

Volume 37

Issue 12

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FT	3000	9000	12000	18000	24000	30000	34000
BRL	1937	2112	2617	07	9900-09	20	2034
DBQ	1922	2218	2418	2218	2218	2233	43
DSM	1919	2118	2118	2118	2118	2034	44
MCW	1709	2118	2118	2118	2118	2048	44
JOT	2229	2215+18	2106+13	2706+06	3205-09	9900-19	191034
SPI	2028	1921+18	1911+12	9900+06	3611-10	3405-20	191034
							161745

**EAA Chapter 790****Lake in the Hills, IL****790.eaachapter.org**

We wish to thank Paul Ranieri and Matt VanBergen for their recent articles.

Chapter Officers were approved at the last Zoom Chapter Meeting. They are:

**Matt VanBergen**-President

**Dave Stokes**-Vice President

**Paul Ranieri**-Treasurer

**Tom LeGates**-Web Site

**Tom Solar**-Secretary

Thanks to Paul for his past years of service and Welcome Matt as our new President and Dave as Vice President.

At the last Board Meeting it was decided to suspend all in person Chapter Meetings and shop visits and the annual December Christmas/Holiday Party at Paul's house. Paul will send out monthly emails for those who wish to participate in the Breakfast fly outs. The Banquet has been put on hold and Youth education as well. Zoom meetings will be scheduled so keep a look out in your emails for notification.

Mike Peranich of Lake in the Hills airport has agreed to support any Chapter Youth Involvement when this COVID issue subsides.

### *In this Issue*

- Calendar of Events-TBD
- Pets and Paws Adventures
- The Starship and why has Space X moved so quickly
- Wanted Newsletter Articles



Speaking of youth involvement; Mark Luchsinger has cleared his agenda by finishing all of his Eagle Scout requirements and has completed his SAT Test. Mark expects to continue flight instruction shortly. He has approx. 27 hours of flight time and must complete his CC and written Exam. Eddie Ranieri has completed his written test, one CC flight and has 47 hrs of flight time. He is awaiting CFI approval for his second CC Flight.

Ole's Prescott pusher is back in the air.

## Pilots-n-Paws Adventures

By Matt VanBergen



I'm not sure if you are aware, but there is a great cause that I have been volunteering for and it involves flying and dogs. What else is there in life? Haha, don't tell my wife I said that. Pilots-n-Paws is mostly an online website that helps connect pilots and pets that need to get from point A to point B. In most cases they are dogs and



they have been rescued and need to get to a shelter. I have been flying for Pilots-n-Paws for the past two years, doing a couple transports each month. The Pilots-n-Paws website is pretty neat. There's a map that shows all of the

transport requests and once you are registered, you can click on a transport request and then there's a discussion forum which involves the requesting party and the pilots that want to help. In my case, I have been helping a German Shepherd rescue based in the Texas Panhandle (Friends of Texas Panhandle Shelter Pets) transport dogs. The reason for their transport varies, some are going to another rescue which

for my transports has been the White Paws German Shepherd Rescue located in the Milwaukee, WI area, some are being transported to a foster home where they will be cared for, trained and prepared for an adoption and in other cases they are being transported to the Chicago area for medical attention.

Since most volunteer pilots are flying a small piston airplane and there really is no option to break the trip into two days, the logistics of lining up multiple pilots and their airplanes along with the weather can be challenging. The rescue person usually takes the lead on this based on the pilots' input. So, for a couple dogs coming out of the Texas Panhandle, they might fly in 4 different airplanes either or all being delayed due to weather, ATC, equipment issues, surprise headwinds and everything else that can delay a GA flight.



*(Continued on next Page)*

## Pilots and Paws Adventure *(Continued)*

I recommend you give it a try. All you have to do is sign-up on the Pilots-n-Paws website (<https://www.pilotsnpaws.org/>) and then start looking at transport requests. When you see one that may originate, terminate or even fly near your home airport, jump into that forum and let the requester know you want to help. It's a little competitive and last minute, I have to say. If you don't respond to a request right away, usually someone else does and you miss out. However, there are also transports that are sitting out there and nobody for whatever reason has volunteered to help – maybe the timing is bad, it was just overlooked or whatever. If you have any questions, feel free to reach out to me.



*Matt*



October Fly Out.

*Photo provided by Matt VanBergen*

# SPACE X STARSHIP



Just watched an amazing presentation by Elon Musk at his Boca Chica location near Brownsville, Tx. Thought this might be interesting for some as he explained Space X Starship Program, so here are some of the details.

