

Cape Cod Community College AMTS
Practical Project Guide for AMT 253 Powerplant Curriculum, Subject Items 5 & 6

Part 147, Appendix D, Part 1- Subject B – Turbine Engines

Item 5. **Overhaul turbine engine.** (Level 2)

Item 6. **Inspect,** check, service, and repair turbine engines and turbine engine installations. (Level 3)

Project 1

Purpose: To learn to properly classify and describe various Turbine Engines as specified in the Type Certificate Data Sheets.

References:

1. 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook Powerplant, Volume 1 (FAA-H-8083-32) Chapter 1
2. www.faa.gov

Equipment and Tools Needed:

- (1) www.faa.gov Type Certificate Data Sheets

Supplies and Materials Needed:

- (1) Computer with internet access

Procedure:

Complete following procedure

- (1) Classify and describe the various Turbine Engines listed below.
- (2) Describe the engines as per the TCDS and indicate the TCDS number and the latest revision number.

1. Rolls-Royce Allison 250-C20

TCDS Number blank _____ Rev. blank _____

Description:

2. Pratt & Whitney of Canada Corp. PT6A-20B

TCDS Number blank _____ Rev. blank _____

Description:

3. Pratt & Whitney, Division of United Technologies Corp. JT9D-7A

TCDS Number blank _____ Rev. blank _____

Description:

4. International Aero Engines AG (IAE) V-2500-A1

TCDS Number blank _____ Rev. blank _____

Description:

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Project 2

Purpose: To learn to properly identify the components or sections of a Turbine engine and describe its basic design features.

References:

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook Powerplant, Volume 1 (FAA-H-8083-32) Chapter 1
- (2) Pratt & Whitney PT6A-20 Maintenance Manual

Equipment and Tools Needed:

1. Pratt & Whitney PT6A-20

Supplies and Materials Needed:

- (1) None

Procedure:

Complete following procedure

1. Using the manufacturer's manuals, identify the tagged components on the assigned engine and name the basic design features as indicated.

blank _____ 1. Fuel Control Unit and Pump

DESIGN FEATURES:

blank _____ 2. Exhaust Duct

Type blank _____

blank _____ 3. Air Inlet Screen

Airflow blank _____

blank _____ 4. Fuel Manifold

Compressor type blank _____

blank _____ 5. Propeller Reduction Gearbox

Is it a Free Turbine? blank ____

blank _____ 6. Ignition Glow Plug

blank _____ 7. Ignition Current Regulator

blank _____ 8. Gas Generator Case

blank _____ 9. Oil-to-Fuel Heater

blank _____ 10. Oil Filter

blank _____ 11. Accessory Gearbox

blank _____ 12. Prop Govenor

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Item 6. **Inspect,** check, service, and repair turbine engines and turbine engine installations. (Level 3)

Project 3

Purpose: To learn to properly identify the components or sections of a Turbine engine and describe its basic design features.

References:

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook Powerplant, Volume 1 (FAA-H-8083-32) Chapter 1
- (2) International Aero Engines V-2500 Installation and Operations Manual

Equipment and Tools Needed:

1. IAE V-2500-A1 Engine

Supplies and Materials Needed:

- (1) None

Procedure:

Complete following procedure

- (1) Using the manufacturer's manuals, identify the tagged components on the assigned engine and name the basic design features as indicated.

blank _____ 1. Fuel Control Unit

blank _____ 2. Exhaust Duct

blank _____ 3. Air Inlet

blank _____ 4. Fuel Manifold

blank _____ 5. Fan Case

blank _____ 6. Igniter Plug

DESIGN FEATURES:

Type blank _____

Airflow blank _____

Compressor type blank _____

Is it a Free Turbine? blank _____

Number of Spools blank _____

blank _____ 7. Ignition Exciter Box

blank _____ 8. Compressor Case

blank _____ 9. Active Clearance Control Manifold

blank _____ 10. Oil Filter

blank _____ 11. Accessory Gearbox

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Item 6. **Inspect,** check, service, and repair turbine engines and turbine engine installations. (Level 3)

Project 4

Purpose: To learn to properly identify the components or sections of a Turbine engine and describe its basic operating features.

References:

1. 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook Powerplant, Volume 1 (FAA-H-8083-32) Chapter 1

Equipment and Tools Needed:

- (1) None

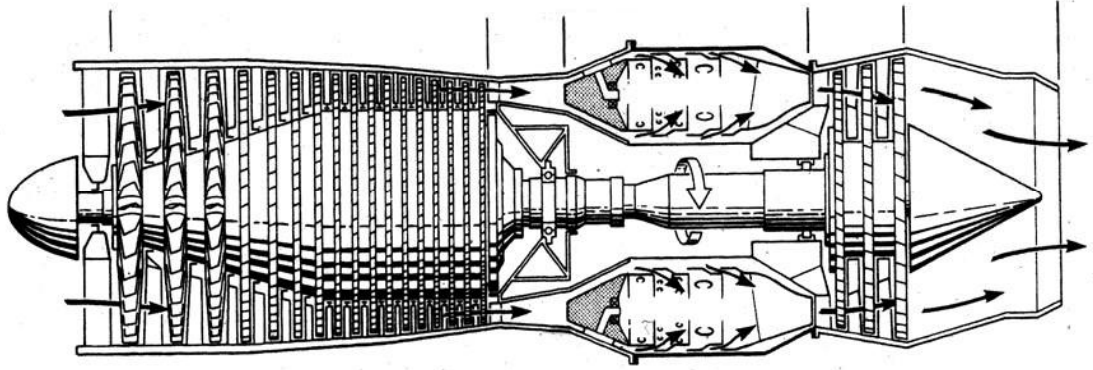
Supplies and Materials Needed:

- (1) None

Procedure:

Complete following procedure

- (1) Using manufacturer's manuals, textbooks and class notes, on the drawing below label the sections of the turbine engine shown.
- (2) On page 2, briefly explain how a turbine engine produces Thrust or Horsepower.
- (3) Answer the questions on page 2.



Explanation:

Questions:

- a. What is the function of a compressor section of a Turbine Engine?

- b. What type of cycle is the Brayton Cycle?

- c. What must be accelerated by a Turbine Engine to produce Thrust?

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Item 5. **Overhaul turbine engine.** (Level 2)

Item 6. **Inspect,** check, service, and repair turbine engines and turbine engine installations. (Level 3)

Project 5

Purpose: To learn to properly identify the components or sections of a Turbine engine and describe its basic operating parameters.

References:

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook Powerplant, Volume 1 (FAA-H-8083-32) Chapter 1

Equipment and Tools Needed:

- (1) None

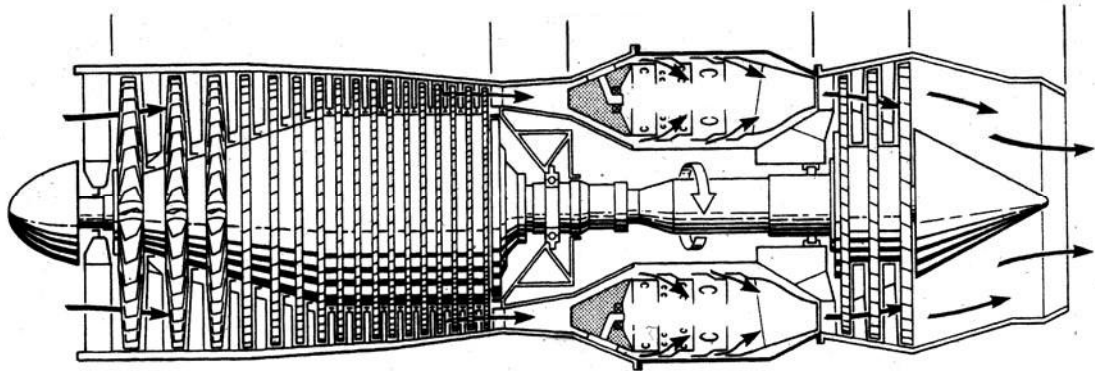
Supplies and Materials Needed:

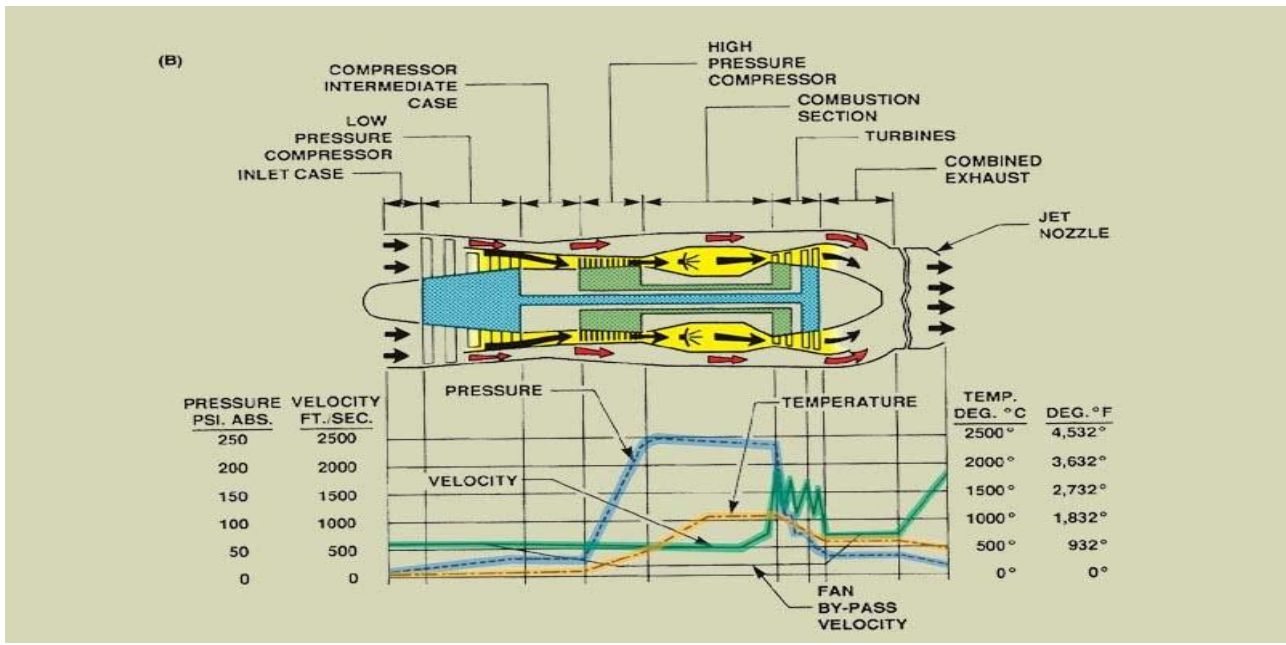
- (1) None

Procedure:

Complete following procedure

- (1) Using manufacturer's manuals, textbooks and class notes, on the drawing on page 2, identify and give a written description of the relative airflow pressures, velocities, and temperatures in each of the various engine sections. NOTE: a graph would be a good description method.
- (2) Answer the questions on page 2.





Questions:

- Where does the highest airflow pressure occur in a turbine engine?
- Why does the pressure drop slightly or remain constant in the Combustion Section of a turbine engine even though we are adding all that fuel energy?
- Why **doesn't** the airflow pressure and velocity relationship follow Bernoulli's Principle in the compressor and turbine sections?

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Project 6

Purpose: To learn to research the Shaft Horsepower and Equivalent Shaft Horsepower of various Turboshaft and Turboprop engines.

References:

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook Powerplant, Volume 1 (FAA-H-8083-32) Chapter 1
- (2) www.faa.gov

Equipment and Tools Needed:

- (1) computer with internet access

Supplies and Materials Needed:

- (1) None

Procedure:

Complete following procedure

- (1) On page 2, list the Type Certificate Data Sheet number and latest revision, Shaft Horsepower, and Equivalent Shaft Horsepower (if available) for each engine listed below. If there is more than one answer available for any engine, choose one and label it as to what type of power it pertains to (i.e. Takeoff, 5minute, etc.).
- (2) In the space below, explain the difference between Shaft Horsepower and Equivalent Shaft Horsepower.

Engines:

1. Rolls Royce-Allison 250-B17B

Type Cert. Data Sheet # blank _____

SHP blank _____

ESHP blank _____

2. Pratt & Whitney of Canada PT6A-20B

Type Cert. Data Sheet # blank _____

SHP blank _____

ESHP blank _____

3. Honeywell (Garrett Turbine Engine Co.) TPE331-10

Type Cert. Data Sheet # blank _____

SHP blank _____

ESHP blank _____

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Item 5. **Overhaul turbine engine.** (Level 2)

Item 6. **Inspect,** check, service, and repair turbine engines and turbine engine installations. (Level 3)

Project 7

Purpose: To learn to research the location, methods of power and cooling of various turbine engine Accessory Sections.

References:

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook Powerplant, Volume 1 (FAA-H-8083-32) Chapter 1
- (2) International Aero Engines V-2500 Installation and Operations Manual
- (3) Pratt & Whitney PT6A-20 Maintenance Manual

Equipment and Tools Needed:

- (1) computer with access to manuals
- (2) Pratt & Whitney PT6A-20
- (3) International Aero Engines V-2500-A1

Supplies and Materials Needed:

- (1) None

Procedure:

Complete following procedure

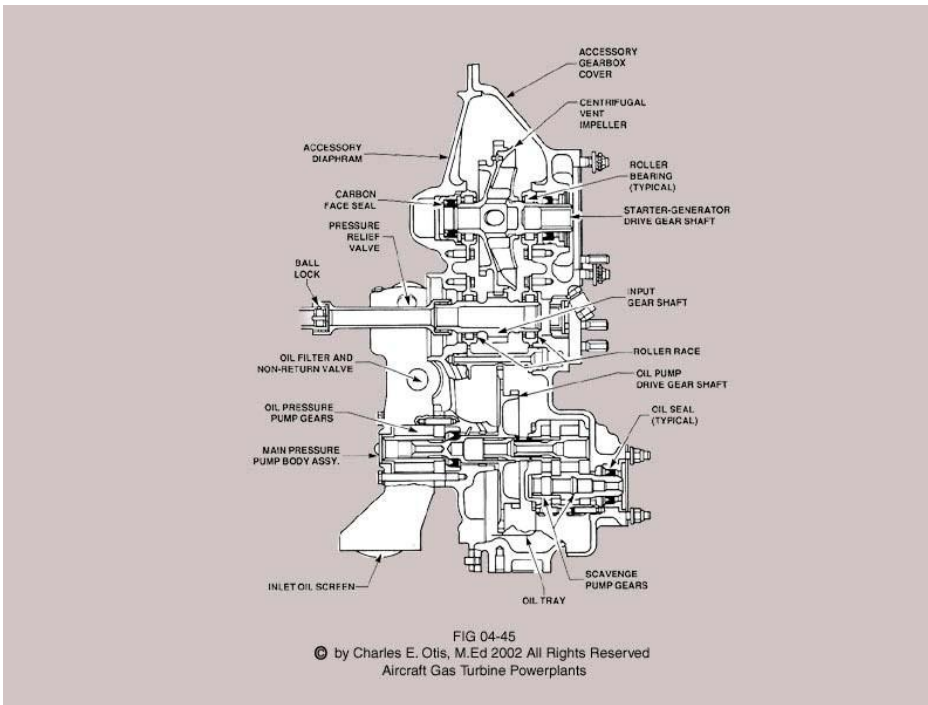
- (1) Using the manufacturer's manuals and class notes and the given engines, research the following engines and explain the method by which the accessory section is:
 - a. driven.
 - b. mounted on the engine (including the location).
 - c. cooled.
- (2) On page 2, the student will complete a hand-drawn sketch of one of the accessory gearboxes (including its labeled gear arrangement and connection to the engine). NOTE: Computer drawings or photocopies or photos are NOT acceptable.

