



1  
00:00:09,410 --> 00:00:16,250

In the vastness of space, communication is key – ensuring our astronauts and spacecraft

2  
00:00:16,250 --> 00:00:20,660

can communicate with NASA's Mission Control Center on Earth.

3  
00:00:20,660 --> 00:00:27,590

Today, and for more than 30 years, that web of connectivity is made possible by the Space

4  
00:00:27,590 --> 00:00:33,690

Network and a fleet of nine orbiting communication satellites known as NASA's Tracking and

5  
00:00:33,690 --> 00:00:40,890

Data Relay Satellite project- or TDRS.

6  
00:00:40,890 --> 00:00:44,090

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Meet TDRS-M, the third replacement satellite

7  
00:00:44,090 --> 00:00:50,420

in a series of advanced, third-generation spacecraft manufactured by Boeing.

8  
00:00:50,420 --> 00:00:55,100

Standing more than 26 and a half feet tall, and stretching more than 69 feet from the

9  
00:00:55,100 --> 00:01:00,949

tip of one antenna to the other, TDRS-M is enclosed in the emblematic payload fairing

10  
00:01:00,949 --> 00:01:06,610

of a United Launch Alliance Atlas V rocket – stowed away in safety for the extreme

11

00:01:06,610 --> 00:01:11,060  
journey ahead.

12  
00:01:11,060 --> 00:01:14,390  
More nations are gaining access to space.

13  
00:01:14,390 --> 00:01:17,500  
Congestion across frequency bands is inevitable.

14  
00:01:17,500 --> 00:01:23,940  
But with the help of TDRS, NASA is operating  
a robust program to improve the efficient

15  
00:01:23,940 --> 00:01:29,530  
use of radio frequency bands and develop advanced  
communication technologies.

16  
00:01:29,530 --> 00:01:36,850  
TDRS-M will carry NASA's space communications  
into the mid-2020s, with years of world-class

17  
00:01:36,850 --> 00:01:40,640  
communication and navigation services.

18  
00:01:40,640 --> 00:01:46,860  
But first, the agency and United Launch Alliance  
must get it into orbit.

19  
00:01:46,860 --> 00:01:50,570  
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Preparing to launch a seven-hundred-and-fifty-one-thousand-pound

20  
00:01:50,570 --> 00:01:56,650  
rocket may sound intimidating to some, but  
United Launch Alliance engineers at NASA's

21  
00:01:56,650 --> 00:02:01,280  
Kennedy Space Center in Florida have it down  
to a science.

22  
00:02:01,280 --> 00:02:06,940  
Each piece is methodically lifted and fixed  
into place with the utmost precision and strict

23  
00:02:06,940 --> 00:02:10,320  
adherence to procedure.

24  
00:02:10,320 --> 00:02:13,540  
--  
It will take the Atlas V an hour and 53 minutes

25  
00:02:13,540 --> 00:02:20,940  
to deliver TDRS-M to one of Earth's most distant  
orbits – a geostationary transfer orbit.

26  
00:02:20,940 --> 00:02:27,310  
Atlas must carry TDRS-M twenty-two thousand  
miles straight up, where the spacecraft's

27  
00:02:27,310 --> 00:02:34,440  
speed matches the Earth's rotation.

28  
00:02:34,440 --> 00:02:40,170  
Atlas V has a one-hundred percent mission  
success rate, and we're all eager to see

29  
00:02:40,170 --> 00:02:43,400  
another perfect launch today.

30  
00:02:43,400 --> 00:02:49,940  
To do so, Atlas will deliver more than eight-hundred  
and sixty thousand pounds of thrust at liftoff,

31  
00:02:49,940 --> 00:02:55,010  
at times traveling eleven thousand miles per  
hour and burning more than sixteen-hundred

32  
00:02:55,010 --> 00:03:00,380  
pounds of propellant per second.

33  
00:03:00,380 --> 00:03:05,920  
When successful, the Centaur second stage will release its payload over the Indian Ocean—

34  
00:03:05,920 --> 00:03:14,150  
and once operational, TDRS-M will be renamed for service to TDRS-13.

35  
00:03:14,150 --> 00:03:20,090  
If all goes according to plan, the constellation of satellites will be restored for at least

36  
00:03:20,090 --> 00:03:26,160  
the next decade, keeping the communication lines open as NASA continues to study the

37  
00:03:26,160 --> 00:05:10,169  
universe and astronauts take the next giant leap in deep space.