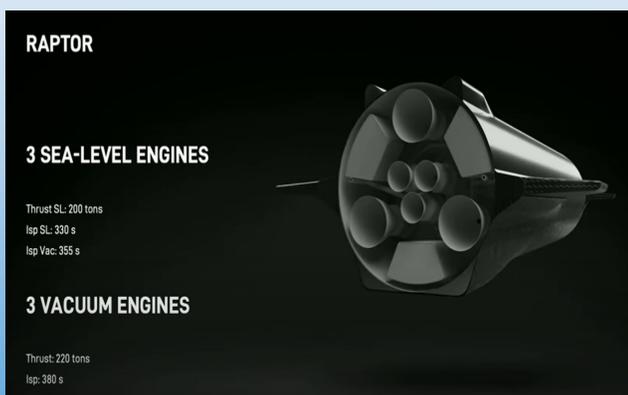
It is assembled on site with out a building (It was faster than constructing a building first. More on his principles of product development and management). It stands 50 meters tall and 9 meters wide, less booster. With the booster the total length is 118 meters. I'm quoting in meters so that I can be more comfortable using them like the rest of the world. It houses 6 raptor engines of which 3 are on gimbals with can turn up to 15 degrees and 3 are for space flight. The bottom fins do not move and are for legs only. The booster will use up to 37 Raptor engines.

The picture above is of the Mark 1. It is built with welded stainless steel plates as will be Mark 2. The Mark 3 and 4 version will use a thinner coil of 301 stainless steel with only one seamed weld. The thrusters use both hot and cold gas thrusters. The cold gas thrusters use compress nitrogen and the hot gas thrusters are used for re-entry. Re-entry will occur at a 60 degree angle with the heat shield on one side. Mark 4 and 5 will be un-crewed orbital flights.

Builds will be at both Cape Canaveral and Boca Chica. With the first crewed launch from Boca Chica.



For the launches to either the moon or Mars, there will be refueling at low earth orbit. Space docking is easier than ISS docking. The booster will not be required for launches from the Moon nor Mars.

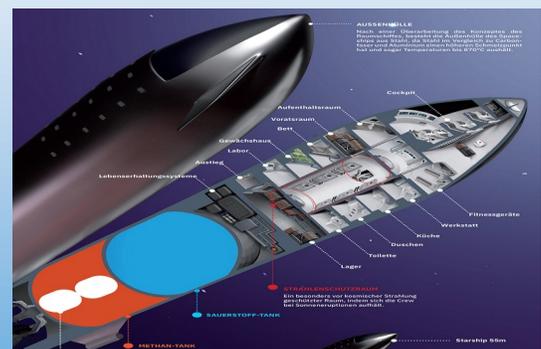


## Starship (Continued)

Only about 5% of Space X budget is used for the Starship program. Propellant production will be made on the moon and Mars.

Expected payloads could be as much as 100 personnel per launch. With a fleet of starships, 1000 times more capacity can be launched than the current equivalent of 200 tons launched each year by all of the worlds launching vehicles. Scientific ports will be the initial space requirements.

The build bottleneck for Space X will be the Raptor engines. Currently 1 is built every 10 days, with the target of building one every 2 days and then 1 every day. (Each Booster requires 37). Both the boosters and Starships will be reusable.



Space X has requested and obtain FAA approval for their first Launch of Starship Mark 1 to 40, 00 feet from today Dec. 8th through Thursday Dec 11th. The idea is to flip the Starship and land. Elon projects 1 in 3 chance of success. Watch for this launch.

## Starship *(Continued)*

And how can Space X develop and deploy so quickly? Well here are Elon's own principles.

Elon Musk's Management principles

If the schedule is long its wrong, tight is right

The best part is no part and the best process is no process

Long design wrong design

If it weights nothing costs nothing can't go wrong.

Constantly looking for what can be undesigned is best with recursive improvements on schedules

Questions from the audience:

Will you use the boring machine? A very good idea to bore into Mars in order to remain away from the high ultraviolet radiation which destroys DNA

Will you have a Mars Rover? Won't need it. A tesla car will work just fine :)

What about Life support Systems? Those are already in use and its pretty straight forward. There is lots of ice on both the moon and Mars. Along with high levels of CO2 on Mars for extracting water and oxygen via solar.

How long did it take you to build the Starship? 4-5 months.

Can you really fit 100 people in the craft? Quite possibly . There is 1000 cubic meters of volume and realize there are 6 levels of positioning in the vacuum of space.

Other Notes: Humans only feel acceleration not velocity. As an example the International Space Station travels horizontally around the earth at approx. 17,000 MPH yet the passengers feel no motion.

Establishing a schedule is key to any successful program. Referring to Mike Collins presentation at Oshkosh 2019. "Mars direct", "JFK Mars express". Saying we are going to the moon or Mars is not enough. One must set a date and then drive to that date just as JFK said we are going to the moon by the end of the decade. People need to be galvanized and focused. Project Management 101.

Hope you enjoyed this information and a bit of banter.

Yours,

*Tom Solar*



December, 2020



***"I fly because it releases my mind from the tyranny of petty things". Antoine de Saint-Exupery***

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### Others TBD:

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