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00:00:00,860 --> 00:00:04,590

Jim Gleason, Project Scientist, NPP: The purpose of the NPP is, it's basically the prototype of

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00:00:04,590 --> 00:00:09,600

the next generation Earth-observing satellite. It's the nation's first attempt to really

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00:00:09,600 --> 00:00:15,640

combine weather monitoring and climate observing in the same platform.

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00:00:15,640 --> 00:00:21,110

NARRATOR: The nations' newest weather monitoring and climate observation satellite is getting

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00:00:21,110 --> 00:00:27,300

ready to take its place in space so that we may know what is going on here on Earth.

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00:00:27,300 --> 00:00:33,920

The spacecraft is known as NPP, for NPOES Preparatory Project, and it is a technological

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00:00:33,920 --> 00:00:40,420

trailblazer in the effort to find out more about the weather and condition of our world.

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00:00:40,420 --> 00:00:45,360

Jim Gleason: NPP is a continuation of the earth orbiting satellite systems.

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00:00:45,360 --> 00:00:52,140

For weather forecasting and for climate predictions, you need to have continuous observations.

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00:00:52,140 --> 00:01:01,130

So what NPP does is continue the data record started by the NASA EOS satellites and

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00:01:01,130 --> 00:01:07,260

improves on the instruments that are used for numerical weather forecasting from the current

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00:01:07,260 --> 00:01:09,420

series of NOAA satellites.

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00:01:09,420 --> 00:01:12,300

Tim Dunn, Launch Director, NPP: The current satellites we have on orbit have been very

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00:01:12,300 --> 00:01:19,820

successful for us, but NPP is taking all the advances we've had in technology over the past

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00:01:19,820 --> 00:01:25,890

five, 10 years, putting them on this test bed spacecraft, being able to use them,

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00:01:25,890 --> 00:01:29,240

prove them out for the future constellation.

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00:01:29,240 --> 00:01:34,440

Gleason: NPP data will be used by virtually all of the national weather services for all

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00:01:34,440 --> 00:01:40,040

the nations of the world. And then there are the scientific users who are trying to

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00:01:40,040 --> 00:01:46,450

understand the individual phenomena both at home and abroad.

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00:01:46,450 --> 00:01:50,660

NARRATOR: While some spacecraft are built to collect a specific set of information

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00:01:50,660 --> 00:01:56,470

using only one instrument, the NPP will observe the Earth in a variety of forms using five

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00:01:56,470 --> 00:02:02,080

instruments. The information it will gather will be extensive, but working with a large set

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00:02:02,080 --> 00:02:06,330

of instruments makes the preparation equally exhaustive.

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00:02:06,330 --> 00:02:08,920

Bruce Reid, Mission Manager, NPP: Well, every mission has its own set of challenges,

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00:02:08,920 --> 00:02:13,160

you know, what's challenging about NPP is the fact we have five instruments.

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00:02:13,160 --> 00:02:17,920

Some spacecraft have one instrument. And every mission has to go through environmental

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00:02:17,920 --> 00:02:22,360

testing, so now you have to go through environmental testing with five different

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00:02:22,360 --> 00:02:27,170

instruments, which all carry their own set of requirements and restrictions.

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00:02:27,170 --> 00:02:31,310

These are NASA satellites, these are one-of-a-kind satellites. You know,

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00:02:31,310 --> 00:02:36,880

something like a GPS constellation, which would launch 20 of the same type of satellites,

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00:02:36,880 --> 00:02:41,140

you can get into a rhythm with how you process those. But it's not the case with

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00:02:41,140 --> 00:02:46,660

NASA missions, which is one of the reasons it's an interesting job because every

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00:02:46,660 --> 00:02:53,930

spacecraft brings its own set of challenges and uniqueness and it keeps the job interesting.

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00:02:53,930 --> 00:02:58,520

NARRATOR: Although NASA routinely dispatches spacecraft to other worlds to push the

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00:02:58,520 --> 00:03:04,400

bounds of exploration, the agency does not lose focus on examinations of our home planet.

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00:03:04,400 --> 00:03:09,470

Previous missions, some still in operation, have compiled decades of data about

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00:03:09,470 --> 00:03:14,970

interactions of the Earth's myriad environmental systems. NPP aims to continue those

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00:03:14,970 --> 00:03:18,480

observations with new levels of precision.

