

# ***NORWAY***

## ***Industrial Participation***



*25 January 2007*

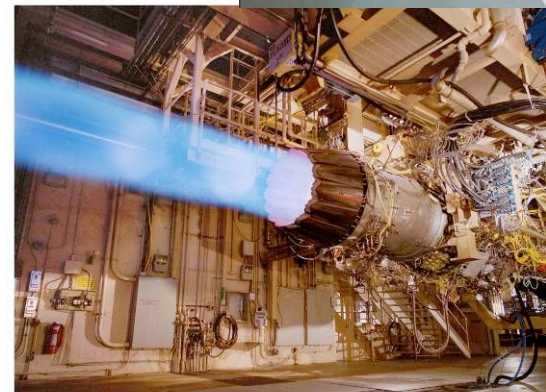




# Agenda Topics



- Overview
- Basis of Estimates
- LM Aero & JSF Team Projects
  - *Current Contracted & Committed*
  - *Additional Production Related*
  - *Global Sustainment*
- Pratt & Whitney Projects
- GE/RR FET Projects
- Summary





## Plan Overview



- **LM Aero, Northrop Grumman, Pratt & Whitney and GE/RR FET Industrial Participation Plans Support...**
  - *Norway's Continued Participation in SDD*
  - *Production, Sustainment and Follow-On Development Phase*
- **Plan is Evolving**
  - *Project Value Estimates will Evolve as Program Matures*
  - *Additional Projects will Continue to be Identified*
    - Even After PSFD MOU Signature
- **Plan Addresses Norway's Strategic Technology Imperatives**
  - *38 Projects to Date,*
    - Derived from 2,629 Aircraft Business Base
    - Over 30+ Years of High Technology Contracts

***Far Surpasses a Typical 48 A/C Traditional Offset***



## ***Best Value Industrial Model***



- **F-35 Industrial Model**
  - ***All Direct Work on F-35, F-135 and F-136 Engines***
  - ***Contracts Already in Place 10 Years Prior to First Norwegian F-35 Planned Delivery***
  - ***Extends Through Life of Program***
  - ***No Multipliers***
- **Tailored Opportunities to Industry Capabilities**
- **Opportunities For Exceeding Potential Procurement Value**



# MoD Strategic Technology Initiatives



- **Composites Technology Insertion/Development**
  - ***Lockheed Martin Team Working with Norwegian Government and Industry***
    - Composites Technology and Manufacturing Expertise
    - Development of a Norwegian Composites Center of Excellence
- **Joint Strike Missile (JSM) Marketing**
  - ***LM Missiles and Fire Control, LM Aero and Kongsberg***
    - Joint Marketing Agreement
    - Marketing the JSM to the US Services and Other F-35 Partners
- **PLCS Software Integration**
  - ***With Autonomic Logistics Information System***
  - ***Supporting Norwegian Non-Financial Contribution***



## Norway - IP Business Base



- **Norway's Best Value Industrial Opportunities Derive from 2,629 Aircraft Business Base**
  - ***2581 US/UK LRIP/ Full Rate Production Aircraft***
  - ***48 Norway Aircraft***
- **Full Spectrum of Potential Participation**
  - ***Air Vehicle and Systems***
  - ***Electronics***
  - ***Sustainment***
  - ***Follow-on Development***





# Opportunity Development



- **Production, Sustainment and Follow-On Development**
  - ***Forecasts of Opportunities through Full Rate Production Period***
    - Extended Business From SDD
      - *Reserved for Norwegian Companies deemed “Best Value”*
    - *Competitive Strategic Sourcing Opportunities*
      - *Exclusively Reserved for Norway*
      - *Norway Only Competitions*
    - *New Competitive Opportunities*
      - *Open Competitions to Which Norwegian Companies will be Invited*
  - ***New Opportunities May Develop – Add to Norway IP Plan***
    - 1st Tier Supplier Second Sourcing
    - Strategic Sourcing
    - New Competitions



