Dream Chaser® Frequently Asked Questions

About the Dream Chaser Spacecraft

Q: What is the Dream Chaser?
A: Dream Chaser® is a reusable, lifting-body spacecraft that provides a flexible and affordable space transportation solution for low-Earth orbit (LEO) destinations such as transporting astronauts to the International Space Station (ISS) and will be used to support a variety of other space missions. Developed by Sierra Nevada Corporation (SNC), Dream Chaser is the product of a dynamic collaboration among SNC and well-known, well-established aerospace companies, NASA centers, and universities. SNC is currently funded under NASA’s Commercial Crew Integrated Capability (CCiCap) agreement to develop a next-generation crew transportation vehicle for low-Earth orbit. SNC’s Dream Chaser is the only reusable, lifting body spacecraft that can land on a commercial runway, anywhere in the world.

Q: Who manufactures the Dream Chaser spacecraft and where is it built?
A: The Dream Chaser is built in more than 30 states by over 15 strategic partners and over 30 other subcontractors and suppliers. The central design, manufacturing and assembly of the vehicle is completed at Sierra Nevada Corporation’s (SNC) Space Systems facility in Louisville, Colorado.

Q: How will Dream Chaser launch into space and return to Earth?
A: Dream Chaser will vertically launch into space atop a proven, Atlas V rocket, provided by United Launch Alliance. Once Dream Chaser re-enters the Earth’s atmosphere, it will land horizontally on a runway, like the Space Shuttle did. However, Dream Chaser, unlike the Shuttle, because it has all non-toxic propellants can land on commercial runways and be accessed anywhere in the world.

Q: What does it mean to say Dream Chaser is a “lifting body” spacecraft and how is that advantageous?
A: A typical airplane has large wings that provide the lift to keep the vehicle in the air. Dream Chaser does have small winglets to provide stability in flight, but the lift is created by the body of the vehicle which is wide and flat. Its third-generation design builds upon
decades of NASA development (i.e., the space shuttle legacy) and SNC’s expertise as a prime developer and integrator of complex human systems and space hardware. Dream Chaser can be reused 25 or more times, which is more than any other current space vehicle, making Dream Chaser very affordable and responsive.

Q: What are Dream Chaser’s dimensions and how does that compare with the Space Shuttle?
A: Dream Chaser is roughly ¼ the total length of the space shuttle, but has a similar size pressurized crew compartment and can carry the same number of astronauts (seven). The space shuttle was designed with a very large cargo bay to allow it to carry large structures up to space to build the ISS. In 2011 the ISS build was completed and NASA no longer needs a vehicle of that size to transport large pieces or hardware or cargo. Instead, NASA now needs a smaller, more efficient U.S. derived transportation system. Dream Chaser is customized for carrying crew and critical cargo.

Q: How many people can Dream Chaser hold?
A: Dream Chaser can hold up to seven crew members, but it can also be flown with reduced crew, or without crew, in a fully autonomous mode. Due to the unique autonomous flight capability, the Dream Chaser is a true multi-mission vehicle.

Q: How long will it take Dream Chaser to get from the hangar to being launch ready?
A: Dream Chaser is designed for reusability and ease of mission processing. It will take only an estimated 45-60 days from landing for Dream Chaser to be ready for its next flight. As SNC gains more experience with the vehicle and its systems, these already short processing times can likely be further reduced.

Q: Will Dream Chaser be capable of going farther than low-Earth orbit?
A: Dream Chaser is designed to operate in low-Earth orbit (LEO), which includes destinations such as the International Space Station and many different mission areas for spacecraft servicing, transport to other future destinations and acting as a self-contained laboratory and test-bed.

Q: How many G’s will Dream Chaser encounter upon re-entry?
A: Dream Chaser provides a re-entry around 1.5g, which is considerably less than existing return systems for orbital reentry, making the vehicle ideal for sensitive payloads, comfortable crew re-entries, and medical emergencies.
Q. What tests has Dream Chaser undergone in its quest for space?
A: SNC employs a design, build, test approach. Through this flight hardware-rich approach, SNC believes that a wealth of valuable information is gained by incrementally testing components and subsystems as they are developed, and then testing the full vehicle at many stages of development. Further, this approach demonstrates the safety and reliability of our systems. There have been several dozen major tests performed already, including a full scale vehicle autonomous flight test at Edwards Air Force Base, California, in conjunction with NASA’s Armstrong Flight Research Center in October 2013 where the full aerodynamic performance of the vehicle was successfully verified.

Q: What are the next tests coming up? When will the first human-rated testing begin?
A: Uncrewed atmospheric flight testing has begun with the first flight in October 2013. After additional uncrewed flights expected in 2014, SNC will move to piloted atmospheric flight tests which will begin in 2015. The first, uncrewed orbital flight is scheduled to occur in November 2016, with the first crewed orbital flight slated for 2017.

