



# SpaceX Falcon 9 first stage Landing Prediction

## Lab 1: Collecting the data

Estimated time needed: **45** minutes

In this capstone, we will predict if the Falcon 9 first stage will land successfully. SpaceX advertises Falcon 9 rocket launches on its website with a cost of 62 million dollars; other providers cost upward of 165 million dollars each, much of the savings is because SpaceX can reuse the first stage. Therefore if we can determine if the first stage will land, we can determine the cost of a launch. This information can be used if an alternate company wants to bid against SpaceX for a rocket launch. In this lab, you will collect and make sure the data is in the correct format from an API. The following is an example of a successful and launch.

Several examples of an unsuccessful landing are shown here:



Most unsuccessful landings are planned. Space X performs a controlled landing in the oceans.

## Objectives

In this lab, you will make a get request to the SpaceX API. You will also do some basic data

wrangling and formatting.

- Request to the SpaceX API
- Clean the requested data

## Import Libraries and Define Auxiliary Functions

We will import the following libraries into the lab

```
In [35]: import datetime
import requests
import pandas as pd
import numpy as np

# Setting this option will print all collumns of a dataframe
pd.set_option('display.max_columns', None)
# Setting this option will print all of the data in a feature
pd.set_option('display.max_colwidth', None)
```

Below we will define a series of helper functions that will help us use the API to extract information using identification numbers in the launch data.

From the `rocket` column we would like to learn the booster name.

```
In [36]: # Takes the dataset and uses the rocket column to call the API and append the c
def getBoosterVersion(data):
    for x in data['rocket']:
        response = requests.get('https://api.spacexdata.com/v4/rockets/'+str(x))
        BoosterVersion.append(response['name'])
```

From the `launchpad` we would like to know the name of the launch site being used, the logitude, and the latitude.

```
In [37]: # Takes the dataset and uses the launchpad column to call the API and append th
def getLaunchSite(data):
    for x in data['launchpad']:
        response=requests.get('https://api.spacexdata.com/v4/launchpads/'+str(x))
        LaunchSite.append(response['name'])
        Latitude.append(response['latitude'])
        Longitude.append(response['longitude'])
```

From the `payload` we would like to learn the mass of the payload and the orbit that it is going to.

In [ ]:

```
In [38]: # Takes the dataset and uses the payloads column to call the API and append the
def getPayloadData (data):
    for load in data['payloads']:
```

```
response = requests.get('https://api.spacexdata.com/v4/payloads/'+load)
PayloadMass.append(response['mass_kg'])
Orbit.append(response['orbit'])
```

From `cores` we would like to learn the outcome of the landing, the type of the landing, number of flights with that core, whether gridfins were used, whether the core is reused, whether legs were used, the landing pad used, the block of the core which is a number used to separate version of cores, the number of times this specific core has been reused, and the serial of the core.

```
In [6]: # Takes the dataset and uses the cores column to call the API and append the data
def getCoreData(data):
    for core in data['cores']:
        if core['core'] != None:
            response = requests.get("https://api.spacexdata.com/v4/cores/"+core['core'])
            Block.append(response['block'])
            ReusedCount.append(response['reuse_count'])
            Serial.append(response['serial'])
        else:
            Block.append(None)
            ReusedCount.append(None)
            Serial.append(None)
    Outcome.append(str(core['landing_success'])+' '+str(core['landing_type']))
    Flights.append(core['flight'])
    GridFins.append(core['gridfins'])
    Reused.append(core['reused'])
    Legs.append(core['legs'])
    LandingPad.append(core['landpad'])
```

Now let's start requesting rocket launch data from SpaceX API with the following URL:

```
In [7]: spacex_url = 'https://api.spacexdata.com/v4/launches/past'
```

```
In [8]: response = requests.get(spacex_url)
```

Check the content of the response

```
In [9]: print(response.content)
```

```

b'[{
  "fairings": {
    "reused": false,
    "recovery_attempt": false,
    "recovered": false,
    "ships": []
  },
  "links": {
    "patch": {
      "small": "https://images2.imgbox.com/3c/0e/T8iJcSN3_o.png",
      "large": "https://images2.imgbox.com/40/e3/GypSkayF_o.png"
    },
    "reddit": {
      "campaign": null,
      "launch": null,
      "media": null,
      "recovery": null
    },
    "flickr": {
      "small": [],
      "original": [],
      "presskit": null,
      "webcast": "https://www.youtube.com/watch?v=0a_00nJ_Y88",
      "youtube_id": "0a_00nJ_Y88",
      "article": "https://www.space.com/2196-spacex-inaugural-falcon-1-rocket-lost-launch.html",
      "wikipedia": "https://en.wikipedia.org/wiki/DemoSat",
      "static_fire_date_utc": "2006-03-17T00:00:00.000Z",
      "static_fire_date_unix": 1142553600,
      "net": false,
      "window": 0,
      "rocket": "5e9d0d95eda69955f709d1eb",
      "success": false,
      "failures": [
        {
          "time": 33,
          "altitude": null,
          "reason": "merlin engine failure"
        }
      ],
      "details": "Engine failure at 33 seconds and loss of vehicle",
      "crew": [],
      "ships": [],
      "capsules": [],
      "payloads": [
        "5eb0e4b5b6c3bb0006eeb1e1"
      ],
      "launchpad": "5e9e4502f5090995de566f86",
      "flight_number": 1,
      "name": "FalconSat",
      "date_utc": "2006-03-24T22:30:00.000Z",
      "date_unix": 1143239400,
      "date_local": "2006-03-25T10:30:00+12:00",
      "date_precision": "hour",
      "upcoming": false,
      "cores": [
        {
          "core": "5e9e289df35918033d3b2623",
          "flight": 1,
          "gridfins": false,
          "legs": false,
          "reused": false,
          "landing_attempt": false,
          "landing_success": null,
          "landing_type": null,
          "landpad": null
        }
      ],
      "auto_update": true,
      "tbd": false,
      "launch_library_id": null,
      "id": "5eb87cd9ffd86e000604b32a"
    },
    {
      "fairings": {
        "reused": false,
        "recovery_attempt": false,
        "recovered": false,
        "ships": []
      },
      "links": {
        "patch": {
          "small": "https://images2.imgbox.com/4f/e3/I0lkuJ2e_o.png",
          "large": "https://images2.imgbox.com/be/e7/iNqsqVYM_o.png"
        },
        "reddit": {
          "campaign": null,
          "launch": null,
          "media": null,
          "recovery": null
        },
        "flickr": {
          "small": [],
          "original": [],
          "presskit": null,
          "webcast": "https://www.youtube.com/watch?v=Lk4zQ2wP-Nc",
          "youtube_id": "Lk4zQ2wP-Nc",
          "article": "https://www.space.com/3590-spacex-falcon-1-rocket-fails-reach-orbit.html",
          "wikipedia": "https://en.wikipedia.org/wiki/DemoSat",
          "static_fire_date_utc": null,
          "static_fire_date_unix": null,
          "net": false,
          "window": 0,
          "rocket": "5e9d0d95eda69955f709d1eb",
          "success": false,
          "failures": [
            {
              "time": 301,
              "altitude": 289,
              "reason": "harmonic oscillation leading to premature engine shutdown"
            }
          ],
          "details": "Successful first stage burn and transition to second stage, maximum altitude 289 km, Premature engine shutdown at T+7 min 30 s, Failed to reach orbit, Failed to recover first stage",
          "crew": [],
          "ships": [],
          "capsules": [],
          "payloads": [
            "5eb0e4b6b6c3bb0006eeb1e2"
          ],
          "launchpad": "5e9e4502f5090995de566f86",
          "flight_number": 2,
          "name": "DemoSat",
          "date_utc": "2007-03-21T01:10:00.000Z",
          "date_unix": 1174439400,
          "date_local": "2007-03-21T13:10:00+12:00",
          "date_precision": "hour",
          "upcoming": false,
          "cores": [
            {
              "core": "5e9e289ef35918416a3b2624",
              "flight": 1,
              "gridfins": false,
              "legs": false,
              "reused": false,
              "landing_attempt": false,
              "landing_success": null,
              "landing_type": null,
              "landpad": null
            }
          ],
          "auto_update": true,
          "tbd": false,
          "launch_library_id": null,
          "id": "5eb87cdaffd86e000604b32b"
        },
        {
          "fairings": {
            "reused": false,
            "recovery_attempt": false,
            "recovered": false,
            "ships": []
          },
          "links": {
            "patch": {
              "small": "https://images2.imgbox.com/3d/86/cnu0pan8_o.png",
              "large": "https://images2.imgbox.com/4b/bd/d8UxLh4q_o.png"
            },
            "reddit": {
              "campaign": null,
              "launch": null,
              "media": null,
              "recovery": null
            },
            "flickr": {
              "small": [],
              "original": [],
              "presskit": null,
              "webcast": "https://www.youtube.com/watch?v=v0w9p3U8860",
              "youtube_id": "v0w9p3U8860",
              "article": "http://www.spacex.com/news/2013/02/11/falcon-1-flight-3-mission-summary",
              "wikipedia": "https://en.wikipedia.org/wiki/Trailblazer_(satellite)",
              "static_fire_date_utc": null,
              "static_fire_date_unix": null,
              "net": false,
              "window": 0,
              "rocket": "5e9d0d95eda69955f709d1eb",
              "success": false,
              "failures": [
                {
                  "time": 140,
                  "altitude": 35,
                  "reason": "residual stage-1 thrust led to collision between stage 1 and stage 2"
                }
              ],
              "details": "Residual stage 1 thrust led to collision between stage 1 and stage 2",
              "crew": [],
              "ships": [],
              "capsules": [],
              "payloads": [
                "5eb0e4b6b6c3bb0006eeb1e3",
                "5eb0e4b6b6c3bb0006eeb1e4"
              ],
              "launchpad": "5e9e4502f5090995de566f86",
              "flight_number": 3,
              "name": "Trailblazer",
              "date_utc": "2008-08-03T03:34:00.000Z",
              "date_unix": 1217734440,
              "date_local": "2008-08-03T15:34:00+12:00",
              "date_precision": "hour",
              "upcoming": false,
              "cores": [
                {
                  "core": "5e9e289ef3591814873b2625",
                  "flight": 1,
                  "gridfins": false,
                  "legs": false,
                  "reused": false,
                  "landing_attempt": false,
                  "landing_success": null,
                  "landing_type": null,
                  "landpad": null
                }
              ],
              "auto_update": true,
              "tbd": false,
              "launch_library_id": null,
              "id": "5eb87cdbffd86e000604b32c"
            },
            {
              "fairings": {
                "reused": false,
                "recovery_attempt": false,
                "recovered": false,
                "ships": []
              },
              "links": {
                "patch": {
                  "small": "https://images2.imgbox.com/e9/c9/T8CfiSYb_o.png",
                  "large": "https://images2.imgbox.com/40/e3/GypSkayF_o.png"
                },
                "reddit": {
                  "campaign": null,
                  "launch": null,
                  "media": null,
                  "recovery": null
                },
                "flickr": {
                  "small": [],
                  "original": [],
                  "presskit": null,
                  "webcast": "https://www.youtube.com/watch?v=Lk4zQ2wP-Nc",
                  "youtube_id": "Lk4zQ2wP-Nc",
                  "article": "https://www.space.com/3590-spacex-falcon-1-rocket-fails-reach-orbit.html",
                  "wikipedia": "https://en.wikipedia.org/wiki/DemoSat",
                  "static_fire_date_utc": null,
                  "static_fire_date_unix": null,
                  "net": false,
                  "window": 0,
                  "rocket": "5e9d0d95eda69955f709d1eb",
                  "success": false,
                  "failures": [
                    {
                      "time": 301,
                      "altitude": 289,
                      "reason": "harmonic oscillation leading to premature engine shutdown"
                    }
                  ],
                  "details": "Successful first stage burn and transition to second stage, maximum altitude 289 km, Premature engine shutdown at T+7 min 30 s, Failed to reach orbit, Failed to recover first stage",
                  "crew": [],
                  "ships": [],
                  "capsules": [],
                  "payloads": [
                    "5eb0e4b6b6c3bb0006eeb1e2"
                  ],
                  "launchpad": "5e9e4502f5090995de566f86",
                  "flight_number": 2,
                  "name": "DemoSat",
                  "date_utc": "2007-03-21T01:10:00.000Z",
                  "date_unix": 1174439400,
                  "date_local": "2007-03-21T13:10:00+12:00",
                  "date_precision": "hour",
                  "upcoming": false,
                  "cores": [
                    {
                      "core": "5e9e289ef35918416a3b2624",
                      "flight": 1,
                      "gridfins": false,
                      "legs": false,
                      "reused": false,
                      "landing_attempt": false,
                      "landing_success": null,
                      "landing_type": null,
                      "landpad": null
                    }
                  ],
                  "auto_update": true,
                  "tbd": false,
                  "launch_library_id": null,
                  "id": "5eb87cdaffd86e000604b32b"
                }
              ]
            }
          ]
        }
      ]
    }
  ]
}

```

```

o.png", "large": "https://images2.imgbox.com/e0/a7/FNjvKlXW_o.png"}, "reddit": {"c
ampaign": null, "launch": null, "media": null, "recovery": null}, "flickr": {"small":
[], "original": [], "presskit": null, "webcast": "https://www.youtube.com/watch?v=d
LQ2tZEH6G0", "youtube_id": "dLQ2tZEH6G0", "article": "https://en.wikipedia.org/wik
i/Ratsat", "wikipedia": "https://en.wikipedia.org/wiki/Ratsat"}, "static_fire_dat
e_utc": "2008-09-20T00:00:00.000Z", "static_fire_date_unix": 1221868800, "net": fal
se, "window": 0, "rocket": "5e9d0d95eda69955f709d1eb", "success": true, "failures":
[], "details": "Ratsat was carried to orbit on the first successful orbital laun
ch of any privately funded and developed, liquid-propelled carrier rocket, the
\\xc2\\xa0SpaceX Falcon 1", "crew": [], "ships": [], "capsules": [], "payloads": ["5eb0e
4b7b6c3bb0006eeble5"], "launchpad": "5e9e4502f5090995de566f86", "flight_number":
4, "name": "RatSat", "date_utc": "2008-09-28T23:15:00.000Z", "date_unix": 122264370
0, "date_local": "2008-09-28T11:15:00+12:00", "date_precision": "hour", "upcoming":
false, "cores": [{"core": "5e9e289ef3591855dc3b2626", "flight": 1, "gridfins": fals
e, "legs": false, "reused": false, "landing_attempt": false, "landing_success": nul
l, "landing_type": null, "landpad": null}], "auto_update": true, "tbd": false, "launch_
library_id": null, "id": "5eb87cdbff86e000604b32d"}, {"fairings": {"reused": fals
e, "recovery_attempt": false, "recovered": false, "ships": [], "links": {"patch": {"sm
all": "https://images2.imgbox.com/a7/ba/NBZSw3Ho_o.png", "large": "https://images
2.imgbox.com/8d/fc/0qdZMWWx_o.png"}, "reddit": {"campaign": null, "launch": null, "m
edia": null, "recovery": null}, "flickr": {"small": [], "original": []}, "presskit": "ht
tp://www.spacex.com/press/2012/12/19/spacexs-falcon-1-successfully-delivers-ra
zaksat-satellite-orbit", "webcast": "https://www.youtube.com/watch?v=yTaIDooc80
g", "youtube_id": "yTaIDooc80g", "article": "http://www.spacex.com/news/2013/02/1
2/falcon-1-flight-5", "wikipedia": "https://en.wikipedia.org/wiki/RazakSAT"}, "st
atic_fire_date_utc": null, "static_fire_date_unix": null, "net": false, "window":
0, "rocket": "5e9d0d95eda69955f709d1eb", "success": true, "failures": [], "details": n
ull, "crew": [], "ships": [], "capsules": [], "payloads": ["5eb0e4b7b6c3bb0006eeble
6"], "launchpad": "5e9e4502f5090995de566f86", "flight_number": 5, "name": "RazakSa
t", "date_utc": "2009-07-13T03:35:00.000Z", "date_unix": 1247456100, "date_loca
l": "2009-07-13T15:35:00+12:00", "date_precision": "hour", "upcoming": false, "core
s": [{"core": "5e9e289ef359184f103b2627", "flight": 1, "gridfins": false, "legs": fals
e, "reused": false, "landing_attempt": false, "landing_success": null, "landing_typ
e": null, "landpad": null}], "auto_update": true, "tbd": false, "launch_library_id": nu
ll, "id": "5eb87cdcff86e000604b32e"}, {"fairings": {"reused": null, "recovery_attem
pt": null, "recovered": null, "ships": [], "links": {"patch": {"small": "https://image
s2.imgbox.com/5c/36/gbDKf6Y7_o.png", "large": "https://images2.imgbox.com/d6/12/
yxne8mMD_o.png"}, "reddit": {"campaign": null, "launch": null, "media": null, "recover
y": null}, "flickr": {"small": [], "original": []}, "presskit": "http://forum.nasaspac
eflight.com/index.php?action=dlattach;topic=21869.0;attach=230821", "webcas
t": "https://www.youtube.com/watch?v=nxSxgBKlYws", "youtube_id": "nxSxgBKlYws", "a
rticle": "http://www.spacex.com/news/2013/02/12/falcon-9-flight-1", "wikipedi
a": "https://en.wikipedia.org/wiki/Dragon_Spacecraft_Qualification_Unit"}, "stat
ic_fire_date_utc": "2010-03-13T00:00:00.000Z", "static_fire_date_unix": 126843840
0, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "f
ailures": [], "details": null, "crew": [], "ships": [], "capsules": [], "payloads": ["5eb
0e4b7b6c3bb0006eeble7"], "launchpad": "5e9e4501f509094ba4566f84", "flight_numbe
r": 6, "name": "Falcon 9 Test Flight", "date_utc": "2010-06-04T18:45:00.000Z", "date
_unix": 1275677100, "date_local": "2010-06-04T14:45:00-04:00", "date_precision": "h
our", "upcoming": false, "cores": [{"core": "5e9e289ef359185f2b3b2628", "flight":
1, "gridfins": false, "legs": false, "reused": false, "landing_attempt": false, "landin
g_success": null, "landing_type": null, "landpad": null}], "auto_update": true, "tbd":
false, "launch_library_id": null, "id": "5eb87cdff86e000604b32f"}, {"fairings": nu
ll, "links": {"patch": {"small": "https://images2.imgbox.com/d9/3e/FfrN88ry_o.pn
g", "large": "https://images2.imgbox.com/00/2f/FhtEd0nB_o.png"}, "reddit": {"campa
ign": null, "launch": null, "media": null, "recovery": null}, "flickr": {"small": [], "or
iginal": []}, "presskit": "http://www.spacex.com/files/downloads/cots1-20101206.p
df", "webcast": "https://www.youtube.com/watch?v=cdLITgWKe_0", "youtube_id": "cdLI
TgWKe_0", "article": "https://en.wikipedia.org/wiki/SpaceX_COTS_Demo_Flight_
1", "wikipedia": "https://en.wikipedia.org/wiki/SpaceX_COTS_Demo_Flight_1"}, "sta

```

```

tic_fire_date_utc":"2010-12-04T00:00:00.000Z","static_fire_date_unix":12914208
00,"net":false,"window":0,"rocket":"5e9d0d95eda69973a809d1ec","success":tru
e,"failures":[],"details":null,"crew":[],"ships":["5ea6ed2d080df4000697c90
1"],"capsules":["5e9e2c5bf35918ed873b2664"],"payloads":["5eb0e4b9b6c3bb0006eeb
1e8","5eb0e4b9b6c3bb0006eeble9"],"launchpad":"5e9e4501f509094ba4566f84","fligh
t_number":7,"name":"COTS 1","date_utc":"2010-12-08T15:43:00.000Z","date_unix":
1291822980,"date_local":"2010-12-08T11:43:00-04:00","date_precision":"hour","u
pcoming":false,"cores":[{"core":"5e9e289ef35918187c3b2629","flight":1,"gridfin
s":false,"legs":false,"reused":false,"landing_attempt":false,"landing_succes
s":null,"landing_type":null,"landpad":null}],"auto_update":true,"tbd":false,"l
aunch_library_id":null,"id":"5eb87cdefffd86e000604b330"},{"fairings":null,"link
s":{"patch":{"small":"https://images2.imgbox.com/fc/7a/r9ITwL12_o.png","larg
e":"https://images2.imgbox.com/2b/8e/MYyHbnd2_o.png"},"reddit":{"campaign":nul
l,"launch":null,"media":null,"recovery":null},"flickr":{"small":[],"original":
[]},"presskit":"https://www.nasa.gov/pdf/649910main_cots2_presskit_051412.pd
f","webcast":"https://www.youtube.com/watch?v=tpQzDbAY7yI","youtube_id":"tpQzD
bAY7yI","article":"https://en.wikipedia.org/wiki/Dragon_C2%2B","wikipedia":"ht
tps://en.wikipedia.org/wiki/Dragon_C2%2B"},"static_fire_date_utc":"2012-04-30T
00:00:00.000Z","static_fire_date_unix":1335744000,"net":false,"window":0,"rock
et":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"details":"Launch
was scrubbed on first attempt, second launch attempt was successful","crew":
[],"ships":["5ea6ed2d080df4000697c901"],"capsules":["5e9e2c5bf3591882af3b266
5"],"payloads":["5eb0e4bab6c3bb0006eeblea"],"launchpad":"5e9e4501f509094ba4566
f84","flight_number":8,"name":"COTS 2","date_utc":"2012-05-22T07:44:00.000
Z","date_unix":1335944640,"date_local":"2012-05-22T03:44:00-04:00","date_preci
sion":"hour","upcoming":false,"cores":[{"core":"5e9e289ef35918f39c3b262a","fli
ght":1,"gridfins":false,"legs":false,"reused":false,"landing_attempt":false,"l
anding_success":null,"landing_type":null,"landpad":null}],"auto_update":tru
e,"tbd":false,"launch_library_id":null,"id":"5eb87cdfffd86e000604b331"},{"fair
ings":null,"links":{"patch":{"small":"https://images2.imgbox.com/0b/33/2eLGEej
P_o.png","large":"https://images2.imgbox.com/52/09/eNvilptL_o.png"},"reddit":
{"campaign":null,"launch":null,"media":null,"recovery":null},"flickr":{"smal
l":[],"original":[]},"presskit":"https://www.nasa.gov/pdf/694166main_SpaceXCRS
-1PressKit.pdf","webcast":"https://www.youtube.com/watch?v=-Vk3hiV_zXU","youtu
be_id":"-Vk3hiV_zXU","article":"https://www.nasa.gov/mission_pages/station/mai
n/spacex-crs1-target.html","wikipedia":"https://en.wikipedia.org/wiki/SpaceX_C
RS-1"},"static_fire_date_utc":"2012-09-29T00:00:00.000Z","static_fire_date_uni
x":1348876800,"net":false,"window":0,"rocket":"5e9d0d95eda69973a809d1ec","succ
ess":true,"failures":[],"details":"CRS-1 successful, but the secondary payload
was inserted into abnormally low orbit and lost due to Falcon 9 boost stage en
gine failure, ISS visiting vehicle safety rules, and the primary payload owner
\'s contractual right to decline a second ignition of the second stage under s
ome conditions.","crew":[],"ships":["5ea6ed2d080df4000697c902"],"capsules":["5
e9e2c5bf3591835983b2666"],"payloads":["5eb0e4bab6c3bb0006eebleb","5eb0e4bab6c3
bb0006eeblec"],"launchpad":"5e9e4501f509094ba4566f84","flight_number":9,"nam
e":"CRS-1","date_utc":"2012-10-08T00:35:00.000Z","date_unix":1349656500,"date_
local":"2012-10-08T20:35:00-04:00","date_precision":"hour","upcoming":false,"c
ores":[{"core":"5e9e289ff3591821a73b262b","flight":1,"gridfins":false,"legs":f
alse,"reused":false,"landing_attempt":false,"landing_success":null,"landing_ty
pe":null,"landpad":null}],"auto_update":true,"tbd":false,"launch_library_id":n
ull,"id":"5eb87ce0fffd86e000604b332"},{"fairings":null,"links":{"patch":{"smal
l":"https://images2.imgbox.com/1b/b6/Z4oktZeR_o.png","large":"https://images2.
imgbox.com/ef/39/FyZRYeOh_o.png"},"reddit":{"campaign":null,"launch":"https://
www.reddit.com/r/space/comments/19gm5f/live_coverage_spacex_crs2_launch_to_the
_iss/c8nvah4","media":null,"recovery":null},"flickr":{"small":[],"original":
[]},"presskit":"https://www.nasa.gov/sites/default/files/files/Orb2_PRESS_KIT.
pdf","webcast":"https://www.youtube.com/watch?v=ik0ElKl5kW4","youtube_id":"ik0
ElKl5kW4","article":"https://en.wikipedia.org/wiki/SpaceX_CRS-2","wikipedi
a":"https://en.wikipedia.org/wiki/SpaceX_CRS-2"},"static_fire_date_utc":"2013-
02-25T18:30:00.000Z","static_fire_date_unix":1361817000,"net":false,"window":

```

```

0,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"detail
s":"Last launch of the original Falcon 9 v1.0 launch vehicle","crew":[],"ship
s":["5ea6ed2d080df4000697c902"],"capsules":["5e9e2c5bf359189ef23b2667"],"paylo
ads":["5eb0e4bbb6c3bb0006eebled"],"launchpad":"5e9e4501f509094ba4566f84","flig
ht_number":10,"name":"CRS-2","date_utc":"2013-03-01T19:10:00.000Z","date_uni
x":1362165000,"date_local":"2013-03-01T15:10:00-04:00","date_precision":"hou
r","upcoming":false,"cores":[{"core":"5e9e289ff3591884e03b262c","flight":1,"gr
idfins":false,"legs":false,"reused":false,"landing_attempt":false,"landing_suc
cess":null,"landing_type":null,"landpad":null}],{"auto_update":true,"tbd":fals
e,"launch_library_id":null,"id":"5eb87ce1ffd86e000604b333"},{"fairings":{"reus
ed":false,"recovery_attempt":false,"recovered":false,"ships":[]},"links":{"pat
ch":{"small":"https://images2.imgbox.com/91/27/VhC1TTYN_o.png","large":"http
s://images2.imgbox.com/89/bc/JcbcvuBI_o.png"},"reddit":{"campaign":null,"launc
h":"http://www.reddit.com/r/spacex/comments/1ndlay","media":null,"recovery":nu
ll},"flickr":{"small":[],"original":[]},"presskit":"https://spaceflightnow.co
m/falcon9/006/UpgradedF9DemoMission_PressKit.pdf","webcast":"https://www.youtu
be.com/watch?v=uFefasS6bhc","youtube_id":"uFefasS6bhc","article":"http://www.p
arabolicarc.com/2013/09/29/falcon-9-launch-payloads-orbit-vandenberg/","wikipe
dia":"https://en.wikipedia.org/wiki/CASSIOPE"},"static_fire_date_utc":"2013-09
-19T00:00:00.000Z","static_fire_date_unix":1379548800,"net":false,"window":
0,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"detail
s":"Commercial mission and first Falcon 9 v1.1 flight, with improved 13-tonne
to LEO capacity. Following second-stage separation from the first stage, an at
tempt was made to perform an ocean touchdown test of the discarded booster veh
icle. The test provided good test data on the experiment-its primary objective
-but as the booster neared the ocean, aerodynamic forces caused an uncontrolla
ble roll. The center engine, depleted of fuel by centrifugal force, shut down
resulting in the impact and destruction of the vehicle.","crew":[],"ships":["5
ea6ed2d080df4000697c903"],"capsules":[],"payloads":["5eb0e4bbb6c3bb0006eeble
e"],"launchpad":"5e9e4502f509092b78566f87","flight_number":11,"name":"CASSIOP
E","date_utc":"2013-09-29T16:00:00.000Z","date_unix":1380470400,"date_loca
l":"2013-09-29T09:00:00-07:00","date_precision":"hour","upcoming":false,"core
s":[{"core":"5e9e289ff359180ae23b262d","flight":1,"gridfins":false,"legs":fals
e,"reused":false,"landing_attempt":true,"landing_success":false,"landing_typ
e":"Ocean","landpad":null}],{"auto_update":true,"tbd":false,"launch_library_i
d":null,"id":"5eb87ce1ffd86e000604b334"},{"fairings":{"reused":false,"recovery
_attempt":false,"recovered":false,"ships":[]},"links":{"patch":{"small":"http
s://images2.imgbox.com/42/b0/vP0sk3d5_o.png","large":"https://images2.imgbox.c
om/b5/ld/46Eo0yu_u_o.png"},"reddit":{"campaign":null,"launch":"http://www.reddi
t.com/r/spacex/comments/1ryy1n","media":null,"recovery":null},"flickr":{"smal
l":[],"original":[]},"presskit":"http://www.spacex.com/sites/spacex/files/spac
ex_ses-8launch_presskit.pdf","webcast":"https://www.youtube.com/watch?v=aAj5xa
pImEs","youtube_id":"aAj5xapImEs","article":"https://www.nasaspaceflight.com/2
013/12/spacex-falcon-9-v1-1-milestone-ses-8-launch/","wikipedia":"https://en.w
ikipedia.org/wiki/SES-8"},"static_fire_date_utc":"2013-11-22T06:26:00.000Z","s
tatic_fire_date_unix":1385101560,"net":false,"window":0,"rocket":"5e9d0d95eda6
9973a809d1ec","success":true,"failures":[],"details":"First GTO launch for Fal
con 9","crew":[],"ships":[],"capsules":[],"payloads":["5eb0e4bbb6c3bb0006eeble
f"],"launchpad":"5e9e4501f509094ba4566f84","flight_number":12,"name":"SES-
8","date_utc":"2013-12-03T22:41:00.000Z","date_unix":1386110460,"date_loca
l":"2013-12-03T18:41:00-04:00","date_precision":"hour","upcoming":false,"core
s":[{"core":"5e9e289ff35918862c3b262e","flight":1,"gridfins":false,"legs":fals
e,"reused":false,"landing_attempt":false,"landing_success":null,"landing_typ
e":null,"landpad":null}],{"auto_update":true,"tbd":false,"launch_library_id":nu
ll,"id":"5eb87ce2ffd86e000604b335"},{"fairings":{"reused":false,"recovery_atte
mpt":false,"recovered":false,"ships":[]},"links":{"patch":{"small":"https://im
ages2.imgbox.com/d8/6d/fnqIBEJh_o.png","large":"https://images2.imgbox.com/37/
c4/jRAK115c_o.png"},"reddit":{"campaign":null,"launch":"http://www.reddit.com/
r/spacex/comments/1ujoc0","media":null,"recovery":null},"flickr":{"small":
[],"original":["https://farm9.staticflickr.com/8617/16789019815_f99a165dc5_o.j

```

```
pg", "https://farm8.staticflickr.com/7619/16763151866_35a0a4d8e1_o.jpg", "http
s://farm9.staticflickr.com/8569/16169086873_4d8829832e_o.png"]}, "presskit": "ht
tp://www.spacex.com/sites/spacex/files/spacex_thaicom6_presskit.pdf", "webcas
t": "https://www.youtube.com/watch?v=AnSNRzMEmCU", "youtube_id": "AnSNRzMEmCU", "a
rticle": "http://spacenews.com/38959spacex-delivers-thaicom-6-satellite-to-orbi
t/", "wikipedia": "https://en.wikipedia.org/wiki/Thaicom_6", "static_fire_date_u
tc": "2013-12-28T00:00:00.000Z", "static_fire_date_unix": 1388188800, "net": fals
e, "window": 0, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failures":
[], "details": "Second GTO launch for Falcon 9. The USAF evaluated launch data f
rom this flight as part of a separate certification program for SpaceX to qual
ify to fly U.S. military payloads and found that the Thaicom 6 launch had \"u
nacceptable fuel reserves at engine cutoff of the stage 2 second burnoff
\", \"crew\": [], \"ships\": [], \"capsules\": [], \"payloads\": [\"5eb0e4bbb6c3bb0006eeb1f
0\"], \"launchpad\": \"5e9e4501f509094ba4566f84\", \"flight_number\": 13, \"name\": \"Thaicom
6\", \"date_utc\": \"2014-01-06T18:06:00.000Z\", \"date_unix\": 1389031560, \"date_loca
l\": \"2014-01-06T14:06:00-04:00\", \"date_precision\": \"hour\", \"upcoming\": false, \"core
s\": [{\"core\": \"5e9e289ff3591878603b262f\", \"flight\": 1, \"gridfins\": false, \"legs\": fals
e, \"reused\": false, \"landing_attempt\": false, \"landing_success\": null, \"landing_typ
e\": null, \"landpad\": null}], \"auto_update\": true, \"tbd\": false, \"launch_library_id\": nu
ll, \"id\": \"5eb87ce3ffd86e000604b336\"}, {\"fairings\": null, \"links\": {\"patch\": {\"small
\": \"https://images2.imgbox.com/a0/cb/slh2RuR0_o.png\", \"large\": \"https://images2.
imgbox.com/ff/81/EOWojaSj_o.png\"}, \"reddit\": {\"campaign\": null, \"launch\": \"http://w
ww.reddit.com/r/spacex/comments/22zo8c\", \"media\": null, \"recovery\": null}, \"flickr
\": {\"small\": [], \"original\": [\"https://farm8.staticflickr.com/7615/16670240949_8d
43db0e36_o.jpg\", \"https://farm9.staticflickr.com/8597/16856369125_e97cd30ef7_o.
jpg\", \"https://farm8.staticflickr.com/7586/16166732954_9338dc859c_o.jpg\", \"http
s://farm8.staticflickr.com/7603/16855223522_462da54e84_o.jpg\", \"https://farm8.s
taticflickr.com/7618/16234010894_e1210ec300_o.jpg\", \"https://farm8.staticflick
r.com/7617/16855338881_69542a2fa9_o.jpg\"]}, \"presskit\": \"http://www.spacex.com/s
ites/spacex/files/spacexcrs-3_presskit_042014.pdf\", \"webcast\": \"https://www.yout
ube.com/watch?v=Od-lON4bTyQ\", \"youtube_id\": \"Od-lON4bTyQ\", \"article\": \"https://new
atlas.com/crs-3-launch-spacex/31671/\", \"wikipedia\": \"https://en.wikipedia.org/wi
ki/SpaceX_CRS-3\", \"static_fire_date_utc\": \"2014-03-08T00:00:00.000Z\", \"static_fi
re_date_unix\": 1394236800, \"net\": false, \"window\": 0, \"rocket\": \"5e9d0d95eda69973a809
dlec\", \"success\": true, \"failures\": [], \"details\": \"Following second-stage separatio
n, SpaceX conducted a second controlled-descent test of the discarded booster
vehicle and achieved the first successful controlled ocean touchdown of a liqu
id-rocket-engine orbital booster. Following touchdown the first stage tipped o
ver as expected and was destroyed. This was the first Falcon 9 booster to fly
with extensible landing legs and the first Dragon mission with the Falcon 9 v
1.1 launch vehicle.\"}, \"crew\": [], \"ships\": [\"5ea6ed2d080df4000697c902\"], \"capsule
s\": [\"5e9e2c5bf3591859a63b2668\"], \"payloads\": [\"5eb0e4bbb6c3bb0006eeb1f1\"], \"launc
hpad\": \"5e9e4501f509094ba4566f84\", \"flight_number\": 14, \"name\": \"CRS-3\", \"date_ut
c\": \"2014-04-18T19:25:00.000Z\", \"date_unix\": 1397849100, \"date_local\": \"2014-04-18T
15:25:00-04:00\", \"date_precision\": \"hour\", \"upcoming\": false, \"cores\": [{\"core\": \"5e9
e289ff3591829343b2630\", \"flight\": 1, \"gridfins\": false, \"legs\": true, \"reused\": fals
e, \"landing_attempt\": true, \"landing_success\": true, \"landing_type\": \"Ocean\", \"landpa
d\": null}], \"auto_update\": true, \"tbd\": false, \"launch_library_id\": null, \"id\": \"5eb87c
e4ffd86e000604b337\"}, {\"fairings\": {\"reused\": false, \"recovery_attempt\": false, \"rec
overed\": false, \"ships\": []}, \"links\": {\"patch\": {\"small\": \"https://images2.imgbox.co
m/a7/b4/bcMrHMey_o.png\", \"large\": \"https://images2.imgbox.com/4d/ed/CHXoRaSP_o.p
ng\"}, \"reddit\": {\"campaign\": null, \"launch\": \"http://www.reddit.com/r/spacex/commen
ts/2aany2\", \"media\": null, \"recovery\": null}, \"flickr\": {\"small\": [], \"original\": [\"htt
ps://farm8.staticflickr.com/7585/16602893909_1181317089_o.jpg\", \"https://farm9.
staticflickr.com/8747/16581738577_83e0690136_o.png\", \"https://farm8.staticflick
r.com/7285/16581736047_6fd536ab11_o.jpg\", \"https://farm8.staticflickr.com/7597/
16789021675_35f0148f78_o.jpg\", \"https://farm8.staticflickr.com/7631/16236321533
_829ae07b42_o.jpg\", \"https://farm9.staticflickr.com/8726/16830422056_26c2265bbc
_o.jpg\", \"https://farm9.staticflickr.com/8591/16670149079_33d6cc3631_o.jp
g\"]}, \"presskit\": \"http://www.spacex.com/sites/spacex/files/spacex_orbcomm_press
```



<https://labs.cognitiveclass.ai/v2/tools/jupyterlab?ulid=ulid-0873642cfd4232ea1de5fbe8823c1c03f6f84b91>

```

mber":17,"name":"AsiaSat 6","date_utc":"2014-09-07T05:00:00.000Z","date_unix":
1410066000,"date_local":"2014-09-07T01:00:00-04:00","date_precision":"hour","u
pcoming":false,"cores":[{"core":"5e9e28a0f35918b1bc3b2633","flight":1,"gridfin
s":false,"legs":false,"reused":false,"landing_attempt":false,"landing_succes
s":null,"landing_type":null,"landpad":null}],{"auto_update":true,"tbd":false,"l
aunch_library_id":null,"id":"5eb87ce6ffd86e000604b33a"},{"fairings":null,"link
s":{"patch":{"small":"https://images2.imgbox.com/b4/28/cQwcs8qz_o.png","larg
e":"https://images2.imgbox.com/0d/e8/tfdeNslS_o.png"},"reddit":{"campaign":nul
l,"launch":"http://www.reddit.com/r/spacex/comments/2grxer","media":null,"reco
very":null},"flickr":{"small":[],"original":["https://farm8.staticflickr.com/7
608/16661753958_9f61f777e7_o.jpg","https://farm9.staticflickr.com/8593/1676319
9166_38ba2cafc8_o.jpg","https://farm9.staticflickr.com/8655/16789074175_ba0398
9359_o.png","https://farm9.staticflickr.com/8659/16166761954_ebc2a72b2a_o.jp
g","https://farm9.staticflickr.com/8620/16642025217_a6852b9499_o.jpg"]},"press
kit":"https://www.nasa.gov/sites/default/files/files/SpaceX_NASA_CRS-4_PressKi
t.pdf","webcast":"https://www.youtube.com/watch?v=7YkCh7uOw1Y","youtube_id":"7
YkCh7uOw1Y","article":"https://www.nasa.gov/press/2014/september/nasa-cargo-la
unches-to-space-station-aboard-spacex-resupply-mission-0","wikipedia":"http
s://en.wikipedia.org/wiki/SpaceX_CRS-4"},"static_fire_date_utc":"2014-09-17T0
0:00:00.000Z","static_fire_date_unix":1410912000,"net":false,"window":0,"rocke
t":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"details":null,"cre
w":[],"ships":["5ea6ed2d080df4000697c902"],"capsules":["5e9e2c5bf3591880643b26
69"],"payloads":["5eb0e4bcb6c3bb0006eeb1f5"],"launchpad":"5e9e4501f509094ba456
6f84","flight_number":18,"name":"CRS-4","date_utc":"2014-09-21T05:52:00.000
Z","date_unix":1411278720,"date_local":"2014-09-21T01:52:00-04:00","date_preci
sion":"hour","upcoming":false,"cores":[{"core":"5e9e28a0f359184a683b2634","fli
ght":1,"gridfins":false,"legs":false,"reused":false,"landing_attempt":true,"la
nding_success":false,"landing_type":"Ocean","landpad":null}],{"auto_update":tru
e,"tbd":false,"launch_library_id":null,"id":"5eb87ce7ffd86e000604b33b"},{"fair
ings":null,"links":{"patch":{"small":"https://images2.imgbox.com/25/b6/RhNppyL
3_o.png","large":"https://images2.imgbox.com/fe/5a/WyQS4MXa_o.png"},"reddit":
{"campaign":null,"launch":"http://www.reddit.com/r/spacex/comments/2rrdha","me
dia":null,"recovery":null},"flickr":{"small":[],"original":["https://farm9.sta
ticflickr.com/8666/16511391418_bb5cdbbd71_o.jpg","https://farm9.staticflickr.c
om/8612/16848173281_035bdc6009_o.jpg","https://farm9.staticflickr.com/8571/166
99496805_bf39747618_o.jpg","https://farm9.staticflickr.com/8650/16699496705_18
7e4e53fd_o.jpg","https://farm9.staticflickr.com/8663/16077174554_370937efbe_o.
jpg","https://farm9.staticflickr.com/8638/16512101410_83763eb9ea_o.jpg","http
s://farm9.staticflickr.com/8653/16077173984_17885d4bea_o.jpg","https://farm8.s
taticflickr.com/7635/16848159582_40c0f9d25f_o.jpg"]},"presskit":"http://www.sp
acex.com/sites/spacex/files/spacex_nasa_crs-5_presskit.pdf","webcast":"http
s://www.youtube.com/watch?v=p7x-SumbynI","youtube_id":"p7x-SumbynI","articl
e":"https://spaceflightnow.com/2015/01/10/dragon-successfully-launched-rocket-
recovery-demo-crash-lands/","wikipedia":"https://en.wikipedia.org/wiki/SpaceX_
CRS-5"},"static_fire_date_utc":"2014-12-19T00:00:00.000Z","static_fire_date_un
ix":1418947200,"net":false,"window":0,"rocket":"5e9d0d95eda69973a809d1ec","suc
cess":true,"failures":[],"details":"Following second stage separation, SpaceX
performed a test flight which attempted to return the first stage of the Falco
n 9 through the atmosphere and land it on an approximately 90-by-50-meter (300
ft x 160 ft) floating platform-called the autonomous spaceport drone ship. Man
y of the test objectives were achieved, including precision control of the roc
ket's descent to land on the platform at a specific point in the Atlantic oce
an, and a large amount of test data was obtained from the first use of grid fi
n control surfaces used for more precise reentry positioning. The grid fin con
trol system ran out of hydraulic fluid a minute before landing and the landing
itself resulted in a crash.","crew":[],"ships":["5ea6ed2e080df4000697c906","5e
a6ed2f080df4000697c90b","5ea6ed2f080df4000697c90c","5ea6ed2f080df4000697c90
f","5ea6ed30080df4000697c912"],"capsules":["5e9e2c5bf35918165f3b266a"],"payloa
ds":["5eb0e4bdb6c3bb0006eeb1f6"],"launchpad":"5e9e4501f509094ba4566f84","fligh
t_number":19,"name":"CRS-5","date_utc":"2015-01-10T09:47:00.000Z","date_unix":

```

```

1420883220,"date_local":"2015-01-10T05:47:00-04:00","date_precision":"hour","u
pcoming":false,"cores":[{"core":"5e9e28a0f359187a3c3b2635","flight":1,"gridfin
s":true,"legs":true,"reused":false,"landing_attempt":true,"landing_success":fa
lse,"landing_type":"ASDS","landpad":"5e9e3032383ecb761634e7cb"}],"auto_updat
e":true,"tbd":false,"launch_library_id":null,"id":"5eb87ce8ffd86e000604b33c"},
{"fairings":{"reused":false,"recovery_attempt":false,"recovered":false,"ship
s":[]},"links":{"patch":{"small":"https://images2.imgbox.com/63/c5/00IpD59z_o.
png","large":"https://images2.imgbox.com/ec/a0/kTPQRyzt_o.png"},"reddit":{"cam
paign":null,"launch":"http://www.reddit.com/r/spacex/comments/2vjm9e","media":
null,"recovery":null},"flickr":{"small":[],"original":["https://farm9.staticfl
ickr.com/8619/16511407538_9a25c5d8c6_o.jpg","https://farm9.staticflickr.com/86
65/16697946612_1284e952b0_o.jpg","https://farm9.staticflickr.com/8570/16698990
475_16524a93de_o.jpg","https://farm9.staticflickr.com/8681/16512864259_e849e49
6b1_o.jpg","https://farm9.staticflickr.com/8637/16079045013_1f0fab9b54_o.jp
g","https://farm9.staticflickr.com/8601/16512864369_2bb896c344_o.jpg","http
s://farm9.staticflickr.com/8646/16697693861_a038331e0a_o.jpg","https://farm9.s
taticflickr.com/8680/16511407248_093635a243_o.jpg","https://farm9.staticflick
r.com/8654/16511594820_451f194d53_o.jpg","https://farm9.staticflickr.com/8603/
16673054016_472fb42a20_o.jpg"}],"presskit":"http://www.spacex.com/press/2015/0
2/11/dscovr-launch-update","webcast":"https://www.youtube.com/watch?v=OvHJSIKP
0Hg","youtube_id":"OvHJSIKP0Hg","article":"https://spaceflightnow.com/2015/02/
12/space-weather-observatory-blasts-off-after-17-year-wait/","wikipedia":"http
s://en.wikipedia.org/wiki/Deep_Space_Climate_Observatory"},"static_fire_date_u
tc":"2015-01-31T00:00:00.000Z","static_fire_date_unix":1422662400,"net":fals
e,"window":0,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":
[],"details":"First launch under USAF's OSP 3 launch contract. First SpaceX l
aunch to put a satellite to an orbit with an orbital altitude many times the d
istance to the Moon: Sun-Earth libration point L1. The first stage made a test
flight descent to an over-ocean landing within 10 m (33 ft) of its intended ta
rget.","crew":[],"ships":["5ea6ed2e080df4000697c906","5ea6ed2f080df4000697c90
b","5ea6ed2f080df4000697c90c"],"capsules":[],"payloads":["5eb0e4bdb6c3bb0006ee
b1f7"],"launchpad":"5e9e4501f509094ba4566f84","flight_number":20,"name":"DSCOV
R","date_utc":"2015-02-11T23:03:00.000Z","date_unix":1423695780,"date_loca
l":"2015-02-11T19:03:00-04:00","date_precision":"hour","upcoming":false,"core
s":[{"core":"5e9e28a0f3591885be3b2636","flight":1,"gridfins":true,"legs":tru
e,"reused":false,"landing_attempt":true,"landing_success":true,"landing_typ
e":"Ocean","landpad":null},"auto_update":true,"tbd":false,"launch_library_i
d":null,"id":"5eb87ceaffd86e000604b33d"},{"fairings":{"reused":false,"recovery
_attempt":false,"recovered":false,"ships":[]},"links":{"patch":{"small":"http
s://images2.imgbox.com/20/10/sqPgZfej_o.png","large":"https://images2.imgbox.c
om/78/82/H9gthFmK_o.png"},"reddit":{"campaign":null,"launch":"http://www.reddi
t.com/r/spacex/comments/2x81fc","media":"https://www.reddit.com/r/spacex/comm
ents/2xmumx","recovery":null},"flickr":{"small":[],"original":["https://farm9.s
taticflickr.com/8749/16788442562_ed460c2d9e_o.jpg","https://farm9.staticflick
r.com/8586/16510243060_48d6a9b1f6_o.jpg","https://farm9.staticflickr.com/8641/
16490359747_c043b8c61a_o.jpg","https://farm9.staticflickr.com/8636/16510241270
_ca83157509_o.jpg","https://farm8.staticflickr.com/7618/16601658850_13b826e705
_o.jpg","https://farm9.staticflickr.com/8617/16510041628_883af57512_o.jp
g"}],"presskit":"http://www.spacex.com/sites/spacex/files/abs-eutelsatfactshee
t.pdf","webcast":"https://www.youtube.com/watch?v=mN7lyaCBzT8","youtube_id":"m
N7lyaCBzT8","article":"https://www.space.com/28702-spacex-rocket-launches-sate
llites-video.html","wikipedia":"https://en.wikipedia.org/wiki/ABS-3A"},"static
_fire_date_utc":"2015-02-25T19:10:00.000Z","static_fire_date_unix":142489140
0,"net":false,"window":0,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"f
ailures":[],"details":"The launch was Boeing's first-ever conjoined launch of
a lighter-weight dual-commsat stack that was specifically designed to take adv
antage of the lower-cost SpaceX Falcon 9 launch vehicle. Per satellite, launch
costs were less than $30 million. The ABS satellite reached its final destinat
ion ahead of schedule and started operations on September 10.","crew":[],"ship
s":[],"capsules":[],"payloads":["5eb0e4bdb6c3bb0006eeb1f8","5eb0e4bdb6c3bb0006

```

```

eeb1f9"], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 21, "name": "ABS-3A / Eutelsat 115W B", "date_utc": "2015-03-02T03:50:00.000Z", "date_unix": 1425268200, "date_local": "2015-03-02T23:50:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a0f35918c0893b2637", "flight": 1, "gridfins": false, "legs": false, "reused": false, "landing_attempt": false, "landing_success": null, "landing_type": null, "landpad": null}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87ceaffd86e000604b33e"}, {"fairings": null, "links": {"patch": {"small": "https://images2.imgbox.com/3d/55/kbVulokl_o.png", "large": "https://images2.imgbox.com/e4/9f/GRP89UBo_o.png"}, "reddit": {"campaign": null, "launch": "https://www.reddit.com/r/spacex/comments/32jnyd", "media": "https://www.reddit.com/r/spacex/comments/32lw5y", "recovery": null}, "flickr": {"small": [], "original": ["https://farm8.staticflickr.com/7624/17170624642_e5949d160e_o.jpg", "https://farm8.staticflickr.com/7708/17170624402_f6de506461_o.jpg", "https://farm8.staticflickr.com/7658/17170624462_2efc977fee_o.jpg", "https://farm8.staticflickr.com/7611/17171659711_42597fefed_o.jpg", "https://farm9.staticflickr.com/8774/17170624412_7091dbd04a_o.jpg"]}, "presskit": "https://www.nasa.gov/sites/default/files/files/SpaceX_NASA_CRS-6_PressKit.pdf", "webcast": "https://www.youtube.com/watch?v=csVpa25iqH0", "youtube_id": "csVpa25iqH0", "article": "https://spaceflightnow.com/2015/04/14/falcon-9-successfully-launches-descends-to-off-balance-landing/", "wikipedia": "https://en.wikipedia.org/wiki/SpaceX_CRS-6"}, "static_fire_date_utc": "2015-04-11T00:00:00.000Z", "static_fire_date_unix": 1428710400, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "Following the first-stage boost, SpaceX attempted a controlled-descent test of the first stage. The first stage contacted the ship, but soon tipped over due to excess lateral velocity caused by a stuck throttle valve resulting in a later-than-intended downthrottle.", "crew": [], "ships": ["5ea6ed2e080df4000697c906", "5ea6ed2f080df4000697c90b", "5ea6ed2f080df4000697c90c", "5ea6ed2f080df4000697c90f", "5ea6ed30080df4000697c912"], "capsules": ["5e9e2c5cf359188bfb3b266b"], "payloads": ["5eb0e4bdb6c3bb0006eeb1fa"], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 22, "name": "CRS-6", "date_utc": "2015-04-14T20:10:00.000Z", "date_unix": 1429042200, "date_local": "2015-04-14T16:10:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a1f359186d533b2638", "flight": 1, "gridfins": true, "legs": true, "reused": false, "landing_attempt": true, "landing_success": false, "landing_type": "ASDS", "landpad": "5e9e3032383ecb761634e7cb"}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87ceaffd86e000604b33f"}, {"fairings": {"reused": false, "recovery_attempt": false, "recovered": false, "ships": []}, "links": {"patch": {"small": "https://images2.imgbox.com/c9/35/VNpbqUPb_o.png", "large": "https://images2.imgbox.com/7a/99/RLkM4sNw_o.png"}, "reddit": {"campaign": null, "launch": "https://www.reddit.com/r/spacex/comments/33xqcj", "media": "https://www.reddit.com/r/spacex/comments/3439s3", "recovery": null}, "flickr": {"small": [], "original": ["https://farm8.staticflickr.com/7695/17138865668_18dcce7072_o.jpg", "https://farm8.staticflickr.com/7677/16706406093_61a8f9c2f8_o.jpg", "https://farm8.staticflickr.com/7691/17324793792_2dd13ea3f3_o.jpg", "https://farm8.staticflickr.com/7691/17139094400_b94celff56_o.jpg", "https://farm9.staticflickr.com/8739/17140415959_38b5ee8bc6_o.jpg", "https://farm8.staticflickr.com/7735/16704192574_e3a0a6fac2_o.jpg"]}, "presskit": "https://www.spacex.com/sites/spacex/files/spacexthalesfactsheet_final.pdf", "webcast": "https://www.youtube.com/watch?v=nBwAYTogj4", "youtube_id": "nBwAYTogj4", "article": "https://spaceflightnow.com/2015/04/28/falcon-9-rocket-powers-into-space-with-satellite-for-turkmenistan/", "wikipedia": "https://en.wikipedia.org/wiki/T%C3%BCrkmen%C3%84lem_52%C2%B0E/_MonacoSAT"}, "static_fire_date_utc": "2015-04-22T11:11:00.000Z", "static_fire_date_unix": 1429701060, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": null, "crew": [], "ships": [], "capsules": [], "payloads": ["5eb0e4beb6c3bb0006eeb1fb"], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 23, "name": "T\u00bcrkmen\u00bcrkmen\u00bcrkmen 52\u00b2\u00b0E / MonacoSAT", "date_utc": "2015-04-27T23:03:00.000Z", "date_unix": 1430175780, "date_local": "2015-04-27T19:03:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a1f35918233f3b2639", "flight": 1, "gridfins": false, "legs": false, "reused": false, "landing_attempt": false, "landing_success": null, "landing_type": null, "landpad": null}], "auto_update": true

```

```

ue,"tbd":false,"launch_library_id":null,"id":"5eb87cedffd86e000604b340"},{"fairings":null,"links":{"patch":{"small":"https://images2.imgbox.com/d0/22/gyTVYo2l_o.png","large":"https://images2.imgbox.com/47/39/stH98Qy1_o.png"},"reddit":{"campaign":null,"launch":"https://www.reddit.com/r/spacex/comments/3b27hk","media":"https://www.reddit.com/r/spacex/comments/3berj3","recovery":null},"flickr":{"small":[],"original":["https://farm1.staticflickr.com/344/19045370790_f20f29cd8d_o.jpg","https://farm1.staticflickr.com/287/18999110808_6e153fed64_o.jpg"]},"presskit":"https://www.nasa.gov/sites/default/files/atoms/files/spacex_nasa_crs-7_presskit.pdf","webcast":"https://www.youtube.com/watch?v=PuNymhcTtSQ","youtube_id":"PuNymhcTtSQ","article":"https://spaceflightnow.com/2015/06/28/falcon-9-rocket-destroyed-in-launch-mishap/","wikipedia":"https://en.wikipedia.org/wiki/SpaceX_CRS-7"},"static_fire_date_utc":"2015-06-26T05:00:00.000Z","static_fire_date_unix":1435294800,"net":false,"window":0,"rocket":"5e9d0d95eda69973a809dlec","success":false,"failures":[{"time":139,"altitude":40,"reason":"helium tank overpressure lead to the second stage LOX tank explosion"}],"details":"Launch performance was nominal until an overpressure incident in the second-stage LOX tank, leading to vehicle breakup at T+150 seconds. The Dragon capsule survived the explosion but was lost upon splashdown because its software did not contain provisions for parachute deployment on launch vehicle failure."},"crew":[],"ships":["5ea6ed2e080df4000697c906","5ea6ed2f080df4000697c90b","5ea6ed2f080df4000697c90c"],"capsules":["5e9e2c5cf35918407d3b266c"],"payloads":["5eb0e4beb6c3bb0006eeb1fc"],"launchpad":"5e9e4501f509094ba4566f84","flight_number":24,"name":"CRS-7","date_utc":"2015-06-28T14:21:00.000Z","date_unix":1435501260,"date_local":"2015-06-28T10:21:00-04:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5e9e28a1f35918683c3b263a","flight":1,"gridfins":true,"legs":true,"reused":false,"landing_attempt":true,"landing_success":null,"landing_type":"ASDS","landpad":"5e9e3032383ecb6bb234e7ca"}],"auto_update":true,"tbd":false,"launch_library_id":null,"id":"5eb87ceeffd86e000604b341"},{"fairings":{"reused":false,"recovery_attempt":false,"recovered":false,"ships":[]},"links":{"patch":{"small":"https://images2.imgbox.com/89/e8/5eeThzqZ_o.png","large":"https://images2.imgbox.com/65/a5/8iNE9T6Y_o.png"},"reddit":{"campaign":null,"launch":"https://www.reddit.com/r/spacex/comments/3xgxh5","media":"https://www.reddit.com/r/spacex/comments/3xm83h/","recovery":null},"flickr":{"small":[],"original":["https://farm2.staticflickr.com/1648/23827554109_837b21739e_o.jpg","https://farm1.staticflickr.com/597/23802553412_d41e4dcc64_o.jpg","https://farm6.staticflickr.com/5806/23802550622_9ff8c90098_o.jpg","https://farm1.staticflickr.com/571/23604164970_2ala2366e4_o.jpg","https://farm6.staticflickr.com/5773/23271687254_5e64d726ba_o.jpg","https://farm6.staticflickr.com/5766/23526044959_5bfe74bc88_o.jpg","https://farm6.staticflickr.com/5723/23785609832_83038751d1_o.jpg","https://farm1.staticflickr.com/715/23833499336_d3fde6a25a_o.jpg"]},"presskit":"http://www.spacex.com/sites/spacex/files/spacex_orbcomm_press_kit_final2.pdf","webcast":"https://www.youtube.com/watch?v=O5bTbVbe4e4","youtube_id":"O5bTbVbe4e4","article":"https://spaceflightnow.com/2015/12/22/round-trip-rocket-flight-gives-spacex-a-trifecta-of-successes/","wikipedia":"https://en.wikipedia.org/wiki/Falcon_9_flight_20"},"static_fire_date_utc":"2015-12-19T00:09:00.000Z","static_fire_date_unix":1450483740,"net":false,"window":0,"rocket":"5e9d0d95eda69973a809dlec","success":true,"failures":[],"details":"Total payload mass was 2,034 kg (4,484 lb) : 11 satellites weighing 172 kg each, plus a 142-kg mass simulator. This was the first launch of the upgraded v1.1 variant (later called Falcon 9 Full Thrust), with a 30 percent power increase. Orbcomm had originally agreed to be the third flight of the enhanced-thrust rocket, but the change to the maiden flight position was announced in October 2015. SpaceX received a permit from the FAA to land the booster on solid ground at Cape Canaveral, and succeeded."},"crew":[],"ships":[],"capsules":[],"payloads":["5eb0e4beb6c3bb0006eeb1fd"],"launchpad":"5e9e4501f509094ba4566f84","flight_number":25,"name":"OG-2 Mission 2","date_utc":"2015-12-22T01:29:00.000Z","date_unix":1450747740,"date_local":"2015-12-22T21:29:00-04:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5e9e28a1f3591867753b263b","flight":1,"gridfins":true,"legs":true,"reused":false,"landing_attempt":true,"landing_success":true,"landing_type":"RTLS","landpad":"5e9e3032383ecb267a