# Multiple Opportunities for Norwegian Defense Industry

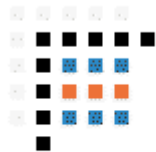


KONGSBERG



DNV

FLEXTRONICS



SEFAR



VOLVO AERO



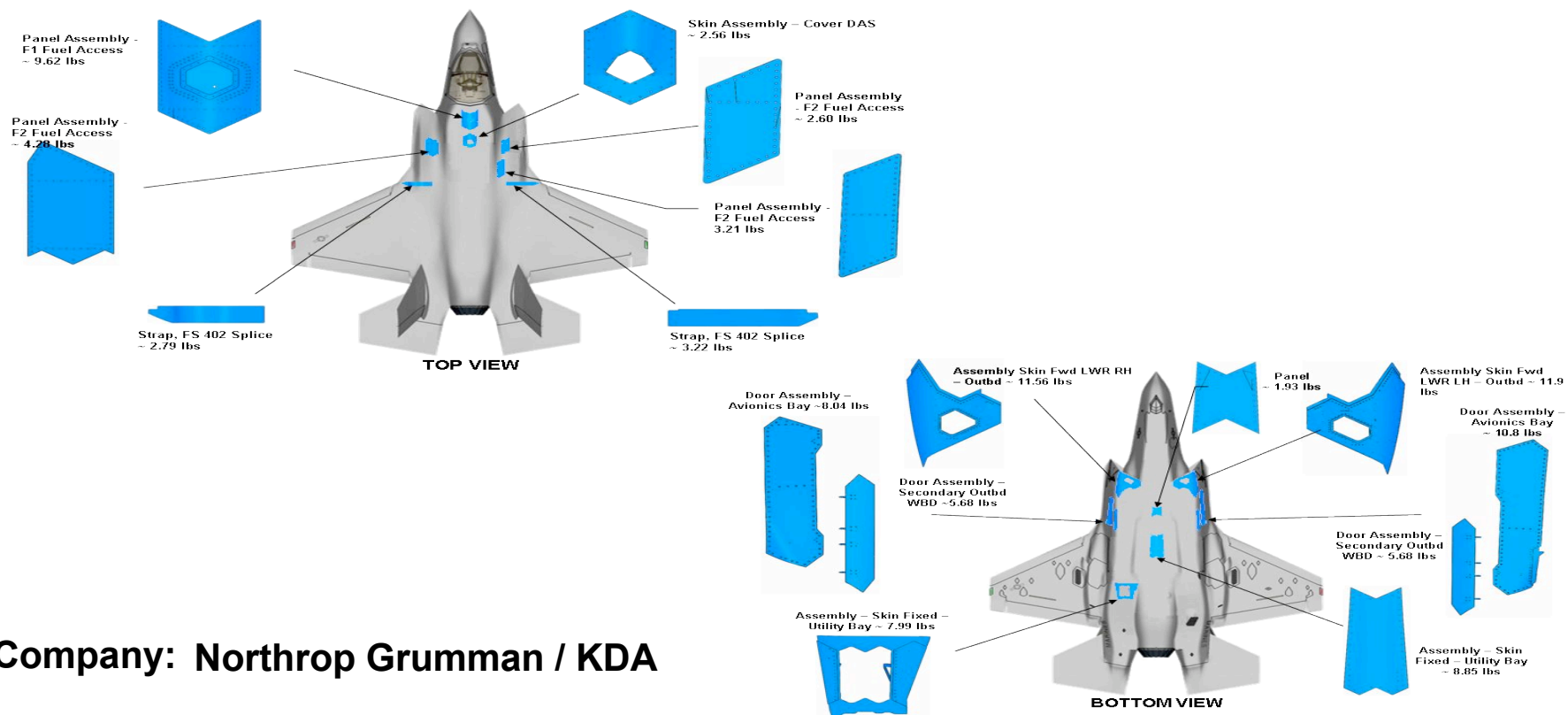




# Extension Of Northrop Grumman Long Term Agreement (LTA) for Composites Production



- Extends Existing 2005 LTA Through year 2027
  - Under Same Terms & Conditions
- 14 Composites Build Packages



