes through only classroom lecture or only “OJT” instruction.

Training and safety are two critical factors in the general aviation environment. There is no choice of whether to train or not; the only choice is that of method. PLST online is the method of choice for those managers and trainers who feel that a training program built upon strong fundamentals is the key to a safe and successful operation.
II. TRAINING GUIDELINES

A. Definition of Training

When you think of training, what comes to mind? Many trainers, supervisors, and managers indicate that teaching and instruction first comes to mind. You may define training as the process of teaching an employee the proper way to perform a specific job. The words safely, efficiently, responsibly, confidently and completely probably come to mind when describing the proper methods to perform a task or job.

You may say that training is developing and increasing the knowledge and skill level of an employee. You could even pull out your dictionary and quote the definition of training; “To make proficient by instruction and practice, as in some art, profession, or work.”

You may begin to describe the training process that consist of a number of activities including; explaining, demonstrating, observing, evaluating, listening, questioning, reviewing, testing, coaching, coordinating and supporting. On all counts, you would be correct. Training is all of these and more. Most importantly, training is the foundation for developing and maintaining a safe and successful operation.

B. Training Objectives

Simply stated, the basic purpose of any training is to change or modify behavior. In order to achieve this goal, the training process must be “result” oriented. A properly designed training program provides the framework for the acquisition of knowledge by establishing specific objectives. Through the training process, employee behavior can be shaped to meet the objectives of the training program and ultimately, to achieve a desired level of performance.

Nearly every training program has a number of basic objectives, among them:

- Increase productivity
- Increase quality
- Increase level of customer service and satisfaction
- Reduce or eliminate accidents

In addition to these, there are a number of other common objectives which vary depending on the point of view. For example, from a management point of view:

- Reduced turnover
- Heightened employee morale
- Reduced direct supervision
- Increased stability and flexibility
The objectives, as seen from an employee’s point of view, may include:

- Creating a positive work environment
- Creating a feeling of belonging and of teamwork
- Increasing knowledge and skills

Establishing training objectives is one of the key factors in a successful training program. The degree of success of any training program can only be measured by the amount of learning that has taken place. Learning has been defined as “a change in behavior as a result of experience”. For this reason, specific criteria or specific standards must be established in order to determine if the training objectives have been achieved, and learned behavior must be observed and evaluated accordingly in order to judge the success of a training program. The trainer must be able to see and measure the results. Individual module “Instruction Plans” are located later in this guidebook that outline specific training objectives.

C. The Importance of Training

How important is training? In the aviation services industry, there is little doubt that the success of an organization and the ability to operate and maintain a safe environment for its customers and employees, is closely related to employee learning and development. An airport and its unique operating environment is not the place to have people learn by trial and error. The first and most obvious requirement for training is that of the care and concern for human life. The next concern is that of care and protection of equipment and facilities. The Flight Safety Foundation, an aviation safety research organization, has estimated that ground accidents worldwide cost air carriers $10 billion annually, including costs associated with injuries and fatalities and other indirect costs such as cancelled flights! While this study focused on the International Air Transport Association air carrier operations ramp, it is important to note that two of the major culprits for these accidents were identified as a lack of, or not adhering to, standard operating procedures, and inadequate training or inadequate training follow-up. Regardless of the type of aircraft environment you operate within, training remains a key ingredient for the prevention of accidents and incidents!

Safety is not the only justification for training. Numerous aviation publication surveys have identified "quality of service" as the number one criteria used by professional pilots to select a FBO. Aircraft operators commented most on FBO personnel, especially line service personnel, who appear to be "untrained" or just plain "sloppy". Obviously, this kind of service does not lend itself to success. Aircraft operators look for and expect professional aircraft servicing provided by competent, knowledgeable and friendly line service personnel.

The effects of poorly trained line service personnel have both tangible and intangible results. The following three tables look at possible results and effects, under various scenarios, that will occur without proper training for line service personnel.
1. ACCIDENTS

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<tr>
<th>RESULTS</th>
<th>EFFECTS</th>
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<tr>
<td>Loss of Life</td>
<td>Catastrophic loss on family and company</td>
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<tr>
<td>Employee Injury</td>
<td>Lost time (reduced available workforce)</td>
</tr>
<tr>
<td>Property Damage</td>
<td>Increased insurance costs</td>
</tr>
<tr>
<td>Customer Aircraft Damage</td>
<td>Unusable, and high replacement cost for use of other aircraft</td>
</tr>
<tr>
<td>Company Vehicles/Equipment</td>
<td>Unusable, and inability to meet customer needs</td>
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2. POOR WORK PERFORMANCE

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<th>RESULTS</th>
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<tr>
<td>Poor Quality of Work</td>
<td>Loss of revenue and profit to company</td>
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<tr>
<td>Low Employee Productivity</td>
<td>Size of workforce</td>
</tr>
<tr>
<td>Customer Dissatisfaction</td>
<td>Loss of customer(s)</td>
</tr>
<tr>
<td>Unsafe Work Environment</td>
<td>Higher number of accidents and related insurance claims</td>
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<tr>
<td>Unsafe Aircraft Servicing</td>
<td>Loss of pilot and passenger lives</td>
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3. POOR WORK ENVIRONMENT

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<th>RESULTS</th>
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<tr>
<td>Low Employee Morale</td>
<td>Reduced employee stability and flexibility for company</td>
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<tr>
<td>Employee Confusion</td>
<td>Increased supervisory requirements</td>
</tr>
<tr>
<td>Employee Dissatisfaction</td>
<td>High employee turnover</td>
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<tr>
<td>Increase in Hiring</td>
<td>Increased training costs</td>
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As we have seen from the above examples and scenarios, there is really no question as to the importance and necessity of training. The training of employees should be recognized as an important and serious responsibility. This responsibility should not be taken lightly, especially in the aviation industry, where catastrophic consequences may result if training is not completed properly!
D. **Keys to Successful Training**

1. **Training must be MOTIVATED**

Employees and trainers must be motivated. Employees must want to learn, and trainers must want to instruct. When an employee needs to know something, the motivation is there and the trainer’s task becomes much easier. While the responsibility bestowed upon you to train others is a sizeable task, and may even seem to be overwhelming at times, it is important to remember that you are the key to developing your employees. A few ways to motivate your employees include:

   a. Let the employees know how they will benefit personally from the training exercise.
      • Employees need to know and see “what’s in it for me?”

   b. Increase the employee’s involvement in the learning exercises.
      • The more the employees become involved, the quicker and better they will learn

   c. Continually give the employee feedback on their level of performance.
      • DO NOT surprise the employee; if the employee has areas that need improvement, let them know immediately in a positive way

   d. Maintain a professional and positive attitude.
      • Enthusiasm and positive energy is contagious. Employees are intuitive and will reflect the attitude that the trainer displays

   e. Always acknowledge the employee’s questions and respond with positive answers.
      • Encourage questions and open dialogue by responding with positive responses and statements

   f. Emphasize the positive and downplay the negative.
      • Motivate your employees by telling them what they did right

   g. Continually review the training schedule and objectives with the employee.
      • This helps the employee to maintain focus and concentrate on the objectives throughout training

Creating a positive and productive learning environment is critical to motivating your employees. A new employee looks to you for direction, leadership and support. There is no argument that training is work, and most times hard work, but on the other hand, it is also a privilege to help people learn and develop new skills.
2. **Training must be INTERACTIVE**

Employees and trainers must be responsive to one another, and they must be able to communicate effectively with one another. Communication is the mutual exchange of information and understanding by any effective means. Communication should not be one-way; it must be two-way to be effective. There are a number of barriers that block understanding including; perception, language, semantics, inflections, personal interest, emotions, preconceived notions, attention, wordiness and assumptions. You must be aware of these barriers. A trainer’s role includes a responsibility to speak effectively and to **listen attentively**. Listed below are a number of ways to improve your listening skills:

a. **Listen intently and do not interrupt**
   - Pay close attention to what is being said
   - Maintain eye contact
   - DO NOT interrupt the person
   - Wait until after the employee has finished with their remarks or has finished responding to the question before speaking

b. **Listen to understand an employee’s point of view**
   - Listen carefully to *what the person is saying*. The employee’s response is an indicator that the person may or may not have the full meaning or understanding of the concept or procedure.
   - Listen for *ideas*. Do not disregard or discount ideas and suggestions from new employees who are looking at a procedure from a completely different perspective or point of view.
   - Listen for *concerns*. Listen closely for clues of the employee’s doubt or uncertainty as to the proper steps to follow for a procedure.
   - Listen for *attitudes*. Do the responses reflect an emphasis on safety, caution, customer service and care?

c. **Provide feedback**
   - Give *timely* feedback. Respond to the situation immediately.
   - Critique the specific skill development. DO NOT direct the feedback personally towards the individual.
   - Provide feedback in a positive manner.
   - Be consistent and fair with your feedback. Each employee needs to know his or her progress.

d. **Avoid negative verbal feedback**
   - Emphasize the positive and downplay the negative
   - DO NOT talk down to the employee or use abusive language
   - Avoid embarrassing the employee, especially in the presence of others. Talk to the employee in private if needed.
• Practice the old axiom, “Praise in public, critique in private.”

e. **Avoid emotional reaction**
- Remain calm and maintain your composure in tense situations.
- Avoid arguing. Becoming emotionally upset, interrupting, arguing, or criticizing only blocks the communication and learning processes.
- Remain upbeat and positive, even when things are not going well. Your employees will reflect your attitude and it will affect their attitude as well as their motivation to learn.

f. **Avoid negative non-verbal feedback**
- Maintain a positive attitude, especially in your facial expressions. This could include a variety of actions or facial expressions such as: head shaking, rolling one’s eyes, looking bored, giving a look of disparagement, confusion, question or surprise.
- Constantly provide positive feedback. Give the employee your undivided attention; smile and nod your head in approval, etc.

Put yourself in the employee’s place; try to see things from the employee’s point of view. This will help you understand their needs, fears and apprehensions (learn to recognize anxiety). Practice the above guidelines and your communication skills will improve.

3. **Training must be DISCIPLINED**

You must devote yourself to the training effort. While it is expected that you must be willing to commit yourself to the training process, you should insist on the same from your employees. The simplest way to instill this attitude in your employee is to **LEAD BY EXAMPLE!** Your employees will be paying close attention as you demonstrate various procedures and as such will follow your actions. Be sure you display a professional and safe attitude with everything you do. This is your opportunity to ensure your employees perform their duties safely and professionally from the start. It is much easier to teach someone the correct way to perform a function the first time rather than try and change unsafe or poor work habits.

Convey the importance and seriousness of the training program. Emphasize that it takes a dedicated effort on both your parts to receive the full benefits of the program. Challenge your employees to stick to the scheduled training period. At the beginning of the training period, establish both a time schedule and training objectives. This will help the employee to fully understand what objectives and goals must be accomplished, and the time frame for when these objectives must be met.

As you can see, training is a combined effort. It is not simply the process of passing on information from one person to another. To make the training period successful, do not forget that **the primary objective of the training process is to communicate effectively and continuously with your employees.**
E. Preparing To Train

Depending on your point of view, employee training could be one the most rewarding or one of the most frustrating parts of your job. Planning, organization, and preparation are the keys to successful training. Interestingly enough however, these activities can be some of the most difficult aspects of the trainer’s job.

The PLST Trainer’s Guide has been designed to assist with the organizational and planning aspects of the training process. The remaining aspect, preparation, is left to the individual trainer. In order to prepare yourself, you must be certain to:

1. **Become familiar with all aspects of the PLST**
   a. **Review all of the online training modules**
      - Review as necessary in order to become comfortable and knowledgeable about the program and its contents
   b. **Read the Trainer’s Guide carefully and completely**
      - Thoroughly read and review all of the material presented
   c. **Become familiar with reference materials**
      - Read and review your written resources such as those identified in each module’s Instruction Plan, i.e.; FAA Advisory Circulars, your fuel supplier’s operating policies and procedures, etc.
   d. **Read the additional reference materials and checklists in PDF format contained throughout the online modules and in the Training Resources**
      - Print, read and review all of the reference materials given in each online module lesson as well as the Training Resources. Make sure to share all reference materials in the Training Resources with every student.

2. **Gather appropriate materials and training aids as listed in each Instruction Plan**
   a. **Have the training materials and aids readily available**
      - These materials should be shown and shared with the employee(s) and remain “on-hand” for easy reference throughout training

3. **Acquire a thorough understanding and knowledge of your operation**
   a. **Review and know your company and department policies and procedures**
   b. **Review and know your airport rules and regulations**
   c. **Review your local fire codes and know those that pertain to your airport**
4. **Acquire a thorough understanding and knowledge of the job**

   a. **Be sure you are qualified to train and perform the tasks required of a Line Service Specialist and Customer Service Specialist**
      - Be able to explain how each task must be performed correctly
      - Be able to explain the “importance” of what and why a procedure must be done a specific way
      - Be able to explain what the consequences are for performing a job incorrectly

The *Trainer’s Guide* is exactly that, a "guide." When you add your company’s specific operational procedures and your personal knowledge and experience, the PLST becomes your company’s specific and complete line service training program. After becoming thoroughly familiar with all aspects of the PLST and your operation, the next step is to put the program to work. The following section on "Training Methods" will discuss the proper methods for instruction.

**F. Training Methods**

An important consideration when instructing people is that of using and varying the methods you use to present training concepts and materials. Not all people receive and process new information in the same way. For many, a detailed and specific discussion is required, others may learn best with hands-on demonstrations, while others may require a combination of classroom discussion and demonstration with repetitions of the procedure. It is recommended that a combination of the various methods discussed below be used to build motivation and to stimulate the employee’s interest.

1. **Classroom Training**

Classroom training is an integral part of the training process. Using the proper guidelines, this method is extremely effective for introducing concepts and outlining the “why,” “how-to” and safety aspects of a particular procedure. Classroom training is important to build knowledge of a particular task prior to actually performing it. The classroom portion of any lesson is most effective if it is supplemented with training aids and materials. Each module’s Instruction Plan will identify the various training aids required. Classroom training offers a number of advantages including:

   a. The ability to use visual aids. Using visual aids helps employees visualize the training concept or procedure prior to having to perform the procedure. Visual aids also maintain the employee’s focus and keeps their attention during the discussion. It will also add variety to the presentation. Visual aids may include videos, slide programs, overheads, flip charts, graphs, diagrams and pictures.
b. **Saves time** during the overall training period. The trainer can present a large amount of material in a short period of time.

c. **Allows control of the subject.** The trainer can remain in control of the presentation (information) without interruption and distraction.

d. **Offers flexibility.** The size of the group, as long as it does not exceed approximately eight to ten people, will not deter from the learning process, in fact it may add to the presentation and related discussions.

Be aware that possible **disadvantages** to classroom training do exist. These disadvantages include:

a. **One-way communication** may result if training material is not supplemented with discussion.

b. **Boredom** may result if the presentation of training information and materials lacks variety.

c. **Limited attention span.** Generally, most adult’s attention span is limited to approximately 17 to 18 minutes per subject. Changing the training focus at regular intervals will help to retain the employee’s attention.

d. **Retention of material.** This is directly related to the employee’s involvement with the training material. A recent study revealed that most adults will retain only 37% of information received, after one day, without repetition of the information.

e. **Lack of feedback.** The employee may be less likely to engage in discussion with the trainer if they do not receive constant encouragement from the trainer.

Classroom instruction remains an integral ingredient of the overall training process. Classroom instruction is helpful to assist the new employee with key concepts, responsibilities and requirements of company specific operations. It must also be integrated with specific OJT instruction. Organized and specific “hands-on” experience must be part of the employee’s training in order to reinforce the classroom training each individual has received.

2. **On-The-Job (OJT) Training**

It is a well known fact that people learn best by doing. This is largely due to the fact that learning results from stimulation of the senses, the more senses used the better, with "sight" being the best. Studies of learning indicate that learning can be increased significantly by letting people "see" rather than only letting them "hear." This leads to the "show and tell" method of learning, more commonly referred to as “On-the-Job” or “OJT” training. OJT reinforces the use of visual aids throughout the training process. Specific skills should be developed through the use of OJT. To make OJT as effective as possible, the following step-by-step procedure is recommended:

a. **Trainer explains the task, thoroughly**
   - Explain what the task consists of and why it is done
• Explain, step-by-step, how to perform the task
• Emphasize safety and key points
• Stress the importance of performing the task correctly
• Identify the consequences of performing the job incorrectly

b. **Trainer performs or demonstrates the task**
   • Always use safe work methods, no shortcuts
   • Emphasize safety in **everything** you do
   • Repeat the explanation of the job as you perform it and use key points

c. **Employee explains the task to the trainer**
   • The employee should identify safe work methods, key points and the proper sequence of events. The trainer should ask questions during this process to verify the employee understands the task.

d. **Employee performs or demonstrates the task**
   • Prior to starting, the employee explains the objectives and steps required to complete the task
   • Allow employee to perform the task until it is learned and understood
   • The trainer should not interrupt the employee unless an error is about to be made

e. **Trainer reviews the task with the employee**
   • Review objectives and expectations
   • Explain and demonstrate the least understood components of the task
   • Ask questions as to why the task is performed, correct procedures to follow and the possible consequences for tasks performed incorrectly

f. **Training is followed-up by the trainer**
   • It is necessary to make periodic observations of the newly trained employee. The trainer needs to ask questions, correct errors, give encouragement and recognition. It is important to give the employee positive feedback. Watch the employee’s performance closely and concentrate on critiquing and correcting those areas that need improvement.
   • Your goal will be to improve job specific behavior. Be sure that your feedback is timely, when the situation occurs, not after the fact.
   • Document employee’s training and the entire training progress.

3. **Self-Study**

The self-study method entails moving the employee to a quiet environment free from distraction and interruptions or assigning independent study to be completed away from the work area in a quiet and uninterrupted area. During self-study periods, the new employee
completes the online training modules as assigned. All learning assignments require self-study. In addition, self-study time is to be set aside for new employees to review procedures and reference materials.

Self-study, when managed properly, can become a very effective learning tool. There are situations where self-study is effective and situations when self-study is not effective. Close management of this concept is required in order to maximize self-study effectiveness. To assure that the employee realizes the benefit from self-study, you must become aware and cognizant of a few of the advantages and disadvantages of self-study.

Advantages to the self-study method include:

a. Allows the employee to work at his or her own pace.
b. The employee can re-read and review online and reference materials until they feel comfortable to move onto the next topic.
c. Allows the employee to relax and learn at their own individual pace without the pressure of the classroom environment.

The Disadvantages to the self-study method may include:

a. Time management by the employee. Is the employee able to use his or her time effectively?
b. There is no one available to answer questions and discuss key points or issues as they arise.
c. The employee may misinterpret vital safety issues, miss key terms, important points and procedures.

As a trainer, you will need to adapt to your employee’s learning style throughout the training process. If one method of instruction is not working, try another. The recommended course of action is to “key” into your employees and find what works best for them.

G. Maximize Online Learning

1. Online Training and Learning

The benefits of online training are becoming more and more evident with the advent of creative and cost effective technology. Training that is accessible 24/7 anywhere internet access is available, has changed the way we view and conduct training. The PLST online training includes detailed video, engaging photography, concise text, captivating narratives and interactive animations that encompass all adult learning approaches. Learning includes increased retention rates due to the mix of interactive content while students feel reduced stress because of the self-paced training that online affords. Online training is consistently fresh and up-to-date, in addition to providing reduced training time as compared to traditional classroom instruction.
One of the most effective and upcoming mediums to train people is through the use of online training programs. This medium offers many advantages to the trainer as well as the student. The time you spend reviewing key concepts and procedures may be less because of the consistent training provided by online training. The emphasis on key concepts and objectives makes the online approach easy, streamlined and efficient. There are, however, a number of ways to increase the effectiveness of this learning tool by following a few simple guidelines as discussed below.

As stated previously in this guide, the desire to learn is a key factor in the effectiveness of any training program. When the desire is present, it must be linked with specific reference materials and practical “hands-on” demonstrations that support the material and concepts presented in the online training. The additional reference materials and checklists presented as pdf documents throughout the online lessons were developed to help the employee with more in-depth guidance material. Additionally the trainer should have, and share, all specific company and airport written procedures and other support information, as outlined in each module’s written Instruction Plan.

The objective is to ensure that the student obtains the maximum amount of information from each online training lesson. In addition to the reference materials, there are a number of other ways to enhance the actual online lessons to increase its effectiveness for the student. The following guidelines will help to ensure that the student obtains maximum learning from each lesson.

2. Trainer Preparation

The first step, prior to presenting training, is for the trainer to be prepared. This requires that the trainer be knowledgeable with the concepts and procedures that will be presented in each training module. This will also require a complete review of the Trainer's Guide and all the key elements of the program that include:

a. Eight online training modules.
b. Additional reference materials and checklists presented as pdf documents throughout the online lessons (All documents are on the online training resource section under PLST PDFs) as well as guidance provided in each Module Instruction Plan and PLST Training Checklist.
c. Related online exam(s) to be taken after each module. (Module 2, Safety, is divided into two online exams because of its length.)
d. Hands-on procedures and Practical Exams to assist with your OJT.
e. The Aircraft Ground Service Online (AGSO) at [www.nata.aero/agso](http://www.nata.aero/agso), Aircraft Ground Service Guide (AGSG) and Aircraft Towing Guide (ATG) and Fire Safety Training Manual. We will leave copies of the AGSG and ATG until the AGSO is complete, but please be aware the [AGSO has the most up-to-date information and is easily printed](http://www.nata.aero/agso). (All references may be found online under the Training Resources.)
This review will take time. However it is required if the trainer intends to present, explain and discuss the topics and concepts as presented in each module.

The first requirement of the review is to view each of the online training modules. This review should be conducted as many times as necessary to ensure that the trainer becomes completely familiar with the material. This in turn will allow the trainer to discuss the contents of the program with their employee(s) in a competent and professional manner. On the initial review of the program, the trainer’s objectives are:

- Familiarize themselves with the major topics and concepts presented in each online module
- Evaluate the effectiveness of the environment where the training sessions will be conducted. Viewing from the employee’s perspective, watch each online module from start to finish. Simulate the same environment the employees will experience and determine if this environment is conducive to learning.

Once the trainer has completed a “first” or preliminary review, he or she must be able to identify and discuss the major topics and concepts presented in the online module. Next, the trainer must evaluate whether or not the classroom is conducive to learning. If the classroom is not conducive to learning, then a change or alteration of the location may be necessary.

After becoming familiar with each online module on the first review, the objective of the second review is to focus on the specific procedures and details associated with each training topic and concept. Use the second review to:

- Identify those portions of each module that may or may not be applicable to your specific operation.
- Take notes of the specific procedures and steps to complete these procedures. Organize the notes and use them for your post-program review. These notes may also be used to develop training aids and support materials.
- The trainer needs to identify which segments or concepts of each online lesson that they may want to expand upon. During this second review, the best way to navigate from one concept to the other within the online lessons is to click on the concept menu (top of the screen) and select the pertinent area to review. The trainer may make notes and place emphasis on certain topics in each online lesson during the review session.

