### **DOCKET NO. SA-515**

**EXHIBIT NO 8G** 

# NATIONAL TRANSPORTATION SAFETY BOARD WASHINGTON, DC

ANE-180 EVALUATION REPORT OF PRATT & WHITNEY QUALITY SYSTEM September 30, 1996

ATTACHMENT I
PHASE I REPORT (PRATT & WHITNEY)
(32 PAGES)

ACSEP Number 96NE055



## ACSEP Evaluation Report

Facility:	
Pratt &	Whitney
East Ha	rtford, CT
Start Date: 7/29/96	End Date: 8/2/96
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Prepared By: Michael J	. Lightbown
FAA ACSEP Evaluation Team Leader	
Date:	:
<b>8</b> /5/96	•
Location of Objective Evidence:	
Originals wi	h Team Leader

FAA Form 8100-3 (12-03)

Page 1 of 2

### **TEAM MEMBERS**

Name	Office	Discipline	Specialty	Training Status (E or T)*
Rita Truax	ANE MISO 42	ASI -		
Dan Kerman	ANE 140	ASE	₩ ( <b>2</b> .5 70.0	
Richard Jennings	AIR 230	ASE		
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* E = Evaluator-in-	-training	T = Team I	.eader-in-tra	ining

FAA Form 8100-3 (12-03)

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#### ACSEP EVALUATION SPECIAL EMPHASIS ITEMS

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ACSEP NO.	96NE055	. •	PROJECT NO. PE13NE-D	
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#### NOTE TO MIO MANAGER AND COGNIZANT PRINCIPAL INSPECTOR

Do to the nature of this ACSEP Evaluation all special emphasis items have been documented in the attached narratives form the team members. It is highly recommended that these reports be reviewed to gain a clear understanding of the evaluation.

#### NOTE TO ACO MANAGER AND ASSIGNED PROJECT ENGINEER

**SEE ABOVE** 

FOR OFFICIAL USE ONLY (when filled in)
Public availability to be determined under 5 U.S.C. 552

SPECIAL, FRM

### SPECIAL AUDIT OF PRATT & WHITNEY

As a result of the failure of PW JT8D-219, #1 Fan Hub on Delta Flight Airlines flight #1288 at Pensacola, Florida, on July 6,1996 a special Quality System audit was initiated by the Manufacturing Inspection Office (MIO) of the Engine & Propeller Directorate, Burlington, MA. The scope of the audit was limited to the following ACSEP Subsystems:

Supplier Control Material Review Board Internal Audit Design Data PRELIMINARY WORKING DESCRIPTION FOR REVIEW AND DISCUSSION PURPOSES OF LY

The audit was conducted from July 29 through August 2, 1996. The audit team was comprised of:

Michael J. Lightbown, Team Leader, (MRB)

Dan Kerman, Aviation Safety Engineer (Design Data, ESA)

Rich Jennings, Aviation Safety Engineer, (Internal Audit)

Rita Truax, Aviation Safety Inspector, (Supplier Control)

An audit inbriefing was conducted on Monday July 29 at 9:00 a.m., at Pratt & Whitney, 400 Main St, East Hartford, CT. The following were in attendance:

The FAA Team
Richard Gidius, P&W, FAA, Principal Inspector
Willian Sparaco, acting for Roger Chericoni, Quality VP
Treva Kendall, P&W FAA Liaison
Andrew Brindisi, P&W FAA Liaison, Manager
Rich Hoyle
Harrie Rand
Rich Strong
Jim Mloganoski
Mike Palazzi

Michael Lightbown explained the purpose and scope of the audit.

P&W presentation included an overview of the current structure specifically the "Product Center" concept now in place in P&W. In addition, Bill Sparaco provided a detailed presentation on the P&W initiative toward ISO 9001 certification and the changes to the Quality System since the last ACSEP Evaluation in October 1994.