```

```

34e7c7"}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87c
efffd86e000604b342"}, {"fairings": {"reused": false, "recovery_attempt": false, "rec
overed": false, "ships": []}, "links": {"patch": {"small": "https://images2.imgbox.co
m/72/f2/uK9vYzvK_o.png", "large": "https://images2.imgbox.com/71/59/j489OwAI_o.p
ng"}, "reddit": {"campaign": null, "launch": "https://www.reddit.com/r/spacex/commen
ts/4l7weg", "media": "https://www.reddit.com/r/spacex/comments/4lcvdm", "recover
y": null}, "flickr": {"small": [], "original": ["https://farm2.staticflickr.com/146
0/24382360351_9blf2fcabc_o.jpg", "https://farm2.staticflickr.com/1669/244236045
06_27d3c4548b_o.jpg", "https://farm2.staticflickr.com/1618/24151425850_1cb60405
69_o.jpg", "https://farm2.staticflickr.com/1622/24127012370_07edc62046_o.jp
g", "https://farm2.staticflickr.com/1508/24127011190_92ef932c96_o.jpg", "http
s://farm2.staticflickr.com/1591/23778325594_08231286fc_o.jpg", "https://farm2.s
taticflickr.com/1542/24038722499_34c10216a3_o.jpg"]}, "presskit": "http://www.sp
acex.com/sites/spacex/files/spacex_jason3_press_kit.pdf", "webcast": "https://ww
w.youtube.com/watch?v=ivdKRJzl6y0", "youtube_id": "ivdKRJzl6y0", "article": "http
s://spaceflightnow.com/2016/01/18/satellite-launched-to-measure-motions-of-the
-oceans/", "wikipedia": "https://en.wikipedia.org/wiki/Jason-3"}, {"static_fire_da
te_utc": "2016-01-11T18:42:00.000Z", "static_fire_date_unix": 1452537720, "net": fa
lse, "window": 0, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failures":
[], "details": "First launch of NASA and NOAA joint science mission under the NL
S II launch contract (not related to NASA CRS or USAF OSP3 contracts). Last la
unch of the original Falcon 9 v1.1 launch vehicle. The Jason-3 satellite was s
uccessfully deployed to target orbit. SpaceX again attempted a recovery of the
first stage booster by landing on an autonomous drone ship; this time located
in the Pacific Ocean. The first stage did achieve a soft-landing on the ship,
but a lockout on one of the landing legs failed to latch, so that the booster
fell over and exploded.", "crew": [], "ships": ["5ea6ed2f080df4000697c910", "5ea6ed
30080df4000697c912", "5ea6ed30080df4000697c914"], "capsules": [], "payloads": ["5eb
0e4beb6c3bb0006eeb1fe"], "launchpad": "5e9e4502f509092b78566f87", "flight_numbe
r": 26, "name": "Jason 3", "date_utc": "2016-01-17T15:42:00.000Z", "date_unix": 14530
45320, "date_local": "2016-01-17T08:42:00-07:00", "date_precision": "hour", "upcomi
ng": false, "cores": [{"core": "5e9e28a1f3591842fa3b263c", "flight": 1, "gridfins": tr
ue, "legs": true, "reused": false, "landing_attempt": true, "landing_success": fals
e, "landing_type": "ASDS", "landpad": "5e9e3033383ecbb9e534e7cc"}], "auto_update": t
rue, "tbd": false, "launch_library_id": null, "id": "5eb87cf0ffd86e000604b343"}, {"fa
irings": {"reused": false, "recovery_attempt": false, "recovered": false, "ships":
[]}, "links": {"patch": {"small": "https://images2.imgbox.com/fa/ef/4FBvVReu_o.pn
g", "large": "https://images2.imgbox.com/f6/aa/xDtGo0WJ_o.png"}, "reddit": {"campa
ign": null, "launch": "https://www.reddit.com/r/spacex/comments/48u4yq", "medi
a": "https://www.reddit.com/r/spacex/comments/472k8c", "recovery": null}, "flickr
r": {"small": [], "original": ["https://farm2.staticflickr.com/1623/25395662282_94
2fd68ba3_o.jpg", "https://farm2.staticflickr.com/1458/25395661442_bfd783f18a_o.
jpg", "https://farm2.staticflickr.com/1641/25421381351_38390bcb8e_o.jpg", "http
s://farm2.staticflickr.com/1616/25514167315_b19b0a4365_o.jpg", "https://farm2.s
taticflickr.com/1482/24883160354_b03cefd416_o.jpg", "https://farm2.staticflick
r.com/1653/25420915781_8fc648b4a4_o.jpg", "https://farm2.staticflickr.com/1610/
25486858116_9c06dfea59_o.jpg", "https://farm2.staticflickr.com/1617/25168697841
_00dfff89bb_o.jpg", "https://farm2.staticflickr.com/1533/24631230904_83b1624807
_o.jpg", "https://farm2.staticflickr.com/1627/25145624551_1b8743116f_o.jpg", "ht
tps://farm2.staticflickr.com/1622/25120540712_7fcla5ed72_o.jpg", "https://farm
2.staticflickr.com/1550/24585667074_aa712b13a8_o.jpg"]}, "presskit": "http://ww
w.spacex.com/sites/spacex/files/spacex_ses9_press_kit_final.pdf", "webcast": "ht
tps://www.youtube.com/watch?v=muDPSyO7-A0", "youtube_id": "muDPSyO7-A0", "articl
e": "https://spaceflightnow.com/2016/03/05/tv-broadcasting-satellite-finally-la
unched-on-falcon-9/", "wikipedia": "https://en.wikipedia.org/wiki/SES-9"}, {"stati
c_fire_date_utc": "2016-10-02T14:11:00.000Z", "static_fire_date_unix": 147541746
0, "net": false, "window": 5400, "rocket": "5e9d0d95eda69973a809dlec", "success": tru
e, "failures": [], "details": "Second launch of the enhanced Falcon 9 Full Thrust
launch vehicle. Following the launch, SpaceX attempted an experimental landing
test to a drone ship, although a successful landing was not expected because 1

```

aunch mass exceeded previously indicated limit for a GTO there was little fuel left. As predicted, booster recovery failed: the spent first stage \\\"landed hard\\\", but the controlled-descent, atmospheric re-entry and navigation to the drone ship were successful and returned significant test data on bringing back high-energy Falcon 9s.\", \"crew\": [], \"ships\": [\"5ea6ed2e080df4000697c906\", \"5ea6ed2f080df4000697c90b\", \"5ea6ed2f080df4000697c90c\", \"5ea6ed30080df4000697c913\"], \"capsules\": [], \"payloads\": [\"5eb0e4beb6c3bb0006eeb1ff\"], \"launchpad\": \"5e9e4501f509094ba4566f84\", \"flight\_number\": 27, \"name\": \"SES-9\", \"date\_utc\": \"2016-03-04T23:35:00.000Z\", \"date\_unix\": 1457134500, \"date\_local\": \"2016-03-04T19:35:00-04:00\", \"date\_precision\": \"hour\", \"upcoming\": false, \"cores\": [{\"core\": \"5e9e28a1f359188def3b263d\", \"flight\": 1, \"gridfins\": true, \"legs\": true, \"reused\": false, \"landing\_attempt\": true, \"landing\_success\": false, \"landing\_type\": \"ASDS\", \"landpad\": \"5e9e3032383ecb6bb234e7ca\"}], \"auto\_update\": true, \"tbd\": false, \"launch\_library\_id\": null, \"id\": \"5eb87cf2ff86e000604b344\"}, {\"fairings\": null, \"links\": {\"patch\": {\"small\": \"https://images2.imgbox.com/49/2a/gkSR50yc\_o.png\", \"large\": \"https://images2.imgbox.com/1b/f0/tyNDMK5j\_o.png\"}, \"reddit\": {\"campaign\": null, \"launch\": \"https://www.reddit.com/r/spacex/comments/4dtoly\", \"media\": \"https://www.reddit.com/r/spacex/comments/4dtpxn/\", \"recovery\": \"https://www.reddit.com/r/spacex/comments/4ee2zy\"}, \"flickr\": {\"small\": [], \"original\": [\"https://farm2.staticflickr.com/1633/25788014884\_6a3f9ae183\_o.jpg\", \"https://farm2.staticflickr.com/1650/26300505022\_8b8b9035e8\_o.jpg\", \"https://farm2.staticflickr.com/1486/25787998624\_3ca213bele\_o.jpg\", \"https://farm2.staticflickr.com/1450/26326628031\_elb08ec0b3\_o.jpg\", \"https://farm2.staticflickr.com/1670/26239020092\_05e5e4c538\_o.jpg\", \"https://farm2.staticflickr.com/1709/26305479266\_76b4d01caf\_o.jpg\", \"https://farm2.staticflickr.com/1645/26239017922\_28c7ac50e0\_o.jpg\", \"https://farm2.staticflickr.com/1559/26288402056\_6c5997ce66\_o.jpg\", \"https://farm2.staticflickr.com/1449/25709481274\_60f8c77358\_o.jpg\", \"https://farm2.staticflickr.com/1671/26217360302\_b66c3e384e\_o.jpg\", \"https://farm2.staticflickr.com/1704/26283822056\_838c1103b9\_o.jpg\", \"https://farm2.staticflickr.com/1508/26217345472\_118767c608\_o.jpg\", \"https://farm2.staticflickr.com/1495/25916886442\_821a152917\_o.jpg\"]}, \"presskit\": \"http://www.spacex.com/sites/spacex/files/spacex\_crs8\_press\_kit.pdf\", \"webcast\": \"https://www.youtube.com/watch?v=7pUAYdjne5M\", \"youtube\_id\": \"7pUAYdjne5M\", \"article\": \"https://spaceflightnow.com/2016/04/08/spacex-lands-rocket-on-floating-platform-after-station-resupply-launch/\", \"wikipedia\": \"https://en.wikipedia.org/wiki/SpaceX\_CRS-8\"}, \"static\_fire\_date\_utc\": \"2016-04-05T00:00:00.000Z\", \"static\_fire\_date\_unix\": 1459814400, \"net\": false, \"window\": 0, \"rocket\": \"5e9d0d95eda69973a809d1ec\", \"success\": true, \"failures\": [], \"details\": \"Dragon carried over 1500 kg of supplies and delivered (stowed in its trunk) the inflatable Bigelow Expandable Activity Module (BEAM) to the ISS for two years of in-orbit tests. The rocket's first stage landed smoothly on SpaceX's autonomous spaceport drone ship 9 minutes after liftoff, making this the first ever successful landing of a rocket booster on a ship at sea as part of an orbital launch. The first stage B1021 was later also the first orbital booster to be used again, when launching SES-10 on March 30, 2017.\", \"crew\": [], \"ships\": [\"5ea6ed2e080df4000697c906\", \"5ea6ed2f080df4000697c90b\", \"5ea6ed2f080df4000697c90c\", \"5ea6ed30080df4000697c912\", \"5ea6ed30080df4000697c913\"], \"capsules\": [\"5e9e2c5cf3591885d43b266d\"], \"payloads\": [\"5eb0e4bfb6c3bb0006eeb200\"], \"launchpad\": \"5e9e4501f509094ba4566f84\", \"flight\_number\": 28, \"name\": \"CRS-8\", \"date\_utc\": \"2016-04-08T20:43:00.000Z\", \"date\_unix\": 1460148180, \"date\_local\": \"2016-04-08T16:43:00-04:00\", \"date\_precision\": \"hour\", \"upcoming\": false, \"cores\": [{\"core\": \"5e9e28a2f359182d0b3b263e\", \"flight\": 1, \"gridfins\": true, \"legs\": true, \"reused\": false, \"landing\_attempt\": true, \"landing\_success\": true, \"landing\_type\": \"ASDS\", \"landpad\": \"5e9e3032383ecb6bb234e7ca\"}], \"auto\_update\": true, \"tbd\": false, \"launch\_library\_id\": null, \"id\": \"5eb87cf3ff86e000604b345\"}, {\"fairings\": {\"reused\": false, \"recovery\_attempt\": false, \"recovered\": false, \"ships\": []}, \"links\": {\"patch\": {\"small\": \"https://images2.imgbox.com/87/c9/qViUTdt5\_o.png\", \"large\": \"https://images2.imgbox.com/84/40/ddJiuhNV\_o.png\"}, \"reddit\": {\"campaign\": \"https://www.reddit.com/r/spacex/comments/4gyh8z\", \"launch\": \"https://www.reddit.com/r/spacex/comments/4htenu\", \"media\": \"https://www.reddit.com/r/spacex/comments/4htg2g\", \"recovery\": \"https://www.reddit.com/r/spacex/comments/4ihplp\"}, \"flickr\": {\"small\": [], \"original\": [\"https://farm8.staticflickr.com/7340/27044931232\_7b755276e

c\_o.jpg", "https://farm8.staticflickr.com/7444/27028105566\_1d3413daa7\_o.jpg", "https://farm8.staticflickr.com/7597/26778141961\_e3bd237942\_o.jpg", "https://farm8.staticflickr.com/7079/26778141661\_559b48ac80\_o.jpg", "https://farm8.staticflickr.com/7682/26778141401\_c437b04b74\_o.jpg", "https://farm8.staticflickr.com/7706/26751237322\_ceb6d56235\_o.jpg", "https://farm8.staticflickr.com/7677/26809210466\_fc55835f3c\_o.jpg", "https://farm8.staticflickr.com/7085/26809208046\_d77bd31fd0\_o.jpg", "https://farm8.staticflickr.com/7103/26809207316\_cdc7d582e6\_o.jpg"]}, "presskit": "http://www.spacex.com/sites/spacex/files/spacex\_jcsat\_press\_kit\_final.pdf", "webcast": "https://www.youtube.com/watch?v=L0bMeDj76ig", "youtube\_id": "L0bMeDj76ig", "article": "https://spaceflightnow.com/2016/05/06/falcon-9-succeeds-in-middle-of-the-night-launch/", "wikipedia": "https://en.wikipedia.org/wiki/JCSAT-2B", "static\_fire\_date\_utc": "2016-05-01T21:32:00.000Z", "static\_fire\_date\_unix": 1462138320, "net": false, "window": 7200, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failures": [], "details": "Launched the JCSAT 14 communications satellite for Tokyo-based SKY Perfect JSAT Corp. JCSAT 14 will support data networks, television broadcasters and mobile communications users in Japan, East Asia, Russia, Oceania, Hawaii and other Pacific islands. This was the first time a booster successfully landed after a GTO mission.", "crew": [], "ships": ["5ea6ed2e080df4000697c906", "5ea6ed2f080df4000697c90b", "5ea6ed2f080df4000697c90c"], "capsules": [], "payloads": ["5eb0e4bfb6c3bb0006eeb201"], "launchpad": "5e9e4501f509094ba4566f84", "flight\_number": 29, "name": "JCSAT-2B", "date\_utc": "2016-05-06T05:21:00.000Z", "date\_unix": 1462512060, "date\_local": "2016-05-06T01:21:00-04:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a2f35918077b3b263f", "flight": 1, "gridfins": true, "legs": true, "reused": false, "landing\_attempt": true, "landing\_success": true, "landing\_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto\_update": true, "tbd": false, "launch\_library\_id": null, "id": "5eb87cf5ff86e000604b346", {"fairings": {"reused": false, "recovery\_attempt": false, "recovered": false, "ships": []}, "links": {"patch": {"small": "https://images2.imgbox.com/d1/de/waYRCanq\_o.png", "large": "https://images2.imgbox.com/b7/ec/5kukvU10\_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/4hjz4k", "launch": "https://www.reddit.com/r/spacex/comments/4l9uou", "media": "https://www.reddit.com/r/spacex/comments/4l4af1", "recovery": "https://www.reddit.com/r/spacex/comments/4lz2y6"}, "flickr": {"small": [], "original": ["https://farm8.staticflickr.com/7420/26814484893\_13059e4b39\_o.jpg", "https://farm8.staticflickr.com/7321/26812794884\_bf91665325\_o.jpg", "https://farm8.staticflickr.com/7337/26812792104\_9323121f0b\_o.jpg", "https://farm8.staticflickr.com/7376/27421461715\_5640d2b87a\_o.jpg", "https://farm8.staticflickr.com/7717/26812758364\_74569b4327\_o.jpg", "https://farm8.staticflickr.com/7742/27294263035\_9b43bd141c\_o.jpg", "https://farm8.staticflickr.com/7252/27294262435\_c534cc4351\_o.jpg", "https://farm8.staticflickr.com/7698/27294261525\_82c4b7e604\_o.jpg", "https://farm8.staticflickr.com/7045/27259828166\_9e32061cc9\_o.jpg", "https://farm8.staticflickr.com/7013/27259827316\_c2f7507b3d\_o.jpg", "https://farm8.staticflickr.com/7211/27182485331\_ed2414a947\_o.jpg", "https://farm8.staticflickr.com/7740/27182481921\_0d7a759736\_o.jpg", "https://farm8.staticflickr.com/7315/26645036414\_39736db559\_o.jpg"]}, "presskit": "http://www.spacex.com/sites/spacex/files/spacex\_thaicom\_8\_press\_kit.pdf", "webcast": "https://www.youtube.com/watch?v=zBYC4f79iXc", "youtube\_id": "zBYC4f79iXc", "article": "https://spaceflightnow.com/2016/05/27/spacex-logs-successful-late-afternoon-launch-for-thaicom/", "wikipedia": "https://en.wikipedia.org/wiki/Thaicom\_8", "static\_fire\_date\_utc": "2016-05-25T00:00:00.000Z", "static\_fire\_date\_unix": 1464134400, "net": false, "window": 7200, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failures": [], "details": "Manufactured by Orbital ATK, the 3,100-kilogram (6,800 lb) Thaicom 8 communications satellite will serve Thailand, India and Africa from the 78.5° East geostationary location. It is equipped with 24 active Ku-band transponders.", "crew": [], "ships": ["5ea6ed2e080df4000697c906", "5ea6ed2f080df4000697c90b", "5ea6ed2f080df4000697c90c", "5ea6ed30080df4000697c913"], "capsules": [], "payloads": ["5eb0e4bfb6c3bb0006eeb202"], "launchpad": "5e9e4501f509094ba4566f84", "flight\_number": 30, "name": "Thaicom 8", "date\_utc": "2016-05-27T21:39:00.000Z", "date\_unix": 1464385140, "date\_local": "2016-05-27T17:39:00-04:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a2f3591845c73b2640", "flight": 1, "gridfins": true, "legs": true, "reused": false, "landing\_attempt": true, "landing\_success": true, "landing\_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}]}



```

e,"reused":false,"landing_attempt":true,"landing_success":true,"landing_type":
e":"ASDS","landpad":"5e9e3032383ecb6bb234e7ca"}]],"auto_update":true,"tbd":fals
e,"launch_library_id":null,"id":"5eb87cf6ffd86e000604b347"},{"fairings":{"reus
ed":false,"recovery_attempt":false,"recovered":false,"ships":[]},"links":{"pat
ch":{"small":"https://images2.imgbox.com/ae/e9/VTH2y7S5_o.png","large":"http
s://images2.imgbox.com/07/79/4ajR03l9_o.png"},"reddit":{"campaign":"https://ww
w.reddit.com/r/spacex/comments/4ksdy3","launch":"https://www.reddit.com/r/spac
ex/comments/4o5u6r","media":"https://www.reddit.com/r/spacex/comments/4o5j6
o","recovery":"https://www.reddit.com/r/spacex/comments/4on75l"},"flickr":{"sm
all":[],"original":["https://farm8.staticflickr.com/7088/27661326426_ce3c3f320
d_o.jpg","https://farm8.staticflickr.com/7698/27661325446_affb08be24_o.jpg","h
ttps://farm8.staticflickr.com/7733/27661322976_073466e80c_o.jpg","https://farm
8.staticflickr.com/7218/27661320706_4c16f3b76b_o.jpg","https://farm8.staticfli
ckr.com/7340/27661315686_6dcb2ce6f9_o.jpg","https://farm8.staticflickr.com/765
6/27661313956_elac9650b9_o.jpg","https://farm8.staticflickr.com/7616/276613125
16_640764f8fd_o.jpg","https://farm8.staticflickr.com/7413/27078893234_0142dd80
f0_o.jpg","https://farm8.staticflickr.com/7334/27078889924_8819fd55ea_o.jp
g"]},"presskit":"https://drive.google.com/open?id=0BwA3a65ef10vMGpJS1pDNHhjel
U","webcast":"https://www.youtube.com/watch?v=gLNmtUEvI5A","youtube_id":"gLNmt
UEvI5A","article":"https://spaceflightnow.com/2016/06/15/spacex-successfully-f
ires-satellites-into-orbit-but-loses-boosters-on-landing/","wikipedia":"http
s://en.wikipedia.org/wiki/ABS_(satellite_operator)","static_fire_date_utc":"2
016-06-13T15:03:00.000Z","static_fire_date_unix":1465830180,"net":false,"windo
w":2700,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"deta
ils":"One year after pioneering this technique on flight 16, Falcon again laun
ched two Boeing 702SP gridded ion thruster satellites in a dual-stack configur
ation, with the two customers sharing the rocket and mission costs. First stag
e landing attempt on drone ship failed on landing due to low thrust on one of
the three landing engines.", "crew":[],"ships":["5ea6ed2e080df4000697c906","5ea
6ed2f080df4000697c90b","5ea6ed2f080df4000697c90c","5ea6ed30080df4000697c91
3"],"capsules":[],"payloads":["5eb0e4bfb6c3bb0006eeb203","5eb0e4bfb6c3bb0006ee
b204"],"launchpad":"5e9e4501f509094ba4566f84","flight_number":31,"name":"ABS-2
A / Eutelsat 117W B","date_utc":"2016-06-15T14:29:00.000Z","date_unix":1466000
940,"date_local":"2016-06-15T10:29:00-04:00","date_precision":"hour","upcomin
g":false,"cores":[{"core":"5e9e28a2f359184f403b2641","flight":1,"gridfins":tru
e,"legs":true,"reused":false,"landing_attempt":true,"landing_success":false,"l
anding_type":"ASDS","landpad":"5e9e3032383ecb6bb234e7ca"}]],"auto_update":tru
e,"tbd":false,"launch_library_id":null,"id":"5eb87cf8ffd86e000604b348"},{"fair
ings":null,"links":{"patch":{"small":"https://images2.imgbox.com/b6/52/p5vdNEJ
F_o.png","large":"https://images2.imgbox.com/7c/07/rs4MS4HU_o.png"},"reddit":
{"campaign":"https://www.reddit.com/r/spacex/comments/4ksedl","launch":"http
s://www.reddit.com/r/spacex/comments/4t2umd/","media":"https://www.reddit.com/
r/spacex/comments/4tayth","recovery":"https://www.reddit.com/r/spacex/comment
s/4znsvo"},"flickr":{"small":[],"original":["https://farm9.staticflickr.com/88
19/27776240293_fcbf8c4a0a_o.jpg","https://farm8.staticflickr.com/7720/27776237
513_038971797c_o.jpg","https://farm8.staticflickr.com/7594/27776235133_d794ce0
1f4_o.jpg","https://farm8.staticflickr.com/7759/27776229243_a0674e590f_o.jp
g","https://farm8.staticflickr.com/7512/27776228443_6652c6baea_o.jpg","http
s://farm9.staticflickr.com/8038/27776218453_34112abbcl_o.jpg","https://farm8.s
taticflickr.com/7636/27776215913_3f9f1b05df_o.jpg","https://farm8.staticflick
r.com/7740/28358960896_9785456101_o.jpg","https://farm8.staticflickr.com/7488/
27776206663_262526ba5f_o.jpg","https://farm8.staticflickr.com/7656/28358955546
_ce55d65e16_o.jpg","https://farm8.staticflickr.com/7467/27776204693_68b4ed82c9
_o.jpg","https://farm8.staticflickr.com/7693/28348649546_0a54b1aa44_o.jpg","ht
tps://farm8.staticflickr.com/7540/28291786662_5e2e874576_o.jpg"]},"presski
t":"https://drive.google.com/open?id=0BwA3a65ef10vM0JpSXdDUUJMRVvk","webcas
t":"https://www.youtube.com/watch?v=ThIdCuSsJh8","youtube_id":"ThIdCuSsJh8","a
rticle":"https://spaceflightnow.com/2016/07/18/spacex-sends-supplies-to-space-
station-lands-another-falcon-rocket/","wikipedia":"https://en.wikipedia.org/wi
ki/SpaceX_CRS-9"},"static_fire_date_utc":"2016-07-16T02:31:47.000Z","static_fi

```

```

re_date_unix":1468636307,"net":false,"window":0,"rocket":"5e9d0d95eda69973a809
dlec","success":true,"failures":[],"details":"Among other cargo, an Internatio
nal Docking Adapter (IDA-2) was carried to the ISS. This mission had a success
ful first-stage landing at Cape Canaveral.*Including the reusable Dragon Capsu
le, total payload to orbit was 6457 kg.", "crew":[], "ships":["5ea6ed2e080df4000
697c906","5ea6ed2f080df4000697c90b","5ea6ed2f080df4000697c90c","5ea6ed30080df4
000697c912"],"capsules":["5e9e2c5cf359183bb73b266e"],"payloads":["5eb0e4c0b6c3
bb0006eeb205"],"launchpad":"5e9e4501f509094ba4566f84","flight_number":32,"nam
e":"CRS-9","date_utc":"2016-07-18T04:45:00.000Z","date_unix":1468817100,"date_
local":"2016-07-18T00:45:00-04:00","date_precision":"hour","upcoming":false,"c
ores":[{"core":"5e9e28a2f359187f273b2642","flight":1,"gridfins":true,"legs":tr
ue,"reused":false,"landing_attempt":true,"landing_success":true,"landing_typ
e":"RTLS","landpad":"5e9e3032383ecb267a34e7c7"}],"auto_update":true,"tbd":fals
e,"launch_library_id":null,"id":"5eb87cf9ffd86e000604b349"}, {"fairings":{"reus
ed":false,"recovery_attempt":false,"recovered":false,"ships":[]},"links":{"pat
ch":{"small":"https://images2.imgbox.com/a4/21/eLkeQ0l8_o.png","large":"http
s://images2.imgbox.com/74/fc/KiaMQgym_o.png"},"reddit":{"campaign":"https://ww
w.reddit.com/r/spacex/comments/4pv6ws","launch":"https://www.reddit.com/r/spac
ex/comments/4xi7uq","media":"https://www.reddit.com/r/spacex/comments/4xkdf
j","recovery":"https://www.reddit.com/r/spacex/comments/4y5xd1"},"flickr":{"sm
all":[],"original":["https://farm9.staticflickr.com/8699/28965678292_17533229f
3_o.jpg","https://farm9.staticflickr.com/8173/28453337463_b9d11eeb4c_o.jpg","h
ttps://farm8.staticflickr.com/7793/28453335533_3f5a0a5760_o.jpg","https://farm
9.staticflickr.com/8784/28938085496_74b3fd0527_o.jpg","https://farm9.staticfli
ckr.com/8337/28969742675_15f78369a1_o.jpg","https://farm9.staticflickr.com/869
1/28353012603_ab83b6f5aa_o.jpg","https://farm9.staticflickr.com/8078/283517828
13_58ca783e51_o.jpg"]},"presskit":"https://drive.google.com/open?id=0BwA3a65ef
1Ovb0FkYnE5dElZRLU","webcast":"https://www.youtube.com/watch?v=QZTCE00gvLo","y
outube_id":"QZTCE00gvLo","article":"https://spaceflightnow.com/2016/08/14/falc
on-9-rocket-launches-japanese-satellite-then-nails-bullseye-landing/","wikiped
ia":"https://en.wikipedia.org/wiki/JCSAT-16"},"static_fire_date_utc":"2016-08-
11T04:01:00.000Z","static_fire_date_unix":1470888060,"net":false,"window":720
0,"rocket":"5e9d0d95eda69973a809dlec","success":true,"failures":[],"detail
s":"First attempt to touch down from a ballistic trajectory using a single-eng
ine landing burn. All previous landings from a ballistic trajectory had fired
three engines on the landing-burn, which provided more braking force, but sub
jected the vehicle to greater structural stresses. The single-engine landing b
urn takes more time and fuel, but puts less stress on the vehicle.", "crew":
[], "ships":["5ea6ed2e080df4000697c906","5ea6ed2f080df4000697c90b","5ea6ed2f080
df4000697c90c","5ea6ed30080df4000697c913"],"capsules":[],"payloads":["5eb0e4c1
b6c3bb0006eeb206"],"launchpad":"5e9e4501f509094ba4566f84","flight_number":3
3,"name":"JCSAT-16","date_utc":"2016-08-14T05:26:00.000Z","date_unix":14711523
60,"date_local":"2016-08-14T01:26:00-04:00","date_precision":"hour","upcomin
g":false,"cores":[{"core":"5e9e28a2f35918b8243b2643","flight":1,"gridfins":tru
e,"legs":true,"reused":false,"landing_attempt":true,"landing_success":true,"la
nding_type":"ASDS","landpad":"5e9e3032383ecb6bb234e7ca"}],"auto_update":tru
e,"tbd":false,"launch_library_id":null,"id":"5eb87cfaffd86e000604b34a"}, {"fair
ings":{"reused":false,"recovery_attempt":false,"recovered":false,"ships":
[]},"links":{"patch":{"small":"https://imgur.com/OADkTym.png","large":"http
s://imgur.com/2F5PYz5.png"},"reddit":{"campaign":"https://www.reddit.com/r/spa
cex/comments/4pv7jl","launch":null,"media":null,"recovery":null},"flickr":{"sm
all":[],"original":[]},"presskit":null,"webcast":"https://www.youtube.com/watc
h?v=_BgJEXQkjNQ","youtube_id":"_BgJEXQkjNQ","article":"https://spaceflightnow.
com/2016/09/01/spacex-rocket-and-israeli-satellite-destroyed-in-launch-pad-exp
losion/","wikipedia":"https://en.wikipedia.org/wiki/Amos-6"},"static_fire_date
_utc":"2016-09-01T13:07:00.000Z","static_fire_date_unix":1472735220,"net":fals
e,"window":null,"rocket":"5e9d0d95eda69973a809dlec","success":false,"failure
s":[{"time":-165180,"altitude":0,"reason":"buckled liner in several of the COP
V tanks, causing perforations that allowed liquid and/or solid oxygen to accum
ulate underneath the lining, which was ignited by friction."}],"details":"The

```

rocket and Amos-6 payload were lost in a launch pad explosion on September 1, 2016 during propellant fill prior to a static fire test. The pad was clear of personnel and there were no injuries.", "crew": [], "ships": [], "capsules": [], "payloads": [{"5eb0e4c1b6c3bb0006eeb207"}], "launchpad": "5e9e4501f509094ba4566f84", "flight\_number": 34, "name": "Amos-6", "date\_utc": "2016-09-01T13:07:00.000Z", "date\_unix": 1472735220, "date\_local": "2016-09-01T09:07:00-04:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a2f359187ee83b2644", "flight": 1, "gridfins": true, "legs": true, "reused": false, "landing\_attempt": true, "landing\_success": null, "landing\_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto\_update": true, "tbd": false, "launch\_library\_id": null, "id": "5eb87cfbffd86e000604b34b"}, {"fairings": {"reused": false, "recovery\_attempt": false, "recovered": false, "ships": []}, "links": {"patch": {"small": "https://images2.imgbox.com/a6/e8/5PyY296y\_o.png", "large": "https://images2.imgbox.com/ab/b8/USCniUHy\_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/5dii6z", "launch": "https://www.reddit.com/r/spacex/comments/5nsaqm", "media": "https://www.reddit.com/r/spacex/comments/5nsico", "recovery": "https://www.reddit.com/r/spacex/comments/5oe9kk"}, "flickr": {"small": [], "original": ["https://farm1.staticflickr.com/658/32394688795\_55a9873ea7\_o.jpg", "https://farm1.staticflickr.com/506/32394688095\_a3339f3c6d\_o.jpg", "https://farm1.staticflickr.com/745/32394687645\_63ae2b4740\_o.jpg", "https://farm1.staticflickr.com/318/31548291014\_e3a30abca8\_o.jpg", "https://farm1.staticflickr.com/670/32351549066\_e9cffe8d2b\_o.jpg", "https://farm6.staticflickr.com/5518/31579784413\_83aeac560a\_o.jpg", "https://farm6.staticflickr.com/5556/32312421135\_22c197c156\_o.jpg", "https://farm1.staticflickr.com/529/32312420015\_5d2403a847\_o.jpg", "https://farm1.staticflickr.com/435/32312417695\_19c0e50c4b\_o.jpg", "https://farm1.staticflickr.com/735/32312416415\_b90892af0a\_o.jpg", "https://farm1.staticflickr.com/293/32312415025\_cae16d1994\_o.jpg", "https://farm1.staticflickr.com/738/31467130724\_92e02c9524\_o.jpg", "https://farm1.staticflickr.com/464/31467130374\_9f7a7d380e\_o.jpg", "https://farm1.staticflickr.com/581/31467129424\_bac77d594a\_o.jpg", "https://farm1.staticflickr.com/380/32308163845\_c1731a4b1f\_o.jpg", "https://farm1.staticflickr.com/447/31450835954\_72ed10a19e\_o.jpg", "https://farm1.staticflickr.com/507/31450834974\_b8a3f4aca5\_o.jpg"]}], "presskit": "https://drive.google.com/open?id=0BwA3a65ef10vZC1aU3FuMlQzalE", "webcast": "https://www.youtube.com/watch?v=7WimRhydggg", "youtube\_id": "7WimRhydggg", "article": "https://spaceflightnow.com/2017/01/14/spacex-resumes-flight-s-with-on-target-launch-for-iridium/", "wikipedia": "https://en.wikipedia.org/wiki/Iridium\_satellite\_constellation#Next-generation\_constellation"}, {"static\_fire\_date\_utc": "2017-01-05T19:40:00.000Z", "static\_fire\_date\_unix": 1483645200, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failures": [], "details": "Return-to-flight mission after the loss of Amos-6 in September 2016. Iridium NEXT will replace the original Iridium constellation, launched in the late 1990s. Each Falcon mission will carry 10 satellites, with a goal to complete deployment of the 66 plus 9 spare satellite constellation by mid 2018. The first two Iridium qualification units were supposed to ride a Dnepr rocket in April 2016 but were delayed, so Iridium decided to qualify the first batch of 10 satellites instead.", "crew": [], "ships": [{"5ea6ed2f080df4000697c910", "5ea6ed30080df4000697c912", "5ea6ed30080df4000697c915"}], "capsules": [], "payloads": [{"5eb0e4c2b6c3bb0006eeb208"}], "launchpad": "5e9e4502f509092b78566f87", "flight\_number": 35, "name": "Iridium NEXT Mission 1", "date\_utc": "2017-01-14T17:54:00.000Z", "date\_unix": 1484416440, "date\_local": "2017-01-14T10:54:00-07:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a3f359189e3a3b2645", "flight": 1, "gridfins": true, "legs": true, "reused": false, "landing\_attempt": true, "landing\_success": true, "landing\_type": "ASDS", "landpad": "5e9e3033383ecbb9e534e7cc"}], "auto\_update": true, "tbd": false, "launch\_library\_id": null, "id": "5eb87cfddfd86e000604b34c"}, {"fairings": null, "links": {"patch": {"small": "https://images2.imgbox.com/d3/08/7YmXiSOQ\_o.png", "large": "https://images2.imgbox.com/02/52/hp8DpyGM\_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/5n2eqx", "launch": "https://www.reddit.com/r/spacex/comments/5uw4bh", "media": "https://www.reddit.com/r/spacex/comments/5uoy8o", "recovery": "https://www.reddit.com/r/spacex/comments/609aq4"}, "flickr": {"small": [], "original": ["https://farm3.staticflickr.com/2815/32761844973\_d2e8d76e9c\_o.jpg", "https://farm4.s

taticflickr.com/3878/32761843663\_8e366494f4\_o.jpg", "https://farm3.staticflickr.com/2790/32852846842\_6f1f7b26b9\_o.jpg", "https://farm3.staticflickr.com/2295/32852845662\_e7ae0daf4a\_o.jpg", "https://farm4.staticflickr.com/3888/33000639155\_2a6e2bb23d\_o.jpg", "https://farm1.staticflickr.com/405/33000638185\_b4ec7c7b93\_o.jpg", "https://farm1.staticflickr.com/574/32874779241\_9f463de901\_o.jpg", "https://farm4.staticflickr.com/3710/32153433074\_96337a54db\_o.jpg", "https://farm1.staticflickr.com/327/32153432924\_09dd1482d8\_o.jpg", "https://farm3.staticflickr.com/2881/32183025803\_36bf976b9e\_o.jpg", "https://farm3.staticflickr.com/2362/32183025493\_2a37b4e22c\_o.jpg", "https://farm1.staticflickr.com/504/32178458813\_ff47f61bb9\_o.jpg", "https://farm1.staticflickr.com/265/32176806823\_879ccc5da0\_o.jpg", "https://farm1.staticflickr.com/401/32866357531\_69c6d289ed\_o.jpg", "https://farm3.staticflickr.com/2105/32945170805\_553d45ca56\_o.jpg", "https://farm4.staticflickr.com/3865/32945170225\_58129f00dc\_o.jpg"}}, "presskit": "http://www.spacex.com/sites/spacex/files/crs10presskitfinal.pdf", "webcast": "https://www.youtube.com/watch?v=giNhaEzv\_PI", "youtube\_id": "giNhaEzv\_PI", "article": "https://spaceflightnow.com/2017/02/19/historic-launch-pad-back-in-service-with-thundering-blastoff-by-spacex/", "wikipedia": "https://en.wikipedia.org/wiki/SpaceX\_CRS-10"}, {"static\_fire\_date\_utc": "2017-02-12T21:30:00.000Z", "static\_fire\_date\_unix": 1486935000, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "First Falcon 9 flight from the historic LC-39 A launchpad at Kennedy Space Center, carrying supplies and materials to support dozens of science and research investigations scheduled during ISS Expeditions 50 and 51. The first stage returned to launch site and landed at LZ-1.", "crew": [], "ships": ["5ea6ed30080df4000697c912"], "capsules": ["5e9e2c5cf359185d753b266f"], "payloads": ["5eb0e4c3b6c3bb0006eeb209"], "launchpad": "5e9e4502f509094188566f88", "flight\_number": 36, "name": "CRS-10", "date\_utc": "2017-02-19T14:39:00.000Z", "date\_unix": 1487515140, "date\_local": "2017-02-19T10:39:00-04:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a3f3591829dc3b2646", "flight": 1, "gridfins": true, "legs": true, "reused": false, "landing\_attempt": true, "landing\_success": true, "landing\_type": "RTLS", "landpad": "5e9e3032383ecb267a34e7c7"}], "auto\_update": true, "tbd": false, "launch\_library\_id": null, "id": "5eb87cfeffd86e000604b34d"}, {"fairings": {"reused": false, "recovery\_attempt": false, "recovered": false, "ships": []}, "links": {"patch": {"small": "https://images2.imgbox.com/54/f8/0X2hNhNK\_o.png", "large": "https://images2.imgbox.com/47/c2/mmiTCLkJ\_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/5n2e10/echo\_star\_23\_launch\_campaign\_thread/", "launch": "https://www.reddit.com/r/spacex/comments/5z8dkm/welcome\_to\_the\_rspacex\_echo\_star23\_official\_launch/", "media": "https://www.reddit.com/r/spacex/comments/5z8if6/rspacex\_echo\_star\_23\_media\_thread\_videos\_images/", "recovery": null}, "flickr": {"small": [], "original": ["https://farm4.staticflickr.com/3819/33094074350\_ae56bd5c73\_o.jpg", "https://farm3.staticflickr.com/2935/33094073720\_92234ddaee\_o.jpg", "https://farm1.staticflickr.com/768/33094072690\_31a85e82ba\_o.jpg", "https://farm3.staticflickr.com/2876/33094072100\_546090a4f3\_o.jpg", "https://farm3.staticflickr.com/2860/32626053254\_d702922d87\_o.jpg", "https://farm3.staticflickr.com/2904/32654666113\_ba833971e0\_o.jpg", "https://farm1.staticflickr.com/677/32654665263\_751d29ded1\_o.jpg", "https://farm3.staticflickr.com/2936/33299697331\_09313ac49d\_o.jpg"]}, "presskit": "http://www.spacex.com/sites/spacex/files/echo\_starxxiiifinal.pdf", "webcast": "https://www.youtube.com/watch?v=lZmqbL-hz7U", "youtube\_id": "lZmqbL-hz7U", "article": "http://spacenews.com/spacex-launches-echo-star-23/", "wikipedia": "https://en.wikipedia.org/wiki/EchoStar#Satellite\_fleet"}, {"static\_fire\_date\_utc": "2017-03-09T23:00:00.000Z", "static\_fire\_date\_unix": 1489100400, "net": false, "window": 9000, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "Communications satellite for EchoStar Corp. EchoStar XXIII, based on a spare platform from the cancelled CMBStar 1 satellite program, will provide direct-to-home television broadcast services over Brazil. There was no attempt at a first-stage recovery so this rocket did not have landing legs or grid fins.", "crew": [], "ships": [], "capsules": [], "payloads": ["5eb0e4c3b6c3bb0006eeb20a"], "launchpad": "5e9e4502f509094188566f88", "flight\_number": 37, "name": "EchoStar 23", "date\_utc": "2017-03-16T06:00:00.000Z", "date\_unix": 1489644000, "date\_local": "2017-03-16T02:00:00-04:00", "date\_precision": "hour", "upcoming": false, "core

```

s":{"core":"5e9e28a3f3591878473b2647","flight":1,"gridfins":false,"legs":false,"reused":false,"landing_attempt":false,"landing_success":null,"landing_type":null,"landpad":null}},{"auto_update":true,"tbd":false,"launch_library_id":null,"id":"5eb87cfeffd86e000604b34e"},{"fairings":{"reused":false,"recovery_attempt":false,"recovered":false,"ships":[]},"links":{"patch":{"small":"https://images2.imgbox.com/5b/10/dfj7yRG3_o.png","large":"https://images2.imgbox.com/d1/f6/9q2edz2p_o.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/5sjrzj/ses10_launch_campaign_thread/","launch":"https://www.reddit.com/r/spacex/comments/62aqi7/rspacex_ses10_official_launch_discussion_updates/","media":"https://www.reddit.com/r/spacex/comments/62aqad/rspacex_ses10_media_thread_videos_images_gifs/","recovery":"https://www.reddit.com/r/spacex/comments/634gmr/bl021ses10_recovery_thread/"},"flickr":{"small":[],"original":["https://farm1.staticflickr.com/601/33026465643_462ef7a2cb_o.jpg","https://farm3.staticflickr.com/2850/32996438264_b79ca3664b_o.jpg","https://farm4.staticflickr.com/3956/32996437434_4dablae8e3_o.jpg","https://farm4.staticflickr.com/3831/32996435084_6c5662caca_o.jpg","https://farm4.staticflickr.com/3775/32915200224_b6ecfabd7e_o.jpg","https://farm4.staticflickr.com/3886/32915199874_b826eac153_o.jpg","https://farm3.staticflickr.com/2842/32915199514_6c44178e87_o.jpg","https://farm4.staticflickr.com/3771/32915198904_2df85aed05_o.jpg","https://farm4.staticflickr.com/3668/32915198334_d2fa2f16ab_o.jpg","https://farm4.staticflickr.com/3955/32915197674_24d6e27cf5_o.jpg","https://farm4.staticflickr.com/3830/33616913981_f04b6e2351_o.jpg","https://farm4.staticflickr.com/3819/33616913111_e699b48d66_o.jpg","https://farm4.staticflickr.com/3835/33361035860_c57ed61239_o.jpg","https://farm4.staticflickr.com/3783/33361035200_bfb797d38f_o.jpg","https://farm4.staticflickr.com/3698/33611796351_54d5a6d65a_o.jpg","https://farm3.staticflickr.com/2857/33611795531_82cc2d8789_o.jpg"]},"presskit":"http://www.spacex.com/sites/spacex/files/finales10presskit.pdf","webcast":"https://www.youtube.com/watch?v=xsZSXav4wI8","youtube_id":"xsZSXav4wI8","article":"https://spaceflightnow.com/2017/03/31/spacex-flies-rocket-for-second-time-in-historic-test-of-cost-cutting-technology/","wikipedia":"https://en.wikipedia.org/wiki/SES-10"},"static_fire_date_utc":"2017-03-27T18:00:00.000Z","static_fire_date_unix":1490637600,"net":false,"window":9000,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"details":"First payload to fly on a reused first stage, B1021, previously launched with CRS-8, which also landed a second time. In what is also a first, the payload fairing remained intact after a successful splashdown achieved with thrusters and a steerable parachute."},"crew":[],"ships":["5ea6ed2e080df4000697c906","5ea6ed2f080df4000697c90b","5ea6ed2f080df4000697c90c","5ea6ed30080df4000697c913"],"capsules":[],"payloads":["5eb0e4c3b6c3bb0006eeb20b"],"launchpad":"5e9e4502f509094188566f88","flight_number":38,"name":"SES-10","date_utc":"2017-03-30T22:27:00.000Z","date_unix":1490912820,"date_local":"2017-03-30T18:27:00-04:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5e9e28a2f359182d0b3b263e","flight":2,"gridfins":true,"legs":true,"reused":true,"landing_attempt":true,"landing_success":true,"landing_type":"ASDS","landpad":"5e9e3032383ecb6bb234e7ca"}],"auto_update":true,"tbd":false,"launch_library_id":null,"id":"5eb87d00ffd86e000604b34f"},{"fairings":{"reused":false,"recovery_attempt":false,"recovered":false,"ships":[]},"links":{"patch":{"small":"https://images2.imgbox.com/0d/06/aNPEVF72_o.png","large":"https://images2.imgbox.com/8e/6e/dM1L8DMs_o.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/601yxx","launch":"https://www.reddit.com/r/spacex/comments/68bn8y/","media":"https://www.reddit.com/r/spacex/comments/68bp1i/","recovery":null},"flickr":{"small":[],"original":["https://farm3.staticflickr.com/2922/33578359423_4169ac8f98_o.jpg","https://farm3.staticflickr.com/2900/33578357343_85c247ebce_o.jpg","https://farm5.staticflickr.com/4166/34006001860_8c45f28e69_o.jpg","https://farm5.staticflickr.com/4166/34005999880_77684dba4b_o.jpg","https://farm3.staticflickr.com/2934/34005998140_c77076b6fb_o.jpg","https://farm5.staticflickr.com/4191/34005996220_fe9e4342d3_o.jpg","https://farm3.staticflickr.com/2883/33575654563_699c544776_o.jpg","https://farm3.staticflickr.com/2902/33575652913_0dece34db4_o.jpg","https://farm5.staticflickr.com/4163/33575651063_24e05826c5_o.jpg","https://farm3.staticflickr.com/2876/33994851620_fabd14770f_o.jpg","https://farm3.staticflickr.com/2832/33973172140

```

```

_b370b79c51_o.jpg", "https://farm3.staticflickr.com/2874/34357262105_11b417bea2_o.jpg", "https://farm5.staticflickr.com/4158/34357260545_16870a94ba_o.jpg"]}, "presskit": "http://www.spacex.com/sites/spacex/files/nrol76presskit.pdf", "webcast": "https://www.youtube.com/watch?v=EzQpkQletdA", "youtube_id": "EzQpkQletdA", "article": "https://techcrunch.com/2017/05/01/spacex-successfully-launches-nrol-76-u-s-military-satellite/", "wikipedia": "https://en.wikipedia.org/wiki/List_of_NRO_launches", "static_fire_date_utc": "2017-04-25T19:02:00.000Z", "static_fire_date_unix": 1493146920, "net": false, "window": 7200, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failures": [], "details": "First launch under SpaceX's certification for national security space missions, which allows SpaceX to contract launch services for classified payloads. Second-stage speed and altitude telemetry were omitted from the launch webcast, which displayed first-stage telemetry instead, with continuous tracking of the booster from liftoff to landing for the first time.", "crew": [], "ships": [{"5ea6ed2f080df4000697c90c"}], "capsules": [], "payloads": [{"5eb0e4c3b6c3bb0006eeb20c"}], "launchpad": "5e9e4502f509094188566f88", "flight_number": 39, "name": "NROL-76", "date_utc": "2017-05-01T11:15:00.000Z", "date_unix": 1493637300, "date_local": "2017-05-01T07:15:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a3f3591811f83b2648", "flight": 1, "gridfins": true, "legs": true, "reused": false, "landing_attempt": true, "landing_success": true, "landing_type": "RTLS", "landpad": "5e9e3032383ecb267a34e7c7"}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87d01ffd86e000604b350"}, {"fairings": {"reused": false, "recovery_attempt": false, "recovered": false, "ships": []}, "links": {"patch": {"small": "https://images2.imgbox.com/82/d6/SCoNa79H_o.png", "large": "https://images2.imgbox.com/76/0b/bJD0zV02_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/64kguj/", "launch": "https://www.reddit.com/r/spacex/comments/6b88hz/", "media": "https://www.reddit.com/r/spacex/comments/6bcf8j/", "recovery": null}, "flickr": {"small": [], "original": ["https://farm5.staticflickr.com/4174/33859521334_d75fa367d5_o.jpg", "https://farm5.staticflickr.com/4158/33859520764_5bb7a7daf6_o.jpg", "https://farm5.staticflickr.com/4182/33859520404_a9c78c971d_o.jpg", "https://farm5.staticflickr.com/4157/34556140711_f404943340_o.jpg", "https://farm5.staticflickr.com/4179/34556139821_b2d6255e07_o.jpg", "https://farm5.staticflickr.com/4187/34684981395_2f93965492_o.jpg", "https://farm5.staticflickr.com/4155/34684980875_77b745158a_o.jpg", "https://farm5.staticflickr.com/4183/34296430820_8d3a42c0d7_o.jpg"]}}, "presskit": "https://www.spacex.com/sites/spacex/files/inmarsat5f4presskit_final.pdf", "webcast": "https://www.youtube.com/watch?v=ynMYE64IEKs", "youtube_id": "ynMYE64IEKs", "article": "https://www.space.com/36852-spacex-launches-inmarsat-5-f4-satellite.html", "wikipedia": "https://en.wikipedia.org/wiki/Inmarsat#Satellites", "static_fire_date_utc": "2017-05-11T16:45:00.000Z", "static_fire_date_unix": 1494521100, "net": false, "window": 2940, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failures": [], "details": "At 6,070 kg this was the heaviest payload launched to GTO by a Falcon 9 rocket. The launch was originally scheduled for the Falcon Heavy, but performance improvements allowed the mission to be carried out by an expendable Falcon 9 instead.", "crew": [], "ships": [], "capsules": [], "payloads": [{"5eb0e4c3b6c3bb0006eeb20d"}], "launchpad": "5e9e4502f509094188566f88", "flight_number": 40, "name": "Inmarsat-5 F4", "date_utc": "2017-05-15T23:21:00.000Z", "date_unix": 1494890460, "date_local": "2017-05-15T19:21:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a3f359186f3f3b2649", "flight": 1, "gridfins": false, "legs": false, "reused": false, "landing_attempt": false, "landing_success": null, "landing_type": null, "landpad": null}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87d01ffd86e000604b351"}, {"fairings": null, "links": {"patch": {"small": "https://images2.imgbox.com/e8/33/RV791zv9_o.png", "large": "https://images2.imgbox.com/4b/88/4irzX449_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/68ul58/", "launch": "https://www.reddit.com/r/spacex/comments/6ektk/", "media": "https://www.reddit.com/r/spacex/comments/6emlzt/", "recovery": null}, "flickr": {"small": [], "original": ["https://farm5.staticflickr.com/4210/34696326760_cee662ef1f_o.jpg", "https://farm5.staticflickr.com/4279/34239858024_64795724c9_o.jpg", "https://farm5.staticflickr.com/4250/35043398436_3ceaa0098a_o.jpg", "https://farm5.staticflickr.com/4223/34272083563_f52e5bffe_o.jpg", "https://farm5.staticflickr"]

```

```

r.com/4219/34918571502_7cf66854f7_o.jpg", "https://farm5.staticflickr.com/4252/34918568732_4efe0885de_o.jpg", "https://farm5.staticflickr.com/4264/34272065153_cfd8899f3e_o.jpg", "https://farm5.staticflickr.com/4284/34948230531_e76b7560c9_o.jpg", "https://farm5.staticflickr.com/4280/35078830875_afbd41c675_o.jpg", "https://farm5.staticflickr.com/4199/35038651646_93d0339269_o.jpg", "https://farm5.staticflickr.com/4227/34223076793_4abe7e74d6_o.jpg"]}, "presskit": "http://www.spacex.com/sites/spacex/files/crs11presskit.pdf", "webcast": "https://www.youtube.com/watch?v=JuZBOUMsYws", "youtube_id": "JuZBOUMsYws", "article": "https://spaceflightnow.com/2017/06/03/reused-dragon-cargo-capsule-launched-on-journey-to-space-station/", "wikipedia": "https://en.wikipedia.org/wiki/SpaceX_CRS-11", "static_fire_date_utc": "2017-05-28T16:00:00.000Z", "static_fire_date_unix": 1495987200, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failures": [], "details": "This mission delivered the Neutron Star Interior Composition Explorer (NICER) to the ISS, along with the MUSES Earth imaging platform and ROSA solar array. For the first time, this mission launched a refurbished Dragon capsule, serial number C106 which first flew in September 2014 on the CRS-4 mission. Originally scheduled to launch on June 1, but was scrubbed due to inclement weather.", "crew": [], "ships": ["5ea6ed30080df4000697c912"], "capsules": ["5e9e2c5bf3591880643b2669"], "payloads": ["5eb0e4c4b6c3bb0006eeb20e"], "launchpad": "5e9e4502f509094188566f88", "flight_number": 41, "name": "CRS-11", "date_utc": "2017-06-03T21:07:00.000Z", "date_unix": 1496524020, "date_local": "2017-06-03T17:07:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a3f3591856803b264a", "flight": 1, "gridfins": true, "legs": true, "reused": false, "landing_attempt": true, "landing_success": true, "landing_type": "RTLS", "landpad": "5e9e3032383ecb267a34e7c7"}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87d03ffd86e000604b352"}, {"fairings": {"reused": false, "recovery_attempt": false, "recovered": false, "ships": []}, "links": {"patch": {"small": "https://images2.imgbox.com/1b/40/Ouyy9Neh_o.png", "large": "https://images2.imgbox.com/3b/6c/d5ulGpoh_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/69hhkm/bulgariasat1_launch_campaign_thread/", "launch": "https://www.reddit.com/r/spacex/comments/6isph2/welcome_to_the_rspacex_bulgariasat1_official/", "media": "https://www.reddit.com/r/spacex/comments/6iujlz/rspacex_bulgariasat1_media_thread_videos_images/", "recovery": "https://www.reddit.com/r/spacex/comments/6k3kop/b10292_bulgariasat1_recovery_thread/"}, "flickr": {"small": [], "original": ["https://farm5.staticflickr.com/4216/35496028185_ac5456195f_o.jpg", "https://farm5.staticflickr.com/4278/35496027525_9ab9d90417_o.jpg", "https://farm5.staticflickr.com/4277/35496026875_fd25c46934_o.jpg", "https://farm5.staticflickr.com/4257/35496026065_02fe65754b_o.jpg", "https://farm5.staticflickr.com/4289/35491530485_5a4d0f39ae_o.jpg", "https://farm5.staticflickr.com/4279/35491529875_1e35ee0ale_o.jpg", "https://farm5.staticflickr.com/4230/34681559323_53f05581ca_o.jpg"]}, "presskit": "http://www.spacex.com/sites/spacex/files/bulgariasat1presskit.pdf", "webcast": "https://www.youtube.com/watch?v=Y8mLi-rRTh8", "youtube_id": "Y8mLi-rRTh8", "article": "https://en.wikipedia.org/wiki/BulgariaSat-1", "wikipedia": "https://en.wikipedia.org/wiki/BulgariaSat-1", "static_fire_date_utc": "2017-06-15T22:25:00.000Z", "static_fire_date_unix": 1497565500, "net": false, "window": 7200, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failures": [], "details": "Second time a booster will be reused: Second flight of B1029 after the Iridium mission of January 2017. The satellite will be the first commercial Bulgarian-owned communications satellite and it will provide television broadcasts and other communications services over southeast Europe.", "crew": [], "ships": ["5ea6ed2e080df4000697c906", "5ea6ed2f080df4000697c90b", "5ea6ed2f080df4000697c90c", "5ea6ed30080df4000697c913"], "capsules": [], "payloads": ["5eb0e4c4b6c3bb0006eeb20f"], "launchpad": "5e9e4502f509094188566f88", "flight_number": 42, "name": "BulgariaSat-1", "date_utc": "2017-06-23T19:10:00.000Z", "date_unix": 1498245000, "date_local": "2017-06-23T15:10:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a3f359189e3a3b2645", "flight": 2, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87d04ffd86e000604b353"}, {"fa