After the trainer has completed the online reviews, the next step is to begin the review of the reference materials that accompany these lessons. Once again the trainer needs to identify those issues that will need to be expanded upon or are specific to your operation. It is recommended that the trainer and student complete each module exam after all reviews of the online training
as well as the accompanying reference materials. This exercise will allow the trainer to become acquainted and exposed to the exam process from both a trainer’s and employee’s point of view. It is important to remember that the online lessons are designed to be completed first, followed by each module’s online exam. Once the online exam is successfully passed with an 80% or better score, the exam will no longer be available. The student may, however, access training until his/her six month assignment expires. We encourage the trainer to remind students to complete the online training, hands-on and practical exams within this six month period of time.

3. Materials and Training Preparation

Prior to the beginning of the training session, various training materials must be gathered and preparations made. The following is a short list of items that should be completed prior to the start of your training instruction:

a. Verify that the materials required for the training session are available; pens, pencils, notepaper, computer, printer and internet access.

b. Know and make sure everyone understands how to efficiently navigate the online training modules to maximize training and reviews. (Online guidance is available in the Training Resources, specifically in the Administrator’s Guidance/FAQs and Student’s Guidance/FAQs.)

c. Prepare written materials and any training aids required to support the information presented in the online module.

d. Plan any specific “hands-on” instruction or other activities as outlined in each module Instruction Plan.

e. Arrange, in advance, the use of equipment and aircraft for training purposes as outlined in each module Instruction Plan.

Organizing training materials prior to the start of the session is important for both the student and the trainer. Time spent on organizing materials, making copies or arranging equipment during the time when instruction should be taking place is not time well spent. This reduces the amount of time the employee has available to develop their new skills. This in turn increases the total amount of time the trainer needs to allocate in order to complete the employee’s initial training.

4. Online Training

Trainers may look to this time as an opportunity to take a break or to follow-up on some other business. While there may be other issues that you could attend to, remember the primary reason you are there is to train your new employee. While your trainee is viewing the online training, you should:

- Remain near the training room and available should a question arise
concerning the training. Online training is designed to emphasize key concepts and objectives at the student’s pace. If the student is new to online training, review the best means to navigate through the lessons and give them a general overview of the lessons as needed.

- Look in on your employees as they progress through the online training. Are they paying close attention, showing interest or boredom or do they look confused or perplexed? The observance of any of these may require you to make some changes.

- **Important Online Tip**: Training modules consist of topics broken down into concepts. Click on the Concept Menu at the top of the training screen to display the different concepts in a topic. Emphasize to your students that they must complete a concept in its entirety to receive credit. Concepts that are complete display a check mark and incomplete concepts do not. If the student closes the topic before completing ALL concepts, credit will NOT be given until ALL concepts within the topic are complete. Training will begin with the incomplete concept when training is resumed. Once all concepts are finished, students must close the training as instructed and will receive completion status.

- **Important Online Tip**: The student must wait for the “yellow circle” to display around the forward arrow before s/he can advance to the next screen on initial training. This was done so that students would not skip important concepts. All screens must be viewed and completed to the end of the topic to receive a status of completed training for that particular topic. The number of topics and their length varies from module to module. Depending on the time available for training, your student may be able to complete several topics within a module. We recommend that the student be encouraged to take a break at the conclusion of one or two topics.

- You should be available at the end of the training session to discuss major points or key concepts. We do recommend minimal disruptions to encourage the student to progress at his or her own pace to facilitate learning. Keep in mind that this procedure may not be necessary for all students. The trainer must assess student by student so that learning is maximized with very little disruption.

There are a few important considerations the trainer must remember when training is conducted. The first involves the time frame. It is better to schedule training earlier in the day, but not too early, when people are generally more alert. It is also recommended that online training NOT be done just after lunch or dinner breaks. These are probably the worst times because people tend to be a little sleepy and tired right after eating. Monitor the temperature of
the room. A warm room may tend to make people sleepy which results in little or no learning.

5. **Post Online Training Presentation**

After the online training session is complete, it is recommended that you schedule a short break of 10-15 minutes if you plan a review session with students afterwards. Most adults will become uncomfortable and restless after sitting, especially in a quiet room. You may also want to schedule training at another time with several students. Your training session will depend on the length of the material you want to cover. Keep in mind the longest module in the PLST is Module 2 on **Safety**. It is divided into two parts or mid-way through the ten topics that make up the module. It is recommended you hold two training sessions that correspond with this training break down. Again, other modules may be shorter in length and lend themselves to one review session.

Make sure to allow time for your student(s) to get up and move around if you conduct a review session following online training. A short break will help the employee to remain alert during the post online training discussion. Keep in mind that they have just taken in a lot of information and may need a few minutes to let their minds take a break as well. While your student(s) are on break, you will need to:

- Distribute any support materials related to the training module/session.
- Prepare any training aids that will be used during the discussion.
- Review and share the module Instruction Plan’s learning objectives.

Once the employees have returned, begin the post program review and discussion.

- To get the discussion moving, ask open-ended and subject-specific questions, such as; “What is the minimum distance for safely positioning a refueler to an aircraft prior to refueling operations,” “What is the correct color code and banding to identify 100LL aviation gasoline,” “What are the specific steps taken to complete a walk-around of an aircraft prior to towing,” etc. This questioning process will help to stimulate and spur interest, questions and general discussion.
- Discuss, in detail, the major topics and procedures presented in the program. Use the Module Instruction Plans and Checklists to assist with the review. Use support materials to assist in the explanation, description and discussion of each topic or procedure.

The post-program review is an important aspect of the classroom instruction session. Use this time to emphasize key points, reinforce critical issues and review step-by-step procedures, particularly company specific policies and procedures. Please note that the trainer should schedule short 5 to 10 minute breaks for the employees, for every 45 - 50 minutes spent in the classroom. This break period will help the employee(s) digest the information and remain attentive.
6. **Conclusion**

One of the most challenging aspects of preparing an employee for their job on the flight line is that of introducing him or her to the many tasks and procedures that they will be required to perform. Due to these many and varied tasks associated with flight line operations, it is almost physically impossible to accomplish this task without the support of training aids, such as an online training program and specific written procedures. We have previously discussed the many ways in which you, the trainer, can enhance an online training program.

A review of the attributes for an effective online training program includes:

a. The ability to present information efficiently and effectively at the student’s pace.

b. The ability to illustrate hard-to-grasp concepts through graphics, videos and clarifying animations.

c. The ability to establish best practices and safe procedures.

d. The ability to demonstrate correct performance of safe habits and skills.

e. The ability to establish consistency and uniformity for all new and recurrent training.

f. The ability to consistently deliver the most up-to-date training as well as the latest practices and industry standards.

g. Increased retention rates for students due to the mix of interactive content enriched with visuals and assessments.

However, be advised that there are limitations with online training programs. Stand alone online training programs are not able to:

a. Answer all questions

b. Lead discussions

c. Provide company specific scenarios that you may experience at your operation

d. Offer first-hand experience

It is for these reasons that an experienced and knowledgeable trainer be “on-hand” throughout the training process. An effective online training program can be an excellent training tool when supplemented by a well-prepared trainer. The trainer must, in turn, provide clear, printed materials and complete each online and classroom discussion with specific OJT instruction. You must understand the importance of merging the online training portion of a program with the hands-on OJT skill development. Any training program based solely on online lessons or written guidance materials is simply not efficient or effective.

**H. Welcoming the New Employee**

A new employee brings to the job a high degree of uncertainty that in turn produces anxiety,
and anxiety can make learning difficult. An organized training program used effectively can reduce new employee anxiety; thereby, creating a healthy and positive work environment that will help facilitate learning. The first day on the job is perhaps the most important for a new employee. Obviously, it requires your full attention to ensure that things go smoothly and that the proper environment is created. It is one of the best investments you can make in your employees.

1. Preparation for the Employee’s First Day
In order to assure a smooth first day, you will need to make some arrangements and preparations. Begin by calling or arranging a meeting with your new employee prior to the start of their first day. This will allow you the opportunity to introduce yourself and to get to know the new employee. The following items should be addressed:

a. Issue the “New Employee Training Questionnaire.” A copy of this questionnaire is located in Appendix A of this Trainer’s Guide.

b. Ask the employee to complete the “New Employee Training Questionnaire” prior to arriving on the first day.

c. Set the employee’s schedule for the first day, in addition to the first week, if possible. Set a specific time and location to meet on their first day.

d. Provide directions as to where they are to park their vehicle. Acquire the employee’s uniform sizes, should your company have a uniform program in place, so that you may place an order.

f. Advise the employee(s) to have the proper work boots or shoes and gloves as required by company policy.

g. Advise them to bring their Driver’s License, Social Security identification and any other information required by your company.

h. Provide any brochures or non-confidential company information that the employee can read in order to become more informed about the company. Point out the specific services your company provides.

After you have met with your new employee, you will need to arrange a few details in order to prepare for the first day of training:

a. Contact your uniform company and arrange to have a set of temporary uniforms available on the employee’s first day.

b. Notify your company benefits representative and arrange for a new employee orientation session.

c. Locate and prepare a uniform locker for the new employee, if applicable.

d. Prepare the training aids and materials you will need for the first day.

2. The Employee’s First Day on the Job
Do you remember your first day on the job? New employees frequently use a number of words to describe the first day on the job, words like insecurity, uncertainty, fear, loneliness and alienation. One of your first challenges is to provide or create an environment that might be
described in the following manner; friendly, secure, belonging and confident. There are three primary “first day objectives” for the trainer when welcoming new employees. These objectives are:

a. Place the new employee at ease. Assure him or her that you are there to train and support them in their new job.

b. Acquaint the employee with their new job, company and the training program. Review their specific duties, responsibilities and the performance standards that they are expected to meet.

c. Make the new employee feel a part of your team. Introduce him or her to all those you come into contact with throughout the day and make sure you take them around to meet others they will be working with throughout the day. Attempt to include them in all your conversations with others.

Begin the first day by spending a few minutes getting to know your new employee. This is your opportunity to begin building a rapport with your new employee. Let the employee do most of the talking by encouraging them to talk about themselves. This will accomplish two objectives. First, they will relax and become more comfortable. This will in turn help to put them at ease and allow for a better learning environment. Second, the employee will become more comfortable with you. This will help them open up and feel at ease to ask questions and enter into discussions throughout the training process.

After you have had a chance to talk and to get to know each other, give the new employee an overview of their new job, and a description of the daily tasks and responsibilities. Stress the importance of their particular job and the critical role they will play in terms of both safety and customer service. Additionally, you will want to talk about your company, its history, current business operations and projected goals and objectives. Explain, in detail, what products and services your company provides. Identify who your customers are and the important role everyone plays in maintaining the customers’ schedules. Discuss the specific role that the line department plays in the overall organization. Be sure to focus on the services that you specifically provide. As soon as possible, place the employee into a clean and professional uniform as applicable to your company. Placing the employee into a uniform will help to make them feel a part of your team and also help to instill a feeling of pride in your company.

Throughout the day, encourage the employee to ask questions. Stress the more questions the faster he or she will learn about the company and job related tasks. It is important to note that quick, positive responses to their questions are necessary to keep employees motivated and asking questions. Capitalize on this opportunity to keep the employee motivated to learn. The next step is to set the employee’s training schedule. This includes, dates, start times, end times and break times. Be specific and be sure the employee has a number to reach you should they have a question or a problem. Make a point to introduce the new employee to as many of their coworkers as possible. Introduce them to company management as well as your customers. This process will help the new employee feel more a member of your team than that of an outsider. When it comes time for a lunch or dinner break, do not let them sit by themselves, offer to eat
with them or have them sit with you and others. Be sure to introduce him or her to everyone possible.

3. **Conclusion of the Employee’s First Day on the Job**

On this first day, do everything you can to make the new employee feel comfortable. Strive to create a training environment that will encourage a desire to learn and to develop abilities and skills as quickly as possible. Emphasize your availability throughout the training process and that you can be depended upon for support. Remind the new employee that all employees, including you, were new employees at one time and had to experience a “first day” as well. As the first day comes to a close, talk briefly with the employee, reassure them that they have your support and express genuine empathy and understanding. Send them home with a positive feeling of pride and motivation!
III. TRAINING CURRICULUM

A. PLST Curriculum

This section of the PLST Trainer’s Guide is intended to help the trainer administer the program to the employee(s) in the most efficient manner possible. The PLST is designed to present a curriculum that enables the employee(s) to acquire the knowledge and skills necessary to become professional Line Service Specialists. The PLST employs online training utilizing videos, quizzes, illustrations, photos and interactive animations, all organized into modules with supporting reference materials throughout the lessons. Dynamic exams with randomized questions and answers follow each of the individual modules. (Module 2 on Safety is the only exception and is divided into two parts and two exams because of its length.) This makes each exam unique and eliminates tedious paperwork due to electronic recording. The individual modules and their respective elements are depicted below.

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<thead>
<tr>
<th>Section</th>
<th>Module</th>
<th>Online Training</th>
<th>Reference Materials</th>
<th>Online Exams</th>
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<tbody>
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<td>1</td>
<td>INTRODUCTION AND GROUND SERVICING</td>
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<td>2</td>
<td>SAFETY</td>
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<td>3</td>
<td>GENERAL FUEL SERVICING</td>
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<td>4</td>
<td>GENERAL TOWING PROCEDURES</td>
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<tr>
<td>5</td>
<td>FUEL FARM MANAGEMENT</td>
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<td>6</td>
<td>CUSTOMER SERVICE</td>
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<td>7</td>
<td>FIRE SAFETY</td>
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<td>8</td>
<td>AVIATION SECURITY</td>
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B. Training Course Methodology and Administration

It is recommended that each module be taken in sequential order, beginning with module #1; “Introduction and Ground Servicing” and concluding with module #8; Aviation Security. This process is most conducive to learning because the information and material presented in each module is referenced to and expanded upon in succeeding modules. Ideally, the suggested order for online training should be as follows:

1. Module #1: INTRODUCTION AND GROUND SERVICING
2. Module #2: SAFETY
3. Module #3: GENERAL FUEL SERVICING
4. Module #4: GENERAL TOWING PROCEDURES
5. Module #5: FUEL FARM MANAGEMENT
6. Module #6: CUSTOMER SERVICE
7. Module #7: FIRE SAFETY
8. Module #8: AVIATION SECURITY

It is the primary goal of the PLST program to introduce and provide an understanding of the fundamental duties and responsibilities for line and customer service personnel. However, as stated previously, there are other objectives that should be realized from the proper use of the complete training package. In order to meet these objectives, the following three phases and related instructional steps are designed to be used by the instructor and should be followed for each training module.

PHASE I: INTRODUCE

Beginning with module #1 Introduction and Ground Servicing, the first phase of the training procedure is to have the employee view the online training, discuss the training with their instructor and read the corresponding reference materials and checklists incorporated in each lesson.

1. PREVIEW
   - Introduce the training module to the employee(s). Provide an overview of the module’s contents as given. Explain how the module’s material relates to both current and future training. Introduce the learning objectives for the training module to be presented.
   - Review the major points of the module with your employee(s). Identify which topics they should pay special attention.
• Tell the employees what will follow the program; post-program discussion, online exam, hands-on activities, etc.
• Review the reference materials and checklists included in each of the online training modules.

2. **VIEW**
• Turn off radios, cell phones, pagers, intercoms and any other items that could interrupt the viewing of the module
• Close the door and darken the room, allowing some light available, if the employees wish to take notes (encourage students to take notes)
• View the online module, in its entirety, in a comfortable and non-disruptive environment
• Schedule a short break (10 -15 minutes) immediately after the conclusion of the online lesson.

3. **REVIEW**
• Review and discuss the online lesson with the employee(s).
• Provide in-depth discussions of the key points, concepts and procedures. Be detailed in your explanations.
• Ask the employee(s) to paraphrase or summarize the material that has been presented or discussed to ensure understanding the material.
• Have the employee read the corresponding reference materials and checklists from the online lessons.

**PHASE II: “HANDS-ON” DEMONSTRATION**

Following completion of each online lesson and an in-depth study of the informational material, “phase two” consists of a “hands-on” demonstration of the subject material by an instructor, supervisor or senior specialist. This phase of training is extremely critical to the learning process, and designed as a practical method to demonstrate and familiarize the employee(s) with the materials presented in the online training and reference materials. Supervised participation in this segment of “on the job” or OJT training is critical.

4. **DEMONSTRATE and PRACTICE**
• Clearly state and outline the specific objectives to be accomplished during the “Hands-On” exercise. (A checklist has been provided in Appendix E to assist)
• Discuss the procedures, step-by-step that will be demonstrated.
• Perform a “hands-on” demonstration. Work slowly and verbalize each step throughout the demonstration.
• Ask the employee to repeat and explain each step of the procedure.
• Allow the employee to demonstrate and practice the procedure(s).
**PHASE III. REVIEW**

Upon completion of the first two “phases”, we recommend a thorough review of the materials presented prior to taking the online exam, including viewing the online training a second time. If questions remain unanswered, we encourage additional review of the online training module and reference materials. The last step in this phase involves the online exam at the end of each training module.

5. **REINFORCE**
   - Have the employee view the online training a second time, or as many times as needed.
   - Pop quizzes are given throughout the online training modules to reinforce key concepts.
   - When ready, the student may take the online exam(s) that pull random questions from a large bank of questions with randomized answers. Once the student completes the exam, he or she will have the option to submit the exam for the completion of the online lesson or elect to return to review the online training again. Once taken, each grade will be recorded and may be monitored by the trainer under Progress Reports, Exam Activity. Once passed with an 80% or better, the exam will no longer be available. The student may, however, access the training until his/her assignment expires in six months.
   - Review the material and procedures that have been discussed and demonstrated.

**C. Module Instruction Plans, Checklists and Training Progress**

The PLST has been carefully structured so that each lesson builds upon the next. To achieve the best results from the program, it is important to adhere to the training schedule progressing from lesson to lesson. Individual Module Instruction Plans have been developed and provide the information and direction necessary to prepare for the actual training effort. It is strongly recommended that the trainer review each module’s Instruction Plan prior to the scheduled date for that specific training module. This will ensure that the time and effort utilized for training is maximized. The Instruction Plans identify each training topic as well as the significant learning objectives within each module. The trainer should conduct a thorough review prior to classroom and OJT instruction and again prior to the student’s online exam.

Each plan focuses on specific training topics and identifies the following items:
1. Online Training Times (approximate)
2. Module Concept
3. Major Topics
4. Learning Objectives
5. Training Aids and Materials
6. Referenced Publications
7. Instruction Time Required

Each module’s Instruction Plan can be found in Appendix B.
In conjunction with the Instruction Plans, the trainer should also use the Training Checklist for each individual module. Each module’s Training Checklist is a thorough checklist for the various topics and procedures presented in each training module. Major topics, numerous sub-topics and several related issues are outlined and discussed in great detail. While this material is detailed, it offers the trainer the ability to present the various aspects of line service in an organized and uniform format for every employee. This checklist is not intended to replace specific aircraft, manufacturer, airport or company checklists, nor should it be considered to be all-inclusive. Many of the topics and key points presented may not apply to a specific operation. Therefore any areas NOT applicable to a particular operation can simply be noted by placing a “NA” next to that topic on the checklist. Likewise, there may be additional training needs or issues not covered in each employee. For this reason, an “Other” section is included at the end of each module’s checklist. This “Other” section is intended to allow for any additional training issues that may need to be addressed in order to meet the requirements of your particular company or operation.

Adjustment to each Training Checklist is allowed, by the participating company of the PLST program, in order to better meet their specific requirements. The use of these checklists will greatly enhance the overall training effort by providing an in-depth training reference guide for the trainer. The checklists also provide an in-depth and specific record of the training administered to each employee. Each individual Module Training Checklist can be found in Appendix C.

Once the employee has begun identifying, refueling and towing aircraft, the trainer needs to document this training onto the Aircraft Identification and Servicing Checklist (Please make sure your students review the information in the AGSO.) This checklist is designed to document the date which an employee achieves a final approval or “qualified” status and as such has received all the necessary training and has demonstrated the ability required in order to perform a particular task correctly, safely and without the need of supervised assistance. Due to the vast amount of various aircraft types that are limited in production, no longer in production or are one of a kind, this checklist is not considered to be all-inclusive. For this reason, an “Other” section is included at the end of the Aircraft Identification and Servicing Checklist. This “Other” section is intended to allow for any additional aircraft that may need to be added in order to meet the requirements of that particular company or operation. The Aircraft Identification and Servicing Checklist may be found in Appendix D.

An employee’s training progress or training records may be viewed online by the trainer/administrator under Training Management of the online administrative portal. Online module training is automatically recorded to monitor student progress. When the trainer clicks on Training Progress, the student’s progress will show the status of training for each topic in a module and the completion status. The online exam will show the completion date and score when the exam is passed with an 80% or better. It is important to know that the online exam will not be available until the student has completed all the topics within a module. The
student may take the exam as many times as necessary to pass with an 80% or better. After completion of the exam, the exam will no longer be available. The student may, however, access training until their assignment expires in six months. Lastly, the Practical Exams will show complete or incomplete along with the completion date and score. (Please see section below that discusses Practical Exams.)

The Hands-on progress or training records may be viewed by the trainer/administrator under Training Management of the online administrative portal. Hands-on procedures consist of many of the key areas and operational requirements that line service specialists must know and accomplish on the line. The Hands-on procedures are designed to record the date that an employee achieves a final approval or “qualified” status. As such, it confirms the line service specialist has received all the necessary training and has demonstrated the ability required to perform a particular task correctly, safely and without the need of supervised assistance. Verification of the key areas and requirements online requires both trainer/administrator and student signatures. The trainer or administrator must review the Hands-on procedures applicable to each student during the training process. If there are Hands-On procedures that are never done by the student, the trainer/administrator will still be required to fill in the date of completion, or in this case confirmation. The next page verifies the student has completed particular hands-on task(s) OR that the hands-on task(s) are not applicable. When the submit button is clicked, the hands-on task(s) will be verified and documented online.

The Practical Exams training progress may be viewed by the trainer/administrator under Training Management of the online administrative portal. The Practical Exams consist of a final exam of pertinent hands-on procedures that a student must accomplish with 100% accuracy on the line. The student must successfully complete the practical exam with the trainer. Confirmation of completion will be documented online by clicking Practical Exams. The trainer will be required to fill in the date of completion along with a grade of 100%. The signature of both the trainer and student will be confirmed. If there are Practical Exams that are never done by the student, the trainer/administrator will still be required to fill in the date of completion, or confirmation in this case, along with a grade of 100%. The next page verifies the student has passed a particular practical exam(s) OR that the practical exam(s) are not applicable. When the submit button is clicked, the Practical Exam(s) will be verified and documented online.

