

Ken Davidian  
FAA Office of Commercial Space  
Transportation (AST-100)  
Room 331  
800 Independence Ave SW  
Washington, DC 20591

January 6, 2009

## **Welcome Letter**

Dear Tour Member,

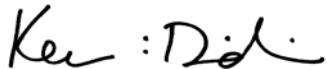
I would like to thank you for your interest in participating in the AIAA Commercial Space Group (CSG) Cape Canaveral Commercial Space Tour!

Our goal is to make today's activities as informative and interesting as possible. Your active participation will help us meet your needs and, therefore, maximize the benefits to you.

If there is any way that we can help make your experience better and more worthwhile, please don't hesitate to let us know.

Thank you, again, and we look forward to spending the day with you!

Sincerely,



Ken Davidian  
Chair, Commercial Space Group  
American Institute of Aeronautics and  
Astronautics, and  
EFP Program Lead, FAA Office of  
Commercial Space Transportation  
Washington DC 20591  
Tel: 202-267-7214  
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Web: [www.aiaa.org](http://www.aiaa.org)

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## AIAA Commercial Space Group

AIAA is actively engaged in expanding its outreach to the commercial and entrepreneurial space community.

The purpose of the AIAA Commercial Space Group (CSG) is to expose AIAA members and aerospace professionals to the different aspects, sectors, and people of commercial space, including (but not limited to):

- launch vehicles
- infrastructure
- telecommunications
- remote sensing
- ground stations
- PNT (position, navigation, and timing, aka GPS)
- other niche markets (e.g. small satellites, etc.)

The CSG is performing two primary functions: organizing activities, and discussing (and documenting) various topics of interest.

The first function includes activities such as conference sessions, meetings, site tours, communication tools, and sponsorship.

The second function, discussing various topics, involves developing informational papers on topics from multiple perspectives.

For more information, please contact Ken Davidian, or visit the AIAA CSG page on the Commercial Space Wiki on the web at the following URL: [commercialspace.pbwiki.com/AIAA-Commercial-Space-Group](http://commercialspace.pbwiki.com/AIAA-Commercial-Space-Group).



## AIAA Commercial Space Group Tour

*100 Spaceport Way, Cape Canaveral, Florida*

*Thursday, January 8, 2009*

*9:00 AM – 4:30 PM*

**9:00AM – 9:30AM**

Meet & Greet at the Resource Center

ALL

**9:30AM – 10:00AM**

Commercial Launch Zone (CLZ) Briefing

Steve Kohler/Space Florida

**10:00AM – 10:15AM**

Commercial Vertical Launch Complex Briefing

Jim Ball/NASA

**10:15AM – 10:30PM**

Board Bus for Tour

ALL

**11:00AM – 12:00PM**

Drive-around tour of LC- 36, LC- 40, LC-46

ALL

**12:00PM – 1:30PM**

Lunch at the O&C Building - Mission Briefing Room

ALL

**1:30PM – 2:00PM**

Crew Exploration Vehicle at Operations & Checkout Building

Scott Wilson/NASA

Richard Harris/Lockheed Martin

**2:00PM – 3:00PM**

Tour of the Space Life Sciences Laboratory

Howard Levine/NASA

**3:30PM – 4:30 PM**

Astrotech Space Operations

Jim Royston/SpaceHab

# AIAA Commercial Space Group - Cape Canaveral Commercial Space Tour Overview

**Ken Davidian**

*EFP Program Lead*

*Office of Commercial Space Transportation*

*January 8, 2009*



## PRESENTATIONS EN ROUTE

- **Part One**

- Tour Logistics
- AIAA Commercial Space Group (CSG)

- **Part Two**

- Space Sectors
- Definitions

- **Part Three**

- Specific NewSpace Company Profiles

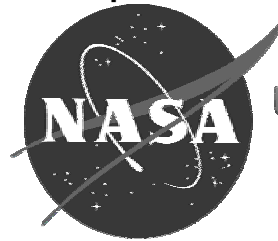


## Part One Agenda

- Tour Logistics

- Who?