```

```

irings":{"reused":false,"recovery_attempt":false,"recovered":false,"ships":
[{},"links":{"patch":{"small":"https://images2.imgbox.com/cd/99/1NwJUnUS_o.pn
g","large":"https://images2.imgbox.com/3f/f0/7zaluW42_o.png"},"reddit":{"campa
ign":"https://www.reddit.com/r/spacex/comments/6bp4fj/","launch":"https://www.
reddit.com/r/spacex/comments/6j67ti/","media":"https://www.reddit.com/r/spac
ex/comments/6j7va6/","recovery":"https://www.reddit.com/r/spacex/comments/6k16h
o/"},"flickr":{"small":[],"original":["https://farm5.staticflickr.com/4162/348
68729603_c75aal26b5_o.jpg","https://farm5.staticflickr.com/4256/35618496935_50
49a27240_o.jpg","https://farm5.staticflickr.com/4138/35231792310_377477e626_o.
jpg","https://farm5.staticflickr.com/4005/35231791780_dd15335d5e_o.jpg","http
s://farm5.staticflickr.com/4289/35371450262_bb9c682ace_o.jpg","https://farm5.s
taticflickr.com/4263/35499710806_f9179bea0e_o.jpg","https://farm5.staticflick
r.com/4256/35533873795_eb04895a60_o.jpg","https://farm5.staticflickr.com/4217/
35533872755_900b3e8977_o.jpg"]},"presskit":"http://www.spacex.com/sites/spac
ex/files/iridium2presskit.pdf","webcast":"https://www.youtube.com/watch?v=7tIwZ
g8F9b8","youtube_id":"7tIwZg8F9b8","article":"https://www.space.com/37304-lift
off-spacex-second-launch-three-days.html","wikipedia":"https://en.wikipedia.or
g/wiki/Iridium_satellite_constellation"},"static_fire_date_utc":"2017-06-20T2
2:10:00.000Z","static_fire_date_unix":1497996600,"net":false,"window":0,"rocke
t":"5e9d0d95eda69973a809dlec","success":true,"failures":[],"details":"First fl
ight with titanium grid fins to improve control authority and better cope with
heat during re-entry.","crew":[],"ships":["5ea6ed2f080df4000697c910","5ea6ed2f
080df4000697c911","5ea6ed30080df4000697c912"],"capsules":[],"payloads":["5eb0e
4c4b6c3bb0006eeb210"],"launchpad":"5e9e4502f509092b78566f87","flight_number":4
3,"name":"Iridium NEXT Mission 2","date_utc":"2017-06-25T20:25:00.000Z","date_
unix":1498422300,"date_local":"2017-06-25T13:25:00-07:00","date_precision":"ho
ur","upcoming":false,"cores":[{"core":"5e9e28a3f3591801cf3b264b","flight":1,"g
ridfins":true,"legs":true,"reused":false,"landing_attempt":true,"landing_succe
ss":true,"landing_type":"ASDS","landpad":"5e9e3033383ecbb9e534e7cc"}],"auto_up
date":true,"tbd":false,"launch_library_id":null,"id":"5eb87d05ffd86e000604b35
4"},{"fairings":{"reused":false,"recovery_attempt":false,"recovered":false,"sh
ips":[]},"links":{"patch":{"small":"https://images2.imgbox.com/ab/6f/314ib2QW_
o.png","large":"https://images2.imgbox.com/94/85/7GzzSMBu_o.png"},"reddit":{"c
ampaign":"https://www.reddit.com/r/spacex/comments/6fw4yy/","launch":"https://
www.reddit.com/r/spacex/comments/6kt2re/","media":"https://www.reddit.com/r/sp
acex/comments/6kt3fe/","recovery":null},"flickr":{"small":[],"original":["http
s://farm5.staticflickr.com/4063/35758875505_a8559a6226_o.jpg","https://farm5.s
taticflickr.com/4025/35758874355_5075298440_o.jpg","https://farm5.staticflick
r.com/4235/35359372730_df7c79797b_o.jpg","https://farm5.staticflickr.com/4014/
35359371840_239a658872_o.jpg","https://farm5.staticflickr.com/4002/35577536822
_679c68862d_o.jpg","https://farm5.staticflickr.com/4259/34868730393_b778d81a71
_o.jpg","https://farm5.staticflickr.com/4162/34868729603_c75aal26b5_o.jp
g"]},"presskit":"http://www.spacex.com/sites/spacex/files/intelsat35epresskit.
pdf","webcast":"https://www.youtube.com/watch?v=MIHVPCj25Z0","youtube_id":"MIH
VPCj25Z0","article":"https://spaceflightnow.com/2017/07/06/spacex-delivers-for
-intelsat-on-heavyweight-falcon-9-mission/","wikipedia":"https://en.wikipedia.
org/wiki/Intelsat_35e"},"static_fire_date_utc":"2017-06-29T00:30:00.000Z","sta
tic_fire_date_unix":1498696200,"net":false,"window":3480,"rocket":"5e9d0d95eda
69973a809dlec","success":true,"failures":[],"details":"Due to the constraints
of sending a heavy satellite (~6,000 kg) to GTO, the rocket will fly in its e
xpendable configuration and the first-stage booster will not be recovered.","c
rew":[],"ships":[],"capsules":[],"payloads":["5eb0e4c4b6c3bb0006eeb211"],"laun
chpad":"5e9e4502f509094188566f88","flight_number":44,"name":"Intelsat 35e","da
te_utc":"2017-07-05T23:35:00.000Z","date_unix":1499297700,"date_local":"2017-0
7-05T19:35:00-04:00","date_precision":"hour","upcoming":false,"cores":[{"cor
e":"5e9e28a4f3591850cc3b264c","flight":1,"gridfins":false,"legs":false,"reuse
d":false,"landing_attempt":false,"landing_success":null,"landing_type":null,"l
andpad":null}],"auto_update":true,"tbd":false,"launch_library_id":null,"id":"5
eb87d06ffd86e000604b355"},{"fairings":null,"links":{"patch":{"small":"https://
images2.imgbox.com/4e/c6/M7X1WGKk_o.png","large":"https://images2.imgbox.com/9

```



```

5/31/PhgU9kf9_o.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/co
mments/6mrga2/crs12_launch_campaign_thread/","launch":"https://www.reddit.com/
r/spacex/comments/6tfcio/welcome_to_the_rspacex_crs12_official_launch/","medi
a":"https://www.reddit.com/r/spacex/comments/6th2nf/rspacex_crs12_media_thread
_videos_images_gifs/","recovery":null},"flickr":{"small":[],"original":["http
s://farm5.staticflickr.com/4352/36438808381_733603843d_o.jpg","https://farm5.s
taticflickr.com/4434/35760634184_f75457493b_o.jpg","https://farm5.staticflick
r.com/4418/35741466074_327e9d0a80_o.jpg","https://farm5.staticflickr.com/4414/
35741465934_db82541cf3_o.jpg","https://farm5.staticflickr.com/4384/35741465854
_e264864537_o.jpg","https://farm5.staticflickr.com/4333/35741465714_d0a8800533
_o.jpg","https://farm5.staticflickr.com/4397/35741465464_1d49cc1cae_o.jpg","ht
tps://farm5.staticflickr.com/4354/35762350653_d94b2b5b07_o.jpg","https://farm
5.staticflickr.com/4353/36571921725_2a0be4ec58_o.jpg"]},"presskit":"http://ww
w.spacex.com/sites/spacex/files/crs12presskit.pdf","webcast":"https://www.yout
ube.com/watch?v=vLxWsYx8dbo","youtube_id":"vLxWsYx8dbo","article":"https://spa
ceflightnow.com/2017/08/17/photos-falcon-9-rocket-soars-into-space-lands-back-
at-cape-canaveral/","wikipedia":"https://en.wikipedia.org/wiki/SpaceX_CRS-1
2"},"static_fire_date_utc":"2017-08-10T13:10:00.000Z","static_fire_date_unix":
1502370600,"net":false,"window":0,"rocket":"5e9d0d95eda69973a809d1ec","succes
s":true,"failures":[],"details":"Dragon is expected to carry 2,349 kg (5,179 l
b) of pressurized mass and 961 kg (2,119 lb) unpressurized. The external paylo
ad manifested for this flight is the CREAM cosmic-ray detector. First flight o
f the Falcon 9 Block 4 upgrade. Last flight of a newly-built Dragon capsule; f
urther missions will use refurbished spacecraft.","crew":[],"ships":["5ea6ed30
080df4000697c912"],"capsules":["5e9e2c5cf3591869b63b2670"],"payloads":["5eb0e4
c4b6c3bb0006eeb212"],"launchpad":"5e9e4502f509094188566f88","flight_number":4
5,"name":"CRS-12","date_utc":"2017-08-14T16:31:00.000Z","date_unix":150272826
0,"date_local":"2017-08-14T12:31:00-04:00","date_precision":"hour","upcoming":
false,"cores":[{"core":"5e9e28a4f3591884ee3b264d","flight":1,"gridfins":tru
e,"legs":true,"reused":false,"landing_attempt":true,"landing_success":true,"la
nding_type":"RTLS","landpad":"5e9e3032383ecb267a34e7c7"}],"auto_update":tru
e,"tbd":false,"launch_library_id":null,"id":"5eb87d07ffd86e000604b356"},"fair
ings":{"reused":false,"recovery_attempt":false,"recovered":false,"ships":
[{}],"links":{"patch":{"small":"https://images2.imgbox.com/f9/3a/3kH19hlj_o.pn
g","large":"https://images2.imgbox.com/a7/2a/s4li5C9t_o.png"},"reddit":{"campa
ign":"https://www.reddit.com/r/spacex/comments/6o98st","launch":"https://www.r
eddit.com/r/spacex/comments/6vihs1/welcome_to_the_rspacex_formosat5_official_l
aunch/","media":"https://www.reddit.com/r/spacex/comments/6vhwil/rspacex_formo
sat5_media_thread_videos_images_gifs/","recovery":"https://www.reddit.com/r/sp
acex/comments/6wk653/b1038_recovery_thread/"},"flickr":{"small":[],"original":
["https://farm5.staticflickr.com/4434/36075361533_54b3b937dd_o.jpg","https://f
arm5.staticflickr.com/4428/36884090115_ced8a80f14_o.jpg","https://farm5.static
flickr.com/4393/36073897213_6746d2a8b2_o.jpg","https://farm5.staticflickr.com/
4341/36073878143_45c3ef0b93_o.jpg","https://farm5.staticflickr.com/4369/359782
84213_el2e5743ab_o.jpg","https://farm5.staticflickr.com/4394/35978283413_145ba
2ca2f_o.jpg","https://farm5.staticflickr.com/4340/35978282703_5dff70fb19_o.jp
g"]},"presskit":"http://www.spacex.com/sites/spacex/files/formosat5presskit.pd
f","webcast":"https://www.youtube.com/watch?v=J4u3ZN2g_MI","youtube_id":"J4u3Z
N2g_MI","article":"https://spaceflightnow.com/2017/08/25/taiwanese-satellite-r
ides-spacex-rocket-into-orbit/","wikipedia":"https://en.wikipedia.org/wiki/For
mosat-5"},"static_fire_date_utc":"2017-08-24T18:50:00.000Z","static_fire_date_
unix":1503600600,"net":false,"window":2520,"rocket":"5e9d0d95eda69973a809d1e
c","success":true,"failures":[],"details":"Formosat-5 is an Earth observation
satellite of the Taiwanese space agency. The SHERPA space tug by Spaceflight
Industries was removed from the cargo manifest of this mission. The satellite
has a mass of only 475 kg.","crew":[],"ships":["5ea6ed2e080df4000697c905","5ea
6ed2f080df4000697c910"],"capsules":[],"payloads":["5eb0e4c4b6c3bb0006eeb21
3"],"launchpad":"5e9e4502f509092b78566f87","flight_number":46,"name":"FormoSat
-5","date_utc":"2017-08-24T18:50:00.000Z","date_unix":1503600600,"date_loca
l":"2017-08-24T11:50:00-07:00","date_precision":"hour","upcoming":false,"core

```

```

s":{"core":"5e9e28a4f359182d843b264e","flight":1,"gridfins":true,"legs":true,
"reused":false,"landing_attempt":true,"landing_success":true,"landing_type":
"ASDS","landpad":"5e9e3033383ecbb9e534e7cc"}},{"auto_update":true,"tbd":false,
"launch_library_id":null,"id":"5eb87d08ffd86e000604b357"},"fairings":{"reused":false,"recovery_attempt":false,"recovered":false,"ships":[],"links":{"patch":{"small":"https://images2.imgbox.com/bb/c2/CpO3VtI7_o.png","large":"https://images2.imgbox.com/7e/ad/Q6iDgXq2_o.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/6u6qlt/x37b_otv5_launch_campaign_thread/","launch":{"https://www.reddit.com/r/spacex/comments/6ygmfl/rspacex_x37b_otv5_official_launch_discussion/","media":"https://www.reddit.com/r/spacex/comments/6yih4g/rspacex_x37b_otv5_media_thread_videos_images_gifs/","recovery":null},"flickr":{"small":[],"original":["https://farm5.staticflickr.com/4411/37087809715_08a6d9904d_o.jpg","https://farm5.staticflickr.com/4384/37087808315_4dc9575d1b_o.jpg","https://farm5.staticflickr.com/4363/36251815974_8b996dbbfb_o.jpg","https://farm5.staticflickr.com/4374/36251814644_la469f63ee_o.jpg","https://farm5.staticflickr.com/4388/36251812554_006501315f_o.jpg","https://farm5.staticflickr.com/4355/36250895284_8c24cb4232_o.jpg","https://farm5.staticflickr.com/4342/36689886890_99709e6934_o.jpg","https://farm5.staticflickr.com/4364/36689885100_c3c427c6bf_o.jpg"]},"presskit":"https://www.spacex.com/sites/spacex/files/otv5_presskit.pdf","webcast":"https://www.youtube.com/watch?v=9M6Zvi-fFv4","youtube_id":"9M6Zvi-fFv4","article":"https://spaceflightnow.com/2017/09/07/spacex-beats-hurricane-with-smooth-launch-of-militarys-x-37b-spaceplane/","wikipedia":"https://en.wikipedia.org/wiki/Boeing_X-37"},"static_fire_date_utc":"2017-08-31T20:30:00.000Z","static_fire_date_unix":1504211400,"net":false,"window":18300,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"details":"Notable because Boeing is the primary contractor of the X-37B, which has until now been launched by ULA, a SpaceX competitor and Boeing partnership. Second flight of the Falcon 9 Block 4 upgrade."},"crew":[],"ships":["5ea6ed2e080df4000697c906","5ea6ed2f080df4000697c90b"],"capsules":[],"payloads":["5eb0e4c5b6c3bb0006eeb214"],"launchpad":"5e9e4502f509094188566f88","flight_number":47,"name":"Boeing X-37B OTV-5","date_utc":"2017-09-07T13:50:00.000Z","date_unix":1504792200,"date_local":"2017-09-07T09:50:00-04:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5e9e28a4f3591845123b264f","flight":1,"gridfins":true,"legs":true,"reused":false,"landing_attempt":true,"landing_success":true,"landing_type":"RTLS","landpad":"5e9e3032383ecb267a34e7c7"}]},{"auto_update":true,"tbd":false,"launch_library_id":null,"id":"5eb87d09ffd86e000604b358"},"fairings":{"reused":false,"recovery_attempt":false,"recovered":false,"ships":[],"links":{"patch":{"small":"https://images2.imgbox.com/1c/e0/lhGbeqkh_o.png","large":"https://images2.imgbox.com/16/0c/P2REhX5k_o.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/6ygwxx/iridium_next_constellation_mission_3_launch/","launch":{"https://www.reddit.com/r/spacex/comments/753e0m/iridium_next_mission_3_official_launch_discussion/","media":"https://www.reddit.com/r/spacex/comments/755m2z/rspacex_iridium3_media_thread_videos_images_gifs/","recovery":"https://www.reddit.com/r/spacex/comments/75z823/b10411_recovery_thread/"},"flickr":{"small":[],"original":["https://farm5.staticflickr.com/4509/37610550066_b56bc5d743_o.jpg","https://farm5.staticflickr.com/4487/37610548356_1b7d30001e_o.jpg","https://farm5.staticflickr.com/4514/37610547696_9114038d60_o.jpg","https://farm5.staticflickr.com/4483/37610547226_01d19395a3_o.jpg","https://farm5.staticflickr.com/4504/36984625383_d7707548ec_o.jpg","https://farm5.staticflickr.com/4505/36984623903_7bb6643649_o.jpg","https://farm5.staticflickr.com/4445/36984622463_6f9b21929c_o.jpg","https://farm5.staticflickr.com/4471/36944884234_92ddc7fb39_o.jpg"]},"presskit":"http://www.spacex.com/sites/spacex/files/iridium3presskit.pdf","webcast":"https://www.youtube.com/watch?v=SB4N4xF2B2w&feature=youtu.be","youtube_id":"SB4N4xF2B2w","article":"https://spaceflightnow.com/2017/10/09/spacex-launch-adds-another-10-satellites-to-iridium-next-fleet/","wikipedia":"https://en.wikipedia.org/wiki/Iridium_satellite_constellation#Next-generation_constellation"},"static_fire_date_utc":"2017-10-05T13:31:00.000Z","static_fire_date_unix":1507210260,"net":false,"window":0,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"details":"Third of eight missions to launch Iridium's second generation constellation"}]}

```

on from VAFB", "crew": [], "ships": [ "5ea6ed2e080df4000697c905", "5ea6ed2f080df4000697c910" ], "capsules": [], "payloads": [ "5eb0e4c5b6c3bb0006eeb215" ], "launchpad": "5e9e4502f509092b78566f87", "flight\_number": 48, "name": "Iridium NEXT Mission 3", "date\_utc": "2017-10-09T12:37:00.000Z", "date\_unix": 1507552620, "date\_local": "2017-10-09T05:37:00-07:00", "date\_precision": "hour", "upcoming": false, "cores": [ { "core": "5e9e28a4f3591843103b2650", "flight": 1, "gridfins": true, "legs": true, "reused": false, "landing\_attempt": true, "landing\_success": true, "landing\_type": "ASDS", "landpad": "5e9e3033383ecbb9e534e7cc" } ], "auto\_update": true, "tbd": false, "launch\_library\_id": null, "id": "5eb87d0affd86e000604b359", { "fairings": { "reused": false, "recovery\_attempt": false, "recovered": false, "ships": [] }, "links": { "patch": { "small": "https://images2.imgbox.com/e3/b5/UEZc5601\_o.png", "large": "https://images2.imgbox.com/75/43/F11jelFx\_o.png" }, "reddit": { "campaign": "https://www.reddit.com/r/spacex/comments/6yvn64/ses1lechostar\_105\_launch\_campaign\_thread/", "launch": "https://www.reddit.com/r/spacex/comments/75bw7p/ses1lechostar105\_official\_launch\_discussions/", "media": "https://www.reddit.com/r/spacex/comments/75pgu5/rspacex\_ses1l\_media\_thread\_videos\_images\_gifs/", "recovery": "https://www.reddit.com/r/spacex/comments/76fqz1/b10312\_recovery\_thread/" }, "flickr": { "small": [], "original": [ "https://farm5.staticflickr.com/4471/37388002420\_b86680c3af\_o.jpg", "https://farm5.staticflickr.com/4497/37388002170\_a267280534\_o.jpg", "https://farm5.staticflickr.com/4455/37388001730\_0869279a8d\_o.jpg", "https://farm5.staticflickr.com/4465/36975195443\_b98ed0fb24\_o.jpg", "https://farm5.staticflickr.com/4499/36975194993\_8548a53c60\_o.jpg", "https://farm5.staticflickr.com/4482/36975194613\_15bb109059\_o.jpg", "https://farm5.staticflickr.com/4453/36975194233\_5f8f45c686\_o.jpg" ] } }, "presskit": "http://www.spacex.com/sites/spacex/files/echo\_star105ses1lpresskit.pdf", "webcast": "https://www.youtube.com/watch?v=ivlzeGSvhIw", "youtube\_id": "ivlzeGSvhIw", "article": "https://spaceflightnow.com/2017/10/12/video-falcon-9-rocket-lifts-off-with-joint-satellite-for-ses-echostar/", "wikipedia": "https://en.wikipedia.org/wiki/List\_of\_SES\_satellites", "static\_fire\_date\_utc": "2017-10-02T20:30:00.000Z", "static\_fire\_date\_unix": 1506976200, "net": false, "window": 7200, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "Nineteenth comsat to GTO, also the fourth satellite launched for SES and second for Echostar. Third time a first stage booster will be reused.", "crew": [], "ships": [ "5ea6ed2f080df4000697c90b", "5ea6ed2f080df4000697c90d", "5ea6ed30080df4000697c913" ], "capsules": [], "payloads": [ "5eb0e4c5b6c3bb0006eeb216" ], "launchpad": "5e9e4502f509094188566f88", "flight\_number": 49, "name": "SES-11 / Echostar 105", "date\_utc": "2017-10-11T22:53:00.000Z", "date\_unix": 1507762380, "date\_local": "2017-10-11T18:53:00-04:00", "date\_precision": "hour", "upcoming": false, "cores": [ { "core": "5e9e28a3f3591829dc3b2646", "flight": 2, "gridfins": true, "legs": true, "reused": true, "landing\_attempt": true, "landing\_success": true, "landing\_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca" } ], "auto\_update": true, "tbd": false, "launch\_library\_id": null, "id": "5eb87d0cffd86e000604b35a", { "fairings": { "reused": false, "recovery\_attempt": true, "recovered": false, "ships": [ "5ea6ed2e080df4000697c908" ] }, "links": { "patch": { "small": "https://images2.imgbox.com/02/51/7NLaBm8c\_o.png", "large": "https://images2.imgbox.com/69/f5/04lBXd2F\_o.png" }, "reddit": { "campaign": "https://www.reddit.com/r/spacex/comments/73ttkd/koreasat\_5a\_launch\_campaign\_thread/", "launch": "https://www.reddit.com/r/spacex/comments/79iuvb/rspacex\_koreasat\_5a\_official\_launch\_discussion/", "media": "https://www.reddit.com/r/spacex/comments/79lmdu/rspacex\_koreasat5a\_media\_thread\_videos\_images/", "recovery": null }, "flickr": { "small": [], "original": [ "https://farm5.staticflickr.com/4477/38056454431\_a5f40f9fd7\_o.jpg", "https://farm5.staticflickr.com/4455/26280153979\_b8016a829f\_o.jpg", "https://farm5.staticflickr.com/4459/38056455051\_79ef2b949a\_o.jpg", "https://farm5.staticflickr.com/4466/26280153539\_ecbc2b3fa9\_o.jpg", "https://farm5.staticflickr.com/4482/26280154209\_bf08d76361\_o.jpg", "https://farm5.staticflickr.com/4493/38056455211\_a4565a9cee\_o.jpg" ] } }, "presskit": "http://www.spacex.com/sites/spacex/files/koreasat5apresskit.pdf", "webcast": "https://www.youtube.com/watch?v=RUjH14vhLxA", "youtube\_id": "RUjH14vhLxA", "article": "https://spaceflightnow.com/2017/10/30/spacex-launches-and-lands-third-rocket-in-three-weeks/", "wikipedia": "https://en.wikipedia.org/wiki/Koreasat\_5A", "static\_fire\_date\_utc": "2017-10-26T16:00:00.000Z", "static\_fire\_date\_unix": 1509033600, "net": false, "window": 8640, "rocket": "5e9d0d95eda69973a80

```

9dlec", "success": true, "failures": [], "details": "KoreaSat 5A is a Ku-band satellite capable of providing communication services from East Africa and Central Asia to southern India, Southeast Asia, the Philippines, Guam, Korea, and Japan. The satellite will be placed in GEO at 113° East Longitude, and will provide services ranging from broadband internet to broadcasting services and maritime communications.", "crew": [], "ships": ["5ea6ed2f080df4000697c90d", "5ea6ed2e080df4000697c908", "5ea6ed30080df4000697c913"], "capsules": [], "payloads": ["5eb0e4c5b6c3bb0006eeb217"], "launchpad": "5e9e4502f509094188566f88", "flight_number": 50, "name": "KoreaSat 5A", "date_utc": "2017-10-30T19:34:00.000Z", "date_unix": 1509392040, "date_local": "2017-10-30T15:34:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a4f359185cc03b2651", "flight": 1, "gridfins": true, "legs": true, "reused": false, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87d0dfdd86e000604b35b"}, {"fairings": null, "links": {"patch": {"small": "https://images2.imgbox.com/ea/12/8vVzl0eL_o.png", "large": "https://images2.imgbox.com/1b/30/oPlDBQ6b_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/7bxg5a/crs13_launch_campaign_thread/", "launch": "https://www.reddit.com/r/spacex/comments/7j725w/rspacex_crs13_official_launch_discussion_updates/", "media": "https://www.reddit.com/r/spacex/comments/7j6oxz/rspacex_crs13_media_thread_videos_images_gifs/", "recovery": null}, "flickr": {"small": [], "original": ["https://farm5.staticflickr.com/4591/38372264594_8140bd943d_o.png", "https://farm5.staticflickr.com/4546/39051469552_13703e6b2e_o.jpg", "https://farm5.staticflickr.com/4682/39051469662_55c55150c0_o.jpg", "https://farm5.staticflickr.com/4565/25215551218_2597838c1a_o.jpg", "https://farm5.staticflickr.com/4680/39051469812_b6f802fc9d_o.jpg", "https://farm5.staticflickr.com/4517/27304331429_59b9d6c1d4_o.jpg"]}}, "presskit": "http://www.spacex.com/sites/spacex/files/crs13presskit12_11.pdf", "webcast": "https://www.youtube.com/watch?v=OPHbqY9LHCs", "youtube_id": "OPHbqY9LHCs", "article": "https://spaceflightnow.com/2017/12/15/spacexs-50th-falcon-rocket-launch-kicks-off-station-resupply-mission/", "wikipedia": "https://en.wikipedia.org/wiki/SpaceX_CRS-13"}, {"static_fire_date_utc": "2017-12-06T20:00:00.000Z", "static_fire_date_unix": 1512590400, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failures": [], "details": "Will reuse the Dragon capsule previously flown on CRS-6 and will reuse the booster from CRS-11.", "crew": [], "ships": ["5ea6ed30080df4000697c912"], "capsules": ["5e9e2c5cf359188bfb3b266b"], "payloads": ["5eb0e4c5b6c3bb0006eeb218"], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 51, "name": "CRS-13", "date_utc": "2017-12-15T15:36:00.000Z", "date_unix": 1513352160, "date_local": "2017-12-15T10:36:00-05:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a3f3591856803b264a", "flight": 2, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "RTLS", "landpad": "5e9e3032383ecb267a34e7c7"}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87d0effd86e000604b35c"}, {"fairings": {"reused": false, "recovery_attempt": false, "recovered": false, "ships": []}, "links": {"patch": {"small": "https://images2.imgbox.com/cb/4b/n6GTX4PI_o.png", "large": "https://images2.imgbox.com/ee/c2/x8q8XiTg_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/7cgts7/iridium_next_constellation_mission_4_launch/", "launch": "https://www.reddit.com/r/spacex/comments/7li8y2/rspacex_iridium_next_4_official_launch_discussion/", "media": "https://www.reddit.com/r/spacex/comments/7litv2/rspacex_iridium4_media_thread_videos_images_gifs/", "recovery": null}, "flickr": {"small": [], "original": ["https://farm5.staticflickr.com/4695/25557986177_2d315f4c11_o.jpg", "https://farm5.staticflickr.com/4735/25377631178_d28e0a9141_o.jpg", "https://farm5.staticflickr.com/4733/25377628928_a79bb43a31_o.jpg", "https://farm5.staticflickr.com/4732/25377628288_361f551d34_o.jpg", "https://farm5.staticflickr.com/4598/39244105581_eeb76c8ed2_o.jpg", "https://farm5.staticflickr.com/4728/24381830217_a49ae2100f_o.jpg"]}}, "presskit": "http://www.spacex.com/sites/spacex/files/iridium4presskit.pdf", "webcast": "https://www.youtube.com/watch?v=wtdjCwo6d3Q", "youtube_id": "wtdjCwo6d3Q", "article": "https://spaceflightnow.com/2017/12/23/spacex-launch-dazzles-delivering-10-more-satellites-for-iridium/", "wikipedia": "https://en.wikipedia.org/wiki/Iridium_satellite_constellation#Next-generation_constellation"}]

```

```

on"},"static_fire_date_utc":"2017-12-17T21:00:00.000Z","static_fire_date_uni
x":1513544400,"net":false,"window":0,"rocket":"5e9d0d95eda69973a809d1ec","succ
ess":true,"failures":[],"details":"Reusing the booster first used on Iridium-
2, but will be flying expendable.", "crew":[],"ships":["5ea6ed2e080df4000697c90
8"],"capsules":[],"payloads":["5eb0e4c6b6c3bb0006eeb219"],"launchpad":"5e9e450
2f509092b78566f87","flight_number":52,"name":"Iridium NEXT Mission 4","date_ut
c":"2017-12-23T01:27:23.000Z","date_unix":1513992443,"date_local":"2017-12-22T
17:27:23-08:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5e9
e28a3f3591801cf3b264b","flight":2,"gridfins":true,"legs":false,"reused":tru
e,"landing_attempt":true,"landing_success":true,"landing_type":"Ocean","landpa
d":null}], "auto_update":true,"tbd":false,"launch_library_id":null,"id":"5eb87d
0fffd86e000604b35d"}, {"fairings":{"reused":false,"recovery_attempt":false,"rec
overed":false,"ships":[]},"links":{"patch":{"small":"https://images2.imgbox.co
m/e8/30/yMNPvCci_o.png","large":"https://images2.imgbox.com/26/99/ppTFXiLw_o.p
ng"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/7895bo/zum
a_launch_campaign_thread/","launch":"https://www.reddit.com/r/spacex/comments/
7oqjf0/rspacex_zuma_official_launch_discussion_updates/","media":"https://www.
reddit.com/r/spacex/comments/7orksl/rspacex_zuma_media_thread_videos_images_gi
fs/","recovery":null},"flickr":{"small":[],"original":["https://farm5.staticflic
kr.com/4751/39557026242_384d287045_o.jpg","https://farm5.staticflickr.com/46
74/39556549372_810396618d_o.jpg","https://farm5.staticflickr.com/4661/39556548
902_f66c7be90d_o.jpg","https://farm5.staticflickr.com/4607/39585580001_8b21846
eab_o.jpg","https://farm5.staticflickr.com/4754/39585578201_a67ab9b9a8_o.jp
g","https://farm5.staticflickr.com/4603/39585575631_216cc035f4_o.jpg"]},"press
kit":"http://www.spacex.com/sites/spacex/files/zumapresskit.pdf","webcast":"ht
tps://www.youtube.com/watch?v=0PWu3BRxn60","youtube_id":"0PWu3BRxn60","articl
e":"https://spaceflightnow.com/2018/01/08/spacex-kicks-off-ambitious-2018-sche
dule-with-launch-for-u-s-government/","wikipedia":"https://en.wikipedia.org/wi
ki/Zuma_(satellite)"},"static_fire_date_utc":"2017-11-11T23:00:00.000Z","stati
c_fire_date_unix":1510441200,"net":false,"window":7200,"rocket":"5e9d0d95eda69
973a809d1ec","success":true,"failures":[],"details":"Originally planned for mi
d-November 2017, the mission was delayed due to test results from the fairing
of another customer. First-stage booster will attempt landing at LZ-1","cre
w":[],"ships":[],"capsules":[],"payloads":["5eb0e4c6b6c3bb0006eeb21a"],"launch
pad":"5e9e4501f509094ba4566f84","flight_number":53,"name":"ZUMA","date_utc":"2
018-01-08T01:00:00.000Z","date_unix":1515373200,"date_local":"2018-01-07T20:0
0:00-05:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5e9e28a
4f35918345e3b2652","flight":1,"gridfins":true,"legs":true,"reused":false,"land
ing_attempt":true,"landing_success":true,"landing_type":"RTLS","landpad":"5e9e
3032383ecb267a34e7c7"}], "auto_update":true,"tbd":false,"launch_library_id":nul
l,"id":"5eb87d10fffd86e000604b35e"}, {"fairings":{"reused":false,"recovery_attem
pt":false,"recovered":false,"ships":[]},"links":{"patch":{"small":"https://ima
ges2.imgbox.com/95/ec/FoFpPft0_o.png","large":"https://images2.imgbox.com/42/0
a/LAupFe3L_o.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/commen
ts/7olw86/govsat1_ses16_launch_campaign_thread/","launch":"https://www.reddi
t.com/r/spacex/comments/7tvbth/rspacex_govsat1_official_launch_discussion/","m
edia":"https://www.reddit.com/r/spacex/comments/7tzzwy/rspacex_govsat1_media_t
hread_videos_images_gifs/","recovery":null},"flickr":{"small":[],"original":
["https://farm5.staticflickr.com/4721/40026315981_f16a7cd32a_o.jpg","https://f
arm5.staticflickr.com/4708/40026316291_0b3aef9d8d_o.jpg","https://farm5.static
flickr.com/4652/39128355655_3eefa0d583_o.jpg","https://farm5.staticflickr.com/
4741/39128355825_7c4166dbbe_o.jpg","https://farm5.staticflickr.com/4609/391283
55355_17381fc00e_o.jpg"]},"presskit":"http://www.spacex.com/sites/spacex/file
s/govsat1presskit.pdf","webcast":"https://www.youtube.com/watch?v=ScYUA51-PO
Q","youtube_id":"ScYUA51-POQ","article":"https://spaceflightnow.com/2018/01/3
1/spacex-rocket-flies-on-60th-anniversary-of-first-u-s-satellite-launch/","wik
ipedia":"https://en.wikipedia.org/wiki/List_of_SES_satellites#SES_Fleet"},"sta
tic_fire_date_utc":"2018-01-26T15:27:00.000Z","static_fire_date_unix":15169804
20,"net":false,"window":8460,"rocket":"5e9d0d95eda69973a809d1ec","success":tru
e,"failures":[],"details":"Reused booster from the classified NROL-76 mission

```

in May 2017. Following a successful experimental ocean landing that used three engines, the booster unexpectedly remained intact; Elon Musk stated in a tweet that SpaceX will attempt to tow the booster to shore.", "crew": [], "ships": [{"5ea6ed2f080df4000697c90b"}, {"capsules": [], "payloads": [{"5eb0e4c6b6c3bb0006eeb21b"}], "launchpad": "5e9e4501f509094ba4566f84", "flight\_number": 54, "name": "SES-16 / GovSat-1", "date\_utc": "2018-01-31T21:25:00.000Z", "date\_unix": 1517433900, "date\_local": "2018-01-31T16:25:00-05:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a3f3591811f83b2648", "flight": 2, "gridfins": true, "legs": true, "reused": true, "landing\_attempt": true, "landing\_success": true, "landing\_type": "Ocean", "landpad": null}], "auto\_update": true, "tbd": false, "launch\_library\_id": null, "id": "5eb87d11ffd86e000604b35f"}, {"fairings": {"reused": false, "recovery\_attempt": false, "recovered": false, "ships": [], "links": {"patch": {"small": "https://images2.imgbox.com/22/5f/jAULKc3\_o.png", "large": "https://images2.imgbox.com/33/1a/ujrnfkna\_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/7hjp03/falcon\_heavy\_demo\_launch\_campaign\_thread/", "launch": "https://www.reddit.com/r/spacex/comments/7vg63x/rspacex\_falcon\_heavy\_test\_flight\_official\_launch/", "media": "https://www.reddit.com/r/spacex/comments/7vimtm/rspacex\_falcon\_heavy\_test\_flight\_media\_thread/", "recovery": null}, "flickr": {"small": [], "original": ["https://farm5.staticflickr.com/4745/40110304192\_b0165b7785\_o.jpg", "https://farm5.staticflickr.com/4676/40110297852\_6173e5cae6\_o.jpg", "https://farm5.staticflickr.com/4615/40143096241\_0324643b5e\_o.jpg", "https://farm5.staticflickr.com/4702/40110298232\_4e9c412936\_o.jpg", "https://farm5.staticflickr.com/4610/39337245575\_41d760caef\_o.jpg", "https://farm5.staticflickr.com/4654/25254688767\_59603ff06c\_o.jpg", "https://farm5.staticflickr.com/4627/40126462801\_d54b4f00be\_o.jpg", "https://farm5.staticflickr.com/4760/40126462231\_cdf00ef431\_o.jpg", "https://farm5.staticflickr.com/4655/40202121122\_5d29cfe2ac\_o.jpg", "https://farm5.staticflickr.com/4631/39337245145\_5f5630a66a\_o.jpg", "https://farm5.staticflickr.com/4650/40126461851\_14b93ec9d7\_o.jpg", "https://farm5.staticflickr.com/4711/40126461411\_b1ed283d45\_o.jpg", "https://farm5.staticflickr.com/4696/40126460511\_7b5cc64871\_o.jpg", "https://farm5.staticflickr.com/4589/38583831555\_9ae89f5c10\_o.jpg", "https://farm5.staticflickr.com/4682/38583829815\_e01509d1a7\_o.jpg", "https://farm5.staticflickr.com/4731/39225582801\_80594d5d91\_o.jpg", "https://farm5.staticflickr.com/4641/39225582421\_7aa0c65851\_o.jpg", "https://farm5.staticflickr.com/4643/27449864329\_d2424bc280\_o.jpg", "https://farm5.staticflickr.com/4681/39225582171\_137a4c75e7\_o.jpg", "https://farm5.staticflickr.com/4644/39225582351\_ac6aba2533\_o.jpg", "https://farm5.staticflickr.com/4587/27449863849\_709e135a98\_o.jpg"]}], "presskit": "http://www.spacex.com/sites/spacex/files/falconheavypresskit\_v1.pdf", "webcast": "https://www.youtube.com/watch?v=wbSwFU6tYlc", "youtube\_id": "wbSwFU6tYlc", "article": "https://spaceflightnow.com/2018/02/07/spacex-debuts-worlds-most-powerful-rocket-sends-tesla-toward-the-asteroid-belt/", "wikipedia": "https://en.wikipedia.org/wiki/Elon\_Musk%27s\_Tesla\_Roadster"}, {"static\_fire\_date\_utc": "2018-01-24T17:30:00.000Z", "static\_fire\_date\_unix": 1516815000, "net": false, "window": 9000, "rocket": "5e9d0d95eda69974db09d1ed", "success": true, "failures": [], "details": "The launch was a success, and the side boosters landed simultaneously at adjacent ground pads. Drone ship landing of the central core failed. Final burn to heliocentric mars-earth orbit was successful after the second stage and payload passed through the Van Allen belt s.", "crew": [], "ships": [{"5ea6ed2f080df4000697c90c", "5ea6ed2f080df4000697c90d", "5ea6ed30080df4000697c913"}, {"capsules": [], "payloads": [{"5eb0e4c6b6c3bb0006eeb21c"}], "launchpad": "5e9e4502f509094188566f88", "flight\_number": 55, "name": "Falcon Heavy Test Flight", "date\_utc": "2018-02-06T20:45:00.000Z", "date\_unix": 1517949900, "date\_local": "2018-02-06T15:45:00-05:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a5f359187f703b2653", "flight": 1, "gridfins": true, "legs": true, "reused": false, "landing\_attempt": true, "landing\_success": false, "landing\_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}, {"core": "5e9e28a2f359187f273b2642", "flight": 2, "gridfins": true, "legs": true, "reused": true, "landing\_attempt": true, "landing\_success": true, "landing\_type": "RTLS", "landpad": "5e9e3032383ecb90a834e7c8"}, {"core": "5e9e28a2f3591845c73b2640", "flight": 2, "gridfins": true, "legs": true, "reused": true, "landing\_attempt": true, "landing\_success": true, "landing\_type": "RTLS", "landpad": "5e9e3032383ecb267a34e7c7"}], "auto\_update": true, "t

```

bd":false,"launch_library_id":null,"id":"5eb87d13ffd86e000604b360"},{"fairing
s":{"reused":false,"recovery_attempt":true,"recovered":false,"ships":["5ea6ed2
e080df4000697c908"]},"links":{"patch":{"small":"https://images2.imgbox.com/f9/
05/I9duWQ6v_o.png","large":"https://images2.imgbox.com/f1/b8/HAXSg9rr_o.pn
g"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/7qnflk/paz_
microsat2a_2b_launch_campaign_thread/","launch":"https://www.reddit.com/r/spac
ex/comments/7y0grt/rspacex_paz_official_launch_discussion_updates/","media":"h
ttps://www.reddit.com/r/spacex/comments/7zdvp/rspacex_paz_media_thread_videos
_images_gifs/","recovery":null},"flickr":{"small":[],"original":["https://farm
5.staticflickr.com/4768/25557986627_f3cc243afb_o.jpg","https://farm5.staticfli
ckr.com/4631/25557986367_6339dd8fld_o.jpg","https://farm5.staticflickr.com/465
0/25557987937_585c15c34d_o.jpg","https://farm5.staticflickr.com/4695/397184941
14_6523797470_o.jpg","https://farm5.staticflickr.com/4655/39533211685_5e0ceb78
ef_o.jpg"]},"presskit":"http://www.spacex.com/sites/spacex/files/paz_press_kit
_2.21.pdf","webcast":"https://www.youtube.com/watch?v=-p-PTOD2URA","youtube_i
d":"-p-PTOD2URA","article":"https://spaceflightnow.com/2018/02/22/recycled-spa
cex-rocket-boosts-paz-radar-satellite-first-starlink-testbeds-into-orbit/","wi
kipedia":"https://en.wikipedia.org/wiki/Paz_(satellite)","static_fire_date_ut
c":"2018-02-11T18:23:00.000Z","static_fire_date_unix":1518373380,"net":fals
e,"window":0,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":
[],"details":"First flight with fairing 2.0. Will also carry two SpaceX test s
atellites for the upcoming Starlink constellation.","crew":[],"ships":["5ea6ed
2e080df4000697c908"],"capsules":[],"payloads":["5eb0e4c6b6c3bb0006eeb21d","5eb
0e4c6b6c3bb0006eeb21e"],"launchpad":"5e9e4502f509092b78566f87","flight_numbe
r":56,"name":"Paz / Starlink Demo","date_utc":"2018-02-22T14:17:00.000Z","date
_unix":1519309020,"date_local":"2018-02-22T06:17:00-08:00","date_precision":"h
our","upcoming":false,"cores":[{"core":"5e9e28a4f359182d843b264e","flight":
2,"gridfins":true,"legs":false,"reused":true,"landing_attempt":false,"landing_
success":null,"landing_type":null,"landpad":null}],"auto_update":true,"tbd":fa
lse,"launch_library_id":null,"id":"5eb87d14ffd86e000604b361"},{"fairings":{"re
used":false,"recovery_attempt":false,"recovered":false,"ships":[],"links":{"p
atch":{"small":"https://images2.imgbox.com/87/5d/ZDr6l98A_o.png","large":"http
s://images2.imgbox.com/86/73/dycVqz0C_o.png"},"reddit":{"campaign":"https://ww
w.reddit.com/r/spacex/comments/7r5pyn/hispasat_30w6_launch_campaign_threa
d/","launch":"https://www.reddit.com/r/spacex/comments/7r5pyn/hispasat_30w6_la
unch_campaign_thread/","media":"https://www.reddit.com/r/spacex/comments/825as
x/rspacex_hispasat_30w6_media_thread_videos_images/","recovery":null},"flick
r":{"small":[],"original":["https://farm5.staticflickr.com/4753/25790223907_36
e7b59efa_o.jpg","https://farm5.staticflickr.com/4666/38850799080_e17426795c_o.
jpg","https://farm5.staticflickr.com/4758/40660917561_daa8efea04_o.jpg","http
s://farm5.staticflickr.com/4622/39951085264_b5deeed6c9_o.jpg","https://farm5.s
taticflickr.com/4772/39951085474_77be77c227_o.jpg"]},"presskit":"http://www.sp
acex.com/sites/spacex/files/hispasat30w6_presskit.pdf","webcast":"https://www.
youtube.com/watch?v=Kpfrp-GMKKM","youtube_id":"Kpfrp-GMKKM","article":"http
s://spaceflightnow.com/2018/03/06/hefty-hispasat-satellite-rides-spacex-rocket
-into-orbit/","wikipedia":"https://en.wikipedia.org/wiki/Hispasat_30W-6"},"sta
tic_fire_date_utc":"2018-02-21T03:46:00.000Z","static_fire_date_unix":15191847
60,"net":false,"window":7200,"rocket":"5e9d0d95eda69973a809d1ec","success":tru
e,"failures":[],"details":"Launched with landing legs and titanium grid fins.
Did not attempt a landing due to \'unfavorable weather conditions in the reco
very area\'.","crew":[],"ships":[],"capsules":[],"payloads":["5eb0e4c7b6c3bb00
06eeb21f"],"launchpad":"5e9e4501f509094ba4566f84","flight_number":57,"name":"H
ispasat 30W-6","date_utc":"2018-03-06T05:33:00.000Z","date_unix":1520314380,"d
ate_local":"2018-03-06T00:33:00-05:00","date_precision":"hour","upcoming":fals
e,"cores":[{"core":"5e9e28a5f359186cb73b2654","flight":1,"gridfins":true,"leg
s":true,"reused":false,"landing_attempt":false,"landing_success":null,"landing
_type":null,"landpad":null}],"auto_update":true,"tbd":false,"launch_library_i
d":null,"id":"5eb87d15ffd86e000604b362"},{"fairings":{"reused":false,"recovery
_attempt":true,"recovered":false,"ships":["5ea6ed2e080df4000697c908"]},"link
s":{"patch":{"small":"https://images2.imgbox.com/2f/36/Bn1RX3aO_o.png","larg

```

```

e": "https://images2.imgbox.com/6e/32/3hj6BIWx_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/82nj55/iridium_next_constellation_mission_5_launch/", "launch": "https://www.reddit.com/r/spacex/comments/88184i/rspacex_iridium_next_5_official_launch_discussion/", "media": "https://www.reddit.com/r/spacex/comments/881141/rspacex_iridium5_media_thread_videos_images_gifs/", "recovery": null}, "flickr": {"small": [], "original": ["https://farm1.staticflickr.com/791/40227113515_da97986607_o.jpg", "https://farm1.staticflickr.com/788/27248936158_2eaf1a98b3_o.jpg", "https://farm1.staticflickr.com/864/40227112595_c34a1cf8d1_o.jpg", "https://farm1.staticflickr.com/806/41121608121_8f0b886f9d_o.jpg", "https://farm1.staticflickr.com/809/41121608541_cdfec6a849_o.jpg", "https://farm1.staticflickr.com/822/40227112875_ec3c5df585_o.jpg"]}, "presskit": "https://www.spacex.com/sites/spacex/files/iridium-5_press_kit_2018.pdf", "webcast": "https://www.youtube.com/watch?v=mp0TW8vkCLg", "youtube_id": "mp0TW8vkCLg", "article": "https://spaceflightnow.com/2018/03/30/iridium-messaging-network-gets-another-boost-from-spacex/", "wikipedia": "https://en.wikipedia.org/wiki/Iridium_satellite_constellation#Next-generation_constellation"}, "static_fire_date_utc": "2018-03-25T12:23:00.000Z", "static_fire_date_unix": 1521980580, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failures": [], "details": "Fifth Iridium NEXT mission to deploy ten Iridium NEXT satellites. Reused booster from third Iridium flight, and although controlled descent was performed, the booster was expended into the ocean. SpaceX planned a second recovery attempt of one half of the fairing using the specially modified boat Mr. Steven. However, the fairing's parafoil twisted during the recovery, which led to water impact at high speed", "crew": [], "ships": ["5ea6ed2e080df4000697c908"], "capsules": [], "payloads": ["5eb0e4c7b6c3bb0006eeb220"], "launchpad": "5e9e4502f509092b78566f87", "flight_number": 58, "name": "Iridium NEXT Mission 5", "date_utc": "2018-03-30T14:13:51.000Z", "date_unix": 1522419231, "date_local": "2018-03-30T07:13:51-08:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a4f3591843103b2650", "flight": 2, "gridfins": true, "legs": true, "reused": true, "landing_attempt": false, "landing_success": null, "landing_type": null, "landpad": null}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87d16ffd86e000604b363"}, {"fairings": null, "links": {"patch": {"small": "https://images2.imgbox.com/e7/bf/WzMjulcP_o.png", "large": "https://images2.imgbox.com/4c/3a/VGGRo5PT_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/82op7a/crs14_launch_campaign_thread/", "launch": "https://www.reddit.com/r/spacex/comments/88s8a7/rspacex_crs14_official_launch_discussion_updates/", "media": "https://www.reddit.com/r/spacex/comments/88152i/rspacex_crs14_media_thread_videos_images_gifs/", "recovery": null}, "flickr": {"small": [], "original": ["https://farm1.staticflickr.com/819/26326005987_c3aec29db5_o.jpg", "https://farm1.staticflickr.com/791/40303273215_4926c917c4_o.jpg", "https://farm1.staticflickr.com/867/26326007227_39e71e6775_o.jpg"]}, "presskit": "http://www.spacex.com/sites/spacex/files/crs-14presskit2018.pdf", "webcast": "https://www.youtube.com/watch?v=BPQHG-LevZM", "youtube_id": "BPQHG-LevZM", "article": "https://spaceflightnow.com/2018/04/02/spacex-supply-ship-departs-cape-canaveral-for-space-station/", "wikipedia": "https://en.wikipedia.org/wiki/SpaceX_CRS-14"}, "static_fire_date_utc": "2018-03-28T15:52:00.000Z", "static_fire_date_unix": 1522252320, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failures": [], "details": "The launch used a refurbished booster (from CRS-12) for the 11th time, and a refurbished capsule (C110 from CRS-8) for the third time. External payloads include a materials research platform MISSE-FF phase 3 of the Robotic Refueling Mission TSIS, heliophysics sensor several crystallization experiments, and the RemoveDebris spacecraft aimed at space junk removal. The booster was expended in order to test a new landing profile.", "crew": [], "ships": ["5ea6ed30080df4000697c912"], "capsules": ["5e9e2c5cf3591885d43b266d"], "payloads": ["5eb0e4c7b6c3bb0006eeb221"], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 59, "name": "CRS-14", "date_utc": "2018-04-02T20:30:41.000Z", "date_unix": 1522701041, "date_local": "2018-04-02T16:30:41-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a4f3591884ee3b264d", "flight": 2, "gridfins": true, "legs": true, "reused": true, "landing_attempt": false, "landing_success": null, "landing_type": null, "landpad": null}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87d16ffd86e000604b363"}]

```



```

ry_id":null,"id":"5eb87d16fffd86e000604b364"},{"fairings":{"reused":false,"recovery_attempt":false,"recovered":false,"ships":[],"links":{"patch":{"small":"https://images2.imgbox.com/ca/54/EEGqRRto_o.png","large":"https://images2.imgbox.com/7d/2c/pYXpOVCz_o.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/88146q/tess_launch_campaign_thread/","launch":"https://www.reddit.com/r/spacex/comments/8cm6lo/rspacex_tess_official_launch_discussion_update_s/","media":"https://www.reddit.com/r/spacex/comments/8cmzop/rspacex_tess_media_thread_videos_images_gifs/","recovery":null},"flickr":{"small":[],"original":["https://farm1.staticflickr.com/799/27684194488_0d9a703c1c_o.jpg","https://farm1.staticflickr.com/854/41512967372_0c37360126_o.jpg","https://farm1.staticflickr.com/832/41512968122_20c2e31de3_o.jpg","https://farm1.staticflickr.com/803/27684194678_clccd0680b_o.jpg","https://farm1.staticflickr.com/902/41512967962_74913ef5b0_o.jpg"]},"presskit":"http://www.spacex.com/sites/spacex/files/tesspresskitfinal417.pdf","webcast":"https://www.youtube.com/watch?v=aY-0uBIYYKk","youtube_id":"aY-0uBIYYKk","article":"https://spaceflightnow.com/2018/04/19/all-sky-surveyor-launched-from-cape-canaveral-on-the-hunt-for-exoplanets/" ,"wikipedia":"https://en.wikipedia.org/wiki/Transiting_Exoplanet_Survey_Satellite"},"static_fire_date_utc":"2018-04-11T18:30:00.000Z","static_fire_date_unix":1523471400,"net":false,"window":30,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"details":"Part of the Explorers program, this space telescope is intended for wide-field search of exoplanets transiting nearby stars. It is the first NASA high priority science mission launched by SpaceX. It was the first time SpaceX launched a scientific satellite not primarily intended for Earth observations. The second stage placed it into a high-Earth elliptical orbit, after which the satellite's own booster will perform complex maneuvers including a lunar flyby, and over the course of two months, reach a stable, 2:1 resonant orbit with the Moon. In January 2018, SpaceX received NASA's Launch Services Program Category 2 certification of its Falcon 9 'Full Thrust', certification which is required for launching medium risk missions like TESS. It was the last launch of a new Block 4 booster, and marked the 24th successful recovery of the booster. An experimental water landing was performed in order to attempt fairing recovery.", "crew":[],"ships":["5ea6ed2e080df4000697c90a","5ea6ed2f080df4000697c90b","5ea6ed2f080df4000697c90d","5ea6ed30080df4000697c913"],"capsules":[],"payloads":["5eb0e4c7b6c3bb0006eeb222"],"launchpad":"5e9e4501f509094ba4566f84","flight_number":60,"name":"TESS","date_utc":"2018-04-18T22:51:00.000Z","date_unix":1524091860,"date_local":"2018-04-18T18:51:00-04:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5e9e28a5f35918863d3b2655","flight":1,"gridfins":true,"legs":true,"reused":false,"landing_attempt":true,"landing_success":true,"landing_type":"ASDS","landpad":"5e9e3032383ecb6bb234e7ca"}],"auto_update":true,"tbd":false,"launch_library_id":null,"id":"5eb87d18fffd86e000604b365"},{"fairings":{"reused":false,"recovery_attempt":false,"recovered":false,"ships":[],"links":{"patch":{"small":"https://images2.imgbox.com/94/3a/eavaQRYD_o.png","large":"https://images2.imgbox.com/df/cf/wlysigUT_o.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/8624iq/bangabandhul_launch_campaign_thread/","launch":"https://www.reddit.com/r/spacex/comments/8ia091/rspacex_bangabandhul_official_launch_discussion","media":"https://www.reddit.com/r/spacex/comments/8ia5bu/rspacex_bangabandhul_media_thread_videos_images/","recovery":"https://www.reddit.com/r/spacex/comments/8j6moa/bangabandhul_block_5_recovery_thread/"},"flickr":{"small":[],"original":["https://farm1.staticflickr.com/903/28197547888_dd697d8147_o.jpg","https://farm1.staticflickr.com/823/42025498712_8ec531950f_o.jpg","https://farm1.staticflickr.com/975/28197546158_880e466fb6_o.jpg","https://farm1.staticflickr.com/823/27200014957_940f3720bb_o.jpg","https://farm1.staticflickr.com/945/42025498442_0b7b91d561_o.jpg","https://farm1.staticflickr.com/967/42025498972_8720104d8a_o.jpg","https://farm1.staticflickr.com/954/42025499162_8a0ef7feaa_o.jpg","https://farm1.staticflickr.com/911/42025499722_47d3433d65_o.jpg"]},"presskit":"http://www.spacex.com/sites/spacex/files/bangabandhupresskit51118.pdf","webcast":"https://www.youtube.com/watch?v=rQEgKZ7CJlk","youtube_id":"rQEgKZ7CJlk","article":"https://spaceflightnow.com/2018/05/11/spacex-debuts-an-improved-human-rated-model-of-the-falcon-9-rocket/" ,"wikipedia":"https://en.wikiped