Engines:

Pratt & Whitney of Canada PT6A-20B

International Aero Engines V-2500-A1

Sketch:



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Project 8

Purpose: To learn to research information concerning the Compressor Section of various Turbine Engines.

References:

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook Powerplant, Volume 1 (FAA-H-8083-32) Chapter 1
- (2) International Aero Engines V-2500 Installation and Operations Manual
- (3) Pratt & Whitney PT6A-20 Maintenance Manual

Equipment and Tools Needed:

- (1) computer with access to manuals
- (2) Pratt & Whitney PT6A-20
- (3) International Aero Engines V-2500-A1

Supplies and Materials Needed:

- (1) None

Procedure:

Complete following procedure

- (1) Using the manufacturer's manuals and class notes and the given engines, research the following engines and answer the questions on page 2 concerning the engines.
- (2) On page 2, the student will complete a hand-drawn sketch of one of the compressor sections and explain the flow of air through it. (How is it compressed? How does it move through the Compressor?) NOTE: Computer drawings or photocopies or photos are NOT acceptable.

Engines:

Pratt & Whitney of Canada PT6A-20B

Questions:

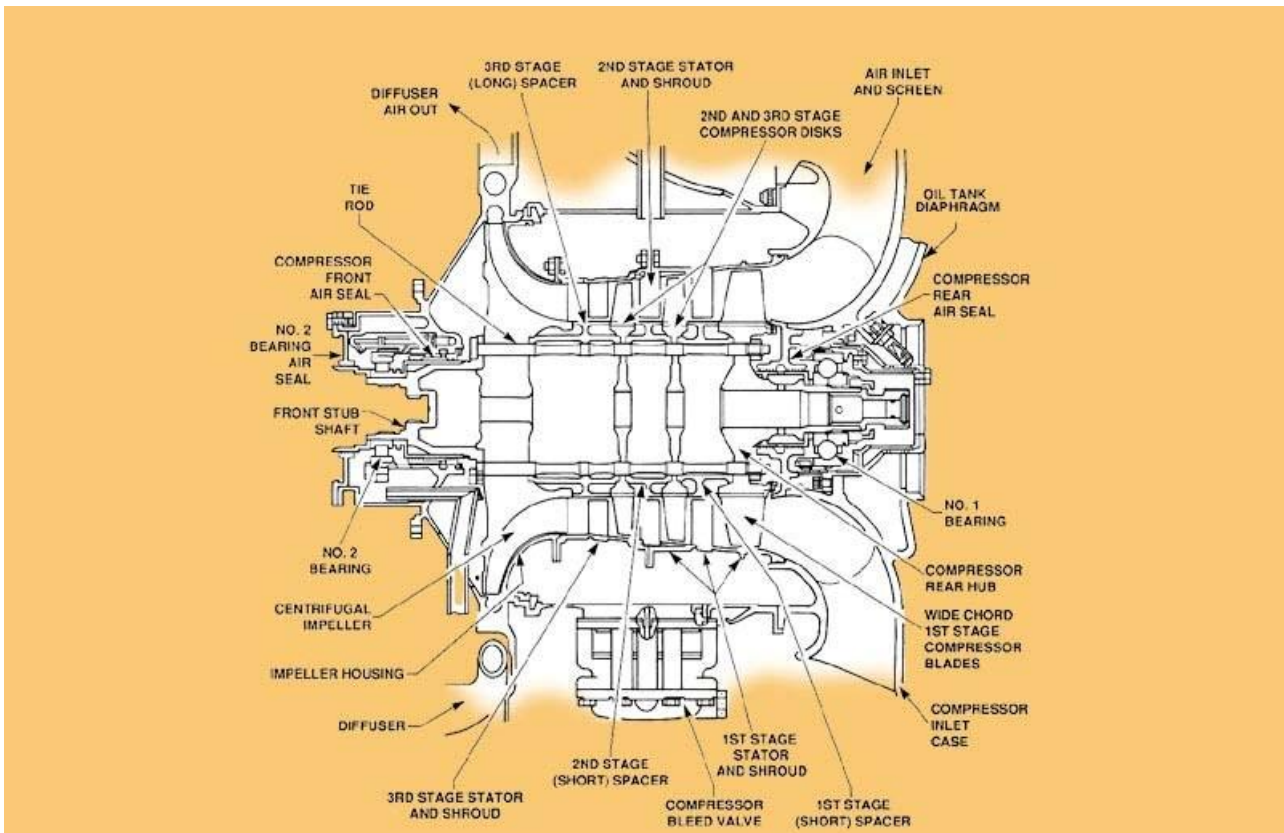
- The type of compressor?
- The number of stages?
- The method of blade attachment?
- The method of supporting the compressor in the engine?
- Which turbine wheel(s) turn the compressor?
- The number of spools?