- AIAA CSG
- Myself
- Our Hosts
  - AIAA Commercial Space Group
  - Space Florida
  - US Air Force
  - NASA



**U.S. AIR FORCE**



## Tour Agenda

- 08:00–09:00 – Depart Orlando for Cape Canaveral
- 09:00–09:30 – Meet & Greet at the Resource Center
- 09:30–10:00 – Commercial Launch Zone Briefing
- 10:00–10:15 – Comm'l Vertical Launch Complex Briefing
- 10:15–10:30 – Board Bus for Tour
- 11:00–12:00 – Drive-around tour of LC-36, LC-40, LC-46
- 12:00–13:30 – Lunch at the Operations & Checkout Bldg
- 13:30–14:00 – Crew Exploration Vehicle at the O&C Bldg
- 14:00–15:00 – Space Life Sciences Laboratory
- 15:30–16:30 – Tour of Astrotech
- 16:30–17:30 – Return to Orlando



## **Tour Logistical Details**

- **Group Photos On-Site In Front Of Something**
- **Smoking Policies**
- **Rest rooms**



## **Who Is This Guy? Hi! I'm Ken Davidian.**

### • **Education**

- BS-AAE at OSU; MS-ME at CWRU; ISU SSP'89

### • **Work**

- 83-96: Liquid Rocket Design/Analysis, NASA LeRC
- 97-99: SSP Asst. Director, ISU (on-loan from NASA)
- 00-01: Plans & Programs Office, NASA GRC
- 01-02: Operations Director, PSDC (CargoLifter)
- 02-03: Operations Director, X PRIZE Foundation
- 03-04: Program Director, PSDC
- 04-08: Centennial Challenges/ESMD, NASA HQ
- 08-Present: EFP Program Lead, FAA AST



## **AIAA CSG PEOPLE**

- **AIAA Liaison: Eleanor Aldrich, AIAA BD**
- **CSG Lead: Ken Davidian, FAA AST**
- **CSG Leadership Team**
  - Karen Barker, DoC OSC
  - Mike Beavin, DoC OSC
  - Paul Eckert, Boeing
  - Alan Ladwig, Consultant
  - Bruce Pittman, ACES



## **AIAA CSG PURPOSE**

**To expose AIAA members and aerospace professionals to the different aspects, sectors, and people of commercial space, including (but not limited to):**

- launch vehicles
- infrastructure
- telecommunications
- remote sensing
- ground stations
- PNT (position, navigation, and timing, aka GPS)
- other niche markets (e.g. small satellites, etc.)



# AIAA CSG TWO PRIMARY ACTIVITIES

## 1. Organization of Activities

- SPECIFIC ACTIVITIES: Conference Sessions, Meetings, Site Tours, Communication Tools, Sponsorship

## 2. Discussion of Topics

- Develop Informational Papers on Topics from Multiple Perspectives
  - TOPICS: Pass-Through Indemnification, Effects of ITAR, Definitions, Space Ports, etc.
  - PERSPECTIVES: International, Technical, Business, Legal, Regulatory, Financial, etc.



## Part One Summary – Part Two Preview

### •Summary

- AIAA CSG Organizing Tours To Expose Commercial Space To Membership
- Commercial Space and NewSpace

### •Preview

- What Does “Commercial Space” Mean?