```

```

dia.org/wiki/Bangabandhu-1"}, {"static_fire_date_utc": "2018-05-04T23:25:00.000Z", "static_fire_date_unix": 1525476300, "net": false, "window": 7620, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "First launch of a Block V first stage.", "crew": [], "ships": ["5ea6ed2e080df4000697c90a", "5ea6ed2f080df4000697c90b", "5ea6ed30080df4000697c913", "5ea6ed30080df4000697c916"], "capsules": [], "payloads": ["5eb0e4c7b6c3bb0006eeb223"], "launchpad": "5e9e4502f509094188566f88", "flight_number": 61, "name": "Bangabandhu-1", "date_utc": "2018-05-11T20:14:00.000Z", "date_unix": 1526069640, "date_local": "2018-05-11T16:14:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a5f359182b023b2656", "flight": 1, "gridfins": true, "legs": true, "reused": false, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87d19ffd86e000604b366"}, {"fairings": {"reused": false, "recovery_attempt": true, "recovered": false, "ships": ["5ea6ed2e080df4000697c908"]}, "links": {"patch": {"small": "https://images2.imgbox.com/f5/da/hz3r2Lni_o.png", "large": "https://images2.imgbox.com/3d/f9/IHjBUElf_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/8ffsgl/iridium6_gracefo_launch_campaign_thread/", "launch": "https://www.reddit.com/r/spacex/comments/8kyk5a/rspacex_iridium_next_6_official_launch_discussion/", "media": "https://www.reddit.com/r/spacex/comments/819tfz/rspacex_iridium6gracefo_media_thread_videos/", "recovery": null}, "flickr": {"small": [], "original": ["https://farm1.staticflickr.com/897/42290934301_4c6ac431c8_o.jpg", "https://farm1.staticflickr.com/831/42290933051_510176c9da_o.jpg", "https://farm1.staticflickr.com/882/42290932011_a522b43015_o.jpg", "https://farm1.staticflickr.com/947/42290930761_4bf7b607b1_o.jpg", "https://farm1.staticflickr.com/982/42290930181_0117ab0dfb_o.jpg", "https://farm1.staticflickr.com/955/42244412292_e787538fc5_o.jpg"]}, "presskit": "http://www.spacex.com/sites/spacex/files/iridium6presskit2018521.pdf", "webcast": "https://www.youtube.com/watch?v=I_0GgKfWCsk", "youtube_id": "I_0GgKfWCsk", "article": "https://spaceflightnow.com/2018/05/22/rideshare-launch-by-spacex-serves-commercial-and-scientific-customers/", "wikipedia": "https://en.wikipedia.org/wiki/Gravity_Recovery_and_Climate_Experiment"}, {"static_fire_date_utc": "2018-05-18T20:16:00.000Z", "static_fire_date_unix": 1526674560, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "GFZ arranged a rideshare of GRACE-FO on a Falcon 9 with Iridium following the cancellation of their Dnepr launch contract in 2015. Iridium CEO Matt Desch disclosed in September 2017 that GRACE-FO would be launched on the sixth Iridium NEXT mission. The booster reuse turnaround was a record 4.5 months between flights.", "crew": [], "ships": ["5ea6ed2e080df4000697c908"], "capsules": [], "payloads": ["5eb0e4c7b6c3bb0006eeb224", "5eb0e4c8b6c3bb0006eeb225"], "launchpad": "5e9e4502f509092b78566f87", "flight_number": 62, "name": "Iridium NEXT Mission 6", "date_utc": "2018-05-22T19:47:58.000Z", "date_unix": 1527018478, "date_local": "2018-05-22T12:47:58-08:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a4f35918345e3b2652", "flight": 2, "gridfins": true, "legs": false, "reused": true, "landing_attempt": false, "landing_success": null, "landing_type": null, "landpad": null}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87d1affd86e000604b367"}, {"fairings": {"reused": false, "recovery_attempt": false, "recovered": false, "ships": []}, "links": {"patch": {"small": "https://images2.imgbox.com/4b/b9/oS8ezl6V_o.png", "large": "https://images2.imgbox.com/44/ba/fvMeODet_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/8jv0ed/ses12_launch_campaign_thread/", "launch": "https://www.reddit.com/r/spacex/comments/8o9woj/rspacex_ses12_official_launch_discussion_updates/", "media": "https://www.reddit.com/r/spacex/comments/8oa3k4/rspacex_ses12_media_thread_videos_images_gifs/", "recovery": null}, "flickr": {"small": [], "original": ["https://farm2.staticflickr.com/1752/41664024035_14c81a25e3_o.jpg", "https://farm2.staticflickr.com/1731/27695627527_d9d5bca0ae_o.jpg", "https://farm2.staticflickr.com/1735/27695627327_ed66c7282c_o.jpg", "https://farm2.staticflickr.com/1752/27695627417_38ea7d7acf_o.jpg", "https://farm2.staticflickr.com/1733/41664023935_e9e8120690_o.jpg"]}, "presskit": "http://www.spacex.com/sites/spacex/files/ses-12missionpress_kit_6.2.18.pdf", "webcast": "https://www.youtube.com/watch?v=2hcM5hqQ45s", "youtube_id": "2hcM5hqQ45s", "article": "https://spaceflightnow.com/2018/06/04/multi-mission-telecom-craft-launched

```

```
-by-spacex-for-ses/", "wikipedia": "https://en.wikipedia.org/wiki/SES-12"}, "static_fire_date_utc": "2018-05-25T01:48:00.000Z", "static_fire_date_unix": 1527212880, "net": false, "window": 7200, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failures": [], "details": "SES-12, the replacement satellite for NSS-6, was successfully launched and deployed on June 4th, completing SpaceX's eleventh flight of 2018. According to SES Luxembourg, The SES-12 satellite will expand SES's capabilities to provide direct-to-home (DTH) broadcasting, VSA T, Mobility and High Throughput Satellite (HTS) data connectivity services in the Middle East and the Asia-Pacific region, including rapidly growing markets such as India and Indonesia. [SES-12] will be co-located with SES-8", "crew": [], "ships": ["5ea6ed2e080df4000697c90a"], "capsules": [], "payloads": ["5eb0e4c8b6c3bb0006eeb226"], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 63, "name": "SES-12", "date_utc": "2018-06-04T04:45:00.000Z", "date_unix": 1528087500, "date_local": "2018-06-04T00:45:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a4f3591845123b264f", "flight": 2, "gridfins": false, "legs": false, "reused": true, "landing_attempt": false, "landing_success": null, "landing_type": null, "landpad": null}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87d1bffd86e000604b368"}, {"fairings": null, "links": {"patch": {"small": "https://images2.imgbox.com/11/ec/xng5hAXN_o.png", "large": "https://images2.imgbox.com/43/35/0QW7yRsB_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/8pualm/crs15_launch_campaign_thread/", "launch": "https://www.reddit.com/r/spacex/comments/8ugo3l/rspacex_crs15_official_launch_discussion_updates", "media": "https://www.reddit.com/r/spacex/comments/8ujcwo/rspacex_crs15_media_thread_videos_images_gifs/", "recovery": null}, "flickr": {"small": [], "original": ["https://farm1.staticflickr.com/836/42374725204_dae09db889_o.jpg", "https://farm2.staticflickr.com/1781/41281636860_71dca92ab4_o.jpg", "https://farm2.staticflickr.com/1829/42374725534_325e676d19_o.jpg", "https://farm2.staticflickr.com/1810/42374724974_e50b050403_o.jpg", "https://farm1.staticflickr.com/843/41281636620_437528bd1f_o.jpg", "https://farm2.staticflickr.com/1790/41281637670_f6a6a2cf6c_o.jpg"]}, "presskit": "http://www.spacex.com/sites/spacex/files/crs15presskit.pdf", "webcast": "https://www.youtube.com/watch?v=ycMagBls8XM", "youtube_id": "ycMagBls8XM", "article": "https://spaceflightnow.com/2018/06/29/spacex-launches-ai-enabled-robot-companion-vegetation-monitor-to-space-station/", "wikipedia": "https://en.wikipedia.org/wiki/SpaceX_CRS-15"}, "static_fire_date_utc": "2018-06-23T21:30:00.000Z", "static_fire_date_unix": 1529789400, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failures": [], "details": "Payload included MISSE-FF 2, ECOSTRESS, and a Latching End Effector. The refurbished booster featured a record 2.5 months period turnaround from its original launch of the TESS satellite the fastest previous was 4.5 months. This was the last commercial flight of a Block 4 booster, which was expended into the Atlantic without landing legs and grid fins.", "crew": [], "ships": ["5ea6ed30080df4000697c912"], "capsules": ["5e9e2c5cf359183bb73b266e"], "payloads": ["5eb0e4c8b6c3bb0006eeb227"], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 64, "name": "CRS-15", "date_utc": "2018-06-29T09:42:00.000Z", "date_unix": 1530265320, "date_local": "2018-06-29T05:42:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a5f35918863d3b2655", "flight": 2, "gridfins": false, "legs": false, "reused": true, "landing_attempt": false, "landing_success": null, "landing_type": null, "landpad": null}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87d1cffd86e000604b369"}, {"fairings": {"reused": false, "recovery_attempt": false, "recovered": false, "ships": []}, "links": {"patch": {"small": "https://images2.imgbox.com/12/7c/NiniYxoh_o.png", "large": "https://images2.imgbox.com/c5/53/5jklZkPz_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/8w19yg/telstar_19v_launch_campaign_thread/", "launch": "https://www.reddit.com/r/spacex/comments/90pla6/rspacex_telstar_19v_official_launch_discussion/", "media": "https://www.reddit.com/r/spacex/comments/90oxrr/rspacex_telstar_19v_media_thread_videos_images/", "recovery": null}, "flickr": {"small": [], "original": ["https://farm1.staticflickr.com/856/28684550147_49802752b3_o.jpg", "https://farm1.staticflickr.com/927/28684552447_956a9744f1_o.jpg", "https://farm2.staticflickr.com/1828/29700007298_8ac5891d2c_o.jpg", "https://farm1.staticflickr.com/914/29700004918_3led7b73ef_o.jpg", "https://
```

```

farm1.staticflickr.com/844/29700002748_3047e50a0a_o.jpg", "https://farm2.static
flickr.com/1786/29700000688_2514cd3cbb_o.jpg"]}, "presskit": "http://www.spacex.
com/sites/spacex/files/telstar19vantagepresskit.pdf", "webcast": "https://www.yo
utube.com/watch?v=xybp6zLaGx4", "youtube_id": "xybp6zLaGx4", "article": "https://s
paceflightnow.com/2018/07/22/spacex-delivers-for-telesat-with-successful-early
-morning-launch/", "wikipedia": "https://en.wikipedia.org/wiki/Telstar_19V", "st
atic_fire_date_utc": "2018-07-18T21:00:00.000Z", "static_fire_date_unix": 1531947
600, "net": false, "window": 7200, "rocket": "5e9d0d95eda69973a809dlec", "success": tr
ue, "failures": [], "details": "SSL-manufactured communications satellite intended
to be placed at 63°xc2°xb0 West over the Americas. At 7,075 kg, it became the
heaviest commercial communications satellite ever launched.", "crew": [], "ship
s": [ "5ea6ed2e080df4000697c90a", "5ea6ed2f080df4000697c90b", "5ea6ed2f080df400069
7c90d", "5ea6ed30080df4000697c913"], "capsules": [], "payloads": [ "5eb0e4c8b6c3bb00
06eeb228"], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 65, "name": "T
elstar 19V", "date_utc": "2018-07-22T05:50:00.000Z", "date_unix": 1532238600, "date
_local": "2018-07-22T01:50:00-04:00", "date_precision": "hour", "upcoming": fals
e, "cores": [ { "core": "5e9e28a5f359181eed3b2657", "flight": 1, "gridfins": true, "leg
s": true, "reused": false, "landing_attempt": true, "landing_success": true, "landing_
type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca" } ], "auto_update": true, "tbd": f
alse, "launch_library_id": null, "id": "5eb87d1effd86e000604b36a"}, { "fairings": { "r
eused": false, "recovery_attempt": true, "recovered": false, "ships": [ "5ea6ed2e080df
4000697c908" ] }, "links": { "patch": { "small": "https://images2.imgbox.com/37/63/NE4
EISfK_o.png", "large": "https://images2.imgbox.com/90/b5/fs6LMNGd_o.png" }, "reddi
t": { "campaign": "https://www.reddit.com/r/spacex/comments/8v4wcm/iridium_next_c
onstellation_mission_7_launch/", "launch": "https://www.reddit.com/r/spacex/comm
ents/91lilru/rspacex_iridium_next_7_official_launch_discussion/", "media": "http
s://www.reddit.com/r/spacex/comments/91gx44/rspacex_iridium_next_constellation
_mission_7/", "recovery": null }, "flickr": { "small": [], "original": [ "https://farm1.
staticflickr.com/934/41868222930_0a850d30dc_o.jpg", "https://farm1.staticflick
r.com/852/41868222500_2ff5f6e5f9_o.jpg", "https://farm1.staticflickr.com/929/28
787338307_7c0cfce99a_o.jpg", "https://farm1.staticflickr.com/928/28787338507_3b
e74590d2_o.jpg" ] }, "presskit": "http://www.spacex.com/sites/spacex/files/iridium
7_press_kit_7_24.pdf", "webcast": "https://www.youtube.com/watch?v=vsDknmK30C
0", "youtube_id": "vsDknmK30C0", "article": "https://spaceflightnow.com/2018/07/2
5/spacexs-second-launch-in-three-days-lofts-10-more-iridium-satellites/", "wiki
pedia": "https://en.wikipedia.org/wiki/Iridium_satellite_constellation#Next-gen
eration_constellation", "static_fire_date_utc": "2018-07-20T21:08:00.000Z", "sta
tic_fire_date_unix": 1532120880, "net": false, "window": 0, "rocket": "5e9d0d95eda699
73a809dlec", "success": true, "failures": [], "details": "SpaceX's fourteenth fligh
t of 2018 and seventh of eight launches in a half-a-billion-dollar contract wi
th Iridium. Will use a Block 5 first stage, to be recovered in the Pacific Oce
an. Only one mission will be left for Iridium, with 10 more satellites. First
attempt to recover a Fairing with the upgraded net. Fairing recovery was not
successful.", "crew": [], "ships": [ "5ea6ed2f080df4000697c910", "5ea6ed2e080df4000
697c908", "5ea6ed30080df4000697c912", "5ea6ed30080df4000697c914"], "capsules":
[], "payloads": [ "5eb0e4c9b6c3bb0006eeb229"], "launchpad": "5e9e4502f509092b78566f
87", "flight_number": 66, "name": "Iridium NEXT Mission 7", "date_utc": "2018-07-25T
11:39:26.000Z", "date_unix": 1532518766, "date_local": "2018-07-25T04:39:26-07:0
0", "date_precision": "hour", "upcoming": false, "cores": [ { "core": "5e9e28a5f3591809
c03b2658", "flight": 1, "gridfins": true, "legs": true, "reused": false, "landing_attem
pt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3033383ec
bb9e534e7cc" } ], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5
eb87d1fffd86e000604b36b"}, { "fairings": { "reused": false, "recovery_attempt": fals
e, "recovered": false, "ships": [] }, "links": { "patch": { "small": "https://images2.img
box.com/a7/ec/sbwePzVD_o.png", "large": "https://images2.imgbox.com/a8/f5/Zgdsrb
qW_o.png" }, "reddit": { "campaign": "https://www.reddit.com/r/spacex/comments/91gw
fg/merah_putih_telkom4_launch_campaign_thread/", "launch": "https://www.reddit.c
om/r/spacex/comments/9539nr/rspacex_merah_putih_telkom4_official_launch/", "med
ia": "https://www.reddit.com/r/spacex/comments/94zr0b/rspacex_merah_putih_media
_thread_videos_images/", "recovery": null }, "flickr": { "small": [], "original": [ "htt

```

ps://farm2.staticflickr.com/1798/43862495212\_8fel688c4b\_o.jpg", "https://farm1.staticflickr.com/935/43006330655\_f1623a3fal\_o.jpg", "https://farm1.staticflickr.com/938/28974313177\_d16381ff5f\_o.jpg", "https://farm2.staticflickr.com/1780/43006334045\_fb7b4a8714\_o.jpg", "https://farm1.staticflickr.com/929/28974335747\_ffd87ff274\_o.jpg", "https://farm1.staticflickr.com/930/30041972208\_f735b9690b\_o.jpg"]}, "presskit": "https://www.spacex.com/sites/spacex/files/merahputihpresskit.pdf", "webcast": "https://www.youtube.com/watch?v=FjfQNBVv2IY", "youtube\_id": "FjfQNBVv2IY", "article": "https://spaceflightnow.com/2018/08/07/indonesian-communications-satellite-deployed-in-orbit-by-spacex/", "wikipedia": "https://en.wikipedia.org/wiki/Telkom\_Indonesia"}, "static\_fire\_date\_utc": "2018-08-02T15:53:00.000Z", "static\_fire\_date\_unix": 1533225180, "net": false, "window": 7200, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failures": [], "details": "SpaceX's fifteenth flight of 2018 launched the Merah Putih (also known as Telkom-4) geostationary communications satellite for Telkom Indonesia. It marked the first reuse of any Block 5 first stage; the booster B1046 had previously launched Bangabandhu-1. The stage was recovered and is expected to become the first Falcon 9 booster to fly three missions.", "crew": [], "ships": ["5ea6ed2f080df4000697c90d", "5ea6ed30080df4000697c913"], "capsules": [], "payloads": ["5eb0e4c9b6c3bb0006eeb22a"], "launchpad": "5e9e4501f509094ba4566f84", "flight\_number": 67, "name": "Merah Putih", "date\_utc": "2018-08-07T05:18:00.000Z", "date\_unix": 1533619080, "date\_local": "2018-08-07T01:18:00-04:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a5f359182b023b2656", "flight": 2, "gridfins": true, "legs": true, "reused": true, "landing\_attempt": true, "landing\_success": true, "landing\_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto\_update": true, "tbd": false, "launch\_library\_id": null, "id": "5eb87d20ffd86e000604b36c"}, {"fairings": {"reused": false, "recovery\_attempt": false, "recovered": false, "ships": []}, "links": {"patch": {"small": "https://images2.imgbox.com/2d/d2/jStsqeLC\_o.png", "large": "https://images2.imgbox.com/ba/db/3plcm5IB\_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/95cte4/telstar\_18v\_apstar\_5c\_launch\_campaign\_thread/", "launch": "https://www.reddit.com/r/spacex/comments/9e7bmq/rspacex\_telstar\_18v\_official\_launch\_discussion/", "media": "https://www.reddit.com/r/spacex/comments/9ebkqw/rspacex\_telstar\_18v\_media\_thread\_videos\_images/", "recovery": "https://www.reddit.com/r/spacex/comments/9erx1h/telstar\_18\_vantage\_recovery\_thread/"}, "flickr": {"small": [], "original": ["https://farm2.staticflickr.com/1878/43690848045\_492ef182dd\_o.jpg", "https://farm2.staticflickr.com/1856/43881229604\_6d42e838b6\_o.jpg", "https://farm2.staticflickr.com/1852/43881223704\_93777e34af\_o.jpg", "https://farm2.staticflickr.com/1841/43881217094\_558b7b214e\_o.jpg", "https://farm2.staticflickr.com/1869/43881193934\_423eff8c86\_o.jpg"]}, "presskit": "https://www.spacex.com/sites/spacex/files/telstar18vantagepresskit.pdf", "webcast": "https://www.youtube.com/watch?v=Apw3xqwsG1U", "youtube\_id": "Apw3xqwsG1U", "article": "https://spaceflightnow.com/2018/09/10/spacex-telesat-achieve-repeat-success-with-midnight-hour-launch/", "wikipedia": "https://en.wikipedia.org/wiki/Telstar\_18V"}, "static\_fire\_date\_utc": "2018-09-05T07:21:00.000Z", "static\_fire\_date\_unix": 1536132060, "net": false, "window": 14400, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failures": [], "details": "SpaceX's sixteenth flight of 2018 launched the Telstar 18v GEO communication satellite for Telesat, the second launch for the canadian company in a few months. The first stage was a new Falcon 9 V1.2 Block 5 which was successfully recovered on OCISLY.", "crew": [], "ships": ["5ea6ed30080df4000697c913", "5ea6ed2f080df4000697c90d", "5ea6ed2f080df4000697c90b"], "capsules": [], "payloads": ["5eb0e4c9b6c3bb0006eeb22b"], "launchpad": "5e9e4501f509094ba4566f84", "flight\_number": 68, "name": "Telstar 18V", "date\_utc": "2018-09-10T04:45:00.000Z", "date\_unix": 1536554700, "date\_local": "2018-09-10T00:45:00-04:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a5f3591833b13b2659", "flight": 1, "gridfins": true, "legs": true, "reused": false, "landing\_attempt": true, "landing\_success": true, "landing\_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto\_update": true, "tbd": false, "launch\_library\_id": null, "id": "5eb87d22ffd86e000604b36d"}, {"fairings": {"reused": false, "recovery\_attempt": false, "recovered": false, "ships": []}, "links": {"patch": {"small": "https://images2.imgbox.com/ae/11/H85gskPQ\_o.png", "large": "https://images2.imgbox.com/66/d2/oVBlofaZ\_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spac

```

ex/comments/9fwj9o/saocom_1a_launch_campaign_thread/","launch":"https://www.re
ddit.com/r/spacex/comments/9lazvr/rspacex_saocom_1a_official_launch_discussio
n/","media":"https://www.reddit.com/r/spacex/comments/9m3ly5/rspacex_saocom_1a
_media_thread_videos_images_gifs/","recovery":null},"flickr":{"small":[],"orig
inal":["https://farm2.staticflickr.com/1940/44262177535_9582184d3f_o.jpg","htt
ps://farm2.staticflickr.com/1917/30234800687_fd94fde151_o.jpg","https://farm2.
staticflickr.com/1951/30234801997_b5a65426ca_o.jpg","https://farm2.staticflick
r.com/1910/44262169525_e4c6b27299_o.jpg","https://farm2.staticflickr.com/1923/
44451125454_8d26929d0b_o.jpg","https://farm2.staticflickr.com/1914/44262170545
_22fe55d4bb_o.jpg","https://farm2.staticflickr.com/1934/44262166295_3f84597f09
_o.jpg"]},"presskit":"https://www.spacex.com/sites/spacex/files/saocomlapressk
it.pdf","webcast":"https://www.youtube.com/watch?v=vr_C6LQ7mHc","youtube_i
d":"vr_C6LQ7mHc","article":"https://spaceflightnow.com/2018/10/08/spacex-aces-
first-rocket-landing-in-california-after-launching-argentine-satellite/","wiki
pedia":"https://en.wikipedia.org/wiki/SAOCOM"},"static_fire_date_utc":"2018-10
-02T21:00:00.000Z","static_fire_date_unix":1538514000,"net":false,"window":
0,"rocket":"5e9d0d95eda69973a809dlec","success":true,"failures":[],"detail
s":"SpaceX's seventeenth flight of 2018 was the first launch of the Saocom Ea
rth observation satellite constellation of the Argentine Space Agency CONAE. T
he second launch of Saocom 1B will happen in 2019. This flight marked the firs
t RTLS launch out of Vandenberg, with a landing on the concrete pad at SLC-4W,
very close to the launch pad.","crew":[],"ships":[],"capsules":[],"payloads":
["5eb0e4c9b6c3bb0006eeb22c"],"launchpad":"5e9e4502f509092b78566f87","flight_nu
mber":69,"name":"SAOCOM 1A","date_utc":"2018-10-08T02:22:00.000Z","date_unix":
1538965320,"date_local":"2018-10-07T19:22:00-07:00","date_precision":"hour","u
pcoming":false,"cores":[{"core":"5e9e28a5f3591809c03b2658","flight":2,"gridfin
s":true,"legs":true,"reused":true,"landing_attempt":true,"landing_success":tru
e,"landing_type":"RTLS","landpad":"5e9e3032383ecb554034e7c9"}],"auto_update":t
rue,"tbd":false,"launch_library_id":null,"id":"5eb87d23ffd86e000604b36e"},"fa
irings":{"reused":false,"recovery_attempt":false,"recovered":false,"ships":
[]},"links":{"patch":{"small":"https://images2.imgbox.com/a3/96/WvJsBXuE_o.pn
g","large":"https://images2.imgbox.com/59/c8/HPYpMlux_o.png"},"reddit":{"campa
ign":"https://www.reddit.com/r/spacex/comments/9p82jt/eshail_2_launch_campaign
_thread/","launch":"https://www.reddit.com/r/spacex/comments/9x9w9v/rspacex_es
hail_2_official_launch_discussion/","media":"https://www.reddit.com/r/spacex/c
omments/9xaa76/rspacex_eshail_2_media_thread_videos_images_gifs/","recover
y":"https://www.reddit.com/r/spacex/comments/9xmpa7/eshail_2_recovery_threa
d/"},"flickr":{"small":[],"original":["https://farm5.staticflickr.com/4834/320
40174268_b71d703417_o.jpg","https://farm5.staticflickr.com/4810/32040174058_a6
5fa64e85_o.jpg","https://farm5.staticflickr.com/4814/32040173268_0ab571e7bc_o.
jpg","https://farm5.staticflickr.com/4899/32040173568_bb5c991565_o.jpg","http
s://farm5.staticflickr.com/4875/32040173278_b5578ba6be_o.jpg","https://farm5.s
taticflickr.com/4862/32040173928_afdfb09939_o.jpg","https://farm5.staticflick
r.com/4888/32040173048_b2b29c020f_o.jpg","https://farm5.staticflickr.com/4808/
32248947038_ddlcf9e8c3_o.jpg","https://farm5.staticflickr.com/4887/31180979107
_da6a935c20_o.jpg"]},"presskit":"https://www.spacex.com/sites/spacex/files/esh
ail-2_mission_press_kit_11_14_2018.pdf","webcast":"https://www.youtube.com/wat
ch?v=PhTbzc-BqKs&feature=youtu.be","youtube_id":"PhTbzc-BqKs","article":"http
s://spaceflightnow.com/2018/11/15/spacex-launches-qatars-eshail-2-communicatio
ns-satellite/","wikipedia":"https://en.wikipedia.org/wiki/Es%27hailSat"},"stat
ic_fire_date_utc":"2018-11-12T18:13:00.000Z","static_fire_date_unix":154204638
0,"net":false,"window":6180,"rocket":"5e9d0d95eda69973a809dlec","success":tru
e,"failures":[],"details":"SpaceX's eighteenth flight of 2018 was its first f
or Es'hailSat. Es'hail-2 is a communications satellite delivering television
and internet to Qatar and the surrounding region. It was launched into a geost
ationary transfer orbit from LC-39A at Kennedy Space Center. The booster lande
d on OCISLY.","crew":[],"ships":["5ea6ed2f080df4000697c90d","5ea6ed30080df4000
697c913"],"capsules":[],"payloads":["5eb0e4c9b6c3bb0006eeb22d"],"launchpad":"5
e9e4502f509094188566f88","flight_number":70,"name":"Es\xe2\x80\x99hail 2","dat
e_utc":"2018-11-15T20:46:00.000Z","date_unix":1542314760,"date_local":"2018-11

```

```
-15T15:46:00-05:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a5f359181eed3b2657", "flight": 2, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87d24ffd86e000604b36f"}, {"fairings": {"reused": false, "recovery_attempt": true, "recovered": false, "ships": ["5ea6ed2e080df4000697c908"]}], "links": {"patch": {"small": "https://images2.imgbox.com/07/ff/s2SD7HuJ_o.png", "large": "https://images2.imgbox.com/c3/88/YprVKOBk_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/9raysi/ssoa_launch_campaign_thread", "launch": "https://www.reddit.com/r/spacex/comments/a0vjff/rspacex_ssoa_official_launch_discussion_updates/", "media": "https://old.reddit.com/r/spacex/comments/a0wylf/rspacex_ssoa_media_thread_videos_images_gifs/", "recovery": "https://www.reddit.com/r/spacex/comments/a2tjoe/ssoa_recovery_thread/"}, "flickr": {"small": [], "original": ["https://farm5.staticflickr.com/4875/45257565145_d53757e0b2_o.jpg", "https://farm5.staticflickr.com/4839/45257565835_4fd6f3e895_o.jpg", "https://farm5.staticflickr.com/4822/45257566865_9c9d34a7ca_o.jpg", "https://farm5.staticflickr.com/4821/45257568225_186c8431cf_o.jpg", "https://farm5.staticflickr.com/4885/45257569445_1d74a601df_o.jpg", "https://farm5.staticflickr.com/4869/45257570925_8eae9a0888_o.jpg", "https://farm5.staticflickr.com/4842/31338804427_2e4dcda6e7_o.jpg", "https://farm5.staticflickr.com/4894/46227271292_2eee9af3eb_o.jpg", "https://farm5.staticflickr.com/4870/44460659210_de634098ac_o.jpg"]}, "presskit": "https://www.spacex.com/sites/spacex/files/ssoa_press_kit.pdf", "webcast": "https://www.youtube.com/watch?v=Wq8kS6UoOrQ", "youtube_id": "Wq8kS6UoOrQ", "article": "https://spaceflightnow.com/2018/12/03/spacex-launches-swarm-of-satellites-re-flies-rocket-for-third-time/", "wikipedia": "https://en.wikipedia.org/wiki/Spaceflight_Industries"}, "static_fire_date_utc": "2018-11-15T21:55:00.000Z", "static_fire_date_unix": 1542318900, "net": false, "window": 1680, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "SpaceX's nineteenth flight of 2018 will fly SSO-A: SmallSat Express out of Vandenberg SLC-4E for Spaceflight. SSO-A is a rideshare to sun synchronous low earth orbit consisting of 64 individual microsatellites and cubesats. It is also likely to be the third flight of core B1046 which previously flew Bangabandhu-1 and Merah Putih. If this happens it will be the first time a Falcon 9 has flown more than two missions. ", "crew": [], "ships": ["5ea6ed2f080df4000697c910", "5ea6ed30080df4000697c912", "5ea6ed30080df4000697c914", "5ea6ed2e080df4000697c908"], "capsules": [], "payloads": ["5eb0e4c9b6c3bb0006eeb22e"], "launchpad": "5e9e4502f509092b78566f87", "flight_number": 71, "name": "SSO-A", "date_utc": "2018-12-03T18:34:00.000Z", "date_unix": 1543861920, "date_local": "2018-12-03T10:34:00-08:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a5f359182b023b2656", "flight": 3, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3033383ecbb9e534e7cc"}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87d25ffd86e000604b370"}, {"fairings": null, "links": {"patch": {"small": "https://images2.imgbox.com/de/47/liJzNMRP_o.png", "large": "https://images2.imgbox.com/b6/15/tLQrmwcl_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/9z7i4j/crs16_launch_campaign_thread/", "launch": "https://www.reddit.com/r/spacex/comments/a2oubw/rspacex_crs16_official_launch_discussion_updates/", "media": "https://www.reddit.com/r/spacex/comments/a2uojp/rspacex_crs16_media_thread_videos_images_gifs/", "recovery": "https://www.reddit.com/r/spacex/comments/a3n3vm/crs16_emergency_recovery_thread/"}, "flickr": {"small": [], "original": ["https://farm5.staticflickr.com/4835/45473442624_69ee8bee45_o.jpg", "https://farm5.staticflickr.com/4903/45473443604_0d668c31da_o.jpg", "https://farm5.staticflickr.com/4858/45473444314_413a344dcb_o.jpg", "https://farm5.staticflickr.com/4856/45473445134_d9384878f8_o.jpg", "https://farm5.staticflickr.com/4840/45473446114_7d5e5d6fe2_o.jpg"]}, "presskit": "https://www.spacex.com/sites/spacex/files/crs16_press_kit_12_4.pdf", "webcast": "https://www.youtube.com/watch?v=Esh1jHT9oTA", "youtube_id": "Esh1jHT9oTA", "article": "https://spaceflightnow.com/2018/12/05/spacex-falcon-9-boosts-dragon-cargo-ship-to-orbit-first-stage-misses-landing-target/", "wikipedia": "https://en.wikipedia.org/wiki/SpaceX_CRS-16"}, "static_fire_date_utc": "2018-11-30T19:57:00.000Z", "static_fire_date_unix": 1543607820, "net": false,
```

```
e,"window":0,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":
[],"details":"SpaceX's 16th Crew Resupply Mission on behalf of NASA, with a t
otal of 20 contracted flights. This will bring essential supplies to the Inter
national Space Station using SpaceX's reusable Dragon spacecraft. The Falcon
9 will launch from SLC-40 at Cape Canaveral Air Force Station. During the lan
ding of the first stage, a grid fin hydraulic pump stalled, causing the core t
o enter an uncontrolled roll, and resulting in a (successful) water landin
g.", "crew":[],"ships":["5ea6ed2f080df4000697c90b"],"capsules":["5e9e2c5cf35918
5d753b266f"],"payloads":["5eb0e4cab6c3bb0006eeb22f"],"launchpad":"5e9e4501f509
094ba4566f84","flight_number":72,"name":"CRS-16","date_utc":"2018-12-05T18:16:
00.000Z","date_unix":1544033760,"date_local":"2018-12-05T13:16:00-05:00","date
_precision":"hour","upcoming":false,"cores":[{"core":"5e9e28a6f359185c603b265
a","flight":1,"gridfins":true,"legs":true,"reused":false,"landing_attempt":tru
e,"landing_success":false,"landing_type":"RTLS","landpad":"5e9e3032383ecb267a3
4e7c7"}],"auto_update":true,"tbd":false,"launch_library_id":null,"id":"5eb87d2
6ffd86e000604b371"}, {"fairings":{"reused":false,"recovery_attempt":false,"reco
vered":false,"ships":[]},"links":{"patch":{"small":"https://images2.imgbox.co
m/b3/24/vKUTLIu9_o.png","large":"https://images2.imgbox.com/e1/cb/cvLgCm0d_o.p
ng"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/a4516o/gps
_iii2_launch_campaign_thread/","launch":"https://www.reddit.com/r/spacex/commen
ts/a7lwyn/rspacex_gps_iii2_official_launch_discussion/","media":"https://www.
reddit.com/r/spacex/comments/a73kz5/rspacex_gps_iii2_media_thread_videos_image
s_gifs/","recovery":null},"flickr":{"small":[],"original":["https://farm5.stat
icflickr.com/4864/45715171884_fldd88c058_o.jpg","https://farm8.staticflickr.co
m/7926/45525648155_32fdab17a5_o.jpg","https://farm8.staticflickr.com/7876/4552
5649035_ba60162fe0_o.jpg","https://farm8.staticflickr.com/7853/45525649825_e6d
35415e1_o.jpg","https://farm5.staticflickr.com/4893/45525650685_02b408c385_o.j
pg"]},"presskit":"https://www.spacex.com/sites/spacex/files/gps_iii_press_kit.
pdf","webcast":"https://youtu.be/yRiLPoy_Mzc","youtube_id":"yRiLPoy_Mzc","arti
cle":"https://spaceflightnow.com/2018/12/23/spacex-closes-out-year-with-succes
sful-gps-satellite-launch/","wikipedia":"https://en.wikipedia.org/wiki/GPS_Blo
ck_IIIA"},"static_fire_date_utc":"2018-12-13T21:24:00.000Z","static_fire_date_
unix":1544736240,"net":false,"window":1560,"rocket":"5e9d0d95eda69973a809d1e
c","success":true,"failures":[],"details":"SpaceX's twenty-first flight of 20
18 launched the first of the new GPS III satellites (Block IIIA) for the Unite
d States Air Force and was SpaceX's first EELV mission. The spacecraft was de
livered to a MEO transfer orbit from SLC-40 at Cape Canaveral Air Force Statio
n. This mission was the first to fly with the redesigned COPV on the first sta
ge (B1054) as well as the second. The booster was expended.", "crew":[],"ship
s":[],"capsules":[],"payloads":["5eb0e4cab6c3bb0006eeb230"],"launchpad":"5e9e4
501f509094ba4566f84","flight_number":73,"name":"GPS III SV01","date_utc":"2018
-12-23T13:51:00.000Z","date_unix":1545573060,"date_local":"2018-12-23T08:51:00
-05:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5e9e28a6f35
918513b3b265b","flight":1,"gridfins":false,"legs":false,"reused":false,"landin
g_attempt":false,"landing_success":null,"landing_type":null,"landpad":nul
l}], "auto_update":true,"tbd":false,"launch_library_id":null,"id":"5eb87d27ffd8
6e000604b372"}, {"fairings":{"reused":false,"recovery_attempt":false,"recovery
d":null,"ships":[]},"links":{"patch":{"small":"https://images2.imgbox.com/11/f
0/xPDcIpmS_o.png","large":"https://images2.imgbox.com/80/ae/1JL1ZzXD_o.pn
g"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/a699fh/irid
ium_next_constellation_mission_8_launch/","launch":"https://www.reddit.com/r/s
pacex/comments/aemq2i/rspacex_iridium_next_8_official_launch_discussion/","med
ia":"https://www.reddit.com/r/spacex/comments/aeoxve/rspacex_iridium_next_8_me
dia_thread_videos_images/","recovery":"https://www.reddit.com/r/spacex/comment
s/aewp4r/iridium_8_recovery_thread/"},"flickr":{"small":[],"original":["http
s://farm5.staticflickr.com/4866/39745612523_14270b4b9d_o.jpg","https://farm8.s
taticflickr.com/7833/39745612923_21aa442350_o.jpg","https://farm5.staticflick
r.com/4881/39745613173_e99b09c000_o.jpg","https://farm8.staticflickr.com/7882/
39745613513_6cdd4581af_o.jpg","https://farm8.staticflickr.com/7807/39745613733
_1a7b70e54a_o.jpg","https://farm5.staticflickr.com/4891/39745614053_43855205bc
```



```

_o.jpg"]}, "presskit": "https://www.spacex.com/sites/spacex/files/iridium8presskit.pdf", "webcast": "https://youtu.be/VshdafZvwrg", "youtube_id": "VshdafZvwrg", "article": "https://spaceflightnow.com/2019/01/11/spacex-begins-2019-with-eighth-and-final-for-upgraded-iridium-network/", "wikipedia": "https://en.wikipedia.org/wiki/Iridium_satellite_constellation#Next-generation_constellation"}, {"static_fire_date_utc": "2019-01-06T13:51:00.000Z", "static_fire_date_unix": 1546782660, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failures": [], "details": "SpaceX's first flight of 2019 will be the eighth and final launch of its planned Iridium flights. Delivering 10 satellites to low earth orbit, this brings the total up to 75 and completes the Iridium NEXT constellation. This mission launches from SLC-4E at Vandenberg AFB. The booster is expected to land on JRTI.", "crew": [], "ships": ["5ea6ed2f080df4000697c910", "5ea6ed30080df4000697c912", "5ea6ed30080df4000697c914"], "capsules": [], "payloads": ["5eb0e4cab6c3bb0006eeb231"], "launchpad": "5e9e4502f509092b78566f87", "flight_number": 74, "name": "Iridium NEXT Mission 8", "date_utc": "2019-01-11T15:31:00.000Z", "date_unix": 1547220660, "date_local": "2019-01-11T07:31:00-08:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a5f3591833b13b2659", "flight": 2, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3033383ecbb9e534e7cc"}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87d28ff86e000604b373"}, {"fairings": {"reused": false, "recovery_attempt": false, "recovered": false, "ships": []}, "links": {"patch": {"small": "https://images2.imgbox.com/50/65/wAkWv7k7_o.png", "large": "https://images2.imgbox.com/1c/8e/rJ4HAYkk_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/afxyrd/nusantara_satu_launch_campaign_thread/", "launch": "https://www.reddit.com/r/spacex/comments/assxjz/rspacex_psnvi_official_launch_discussion_updates/", "media": "https://www.reddit.com/r/spacex/comments/at5mu8/rspacex_psn6_media_thread_videos_images_gifs/", "recovery": "https://www.reddit.com/r/spacex/comments/atbmp3/psnvi_recovery_discussion_updates_thread/"}, "flickr": {"small": [], "original": ["https://farm8.staticflickr.com/7800/47173936271_b8ddb5bc5b_o.jpg", "https://farm8.staticflickr.com/7821/47121969172_37428a280e_o.jpg", "https://farm8.staticflickr.com/7923/47173936181_c0bf7a22a6_o.jpg", "https://farm8.staticflickr.com/7829/46259779115_8982c2c8c2_o.jpg", "https://farm8.staticflickr.com/7889/46259778995_68130be69d_o.jpg", "https://farm8.staticflickr.com/7895/47130341432_3772641a68_o.jpg"]}, "presskit": "https://www.spacex.com/sites/spacex/files/nusantara_satu_press_kit.pdf", "webcast": "https://www.youtube.com/watch?v=XS0E35aYJcU", "youtube_id": "XS0E35aYJcU", "article": "https://spaceflightnow.com/2019/02/22/israeli-moon-lander-hitches-ride-on-spacex-launch-with-indonesian-comsat/", "wikipedia": "https://en.wikipedia.org/wiki/PT_Pasifik_Satelit_Nusantara"}, {"static_fire_date_utc": "2019-02-18T17:03:00.000Z", "static_fire_date_unix": 1550509380, "net": false, "window": 1920, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failures": [], "details": "SpaceX will launch this rideshare to GTO for Space Systems Loral (SSL). The primary payload for this mission is Nusantara Satu, a communications satellite built by SSL for the private Indonesian company PT Pasifik Satelit Nusantara (PSN). Spaceflight Industries' GTO-1 mission consists of two secondary payloads. One of those is Beresheet, the lunar lander built by the Israeli non-profit organization, SpaceIL. Beresheet will make its own way to the moon from GTO. The other secondary is Air Force Research Lab's (Space Situational Awareness) S5 mission, which hitches a ride to GEO aboard Nusantara Satu. This mission launches from SLC-40 at Cape Canaveral AFS. The booster is expected to land on OCISLY.", "crew": [], "ships": ["5ea6ed30080df4000697c913"], "capsules": [], "payloads": ["5eb0e4cab6c3bb0006eeb232", "5eb0e4cab6c3bb0006eeb233", "5eb0e4cab6c3bb0006eeb234"], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 75, "name": "Nusantara Satu (PSN-6) / S5 / Beresheet", "date_utc": "2019-02-22T01:45:00.000Z", "date_unix": 1550799900, "date_local": "2019-02-21T20:45:00-05:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a5f3591809c03b2658", "flight": 3, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87d2affd86e000604b374"}, {"fairings": {"reused": null, "recovery_attempt": n

```

```

ull,"recovered":null,"ships":[],"links":{"patch":{"small":"https://images2.im
gbox.com/be/7e/g0kzvXPe_o.png","large":"https://images2.imgbox.com/e6/a4/YKd36
sul_o.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/a65
clm/dml_launch_campaign_thread/","launch":"https://www.reddit.com/r/spacex/com
ments/avlasz/rspacex_cctcap_demo_mission_1_official_launch/","media":"https://
www.reddit.com/r/spacex/comments/aw6g7j/rspacex_cctcap_demo_mission_1_media_th
read_videos/","recovery":"https://www.reddit.com/r/spacex/comments/awo5lf/cctc
ap_demo_mission_1_official_booster_recovery/"},"flickr":{"small":[],"origina
l":["https://farm8.staticflickr.com/7899/39684491043_f0289164bd_o.jpg","http
s://farm8.staticflickr.com/7804/39684490433_70337aa4e5_o.jpg","https://farm8.s
taticflickr.com/7826/32774791628_e2234480db_o.jpg","https://farm5.staticflick
r.com/4882/39684490143_7df3838d2c_o.jpg","https://farm8.staticflickr.com/7851/
46535572784_7eb295968e_o.jpg","https://farm8.staticflickr.com/7826/46535572564
_a022f9c43a_o.jpg","https://farm8.staticflickr.com/7889/40294395933_f429c12e83
_o.jpg","https://farm8.staticflickr.com/7914/40294395873_0a328f2d87_o.jpg","ht
tps://farm8.staticflickr.com/7866/46535572294_22499c1223_o.jpg","https://farm
8.staticflickr.com/7850/46535573034_03da10f899_o.jpg","https://farm8.staticfli
ckr.com/7848/46535572664_316c466742_o.jpg"]},"presskit":"https://www.spacex.co
m/sites/spacex/files/crew_demo-1_press_kit.pdf","webcast":"https://youtu.be/2Z
L0tbOZYhE","youtube_id":"2ZL0tbOZYhE","article":"https://spaceflightnow.com/20
19/03/02/spacex-launches-first-crew-dragon-ferry-ship/","wikipedia":"https://e
n.wikipedia.org/wiki/SpX-DM1"},"static_fire_date_utc":"2019-01-24T19:03:00.000
Z","static_fire_date_unix":1548356580,"net":false,"window":0,"rocket":"5e9d0d9
5eda69973a809dlec","success":true,"failures":[],"details":"Demonstration Missi
on 1 (DM-1) will launch Dragon 2 as part of NASA's Commercial Crew Transporta
tion Capability program. This mission will demonstrate Dragon 2, and Falcon 9
in its configuration for crewed missions. DM-1 will launch from LC-39A at Ken
nedy Space Center, likely carrying some cargo to the International Space Stati
on. The booster is expected to land on OCISLY.","crew":[],"ships":["5ea6ed3008
0df4000697c913"],"capsules":["5e9e2c5df35918b1063b2671"],"payloads":["5eb0e4cb
b6c3bb0006eeb235"],"launchpad":"5e9e4502f509094188566f88","flight_number":7
6,"name":"CCtCap Demo Mission 1","date_utc":"2019-03-02T07:45:00.000Z","date_u
nix":1551512700,"date_local":"2019-03-02T02:45:00-05:00","date_precision":"hou
r","upcoming":false,"cores":[{"core":"5e9e28a6f35918c0803b265c","flight":1,"gr
idfins":true,"legs":true,"reused":false,"landing_attempt":true,"landing_succes
s":true,"landing_type":"ASDS","landpad":"5e9e3032383ecb6bb234e7ca"}],"auto_upd
ate":true,"tbd":false,"launch_library_id":null,"id":"5eb87d2bffd86e000604b37
5"},{"fairings":{"reused":false,"recovery_attempt":true,"recovered":true,"ship
s":["5ea6ed2f080df4000697c90c"]},"links":{"patch":{"small":"https://images2.im
gbox.com/ab/ad/YJDi211n_o.png","large":"https://images2.imgbox.com/82/e3/RzQ9n
X2V_o.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/b0k
scl/arabsat6a_launch_campaign_thread/","launch":"https://www.reddit.com/r/spac
ex/comments/basm9y/rspacex_arabsat6a_official_launch_discussion/","media":"htt
ps://www.reddit.com/r/spacex/comments/bbh9a/rspacex_arabsat6a_media_thread_vi
deos_images_gifs/","recovery":"https://www.reddit.com/r/spacex/comments/bceca
o/fh_arabsat_6a_center_core_recovery_thread/"},"flickr":{"small":[],"origina
l":["https://live.staticflickr.com/7911/32652060737_4bel171d4a_o.jpg","http
s://live.staticflickr.com/7807/40628442293_9643eaf670_o.jpg","https://live.sta
ticflickr.com/7804/40628440983_4da5d76cc7_o.jpg","https://live.staticflickr.co
m/7856/40628439793_27927d11de_o.jpg","https://live.staticflickr.com/7919/40628
438523_c597eabff1_o.jpg","https://live.staticflickr.com/7834/40628437283_84088
aca75_o.jpg","https://live.staticflickr.com/7856/40628435833_albcde59db_o.jp
g","https://live.staticflickr.com/7809/40628435153_17c05d3b5e_o.jpg","https://
live.staticflickr.com/7885/40628434483_3545598b82_o.jpg"]},"presskit":"http
s://www.spacex.com/sites/spacex/files/arabsat-6a_press_kit.pdf","webcast":"htt
ps://youtu.be/TXMGU2d8c8g","youtube_id":"TXMGU2d8c8g","article":"https://space
flightnow.com/2019/04/11/spacexs-falcon-heavy-successful-in-commercial-debu
t/","wikipedia":"https://en.wikipedia.org/wiki/Arabsat-6A"},"static_fire_date_
utc":"2019-04-05T09:57:00.000Z","static_fire_date_unix":1554458220,"net":fals
e,"window":7020,"rocket":"5e9d0d95eda69974db09dled","success":true,"failures":

```

```
[{"details": "SpaceX will launch Arabsat 6A to a geostationary transfer orbit from SLC-39A, KSC. The satellite is a geostationary telecommunications satellite built by Lockheed Martin for the Saudi Arabian company Arabsat. This will be the first operational flight of Falcon Heavy, and also the first Block 5 Falcon Heavy. All three cores will be new Block 5 cores. The side cores are expected to land at LZ-1 and LZ-2, and the center core is expected to land on OCISLY.", "crew": [], "ships": ["5ea6ed2f080df4000697c90e", "5ea6ed30080df4000697c913", "5ea6ed2f080df4000697c90b", "5ea6ed2e080df4000697c909", "5ea6ed2f080df4000697c90c"], "capsules": [], "payloads": ["5eb0e4cbb6c3bb0006eeb236"], "launchpad": "5e9e4502f509094188566f88", "flight_number": 77, "name": "ArabSat 6A", "date_utc": "2019-04-11T22:35:00.000Z", "date_unix": 1555022100, "date_local": "2019-04-11T18:35:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a6f3591897453b265f", "flight": 1, "gridfins": true, "legs": true, "reused": false, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}, {"core": "5e9e28a6f359183c413b265d", "flight": 1, "gridfins": true, "legs": true, "reused": false, "landing_attempt": true, "landing_success": true, "landing_type": "RTLS", "landpad": "5e9e3032383ecb267a34e7c7"}, {"core": "5e9e28a6f359188fd53b265e", "flight": 1, "gridfins": true, "legs": true, "reused": false, "landing_attempt": true, "landing_success": true, "landing_type": "RTLS", "landpad": "5e9e3032383ecb90a834e7c8"}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87d2dffd86e000604b376", "fairings": null, "links": {"patch": {"small": "https://images2.imgbox.com/fc/58/9UERD3ut_o.png", "large": "https://images2.imgbox.com/12/47/6uim8L1a_o.png"}, "reddit": {"campaign": "https://new.reddit.com/r/spacex/comments/bd2l28/crs17_launch_campaign_thread/", "launch": "https://www.reddit.com/r/spacex/comments/bjsn0v/rspacex_crs17_official_launch_discussion_updates", "media": "https://www.reddit.com/r/spacex/comments/bkc4d5/rspacex_crs17_media_thread_videos_images_gifs", "recovery": "https://www.reddit.com/r/spacex/comments/bjy7p5/rspacex_crs17_recovery_discussion_updates_thread"}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/46856594435_206c773b5a_o.jpg", "https://live.staticflickr.com/65535/47720639872_284e49381d_o.jpg", "https://live.staticflickr.com/65535/46856594755_88f1b22e50_o.jpg", "https://live.staticflickr.com/65535/47720639542_1b7c1a71b0_o.jpg", "https://live.staticflickr.com/65535/47720639732_e04b2a9ed7_o.jpg", "https://live.staticflickr.com/65535/32829382467_087d024428_o.jpg"]}, "presskit": "https://www.spacex.com/sites/spacex/files/crs-17_press_kit.pdf", "webcast": "https://youtu.be/AQFhX5TvP0M", "youtube_id": "AQFhX5TvP0M", "article": "https://spaceflightnow.com/2019/05/04/spacex-launches-space-station-resupply-mission-lands-rocket-on-drone-ship/", "wikipedia": "https://en.wikipedia.org/wiki/SpaceX_CRS-17", "static_fire_date_utc": "2019-04-27T07:23:00.000Z", "static_fire_date_unix": 1556349780, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "detail_s": "SpaceX's 17th Commercial Resupply Services mission for NASA out of a total of 20 contracted flights, this mission brings essential supplies to the International Space Station using SpaceX's reusable Dragon 1 spacecraft. The external payloads for this mission include Orbital Carbon Observatory 3 and Space Test Program-Houston 6. The Falcon 9 launches from SLC-40 at Cape Canaveral AFS. The booster was expected to land at LZ-1, however, due to the ongoing investigation and clean-up following the Crew Dragon testing incident, it is likely to land on OCISLY instead."}, {"crew": [], "ships": ["5ea6ed30080df4000697c913", "5ea6ed2f080df4000697c90e", "5ea6ed2f080df4000697c90b"], "capsules": ["5e9e2c5cf3591869b63b2670"], "payloads": ["5eb0e4cbb6c3bb0006eeb237"], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 78, "name": "CRS-17", "date_utc": "2019-05-04T06:48:00.000Z", "date_unix": 1556952480, "date_local": "2019-05-04T02:48:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a7f3591809313b2660", "flight": 1, "gridfins": true, "legs": true, "reused": false, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87d2effd86e000604b377", "fairings": {"reused": false, "recovery_attempt": true, "recovered": true, "ships": ["5ea6ed2f080df4000697c90c"]}, "links": {"patch": {"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png"}, "reddit": {"campaign": "https://www.reddit.com/comments/bjybrl", "launch": "ht
```

tps://www.reddit.com/r/spacex/comments/brfbic/rspacex\_starlink\_official\_launch\_discussion", "media": "https://www.reddit.com/r/spacex/comments/bp0479/rspacex\_starlink\_media\_thread\_videos\_images\_gifs", "recovery": "https://www.reddit.com/r/spacex/comments/bsaljm/rspacex\_starlink\_b10493\_recovery\_discussion\_and"}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/47926143711\_4a0b2680bf\_o.jpg", "https://live.staticflickr.com/65535/47926136902\_d8ce35223d\_o.jpg", "https://live.staticflickr.com/65535/47926144123\_2a828b66d5\_o.jpg", "https://live.staticflickr.com/65535/47926137127\_ef58152b6b\_o.jpg", "https://live.staticflickr.com/65535/47926137017\_e6d86fa820\_o.jpg"]}, "presskit": "https://www.spacex.com/sites/spacex/files/starlink\_press\_kit.pdf", "webcast": "https://www.youtube.com/watch?v=riBaVeDTEWI", "youtube\_id": "riBaVeDTEWI", "article": "https://spaceflightnow.com/2019/05/24/spacexs-first-60-starlink-broadband-satellites-deployed-in-orbit", "wikipedia": "https://en.wikipedia.org/wiki/Starlink\_(satellite\_constellation)", "static\_fire\_date\_utc": "2019-05-13T20:06:00.000Z", "static\_fire\_date\_unix": 1557777960, "net": false, "window": 9000, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failures": [], "details": "SpaceX will launch dozens of Starlink demonstration satellites from SLC-40, Cape Canaveral AFS. Starlink is a low Earth orbit broadband internet constellation developed and owned by SpaceX which will eventually consist of nearly 12 000 satellites and will provide low latency internet service to ground terminals around the world. Two prototype satellites, Microsats 2a and 2b, were launched from Vandenberg AFB in February 2018. The booster for this mission will land on OCISLY.", "crew": [], "ships": ["5ea6ed30080df4000697c913", "5ea6ed2f080df4000697c90c", "5ea6ed2f080df4000697c90e", "5ea6ed2f080df4000697c90b", "5ea6ed2e080df4000697c909"], "capsules": [], "payloads": ["5eb0e4ccb6c3bb0006eeb238"], "launchpad": "5e9e4501f509094ba4566f84", "flight\_number": 79, "name": "Starlink v0.9", "date\_utc": "2019-05-24T02:30:00.000Z", "date\_unix": 1558665000, "date\_local": "2019-05-23T22:30:00-04:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a5f3591833b13b2659", "flight": 3, "gridfins": true, "legs": true, "reused": true, "landing\_attempt": true, "landing\_success": true, "landing\_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto\_update": true, "tbd": false, "launch\_library\_id": null, "id": "5eb87d30ffd86e000604b378"}, {"fairings": {"reused": false, "recovery\_attempt": false, "recovered": null, "ships": []}, "links": {"patch": {"small": "https://images2.imgbox.com/4e/dd/qsIUVhlj\_o.png", "large": "https://images2.imgbox.com/c3/06/2irK3PGj\_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/buq487/radarsat\_constellation\_launch\_campaign\_thread", "launch": "https://www.reddit.com/r/spacex/comments/byp69f/rspacex\_radarsat\_constellation\_official\_launch", "media": null, "recovery": null}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/48052269657\_71764b0fb3\_o.jpg", "https://live.staticflickr.com/65535/48052269617\_34447619f0\_o.jpg", "https://live.staticflickr.com/65535/48052224858\_20ea2a411e\_o.jpg", "https://live.staticflickr.com/65535/48052269562\_325c117b81\_o.jpg", "https://live.staticflickr.com/65535/48052182461\_a419db6b84\_o.jpg", "https://live.staticflickr.com/65535/48052224733\_f89f1dd046\_o.jpg"]}, "presskit": "https://www.spacex.com/sites/spacex/files/radarsat\_constellation\_mission\_press\_kit.pdf", "webcast": "https://youtu.be/8A2nJd9Urk8", "youtube\_id": "8A2nJd9Urk8", "article": "https://spaceflightnow.com/2019/06/12/three-canadian-radar-surveillance-satellites-ride-spacex-rocket-into-orbit/", "wikipedia": "https://en.wikipedia.org/wiki/RADARSAT\_Constellation"}, "static\_fire\_date\_utc": "2019-06-08T08:39:00.000Z", "static\_fire\_date\_unix": 1559983140, "net": false, "window": 780, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failures": [], "details": "SpaceX is launching the three satellite RADARSAT Constellation Mission into Sun Synchronous orbit from SLC-4E, VAFB. The RCM spacecraft are synthetic aperture radar (SAR) Earth observation satellites built by the Canadian space company, MDA, for the Canadian Space Agency. This mission was delayed when the originally slated booster failed to land after CRS-16. The booster is expected to return to LZ-4.", "crew": [], "ships": [], "capsules": [], "payloads": ["5eb0e4ccb6c3bb0006eeb239"], "launchpad": "5e9e4502f509092b78566f87", "flight\_number": 80, "name": "RADARSAT Constellation", "date\_utc": "2019-06-12T14:17:00.000Z", "date\_unix": 1560349020, "date\_local": "2019-06-12T07:17:00-07:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a6f35918c0803b265c", "flight": 2, "gridfins": true

```

e,"legs":true,"reused":true,"landing_attempt":true,"landing_success":true,"lan
ding_type":"RTLS","landpad":"5e9e3032383ecb554034e7c9"}},{"auto_update":true,"t
bd":false,"launch_library_id":null,"id":"5eb87d31ffd86e000604b379"},{"fairing
s":{"reused":false,"recovery_attempt":true,"recovered":true,"ships":["5ea6ed2e
080df4000697c908"]},"links":{"patch":{"small":"https://images2.imgbox.com/b0/2
3/BvwaqoS0_o.png","large":"https://images2.imgbox.com/18/17/gCjLjHbl_o.pn
g"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/bw6aa8/stp2
_launch_campaign_thread/","launch":"https://www.reddit.com/r/spacex/comments/c
40a29/rspacex_stp2_official_launch_discussion_updates","media":"https://www.re
ddit.com/r/spacex/comments/c4ng3a/rspacex_stp2_media_thread_videos_images_gif
s","recovery":null},"flickr":{"small":[],"original":["https://live.staticflickr
r.com/65535/48129211778_83c1769305_o.jpg","https://live.staticflickr.com/6553
5/48129211908_8390c775b0_o.jpg","https://live.staticflickr.com/65535/481291828
36_fd53e5646b_o.jpg","https://live.staticflickr.com/65535/48129269897_22d854be
5c_o.jpg","https://live.staticflickr.com/65535/48129182631_572051790c_o.jp
g","https://live.staticflickr.com/65535/48129211693_d23b0287f1_o.jpg","http
s://live.staticflickr.com/65535/48129269942_eb9b5c25bc_o.jpg"]},"presskit":"ht
tps://www.spacex.com/sites/spacex/files/stp-2_press_kit.pdf","webcast":"http
s://youtu.be/WxH4CALhtiQ","youtube_id":"WxH4CALhtiQ","article":"https://spacef
lightnow.com/2019/06/25/falcon-heavy-launches-on-military-led-rideshare-missio
n-boat-catches-fairing","wikipedia":"https://en.wikipedia.org/wiki/Space_Test_
Program"},"static_fire_date_utc":"2019-06-19T21:52:00.000Z","static_fire_date_
unix":1560981120,"net":false,"window":14400,"rocket":"5e9d0d95eda69974db09d1e
d","success":true,"failures":[],"details":"Space Test Program 2 is a rideshare
managed by the U.S. Air Force Space and Missile Systems Center (SMC), launchin
g from LC-39A, KSC. Most of the spacecraft will be delivered into low Earth or
bit (LEO) in two deployment sequences separated by a second stage burn. These
LEO payloads include the six Taiwan and United States owned COSMIC-2 microsatt
ellites, the Planetary Society's LightSail-B demonstrator cubesat, and other
s. The third and final deployment will be the Air Force Research Lab's DSX sp
acecraft, which will be delivered to a medium Earth orbit (MEO). This mission
will reuse the side cores from Arabsat 6A, which will return to LZ-1, and LZ-
2. The new center core will boost back to land on OCISLY less than 40 km from
the launch site.","crew":[],"ships":["5ea6ed30080df4000697c913","5ea6ed2f080d
f4000697c90b","5ea6ed2e080df4000697c909","5ea6ed2e080df4000697c908","5ea6ed2f0
80df4000697c90e"],"capsules":[],"payloads":["5eb0e4ccb6c3bb0006eeb23a","5eb0e4
ccb6c3bb0006eeb23b","5eb0e4ccb6c3bb0006eeb23c","5eb0e4ccb6c3bb0006eeb23d","5eb
0e4ccb6c3bb0006eeb23e","5eb0e4cdb6c3bb0006eeb23f","5eb0e4cdb6c3bb0006eeb24
0","5eb0e4cdb6c3bb0006eeb241","5eb0e4cdb6c3bb0006eeb242","5eb0e4cdb6c3bb0006ee
b243","5eb0e4cdb6c3bb0006eeb244","5eb0e4cdb6c3bb0006eeb245","5eb0e4ceb6c3bb000
6eeb246","5eb0e4ceb6c3bb0006eeb247","5eb0e4ceb6c3bb0006eeb248","5eb0e4ceb6c3bb
0006eeb249"],"launchpad":"5e9e4502f509094188566f88","flight_number":81,"nam
e":"STP-2","date_utc":"2019-06-25T03:30:00.000Z","date_unix":1561433400,"date_
local":"2019-06-24T23:30:00-04:00","date_precision":"hour","upcoming":false,"c
ores":[{"core":"5e9e28a7f3591878063b2661","flight":1,"gridfins":true,"legs":tr
ue,"reused":false,"landing_attempt":true,"landing_success":false,"landing_typ
e":"ASDS","landpad":"5e9e3032383ecb6bb234e7ca"},{"core":"5e9e28a6f359183c413b2
65d","flight":2,"gridfins":true,"legs":true,"reused":true,"landing_attempt":tr
ue,"landing_success":true,"landing_type":"RTLS","landpad":"5e9e3032383ecb267a3
4e7c7"},{"core":"5e9e28a6f359188fd53b265e","flight":2,"gridfins":true,"legs":t
rue,"reused":true,"landing_attempt":true,"landing_success":true,"landing_typ
e":"RTLS","landpad":"5e9e3032383ecb90a834e7c8"}],"auto_update":true,"tbd":fals
e,"launch_library_id":null,"id":"5eb87d35ffd86e000604b37a"},{"fairings":nul
l,"links":{"patch":{"small":"https://images2.imgbox.com/89/54/61VCHZwd_o.pn
g","large":"https://images2.imgbox.com/08/a2/bPpNeIRJ_o.png"},"reddit":{"campa
ign":"https://www.reddit.com/r/spacex/comments/c8k6g5/crs18_launch_campaign_th
read","launch":"https://www.reddit.com/r/spacex/comments/ch2ml7/rspacex_crs18_
official_launch_discussion_updates","media":"https://www.reddit.com/r/spacex/
comments/chbr8i/rspacex_crs18_media_thread_videos_images_gifs/","recovery":nul
l},"flickr":{"small":[],"original":["https://live.staticflickr.com/65535/48380

