Commercial Space Transportation License

License Number: LLO 19-110 (Rev 3)

SPACE EXPLORATION TECHNOLOGIES

is authorized, subject to the provisions of 51 USC Subtitle V, ch. 509, and the orders, rules, and regulations issued under it, to conduct launches.

General. Space Exploration Technologies is authorized to conduct:

- (i) Flights of Falcon 9 and Falcon Heavy launch vehicles from Launch Complex 39A at Kennedy Space Center (KSC), each transporting a payload to a low Earth, geosynchronous equatorial, or geosynchronous transfer orbit; and
- (ii) Pre-flight ground operations at KSC involving the Falcon 9 and Falcon Heavy launch vehicles associated with the conduct of any flights that require a Federal Aviation Administration license.

This license is granted subject to the terms, conditions, and limitations set forth in licensing orders A, B, C, and D and any subsequent orders issued by the Office of Commercial Space Transportation.

The licensee shall at all times conduct its operations in accordance with the regulations prescribed by the Office of Commercial Space Transportation for the activities authorized by this license.



US Department of Transportation Federal Aviation Administration Original Issued: February 15, 2019
Rev 3 Issued: April 14, 2023
Rev 3 Effective: April 14, 2023

Revision History:

Original License - Issued February 15, 2019

Revision 1 - Issued April 5, 2019

1) Added "Falcon Heavy" to paragraphs (i) and (ii) as a vehicle covered under this license.

Revision 2 - Issued November 8, 2019

1) Paragraph (ii) removed condition that pre-flight ground operations is specifically associated with the flights in Paragraph (i) and replaced with the following: "pre-flight ground operations at KSC involving the Falcon 9 and Falcon Heavy launch vehicles associated with the conduct of any flights that require a Federal Aviation Administration license."

Revision 3 - Issued April 14, 2023

1) Paragraph (i) changed "to a low Earth or geosynchronous transfer orbit;" to "to a low earth, geosynchronous equatorial, or geosynchronous transfer orbit;"

OFFICE OF COMMERCIAL SPACE TRANSPORTATION LICENSE ORDER REGARDING

LAUNCH

AUTHORIZED BY LICENSE NO. LLO 19-110 ISSUED TO

SPACE EXPLORATION TECHNOLOGIES

- 1. <u>Authority</u>: This Order is issued to Space Exploration Technologies, referred to as SpaceX, under 51 U.S.C. subtitle V, chapter 509, and 14 C.F.R. Ch. III.
- 2. Purpose: This Order modifies License No. LLO 19-110 originally issued on February 15, 2019, by the Federal Aviation Administration's Office of Commercial Space Transportation, authorizing SpaceX to conduct launches of Falcon 9 and Falcon Heavy launch vehicles; and prescribes as conditions to License No. LLO 19-110 certain requirements applicable to the launches.
- 3. <u>Definitions</u>: For purposes of License No. LLO 19-110 and any orders issued by the FAA pertaining to activities covered by License No. LLO 19-110:
 - (a) "Flight" shall mean the flight of a Falcon 9 or Falcon Heavy launch vehicle, commencing with ignition of the first stage from Kennedy Space Center (KSC) and transporting a payload to a low Earth, geosynchronous equatorial, or geosynchronous transfer orbit. Flight includes fly back of Falcon 9 or Falcon Heavy first stage boosters for landing at LZ-1, LZ-2, and/or on a droneship or splashdown in the ocean. A flight is concluded upon SpaceX's last exercise of control over the Falcon 9 or Falcon Heavy vehicle, including the safing of the Falcon 9 or Falcon Heavy vehicle stages or components that reach Earth orbit, following separation of the payload, or at the stage's splashdown after a purposeful disposal.
 - (b) "Pre-flight ground operations" shall mean SpaceX's pre-flight preparations of the Falcon 9 or Falcon

Heavy launch vehicles at KSC, beginning with the arrival of the Falcon 9 and Falcon Heavy vehicles at KSC.