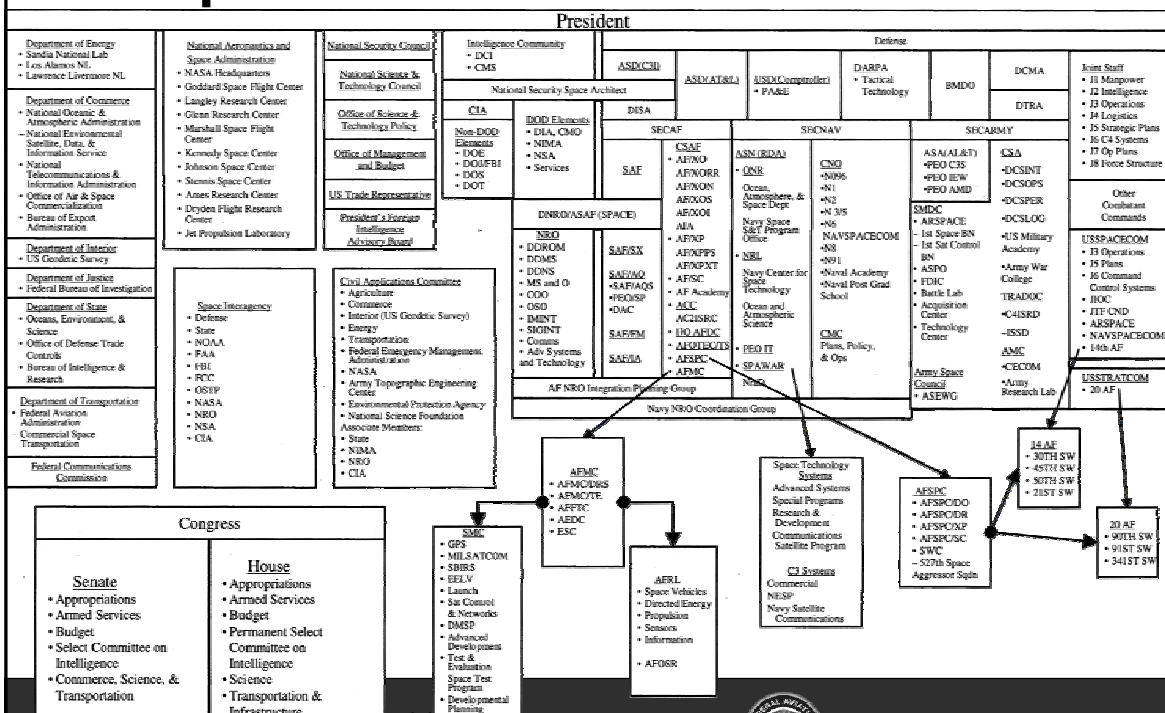


## Part Two Agenda

- U.S. Space Sectors
- U.S. Space Policies
- Government Roles
- Definitions
  - Commercial Space
  - NewSpace



## USG Space: The BIG Picture



**President**

- National Security Council**
  - Intelligence Community
    - DCI
    - CMS
  - National Security Space Architect
    - ASDC3D
    - ASD(AT&L)
    - USDC(Comptroller)
      - P&AE
    - DARPA
      - Tactical Technology
    - BMDO
    - DCMA
    - DTRA
- National Science & Technology Council**
  - Office of Science & Technology Policy
    - Office of Management and Budget
    - US Trade Representative
    - President's Foreign Intelligence Advisory Board
  - Civil Applications Committee
    - Agriculture
    - Commerce
    - Interior (US Geodetic Survey)
    - Energy
    - State
    - NOAA
    - FAA
    - FBI
    - FCC
    - OSTP
    - NASA
    - NRO
    - NSA
    - CIA
  - Space Interagency
    - Defense
    - State
    - NOAA
    - FAA
    - FBI
    - FCC
    - OSTP
    - NASA
    - NRO
    - NSA
    - CIA
- Department of Energy**
  - Sandia National Lab
  - Los Alamos NL
  - Lawrence Livermore NL
- Department of Commerce**
  - National Oceanic & Atmospheric Administration
  - National Environmental Satellite, Data, & Information Service
  - National Telecommunications & Information Administration
  - Office of Air & Space Commercialization
  - Bureau of Export Administration
- Department of Interior**
  - US Geodetic Survey
- Department of Justice**
  - Federal Bureau of Investigation
- Department of State**
  - Occasions, Environment, & Science
  - Office of Defense Trade Controls
  - Bureau of Intelligence & Research
- Department of Transportation**
  - Federal Aviation Administration
  - Commercial Space Transportation
- Federal Communications Commission**