International Aero Engines V-2500-A1

Questions:

- The type of compressor?
- The number of stages?
- The method of blade attachment?
- The method of supporting the compressor in the engine?
- Which turbine wheel(s) turn the compressor?
- The number of spools?

Sketch:



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Item 6. **Inspect,** check, service, and repair turbine engines and turbine engine installations. (Level 3)

Project 9

Purpose: To learn to research information concerning the Combustion and Diffuser Sections of various Turbine Engines.

References:

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook Powerplant, Volume 1 (FAA-H-8083-32) Chapter 1
- (2) International Aero Engines V-2500 Installation and Operations Manual
- (3) Pratt & Whitney PT6A-20 Maintenance Manual

Equipment and Tools Needed:

- (1) computer with access to manuals
- (2) Pratt & Whitney PT6A-20
- (3) International Aero Engines V-2500-A1

Supplies and Materials Needed:

- (1) None

Procedure:

Complete following procedure

- (1) Using the manufacturer's manuals and class notes and the given engines, research the following engines and answer the questions on page 2 concerning the engines.
- (2) On page 2, the student will complete a hand-drawn sketch of one of the Diffuser & Combustion Sections in detail and explain how the Primary and Secondary Air flows through the Combustion Section.
NOTE: Computer drawings or photocopies or photos are NOT acceptable.

Engines:

Pratt & Whitney of Canada PT6A-20B

Questions:

- The type of combustion section?
- The location of the combustion chamber in relation to the physical appearance of the engine?
- The location of the diffuser section in relation to the physical appearance of the engine?

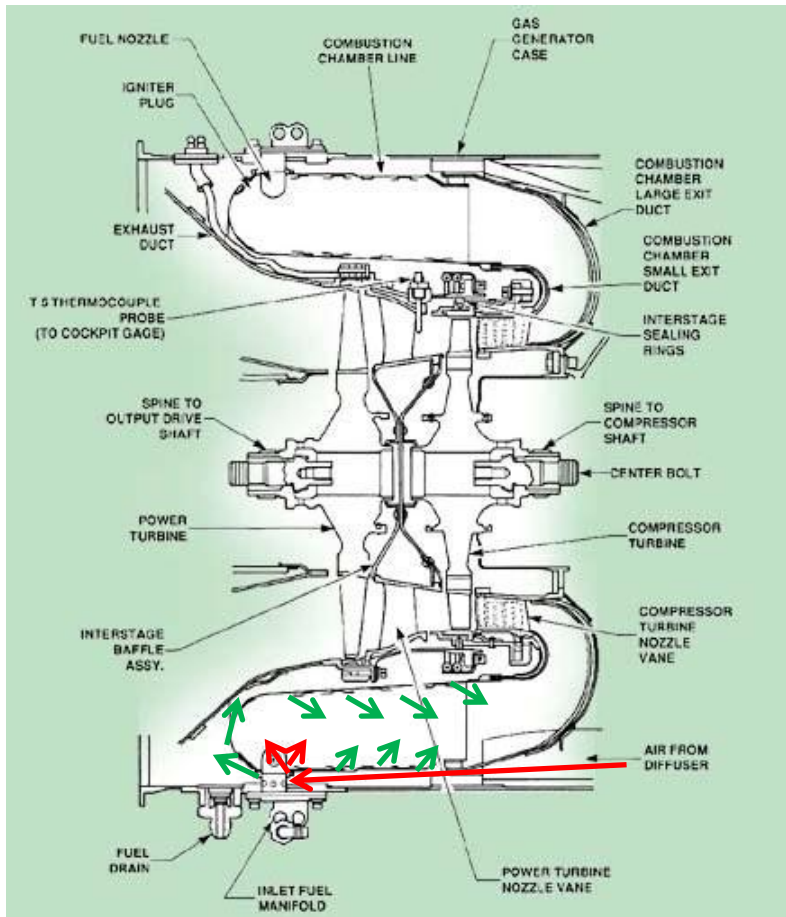
International Aero Engines V-2500-A1

Questions:

- The type of combustion section?
- The location of the combustion chamber in relation to the physical appearance of the engine?
- The location of the diffuser section in relation to the physical appearance of the engine?