The PLST Certification Checklist shows progress or training records and may be viewed online by the trainer/administrator under Training Management of the administrative portal. The PLST Certification Checklist gives a snapshot of student progress towards certification. This is one of the best places to go to check on student progress pertaining to training progress, practical exams and hands-on procedures that all must be accomplished for PLST certification. Each column contains a complete (colored green) or incomplete and a link to check training status. The trainer/administrator can click on the link under the incomplete training to review training progress. Once the student completes all of the training, as indicated by the color green under the training column(s), the “apply for certification” link will appear. The trainer/administrator
must review and confirm a student’s PLST certification, and then notification will be sent to NATA Safety 1st for verification and student certification.

The *Fire Certification Checklist* shows progress or training records and may be viewed online by the trainer/administrator under *Training Management* of the administrative portal. The *Fire Certification Checklist* gives a snapshot of student progress on training satisfying the requirements of 139.321(b) (1) through 139.321(b) (6). This is one of the best places to go to check on student progress pertaining to online training, hands-on and practical exams that must be accomplished for fire certification. Each column contains a complete (colored green) or incomplete (with a link to check training status). The trainer/administrator can click on the link under the incomplete training to review training progress. The trainer/administrator must review and confirm a student’s fire certification and request/obtain training on the local fire code requirements from the public body having jurisdiction over the airport as required under 139.321(b) (7), Title 14 of the Code of Federal Regulations, *Handling and Storage of Hazardous Substances and Material*. Please ensure all students receive hands-on training in the proper use of fire extinguishers within 60 days of completion of this fire safety training and make sure to include a record of this training in the student’s training record along with NATA’s Safety 1st fire safety certificate.

*Progress Reports* provide student training reports and may be viewed online by the trainer/administrator by clicking on the *Training Management* bar of the administrative portal. *Progress Reports* provide various student training reports to help determine a student’s progress in specific areas. Reports are available for viewing or printing to manage student training and for student record keeping. All student activity may be monitored and recorded by the trainer or administrator of the subscribing company.

The student is also able to monitor training progress through the online student portal. As the student trains and completes each topic in a module, the date of completion is electronically recorded. Once all the topics within a module are finished, the student may take the online exam which is automatically recorded as well. The student may print the *Practical Exams* from the student portal, and must perform the *Practical Exam* with the trainer. (As the trainer, you should **review and document all applicable hands-on training before administering Practical Exams**.) The practical exams must be completed by the student to ensure s/he can successfully complete the procedure with 100% accuracy.

*Training Resources* provides training references and may be viewed online by the trainer/administrator by clicking on the left navigation bar of the administrative portal. Click the *Training Resources* button to download and print copies of the many training guides available with the PLST. Here you will find the *Aircraft Ground Service Online at www.nata.aero/agso*, *Aircraft Ground Service Guide*, *Aircraft Towing Guide*, *Trainer’s Guide*, *Fire Safety Training* and all the *PLST Online PDF* references found throughout the online training.
D. Online Module Exams and Procedures

The student must complete all topics within a module before the online exam will be available. Students may review the topics within a module as many times as necessary before taking the exam. Once completed, the student should take the online exam while the information is fresh in his/her mind. Each module contains a bank of questions that are randomly selected with randomized answers. Module 2, Safety, is the only module that has two exams due to the extensive amount of information in the lesson. It is recommended that all exams be taken at the conclusion of each module or half-way through Module 2 and then at the end because Module 2 contains two exams. Testing is a critical part of the overall training process. Many believe that testing is only conducted in order to document training or is required in order to transfer from one segment of training into the next section. While both of these may hold some truth, there are a number of other roles that testing plays in training. These roles may include:

- An evaluation of the student understanding and knowledge of the material presented in both the online lessons and guidance materials.
- An evaluation of the student understanding and knowledge of the material presented during on-the-job instruction.
- A learning tool to be used to reinforce key concepts and procedures.
- A method by which a trainer may evaluate the effectiveness of the training.

The PLST online exam questions are a combination of true/false and multiple choice questions. The trainer is responsible to ensure that the employee understands the importance of the testing process. The employee must achieve a minimum score of 80% on each exam, as part of the requirements to becoming certified as a PLST Line Service Specialist. If 80% is not initially attained, the employee must review the online training and guidance materials and retake the exam prior to moving on to the next module. The questions presented in each exam include concepts from the following training modules and their respective major topic subjects:

1. Introduction and Ground Servicing
   a. Introduction to PLST
   b. General Aviation Industry
   c. Common duties of a line service specialist
   d. Aviation operations terminology
   e. Aircraft terminology
   f. FOD and windshield cleaning
   g. Ground power units
   h. General fuel and oil servicing
   i. Lavatory and potable water services
2. **Safety**
   a. Personal safety and servicing dangers
   b. Aircraft care and handling
   c. Aircraft marshaling and hand signals
   d. Aircraft servicing safety
   e. Refueling safety
   f. Mobile refuelers
   g. Emergency procedures
   h. Airport vehicle operations
   i. Seasonal operations

3. **General Fuel Servicing**
   a. Fuel products and aircraft types
   b. Procedures and equipment
   c. Refueling equipment
   d. General refueling practices
   e. Refueling over wing and single point
   f. Refueling safety

4. **General Towing Procedures**
   a. Principles of towing
   b. Towing equipment and vehicles
   c. Aircraft tow limits
   d. General towing operations and procedures
   e. Hangar towing safety procedures

5. **Fuel Farm Management**
   a. Fuel farm safety, security and your role
   b. Quality control of aviation fuels and checks
   c. Receiving and loading fuel
   d. Refueler management and quality control

6. **Customer Service**
   a. Introduction to customer service
   b. Understanding the industry and its clientele
   c. Effective communication
   d. Conflict resolution

7. **Fire Safety**
   a. Fire safety and fire properties
   b. Fire classification and extinguishing agents
   c. Fire fighting procedures
   d. Minimizing fire risk

8. **Aviation Security**
   a. Threats to airport security
   b. Airport security measures
   c. Effective security procedures
   d. Specific security activities
   e. Potential security breaches

After completion of the online exam, the student will be required to review the exam questions.
The intent of the review is to verify that the employee understands and has grasped the concepts and procedures of the material presented in the module. When the student passes with an 80% or better, the score will be automatically recorded online for viewing by both the trainer/administrator and student anytime they log into the student or administrative portal. If the student does not pass, the score will be automatically tracked along with the date taken and available for viewing under Progress Reports by the trainer/administrator. The student may take the exam until passed with an 80% or better. Once the module exam is passed, the exam will no longer be available. The student may, however, access training until his/her assignment expires in six months.

E. Additional Reference Materials
The online lessons include additional reference materials and checklists presented as PDF documents throughout the training to provide guidance on specific concepts that require expansion. (All documents are in the online Training Resource section under PLST PDFs) Guidance is also provided in each Module Instruction Plan and the PLST Training Checklist. Trainers should copy and share appropriate instruction plans and checklists with each student for study purposes. All reference materials provide reinforcement of the material presented in each of the online modules.

F. Conclusion
The responsibility for ensuring that line service personnel are well-trained and have a “safety first” attitude for every task they set out to accomplish are perhaps the two most important responsibilities an instructor has. It is critical for an instructor to accept these responsibilities and the related objectives to train and develop people. Obviously, it takes time to properly train someone to complete a task properly. However, it takes an even greater amount of time to correct mistakes, reassign work, to dispel myths of poor service to potential customers and to “win-back” customers, all of which could have been prevented with proper training.

There is a great amount of personal satisfaction realized when you consider that through your efforts you are helping people to learn and acquire new skills and abilities. Training helps employees become positive contributors to help your department and your company. This in turn helps your company grow and prosper which enables the company to provide a place where opportunity for personal growth and advancement is available. Another positive result of good training is the great sense of accomplishment, confidence and personal pride that a new employee realizes when they begin a new job.

Good training speaks for itself; the results will be reflected by a more productive work force, a positive work attitude, a safe working environment and a successful organization. At the conclusion of the training program, in addition to being orientated to aviation, the company, airport, and their new job, the newly hired line service employee should have obtained the knowledge and skills necessary to successfully perform basic line service functions.
You are the key to developing safe, proficient, professional and motivated employees. **NEVER** underestimate or disregard the importance and opportunity for teaching people new skills and abilities!

“It is one of the most beautiful compensations of this life that no man can sincerely try to help another without helping himself.”

RALPH WALDO EMERSON
IV. CERTIFICATION PROCEDURES

A. NATA Safety 1st PLST Certification

The following procedures must be followed when preparing to request certificates for your professional line service specialists who have successfully completed the PLST program. (Click on PLST Certification Checklist to complete the online process for certification requests.)

The following items must be completed in order to receive certification:

- Student must view each online module of the PLST modules 1-8.
- Student must read all corresponding reference materials given in pdf format throughout the PLST modules 1-8.
- Trainer must present the entire PLST curriculum to the student as outlined in the Trainer’s Guide.
- Student must be proficient at refueling, towing and all other hands-on services required of a Professional Line Service Specialist.
- Student must successfully pass each online module exam, 1-8, with a score of at least 80%. If not successful, the student must review the module materials, and retest until a score of 80% is demonstrated. The student must also complete all hands-on procedures and practical exams with 100%.
- After completion of the above steps, the trainer must complete the required online paperwork to request PLST Certification. The trainer must log into the administrative portal to verify completion of hands-on and practical exams. The certification process, once submitted may be tracked online.
- The trainer must verify that all items of the PLST curriculum, including those listed above have been successfully completed to the satisfaction of NATA Safety 1st, the trainer and the student.

NATA Safety 1st will verify and issue an accreditation certificate and patch to the student.

The NATA Safety 1st Program is not responsible for any failure of a student or falsification of records related to PLST training. Any records falsified or manipulated in any way shall cause the immediate revocation of certification of any and all employees and the company in question and revocation of the privilege to present and use the NATA Safety 1st PLST reference materials and online modules. Falsification of records or violation of the copyright protection of the PLST will be prosecuted to the fullest extent of the law.
B. NATA Safety 1st Fire Safety Certification

The following procedures must be followed when preparing to request fire safety certificates for your professional line service specialists who have successfully completed Fire Safety, Module 7 of the PLST Online. (Click on Fire Safety Certification Checklist to complete the online process for certification requests.)

The following items must be completed in order to receive certification:

- Student must view module 7, Fire Safety of the PLST Online.

- Student must read all corresponding reference materials given in PDF format for Module 7 of the PLST Online.

- Trainer must present all applicable references and curriculum for Module 7 PLST Online to the student as outlined in the Trainer's Guide.

- Student must demonstrate proficiency with all applicable hands-on procedures required of Module 7, Fire Safety.

- Student must successfully pass the online module exam on Fire Safety, Module 7 with a score of 80% or better. If unsuccessful, the student must review the module materials, and retest until a score of 80% is demonstrated. The student must also complete all practical (hands-on) exams for Module 7, Fire Safety, with 100%.

- By completing the Fire Safety module of the PLST Online, the student demonstrates completion of training satisfying the requirements of 139.321(b) (1) through 139.321(b) (6) as required for Part 139.321 of the Federal Aviation Regulations under Title 14 of the Code of Federal Regulations, “Handling and Storage of Hazardous Substances and Materials.”

- Our training included information from NFPA 407 in addition to other national/local codes and best practices. There may be local codes, statues, ordinance and laws governing fueling operations at your airport. It is your responsibility to become knowledgeable about these and observe/teach them as applicable.

- Student(s) must receive hands-on training in the proper use of hand held fire extinguishers from the local fire authority or other qualified source. Print the Hands-on Fire Extinguisher Training Record provided in the PLST PDFs or as provided in the summary section of the last fire safety module. Hands-on fire extinguisher training MUST be completed with the supervisor and/or line service training course in fire safety within 60 days of completion of this fire safety training course. Keep a copy of this, along with NATA’s Safety 1st certification, in each student’s training record to show that all required elements of the aviation fire safety course have been completed.

- After completion of the above steps, the trainer must complete the required online recording of tasks for Fire Safety Certification. The trainer must log into the administrative portal to verify completion of hands-on and practical exams. The certification process
may be tracked online.

- The trainer must verify that all items of the *Fire Safety* curriculum, including those listed above have been successfully completed to the satisfaction of NATA Safety 1st, the trainer and the student.

NATA Safety 1st will verify and issue a fire safety certificate to the student. The NATA Safety 1st Program is not responsible for any failure of a student or falsification of records related to *PLST Online Fire Safety* training. Any records falsified or manipulated in any way shall cause the immediate revocation of certification of any and all employees and the company in question and revocation of the privilege to present and use the NATA Safety 1st *PLST* reference materials and online modules.
V. APPENDIX

A. New Employee Training Questionnaire
B. Module Instruction Plans
C. Module Training Checklists
D. Aircraft Identification and Servicing Checklist
E. Hands-On Training Procedures Checklist
A. New Employee Training Questionnaire

<table>
<thead>
<tr>
<th>Aircraft Fueled (F)</th>
<th>Aircraft Towed (T)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

Single-Engine

(Piston): _____________________________________________________________________

Multi-Engine

(Piston): _____________________________________________________________________

Helicopters

(Piston): _____________________________________________________________________

Turboprop: _____________________________________________________________________

Helicopters (Turbine): _____________________________________________________________________
Jet:_________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

Airline Type:_________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

Please indicate, with the approximate date, if you have received any “Classroom Instruction” or “Hands-On” training for any of the following procedures:

<table>
<thead>
<tr>
<th></th>
<th>Classroom Instruction</th>
<th>“Hands-On” Training</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fuel Quality Control:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel Farm: Daily Inspections</td>
<td></td>
<td></td>
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<tr>
<td>Fuel Farm: Monthly Inspections</td>
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<td></td>
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<tr>
<td>Fuel Farm: Fuel Inventory</td>
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<tr>
<td>Fuel Farm: Receiving Fuel</td>
<td></td>
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<tr>
<td>Refuelers: Daily Inspections</td>
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<td></td>
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<tr>
<td>Refueler Top-Off: “Bottom Load”</td>
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<tr>
<td><strong>Ramp Operations:</strong></td>
<td></td>
<td></td>
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<tr>
<td>Fire Extinguisher Training</td>
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</tr>
<tr>
<td>Aircraft Marshaling</td>
<td></td>
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<tr>
<td>Helicopter Marshaling</td>
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<tr>
<td>Ground Power Unit Operations</td>
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<td></td>
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<tr>
<td>Oxygen Servicing</td>
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<tr>
<td>Lavatory Servicing</td>
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<tr>
<td>Potable Water Servicing</td>
<td></td>
<td></td>
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<tr>
<td>De-icing Operations</td>
<td></td>
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<tr>
<td>Aircraft Engine Pre-heats</td>
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<tr>
<td>Aircraft Air-Condition Units</td>
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<tr>
<td><strong>Customer Service Operations:</strong></td>
<td></td>
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<tr>
<td>Telephone Procedures</td>
<td></td>
<td></td>
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<tr>
<td>UNICOM and Radio Operations</td>
<td></td>
<td></td>
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<tr>
<td>Cash/Credit Transactions</td>
<td></td>
<td></td>
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<tr>
<td>Rental Vehicle Transactions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arranging Hotel/Restaurant Reserve</td>
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<td></td>
</tr>
</tbody>
</table>
List any other additional information that may be helpful in evaluating your experience and background.

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B. Module Instruction Plans

MODULE: INTRODUCTION AND GROUND SERVICING

ONLINE TIME: 75 Minutes

CONCEPT: General aviation and the many facets of an FBO can be overwhelming to a new employee. It is important to the employee learning process to begin with a basic introduction to aviation including; terminology and communications, aircraft construction and primary ground servicing procedures.

MAJOR TOPICS:
1. Line Service Specialist duties and responsibilities
2. General Aviation Industry and FBO operations
3. Aviation communications and terminology
4. Aviation operations and airport terminology
5. Aircraft component and construction
6. FOD
7. Ground power units
8. Cleaning windshields
9. Lavatory servicing
10. Potable water servicing
11. Fuel and oil servicing
12. Refueling safety

LEARNING OBJECTIVES:
1. To become familiar with the activities and functions of line service and the duties and responsibilities for a Line Service Specialist
2. To become familiar with the Professional Line Service Training program and training curriculum
3. To become familiar with the general aviation industry; its diversity and operations
4. To become familiar with the operations, activities, products and services offered by the FBO
5. To become familiar and understand how to identify and correctly convert to/from “UTC” using current time
(6) To become familiar and be able to communicate effectively using the phonetic alphabet
(7) To become familiar with the airport, its layout, facilities, operations and the regulations governing vehicle and support equipment operations
(8) To become familiar with the five major aircraft components including “canards” and “composite” design
(9) To become familiar and understand the correct location and purpose of aircraft position lights
(10) To become familiar and be able to explain the concept of FOD
(11) To become familiar with the two categories of aviation fuel and be able to explain the importance of correctly identifying each
(12) To become familiar with the two categories of aviation oil and be able to explain the importance of correctly identifying between the two categories
(13) To become familiar and understand the concept for the correct identification and use of the different GPU voltage types and systems
(14) To be able to explain and demonstrate the correct use of a GPU at an aircraft including the proper safety procedures
(15) To be able to explain and demonstrate the use of the proper materials and the proper cleaning procedures
(16) To become familiar with the two types of lavatory systems and the proper servicing procedures for each
(17) To become familiar with potable water and general servicing procedures

TRAINING AIDS/MATERIALS:

(1) PLST online Module #1: Introduction & Ground Servicing
(2) PLST Introduction & Ground Servicing reference materials (Training resources online: PLST PDFs)
(3) Company Standard Operating Procedures
(4) Company fire and safety policies and procedures
(5) Airport rules and regulations manual
(6) Pictures/diagrams of airport and FBO
(7) GPU manual/operating procedures
(8) Lavatory unit(s) manual/operating procedures
(9) Potable water unit(s) manual/operating procedures

REFERENCED PUBLICATIONS:

(1) Advisory Circulars -
http://www.faa.gov/regulations_policies/advisory_circulars/
AC 00-34A – Aircraft Ground Handling and Servicing
AC 150/5230-4B – Aircraft Fuel Storage, Handling and Dispensing on Airports

(2) Aeronautical Information Manual (AIM)

(3) Airport Ground Vehicle Operations FAA Guide
http://www.spokaneairports.net/RFP/airport_ground_vehicle_guide.pdf

(4) NFPA 407 – Aircraft Fuel Servicing
www.nfpa.org

INSTRUCTION TIME:

Classroom: 3 - 4 hours
Preview of material: 15 min
Online viewing: 75 min
Review and discussion: 1 - 2 hr
- General aviation and FBO definitions
- “UTC” time
- Phonetic alphabet
- Aircraft components
- FOD safety
- Aviation fuel and oil types
- GPU operations
- Windshields and cleaning
- Lavatory servicing
- Potable water servicing
OJT: 2 - 3 hours
Hands-on review of:
- Aircraft components
- Aircraft position lights
- Aircraft windshield cleaning procedures
- GPU operating procedures
- Lavatory service unit and procedures
- Potable water unit and procedures
MODULE INSTRUCTION PLAN - MODULE #2

**MODULE:** SAFETY

**ONLINE TIME:** 2 Hours 10 minutes

**CONCEPT:** To introduce the new employee to the all-important issues of ramp safety and the development of safe work habits. The understanding and practice of safe work habits is fundamental to assure safety to customers, employees, facilities and equipment. All training efforts must emphasize safety first!

**MAJOR TOPICS:**

1. Introduction to Safety
2. Personal Safety and Servicing Dangers
3. Aircraft Care and Handling
4. Aircraft Marshaling and Hand Signals
5. Aviation Fuel and Oil Products
6. Refueling Safety
7. Mobile Refuelers
8. Emergency procedures
9. Airport Vehicle Operations
10. Seasonal Operations

**LEARNING OBJECTIVES:**

1. To become familiar with personal safety as it relates to ramp and aircraft servicing including; fire safety, FOD, jet blast, hearing protection and propeller danger
2. To be able to explain the precautions and care that must be exercised when working around and servicing aircraft, i.e; refueling and towing
3. To be able to identify, understand and use the correct aircraft and helicopter hand signals in order to effectively communicate with flight crews and to assure safe aircraft and helicopter ground operations
4. To properly identify and explain the correct application for each aviation fuel type
5. To properly identify and explain the correct application for each aviation oil type
(6) To understand the proper safety procedures to observe during and after oil servicing
(7) To be able to understand and explain the consequences and precautions for prevention of a misfueling
(8) To be able to differentiate between piston, turboprop and jet aircraft
(9) To understand, explain the two refueling methods (overwing and single-point/pressure) and identify the different refueling nozzles used
(10) To be able to understand and explain the procedures for preventing fuel contamination
(11) To become familiar with general fuel spill safety
(12) To be able to explain and demonstrate the procedure for performing a visual check on mobile refuelers prior to refueling operations
(13) To be able to explain the safety procedures when operating a mobile refueler; speed limits, driving/parking safety margins, and bonding
(14) To understand and explain the purpose, operation and location of the safety equipment, operating components and servicing supplies found on refuelers
(15) To be able to explain, and demonstrate the correct operation of deadman and emergency shutoff controls
(16) To become familiar with emergency procedures per the company’s emergency manual
(17) To be able to explain the general procedures and “right-of-way” rules for operating vehicles on the airport
(18) To become familiar with the security issues regarding airports, employee identification, and the procedures for the handling of non-badged or unauthorized personnel
(19) To become familiar and be able to explain the identification, handling safety and servicing procedures for aviators breathing oxygen (ABO)
(20) To become familiar and be able to explain the affects of severe weather for ramp operations including refueling operations and lightning, winter ramp vehicle operations and general aircraft
deice procedures

TRAINING AIDS/MATERIALS:

1. PLST Online Module 2: Safety
2. PLST Safety reference materials (Training resources online: PLST PDFs)
3. Company Standard Operating Procedures
5. Company fire and safety policies and procedures
6. Company Material Safety Data Sheets manual
7. Airport rules and regulations manual
8. Airport security regulations and procedures
9. Applicable fuel spill/reporting procedures

REFERENCED PUBLICATIONS:

   AC 00-34A – Aircraft Ground Handling and Servicing
   AC 91-13C – Cold Weather Operation of Aircraft
   AC 150/5230-4B – Aircraft Fuel Storage, Handling and Dispensing on Airports
   AC 150/5230-20 - Ground Vehicle Operations on Airports
5. NFPA 407 – Aircraft Fuel Servicing www.nfpa.org

INSTRUCTION TIME:

Classroom: 3 - 5 hours
Preview of material: 20 min
Online viewing: 2 hours 10 min
Review and discussion: 2 - 3 hr
- Personal safety precautions
- Aircraft care and handling
- Aircraft marshaling and hand signals
• Helicopter marshaling and hand signals
• Aviation fuel and oil products
• Refueling safety issues
• Emergency procedures
• Airport vehicle operations
• Oxygen servicing procedures and precautions
• Seasonal operations;
  ➢ Deicing
  ➢ Severe weather operating procedures

OJT: 3 - 4 hours

Hands-on review:
• Aircraft marshaling and hand signals
• Mobile refuelers
• Oxygen servicing unit and operating procedures
• Aircraft deice unit and procedures
• Aircraft engine pre-heat unit and procedures
MODULE: GENERAL FUEL SERVICING

ONLINE TIME: 55 Minutes

CONCEPT: Assuring that the correct type, grade and amount of fuel has been uplifted into an aircraft is critical to the safety of those aboard that aircraft. Employees must be shown the proper refueling procedures and taught to exercise safe work habits for each and every aircraft refueling in order to prevent tragic accidents.