## PRELIMINARY WORKING DI AFT The following is an outline of what transpired during the audit. AND PURPOSES CILLY

P&W is currently undergoing a revamp of the Quality System aligning with the ISO 9001 structure. To accomplish this the current Quality Assurance Manual (QAM), which is FAA approved, has been restructured into two documents, the Pratt & Whitney Quality Manual, which is the top document and reflects the P&W quality policy (1st Level), the second is the Pratt & Whitney System Level Procedures (SLP's) (2nd Level) which are procedures covering all work centers, the Work Instructions (3rd Level) are Product Center unique. Each work center is allowed to have working level procedures which must be structured to meet the intent of the System Level Procedures and the Quality Manual. Current FAA policy does not require PI's to review or approve these instructions (3rd Level). At P&W the PI is notified when sigificant changes take place in the work instructions. Significant is defined as anything "policy" related.

The Principal Inspector is currently reviewing the Quality Manual and the System Level Procedures and expects to have this accomplished within six to eight weeks. P&W is currently scheduled for an ACSEP Evaluation in early \*October, 1996. Based on the PI review and approval of the new system it is my recommendation the ACSEP be scheduled later in the year and that it remain a national evaluation.

\*The decision has been made to conduct the ACSEP Evaluation in April 1997.

The "Product Center Concept" was initiated at P&W in early 1993 and was approved by the FAA PI at that time. Detailed flowcharts attached depict the structure now in place.

The Quality oversight for this organization is two fold An Operations & Audit, "Core", Quality function provides Product Center Audits and Special Audits over : all Product Centers. Secondly, and in addition to "Core" each Product Center is responsible to maintain a quality function providing internal audit and supplier audit to suppliers under their control.

It should be clearly understood, this audit concentrated on the first and second level of the P&W system and the work instructions of International Product Center and the General Machine Priduct Center. This accounts for ONLY two (2) of eleven (11) Centers within the P&W system.

A review and audit of the Material Review Board at the, "Core Level" was conducted. The current procedures were reviewed and evaluated to the ACSEP Evaluation Criteria. Special emphasis was placed on the Preliminary Review (PR)



# PRELIMINARY WORKING D' AFT

as applied to foreign suppliers. No concernment per property & Milollowed 15510N procedures as written.

PURPOSES ONLY

A further review of the "Product Center area" was conducted at the International Operations Business Unit. This included receiving, storage MRB and shipping. It was noted that this particular unit has recently (Nov 95) been reorganized. Although the on site interviewee was extremely helpful and knowledgeable of the system the area did not have procedures available. In addition, the MRB Crib in this area lacked the required control outlined in P&W MRB Procedures. This was brought to the attention of P&W management who assured this area will be audited beginning Monday August 5, 1996. It is recommended the FAA Principal Inspector be provided with the audit results and any corrective action plan as a result this audit.

It was determined by the team leader that this issue would not be documented as a finding at this time allowing the transition to be completed. It should be noted a recommendation is being made to the Manufacturing Office (ANE 180) to conduct a followup evaultion prior the the rescheduled ACSEP by the same team. This would not only be directed at this issue but all findings, observations, and recommendations.

The Pratt & Whitney Internal Audit "Core Level" function was evaluated and found to be operating within the current P&W procedures. Internal audit schedules, plans, findings, and corrective actions were reviewed and found to be in accordance with the procedures. There is direct line on communications from the audit function to the Quality Vice President in matters such as corrective action. Documented findings were reviewed and found to be accurate and well written in regards to the detail of the finding. Corrective actions were timely and detailed. All auditors interviewed were well informed and knowledgeable of their functions.

As required by P&W Procedures, P&W QAM, internal audits are also required at the "Product Center" Level. The International Operations Product Center internal audit system it virtually non existent, no Product Center procedures, no schedule, and no audits. This resulted in a documented finding.

The General Machining Product Center was audited for the internal audit function and found to be in compliance.

As required by P&W Procedures, P&W, QAM, external audits (supplier) audits are required to be performed by "Product Centers". The International Operations Product Center has an unapproved procedure to cover this function. There is lack of discipline to the procedure covering lack of schedule and independence of auditor. This resulted in a documented finding.