:

Sketch:



Red Arrow = Primary air
Green Arrow = Secondary air

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Item 6. **Inspect,** check, service, and repair turbine engines and turbine engine installations. (Level 3)

Project 9

Purpose: To learn to research information concerning the Combustion and Diffuser Sections of various Turbine Engines.

References:

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook Powerplant, Volume 1 (FAA-H-8083-32) Chapter 1
- (2) International Aero Engines V-2500 Installation and Operations Manual
- (3) Pratt & Whitney PT6A-20 Maintenance Manual

Equipment and Tools Needed:

- (1) computer with access to manuals
- (2) Pratt & Whitney PT6A-20
- (3) International Aero Engines V-2500-A1

Supplies and Materials Needed:

- (1) None

Procedure:

Complete following procedure

- (1) Using the manufacturer's manuals and class notes and the given engines, research the following engines and answer the questions on page 2 concerning the engines.
- (2) On page 2, the student will complete a hand-drawn sketch of one of the Diffuser & Combustion Sections in detail and explain how the Primary and Secondary Air flows through the Combustion Section.
NOTE: Computer drawings or photocopies or photos are NOT acceptable.

Engines:

Pratt & Whitney of Canada PT6A-20B

Questions:

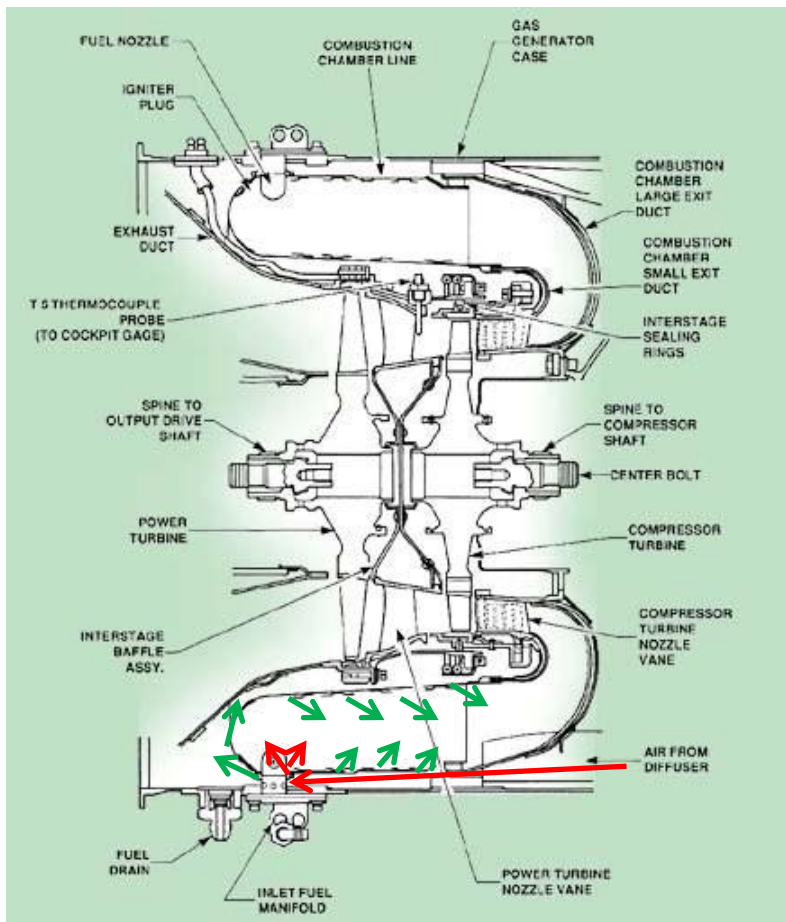
- The type of combustion section?
- The location of the combustion chamber in relation to the physical appearance of the engine?
- The location of the diffuser section in relation to the physical appearance of the engine?

International Aero Engines V-2500-A1

Questions:

- The type of combustion section?
- The location of the combustion chamber in relation to the physical appearance of the engine?
- The location of the diffuser section in relation to the physical appearance of the engine?

Sketch:



Red Arrow=Primary Air;
Green Arrow=Secondary Air

PT6

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Item 6. **Inspect,** check, service, and repair turbine engines and turbine engine installations. (Level 3)

Project 10

Purpose: To learn to research information concerning various Turbine Engine Turbine Sections.

References:

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook Powerplant, Volume 1 (FAA-H-8083-32) Chapter 1
- (2) International Aero Engines V-2500 Installation and Operations Manual
- (3) Pratt & Whitney PT6A-20 Maintenance Manual

Equipment and Tools Needed:

- (1) computer with access to manuals
- (2) Pratt & Whitney PT6A-20
- (3) International Aero Engines V-2500-A1

Supplies and Materials Needed:

- (1) None

Procedure:

Complete following procedure

- (1) Using the manufacturer's manuals and class notes and the given engines, research the following engines and answer the questions on page 2 concerning the engines.