MAJOR TOPICS:

(1) Fuel products  
(2) Fuel additives  
(3) Aircraft types  
(4) Refueling methods and equipment  
(5) General refueling practices  
(6) The refueling process  
(7) Refueling details

LEARNING OBJECTIVES:

(1) To be able to explain the proper procedure to follow when any doubts or questions arise prior to or during any refueling operation  
(2) To be able to correctly identify fuel using color, odor and feel  
(3) To be able to identify the proper fuel type required for reciprocating (piston) engine, turboprop and jet engines  
(4) To be able to understand and explain the approximate weight of jet fuel and how to convert into pounds from gallons  
(5) To be able to explain the function of jet fuel additives and to demonstrate the proper technique for adding additives during refueling  
(6) To be able to distinguish the difference between reciprocating (piston) engines, turboprop and jet engines and describe the oils required by each as well as the safety precautions for servicing  
(7) To be able to understand and explain the basic operation of a reciprocating (piston) engine,
turboprop engine and jet engine aircraft including “turbofans”

(8) To be able to understand and explain the operational differences between a “turbocharger” and a “turboprop”

(9) To be able to identify reciprocating, turboprop and jet engine aircraft normally found on the FBO ramp and to perform the proper refueling of each of these aircraft

(10) To be able to correctly identify avgas and jet refuelers and fuel storage systems using color coded and DOT placards of refueling equipment and refueler

(11) To become familiar and be able to demonstrate the proper refueler “pre-check”

(12) To be able to explain and complete general refueling paperwork neatly and accurately

(13) To be able to recognize and become familiar with the proper operation of the three common types of reciprocating engine aircraft fuel caps

(14) To become familiar with the hazards associated and the precautions required for the refueling of helicopters

(15) To be able to explain and demonstrate the proper operating procedures for single point refuel nozzles and “deadman controls”

(16) To become familiar with the term “balanced fuel loading” and understand the precautions to take for servicing turbine aircraft

(17) To be able to understand and explain the basic operation of an APU

(18) To be able to explain and demonstrate the proper safety procedures to follow when working in the vicinity of any operating APU

TRAINING AIDS/MATERIALS:

(1) PLST Online module #3: General Fuel Servicing
(2) PLST General Fuel Servicing reference materials (Training resources online: PLST PDFs)
(3) PLST Aircraft Ground Service Online (www.nata.aero/agso)
(4) Company Standard Operating Procedures
MODULE INSTRUCTION PLAN - MODULE #3

(5) Company Emergency Procedures manual
(6) Applicable fuel spill and reporting procedures
(7) Company Material Safety Data Sheets manual
(8) Company fire and safety policies and procedures
(9) Mobile and fixed refueler operating manual(s)
(10) Fuel storage system operating procedures
(11) Airport rules and regulations manual

REFERENCED PUBLICATIONS:

   AC 00-34A – Aircraft Ground Handling and Servicing
   AC 91-13C – Cold Weather Operation of Aircraft
   AC 150/5230-4B – Aircraft Fuel Storage, Handling and Dispensing on Airports
(4) NFPA 407 – Aircraft Fuel Servicing [www.nfpa.org](http://www.nfpa.org)

INSTRUCTION TIME:

<table>
<thead>
<tr>
<th>Classroom:</th>
<th>6 - 8 hours</th>
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<tbody>
<tr>
<td>Preview of material:</td>
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<tr>
<td>Online viewing:</td>
<td>55 min</td>
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<tr>
<td>Review and discussion of:</td>
<td>2 - 3 hr</td>
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- Reciprocating (piston), turboprop and jet engine fuel and oil products
- Avgas and jet refuelers and refuel systems
- Refueling paperwork
- General reciprocating, turboprop and jet engine aircraft servicing procedures and precautions
- Multi-engine reciprocating engine aircraft servicing procedures
- General reciprocating, turboprop and jet engine aircraft review
- General reciprocating and turbine engine helicopter servicing procedures and precautions
**OJT:** 8 - 10 hours

**Hands-on review:**
- Avgas and jet fuel storage system
- Avgas and jet refueling equipment (mobile/fixed)
- Driving and operation of avgas and jet refuelers
- Reciprocating, turboprop and jet engine aircraft
- Reciprocating engine fuel caps
- Reciprocating, turboprop and jet engine aircraft refueling and oil servicing procedures
- Reciprocating and turbine engine helicopter refueling and servicing procedures
- Jet aircraft over wing refueling and servicing procedures
- Jet aircraft single point refueling and servicing procedures
MODULE: **TOWING**

ONLINE TIME:  40 Minutes

CONCEPT: The movement (towing) of aircraft is a skill which must be developed over time and requires a great deal of patience and practice. It should be recognized that aircraft towing presents a major safety concern when considering the many and varying hazards that are present during the towing operation. These include other aircraft, ground support equipment, passengers, restricted clearances and visibilities that exist on FBO ramps and in storage hangars. The process for developing good towing skills must be accomplished slowly and with direct supervision at all times. Reinforce the use of wing walkers for hangar operations and whenever any questions regarding clearances exist.

MAJOR TOPICS:

1. Principles of towing
2. Towing equipment and vehicles
3. Aircraft tow (turn) limits and tow bar usage
4. General towing procedures and safety
5. Hangar towing and safety procedures

LEARNING OBJECTIVES:

1. To understand the critical nature of aircraft towing and the responsibility required of the person at the tow vehicle controls
2. To become familiar and understand the different types of tow vehicles used for towing aircraft
3. To become familiar and understand the critical safety issues associated with aircraft weight and tow vehicle towing speeds
4. To be able to explain the vehicle safety check items that must be reviewed prior to operating a tow vehicle (tug)
5. To be able to demonstrate the ability to safely operate a tow vehicle (tug)
6. To be able to explain the safety rules and guidelines for using tow bars
7. To be able to explain what action should be taken if
an aircraft becomes disconnected during a towing operation

(8) To be able to explain and identify where tow bars are connected to aircraft

(9) To understand and explain the importance and procedures for selecting the proper route of travel prior to moving an aircraft

(10) To understand and explain the correct procedures to follow when getting off a tow vehicle (tug)

(11) To understand and explain the safety guidelines and the proper procedures to follow when working around propellers

(12) To understand and explain the importance of nose wheel “turn limits”

(13) To understand and be able to demonstrate the proper procedures to follow when performing a pre-tow walk-around

(14) To understand explain the correct procedures for removing gust (rudder) locks

(15) To be able to identify, explain and perform general safety towing procedures

(16) To understand and explain the proper procedures to follow for the removal and reinsertion of wheel chocks

(17) To become familiar with the proper procedures and precautions to follow when moving tail-wheel aircraft

(18) To understand the importance and proper procedures to follow and report aircraft damage

(19) To be able to explain the safety guidelines for moving aircraft in and out of hangars

(20) To understand and explain the responsibilities of and the proper procedures to follow when using a wing walker

(21) To understand and explain the procedures to follow when pushing aircraft backwards

(22) To become familiar with the general procedures for connecting and disconnecting aircraft nose gear

TRAINING AIDS/MATERIALS:

(1) PLST Online Module 4: Towing

(2) PLST Towing reference materials (Training
resources online: PLST PDFs)

(3) PLST Aircraft Ground Service Online, www.nata.aero/agso

(4) Tow vehicle(s) operating manual(s)

(5) Company Standard Operating Procedures

(6) Company Emergency Procedures manual

(7) Airport rules and regulations manual

REFERENCED PUBLICATIONS:

(1) Advisory Circulars -
http://www.faa.gov/regulations_policies/advisory_circulars/
AC 00-34A – Aircraft Ground Handling and Servicing
AC 20-35C – Tie-down Sense
AC 91-13C – Cold Weather Operation of Aircraft

INSTRUCTION TIME:

Classroom: 3 - 4 hours
Preview of material: :15 min
Online viewing: :40 min
Review and discussion: 1 - 2 hr
• Tow vehicles
• General towing principles, procedures and precautions

OJT: 4 - 5 hours
Hands-on review:
• Tow bars and equipment
• Tow vehicle(s)
• Driving and operation of tow vehicle with employee at controls
• Employee practicing towing maneuvers with tug and GPU
• Typical ramp towing operations
• Aircraft nose gear disconnect procedures
• Typical hangar towing operations
MODULE: FUEL FARM MANAGEMENT

ONLINE TIME: 55 Minutes

CONCEPT: Assuring that all fuel received, stored, and delivered into aircraft is both clean and dry requires a high degree of care and responsibility. Delivering the incorrect type of fuel, or fuel that is contaminated, will almost certainly result in aircraft damage, loss of life or both! The importance of delivering good, clean product cannot be over emphasized.

MAJOR TOPICS:

1. Quality control, contaminants and checks at fuel farm
2. Fuel storage activities, safety and security
3. Fuel farm monitoring and testing
4. Fuel ordering, receiving and loading
5. Refueler monitoring and testing

LEARNING OBJECTIVES:

1. To understand that it is every person’s responsibility to ensure the fuel being delivered into aircraft is of the correct type and grade and meets the highest standards for quality control.
2. To become familiar and be able to define, identify, and explain the source, effect, prevention and removal of the following more common aviation fuel contaminants;
   a) free water
   b) solids
   c) microorganisms
   d) surfactants
   e) inadvertent mixing of fuels
3. To be able to explain and correctly identify all tanks, pipelines, filter vessels and fittings using industry standard color coding, banding, arrows and lettering
4. To become familiar and understand fuel filtering systems, components and processes
5. To become familiar and understand the correct operation of your fuel storage system including the
type of storage tank system, emergency shut off controls and fire extinguishers

(6) To understand and explain the procedures and importance of maintaining a clean and secure fuel storage facility

(7) To understand and be able to explain the proper safety equipment, procedures and placards required at, on and near fuel storage areas, loading islands and refuelers

(8) To be able to understand, explain and perform the proper procedures for the following fuel quality tests and checks;
   a) Clear and Bright test
   b) White Bucket test
   c) Sump sample check
   d) Water finding paste test
   e) Millipore test
   f) Differential Pressure check

(9) To become familiar with the proper procedures and actions required following operation of the differential pressure gauge

(10) To understand the criteria for filter coalescer element replacement

(11) To understand and be able to explain the DAILY quality control checks that must be made and recorded as follows;
   a) Sump each storage tank
   b) Water detection for each storage tank
   c) Sump each filter vessel
   d) Differential pressure gauge reading
   e) Record the fuel quantity in each storage tank
   f) Tank vents - clear and open
   g) Tank hatches - secure
   h) Bonding wires - continuity and operation
   i) Hoses and connections - damage and/or leaks
   j) Nozzle dust covers - in place
   k) Pumps and motors - rotation and operation; seals and gaskets - leaks
   l) Storage area - clean and free of weeds
   m) Fire extinguishers - broken seals,
plugged/damaged discharge nozzles, recharge inspection dates

(12) To understand and be able to explain the WEEKLY quality control checks that must be made and recorded as follows;
   a) Deadman controls and emergency shut off devices - proper operation
   b) Floating suction - freedom of movement
   c) Signage/placards - in place, secure, easily readable

(13) To understand and be able to explain the MONTHLY quality control checks that must be made and recorded as follows;
   a) Filter Millipore/Membrane
   b) Loading hoses working pressure - separations, soft spots and deterioration
   c) Oil level/lubrication of pumps, hose reels, motors and other equipment requiring lubrication
   d) Automatic water slug shutoff valve - proper operation

(14) To understand and explain the procedures to follow for monthly fuel inventory

(15) To understand and be able to explain the other “PERIODIC” quality control checks that must be made and recorded as follows;
   a) Fuel sump heaters (quarterly) - proper operation
   b) Tank visual inspection for corrosion, scale or possible rupture (1st year, if new, then inspect subsequently at periods not exceeding 3 years) – clean tanks if contaminants found

(16) To become familiar with the general procedures and safety concerns for ordering and accepting bulk fuel shipments including the following specific control checks to determine acceptability;
   a) Appearance - clear and bright and fuel color
   b) Water detection test
   c) Gravity check
(17) To understand the proper procedures to follow for monitoring and testing of refuelers including:
   a) general appearance and cleanliness
   b) placarding and identification
   c) proper equipment and maintenance
   d) daily checks
   e) weekly checks
   f) monthly checks

(18) To understand the proper procedures to follow for refueler loading

TRAINING AIDS/MATERIALS:

(1) PLST Online Module 7: Fuel Farm Management
(2) PLST Fuel Farm Management reference materials
    (Training resources online: PLST PDFs)
(3) Company Fuel Storage Operating Procedures
(4) Pictures/diagrams/schematic of your fuel storage system
    and piping layout
(5) Fuel sampling equipment
(6) Fuel Supplier Fuel Quality Control Manual
(7) Company Standard Operating Procedures
(8) Company fire and safety policies and procedures
(9) Company Emergency Procedures manual
(10) Airport rules and regulations manual
(11) Company Material Safety Data Sheets manual
(12) Applicable fuel spill/reporting procedures

REFERENCED PUBLICATIONS:

(1) Advisory Circulars -
    http://www.faa.gov/regulations_policies/advisory_circul
    ars/
    AC 00-34A – Aircraft Ground Handling and Servicing
    AC 150/5230-4B – Aircraft Fuel Storage, Handling and
    Dispensing on Airports
    http://www.astm.org/BOOKSTORE/PUBS/MNL5-
    4TH.htm
(3) EI (API) 1542 - Identification Markings for Dedicated
    Aviation Fuel Manufacturing and Distribution Facilities,
    Airport Storage and Mobile Fuelling Equipment
    http://www.energyinst.org/information-centre/ei-
    publications/newpubs/EI-1542
(4) NFPA 407 – Aircraft Fuel Servicing
    www.nfpa.org
INSTRUCTION TIME:

Classroom: 3 - 4 hours
Preview of material: :15 min
Online viewing: :55 min
Review and discussion: 1 - 2 hr
- Fuel storage system and equipment
- Specific fuel quality control procedures
- General fuel receiving and loading procedures and precautions
- Specific scheduled checks
  - Daily
  - Weekly
  - Monthly
  - Periodic

OJT: 4 - 5 hours
Hands-on review:
- fuel storage system placarding, fuel quality systems and safety and equipment
- fuel quality control checks;
  - Daily
  - Weekly
  - Monthly
  - Periodic
  - Filter coalescer element replacement
  - Differential pressure gauge operations
- Hands-on review of the various fuel contaminants
- Refueler fuel quality systems and equipment
- Refueler fuel quality control checks as listed above and including:
  - Daily checks
  - Weekly checks
  - Monthly checks
  - General appearance and cleanliness
  - Placarding and identification
  - Proper equipment and maintenance
- Fuel inventory procedures
- Ordering and accepting bulk fuel shipments
- Refueler bottom loading procedures
- Typical operations and procedures
MODULE:

CUSTOMER SERVICE

ONLINE TIME:

50 Minutes

CONCEPT:

Professional and friendly customer service personnel are critical to the success of an FBO. In the fast paced and time sensitive world of air travel, the effort to meet the customer’s needs is crucial to assure their return business. It has been proven that those customers who are not having their need met WILL go elsewhere and find someone who will.

MAJOR TOPICS:

(1) Introduction to Customer Service
(2) Understanding Your Clientele
(3) Effective Communication
(4) Conflict Resolution

LEARNING OBJECTIVES:

(1) To be able to understand and explain who your customers are and the services they require
(2) To be able to understand and explain the job demands of the flight crew and the importance of taking care of both passengers and flight crews
(3) To be able to understand and demonstrate procedures for providing good customer service;
   (a) smiling and showing genuine concern
   (b) professional appearance
   (c) good listening skills
   (d) showing responsiveness, reliability and enthusiasm
(4) To become familiar with and be able to properly answer the telephone and handle calls in a friendly and professional manner
(5) To become familiar and be able to communicate effectively with flight and ground crews using air-to-ground and radio phraseology and proper company procedures
(6) To become familiar with the activities and functions of the Customer Service Specialist position
TRAINING AIDS/MATERIALS:

(1) PLST Online Module 6: Customer Service
(2) PLST Customer Service reference materials (Training resources online: PLST PDFs)
(4) Company Standard Operating Procedures
(5) Company Emergency Procedures manual
(6) Airport rules and regulations manual

REFERENCED PUBLICATIONS:

(1) Aeronautical Information Manual (AIM)
(2) ServiceElements International Inc.
   http://www.serviceelements.com/

INSTRUCTION TIME:

Classroom: 3 - 4 hours
Preview of material: :15 min
Online viewing: :50 min
Review and discussion: 1 - 2 hr

- General customer service duties and responsibilities
- Good customer service:
  a. professional appearance and attitude
  b. good eye contact and listening skills
  c. friendliness, sincerity, honesty and enthusiasm
- Telephone Procedures
  a. proper answering technique
  b. correct “hold and transfer” procedures
- Company radio procedures
  a. proper use of microphone
  b. correct use of terminology and phraseology
- Air-to-ground radio procedures
  a. proper use of microphone
  b. correct use of terminology and phraseology
- General sales transaction procedures
  a. cash/check/credit card acceptance and handling procedures
- General accounting transaction procedures
- Emergency procedures
  a. emergency phone numbers
  b. emergency notification list
**OJT:** 4 - 5 hours

Hands-on review:
- Customer areas in all facilities (hangar/buildings)
- Customer service flight counter area and equipment
- General customer service operating procedures
- Telephone procedures
- Accounting and sales transactions
- Ground-to-ground radio procedures
- Company radio procedures
- Ground transportation/rental car procedures
- Catering ordering and handling procedures
MODULE: **FIRE SAFETY**

ONLINE TIME: 90 Minutes

CONCEPT: *Fire Safety* as it relates to fuel handling is a major safety concern when considering the volatility of fuel and the volumes which are transferred during all fueling, loading and unloading operations. Lives are at stake when proper procedures are not followed. The handling and storage of aviation fuel cannot be taken lightly nor should it be conducted without proper introductory and recurrency training. Establishing and maintaining procedures for the protection of persons, aircraft and other property during the handling and storing of aviation fuel is required.

MAJOR TOPICS:

1. Fire Safety Standards and Characteristics of Aviation Fuels
2. Recognizing Fires and Extinguishing Agents
3. Fighting Fires
4. Minimizing Fire Risk

LEARNING OBJECTIVES:

1. To understand and explain the requirements for 14 CFR Part 139 Section 321 as it applies to fuel handling
2. To understand the fire hazard properties and characteristics of aviation fuels
3. To understand the four (4) elements necessary to cause and support a fire as presented in the fire tetrahedron
4. To understand the extinguishing of a fire is accomplished through the interruption of one or more of the essential elements as presented in the fire tetrahedron
5. To be able to explain the four (4) different classifications of fires
6. To be able to define and explain the extinguishing agents, their applicability to the four (4) different classes of fires and the characteristics of each extinguishing agent
7. To be able to explain and demonstrate the step-by-step procedures and techniques for using fire extinguishers
(8) To be able to explain the size, type and number of fire extinguishers required on mobile refuelers, fixed refueling systems and at fuel storage systems

(9) To be able to explain and correctly identify all mobile refuelers, hydrant carts, fueling cabinets, fuel storage tanks, pipelines, filter vessels and fittings using industry and government standard color coding, banding, arrows and lettering

(10) To understand the safety equipment required on mobile refuelers and other refueling equipment including:

- emergency shut-off controls
- deadman controls
- baffled muffler and exhaust systems
- air filter/flame arrestor equipment
- removal of smoking equipment from refuelers
- shielding to safely drain potential fuel spills away from potential ignition sources

(11) To be able to explain the dangers of static electricity and the precautionary safety procedures to follow to prevent static discharge including:

- proper clothing for refueling personnel
- handling non-galvanized funnels and buckets (DO NOT use plastic funnels or buckets)
- handling of lighters and matches by refueling personnel
- operation of refueling safety equipment
- operation of radios, vehicle engines, GPU’s, electrical equipment and aircraft radar

(12) To understand and explain the proper bonding concerns and procedures to follow for all refueling operations

(13) To understand and be able to explain the procedures for responding to and handling of a fuel spill or leak and the hazards presented to personnel with clothing contaminated by spilled fuel

(14) To understand and be able to explain the proper safety and security equipment, procedures and placards required at, on and near all fuel storage
systems, loading islands and refuelers

(15) To be able to understand and explain the proper procedures to follow for aircraft refueling operations including:
- refueling downstream of jet and turboprop engine exhausts
- thunderstorms and refueling operations including the calculation process to determine the distance from thunderstorms jet engine intakes
- loose items and objects carried by personnel

(16) To understand the proper safety procedures to follow for public protection including:
- refueling aircraft with passengers on board
- aircraft refueling operations within fifty (50) feet of passenger vehicles
- display of NO SMOKING signs at ramp entrances
- proper bonding procedures

TRAINING AIDS/MATERIALS:

(1) PLST Online Module 7: Fire Safety
(2) PLST Fire Safety reference materials (Training resources online: PLST PDFs)
(3) Company Fuel Storage Operating Procedures
(4) Pictures/diagrams/schematic of your fuel storage system and piping layout
(5) Refueling equipment (mobile refuelers/hydrant carts/cabinets)
(6) Fuel Supplier Fuel Quality Control Manual
(7) Company Standard Operating Procedures
(8) Company fire and safety policies and procedures
(9) Company Emergency Procedures manual
(10) Local Fire codes and regulations as it pertains to your local airport
(11) Airport rules and regulations manual
(12) Samples of the fire extinguishers used at your facility

REFERENCED PUBLICATIONS:

(1) Aeronautical Information Manual (AIM)
(2) Service Elements International Inc.
MODULE INSTRUCTION PLAN - MODULE #7

INSTRUCTION TIME:

**Classroom:**
- **3 - 4 hours**
- Preview of material: :15 min
- Online viewing: 90 min
- Review and discussion: 1 - 2 hr

- Fire hazard characteristics;
  - flash point
  - flammability conditions
  - autoignition temperature
  - heat of combustion
  - rate of flame spread
- Fire tetrahedron
- Fire extinguisher operating principles
- Fire extinguishing types, agents and applicability
- Fire extinguisher procedures (PASS)
- Fuel placarding and identification
- Mobile refuelers and safety equipment
- Fuel storage safety and security
- Aircraft refueling safety
- Static electricity
- Bonding
- Fuel spill response and handling
- Public and personal safety concerns

**OJT:**

- **4 - 5 hours**

**Hands-on review:**

- Fire extinguisher types and locations on each mobile refueler and in all buildings, hangars, ramps, fuel storage areas, etc.
- Fire (live if possible) demonstration with hands-on review and employee practice of the proper procedures for extinguishing a fire
- Fuel storage system operations, fire safety concerns and safety equipment
- Refueling system operations (mobile and fixed), fire safety concerns and safety equipment
- Fuel spill materials, storage locations(s) and approved disposal
MODULE: AVIATION SECURITY

ONLINE TIME: :45 Minutes

CONCEPT:
Aviation Security is an issue that is critical to everyone at an airport. The primary goal of this module is to teach your line staff how to be more observant, to help them understand the importance of security, to identify their specific responsibilities within their work area, and overall, to reduce any threat to your business. Establishing and maintaining procedures for the protection of personnel, aircraft, facilities and equipment are a reality for today’s aviation businesses and maintaining a safe, secure operation.