**Department of Defense**

- Joint Staff**
  - J1 Manpower
  - J2 Intelligence
  - J3 Operations
  - J4 Logistics
  - J5 Strategic Plans
  - J6 C4 Systems
  - J7 Op Plans
  - J8 Force Structure
- Other Combatant Commands**
  - USSPACECOM
  - J3 Operations
  - J5 Plans
  - J6 Command Control Systems
  - JIOC
  - JTF CND
  - ARSPACE
  - NAVSPACECOM
  - 14th AF
- USSTRATCOM**
  - 20 AF
- USAF**
  - 14 AF
  - 30TH SW
  - 45TH SW
  - 50TH SW
  - 21ST SW
- AFMPC**
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## U.S. Space Policies

- **NSPD 27, 25 April 2003**
  - U.S. Commercial Remote Sensing Space Policy
- **NSPD 31, 14 January 2004**
  - U.S. Space Exploration Policy
- **NSPD 39, 08 December 2004**
  - U.S. Space-Based Position, Navigation, and Timing Policy
- **NSPD 40, 21 December 2004**
  - U.S. Space Transportation Policy
- **NSPD 49, 31 August 2006**
  - U.S. National Space Policy

*NSPD = National Security Presidential Directives*



## Government Roles

- |   |  |
|---|--|
| <ul style="list-style-type: none"><li>• <b>DoD, NASA, NOAA</b><ul style="list-style-type: none"><li>– Technology Developers</li><li>– Customers</li><li>– Encouragement</li></ul></li></ul> | <ul style="list-style-type: none"><li>• <b>FAA AST</b><ul style="list-style-type: none"><li>– Regulate to Protect Public Health, Safety, etc...</li><li>– Encourage, Facilitate, and Promote</li></ul></li></ul> |
|---|--|



## **Military & Civil Space**

### **•Military Space**

- Defense-Related
- Intelligence Community

### **•Civil Space**

- NASA
- NOAA
- More...

### **•Commercial Space**

- Infrastructure
- Launch Vehicles
- Telecommunications
- Remote Sensing
- Ground Stations
- Position, Navigation, and Timing (GPS)
- Small Satellites
- “NewSpace”

## **Commercial Space Is Inherently Non-Governmental**



## **What Is NewSpace?**

### **•NewSpace Companies Possess Some, Many, or All of The Following Characteristics**

- Low Cost Focus
- Incremental Development
- Operations Are Key
- Small Teams
- Humans in Space
- Demand Elasticity
- Consumer Markets
- Innovation
- Fixed-Price Only

### **•Not Necessarily Low TRL Technology Development**



# List of NewSpace Companies

## 92 NewSpace Companies and Organizations

Note: this is an informal list, meaning the only requirement to be here is an active website. If you see an error, or wish to add a company or organization, please inform us by using our Comments page. Ultimately, the power of the marketplace will determine who remains listed.