```

511527\_190682b573\_o.jpg", "https://live.staticflickr.com/65535/48380370691\_7b0757a4d3\_o.jpg", "https://live.staticflickr.com/65535/48380511492\_51db1bf984\_o.jpg", "https://live.staticflickr.com/65535/48380370626\_a5d264c637\_o.jpg", "https://live.staticflickr.com/65535/48380511427\_97db52a9e3\_o.jpg"]}, "presskit": "https://www.spacex.com/sites/spacex/files/crs-18\_press\_kit.pdf", "webcast": "https://youtu.be/SlgrxVuP5jk", "youtube\_id": "SlgrxVuP5jk", "article": "https://spaceflightnow.com/2019/07/25/new-docking-port-spacesuit-and-supplies-en-route-to-space-station/", "wikipedia": "https://en.wikipedia.org/wiki/SpaceX\_CRS-18", "static\_fire\_date\_utc": "2019-07-19T15:31:00.000Z", "static\_fire\_date\_unix": 1563550260, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "SpaceX's 18th Commercial Resupply Services mission out of a total of 20 such contracted flights for NASA, this launch will deliver essential supplies to the International Space Station using the reusable Dragon 1 cargo spacecraft. The external payload for this mission is International Docking Adapter 3, replacing IDA-1 lost in SpaceX's CRS-7 launch failure. This mission will launch from SLC-40 at Cape Canaveral AFS on a Falcon 9, and the first-stage booster is expected to land back at CCAFS LZ-1.", "crew": [], "ships": [], "capsules": ["5e9e2c5cf359188bfb3b266b"], "payloads": ["5eb0e4ceb6c3bb0006eeb24a"], "launchpad": "5e9e4501f509094ba4566f84", "flight\_number": 82, "name": "CRS-18", "date\_utc": "2019-07-25T22:01:00.000Z", "date\_unix": 1564092060, "date\_local": "2019-07-25T18:01:00-04:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a7f3591809313b2660", "flight": 2, "gridfins": true, "legs": true, "reused": true, "landing\_attempt": true, "landing\_success": true, "landing\_type": "RTL", "landpad": "5e9e3032383ecb267a34e7c7"}], "auto\_update": true, "tbd": false, "launch\_library\_id": null, "id": "5eb87d36ffd86e000604b37b"}, {"fairings": {"reused": false, "recovery\_attempt": true, "recovered": true, "ships": ["5ea6ed2e080df4000697c908"]}, "links": {"patch": {"small": "https://images2.imgbox.com/f1/4a/WAKSmKfY\_o.png", "large": "https://images2.imgbox.com/a0/ab/XUoByiuR\_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/cjaawx/amos17\_launch\_campaign\_thread", "launch": "https://www.reddit.com/r/spacex/comments/cmmedgn/rspacex\_amos17\_official\_launch\_discussion\_updates", "media": "https://www.reddit.com/r/spacex/comments/cmppne/rspacex\_amos17\_media\_thread\_videos\_images\_gifs", "recovery": null}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/48478269312\_58dd3dc446\_o.jpg", "https://live.staticflickr.com/65535/48478269747\_353dcb2e62\_o.jpg", "https://live.staticflickr.com/65535/48478119901\_2de0441026\_o.jpg", "https://live.staticflickr.com/65535/48478120646\_ab72c2c6c3\_o.jpg", "https://live.staticflickr.com/65535/48478120031\_5aaelf6131\_o.jpg", "https://live.staticflickr.com/65535/48478269442\_08479bed36\_o.jpg"]}, "presskit": "https://www.spacex.com/sites/spacex/files/amos-17\_mission\_press\_kit\_8\_6\_2019.pdf", "webcast": "https://youtu.be/fZh82-WcCuo", "youtube\_id": "fZh82-WcCuo", "article": "https://spaceflightnow.com/2019/08/07/spacex-launches-israeli-owned-telecom-satellite/", "wikipedia": "https://en.wikipedia.org/wiki/Spacecom", "static\_fire\_date\_utc": "2019-08-01T00:00:00.000Z", "static\_fire\_date\_unix": 1564617600, "net": false, "window": 5280, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "SpaceX will launch Boeing built Amos-17, a geostationary communications satellite for Israeli company Spacecom. The satellite will be delivered to GTO from KSC LC-39A or possibly CCAFS SLC-40, and will replace the defunct Amos-5 at 17\u00b0 E. Amos-17 carries multi-band high throughput and regional beams servicing Africa, Europe and the Middle East. The cost of this launch is covered for Spacecom by SpaceX credit following the Amos-6 incident. A recovery of the booster for this mission is not expected.", "crew": [], "ships": ["5ea6ed2e080df4000697c908", "5ea6ed2e080df4000697c909"], "capsules": [], "payloads": ["5eb0e4cfb6c3bb0006eeb24b"], "launchpad": "5e9e4501f509094ba4566f84", "flight\_number": 83, "name": "Amos-17", "date\_utc": "2019-08-06T22:52:00.000Z", "date\_unix": 1565131920, "date\_local": "2019-08-06T18:52:00-04:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a5f359181eed3b2657", "flight": 3, "gridfins": false, "legs": false, "reused": true, "landing\_attempt": false, "landing\_success": null, "landing\_type": null, "landpad": null}], "auto\_update": true, "tbd": false, "launch\_library\_id": null, "id": "5eb87d37ffd86e000604b37c"}, {"fairings": {"reused": true, "recovery\_attempt": false, "recovered": false, "ships": []}, "link

s":{"patch":{"small":"https://imgur.com/BrW201S.png","large":"https://imgur.com/573IfGk.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comment/s/dgqcb6/2nd\_starlink\_mission\_launch\_campaign\_thread","launch":"https://www.reddit.com/r/spacex/comments/du07rt/rspacex\_starlink1\_official\_launch\_discussion","media":"https://www.reddit.com/r/spacex/comments/durx53/rspacex\_starlink1\_media\_thread\_videos\_images","recovery":"https://www.reddit.com/r/spacex/comments/dulduu/starlink1\_booster\_and\_fairing\_recovery\_discussion"},"flickr":{"small":[],"original":["https://live.staticflickr.com/65535/49051988851\_0b422e1603\_o.jpg","https://live.staticflickr.com/65535/49051988746\_1a97e38ca8\_o.jpg","https://live.staticflickr.com/65535/49052201452\_c3b01e37f0\_o.jpg","https://live.staticflickr.com/65535/49051988636\_3714a78787\_o.jpg","https://live.staticflickr.com/65535/49051477088\_d86104481d\_o.jpg"]},"presskit":"https://www.spacex.com/sites/spacex/files/starlink\_press\_kit\_nov2019.pdf","webcast":"https://youtube.be/pIDuv0Ta0XQ","youtube\_id":"pIDuv0Ta0XQ","article":"https://spaceflightnow.com/2019/11/11/successful-launch-continues-deployment-of-spacexs-starlink-network","wikipedia":"https://en.wikipedia.org/wiki/Starlink\_(satellite\_constellation)","static\_fire\_date\_utc":"2019-11-11T12:08:00.000Z","static\_fire\_date\_unix":1573474080,"net":false,"window":0,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"details":"This mission will launch the first batch of Starlink version 1.0 satellites, from SLC-40, Cape Canaveral AFS. They are expected to contribute to the 550 km x 53 shell. It is the second Starlink launch overall. Starlink is a low Earth orbit broadband internet constellation developed and owned by SpaceX which will eventually consist of nearly 12 000 satellites and will provide low latency internet service to ground terminals around the world. The booster for this mission is expected to land on OCISLY."},"crew":[],"ships":["5ea6ed2e080df4000697c908","5ea6ed30080df4000697c913","5ea6ed2e080df4000697c909","5ea6ed2f080df4000697c90d"],"capsules":[],"payloads":["5eb0e4cfb6c3bb0006eeb24c"],"launchpad":"5e9e4501f509094ba4566f84","flight\_number":84,"name":"Starlink-1","date\_utc":"2019-11-11T14:56:00.000Z","date\_unix":1573484160,"date\_local":"2019-11-11T09:56:00-05:00","date\_precision":"hour","upcoming":false,"cores":[{"core":"5e9e28a5f3591809c03b2658","flight":4,"gridfins":true,"legs":true,"reused":true,"landing\_attempt":true,"landing\_success":true,"landing\_type":"ASDS","landpad":"5e9e3032383ecb6bb234e7ca"}],"auto\_update":true,"tbd":false,"launch\_library\_id":null,"id":"5eb87d39fffd86e000604b37d"},{"fairings":null,"links":{"patch":{"small":"https://images2.imgbox.com/05/f9/FQWx8g9k\_o.png","large":"https://images2.imgbox.com/1f/40/3mc90SdH\_o.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/e0upb3/crs19\_launch\_campaign\_thread/","launch":"https://www.reddit.com/r/spacex/comments/e5r8hj/rspacex\_crs19\_official\_launch\_discussion\_updates","media":"https://www.reddit.com/r/spacex/comments/e6ln0m/rspacex\_crs19\_media\_thread\_videos\_images\_gifs","recovery":"https://www.reddit.com/r/spacex/comments/e6lbzy/rspacex\_crs19\_booster\_recovery\_discussion\_updates"},"flickr":{"small":[],"original":["https://live.staticflickr.com/65535/49178460143\_e3ae2bd506\_o.jpg","https://live.staticflickr.com/65535/49178954221\_8544835325\_o.jpg","https://live.staticflickr.com/65535/49179161792\_9f1801a963\_o.jpg","https://live.staticflickr.com/65535/49178460368\_62eb945db8\_o.jpg","https://live.staticflickr.com/65535/49184948561\_ce20b38bc6\_o.jpg","https://live.staticflickr.com/65535/49185149122\_00a7fa573d\_o.jpg"]},"presskit":"https://www.spacex.com/sites/spacex/files/crs-19\_mission\_press\_kit.pdf","webcast":"https://youtube.be/-aoAGdYXp\_4","youtube\_id":"-aoAGdYXp\_4","article":"https://spaceflightnow.com/2019/12/05/dragon-soars-on-research-and-resupply-flight-to-international-space-station","wikipedia":"https://en.wikipedia.org/wiki/SpaceX\_CRS-19"},"static\_fire\_date\_utc":"2019-11-26T17:04:00.000Z","static\_fire\_date\_unix":1574787840,"net":false,"window":0,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"details":"SpaceX's 19th Crew Resupply Mission on behalf of NASA with a total of 20 contracted flights, this mission brings essential supplies to the International Space Station using SpaceX's reusable Dragon spacecraft. The external payloads for this mission include the Hyperspectral Imager Suite and a lithium-ion battery. Falcon 9 and Dragon will launch from SLC-40, Cape Canaveral AFS. The mission will be complete with return and recovery of the Dragon capsule and down cargo."},"crew":

```
[{"ships":["5ea6ed2f080df4000697c90d"],"capsules":["5e9e2c5bf3591880643b2669"],
"payloads":["5eb0e4cfb6c3bb0006eeb24d"],"launchpad":"5e9e4501f509094ba4566f84",
"flight_number":85,"name":"CRS-19","date_utc":"2019-12-05T17:29:23.000Z",
"date_unix":1575566963,"date_local":"2019-12-05T12:29:23-05:00","date_precision":"hour",
"upcoming":false,"cores":[{"core":"5e9e28a7f359187afd3b2662","flight":1,
"gridfins":true,"legs":true,"reused":false,"landing_attempt":true,"landing_success":true,
"landing_type":"ASDS","landpad":"5e9e3032383ecb6bb234e7ca"}],
"auto_update":true,"tbd":false,"launch_library_id":null,"id":"5eb87d39ffd86e000604b37e"},
{"fairings":{"reused":false,"recovery_attempt":true,"recovered":false,"ships":["5ea6ed2e080df4000697c908"]},
"links":{"patch":{"small":"https://images2.imgbox.com/3c/e7/PotxLenG_o.png",
"large":"https://images2.imgbox.com/49/eb/evBlWi95_o.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/e5w6i8/jcsatl8kacificl_launch_campaign_thread",
"launch":"https://www.reddit.com/r/spacex/comments/ebfr9t/rspacex_jcsatl8kacificl_official_launch",
"media":"https://www.reddit.com/r/spacex/comments/ebn4g5/rspacex_jcsatl8kacificl_media_thread_videos",
"recovery":"https://www.reddit.com/r/spacex/comments/ec48p3/jscatl8kacificl_recovery_discussion_and_updates"},"flickr":{"small":[],
"original":["https://live.staticflickr.com/65535/49235364922_e55ceb61be_o.jpg",
"https://live.staticflickr.com/65535/49235136806_e5a3774904_o.jpg",
"https://live.staticflickr.com/65535/49235137056_585dc050e7_o.jpg"]},
"presskit":"https://www.spacex.com/sites/spacex/files/jcsatl8kacificl_mission_press_kit.pdf",
"webcast":"https://youtu.be/sbXgZg9JmkI","youtube_id":"sbXgZg9JmkI","article":"https://spaceflightnow.com/2019/12/17/startup-launches-broadband-satellite-on-spacex-rocket-to-connect-pacific-islands",
"wikipedia":"https://en.wikipedia.org/wiki/JSAT_(satellite_constellation)"},
"static_fire_date_utc":"2019-12-13T12:34:00.000Z","static_fire_date_unix":1576240440,"net":false,"window":5280,
"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"details":"SpaceX will launch the Boeing built dual payload satellite to geostationary transfer orbit from XXXX. JCSat 18 is a mobile broadband communications payload built for Sky Perfect JSAT Corporation of Japan and will service Asia Pacific. Kacific 1 is a high throughput broadband internet payload built for Kacific Broadband Satellites and will service certain high demand areas of Southeast Asia and the Pacific. Both payloads share a single chassis. The booster for this mission is expected to land on OCISLY.",
"crew":[],"ships":["5ea6ed2e080df4000697c908","5ea6ed2e080df4000697c907","5ea6ed30080df4000697c913","5ea6ed2f080df4000697c90d"],
"capsules":[],"payloads":["5eb0e4cfb6c3bb0006eeb24e"],
"launchpad":"5e9e4501f509094ba4566f84","flight_number":86,"name":"JCSat 18 / Kacific 1",
"date_utc":"2019-12-17T00:10:00.000Z","date_unix":1576541400,"date_local":"2019-12-16T19:10:00-05:00",
"date_precision":"hour","upcoming":false,"cores":[{"core":"5e9e28a7f3591809313b2660","flight":3,
"gridfins":true,"legs":true,"reused":true,"landing_attempt":true,"landing_success":true,"landing_type":"ASDS",
"landpad":"5e9e3032383ecb6bb234e7ca"}],
"auto_update":true,"tbd":false,"launch_library_id":null,"id":"5eb87d3bfdd86e000604b37f"},
{"fairings":{"reused":false,"recovery_attempt":true,"recovered":false,"ships":["5ea6ed2e080df4000697c908"]},
"links":{"patch":{"small":"https://imgur.com/BrW201S.png",
"large":"https://imgur.com/573IfGk.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/efqnvq/starlink2_launch_campaign_thread",
"launch":"https://www.reddit.com/r/spacex/comments/eko0hr/rspacex_starlink_2_official_launch_discussion",
"media":"https://www.reddit.com/r/spacex/comments/ekybbz/rspacex_starlink2_media_thread_videos_images_gifs",
"recovery":"https://www.reddit.com/r/spacex/comments/elgp5k/rspacex_starlink_l2_recovery_discussion_updates"},"flickr":{"small":[],
"original":["https://live.staticflickr.com/65535/49346907238_b27507e4d9_o.jpg",
"https://live.staticflickr.com/65535/49347368761_f4e45bd38a_o.jpg",
"https://live.staticflickr.com/65535/49347368406_8f9acfle2a_o.jpg"]},
"presskit":"https://www.spacex.com/sites/spacex/files/starlink_press_kit_jan2020.pdf",
"webcast":"https://youtu.be/HwyXo6T7jC4","youtube_id":"HwyXo6T7jC4",
"article":"https://spaceflightnow.com/2020/01/07/spacex-launches-more-starlink-satellites-tests-design-change-for-astronomers",
"wikipedia":"https://en.wikipedia.org/wiki/Starlink_(satellite_constellation)"},
"static_fire_date_utc":"2020-01-04T11:45:00.000Z","static_fire_date_unix":1578138300,"net":false}
```



```

e,"window":0,"rocket":"5e9d0d95eda69973a809dlec","success":true,"failures":
[],"details":"This mission will launch the second batch of Starlink version 1.
0 satellites, from SLC-40, Cape Canaveral AFS. They are expected to contribute
to the 550 km x 53\xc2\xba shell. It is the third Starlink launch overall. Sta
rlink is a low Earth orbit broadband internet constellation developed and owne
d by SpaceX which will eventually consist of nearly 12 000 satellites and will
provide low latency internet service to ground terminals around the world. The
booster for this mission is expected to land on OCISLY.", "crew":[],"ships":["5
ea6ed2e080df4000697c908","5ea6ed30080df4000697c913","5ea6ed2e080df4000697c90
9","5ea6ed2f080df4000697c90b","5ea6ed2f080df4000697c90d"],"capsules":[],"paylo
ads":["5eb0e4cfb6c3bb0006eeb24f"],"launchpad":"5e9e4501f509094ba4566f84","flig
ht_number":87,"name":"Starlink-2","date_utc":"2020-01-07T02:19:00.000Z","date_
unix":1578363540,"date_local":"2020-01-06T21:19:00-05:00","date_precision":"ho
ur","upcoming":false,"cores":[{"core":"5e9e28a5f3591833b13b2659","flight":4,"g
ridfins":true,"legs":true,"reused":true,"landing_attempt":true,"landing_succes
s":true,"landing_type":"ASDS","landpad":"5e9e3032383ecb6bb234e7ca"}],"auto_upd
ate":true,"tbd":false,"launch_library_id":null,"id":"5eb87d3cffd86e000604b38
0"}, {"fairings":{"reused":null,"recovery_attempt":null,"recovered":null,"ship
s":[]},"links":{"patch":{"small":"https://images2.imgbox.com/4f/d2/kTjuhrb0_o.
png","large":"https://images2.imgbox.com/9d/04/DNXjbXDY_o.png"},"reddit":{"cam
paign":"https://www.reddit.com/r/spacex/comments/ek7eny/in_flight_abort_test_l
aunch_campaign_thread","launch":"https://www.reddit.com/r/spacex/comments/eq24
ap/rspacex_inflight_abort_test_official_launch","media":"https://www.reddit.co
m/r/spacex/comments/eq7pg4/rspacex_inflight_abort_test_media_thread_video
s/"},"recovery":null},"flickr":{"small":[],"original":["https://live.staticflic
kr.com/65535/49421605028_b7ba890f0e_o.jpg","https://live.staticflickr.com/6553
5/49422067976_cda2b8f021_o.jpg","https://live.staticflickr.com/65535/494220678
76_13ed519fe6_o.jpg","https://live.staticflickr.com/65535/49421604803_0093a5d2
cb_o.jpg","https://live.staticflickr.com/65535/4942294602_0d5e7d8e82_o.jp
g","https://live.staticflickr.com/65535/49422068111_2ed613b19b_o.jpg"]},"press
kit":"https://www.spacex.com/sites/spacex/files/in-flight_abort_test_press_ki
t.pdf","webcast":"https://youtu.be/mhrkdHshb3E","youtube_id":"mhrkdHshb3E","ar
ticle":"https://spaceflightnow.com/2020/01/19/spacex-aces-final-major-test-bef
ore-first-crew-mission","wikipedia":"https://en.wikipedia.org/wiki/Commercial_
Crew_Development"},"static_fire_date_utc":"2020-01-11T09:42:00.000Z","static_f
ire_date_unix":1578735720,"net":false,"window":14400,"rocket":"5e9d0d95eda6997
3a809dlec","success":true,"failures":[],"details":"SpaceX will launch a Crew D
ragon capsule from LC-39A, KSC on a fully fueled Falcon 9 rocket and then trig
ger the launch escape system during the period of maximum dynamic pressure. As
part of NASA\'a Commercial Crew Integrated Capability program (CCiCap) this te
st will contribute valuable data to help validate Crew Dragon and its launch a
bort system. The Crew Dragon will be recovered by GO Searcher after splashdown
in the Atlantic Ocean. This flight does not go to orbit. The booster and upper
stage are expected to break up following capsule separation and there will be
no landing attempt.", "crew":[],"ships":["5ea6ed2f080df4000697c90c"],"capsule
s":["5e9e2c5df359184c9a3b2672"],"payloads":["5eb0e4d0b6c3bb0006eeb250"],"launc
hpad":"5e9e4502f509094188566f88","flight_number":88,"name":"Crew Dragon In Fli
ght Abort Test","date_utc":"2020-01-19T14:00:00.000Z","date_unix":157944240
0,"date_local":"2020-01-19T09:00:00-05:00","date_precision":"hour","upcoming":
false,"cores":[{"core":"5e9e28a5f359182b023b2656","flight":4,"gridfins":fals
e,"legs":false,"reused":true,"landing_attempt":false,"landing_success":null,"l
anding_type":null,"landpad":null}], "auto_update":true,"tbd":false,"launch_libr
ary_id":null,"id":"5eb87d3dffd86e000604b381"}, {"fairings":{"reused":false,"rec
overy_attempt":true,"recovered":true,"ships":["5ea6ed2e080df4000697c908"]},"li
nks":{"patch":{"small":"https://imgur.com/BrW201S.png","large":"https://imgur.
com/573IfGk.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/commen
ts/eof5pr/starlink3_launch_campaign_thread/","launch":"https://www.reddit.com/
r/spacex/comments/eudve3/rspacex_starlink_3_official_launch_discussion/"},"medi
a":"https://www.reddit.com/r/spacex/comments/evjdws/rspacex_starlink3_media_th
read_videos_images_gifs/"},"recovery":"https://www.reddit.com/r/spacex/comment

```

```

s/evnyij/rspacex_starlink3_recovery_discussion_updates/"},"flickr":{"small":
[],"original":["https://live.staticflickr.com/65535/49461673512_f4e01c8b27_o.j
pg","https://live.staticflickr.com/65535/49461673792_b1804c2a2b_o.jpgg","http
s://live.staticflickr.com/65535/49461673707_cb7fc4a3a8_o.jpgg","https://live.st
aticflickr.com/65535/49461673552_65cc294f82_o.jpgg"]},"presskit":"https://www.s
pacex.com/sites/spacex/files/starlink_press_kit_jan272020.pdf","webcast":"http
s://youtu.be/1KmBDCiL7MU","youtube_id":"1KmBDCiL7MU","article":"https://spacef
lightnow.com/2020/01/29/spacex-boosts-60-more-starlink-satellites-into-orbit-a
fter-weather-delays/","wikipedia":"https://en.wikipedia.org/wiki/SpaceX_Starli
nk"},"static_fire_date_utc":"2020-01-20T13:17:00.000Z","static_fire_date_uni
x":1579526220,"net":false,"window":0,"rocket":"5e9d0d95eda69973a809dlec","succ
ess":true,"failures":[],"details":"This mission will launch the third batch of
Starlink version 1.0 satellites, from SLC-40, Cape Canaveral AFS. It is the fo
urth Starlink launch overall. The satellites will be delivered to low Earth or
bit and will spend a few weeks maneuvering to their operational altitude of 55
0 km. The booster for this mission is expected to land on OCISLY.","crew":
[],"ships":["5ea6ed2e080df4000697c908","5ea6ed2e080df4000697c907","5ea6ed30080
df4000697c913","5ea6ed2f080df4000697c90b","5ea6ed2f080df4000697c90d"],"capsule
s":[],"payloads":["5eb0e4d0b6c3bb0006eeb251"],"launchpad":"5e9e4501f509094ba45
66f84","flight_number":89,"name":"Starlink-3","date_utc":"2020-01-29T14:06:00.
000Z","date_unix":1580306760,"date_local":"2020-01-29T09:06:00-05:00","date_pr
ecision":"hour","upcoming":false,"cores":[{"core":"5e9e28a6f35918c0803b265
c","flight":3,"gridfins":true,"legs":true,"reused":true,"landing_attempt":tru
e,"landing_success":true,"landing_type":"ASDS","landpad":"5e9e3032383ecb6bb234
e7ca"}],"auto_update":true,"tbd":false,"launch_library_id":null,"id":"5eb87d3f
ffd86e000604b382"},{"fairings":{"reused":false,"recovery_attempt":true,"recove
red":false,"ships":["5ea6ed2e080df4000697c908"]},"links":{"patch":{"small":"ht
tps://imgur.com/BrW201S.png","large":"https://imgur.com/573IfGk.png"},"reddi
t":{"campaign":"https://www.reddit.com/r/spacex/comments/ex0ilm/starlink4_laun
ch_campaign_thread/","launch":"https://www.reddit.com/r/spacex/comments/f4d8s
g/rspacex_starlink4_official_launch_discussion/","media":"https://www.reddit.c
om/r/spacex/comments/f56mb4/rspacex_starlink4_media_thread_videos_images_gif
s/","recovery":"https://www.reddit.com/r/spacex/comments/f5es7j/rspacex_starli
nk4_recovery_discussion_updates/"},"flickr":{"small":[],"original":["https://l
ive.staticflickr.com/65535/49549022017_18738a2552_o.jpgg","https://live.staticf
lickr.com/65535/49548795221_edd6dc7ef6_o.jpgg","https://live.staticflickr.com/6
5535/49548795401_93ef80caf5_o.jpgg","https://live.staticflickr.com/65535/495490
22057_d4dbd6a492_o.jpgg"]},"presskit":"https://www.spacex.com/sites/spacex/file
s/fifth_starlink_press_kit.pdf","webcast":"https://youtu.be/8xeX62mLcf8","yout
ube_id":"8xeX62mLcf8","article":"https://spaceflightnow.com/2020/02/17/spacex-
delivers-more-starlink-satellites-to-orbit-booster-misses-drone-ship-landin
g/","wikipedia":"https://en.wikipedia.org/wiki/SpaceX_Starlink"},"static_fire_
date_utc":"2020-02-14T08:31:00.000Z","static_fire_date_unix":1581669060,"net":
false,"window":0,"rocket":"5e9d0d95eda69973a809dlec","success":true,"failure
s":[],"details":"This mission will launch the fourth batch of Starlink version
1.0 satellites, from SLC-40, Cape Canaveral AFS. It is the fifth Starlink laun
ch overall. The satellites will be delivered to low Earth orbit and will spend
a few weeks maneuvering to their operational altitude of 550 km. The booster f
or this mission is expected to land on OCISLY.","crew":[],"ships":["5ea6ed2e08
0df4000697c908","5ea6ed2e080df4000697c907","5ea6ed2f080df4000697c90b","5ea6ed3
0080df4000697c913","5ea6ed2f080df4000697c90d"],"capsules":[],"payloads":["5eb0
e4d0b6c3bb0006eeb252"],"launchpad":"5e9e4501f509094ba4566f84","flight_number":
90,"name":"Starlink-4","date_utc":"2020-02-17T15:05:55.000Z","date_unix":15819
51955,"date_local":"2020-02-17T10:05:55-05:00","date_precision":"hour","upcomi
ng":false,"cores":[{"core":"5e9e28a7f3591809313b2660","flight":4,"gridfins":tr
ue,"legs":true,"reused":true,"landing_attempt":true,"landing_success":false,"l
anding_type":"ASDS","landpad":"5e9e3032383ecb6bb234e7ca"}],"auto_update":tru
e,"tbd":false,"launch_library_id":null,"id":"5eb87d41ffd86e000604b383"},{"fair
ings":null,"links":{"patch":{"small":"https://images2.imgbox.com/53/22/dh0XSLX
O_o.png","large":"https://images2.imgbox.com/15/2b/NAcsTEB6_o.png"},"reddit":

```

```

{"campaign": "https://www.reddit.com/r/spacex/comments/ezn6n0/crs20_launch_campaign_thread", "launch": "https://www.reddit.com/r/spacex/comments/fe8pcj/rspacex_crs20_official_launch_discussion_updates/", "media": "https://www.reddit.com/r/spacex/comments/fes64p/rspacex_crs20_media_thread_videos_images_gifs/", "recovery": null, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/49635401403_96f9c322dc_o.jpg", "https://live.staticflickr.com/65535/49636202657_e81210a3ca_o.jpg", "https://live.staticflickr.com/65535/49636202572_8831c5a917_o.jpg", "https://live.staticflickr.com/65535/49635401423_e0bef3e82f_o.jpg", "https://live.staticflickr.com/65535/49635985086_660be7062f_o.jpg"]}, "presskit": "https://www.spacex.com/sites/spacex/files/crs-20_mission_press_kit.pdf", "webcast": "https://youtu.be/1MkcWK2PnsU", "youtube_id": "1MkcWK2PnsU", "article": "https://spaceflightnow.com/2020/03/07/late-night-launch-of-spacex-cargo-ship-marks-end-of-an-era/", "wikipedia": "https://en.wikipedia.org/wiki/SpaceX_CRS-20", "static_fire_date_utc": "2020-03-01T10:20:00.000Z", "static_fire_date_unix": 1583058000, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "SpaceX's 20th and final Crew Resupply Mission under the original NASA CRS contract, this mission brings essential supplies to the International Space Station using SpaceX's reusable Dragon spacecraft. It is the last scheduled flight of a Dragon 1 capsule. (CRS-21 and up under the new Commercial Resupply Services 2 contract will use Dragon 2.) The external payload for this mission is the Bartolomeo ISS external payload hosting platform. Falcon 9 and Dragon will launch from SLC-40, Cape Canaveral Air Force Station and the booster will land at LZ-1. The mission will be complete with return and recovery of the Dragon capsule and down cargo.", "crew": [], "ships": [], "capsules": ["5e9e2c5cf359185d753b266f"], "payloads": ["5eb0e4d0b6c3bb0006eeb253"], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 91, "name": "CRS-20", "date_utc": "2020-03-07T04:50:31.000Z", "date_unix": 1583556631, "date_local": "2020-03-06T23:50:31-05:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a7f359187afd3b2662", "flight": 2, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "RTLS", "landpad": "5e9e3032383ecb267a34e7c7"}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87d42ffd86e000604b384", {"fairings": {"reused": true, "recovery_attempt": true, "recovered": false, "ships": ["5ea6ed2e080df400697c908"]}, "links": {"patch": {"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/f8awv0/starlink5_launch_campaign_thread/", "launch": "https://www.reddit.com/r/spacex/comments/fhymy3/rspacex_starlink_5_official_launch_discussion/", "media": "https://www.reddit.com/r/spacex/comments/fizrn1/rspacex_starlink5_media_thread_videos_images_gifs/", "recovery": null, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/49673373182_93a517e140_o.jpg", "https://live.staticflickr.com/65535/49672551378_fabc17ef6f_o.jpg", "https://live.staticflickr.com/65535/49672551303_564ce21658_o.jpg"]}, "presskit": "https://www.spacex.com/sites/spacex/files/sixth_starlink_press_kit.pdf", "webcast": "https://youtu.be/I4sMhHbHYXM", "youtube_id": "I4sMhHbHYXM", "article": "https://spaceflightnow.com/2020/03/18/falcon-9-rocket-overcomes-engine-failure-to-deploy-starlink-satellites/", "wikipedia": "https://en.wikipedia.org/wiki/Starlink"}, "static_fire_date_utc": "2020-03-13T18:37:00.000Z", "static_fire_date_unix": 1584124620, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "The sixth Starlink launch overall and the fifth operational batch of Starlink satellites will launch into orbit aboard a Falcon 9 rocket. This mission is expected to deploy all sixty satellites into an elliptical orbit about fifteen minutes into flight. In the weeks following launch the satellites are expected to utilize their onboard ion thrusters to raise their orbits to 550 km in three groups of 20, making use of precession rates to separate themselves into three planes. The booster will land on a drone ship approximately 628 km downrange.", "crew": [], "ships": ["5ea6ed30080df400697c913", "5ea6ed2f080df4000697c90d"], "capsules": [], "payloads": ["5eb0e4d0b6c3bb0006eeb254"], "launchpad": "5e9e4502f509094188566f88", "flight_number": 92, "name": "Starlink-5", "date_utc": "2020-03-18T12:16:00.000Z", "date_unix": 1584533760, "date_local": "2020-03-18T08:16:00-04:00", "date_precision": "hour", "upcoming":

```

```

false,"cores":[{"core":"5e9e28a5f3591809c03b2658","flight":5,"gridfins":true,"legs":true,"reused":true,"landing_attempt":true,"landing_success":false,"landing_type":"ASDS","landpad":"5e9e3032383ecb6bb234e7ca"}],"auto_update":true,"tbd":false,"launch_library_id":null,"id":"5eb87d43ffd86e000604b385"},{"fairings":{"reused":true,"recovery_attempt":false,"recovered":null,"ships":[{"5ea6ed2e080df4000697c908","5ea6ed2f080df4000697c90d"}],"links":{"patch":{"small":"https://imgur.com/BrW201S.png","large":"https://imgur.com/573IfGk.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/fxkc7k/starlink6_launch_campaign_thread/","launch":"https://www.reddit.com/r/spacex/comments/g5jmx0/rspacex_starlink_6_official_launch_discussion/","media":"https://www.reddit.com/r/spacex/comments/g5fqka/rspacex_starlink6_media_thread_photographer/","recovery":"https://www.reddit.com/r/spacex/comments/g6kztd/rspacex_starlink_v1_1_6_recovery_discussion/"},"flickr":{"small":[],"original":["https://live.staticflickr.com/65535/49673373182_93a517e140_o.jpg","https://live.staticflickr.com/65535/49672551378_fabc17ef6f_o.jpg","https://live.staticflickr.com/65535/49672551303_564ce21658_o.jpg","https://live.staticflickr.com/65535/49806771628_fef13c852d_o.jpg","https://live.staticflickr.com/65535/49807633862_e5abcb41a6_o.jpg"]},"presskit":"https://www.spacex.com/sites/spacex/files/seventh_starlink_mission_overview.pdf","webcast":"https://youtu.be/wSge0I7pwFI","youtube_id":"wSge0I7pwFI","article":"https://spaceflightnow.com/2020/04/22/spacexs-starlink-network-surpasses-400-satellite-mark-after-successful-launch/","wikipedia":"https://en.wikipedia.org/wiki/Starlink"},"static_fire_date_utc":"2020-04-17T11:48:00.000Z","static_fire_date_unix":1587687810,"net":false,"window":0,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"details":"This mission will launch the sixth batch of operational Starlink satellites, which are expected to be version 1.0, from SLC-40, Cape Canaveral AFS. It is the seventh Starlink launch overall. The satellites will be delivered to low Earth orbit and will spend a few weeks maneuvering to their operational altitude of 550 km. The booster for this mission is expected to land on OCISLY."},"crew":[],"ships":["5ea6ed30080df4000697c913","5ea6ed2e080df4000697c908","5ea6ed2e080df4000697c907","5ee68c683c228f36bd5809b5"]},"capsules":[],"payloads":["5eb0e4d1b6c3bb0006eb255"]},"launchpad":"5e9e4502f509094188566f88","flight_number":93,"name":"Starlink-6","date_utc":"2020-04-22T19:30:00.000Z","date_unix":1587583800,"date_local":"2020-04-22T15:30:00-04:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5e9e28a6f35918c0803b265c","flight":4,"gridfins":true,"legs":true,"reused":true,"landing_attempt":true,"landing_success":true,"landing_type":"ASDS","landpad":"5e9e3032383ecb6bb234e7ca"}],"auto_update":true,"tbd":false,"launch_library_id":null,"id":"5eb87d44ffd86e000604b386"},{"fairings":null,"links":{"patch":{"small":"https://images2.imgbox.com/eb/0f/Vev7xkUX_o.png","large":"https://images2.imgbox.com/ab/79/Wyc9K7fv_o.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/fjff6rr/dm2_launch_campaign_thread/","launch":"https://www.reddit.com/r/spacex/comments/glwz6n/rspacex_cctcap_demonstration_mission_2_general","media":"https://www.reddit.com/r/spacex/comments/gplgf5/rspacex_dm2_media_thread_photographer_contest/","recovery":"https://www.reddit.com/r/spacex/comments/gu5gkd/cctcap_demonstration_mission_2_stage_1_recovery/"},"flickr":{"small":[],"original":["https://live.staticflickr.com/65535/49927519643_b43c6d4c44_o.jpg","https://live.staticflickr.com/65535/49927519588_8a39a3994f_o.jpg","https://live.staticflickr.com/65535/49928343022_6fb33cbd9c_o.jpg","https://live.staticflickr.com/65535/49934168858_cacb00d790_o.jpg","https://live.staticflickr.com/65535/49934682271_fd6a31becc_o.jpg","https://live.staticflickr.com/65535/49956109906_f88d815772_o.jpg","https://live.staticflickr.com/65535/49956109706_cffa847208_o.jpg","https://live.staticflickr.com/65535/49956109671_859b323ede_o.jpg","https://live.staticflickr.com/65535/49955609618_4cca01d581_o.jpg","https://live.staticflickr.com/65535/49956396622_975c116b71_o.jpg","https://live.staticflickr.com/65535/4995609378_9b77e5c771_o.jpg","https://live.staticflickr.com/65535/49956396262_ef41c1d9b0_o.jpg"]},"presskit":"https://www.nasa.gov/sites/default/files/atoms/files/commercialcrew_press_kit.pdf","webcast":"https://youtu.be/xY96v00IcK4","youtube_id":"xY96v00IcK4","article":"https://spaceflightnow.com/2020/05/30/nasa-astronauts-launch-from-us-soil-for-first-time-in-nine-years/","wikipedia":"https://en.wiki

```

<https://labs.cognitiveclass.ai/v2/tools/jupyterlab?ulid=ulid-0873642cfd4232ea1de5fbe8823c1c03f6f84b91>

```

ry":"https://www.reddit.com/r/spacex/comments/h8sx6q/starlink8_recovery_threa
d/"},"flickr":{"small":[],"original":["https://live.staticflickr.com/65535/500
09748327_93e52a451f_o.jpg"]},"presskit":null,"webcast":"https://youtu.be/8riKQ
XChPGg","youtube_id":"8riKQXChPGg","article":"https://spaceflightnow.com/2020/
06/13/starlink-satellite-deployments-continue-with-successful-falcon-9-launc
h/","wikipedia":"https://en.wikipedia.org/wiki/Starlink"},"static_fire_date_ut
c":null,"static_fire_date_unix":null,"net":false,"window":0,"rocket":"5e9d0d95
eda69973a809dlec","success":true,"failures":[],"details":"This mission will la
unch the eighth batch of operational Starlink satellites, which are expected t
o be version 1.0, from SLC-40, Cape Canaveral AFS. It is the ninth Starlink la
unch overall. The satellites will be delivered to low Earth orbit and will spe
nd a few weeks maneuvering to their operational altitude of 550 km. This missi
on is includes rideshare payloads, SkySats 16-18, on top of the Starlink stac
k. The booster for this mission is expected to land an ASDS.","crew":[],"ship
s":["5ea6ed2e080df4000697c908","5ea6ed2e080df4000697c907","5ea6ed2f080df400069
7c90b"],"capsules":[],"payloads":["5eb0e4d1b6c3bb0006eeb258"],"launchpad":"5e9
e4501f509094ba4566f84","flight_number":96,"name":"Starlink-8 & SkySat 16-1
8","date_utc":"2020-06-13T09:21:00.000Z","date_unix":1592040060,"date_loca
l":"2020-06-13T05:21:00-04:00","date_precision":"hour","upcoming":false,"core
s":[{"core":"5e9e28a7f359187afd3b2662","flight":3,"gridfins":true,"legs":tru
e,"reused":true,"landing_attempt":true,"landing_success":true,"landing_typ
e":"ASDS","landpad":"5e9e3032383ecb6bb234e7ca"}],"auto_update":true,"tbd":fals
e,"launch_library_id":null,"id":"5eb87d46ffd86e000604b389"},{"fairings":{"reus
ed":null,"recovery_attempt":true,"recovered":true,"ships":[]},"links":{"patc
h":{"small":"https://imgur.com/yBTgcQH.png","large":"https://imgur.com/vwfiNU
7.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/gzeshn/
gps_iii_sv03_launch_campaign_thread/","launch":"https://www.reddit.com/r/space
x/comments/hi5hit/rspacex_gps_iii_sv03_columbus_official_launch/","media":"htt
ps://www.reddit.com/r/spacex/comments/hiq0vd/rspacex_gps_iii_sv03_media_thread
_photographer/","recovery":"https://www.reddit.com/r/spacex/comments/hjendd/gp
s_iii_svo3_recovery_thread/"},"flickr":{"small":[],"original":["https://live.s
taticflickr.com/65535/50065947228_804efe6117_o.jpg","https://live.staticflick
r.com/65535/50065947263_ela6eale22_o.jpg","https://live.staticflickr.com/6553
5/50065947218_88ef29951a_o.jpg","https://live.staticflickr.com/65535/500667624
57_8c92090037_o.jpg","https://live.staticflickr.com/65535/50085443052_9f6b843a
02_o.jpg","https://live.staticflickr.com/65535/50085211776_588bed76f0_o.jp
g","https://live.staticflickr.com/65535/50084627433_89d8915596_o.jpg"]},"press
kit":null,"webcast":"https://youtu.be/6zr0nfG3Xy4","youtube_id":"6zr0nfG3Xy
4","article":"https://spaceflightnow.com/2020/06/30/spacex-launches-its-first-
mission-for-u-s-space-force/","wikipedia":"https://en.wikipedia.org/wiki/GPS_B
lock_III"},"static_fire_date_utc":"2020-06-25T09:48:00.000Z","static_fire_date
_unix":1593078480,"net":false,"window":0,"rocket":"5e9d0d95eda69973a809dle
c","success":true,"failures":[],"details":"SpaceX will launch GPS Block III Sp
ace Vehicle 03 from SLC-40, Cape Canaveral AFS aboard a Falcon 9. GPS III is o
wned and operated by the US Air Force and produced by Lockheed Martin. This is
the third GPS III satellite and the second launched by SpaceX. The satellite w
ill be delivered into a MEO transfer orbit. The booster for this mission is ex
pected to land on an ASDS.","crew":[],"ships":[],"capsules":[],"payloads":["5e
b0e4d2b6c3bb0006eeb25c"],"launchpad":"5e9e4501f509094ba4566f84","flight_numbe
r":97,"name":"GPS III SV03 (Columbus)","date_utc":"2020-06-30T19:55:00.000
Z","date_unix":1593546900,"date_local":"2020-06-30T15:55:00-04:00","date_preci
sion":"hour","upcoming":false,"cores":[{"core":"5ef670f10059c33cee4a826c","fli
ght":1,"gridfins":true,"legs":true,"reused":false,"landing_attempt":true,"land
ing_success":true,"landing_type":"ASDS","landpad":"5e9e3033383ecbb9e534e7c
c"}],"auto_update":true,"tbd":false,"launch_library_id":null,"id":"5eb87d4affd
86e000604b38b"},{"fairings":{"reused":null,"recovery_attempt":true,"recover
ed":true,"ships":["5ea6ed2e080df4000697c908","5ea6ed2e080df4000697c907"]},"link
s":{"patch":{"small":"https://images2.imgbox.com/e7/01/LB9VKSzG_o.png","larg
e":"https://images2.imgbox.com/ad/77/CDzoMWTH_o.png"},"reddit":{"campaign":"ht
tps://www.reddit.com/r/spacex/comments/hkbhqo/anasisii_launch_campaign_threa

```

d", "launch": "https://www.reddit.com/r/spacex/comments/hu6sci/rspacex\_anasisii\_official\_launch\_discussion/", "media": "https://www.reddit.com/r/spacex/comments/hun4pv/rspacex\_anasisii\_media\_thread\_photographer\_contest/", "recovery": "https://www.reddit.com/r/spacex/comments/hvgjk9/anasisii\_recovery\_thread/", "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/50136967628\_ed\_a99b6353\_o.jpg", "https://live.staticflickr.com/65535/50137510881\_4618ba6c84\_o.jpg", "https://live.staticflickr.com/65535/50136967553\_elac93fab0\_o.jpg", "https://live.staticflickr.com/65535/50136967658\_9347d7c575\_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/TshvZlQ7le8", "youtube\_id": "TshvZlQ7le8", "article": "https://spaceflightnow.com/2020/07/20/spacex-delivers-south-koreas-first-military-satellite-into-on-target-orbit/", "wikipedia": null, "static\_fire\_date\_utc": "2020-07-11T17:58:00.000Z", "static\_fire\_date\_unix": 1594490280, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failures": [], "details": "SpaceX will launch ANASIS-II, a South Korean geostationary military communication satellite from LC-39A, Kennedy Space Center. It will be South Korea's first dedicated military communications satellite. Falcon 9 will deliver the satellite to a geostationary transfer orbit. The booster is expected to land downrange on an ASDS.", "crew": [], "ships": ["5ea6ed2e080df4000697c908", "5ea6ed2e080df4000697c907", "5ea6ed2f080df4000697c90b"], "capsules": [], "payloads": ["5eb0e4d2b6c3bb0006eeb25b"], "launchpad": "5e9e4501f509094ba4566f84", "flight\_number": 98, "name": "ANASIS-II", "date\_utc": "2020-07-20T21:30:00.000Z", "date\_unix": 1595280600, "date\_local": "2020-07-20T17:30:00-04:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a7f3591817f23b2663", "flight": 2, "gridfins": true, "legs": true, "reused": true, "landing\_attempt": true, "landing\_success": true, "landing\_type": "ASDS", "landpad": "5e9e3033383ecbb9e534e7cc"}], "auto\_update": true, "tbd": false, "launch\_library\_id": null, "id": "5eb87d50fffd86e000604b394"}, {"fairings": {"reused": null, "recovery\_attempt": true, "recovered": true, "ships": ["5ea6ed2e080df4000697c908", "5ea6ed2e080df4000697c907"]}, "links": {"patch": {"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/h8mold/starlink9\_launch\_campaign\_thread/", "launch": "https://www.reddit.com/r/spacex/comments/i4ozw3/rspacex\_starlink9\_launch\_discussion\_updates/", "media": "https://www.reddit.com/r/spacex/comments/hg499n/rspacex\_starlink9\_media\_thread\_photographer/", "recovery": "https://www.reddit.com/r/spacex/comments/i5smhk/starlink\_9blacksky\_recovery\_thread/"}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/50198901143\_0bb53a499e\_o.jpg", "https://live.staticflickr.com/65535/50199448011\_35d0e9c8bf\_o.jpg", "https://live.staticflickr.com/65535/50199715777\_eca6f41d25\_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/KU6KogxG5BE", "youtube\_id": "KU6KogxG5BE", "article": "https://spaceflightnow.com/2020/08/07/spacex-closes-out-busy-week-with-launch-of-more-starlink-satellites/", "wikipedia": "https://en.wikipedia.org/wiki/Starlink"}, "static\_fire\_date\_utc": "2020-06-24T18:18:00.000Z", "static\_fire\_date\_unix": 1593022680, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failures": [], "details": "This mission will launch the ninth batch of operational Starlink satellites, which are expected to be version 1.0, from LC-39A, Kennedy Space Center. It is the tenth Starlink launch overall. The satellites will be delivered to low Earth orbit and will spend a few weeks maneuvering to their operational altitude of 550 km. This mission includes a rideshare of two BlackSky satellites on top of the Starlink stack. The booster for this mission is expected to land on an ASDS.", "crew": [], "ships": ["5ea6ed2e080df4000697c908", "5ea6ed2e080df4000697c907", "5ea6ed30080df4000697c913", "5ee68c683c228f36bd5809b5"], "capsules": [], "payloads": ["5ed9858b1f30554030d45c3e", "5ee522e32f1f3d474c758123"], "launchpad": "5e9e4502f509094188566f88", "flight\_number": 99, "name": "Starlink-9 (v1.0) & BlackSky Global 5-6", "date\_utc": "2020-08-07T05:12:00.000Z", "date\_unix": 1596777120, "date\_local": "2020-08-07T01:12:00-04:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a6f35918c0803b265c", "flight": 5, "gridfins": true, "legs": true, "reused": true, "landing\_attempt": true, "landing\_success": true, "landing\_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto\_update": true, "tbd": false, "launch\_library\_id": null, "id": "5ed9819a1f30554030d45c29"}, {"fairings": {"reused": true, "recovery\_attempt": true, "recovered": true, "ships": ["5ea6ed2e080df400"]

```

0697c908", "5ea6ed2e080df4000697c907"]}, "links": {"patch": {"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/i63bst/starlink_general_discussion_and_deployment_thread/", "launch": "https://www.reddit.com/r/spacex/comments/ibacxz/rspacex_starlink10_launch_discussion_updates/", "media": "https://www.reddit.com/r/spacex/comments/ic46fw/starlink10_recovery_updates_discussion_thread/", "recovery": "https://www.reddit.com/r/spacex/comments/ic46fw/starlink10_recovery_updates_discussion_thread/"}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/50241845831_9a7412e81d_o.jpg", "https://live.staticflickr.com/65535/50242057637_ea4f98d517_o.jpg", "https://live.staticflickr.com/65535/50242057682_6084977bf7_o.jpg", "https://live.staticflickr.com/65535/50242057677_e96fbd46e6_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/jTMJK7wb0rM", "youtube_id": "jTMJK7wb0rM", "article": "https://spaceflightnow.com/2020/08/18/spacex-adds-more-satellites-to-ever-growing-starlink-network/", "wikipedia": "https://en.wikipedia.org/wiki/Starlink"}, "static_fire_date_utc": "2020-08-17T10:00:00.000Z", "static_fire_date_unix": 1597658400, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "This mission will launch the tenth batch of operational Starlink satellites, which are expected to be version 1.0, from LC-39A, Kennedy Space Center. It is the eleventh Starlink launch overall. The satellites will be delivered to low Earth orbit and will spend a few weeks maneuvering to their operational altitude of 550 km. This mission includes rideshare payloads, SkySats 19-21, on top of the Starlink stack. The booster for this mission is expected to land on an ASD S.", "crew": [], "ships": ["5ea6ed2e080df4000697c908", "5ea6ed2e080df4000697c907", "5ee68c683c228f36bd5809b5", "5ea6ed2f080df4000697c90b", "5ea6ed30080df4000697c913"], "capsules": [], "payloads": ["5ed9859f1f30554030d45c3f"], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 100, "name": "Starlink-10 (v1.0) & SkySat 19-21", "date_utc": "2020-08-18T14:31:00.000Z", "date_unix": 1597761060, "date_local": "2020-08-18T10:31:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a5f3591833b13b2659", "flight": 6, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5ed981d91f30554030d45c2a"}, {"fairings": {"reused": null, "recovery_attempt": true, "recovered": true, "ships": ["5ea6ed2e080df4000697c907"]}, "links": {"patch": {"small": "https://images2.imgbox.com/e7/f6/v0zFOhZE_o.png", "large": "https://images2.imgbox.com/43/33/36WPntCu_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/ffoz5r/saocom_1b_launch_campaign_thread/", "launch": "https://www.reddit.com/r/spacex/comments/i1wlch/rspacex_saocom_1b_launch_discussion_updates_thread/", "media": "https://www.reddit.com/r/spacex/comments/ij8mxf/rspacex_starlink11_saocom_1b_media_thread/", "recovery": null}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/50291453997_aa715950e7_o.jpg", "https://live.staticflickr.com/65535/50291306296_85b6ff12a2_o.jpg", "https://live.staticflickr.com/65535/50291306061_2f9e350a85_o.jpg", "https://live.staticflickr.com/65535/50291306216_4fd44c261e_o.jpg", "https://live.staticflickr.com/65535/50291306346_136d3dce7b_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/P-gLOsDjE3E", "youtube_id": "P-gLOsDjE3E", "article": "https://spaceflightnow.com/2020/08/31/spacex-launches-first-polar-orbit-mission-from-florida-in-decades/", "wikipedia": "https://en.wikipedia.org/wiki/SAOCOM"}, "static_fire_date_utc": null, "static_fire_date_unix": null, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "SpaceX's Falcon 9 will launch the second of the two satellite SAOCOM 1 satellites into a sun-synchronous polar orbit from SLC-40, Cape Canaveral AFS. SAOCOM 1B is a synthetic aperture radar Earth observation satellite to support disaster management. The SAOCOM spacecraft are operated by CONAE, the Argentinian National Space Activities Commission, and are built by INVAP. This mission is also expected to include rideshare payloads Sequoia, and G NOMES-1. This will be the first polar launch from the Space Coast in 60 years. The launch azimuth will be southward and the booster will land at LZ-1.", "crew": [], "ships": ["5ea6ed2e080df4000697c907"], "capsules": [], "payloads": ["5eb0e4d1b6c3bb0006eeb259"], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 10