MAJOR TOPICS:
(1) General Aviation Industry and its Importance
(2) Airport Security Issues
(3) National Agencies Involved in Security
(4) Your Role in Security
(5) Awareness of General Surroundings
(6) Access Control Procedures
(7) Specific Security Activities

LEARNING OBJECTIVES:
(1) To understand the importance and impact of security
(2) To be familiar with the national agencies involved in security
(3) To explain and understand the responsibility each airport employee has for a safe, secure environment
(4) To understand and observe daily events concerning customers, fellow employees and general surroundings
(5) To be familiar and understand the different access requirements for the airport/facility
(6) To understand and explain challenge, emergency, witness and reporting procedures to maintain a safe, secure operation
(7) To understand and be familiar with media requests and telephone threat procedures
(8) To understand and be familiar with badge credentials and proper procedures for valid checks

TRAINING AIDS/MATERIALS:

(1) PLST Online Module 8: Aviation Security
(2) PLST Aviation Security reference materials (Training resources online: PLST PDFs)
(3) Airport Rules and Regulations Manual
(4) Review Company Proprietary Issues
(7) Company communication procedures and telephone contact information
(8) Transportation Security Administration (A001/2004) Security Guidelines for General Aviation Airports

REFERENCED PUBLICATIONS:

(1) General Aviation Security Programs and Initiatives
   http://www.tsa.gov/what_we_do/tsnm/general_aviation/programs_sp.shtm

(2) Security Guidelines for General Aviation Airports
   http://www.tsa.gov/what_we_do/tsnm/general_aviation/programs_sp.shtm

INSTRUCTION TIME:

Classroom: 3 - 4 hours
Preview of material: :15 min
Online viewing: :45 min
Review and discussion: 2 – 3 hr
• General company/airport security procedures and policies
• National Agencies involved in security
• Why security is important
• Line service specialist role in security
• Company security technology policies
• Company badge requirements and validation checks
• Observance of customers and fellow employees
• Company/airport access policies and procedures
• Company/airport escort policies and procedures
• Company threat policies and procedures
• Company emergency policies and procedures
• Company witness policies and procedures
• Company reporting policies and procedures
• Company media and communication policies and procedures
• Company auto parking policies and procedures for based customers

**OJT:** 3 – 4 hours

**Hands-on/tour of facility:**
• Immediate work area
• Sterile areas
• Non-sterile areas
• Lobby, terminal and office areas
• Hangars
• Fuel storage
• Airport Operations Area
• Gates and fenced areas
• Doors and emergency exits
• Access control systems
• Monitoring systems
• Night operations and lighting checklists
• Airport/company badge procedures
• Auto parking
C. PLST Training Checklists

Complete online lesson for module #1 *INTRODUCTION & GROUND SERVICING*
Complete online exam for module #1 *INTRODUCTION & GROUND SERVICING*

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- Professional Line Service Training Overview
  - discuss components of PLST program
  - briefly describe the overall training objectives
  - briefly describe each online module and its contents
  - briefly describe reference materials and checklists in online lessons
  - Aircraft Ground Service Guide and Aircraft Towing Guide; to be used as a quick reference
  - discuss PLST curriculum
    - phase “1”
      - view the online module and discuss with trainer
      - read corresponding reference materials
    - phase “2”
      - “hands-on” OJT demonstration and practice of material presented
    - phase “3”
      - review of material presented in classroom and during OJT
      - review of online training, as applicable
      - module examination
        - 80% passing score required
      - employee receives Hands-on procedures and Practical Exam
        - 100% passing score required and completion of online documentation
    - employee receives PLST certificate upon completion of program

- FBO Operations
  - define FBO
  - review primary services provided
  - discuss the size and scope of General Aviation including its various segments
  - discuss the role of Line Service Specialists and specific responsibilities
    - stress the importance of Safety and Customer Service

- Communications & Terminology
  - discuss directional terminology; oriented from the pilot’s point of view
    - left versus right
    - numbering of aircraft engines
  - discuss and explain use of the “24” hour clock system
  - discuss and explain use of Coordinated Universal Time or “Z” time
    - explain the proper conversion for your specific time zone
  - discuss and explain the use of the phonetic alphabet
PLST TRAINING CHECKLIST - MODULE #1

- discuss the correct enunciation for using numbers, ie; “niner” for 9; zero, not “OH” for zero
- discuss aircraft registration identification or tail numbers
  - review common country registration prefixes at your FBO

_____ _____ Airport Operations
- discuss and identify the AOA on the airport
- discuss and identify “critical movement area” on the airport
- identify the runways and taxiways located on the airport
- discuss the aircraft “right-of-way” rules
- discuss specific safety procedures and speed limit rule

_____ _____ Aircraft Component & Construction
- discuss and identify the major aircraft components: powerplants (engines), fuselage, wings, undercarriage, empennage and canards
- discuss and identify primary aircraft construction materials: aluminum fuselage, fabric wings and composites
- discuss aircraft identification lighting
  - explain the correct location and purpose for aircraft position lights

_____ _____ Ramp & Facility Security (also covered in Module 8 on Aviation Security)
- review company and airport security procedures
- review proper access locations and procedures for employees
- identify FBO security access gates and doors
- review proper reporting procedures of unauthorized personnel

_____ _____ Foreign Object damage (FOD)
- define and identify examples of FOD
- explain potential damage to aircraft and personnel from FOD

_____ _____ Aviation Fuel & Oil
- discuss and identify the two different categories of aviation fuel
  - aviation gasoline (Avgas)
    - different grades: 100LL-Blue and 100/130-Green
  - jet fuel - clear to straw yellow
- define and discuss concept of misfueling
- discuss incompatibility of mixing fuel and using the incorrect fuel for other than the engine type it is designed may result in loss of lives and property
- discuss and identify the different categories of aircraft engine oils
  - reciprocating (piston) engine oil
  - turbine engine oil (synthetic base)
- discuss incompatibility of mixing the different categories, types and brands of oil with another

_____ _____ Ground Power Unit Operations
- discuss and demonstrate GPU operating procedures
  - correct identification of 12, 28 and 115 volt units
  - proper GPU operating procedures; start-up & shut-down
proper voltage and amperage settings
driving or towing procedures & concerns
discuss and demonstrate GPU procedures at aircraft
selecting and positioning GPU

- verify aircraft power requirements and starting sequence with pilot
- select appropriate rated GPU
- position at the rear of the aircraft
  - position out of the jet blast and propeller wash areas
  - Never position in front of aircraft engines and propellers
  - DO NOT position within 10' radius of aircraft fuel vents
- start engine and verify generator switch is in the “OFF” position

providing ground power to aircraft

- connect GPU power cable plug to the aircraft receptacle
- bring GPU to operating speed, verify correct voltage and amperage settings
- switch generator to "ON", verify indicator light illuminates
- signal pilot that GPU is connected and supplying power

discontinue power to aircraft

- switch generator switch to “OFF”
- disconnect GPU power cable plug from aircraft receptacle

*NEVER disconnect GPU power cord plug with generator switch “ON”
- signal pilot that GPU is disconnected and area is clear for taxi
- provide ground guidance and obstacle clearance to flight crew
- return GPU to parking area once area is clear

Windshields and Cleaning

- identification of glass and plexiglass windshields, as applicable
- discuss proper cleaning of windshields
  - ALWAYS check with flight crew prior to cleaning any windshield
  - discuss proper cleaning materials
    - soft/specialized towels designated for cleaning windshields
    - *NEVER use red shop rags or other non-designated materials to clean windshields
  - appropriate cleaner fluid
  - discuss specific windshield cleaning procedures
    - use a generous amount of fluid to suspend dust and dirt
    - always clean in the direction of the air flow to avoid scratches
    - turn the cleaning cloth frequently
    - avoid using dry cloths to prevent generating static electricity and scratches

Lavatory Service

- discuss and define both types of lavatory systems
- discuss safety considerations
  - proper use of personal protection items including; gloves, eye protection, etc
PLST TRAINING CHECKLIST - MODULE #1

- reporting of leaks & exterior “blue” streaks
- reporting of servicing concerns or problems; excess quantity of water required to service system, inability to drain waste from aircraft, etc.

- discuss and demonstrate lavatory service unit operation
  - location and proper operation of service unit operating switches, pumps, valves, waste discharge hose, refill (charge) hose, meter, etc.
  - discuss driving or towing procedures & concerns
  - approved airport location for emptying of lavatory service unit
  - *NEVER use ramp surface drains to empty aircraft lavatories or lavatory service units
    - proper emptying of waste holding tank
    - proper refilling of charge tank
    - proper use of lavatory chemical/deodorant

- discuss and demonstrate servicing procedures for a portable lift-out system
  - coordinate with flight crew for specific servicing procedures and fluid capacities
  - remove portable lift-out system from aircraft
  - take lift-out system to an approved remote disposal location
  - empty lift-out system
  - fill lift-out system with clean water and empty a second time
  - refill lift-out system with clean water (verify this amount with the flight crew)
  - reinstall lift-out system into aircraft
  - add deodorant chemical into lift-out system **AFTER** it is reinstalled in aircraft

- discuss and demonstrate servicing procedures for permanently installed (fixed) system
  - coordinate with flight crew for specific servicing procedures and fluid capacities
  - position service unit at aircraft
    - secure service unit at aircraft with parking brake and/or wheel chocks
    - verify **ALL** drain valves on service unit are properly closed
  - connect waste discharge and refill (blue water) hoses to aircraft
    - open aircraft lavatory service panel door and unlatch or remove aircraft waste drain cap
    - turn lock ring on hoses **CLOCKWISE** to secure
    - pull gently on each hose to ensure a proper connection

- drain waste from aircraft
  - stand upwind and to one side
  - pull and hold open waste drain valve handle, for several seconds, to drain waste from aircraft
    - *wait several seconds for the waste to be discharged from the aircraft*
  - release waste drain handle and pull open a second time to assure all waste has sufficiently drained
  - reposition waste drain handle to closed position

- flush aircraft system
  - pump charge “blue” water into aircraft
  - stand upwind and to one side
  - pull and hold open waste drain valve handle, for several seconds, to
drain flush water and any remaining waste from aircraft
*wait several seconds for the waste to be discharged from the aircraft
☐ release waste drain handle and pull open a second time to assure all fluid has sufficiently drained
☐ reposition waste drain handle to closed position
☐ refill aircraft system
  ☐ verify with flight crew the specific fluid capacity of the system
  ☐ monitor the water meter on the service unit to add the correct number of gallons
☐ completion of servicing
  ☐ disconnect the waste discharge and refill (blue water) hoses from the aircraft by turning lock ring on hoses COUNTER-CLOCKWISE
  ☐ latch or reconnect aircraft waste drain cap
  ☐ close and secure lavatory service panel door
  ☐ clean and wipe-off any fluid that may have dripped onto the aircraft

Potable Water Service
☐ discuss and define “potable water” and both types of aircraft systems
☐ discuss safety considerations
  ☐ reporting of leaks
  ☐ reporting of servicing concerns or problems; excess quantity of water required to service system, incorrect operation of automatic overflow vent
  ☐ potable water equipment must be kept clean
  ☐ potable water equipment and tanks must be protected from freezing temperatures
☐ discuss and demonstrate potable water service unit operation
  ☐ location and proper operation of service unit operating switches, pumps, valves, refill hose, meter, etc.
  ☐ discuss driving or towing procedures & concerns
  ☐ approved airport location for refilling of water service unit tank
  ☐ proper handling & storage of unit
☐ aircraft servicing procedures
  ☐ discuss and demonstrate servicing procedures for permanently installed (fixed) system
    ☐ coordinate with flight crew for specific servicing procedures and fluid capacities
    ☐ position service unit at aircraft
    ☐ secure service unit at aircraft with parking brake and/or wheel chocks
    ☐ connect refill hose to aircraft
    ☐ stand upwind and to one side
    ☐ position refill valve handle to proper position
    ☐ monitor the water meter on the service unit to add the correct number of gallons
  ☐ discuss and demonstrate servicing procedures for lift-out containers
    ☐ approved location for refill of unit
    ☐ proper cleaning and securing of lift-out container lid and latches
Complete online lesson for Module #2 SAFETY
Complete both online exams for Module #2 SAFETY, Part 1 and Part 2. (This is the longest module in the online series. The exams have been divided into two sections because of the extensive amount of information covered. All students are encouraged to take the exams as posted on the student training portal.)

DATE    INITIALS

______ ______ Personal Safety and Servicing Dangers

- general safety
  - remain alert, keep head up and eyes moving
  - don’t rush your tasks
  - any questions, ask supervisor for help
  - “if you are not sure, DON’T DO IT”
  - discuss appropriate personal protective equipment (PPE) use and care

- fire safety
  - know where fire extinguishers are located
  - know the types of fire extinguishers available and their correct use
  - DO NOT carry smoking materials when working
  - change clothes and wash thoroughly if fuel is spilled onto clothes or person
  - review aviation fuel Material Safety Data Sheet (MSDS) information

- discuss potential damage to aircraft and injury to people as a result of FOD
  - identify sources of FOD
  - keep pockets buttoned or empty to avoid items falling out and becoming FOD
  - proper disposal of FOD

- discuss the dangers associated with jet blast and prop-wash/prop-blast
  - use eye protection - protect face and eyes
  - NEVER walk or drive directly behind a turbine or propeller driven aircraft when the engines are running or the propellers are turning
  - discuss the dangers associated with noise exposure
    - review company procedures for use of hearing protection
    - review potential results for not wearing hearing protection
    - suggested use of hearing protection that covers entire ear

- define and discuss propeller danger and “propeller paranoia”
  - propellers become “invisible” at night and when spinning at high revolutions
  - do not approach an aircraft until propellers have stopped moving
  - always treat stationary propellers as though they are “hot”
  - discuss potential of propellers starting without a pilot present

______ ______ Aircraft Care and Handling

- discuss aircraft structures and components
  - designed to show strength in the air, NOT on the ground
  - review the high cost of aircraft and the high cost to repair damaged aircraft
  - discuss methods to prevent aircraft damage
    - report any incident or damage to the supervisor immediately
    - review equipment checks and parking procedures
PLST TRAINING CHECKLIST - MODULE #2

- discuss 50/10 rule operational best practice and procedures
- use protective fuel mats when over wing refueling to protect aircraft surfaces
- do not approach aircraft until rotating beacon light is off
- discuss operational best practice on securing aircraft
- discuss operational best practice on hangar chocks
- discuss best practice on cone placement
- avoid parking aircraft in potential danger zones
- discuss aircraft inspection checklist and procedures
- avoid spilling fuel on aircraft surfaces
- be sure of clearances when moving aircraft or operating equipment near aircraft
- physically check any clearance uncertainty
- use wing walker(s) for aircraft movements

Aircraft and Helicopter Marshaling and Hand Signals

- discuss aircraft hand signals and importance of signal person
  - review basic safety marshaling procedures
    - always face the aircraft nose in full view of the pilot
    - always remain in the pilot’s field of vision
    - use of light wands during night and low visibility situations
    - use precise and professional signals with arms/wands fully extended
    - observe the pilots reaction and adjust the signals accordingly
    - bring aircraft to an **immediate and complete stop** when in doubt of any clearance
    - use additional personnel (wing walkers) to assist in congested areas
    - **NEVER** position small aircraft within danger from jet blast or prop wash/blast
    - propellers and rotors must be completely stopped before positioning chocks
    - establish eye contact with the pilot before placing chocks in place
    - always stay clear of propellers and rotors, even when they are stationary
  - demonstrate each of the aircraft hand signals
  - review aircraft **arrival** procedures
    - marshaler must be in position prior to aircraft arrival onto the ramp
    - demonstrate each of the arrival hand signals
  - review aircraft **departure** procedures
    - marshaler’s position is just left of the aircraft’s nose, within easy view of the pilot and in view of the aircraft tail
    - demonstrate each of the departure hand signals
  - discuss helicopter hand signals and review marshaling safety
    - use of eye protection - protect face and eyes
    - marshaler’s position is upwind of the helicopter in full view of the pilot
    - always remain in the pilot’s field of vision
    - use of lighted wands during night and low visibility situations
use precise and professional signals with arms fully extended
observe the pilots reaction and adjust the signals accordingly
bring helicopter to an **immediate and complete stop**, with any doubt as to clearances
use additional personnel to assist in congested areas
NEVER walk directly behind a helicopter or near the tail rotor
DO NOT approach the helicopter while the engines are running or the rotors are turning
demonstrate each of the helicopter hand signals used to communicate with the pilot

________ Aviation Fuel and Oil

- review the two different categories of aviation fuel
  - aviation gasoline (Avgas)
    - avgas grades: 100LL-Blue; 100-130-Green
    - color coding of each
    - color, feel and smell of each
  - jet fuel
    - color coding of Jet-A and Jet A1 (as applicable)
    - color, feel and smell
- review of aviation oils
  - discuss and identify the two different categories of aircraft engine oils: reciprocating (piston) engine oil and turbine engine oil (synthetic base)
  - discuss incompatibility of mixing the different categories, types and brands of oil
  - review reciprocating (piston) engine oil
    - manufactured from crude oil
    - two different types; “AD”-ashless dispersant and “NON-AD”-non ashless dispersant (straight mineral oil)
    - different weights/grades and multi-viscosity oils
  - review turbine engine oil
    - manufactured using a synthetic base
    - add only under the supervision of the pilot
- oil servicing precautions
  - avoid spillage onto the engine or cowling
  - always wipe up any spilled or excess oil
  - replace and secure all oil filler caps and dipsticks

________ Refueling Safety

- define and discuss concept of misfueling
  - discuss incompatibility of fuel types and grades
  - misfueling accidents due to similar looking aircraft with different fuel requirements
  - use of the incorrect fuel, for other than the engine type it is designed, may result in loss of lives and property
  - review steps to prevent a misfueling
PLST TRAINING CHECKLIST - MODULE #2

- verify the fuel requested on the fuel order form is the correct type for the aircraft
- verify that the aircraft’s tail number exactly matches the tail number listed on the order form
- verify the wing decals near fill ports
- verify the type of engine on the aircraft; is it piston or turbine

- discuss refueling methods
  - over wing
    - used on all piston, most turboprop and some jet aircraft
    - nozzle similar to that used to refuel an automobile, however - NO AUTOMATIC SHUT-OFF
  - review “J” spout nozzles used for jet fuel refueling
  - single point nozzle
    - used on a few turboprop aircraft and many jet aircraft
    - nozzle connects directly to a receptacle on the aircraft
    - opening of the nozzle fuel flow control valve handle locks nozzle to aircraft

- discuss importance of preventing fuel contamination during refueling
  - review steps to prevent fuel contamination during refueling
    - avoid refueling during heavy rains and wind/dust storms
    - check fuel nozzles for water and dirt prior to each refueling
    - cover fill ports to if you must refuel during heavy rains and wind/dust storms
    - double check that filler caps are in place and properly secure after each refueling
    - NEVER lay or drag a nozzle on the ground
    - always point the nozzle downward when stowing onto the refueler/cabinet
  - replace nozzle dust caps after each refueling

- review fuel spill and fire prevention procedures (also covered in Module 7 Fire Safety)
  - STOP the flow of fuel, immediately
  - notify supervisor and airport fire authority
  - place fire extinguisher upwind of the spill area
  - stand guard at fuel spill area and do not allow vehicles or aircraft to be driven or towed through the spill
  - follow local, state, and Federal laws and regulations
  - review fire extinguisher operating procedures (see Module 7 Fire Safety)

Mobile Refuelers

- review “standard operating procedures”
  - refueler quick visual check prior to servicing an aircraft
    - tires properly inflated
    - fluids are NOT dripping from nozzles, filters, plumbing, fuel tank, undercarriage of vehicle, etc.
    - verify that the refueler chosen has the correct fuel type for the aircraft
    - verify that the bonding cables, wing protection mats, and ladders are
on-board and in good operating condition
   ☐ verify that refueler is equipped with two “BC” type fire extinguishers

☐ starting and operating refueler
   ☐ check mirrors, gauges; sufficient running fuel, air pressure and battery, lights, brakes, etc.
   ☐ maintain proper speed limit (Do Not exceed posted speed limit)
   ☐ adjust speed for current conditions
   ☐ use a qualified guide person when backing

☐ parking and positioning refuelers
   ☐ maintain 10’ between refueler and aircraft fuel system vent openings
   ☐ maintain 50’ between refueler and any building and hangar
   ☐ NEVER drive refuelers into a hangar, under passenger concourses or jetways

☐ bonding
   ☐ aircraft must be bonded to refueling vehicle/unit prior to opening any fuel cap
   ☐ bonding clip must be attached to an unpainted surface on the aircraft
   ☐ over wing nozzles must touch the filler cap/opening prior to opening the cap
   ☐ over wing nozzles must be kept in contact with the filler opening at all times

☐ safety mechanisms
   ☐ review deadman and emergency shutoff(s) operation
   ☐ DO NOT bypass, jam or block open any of the safety mechanisms

--- Emergency Procedures
   ☐ review specific location of emergency manuals and phone lists
   ☐ review procedure for contacting emergency agencies; police, fire and ambulance
   ☐ review procedure for notification of company personnel
   ☐ review specific company procedures to prevent and respond to the following situations:
      ☐ fire injury       ☐ vehicle accident.... ☐ disabled aircraft
      ☐ aircraft misfueling ☐ aircraft accident   ☐ aircraft theft
      ☐ hazardous material ☐ bomb threat     ☐ natural disasters

--- Security
   ☐ discuss security issues from a large and a small airport’s perspective
   ☐ review the airport and company security rules and regulations
      ☐ identification badges
         ☐ display at all times when working
         ☐ assure badge is secure and cannot easily be removed or dropped
         ☐ report lost or stolen badges immediately
         ☐ challenge those individuals who are not displaying identification badges in areas where badges are required
   ☐ reporting procedures
      ☐ do not take matters into own hands, contact the supervisor or airport
authority/security personnel as soon as possible
- unauthorized personnel or those who become nervous or angry
- unattended baggage, unidentified or suspicious vehicles and security doors that are left open

_____ ____ Airport Vehicle Operations
- review rules and regulations for driving vehicles on the airport
  - **ALWAYS** yield right-of-way to aircraft operating under own power or under tow
  - when driving passenger vehicles, yield right-of-way to aircraft support units/equipment
  - **NEVER** drive any vehicle onto a runway or taxiway, without approval from the FAA or airport authority
  - observe all speed limits, traffic signage and rules published by the airport authority
  - observe and understand airport signage

_____ ____ Oxygen Servicing
- overview of Aviators Breathing Oxygen (ABO)
  - importance of ABO to flight crew and passengers
  - two systems primarily found in general aviation aircraft; fixed and portable
  - proper identification of ABO systems: light green bottles with large white letters
  - general safety procedures
    - keep personal clothing (gloves/jackets/hats) tools, shop towels, and servicing area clean of ALL petroleum products; oil, fuel, grease
    - servicing personnel must clean hands of any fuel, oil and grease prior to servicing
    - smoking is **NOT** permitted within 50’ of aircraft or oxygen servicing area/unit
    - servicing should be completed outside hangars, away from fuel vapors, oil and grease
    - **DO NOT** service aircraft oxygen system during aircraft fuel and oil servicing
    - **DO NOT** service oxygen system within 50’ of a fuel spill
    - service oxygen systems slowly to prevent overheating
    - open oxygen system valves slowly
    - servicing personnel are **NOT** to leave the area at any time during the servicing
    - servicing personnel must check aircraft and service unit oxygen pressure gauges frequently during servicing
  - overview of ABO cylinders used for servicing
    - proper identification of ABO cylinders: light green bottles with large white letters
    - proper handling and storage of ABO cylinders; keep caps on cylinders at all times, unless on service cart
    - cylinders must be stored upright, cap on and secured in position with a mechanical restraint
    - cylinders must be stored separate and away from any other gaseous cylinders
containing flammable gases or liquids

☐ assure equipment and servicing area is clean of any oil, grease and fuel

☐ instruction for the use of ABO servicing equipment/unit

☐ location and proper operation of service unit, including operating valves, refill hose line, gauges, connecting hoses, adapters, tools, etc.

