1
00:00:02,450 --> 00:00:10,380
\h GEORGE DILLER: Gamma-ray bursts... Dark matter... Black holes... Neutron stars and supernova rem

2
00:00:10,380 --> 00:00:17,900
\h Clues to these mysteries of the universe and more will soon be investigated by a new intergalactic dete

3
00:00:17,900 --> 00:00:25,640
\h The Gamma-ray Large Area Space Telescope -- known as GLAST -- is poised for launch aboard a Delt

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00:00:25,640 --> 00:00:33,670
\h GLAST will be the first observatory of its kind to daily survey the entire sky using its highly sensitive inst

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00:00:33,670 --> 00:00:40,440
\h Join us now from the Kennedy Space Center in Florida as we learn more about the exciting mission of G

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00:00:40,440 --> 00:00:48,890
\h MUSIC.

7
00:00:48,890 --> 00:00:52,770
\h Hello and welcome to NASA's special coverage of the GLAST mission.

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00:00:52,770 --> 00:00:55,270
\h I'm your host, Tiffany Nail.

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00:00:55,270 --> 00:01:00,210
\h In addition to taking a closer look at this exciting mission, we're going to visit a

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00:01:00,210 --> 00:01:03,690
\h location that NASA viewers only glimpse during launch coverage.

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00:01:03,690 --> 00:01:08,300
\h It's the Mission Director's Center where the launch team conducts the countdown.

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00:01:08,300 --> 00:01:12,830
\h We'll also hear from a member of the GLAST team who stopped by the studio earlier

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00:01:12,830 --> 00:01:16,210

\h to answer some questions about the goals of the mission.

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00:01:16,210 --> 00:01:24,570
\h But before that, our mission manager here at Kennedy -- Bruce Reid -- is going to introduce us to the sp

15
00:01:24,570 --> 00:01:29,460
\h Hi, I'm Bruce Reid -- mission manager for the Launch Services Program here at Kennedy Space Center

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00:01:29,460 --> 00:01:35,110
\h It's my job to act as the primary coordinator between the spacecraft and the rocket that will carry it to sp

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00:01:35,110 --> 00:01:39,960
\h The GLAST spacecraft was built and tested for NASA by General Dynamics in Arizona.

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00:01:39,960 --> 00:01:43,220
\h The spacecraft was transported across country, where it received additional

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00:01:43,220 --> 00:01:46,480
\h testing at the Naval Research Laboratory in Washington.

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00:01:46,480 --> 00:01:51,260
\h In early March, GLAST arrived by truck at Astrotech's processing facility in Titusville,

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00:01:51,260 --> 00:01:55,800
\h Florida -- located just across the Indian River from the Kennedy Space Center.

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00:01:55,800 --> 00:02:01,350
\h Over the last two months, final pre-launch preparations of the spacecraft were completed in the facility's

23
00:02:01,350 --> 00:02:05,060
\h Engineers and technicians have been busy checking all the spacecraft's

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00:02:05,060 --> 00:02:09,470
\h communications -- command and data handling -- and propulsion systems.

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00:02:09,470 --> 00:02:14,900
\h In addition to a complete checkout of the craft's scientific instruments, the flight battery was installed –

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00:02:14,900 --> 00:02:18,990
\h along with a communications antenna -- and two sets of solar arrays.

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00:02:18,990 --> 00:02:24,210
\h Meanwhile -- just miles away at Launch Pad 17-B -- the Delta II rocket has been

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00:02:24,210 --> 00:02:28,400
\h under going its own preparations by its builder, United Launch Alliance.

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00:02:28,400 --> 00:02:31,670
\h The Delta II has proven to be a workhorse launch vehicle.

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00:02:31,670 --> 00:02:37,380
\h For the GLAST launch, the rocket will use nine strap-on solid rocket boosters for additional lift capacity.

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00:02:37,380 --> 00:02:44,200
\h With the first and second stages in place, the rocket was topped off by the spacecraft tucked inside a pr

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00:02:44,200 --> 00:02:49,230
\h The stage is now set -- the rocket and spacecraft are ready -- and soon the familiar 3 –

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00:02:49,230 --> 00:02:55,710
\h 2--1 -- liftoff will send GLAST spaceward to fulfill its mission.

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00:02:55,710 --> 00:02:59,490
\h I'm here in Mission Director's Center with NASA launch director Omar Baez.

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00:02:59,490 --> 00:03:00,860
\h Omar, thanks for joining us.

36
00:03:00,860 --> 00:03:02,040
\h Thank you, Tiffany.

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00:03:02,040 --> 00:03:04,660
\h This is where the launch team works during the countdown.

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00:03:04,660 --> 00:03:07,760

\h This place is full of activity in the moments leading up to launch.

39
00:03:07,760 --> 00:03:11,350
\h Can you show us your console and tell us what you do during the countdown?

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00:03:11,350 --> 00:03:12,980
\h Sure, Tiffany.

41
00:03:12,980 --> 00:03:16,050
\h This is my console -- it's my communications station.

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00:03:16,050 --> 00:03:19,670
\h I also have video in here and closed circuit TV of what's going on.

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00:03:19,670 --> 00:03:24,270
\h And this is where I perform my polls at different phases of the launch.

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00:03:24,270 --> 00:03:29,420
\h A question our viewers always ask us is: Do you actually push a button to launch the rocket?

45
00:03:29,420 --> 00:03:31,860
\h No, I actually don't push a button.