```



```

1, "name": "SAOCOM 1B, GNOMES-1, Tyvak-0172", "date_utc": "2020-08-30T23:18:00.000Z", "date_unix": 1598829480, "date_local": "2020-08-30T19:18:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a7f359187afd3b2662", "flight": 4, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "RTLS", "landpad": "5e9e3032383ecb267a34e7c7"}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87d47ffd86e000604b38a"}, {"fairings": {"reused": null, "recovery_attempt": true, "recovered": null, "ships": [{"5ea6ed2e080df4000697c908"}]}, "links": {"patch": {"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/i63bst/starlink_general_discussion_and_deployment_thread/", "launch": "https://www.reddit.com/r/spacex/comments/iip8h3/rspacex_starlink11_launch_discussion_updates/", "media": "https://www.reddit.com/r/spacex/comments/ij8mxf/rspacex_starlink11_saocom_1b_media_thread/", "recovery": null}, "flickr": {"small": [], "original": []}, "presskit": null, "webcast": "https://youtu.be/_j4xR7LMCGY", "youtube_id": "_j4xR7LMCGY", "article": null, "wikipedia": "https://en.wikipedia.org/wiki/Starlink"}, "static_fire_date_utc": null, "static_fire_date_unix": null, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "This mission will launch the eleventh batch of operational Starlink satellites, which are expected to be version 1.0, from SLC-40, Cape Canaveral Air Force Station. It is the twelfth Starlink launch overall. The satellites will be delivered to low Earth orbit and will spend a few weeks maneuvering to their operational altitude of 550 km. The booster for this mission is expected to land on an ASDS.", "crew": [], "ships": [{"5ea6ed2e080df4000697c908"}, {"5ea6ed2f080df4000697c90b"}, {"5ee68c683c228f36bd5809b5"}], "capsules": [], "payloads": [{"5ef6a4600059c33cee4a829e"}], "launchpad": "5e9e4502f509094188566f88", "flight_number": 102, "name": "Starlink-11 (v1.0)", "date_utc": "2020-09-03T12:46:00.000Z", "date_unix": 1599137160, "date_local": "2020-09-03T08:46:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5ef670f10059c33cee4a826c", "flight": 2, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5ef6a1e90059c33cee4a828a"}, {"fairings": {"reused": true, "recovery_attempt": true, "recovered": true, "ships": [{"5ea6ed2e080df4000697c907"}, {"5ea6ed2e080df4000697c908"}]}, "links": {"patch": {"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/i63bst/starlink_general_discussion_and_deployment_thread/", "launch": "https://www.reddit.com/r/spacex/comments/iu0vtg/rspacex_starlink12_official_launch_discussion/", "media": "https://www.reddit.com/r/spacex/comments/iudifm/rspacex_starlink12_media_thread_photographer/", "recovery": null}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/50428228397_6151927733_o.jpg", "https://live.staticflickr.com/65535/50427359318_67b3397892_o.jpg", "https://live.staticflickr.com/65535/50428050591_36defbe958_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/UZkaE_9zwQQ", "youtube_id": "UZkaE_9zwQQ", "article": null, "wikipedia": "https://en.wikipedia.org/wiki/Starlink"}, "static_fire_date_utc": null, "static_fire_date_unix": null, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "This mission will launch the twelfth batch of operational Starlink satellites, which are expected to be version 1.0, from SLC-40, Cape Canaveral Air Force Station. It is the thirteenth Starlink launch overall. The satellites will be delivered to low Earth orbit and will spend a few weeks maneuvering to their operational altitude of 550 km. The booster for this mission is expected to land on an ASDS.", "crew": [], "ships": [{"5ea6ed2f080df4000697c90b"}, {"5ea6ed2f080df4000697c910"}, {"5ea6ed2e080df4000697c907"}, {"5ea6ed2e080df4000697c908"}, {"5ea6ed30080df4000697c913"}], "capsules": [], "payloads": [{"5ef6a48e0059c33cee4a829f"}], "launchpad": "5e9e4502f509094188566f88", "flight_number": 103, "name": "Starlink-12 (v1.0)", "date_utc": "2020-10-06T11:29:00.000Z", "date_unix": 1601983740, "date_local": "2020-10-06T07:29:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a7f3591817f23b2663", "flight": 3, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto_upd

```

```

ate":true,"tbd":false,"launch_library_id":null,"id":"5ef6a2090059c33cee4a828b"},{"fairings":{"reused":true,"recovery_attempt":true,"recovered":null,"ships":["5ea6ed2e080df4000697c907","5ea6ed2e080df4000697c908"]},"links":{"patch":{"small":"https://imgur.com/BrW201S.png","large":"https://imgur.com/573IfGk.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/i63bst/starlink_general_discussion_and_deployment_thread/","launch":"https://www.reddit.com/r/spacex/comments/jctqq9/rspacex_starlink13_official_launch_discussion/","media":"https://www.reddit.com/r/spacex/comments/jdgs2/rspacex_starlink13_media_thread_photographer/","recovery":"https://www.reddit.com/r/spacex/comments/jdgppl/starlink13_recovery_updates_discussion_thread/"},"flickr":{"small":[],"original":["https://live.staticflickr.com/65535/50500804918_eb1187e1b2_o.jpg","https://live.staticflickr.com/65535/50501674637_f16f528728_o.jpg","https://live.staticflickr.com/65535/50501515611_2a3753bed1_o.jpg","https://live.staticflickr.com/65535/50501674632_0d5276b1b5_o.jpg"]},"presskit":null,"webcast":"https://youtu.be/UM8CDDAmp98","youtube_id":"UM8CDDAmp98","article":"https://spaceflightnow.com/2020/10/18/spacex-launches-another-batch-of-starlink-satellites/","wikipedia":"https://en.wikipedia.org/wiki/Starlink"},"static_fire_date_utc":"2020-10-17T05:23:00.000Z","static_fire_date_unix":1602912180,"net":false,"window":null,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"details":"This mission will launch the thirteenth batch of operational Starlink satellites, which are expected to be version 1.0, from LC-39A, Kennedy Space Center. It is the fourteenth Starlink launch overall. The satellites will be delivered to low Earth orbit and will spend a few weeks maneuvering to their operational altitude of 550 km. The booster for this mission is expected to land on an ASDS."},"crew":[],"ships":["5ea6ed30080df4000697c913","5ea6ed2f080df4000697c90b","5ee68c683c228f36bd5809b5","5ea6ed2e080df4000697c907","5ea6ed2e080df4000697c908"],"capsules":[],"payloads":["5ef6a4d50059c33cee4a82a1"],"launchpad":"5e9e4502f509094188566f88","flight_number":104,"name":"Starlink-13 (v1.0)","date_utc":"2020-10-18T12:25:00.000Z","date_unix":1603023900,"date_local":"2020-10-18T08:25:00-04:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5e9e28a6f35918c0803b265c","flight":6,"gridfins":true,"legs":true,"reused":true,"landing_attempt":true,"landing_success":true,"landing_type":"ASDS","landpad":"5e9e3032383ecb6bb234e7ca"}],"auto_update":true,"tbd":false,"launch_library_id":null,"id":"5ef6a2bf0059c33cee4a828c"},{"fairings":{"reused":false,"recovery_attempt":true,"recovered":null,"ships":["5ea6ed2e080df4000697c907","5ea6ed2e080df4000697c908"]},"links":{"patch":{"small":"https://imgur.com/BrW201S.png","large":"https://imgur.com/573IfGk.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/i63bst/starlink_general_discussion_and_deployment_thread/","launch":"https://www.reddit.com/r/spacex/comments/jethh8/rspacex_starlink14_official_launch_discussion/","media":"https://www.reddit.com/r/spacex/comments/jhcwun/rspacex_starlink14_media_thread_photographer/","recovery":null},"flickr":{"small":[],"original":[]},"presskit":null,"webcast":"https://youtu.be/2gbVgTxLgN0","youtube_id":"2gbVgTxLgN0","article":"https://spaceflightnow.com/2020/10/24/spacex-adds-another-60-satellites-to-starlink-network/","wikipedia":"https://en.wikipedia.org/wiki/Starlink"},"static_fire_date_utc":"2020-10-21T12:55:00.000Z","static_fire_date_unix":1603284900,"net":false,"window":null,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"details":"This mission will launch the fourteenth batch of operational Starlink satellites, which are expected to be version 1.0, from SLC-40, Kennedy Space Center. It is the fifteenth Starlink launch overall. The satellites will be delivered to low Earth orbit and will spend a few weeks maneuvering to their operational altitude of 550 km. The booster for this mission is expected to land on JRTI."},"crew":[],"ships":["5ea6ed2f080df4000697c910","5ea6ed2f080df4000697c90b","5ea6ed2e080df4000697c907","5ea6ed2e080df4000697c908"],"capsules":[],"payloads":["5ef6a4ea0059c33cee4a82a2"],"launchpad":"5e9e4501f509094ba4566f84","flight_number":105,"name":"Starlink-14 (v1.0)","date_utc":"2020-10-24T15:31:00.000Z","date_unix":1603553460,"date_local":"2020-10-24T11:31:00-04:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5ef670f10059c33cee4a826c","flight":3,"gridfins":true,"legs":true,"reused":true,"landing_attempt":true,"landing_success":true,"landing_type":"ASDS","landpad":"5e9e3033383ec

```

```

bb9e534e7cc"}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5
ef6a2e70059c33cee4a8293"}, {"fairings": {"reused": null, "recovery_attempt": true,
"recovered": null, "ships": [{"5ea6ed2e080df4000697c907"}]}, "links": {"patch": {"small": "https://images2.imgbox.com/ed/27/HV6rc52t_o.png", "large": "https://images2.imgbox.com/73/8f/kKV6cyQO_o.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/io0swm/gps_iii_sv04_launch_campaign_thread/", "launch": "https://www.reddit.com/r/spacex/comments/jobxn2/rspacex_gps_iii_sv04_sacagawea_official_launch/", "media": null, "recovery": null}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/50611865511_2299e11860_o.jpg", "https://live.staticflickr.com/65535/50611118958_448d239fe1_o.jpg", "https://live.staticflickr.com/65535/50611979827_48811d2ea6_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/wufXF5YKR1M", "youtube_id": "wufXF5YKR1M", "article": "https://spaceflightnow.com/2020/11/06/spacex-launches-gps-navigation-satellite-from-cape-canaveral/", "wikipedia": "https://en.wikipedia.org/wiki/GPS_Block_III"}, {"static_fire_date_utc": "2020-09-25T05:42:00.000Z", "static_fire_date_unix": 1601012520, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "SpaceX will launch GPS Block III Space Vehicle 04 from SLC-40, Cape Canaveral AFS aboard a Falcon 9. GPS III is owned and operated by the US Air Force and produced by Lockheed Martin. This will be the fourth GPS III satellite launched and the third launched by SpaceX. The satellite will be delivered into a MEO transfer orbit. The booster for this mission will land on an ASDS.", "crew": [], "ships": [{"5ea6ed30080df4000697c913", "5ee68c683c228f36bd5809b5", "5ea6ed2e080df4000697c907"}], "capsules": [], "payloads": [{"5eb0e4d2b6c3bb0006eeb25e"}], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 106, "name": "GPS III SV04 (Sacagawea)", "date_utc": "2020-11-05T23:24:00.000Z", "date_unix": 1604618640, "date_local": "2020-11-05T18:24:00-05:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5f57c5440622a633027900a0", "flight": 1, "gridfins": true, "legs": true, "reused": false, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5eb87d4cffd86e000604b38d"}, {"fairings": null, "links": {"patch": {"small": "https://imgur.com/6RnqgLW.png", "large": "https://imgur.com/2XsSLUM.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/iwb8bl/crew1_launch_campaign_thread/", "launch": "https://www.reddit.com/r/spacex/comments/ju7fxv/rspacex_crew1_official_launch_coast_docking/", "media": "https://www.reddit.com/r/spacex/comments/judv0r/rspacex_crew1_media_thread_photographer_contest/", "recovery": null}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/50618376646_8f52c31fc4_o.jpg", "https://live.staticflickr.com/65535/50618376731_43ddaab1b8_o.jpg", "https://live.staticflickr.com/65535/50618376671_ba4e60af7c_o.jpg", "https://live.staticflickr.com/65535/50618376351_ecfdee4ab2_o.jpg", "https://live.staticflickr.com/65535/50618727917_01e579c4d9_o.jpg", "https://live.staticflickr.com/65535/50618355216_2872d1fe98_o.jpg", "https://live.staticflickr.com/65535/50618354801_ff3e722884_o.jpg", "https://live.staticflickr.com/65535/50618463487_41642939a4_o.jpg", "https://live.staticflickr.com/65535/50617619613_5630422345_o.jpg", "https://live.staticflickr.com/65535/50617619668_d680d7319c_o.jpg", "https://live.staticflickr.com/65535/50617625523_a7484e0abf_o.jpg", "https://live.staticflickr.com/65535/50618469202_fa86f88ab3_o.jpg", "https://live.staticflickr.com/65535/50617625183_8554412cee_o.jpg", "https://live.staticflickr.com/65535/50618470472_fb8e6507d7_o.jpg", "https://live.staticflickr.com/65535/50617626838_c0c71delf7_o.jpg", "https://live.staticflickr.com/65535/50617626738_aa3997aaea_o.jpg", "https://live.staticflickr.com/65535/50617626408_fb0bba0f89_o.jpg", "https://live.staticflickr.com/65535/51158778650_9b8d555c1e_o.jpg", "https://live.staticflickr.com/65535/51158458619_9b74f6a3d0_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/bnChQbxLkkI", "youtube_id": "bnChQbxLkkI", "article": "https://spaceflightnow.com/2020/11/16/astronauts-ride-spacex-crew-capsule-in-landmark-launch-for-commercial-spaceflight/", "wikipedia": "https://en.wikipedia.org/wiki/SpaceX_Crew-1"}, {"static_fire_date_utc": "2020-11-11T16:17:00.000Z", "static_fire_date_unix": 1605111420, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "SpaceX will launch the first operational mission of its Crew Dragon vehicle as part of NASA's C

```

<https://labs.cognitiveclass.ai/v2/tools/jupyterlab?ulid=ulid-0873642cfd4232ea1de5fbe8823c1c03f6f84b91>

```

1T16:31:00.000Z","static_fire_date_unix":1605976260,"net":false,"window":null,
"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"detail
s":"This mission will launch the fifteenth batch of operational Starlink satel
lites, which are version 1.0, from SLC-40, Cape Canaveral Air Force Station. I
t will be the sixteenth Starlink launch overall. The satellites will be delive
red to low Earth orbit and will spend a few weeks maneuvering to their operati
onal altitude of 550 km. The booster for this mission is expected to land on a
n ASDS.", "crew":[],"ships":["5ea6ed30080df4000697c913","5ea6ed2f080df4000697c9
0c","5ea6ed2f080df4000697c90b","5ea6ed2f080df4000697c90d","5ea6ed2e080df400069
7c907"],"capsules":[],"payloads":["5fb95c263a88ae63c9546044"],"launchpad":"5e9
e4501f509094ba4566f84","flight_number":109,"name":"Starlink-15 (v1.0)","date_u
tc":"2020-11-25T02:13:00.000Z","date_unix":1606270380,"date_local":"2020-11-24
T21:13:00-05:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5e
9e28a5f3591833b13b2659","flight":7,"gridfins":true,"legs":true,"reused":tru
e,"landing_attempt":true,"landing_success":true,"landing_type":"ASDS","landpa
d":"5e9e3032383ecb6bb234e7ca"}],"auto_update":true,"tbd":false,"launch_library
_id":null,"id":"5fb95b3f3a88ae63c954603c"}, {"fairings":null,"links":{"patch":
{"small":"https://imgur.com/5Oz6Hnq.png","large":"https://imgur.com/uTeUcbN.pn
g"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/jw8bfe/crs2
1_launch_campaign_thread/","launch":"https://www.reddit.com/r/spacex/comments/
k6myl6/rspacex_crs21_official_launch_discussion_updates/","media":null,"recove
ry":"https://www.reddit.com/r/spacex/comments/k2tslq/rspacex_fleet_updates_dis
cussion_thread/"},"flickr":{"small":[],"original":["https://live.staticflickr.
com/65535/50689254612_db8bc87d2c_o.jpg","https://live.staticflickr.com/65535/5
0689254712_98ef758c81_o.jpg","https://live.staticflickr.com/65535/50689254512_
bb44826694_o.jpg","https://live.staticflickr.com/65535/50689254642_ba6b08d142_
o.jpg","https://live.staticflickr.com/65535/50689254552_1d9f91a963_o.jpg"]},"p
resskit":"https://www.nasa.gov/sites/default/files/atoms/files/spacex_crs-21_m
ission_overview_high_res.pdf","webcast":"https://youtu.be/4xJAGFR_N-c","youtube
_id":"4xJAGFR_N-c","article":"https://spaceflightnow.com/2020/12/06/spacex-lau
nches-first-in-new-line-of-upgraded-space-station-cargo-ships/","wikipedia":"h
ttps://en.wikipedia.org/wiki/SpaceX_CRS-21"},"static_fire_date_utc":"2020-12-0
3T13:45:00.000Z","static_fire_date_unix":1607003100,"net":false,"window":nul
l,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"detail
s":"SpaceX's 21st ISS resupply mission on behalf of NASA and the first under
the CRS-2 contract, this mission brings essential supplies to the Internation
al Space Station using the cargo variant of SpaceX's Dragon 2 spacecraft. The
external payload for this mission is the Nanoracks Bishop Airlock. Falcon 9 an
d Dragon launch from LC-39A, Kennedy Space Center and the booster is expected
to land on an ASDS. The mission will be complete with return and recovery of
the Dragon capsule and down cargo.", "crew":[],"ships":["5ea6ed30080df4000697c
913","5ea6ed2f080df4000697c90b","5ea6ed2f080df4000697c90d"],"capsules":["5fbb0
f8fec55b34eb9f35c14"],"payloads":["5eb0e4d3b6c3bb0006eeb262"],"launchpad":"5e9
e4502f509094188566f88","flight_number":110,"name":"CRS-21","date_utc":"2020-12
-06T16:17:00.000Z","date_unix":1607271420,"date_local":"2020-12-06T11:17:00-0
5:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5e9e28a7f3591
817f23b2663","flight":4,"gridfins":true,"legs":true,"reused":true,"landing_att
empt":true,"landing_success":true,"landing_type":"ASDS","landpad":"5e9e3032383
ecb6bb234e7ca"}],"auto_update":true,"tbd":false,"launch_library_id":null,"i
d":"5eb87d4effd86e000604b391"}, {"fairings":{"reused":true,"recovery_attempt":t
rue,"recovered":null,"ships":[]},"links":{"patch":{"small":"https://i.imgur.co
m/UaMwIqw.png","large":"https://i.imgur.com/qGOxE3r.png"},"reddit":{"campaig
n":"https://www.reddit.com/r/spacex/comments/k5lp7b/sxm7_launch_campaign_threa
d/","launch":"https://www.reddit.com/r/spacex/comments/kaizok/rspacex_sxm7_off
icial_launch_discussion_updates/","media":"https://www.reddit.com/r/spacex/com
ments/kcev8p/sxm7_media_thread_photographer_contest/","recovery":"https://www.
reddit.com/r/spacex/comments/k2tslq/rspacex_fleet_updates_discussion_threa
d/"},"flickr":{"small":[],"original":["https://live.staticflickr.com/65535/507
15254423_3cb2a8ff9c_o.jpg","https://live.staticflickr.com/65535/50715992426_bf
43a8f872_o.jpg","https://live.staticflickr.com/65535/50716071077_5a5bc00af9_o.

```

```

jpg","https://live.staticflickr.com/65535/50716071167_100d6f7092_o.jpg"]},"pre
sskit":null,"webcast":"https://youtu.be/COrAGXFb1l","youtube_id":"COrAGXFb1l
o","article":"https://spaceflightnow.com/2020/12/13/siriusxm-satellite-rides-s
pacex-rocket-into-orbit/","wikipedia":"https://en.wikipedia.org/wiki/Sirius_XM
#Satellites"},"static_fire_date_utc":"2020-12-07T23:00:00.000Z","static_fire_d
ate_unix":1607382000,"net":false,"window":null,"rocket":"5e9d0d95eda69973a809d
lec","success":true,"failures":[],"details":"SpaceX will launch the first of t
wo next generation high power S-band broadcast satellites for SiriusXM. The sp
acecraft will be delivered into a geostationary transfer orbit and the booster
will be recovered downrange. The spacecraft is built by Space Systems Loral (S
SL) on the SSL 1300 platform and includes two solar arrays producing 20kW, and
an unfurlable antenna dish. SXM-7 will replace XM-3 in geostationary orbi
t.","crew":[],"ships":["5ea6ed2f080df4000697c910","5ee68c683c228f36bd5809b
5","5ea6ed2f080df4000697c90c"],"capsules":[],"payloads":["5eb0e4d2b6c3bb0006ee
b25d"],"launchpad":"5e9e4501f509094ba4566f84","flight_number":111,"name":"SXM-
7","date_utc":"2020-12-13T17:30:00.000Z","date_unix":1607880600,"date_loca
l":"2020-12-13T12:30:00-05:00","date_precision":"hour","upcoming":false,"core
s":[{"core":"5e9e28a6f35918c0803b265c","flight":7,"gridfins":true,"legs":tru
e,"reused":true,"landing_attempt":true,"landing_success":true,"landing_typ
e":"ASDS","landpad":"5e9e3033383ecbb9e534e7cc"}],"auto_update":true,"tbd":fals
e,"launch_library_id":null,"id":"5eb87d4bffd86e000604b38c"},{"fairings":{"reus
ed":false,"recovery_attempt":true,"recovered":true,"ships":["5ea6ed2e080df4000
697c908","5ea6ed2f080df4000697c90c"]},"links":{"patch":{"small":"https://i.img
ur.com/t9j2kJg.png","large":"https://i.imgur.com/lSpAmBB.png"},"reddit":{"camp
aign":"https://www.reddit.com/r/spacex/comments/j7qqbg/nrol108_launch_campaign
_thread/","launch":"https://www.reddit.com/r/spacex/comments/ke9pmg/rspacex_nr
ol108_official_launch_discussion/","media":null,"recovery":"https://www.reddi
t.com/r/spacex/comments/k2ts1q/rspacex_fleet_updates_discussion_thread/"},"fli
ckr":{"small":[],"original":["https://live.staticflickr.com/65535/50740257483_
0f550f6a25_o.jpg","https://live.staticflickr.com/65535/50740993291_57ef3f881b_
o.jpg","https://live.staticflickr.com/65535/50740257263_b41b843e85_o.jpg","htt
ps://live.staticflickr.com/65535/50740993211_dc00af6dbb_o.jpg","https://live.s
taticflickr.com/65535/50740257078_e46a6462df_o.jpg","https://live.staticflick
r.com/65535/50741096702_2a152bdf13_o.jpg","https://live.staticflickr.com/6553
5/50740257323_e3e49fa2c6_o.jpg"]},"presskit":null,"webcast":"https://youtu.be/
90eVwaFBkFE","youtube_id":"90eVwaFBkFE","article":"https://spaceflightnow.com/
2020/12/19/spacex-closes-out-record-year-of-launches-from-floridas-space-coas
t/","wikipedia":"https://en.wikipedia.org/wiki/National_Reconnaissance_Offic
e"},"static_fire_date_utc":null,"static_fire_date_unix":null,"net":false,"wind
ow":null,"rocket":"5e9d0d95eda69973a809dlec","success":true,"failures":[],"det
ails":"SpaceX will launch NROL-108 for the National Reconnaissance Office aboa
rd a Falcon 9 from SLC-40, Cape Canaveral Air Force Station. The booster for t
his mission is expected to land at LZ-1.","crew":[],"ships":["5ea6ed2f080df400
0697c90c","5ea6ed2e080df4000697c908"],"capsules":[],"payloads":["5f839ac7818d8
b59f5740d48"],"launchpad":"5e9e4502f509094188566f88","flight_number":112,"nam
e":"NROL-108","date_utc":"2020-12-19T14:00:00.000Z","date_unix":1608386400,"da
te_local":"2020-12-19T09:00:00-05:00","date_precision":"hour","upcoming":fals
e,"cores":[{"core":"5e9e28a7f359187afd3b2662","flight":5,"gridfins":true,"leg
s":true,"reused":true,"landing_attempt":true,"landing_success":true,"landing_t
ype":"RTLS","landpad":"5e9e3032383ecb267a34e7c7"}],"auto_update":true,"tbd":fa
lse,"launch_library_id":null,"id":"5f8399fb818d8b59f5740d43"},{"fairings":{"re
used":true,"recovery_attempt":true,"recovered":null,"ships":["5ea6ed2e080df400
0697c907","5ea6ed2e080df4000697c908"]},"links":{"patch":{"small":"https://imgu
r.com/xdKmm6T.png","large":"https://imgur.com/cqGBC29.png"},"reddit":{"campai
gn":"https://www.reddit.com/r/spacex/comments/kawy4/t%C3%BCrksat_5a_launch_cam
paign_thread/","launch":"https://www.reddit.com/r/spacex/comments/ksagr9/rspac
ex_t%C3%BCrksat_5a_official_launch_discussion/","media":null,"recovery":"http
s://www.reddit.com/r/spacex/comments/k2ts1q/rspacex_fleet_updates_discussion_t
hread/"},"flickr":{"small":[],"original":["https://live.staticflickr.com/6553
5/50814482042_476d87b020_o.jpg","https://live.staticflickr.com/65535/508136304

```

08\_d98c2215f8\_o.jpg", "https://live.staticflickr.com/65535/50814379121\_8834b5362d\_o.jpg", "https://live.staticflickr.com/65535/50814379056\_f032a23955\_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/9I0UYXVqIn8", "youtube\_id": "9I0UYXVqIn8", "article": "https://spaceflightnow.com/2021/01/08/spacex-deploys-turkish-satellite-in-first-launch-of-2021/", "wikipedia": "https://en.wikipedia.org/wiki/T%C3%BCrksat\_5A", "static\_fire\_date\_utc": null, "static\_fire\_date\_unix": null, "net": false, "window": 17820, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "SpaceX will launch the first of two next generation satellites on contract for T\x3\xbcrcsat. T\x3\xbcrcsat 5A is a Ku-band broadcast satellite built by Airbus Defense and Space and based on the Electric Orbit Raising version of the Eurostar E3000 platform. This spacecraft will be delivered into a transfer orbit and will then raise itself to its operational 31\x2\x30 East geostationary orbit to serve Turkey, the Middle East, Europe, North Africa and South Africa. The booster for this mission will be recovered downrange via ASDS.", "crew": [], "ships": ["5ea6ed2f080df4000697c90d", "5ea6ed2f080df4000697c910", "5ea6ed2e080df4000697c907", "5ea6ed2e080df4000697c908"], "capsules": [], "payloads": ["5eb0e4d3b6c3bb0006eeb264"], "launchpad": "5e9e4501f509094ba4566f84", "flight\_number": 113, "name": "Turksat 5A", "date\_utc": "2021-01-08T02:15:00.000Z", "date\_unix": 1610072100, "date\_local": "2021-01-07T21:15:00-05:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "5ef670f10059c33cee4a826c", "flight": 4, "gridfins": true, "legs": true, "reused": true, "landing\_attempt": true, "landing\_success": true, "landing\_type": "ASDS", "landpad": "5e9e3033383ecbb9e534e7cc"}], "auto\_update": true, "tbd": false, "launch\_library\_id": null, "id": "5eb87d4fffd86e000604b393"}, {"fairings": {"reused": true, "recovery\_attempt": true, "recovered": null, "ships": ["5ea6ed2e080df4000697c907", "5ea6ed2e080df4000697c908"]}, "links": {"patch": {"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/jhu37i/starlink\_general\_discussion\_and\_deployment\_thread/", "launch": "https://www.reddit.com/r/spacex/comments/kz969o/rspacex\_starlink16\_official\_launch\_discussion/", "media": "https://www.reddit.com/r/spacex/comments/11b5q8/starlink16\_media\_thread\_photographer\_contest/", "recovery": "https://www.reddit.com/r/spacex/comments/k2ts1q/rspacex\_fleet\_updates\_discussion\_thread/"}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/50855737853\_4d290519b4\_o.jpg", "https://live.staticflickr.com/65535/50856457401\_5fd05cddd1\_o.jpg", "https://live.staticflickr.com/65535/50855737933\_bcc65bdf8b\_o.jpg", "https://live.staticflickr.com/65535/50856551642\_5190c59ecl\_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/84Nct\_Q9Lqw", "youtube\_id": "84Nct\_Q9Lqw", "article": "https://spaceflightnow.com/2021/01/20/spacex-sets-new-rocket-reuse-records-with-successful-starlink-launch/", "wikipedia": "https://en.wikipedia.org/wiki/Starlink", "static\_fire\_date\_utc": null, "static\_fire\_date\_unix": null, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "This mission launches the sixteenth batch of operational Starlink satellites, which are version 1.0, from SLC-40 or LC-39A. It is the seventeenth Starlink launch overall. The satellites will be delivered to low Earth orbit and will spend a few weeks maneuvering to their operational altitude. The booster is expected to land on an ASDS.", "crew": [], "ships": ["5ea6ed2e080df4000697c907", "5ea6ed2e080df4000697c908", "5ea6ed2f080df4000697c910", "5ea6ed2f080df4000697c90d", "5ea6ed2f080df4000697c90b"], "capsules": [], "payloads": ["5fbfedba54ceb10a5664c813"], "launchpad": "5e9e4502f509094188566f88", "flight\_number": 114, "name": "Starlink-16 (v1.0)", "date\_utc": "2021-01-20T13:02:00.000Z", "date\_unix": 1611147720, "date\_local": "2021-01-20T08:02:00-05:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a6f35918c0803b265c", "flight": 8, "gridfins": true, "legs": true, "reused": true, "landing\_attempt": true, "landing\_success": true, "landing\_type": "ASDS", "landpad": "5e9e3033383ecbb9e534e7cc"}], "auto\_update": true, "tbd": false, "launch\_library\_id": null, "id": "5fbfecce54ceb10a5664c80a"}, {"fairings": {"reused": false, "recovery\_attempt": true, "recovered": true, "ships": ["5ea6ed2e080df4000697c908", "5ea6ed2e080df4000697c907"]}, "links": {"patch": {"small": "https://imgur.com/IJWn9pK.png", "large": "https://imgur.com/u49XVx4.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/kt5gds/transporter1\_launch\_campaign\_thread/", "launch": "https://www.reddit.com/r/spacex/comments/1210i

```

3/rspacex_transporter1_official_launch_discussion/", "media": null, "recovery": "https://www.reddit.com/r/spacex/comments/k2tslq/rspacex_fleet_updates_discussion_thread/", "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/50870343533_e815eb30c4_o.jpg", "https://live.staticflickr.com/65535/50871151292_af114a3f9e_o.jpg", "https://live.staticflickr.com/65535/50871053741_59a1dbb6cc_o.jpg", "https://live.staticflickr.com/65535/50871053696_cd01a7e092_o.jpg", "https://live.staticflickr.com/65535/50870343763_1blac55eae_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/SCH1lcbkUv4", "youtube_id": "SCH1lcbkUv4", "article": "https://spaceflightnow.com/2021/01/24/spacex-launches-record-setting-rideshare-mission-with-143-small-satellites/", "wikipedia": null, "static_fire_date_utc": null, "static_fire_date_unix": null, "net": false, "window": 2520, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "SpaceX will launch a dedicated rideshare mission from SLC-40 or LC-39A. The spacecraft will be delivered into a sun-synchronous orbit. The booster for this mission is expected to land on an ASDS.", "crew": [], "ships": ["5ea6ed30080df4000697c913", "5ea6ed2f080df4000697c90c", "5ea6ed2e080df4000697c908", "5ea6ed2e080df4000697c907"], "capsules": [], "payloads": ["5fd3871a7faea57d297c86c6"], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 115, "name": "Transporter-1", "date_utc": "2021-01-24T15:00:00.000Z", "date_unix": 1611500400, "date_local": "2021-01-24T10:00:00-05:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a7f3591817f23b2663", "flight": 5, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "5fd386aa7faea57d297c86c1", {"fairings": {"reused": true, "recovery_attempt": true, "recovered": null, "ships": ["5ea6ed2e080df4000697c908", "5ea6ed2e080df4000697c907"]}, "links": {"patch": {"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_deployment_thread/", "launch": "https://www.reddit.com/r/spacex/comments/lbjuok/rspacex_starlink18_official_launch_discussion/", "media": null, "recovery": "https://www.reddit.com/r/spacex/comments/k2tslq/rspacex_fleet_updates_discussion_thread/"}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/50908787351_5733229c09_o.jpg", "https://live.staticflickr.com/65535/50908092893_d254477be0_o.jpg", "https://live.staticflickr.com/65535/50908092833_4cb5833fb9_o.jpg", "https://live.staticflickr.com/65535/50908787221_9cf383a2b4_o.jpg", "https://live.staticflickr.com/65535/50908787166_8dde2e29bd_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/fe6HBwly6bA", "youtube_id": "fe6HBwly6bA", "article": null, "wikipedia": "https://en.wikipedia.org/wiki/Starlink"}, "static_fire_date_utc": null, "static_fire_date_unix": null, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "This mission launches the eighteenth batch of operational Starlink satellites, which are version 1.0, from SLC-40. It is the nineteenth Starlink launch overall. The satellites will be delivered to low Earth orbit and will spend a few weeks maneuvering to their operational altitude. The booster is expected to land on an ASDS.", "crew": [], "ships": ["5ea6ed30080df4000697c913", "601742b20c87b90be7bb7e86", "5ea6ed2e080df4000697c908", "5ea6ed2e080df4000697c907", "5ea6ed2f080df4000697c90b"], "capsules": [], "payloads": ["5ff655769257f579ee3a6c64"], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 116, "name": "Starlink-18 (v1.0)", "date_utc": "2021-02-04T06:19:00.000Z", "date_unix": 1612419540, "date_local": "2021-02-04T01:19:00-05:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5ef670f10059c33cee4a826c", "flight": 5, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto_update": true, "tbd": false, "launch_library_id": "f31702e8-6353-4c9a-932c-5bd104717500", "id": "5ff6554f9257f579ee3a6c5f", {"fairings": {"reuse": null, "recovery_attempt": true, "recovered": true, "ships": ["5ea6ed2e080df4000697c908", "5ea6ed2e080df4000697c907"]}, "links": {"patch": {"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_deployment_thread/", "launch": "https://www.reddit.com/r/spacex/comments/1jkh71/rspacex_starlink19_official_launch_discussion/", "media": "https://www.red

```



```

dit.com/r/spacex/comments/lkwllg/starlink19_media_thread_photographer_contes
t/", "recovery": "https://www.reddit.com/r/spacex/comments/k2ts1q/rspacex_fleet_
updates_discussion_thread/", "flickr": {"small": [], "original": ["https://live.st
aticflickr.com/65535/50949943433_87e3002307_o.jpg"]}, "presskit": null, "webcas
t": "https://youtu.be/L0dkyV09Zso", "youtube_id": "L0dkyV09Zso", "article": "http
s://spaceflightnow.com/2021/02/16/spacex-successfully-deploys-60-more-starlink
-satellites-but-loses-booster-on-descent/", "wikipedia": "https://en.wikipedia.o
rg/wiki/Starlink", "static_fire_date_utc": "2021-02-13T18:17:00.000Z", "static_f
ire_date_unix": 1613240220, "net": false, "window": null, "rocket": "5e9d0d95eda69973
a809dlec", "success": true, "failures": [], "details": "This mission launches the ei
ghteenth batch of operational Starlink satellites, which are version 1.0, from
SLC-40. It is the nineteenth Starlink launch overall. The satellites will be d
elivered to low Earth orbit and will spend a few weeks maneuvering to their op
erational altitude. The booster is expected to land on an ASDS.", "crew": [], "sh
ips": ["5ea6ed30080df4000697c913"], "capsules": [], "payloads": ["600f9bc08f798e2a4
d5f97a4"], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 117, "name": "S
tarlink-19 (v1.0)", "date_utc": "2021-02-16T03:59:00.000Z", "date_unix": 161344794
0, "date_local": "2021-02-15T22:59:00-05:00", "date_precision": "hour", "upcoming":
false, "cores": [{"core": "5e9e28a7f359187afd3b2662", "flight": 6, "gridfins": tru
e, "legs": true, "reused": true, "landing_attempt": true, "landing_success": false, "la
nding_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto_update": tru
e, "tbd": false, "launch_library_id": "985f1cc1-82c1-4a89-b2cc-e9dc91829a0e", "i
d": "600f9a5e8f798e2a4d5f979c"}, {"fairings": {"reused": null, "recovery_attempt": n
ull, "recovered": null, "ships": []}, "links": {"patch": {"small": "https://imgur.com/
BrW201S.png", "large": "https://imgur.com/573IfGk.png"}, "reddit": {"campaign": "ht
tps://www.reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_
deployment_thread/", "launch": "https://www.reddit.com/r/spacex/comments/l8qs3/
rspacex_starlink17_official_launch_discussion/", "media": null, "recovery": "http
s://www.reddit.com/r/spacex/comments/k2ts1q/rspacex_fleet_updates_discussion_t
hread/", "flickr": {"small": [], "original": ["https://live.staticflickr.com/6553
5/51004598206_9779f08338_o.jpg", "https://live.staticflickr.com/65535/510045981
96_b2059799f4_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/d5DzoKuhdN
k", "youtube_id": "d5DzoKuhdNk", "article": "https://spaceflightnow.com/2021/03/0
4/spacex-sticks-75th-falcon-rocket-landing-after-launching-60-more-starlink-sa
tellites/", "wikipedia": "https://en.wikipedia.org/wiki/Starlink", "static_fire_
date_utc": "2021-02-24T12:25:00.000Z", "static_fire_date_unix": 1614169500, "net":
false, "window": null, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failur
es": [], "details": "This mission launches the sixteenth batch of operational Sta
rlink satellites, which are version 1.0, from LC-39A. It is the eighteenth Sta
rlink launch overall. The satellites will be delivered to low Earth orbit and
will spend a few weeks maneuvering to their operational altitude. The booster
is expected to land on an ASDS.", "crew": [], "ships": ["5ea6ed2f080df4000697c90
d", "5ea6ed30080df4000697c913"], "capsules": [], "payloads": ["5fbfedc654ceb10a5664
c814"], "launchpad": "5e9e4502f509094188566f88", "flight_number": 118, "name": "Star
link-17 (v1.0)", "date_utc": "2021-03-04T08:24:00.000Z", "date_unix": 161484624
0, "date_local": "2021-03-04T03:24:00-05:00", "date_precision": "hour", "upcoming":
false, "cores": [{"core": "5e9e28a5f3591833b13b2659", "flight": 8, "gridfins": tru
e, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "lan
ding_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto_update": true, "t
bd": false, "launch_library_id": "dfd4f0e0-0ab4-494d-bd88-1b93b934b269", "id": "5fb
fecfe54ceb10a5664c80b"}, {"fairings": {"reused": true, "recovery_attempt": true, "re
covered": true, "ships": ["5ea6ed2e080df4000697c909", "5ea6ed2f080df4000697c90
c"]}, "links": {"patch": {"small": "https://imgur.com/BrW201S.png", "large": "http
s://imgur.com/573IfGk.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spa
cex/comments/jhu37i/starlink_general_discussion_and_deployment_thread/", "launc
h": "https://www.reddit.com/r/spacex/comments/m0yww5/rspacex_starlink20_officia
l_launch_discussion/", "media": null, "recovery": "https://www.reddit.com/r/space
x/comments/k2ts1q/rspacex_fleet_updates_discussion_thread/"}, "flickr": {"smal
l": [], "original": ["https://live.staticflickr.com/65535/51027544097_799f5baccc_
o.jpg", "https://live.staticflickr.com/65535/51027443336_3e7486be6f_o.jpg", "htt

```

```

ps://live.staticflickr.com/65535/51027443321_9a59458d39_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/U4sWbTfrzj8", "youtube_id": "U4sWbTfrzj8", "article": "https://spaceflightnow.com/2021/03/11/spacex-adds-more-satellites-to-starlink-internet-fleet/", "wikipedia": "https://en.wikipedia.org/wiki/Starlink"}, "static_fire_date_utc": "2021-03-09T23:00:00.000Z", "static_fire_date_unix": 1615330800, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "This mission launches the 20th batch of operational Starlink satellites, which are version 1.0, from LC-39A or SLC-40. It is the 21st Starlink launch overall. The satellites will be delivered to low Earth orbit and will spend a few weeks maneuvering to their operational altitude. The booster is expected to land on an ASDS.", "crew": [], "ships": ["5ea6ed2f080df4000697c910", "5ee68c683c228f36bd5809b5", "5ea6ed2e080df4000697c909", "5ea6ed2f080df4000697c90c"], "capsules": [], "payloads": ["600f9bcb8f798e2a4d5f97a5"], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 119, "name": "Starlink-20 (v1.0)", "date_utc": "2021-03-11T08:13:00.000Z", "date_unix": 1615450380, "date_local": "2021-03-11T03:13:00-05:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a7f3591817f23b2663", "flight": 6, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3033383ecbb9e534e7cc"}], "auto_update": true, "tbd": false, "launch_library_id": "134eb787-244e-4131-8b03-c9fbd0a11efc", "id": "600f9a718f798e2a4d5f979d"}, {"fairings": {"reused": true, "recovery_attempt": true, "recovered": true, "ships": ["5ea6ed2e080df4000697c909", "5ea6ed2f080df4000697c90c"]}, "links": {"patch": {"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_deployment_thread/", "launch": "https://www.reddit.com/r/spacex/comments/m4e377/rspacex_starlink21_launch_discussion_updates/", "media": null, "recovery": "https://www.reddit.com/r/spacex/comments/k2ts1q/rspacex_fleet_updates_discussion_thread/"}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/51036945097_9fc94fa9a9_o.jpg", "https://live.staticflickr.com/65535/51036945067_ce0d5b3c0b_o.jpg", "https://live.staticflickr.com/65535/51036945027_47c96d71d1_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/JKf45ATgATc", "youtube_id": "JKf45ATgATc", "article": "https://spaceflightnow.com/2021/03/14/spacex-extends-its-own-rocket-reuse-record-on-starlink-launch/", "wikipedia": "https://en.wikipedia.org/wiki/Starlink"}, "static_fire_date_utc": null, "static_fire_date_unix": null, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "This mission launches the 21st batch of operational Starlink satellites, which are version 1.0, from LC-39A or SLC-40. It is the 22nd Starlink launch overall. The satellites will be delivered to low Earth orbit and will spend a few weeks maneuvering to their operational altitude. The booster is expected to land on an ASDS.", "crew": [], "ships": ["5ea6ed2e080df4000697c909", "5ea6ed2f080df4000697c90c", "5ea6ed2f080df4000697c90d", "5ea6ed30080df4000697c913"], "capsules": [], "payloads": ["600f9bd88f798e2a4d5f97a6"], "launchpad": "5e9e4502f509094188566f88", "flight_number": 120, "name": "Starlink-21 (v1.0)", "date_utc": "2021-03-14T10:01:00.000Z", "date_unix": 1615716060, "date_local": "2021-03-14T06:01:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a6f35918c0803b265c", "flight": 9, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto_update": true, "tbd": false, "launch_library_id": "896d876d-e834-4810-8a5e-44d6b6a42630", "id": "600f9a8d8f798e2a4d5f979e"}, {"fairings": {"reuse": null, "recovery_attempt": true, "recovered": true, "ships": ["6059166413f40e27e8af34b6", "5ea6ed2f080df4000697c90b"]}, "links": {"patch": {"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_deployment_thread/", "launch": "https://www.reddit.com/r/spacex/comments/m4e377/rspacex_starlink21_launch_discussion_updates/", "media": null, "recovery": "https://www.reddit.com/r/spacex/comments/k2ts1q/rspacex_fleet_updates_discussion_thread/"}, "flickr": {"small": [], "original": []}, "presskit": null, "webcast": "https://youtu.be/a15czI9B91c", "youtube_id": "a15czI9B91c", "article": "https://spaceflightnow.com/2021/03/24/spacex-launches-25th-mission-to-build-out-st

```

```

arlink-internet-network/", "wikipedia": "https://en.wikipedia.org/wiki/Starlink"}, {"static_fire_date_utc": null, "static_fire_date_unix": null, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "This mission launches the 22nd batch of operational Starlink satellites, which are version 1.0, from or SLC-40. It is the 23rd Starlink launch overall. The satellites will be delivered to low Earth orbit and will spend a few weeks maneuvering to their operational altitude. The booster is expected to land on an ASDS.", "crew": [], "ships": ["5ee68c683c228f36bd5809b5", "5ea6ed30080df4000697c913", "5ea6ed2f080df4000697c90b", "6059166413f40e27e8af34b6"], "capsules": [], "payloads": ["60428afbc041c16716f73cdd"], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 121, "name": "Starlink-22 (v1.0)", "date_utc": "2021-03-24T08:28:00.000Z", "date_unix": 1616574480, "date_local": "2021-03-24T04:28:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5ef670f10059c33cee4a826c", "flight": 6, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto_update": true, "tbd": false, "launch_library_id": "ec03fe36-fe2a-4e43-8e10-d07d5349f1de", "id": "60428aafc041c16716f73cd7"}, {"fairings": {"reused": true, "recovery_attempt": true, "recovered": null, "ships": ["6059166413f40e27e8af34b6", "5ea6ed2f080df4000697c90b", "5ea6ed2e080df4000697c908"]}, "links": {"patch": {"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_deployment_thread/", "launch": "https://www.reddit.com/r/spacex/comments/mlitqf/rspacex_starlink23_launch_discussion_updates/", "media": null, "recovery": "https://www.reddit.com/r/spacex/comments/k2ts1q/rspacex_fleet_updates_discussion_thread/"}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/51101836837_8671b88722_o.jpg", "https://live.staticflickr.com/65535/51101836832_e151d33d66_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/Uy9Jn-3vuPs", "youtube_id": "Uy9Jn-3vuPs", "article": "https://spaceflightnow.com/2021/04/07/spacex-launches-its-100th-mission-from-floridas-space-coast/", "wikipedia": "https://en.wikipedia.org/wiki/Starlink"}, {"static_fire_date_utc": null, "static_fire_date_unix": null, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "This mission launches the 23rd batch of operational Starlink satellites, which are version 1.0, from or SLC-40 or LC-39A. It is the 24th Starlink launch overall. The satellites will be delivered to low Earth orbit and will spend a few weeks maneuvering to their operational altitude. The booster is expected to land on an ASDS.", "crew": [], "ships": ["5ea6ed30080df4000697c913", "5ee68c683c228f36bd5809b5", "5ea6ed2f080df4000697c90b"], "capsules": [], "payloads": ["60428b02c041c16716f73cde"], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 122, "name": "Starlink-23 (v1.0)", "date_utc": "2021-04-07T16:34:00.000Z", "date_unix": 1617813240, "date_local": "2021-04-07T12:34:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a7f3591817f23b2663", "flight": 7, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto_update": true, "tbd": false, "launch_library_id": "385455f4-067e-4c24-9937-ca8283ed3307", "id": "60428ac4c041c16716f73cd8"}, {"fairings": null, "links": {"patch": {"small": "https://imgur.com/SS92zpG.png", "large": "https://imgur.com/OvSAk3K.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/lrx7ez/crew2_launch_campaign_thread/", "launch": "https://www.reddit.com/r/spacex/comments/mvcst9/rspacex_crew2_launch_discussion_updates_thread/", "media": null, "recovery": null}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/51136761295_edb4d3ba1d_o.jpg", "https://live.staticflickr.com/65535/51135652706_3e8448193d_o.jpg", "https://live.staticflickr.com/65535/51135865043_3ee9818a56_o.jpg", "https://live.staticflickr.com/65535/51136428854_4723547f5a_o.jpg", "https://live.staticflickr.com/65535/51134975562_ca678d7e2f_o.jpg", "https://live.staticflickr.com/65535/51135650561_0bd04e5a56_o.jpg", "https://live.staticflickr.com/65535/51135650711_f65e45739d_o.jpg", "https://live.staticflickr.com/65535/51136428874_30a1912bc6_o.jpg", "https://live.staticflickr.com/65535/51135650696_80bb4d0047_o.jpg", "https://live.staticflickr.com/65535/51135650641_f8c77b5420_o.jpg", "https://live.staticflickr.com/65535/51136428829_2b995a79bc_o.jpg", "https://live.s

```

taticflickr.com/65535/51135650621\_187bc9fa5b\_o.jpg", "https://live.staticflickr.com/65535/51135324597\_816d0bc217\_o.jpg", "https://live.staticflickr.com/65535/51135997286\_1b5a4452f0\_o.jpg", "https://live.staticflickr.com/65535/51136428899\_eb329865d1\_o.jpg", "https://live.staticflickr.com/65535/51136428909\_d4d6cf76ae\_o.jpg", "https://live.staticflickr.com/65535/51136761220\_9a2e6dbaf6\_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/lW07SN3YoLI", "youtube\_id": "lW07SN3YoLI", "article": "https://spaceflightnow.com/2021/04/23/spacex-launches-astronauts-on-refurbished-capsule-and-flight-proven-rocket/", "wikipedia": "https://en.wikipedia.org/wiki/SpaceX\_Crew-2", "static\_fire\_date\_utc": "2021-04-17T11:01:00.000Z", "static\_fire\_date\_unix": 1618657260, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "SpaceX launches the second operational mission of its Crew Dragon vehicle as part of NASA's Commercial Crew Program, carrying NASA astronauts Shane Kimbrough, Megan McArthur, Thomas Pesquet, and Akihiko Hoshide to the International Space Station. The Falcon 9 and Crew Dragon lift off from LC-39A, Kennedy Space Center. Both the booster and the capsule have flown previously, each a first for a commercial crew flight. The booster for this mission is expected to land on an ASDS. The mission will be complete with the safe return of the astronauts to Earth.", "crew": ["5fe3ba5fb3467846b3242188", "5fe3bb01b3467846b3242189", "5fe3bc3db3467846b324218b", "5fe3bc8ab3467846b324218c"], "ships": ["5ea6ed2e080df4000697c909", "5ea6ed30080df4000697c913"], "capsules": ["5e9e2c5df359188aba3b2676"], "payloads": ["5fe3b3adb3467846b3242173"], "launchpad": "5e9e4502f509094188566f88", "flight\_number": 123, "name": "Crew-2", "date\_utc": "2021-04-23T09:49:00.000Z", "date\_unix": 1619171340, "date\_local": "2021-04-23T05:49:00-04:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "5f57c53d0622a6330279009f", "flight": 2, "gridfins": true, "legs": true, "reused": true, "landing\_attempt": true, "landing\_success": true, "landing\_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto\_update": true, "tbd": false, "launch\_library\_id": "32dcb5ad-7609-4fc0-8094-768ee5c2ebe0", "id": "5fe3af58b3467846b324215f", {"fairings": {"reused": false, "recovery\_attempt": true, "recovered": true, "ships": ["6059166413f40e27e8af34b6"]}}, "links": {"patch": {"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/jhu37i/starlink\_general\_discussion\_and\_deployment\_thread/", "launch": "https://www.reddit.com/r/spacex/comments/mzol0k/rspacex\_starlink24\_launch\_discussion\_updates/", "media": null, "recovery": "https://www.reddit.com/r/spacex/comments/k2ts1q/rspacex\_fleet\_updates\_discussion\_thread/"}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/51146838376\_4667d78231\_o.jpg", "https://live.staticflickr.com/65535/51147622479\_d027e09727\_o.jpg", "https://live.staticflickr.com/65535/51147949685\_975bd6b4ee\_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/RBxkRKZ34yo", "youtube\_id": "RBxkRKZ34yo", "article": "https://spaceflightnow.com/2021/04/29/spacex-launches-60-more-starlink-spacecraft-fcc-clears-spacex-to-fly-satellites-at-lower-altitudes/", "wikipedia": "https://en.wikipedia.org/wiki/Starlink"}, "static\_fire\_date\_utc": null, "static\_fire\_date\_unix": null, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "This mission launches the 24th batch of operational Starlink satellites, which are version 1.0, from LC-39A or SLC-40. It is the 25th Starlink launch overall. The satellites will be delivered to low Earth orbit and will spend a few weeks maneuvering to their operational altitude. The booster is expected to land on an ASDS.", "crew": [], "ships": ["5ea6ed2f080df4000697c910", "5ea6ed2f080df4000697c90d", "5ee68c683c228f36bd5809b5", "6059166413f40e27e8af34b6"], "capsules": [], "payloads": ["605b4be3aa5433645e37d046"], "launchpad": "5e9e4501f509094ba4566f84", "flight\_number": 124, "name": "Starlink-24 (v1.0)", "date\_utc": "2021-04-29T03:44:00.000Z", "date\_unix": 1619667840, "date\_local": "2021-04-28T23:44:00-04:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "5ef670f10059c33cee4a826c", "flight": 7, "gridfins": true, "legs": true, "reused": true, "landing\_attempt": true, "landing\_success": true, "landing\_type": "ASDS", "landpad": "5e9e3033383ecbb9e534e7cc"}], "auto\_update": true, "tbd": false, "launch\_library\_id": "fbd23c86-89d0-4d3f-b5fb-5d7165d05cca", "id": "605b4b6aaa5433645e37d03f", {"fairings": {"reused": true, "recovery\_attempt": true, "recovered": true, "ships": ["6059166413f40e27e8af34b6"]}}, "links": {"patch": {"small": "http

```
s://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png"}, "reddit":
{"campaign": "https://www.reddit.com/r/spacex/comments/jhu37i/starlink_general_
discussion_and_deployment_thread/", "launch": "https://www.reddit.com/r/spacex/c
omments/n3z0aa/rspacex_starlink25_launch_discussion_updates/", "media": null, "re
covery": "https://www.reddit.com/r/spacex/comments/k2ts1q/rspacex_fleet_updates
_discussion_thread/"}, "flickr": {"small": [], "original": []}, "presskit": null, "web
cast": "https://youtu.be/xpl_JnG7rcg", "youtube_id": "xpl_JnG7rcg", "article": nul
l, "wikipedia": "https://en.wikipedia.org/wiki/Starlink"}, "static_fire_date_ut
c": "2021-05-03T05:00:00.000Z", "static_fire_date_unix": 1620018000, "net": fals
e, "window": 0, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures":
[], "details": "This mission launches the 25th batch of operational Starlink sat
ellites, which are version 1.0, from LC-39A. It is the 26th Starlink launch ov
erall. The satellites will be delivered to low Earth orbit and will spend a fe
w weeks maneuvering to their operational altitude. The booster is expected to
land on OCISLY.", "crew": [], "ships": ["608c1a06cf7f3d6152666ad4", "5ea6ed30080df
4000697c913", "6059166413f40e27e8af34b6"], "capsules": [], "payloads": ["605b4befaa
5433645e37d047"], "launchpad": "5e9e4502f509094188566f88", "flight_number": 125, "n
ame": "Starlink-25 (v1.0)", "date_utc": "2021-05-04T19:01:00.000Z", "date_unix": 16
20154860, "date_local": "2021-05-04T15:01:00-04:00", "date_precision": "hour", "upc
oming": false, "cores": [{"core": "5e9e28a5f3591833b13b2659", "flight": 9, "gridfin
s": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": tru
e, "landing_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto_update": t
rue, "tbd": false, "launch_library_id": "1ecc82c0-c5c8-41f0-aa58-b50a3b839ae0", "i
d": "605b4b7daa5433645e37d040"}, {"fairings": {"reused": true, "recovery_attempt": t
rue, "recovered": true, "ships": ["6059166413f40e27e8af34b6"]}, "links": {"patch":
{"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.pn
g"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/jhu37i/star
link_general_discussion_and_deployment_thread/", "launch": "https://www.reddit.c
om/r/spacex/comments/n7ju15/rspacex_starlink27_launch_discussion_updates/", "me
dia": null, "recovery": "https://www.reddit.com/r/spacex/comments/k2ts1q/rspacex_
fleet_updates_discussion_thread/"}, "flickr": {"small": [], "original": []}, "pressk
it": null, "webcast": "https://youtu.be/J71s2KmkSrc", "youtube_id": "J71s2KmkSr
c", "article": null, "wikipedia": "https://en.wikipedia.org/wiki/Starlink"}, "stati
c_fire_date_utc": null, "static_fire_date_unix": null, "net": false, "window": nul
l, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "detail
s": "This mission launches the 26th batch of operational Starlink satellites, w
hich are version 1.0, from SLC-40. It is the 27th Starlink launch overall. The
satellites will be delivered to low Earth orbit and will spend a few weeks man
euvering to their operational altitude. The booster is expected to land on an
ASDS.", "crew": [], "ships": ["5ea6ed30080df4000697c913", "5ee68c683c228f36bd5809b
5", "6059166413f40e27e8af34b6"], "capsules": [], "payloads": ["6079bd5e9a06446e8c61
bf7c"], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 126, "name": "Star
link-27 (v1.0)", "date_utc": "2021-05-09T06:42:00.000Z", "date_unix": 162054252
0, "date_local": "2021-05-09T02:42:00-04:00", "date_precision": "hour", "upcoming":
false, "cores": [{"core": "5e9e28a6f35918c0803b265c", "flight": 10, "gridfins": tru
e, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "lan
ding_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto_update": true, "t
bd": false, "launch_library_id": "e5085f22-208b-4b28-b66c-fd4bd9df90e7", "id": "607
9bd1c9a06446e8c61bf76"}, {"fairings": {"reused": true, "recovery_attempt": true, "re
covered": null, "ships": ["6059166413f40e27e8af34b6"]}, "links": {"patch": {"smal
l": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png"}, "r
eddit": {"campaign": "https://www.reddit.com/r/spacex/comments/jhu37i/starlink_g
eneral_discussion_and_deployment_thread/", "launch": "https://www.reddit.com/r/s
pacex/comments/ncfexu/rspacex_starlink26_launch_discussion_updates/", "media": n
ull, "recovery": "https://www.reddit.com/r/spacex/comments/k2ts1q/rspacex_fleet_
updates_discussion_thread/"}, "flickr": {"small": [], "original": ["https://live.st
aticflickr.com/65535/51171344450_6a3f0e08b9_o.jpg", "https://live.staticflickr.
com/65535/51170251791_9b36fba5b7_o.jpg", "https://live.staticflickr.com/65535/5
1185653708_86840b1672_o.jpg", "https://live.staticflickr.com/65535/51185653723_
7bd9ecab87_o.jpg", "https://live.staticflickr.com/65535/51186506630_1a47a43787_
```

```

o.jpg"}}, "presskit": null, "webcast": "https://youtu.be/tdgg_qwj-hI", "youtube_id": "tdgg_qwj-hI", "article": null, "wikipedia": "https://en.wikipedia.org/wiki/Starlink", "static_fire_date_utc": null, "static_fire_date_unix": null, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "This mission launches the 27th batch of operational Starlink satellites, which are version 1.0, from LC-39A or SLC-40. It is the 28th Starlink launch overall. The satellites will be delivered to low Earth orbit and will spend a few weeks maneuvering to their operational altitude. The booster is expected to land on an ASDS.", "crew": [], "ships": ["5ea6ed30080df4000697c913", "6059166413f40e27e8af34b6", "608c1a06cf7f3d6152666ad4", "5ea6ed2f080df4000697c90b"], "capsules": [], "payloads": ["605b4bfcaa5433645e37d048", "609f48374a12e4692eae4667", "609f49c64a12e4692eae4668"], "launchpad": "5e9e4502f509094188566f88", "flight_number": 127, "name": "Starlink-26 (v1.0) + Capella-6 + Tyvak-0130", "date_utc": "2021-05-15T22:54:00.000Z", "date_unix": 1621119240, "date_local": "2021-05-15T18:54:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a7f3591817f23b2663", "flight": 8, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto_update": true, "tbd": false, "launch_library_id": "c32d1f5e-2dd9-4b55-ac8b-3eb8c4a4e955", "id": "605b4b95aa5433645e37d041"}, {"fairings": {"reused": true, "recovery_attempt": true, "recovered": true, "ships": ["5ea6ed2e080df4000697c909", "5ea6ed2f080df4000697c90c"]}, "links": {"patch": {"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_deployment_thread/", "launch": "https://www.reddit.com/r/spacex/comments/nkxg4s/rspacex_starlink28_launch_discussion_and_updates/", "media": null, "recovery": "https://www.reddit.com/r/spacex/comments/k2ts1q/rspacex_fleet_updates_discussion_thread/"}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/51225270061_42bc3abb43_o.jpg", "https://live.staticflickr.com/65535/51226036719_584d141279_o.jpg", "https://live.staticflickr.com/65535/51225480623_5ef7d3957a_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/xRu-ekesDyY", "youtube_id": "xRu-ekesDyY", "article": "https://spaceflightnow.com/2021/05/26/first-phase-of-spacexs-starlink-network-nears-completion-with-falcon-9-launch/", "wikipedia": "https://en.wikipedia.org/wiki/Starlink"}, {"static_fire_date_utc": null, "static_fire_date_unix": null, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "This mission launches the 28th batch of operational Starlink satellites, which were version 1.0, from SLC-40. It was the 29th Starlink launch overall. The satellites plan to be delivered to low Earth orbit and will spend a few weeks maneuvering to their operational altitude. The booster is expected to land on ASDS JRT I.", "crew": [], "ships": ["5ea6ed30080df4000697c913", "5ea6ed2f080df4000697c90c", "5ee68c683c228f36bd5809b5", "5ea6ed2f080df4000697c90b", "5ea6ed2e080df4000697c909"], "capsules": [], "payloads": ["6079bd679a06446e8c61bf7d"], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 128, "name": "Starlink-28 (v1.0)", "date_utc": "2021-05-26T18:59:00.000Z", "date_unix": 1622055540, "date_local": "2021-05-26T14:59:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5f57c54a0622a633027900a1", "flight": 2, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3033383ecbb9e534e7cc"}], "auto_update": true, "tbd": false, "launch_library_id": "fb25ecf0-fb51-4b5e-b678-105f6ba4c06e", "id": "6079bd399a06446e8c61bf77"}, {"fairings": null, "links": {"patch": {"small": "https://imgur.com/o6zaoex.png", "large": "https://imgur.com/klt5qq2.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/nhztq5/crs22_launch_campaign_thread/", "launch": "https://www.reddit.com/r/spacex/comments/nqgojc/rspacex_crs22_launch_docking_discussion_updates/", "media": null, "recovery": "https://www.reddit.com/r/spacex/comments/k2ts1q/rspacex_fleet_updates_discussion_thread/"}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/51225482033_086576f2cd_o.jpg", "https://live.staticflickr.com/65535/51226340205_9c3ac87b8e_o.jpg", "https://live.staticflickr.com/65535/51224563112_61d493b775_o.jpg", "https://live.staticflickr.com/65535/51224563062_95bf029b80_o.jpg", "https://live.staticflickr.com/65535/51225271661_49315dc688_o.jpg", "https://live.staticflickr.com/65535/51226340225_"]