Much discussion and questions were pointed at the Engineering Source Approval (ESA, see PWA Spec 370). This one issue crosses both the engineering and quality disciplines within both P&W and the FAA. I recommend FAA Engineering and Manufacturing revisit this process in order to clarify each others role in the cycle. Due to the complexity of this entire issue, ESA will be addressed in a separate briefing paper to be accomplished by Dan Kerman (ANE 140).

Flow charts for MRB, Supplier Control, Internal/External Audit, and Organizational are included in this package. It is important to review these charts in order to appreciate the complexity of the systems in question.

Time permitted a review of the Blue Etch Non-Destructive Test (NDT) process being applied to #1 Fan Hubs recalled as a result of AD 96-15-06.

All Pratt & Whitney employees were extreamly cooperative during the evaluation. All requests were responded to in a timely fashion and to the detail requested.

It should be noted that this is an intrim report and that open, undocumented items remain in the discussion stages between P&W and the FAA audit team.

Michael J. Lightbown Team Leader

PRELIMINARY WORKING DRAFT FOR REVIEW AND LISCUSSION PURPOSES OF LY

•	AC	SEP Record of		ACSEP No: 96NE055
J.S. Department of Transportation Federal Aviation Administration	Findin	gs / Observations		Project No: PE13NE-
Evaluation Criteria 15M1 Number:	Document: Quality Rev. 3/14/95.	ologies Pratt & Whitney Assurance Manual FAA-Approved 4/5/95	Applicable FAR Section:	<b>21.165</b>
FINDING  X System Safet		RVATION System :	Isolated [	FAR No.
Required Condition:  Item P17.2.1, paragraph four, requirements of the Product C  Item P17.2.2 of the same Sect	enters to have an audit fu	action that reports dire	ctly to their	Quality Manag
in accordance with documente				
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SECTION	P17

Page 1 of 3

## P17 INTERNAL QUALITY AUDITS PRIVATE

- P17.1 SCOPE This section establishes the policy for evaluating the Pratt & Whitney Quality Program, which includes; All Pratt & Whitney facilities, Suppliers, Partners, or other external sources whose activities may affect the quality of products or services furnished by Pratt & Whitney to its customers. The audit policy herein is designed to assess the effectiveness of the Quality Program, provide management with a key tool for achieving quality objectives and to monitor the effectiveness of corrective action taken.
- P17.2 POLICY Audit of the Pratt & Whitney Quality Program shall be conducted to verify whether quality activities and results comply with planned arrangements, determine the effectiveness of the Quality System and to verify that compliance with established policy, systems and procedures is maintained.
  - All Pract & Whitney Quality Program: policies, procedures, systems, processes, products and activities of Large Commercial Engines (LCE), Government Engines and Space Propulsion (GESP), Technical and Operations shall be subject to audit. Audits shall be performed in a manner to effectively assess existing conditions and operations.
- P17.2.1 RESPONSIBILITY FOR AUDITS Pratt & Whimey Business Units have the primary responsibility for verifying that systems and controls are in place to assure full compliance with their respective contractual and regulatory requirements. Audit activity of the Pratt & Whimey Quality Program is conducted at various levels. Audit shall be performed by personnel independent of the activity being audited.

Group Systems Assurance, reporting directly to the Vice President, Quality Assurance and Product Integrity, is responsible for overall Group Product Integrity audit. The extent of Group Systems Assurance activities extend to all Pratt & Whitney operating units.

Quality Operations and Audit, reporting directly to the Vice President, Quality Assurance and Product Integrity, is responsible for overall audit of the Product Centers and Product Delivery Center, Operations.

The Product Delivery Center and Product Centers shall have an audit function, reporting directly to their Quality Manager, that is responsible for audit of the Quality program activities within their respective Centers and at their suppliers.

Operations, International Product Quality, is responsible to the Vice President, Quality Assurance and Product Integrity, for audit of foreign Partners, Suppliers or other foreign sources.