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00:03:31,860 --> 00:03:35,450
\h But three miles down the road, there's gentleman called the first stage controller,

47
00:03:35,450 --> 00:03:42,450
\h who actually clicks a mouse at T-3 seconds and enables the engines to start on the rocket.

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00:03:42,450 --> 00:03:47,600
\h Can you explain to me what some other key members of the launch team do on launch day?

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00:03:47,600 --> 00:03:52,500
\h Sure. If I start at the back of the room, we have our safety and mission assurance personnel.

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00:03:52,500 --> 00:03:56,520
\h We also have our public affairs officer doing the live commentary.

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00:03:56,520 --> 00:04:03,900
\h We have our spacecraft customer, we have the Air Force landlord of Complex 17,

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00:04:03,900 --> 00:04:11,480
\h we have the launch service provider, the mission integration team, and behind me I have my manageme

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00:04:11,480 --> 00:04:13,940
\h Thanks Omar, and good luck on launch day!

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00:04:13,940 --> 00:04:15,890
\h Thank you.

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00:04:15,890 --> 00:04:19,950
\h Once GLAST is in orbit, NASA's Goddard Space Flight Center takes over as the

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00:04:19,950 --> 00:04:24,530
\h spacecraft gets set to help unlock the mysteries of the universe.

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00:04:24,530 --> 00:04:29,690
\h The mission is a cooperative effort between NASA -- the U.S. Department of Energy –

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00:04:29,690 --> 00:04:34,730
\h international partners from France, Germany, Italy, Japan and Sweden –

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00:04:34,730 --> 00:04:39,310
\h plus a number of academic institutions from the U.S. and abroad.

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00:04:39,310 --> 00:04:44,080
\h Here's GLAST's Project Scientist, Dr. Steven Ritz, to answer some questions

61
00:04:44,080 --> 00:04:49,120
\h about the purpose and goals of the GLAST mission.

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00:04:49,120 --> 00:04:53,740
\h Among the many areas of scientific investigation that we'll be doing with GLAST

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00:04:53,740 --> 00:04:56,250

\h is a phenomenon called gamma ray bursts.

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00:04:56,250 --> 00:05:02,600
\h Gamma ray bursts have been well studied before, but we don't know very well at all about their highest

65
00:05:02,600 --> 00:05:05,300
\h And that's very important to understand so that we can understand what's under

66
00:05:05,300 --> 00:05:09,130
\h the hood of these incredibly powerful engines.

67
00:05:09,130 --> 00:05:15,060
\h Together the two instruments -- the GLAST Burst Monitor, or GBM, and the Large Area Telescope,

68
00:05:15,060 --> 00:05:20,890
\h LAT -- cover for some phenomenon, such as gamma ray bursts, seven decades of energy.

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00:05:20,890 --> 00:05:26,150
\h That means if GLAST were an instrument like a piano, it would cover 23 octaves.

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00:05:26,150 --> 00:05:29,990
\h And so that's an incredibly huge breakthrough all by itself.

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00:05:29,990 --> 00:05:34,460
\h The LAT will provide for us those breakthrough energy range measurements and

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00:05:34,460 --> 00:05:41,280
\h we'll be able to do that with exquisite time detail as well, and that's an incredibly important advance.

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00:05:41,280 --> 00:05:49,420
\h However, we really need to know burst to burst, and they happen about once a day, what the lower ene

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00:05:49,420 --> 00:05:52,970
\h As our colleagues say, "When you've seen one gamma ray burst, you've seen one gamma ray burst."

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00:05:52,970 --> 00:05:54,100
\h They're all different.

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00:05:54,100 --> 00:05:59,770
\h So it's important to match the lower energy measurements of gamma ray bursts with

77
00:05:59,770 --> 00:06:02,790
\h the higher energy measurements that the LAT will provide,

78
00:06:02,790 --> 00:06:06,730
\h and that is an important role that the GLAST Burst Monitor, or GBM, plays.

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00:06:06,730 --> 00:06:13,130
\h GLAST is a multi-agency, multi-cultural, and multi-national mission.

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00:06:13,130 --> 00:06:15,210
\h That's one of the things that's really great about it

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00:06:15,210 --> 00:06:19,080
\h NASA is working together with the Department of Energy in the United States,

82
00:06:19,080 --> 00:06:22,820
\h that represents the cooperation of different communities,

83
00:06:22,820 --> 00:06:27,270
\h in particular the high energy astrophysics high energy particle physics communities.

84
00:06:27,270 --> 00:06:31,990
\h These communities have come together to make something very special which is GLAST.

85
00:06:31,990 --> 00:06:35,520
\h That's the multi- agency and multi-cultural aspects.

86
00:06:35,520 --> 00:06:42,230
\h It's also multi-national -- there have been essential contributions from Italy, Japan, France Germany and

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00:06:42,230 --> 00:06:47,440
\h And together, these combined talents have made GLAST a reality.

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00:06:47,440 --> 00:06:52,230

\h GLAST is designed to operate for five years, and we have a goal to operate for 10 years.

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00:06:52,230 --> 00:06:55,680
\h Since there are no consumables onboard, which means there's no gas or

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00:06:55,680 --> 00:07:00,730
\h other things that get used up, we think we can do that.

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00:07:00,730 --> 00:07:02,750
\h I hope you've enjoyed the program.

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00:07:02,750 --> 00:07:09,080
\h I want to thank all our guests for giving us this inside look at what goes into a successful launch and mis

93
00:07:09,080 --> 00:07:16,890
\h Join us live for the GLAST liftoff -- on NASA TV -- or on your computer at nasa.gov/GLAST