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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 --> 00:00:24,109
Canada is responsible for what some call the
observatory's steering wheel, otherwise known

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00:00:24,109 --> 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,

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

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00:00:36,509 --> 00:00:41,449
To find out more about the FGS and NIRISS,
we're here at the Canadian Space Agency's

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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 --> 00:00:50,298
Karl Saad/CSA Project Manager, FGS-NIRISS:
Right now we're standing in front of the thermal

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00:00:50,298 --> 00:00:57,229
vacuum chamber where we've tested the instruments
in the vacuum of space and also the cold environment

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00:00:57,229 --> 00:00:59,058
in which it's going to operate.

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00:00:59,058 --> 00:01:03,849

So it's key for us to demonstrate that our system that has to be very sensitive but also

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00:01:03,850 --> 00:01:07,769

have to be robust enough to survive the conditions of the mission.

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00:01:07,769 --> 00:01:13,069

Mary: Was there some other technology that helped develop the Fine Guidance and the NIRISS?

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00:01:13,069 --> 00:01:18,179

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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00:01:21,489 --> 00:01:25,299

So we built on that heritage to build the software for this mission.

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00:01:25,299 --> 00:01:30,209

Mary: So were there any other challenges you had to overcome to build FGS and NIRISS?

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00:01:30,209 --> 00:01:34,919

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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00:01:44,459 --> 00:01:48,299

Mary: I understand the FGS and NIRISS are

actually here in the building.

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00:01:48,299 --> 00:01:49,299

Karl: That's right.

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00:01:49,299 --> 00:01:51,619

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 --> 00:01:59,799

Karl: On the top here what we have is the Fine Guidance Sensor.

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00:01:59,799 --> 00:02:04,798

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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00:02:09,758 --> 00:02:13,129

One of the aspects of NIRISS that we're very excited about is that it has a particular

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00:02:13,129 --> 00:02:15,389

capability to detect exoplanets.

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00:02:15,389 --> 00:02:22,498

These are planets that are circulating around a star and hopefully, at the same time, detect

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00:02:22,498 --> 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.

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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 --> 00:02:36,439
Karl: That's right... the Fine Guidance Sensor
has two cameras and both function the same

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00:02:36,439 --> 00:02:41,090
way and if we have a problem with one of the
channels, we can switch over to the other

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00:02:41,090 --> 00:02:43,748
one and not lose any capability, any performance.

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00:02:43,748 --> 00:02:48,138
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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00:02:52,289 --> 00:02:55,968
Mary: Thank you, Karl, for showing us the
Fine Guidance Sensor and the NIRISS.

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00:02:55,968 --> 00:02:57,638
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.

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00:03:02,169 --> 00:03:05,758
Thanks for joining us for yet another edition

of Behind the Webb.