Pengembangan Dan
Pemanfaatan Peralatan Produksi
Dalam Negeri Untuk Menunjang
Keselamatan Penerbangan

Wahana: Program N219
Focus Group Discussion, KeMenHub

Surabaya, 25 September 2019
Presented By: M. RIDLO AKBAR
Director Of Production
PT Dirgantara Indonesia (Persero)
Stake Holder In The Aircraft Development

It’s Required To Have The Same Strong Commitment, Synergy, Co-Operations And Commend Interest Among Stake Holder In Achieving The National Strategic Project
The Five (5) Major Certification Processes For The Model N219 Airplanes

1. N219 Type Certification CASR Part 21 Subpart-B
2. N219 Production Under Type Certificate CASR Part 21 Subpart-F
3. N219 Production Under Production Certificate CASR Part 21 Subpart-G
4. N219 Airworthiness Certification CASR Part 21 Subpart-H
5. N219 Instruction For Continued Airworthiness CASR Part 23 App.G
Typical Aircraft Development Major Steps

- Conceptual Design
- Preliminary Design
- Detail Design
- Prototype Construction
- Inspections and Test
- Type Certification
- Aircraft Continuous Safe Operation
- Further Aircraft Development Modification

This is Typical Aircraft Development Process Life Cycle

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1. Using DGCA Approved Design Organization
   • Qualified Personnel's
     - Design Engineers
     - Certification Verification Engineers
     - Airworthiness Officers
   • Approved Design Organization Manual/Handbook
   • Approved Design Means, Including Laboratories

2. Using DGCA Approved Production Organization
   • Qualified Personnel's
     - Manufacturing/Production Engineers
     - Detail Part Manufacturing Operators
     - Assemblers, Installers, Testers
     - Quality Inspectors
   • Approved Quality Management System
   • Approved Manufacturing/Production Facilities
3. Using Approved Aeronautical Products
   • Approved Class#1 Products – Engines & Propellers
   • Approved Equipments
   • Approved Standard Parts & Consumables

4. Using Approved Manufacturing & Assy Processes
   • Sheet Metal Forming
   • Machining & High-Speed-Machining
   • Special Processes
   • Bonding Composites
   • Structure Component Assemblies
   • Assembly Shops – Electrical, Mechanical, Avionics, Powerplant
   • Final Assembly Lines
   • Flight Line Operations
5. Using Configuration Management Systems

- Engineering Product Definitions – EBOM
- Manufacturing Bill Of Materials – MBOM
- Built Records
- Design-Change-Controls
- Non-Conforming-Controls

6. In-House-Product-Development

- Wind Shields
- Main & Nose Landing Gears
- Engine Mounts
- Cockpit-Instrument-Lighted-Panels
- Passenger Seats

NOTE: To Develop These Products, It’s Required, Both, Product Qualification And Supplier Qualification Processes
6. In-House-Product-Development (Cont’d)

- It’s Required Strategizing In Term Of Product Development Cost And Time, Since The Aircraft (Under CASR Part 23) Certification Period Is Only Given For 3 Years While The Development Of Both Products & Suppliers May Take Longer

- The Development Of Both In-House Products & Suppliers May Require Such Of Investment, e.g. Human Resources, Development Concept – Method – Std. Procedures – Quality System, Facilities & Equipment & Inspection/Test Means

- It’s Suggested That The Development Of Both In-House Products & Suppliers Has To Be Independently Managed, Not Directly Be Linked To The Aircraft Development
1. N219 Potential

- Component Potential To Be Manufactured Locally With Imported Material.
- Component Potential To Be Manufactured Locally.
- Component Can Not Be Locally Manufactured *(at the moment)*.

