NASA Conducts Unannounced Test with Artemis 2 Rocket

Description

NASA is loading liquid hydrogen into its Space Launch System (SLS) moon rocket at the Kennedy Space Center. This operation, taking place on Thursday, is an important test of repairs made to a leaky umbilical, which caused a countdown rehearsal to stop on February 2.

The loading of liquid hydrogen into the rocket's core stage was expected to start at launch complex 39B on Thursday morning. The test will check if new seals in the launch pad umbilical are effective. A NASA spokesperson explained that engineers are testing the new seals by partially filling the core stage tank with liquid hydrogen. The results will help plan the next wet dress rehearsal, a practice run for launching.

During the previous wet dress rehearsal, the launch team faced hydrogen leaks from the umbilical that sends propellant into the rocket. They managed the leaks by stopping and starting the fueling process, which allowed the seals to warm and close the leaks.

Liquid hydrogen can be challenging to manage because its small molecules can escape through tiny gaps. It can also be very explosive when mixed with air. In the February 2 fueling test, the launch team filled the tanks but stopped the countdown due to a large increase in hydrogen leakage during the final minutes.

If the tests on Thursday go well, NASA may organise a second wet dress rehearsal as soon as next week.

Vocabulary List:

1. **Umbilical** /ʌmˈbɪlɪkəl/ (noun): A cord-like structure that connects the rocket to the fuel supply.
2. **Rehearsal** /rɪˈhɜːr.səl/ (noun): A practice session for a performance or event.
3. **Explosive** /ɪkˈspləʊsɪv/ (adjective): Able or likely to cause an explosion.
4. **Leaky** /ˈliː.ki/ (adjective): Having a hole or crack through which liquid or gas can escape.
5. **Hydrogen** /ˈhaɪdrədʒən/ (noun): A chemical element that is a colorless odorless gas and is highly flammable.
6. **Effective** /ɪˈfɛktɪv/ (adjective): Successful in producing a desired or intended result.

Comprehension Questions

Multiple Choice

1. What is the purpose of loading liquid hydrogen into the Space Launch System (SLS) moon rocket at the

Kennedy Space Center?

Option: To test repairs to a leaky umbilical
Option: To clean the rocket
Option: To refuel the rocket for immediate launch
Option: To test new rocket engines

2. What is the main challenge in managing liquid hydrogen?

Option: Its high cost
Option: Its weight
Option: Its small molecules escaping through tiny gaps
Option: Its corrosiveness

3. What is the purpose of the wet dress rehearsal mentioned in the text?

Option: To test the rocket launch in rainy conditions
Option: To simulate a full launch scenario
Option: To dry-clean the rocket
Option: To repair the rocket

4. What caused the countdown rehearsal to stop on February 2?

Option: A technical glitch in the rocket engines
Option: A leaky umbilical
Option: Weather conditions
Option: Human error

5. How did the launch team manage hydrogen leaks during the previous wet dress rehearsal?

Option: By increasing the fuel flow
Option: By stopping and starting the fueling process
Option: By replacing the seals immediately
Option: By venting excess hydrogen into space

6. What is the potential consequence of liquid hydrogen mixing with air?

Option: It creates a pleasant scent
Option: It becomes less combustible
Option: It becomes very explosive
Option: It freezes instantly

True-False

7. Liquid hydrogen is easy to contain due to its large molecule size.

8. NASA conducted a wet dress rehearsal on February 2 without any issues.

9. The repairs made to the leaky umbilical were successful.

10. Liquid hydrogen is not used as a propellant in the rocket.

11. The new seals in the launch pad umbilical are being tested by completely filling the core stage tank with liquid hydrogen.

12. Liquid hydrogen is only explosive when in contact with water.

Gap-Fill

13. Liquid hydrogen can be very explosive when mixed with _____.

14. The launch team faced hydrogen leaks during the previous wet dress rehearsal, causing them to stop and start the fueling process to allow the seals to warm and close the _____.

15. If the tests on Thursday go well, NASA may organise a second wet dress rehearsal as soon as next _____.

16. Liquid hydrogen is being loaded into the rocket's core stage at launch complex 39B at the _____ Space Center.

17. Engineers are testing the new seals by partially filling the core stage tank with liquid _____.

18. The operation to load liquid hydrogen into the SLS moon rocket is an important test of _____ made to a leaky umbilical.

Answer

Multiple Choice: 1. To test repairs to a leaky umbilical 2. Its small molecules escaping through tiny gaps 3. To simulate a full launch scenario

4. A leaky umbilical 5. By stopping and starting the fueling process 6. It becomes very explosive
True-False: 7. False 8. False 9. True 10. False 11. False 12. False
Gap-Fill: 13. air 14. leaks 15. week 16. Kennedy 17. hydrogen 18. repairs

CATEGORY

1. Sci/Tech - LEVEL3

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