- 4. Special Reporting Requirements: In addition to all applicable reporting requirements under 14 C.F.R. Ch. Ill, SpaceX must identify any anomaly occurring on a prior Falcon 9 or Falcon Heavy launch that could be material to public safety no later than 15 days before any flight conducted under this license, unless the requirement of 14 C.F.R. § 417.25(a) has already been satisfied.
- 5. <u>Compliance Documentation</u>: Any references to LLS 17-100 or LLS 17-101 in compliance documentation will remain valid and equally applicable under LLO 19-110.
- 6. <u>License Term</u>: The term of License No. LLO 19-110 authorizing SpaceX to conduct launches is five (5) years from February 15, 2019.

OFFICE OF COMMERCIAL SPACE TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

MICHELLE S MURRAY Digitally signed by MICHELLE S MURRAY Date: 2023.04.14 15:39:04 -04'00'

Michelle S. Murray, Manager Safety Authorization Division

Original Issued: February 15, 2019
Rev 3 Issued: April 14, 2023
Rev 3 Effective: April 14, 2023

Revision History:

Original License Order A - Issued February 15, 2019

Revision 1 - Issued April 5, 2019

- 1) Added "Falcon Heavy" to paragraphs (2), (3) and (4) as a vehicle covered under this license
- 2) Paragraph (2) replaced "issued concurrently" with "originally issued on February 15, 2019"

- 3) Paragraph (3) added LZ-2 to list of first stage flyback locations.
- Revision 2 Issued November 6, 2020
 - 1) Added "or at the stage's splashdown after a purposeful disposal" to paragraph (3)(a) to clarify the end of licensed activities.
- Revision 3 Issued April 14, 2023
 - 1) Paragraph (3)(a) changed "transporting a payload to a low Earth or geosynchronous transfer orbit." To "transporting a payload to low earth, geosynchronous equatorial, or geosynchronous transfer orbit."

OFFICE OF COMMERCIAL SPACE TRANSPORTATION LICENSE ORDER REGARDING

FLIGHT

AUTHORIZED BY LICENSE NO. LLO 19-110 ISSUED TO

SPACE EXPLORATION TECHNOLOGIES

- 1. <u>Authority</u>: This Order is issued to Space Exploration Technologies, referred to as SpaceX, under 51 U.S.C. subtitle V, chapter 509, and 14 C.F.R. Ch. III.
- 2. Purpose: This Order modifies License No. LLO 19-110 originally issued on February 15, 2019, by the Federal Aviation Administration's Office of Commercial Space Transportation, authorizing SpaceX to conduct launches of Falcon 9 and Falcon Heavy launch vehicles; and prescribes as conditions to License No. LLO 19-110 certain requirements applicable to the authorization to conduct the flights of these launch vehicles.
- 3. <u>Authorization</u>: SpaceX is authorized to conduct flights of launch vehicles:
 - (a) Using a Falcon 9 or Falcon Heavy launch vehicle;
 - (b) From Launch Complex 39A at Kennedy Space Center, Florida;
 - (c) Transporting Dragon 2 to low Earth orbit or a payload to a low Earth, geosynchronous equatorial, or geosynchronous transfer orbit; and
 - (d) According to the launch vehicle, launch vehicle systems, and safety management program represented in the SpaceX application as of the date of this order, and any amendments to the license application approved by the FAA, in writing.

OFFICE OF COMMERCIAL SPACE TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

MICHELLE S MURRAY

Date: 2023.04.14 15:40:58 -04'00'

Michelle S. Murray, Manager Safety Authorization Division

Original Issued: February 15, 2019
Rev 7 Issued: April 14, 2023
Rev 7 Effective: April 14, 2023

Revision History:

Original License Order B - Issued February 15, 2019

Revision 1 - Issued April 5, 2019

- 1) Added "Falcon Heavy" to paragraphs (2) and (3)(a) as a vehicle covered under this license.
- 2) Paragraph (2) replaced "issued concurrently" with "originally issued on February 15, 2019"

Revision 2 - Issued February 18, 2020

- 1) Changed launch azimuth in paragraph (3) (c) from 43.7 degrees to "43 to 44 degrees".
- 2) Amended wording in paragraph 3 (d) to state "Transporting a Dragon capsule to low Earth orbit for NASA CRS missions or a payload to a low Earth or geosynchronous transfer orbit".

Revision 3 - Issued November 6, 2020

- 1) Paragraph (3) removed "On a nominal launch azimuth of 43 to 44 degrees for missions to low Earth orbit or 90 degrees for missions to geosynchronous transfer orbit".
- 2) Paragraph (3)(c) added "the Dragon 2 NASA CCP-1 mission" and Dragon 1 for the NASA CRS missions.