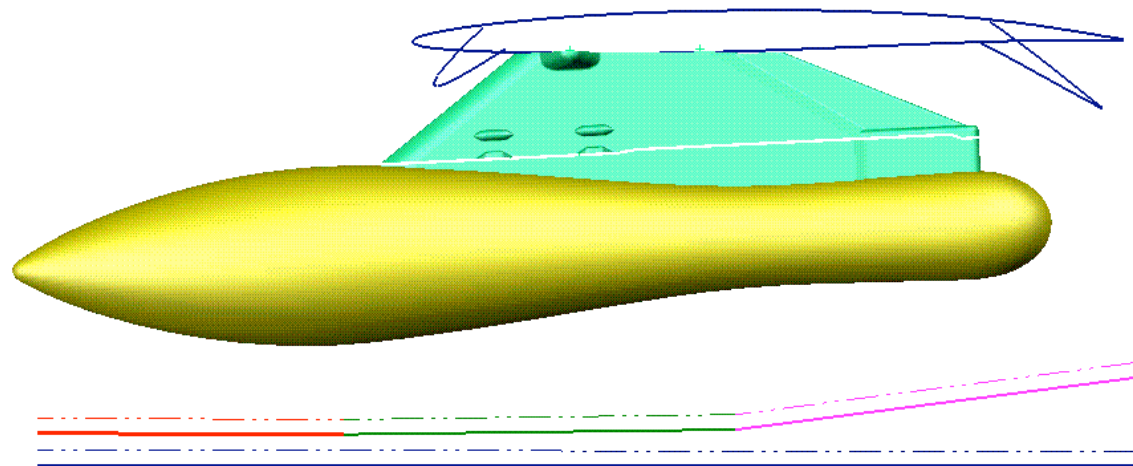
**Company: Northrop Grumman / KDA**



## *External Fuel Tanks*



- Nov 2004 LOI - Hexagon Selected as a Second Tier Supplier
- Primary Source Competition Planned 1st QTR 2007
  - Will require all Tier 1 Suppliers to Utilize Hexagon as Source for Composites



**Company: US-TBD / Hexagon**

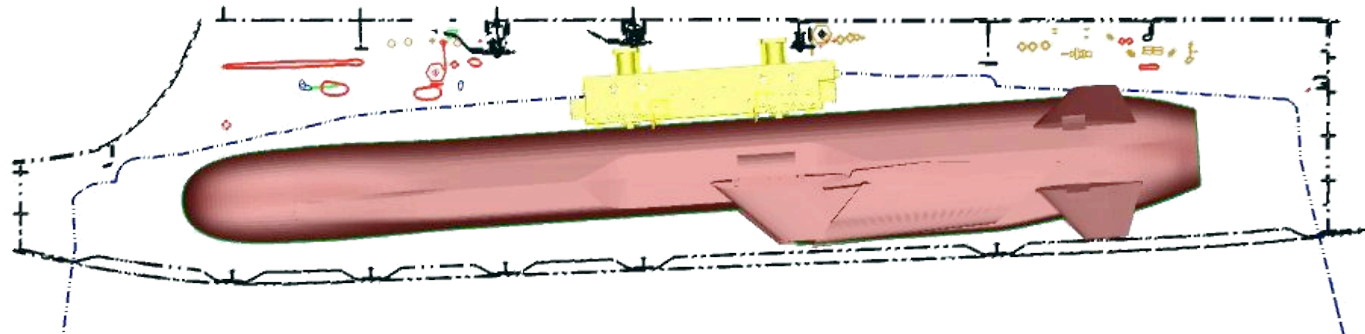


## ***Naval Strike Missile - Phase II***



- **Phase 1 (Physical Integration) – Complete**
- **Phase 2 Contract (JPO to LM) Received**
  - **Mission Systems Integration**
  - **KDA is subcontractor for Study**