The Office of Continuous Improvement, reporting directly to the Director of Total Quality Operations, for GESP, Office of Vice President, Propulsions LCE, and designated Technical personnel coordinate audit activity and resulting reports for their respective areas and suppliers.

Software quality assurance audits are conducted by Technical Unit, Management Information Systems, Software Quality Assurance, north/south. Reference sections P1 and P22 of this manual.

(9)



SECTION	<b>P</b> 17

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P17.2.1.1

MATERIALS CONTROL LABORATORY (MCL), NONDESTRUCTIVE TEST (NDT) — MCL NDT and/or Product Center NDT shall perform audits on systems used for Quality NDT, including personnel, to assure continued conformance with established procedures. NDT audits shall include:

Random audits of operating NDT systems and personnel for compliance to procedures and processes.

Over-inspection of items previously inspected by quality NDT personnel.

Review of inspection records for accuracy and completeness.

Review of audit and over-inspection trend data.

Materials Control Laboratory, Nondestructive Test, may use the Performance Review Institute (PRI) Third Party Accreditation Program for the purpose of providing audits of supplier quality NDT systems and NDT personnel performing inspections for conformance to P&W NDT Specifications per the Materials Control Laboratory, Manual.

Materials Control Laboratory, Nondestructive Test, shall ensure a requirement for immediate actification by the PRI Third Party Accreditation Program when a system breakdown occurs at any supplier. Materials Control Laboratory, Nondestructive Test, shall, as appropriate, review implementation of corrective/preventative action.

Pratt & Whitney suppliers using PRI Third Party Accreditation Audits must be certified by Materials Control Laboratory, Nondestructive Test, to the requirements of the applicable NDT Method Specification.

- P17.2.2
- PROCEDURES Audits, their planning, scheduling and follow-up activities to verify and record implementation and effectiveness of corrective actions taken, shall be carried out in accordance with documented procedures.
- P17.2.3
- SCHEDULE Audit shall be scheduled on the basis of the status and importance of the activity to be audited.
- P17.2.4
- PRODUCTS manufactured by Pratt & Whitney, and Its suppliers, partners, or other external sources shall be subject to over-inspection to verify the effectiveness of the quality program.
- P17.2.5
- AUDITS OF SUPPLIERS / PARTNERS shall be coordinated with the applicable Product Delivery Center, Product Center or GESP purchasing responsible personnel, and with program management personnel, when applicable.
- P17.2.6 NOTIFICATION shall be given to the appropriate Management/Supervision of Pratt & Whitney, Supplier, Partner, or other source prior to performing an audit.

Issued 03/14/95

Circ. No. 95P17A-1

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SECTION P17

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- P17.2.7 AUDIT RESULTS/FINDINGS shall be documented and shall be brought to the attention of the Management/Supervision responsible for the area/function/activity audited. Management/Supervision responsible for the area/function/activity audited shall take timely corrective action on deficiencies found by the audit.
- P17.2.8 FOLLOW-UP Follow-up audit shall verify and record the implementation and effectiveness of corrective action taken.
- P17.2.9 AUDIT REPORTS Summary reports of audit results and indicated trends shall be prepared quarterly. Report copies shall be sent to The Vice President, Quality Assurance and Product Integrity, cognizant Quality/Manufacturing Managers/Directors, Product/Product Delivery Center General Managers, Operations and GESP, and involved LCE and Technical management. Management shall use audit reports as as integral part of the overall management review system.
- P17.2.10 HARDWARE QUALITY AUDIT The applicable Product Center, Product Delivery Center or GESP is responsible for all hardware audit activity for raw materials, parts, assemblies and components. These audits/reviews are conducted on Pract & Whitney and supplier—manufactured items to ensure that the inherent design/reliability features were not compromised during manufacturing and test.
- P17.2.10.1 Audit of hardware shall be conducted in a manner that promotes compliance to specification, contract requirement and company policy. Supplier, Partner or other external source items are subject to audit at the source and/or upon receipt at Pratt & Whitney. Documented procedures will provide the necessary instructions. This independent audit/review identifies deficiencies and nonconformances and provides for prompt corrective action.
- P17.2.10.2 Quality audit of hardware may include Government participation. Performance of audit is subject to review by Government Representative.
- P17.2.11 JOINT AND/OR SPECIAL AUDITS When requested and agreed to by Management of the affected areas, auditors from one organizational area may perform audits for another organizational area or may perform audits jointly with auditors from other organizational areas. With approval of the Vice President, Quality Assurance and Product Integrity or Director, Total Quality Operations, as applicable, audits may be performed jointly with external or customer auditors.

