1
00:00:13,900 --> 00:00:17,640
Mary Estacion/Reporter: Almost two dozen countries
are helping to build the James Webb Space

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00:00:17,640 --> 00:00:19,050
Telescope.

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00:00:19,050 --> 00:00:24,110
Canada is responsible for what some call the
observatory's steering wheel, otherwise known

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00:00:24,110 --> 00:00:27,410
as the Fine Guidance Sensor or FGS.

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00:00:27,410 --> 00:00:33,090
The Canadians are also delivering one of the
four scientific instruments on the telescope,

6
00:00:33,090 --> 00:00:36,510
the Near Infrared Imager and Slitless Spectrograph.

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00:00:36,510 --> 00:00:41,450
To find out more about the FGS and NIRISS,
we're here at the Canadian Space Agency's

8
00:00:41,450 --> 00:00:44,520
David Florida Laboratory in Ottawa, Canada.

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00:00:44,520 --> 00:00:47,280
Mary: So Karl, why did you want to meet here
in a chamber?

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00:00:47,280 --> 00:00:50,299
Karl Saad/CSA Project Manager, FGS-NIRISS:
Right now we're standing in front of the thermal

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00:00:50,299 --> 00:00:57,230
vacuum chamber where we've tested the instruments
in the vacuum of space and also the cold environment

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00:00:57,230 --> 00:00:59,059
in which it's going to operate.

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00:00:59,059 --> 00:01:03,850
So it's key for us to demonstrate that our
system that has to be very sensitive but also

14
00:01:03,850 --> 00:01:07,770
have to be robust enough to survive the conditions
of the mission.

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00:01:07,770 --> 00:01:13,070
Mary: Was there some other technology that
helped develop the Fine Guidance and the NIRISS?

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00:01:13,070 --> 00:01:18,180
Karl: Yes, in fact our prime contractor, COMDEV
Canada, developed some star tracking software

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00:01:18,180 --> 00:01:21,490
for other missions and for missions that are
currently ongoing.

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00:01:21,490 --> 00:01:25,300
So we built on that heritage to build the
software for this mission.

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00:01:25,300 --> 00:01:30,210
Mary: So were there any other challenges you
had to overcome to build FGS and NIRISS?

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00:01:30,210 --> 00:01:34,920
Karl: In fact, our team is spread over 3 time
zones so in order to keep communications flowing

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00:01:34,920 --> 00:01:37,950
and also getting decisions in as real time
as possible...

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00:01:37,950 --> 00:01:41,620
That was a challenge but we had a good team,
a team that really believed in the mission

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00:01:41,620 --> 00:01:44,460
so we were very cohesive and we were able
to overcome that.

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00:01:44,460 --> 00:01:48,300
Mary: I understand the FGS and NIRISS are
actually here in the building.

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00:01:48,300 --> 00:01:49,300
Karl: That's right.

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00:01:49,300 --> 00:01:51,620
This is their home and if you want, we can
take a look at them in the tent.

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00:01:51,620 --> 00:01:54,250
Mary: Sounds good.

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00:01:54,250 --> 00:01:56,000
Karl: Good.

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00:01:56,000 --> 00:01:59,800
Karl: On the top here what we have is the
Fine Guidance Sensor.

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00:01:59,800 --> 00:02:04,799
It will basically point the telescope and
keep the telescope stabilized so that we get

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00:02:04,799 --> 00:02:07,540
really sharp images from that.

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00:02:07,540 --> 00:02:09,759
And on the other side, we have NIRISS.

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00:02:09,759 --> 00:02:13,130
One of the aspects of NIRISS that we're very
excited about is that it has a particular

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00:02:13,130 --> 00:02:15,390
capability to detect exoplanets.

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00:02:15,390 --> 00:02:22,499
These are planets that are circulating around
a star and hopefully, at the same time, detect

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00:02:22,499 --> 00:02:26,959
if they have atmospheres and if they do have
atmospheres, know exactly what these atmospheres

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00:02:26,959 --> 00:02:28,139
contain.

38
00:02:28,139 --> 00:02:29,459
Is it capable of sustaining life.

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00:02:29,459 --> 00:02:32,489
Mary: Now I understand Fine Guidance has a
redundancy built in, right?

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00:02:32,489 --> 00:02:33,489
Karl: That's right...

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00:02:33,489 --> 00:02:37,719
the Fine Guidance Sensor has two cameras and
both function the same way and if we have

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00:02:37,719 --> 00:02:41,790
a problem with one of the channels, we can
switch over to the other one and not lose

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00:02:41,790 --> 00:02:43,749
any capability, any performance.

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00:02:43,749 --> 00:02:48,139
NIRISS, our science instrument, can also perform guidance functions.

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00:02:48,139 --> 00:02:52,290
So it's like we have a third level of redundancy as part of the Canadian package.

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00:02:52,290 --> 00:02:55,969
Mary: Thank you, Karl, for showing us the Fine Guidance Sensor and the NIRISS.

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00:02:55,969 --> 00:02:57,639
Karl: You're very welcome, Mary.

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00:02:57,639 --> 00:02:59,400
Mary: So there you have it...

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00:02:59,400 --> 00:03:02,170
Canada's contribution to the James Webb Space Telescope.