Pratt & Whitney of Canada PT6A-20B Questions:

- a. The number of turbine stages (total number)?
- b. The number of free or power turbine stages?
- c. The method of attachment of the rotor blades?
- d. The method of retention of the stators?

International Aero Engines V-2500-A1

Questions:

- a. The number of turbine stages (total number)?
- b. The number of free or power turbine stages?
- c. The method of attachment of the rotor blades?
- d. The method of retention of the stators?

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Item 5. **Overhaul turbine engine.** (Level 2)

Item 6. **Inspect,** check, service, and repair turbine engines and turbine engine installations. (Level 3)

Project 11

Purpose: To become familiar with turbine engine parameters.

References:

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook Powerplant, Volume 1 (FAA-H-8083-32) Chapters 1 & 10
- (2) Pratt & Whitney PT6A Maintenance Manual
- (3) www.faa.gov

Equipment and Tools Needed:

- (1) computer with access to manuals
- (2) Pratt & Whitney PT6A-34

Supplies and Materials Needed:

- (1) None

Procedure:

Complete following procedure

- (1) Fill in the requested information on page 2 for the assigned engine (assume Standard Conditions) or N/A if Not Applicable to the assigned engine. To the left of each question number, indicate the location of the information used as a reference: MM for Maintenance Manual, TC for Type Certificate Data Sheets, or OT for Other (if Other, list the reference on the reverse side of this sheet).

1. Engine: Pratt & Whitney PT6A-34
2. T.C. Number blank _____
3. Weight (Dry) blank _____
4. ESHP blank _____ SHP blank _____ Jet Thrust blank _____
5. Type of fuel required blank _____

6. Turbine Temperature:

Temp. (Range)	Duration
Take-off blank _____	blank _____
Starting blank _____	blank _____
Max. Cont. blank _____	blank _____

7. Type of Compressor blank _____

8. Number of Compressor stages blank _____

9. Number of Gas Producer Turbine stages blank _____

10. Number of Power Turbine stages blank _____

11. Take-off Gas Producer RPM blank _____

12. Maximum Continuous Gas Producer RPM blank _____

13. Take-off Power Turbine RPM blank _____

14. Maximum Continuous Power Turbine RPM blank _____

15. Power Output Shaft RPM blank _____

16. Dimensions:

Length blank _____

Nominal Diameter blank _____

Maximum Radius (excluding exhaust ports) blank _____

17. Maximum Oil Consumption blank _____

18. Take-off Specific Fuel Consumption blank _____

19. Maximum Continuous Specific Fuel Consumption blank _____

20. Thermal Efficiency at Maximum Continuous rating blank _____

21. Type of Oil required blank _____

22. Usable Oil Tank Capacity blank _____

List all Life Limited Parts and/or Components required Overhaul and their lives (or a reference to where to find this information):

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Item 6. **Inspect, check, service, and repair** turbine engines and turbine engine installations. (Level 3)

Project 12

Purpose: To become familiar with turbine engine Inspection Procedures the student will research and list all installed components of an assigned turbine engine as the first step in an Inspection.

References:

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook Powerplant, Volume 1 (FAA-H-8083-32) Chapters 1 & 10
- (2) Pratt & Whitney PT6A Maintenance, Parts, and Overhaul Manuals
- (3) www.faa.gov

Equipment and Tools Needed:

- (1) computer with access to manuals
- (2) Pratt & Whitney PT6A-__ (model as assigned)

Supplies and Materials Needed:

- (1) None

Procedure:

Complete following procedure

- (1) Fill in the requested information below for the assigned engine:

Engine Manufacturer Pratt & Whitney
Engine Model blank _____
Engine S/N blank _____

- (2) On page 2, list the indicated information (as available) for all installed components and accessories:

Component/Accessory	Type or Model	Serial Number

Is any required component missing? If so, list it/them:

(3) Inspect your engine and fill in the below information:

What is the general condition? List any unairworthy discrepancies noted.

Review the Type Certificate Data Sheet for this engine and list any Notes or Placards that apply.

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Item 5. **Overhaul turbine engine.** (Level 2)

Item 6. **Inspect, check, service, and repair** turbine engines and turbine engine installations. (Level 3)

Project 13

Purpose: To become familiar with turbine engine Inspection Procedures the student will practice the inspection and repair procedures for a turbine engine Cold Section.

References:

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook Powerplant, Volume 1 (FAA-H-8083-32) Chapters 1 & 10
- (2) Pratt & Whitney PT6A Maintenance, Parts, and Overhaul Manuals
- (3) www.faa.gov

Equipment and Tools Needed:

- (1) computer with access to manuals
- (2) Pratt & Whitney PT6A-__ (model as assigned)
- (3) Pratt & Whitney Special Tools
- (4) Borescope

Supplies and Materials Needed:

- (1) None

Procedure:

Complete following procedure

- (1) Prepare a Checklist for the Inspection of the Cold Section of the assigned engine as per the manufacturer's maintenance manual. This can simply be a list of the manual paragraph/page numbers which are appropriate but should include a list of required inspection limits or checks (measurements, torques, etc.) and space to indicate the results of these inspections or checks, an area for recording any discrepancies found and their recommended repairs, and a list of any Consumable Items (seals, gaskets, o-rings, etc.) which are required (list by Part Number or Stock Number). **BE SURE TO REVIEW AND BE FAMILIAR WITH ANY CAUTIONS OR NOTES!** Have the Instructor review this and initial below **PRIOR** to proceeding to Step #2.