4Frontiers Corporation	E' Prime Aerospace	Optech	Space Propulsion Systems
62 Mile Club	Ecliptic Enterprises Corporation	Orbital Commerce Project	Space Resources, Inc.
AeroAstro	Epsori Space Systems	Orbital Expeditions	Spaceport Systems
Alien Landscapes	eSpaceTickets.com	Orbital Outfitters	Space Settlement Institute
ARCASpace	Flometrics	Orbital Recovery	Space Studies Institute
Airlaunch LLC	Forever Bound	Orion Propulsion	The Spaceship Company
Andrews Space	Garvey Spacecraft	Paragon Space Development Corp.	Space Tourism Society
Armadillo Aerospace	GeoEye	PlanetSpace	Sprague Astronautics
Apogee Books	High Altitude Research	ProSpace	Tethers Unlimited
AstroVision	HMX Inc.	Rocket Lab Ltd.	TGV Rockets
Aurora Aerospace	Interorbital Systems	Rocketplane Ltd.	t/Space
Benson Space Company	Institute for Space Law and Policy	Scaled Composites	TransLunar Research
Beyond-Earth	IPX Entertainment	Space Access Society	TransOrbital
Bigelow Aerospace	JP Aerospace	Space Adventures	Universal Space Lines
Blue Origin	Kelly Space	Space Angels Network, LLC	Universal Space Network
Canadian Arrow	LiftPort Group	Space Channel	UP Aerospace
Caribbean Spaceport	Lunar Enterprise	SpaceCruiseNews	Virgin Galactic
Constellation Services International	Lunar Resources	SpaceDev	WonderWorks Inc.
Copenhagen Suborbitals	Lunar Transportation	SpaceX	XCOR Aerospace
Da Vinci Project	ManSat	Space Frontier Foundation	X Prize Foundation
DestinySpace	Masten Space Systems	SPACEHAB	X-Rocket, LLC
Enterprises	Microcosm, Inc.	Space Island Group	XtraOrdinaryAdventures
Difinity, Inc.	Odyssey Moon Limited	Spacepartnerships	Zero-G Corporation
Digital Globe			



## Part Two Summary – Part Three Preview

### •Summary

- Three U.S. Space Sectors
- Roles of Government
- Definitions of Commercial Space and NewSpace

### •Preview

- What Do NewSpace Companies Look Like?



## Company Profiles: ZeroG



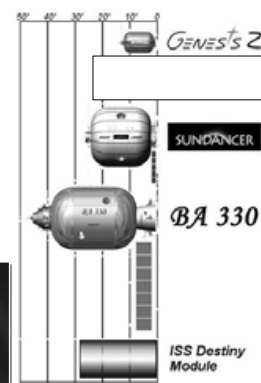
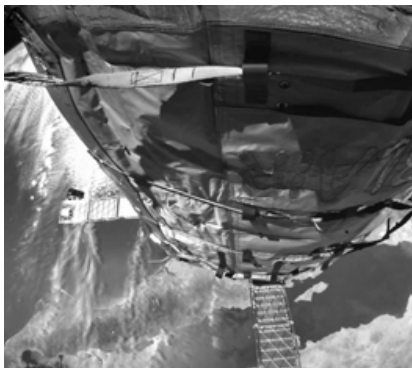
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Federal Aviation  
Administration

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## Company Profiles: Bigelow