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Circ. No. 95P17A-1



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I.S. Department of Transportation , ederal Aviation Administration		Observations		Project No: PE13NE-D
Criteria 10Q1 I Number:	Occument: Quality Assu: Rev. 3/14/95, FA/	es Pratt & Whitney rance Manual A-Approved 4/5/95	Applicable FAR. Section:	21.165
FINDING  X System Safety	No. 2 OBSERVA		solated [	FAR No.
Pratt & Whitney's Material Copart: This section establishes dito surveillance of suppliers con Materials, Processes, and Parts surveillance report and product	aties & procedures for MCL : apliance with the requirement. ). SME reports survey result	Supplier Metallurg s of P&W specifica s on Laboratory Co	ical Engineention PWA- control at So	rs (SME) with regar 300 (control of urce (LCS)
				:
Encountered Condition:			x	Discussed with Facility
Encountered Condition:  ME surveillance report record	s reviewed for:	· · · · · · · · · · · · · · · · · · ·	X	Discussed with Facility
ME surveillance report record	ls reviewed for: s, Paramount, CA, indicated r	o reports available		
ME surveillance report record  a. Carlton Forge Works		_	since Octo	ber 1995.
ME surveillance report record  a. Cariton Forge Works  b. Ladish Co., Inc., Cue	s, Paramount, CA, indicated related related report	s available for the	since Octo	ber 1995.
ME surveillance report record  a. Carlton Forge Works  b. Ladish Co., Inc., Cue  Note: Carlton Forge and Ladish	s, Paramount, CA, indicated relationships, WI, indicated no report to Co. have quarterly reporting	s available for the i	since Octo	ber 1995.
Carlton Forge Works	s, Paramount, CA, indicated relationships, WI, indicated no report to Co. have quarterly reporting	s available for the i	since Octo	ber 1995.

Rita Truax

Office Symbol

Date

NE-MISO-42

8/1/96

W Form 8100-6 (12-93)

Signature of Evaluator:



### MATERIALS CONTROL LABORATORY MANUAL

Section C-10
Page 1 of 5
Issued 12-30-51
Revised 11-30-95
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MCL Internal Procedures

#### SUPPLIER METALLURGICAL CONTROL AND SURVEILLANCE BY SUPPLIER QUALITY ASSURANCE

#### 1. SCOPE:

This section establishes duties and procedures for Materials Control Laboratory (MCL) Supplier Metallurgical Engineers (SME) with regard to surveillance of suppliers' compliance with the requirements of PWA 300, as amplified by MCL Manual Sections and Supplier Authorizations. Surveillance of Laboratory Control at Source (ICS) suppliers by Supplier Quality Assurance (SQA) is also addressed.

#### 2. DUTIES:

Survey laboratory controls at ICS suppliers and at qualified sources of chemical/metallurgical processing as follows:

- 2.1 Assure supplier complies with FWA 300, MCL Manual Section F-17, MCL Supplier Authorization, FWA specifications, and MCL Manuals F and Y sections as applicable.
- 2.2 Assure second tier sources used by ICS suppliers are capable of and qualified to perform the work required on PEW parts.
- 2.3 Report survey results, verify nonconformances and evaluate root causes, obtain written corrective action for nonconformances and verify implementation and effectiveness.
- 2.4 Review and approve manufacture of materials which require MCL source qualification.
- 2.5 SME is responsible to ensure that in-house laboratories submit yearly correlation test specimens per MCL Manual Section F-23.
- 2.6 Maintain surveillance of Nordestructive Testing (NDT) systems at P&W qualified NDT laboratories.