☐ driving or towing procedures and concerns

☐ proper loading and unloading of ABO cylinders onto and off of the service unit

☐ proper securing of ABO cylinders and equipment on service unit

☐ approved storage location and securing of empty and full ABO cylinders

☐ general fixed system and portable bottle servicing procedures

☐ verify with flight crew the specific servicing requirements and system capacity

☐ bond ABO servicing unit with aircraft

☐ locate the oxygen service refill connection on the aircraft or portable bottle

☐ **VERIFY THAT THE AIRCRAFT OR PORTABLE BOTTLE VALVE IS CLOSED**

☐ open the service panel door, if applicable, and carefully remove the refill connection cap from the aircraft or portable bottle

☐ connect the proper fitting to the aircraft or portable bottle connection point*

*Be sure that the fill line connector threads are properly mated with the connection point threads in order to prevent “cross-threading” and damage to the receiving system/bottle

☐ verify the connection is SECURE, however do NOT over tighten

☐ identify the cylinders* on the service unit which have greater pressure than the system to be serviced

☐ open the lowest pressure cylinder, from this group*, on the service unit

*Note: open **ONLY** one cylinder at any time during servicing

☐ constantly check both the aircraft and the service unit pressure gauges in order to verify when equal pressure has been reached

☐ when both gauges display approximately the same reading, close the valve for the cylinder currently open

☐ locate the cylinder on the service cart which has the next highest pressure and open the valve slowly

☐ repeat the above five steps until the system reaches 1800 lbs

☐ when 1800 lbs has been verified on the aircraft system gauge, verify that all valves and cylinders are properly and securely closed

☐ prior to disconnection of the refill line and connection, verify that the aircraft system gauge is reading 1800 lbs

☐ identify the cylinder on the service unit with the lowest pressure. Open the cylinder and valve and allow a few seconds to “bleed-off” the excess pressure in the line. Once this is complete, close the valve and cylinder

☐ open the pressure bleed valve on the service unit to allow pressure to bleed out of the line

☐ **slowly** loosen the fill line connection and allow any remaining pressure to bleed from line

☐ disconnect the service connection, replace the aircraft’s connection cap, close
and secure the service panel door, if applicable
☐ properly store and secure the service unit fill line and tools on the service unit
☐ return the oxygen service unit to its proper storage location
☐ verify that each valve and cylinder is closed and all equipment is properly stowed
☐ verify there is at least one full cylinder on the service unit (1800 lbs) for the next servicing
☐ return customer’s portable bottle to line operations and record servicing on order form

Seasonal Operations
☐ review spring and summer weather concerns
    ☐ heavy rain, hail and strong winds can approach very quickly
    ☐ heavy winds and gusts can occur 20 miles away from storm
    ☐ aircraft must be kept secure at all times
    ☐ refueling, refueler loading and oxygen servicing operations should be discontinued when lightning is within five (5) miles of the airport
    ☐ if sound of thunder is less than twenty-five (25) seconds after the lightning flash, ALL fuel handling and oxygen operations should be discontinued
    ☐ formula for estimating the proximity of an approaching thunderstorm; five (5) seconds of elapsed time between the lightning flash and the sound of thunder = one (1) mile
    ☐ reduction of speed when ramps become wet and when visibility is reduced

☐ winter weather concerns
    ☐ reduction of speed when ramps become wet and when visibility is reduced
    ☐ snow removal from aircraft (as applicable)
        ☐ discuss effect of frost, ice and snow on lift of aircraft
        ☐ procedures using heated hangars
        ☐ procedures using special soft bristle “aircraft only” brooms
        ☐ procedures using deice fluids
        ☐ define and discuss “deicing”
        ☐ define and discuss “anti-icing”
        ☐ define and discuss the different types of deice fluids and their applicability

OTHER
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III. Module #3: GENERAL FUEL SERVICING

Complete online lesson for module #3 GENERAL FUEL SERVICING
Complete online exam for module #3 GENERAL FUEL SERVICING

RECIROCATING ENGINE AIRCRAFT

DATE INITIALS

_____ _____ Piston Engine Fuel and Oil Products
- review definition of “reciprocating engine”
  - define and discuss refueling issues for “turbocharger” and “turboprop” aircraft
  - use of the word “turbo” - always double check prior to servicing
- aviation gasoline (Avgas)
  - review different grades: 100LL-Blue; 100-130-Green
    - color coding of each
    - color, feel and smell of each
- piston engine oils
  - review two different types:
    - “AD”- ashless dispersant for after “break-in” (most commonly used)
    - “NON-AD”- non ashless dispersant (mineral oil) for new or recently refurbished engines
  - different weights/grades (viscosities)
  - multi-viscosity (weight) oils
  - DO NOT mix different types, weights or viscosities

_____ _____ Refueling Paperwork
- types of forms; fuel service orders and refueler delivery sheet (record)
  - fuel service order forms
    - contents of the order form
    - read carefully
    - confirm the correct type and grade of fuel and oil
  - review individual refueler delivery sheet (record)
    - stress neatness and accuracy
    - time, difficulty and expense to correct errors
- refuel delivery meters
  - review definition and use of “large” and “small” meter numbers
  - review calculation method
  - demonstrate and practice examples of refuel delivery meter calculations
General Servicing Procedures and Precautions

- aircraft fuel filler caps
  - review of three basic types of piston aircraft fuel caps, removal, replacement and proper securing of access doors, as applicable
  - review use of fuel level “tabs”
  - discuss “top-off” procedures
  - discuss fuel expansion due to warmer temperatures; leave two (2) inches down
- identify fuel tank types and locations: main versus auxiliary, inboard versus outboard, tip, nacelle, locker and fuselage, etc
- single-engine aircraft refueling procedures
  - understanding the fuel service order
  - select proper refueler for the job
    - verify correct product in the cargo tank
    - verify proper quantity of fuel to complete job
    - perform safety check of vehicle (refer to module #2 checklist)
- refueler position at aircraft
  - aircraft secure; chocks in place
  - slowly position refueler at center of aircraft - ability to see meter easily from each wing/tank
  - maintain ten (10) foot distance between refueler and aircraft
  - set refueler parking brake and chock
- review and verify fuel service order
  - aircraft tail number matches the number listed on fuel service order
  - verify the services ordered are appropriate for this aircraft type
  - does this aircraft require avgas or jet
  - is this the proper refueler with the correct type of fuel (avgas or jet)
  - are there any special servicing instructions
  - is the previous meter reading correct
- IF ANY QUESTION REMAINS: STOP AND ASK FOR CLARIFICATION
- setting up to refuel
  - bonding
    - reason for proper bonding
    - general bonding procedures
    - proper bonding points; ie. non-painted, machined metal surface on landing gear or as designated by manufacturer; NOT to propellers, exhaust pipes, brake lines, antennas, etc.
    - nozzle bonding procedures: touch nozzle to filler cap PRIOR to opening
  - determine which tank to refuel first
    - refer to fuel service order
PLST TRAINING CHECKLIST - MODULE #3

- step ladder
  - position at aircraft: lay on the ground until ready to use
  - NEVER position a ladder underneath a wing’s surface - aircraft may settle
  - maintain at least twelve (12) inch clearance between aircraft and ladder
- “clear” refuel delivery meter to zero
- use a wing protection mat
- extend refuel hose with enough length to easily reach the farthest tank
- keep hoses away from aircraft doors
- inspect refuel nozzle - verify it is clean and dry
- reposition ladder

- refueling the aircraft
  - lay down wing protection mat
  - touch the overwing nozzle to the filler cap prior to opening any cap
  - open filler cap and place on wing protection mat
  - slowly insert nozzle into filler opening*
  - *IF NOZZLE WILL NOT FIT INTO OPENING STOP IMMEDIATELY AND CALL THE SUPERVISOR!!
  - NEVER insert nozzle more than three (3) inches
  - hold nozzle and hose with both hands to prevent damage to aircraft surface and deice equipment
  - maintain constant contact between the filler neck and the nozzle
  - protect opening from any contaminants and other items that may accidentally enter the fuel tank
  - DO NOT lean against the leading edge or sit on any portion of wing surface prior to or during the refueling process
  - fill the tank according to the instructions and as directed by the flight crew
  - wipe up any spilled fuel IMMEDIATELY!
  - ALWAYS replace each individual fuel cap when refueling for that tank is completed
  - NEVER leave a filler opening unattended

- completion of refueling
  - lay down the ladder
  - rewind the refuel hose
  - NEVER leave the nozzle on the ground when rewinding
  - NEVER drag the nozzle on the ground
  - secure the nozzle dust cap onto the refuel nozzle when storing
  - stow the wing protection mat

- oil servicing procedures
  - general overview
    - aircraft generally have larger oil capacities than automobiles
    - aircraft may have filler and dipstick located at same location
PLST TRAINING CHECKLIST - MODULE #3

- review different types of oil fillers and dipsticks: two-sided, self-locking, screw cap, and twist-off, etc...
- oil level verification procedures
  - locate oil dipstick and oil filler locations
  - pull out the dipstick
  - wipe the dipstick clean
  - re-insert the dipstick into the dipstick opening
  - pull out and carefully read the level on the dipstick
  - repeat the process a second time to verify accuracy
- adding oil to the aircraft oil system
  - locate the oil filler opening
  - open the oil filler panel door and remove the oil filler cap
  - clean the oil funnel thoroughly
  - clean the oil container opening thoroughly
  - carefully insert the oil funnel into the opening
  - carefully pour the oil container into the oil funnel
  - avoid spillage and clean up any spilled oil on engine or cowling immediately
  - add the required amount of oil
  - verify the correct amount of oil has been added (refer to above procedure)
- completion of oil servicing
  - replace the oil filler cap, close and secure the oil filler panel door
  - double check security of the dipstick, oil cap and door (if applicable) after each servicing
  - verify that no servicing items are left inside the engine compartment
  - stow all oil servicing equipment on the refueler
  - dispose of used oil containers and soiled oil rags as required by local regulations
- windshield cleaning procedures
  - clean windshield only if directed to do so by pilot/flight crew
  - refer to Module #1 checklist for specific cleaning procedures
- stow and check equipment
  - stow ladder
  - remove bonding cable from aircraft and carefully rewind onto reel
- complete the paperwork
  - retrieve the refueler delivery sheet (record)
  - check the ending meter reading and record onto the refueler delivery sheet
  - complete the meter reading calculations and record onto both the refueler delivery sheet and the fuel service order form
- final visual check
  - verify all refuel support equipment (refuel hose, bonding cables, ladders, wing protection mats, etc.) are properly stowed on the refueler
  - verify all fuel and oil servicing caps, dipsticks and doors are closed and
properly secured
☑ verify that the aircraft has been properly serviced as per the fuel service order form
☑ multi-engine aircraft refuel and oil procedures
   ☑ define difference and use of individual fuel tanks: mains versus auxiliaries
   ☑ tank refuel sequence: mains first/auxiliaries second or as directed by the pilot
   ☑ oil requirements may differ between individual engines

Reciprocating Engine Aircraft Review
☑ identify piston aircraft - use Aircraft Ground Service Guide
   ☑ discuss and review high and low wing configurations, single versus twin engine, turbocharger models, etc (review Module #1 checklist)

Reciprocating Engine Helicopters
☑ “hot” (“rapid”) refueling is NOT ALLOWED for reciprocating engine helicopters
☑ general helicopter safety rules
   ☑ DO NOT move towards helicopter or position refueler at helicopter until all blades and rotors have come to a complete stop
   ☑ ALWAYS park refueler outside of main rotor blade rotation even when the blades are stationary
   ☑ NEVER walk behind a helicopter
   ☑ ALWAYS stay within the pilot’s field of vision
   ☑ stay AWAY from the tail rotor
   ☑ bond the refueler/equipment to a non-painted/machined point on the helicopter, as designated by the helicopter manufacturer (usually a point is located on the landing skid)
   ☑ allow at least three (3) minutes for the static electricity, generated by the rotor blades, to dissipate before commencing refueling
   ☑ ALWAYS touch the refueling nozzle to the filler cap prior to opening the fuel tank
   ☑ be aware of rotor blade “downwash” and “sag”
   ☑ demonstrate proper techniques for helicopter refueling
      ☑ demonstrate the refueling of a piston engine helicopter, explain each step in detail
      ☑ explain “look and listen” concept to prevent overfill and fuel spills
         ☑ fill slowly
         ☑ pay close attention to fuel level in tank
         ☑ listen to fuel filling in tank

Reciprocating Engine Helicopter Review
☑ identify piston helicopters - use Aircraft Ground Service Guide
☑ discuss and review various fuel tank locations; bubble tanks, fuselage, high and low
☑ discuss major components of helicopters; main rotor blades, rotor mast, tail boom, tail rotor, landing skid etc.
Refuelers and Refuel Systems

- detailed review of avgas and jet refuelers (fuel cabinets/fueling islands)
- exterior of refueler
- fuel identification placards
  - API identification: AVGAS, “white letters on a red background” next to a single band identifying the exact color code of the fuel
  - API identification: JET-A, “white letters on a black background” next to a single band identifying the exact color code of the fuel
- DOT# 1203 (Avgas)
- DOT# 1863 (Jet)
- NO SMOKING and FLAMMABLE placards on three (3) sides
- fire extinguisher location (2), types, removal, and operating instructions
- fuel sample location(s) and procedures
- ladder(s) location
- refuel mat(s) location(s)
- cone(s) and chock(s) location
- aviation oil storage compartment location
- refueling hoses and equipment in good working order and are generally placed on the left (driver’s side) of the refueler
- bonding cable location and operation
- refuel delivery meter(s) location(s) and operation
  - larger numbers and small numbers
  - clear knob on meter
- overwing hose and nozzle location and operation
- overwing hose reel location and operation
- overwing nozzle holder and dust cap location and operation
- review over wing “J” spout nozzle(s) operation and use of dust cap(s) (as applicable on jet refueler)
- brake interlocks location and operation
- review single point nozzle operation (maximum pressure allowable: 50 psi as applicable on jet refueler)
- single point hose, reel and brake interlock location and operation (as applicable on jet refueler)
- deadman control location and operation (as applicable on jet refueler)
- refueler control panel: power switches, throttle control, pressure gauges, etc (as applicable on jet refueler)
- emergency shut-off valve(s) location(s) and operation
- refueler “bottom-load” location and operation
- cargo tank automatic shut-off unit and pre-test valve
- engine running fuel tank location and refilling procedures
PLST TRAINING CHECKLIST - MODULE #3

- engine oil dipstick and refill location
- engine coolant location
- engine battery location
- visually check no broken lights and no dripping fluids from nozzles, filters, plumbing, fuel tank or under carriage

- interior of refueler
  - proper starting procedures
  - mirrors, gauges (running fuel, air pressure battery) lights, brakes, etc.
  - windshield cleaning supplies
  - parking/emergency brake location and operation
  - PTO (power take-off) location and operation

- demonstration of operating and driving procedures
  - review ramp safety procedures
  - right-of-way rules
  - prohibited areas (runways, taxiways, etc.)
  - use of vehicle service lanes or typical traffic flow on airports
  - review control tower light signals
  - proper speed limits: reduce speed due to heavier refueler weight, as applicable
  - increase following distances by four (4) times that of an automobile
  - heavier refueler weight results in reduced braking capacity/ability
  - heavier refueler weights increase “wear and tear” of vehicle
  - driving concerns during inclement weather - REDUCE SPEED
  - initiate turns with slower speeds to prevent “rollover”
  - allow greater turning radius for longer refueler chassis/cargo tank, as applicable
  - check tire inflation -- under inflated tires could result in tire failure and loss of vehicle control
  - use of guide person for refueler backing, clearances and positioning
  - visibility concerns (weather) and obstructions (cargo tank)
  - keep windows clean and clear at all times
  - operation of headlights with low visibility
  - avoid pointing headlights into pilot eyes
  - test brakes prior to arriving at aircraft
  - initiate 50/10 rule when approaching aircraft

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Refueling Paperwork
- types of forms; fuel service orders and refueler delivery sheet (record)
  - fuel service order forms
    - contents of the order form
    - read carefully
PLST TRAINING CHECKLIST - MODULE #3

☐ confirm the correct type and grade of fuel and oil
☐ review individual refueler delivery sheet (record)
☐ stress neatness and accuracy
☐ time, difficulty and expense to correct errors

☐ refuel delivery meters
  ☐ review definition and use of “large” and “small” meter numbers
  ☐ review calculation method
  ☐ demonstrate and practice examples of refuel delivery meter calculations

____  ______  OTHER

__________________________________________________________________________
__________________________________________________________________________
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REFUELING TURBOPROP AIRCRAFT

____  ____  Definition and design of turboprop engines
  ☐ explain the design and operation of a turboprop engine
  ☐ review the differences between turboprop and reciprocating engines
  ☐ review implications of refueling aircraft with the incorrect fuel (misfueling)

____  ____  Turbine Engine Fuel and Oil Products
  ☐ review proper color, smell, color, labeling and the color code for jet fuel
  ☐ discuss the weight of jet fuel and how to convert pounds into gallons (refer to Fuel Weight Conversion Chart)
  ☐ discuss purpose and procedures for adding fuel anti-icing additives using an aerosol can
    ☐ review MSDS regarding fuel additive
    ☐ wear proper protection: gloves and eye protection
    ☐ start the flow of fuel into the aircraft
    ☐ begin the flow of additive
    ☐ discontinue the flow of additive
    ☐ discontinue the flow of fuel
  ☐ review of various (synthetic) turbine engine oil brands and types
  ☐ review proper procedures for adding turbine oil
    ☐ ALWAYS speak with flight crew prior to adding any turbine oil
    ☐ verify correct brand, type and correct amount required
    ☐ add only under the supervision of the pilot
    ☐ refer to aircraft maintenance manuals for specific oil servicing procedures

____  ____  General Servicing Procedures
  ☐ review paperwork procedures
PLST TRAINING CHECKLIST - MODULE #3

- multiple meters and multiple refueler delivery sheets
- write legibly and record accurate numbers and information
- verify meter numbers before finalizing paperwork
- positioning of refueler at aircraft
  - test brakes and slow down when approaching aircraft
  - verify that the aircraft is secure; chocks in place
  - maintain minimum of ten (10) feet between refueler and aircraft
  - position refueler in front of aircraft, parallel to the wing, at centerline of the aircraft
    - position refueler away from aircraft entry/exit door
    - position hoses and bonding cables away from aircraft entry/exit door areas
    - allow passengers to clear area before refueling the aircraft
- set and secure refueler parking brake and chock as applicable
- specific fuel loads
  - aircraft must be refueled exactly as directed by the fuel order/flight crew
  - position refueler so that meters are equally visible from each wing/tank of the aircraft
  - use another Line Service Specialist to relay meter numbers if needed
- balanced fuel loading procedures
  - required on some aircraft, ex: MU-II; maximum 30 gals difference per side
  - use two (2) people whenever possible
  - alternate filling from one side to another if refueling with only one LSS
- handling and reporting of aircraft that appear to be unbalanced

Turboprop Aircraft
- review overwing refueling procedures
- thorough review of each turboprop aircraft and its specific refueling procedures
  - identify turboprop aircraft - use Aircraft Ground Service Guide
  - view various turboprop aircraft parked on ramps and in hangars
  - have employee identify turboprop aircraft
- demonstrate the refueling of a turboprop aircraft: explain each step in detail

Turbine Helicopters
- “hot” (“rapid”) refueling is not recommended for turbine helicopters
- follow general helicopter safety rules under reciprocating engine helicopters
- thorough review of each turbine helicopter and its specific refueling procedures
  - identify turbine helicopters - use Aircraft Ground Service Guide
  - view various turboprop aircraft parked on ramps and in hangars
  - have employee identify turbine helicopters
- demonstrate the refueling of a turbine helicopter, explain each step in detail

OTHER
REFUELING JET AIRCRAFT

Jet Engine Design
- explain the design and operation of a jet engine
- explain the difference between the older jet engine and the newer “turbofan” engine design
- review proper color, smell, color, labeling and the color code for jet fuel use in jet engines
- review implications of refueling aircraft with the incorrect fuel (misfueling)

Auxiliary Power Units (APU)
- define and discuss aircraft auxiliary power units (APU)
  - provides electrical/pneumatic power to aircraft systems when on the ground
  - located near the rear of the aircraft
  - operates on jet fuel
  - may be operating during ground servicing and refueling operations
  - apu’s are loud: wear hearing protection
  - apu’s generate exhaust blast: keep persons and equipment well clear of exhaust