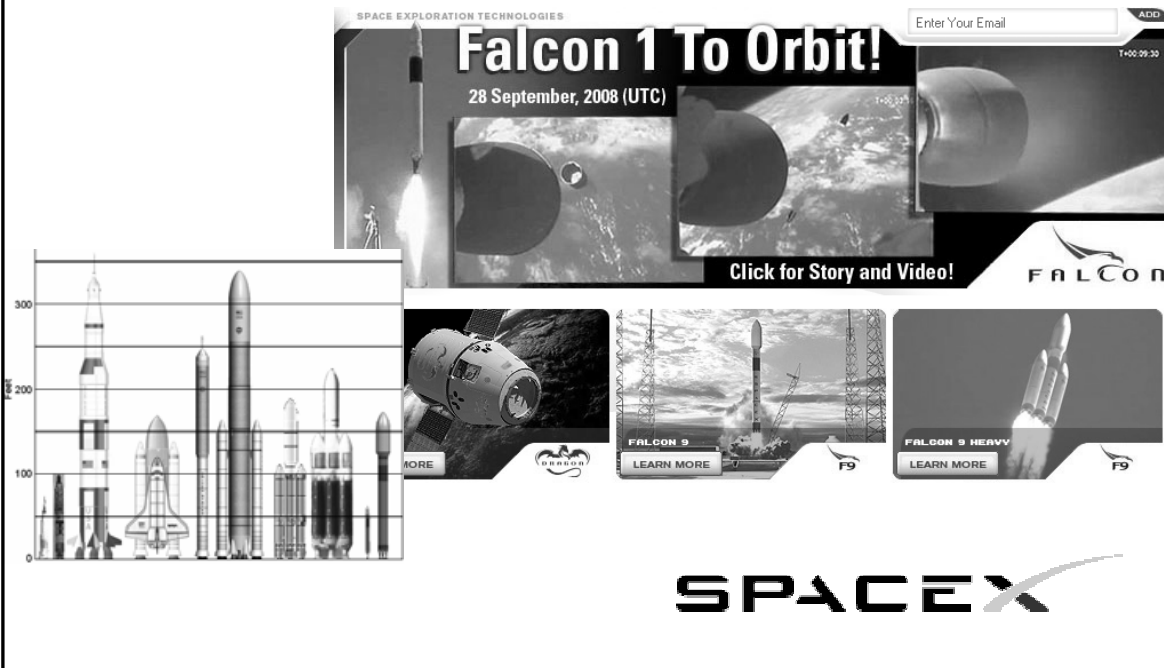
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Federal Aviation  
Administration

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# Company Profiles: SpaceX



SPACE EXPLORATION TECHNOLOGIES

## Falcon 1 To Orbit!

28 September, 2008 (UTC)

Click for Story and Video!

FALCON 9

FALCON 9 HEAVY

**SPACEX**

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# Company Profiles: Armadillo



**ArmadilloAerospace™**

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Federal Aviation Administration

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# Company Profiles: Orbital Outfitters

Home Vision Who We Are Space Suits SpaceDiver Press Contact Us Links



*"Have Space Suit – Will Travel."* – Robert A. Heinlein

New – [Orbital Outfitters Selected for NASA Space Suit Work](#)



The Mission of Orbital Outfitters is to provide affordable, industrial quality space suits and related services to commercial and government space travelers and explorers.

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Office of Commercial Space Transportation

January 8, 2009



Federal Aviation  
Administration

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## Part Three Summary

- **NewSpace Companies Are Unique**
- **Many Examples Of Viable NewSpace Companies**
- **Questions? Discussion?**

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Federal Aviation  
Administration

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Washington, DC 20591

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## **Feedback Form**

Dear Tour Member,

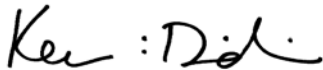
It is our goal is to make today's activities as informative and interesting as possible.

If you have any comments from which we could benefit, please don't hesitate to tell us.

To make it as easy as possible for you, we would be happy to accept this information in any one (or more) of the multiple ways described below.

Your input is appreciated and always welcome!

Sincerely,



Ken Davidian

### **Ways To Submit Your Feedback**

1. Right Now! You can write your comments on the back of this piece of paper and hand it to me at any time.
2. By US Postal Service: Please send your written comments to the following address: Ken Davidian, FAA Office of Commercial Space Transportation, AST-100 Space Systems Development Division, Room 331, 800 Independence Ave SW, Washington DC 20591.
3. By Email: Please send your written comments to the following email address: [ken.davidian@faa.gov](mailto:ken.davidian@faa.gov).
4. By Fax: Please send your written comments to the following fax number: 202-267-5463.
5. By Phone: Please give me a call and speak with me directly at the following phone number: 202-267-7214. If I'm not there, you can leave your suggestions and ideas in my voicemail if you want. If not, I'll call you back as soon as I can.
6. In Person: This isn't the ideal way to provide information, just because I might forget it or I might not remember it correctly. Although written communication is preferred, if this is the way you'd prefer to provide the information, then I'll be happy to accommodate you as best I can.