Based on Survey by PT. Surveyor Indonesia, Aug 16th, 2019, Rate Of TKDN For N219 is 44.69%
Development of TKDN from PTDI Product (2)

2. TKDN of Other PTDI Products

HELICOPTER BELL 412
TKDN 17,31 %

CN235-220M
TKDN 38,74 %

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25 September 2019
3. Involvement of Local Industry

- INACOM (Indonesian Aircraft Component Manufacturer Association) Is Partnering With PTDI On Collaboration Scheme As “Extended-Shop”.
- Some of PTDI product has been manufactured by INACOM and supported by “Balai Industri” and Research Institutions.
Surabaya, 25 September 2019

By M. Ridlo Akbar

Director Of Production

PT Dirgantara Indonesia (Persero)

N219 Airplane

5-Major Certification Requirements & Compliances
The Five (5) Major Certification Processes For The Model N219 Airplanes

(1). N219 Type Certification CASR Part 21 Subpart-F

(2). N219 Production Under Type Certificate CASR Part 21 Subpart-G

(3). N219 Production Under Production Certificate CASR Part 21 Subpart-H

(4). N219 Airworthiness Certification CASR Part 21 Subpart-H

(5). N219 Instruction For Continued Airworthiness CASR Part 23 App.G

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N219 Type Certification – DGCA Requirements

1. N219 Type Certification (#1)

CASA 21.17 Designation Of Applicable Regulations

CASA 21.50 Instruction For Continued Airworth

CASA 21.31 Type Design Data


CASA 21.33 Inspection And Test

CASA 21.53 Statement Of Conformity

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N219 Type Certification – PT.DI Compliances

1. N219 Type Certifications (#2)

Application For Type Certificate
- N219 Application Letters

Applicable Regulations
- N219 Certification Basis
- N219 Compliance Check List

Type Design Data
- N219 Applicable Draw & Spec
- N219 Certification Docs/Substantiations
- N219 Aircraft Limitations

Statement Of Conformity
- N219 CIP&ARC For Purchased Items
- N219 CIP&SOC For Detail Part Mfg
- N219 CIP&SOC For Component And Assy
- N219 CIP&SOC For FAL & Delivery Center

Flight Test Pilot & FT-Calibrations
- N219 Flight Test Pilots & Engineers License
- N219 FTIS Installation & Inspection Reports
- N219 FTIS Calibration Test Reports
- N219 FTIS Calibration Verification Reports

Instruction For Continued Airworthiness
- N219 Airworthiness Limitation Items
- N219 Certification Maintenance Rec'ment
- N219 Airworth Limitation Section/AMM Ch.5

Inspection And Test
- N219 Laboratory Testing
- N219 Aircraft Ground Testing
- N219 Aircraft Flight Testing
- N219 Simulation

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2. N219 Production Under TC (#1)

N219 Production Under TC – DGCA Requirements

N219 Production Under Type Certificate

N219 Type Certifications

CASR Part 21 Section 21.123 General Requirements

CASR Part 21 Section 21.127 Testing: Aircraft

CASR Part 21 Section 21.130 Statement Of Conformity

CASR Part 21 Subpart-F “Production Under Type Certificate”

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N219 Production Under TC – PT.DI Compliances

**PT.DI Organizations**
- PT.DI Organization Structures
- PT.DI Assigned Responsible Key-Persons
- PT.DI Organization Charters
- PT.DI Business Processes

**N219 Statement Of Conformity**
- N219 CIP&ARC For Purchased Items
- N219 CIP&SOC For Detail Part Mfg
- N219 CIP&SOC For Component And Assy
- N219 CIP&SOC For FAL & Delivery Center

**N219 Series Prod Quality Syst**
- Design Data Control
- Supplier Control
- Manufacturing Process Control
- Inspection And Testing
- Nonconforming Product Control
- Corrective/Preventive Actions
- Handling & Storage
- Control Of Quality Records
- Internal Audit
- In-Service Feedback
- Quality Escape

**N219 Production Flight Testing**
- N219 Production Flight Test Procedures
- N219 Production Flight Check-Off-Forms
- N219 Production Flight Test Reports

**N219 Quality Manual/Plan**
- Manuals Describing Quality System
  - Quality Manuals, In Bhs Indonesia & English
  - Quality Manuals, Accessible By The DGCA

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3. N219 Production Under PC (#1)

N219 Production Under PC – DGCA Requirements
N219 Production Under PC – PT.DI Compliances

**PT.DI Organizations**
- PT.DI Organization Structures
- PT.DI Assigned Responsible Key-Persons
- PT.DI Organization Charters
- PT.DI Business Processes