Revision 4 - Issued December 1, 2020

1) Paragraph (3)(c) added Dragon 1 "or 2" for the NASA CRS missions.

Revision 5 - Issued September 10, 2021

1) Paragraph (3)(c) added "the Inspiration4 mission and"

Revision 6 - Issued March 18, 2022

1) Paragraph (3)(c) replaced "(c)Transporting a Dragon 2 capsule for the Inspiration4 mission and NASA CCP missions or Dragon 1 or 2 capsule for the NASA CRS missions to low Earth orbit or a payload to a low Earth or geosynchronous transfer orbit;

and" with "Transporting Dragon 2 to low Earth orbit or a payload to a low Earth or geosynchronous transfer orbit; and"

Revision 7 - Issued April 14, 2023

1) Paragraph (3)(c) changed "or a payload to a low Earth or geosynchronous transfer orbit" to "or a payload to a low Earth, geosynchronous equatorial, or geosynchronous transfer orbit"

OFFICE OF COMMERCIAL SPACE TRANSPORTATION LICENSE ORDER REGARDING

PRE-FLIGHT GROUND OPERATIONS

AUTHORIZED BY LICENSE NO. LLO 19-110 ISSUED TO

SPACE EXPLORATION TECHNOLOGIES

- 1. Authority: This Order is issued to Space Exploration Technologies, referred to as SpaceX, under 51 U.S.C. subtitle V, chapter 509, and 14 C.F.R. Ch. III.
- Purpose: This Order modifies License No. LLO 19-110 2. originally issued on February 15, 2019, by the Federal Aviation Administration's Office of Commercial Space Transportation, authorizing SpaceX to conduct launches of Falcon 9 and Falcon Heavy launch vehicles; and prescribes as conditions to License No. LLO 19-110 certain requirements applicable to the authorization to conduct pre-flight ground operations.
- Authorization: SpaceX is authorized to conduct pre-flight 3. ground operations at Kennedy Space Center (KSC) associated with launches of Falcon 9 and Falcon Heavy launch vehicles.

OFFICE OF COMMERCIAL SPACE TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

By:

Kenneth Wong, Manager

Genneth Woma

Licensing and Evaluation Division

Original Issued:

February 15, 2019

Rev 1 Issued:

April 5, 2019

Rev 1 Effective:

April 5, 2019

Revision History:

Original License Order C - Issued February 15, 2019 Revision 1 - Issued April 5, 2019

- 1) Added "Falcon Heavy" to paragraphs (2) and (3) as a vehicle covered under this license.
- 2) Paragraph (2) replaced "issued concurrently" with "originally issued on February 15, 2019".

OFFICE OF COMMERCIAL SPACE TRANSPORTATION LICENSE ORDER REGARDING

FINANCIAL RESPONSIBILITY REQUIREMENTS

Under License No. LLO 19-110
Issued to

SPACE EXPLORATION TECHNOLOGIES

- 1. <u>Authority</u>: This Order is issued to Space Exploration Technologies, referred to as SpaceX, under 51 U.S.C. Subtitle V, chapter 509, and 14 C.F.R. part 440.
- 2. Purpose: This Order modifies License No. LLO 19-110 originally issued on February 15, 2019, by the Federal Aviation Administration's Office of Commercial Space Transportation, by prescribing financial responsibility requirements for licensed launch activities in accordance with 14 C.F.R. part 440.
- 3. <u>Definitions</u>: For purposes of this Order, "licensed launch activities" shall mean activities authorized by the License. Other terms used in this Order are defined in accordance with 14 C.F.R. § 440.3.
- 4. <u>Liability Insurance</u>: SpaceX shall maintain a policy or policies of liability insurance for covered claims in accordance with 14 C.F.R. § 440.9(b) in the amounts below:
 - (a) Flight of Falcon 9 or Falcon Heavy launch vehicle from Kennedy Space Center (KSC)
 - (i) Fifty-Three Million Dollars (\$53,000,000) for geosynchronous transfer orbit (GTO) missions and for Starlink Group 4, Group 5, or Group 6 missions;
 - (ii) Eighty-Six Million Dollars (\$86,000,000) for low Earth orbit (LEO) missions;
 - (iii) Seventy Million Dollars (\$70,000,000) for Dragon 2
 missions if the flight does not include a first

stage return to land;

