1
00:00:14,009 --> 00:00:17,089
BECAUSE THE JAMES WEBB SPACE TELESCOPE
WILL BE SEARCHING FOR THE HEAT

2
00:00:17,280 --> 00:00:19,640
COMING FROM FARAWAY OBJECTS IN THE UNIVERSE,

3
00:00:19,640 --> 00:00:22,420
THE OBSERVATORY NEEDS TO BE KEPT COLD.

4
00:00:22,869 --> 00:00:25,389
THE LAYERS OF ITS SUNSHIELD WILL SEPARATE
FROM EACH OTHER,

5
00:00:25,389 --> 00:00:27,669
MUCH LIKE THIS FAN DOES

6
00:00:27,890 --> 00:00:30,440
IN ORDER TO KEEP THE WEBB TELESCOPE FROM HEATING UP.

7
00:00:30,440 --> 00:00:33,140
TO FIND OUT MORE ABOUT HOW ALL THIS IS GOING
TO WORK,

8
00:00:33,300 --> 00:00:36,820
WE'VE COME TO NORTHROP GRUMMAN IN REDONDO BEACH, CALIFORNIA.

9
00:00:37,020 --> 00:00:39,020
Jud, I see that a test is about to happen
here.

10
00:00:39,030 --> 00:00:40,030
What's going on?

11
00:00:40,180 --> 00:00:42,100
Jud Yamane (Sunshield Chief Engineer/NGAS):
Yes, We're about to deploy the second half

12

00:00:42,110 --> 00:00:46,789
of the sunshield membrane assembly to see how the whole system works together….

13
00:00:47,340 --> 00:00:51,400
We’re trying to verify that the behaviors of
the sunshield

14
00:00:51,580 --> 00:00:53,700
pan out like we expect them to.

15
00:00:54,479 --> 00:00:56,039
If there are problems with the deployment,

16
00:00:56,220 --> 00:01:00,280
then we know how to fix the problems before we get into our flight production

17
00:01:00,289 --> 00:01:03,339
How representative is it of the flight sunshield?

18
00:01:03,339 --> 00:01:07,650
These are about 90% representative of the
flight membrane articles.

19
00:01:07,650 --> 00:01:12,180
They have similar coatings and for the most
part, the overall construction of the membranes

20
00:01:12,180 --> 00:01:14,350
are identical….

21
00:01:14,350 --> 00:01:19,210
As we deploy the sunshield, it unfolds…
in a controlled, organized manner

22
00:01:19,320 --> 00:01:25,680
and that’s allowing us to keep the membrane assembly
or the sunshield safe during deployment….

23
00:01:27,500 --> 00:01:29,560

After the membranes deploy all
the way out,

24
00:01:29,560 --> 00:01:31,540
we are then going to tension the membranes

25
00:01:31,620 --> 00:01:35,540
and that's going to actually
cause the 5 layers of the membrane to separate.

26
00:01:36,930 --> 00:01:39,910
Our main concern right now is to test the
membrane interaction

27
00:01:40,060 --> 00:01:42,480
with the subsystems of the sunshield

28
00:01:42,620 --> 00:01:44,620
to make sure everything is functioning as intended.

29
00:01:45,700 --> 00:01:49,730
So when this test is done, will it look like
the pictures we've seen of Webb?

30
00:01:49,730 --> 00:01:52,700
Actually, it won't look exactly like the
images.

31
00:01:52,700 --> 00:01:56,990
The overall shape and size of the membrane
should be close.

32
00:01:56,990 --> 00:02:00,050
There are some differences that we won't
be able to replicate because

33
00:02:00,200 --> 00:02:04,520
we are deploying in 1G of gravity on earth.

34

00:02:04,530 --> 00:02:08,429
We won’t be able to realize the real shape
until we get up into space where it’s 0G

35
00:02:08,429 --> 00:02:10,129
or a weightless environment.

36
00:02:10,640 --> 00:02:13,900
Well thank you so much Jud for showing us
what you guys do to test out the sunshield.

37
00:02:13,900 --> 00:02:15,450
Sure, you’re very welcome Mary.

38
00:02:16,160 --> 00:02:20,860
THE OBSERVATORY NEEDS TO BE PROTECTED
FROM HEAT SOURCES LIKE OUR OWN SUN.

39
00:02:20,870 --> 00:02:25,249
THE SUNTAN LOTIONS THAT YOU AND I USE HAVE
A MAXIMUM SUN PROTECTION FACTOR OF

40
00:02:25,249 --> 00:02:26,810
ABOUT A HUNDRED OR SO.

41
00:02:26,810 --> 00:02:32,420
THE WEBB TELESCOPE SUNSHIELD HAS AN ESTIMATED SPF OF 1-MILLION.