**PT.DI Quality System**
- Design Data Control; Supplier Control
- Manufacturing Process Control; Inspection And Testing; Nonconforming Product Control; Corrective/ Preventive Actions;
- Handling & Storage; Control Of Quality Records; Internal Audit; In-Service-Feedback; Quality Escape

**PT.DI Inspection & Test**
- PT.DI Allows The DGCA To Perform Inspection & Witness Test, For:
  - Quality Systems, Facilities, Technical Data, And Product
  - Access Any Inspection & Test In Supplier Facilities

**PT.DI Responsibility**
- Maintaining Approved Quality System
- Ensuring The Manufactured Product Is In Conformity With Approved Type Design And Is In Condition For Safe Operations

**PT.DI Quality Manual**
- Manuals Describing Quality System
  - Quality Manuals, In Bhs Indonesia & English
  - Quality Manuals, Accessable By The DGCA

**Amendment Of Production Certificate**
- PT.DI Will Apply For An Amendment Of PC & Its PLR When PT.DI Adds A New Type Of Product(s) To Be Manufactured (e.g. Model N219 Airplanes)

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4. N219 Airworthiness Certificate (#1)

N219 Airworth Certificates – DGCA Requirements

- CASR Section 21.183(e) Conformance With The Noise Requirements CASR Part 36
- CASR Part 21 Subpart-H “Airworthiness Certificate”
- CASR Section 21.183(g) Conformance With The Fuel Venting & Exhaust Emission CASR Part 34
N219 Airworth Certificates – PT.DI Compliances

**Conformance With The Airworthiness Standards, CASR Part 23**
PT.DI Provides The DGCA With A Such Of Evidence Describing The Type Design Of The Model N219 Airplane Complies With The CASR Part 23

**Conformance With The Fuel Venting & Smoke Emission, CASR Part 34**
PT.DI Provides The DGCA With A Such Of Evidence Describing The Type Design Of The Model N219 Airplane Complies With The CASR Part 34

**Conformance With The Noise Req’ts, CASR Part 36**
PT.DI Provides The DGCA With A Such Of Evidence Describing The Type Design Of The Model N219 Airplane Complies With The CASR Part 36

**PT.DI Documentations**
- Application For Standard. C of A
- ASN – Aircraft Status Notice (Built Rcd)
- W&B – Weight & Balance Reports
- Swing Compass Reports
- Aircraft Ground Run Reports

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5. N219 Instruction For Contd Airworth (#1)

N219 Instruct For Contd Airwoth (ICA) – DGCA Requirements
5. N219 Instruction For Contd Airworth (#2)

N219 Instruct For Contd Airwoth (ICA) – PTDI Compliances

**General & Format**
- The ICA For Each Airplane Must Include ICA For Engine And Propeller
- This Must Include The Information Essential For ICA The Airplane
- The ICA Must Be In The Form Of Manual

**Contents**
- Airplane Maintenance Manual Or Section;
- Maintenance Instructions;
- Diagram Of Structural Access;
- Details For Inspection Techniques;
- Information Needed To Apply Protective Treatment;
- Data Related To All Fasteners & Torque Values;
- List Of Special Tools;
- Electrical Loads;
- Methods Of Balancing Flight Controls;
- Special Repair

**Airworthiness Limitation Section**
- A Specific Section Of The Aircraft Maintenance Manual, Titled Airworthiness Limitation Section
- Mandatory Replacement Time; Structural Inspection Intervals; Inspection Procedures

**PT.DI Documentations**
- N219 Airworthiness Limitation Items
- N219 Certification Maintenance Rec'ment
- N219 Airworth Limitation Section/AMM Ch.5
- N219 Structural Repair Manual
- N219 Wiring Diagram Manual
N219 Assigned Responsibility Of The 5-Major Certifications

- **Type Certification** [CASR 21 Subpart B]  
  **RESP:** DT

- **Production Under Type Certificate** [CASR 21 Subpart F]  
  **RESP:** DP

- **Production Under Prod Certificate** [CASR 21 Subpart G]  
  **RESP:** DP

- **Airworth Certificate** [CASR 21 Subpart H]  
  **RESP:** DP

- **Continued Airworth** [CASR 21 Subpart B & CASR 23 App.G]  
  **RESP:** DT
Terima Kasih

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