NASA’s Plan to Use Nuclear Power for Mars Gateway

Description

A new nuclear-electric propulsion system, called SR-1, will replace solar power with electricity from a nuclear reactor to energise plasma thrusters. This system aims to improve efficiency in space travel.

Isaacman, a key figure in the project, explained that SR-1 does not seek billions of dollars for a new mission. He emphasised the project will use existing hardware, including a reactor that is mostly built. This approach saves time and money, as some costs for the fuel have already been paid.

NASA has not announced how much the SR-1 mission will cost. Isaacman mentioned that proving nuclear propulsion can work may lead to more funding in the future. Sinacore, another project leader, highlighted that SR-1 mainly adds the nuclear reactor to an already existing spacecraft design. The timeline aims for launches during the next Mars opportunity in December 2028, which is critical based on orbital mechanics.

Preparing for a large space mission like this is challenging. Sinacore pointed out that they need to avoid “mission creep,” which means keeping the project focused on its main goals. The timeline includes completing mission design by June and starting assembly in early 2028. If they miss the 2028 launch, the next chance won’t be until 2031.

NASA will lead the SR-1 project, but launching radioactive fuel into space requires coordination with various federal agencies, including the Department of Energy. Selected rockets must also pass special certification for nuclear launch missions.

Vocabulary List:

1. **propulsion** //prəˈpʌlʃən// (noun): power that moves a vehicle forward
2. **reactor** //riˈæktɚ// (noun): machine that makes energy from nuclear material
3. **plasma** //ˈplæzmə// (noun): hot, charged gas used for high-speed travel
4. **orbital** //ˈɔrbɪtəl// (adjective): relating to the path around a planet
5. **radioactive** //ˌreɪdioʊˈæktɪv// (adjective): giving off dangerous energy from atoms
6. **certification** //ˌsɜrtɪfɪˈkeɪʃən// (noun): official approval that something meets rules

Comprehension Questions

Multiple Choice

1. What will the SR-1 system replace with electricity from a nuclear reactor?

   Option: Solar power
   Option: Wind power
   Option: Fossil fuels
   Option: Chemical propulsion

2. Who is a key figure in the SR-1 project?

   Option: Elon Musk
   Option: Jeff Bezos
   Option: Jared Isaacman
   Option: Bill Gates

3. What is the main goal of the SR-1 project?

   Option: To develop solar-powered thrusters
   Option: To improve efficiency in space travel
   Option: To send humans to Mars in 2024
   Option: To create a new spacecraft design

4. When is the target launch window for the SR-1 mission?

   Option: July 2028
   Option: December 2028
   Option: March 2031
   Option: October 2028

5. What must selected rockets pass for nuclear launch missions?

   Option: Environmental review
   Option: Special certification
   Option: Cost analysis
   Option: Safety audit

6. Which department requires coordination for launching radioactive fuel into space?

   Option: Department of Defense
   Option: Department of Energy
   Option: Department of Transportation
   Option: NASA Headquarters

True-False

7. The SR-1 mission will use entirely new hardware.

8. NASA has disclosed the cost of the SR-1 mission.

9. Isaacman believes that demonstrating nuclear propulsion may not attract future funding.

10. Mission creep refers to the expansion of project goals beyond the original intent.

11. The next chance for launching SR-1 after December 2028 is in 2032.

12. The timeline for the SR-1 mission includes design completion by June.

Gap-Fill

13. The SR-1 system is designed to use _____ from a nuclear reactor.

14. Isaacman stated that some costs for the fuel have already been _____ paid.

15. The timeline for SR-1 aims for launches during the next Mars opportunity in _____ 2028.

16. Preparing for large space missions is often fraught with _____ challenges.

17. The next chance to launch after 2028 won't be until _____ 2031.

18. NASA will lead the SR-1 project while coordinating with _____ federal agencies.

Answer

Multiple Choice: 1. Solar power 2. Jared Isaacman 3. To improve efficiency in space travel 4. December 2028 5. Special certification 6. Department of Energy
True-False: 7. False 8. False 9. False 10. True 11. False 12. True
Gap-Fill: 13. electricity 14. paid 15. December 16. challenging 17. March 18. various

CATEGORY

1. Sci/Tech - LEVEL3

POST TAG

1. B1
2. ESL learning
3. esl news
4. gateway
5. L3
6. Mars
7. NASA
8. nuking
9. plan
10. reading level

Tags

1. B1
2. ESL learning
3. esl news
4. gateway
5. L3
6. Mars
7. NASA
8. nuking
9. plan
10. reading level

Date Created
2026/03/26
Author
aimeeyoung99