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00:03:18,480 --> 00:03:25,040

Gleason: It has two specific goals. One is to get the data for the weather forecasts,

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00:03:25,040 --> 00:03:30,900

environmental observations and take a whole suite of observations that continue our

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00:03:30,900 --> 00:03:37,350

satellite data records which span from measuring aerosols, you know, dust particles in the

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00:03:37,350 --> 00:03:44,890

atmosphere, how have they changed over the past decade? Is the vegetation index?

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00:03:44,890 --> 00:03:52,350

Is the ground greener or browner over time? Has the sea surface temperature changed?

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00:03:52,350 --> 00:03:59,780

Has the ozone changed? These are all data sets that we have that we have multi-decades

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00:03:59,780 --> 00:04:04,560

sets of data sets and we just want to keep adding to that so we can answer the question,

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00:04:04,560 --> 00:04:06,640

Is the climate changing?

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00:04:06,640 --> 00:04:10,900

NARRATOR: The NPP will lift off from Vandenberg Air Force Base in California,

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00:04:10,900 --> 00:04:15,810

so it can be positioned in a specific orbit for its important mission.

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00:04:15,810 --> 00:04:20,350

DUNN: The NPP satellite will launch from Vandenberg Air Force Base, specifically Space Launch

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00:04:20,350 --> 00:04:25,320

Complex 2 for the reason that it needs to go into a polar orbit.

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00:04:25,320 --> 00:04:31,650

Polar orbit meaning that as the Earth rotates the satellite will be crossing the poles.

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00:04:31,650 --> 00:04:35,500

And because this is an earth-observing satellite,

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00:04:35,500 --> 00:04:39,940

you are able to see every bit of the Earth.

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00:04:39,940 --> 00:04:44,370

NARRATOR: The NPP satellite is going into space courtesy of a Delta II rocket,

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00:04:44,370 --> 00:04:49,700

the workhorse of America's fleet of uncrewed missions. First launched in 1989,

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00:04:49,700 --> 00:04:55,180

the Delta II has been used to successfully orbit several Earth-observing satellites.

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00:04:55,180 --> 00:05:00,780

It dispatched spacecraft to Mars including the Spirit and Opportunity rovers in 2003,

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00:05:00,780 --> 00:05:05,760

both of which continue to operate on Martian soil. NASA's record is perfect for missions

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00:05:05,760 --> 00:05:09,310

launch on a Delta II.

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00:05:09,310 --> 00:05:14,890

DUNN: The NPP mission on Delta II is currently the last manifested Delta II to

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00:05:14,890 --> 00:05:21,380

launch on either coast. That has historical significance to our team,

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00:05:21,380 --> 00:05:28,330

however, we're treating this as we have treated all the rest of the Delta II launches.

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00:05:28,330 --> 00:05:33,250

NARRATOR: Recent years have seen new rockets emerge on the Launch Services Program roster.

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00:05:33,250 --> 00:05:38,930

They use new methods of construction, compared with that employed for the Delta II.

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00:05:38,930 --> 00:05:45,120

DUNN: Delta has more of a historic launch processing flow of building the

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00:05:45,120 --> 00:05:47,480

entire rocket up on the pad.

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00:05:47,480 --> 00:05:53,000

NARRATOR: Work to prepare the Delta II to launch the NPP satellite began during the summer.

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00:05:53,000 --> 00:05:59,750

DUNN: We began build-up of the vehicle in July of this year, erecting first stage,

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00:05:59,750 --> 00:06:04,290

the nine solid rocket motors, the second stage, putting the payload fairing

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00:06:04,290 --> 00:06:09,860

into the mobile service tower. We will then bring out the satellite in a

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00:06:09,860 --> 00:06:16,360

transportation can, erect it, mate it, then bring the payload fairing around the satellite.

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00:06:16,360 --> 00:06:19,290

REID: By the time you get there on launch day, it's kind of like you've planned a

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00:06:19,290 --> 00:06:24,600

trip and you've packed for the trip and all you have left to do is gas and go.

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00:06:24,600 --> 00:06:28,920

So that's what we do on launch day, we load the rocket with fuel and