***NSM on Station 4 – CTOL***



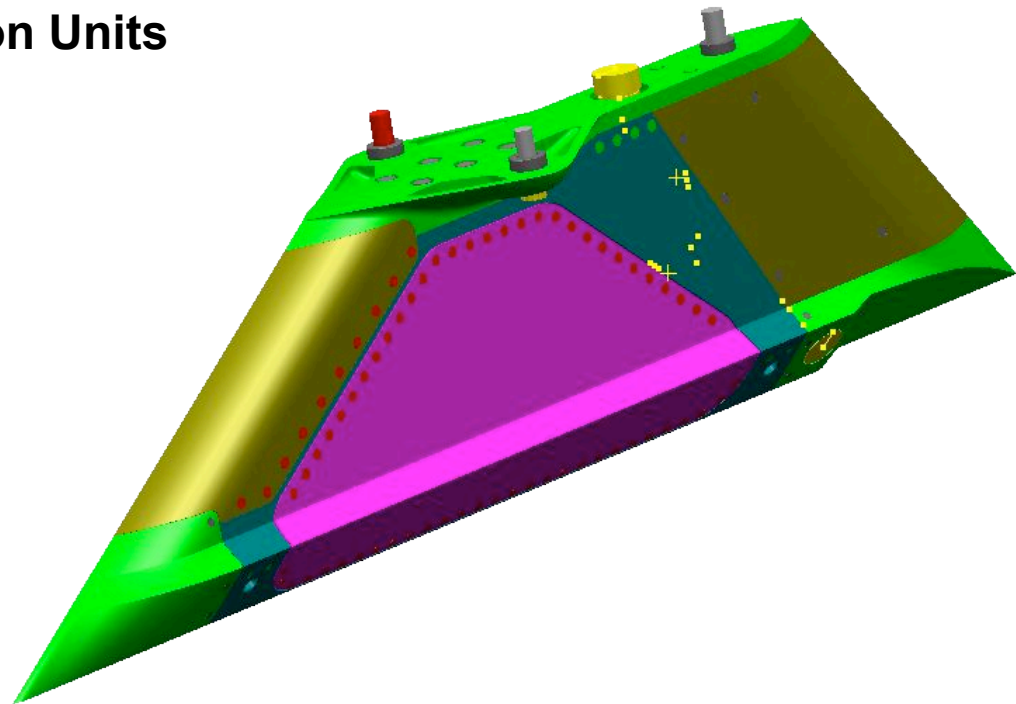
**Company: LM Aero / KDA**



# *Air to Air Pylons*



- **Marvin Engineering-KDA**
  - **MOU and Letter Contract**
    - **SDD Test Units**
    - **LRIP and Production Units**
- **SDD Purchase Order**
- **2 Pylons per Aircraft**



**Company: Marvin Engineering / KDA**



# ***ICP Backplane Assembly***



- **Assembly of Backplane for Integrated Core Processor (ICP)**
  - SDD
  - LRIP
  - FRP Production



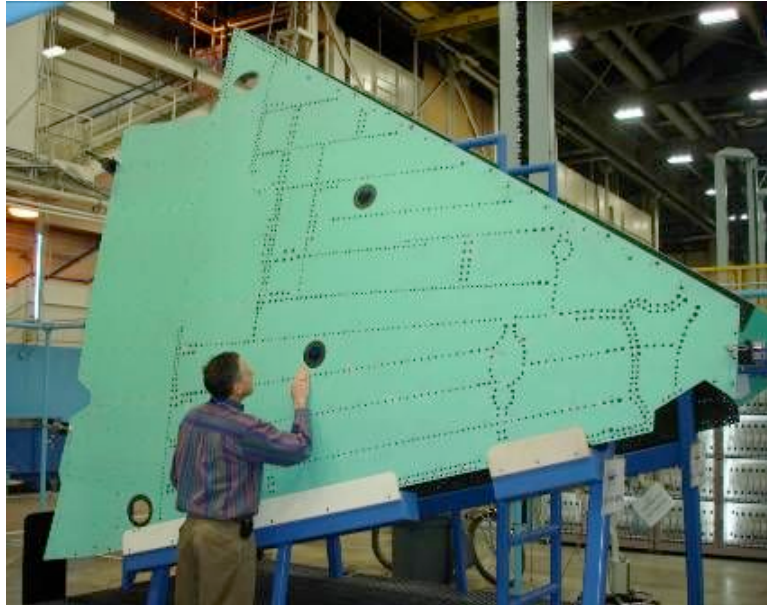
**Company: LM MS2 / Kitron**



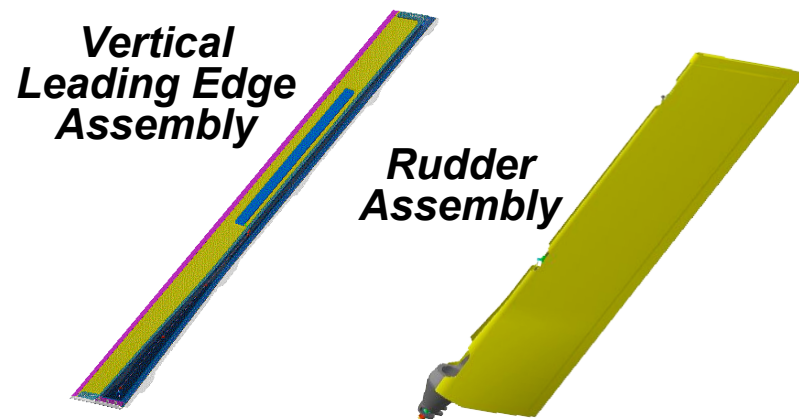




# Composite Wing Skins (Upper) and Conventional Edges



- **LM Aero and KDA have signed an MOU**
  - KDA to manufacture 150 composite wing skins as a competitive strategic source
  - KDA compete on remaining production lots based on their capacity
- **KDA – LM Aero have signed an MOU**
  - KDA has won the opportunity to manufacture the Rudder and Vertical Fin Leading Edge portions of Conventional Edges