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### MATERIALS CONTROL LABORATORY MANUAL

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#### 3. PROCEDURE:

- 3.1 When ICS, Engineering Source Approval (ESA), or Source Qualification is requested, the SME initiates a survey of the supplier's ability to comply with applicable MCL Manual Sections. If survey (and a trial demonstration period for ICS) shows good results, MCL issues a Supplier Authorization (or a notification letter for Source Qualification) to supplier's Quality Control Manager, or Representative, to document agreed upon controls. MCL notifies requester and P&W divisions about new ICS supplier.
  - 3.1.1 SME performs surveillance of ICS supplier's laboratory controls to verify continued conformance to the requirements of MCL Manual Section F-17 at the following frequencies:
    - b. Finished Part Suppliers: Nonrotor once per 6 months
      Rotor (incl. mainshaft bearings) once per 2 months
      Packaging parts ("P" prefix) once per 12 months

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- 3.1.2 SME reports survey results on ICS Surveillance Report, MCL Form F-6897 and product specific check lists quarterly, yearly or after each visit, as applicable.
- 3.1.3 SME performs and reports an audit overinspection at least once per surveillance report period. SME chooses a part at final inspection and traces path from start to finish through all processing and testing to assure all requirements were met.



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2		ACSEP Record of		ACSEP No: 96NE055
S. Department of Transportation	, TG	indings / Observation		Project No:
.s. Department of Transportation ederal Aviation Administration	·	mamas / Onservanc		PE13NE-D
Evaluation		Technologies Pratt & Whit		
Criteria 10Q1 Number:		uality Assurance Manual V14/95, FAA-Approved 4/5/	FAR 95 Section:	<b>21.165</b>
FINDING		OBSERVATION	Same and the same of the same	
X System Safe	ty No. 3	System System	Isolated [	FAR No.
Required Condition: Pratt & Whitney's Quality As International Product Quality Integrity for audit of foreign follow-up activities shall be c by personnel independent of t	(IPQ) is responsible partners, suppliers or arried out in accorda the activity being and	to the Vice President, Q other foreign sources. A nce with documented pro- lited. IPQ Policy Statem	uality Assurand Audits, their placedures. Aud	ce and Product anning, scheduling and its shall be performed
will be conducted at appropri	ate four year interval	<u>S</u>		
Encountered Condition:			[ <u>x</u>	Discussed with Facility
Review of the IPQ resulted in	i the following:			
<ul> <li>a. The only existing proce</li> <li>Quality Assurance Publication</li> <li>b. All 1996 and some comfor suppliers/partners.</li> </ul>	ns Approval.			ersonnel responsible
c. No evidence of 1995 au	dit schodula			
d. Number of audits compresponsibility for 61 suppliers  e. • MTU, Germany, allia	partners.	5 (0); 1994 (5 includes 2	•	
• KHI, Japan, partner,	major rotating parts	- last audit January 1987.		;
<ul> <li>Techspace Aero, Belg August 1987 and October 19</li> </ul>		Netherlands, partners, n	najor rotating	parts - last audits
Attach: 1. P & W QA Manual Section 2. IPQ Statement No. 2 dtd 3. IPQ External Audit Sched 4. IPQ External Audit Sched	7/19/95 lule		٤	•
Signature of Evaluator:	<del></del>		Office Symbol	Date
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Rita Truax	w /	P N	E-MISO-42	8/1/96



SECTION

I of 3

### P17 INTERNAL QUALITY AUDITS

P17.1 SCOPE - This section establishes the policy for evaluating the Pratt & Whitney Quality Program, which includes; All Pratt & Whitney facilities, Suppliers, Partners, or other external sources whose activities may affect the quality of products or services furnished by Pratt & Whitney to its customers. The audit policy herein is designed to assess the effectiveness of the Quality Program, provide management with a key tool for achieving quality objectives and to monitor the effectiveness of corrective action taken.