```

27df994080\_o.jpg", "https://live.staticflickr.com/65535/51224563102\_d07c630ef5\_o.jpg", "https://live.staticflickr.com/65535/51225482053\_1fe7157f74\_o.jpg", "https://live.staticflickr.com/65535/51226038164\_304c347347\_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/QXf9mRWbXDM", "youtube\_id": "QXf9mRWbXDM", "article": "https://spaceflightnow.com/2021/06/03/spacex-supply-ship-launches-on-mission-to-begin-upgrading-space-station-electrical-grid/", "wikipedia": "https://en.wikipedia.org/wiki/SpaceX\_CRS-22"}, {"static\_fire\_date\_utc": null, "static\_fire\_date\_unix": null, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "SpaceX's 22nd ISS resupply mission on behalf of NASA, this mission sends essential supplies to the International Space Station using the cargo variant of SpaceX's Dragon 2 spacecraft. The external payload for this mission is the first pair of ISS Roll Out Solar Arrays. Falcon 9 and Dragon launch from LC-39A, Kennedy Space Center and the booster is expected to land on an ASDS. The mission will be complete with splashdown and recovery of the capsule and down cargo.", "crew": [], "ships": ["5ea6ed2f080df4000697c90b", "608c1a06cf7f3d6152666ad4", "5ea6ed30080df4000697c913"], "capsules": ["60b803421f83cc1e59f1644d"], "payloads": ["5fe3b642b3467846b324217b"], "launchpad": "5e9e4502f509094188566f88", "flight\_number": 129, "name": "CRS-22 & IROSA", "date\_utc": "2021-06-03T17:29:00.000Z", "date\_unix": 1622741340, "date\_local": "2021-06-03T13:29:00-04:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "60b800111f83cc1e59f16438", "flight": 1, "gridfins": true, "legs": true, "reused": false, "landing\_attempt": true, "landing\_success": true, "landing\_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto\_update": true, "tbd": false, "launch\_library\_id": "89a150ea-6e4b-489f-853c-3603ae684611", "id": "5fe3af84b3467846b3242161"}, {"fairings": {"reused": false, "recovery\_attempt": true, "recovered": true, "ships": ["5ea6ed2f080df4000697c90b", "5ea6ed2e080df4000697c909"]}, "links": {"patch": {"small": "https://i.imgur.com/Iphd7Aj.png", "large": "https://i.imgur.com/X9q44xx.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/n91llxw/sxm8\_launch\_campaign\_thread/", "launch": "https://www.reddit.com/r/spacex/comments/nss9br/rspacex\_sxm8\_launch\_discussion\_and\_updates\_thread/", "media": null, "recovery": null}, "flickr": {"small": [], "original": [], "presskit": null, "webcast": "https://youtu.be/bgtDRR2F2wA", "youtube\_id": "bgtDRR2F2wA", "article": null, "wikipedia": "https://en.wikipedia.org/wiki/Sirius\_XM#Satellites"}, "static\_fire\_date\_utc": "2021-06-03T06:32:00.000Z", "static\_fire\_date\_unix": 1622701920, "net": false, "window": 5940, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "SpaceX launches the second of two next generation satellites for SiriusXM from SLC-40, Cape Canaveral Space Force Station. The spacecraft will be delivered into a sub-synchronous geostationary transfer orbit and will replace XM-4 in geostationary orbit. The booster for this mission will land on an ASDS.", "crew": [], "ships": ["5ee68c683c228f36bd5809b5", "5ea6ed2f080df4000697c910", "5ea6ed2f080df4000697c90b", "5ea6ed2e080df4000697c909"], "capsules": [], "payloads": ["5fe3b57db3467846b324217a"], "launchpad": "5e9e4501f509094ba4566f84", "flight\_number": 130, "name": "SXM-8", "date\_utc": "2021-06-06T04:26:00.000Z", "date\_unix": 1622953560, "date\_local": "2021-06-06T00:26:00-04:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "5f57c53d0622a6330279009f", "flight": 3, "gridfins": true, "legs": true, "reused": true, "landing\_attempt": true, "landing\_success": true, "landing\_type": "ASDS", "landpad": "5e9e3033383ecbb9e534e7cc"}], "auto\_update": true, "tbd": false, "launch\_library\_id": "edaf9a8d-d67c-4e0e-8452-a37b111581d5", "id": "5fe3af6db3467846b3242160"}, {"fairings": {"reused": false, "recovery\_attempt": true, "recovered": true, "ships": ["60c8c7a45d4819007ea69871"]}, "links": {"patch": {"small": "https://i.imgur.com/sZiYIsl.png", "large": "https://i.imgur.com/n4PN2ko.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/nuud01/gps\_iii\_sv05\_launch\_campaign\_thread/", "launch": "https://www.reddit.com/r/spacex/comments/o0gcnq/rspacex\_gps\_iii\_sv05\_launch\_discussion\_and/", "media": null, "recovery": null}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/51254829184\_e6e1d0d79c\_o.jpg", "https://live.staticflickr.com/65535/51253353892\_de82b01e23\_o.jpg", "https://live.staticflickr.com/65535/51254285968\_288383ce6e\_o.jpg", "https://live.staticflickr.com/65535/51254829154\_3c5980c086\_o.jpg", "https://live.staticflickr.com/65535/51253353882\_e59ea4df4f\_o.jpg", "https://live.staticflickr.com/65535/51254829139\_ca68c19689\_o.jpg", "http

s://live.staticflickr.com/65535/51262926489\_9fbce20e9c\_o.jpg", "https://live.staticflickr.com/65535/51262926469\_974292477d\_o.jpg", "https://live.staticflickr.com/65535/51262179176\_e4302db116\_o.jpg", "https://live.staticflickr.com/65535/51263224735\_3210fb7499\_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/QJXxVtp3KqI", "youtube\_id": "QJXxVtp3KqI", "article": null, "wikipedia": "https://en.wikipedia.org/wiki/GPS\_Block\_III", "static\_fire\_date\_utc": "2021-06-13T19:30:00.000Z", "static\_fire\_date\_unix": 1623612600, "net": false, "window": 900, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "SpaceX's fourth GPS III launch will use the first stage from the previous GPS mission. This will be the first time a National Security Space Launch has flown on a flight proven booster. Falcon 9 will launch from SLC-40, Cape Canaveral and the booster will land downrange on a drone ship. GPS III is the third generation of the U.S. Space Force's NAVSTAR Global Positioning System satellites, developed by Lockheed Martin. The GPS III constellation will feature a cross-linked command and control architecture, allowing the entire GPS constellation to be updated simultaneously from a single ground station. A new spot beam capability for enhanced military coverage and increased resistance to hostile jamming will be incorporated.", "crew": [], "ships": ["60c8c7a45d4819007ea69871", "5ee68c683c228f36bd5809b5", "5ea6ed2f080df4000697c910"], "capsules": [], "payloads": ["5eb0e4d2b6c3bb0006eeb261"], "launchpad": "5e9e4501f509094ba4566f84", "flight\_number": 131, "name": "GPS III SV05", "date\_utc": "2021-06-17T16:09:00.000Z", "date\_unix": 1623946140, "date\_local": "2021-06-17T12:09:00-04:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "5f57c5440622a633027900a0", "flight": 2, "gridfins": true, "legs": true, "reused": true, "landing\_attempt": true, "landing\_success": true, "landing\_type": "ASDS", "landpad": "5e9e3033383ecbb9e534e7cc"}], "auto\_update": true, "tbd": false, "launch\_library\_id": "110c808a-a091-47ab-8532-4fa058c1de7a", "id": "5eb87d4effd86e000604b390"}, {"fairings": {"reused": true, "recovery\_attempt": true, "recovered": true, "ships": ["60c8c7a45d4819007ea69871"]}, "links": {"patch": {"small": "https://imgur.com/IJWn9pK.png", "large": "https://imgur.com/u49XVx4.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/nz7rai/transporter2\_launch\_campaign\_thread/", "launch": "https://www.reddit.com/r/spacex/comments/o9ki7u/rspacex\_transporter2\_launch\_discussion\_and/", "media": null, "recovery": "https://www.reddit.com/r/spacex/comments/k2tslq/rspacex\_fleet\_updates\_discussion\_thread/"}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/51283430951\_a9e5a41141\_o.jpg", "https://live.staticflickr.com/65535/51283430936\_3852120bbe\_o.jpg", "https://live.staticflickr.com/65535/51283604493\_d1a088b7c9\_o.jpg", "https://live.staticflickr.com/65535/51284454795\_591717faee\_o.jpg", "https://live.staticflickr.com/65535/51284454810\_9fdd0e8db4\_o.jpg", "https://live.staticflickr.com/65535/51283604443\_6d92fe1231\_o.jpg", "https://live.staticflickr.com/65535/51283604428\_b24ebf1b5f\_o.jpg", "https://live.staticflickr.com/65535/51283604438\_7202e2a388\_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/sSiuWlHcGjA", "youtube\_id": "sSiuWlHcGjA", "article": null, "wikipedia": null}, "static\_fire\_date\_utc": "2021-06-22T15:24:00.000Z", "static\_fire\_date\_unix": 1624375440, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "Falcon 9 launches to sun-synchronous polar orbit from Florida as part of SpaceX's Rideshare program dedicated to small sat customers. The mission lifts off from SLC-40, Cape Canaveral on a southward azimuth and performs a dogleg maneuver. The booster for this mission is expected to return to LZ-1 based on FCC communications filings. This rideshare takes approximately 90 satellites and hosted payloads into orbit on a variety of deployers including three free-flying spacecraft which dispense their customers' satellites after separation from the SpaceX stack.", "crew": [], "ships": ["60c8c7a45d4819007ea69871"], "capsules": [], "payloads": ["608ac397eb3e50044e3630e7"], "launchpad": "5e9e4501f509094ba4566f84", "flight\_number": 132, "name": "Transporter-2", "date\_utc": "2021-06-30T19:31:00.000Z", "date\_unix": 1625081460, "date\_local": "2021-06-30T15:31:00-04:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "5ef670f10059c33cee4a826c", "flight": 8, "gridfins": true, "legs": true, "reused": true, "landing\_attempt": true, "landing\_success": true, "landing\_type": "RTLS", "landpad": "5e9e3032383ecb267a34e7c7"}], "auto\_update": true, "tbd": false, "launch\_library\_id": "5d248abe-17ef-43ce-9c04-aef33af40520", "id": "600f9b6d8f7



```

98e2a4d5f979f"}, {"fairings": null, "links": {"patch": {"small": "https://i.imgur.com/ZBUSrcD.png", "large": "https://i.imgur.com/yPv13SR.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/p67i27/crs23_launch_campaign_thread/", "launch": "https://www.reddit.com/r/spacex/comments/pj0ao/rspacex_crs23_launch_docking_discussion_updates/", "media": null, "recovery": null}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/51411435986_82d7088b61_o.jpg", "https://live.staticflickr.com/65535/51411702583_fe67991413_o.jpg", "https://live.staticflickr.com/65535/51411702573_de10cdbc06_o.jpg", "https://live.staticflickr.com/65535/51411435116_ac7b3cc3d1_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/x-KiDqxAMU0", "youtube_id": "x-KiDqxAMU0", "article": null, "wikipedia": "https://en.wikipedia.org/wiki/SpaceX_CRS-23"}, {"static_fire_date_utc": "2021-08-26T02:49:00.000Z", "static_fire_date_unix": 1629946140, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "SpaceX's 23rd ISS resupply mission on behalf of NASA, this mission brings essential supplies to the International Space Station using the cargo variant of SpaceX's Dragon 2 spacecraft. Cargo includes several science experiments. The booster for this mission is expected to land on an ASDS. The mission will be complete with return and recovery of the Dragon capsule and down cargo."}, {"crew": [], "ships": ["5ea6ed2d080df4000697c904"], "capsules": [], "payloads": ["5fe3c4f2b3467846b3242193"], "launchpad": "5e9e4502f509094188566f88", "flight_number": 133, "name": "CRS-23", "date_utc": "2021-08-29T07:14:00.000Z", "date_unix": 1630221240, "date_local": "2021-08-29T03:14:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5f57c53d0622a6330279009f", "flight": 4, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3033383ecb075134e7cd"}], "auto_update": true, "tbd": false, "launch_library_id": "13386512-85bb-4c93-a9b0-f5eac05f8e4f", "id": "5fe3b11eb3467846b324216c"}, {"fairings": {"reused": true, "recovery_attempt": null, "recovered": null, "ships": []}, "links": {"patch": {"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_deployment_thread/", "launch": "https://www.reddit.com/r/spacex/comments/pmn0xm/rspacex_starlink21_launch_discussion_and_updates/", "media": null, "recovery": "https://www.reddit.com/r/spacex/comments/k2tslq/rspacex_fleet_updates_discussion_thread/"}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/51474853666_be4615e186_o.jpg", "https://live.staticflickr.com/65535/51475097383_dcf9002e9c_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/4372QYiPZB4", "youtube_id": "4372QYiPZB4", "article": "https://spaceflightnow.com/2021/09/14/spacex-launches-first-full-batch-of-laser-equipped-starlink-satellites/", "wikipedia": "https://en.wikipedia.org/wiki/Starlink"}, {"static_fire_date_utc": "2021-09-02T17:29:00.000Z", "static_fire_date_unix": 1630603740, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": null, "crew": [], "ships": ["5ea6ed30080df4000697c913"], "capsules": [], "payloads": ["60e3bf3373359ele20335c3c"], "launchpad": "5e9e4502f509092b78566f87", "flight_number": 134, "name": "Starlink 2-1 (v1.5)", "date_utc": "2021-09-14T03:55:00.000Z", "date_unix": 1631591700, "date_local": "2021-09-13T20:55:00-07:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a5f3591833b13b2659", "flight": 10, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto_update": true, "tbd": false, "launch_library_id": "6b9f9fe6-7f94-498b-a664-7c9e42dbe76d", "id": "60e3bf0d73359ele20335c37"}, {"fairings": null, "links": {"patch": {"small": "https://i.imgur.com/J1uM5nz.png", "large": "https://i.imgur.com/jYYTXwC.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/pclfq7/inspiration4_launch_campaign_thread/", "launch": "https://www.reddit.com/r/spacex/comments/po651k/rspacex_inspiration4_launch_discussion_updates/", "media": null, "recovery": null}, "flickr": {"small": [], "original": []}, "presskit": null, "webcast": "https://youtu.be/3pv01sSq44w", "youtube_id": "3pv01sSq44w", "article": null, "wikipedia": "https://en.wikipedia.org/wiki/Inspiration4"}, {"static_fire_date_utc": "2021-09-13T07:07:00.000Z", "static_fire_date_unix": 1631516820, "net": false, "window": 18000, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "Inspiration4 is the world's first all-civilian orbital mission."}

```

99s first all-civilian mission to space. The mission will be commanded by Jared Isaacman, the 37-year-old founder and Chief Executive Officer of Shift4 Payments and an accomplished pilot and adventurer. Inspiration4 will leave Earth from Kennedy Space Center's historic Launch Complex 39A, the embarkation point for Apollo and Space Shuttle missions, and travel across a low earth orbit on a multi-day journey that will continually eclipse more than 90% of the earth's population. Named in recognition of the four-person crew that will raise awareness and funds for St. Jude Children's Research Hospital, this milestone represents a new era for human spaceflight and exploration.

"crew": ["607a3a5f5a906a44023e0870", "607a3ab45a906a44023e0872", "607b48375a906a44023e08b8", "607b48da5a906a44023e08b9"], "ships": ["5ea6ed2f080df4000697c910", "5ee68c683c228f36bd5809b5", "614251b711a64135defb3654"], "capsules": ["5f6f99fddcdf403df379709"], "payloads": ["607a382f5a906a44023e0867"], "launchpad": "5e9e4502f509094188566f88", "flight\_number": 135, "name": "Inspiration4", "date\_utc": "2021-09-16T00:02:00.000Z", "date\_unix": 1631750520, "date\_local": "2021-09-15T20:02:00-04:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "5f57c5440622a633027900a0", "flight": 3, "gridfins": true, "legs": true, "reused": true, "landing\_attempt": true, "landing\_success": true, "landing\_type": "ASDS", "landpad": "5e9e3033383ecbb9e534e7cc"}], "auto\_update": true, "tbd": false, "launch\_library\_id": "621d64e6-0513-45dc-8ffa-c9fd56518398", "id": "607a37565a906a44023e0866", {"fairings": null, "links": {"patch": {"small": "https://i.imgur.com/kIHwGnk.png", "large": "https://i.imgur.com/iKMGCp.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/q8r52a/crew3\_launch\_campaign\_thread/", "launch": "https://www.reddit.com/r/spacex/comments/qij6f4/rspacex\_crew3\_launch\_discussion\_updates\_thread/", "media": null, "recovery": null}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/51673353699\_e3da266245\_o.jpg", "https://live.staticflickr.com/65535/51673548360\_64354b760f\_o.jpg", "https://live.staticflickr.com/65535/51672676881\_3b88410a96\_o.jpg", "https://live.staticflickr.com/65535/51673548330\_7acc53d2fb\_o.jpg", "https://live.staticflickr.com/65535/51671874407\_4f56a87855\_o.jpg", "https://live.staticflickr.com/65535/51672676961\_36371a6a76\_o.jpg", "https://live.staticflickr.com/65535/51672915563\_7f5b373701\_o.jpg", "https://live.staticflickr.com/65535/51672915633\_947e35cabc\_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/WZvtrnFItNs", "youtube\_id": "WZvtrnFItNs", "article": "https://spaceflightnow.com/2021/11/11/spacex-debuts-new-dragon-capsule-in-launch-to-the-international-space-station/", "wikipedia": "https://en.wikipedia.org/wiki/SpaceX\_Crew-3"}, "static\_fire\_date\_utc": "2021-10-28T05:46:00.000Z", "static\_fire\_date\_unix": 1635399960, "net": false, "window": 0, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "SpaceX will launch the third operational mission of its Crew Dragon vehicle as part of NASA's Commercial Crew Program, carrying four astronauts to the International Space Station, including 1 international partner. This mission will fly on a new capsule and a once used booster. The booster will land downrange on a dry one ship. The Crew-2 mission returns from the space station in November."

"crew": ["5fe3c587b3467846b3242198", "5fe3c5beb3467846b3242199", "5fe3c5f6b3467846b324219a", "60c4b5ad4e041c0b356db393"], "ships": ["5ea6ed2d080df4000697c904", "5ee68c683c228f36bd5809b5", "614251b711a64135defb3654", "5ea6ed2f080df4000697c90c", "5ea6ed2e080df4000697c909"], "capsules": ["617c05591bad2c661a6e2909"], "payloads": ["5fe3b3bab3467846b3242174"], "launchpad": "5e9e4502f509094188566f88", "flight\_number": 136, "name": "Crew-3", "date\_utc": "2021-11-11T02:03:00.000Z", "date\_unix": 1636596180, "date\_local": "2021-11-10T21:03:00-05:00", "date\_precision": "hour", "upcoming": false, "cores": [{"core": "60b800111f83cc1e59f16438", "flight": 2, "gridfins": true, "legs": true, "reused": true, "landing\_attempt": true, "landing\_success": true, "landing\_type": "ASDS", "landpad": "5e9e3033383ecb075134e7cd"}], "auto\_update": true, "tbd": false, "launch\_library\_id": "0d779392-1a36-4c1e-b0b8-ec11e3031ee6", "id": "5fe3b15eb3467846b324216d", {"fairings": {"reused": null, "recovery\_attempt": true, "recovered": true, "ships": ["618fad7e563d69573ed8caa9"]}, "links": {"patch": {"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/jhu37i/starlink\_general\_discussion\_and\_deployment\_thread/", "launch": "https://www.reddit.com/r/spacex/comments/qro60o/rspacex\_starlink\_41\_launch\_discussion\_and\_update

```

s/", "media": null, "recovery": "https://www.reddit.com/r/spacex/comments/k2ts1q/r
spacex_fleet_updates_discussion_thread/", "flickr": {"small": [], "original": ["ht
tps://live.staticflickr.com/65535/51676939646_1a12780e54_o.jpg", "https://live.
staticflickr.com/65535/51677186188_e03e87ae8e_o.jpg", "https://live.staticflick
r.com/65535/51676136297_0bbb893f44_o.jpg", "https://live.staticflickr.com/6553
5/51677822295_87c2ee94b1_o.jpg", "https://live.staticflickr.com/65535/516771860
98_12c8f54593_o.jpg", "https://live.staticflickr.com/65535/51676136282_5118fa42
ef_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/AtmtP4vouSY", "youtube_
id": "AtmtP4vouSY", "article": "https://spaceflightnow.com/2021/11/13/spacex-laun
ch-starts-deployment-of-new-starlink-orbital-shell/", "wikipedia": "https://en.w
ikipedia.org/wiki/Starlink", "static_fire_date_utc": null, "static_fire_date_uni
x": null, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809dlec", "succes
s": true, "failures": [], "details": null, "crew": [], "ships": [{"5ea6ed2f080df4000697c
910", "618fad7e563d69573ed8caa9"}], "capsules": [], "payloads": [{"618fabf0563d69573e
d8caa6"}], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 137, "name": "St
arlink 4-1 (v1.5)", "date_utc": "2021-11-13T12:40:00.000Z", "date_unix": 163680720
0, "date_local": "2021-11-13T07:40:00-05:00", "date_precision": "hour", "upcoming":
false, "cores": [{"core": "5e9e28a7f3591817f23b2663", "flight": 9, "gridfins": tru
e, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "lan
ding_type": "ASDS", "landpad": "5e9e3033383ecbb9e534e7cc"}], "auto_update": true, "t
bd": false, "launch_library_id": null, "id": "618faad2563d69573ed8caa9d"}, {"fairing
s": {"reused": null, "recovery_attempt": true, "recovered": null, "ships": [{"5ea6ed300
80df4000697c912"}], "links": {"patch": {"small": "https://i.imgur.com/uACyyZV.pn
g", "large": "https://i.imgur.com/4wqXB9V.png"}, "reddit": {"campaign": "https://ww
w.reddit.com/r/spacex/comments/qu8s5a/dart_launch_campaign_thread/", "launc
h": "https://www.reddit.com/r/spacex/comments/r0dn3a/rspacex_dart_launch_discus
sion_and_updates_thread/", "media": null, "recovery": null}, "flickr": {"small":
[], "original": ["https://live.staticflickr.com/65535/51702654584_13a4b39655_o.j
pg", "https://live.staticflickr.com/65535/51702261963_ec86519bce_o.jpg", "http
s://live.staticflickr.com/65535/51702654544_c4b0a727c3_o.jpg", "https://live.st
aticflickr.com/65535/51702654514_c379940fa3_o.jpg", "https://live.staticflickr.
com/65535/51702654339_7c40563d73_o.jpg"]}, "presskit": null, "webcast": "https://y
outu.be/XKRf6-NcMqI", "youtube_id": "XKRf6-NcMqI", "article": null, "wikipedia": "ht
tps://en.wikipedia.org/wiki/Double_Asteroid_Redirection_Test", "static_fire_da
te_utc": "2021-11-19T20:20:00.000Z", "static_fire_date_unix": 1637353200, "net": fa
lse, "window": null, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failure
s": [], "details": "NASA's Double Asteroid Redirect Test (DART) will demonstrate
the use of a kinetic impactor to alter an asteroid's trajectory, an intervent
ion that could be used in the future to prevent devastating Earth impacts. The
target system consists of Didymos, 780 meters in diameter, and its moonlet Dim
orphos, 160 meters. The DART spacecraft will intercept the double asteroid, us
ing autonomous guidance to crash into the smaller one. Moving at about 6 km/s,
the transferred momentum should alter Dimorphos's 12 hour orbital period arou
nd its companion by several minutes. The mission tests several technologies, i
ncluding the Small-body Maneuvering Autonomous Real-Time Navigation (SMART Na
v) used to differentiate and steer toward the target body and Roll-Out Solar A
rrays (ROSA) with Transformational Solar Array concentrators. NASA's Evolutionary Xenon Thruster (NEXT) ion
engine will also be demonstrated, although the spacecraft's primary propulsi
on is hydrazine thrusters. DART should arrive at Didymos in late September 202
2, when it is about 11 million kilometers from Earth. Ten days before impact,
the Italian Space Agency's cubesat LICIACube will be deployed to observe the
collision and ejecta with its two cameras. Earth-based telescopes will be used
to measure the altered orbit.", "crew": [], "ships": [{"5ea6ed30080df4000697c91
3", "5ea6ed2f080df4000697c90b", "5ea6ed30080df4000697c912"}], "capsules": [], "paylo
ads": [{"5fe3c4a6b3467846b3242192"}], "launchpad": "5e9e4502f509092b78566f87", "flig
ht_number": 138, "name": "DART", "date_utc": "2021-11-24T06:20:00.000Z", "date_uni
x": 1637734800, "date_local": "2021-11-23T22:20:00-08:00", "date_precision": "hou
r", "upcoming": false, "cores": [{"core": "5f57c54a0622a633027900a1", "flight": 2, "gr
idfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_succes

```

```

s":true,"landing_type":"ASDS","landpad":"5e9e3032383ecb6bb234e7ca"}]],"auto_upd
ate":true,"tbd":false,"launch_library_id":"c4b2f90e-3385-4cbe-a89f-fc5f57dalbf
b","id":"5fe3b107b3467846b324216b"},{"fairings":{"reused":null,"recovery_attem
pt":true,"recovered":null,"ships":["618fad7e563d69573ed8caa9"]},"links":{"patc
h":{"small":"https://imgur.com/BrW201S.png","large":"https://imgur.com/573IfG
k.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/jhu37i/
starlink_general_discussion_and_deployment_thread/","launch":"https://www.redd
it.com/r/spacex/comments/r79osa/spacex_starlink_43_launch_discussion_and_updat
es/","media":null,"recovery":"https://www.reddit.com/r/spacex/comments/k2ts1q/
rspacex_fleet_updates_discussion_thread/"},"flickr":{"small":[],"original":["h
ttps://live.staticflickr.com/65535/51732172914_4efa7d5210_o.jpg","https://liv
e.staticflickr.com/65535/51730706247_4b5bf2899f_o.jpg","https://live.staticfli
ckr.com/65535/51732172879_4ce91546ed_o.jpg"]},"presskit":null,"webcast":"http
s://youtu.be/594TbXriaAk","youtube_id":"594TbXriaAk","article":null,"wikipedi
a":"https://en.wikipedia.org/wiki/Starlink"},"static_fire_date_utc":null,"stat
ic_fire_date_unix":null,"net":false,"window":null,"rocket":"5e9d0d95eda69973a8
09dlec","success":true,"failures":[],"details":null,"crew":[],"ships":["5ea6ed
2d080df4000697c904","618fad7e563d69573ed8caa9","5ee68c683c228f36bd5809b5"],"ca
psules":[],"payloads":["6161d0f26db1a92bfbfa85355"],"launchpad":"5e9e4501f50909
4ba4566f84","flight_number":139,"name":"Starlink 4-3 (v1.5)","date_utc":"2021-
12-01T23:20:00.000Z","date_unix":1638400800,"date_local":"2021-12-01T18:20:00-
05:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5ef670f10059
c33cee4a826c","flight":9,"gridfins":true,"legs":true,"reused":true,"landing_at
tempt":true,"landing_success":true,"landing_type":"ASDS","landpad":"5e9e303338
3ecb075134e7cd"}]],"auto_update":true,"tbd":false,"launch_library_id":"56db9abd
-41b8-41a3-9d6d-88e52460682b","id":"6161c94c6db1a92bfbfa85349"},{"fairings":{"r
eused":null,"recovery_attempt":null,"recovered":null,"ships":[],"links":{"pat
ch":{"small":"https://i.imgur.com/LGFVcbi.png","large":"https://i.imgur.com/Y8
igNDv.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/r7c
hh2/ixpe_launch_campaign_thread/","launch":null,"media":null,"recovery":nul
l},"flickr":{"small":[],"original":["https://live.staticflickr.com/65535/51736
587581_c944959eaa_o.jpg","https://live.staticflickr.com/65535/51737479675_63a2
074244_o.jpg","https://live.staticflickr.com/65535/51737234364_b43ca3ea26_o.jp
g","https://live.staticflickr.com/65535/51735767097_6126fe3138_o.jpg"]},"press
kit":null,"webcast":"https://youtu.be/CpmHsN5GUN8","youtube_id":"CpmHsN5GUN
8","article":null,"wikipedia":"https://en.wikipedia.org/wiki/IXPE"},"static_fi
re_date_utc":null,"static_fire_date_unix":null,"net":false,"window":null,"rock
et":"5e9d0d95eda69973a809dlec","success":true,"failures":[],"details":null,"cr
ew":[],"ships":[],"capsules":[],"payloads":["61c1f395a4a2462678cbf46e"],"launc
hpad":"5e9e4502f509094188566f88","flight_number":140,"name":"IXPE","date_ut
c":"2021-12-09T06:00:00.000Z","date_unix":1639029600,"date_local":"2021-12-09T
01:00:00-05:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5f5
7c53d0622a6330279009f","flight":5,"gridfins":true,"legs":true,"reused":true,"l
anding_attempt":true,"landing_success":true,"landing_type":"ASDS","landpad":"5
e9e3033383ecbb9e534e7cc"}]],"auto_update":true,"tbd":false,"launch_library_i
d":"dfb2cc3b-8cd8-41b6-a83a-22b2a742ba4b","id":"6161c88d6db1a92bfbfa85348"},{"f
airings":{"reused":null,"recovery_attempt":true,"recovered":null,"ships":["5ea
6ed30080df4000697c912"]},"links":{"patch":{"small":"https://imgur.com/BrW201S.
png","large":"https://imgur.com/573IfGk.png"},"reddit":{"campaign":"https://ww
w.reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_deployme
nt_thread/","launch":"https://www.reddit.com/r/spacex/comments/rhvacp/rspacex_
starlink_44_launch_discussion_and_updates/","media":null,"recovery":"https://w
ww.reddit.com/r/spacex/comments/k2ts1q/rspacex_fleet_updates_discussion_threa
d/"},"flickr":{"small":[],"original":["https://live.staticflickr.com/65535/517
56013766_f664db8097_o.jpg","https://live.staticflickr.com/65535/51756656374_59
ca8efbab_o.jpg"]},"presskit":null,"webcast":"https://youtu.be/q4Ed3EBx90s","yo
utube_id":"q4Ed3EBx90s","article":"https://spaceflightnow.com/2021/12/18/space
x-launches-starlink-satellites-from-california-on-unusual-coast-hugging-trajec
tory/","wikipedia":"https://en.wikipedia.org/wiki/Starlink"},"static_fire_date
_utc":"2021-12-17T08:31:00.000Z","static_fire_date_unix":1639729860,"net":fals

```

```
e,"window":null,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":
[],"details":"The mission consists in launching 52 Starlink v1.5 satellites to
Shell number 4 at 53.2\xc2\xba0. This is unusual as the mission is launching fr
om Vandenberg as these missions usually launch from the East Coast.", "crew":
[], "ships":["5ea6ed30080df4000697c913","5ea6ed30080df4000697c912","5ea6ed2f080
df4000697c90b"],"capsules":[],"payloads":["61bbac16437241381bf70632"],"launchp
ad":"5e9e4502f509092b78566f87","flight_number":141,"name":"Starlink 4-4 (v1.
5)","date_utc":"2021-12-18T12:41:40.000Z","date_unix":1639831300,"date_loca
l":"2021-12-18T12:41:40-08:00","date_precision":"hour","upcoming":false,"core
s":[{"core":"5e9e28a6f35918c0803b265c","flight":11,"gridfins":true,"legs":tru
e,"reused":true,"landing_attempt":true,"landing_success":true,"landing_typ
e":"ASDS","landpad":"5e9e3032383ecb6bb234e7ca"}],"auto_update":false,"tbd":fal
se,"launch_library_id":"0d4b0c0f-3d72-4cb2-b596-dc526ad178a6","id":"61bba80643
7241381bf7061e"}, {"fairings":{"reused":null,"recovery_attempt":true,"recover
e":null,"ships":["618fad7e563d69573ed8caa9"]},"links":{"patch":{"small":"http
s://i.imgur.com/K7j17jw.png","large":"https://i.imgur.com/jA45x7I.png"},"reddi
t":{"campaign":"https://www.reddit.com/r/spacex/comments/rfim89/t%C3%BCrksat_5
b_launch_campaign_thread/","launch":"https://www.reddit.com/r/spacex/comments/
rja5u0/rspacex_t%C3%BCrksat_5b_launch_discussion_and_updates/","media":null,"r
ecovery":null},"flickr":{"small":[],"original":[]},"presskit":null,"webcas
t":"https://youtu.be/JBGjE9_aosc","youtube_id":"JBGjE9_aosc","article":"http
s://spaceflightnow.com/2021/12/19/spacex-two-for-two-in-companys-first-falcon-
9-launch-doubleheader/","wikipedia":"https://en.wikipedia.org/wiki/T%C3%BCrksa
t_5B"},"static_fire_date_utc":null,"static_fire_date_unix":null,"net":false,"w
indow":null,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":
[],"details":"The T\xc3\xbcrcsat 5B communication satellite, which its constru
ction work continues at Airbus Defense and Space's facilities in Toulouse, Fr
ance, will soon be sent to the Cape Canaveral Space Launch Station located in
Florida, United States. The satellite will be launched into space onboard the
Falcon 9 rocket following pre-launch preparations. With an estimated in-orbit
lifetime of 30 years and the aim of securing Turkey\xe2\x80\x99s orbital and
frequency rights, T\xc3\xbcrcsat 5B will be launched into an orbital slot at
42 degrees East. With 12 kW power, T\xc3\xbcrcsat 5B will provide TV broadcas
ting and data communication services over a wide coverage area that reaches th
e entire Middle East, the Persian Gulf, the Red Sea, the Mediterranean, North
Africa, East Africa, South Africa and Nigeria. Apart from that, the satellite
will also provide customized services for airlines and commercial ship operato
rs around the world thanks to the fact that it operates in Ka-Band.", "crew":
[], "ships":["618fad7e563d69573ed8caa9","5ee68c683c228f36bd5809b5"],"capsules":
[], "payloads":["5fe3c080b3467846b3242190"],"launchpad":"5e9e4501f509094ba4566f
84","flight_number":142,"name":"T\xc3\xbcrcsat 5B","date_utc":"2021-12-19T03:5
8:00.000Z","date_unix":1639886280,"date_local":"2021-12-18T22:58:00-05:00","da
te_precision":"hour","upcoming":false,"cores":[{"core":"60b800111f83cc1e59f164
38","flight":3,"gridfins":true,"legs":true,"reused":true,"landing_attempt":tru
e,"landing_success":true,"landing_type":"ASDS","landpad":"5e9e3033383ecb075134
e7cd"}],"auto_update":false,"tbd":false,"launch_library_id":"16d0c02e-0bb1-45d
5-a3f5-7c4ff6cf6de1","id":"5fe3afclb3467846b3242164"}, {"fairings":null,"link
s":{"patch":{"small":"https://i.imgur.com/vf01hfS.png","large":"https://i.imgu
r.com/A7b7xqL.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comm
ents/rfisc2/crs24_launch_campaign_thread/","launch":"https://www.reddit.com/r/
spacex/comments/rktygs/rspacex_crs24_launch_discussion_and_updates_thread/","m
edia":null,"recovery":null},"flickr":{"small":[],"original":[]},"presskit":nul
l,"webcast":"https://youtu.be/gEv6HLHYhWo","youtube_id":"gEv6HLHYhWo","articl
e":"https://spaceflightnow.com/2021/12/21/spacex-cargo-flight-sets-record-for-
most-orbital-launches-from-space-coast-in-a-year/","wikipedia":null},"static_f
ire_date_utc":null,"static_fire_date_unix":null,"net":false,"window":0,"rocke
t":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"details":"SpaceX
's 24th ISS resupply mission on behalf of NASA, this mission brings essential
supplies to the International Space Station using the cargo variant of SpaceX
's Dragon 2 spacecraft. Cargo includes several science experiments. The boost
```

<https://labs.cognitiveclass.ai/v2/tools/jupyterlab?ulid=ulid-0873642cfd4232ea1de5f8e8823c1c03f6f84b91>

```

ll,"recovery_attempt":true,"recovered":null,"ships":["614251b711a64135defb3654"]}],{"links":{"patch":{"small":"https://imgur.com/BrW201S.png","large":"https://imgur.com/573IfGk.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_deployment_thread/","launch":null,"media":null,"recovery":"https://www.reddit.com/r/spacex/comments/k2ts1q/rspacex_fleet_updates_discussion_thread/"},"flickr":{"small":[],"original":["https://live.staticflickr.com/65535/51830117595_12bfa3bf5d_o.jpg","https://live.staticflickr.com/65535/51828440767_8ce8e10d30_o.jpg","https://live.staticflickr.com/65535/51829734974_ddfe778a46_o.jpg","https://live.staticflickr.com/65535/51829734959_d68fa43e2a_o.jpg"]},"presskit":null,"webcast":"https://youtu.be/Yov854ZT1lg","youtube_id":"Yov854ZT1lg","article":"https://spaceflightnow.com/2022/01/19/spacex-launches-2000th-starlink-satellite/","wikipedia":"https://en.wikipedia.org/wiki/Starlink"},"static_fire_date_utc":null,"static_fire_date_unix":null,"net":false,"window":null,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"details":null,"crew":[],"ships":["5ea6ed2d080df4000697c904","614251b711a64135defb3654"],"capsules":[],"payloads":["61e05516be8d8b66799018d4"],"launchpad":"5e9e4502f509094188566f88","flight_number":146,"name":"Starlink 4-6 (v1.5)","date_utc":"2022-01-19T00:04:00.000Z","date_unix":1642550640,"date_local":"2022-01-18T19:04:00-05:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5ef670f10059c33cee4a826c","flight":10,"gridfins":true,"legs":true,"reused":true,"landing_attempt":true,"landing_success":true,"landing_type":"ASDS","landpad":"5e9e3033383ecb075134e7cd"}],"auto_update":true,"tbd":false,"launch_library_id":"50ac28f2-024f-442f-837d-dab8107304ec","id":"61e048bbbe8d8b66799018d0"},"fairings":{"reused":null,"recovery_attempt":null,"recovered":null,"ships":[],"links":{"patch":{"small":"https://i.imgur.com/CaF1N0S.png","large":"https://i.imgur.com/XdcZC8w.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/sarr7x/rspacex_csg2_campaign_thread/","launch":"https://www.reddit.com/r/spacex/comments/sdtz77/rspacex_csg2_launch_discussion_and_updates_thread/","media":null,"recovery":null},"flickr":{"small":[],"original":["https://live.staticflickr.com/65535/51856205295_4eclc21ce3_o.jpg","https://live.staticflickr.com/65535/51854587612_b30f28ede1_o.jpg","https://live.staticflickr.com/65535/51855875789_b27465elf2_o.jpg","https://live.staticflickr.com/65535/51855546836_710848417a_o.jpg","https://live.staticflickr.com/65535/51855627363_c927574ce4_o.jpg","https://live.staticflickr.com/65535/51854587577_cfe014f0e9_o.jpg","https://live.staticflickr.com/65535/51855875759_a4cdc29fbf_o.jpg","https://live.staticflickr.com/65535/51855546821_7900aed52d_o.jpg"]},"presskit":null,"webcast":"https://youtu.be/AbFoi68L-GQ","youtube_id":"AbFoi68L-GQ","article":"https://spaceflightnow.com/2022/02/01/italian-radar-satellite-rides-spacex-rocket-into-polar-orbit/","wikipedia":null},"static_fire_date_utc":"2022-01-23T21:22:00.000Z","static_fire_date_unix":1642972920,"net":false,"window":null,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"details":"Falcon 9 launches to sun-synchronous polar orbit from Florida as part of CSG-2 Mission. The mission lifts off from SLC-40, Cape Canaveral on a southward azimuth and performs a dogleg maneuver. The booster for this mission is expected to return to LZ-1 based on FCC communications filings","crew":[],"ships":[],"capsules":[],"payloads":["6161d3a06db1a92bfbfa8535a"],"launchpad":"5e9e4501f509094ba4566f84","flight_number":147,"name":"CSG-2","date_utc":"2022-01-31T23:11:12.000Z","date_unix":1643670672,"date_local":"2022-01-31T18:11:12-05:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5e9e28a6f359183c413b265d","flight":3,"gridfins":true,"legs":true,"reused":true,"landing_attempt":true,"landing_success":true,"landing_type":"RTLS","landpad":"5e9e3032383ecb267a34e7c7"}],"auto_update":false,"tbd":false,"launch_library_id":"23229c2b-abb7-4b94-b624-981a9adc88d2","id":"6161d32d6db1a92bfbfa85359"},"fairings":{"reused":null,"recovery_attempt":null,"recovered":null,"ships":[],"links":{"patch":{"small":"https://i.imgur.com/ISOB8Ny.png","large":"https://i.imgur.com/PxsC9UW.png"},"reddit":{"campaign":null,"launch":"https://www.reddit.com/r/spacex/comments/si3o0y/rspacex_nrol87_launch_discussion_and_updates/","media":null,"recovery":null},"flickr":{"small":[],"original":["https://live.staticflickr.com/65535/51860158413_2ebc4d47a4_o.jpg","https://live.staticflickr.com/65535/51860412009_2e15b59fbf_o.jpg","https://live.st

```

```

aticflickr.com/65535/51860158508_793bf779eb_o.jpg", "https://live.staticflickr.
com/65535/51860411994_584cab0598_o.jpg", "https://live.staticflickr.com/65535/5
1859123422_603c610574_o.jpg", "https://live.staticflickr.com/65535/51859122897_
637e67a312_o.jpg", "https://live.staticflickr.com/65535/51860730685_c8c7f0561e_
o.jpg", "https://live.staticflickr.com/65535/51859123052_cc5640ef1a_o.jpg", "htt
ps://live.staticflickr.com/65535/51860412119_8926453a27_o.jpg"]}, "presskit":nu
ll, "webcast": "https://youtu.be/bVk8XyjhTKo", "youtube_id": "bVk8XyjhTKo", "articl
e": "https://spaceflightnow.com/2022/02/02/spacex-launches-classified-nro-satel
lite-from-vandenberg-space-force-base/", "wikipedia": null}, "static_fire_date_ut
c": null, "static_fire_date_unix": null, "net": false, "window": null, "rocket": "5e9d0
d95eda69973a809dlec", "success": true, "failures": [], "details": null, "crew": [], "sh
ips": [], "capsules": [], "payloads": ["6175aaacefa4314085aa9c56"], "launchpad": "5e9
e4502f509092b78566f87", "flight_number": 148, "name": "NROL-87", "date_utc": "2022-0
2-02T20:18:00.000Z", "date_unix": 1643833080, "date_local": "2022-02-02T12:18:00-0
8:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "61fae5947aa67
176fe3e0ele", "flight": 1, "gridfins": true, "legs": true, "reused": false, "landing_at
tempt": true, "landing_success": true, "landing_type": "RTLS", "landpad": "5e9e303238
3ecb554034e7c9"}], "auto_update": true, "tbd": false, "launch_library_id": "2e650790
-ff3e-434a-b028-a6a1a13cfc94", "id": "607a34e35a906a44023e085e"}, {"fairings": {"r
eused": null, "recovery_attempt": null, "recovered": null, "ships": []}, "links": {"pat
ch": {"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfG
k.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/jhu37i/
starlink_general_discussion_and_deployment_thread/", "launch": "https://www.redd
it.com/r/spacex/comments/sfr8l0/rspacex_starlink_47_launch_discussion_and_upda
tes/", "media": null, "recovery": "https://www.reddit.com/r/spacex/comments/k2ts1
q/rspacex_fleet_updates_discussion_thread/"}, "flickr": {"small": [], "original": [
"https://live.staticflickr.com/65535/51869166852_83ed7030ff_o.jpg", "https://l
ive.staticflickr.com/65535/51870446979_a7af58c55a_o.jpg", "https://live.staticf
lickr.com/65535/51870446669_f94575721f_o.jpg"]}, "presskit": null, "webcast": "htt
ps://youtu.be/UY3fZ6PwuUY", "youtube_id": "UY3fZ6PwuUY", "article": "https://space
flightnow.com/2022/02/03/spacex-launches-third-falcon-9-rocket-mission-in-thre
e-days/", "wikipedia": "https://en.wikipedia.org/wiki/Starlink"}, "static_fire_da
te_utc": null, "static_fire_date_unix": null, "net": false, "window": null, "rocke
t": "5e9d0d95eda69973a809dlec", "success": true, "failures": [], "details": null, "cre
w": [], "ships": [], "capsules": [], "payloads": ["61e05520be8d8b66799018d5"], "launch
pad": "5e9e4502f509094188566f88", "flight_number": 149, "name": "Starlink 4-7 (v1.
5)", "date_utc": "2022-02-03T18:13:00.000Z", "date_unix": 1643911980, "date_loca
l": "2022-02-03T13:13:00-05:00", "date_precision": "hour", "upcoming": false, "core
s": [{"core": "5f57c53d0622a6330279009f", "flight": 6, "gridfins": true, "legs": tru
e, "reused": true, "landing_attempt": true, "landing_success": true, "landing_typ
e": "ASDS", "landpad": "5e9e3033383ecb075134e7cd"}], "auto_update": true, "tbd": fals
e, "launch_library_id": "de39dd1a-0f72-4afd-a6b9-1b848b246071", "id": "61e048ffbe8
d8b66799018d1"}, {"fairings": {"reused": null, "recovery_attempt": null, "recover
d": null, "ships": []}, "links": {"patch": {"small": "https://imgur.com/BrW201S.pn
g", "large": "https://imgur.com/573IfGk.png"}, "reddit": {"campaign": "https://www.
reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_deployment
_thread/", "launch": "https://www.reddit.com/r/spacex/comments/sx92uf/rspacex_st
arlink_48_launch_discussion_and_updates/", "media": null, "recovery": "https://ww
w.reddit.com/r/spacex/comments/k2ts1q/rspacex_fleet_updates_discussion_threa
d/"}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/518
97183392_ecee950c6f_o.jpg", "https://live.staticflickr.com/65535/51898142206_9d
d9dd27e1_o.jpg", "https://live.staticflickr.com/65535/51897183382_6f6dcf0fb8_o.
jpg"]}, "presskit": null, "webcast": "https://youtu.be/eiKOMCRymsw", "youtube_i
d": "eiKOMCRymsw", "article": "https://spaceflightnow.com/2022/02/21/spacex-adds-
46-more-satellites-to-starlink-fleet/", "wikipedia": "https://en.wikipedia.org/w
iki/Starlink"}, "static_fire_date_utc": null, "static_fire_date_unix": null, "net":
false, "window": null, "rocket": "5e9d0d95eda69973a809dlec", "success": true, "failur
es": [], "details": null, "crew": [], "ships": [], "capsules": [], "payloads": ["61fc02e1
e0dc5662b76489b4"], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 15
0, "name": "Starlink 4-8 (v1.5)", "date_utc": "2022-02-21T14:44:00.000Z", "date_uni

```



```

x":1645454640,"date_local":"2022-02-21T09:44:00-05:00","date_precision":"hou
r","upcoming":false,"cores":[{"core":"5e9e28a7f3591817f23b2663","flight":11,"g
ridfins":true,"legs":true,"reused":true,"landing_attempt":true,"landing_succes
s":true,"landing_type":"ASDS","landpad":"5e9e3033383ecb075134e7cd"}],"auto_upd
ate":true,"tbd":false,"launch_library_id":"398e713f-5daa-4fb9-a70a-0b8654baf5d
1","id":"61fc01dae0dc5662b76489a7"},{"fairings":{"reused":null,"recovery_attem
pt":null,"recovered":null,"ships":[],"links":{"patch":{"small":"https://imgu
r.com/BrW201S.png","large":"https://imgur.com/573IfGk.png"},"reddit":{"campaig
n":"https://www.reddit.com/r/spacex/comments/jhu37i/starlink_general_discussio
n_and_deployment_thread/","launch":"https://www.reddit.com/r/spacex/comments/t
0yksi/rspacex_starlink_411_launch_discussion_and/","media":null,"recovery":"ht
tps://www.reddit.com/r/spacex/comments/k2ts1q/rspacex_fleet_updates_discussion
_thread/"},"flickr":{"small":[],"original":["https://live.staticflickr.com/655
35/51903390122_fc0acab37a_o.jpg","https://live.staticflickr.com/65535/51904998
190_f8f347c995_o.jpg","https://live.staticflickr.com/65535/51904679574_588b01b
22d_o.jpg"]},"presskit":null,"webcast":"https://youtu.be/nnVOfKOzXHE","youtube
_id":"nnVOfKOzXHE","article":"https://spaceflightnow.com/2022/02/25/spacex-dep
loys-another-batch-of-starlink-satellites/","wikipedia":"https://en.wikipedia.
org/wiki/Starlink"},"static_fire_date_utc":null,"static_fire_date_unix":nul
l,"net":false,"window":null,"rocket":"5e9d0d95eda69973a809d1ec","success":tru
e,"failures":[],"details":null,"crew":[],"ships":[],"capsules":[],"payloads":
["61fc0334e0dc5662b76489b5"],"launchpad":"5e9e4502f509092b78566f87","flight_nu
mber":151,"name":"Starlink 4-11 (v1.5)","date_utc":"2022-02-25T17:12:00.000
Z","date_unix":1645809120,"date_local":"2022-02-25T09:12:00-08:00","date_preci
sion":"hour","upcoming":false,"cores":[{"core":"5f57c54a0622a633027900a1","fli
ght":4,"gridfins":true,"legs":true,"reused":true,"landing_attempt":true,"landi
ng_success":true,"landing_type":"ASDS","landpad":"5e9e3032383ecb6bb234e7c
a"}],"auto_update":true,"tbd":false,"launch_library_id":"b7b24770-f9dd-40eb-ad
ad-da95e917e55d","id":"61fc0203e0dc5662b76489a8"},{"fairings":{"reused":nul
l,"recovery_attempt":null,"recovered":null,"ships":[],"links":{"patch":{"smal
l":"https://imgur.com/BrW201S.png","large":"https://imgur.com/573IfGk.png"},"r
eddit":{"campaign":"https://www.reddit.com/r/spacex/comments/jhu37i/starlink_g
eneral_discussion_and_deployment_thread/","launch":"https://www.reddit.com/r/s
pacex/comments/t5lzm9/rspacex_starlink_49_launch_discussion_and_updates/","med
ia":null,"recovery":"https://www.reddit.com/r/spacex/comments/k2ts1q/rspacex_f
leet_updates_discussion_thread/"},"flickr":{"small":[],"original":["https://li
ve.staticflickr.com/65535/51924631989_4e0b26f306_o.jpg","https://live.staticfl
ickr.com/65535/51924934610_296c72bf67_o.jpg","https://live.staticflickr.com/65
535/51924933910_9627ae096e_o.jpg"]},"presskit":null,"webcast":"https://youtu.b
e/ypb2sDdUkRo","youtube_id":"ypb2sDdUkRo","article":"https://spaceflightnow.co
m/2022/03/03/after-another-starlink-mission-spacex-on-pace-for-one-launch-per-
week-this-year/","wikipedia":"https://en.wikipedia.org/wiki/Starlink"},"static
_fire_date_utc":null,"static_fire_date_unix":null,"net":false,"window":null,"r
ocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"details":nul
l,"crew":[],"ships":[],"capsules":[],"payloads":["61fc0379e0dc5662b76489b
6"],"launchpad":"5e9e4502f509094188566f88","flight_number":152,"name":"Starlin
k 4-9 (v1.5)","date_utc":"2022-03-03T14:35:00.000Z","date_unix":1646318100,"da
te_local":"2022-03-03T09:35:00-05:00","date_precision":"hour","upcoming":fals
e,"cores":[{"core":"5ef670f10059c33cee4a826c","flight":11,"gridfins":true,"leg
s":true,"reused":true,"landing_attempt":true,"landing_success":true,"landing_t
ype":"ASDS","landpad":"5e9e3033383ecbb9e534e7cc"}],"auto_update":true,"tbd":fa
lse,"launch_library_id":"861795c5-e694-4d3e-b22f-a356a31cd5d8","id":"61fc0224e
0dc5662b76489ab"},{"fairings":{"reused":null,"recovery_attempt":null,"recover
e":null,"ships":[],"links":{"patch":{"small":"https://imgur.com/BrW201S.pn
g","large":"https://imgur.com/573IfGk.png"},"reddit":{"campaign":"https://www.
reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_deployment
_thread/","launch":"https://www.reddit.com/r/spacex/comments/t9la7r/rspacex_st
arlink_410_launch_discussion_and/","media":null,"recovery":"https://www.reddi
t.com/r/spacex/comments/k2ts1q/rspacex_fleet_updates_discussion_thread/"},"fli
ckr":{"small":[],"original":["https://live.staticflickr.com/65535/51928220502_