Single Point Refueling
- discuss single point refueling
  - fully enclosed system and operated under pressure (referred to as a “pressure” system)
- safer, more efficient and reduces risk of a fuel spill
- single point system aircraft will have overwing fuel filler caps (used as backup in the event of inoperative single point system)
- DO NOT open fuel filler caps without first talking with flight crews
- discuss single point system design (refueling vehicles)
  - refuelers may be equipped with pre-check systems: deadman timers and brake interlocks with status lighting
  - refuelers’ single point nozzle connected to a two (2) or three (3) inch hose
  - refuelers’ generally have one single point hose and nozzle per refueler
  - single point systems are designed to be operated at a MAXIMUM of fifty (50) psi
  - LSS must monitor pressure gauge on refueler to assure 50 psi is NEVER exceeded: structural damage to aircraft can occur
  - LSS must STOP refueling IMMEDIATELY if 50 psi is ever exceeded
- single point system design (aircraft)
  - most business jets are equipped with one (1) single point refueling connection
  - access to single point connections are generally located on GA business jets
    - under a panel door
    - fore or aft of the wing root
    - above or below the wing
    - on the right side of the aircraft
  - define and discuss “automatic fuel shutoff” and “pre-check” systems
  - discuss correct operation of the “pre-check” button/switch
    - “pre-check” must be completed at the BEGINNING of the refueling
    - fuel is flowing into aircraft and at normal operating range
  - “pre-check” switch must be held in open or on position until all fuel flow stops
- fuel control panels
  - discuss the general design and operation of a fuel control panel
  - discuss the weight of jet fuel (refer to Fuel Weight Conversion Chart)
- fuel vent systems
  - discuss the general operation and location of aircraft fuel vent systems
    - verify vents are properly operating during refueling
    - closely monitor vents during refueling
    - STOP FUELING IMMEDIATELY if vents release fuel overboard
- jet aircraft refueling procedures
  - review and verify fuel service order
    - aircraft tail number matches the number listed on the service order
    - are the services ordered appropriate for this aircraft type
    - are there any special servicing instructions
    - is the previous meter reading correct
IF ANY QUESTION REMAINS: STOP AND ASK FOR CLARIFICATION

refueling overwing
- review procedures for adding fuel additives manually using an aerosol can
- review the step-by-step overwing procedures
- general refueler positioning for refueling jets overwing
  - behind and perpendicular to the wing, at the centerline of the aircraft
  - keep refueling hoses and bonding cables well clear of the aircraft entry/exit door and related passenger and pilot area
  - allow passengers to clear area before refueling the aircraft

refueling single point
- review fuel service order
- select proper refueler for the job
  - verify correct product and proper quantity in the cargo tank
  - safety check of vehicle (refer to Module #2 checklist)
- general refueler positioning for refueling jets single point
  - aircraft secure (chocks in place)
  - maintain ten (10) feet distance between the refueler and the aircraft fuel vents
  - possible positions due to location of refuel panel
    - behind the aircraft, perpendicular to the fuselage and to the right of the aircrafts’ vertical stabilizer
    - right side of the aircraft, parallel with the fuselage, and just outboard and forward of the right wing tip
    - right side of the aircraft, forward and parallel with the right wing leading edge, with the refueler directed forward and away from the aircraft nose
  - secure refueler (parking brake) and chock

setting up to refuel
- bond refueler to aircraft
- determine which tank to refuel first
- verify refuel delivery numbers and “clear” meter to zero
- extend refuel hose with enough length to easily reach
- remove the single point nozzle dust cap
- inspect refuel nozzle (clean and dry)
PLST TRAINING CHECKLIST - MODULE #3

- refueling the aircraft
  - open the aircraft refuel panel access door
  - remove the aircraft receptacle dust cap/cover
  - position the nozzle against the aircraft receptacle
  - rotate the handles clockwise until the nozzle locks securely against the aircraft receptacle “stops”
  - open the nozzle fuel flow valve slowly
  - retrieve the refueler deadman control and begin fuel flow
  - DO NOT lean against the aircraft or sit on any portion of wing surface prior to or during the refueling process
  - wipe up any spilled fuel IMMEDIATELY!
  - NEVER leave the refueling operation unattended
  - refuel the aircraft according to the pilots’ directions

- completion of refueling
  - release the deadman control
  - close nozzle fuel flow valve slowly
  - rotate handles counter-clockwise and remove from aircraft
  - replace the aircraft receptacle dust cap/cover
  - verify all switches and controls are off or in closed position
  - close and secure the refuel panel access door
  - replace the single point nozzle dust cap
  - rewind and properly store the refuel hose onto the refueler
  - NEVER leave the nozzle on the ground when rewinding
  - NEVER drag the nozzle on the ground
  - rewind the deadman control cable

Jet Aircraft Review
- conduct a thorough review of each jet aircraft and its specific refueling procedures
  - identify jet aircraft - use Aircraft Ground Service Guide
  - view various jet aircraft parked on ramps and in hangars
  - have employee identify jet aircraft
  - demonstrate the proper handling, connection and operation of a single point nozzle and deadman control: explain each step in detail
  - demonstrate the refueling of an overwing jet aircraft: explain each step in detail
  - demonstrate the refueling of a single point jet aircraft: explain each step in detail

OTHER
IV. Module #4: GENERAL TOWING PROCEDURES

Complete online lesson for Module #4 GENERAL TOWING PROCEDURES
Complete online exam for Module #4 GENERAL TOWING PROCEDURES

Towing aircraft is a very complex yet delicate operation. The physical movement of aircraft often requires heavy duty equipment and strict attention to detail to ensure no damage is incurred by the fragile components of the aircraft throughout the towing operation. Skill development is both time consuming and demanding. One-on-one instruction is strongly recommended and employee progress should not be expected to increase significantly after only a few hours or days on a tug. As such, NATA recommends that as much time as possible be devoted to develop the employee’s knowledge. The checklist that follows is designed to introduce the new employee to aircraft towing and should not be used solely to “qualify” an individual to safely tow aircraft.

DATE    INITIALS

_____ _____ Towing Operations
☐ discuss and review general reasons for moving aircraft
☐ review aircraft towing and storage areas including:
  ☐ transient parking areas
  ☐ tie-down lines hangars
  ☐ large aircraft parking areas
☐ discuss towing is a skill developed over time with patience, practice and experience; and requires hand-eye coordination, concentration, familiarization with towing vehicles and good judgment
☐ review importance of following safe and prudent procedures to avoid costly accidents
☐ review responsibility of the tow vehicle operator for the towing operation
☐ review all towing reference materials included in the online lesson on the training resource section (PLST PDFs)
☐ review individual company towing manual

_____ _____ Tow Vehicles
☐ review various types, characteristics and designated uses for the tow vehicles at your facility
☐ review specific towing capacities of each tow vehicle
  ☐ aircraft are generally towed from the front of the tow vehicle
☐ review general procedures for the use of tow vehicles
  ☐ respect the weight of each aircraft
  ☐ keep tow speed to a minimum
  ☐ maintain control of the aircraft nose gear by using slow turns and slow speeds
  ☐ use the appropriate power and weight rated tow vehicle
☐ review the tow vehicle safety checks
  ☐ tires properly inflated
  ☐ tow racks and tow bars secure
  ☐ tow hitches in proper working order
  ☐ check for any fluid leaks
  ☐ check for any signs of damage which may affect the safe operation of the tow vehicle
vehicle
- fire extinguisher location and instructions
- parking brake operating properly
- control pedals clean and dry
- seat positioned properly
- start vehicle and verify all instrument gauges indicating positive readings
- verify vehicle engine is running properly
- release brake, slowly pull forward and test the brakes

- demonstrate the proper operating and driving procedures for each tow vehicle

Tow Bars
- discuss how and why tow bars are used
- review the safety rules for the selection of a tow bar
  - use only the towbar designed for the aircraft to be towed
  - NEVER substitute a specified tow bar for one that looks similar
  - NEVER use a tow bar that is or appears to be damaged
- review procedures for an aircraft that becomes disconnected during a towing operation
  - NEVER attempt to stop the aircraft yourself
  - move the tug safely away from the aircraft’s direction of travel
  - STAY CLEAR of the aircraft until the aircraft has come to a complete stop
- review two different types of tow bars
  - wheeled (some may be equipped with multiple attachable heads)
  - hand carried (some may be designed to be used on various types of aircraft)
    - identify multi-purpose and aircraft-specific tow bars
    - review the operation of each tow bar and tow bar attachment head
    - review the correct handling, usage and storage
    - review tow bar storage areas
- discuss the procedure for pulling versus pushing a wheeled towbar
- review the three (3) typical places where tow bars are connected to aircraft
  - nose gear wheel axle
  - nose gear shear pins
  - connection points specifically designed to hold the tow bar

- discuss nose gear turn limits
  - typical maximum side-to-side turn limit is 45 degrees to each side (varies aircraft to aircraft)

Typical Towing Sequence
- perform the tow vehicle safety check (see list above)
- discuss pre-tow planning and preparation
  - determine the destination of the aircraft
    - is there adequate space at destination
  - determine the best (safest and shortest) route to aircraft’s destination
  - determine the number of wing walkers required and the correct placement of each
    - establish communication instructions and procedures
- positioning tow vehicle at aircraft
  - test the tow vehicle’s brakes upon approaching aircraft
  - slowly position tow vehicle in front and in-line with the aircraft, avoid sharp angles
  - ALWAYS place transmission into neutral or park, shut off the vehicle, set the parking brake and chock as applicable
- prepare the aircraft for towing
  - visually check the nose gear for turn limit markings
  - select and connect the proper tow bar to the aircraft
    - single-engine aircraft may require that the propeller be manually moved in order to connect the tow bar
      - use EXTREME CAUTION if called upon to move propeller
      - ALWAYS move the propeller in the OPPOSITE direction of normal powered rotation - move the propeller SLOWLY
      - keep body out of the propeller arc
      - NEVER wrap fingers and hands over the blade
  - once tow bar is firmly attached to aircraft, physically move the tow bar from side to side to verify the turn limits
  - connect the tow bar to the tow vehicle and secure locking mechanism on the tow hitch
- perform an aircraft towing walk around inspection (refer to towing reference materials included in the online lesson on the training resource section (PLST PDFs)
  - discuss purpose of walk around inspection
    - safety, familiarization with aircraft, visual check for damage, note of obstacles which could impede or cause damage during the towing operation, removal of aircraft tie-down equipment, chocks, gust locks, etc.
  - begin “walk-around” on the left side of the aircraft and finish on the right side
    - remove chocks
    - ensure aircraft parking brake is off
    - tie-down chains/ropes removed
    - check wing tip and tail clearances
    - rudder/gust locks removed
      - define and discuss the different types, operation and the proper removal of aircraft rudder/gust locks
    - gear lock pins installed
      - define and discuss the operation and proper insertion of aircraft gear lock pins
    - tires properly inflated
    - entire area clear of any tools, parts, hydraulic lifting jacks, hoses, etc
    - verify tow bar is secure to aircraft and tow vehicle
    - review to ensure route chosen is clear
  - towing operation
- start the tow vehicle
  - release the parking brake
  - check area behind tow vehicle and around aircraft to verify proper clearances

- movement of aircraft
  - slowly release pressure on the brake pedal allowing aircraft to move
  - if aircraft does not move easily, **STOP** and call supervisor
  - constant movement of head and eyes - watch the direction of travel, verify clearances, watch for possible obstructions, check nose gear, etc.

- **REMAIN ALERT** and **FOCUS ON THE JOB AT HAND**, if something distracts the tow vehicle operator, **STOP** the tow vehicle, place the transmission into neutral or park, shut off the vehicle and set the parking brake

- maintain a slow and consistent speed, adjust speed for ramp conditions: slow down when ramp is wet or visibility is reduced

- stay within the nose wheel turn limits

- avoid sharp turns and sudden movements

- positioning the aircraft into its parking destination

- maintain proper tug and aircraft alignment (avoid sharp turns)

- slow push back (keep steering movements to a minimum)

- steer the tug slowly in the direction you want the aircraft to go

- proper placement: aircraft is sitting “straight” and a distance of at least five (5) feet separates any surface of the aircraft from any other aircraft or obstacles

- slowly and smoothly bring the tow vehicle to a stop

- place the transmission into neutral or park, shut off the vehicle and set the parking brake

- position the chocks on the aircraft

- remove the tow bar from the tow vehicle, then from the aircraft and secure on the tow vehicle

- **NEVER** remove the tow bar until **AFTER** the aircraft has been properly chocked

- perform a final “walk-around” to verify aircraft is safely positioned and in the same condition prior to towing

- secure aircraft: chock gear, attach tie-downs (if no tie-downs are available, place a set of chocks at each gear) replace the rudder/gust lock, reconnect nose gear, etc.

- other towing issues

- fragile aircraft components

  - discuss and review the critical aircraft structures and components which are very delicate and can easily be damaged during a towing operation (refer to towing reference materials included in the online lesson on the training resource section)
(PLST PDFs)

- tail wheel aircraft
  - discuss the unique characteristics for towing tail wheel aircraft including: tow bar connection and towing reaction times
- reporting aircraft damage
  - **ALL DAMAGE**, no matter how small may affect the airworthiness and safe flight of the aircraft and as such **MUST BE REPORTED IMMEDIATELY**
- winter operations and towing procedures (if applicable)
  - reduce speed and tow at a speed appropriate for conditions, respect the weight of the aircraft
  - tow aircraft into wind
  - avoid towing aircraft over or through icy ruts and snow ridges
  - pull rather than push the aircraft over wet or slick ramp areas
  - avoid sharp turns to prevent jackknifing the aircraft
- movement of larger and heavier aircraft
  - reduced speeds with increased weight of larger aircraft
  - proper utilization of wing walkers - establish communication instructions and procedures
  - secure any open doors prior to aircraft movement
  - verify gear lock pins are installed (if applicable)

- demonstrate the proper procedures for towing single-engine reciprocating engine aircraft
- demonstrate the proper procedures for towing twin-engine reciprocating engine aircraft
- demonstrate the proper procedures for towing single-engine turboprop aircraft
- demonstrate the proper procedures for towing twin-engine turboprop aircraft
- demonstrate the proper procedures for towing light jet aircraft
- demonstrate the proper procedures for towing heavy jet aircraft

**Hangar Operations**

- hangar towing safety and operations
  - hangars present many safety concerns and hazards due to limited and confined space
  - review the proper operation of each hangar’s doors
  - review the hangar towing safety rules
  - **Do Not** reconnect an aircraft’s disconnected nose gear after positioning inside a hangar
- review procedures for a pre-towing “walk-around” (refer to pdf document above)
- review the use of a wing walker
  - importance of wing walkers - ability to act as a second pair of eyes due to inability of tow vehicle operator to see all the extremities of the aircraft from the tow vehicle
  - extremely important when pushing back aircraft
  - review wing walker responsibilities
ALWAYS maintain eye contact with tow vehicle operator
use crisp and distinct hand signals (refer to the reference materials on NATA Safety 1st Hand Signal Guide from online lessons)
DO NOT hesitate to call out STOP if unsure of a clearance or situation
review tow vehicle operator and wing walker communications
maintain a clear line of vision and establish communication instructions and procedures
procedure to follow if tow vehicle loses sight or contact with wing walker; place the transmission into neutral or park, shut off the vehicle, set the parking brake, locate the wing walker and clarify any clearance or miscommunications
review general aircraft push back maneuvers
preferred method for aircraft movement within a hangar; push in and pull out
ALWAYS steer the tug slowly in the direction you want the aircraft to go
keep steering movements to a minimum
use slow corrections in the opposite direction to avoid exceeding turn limits
maintain proper tug and aircraft alignment (avoid sharp turns)
proper placement: aircraft is sitting “straight” and a distance of at least five (5) feet separates any surface of the aircraft from any other aircraft or obstacles
ALWAYS chock the aircraft if disconnection of the tow bar from the tug is required in order to reposition the tug with the aircraft
review movement of aircraft over hangar door tracks
maintain a slow yet constant speed
approach the hangar tracks so that each main wheel travels over the door tracks at the same time
avoid stopping the aircraft with any of its wheels in the hangar door tracks
review towing aircraft within maintenance areas
review the hangar towing safety rules
review tow vehicle operator and wing walker communications instructions and procedures
ALWAYS verify with the maintenance personnel that an aircraft is approved for towing prior to moving the aircraft
ensure the aircraft is NOT supported by jacks or tail stands
check the movement area for parts, tools, tool boxes, ladders, platforms, support equipment, etc.
NEVER move an aircraft with equipment attached to the aircraft
NEVER move an aircraft that has a red maintenance tag or red chock on the nose gear
demonstrate the proper procedures for towing aircraft into and out of various hangars

Aircraft Disconnect Procedures
review why some aircraft require the nose gear to be disconnected prior to towing
PLST TRAINING CHECKLIST - MODULE #4

- review specific aircraft nose gear disconnect procedures
- thorough review of each aircraft requiring nose gear disconnection prior to towing and the specific disconnection procedures
  - review various aircraft parked on ramps and in hangars
- demonstrate the proper techniques for nose gear disconnection

____   ______ Aircraft Towing Practice and Disconnect Procedures
- have the employee practice towing all types of aircraft. The trainer or an experienced technician, certified by the trainer and department manager **MUST BE PRESENT AT ALL TIMES** to oversee the entire towing operation (*It is suggested that the trainer or a qualified and designated Line Service Specialist supervise the employee during all towing operations, and until such time the employee demonstrates the ability to tow aircraft safely. The employee must also be able to exhibit complete knowledge of correct nose gear disconnect and reconnect procedures on applicable aircraft.*)

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SAFETY 1st
V. Module #5: FUEL FARM MANAGEMENT

Complete online lesson for Module #5 FUEL FARM MANAGEMENT
Complete online exam for Module #5 FUEL FARM MANAGEMENT

DATE         INITIALS

______ ______ Quality Control of Aviation Fuels
☐ discuss the responsibility of properly storing and dispensing aviation fuel
    ☐ eliminating/reducing the potential for fuel contamination
    ☐ consequences of improper fuel handling
        ☐ loss of fuel
        ☐ engine damage
        ☐ explosion and fire
        ☐ loss of life
    ☐ customer trust
    ☐ customer safety
☐ explain the various types of fuel contamination
    ☐ water
    ☐ solids
    ☐ microorganisms
    ☐ surfactants
    ☐ mixing
☐ review of the types of fuel at the company facility
☐ review of fuel identification
    ☐ color coding
    ☐ equipment marking
    ☐ placards
☐ discuss the reasons for filtration
    ☐ elimination/reduction of contaminants
    ☐ location and types of filters at company facility
☐ discuss importance of fuel records
    ☐ inventory control
    ☐ product segregation
    ☐ testing identification
    ☐ system monitoring
    ☐ filter element changes
    ☐ aircraft accident investigation

______ ______ Fuel Storage Issues
☐ discuss the importance of a thorough knowledge of the company’s fuel storage facility
☐ acknowledge the different types of fuel farms, identify type currently in use
    ☐ above ground
    ☐ below ground
    ☐ above ground below grade
☐ discuss importance of fuel farm appearance
PLST TRAINING CHECKLIST - MODULE #5

- positive image
- safety
- review security issues related to fuel storage
  - vandalism, sabotage and terrorism
  - airside and streetside access
  - night operations and lighting
  - flammable/no smoking signage
  - emergency shut-off controls (identification, location and how to use)
  - fire extinguishers (identification, location and how to use)
  - bonding cables (location and how to use)

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**Fuel Farm Monitoring and Testing**

- review the appropriate sections of the quality control/operations manuals provided by fuel supplier
- discuss the reason for, and the various types of, fuel system checks and tests
- discuss when to use and how to perform each check or test
  - clear and bright
  - white bucket test
  - water finder and sump checks
  - millipore tests
  - differential pressure checks
- explain the reasons for, and the schedule of, quality control checks and tests
  - daily fuel farm checks and tests
    - storage tanks
    - filter separators
    - fuel tank quantity
    - tank vents and hatches
    - bonding wires
    - hoses and connections
    - nozzles and dust covers
    - pumps and motors
    - overall storage area
    - fire extinguishers
  - weekly fuel farm checks and tests
    - emergency shut-off and deadman controls
    - floating suction
    - signage and placards
    - monthly fuel farm checks and tests
    - millipore/membrane filtration tests
    - pressure testing of hoses
    - pumps, reels and motors
    - water slug shut-off test
    - month-end fuel inventory
  - other periodic testing
    - quarterly testing of fuel sump heaters
    - storage tank inspections
PLST TRAINING CHECKLIST - MODULE #5

- review of environmental regulations

Ordering and Receiving Fuel
- review the appropriate sections of the quality control/operations manuals provided by fuel supplier
- discuss gauging/measuring quantity in tanks
- discuss ordering fuel
  - order forms and paperwork
  - approved fuel vendors
  - specifying product type and grade
- review the requirements for accepting fuel deliveries
  - wheel chocks on transport
  - bonding
  - bill of lading
  - ten (10) minute settling time
  - tamper evident seals
  - checking each compartment
  - control check of each compartment at the manifold
  - verification of proper storage tank for product
  - hose fittings and tank connections
  - gauging the tank before delivery
  - check of compartments after unloading
  - signing release
- review of special functions/operations at company fuel storage facility
- review of the fuel acceptance procedures for pipeline, marine vessel, and rail tank car if applicable

Refueler Monitoring and Testing
- review the appropriate sections of the quality control/operations manuals provided by fuel supplier
- discuss refueler cleanliness and readiness
  - overall cleaning
  - windshield and windows
  - refuel nozzles and dust covers
  - interior cab and storage areas
- review refueler labeling
- discuss refueler fire extinguishers
- discuss the reasons for keeping refuelers full
- discuss daily refueler checks and tests
  - sump checks
  - delivery hoses and nozzles
  - fuel delivery pressure
- weekly refueler checks and tests
  - strainers and nozzle screens
  - emergency shut-off and deadman controls
- monthly refueler checks and tests
  - millipore checks
PLST TRAINING CHECKLIST - MODULE #5

- differential pressure checks
- brake interlock system

______ ______ Refueler Loading
- review the appropriate sections of the quality control/operations manuals provided by fuel supplier
- review loading sequence
  - secure/shut-off vehicle
  - bonding
  - connections and manual pre-checks
  - overfill
  - bottom loading
  - proper fuel type and grade

______ ______ Familiarization with Company Fuel Storage Facility
- provide detailed walk through and review of local fuel storage facility
  - access
  - emergency shut-off controls
  - location and sizes of tanks
  - types of filtration used
  - additive blending if applicable
  - disposal of waste fuel
  - operation of pumps
  - handling of waste fuel
  - operation of electronic key card systems if applicable
  - unusual safety or security issues

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VI. Module #6: CUSTOMER SERVICE

Complete online lesson for module #6 CUSTOMER SERVICE
Complete online exam for module #6 CUSTOMER SERVICE