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Operations, International Product Quality, is responsible to the Vice President, Quality Assurance and Product Integrity, for audit of foreign Partners, Suppliers or other foreign sources.

The Office of Continuous Improvement, reporting directly to the Director of Total Quality Operations, for GESP, Office of Vice President, Propulsions LCE, and designated Technical personnel coordinate audit activity and resulting reports for their respective areas and suppliers.

Software quality assurance audits are conducted by Technical Unit, Management Information Systems, Software Quality Assurance, north/south. Reference sections P1 and P22 of this manual.

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SECTION P17

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MATERIALS CONTROL LABORATORY (MCL), NONDESTRUCTIVE TEST (NDT) — MCL NDT and/or Product Center NDT shall perform audits on systems used for Quality NDT, including personnel, to assure continued conformance with established procedures. NDT audits shall include:

Random audits of operating NDT systems and personnel for compliance to procedures and processes.

Over-inspection of items previously inspected by quality NDT personnel.

Review of inspection records for accuracy and completeness.

Review of audit and over -inspection trend data.

Materials Control Laboratory, Nondestructive Test, may use the Performance Review Institute (PRI) Third Party Accreditation Program for the purpose of providing audits of supplier quality NDT systems and NDT personnel performing inspections for conformance to P&W NDT Specifications per the Materials Control Laboratory, Manual.

Materials Control Laboratory, Nondestructive Test, shall ensure a requirement for immediate notification by the PRI Third Party Accreditation Program when a system breakdown occurs at any supplier. Materials Control Laboratory, Nondestructive Test, shall, as appropriate, review implementation of corrective/preventative action.

Pratt & Whitney suppliers using PRI Third Party Accreditation Audits must be certified by Materials Control Laboratory, Nondestructive Test, to the requirements of the applicable NDT Method Specification.

- P17.2.2 PROCEDURES Audits, their planning, scheduling and follow—up activities to verify and record implementation and effectiveness of corrective actions taken, shall be carried out in accordance with documented procedures.
- P17.2.3 SCHEDULE Audit shall be scheduled on the basis of the status and importance of the activity to be audited.
- P17.2.4 PRODUCTS manufactured by Pratt & Whitney, and Its suppliers, partners, or other external sources shall be subject to over—inspection to verify the effectiveness of the quality program.
- P17.2.5 AUDITS OF SUPPLIERS / PARTNERS shall be coordinated with the applicable Product Delivery Center, Product Center or GESP purchasing responsible personnel, and with program management personnel, when applicable.
- P17.2.6 NOTIFICATION shall be given to the appropriate Management/Supervision of Pratt & Whitney, Supplier, Partner, or other source prior to performing an audit.

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SECTION P17

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- P17.2.7 AUDIT RESULTS/FINDINGS shall be documented and shall be brought to the attention of the Management/Supervision responsible for the area/function/activity audited. Management/Supervision responsible for the area/function/activity audited shall take timely corrective action on deficiencies found by the audit.
- P17.2.8 FOLLOW-UP Follow-up audit shall verify and record the implementation and effectiveness of corrective action taken
- P17.29 AUDIT REPORTS Summary reports of audit results and indicated trends shall be prepared quarterly. Report copies shall be sent to The Vice President, Quality Assurance and Product Integrity, cognizant Quality/Manufacturing Managers/Directors, Product/Product Delivery Center General Managers, Operations and GESP, and involved LCE and Technical management. Management shall use audit reports as as integral part of the overall management review system.
- P17.2.10 HARDWARE QUALITY AUDIT The applicable Product Center, Product Delivery Center or GESP is responsible for all hardware audit activity for raw materials, parts, assemblies and components. These audits/reviews are conducted on Pratt & Whitney and supplier—manufactured items to ensure that the inherent design/reliability features were not compromised during manufacturing and test.
- P17.2.10.1 Audit of hardware shall be conducted in a manner that promotes compliance to specification, contract requirement and company policy. Supplier, Partner or other external source items are subject to audit at the source and/or upon receipt at Pratt & Whitney. Documented procedures will provide the necessary instructions. This independent audit/review identifies deficiencies and nonconformances and provides for prompt corrective action.
- P17.2.10.2 Quality audit of hardware may include Government participation. Performance of audit is subject to review by Government Representative.
- P17.2.11 JOINT AND/OR SPECIAL AUDITS When requested and agreed to by Management of the affected areas, auditors from one organizational area may perform audits for another organizational area or may perform audits jointly with auditors from other organizational areas. With approval of the Vice President, Quality Assurance and Product Integrity or Director, Total Quality Operations, as applicable, audits may be performed jointly with external or customer auditors.