- (iv) One-Hundred and Eighty Million Dollars
 (\$180,000,000) for the OneWeb missions or Falcon
 Heavy Arabsat 6A mission;
- (v) One-Hundred Million Dollars for the ViaSat 3.1
 mission;
- (vi) One-Hundred Sixty Million Dollars (\$160,000,000)
 for Dragon 2 missions if the flight includes a first
 stage return to land; or
- (vii) Five-Hundred Million Dollars (\$500,000,000) for the Falcon Heavy Echostar XXIV/Jupiter 3 mission; and
- (j) Pre-flight operations performed at KSC
- (i) Twenty Four Million Dollars (\$24,000,000) for the NROL-108 mission;
- (ii) Two Hundred Twenty Million Dollars (\$220,000,000) for NASA CRS Dragon 2 missions if the flight does not include a first stage return to land;
- (iii) Two Hundred Thirty-Five Million Dollars
 (\$235,000,000) for NASA CCP or commercial human
 space flight Dragon 2 missions if the flight does
 not include a first stage return to land;
- (iv) Eighteen Million Dollars (\$18,000,000) for all other missions; or
- (v) One-Hundred Thirty-Four Million Dollars (\$134,000,000) for Dragon 2 missions if the flight includes a first stage return to land.
- 5. Government Property Insurance: SpaceX shall maintain a policy or policies of insurance for covered claims in accordance with 14 C.F.R § 440.9(d) in the amounts below:
 - (a) Flight of Falcon 9 or Falcon Heavy launch vehicle from Kennedy Space Center (KSC)

- (i) Seventy-Two Million Dollars (\$72,000,000) for GTO and LEO missions;
- (ii) Seventy-Two Million Dollars (\$72,000,000) for the NASA CCP, NASA CRS, or commercial human spaceflight Dragon 2 missions if the flight does not include a first stage return to land; or
- (iii) One Hundred Million Dollars (\$100,000,000) for the OneWeb missions, Falcon Heavy launch vehicle missions, or Dragon 2 missions if the flight includes a first stage return to land; and

(b) Pre-flight operations performed at KSC

- (i) Sixty-Three Million Dollars (\$63,000,000) for Falcon 9 launches; or
- (ii) Seventy-Two Million Dollars (\$72,000,000) for Falcon Heavy launches.
- 6. Covered property includes all property owned, leased, or occupied by, or within the care, custody, or control of, the United States and its agencies, and its contractors and subcontractors involved in licensed launch activities, at KSC and Cape Canaveral Space Force Station.
- 7. For the purpose of financial responsibility, launch operations covered by this license that include an abort of the Dragon-2 capsule prior to the liftoff of Falcon-9 are considered pre-flight operations.
- 8. Any documents submitted for compliance with 14 C.F.R. §§ 440.15 and 440.17 under License Nos. LLS 17-100 and LLS 17-101 remain valid for this license.

OFFICE OF COMMERCIAL SPACE TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

Michelle S. Murray Digitally signed by Michelle S. Murray Date: 2023.09.01 16:42:22 -04'00'

Michelle S. Murray, Manager Safety Authorization Division

Original Issued: February 15, 2019
Rev 16 Issued: September 1, 2023
Rev 16 Effective: September 1, 2023

Revision History:

Original License Order D - Issued February 15, 2019 Revision 1 - Issued April 5, 2019

- 1) Paragraph (2) replaced "issued concurrently" with "originally issued on February 15,
 2019"
- 2) Added" or One-Hundred and Eighty Million Dollars (\$180,000,000) for covered claims resulting from flight of the Falcon Heavy launch vehicle from Kennedy Space Center (KSC) for geosynchronous transfer orbit (GTO) missions" to paragraph
 (4) (a) for liability values covering the Falcon Heavy vehicle.
- 3) Added "or One-Hundred Million Dollars (\$100,000,000) for covered claims resulting from flight of the Falcon Heavy launch vehicle from KSC for GTO missions" to paragraph (5) (a) for liability values covering the Falcon Heavy vehicle.
- 4) Added "or Seventy-Two Million Dollars (\$72,000,000) for covered claims resulting from pre-flight operations performed at KSC for Falcon Heavy launches" to paragraph (5) (b).

