

Oceaneering Space Systems

TPS Experience and Capabilities



TPS Experience and Past Performance

Shuttle SRB Thermal Curtains

- Description: Build To Print
- Customer: USBI/USA/NASA
- Quantity: 97 Flight Sets
(8000+ Segments)



Titan IVB Heat Shields

- Description: Design, Qualification, and Production
- Customer: Hercules/ATK
- Quantity: 21 Flight Sets (160 Segments)



TPS Experience and Past Performance

Atlas IIAS Heat Shields

- Description: Design, Qualification and Production
- Customer: General Dynamics/
Lockheed Martin
- Quantity: 5 Flight Sets
(20 Thermal Boots)



Atlas IIA Heat Shields

- Description: Build To Print
- Customer: Lockheed Martin
- Quantity: 43 Flight Sets
(129 Heat Shields)



TPS Experience and Past Performance

Delta II/III Heat Shields

- Description: Build To Print
- Customer: McDonnell Douglas/
Boeing
- Quantity: 42 Flight Sets
(84 Heat Shields)



Delta IV GEM-60 Thermal Boots

- Description: Design, Qualification,
and Production
- Customer: ATK
- Quantity: 65 Flight Sets
(130 Thermal Boots)



TPS Experience and Past Performance

Castor 120 Heat Shield

- Description: Design and Qualification
- Customer: ATK
- Quantity: N/A



X-34 Heat Shields

- Description: Design, Qualification, and Production
- Customer: Orbital
- Quantity: 2 Flight Sets



TPS Experience and Past Performance

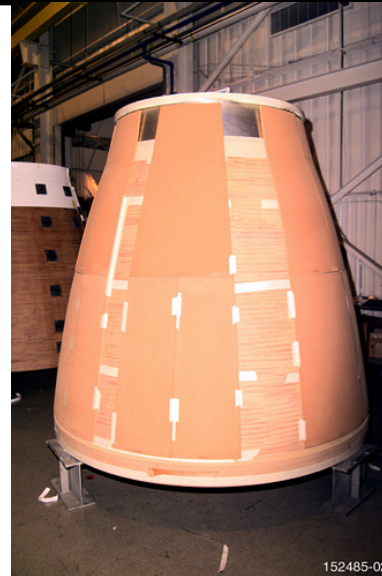
Delta IV External Propulsion Line Seal

- Description: Design, Qualification, Production
- Customer: Boeing
- Quantity: 17 Flight Sets



TPS Experience and Past Performance

- Delta IV RS 68 Nozzle TPS
 - Description: Ablative Cork (molded)
 - Customer: ATK-Thiokol
 - Quantity: 20 Flight Sets



- Delta IV Common Core Ablative Cork TPS
 - Description: Ablative Cork (molded)
 - Customer: Boeing
 - Quantity: 10 Flight Sets



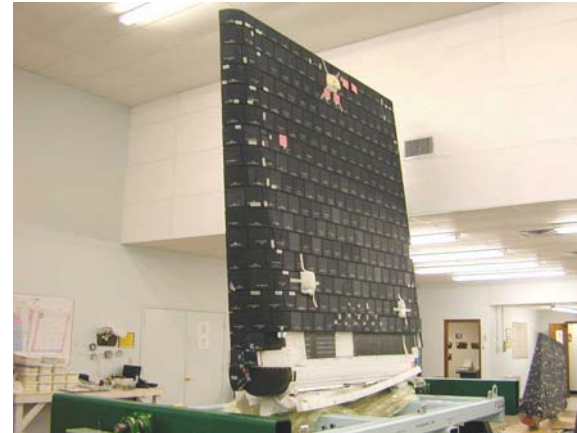
TPS Experience and Past Performance

- X-34
 - Description: Design, Analysis, Manufacturing of Flexible Insulation and Thermal Seals
 - Customer: Orbital Sciences Corp.
 - Quantity: 2 Flight Sets



TPS Experience and Past Performance

- X-33
 - Description: Installation of Ceramic Tiles and Thermal Barriers.
Manufacture of Replacement Ceramic Tiles
 - Customer: Lockheed Martin
 - Quantity: 1 Flight Set



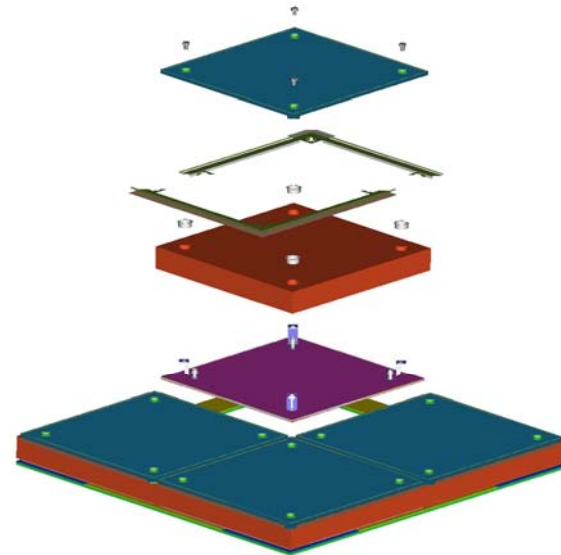
TPS Experience and Past Performance

- X-38
 - Description: Design, Manufacture, Body Flap Insulation Blanket
 - Customer: NASA JSC
 - Quantity: Multiple Test and Development Articles



TPS Experience and Past Performance

- Metallic TPS
 - Description: Design, Manufacture, and Testing
 - Customers: NASA MSFC/LaRC, Northrop Grumman, Lockheed Martin
 - Quantity: Test and Development Articles



TPS Experience and Past Performance

- K1
 - Description: Design of Flexible Insulation Blankets, Ceramic Tiles, and Thermal Barriers
 - Customer: Kistler Aerospace Corporation