DATE    INITIALS

_____ _____ What Is Customer Service
- define “service”
- explain that both CSS & LSS are responsible for customer service
- define job of serving people not just aircraft
- discuss importance of having a positive attitude
- how can the LSS and CSS make a difference in the customers travel experience
  - smiles
  - courtesy
  - respect
  - concern
  - honesty
- discuss the importance of being able to identify frequent customers by name

_____ _____ The Industry And Its Clientele
- discuss the impact of the general aviation industry on the national economy
- explain the diverse clientele of the FBO
  - business flyers and passengers
  - air ambulance pilots and flight nurses
  - student pilots and instructors
  - overnight cargo pilots and support personnel
  - private pilots and pleasure flyers
- discuss why LSSs’ & CSSs’ job affects people directly
  - jobs
  - livelihood
  - most importantly - safety
- explain why people own and operate aircraft
  - sport or relaxation
  - urgent travel needs
  - safety
  - comfort
  - security
  - ability to land at an airport closest to destination
  - travel flexibility

_____ _____ The Customers’ World
- explain that customers are often type-a personalities (always in a hurry)
- review the role of both pilots and passengers as customers
  - each group is dependent on the other
  - passenger is generally the pilots boss
• pilot decisions on FBO to use
  • industry competition (local and regional FBO)
• LSS and CSS must understand the pilot’s point of view/responsibilities
  • scheduling & planning of flights
  • ordering catering
  • making room reservations
  • arranging ground transportation
  • preparing the aircraft for flight
  • flight crews are always on stand-by
  • flight crews spend many hours on the road, help them to feel at home
• explain how individuals and companies justify owning an aircraft
  • time savings
  • value of executives time and ability of aircraft to make them more productive
• explain what is on the pilots mind upon arrival at the FBO
  • where to park
  • is ground transportation waiting
  • assistance with passengers and baggage
  • is catering ready for outbound flight
  • are the LSSs’ knowledgeable about aircraft
  • if overnight, will aircraft be secure
  • can the flight crew trust the LSSs’ to move the aircraft
  • if the aircraft has a mechanical problem, can the FBO help with service
• discuss the LSSs’ and CSSs’ job of removing the hurdles and eliminating the concerns
  of the pilot/passenger

Methods of Good Customer Service
• explain the role of front line representative for the company
  • appearance and uniforms
  • general lack of responsive service
  • personal attention can create life-long customer friendships
  • good eye contact
  • selling yourself as well as the company
  • responsiveness, reliability and enthusiasm
• discuss the fact that pilots have many choices, LSS and CSS can directly impact that
  choice
  • indifference will result in loss of customer

Customer Service Job Responsibilities
• review the handling incoming calls/service requests
• review the use of telephone equipment
  • equipment features
  • how to answer
  • how to make outgoing calls
  • long distance calls
  • placing callers on hold
  • transfer of calls
  • multiple calls at once
PLST TRAINING CHECKLIST - MODULE #6

- paging systems
- discuss in detail telephone procedures
  - answer professionally with a smile in your voice
  - try to answer on the first ring
  - identify your company and yourself
  - speak with positive words of response
  - listen carefully
  - taking good messages – make notes/write down all information relayed by caller
  - procedures for interruption by another call
  - procedures for interruption by someone at the counter
  - sound of your voice is critical (positive/indifferent/unsure)
- review air to ground communication policies and procedures
  - flight crews may call from the air
  - phraseology and professionalism (discuss additional reference materials on aviation alphabet and phraseology from online training resources)
  - pay close attention
  - minimal words
  - others may be listening or using frequency
  - repeat back information (safety and understanding)
  - using the microphone
  - listening before transmitting
  - thinking before speaking
- discuss communicating service requests to personnel on the ramp
  - using company radio equipment
  - procedures similar to air to ground communications
- explain importance of assisting flight crews with service requests
  - fuel orders
  - maintenance or other services
- discuss the job of ordering catering
  - in house preparation
  - using outside vendors
  - food options and costs
  - menus
  - specialized or personalized dishes/glassware from aircraft
- discuss the job of providing ice and coffee
  - location and directions for use of coffee makers
  - aircraft coffee pots and reservoirs
  - use of ice machine and typical quantities of ice for aircraft
- explain how to assist arriving pilots and passengers
  - car rental procedures
  - limousine services
  - crew cars and courtesy vans
  - hotel arrangements
  - directions to local activities, restaurants, attractions
PLST TRAINING CHECKLIST - MODULE #6

- Discuss customer payment options/procedures
  - Cash and credit cards
  - Direct billing if available
  - Paperwork and computer entries
  - Pricing of products and services
- Discuss the responsibility maintaining clean comfortable facilities
  - Appearance of flight lounge and waiting areas
  - Magazines, newspapers and other literature
  - Clean entry areas and glass doors
  - Counter area tidy and professional
  - Vending areas neat and trash removed
  - Importance of clean restrooms (freshness, cleanliness, supplies)

Handling Customer Complaints

- Review company policy on customer complaints
  - Listening skills
  - Taking notes
  - Responding to hostility calmly and avoiding being defensive
  - Showing empathy and avoiding placing blame
  - Thanking the customer, clarifying and asking questions
  - Identifying what the customer wants
  - Resolving the problem or referring the customer to someone who can
  - Following through to make sure the situation is resolved

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VII. Module #7: FIRE SAFETY

Complete online lesson for module #7 FIRE SAFETY
Complete online exam for module #7 FIRE SAFETY

DATE INITIALS

______ ______ Fire Hazard Properties
- explain the requirements for CFR Part 139 section 321
- review major topics addressed in program (refer to module Instruction Plan)
- review the types and grades of aviation fuel handled at your operation
  - Avgas: 100LL and 100/130
  - Jet-A and Jet A1
- define and explain the fire hazard characteristics for each aviation fuel type;
  - flash point
  - flammability condition
  - autoignition temperature
  - heat of combustion
  - rate of flame spread
- define and explain the Fire tetrahedron
- discuss elements necessary to cause and support a fire
- discuss possible ignition sources at your operation
- discuss methods to extinguish a fire
- identify types of fire extinguisher used
- identify fire extinguisher locations on and near ramp & aircraft handling areas
- discuss methods to prevent fires
  - always bond when refueling
  - follow the proper refueling procedures
  - closely monitor rising fuel levels during refueling and all fuel transfers
  - know and follow the proper fuel spill cleanup and removal procedures
  - properly dispose of fuel spill cleanup materials
  - keep ramp, hangar, storage and equipment areas clean and well organized

______ ______ Extinguishing Principles
- review the 4 classifications of fires
  - Class “A”
  - Class “B”
  - Class “C”
  - Class “D”
- review different types of extinguishing agents, their effect on fires and specific application
  - Water
    - utilize on class “A” fires ONLY
    - DO NOT use on electrical fires
Carbon Dioxide (CO2)
- utilize on class B and C fires
- caution; toxic in enclosed areas/disperses in wind

Dry Chemical
- utilize on class A, B and C fires

Foam
- utilize primarily on class B and C fires
- most effective on “pooled” flammable liquid fires
- NOT effective on vertical or pressure fires

Halogenated Agents
- utilize primarily on B and C fires
- NOT used on ramps, due to environmental concerns, mostly used inside aircraft cabins

Metl-X, G-1 and Sodium Chloride
- utilize on D fires (metal aircraft landing gear components)

Fire extinguishers
- review the safety considerations in determining whether or not to fight a fire
- review the various parts of a fire extinguisher
  - product and information label
  - inspection tag
  - pressure gauge
  - handle and trigger
  - hose and nozzle
  - safety pin and safety seal
  - external nitrogen cartridge plunger (if applicable)
- review the proper procedure for operating an extinguisher and its use when fighting a fire
  - retrieve the extinguisher and position UPWIND
  - break safety seal by removing pin
  - activate external nitrogen supply lever (if applicable)
  - remove hose and nozzle and point at base of flame
  - move to within 10 feet of flame and open extinguisher nozzle
  - make rapid sweeping motion at BASE OF FLAME
  - steadily move forward as flame closest to you is extinguished, while continuing nozzle sweeping motion
  - DO NOT TURN YOUR BACK on the fire at any time, back away from extinguished fire slowly
- review fire safety acronym: PASS

Placards and Identification
- refueler
  - fuel type labels on each side and rear with 3 inch letters and contrasting background
  - “Flammable” and “No Smoking” labels
  - DOT fuel product identification number
    - Avgas .................#1203
PLST TRAINING CHECKLIST - MODULE #7

- Jet-A ............ #1863
- Emergency Fuel Shutoff labels with “push” or “pull” fuel type and No Smoking labels inside of refueler

Fuel Farm and Fixed System
- piping and headers labeled with fuel type and banding
  - Avgas-white letters on red background next to a single colored band, ie, 100LL = Blue;
  - Jet-A-white letters on black background next to black band
- fire extinguishers
  - required at all fuel farms and fixed refueling facilities
  - open hose discharge capacity of fuel system determines extinguisher type and capacity
  - location marked with letters at least 2” high
  - extinguishers must be kept clear of ice, snow and easily accessible

Fire Safety in Mobile Refuelers and Refueling Cabinets
- refuelers
  - equipped with an emergency shutoff capable of overriding all other fuel controls
  - flow control valve on the handle of an overwing nozzle is considered a deadman
  - single point refueling requires use of a remote deadman control
  - engines must be equipped with an air filter/flame arrestor and a leak free exhaust which terminates into a baffled muffler at front of vehicle
  - smoking is NOT permitted in or around any refueler
  - cigarette lighters and ash trays are to be removed
  - two (2) “20-BC” rated extinguishers required on refuelers
  - one (1) “20-BC” rated extinguisher required on hydrants

Fueling Cabinets
- cabinets must be equipped with an emergency shutoff capable of overriding all other fuel controls
- cabinets must be equipped with “BC” dry chemical extinguisher
- smoking is NOT permitted in or around any cabinet

Static Electricity
- clothing and footwear
  - 100% cotton clothing is recommended
  - silk, polyester, wool or nylon and wool blends are NOT recommended
  - leather shoes and boots with rubber soles are recommended
  - shoes or boots with steel taps or screws are NOT to be worn
  - canvas or “tennis” shoes are not recommended
- buckets and funnels
  - DO NOT use plastic buckets and funnels for handling fuel
  - when using a funnel, it must be a non-galvanized and must remain in constant contact with the filler opening
- igniting devices
PLST TRAINING CHECKLIST - MODULE #7

- ignition sources such as matches and cigarette lighters are not to be carried by refueling personnel when within 50 feet of any fuel tank, loading dock, storage area, refueler or aircraft
- all portable electrical equipment must be approved for hazardous locations and must be approved as explosion proof around flammable liquids

- refuelers
  - refuelers are NOT to be parked:
    - inside of an aircraft hangar
    - within a 10 foot radius of the aircraft fuel vents
    - within 10 feet from other refueling equipment
    - within 50 feet of any aircraft except for aircraft being refueled
    - within 50 feet of any building including airport terminals, cargo buildings, hangars, and other structures housing the public
  - all motors, engines, radios and other mechanical equipment must be shut off when loading or unloading a refueler

- aircraft
  - aircraft with on-board APU’s are allowed to be in operation during refueling operations - verify with flight crew
  - verify with the flight crew that the radar equipment is turned off during refueling

- ground support equipment
  - ground power units (GPU) may be operated during refueling operations
  - DO NOT connect or disconnect ground power generators during refueling operations
  - battery powered equipment, such as tugs and other vehicles, are NOT to be operated within 10 feet of refueling equipment or fuel spills

Bonding and Grounding (as applicable)

- explanation of static electricity, as it pertains to aviation
  - generation of static electricity on aircraft during flight
  - generation of static electricity resulting from cold, dry air and windy conditions
  - generation of static electricity during fuel movement through filtering systems
  - bonding provides a conductive path to equalize the potential between refueling equipment and the aircraft

- bonding requirements
  - refueling equipment must be bonded to an aircraft through the use of a cable

- bonding
  - bonding connection on aircraft must be an unpainted metal point
  - connection shall be maintained until AFTER refueling procedures are completed
  - if provided, the overwing nozzle should be bonded to the aircraft with a nozzle clip or plug
  - if no overwing clip or plug is available, then the nozzle must the filler cap prior to removing the filler cap
  - the overwing nozzle must remain in contact with the filler neck until AFTER the refueling is completed
PLST TRAINING CHECKLIST - MODULE #7

- **grounding**
  - while it is NOT recommended for refueling operations, it may be required at some airports
  - if required to ground, verify that your grounding connection is made to an appropriate earth ground

- **fuel transfer**
  - prior to opening any refueler or aircraft tank and all times during any fuel transfer, a bonding cable must be provided between;
    - refueler being loaded and the loading dock
    - refueler/hydrant cart and the aircraft
    - fuel cabinet and the aircraft
  - loading of a cargo tank;
    - shall be under the observation of a qualified person at ALL times
    - is NEVER to be left unattended during fuel transfer
    - engine of the refueling vehicle must be shutoff prior to loading the cargo tank
    - bonding connections must be made prior to opening of the dome cover and maintained until after the dome cover is securely closed

- **equipment**
  - conductive hose
    - must meet American Petroleum Institute type “C” standards shall be used to reduce the accumulation of static electricity
    - SHOULD NOT be used in place of approved bonding cables
  - emergency shutoff and deadman controls
    - must NEVER be overridden or jammed open
    - overriding will increase the potential for a fuel spill

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### Fuel Spills

- **fuel spill handling variables**
  - size of the spill
  - type of flammable or combustible liquid that has been spilled
  - arrangement of equipment
  - occupancy of the aircraft
  - availability of emergency equipment and personnel

- **fuel spill handling procedures**
  - stop the flow of fuel, if possible
  - notify your supervisor and notify the fire authority
  - place fire extinguishers upwind of the spill

- **fuel spill hazards**
  - DO NOT MOVE a refueler
  - DO NOT START OR TURN off any equipment including GPU’s (if an engine is running leave it running/if an engine is off, leave it off)
  - STAND BY fire extinguisher and direct traffic away from the spill area
  - immediately remove any clothing that had fuel spilled onto it
  - immediately wash any areas of the skin that came into contact with the fuel
Control and Access to Fuel Storage and Fixed Refueling Systems

- security and appearance
  - all fuel storage facilities must be fenced
  - fences must be in good repair
  - all gates must be locked
  - storage area must be kept clear of trash and weeds

- signage
  - signage restricting unauthorized access, tampering or entry
  - "NO SMOKING" displayed prominently and highly visible
  - "FLAMMABLE" displayed prominently and highly visible
  - "EMERGENCY FUEL SHUTOFF" in at least 2" letters with an arrow or the word "PUSH" or "PULL" to indicate its correct operation

- equipment
  - all hoses, nozzles and outflow connectors must be controlled by a deadman fuel flow control feature
  - deadman fuel flow control must be capable of completely stopping fuel flow with one movement
  - bonding cable must be provided at all truck loading and unloading facilities

Aircraft Refueling

- refueling precautions
  - jet engine exhausts can reach speeds over 500 miles per hour and temperatures over 900 degrees Fahrenheit
  - DO NOT conduct refueling operations within 150' directly downstream of a operating jet engine
  - DO NOT conduct refueling operations within 75' directly downstream of an operating turboprop engine
  - refueling operations should be suspended when a thunderstorm is within 5 miles
  - thunderstorm calculation:
    - sound travels 1/5th of a mile per second
    - count the number of seconds between the flash of lightning and the sound of thunder
    - divide the number of seconds by 5 to arrive at the approximate distance of the thunderstorm in miles
  - take note of jet engine intakes and stay clear
  - keep shirt pockets buttoned and free of loose items
  - take precautions to prevent items from falling into aircraft and fuel storage tanks

Public Protection

- general precautions
  - refueling when passengers are onboard is NOT recommended, however if performed;
    - at least one qualified member of the flight crew, trained in emergency evacuation procedures for the aircraft being refueled, is posted near the intended emergency exit
The aircraft’s “NO SMOKING” signs must be illuminated and enforced.
- May require fire department to stand-by if non-ambulatory passengers on board.
- NO smoking is allowed near the aircraft.
- Refueling personnel shall NEVER leave the area.

- Aircraft refueling should stop whenever a vehicle is within 50' of refueling operations, keep the filler caps on until the vehicle has moved away.
- “NO SMOKING” signs should be clearly displayed at the entrance to the ramp area to inform passengers that smoking is not allowed on the aircraft ramp.
- Always bond the aircraft and the refueling vehicle prior to opening any aircraft fuel filler caps or access panels.
- Allow adequate time for static electricity to dissipate before commencing refueling or defueling operations.
- The bonding connection on the aircraft must be a non-painted metallic surface.
- Local regulations may require that the aircraft be grounded to an earth ground (this is not recommended by NFPA 407).
- Overwing nozzles may be equipped with a bonding clip or plug.
- If no bonding clip or plug is available on an overwing nozzle, you must:
  - First touch the nozzle to the cap, prior to opening and
  - You must maintain contact between the fuel nozzle and the filler opening throughout the refueling process.
- If refueling by single-point, no nozzle bonding cable is required, however a bonding cable between the refueler and the aircraft must be attached prior to opening any fuel service panel door.

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VIII. Module #8: AVIATION SECURITY

Complete online lesson for Module #8 AVIATION SECURITY
Complete online exam for Module #8 AVIATION SECURITY

DATE  INITIALS

____  _____  Aviation Security Overview
☐ Discuss threats
☐ Discuss the type of airport at your operation
☐ Review proprietary Company issues
☐ Discuss personal safety and the possible impact of threats or incidents
☐ Review the role of people as the first line of defense
☐ Discuss key customers and detail the confidentiality of tenant operations
☐ Detail typical day-to-day operations
☐ Discuss whom to contact in emergencies
☐ Review company emergency response manual
☐ Discuss unusual equipment or vehicle issues
☐ How to deal with unusual cargo or baggage
☐ Unusual behavior
☐ Challenge procedures
☐ People and baggage
☐ Communication Policies
☐ Review company procedures on telephones and threats
☐ Dealing with passengers/customers in a positive and sensitive manner
☐ Procedures for handling inquiries from local, state or federal authorities
☐ Procedures for handling inquiries from the news media

____  _____  Facility Tour
☐ Immediate work area
☐ Sterile areas
☐ Non-sterile areas
☐ Lobby, terminal and office areas
☐ Hangars
☐ Fuel storage
☐ AOA
☐ Auto parking
☐ Gates and fenced areas
☐ Doors and emergency exits
☐ Demonstrate various access control systems
☐ Review appropriate monitoring systems
☐ Airport and/or Company badge procedures
☐ Review night operations, patrols and lighting checklists

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### D. Aircraft Identification and Servicing Checklist

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<th>Visual ID</th>
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<th>Trainer Initial</th>
<th>Towing</th>
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E. Hands-on Training Procedure Checklist

The following hands-on training should be conducted with each of your line service specialists. Each employee must be able to perform the hands-on procedure on their own before it can be marked completed. Once completed, you may go online to the administrative portal, click on Training Management and then Hands-on to document all applicable hands-on training for each of your employees. (Please refer to recording Hands-on training progress under Training Curriculum, Part C.) When your employee has completed all the hands-on training and is ready to be tested, you may have him or her perform the Practical Exams. The Practical exams may be printed and documented online the administrative portal by clicking on Training Management and then the Practical Exams link.

For easy reference and as a reminder, please ensure the following are completed by each of your employees;

**EMPLOYEE ORIENTATION**
- Company Familiarization
- Company Indoctrination
- Employee Identification (photo)
- Airport Familiarization
- Airport Identification (photo)
- Airport Driving Permit

I. INTRODUCTION AND GROUND SERVICING

GPU General Operations and Safety Procedures
- GPU procedures on aircraft – 12 volt
- GPU procedures on aircraft – 28/115 volts

Windshields: Identification and Cleaning Procedures
- Glass windshield cleaning
- Plexiglass windshield cleaning

Lavatory General Servicing and Safety Procedures
- Lift-Out system servicing
- Installed system servicing

Potable Water Operations and Safety Procedures
- Lift-Out system servicing
- Installed system servicing

II. SAFETY

Emergency Procedures
Security Procedures
Aircraft Marshaling and Hand Signals

III. GENERAL FUEL SERVICING

Avgas Refueler Operating Procedures
  Avgas refueler driving checkout
  Avgas refueler “top-off” procedures
Piston Aircraft Refueling Operations and Safety
  Overwing refueling procedure
  Reciprocating engine oil servicing procedures
Piston Aircraft: Single-Engine Refueling
Piston Aircraft: Twin-Engine Refueling
Piston Helicopter Refueling Safety and Operations
  Piston helicopter refueling procedures
Jet Refueler Operating Procedures
  Jet refueler driving checkout
  Jet refueler “top-off” procedures
Turboprop Aircraft Refueling Safety and Operations
  Overwing refueling procedures
  Fuel additive safety and servicing procedures
Turboprop Aircraft: Single-Engine Refueling
Turboprop Aircraft: Twin-Engine Refueling
Turbine Helicopter Refueling Safety and Operations
  Turbine helicopter refueling procedures
Jet Refueler (large) Operating Procedures
  Jet refueler driving checkout
  Refueler top-off procedures
Jet Aircraft Refueling Operations and Safety
  Overwing procedures
  Single-Point procedures

IV. GENERAL TOWING PROCEDURES

Towing Safety and Operations
Tow Bar Operation(s) and Safety Procedures
Tug Unit Safety and Operations
Towing of Piston Single-Engine Aircraft
Towing of Piston Twin-Engine Aircraft
Towing of Turboprop Single-Engine Aircraft
Towing of Turboprop Twin-Engine Aircraft
Towing of Jet Engine Aircraft
Nose gear Disconnect Procedures
Hangar Towing Operations

V. FUEL FARM MANAGEMENT
Fuel Storage Operations and Safety
  Fuel Storage Familiarization
  Fuel Storage Safety Inspection Procedure
  Fuel Inventory Procedure
  Receiving a Fuel Load Procedure

  Fuel Quality Control Check Procedures
    Clear and Bright Test
    Water Detection test
    White “Bucket” Test - Jet fuel
    Milipore/Membrane Test

  Refueler Inspection Procedure

VI. CUSTOMER SERVICE
Customer Relations
  Customer support operating procedures
  Sales procedures (cash/credit transactions)
  Catering ordering and storing procedures
  Rental car/Ground transportation procedures
  Hotel/Restaurant reservation procedures

Communication Procedures
  Telephone procedures and etiquette
  Radio procedures and etiquette:

VII. FIRE SAFETY
Fire and Fuel Characteristics
Fire Extinguishing Principles
Fire Extinguisher Hands-On Procedures
Fuel Storage System Security and Fire Safety Review
Refueler and Fixed System Fire Safety Review
Fuel Spill Response and Handling

VIII. GENERAL AVIATION SECURITY
Security Policies and Procedures
Communication Policies and Procedures
Access Policies and Procedures
Emergency Procedures (Security)
Reporting Procedures
Escort Procedure