Revision 2 - Issued February 18, 2020

- 1) Paragraph (4) (a) added "Eighty-Six Million Dollars (\$86,000,000) for Falcon 9 low Earth orbit (LEO) missions"
- 2) Paragraph (5)(a) added "and LEO" to the first sentence.

Revision 3 - Issued November 6, 2020

- 1) Paragraph (4) (a) Added "One Hundred Sixty Million Dollars (\$160,000,000) for the Falcon 9 NROL-108 mission" and "Seventy Million Dollars (\$70,000,000) for the Falcon 9 NASA CCP missions".
- 2) Paragraph (4)(b) Added "Twenty Four Million Dollars (\$24,000,000) for the Falcon 9 NROL-108 mission" and "One Hundred Twenty-Nine Million Dollars (\$129,000,000) for the Falcon 9 NASA CCP missions".
- 3) Paragraph (5)(a) Added "One Hundred Million Dollars (\$100,000,000) for the Falcon 9 NROL-108 mission" and "Seventy-Two Million Dollars (\$72,000,000) for the Falcon 9 NASA CCP missions".

- 4) Added Paragraph 7 to clarify Dragon-2 abort scenario financial responsibility.
- 5) Renumbered paragraphs as a result of the addition of paragraph 7.

Revision 4 - Issued December 1, 2020

- 1) Renumbered paragraphs for clarity.
- 2) Paragraph (4)(a)(iii) Added "Dragon 1 RTLS".
- 3) Paragraph (4)(a)(iv) Added "or CRS Dragon 2".
- 4) Paragraph (4) (b) (ii) Added "Fifty Four Million Dollars (\$54,000,000) for NASA CRS Dragon 2 missions".
- 5) Paragraph (5) (a) (i) Added "or CRS Dragon 2"

Revision 5 - Issued September 8, 2021

- 1) Paragraph (4) removed "or otherwise demonstrate financial responsibility"
- 2) Renumbered paragraphs for clarity.
- 3) Paragraph (4)(b)(iv) Added "One Hundred Twenty Nine Million Dollars (\$129,000,000) for the Inspiration4 mission".

Revision 6 - Issued September 10, 2021

- 1) Renumbered paragraphs for clarity.
- 2) Paragraph (4)(a)(iv) Added "or the Inspiration4 mission".
- 3) Paragraph (5) removed "or otherwise demonstrate financial responsibility"
- 4) Paragraph (5)(a)(i) Added "Inspiration4 mission".

Revision 7 - Issued October 25, 2021

- 1) Renumbered paragraphs for clarity.
- 2) Paragraph (4)(b) removed "Eighty Seven Million Dollars (\$87,000,000) for NASA CCP missions"
- 3) Paragraph (4) (b) (iii) Added "NASA CCP missions or" and missing parenthesis.

Revision 8 - Issued December 14, 2021

1) Paragraph (4)(b)(ii) replaced "Fifty Four Million Dollars (\$54,000,000)" with "One Hundred Fourteen Million Dollars (\$114,000,000)" for NASA CRS Dragon 2 missions.

Revision 9 - Issued January 5, 2022

- 1) Corrected Order D header. Replaced "LLS 19-110D" with "LLO 19-110D".
- 2) Paragraph (4)(a)(i) added "Starlink Group 4 missions".
- 3) Paragraph (5)(a)(i) added "Starlink Group 4 missions".

Revision 10 - Issued March 18, 2022

- 1) Removed paragraph (4)(a)(iii)
- 2) Renumbered paragraph (4)(a)(iv) to paragraph (4)(a)(iii)
- 3) Paragraph (4)(a)(iii) replaced "NASA CCP or CRS Dragon 2 missions or the Inspiration4 mission" with "Dragon 2 missions"
- 4) Renumbered paragraph (4)(a)(v) to paragraph (4)(a)(iv)
- 5) Paragraph (4)(b)(iii) replaced "NASA CCP missions or the Inspiration4 mission" with "commercial human space flight Dragon 2 missions"