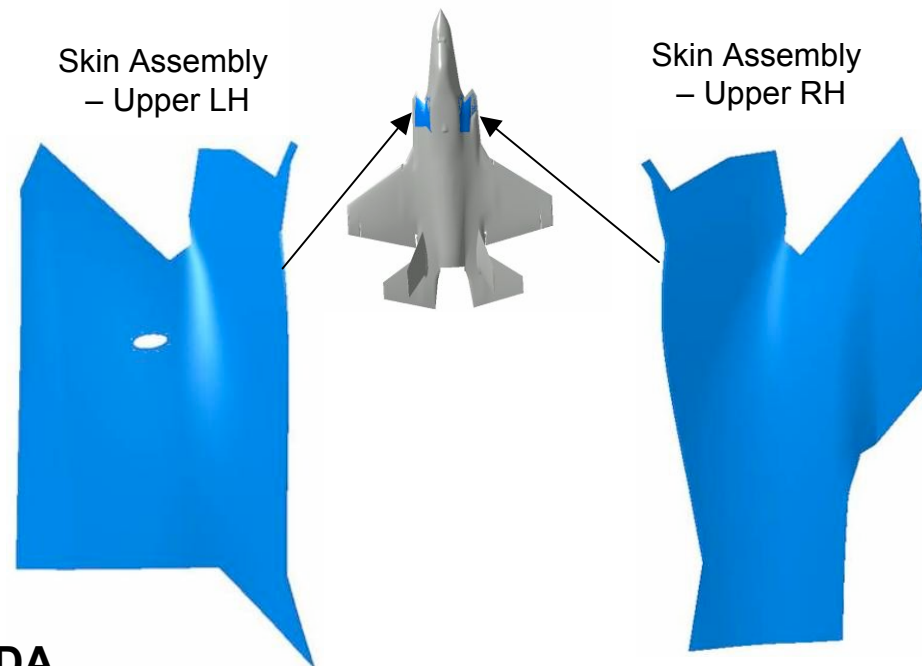


# ***Additional Fiber Placed Upper Skins (STOVL)***



- **Fiber-Placed STOVL Upper Skins Through 2036**
- **Add to Existing Northrop Grumman Long Term Agreement**

## **STOVL Configuration**



**Company: Northrop Grumman / KDA**



# ***Establish Norwegian Composites Center of Excellence***



- **Funding of Technical Assistance and Composites Qualification Toward Establishment Of a Composites Center Of Excellence**
- **Supplement Government Of Norway Investment**





# ***Pilot Flight Equipment - Production***



- **Second Source for Pilot Flight Equipment**
- **Chem/Bio Protection**
- **Interfaces for Breathing Apparatus**
- **Winning Norwegian Company TBD**
  - ***Support of Pilot Flight Equipment***
  - ***Replenishment***
    - **Re-Manufacture**
    - **New Manufacture**