Q: Will there be more than one Dream Chaser?
A: Yes. SNC currently has one sub-orbital test vehicle and our first orbital vehicle is now under construction. It will be used for the orbital test and certification flights, as well as follow-on crew transportation services. We will build a second orbital vehicle, starting later this year. There is a growing demand from several different potential customers to do a wide range of missions that are enabled by flexibility of our design, so once we are operational, we envision building more vehicles to meet the growing demand for these missions.

Q: How is Dream Chaser different than Virgin Galactic’s SpaceShip Two and other suborbital offerings?
A: Virgin Galactic's vehicle, SpaceShip2, is designed to fly to sub-orbital space, primarily to serve a space tourism market. Dream Chaser is being built as an orbital vehicle to serve the growing need for a safe, reliable and cost-effective crew and critical cargo transportation to low-Earth orbit, as well as, a broad multi-mission orbital market.

Uses & Benefits

Q: What does Dream Chaser offer to the American people?
A: With the retirement of the space shuttle program in 2011, the United States currently does not have its own means of transporting crew into low-Earth orbit, including the International Space Station (ISS). Dream Chaser is the best solution to this challenge because of its affordability, flexibility, safety, and extensive capabilities that don’t exist anywhere else in the world. It offers NASA safe and affordable U.S. human access to the ISS for crew and critical cargo transportation. It also offers multi-mission applications, such as orbital science and research, spacecraft repair and retrieval for civil and commercial customers around the world. Essentially, Dream Chaser will help open space for many commercial markets.
Q: What are the benefits of Dream Chaser’s ability to land on commercial runways?
A: SNC’s Dream Chaser spacecraft’s unique runway landing capability is focused primarily on safety and accessibility. First, since Dream Chaser uses all non-toxic propellants, it can literally land in any desired geographic region that has a commercial or military runway capable of handling a typical large passenger airplane (like a Boeing 737 or Airbus 320). Immediately upon landing, the Dream Chaser spacecraft offers access to crew and cargo. Further, there is no extensive ground infrastructure or special landing location that is required, which reduces costs and logistics demands, while substantially increasing safety and reducing risk because runways are developed and maintained to strict international standards. With capsules, which splash down into an ocean or land on the ground in a remote area, crew and cargo retrieval is more labor intensive, takes longer to complete, and introduces risk, including those related to injured crew or sensitive cargo. These drawbacks don’t exist for runway landings.

Q: It’s been said that Dream Chaser can serve multiple missions. What does that mean?
A: SNC is developing Dream Chaser to become NASA’s primary crew transportation vehicle to low-Earth orbit. Serving in this capacity is the first priority among many possible applications for Dream Chaser. Because of its inherent design and mission flexibility, Dream Chaser can serve the needs of global science and commercial research industries, as well as, the economic development strategies for both international and industry participants. For example, the spacecraft could fulfill a NASA need by transporting crew and cargo to the International Space Station, and then, it could remain in space for a pre-determined amount of time to deploy a payload or conduct an experiment for a commercial customer. Alternatively, the Dream Chaser could conduct an industry research mission and land in the sponsoring country. Or yet further, it could conduct a dedicated servicing mission to the International Space Station to extend its life on one mission, followed by another mission to deliver crew to a commercial outpost currently being planned by private industry.

Q: While SNC is leading the charge, who else is involved in Dream Chaser’s evolution?
A: The Dream Chaser Dream Team balances proven human spaceflight experts and technology providers with successful, world-class entrepreneurial companies and universities. Given that NASA is the prime customer, the spacecraft is being refined through partnership agreements with eight NASA Centers and draws from suppliers in more than 30 states – all of which represent the very best in the business. This network of partnerships ensures maximum customer insight, access, and delivered quality through Dream Chaser’s acquisition, development, testing, and operations process. SNC leverages the lessons of the past and combines them with the state-of-the-art in modern materials, technologies, and processes, coupled with a rich diversity of input and participation. Our team is built on strong, diverse industry alliances with veteran human spaceflight contractors across the country representing a true “Dream Team.”

Q: Where will Dream Chaser operations be based?
A: The Dream Chaser spacecraft flight operations will be primarily based in Florida at or near Kennedy Space Center. For NASA missions, the vehicle will launch from an United Launch Alliance Atlas V launch vehicle from Cape Canaveral, Florida. Landing will be primarily accomplished at the Shuttle Landing Facility on Kennedy Space Center or in
California at the Vandenberg USAF landing facilities with additional secondary landing facilities to be designated as they are approved.

Other

Q: Is Sierra Nevada Corporation hiring right now for the Dream Chaser program, and if so, what types of positions?
   A: SNC is always looking for the best and brightest talent who want to join our team! The SNC Dream Team culture is a family-oriented place where the finest people can do the best work that will positively change history – everyone is passionately committed to these ideals and the quality of life is unsurpassed. Please visit the Careers section of our website to peruse current opportunities.

Q: How can I find out more about Dream Chaser developments, news, and events?

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