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"THIS DOCUMENT IS THE PROPERTY OF UNITED TECHNOLOGIES CORPORATION AND CONTAINS CONFIDENTIAL TECHNICAL, COMMERCIAL OR FINANCIAL INFORMATION. IT IS DELIVERED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE DISCLOSED OR AUPRODUCED IN WHOLE OR IN PART WITHOUT THE WRITTEN CONSEN. JE UNITED TECHNOLOGIES CORPORATION; AND THAT NO RIGHT IS JEAN! DISCLOSE OR REPRODUCE ANY INFORMATION CONTAINED IN SAID DOCUMENT, THIS RESTRICTION DOES NOT LIMIT THE RIGHT TO USE INFORMATION OSTAINED FROM ANOTHER SOURCE."

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\*Note: To be completed by MER/MET. Comments and recommendations by other approvers shall be supplied separately: MER/MET to be included in the final comments and disposition.

FEW FORM HART REY 11-44



VOLVO FLYGMOTOR AS SWEDEN		HUB FRONT	5000501	-
PROBLEM REQUIRED APPROVED (B.G., FORGING, MACHINES, BROACHING/INSPECT	Catang Costing)	Engine Masis JT80-200	Material Spec/Procuse Sp PWA 121	
Process Management (Inchrong reviews)	Original Submitted	Product		
Sescription of Process Revision Including Operation				
OP. NO 90 BROACHING 0-167053	INSPECT O-	167054 ARE REPLACED BY	7 0-168016 WITH F	OLLOWING
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#### PROCESS APPROVAL RECORD



VOLVO FLYGMOTOR AB SWEDEN		HUB		5000501/303201	
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#### PROCESS APPROVAL RECORD



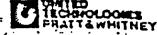
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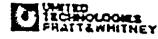




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### PROCESS APPROVAL RECORD



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Description of Process Revision Including Operation No. (If applic	cable): OP, NO:	60		
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\*Note: To be completed by MER/MET. Comments and recommendations by other approvers shall be supplied separate: MER/MET to be included in the final comments and disposition.

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## PRIVATE

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		ACSEP Record of	£		ACSEP No: 96NE055
	10		_		Project No:
J.S. Department of Transportation Federal Aviation Administration	·	indings / Observati	ons		PE13NE-D
Evaluation	Controlling United	Technologies Pratt & Whi	itney	Applicable	
Criteria 15M2		uality Assurance Manual		FAR	21.165
Number: FINDING	Rev. 3	/14/95, FAA-Approved 4/5 OBSERVATION	5/95	Section:	
System Safe	ty No	OBSERVATION System	XI	solated	FAR No. /
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Signature of Evaluator:	1/01		Office	Symbol	Date
Richard E. Jennings			AIF	R-230	8/1/96
AA Form 8100-6 (12-93)			·		

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( <b>2</b>		ACSEP Record	of	ACSEP No: 96NE055
J.S. Department of Transportation	F	indings / Observ		Project No:
Federal Aviation Administration			of comments	PE13NE-D
Evaluation Criteria 10Q5 Number:	Document: Q	Technologies Pratt & V uality Assurance Manu /14/95, FAA-Approved	al FAR	21.165
FINDING	245.7, 3	OBSERVATION	e Strongeren	
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Rita Truax			NE-MISO-42	<b>8</b> /1/96
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