- 6) Paragraph (5)(a)(i) replaced "Inspiration4" with "commercial human spaceflight Dragon 2"
- 7) Paragraph (5)(a)(ii) removed "Falcon 9 NASA Dragon 1 CRS RTLS missions or the NROL-108 mission, or "

Revision 11 - Issued December 6, 2022

- 1) Paragraph (4)(a)(iv) added "the OneWeb missions or"
- 2) Paragraph (5)(a)(ii) added "OneWeb missions or"

Revision 12 - Issued January 30, 2023

- 1) Paragraph (4)(a)(i) added "or Group 5"
- 2) Paragraph (4) (b) (ii) changed "One Hundred Fourteen Million Dollars (\$114,000,000) for NASA CRS Dragon 2 missions" to "Two Hundred Twenty Million Dollars (\$220,000,000) for NASA CRS Dragon 2 missions"
- 3) Paragraph (4)(b)(iii) changed "One Hundred Twenty Nine Million Dollars (\$129,000,000) for commercial human space flight Dragon 2 missions" to "Two Hundred Thirty-Five Million Dollars (\$235,000,000) for commercial human space flight Dragon 2 missions"
- 4) Paragraph (4)(b)(iv) changed "Twelve Million Dollar (\$12,000,000) for all other missions" to "Eighteen Million Dollars (\$18,000,000) for all other missions
- 5) Paragraph (5)(a)(i) removed "Starlink Group 4 missions,"

Revision 13 - Issued April 14, 2023

- 1) Paragraph (4)(a) changed "Flight of Falcon 9 launch vehicle" to "Flight of a Falcon 9 or Falcon Heavy launch vehicle"
- 2) Paragraph (4)(a)(iii) removed "or"
- 3) Paragraph (4)(a)(iv) changed "One-Hundred and Eighty Million Dollars (\$180,000,000) for the OneWeb missions or Falcon Heavy geosynchronous transfer orbit (GTO) missions; and" to "One-Hundred and Eighty Million Dollars (\$180,000,000) for the OneWeb missions or Falcon Heavy Arabsat 6A mission; or"
- 4) Added Paragraph (4)(a)(v)
- 5) Paragraph (5)(a) changed "Flight of Falcon 9 launch vehicle" to "Flight of a Falcon 9 or Falcon Heavy launch vehicle"
- 6) Paragraph (5)(a)(ii) changed "or Falcon Heavy launch vehicle GTO missions" to "or Falcon Heavy launch vehicle missions"

Revision 14 - Issued May 19, 2023

- 1) Paragraph (4)(a)(iii) added "if the flight does not include a first stage return to land"
- 2) Paragraph (4)(a)(vi) added "One-Hundred Sixty Million Dollars (\$160,000,000) for Dragon 2 missions if the flight includes a first stage return to land"
- 3) Paragraph (4)(b)(ii) added "if the flight does not include a first stage return to land"
- 4) Paragraph (4)(b)(iii) added "NASA CCP or" and "if the flight does not include a first stage return to land"
- 5) Paragraph (4)(b)(v) added "One-Hundred Thirty-Four Million Dollars (\$134,000,000) for Dragon 2 missions if the flight includes a first stage return to land"
- 6) Paragraph (5)(a)(i) removed "NASA CCP or CRS Dragon 2, commercial human spaceflight Dragon 2 missions"

- 7) Paragraph (5)(a)(ii) added "Seventy-Two Million Dollars (\$72,000,000) for the NASA CCP, NASA CRS, or commercial human spaceflight Dragon 2 missions if the flight does not include a first stage return to land"
- 8) Paragraph (5)(a)(iii) added "or the Dragon 2 missions if the flight includes a first stage return to land"

Revision 15 - Issued July 26, 2023

- 1) Paragraph (4)(a)(i) corrected bullet from "(ix)" to "(i)"
- 2) Paragraph (4)(a)(v) removed "or" in
- 3) Paragraph (4)(a)(vi) changed "and" to "or"
- 4) Added Paragraph (4)(a)(vii) "Five-hundred Million Dollars (\$500,000,000) for the Falcon Heavy Echostar XXIV/Jupiter 3 mission; and"

Revision 16 - Issued September 1, 2023

1) Paragraph (4)(a)(i) changed "and for Starlink Group 4 or Group 5 missions" to "and for Starlink Group 4, Group 5, or Group 6 missions"