OK to proceed to Step 2 blank_____

(2) Disassemble as necessary, inspect the Cold Section and complete your checklist noted limit measurements or checks. List any discrepancies found, discuss these with the Instructor and have the Instructor initial each item.

Inspection techniques, discrepancies blank_____

(3) Repair Compressor Blade damage as per the maintenance manual and show it to the Instructor.

Repair OK blank_____

(4) Reassemble the Cold Section. Insure all torquing and safetying is accomplished and have the Instructor witness this and initial below.

Reassembly blank_____

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Item 6. **Inspect, check, service, and repair** turbine engines and turbine engine installations. (Level 3)

Project 14

Purpose: To become familiar with turbine engine Inspection Procedures the student will practice the inspection and repair procedures for a turbine engine Hot Section.

References:

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook Powerplant, Volume 1 (FAA-H-8083-32) Chapters 1 & 10
- (2) Pratt & Whitney PT6A Maintenance, Parts, and Overhaul Manuals
- (3) www.faa.gov

Equipment and Tools Needed:

- (1) computer with access to manuals
- (2) Pratt & Whitney PT6A-__ (model as assigned)
- (3) Pratt & Whitney Special Tools
- (4) Borescope

Supplies and Materials Needed:

- (1) None

Procedure:

Complete following procedure

- (1) Prepare a Checklist for the Inspection of the Hot Section of the assigned engine as per the manufacturer's maintenance manual. This can simply be a list of the manual paragraph/page numbers which are appropriate but should include a list of required inspection limits or checks (measurements, torques, etc.) and space to indicate the results of these inspections or checks, an area for recording any discrepancies found and their recommended repairs, and a list of any Consumable Items (seals, gaskets, o-rings, etc.) which are required (list by Part Number or Stock Number). **BE SURE TO REVIEW AND BE FAMILIAR WITH ANY CAUTIONS OR NOTES!** Have the Instructor review this and initial below **PRIOR** to proceeding to Step #2.

OK to proceed to Step 2 blank_____

(2) Disassemble as necessary, inspect the Hot Section and complete your checklist noted limit measurements or checks. List any discrepancies found, discuss these with the Instructor and have the Instructor initial each item.

Inspection techniques, discrepancies blank_____

(3) Reassemble the Hot Section. Insure all torqueing and safetying is accomplished and have the Instructor witness this and initial below.

Reassembly blank_____

Item 6. **Inspect, check, service, and repair** turbine engines **and turbine engine installations.** (Level 3)

Item 7. **Install, troubleshoot, and remove** turbine engines. (Level 3)

Project 15

Purpose: To practice Inspecting, Checking, Servicing, and Repair of turbine engine Installations; and turbine engine Installation, Troubleshooting, and Removal procedures.

References:

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook Powerplant, Volume 1 (FAA-H-8083-32) Chapter 1& Volume 2 Chapter 8
- (2) Sabreliner 40 Maintenance Manual NA-62-1224
- (3) www.faa.gov

Equipment and Tools Needed:

- (1) Computer with access to manuals or hardcopy manual
- (2) Pratt & Whitney JT12-8 (model as assigned)
- (3) Sabreliner / Pratt & Whitney Special Tools
- (4) Engine Hoist
- (5) Torque Wrench

Supplies and Materials Needed:

- (1) Fluid line caps/plugs
- (2) Identification tags
- (3) Safety wire

Procedure:

Complete following procedure

Assigned Engine: Make: Pratt & Whitney / Model: JT12-8 / Ser. No.: TBD

- (1) Remove the assigned engine from the aircraft as per the manufacturer's instructions.

Removal Procedures blank_____

- (2) Inspect the complete Engine Compartment as per the manufacturer's instructions. List any discrepancies below, indicate the proper repair, and repair the item at the direction of the Instructor.

Inspection blank_____

(3) Reinstall the assigned engine as per the manufacturer's instructions.

Reinstallation Procedures blank _____

(4) Complete the Troubleshooting Chart below and on the following page(s) by filling in the blank areas of Cause and Remedy (one line for each Cause). Be sure to enter reference information to indicate where you found each of the answers (e.g., PT6-20 manual, pg. 2-18).

Low power at maximum T_{15}		

Engine fails to light-up when power lever is advanced to the Ground Idle position		

Hot Start		
Engine surges during acceleration or fails to accelerate properly		

Engine Flame-out during deceleration		
Engine overspeed N_g		
Engine overspeed N_f		

Engine over-temperature		

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