## ***Additional Norwegian Industry Projects***



**Training – Courseware Development**

**EW Test Equipment – SDD Only**

**CNI – Low Band Pre-Selector Switch**

**ICP Fiber Channel Switch**

**Time Frequency Reference Module**

**LM Aero Machined Parts**

**EHAS Power Input Filter**

**Input Filter Housing**

**Casting and Machining**

**NGC / Applica**

**BAE Systems IEWS / Kitron**

**NG ST / Flextronics / Kitron**

**LM MS2 / Vmetro / Data Respons**

**NG ST / Kitron / Flextronics**

**LM Aero / Natech**

**Moog / Micro Circuit**

**Moog / Micro Circuit**

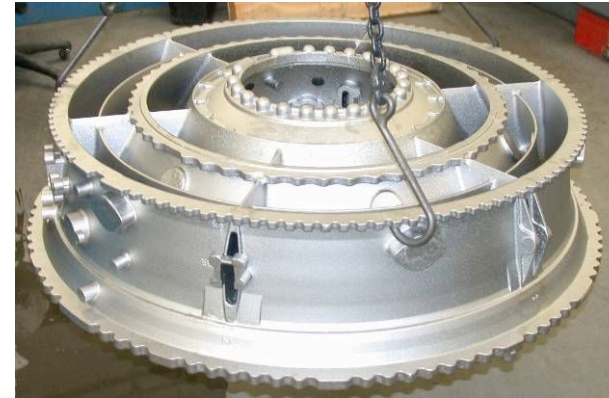
**NG ES / TBD**



## ***F135 Industrial Participation***



**Volvo Aero Norge**  
• F119/F135 LPT Shaft

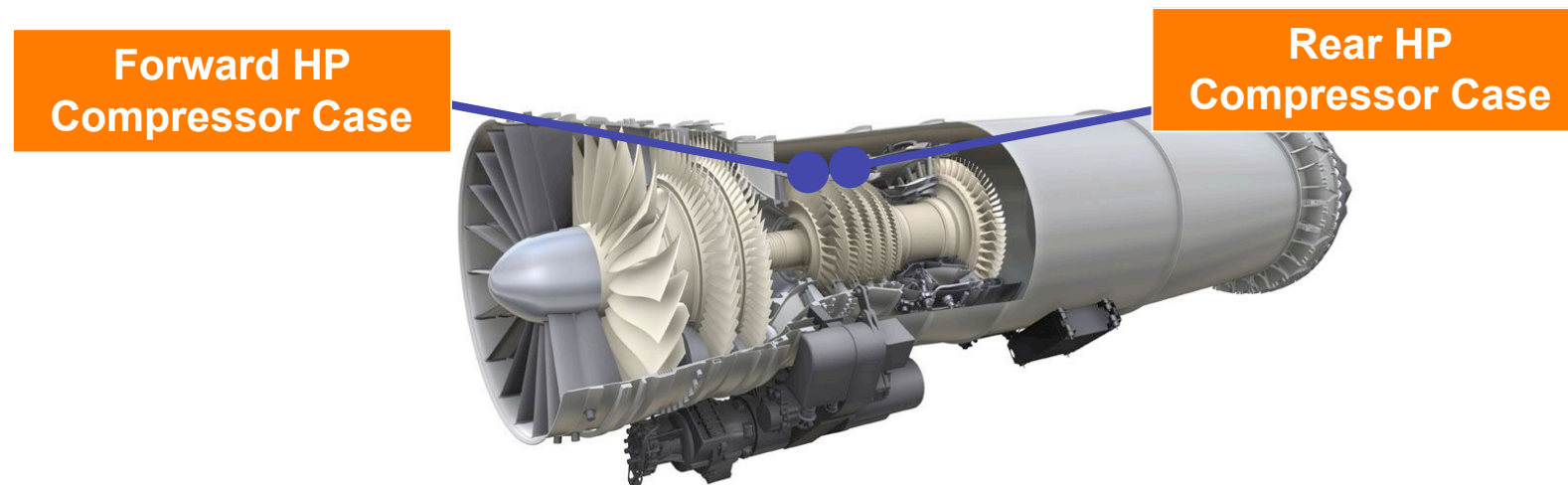


**Volvo Aero Norge**  
• Intermediate Case



# SDD Supplier Selection

- Early supplier involvement: F136 Seminars held in the UK with Norwegian Industry
- Knowledge of Norwegian industry from other programs used to identify candidates
- Confederation of Business & Industry approached to suggest further candidates
- Seminars helped FET and Industry match capabilities with work on offer
- To date, Volvo Aero Norge selected to manufacture:



- Significant opportunities remain for SDD, LRIP and Production:
  - Manufacturing
  - Engineering
  - Knowledge Programs
  - Sustainment



# Norwegian Industrial Plan Summary



- **Preliminary Plan for Norway: \$4.5+ B (Then Year Dollars)**
  - *38 LM Aero JSF Team Projects*
  - *30+ Years of High Technology Contracts for Norwegian Industry*
- **Plan Still Evolving – New Projects will be Added Over Time**
- **Technology Initiatives Address Norwegian Strategic Imperatives**
  - *Composites Center of Excellence*
  - *JSM Marketing in U.S.*
  - *PLCS Software Integration*
- **Far Surpasses Typical 48 Aircraft Traditional Offset Program**
  - *Quality/Quantity of Work*
  - *Timing*