```

```

1a44139be7_o.jpg", "https://live.staticflickr.com/65535/51929288928_46decee5db_o.jpg", "https://live.staticflickr.com/65535/51929537589_f03fb8c20a_o.jpg"]}, {"presskit": null, "webcast": "https://youtu.be/uqAppamdGyo", "youtube_id": "uqAppamdGyo", "article": "https://spaceflightnow.com/2022/03/09/spacex-broomstick-launches-40th-starlink-mission/", "wikipedia": "https://en.wikipedia.org/wiki/Starlink"}, {"static_fire_date_utc": null, "static_fire_date_unix": null, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": null, "crew": [], "ships": [], "capsules": [], "payloads": [{"61fc0382e0dc5662b76489b7"}], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 153, "name": "Starlink 4-10 (v1.5)", "date_utc": "2022-03-09T13:45:00.000Z", "date_unix": 1646833500, "date_local": "2022-03-09T08:45:00-05:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a6f359183c413b265d", "flight": 4, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3033383ecb075134e7cd"}], "auto_update": true, "tbd": false, "launch_library_id": "d8c7fbe0-6a32-42dc-8c24-f1c632adc8b5", "id": "61fc0243e0dc5662b76489ae"}, {"fairings": {"reused": null, "recovery_attempt": null, "recovered": null, "ships": []}, "links": {"patch": {"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_deployement_thread/", "launch": null, "media": null, "recovery": "https://www.reddit.com/r/spacex/comments/k2tslq/rspacex_fleet_updates_discussion_thread/"}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/51947052831_3b1599cd70_o.jpg", "https://live.staticflickr.com/65535/51946071252_b51d6839e9_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/0giA6VZOICs", "youtube_id": "0giA6VZOICs", "article": "https://spaceflightnow.com/2022/03/19/spacex-stretches-rocket-reuse-record-with-another-starlink-launch/", "wikipedia": "https://en.wikipedia.org/wiki/Starlink"}, {"static_fire_date_utc": null, "static_fire_date_unix": null, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": null, "crew": [], "ships": [], "capsules": [], "payloads": [{"623491e5f051102elfcedac9"}], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 154, "name": "Starlink 4-12 (v1.5)", "date_utc": "2022-03-19T03:24:00.000Z", "date_unix": 1647660240, "date_local": "2022-03-18T23:24:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a6f35918c0803b265c", "flight": 12, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3033383ecbb9e534e7cc"}], "auto_update": true, "tbd": false, "launch_library_id": "72188aca-810d-40b9-887d-43040614dd2c", "id": "6234908cf051102elfcedac4"}, {"fairings": {"reused": null, "recovery_attempt": null, "recovered": null, "ships": []}, "links": {"patch": {"small": "https://imgur.com/IJWn9pK.png", "large": "https://imgur.com/u49XVx4.png"}, "reddit": {"campaign": null, "launch": "https://www.reddit.com/r/spacex/comments/tt5n43/rspacex_transporter4_launch_discussion_and/", "media": null, "recovery": null}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/51981688502_0584ac5658_o.jpg", "https://live.staticflickr.com/65535/51982975529_3e1610767a_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/4NqSoHnkKEM", "youtube_id": "4NqSoHnkKEM", "article": "https://spaceflightnow.com/2022/04/01/forty-payloads-ride-into-orbit-on-spacex-falcon-9-rocket/", "wikipedia": null}, {"static_fire_date_utc": null, "static_fire_date_unix": null, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": null, "crew": [], "ships": [], "capsules": [], "payloads": [{"6243af62af52800c6e919260"}], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 155, "name": "Transporter-4", "date_utc": "2022-04-01T16:24:00.000Z", "date_unix": 1648830240, "date_local": "2022-04-01T12:24:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5f57c53d0622a6330279009f", "flight": 7, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3033383ecbb9e534e7cc"}], "auto_update": true, "tbd": false, "launch_library_id": "335acce9-a35c-436c-9a22-a2505f20957f", "id": "6243ad8baf52800c6e919252"}, {"fairings": null, "links": {"patch": {"small": "https://i.imgur.com/10Sw7Q1.png", "large": "https://i.imgur.com/QV9W80J.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/t3ez79/axiom1_launch_campaign_thread/", "launch": "https://www.reddit.com/r/spacex/comments/tyd866/rspacex_axiom1

```

```

_launch_discussion_and_updates/", "media": null, "recovery": null}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/51991997860_fa865513ec_o.jpg", "https://live.staticflickr.com/65535/51991997845_85b28ce575_o.jpg", "https://live.staticflickr.com/65535/51990441472_e16a9f15ff_o.jpg", "https://live.staticflickr.com/65535/51991440466_17111d73b6_o.jpg", "https://live.staticflickr.com/65535/51991498488_037537ba40_o.jpg", "https://live.staticflickr.com/65535/51991498473_0e62ee3c34_o.jpg", "https://live.staticflickr.com/65535/51991440451_209bac2fac_o.jpg", "https://live.staticflickr.com/65535/51991997825_345544ff0a_o.jpg", "https://live.staticflickr.com/65535/51990441502_7dfa987137_o.jpg", "https://live.staticflickr.com/65535/51990441532_e9d53093c6_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/5nLk_Vqp7nw", "youtube_id": "5nLk_Vqp7nw", "article": null, "wikipedia": "https://en.wikipedia.org/wiki/Axiom_Mission_1"}, {"static_fire_date_utc": "2022-04-06T19:13:00.000Z", "static_fire_date_unix": 1649272380, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": "Axiom Mission 1 (or Ax-1) is a planned SpaceX Crew Dragon mission to the International Space Station (ISS), operated by SpaceX on behalf of Axiom Space. The flight will launch no earlier than 31 March 2022 and send four people to the ISS for an eight-day stay", "crew": ["61eefc9c9eb1064137a1bd77", "61eefcf89eb1064137a1bd79", "61eefd5b9eb1064137a1bd7a", "61eefdbf9eb1064137a1bd7b"], "ships": ["5ea6ed2e080df4000697c909"], "capsules": ["5e9e2c5df359188aba3b2676"], "payloads": ["61eefb129eb1064137a1bd74"], "launchpad": "5e9e4502f509094188566f88", "flight_number": 156, "name": "Ax-1", "date_utc": "2022-04-08T15:17:00.000Z", "date_unix": 1649431020, "date_local": "2022-04-08T11:17:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5f57c5440622a633027900a0", "flight": 5, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3033383ecb075134e7cd"}], "auto_update": true, "tbd": false, "launch_library_id": "a3eeb03b-a209-4255-91b5-772dc0d2150e", "id": "61eefaa89eb1064137a1bd73"}, {"fairings": {"reuse": null, "recovery_attempt": null, "recovered": null, "ships": []}, "links": {"patch": {"small": "https://i.imgur.com/TbgxSkw.png", "large": "https://i.imgur.com/HhCin2X.png"}, "reddit": {"campaign": null, "launch": null, "media": null, "recovery": null}, "flickr": {"small": [], "original": ["https://live.staticflickr.com/65535/52013376989_395092fa4c_o.jpg", "https://live.staticflickr.com/65535/52013130121_da63eebec_o.jpg", "https://live.staticflickr.com/65535/52013376694_cealbblc0b_o.jpg"]}, "presskit": null, "webcast": "https://youtu.be/mMcmflg4qSA", "youtube_id": "mMcmflg4qSA", "article": "https://spaceflightnow.com/2022/04/17/spacex-launches-and-lands-rocket-on-mission-for-national-reconnaissance-office/", "wikipedia": "https://en.wikipedia.org/wiki/National_Reconnaissance_Office"}, {"static_fire_date_utc": null, "static_fire_date_unix": null, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": null, "crew": [], "ships": [], "capsules": [], "payloads": ["6243b036af52800c6e919262"], "launchpad": "5e9e4502f509092b78566f87", "flight_number": 157, "name": "NROL-85", "date_utc": "2022-04-17T13:13:00.000Z", "date_unix": 1650201180, "date_local": "2022-04-17T06:13:00-07:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "61fae5947aa67176fe3e0ele", "flight": 2, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "RTLS", "landpad": "5e9e3032383ecb554034e7c9"}], "auto_update": true, "tbd": false, "launch_library_id": "42932355-c450-4250-a885-2d2709fd7cfc", "id": "6243adcaaf52800c6e919254"}, {"fairings": {"reuse": null, "recovery_attempt": null, "recovered": null, "ships": []}, "links": {"patch": {"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_deployment_thread/", "launch": "https://www.reddit.com/r/spacex/comments/u8hpux/rspacex_starlink_414_launch_discussion_and/", "media": null, "recovery": "https://www.reddit.com/r/spacex/comments/k2ts1q/rspacex_fleet_updates_discussion_thread/"}, "flickr": {"small": [], "original": []}, "presskit": null, "webcast": "https://youtu.be/s6yBwQSrtFY", "youtube_id": "s6yBwQSrtFY", "article": null, "wikipedia": "https://en.wikipedia.org/wiki/Starlink"}, {"static_fire_date_utc": null, "static_fire_date_unix": null, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": null, "crew": [], "ships": ["618fad7e563d69573ed8caa9"], "capsule

```

```

s": [], "payloads": [ "6243af9faf52800c6e919261" ], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 158, "name": "Starlink 4-14 (v1.5)", "date_utc": "2022-04-21T15:16:00.000Z", "date_unix": 1650554160, "date_local": "2022-04-21T11:16:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [ { "core": "5ef670f10059c33cee4a826c", "flight": 12, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3033383ecbb9e534e7cc" } ], "auto_update": true, "tbd": false, "launch_library_id": "2c5447d7-36c5-40fd-88de-47ed6b258bdb", "id": "6243ada6af52800c6e919253", { "fairings": null, "links": { "patch": { "small": "https://i.imgur.com/0sjhg1A.png", "large": "https://i.imgur.com/1B1pjyL.png" }, "reddit": { "campaign": "https://www.reddit.com/r/spacex/comments/u6d5na/rspacex_crew4_campaign_launch_discussion_updates/", "launch": null, "media": null, "recovery": null }, "flickr": { "small": [], "original": [] }, "presskit": null, "webcast": "https://youtu.be/orN0PaqQECs", "youtube_id": "orN0PaqQECs", "article": null, "wikipedia": "https://en.wikipedia.org/wiki/SpaceX_Crew-4" }, "static_fire_date_utc": "2022-04-20T14:12:00.000Z", "static_fire_date_unix": 1650463920, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": null, "crew": [ "6243bc5baf52800c6e919276", "6243bcdcaf52800c6e919277", "6243bd7baf52800c6e919278", "6243bdf8af52800c6e919279" ], "ships": [ "614251b711a64135defb3654" ], "capsules": [ "62615d180ec008379be596f1" ], "payloads": [ "6243b1cdaf52800c6e919265" ], "launchpad": "5e9e4502f509094188566f88", "flight_number": 159, "name": "Crew-4", "date_utc": "2022-04-27T07:52:00.000Z", "date_unix": 1651045920, "date_local": "2022-04-27T03:52:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [ { "core": "60b800111f83cc1e59f16438", "flight": 4, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3033383ecb075134e7cd" } ], "auto_update": true, "tbd": false, "launch_library_id": "d786d8fc-862b-45bf-8f7b-9ad862883f67", "id": "6243ade2af52800c6e919255", { "fairings": { "reused": null, "recovery_attempt": null, "recovered": null, "ships": [] }, "links": { "patch": { "small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png" }, "reddit": { "campaign": "https://www.reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_deployment_thread/", "launch": null, "media": null, "recovery": "https://www.reddit.com/r/spacex/comments/k2ts1q/rspacex_fleet_updates_discussion_thread/" }, "flickr": { "small": [], "original": [] }, "presskit": null, "webcast": "https://youtu.be/skNrXnubpwA", "youtube_id": "skNrXnubpwA", "article": null, "wikipedia": "https://en.wikipedia.org/wiki/Starlink" }, "static_fire_date_utc": null, "static_fire_date_unix": null, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": null, "crew": [], "ships": [], "capsules": [], "payloads": [ "62582aa55988f159024b964d" ], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 160, "name": "Starlink 4-16 (v1.5)", "date_utc": "2022-04-29T21:27:00.000Z", "date_unix": 1651267620, "date_local": "2022-04-29T17:27:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [ { "core": "5f57c5440622a633027900a0", "flight": 6, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3033383ecbb9e534e7cc" } ], "auto_update": true, "tbd": false, "launch_library_id": "b79a9332-4c0c-42a2-a59b-aafcd5d4721d", "id": "62582a6f5988f159024b964b", { "fairings": { "reused": null, "recovery_attempt": null, "recovered": null, "ships": [] }, "links": { "patch": { "small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png" }, "reddit": { "campaign": "https://www.reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_deployment_thread/", "launch": "https://www.reddit.com/r/spacex/comments/uj5ina/rspacex_starlink_417_launch_discussion_and/", "media": null, "recovery": "https://www.reddit.com/r/spacex/comments/k2ts1q/rspacex_fleet_updates_discussion_thread/" }, "flickr": { "small": [], "original": [] }, "presskit": null, "webcast": "https://youtu.be/KzpVUXxdc68", "youtube_id": "KzpVUXxdc68", "article": null, "wikipedia": null }, "static_fire_date_utc": null, "static_fire_date_unix": null, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": null, "crew": [], "ships": [], "capsules": [], "payloads": [ "62582aad5988f159024b964e" ], "launchpad": "5e9e4502f509094188566f88", "flight_number": 161, "name": "Starlink 4-17 (v1.5)", "date_utc": "2022-05-06T09:42:00.000Z", "date_unix": 1651830120, "date_local": "2022-05-06T05:42:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [ { "cor

```

```

e": "5e9e28a7f3591817f23b2663", "flight": 12, "gridfins": true, "legs": true, "reuse
d": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "l
andpad": "5e9e3033383ecb075134e7cd"}], "auto_update": true, "tbd": false, "launch_li
brary_id": "4f25c927-6a49-4472-814f-4f1a20d93604", "id": "62582a855988f159024b964
c"}, {"fairings": {"reused": null, "recovery_attempt": null, "recovered": null, "ship
s": []}, "links": {"patch": {"small": "https://imgur.com/BrW201S.png", "large": "http
s://imgur.com/573IfGk.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spa
cex/comments/jhu37i/starlink_general_discussion_and_deployment_thread/", "launc
h": null, "media": null, "recovery": "https://www.reddit.com/r/spacex/comments/k2ts
lq/rspacex_fleet_updates_discussion_thread/"}, "flickr": {"small": [], "original":
[]}, "presskit": null, "webcast": "https://youtu.be/bG6AwvGPd-E", "youtube_id": "bG6
AwvGPd-E", "article": null, "wikipedia": null}, "static_fire_date_utc": null, "static
_fire_date_unix": null, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809
dlec", "success": true, "failures": [], "details": null, "crew": [], "ships": [], "capsul
es": [], "payloads": ["625829d75988f159024b9649"], "launchpad": "5e9e4502f509092b78
566f87", "flight_number": 162, "name": "Starlink 4-13 (v1.5)", "date_utc": "2022-05-
13T22:07:00.000Z", "date_unix": 1652479620, "date_local": "2022-05-13T15:07:00-07:
00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5f57c54a0622a63
3027900a1", "flight": 5, "gridfins": true, "legs": true, "reused": true, "landing_attem
pt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3032383ec
b6bb234e7ca"}], "auto_update": true, "tbd": false, "launch_library_id": "0bc91464-1d
61-4545-95c8-01040dc5eec9", "id": "6258290d5988f159024b9644"}, {"fairings": {"reus
ed": null, "recovery_attempt": null, "recovered": null, "ships": []}, "links": {"patc
h": {"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfG
k.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/jhu37i/
starlink_general_discussion_and_deployment_thread/", "launch": "https://www.redd
it.com/r/spacex/comments/upk6t3/rspacex_starlink_415_launch_discussion_an
d/", "media": null, "recovery": "https://www.reddit.com/r/spacex/comments/k2tslq/r
spacex_fleet_updates_discussion_thread/"}, "flickr": {"small": [], "original":
[]}, "presskit": null, "webcast": "https://youtu.be/nFDkWL2Hmh8", "youtube_id": "nFD
kWL2Hmh8", "article": null, "wikipedia": null}, "static_fire_date_utc": null, "static
_fire_date_unix": null, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809
dlec", "success": true, "failures": [], "details": null, "crew": [], "ships": [], "capsul
es": [], "payloads": ["625829cf5988f159024b9648"], "launchpad": "5e9e4501f509094ba4
566f84", "flight_number": 163, "name": "Starlink 4-15 (v1.5)", "date_utc": "2022-05-
14T20:40:00.000Z", "date_unix": 1652560800, "date_local": "2022-05-14T16:40:00-04:
00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "627843db57b51b7
52c5c5a54", "flight": 1, "gridfins": true, "legs": true, "reused": false, "landing_atte
mpt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3033383e
cbb9e534e7cc"}], "auto_update": true, "tbd": false, "launch_library_id": "b418d984-a
9d1-4fa3-953d-c684a079714c", "id": "625828f25988f159024b9643"}, {"fairings": {"reu
sed": null, "recovery_attempt": null, "recovered": null, "ships": []}, "links": {"patc
h": {"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfG
k.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/jhu37i/
starlink_general_discussion_and_deployment_thread/", "launch": "https://www.redd
it.com/r/spacex/comments/urv8l4/rspacex_starlink_418_launch_discussion_an
d/", "media": null, "recovery": "https://www.reddit.com/r/spacex/comments/k2tslq/r
spacex_fleet_updates_discussion_thread/"}, "flickr": {"small": [], "original":
[]}, "presskit": null, "webcast": "https://youtu.be/dQTgX40R-IQ", "youtube_id": "dQT
gX40R-IQ", "article": null, "wikipedia": null}, "static_fire_date_utc": null, "static
_fire_date_unix": null, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809
dlec", "success": true, "failures": [], "details": null, "crew": [], "ships": [], "capsul
es": [], "payloads": ["62615ee40ec008379be596fd"], "launchpad": "5e9e4502f509094188
566f88", "flight_number": 164, "name": "Starlink 4-18 (v1.5)", "date_utc": "2022-05-
18T10:40:00.000Z", "date_unix": 1652870400, "date_local": "2022-05-18T06:40:00-04:
00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a6f359183
c413b265d", "flight": 5, "gridfins": true, "legs": true, "reused": true, "landing_attem
pt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3033383ec
b075134e7cd"}], "auto_update": true, "tbd": false, "launch_library_id": "27795b91-eb
0e-43f1-898b-a23d9ff332db", "id": "62615ebc0ec008379be596fa"}, {"fairings": {"reus

```

```

ed":null,"recovery_attempt":null,"recovered":null,"ships":[]},"links":{"patch":{"small":"https://imgur.com/IJWn9pK.png","large":"https://imgur.com/u49XVx4.png"},"reddit":{"campaign":null,"launch":"https://www.reddit.com/r/spacex/comments/uxafkb/rspacex_transporter5_launch_discussion_and/","media":null,"recovery":null},"flickr":{"small":[],"original":[]},"presskit":null,"webcast":"https://youtu.be/KHt3MyimuqU","youtube_id":"KHt3MyimuqU","article":null,"wikipedia":null},"static_fire_date_utc":null,"static_fire_date_unix":null,"net":false,"window":null,"rocket":"5e9d0d95eda69973a809dlec","success":true,"failures":[],"details":null,"crew":[],"ships":[],"capsules":[],"payloads":["6243b39daf52800c6e919267"],"launchpad":"5e9e4501f509094ba4566f84","flight_number":165,"name":"Transporter-5","date_utc":"2022-05-25T18:27:00.000Z","date_unix":1653503220,"date_local":"2022-05-25T14:27:00-04:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5f57c53d0622a6330279009f","flight":8,"gridfins":true,"legs":true,"reused":true,"landing_attempt":true,"landing_success":true,"landing_type":"RTLS","landpad":"5e9e3032383ecb267a34e7c7"}],"auto_update":true,"tbd":false,"launch_library_id":"949421ac-3802-499b-b383-d8274de7e147","id":"6243ae24af52800c6e919258"},"fairings":{"reused":null,"recovery_attempt":null,"recovered":null,"ships":[]},"links":{"patch":{"small":"https://i.imgur.com/G5Q4UGg.png","large":"https://i.imgur.com/yN5JioT.png"},"reddit":{"campaign":null,"launch":"https://www.reddit.com/r/spacex/comments/v7hxp/rspacex_nilesat_301_launch_discussion_and_updates/","media":null,"recovery":null},"flickr":{"small":[],"original":[]},"presskit":null,"webcast":"https://youtu.be/UpCZu89zb5Y","youtube_id":"UpCZu89zb5Y","article":null,"wikipedia":"https://en.wikipedia.org/wiki/Nilesat"},"static_fire_date_utc":null,"static_fire_date_unix":null,"net":false,"window":null,"rocket":"5e9d0d95eda69973a809dlec","success":true,"failures":[],"details":null,"crew":[],"ships":[],"capsules":[],"payloads":["6243b286af52800c6e919266"],"launchpad":"5e9e4501f509094ba4566f84","flight_number":166,"name":"Nilesat-301","date_utc":"2022-06-08T21:04:00.000Z","date_unix":1654722240,"date_local":"2022-06-08T17:04:00-04:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5f57c5440622a633027900a0","flight":7,"gridfins":true,"legs":true,"reused":true,"landing_attempt":true,"landing_success":true,"landing_type":"ASDS","landpad":"5e9e3033383ecbb9e534e7cc"}],"auto_update":true,"tbd":false,"launch_library_id":"62fb58f6-1d43-4b24-862f-6ac5bee5f723","id":"6243ae0aaf52800c6e919257"},"fairings":{"reused":null,"recovery_attempt":null,"recovered":null,"ships":[]},"links":{"patch":{"small":"https://imgur.com/BrW201S.png","large":"https://imgur.com/573IfGk.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_deployment_thread/","launch":"https://www.reddit.com/r/spacex/comments/vdue2y/rspacex_starlink_419_launch_discussion_and/","media":null,"recovery":"https://www.reddit.com/r/spacex/comments/k2ts1q/rspacex_fleet_updates_discussion_thread/"},"flickr":{"small":[],"original":[]},"presskit":null,"webcast":"https://youtu.be/oCN-BMU9-hM","youtube_id":"oCN-BMU9-hM","article":null,"wikipedia":null},"static_fire_date_utc":null,"static_fire_date_unix":null,"net":false,"window":null,"rocket":"5e9d0d95eda69973a809dlec","success":true,"failures":[],"details":null,"crew":[],"ships":[],"capsules":[],"payloads":["6278484e57b51b752c5c5a63"],"launchpad":"5e9e4502f509094188566f88","flight_number":167,"name":"Starlink 4-19 (v1.5)","date_utc":"2022-06-01T17:08:50.000Z","date_unix":1654103330,"date_local":"2022-06-01T13:08:50-04:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5ef670f10059c33cee4a826c","flight":13,"gridfins":true,"legs":true,"reused":true,"landing_attempt":true,"landing_success":true,"landing_type":"ASDS","landpad":"5e9e3033383ecb075134e7cd"}],"auto_update":true,"tbd":false,"launch_library_id":"179789f0-9380-4182-8ea2-676504c2f890","id":"6278481757b51b752c5c5a5f"},"fairings":{"reused":null,"recovery_attempt":null,"recovered":null,"ships":[]},"links":{"patch":{"small":"https://i.imgur.com/l9g82V0.png","large":"https://i.imgur.com/hsVdIVT.png"},"reddit":{"campaign":null,"launch":"https://www.reddit.com/r/spacex/comments/vf0x9v/rspacex_sarah1_launch_discussion_and_updates/","media":null,"recovery":"https://www.reddit.com/r/spacex/comments/k2ts1q/rspacex_fleet_updates_discussion_thread/"},"flickr":{"small":[],"original":[]},"presskit":null,"webcast":"https://youtu.be/lCX-KUCn4A4","youtube_id":"lCX-KUCn4A4","article":null,"wikipedia":null},"static

```

```

_fire_date_utc":null,"static_fire_date_unix":null,"net":false,"window":null,"r
ocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"details":nul
l,"crew":[],"ships":[],"capsules":[],"payloads":["5fe3b2abb3467846b324217
2"],"launchpad":"5e9e4502f509092b78566f87","flight_number":168,"name":"SARah
1","date_utc":"2022-06-18T14:19:00.000Z","date_unix":1655561940,"date_loca
l":"2022-06-18T07:19:00-07:00","date_precision":"hour","upcoming":false,"core
s":[{"core":"61fae5947aa67176fe3e0e1e","flight":3,"gridfins":true,"legs":tru
e,"reused":true,"landing_attempt":true,"landing_success":true,"landing_typ
e":"RTLS","landpad":"5e9e3032383ecb554034e7c9"}],"auto_update":true,"tbd":fals
e,"launch_library_id":"4ca945f6-981f-4ee9-8a79-f1204b785f8c","id":"5fe3af43b34
67846b324215e"},{"fairings":{"reused":null,"recovery_attempt":null,"recovere
d":null,"ships":[],"links":{"patch":{"small":"https://i.imgur.com/5rTHM0M.pn
g","large":"https://i.imgur.com/S60M8Nx.png"},"reddit":{"campaign":null,"launc
h":"https://www.reddit.com/r/spacex/comments/vfcq6f/rspacex_globalstar_fm15_la
unch_discussion_and/","media":null,"recovery":null},"flickr":{"small":[],"orig
inal":[]},"presskit":null,"webcast":"https://youtu.be/94cClvOFWH4","youtube_i
d":"94cClvOFWH4","article":null,"wikipedia":"https://en.wikipedia.org/wiki/Glo
balstar"},"static_fire_date_utc":null,"static_fire_date_unix":null,"net":fals
e,"window":null,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":
[],"details":null,"crew":[],"ships":[],"capsules":[],"payloads":["62adecbcd26f
4f711fa53848"],"launchpad":"5e9e4501f509094ba4566f84","flight_number":169,"nam
e":"Globalstar FM15","date_utc":"2022-06-19T04:27:00.000Z","date_unix":1655612
820,"date_local":"2022-06-19T00:27:00-04:00","date_precision":"hour","upcomin
g":false,"cores":[{"core":"5f57c53d0622a6330279009f","flight":9,"gridfins":tru
e,"legs":true,"reused":true,"landing_attempt":true,"landing_success":true,"lan
ding_type":"ASDS","landpad":"5e9e3033383ecbb9e534e7cc"}],"auto_update":true,"t
bd":false,"launch_library_id":"33223258-614c-449c-8af7-a9f75cc036b2","id":"62a
9f08b20413d2695d88711"},{"fairings":{"reused":null,"recovery_attempt":null,"re
covered":null,"ships":[],"links":{"patch":{"small":"https://i.imgur.com/MKrgq
cK.png","large":"https://i.imgur.com/F6xKxnI.png"},"reddit":{"campaign":nul
l,"launch":"https://www.reddit.com/r/spacex/comments/vnc3uu/rspacex_ses22_laun
ch_discussion_and_updates_thread/","media":null,"recovery":null},"flickr":{"sm
all":[],"original":[]},"presskit":null,"webcast":"https://youtu.be/ZjUvXWg2_f
E","youtube_id":"ZjUvXWg2_fE","article":null,"wikipedia":null},"static_fire_da
te_utc":null,"static_fire_date_unix":null,"net":false,"window":null,"rocke
t":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"details":null,"cre
w":[],"ships":[],"capsules":[],"payloads":["6243b93caf52800c6e91926f"],"launch
pad":"5e9e4501f509094ba4566f84","flight_number":170,"name":"SES-22","date_ut
c":"2022-06-29T21:04:00.000Z","date_unix":1656536640,"date_local":"2022-06-29T
17:04:00-04:00","date_precision":"hour","upcoming":false,"cores":[{"core":"627
843db57b51b752c5c5a54","flight":2,"gridfins":true,"legs":true,"reused":true,"l
anding_attempt":true,"landing_success":true,"landing_type":"ASDS","landpad":"5
e9e3033383ecb075134e7cd"}],"auto_update":true,"tbd":false,"launch_library_i
d":"86a3010e-f8ef-4b64-a029-f4f92829772d","id":"6243aea5af52800c6e91925c"},{"f
airings":{"reused":null,"recovery_attempt":null,"recovered":null,"ships":
[],"links":{"patch":{"small":"https://imgur.com/BrW201S.png","large":"http
s://imgur.com/573IfGk.png"},"reddit":{"campaign":"https://www.reddit.com/r/spa
cex/comments/jhu37i/starlink_general_discussion_and_deployment_thread/","launc
h":"https://www.reddit.com/r/spacex/comments/vsz5s5/rspacex_starlink_421_launc
h_discussion_and/","media":null,"recovery":"https://www.reddit.com/r/spacex/co
mments/k2ts1q/rspacex_fleet_updates_discussion_thread/"},"flickr":{"small":
[],"original":[]},"presskit":null,"webcast":"https://youtu.be/u_A7xdnVllM","yo
utube_id":"u_A7xdnVllM","article":null,"wikipedia":null},"static_fire_date_ut
c":null,"static_fire_date_unix":null,"net":false,"window":null,"rocket":"5e9d0
d95eda69973a809d1ec","success":true,"failures":[],"details":null,"crew":[],"sh
ips":[],"capsules":[],"payloads":[],"launchpad":"5e9e4501f509094ba4566f84","fl
ight_number":171,"name":"Starlink 4-21 (v1.5)","date_utc":"2022-07-07T13:11:0
0.000Z","date_unix":1657199460,"date_local":"2022-07-07T09:11:00-04:00","date
_precision":"hour","upcoming":false,"cores":[{"core":"5e9e28a7f3591817f23b266
3","flight":13,"gridfins":true,"legs":true,"reused":true,"landing_attempt":tru

```

```
e,"landing_success":true,"landing_type":"ASDS","landpad":"5e9e3033383ecbb9e534e7cc"}],{"auto_update":true,"tbd":false,"launch_library_id":"ac4ce8e1-fd76-4654-8809-5500ba792a8a","id":"62a9f0c920413d2695d88712"},{"fairings":{"reused":null,"recovery_attempt":null,"recovered":null,"ships":[]},"links":{"patch":{"small":"https://imgur.com/BrW201S.png","large":"https://imgur.com/573IfGk.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_deployment_thread/","launch":"https://www.reddit.com/r/spacex/comments/vvwx9k/rspacex_starlink_31_launch_discussion_and_updates/","media":null,"recovery":"https://www.reddit.com/r/spacex/comments/k2ts1q/rspacex_fleet_updates_discussion_thread/"},"flickr":{"small":[],"original":[]},"presskit":null,"webcast":"https://youtu.be/_c738Z_zQR0","youtube_id":"_c738Z_zQR0","article":null,"wikipedia":null},"static_fire_date_utc":null,"static_fire_date_unix":null,"net":false,"window":null,"rocket":"5e9d0d95eda69973a809d1ec","success":null,"failures":[],"details":null,"crew":[],"ships":[],"capsules":[],"payloads":[],"launchpad":"5e9e4502f509092b78566f87","flight_number":172,"name":"Starlink 3-1 (v1.5)","date_utc":"2022-07-11T01:39:00.000Z","date_unix":1657503540,"date_local":"2022-07-10T18:39:00-07:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5f57c54a0622a633027900a1","flight":6,"gridfins":true,"legs":true,"reused":true,"landing_attempt":true,"landing_success":true,"landing_type":"ASDS","landpad":"5e9e3032383ecb6bb234e7ca"}],{"auto_update":true,"tbd":false,"launch_library_id":"051c4c90-a89d-4a86-a77f-c7e22b9cb458","id":"62a9f0e320413d2695d88713"},{"fairings":null,"links":{"patch":{"small":null,"large":null},"reddit":{"campaign":null,"launch":"https://www.reddit.com/r/spacex/comments/vyw3eo/rspacex_crs25_launch_discussion_and_updates_thread/","media":null,"recovery":null},"flickr":{"small":[],"original":[]},"presskit":null,"webcast":"https://youtu.be/mnowEqqMiFs","youtube_id":"mnowEqqMiFs","article":null,"wikipedia":null},"static_fire_date_utc":null,"static_fire_date_unix":null,"net":false,"window":null,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"details":null,"crew":[],"ships":[],"capsules":[],"payloads":["6243b835af52800c6e91926d"],"launchpad":"5e9e4502f509094188566f88","flight_number":173,"name":"CRS-25","date_utc":"2022-07-15T00:44:00.000Z","date_unix":1657845840,"date_local":"2022-07-14T20:44:00-04:00","date_precision":"hour","upcoming":false,"cores":[{"core":"60b800111f83cc1e59f16438","flight":5,"gridfins":true,"legs":true,"reused":true,"landing_attempt":true,"landing_success":true,"landing_type":"ASDS","landpad":"5e9e3033383ecb075134e7cd"}],{"auto_update":true,"tbd":false,"launch_library_id":"2773613e-58eb-4b99-8120-595c92aa3390","id":"6243ae40af52800c6e919259"},{"fairings":{"reused":null,"recovery_attempt":null,"recovered":null,"ships":[]},"links":{"patch":{"small":"https://imgur.com/BrW201S.png","large":"https://imgur.com/573IfGk.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_deployment_thread/","launch":null,"media":null,"recovery":"https://www.reddit.com/r/spacex/comments/k2ts1q/rspacex_fleet_updates_discussion_thread/"},"flickr":{"small":[],"original":[]},"presskit":null,"webcast":"https://youtu.be/7VWcjgYfJ9U","youtube_id":"7VWcjgYfJ9U","article":null,"wikipedia":null},"static_fire_date_utc":null,"static_fire_date_unix":null,"net":false,"window":null,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"details":null,"crew":[],"ships":[],"capsules":[],"payloads":[],"launchpad":"5e9e4501f509094ba4566f84","flight_number":174,"name":"Starlink 4-22 (v1.5)","date_utc":"2022-07-17T14:50:00.000Z","date_unix":1658069400,"date_local":"2022-07-17T10:50:00-04:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5e9e28a6f35918c0803b265c","flight":13,"gridfins":true,"legs":true,"reused":true,"landing_attempt":true,"landing_success":true,"landing_type":"ASDS","landpad":"5e9e3033383ecbb9e534e7cc"}],{"auto_update":true,"tbd":false,"launch_library_id":"84f9bbdd-0e2c-468e-b1d0-73d640745c13","id":"62a9f0f820413d2695d88714"},{"fairings":{"reused":null,"recovery_attempt":null,"recovered":null,"ships":[]},"links":{"patch":{"small":"https://imgur.com/BrW201S.png","large":"https://imgur.com/573IfGk.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_deployment_thread/","launch":null,"media":null,"recovery":"https://www.reddit.com/r/spacex/comments/k2ts1q/rspacex_fleet_updates_discussion_thread/"},"flickr":{"small":[],"original":[]},"presskit":null
```



```

1, "webcast": "https://youtu.be/BuXdtORWrpq", "youtube_id": "BuXdtORWrpq", "article": null, "wikipedia": null, "static_fire_date_utc": null, "static_fire_date_unix": null, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": null, "crew": [], "ships": [], "capsules": [], "payloads": [], "launchpad": "5e9e4502f509092b78566f87", "flight_number": 175, "name": "Starlink 3-2 (v1.5)", "date_utc": "2022-07-21T17:13:00.000Z", "date_unix": 1658423580, "date_local": "2022-07-21T10:13:00-07:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "61fae5947aa67176fe3e0e1e", "flight": 4, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3032383ecb6bb234e7ca"}], "auto_update": true, "tbd": false, "launch_library_id": "4ddf282b-94a1-418e-b3f6-7d8e753fdfec", "id": "62a9f10b20413d2695d88715"}, {"fairings": {"reused": null, "recovery_attempt": null, "recovered": null, "ships": []}, "links": {"patch": {"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_deployment_thread/", "launch": null, "media": null, "recovery": "https://www.reddit.com/r/spacex/comments/k2tslq/rspacex_fleet_updates_discussion_thread/"}, "flickr": {"small": [], "original": []}, "presskit": null, "webcast": null, "youtube_id": null, "article": null, "wikipedia": null, "static_fire_date_utc": null, "static_fire_date_unix": null, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": null, "crew": [], "ships": [], "capsules": [], "payloads": [], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 176, "name": "Starlink 4-25 (v1.5)", "date_utc": "2022-07-24T00:00:00.000Z", "date_unix": 1658620800, "date_local": "2022-07-23T20:00:00-04:00", "date_precision": "day", "upcoming": false, "cores": [{"core": "5f57c5440622a633027900a0", "flight": 8, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3033383ecb075134e7cd"}], "auto_update": true, "tbd": false, "launch_library_id": null, "id": "62a9f12820413d2695d88716"}, {"fairings": {"reused": null, "recovery_attempt": null, "recovered": null, "ships": []}, "links": {"patch": {"small": "https://i.imgur.com/Vp2RDZq.png", "large": "https://i.imgur.com/940t1sU.png"}, "reddit": {"campaign": null, "launch": "https://www.reddit.com/r/spacex/comments/wfohz0/rspacex_kplo_launch_discussion_updates_thread/", "media": null, "recovery": null}, "flickr": {"small": [], "original": []}, "presskit": null, "webcast": "https://youtu.be/rTrkHZjiO_8", "youtube_id": "rTrkHZjiO_8", "article": null, "wikipedia": null, "static_fire_date_utc": null, "static_fire_date_unix": null, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": null, "crew": [], "ships": [], "capsules": [], "payloads": [], "launchpad": "5e9e4501f509094ba4566f84", "flight_number": 177, "name": "KPL O", "date_utc": "2022-08-04T23:08:00.000Z", "date_unix": 1659654480, "date_local": "2022-08-04T19:08:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "5e9e28a6f359183c413b265d", "flight": 6, "gridfins": true, "legs": true, "reused": true, "landing_attempt": true, "landing_success": true, "landing_type": "ASDS", "landpad": "5e9e3033383ecbb9e534e7cc"}], "auto_update": true, "tbd": false, "launch_library_id": "75d7306e-1d76-4c0b-9dc4-98dee7b9af59", "id": "62a9f86420413d2695d88719"}, {"fairings": {"reused": null, "recovery_attempt": null, "recovered": null, "ships": []}, "links": {"patch": {"small": "https://imgur.com/BrW201S.png", "large": "https://imgur.com/573IfGk.png"}, "reddit": {"campaign": "https://www.reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_deployment_thread/", "launch": "https://www.reddit.com/r/spacex/comments/wk8dua/rspacex_starlink_426_launch_discussion_and/", "media": null, "recovery": "https://www.reddit.com/r/spacex/comments/k2tslq/rspacex_fleet_updates_discussion_thread/"}, "flickr": {"small": [], "original": []}, "presskit": null, "webcast": "https://youtu.be/ck5z0uMGz8s", "youtube_id": "ck5z0uMGz8s", "article": null, "wikipedia": null, "static_fire_date_utc": null, "static_fire_date_unix": null, "net": false, "window": null, "rocket": "5e9d0d95eda69973a809d1ec", "success": true, "failures": [], "details": null, "crew": [], "ships": [], "capsules": [], "payloads": [], "launchpad": "5e9e4502f509094188566f88", "flight_number": 178, "name": "Starlink 4-26 (v1.5)", "date_utc": "2022-08-09T22:57:00.000Z", "date_unix": 1660085820, "date_local": "2022-08-09T18:57:00-04:00", "date_precision": "hour", "upcoming": false, "cores": [{"core": "627843db57b51b752c5c5a54", "flight": 3, "gridfins": true, "legs": true, "reused": true, "landing_a

```

```
ttempt":true,"landing_success":true,"landing_type":"ASDS","landpad":"5e9e3033383ecb075134e7cd"}],{"auto_update":true,"tbd":false,"launch_library_id":"a6b9deb4-f78d-4b57-8e47-98c5aea99d9e","id":"62a9f8b320413d2695d8871b"},{"fairings":{"reused":null,"recovery_attempt":null,"recovered":null,"ships":[]},"links":{"patch":{"small":"https://imgur.com/BrW201S.png","large":"https://imgur.com/573IfGk.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_deployment_thread/","launch":"https://www.reddit.com/r/spacex/comments/wmgtiu/rspacex_starlink_33_launch_discussion_and_updates/","media":null,"recovery":"https://www.reddit.com/r/spacex/comments/k2tslq/rspacex_fleet_updates_discussion_thread/"},"flickr":{"small":[],"original":[]},"presskit":null,"webcast":"https://youtu.be/SU5FbiCbjiC","youtube_id":"SU5FbiCbjiC","article":null,"wikipedia":null},"static_fire_date_utc":null,"static_fire_date_unix":null,"net":false,"window":null,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"details":null,"crew":[],"ships":[],"capsules":[],"payloads":[],"launchpad":"5e9e4502f509092b78566f87","flight_number":179,"name":"Starlink 3-3 (v1.5)","date_utc":"2022-08-12T21:30:00.000Z","date_unix":1660339800,"date_local":"2022-08-12T14:30:00-07:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5f57c53d0622a6330279009f","flight":10,"gridfins":true,"legs":true,"reused":true,"landing_attempt":true,"landing_success":true,"landing_type":"ASDS","landpad":"5e9e3032383ecb6bb234e7ca"}],{"auto_update":true,"tbd":false,"launch_library_id":"4f2c5733-5019-4f7a-8403-15a1a270bf96","id":"62f3b4ff0f55c50e192a4e6b"},{"fairings":{"reused":null,"recovery_attempt":null,"recovered":null,"ships":[]},"links":{"patch":{"small":"https://imgur.com/BrW201S.png","large":"https://imgur.com/573IfGk.png"},"reddit":{"campaign":"https://www.reddit.com/r/spacex/comments/jhu37i/starlink_general_discussion_and_deployment_thread/","launch":"https://www.reddit.com/r/spacex/comments/wsdelt/rspacex_starlink_427_launch_discussion_and/","media":null,"recovery":"https://www.reddit.com/r/spacex/comments/k2tslq/rspacex_fleet_updates_discussion_thread/"},"flickr":{"small":[],"original":[]},"presskit":null,"webcast":"https://youtu.be/M018DAaNd_E","youtube_id":"M018DAaNd_E","article":null,"wikipedia":null},"static_fire_date_utc":null,"static_fire_date_unix":null,"net":false,"window":null,"rocket":"5e9d0d95eda69973a809d1ec","success":true,"failures":[],"details":null,"crew":[],"ships":[],"capsules":[],"payloads":[],"launchpad":"5e9e4501f509094ba4566f84","flight_number":180,"name":"Starlink 4-27 (v1.5)","date_utc":"2022-08-19T19:24:00.000Z","date_unix":1660937040,"date_local":"2022-08-19T15:24:00-04:00","date_precision":"hour","upcoming":false,"cores":[{"core":"5f57c5440622a633027900a0","flight":9,"gridfins":true,"legs":true,"reused":true,"landing_attempt":true,"landing_success":true,"landing_type":"ASDS","landpad":"5e9e3033383ecb075134e7cd"}],{"auto_update":true,"tbd":false,"launch_library_id":"4a114237-e8c5-4248-8d30-7a9026b86430","id":"62f3b5200f55c50e192a4e6c"}]}
```

You should see the response contains massive information about SpaceX launches. Next, let's try to discover some more relevant information for this project.

## Task 1: Request and parse the SpaceX launch data using the GET request

To make the requested JSON results more consistent, we will use the following static response object for this project:

```
In [10]: static_json_url='https://cf-courses-data.s3.us.cloud-object-storage.appdomain.c
```

We should see that the request was successful with the 200 status response code

```
In [11]: response.status_code
```

Out[11]: 200

Now we decode the response content as a Json using `.json()` and turn it into a Pandas dataframe using `.json_normalize()`

```
In [12]: # Use json_normalize meethod to convert the json result into a dataframe  
data = pd.json_normalize(response.json())
```

Using the dataframe `data` print the first 5 rows

```
In [13]: # Get the head of the dataframe  
df = data  
df.head()
```

Out[13]:

	static_fire_date_utc	static_fire_date_unix	net	window	rocket	success
--	----------------------	-----------------------	-----	--------	--------	---------

0	2006-03-17T00:00:00.000Z	1.142554e+09	False	0.0	5e9d0d95eda69955f709d1eb	False
---	--------------------------	--------------	-------	-----	--------------------------	-------

1	None	NaN	False	0.0	5e9d0d95eda69955f709d1eb	False
---	------	-----	-------	-----	--------------------------	-------

2	None	NaN	False	0.0	5e9d0d95eda69955f709d1eb	False
---	------	-----	-------	-----	--------------------------	-------

3	2008-09-20T00:00:00.000Z	1.221869e+09	False	0.0	5e9d0d95eda69955f709d1eb	True
---	--------------------------	--------------	-------	-----	--------------------------	------

	static_fire_date_utc	static_fire_date_unix	net	window		rocket	success
4	None	NaN	False	0.0	5e9d0d95eda69955f709d1eb	T	

You will notice that a lot of the data are IDs. For example the rocket column has no information about the rocket just an identification number.

We will now use the API again to get information about the launches using the IDs given for each launch. Specifically we will be using columns `rocket`, `payloads`, `launchpad`, and `cores`.

```
In [14]: # Lets take a subset of our dataframe keeping only the features we want and the
data = data[['rocket', 'payloads', 'launchpad', 'cores', 'flight_number', 'date_utc']]

# We will remove rows with multiple cores because those are falcon rockets with
data = data[data['cores'].map(len)==1]
data = data[data['payloads'].map(len)==1]

# Since payloads and cores are lists of size 1 we will also extract the single
data['cores'] = data['cores'].map(lambda x : x[0])
data['payloads'] = data['payloads'].map(lambda x : x[0])

# We also want to convert the date_utc to a datetime datatype and then extract the date
data['date'] = pd.to_datetime(data['date_utc']).dt.date

# Using the date we will restrict the dates of the launches
data = data[data['date'] <= datetime.date(2020, 11, 13)]
```

- From the `rocket` we would like to learn the booster name
- From the `payload` we would like to learn the mass of the payload and the orbit that it is going to
- From the `launchpad` we would like to know the name of the launch site being used, the longitude, and the latitude.
- From `cores` we would like to learn the outcome of the landing, the type of the landing, number of flights with that core, whether gridfins were used, whether the core is reused, whether legs were used, the landing pad used, the block of the core which is a number used to separate version of cores, the number of times this specific core has been reused, and the serial of the core.

The data from these requests will be stored in lists and will be used to create a new dataframe.

```
In [15]: #Global variables
BoosterVersion = []
PayloadMass = []
Orbit = []
LaunchSite = []
Outcome = []
Flights = []
GridFins = []
Reused = []
Legs = []
LandingPad = []
Block = []
ReusedCount = []
Serial = []
Longitude = []
Latitude = []
```

These functions will apply the outputs globally to the above variables. Let's take a look at `BoosterVersion` variable. Before we apply `getBoosterVersion` the list is empty:

```
In [16]: BoosterVersion
```

```
Out[16]: []
```

Now, let's apply `getBoosterVersion` function method to get the booster version

```
In [17]: # Call getBoosterVersion
getBoosterVersion(data)
```

the list has now been updated

```
In [18]: BoosterVersion[0:5]
```

```
Out[18]: ['Falcon 1', 'Falcon 1', 'Falcon 1', 'Falcon 1', 'Falcon 9']
```

we can apply the rest of the functions here:

```
In [19]: # Call getLaunchSite
getLaunchSite(data)
```

```
In [20]: # Call getPayloadData
getPayloadData(data)
```

```
In [21]: # Call getCoreData
getCoreData(data)
```

Finally let's construct our dataset using the data we have obtained. We will combine the columns into a dictionary.

```
In [22]: launch_dict = {'FlightNumber': list(data['flight_number']),
                        'Date': list(data['date']),
                        'BoosterVersion':BoosterVersion,
                        'PayloadMass':PayloadMass,
                        'Orbit':Orbit,
```

```
'LaunchSite':LaunchSite,  
'Outcome':Outcome,  
'Flights':Flights,  
'GridFins':GridFins,  
'Reused':Reused,  
'Legs':Legs,  
'LandingPad':LandingPad,  
'Block':Block,  
'ReusedCount':ReusedCount,  
'Serial':Serial,  
'Longitude': Longitude,  
'Latitude': Latitude}
```

Then, we need to create a Pandas data frame from the dictionary launch\_dict.

```
In [23]: launch_data = pd.DataFrame(launch_dict)
```

```
In [ ]:
```

Show the summary of the dataframe

```
In [24]: launch_data.head(20)
```

Out [24]:

	FlightNumber	Date	BoosterVersion	PayloadMass	Orbit	LaunchSite	Outcome	Flights
0	1	2006-03-24	Falcon 1	20.0	LEO	Kwajalein Atoll	None None	1
1	2	2007-03-21	Falcon 1	NaN	LEO	Kwajalein Atoll	None None	1
2	4	2008-09-28	Falcon 1	165.0	LEO	Kwajalein Atoll	None None	1
3	5	2009-07-13	Falcon 1	200.0	LEO	Kwajalein Atoll	None None	1
4	6	2010-06-04	Falcon 9	NaN	LEO	CCSFS SLC 40	None None	1
5	8	2012-05-22	Falcon 9	525.0	LEO	CCSFS SLC 40	None None	1
6	10	2013-03-01	Falcon 9	677.0	ISS	CCSFS SLC 40	None None	1
7	11	2013-09-29	Falcon 9	500.0	PO	VAFB SLC 4E	False Ocean	1
8	12	2013-12-03	Falcon 9	3170.0	GTO	CCSFS SLC 40	None None	1
9	13	2014-01-06	Falcon 9	3325.0	GTO	CCSFS SLC 40	None None	1
10	14	2014-04-18	Falcon 9	2296.0	ISS	CCSFS SLC 40	True Ocean	1
11	15	2014-07-14	Falcon 9	1316.0	LEO	CCSFS SLC 40	True Ocean	1
12	16	2014-08-05	Falcon 9	4535.0	GTO	CCSFS SLC 40	None None	1
13	17	2014-09-07	Falcon 9	4428.0	GTO	CCSFS SLC 40	None None	1
14	18	2014-09-21	Falcon 9	2216.0	ISS	CCSFS SLC 40	False Ocean	1
15	19	2015-01-10	Falcon 9	2395.0	ISS	CCSFS SLC 40	False ASDS	1
16	20	2015-02-11	Falcon 9	570.0	ES-L1	CCSFS SLC 40	True Ocean	1
17	22	2015-04-14	Falcon 9	1898.0	ISS	CCSFS SLC 40	False ASDS	1
18	23	2015-04-27	Falcon 9	4707.0	GTO	CCSFS SLC 40	None None	1
19	24	2015-06-28	Falcon 9	2477.0	ISS	CCSFS SLC 40	None ASDS	1

In [25]: launch\_data['BoosterVersion'].value\_counts



```
Out[25]: <bound method IndexOpsMixin.value_counts of 0      Falcon 1
1      Falcon 1
2      Falcon 1
3      Falcon 1
4      Falcon 9
...
89     Falcon 9
90     Falcon 9
91     Falcon 9
92     Falcon 9
93     Falcon 9
Name: BoosterVersion, Length: 94, dtype: object>
```

```
In [ ]:
```

## Task 2: Filter the dataframe to only include Falcon 9 launches

Finally we will remove the Falcon 1 launches keeping only the Falcon 9 launches. Filter the data from the dataframe using the `BoosterVersion` column to only keep the Falcon 9 launches. Save the filtered data to a new dataframe called `data_falcon9`.

```
In [26]: data_falcon9 = launch_data[launch_data.BoosterVersion == 'Falcon 9']
data_falcon9.head()
```

```
Out[26]:
```

	FlightNumber	Date	BoosterVersion	PayloadMass	Orbit	LaunchSite	Outcome	Flights	Gl
4	6	2010-06-04	Falcon 9	NaN	LEO	CCSFS SLC 40	None None	1	
5	8	2012-05-22	Falcon 9	525.0	LEO	CCSFS SLC 40	None None	1	
6	10	2013-03-01	Falcon 9	677.0	ISS	CCSFS SLC 40	None None	1	
7	11	2013-09-29	Falcon 9	500.0	PO	VAFB SLC 4E	False Ocean	1	
8	12	2013-12-03	Falcon 9	3170.0	GTO	CCSFS SLC 40	None None	1	

```
In [ ]:
```

Now that we have removed some values we should reset the FlightNumber column

```
In [27]: data_falcon9.loc[:, 'FlightNumber'] = list(range(1, data_falcon9.shape[0]+1))
data_falcon9
```

```
/home/jupyterlab/conda/envs/python/lib/python3.7/site-packages/pandas/core/indexing.py:1773: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
self._setitem_single_column(ilocs[0], value, pi)
```

Out [27]:

	FlightNumber	Date	BoosterVersion	PayloadMass	Orbit	LaunchSite	Outcome	Flights
<b>4</b>	1	2010-06-04	Falcon 9	NaN	LEO	CCSFS SLC 40	None None	1
<b>5</b>	2	2012-05-22	Falcon 9	525.0	LEO	CCSFS SLC 40	None None	1
<b>6</b>	3	2013-03-01	Falcon 9	677.0	ISS	CCSFS SLC 40	None None	1
<b>7</b>	4	2013-09-29	Falcon 9	500.0	PO	VAFB SLC 4E	False Ocean	1
<b>8</b>	5	2013-12-03	Falcon 9	3170.0	GTO	CCSFS SLC 40	None None	1
...	...	...	...	...	...	...	...	...
<b>89</b>	86	2020-09-03	Falcon 9	15600.0	VLEO	KSC LC 39A	True ASDS	2
<b>90</b>	87	2020-10-06	Falcon 9	15600.0	VLEO	KSC LC 39A	True ASDS	3
<b>91</b>	88	2020-10-18	Falcon 9	15600.0	VLEO	KSC LC 39A	True ASDS	6
<b>92</b>	89	2020-10-24	Falcon 9	15600.0	VLEO	CCSFS SLC 40	True ASDS	3
<b>93</b>	90	2020-11-05	Falcon 9	3681.0	MEO	CCSFS SLC 40	True ASDS	1

90 rows × 17 columns

## Data Wrangling

We can see below that some of the rows are missing values in our dataset.

```
In [28]: data_falcon9.isnull().sum()
```

```
Out[28]: FlightNumber    0
         Date            0
         BoosterVersion  0
         PayloadMass     5
         Orbit           0
         LaunchSite      0
         Outcome         0
         Flights         0
         GridFins        0
         Reused          0
         Legs            0
         LandingPad      26
         Block           0
         ReusedCount     0
         Serial          0
         Longitude       0
         Latitude        0
         dtype: int64
```

Before we can continue we must deal with these missing values. The `LandingPad` column will retain None values to represent when landing pads were not used.

### Task 3: Dealing with Missing Values

Calculate below the mean for the `PayloadMass` using the `.mean()`. Then use the mean and the `.replace()` function to replace `np.nan` values in the data with the mean you calculated.

```
In [29]: data_falcon9[['PayloadMass']]
```

```
Out[29]:
```

	PayloadMass
4	NaN
5	525.0
6	677.0
7	500.0
8	3170.0
...	...
89	15600.0
90	15600.0
91	15600.0
92	15600.0
93	3681.0

90 rows × 1 columns

```
In [30]: payload_mean = data_falcon9['PayloadMass'].mean()
         print('The Average Payload Size Per KG:', payload_mean)
```

```
data_falcon9['PayloadMass'].replace(np.nan, payload_mean, inplace=True)
data_falcon9[['PayloadMass']].show_all
```

```
/home/jupyterlab/conda/envs/python/lib/python3.7/site-packages/pandas/core/gen
eric.py:6619: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame
```

See the caveats in the documentation: [https://pandas.pydata.org/pandas-docs/stable/user\\_guide/indexing.html#returning-a-view-versus-a-copy](https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy)

```
return self._update_inplace(result)
```

The Average Payload Size Per KG: 6123.547647058824

```
-----
AttributeError                                Traceback (most recent call last)
/tmp/ipykernel_69/470773195.py in <module>
      3
      4 data_falcon9['PayloadMass'].replace(np.nan, payload_mean, inplace=True)
----> 5 data_falcon9[['PayloadMass']].show_all

~/conda/envs/python/lib/python3.7/site-packages/pandas/core/generic.py in __ge
tattr__(self, name)
    5485         ):
    5486             return self[name]
-> 5487         return object.__getattr__(self, name)
    5488
    5489     def __setattr__(self, name: str, value) -> None:

AttributeError: 'DataFrame' object has no attribute 'show_all'
```

```
In [ ]: data_falcon9.tail()
```

You should see the number of missing values of the `PayloadMass` change to better fit our data with mass kg averages.

Now we should have no missing values in our dataset except for in `LandingPad`.

We can now export it to a **CSV** for the next section, but to make the answers consistent, in the next lab we will provide data in a pre-selected date range.

```
data_falcon9.to_csv('dataset_part\1.csv', index=False)
```

## Authors

[Joseph Santarcangelo](#) has a PhD in Electrical Engineering, his research focused on using machine learning, signal processing, and computer vision to determine how videos impact human cognition. Joseph has been working for IBM since he completed his PhD.

## Change Log

Date (YYYY-MM-DD)	Version	Changed By	Change Description
2020-09-20	1.1	Joseph	get result each time you run

Date (YYYY-MM-DD)	Version	Changed By	Change Description
2020-09-20	1.1	Azim	Created Part 1 Lab using SpaceX API
2020-09-20	1.0	Joseph	Modified Multiple Areas

Copyright © 2021 IBM Corporation. All rights reserved.

In [ ]:

In [ ]: