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Featured Stories



VITAL team members take a group shot right before sending the ventilator to Mount Sinai for testing. (Top Row, left to right): Shaunessy Grant, Michael Johnson, David Van Buren, Michelle Easter. (Front row): Brandon Metz, Patrick Degrosse Image Credit: NASA/JPL-Caltech

JPL Shows Heart to Save Lungs

By Taylor Hill

On March 11, David Van Buren found himself in JPL's cafeteria, waiting in line for a cup of coffee. It was a bustling Wednesday morning on Lab—typical pre-mandatory telework—but Van Buren's mind wasn't focused on his typical JPL workload.

Instead, the mechanical systems engineer was crunching coronavirus numbers. In February, he'd given a lecture on pandemics in relation to COVID-19 for his physics course at Cal State Los Angeles, and saw clear signs of a developing pandemic.

"It didn't take much extrapolating to see the potential of what could happen here," Van Buren said. "And at the same time, I was thinking about our work; we have these missions and efforts to explore other planets, but I started questioning if what we were doing at JPL was what we should be doing," Van Buren said.

That same morning, JPL Chief Engineer Rob Manning's thoughts were preoccupied by the virus, and he needed coffee, too.

"I had just seen some projections, and I was worried," Manning said.

In one of the last chance encounters before the virus put an end to them, the two men chatted about upcoming work and a bit about their coronavirus concerns—but nothing about developing a cheap, effective, high pressure ventilator specially designed for coronavirus cases. And nothing about doing it in about a month's time.

Then Van Buren sent an email.

"I went back to my desk after talking with Rob, and the question was still nagging me," Van Buren said. "We have incredible engineering talent and capabilities here, how can we help reduce the ventilator shortage that could be coming?"

This, well before most people even knew the meaning of "ventilator," let alone the fatal implications of a shortage.

Van Buren outlined a plan to develop and proof a low-cost respirator design that could be made quickly and in volume. Manning was hooked.

"We needed to do something, and this was it," Manning said.

Thirty-seven days later, a team of more than 50 JPLers—some working on-Lab, but most from home—had designed, built and tested VITAL (Ventilator Intervention Technology Accessible Locally), a breathing aid that would help critically ill COVID-19 patients and bolster scarce stocks of traditional hospital ventilators.

The timeline is a feat nearly unheard of in medical device development, completed by a research and development center that makes robots for space, not breathing aids for humans. In JPL terms, the team would say they crammed an entire planetary flight mission — from formulation to launch to landing — into just over a month. Most team members worked 14-to 16-hour days, seven days a week. Success was never assured, and mandatory telework restrictions put unique strains on an already daunting task. Van Buren said the obstacles discouraged no one.

"The difference is the purpose," Van Buren said. "Landing something on Mars is incredibly exciting, but saving lives is a different beast."

There's a WAM for That

So how did the team turn the initial idea into action? And exactly how did JPL transform itself into an R&D center for ventilators?

Enter Leon Alkalai, engineering fellow in the Office of Strategic Integration, who for the past six years has led a medical engineering forum at JPL aimed at identifying the Lab's unique space technologies that could be applied to solving challenging problems in healthcare and medicine.

"The broad vision has been there," Alkalai said. "David's idea brought the urgency and the opportunity for JPL to make a significant contribution in a unique way, and I wanted to help in any way I could."

Thanks to the forum's funding, JPLers were able to charge hours they worked on the project and get organized quickly without having to wade through red tape.

"There are many efforts to combat COVID-19 coming out across NASA, and one of the reasons this one caught the attention of the leadership is JPL's organization from the beginning," Alkalai said. "We got a jump start."

With funding in place, the team quickly formed. Van Buren canvassed for various experts across JPL, and Mark E. Johnson—Van Buren's manager—teamed up with Manning to champion the project to Lab leadership. The team—now about a dozen or so strong—held its kickoff meeting Monday, March 16 in Left Field—a whiteboard-lined creative space in Building 301 typically used for brainstorming early mission concepts.

Instead, the team had turned the room into a ventilator learning station. And thanks to one world-renowned pulmonologist, the learning curve was about to get steep.



VITAL is a new high-pressure ventilator developed by JPL, tailored to treat coronavirus. Image Credit: NASA/JPL-Caltech

No Time to Breathe

A respiratory therapist since the 1970s, Dr. Michael Gurevitch brought his real-world experience designing and adapting ventilators for neuromuscular patients to JPL—literally.

As the Medical Director of the School of Respiratory Therapy for East Los Angeles and Santa Monica Colleges, Gurevitch had access to the consortium's supply of ventilators, circuits, valves and filters—all of

which he brought to the Lab to help illustrate what was needed to make a functioning COVID-19-fighting device.

“Since coronavirus restrictions had shut down the colleges, the school leadership granted us access to grab just about anything we needed from their labs that would help aid JPL’s project,” Gurevitch said. “It proved invaluable for the engineers to proceed with their efforts in development and testing.”

Gurevitch’s ventilator show-and-tell proved to be a crash course that gave the VITAL team key insights in understanding the requirements necessary to develop a ventilator targeting COVID-19 cases.

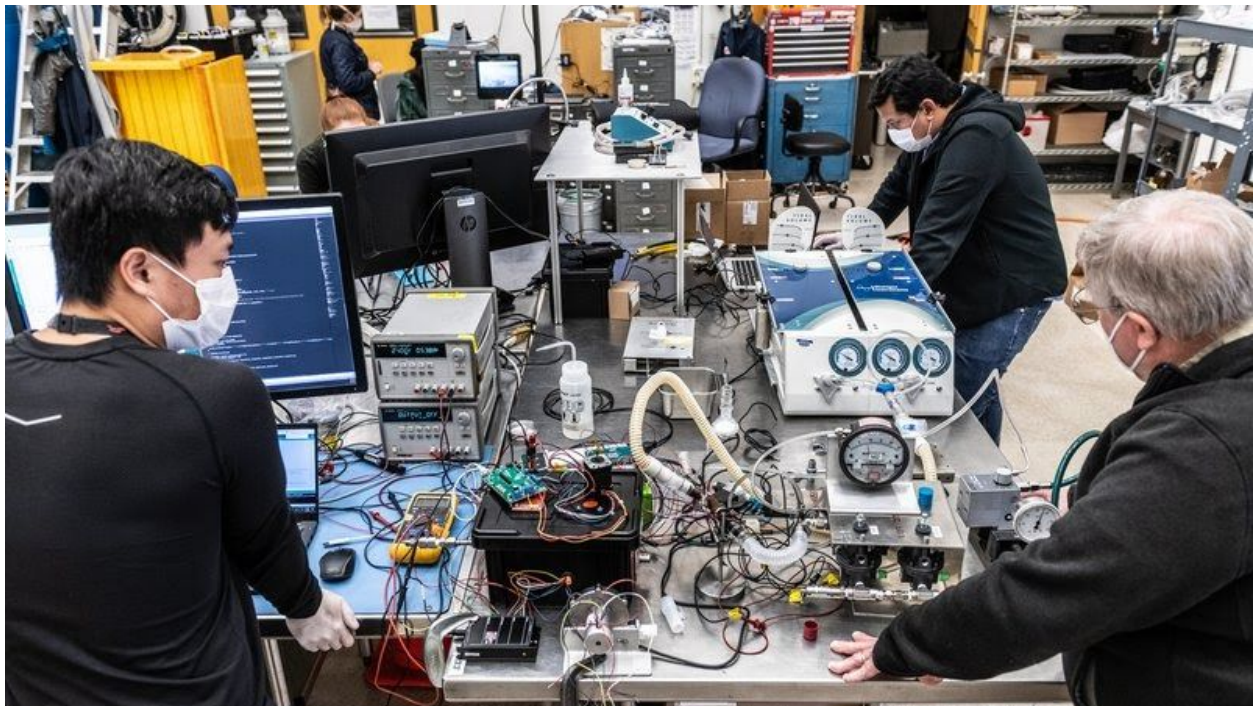
“We quickly understood that anything going in a hospital setting would require FDA authorization, so the idea of putting together an informal device wasn’t likely,” Van Buren said. “In order to have widespread adoption, it had to be a more formally developed unit.”

After the meeting, VITAL’s design team, led by Mechatronic Engineer Mike R. Johnson, turned Gurevitch’s lecture into requirements.

The ventilator had to meet specific high pressure oxygen flow rates to aid COVID-19 patients battling Acute Respiratory Distress Syndrome; it had to be made of far fewer parts than a typical hospital ventilator to keep costs down; those parts had to be widely available in the U.S. supply chain to make sure the ventilators could be built in mass quantities; and those parts couldn’t be the same used by traditional ventilators—to prevent the making of one device from blocking production of another.

Gurevitch said seeing the team transfer his medical notes on ventilators into a working concept, design, and prototype was inspiring.

“They were amazing. They not only grasped the medical concepts and physiology, but they understood how those requirements would interface with the mechanics of the device,” Gurevitch said.



JPLers work on the ventilator prototype. Image Credit: NASA/JPL-Caltech

Called to Lab in a Pandemic

While a majority of the team worked from home following the mandatory telework order issued March 17, prototype assembly and testing were essential to getting the job done, so a limited staff stayed on Lab as

mission-essential, operating in the propulsion high bay in Building 233 through the duration of the VITAL project.

Michelle Easter, a mechatronic engineer who worked as prototype logistics and hardware test lead for VITAL, was brought on to the team March 18, when she said getting used to the idea of being on Lab in the middle of a pandemic took some time.

“The first week on Lab after telework started was a process,” Easter said. “I was anxious, being hypersensitive to cleanliness, but still there was a part of me that switched automatically into the mode of ‘we can help, so we have to help.’”

It wasn’t that the team was responding to anxiety or fears around coronavirus—it was more of a progression to overcome them, and once they did, the sole focus became how to get the work done as quickly as possible.

Easter said the time constraints and parts availability made each design choice a challenge.

“We were considering the FDA approval process on top of making sure each part we choose is available for mass production, and not just available, but available right now,” Easter said. “This had to be technically excellent, and the parts had to be readily available. We’re not used to that at JPL. If I’m working on a flight instrument and I want a part, I’ll just give a company a 20-month lead time to custom build it. That’s not an option here.”

Despite the early growing pains, the team found their groove, designing, building and testing two different prototype models—one powered by a blower and another by a pneumatic system. Both contain about one-seventh of the parts of a traditional ventilator, and both are capable of delivering high pressure oxygen flows needed for COVID-19 patients while keeping the lungs slightly inflated even as they exhale—key for patients to stave off infections like pneumonia.

“It’s been amazing to be a part of such a grassroots project, and watching it just explode in an organic way from those first meetings into these working prototypes,” Easter said. “I joke that I’ve met all my new favorite JPLers from this project. Because everyone on this team has a big heart, and they’re on this project because they want to make a difference. That pureness of intention is incredible. Everybody is all in for the good, and it just feels great.”

Systems Engineer Stacey Boland is no stranger to JPL’s penchant for acronyms and jargon, but as operations lead on VITAL, she was tasked with essentially writing a user manual for the device as it was being built.

“The medical professionals definitely have their own language,” Boland said. “Different specialties within the healthcare profession even seem to have their own dialects—so there’s been a fair amount of iteration and editing involved.”

Van Buren saw the communication channels as key to the success of the project—just as those channels are key to the success of JPL’s missions.

“It was a great example of what JPL does really well, which is to work with the scientists—or in this case, physicians—to understand what we really need to do, and then build to those needs,” Van Buren said.

Boland’s other job is working on the MAIA instrument (Multi-Angle Imager for Aerosols)—NASA’s first time partnering with epidemiologists and health organizations to use satellite data to study human health. It has uniquely qualified her for a position on VITAL.

“In a given day, I’m talking to doctors, engineers, managers, visual strategists and sometimes also regulators,” Boland said. That can result in a lot of different points of view to try to reconcile. It’s a challenge under normal working circumstances before adding in the stresses of teleworking and the

breakneck design pace. “Yet, we all really work great together as one big virtual team,” Boland said. “We all talk. We all listen. We’re all learning together. There’s something beautiful and enabling in having a singular focus—there’s a real unmet need and we’re responding to it. There truly is a sense that we’re all in this together.”

VITAL’s Future

With the prototypes built, the team was able to connect through Alkalai with Dr. Matthew Levin at the Icahn School of Medicine at Mount Sinai, New York. On April 22, barely a month after the start of the project, the ventilator passed critical tests in the center’s high fidelity human simulation lab, performing under a wide variety of simulated patient conditions.

On April 30, after reviewing the 505-page submission the team sent in just a week prior, the Food and Drug Administration (FDA) approved VITAL for Emergency Use Authorization.

More than 160 manufacturing companies in the U.S. and countries around the world have already sent in applications to obtain a free license for building VITAL through Caltech’ Office of Technology Transfer and Corporate Partnerships.

“The global interest in licensing the VITAL technology is overwhelming and humbling,” Alkalai said. “We need to find a way to make our ventilator available globally and help save lives everywhere.”

Currently, ventilator usage remains below critical levels in the United States, but that doesn’t mean VITAL won’t be needed if coronavirus cases spike again in the future.

“It looks like we’re near the peak in the U.S., but it could get worse as easily as it gets better,” Van Buren said. “We won’t know it’s over until it’s obvious we have beat it. No matter what happens, what we’ve shown through this project is a pathway to get important, time-sensitive work done. There will be another pandemic, and we’re putting in place principles on how to attack them here.”

Praise for the Team

Dave Gallagher showcases VITAL to President Trump on April 24.

The team’s incredible accomplishments have captured the world’s attention. On April 23, NASA Administrator Jim Bridenstine held a media briefing where JPL Associate Director of Strategic Integration Dave Gallagher presented on the development of VITAL. Two days later, Gallagher was in the White House, showing off the ventilator to President Donald Trump.

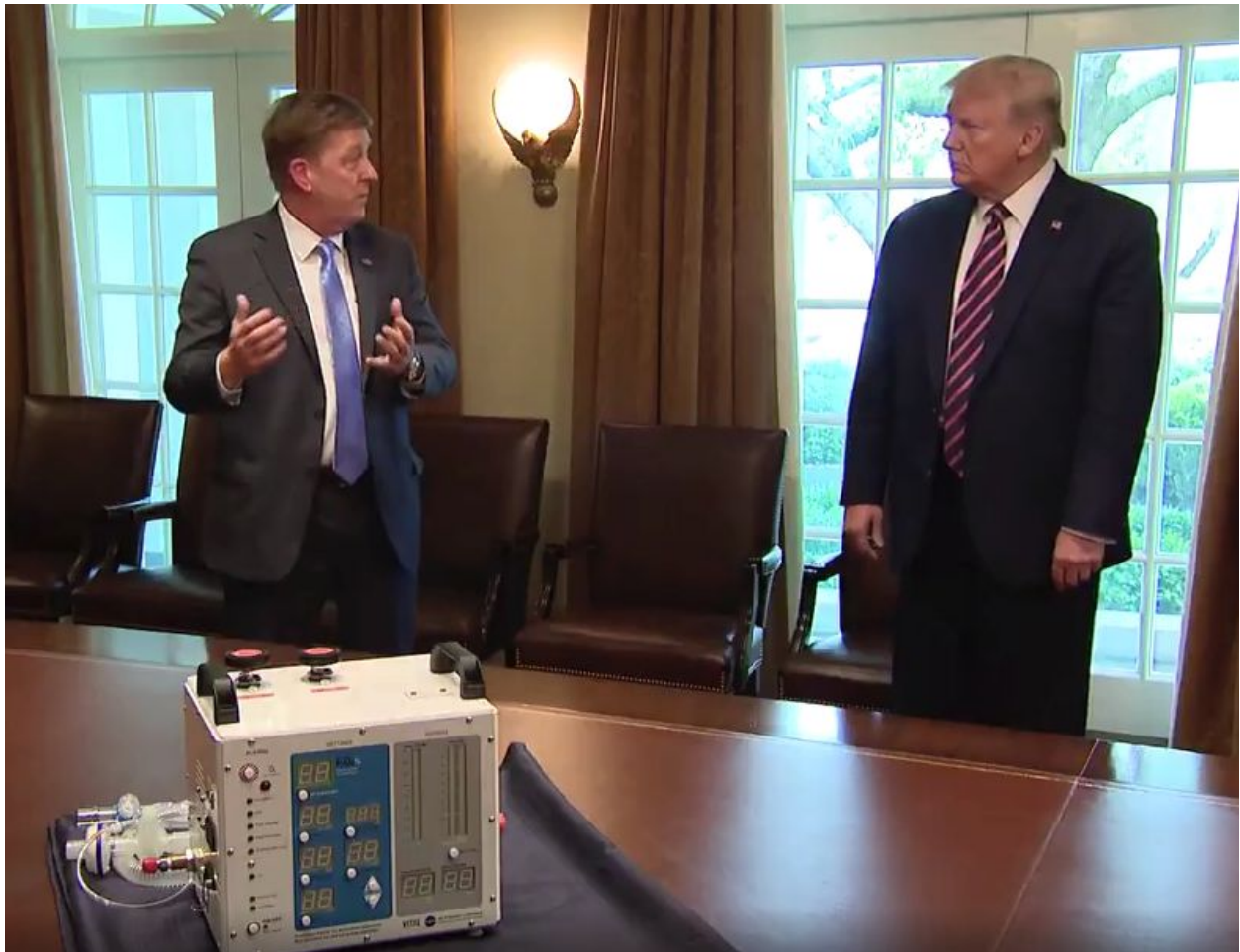
“Congratulate the engineer, okay? Say hello to Dave,” Trump said to Gallagher, referring to Van Buren.

For Van Buren, the congratulations go all around for the team, and beyond.

“The medical workers, the people knitting face masks, providing PPE for groups on the front lines...the amount of compassion people are displaying while we are all trying to cope with this epidemic is really heartwarming.”

Manning gave Van Buren considerably more credit than the proponent of the project gave himself.

“In some sense, he was the soul for the project,” Manning said. “Every day, he reminded people why we are doing this, and why it’s essential to do it well. His passion for making this oozed into other people. People wanted to be successful, and he made people want to be a part of this team.”



Dave Gallagher showcases VITAL to President Trump on April 24.

The Heart of JPL

Thinking back on the serendipitous coffee chat with Van Buren in March, Manning reflected on the sparks of inspiration—and the hard work—that for him represent the best of JPL.

“There’s a magic here, but it doesn’t always stick out. To the outside world, it sticks out because they see the rovers and the fantastic mission results and the incredible science that comes out, but if you go inside, and you work here, sometimes it can be a bit surprising what a slog it can be to work here, when you’ve got your head down working and you’re just facing obstacle after obstacle.”

“But somehow when people get together, and they put themselves out there, and are honest and open to where and what we need to do to make something happen, the perseverance and talent of JPL is just through the roof,” Manning said.

What VITAL will mean to the world is yet unknown. It has the potential to save lives, but all who helped build it hope coronavirus numbers never swell to a place where hospital ventilator capacities are exhausted, and VITAL becomes its namesake.

What VITAL says about the heart of JPL has been clear from the start.

In his initial email to Mike Watkins and Larry James on behalf of the project, Manning outlined the team’s bold idea, the lack of medical equipment design experience at JPL, and the major roadblocks to success.

And then he requested full support.

“There is very little time,” Manning wrote. “I would like us to give them as much space to succeed as we possibly can, regardless of the probability of a successful outcome.”



Former Lab Deputy Director Peter Lyman Dies

Former JPL Deputy Director Peter Tompkins Lyman has died at the age of 90.

Lyman became deputy director in 1987, when he had already been working at JPL for 24 years. He had served as assistant laboratory director for the Office of Telecommunications and Data Acquisition. In that role, he was responsible for overseeing long-range planning, advanced development, and implementation and operation of NASA's Deep Space Network.

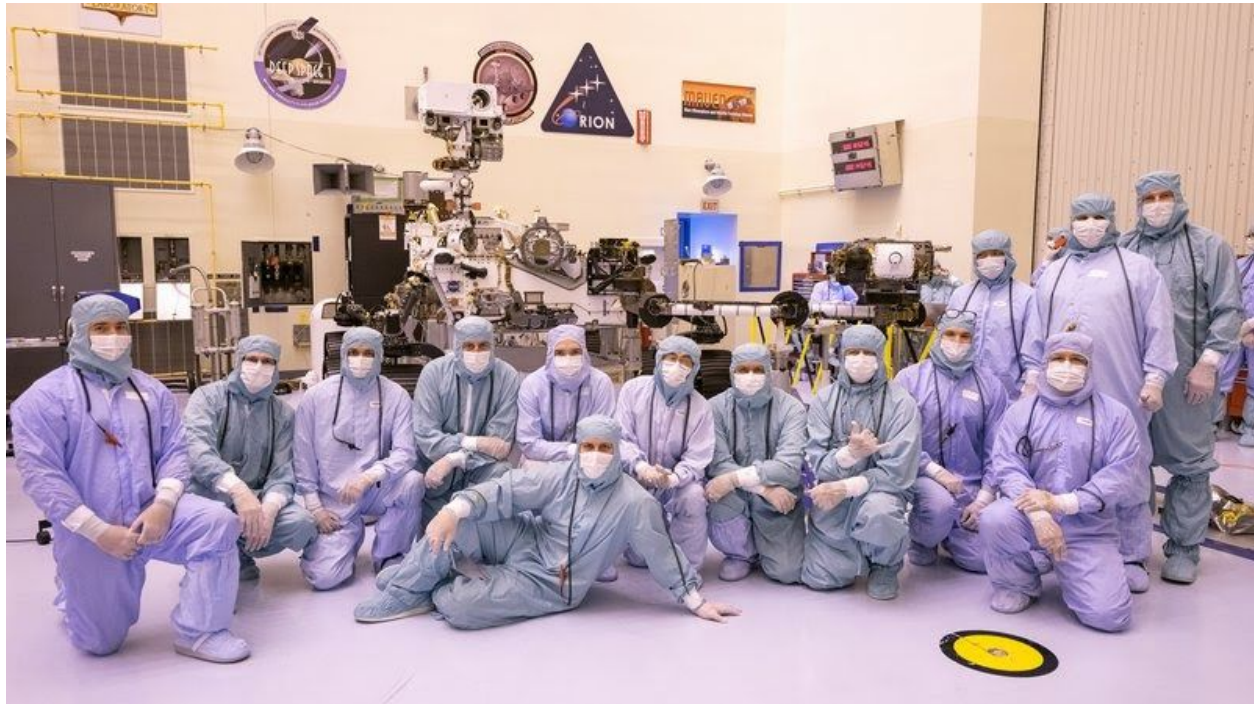
Lyman's other jobs included spacecraft development specialist, director of spacecraft operations for several NASA deep space missions, and deputy project manager for the Voyager Mission. He also managed the Laboratory's Applied Mechanics Division and Information Systems Division.

Lyman retired in April 1992.

Lyman, a native of Berkeley, graduated from UC Berkeley, where he also received a master's degree in naval architecture and a doctorate in mechanical engineering.

Lyman died on May 6, 2020. He was preceded in death by his parents Elwood Watson Lyman and Laura Vail Tompkins; Yvonne Remillard Lyman, his wife of 47 years and the mother of his children; his son, Jon (John) Remillard Lyman; and his siblings, John Tompkins Lyman, and Alice Lyman Westbie.

He is survived by his wife Eve Lyman; his children Laura Lyman and David Remillard Lyman, a stepson, Robert G. Bock, Jr., and his brother Richard Tompkins Lyman. He is also survived by four grandchildren and four great-grandchildren.



From left to right top: Danny Laugen, Joe Mora, Lawrence Harma, Charles Morris, Neil Laugen, James Bailey, Kim Sun, Ivan Garcia Hernandez, Dellon Strommen, Christian Mangano, Robert Uyeda, Nick Lucero, John De Gange, John Shuping. Image Credit: Christian Mangano

Parties of One

By Taylor Hill and Celeste Hoang

While most JPLers are working from home or coming back to familiar comforts after a day on Lab, one group is isolating in strange rooms on the opposite coast.

More than a dozen Mars 2020 technicians have been at Kennedy Space Center (KSC) in Florida since January, and with air travel nearly nonexistent and probably unwise, they expect to remain 2,700 miles from home through launch in July.

Long-term assignments to launch sites are normal, but conditions in 2020 could hardly be less so.

“The contributions and sacrifices these teams make to come down here every four to five years for a flagship mission is pretty substantial,” says Jim Pearson, group supervisor for Flight Technicians Services. “They’re away from family and friends for six or seven months. Under the best circumstances, it’s still a high-stress assignment. Now they can’t really spend time with one another outside of work. They’re basically isolated. We’ve been through pressure situations before, but these are new circumstances. And what these techs are going through is not taken for granted. They are, indeed, real-life heroes.”

Six of the Assembly, Test, Launch Operations (ATLO) team members at Cape Canaveral shared their experiences of deployment, the pandemic, and the pull of the home life they have put on hold.



Unloading the rover of the C-17. Image Credit: Michael Illhareguy

Michael Illhareguy

Illhareguy is the ATLO group lead in charge of the technicians. He runs their morning meetings and assigns tasks for the day and night shifts, along with taking care of his own jobs. Last week he was getting ready to install the pyro explosives for the separation hardware (during entry, descent and landing).

“The explosives activate the separation joints so when the heat shield needs to come off, they fire off and push the heat shield away. You can imagine the way this thing lands, there’s well over 200 individual pyro devices,” Illhareguy said.

He has been on deployment since January, though the first part may as well have been on another planet.

“In January, half our team was here. We’d go to the bowling alleys, meet each other for dinners, go to a steakhouse and sushi place and sit down together,” he recalled. “Eighty percent of our team has been together for a long time; many were on Cassini, MSL and previous missions. Besides working together in normal times, we go to each other’s houses and kids’ birthday parties. We’re more of a family.”

Now, he said, “everyone’s locked down in their apartments and hotels.”

“I’ve done this a lot throughout my career and I’ve traveled all over the world. It’s very different this time around. Normally we have family visits, and stress levels are fairly high at this point. Any little mistake can be the end of a mission. Everyone’s anxiety is up a bit and you add in the virus and the possibility of not seeing your wives and kids for six months, all of that compounds.”

It takes a rare person to handle a long deployment, and maybe a unique one this time around. Since they’re committed now, the technicians are becoming those unique persons.

“The reason these people are here is because they’re dedicated to the project. Everyone wants to see this thing launch. Everybody’s finding their own methods to deal with it,” he said.

“The bottom line is what we’re doing here is pretty amazing. It’s an honor to be part of this community and family.”



Patricia Lopez (left) Elizabeth Jasso (right) working to install electrical wiring inside the rover. Image Credit: Michael Ilharreguy

Patricia Lopez

Lopez is the ATLO lead cable technician, responsible for installing all of the cables on Mars 2020. At the Cape, her team will be integrating and supporting all cabling needs as the spacecraft comes together.

A seasoned veteran—this is Lopez’s third deployment to the Cape, having previously worked on MER and MSL—she thought she was familiar with what to expect. Then the country went into a lockdown.

“It’s been lonely not being able to interact with coworkers and not having family come out,” she said. “My family has visited in the past and my coworkers and I got to see different places when we had time off; we went to Miami and other areas here in Florida. I miss that.”

Most of the team stayed in hotels until April 1, when they were transferred to nearby condos.

“It made a world of a difference for me,” she said of the change in scenery. “It was a relief that I wasn’t in a little box [through this].”

These days, Lopez spends most of her non-working hours reading, going through recipes, baking, and sewing. She misses her family at home, especially her grandchildren, who are 4, 5, and 8 years old.

“I used to see them every week or every other week. I FaceTime them now, so that’s good. Luckily, the older ones are old enough that they won’t forget me,” she adds with a laugh.

While social distancing has added an extra layer of complexity to the already challenging task of completing the spacecraft, the overall thrill of the job still isn’t lost on Lopez.

“It’s seeing it all come together, you know? We work hard,” she said. “I hear people on the team say their legs, backs, arms are sore. It’s very physical work but it is challenging and rewarding. This is such a great opportunity, to come out here and witness all the things being done.”



Elizabeth Jasso moving pallets. Image Credit: Michael Ilharreguy

Elizabeth Jasso

As one of the youngest members of the ATLO crew, this is Jasso’s first deployment to the Cape. The electronic development technician, who works on the cabling team under Lopez, flew down to Florida in February and—even during this tough time—is still starry-eyed by the experience.

“Mars 2020 is my first big project and this is my first time being here,” she said. “I was excited and looking forward to this experience, just coming here, working on this project—everything we’re doing is pretty amazing. Not a lot of people get this opportunity.”

While Jasso is disappointed that the lockdown means a limited post-work social life—“The restaurants aren’t open and we can’t go after hours and have a good time together and my friends can’t visit”—she is also in a unique position because she doesn’t have past (read: non-pandemic) deployments to compare her experience to.

"I'm just here to do my job and try to finish that to the end," she said, adding that she does spend her time off going for long walks or afternoon bike rides. "We're here to work and we're still working, and that's a blessing. I wasn't expecting anything different."

Alone across the country, though, she's thinking of her family, especially her 15-year-old niece.

"I just want to be supportive of my niece and it's hard leaving her," she said. "We have the same birthday and she looks up to me a lot, so I try to be there for her."

Still, she's focusing on the positive and savoring the opportunities in front of her now.

"I'm sure a lot of people would like to be here and being the chosen one," she said. "Never did I imagine I would be working on something like Mars 2020. It's a big deal."

James Bailey

Bailey has been working on Mars 2020 for the past four years as a tech for the cruise stage. When he started, the team was just getting going on structural fabrication, and he's been wrenching on the spacecraft ever since.

The 30-year-old came out to Cape Canaveral in February for the trailblazer exercise, a detailed dress rehearsal of all procedures involved in handling the rover's power system. Over the first few months, he slowly saw the changes as coronavirus restrictions came to the state.

"The thing that made it most real for me was seeing those cruise ships we were driving by every day," Bailey said. "We'd see them load up every weekend and head out, all of the restaurants down there were just packed. Then it gradually became this eerie ghost town."

For Bailey and his wife of three years, the time apart was nothing new.

"My wife is in the military and also providing security to the Mercy Hospital ship, so she's got her hands full," Bailey said.

With travel restricted at his wife's base, the only way Bailey could see her would be to go on the NASA jet, which flies on a fixed schedule from KSC to Edwards Air Force Base once a week.

"We're lucky, as we've done long term deployments before. Thank God for technology and FaceTime—a lot better than a 15-minute timed satellite call," Bailey said.

Now with the team stacking the spacecraft into launch configuration, James reminisces on the project that's preoccupied nearly the totality of his time at JPL.

"I've touched or installed nearly all of these instruments on Mars 2020," Bailey said. "I started my career at JPL wrenching on the raw parts of the cruise stage, drilling, and riveting. We're sort of the custodians of everybody else's collective efforts. We're the tip of the pyramid, and to see it all come together now is beautiful. It's an amazing opportunity to be that final part of it."

Seth Harvey

Harvey is a floor technician at KSC working on the rover and spacecraft integration, as well as lead technician for the Multi-Mission Radioisotope Thermoelectric Generator (MMRTG).

Harvey deployed to KSC in early February, and had planned to take a solo road trip across the country with his dogs.

“At the last second, my mom decided to join me and we ended up turning it into a really fun trip, complete with a stop at the Grand Canyon,” Harvey said.

Coronavirus wasn’t a blip on his radar when they started the trip, but that changed quickly.

“My mom headed back soon after we got to Cape Canaveral,” Harvey said. “Initially she was planning on coming back down to visit, but now it just doesn’t seem worth it. We want to stay safe. If that means missing a couple of visits over the course of deployment to make launch, so be it.”

He says his past deployments have helped him step up and support the first-time crew members now coping with unprecedented circumstances.

“I’m lucky in some ways, because I’ve done deployments before with Curiosity and Insight, and I’ve done the Cocoa Beach lifestyle, where you’re going out with coworkers,” Harvey said. “For the younger guys, I know they wanted to have fun in the sun and they are obviously disappointed, but they’ve dealt really well with a bad situation. I’ve been trying to emphasize that your health isn’t worth trying to push your luck. You’re going to look back on this and say not only did I do something amazing, it was under pandemic circumstances. We’ll celebrate after we light the candle and it’s on its way to Mars.”

Christian Mangano

Mangano has spent the past few weeks finally integrating the BUD subsystem (Bridal Umbilical Device that lowers the rover during the final entry phase) that he started working on two years ago.

His time at Cape Canaveral started with some pre-deployments in November, where he got interested in photographing rocket launches, since the team’s working location is so close to the launch pads.

In February, Mangano helped load Perseverance onto the C-17 that flew from March Air Reserve Base to KSC, and got to hitch a ride on the plane.

“That was awesome,” Mangano said.

As coronavirus concerns escalated, the number of people allowed in the clean room diminished, and having a designated photographer on site to snap photos of the team’s work became non-essential. So, Mangano volunteered to fill in.

“Once the pandemic restrictions came down, I became the sort of the de facto photographer for the Mars 2020 mission, since the team knew I was interested in photography,” Mangano said, “Now when there’s a big lift, or we’re putting together something substantial that the team wants to document, I snap a few shots to make sure we have them for reference.”

Basically whenever he’s not turning a wrench, he’s snapping pictures.

“It’s been a nice change of pace,” Mangano said. “It’s a lot less stressful for me to push a button on a camera than bolting scientific instruments onto a billion dollar rover.”

For his time spent away from work, Mangano made a location change that should ease the stay-at-home orders.

“I moved from Cape Canaveral to Cocoa Beach a couple weeks ago,” Mangano said. “Now I’m in a condo basically on the beach and the Banana River. If we’re going to be secluded, I like having a view.”

Soon, he and his fellow techs will have the best view on Earth of the event that will sever their loneliness and sweep them home.



Performers at the Jan. 13, 2020 Lunar New Year Luncheon hosted by the AAC in Von Karman Auditorium.

The Vibrant World of JPL’s Asian American Council

By Celeste Hoang

As the country celebrates Asian Pacific Heritage Month in May—an opportunity to honor the many contributions of Asian Americans and Pacific Islander Americans to U.S. history—we’re recognizing the superb work of JPL’s Asian American Council (AAC) to advance cultural awareness on Lab.

The Employee Resource Group (ERG) is behind beloved annual events such as JPL’s Lunar New Year Luncheon and popular speakers such as Jorge Cham, the creator of the Piled High and Deeper comics. We reached out to AAC Chair Manny Soriano and Vice-Chairs Melody Wong and Nelson Huang to discuss why this month is special, how they’re navigating future events during this telework period, and career advice for JPLers.

What does Asian Pacific Heritage Month mean to the AAC?

Melody Wong: A time to focus on our heritage across all the Asian cultures, to be proud and share where we come from. This includes our histories, cultures, food, and much more. It’s our month to shine and stand out and celebrate. It’s also a chance to share experiences with others in our community.

Manny Soriano: Like all the ERGs, we each have a month to celebrate and honor our communities, cultures and heritage. For AAC, this is May with APA Heritage Month. Over the years we have had performers, talks, and other gatherings not only for our members but for the whole Lab.

Nelson Huang: This is an opportunity for the AAC to bring events inspired by Asian heritage to the JPL community. One fun event that we have done in years past is to collaborate with our fellow Employee Resource Group Amigos Unidos and create a joint event to celebrate the annual JPL Cinco de Mayo Salsa Tasting Contest with Asian-themed performances. Notable events in the past included guest speakers from the Los Angeles Dodgers, Hong Kong Disney, and the creator of Piled Higher and Deeper comics.

What are some accomplishments the AAC is most proud of from this past year?

Nelson: Our biggest accomplishment is the annual AAC Lunar New Year Luncheon. A tradition that first started with several JPLers wanting to enjoy the Lunar New Year at a fancy restaurant, it has now become a full-blown production with months-long planning that features banquet-style food, raffle prizes, professional acts, and a delightful skit performed by the JPL Chinese Class, featuring a famous actress from Chinese cinema. As an ERG at JPL, Human Resources has also stepped up its support for us this year, providing resources to help spread the word for each group, getting banners made and displayed on the steps of 180, and brainstorming ideas to increase the AAC's impact on Lab.

Another big accomplishment this year is the increase of members that want to be active in planning more events that we can bring to the JPL community. Seeing the group grow and hearing the new ideas that are brought to the table makes me very proud to be part of the whole thing.

Manny: Perhaps above all was AAC updating our by-laws. The organization was founded in 1994, with the founders being very diligent with its contents. Our current officers were mindful of this as we updated the document to match our current scope of activities and programs. Our new mission statement reads: AAC's mission is to create a home for JPL/Caltech's Asian American employees and colleagues by celebrating their cultural heritage, fostering members' personal and leadership development, and advocating for multicultural inclusion within the JPL/Caltech community.

Also, one highlight at the Lunar New Year Luncheon was bringing in the East Asian A capella group from USC, the Trogons. They wowed the whole space with their beautiful renditions of popular songs like Coldplay's "Yellow" in Mandarin. Another memorable event was the performances of renowned vocalist and musician Pandit Girish Chatterjee and percussionist Rishi Verma, a JPLer.

How are your activities changing during mandatory telework?

Melody: Since May is Asian Pacific Heritage month, we have tested ideas like movie parties and entertained the idea of a live cooking demonstration where folks could follow along, if they've assembled the ingredients in advance. It is challenging as we struggle to find a media platform that would work. We are still exploring ideas as a singular ERG group as well as jointly with other ERG groups on Lab. We will have one or two engagement activities over the course of the next few months.

Manny: We have transitioned to Webex during Safer-At-Home. We are behind but hope to have at least one virtual event open to all in the JPL/Caltech community. Stay tuned!

How can JPLers participate in Asian Pacific Heritage month given our current teleworking environment?

Nelson: If you have not already, reach out to one of our AAC Officers to be included in the AAC mailing list. We have some activities planned and you can hear about them first from our emails. The AAC has also partnered with HR and put together an Asian Pacific American Heritage Month (APAHM) campaign on social media. Please "like" or show some "love" to JPLers featured on official JPL social media pages like Facebook, LinkedIn and Instagram. Lastly, participate in an APAHM campaign or activity that

celebrates Asian Pacific Heritage in your community or within your social circle. Although nothing beats a good face-to-face event or activity, it is more important now than ever to stay connected.



Taken during the AAC Annual Lunar New Year Luncheon on January 13, 2020, this group photo includes current AAC officers, Lunar New Year Luncheon volunteers, and members of the JPL Chinese Class.

What are some of the council's biggest goals for 2020?

Melody: Our goals are to continue to organize events that will promote diversity and inclusion and to highlight the Asian cultures. We also want to nurture an affinity group for those from Asian cultures and/or those who wish to learn more about the culture. Examples of the latter would be our Chinese language class and also our Asian board game lunches.

Manny: Personally, as the FY19 and FY20 chair, my focuses have been recruitment and diversification of our officers. I joined AAC as a college graduate in 2016 and mostly found myself the youngest in the room every meeting. Thankfully, over time, new employees and graduates have emerged to help out. And ever since AAC's founding, the group has been East Asian, particularly Chinese centric. I am a Filipino American and have been mindful of how we can make connections across multiple ethnic groups and cultures within the APA umbrella: Middle East, South and Southeast Asian, etc. Before my term expires at the end of this fiscal year, I hope we can build a strong and diverse FY21 officer council.

Nelson: The biggest goal for the AAC this year is to continue to grow our group and inspire fresh ideas. It is an election year for the AAC and our elected officers will be rotating off their positions. We need help more than ever to keep great things moving forward. We also have excellent support from HR and the JPL Executive Council to invigorate the Employee Resource Groups such as the AAC and promote Diversity and Inclusion for the coming year. It takes a village, and we can sure use all the help we can get.

What career advice would you give to Asian American and Pacific Islander American employees at JPL?

Melody: Expand your business network, find a mentor, make lasting friendships that will help you through thick and thin. "Play well in the sandbox" but don't compromise your integrity.

Manny: Did you know that we have small cultural groups for particular ethnicities? This is mostly seen at the annual American Heritage Event and many of these cultures host their own booths and highlight their

culture through cuisine and performances. Some of these groups also meet up from time to time as colleagues.

Nelson: I would say the biggest thing is to explore and go outside of your comfort zone. It is easy to be overwhelmed starting at a new place and just work and do nothing else. JPL is an amazing place and with amazing people. Take the opportunity to get to know others with common interests, whether via interest groups, Employee Resource Groups like the AAC, or other clubs. You'll be surprised at who you will meet at an activity or lecture, and how your paths may cross in the not-so-distant future professionally.



A new banner was designed for 2020's Asian Pacific Heritage Month.

How can a JPLer become an AAC member?

Manny: The AAC is open to all in the JPL community: employees, affiliates, interns, etc. Look for our current officer team contacts at our website: aac.jpl.nasa.gov. Send us a message and we will gladly add you to our mailing list. If you would like to volunteer with our events, then please join our officer meetings, which are usually second Wednesdays of the month at noon. Anyone is invited to join! Find us at one of our upcoming events or online at aac.jpl.nasa.gov.



Why JPL Did Business With a Distillery

By Jane Platt

JPL doing business with a distillery? In ordinary times, that would sound, at best, NSFW, and at worst, unethical or illegal. But these are far from ordinary times. So when the Lab needed more hand sanitizer, the Technical Inventory group (356M) found themselves doing business with an unusual source.

It started when Inventory Control Specialist Aldo Bernardino read an article online about a Pennsylvania distillery that converted its process to make alcohol-based sanitizer for hospitals and first responders. Bernardino was looking to buy sanitizer for his own use, so he searched to see whether any Southern California distilleries might be making some. He found that Citrus Grove Distillery in Claremont had converted its operations to do just that, and they would even handle bulk orders.

Bernardino thought about how JPL was also having an incredibly tough time getting sanitizer for essential employees on Lab. This triggered a stream-of-consciousness dialogue in his brain that went something like this: "JPL will not let us buy from a distillery and put it on a P-card. But we need sanitizer...nah, I'll get fired. But, but—we really need sanitizer."

That unfulfilled need to buy sanitizer for the Lab was extremely frustrating for Terry Badgley, group lead of General Inventory (356M), who prides himself on locating whatever it takes to get the job done.

As he explains it, "Ya' know that guy in 'The Shawshank Redemption' who can find anything in the world? That's me. But I couldn't find any...there was no sanitizer anywhere in the world."

So when Bernardino presented the idea to Badgley of buying from a distillery, he jumped on it, contacted the distillery right away and drove out to Claremont. "I waited in line for an hour at the distillery to pick up some samples to bring to the Lab for testing, to ensure it was high quality and met the necessary standards."

Mike Christensen, section manager for Safety and Mission Success, and Howard Eisen, chief engineer of the Planetary Science Directorate, tried out the samples, and Mimi Ton, health and safety engineer, confirmed that it met World Health Organization standards.

Once the samples passed muster, Badgley made a couple of runs to the distillery and enlisted JPL Transportation, including Adrian Martinez, Danny Miller and Enrique Avina, to pick up the huge order.

Yes, they did manage to get the purchase covered on a P-card. No, no one got in trouble.

The only hiccup, Badgley says—and it was a big one—was that the distillery's bottles don't have hand pumps. Dispenser pump bottles were also on the list of hard-to-find items during the pandemic. That problem was solved after about a week of searching when a seller was finally located on Amazon. The Inventory team just had to create makeshift labels referencing Citrus Grove Distillery, so the source was clearly marked.

As a fringe benefit to the community, the distillery hired additional employees to keep up with demand for sanitizer from not only JPL, but also from local hospitals, fire departments and military customers.

Worth noting is that the Inventory teams are about much more than getting sanitizers from a distillery. Matt Stelwagen, group supervisor of Technical Inventory (356M), says it has been a huge challenge getting goggles, wipes, safety glasses, and other items that are normally an afterthought, usually readily available for a clean room or labs.

He describes the hunt for these items as "Bittersweet...we're trying to protect the Lab without interfering with healthcare supply chains."

Stelwagen says the convoluted adjustments needed during the pandemic involve a lot of coordination between teams. Eisen and Christensen are sourcing local garment factories to get masks for JPLers. In addition, a volunteer effort uses quilters and others to make masks.

Stelwagen said, "My team is focused on finding new vendors for clean room-certified face masks and other personal protective equipment, like gloves, safety glasses, sanitizers and surface cleaners. Without these supplies, JPL operations, including remaining work on Mars 2020, would be severely impacted."

Badgley says, "I was determined to ensure that there would be no adverse effects because of a worldwide sanitizer shortage."

And while Bernardino is happy that he could play a small role in helping, he says he's still in denial about the irony of the situation, imagining that people may think, "It's a pandemic and you guys are out buying alcohol?!"

Well, yes, they are, and because of it, JPL is a safer place, and missions, such as the march toward launch for Mars 2020, can continue.

These unusual searches and deals are keeping the Inventory teams hopping. As Badgley sums it up, "We are busier than any other time. There's a lot of teamwork. That's the spirit we're seeing."

Events



Human Impacts on the Atmosphere as Revealed by COVID-19

Tuesday, June 9 at 2 p.m.

Free event registration:

https://caltech.zoom.us/webinar/register/WN_Sc-7xE2USU2z8smDonq-fg

Changes in energy use, transportation, and manufacturing during the coronavirus pandemic can be connected to changes in air quality and emissions of greenhouse gases such as carbon dioxide and methane. Panelists will discuss how this has created an experiment that can help us understand how human activity changes the environment and guide policies for a transition to a sustainable planet.

Moderator: Jessica Neu, Deputy Principal Investigator for Aura Tropospheric Emission Spectrometer (TES), JPL

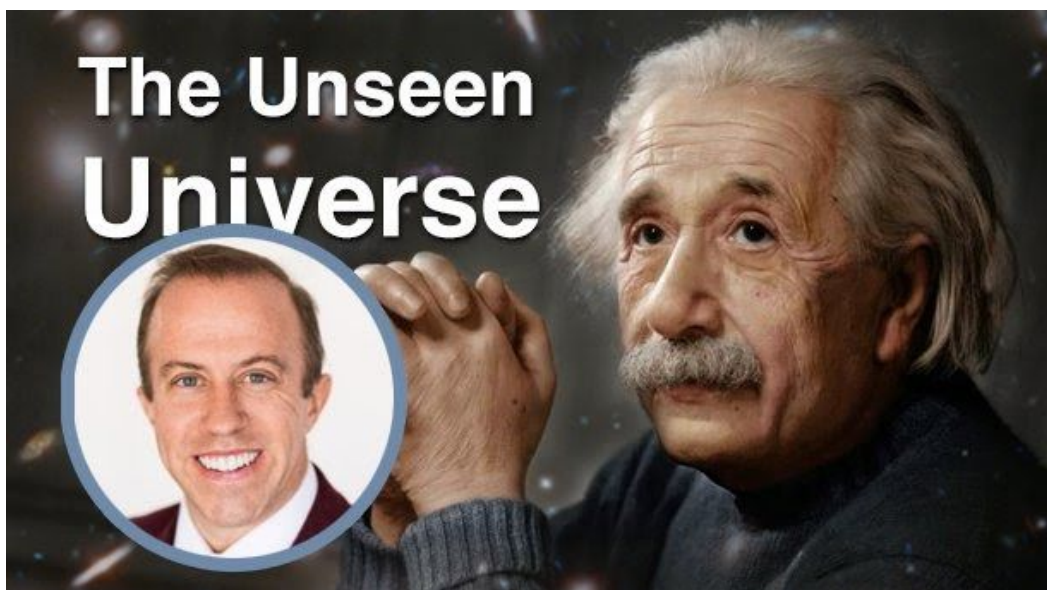
Panelists:

Paul Wennberg, R. Stanton Avery Professor of Atmospheric Chemistry and Environmental Science and Engineering; Director, Ronald and Maxine Linde Center for Global Environmental Science

Christian Frankenberg, Professor of Environmental Science and Engineering; Jet Propulsion Laboratory Research Scientist

Annmarie Eldering, Deputy Project Scientist for the Orbiting Carbon Observatory-2 (OCO-2) and Project Scientist for OCO-3, JPL

This event is co-sponsored by the Resnick Sustainability Institute, the Ronald and Maxine Linde Center for Global Environmental Science and the Keck Institute for Space Studies.



Science! The Show: The Unseen Universe

Wednesday, June 10 at 6 p.m.

Register to attend here:

<https://www.eventbrite.com/e/science-presents-the-unseen-universe-tickets-106163788750>

Ninety-five percent of our universe is made of unseen dark matter and dark energy. It may sound like the stuff of fantasy, but that figure is based on the detailed, verified work of scientists over the past hundred years.

JPL researcher Jason Rhodes will talk about the unseen universe we're all part of. Support for this event is provided by JPL's LEAP Innovation and the Formulation Science Communication Office.



Von Karman Lecture Series: Making a Mars Rover

Thursday, June 18 at 7 p.m.

Speakers:

Briony Horgan — Scientist, Mars 2020 mission and professor, Purdue University

Armen Toorian — System testbed lead for the Mars 2020 mission, NASA-JPL

Hosts: Preston Dyches and Sarah Marcotte

View online here: <https://www.youtube.com/nasajpl/>

JPL is preparing to launch the Perseverance rover to Mars, but what's involved in getting the Mars 2020 rover mission ready to head to Mars, and how does the team prepare for operations once there? In this month's show, speakers Briony Horgan and Armen Toorian will talk with one of the researchers working on Mars 2020 to get a scientist's perspective on what it's like to develop a Mars rover mission. The presentation will then transition to hear about how NASA-JPL uses unique testing facilities on Earth for developing Mars rovers — testbeds for mechanical components, software, and even full-size test rovers that roll about JPL's Mars Yard to try out new systems and approaches for landing and operating on Mars.

This webcast show will be conducted via video conference, with speakers joining remotely from home. Watch live via YouTube and Facebook and submit your questions via the chat.

JPL Family News

Retirees

The following JPL employees recently announced their retirements:

40+ Years:

Sandra M. Thomas, Section 3913, 49 years

20+ Years:

Julie L. Webster, Section 4400, 27 years

10+ Years:

William A. Gavid, Section 357C, 18 years

Passings

Tommy Tomey, 88, a retired electronics engineer, passed away on May 11, 2020. He was employed at JPL for 20 years. He worked on the Ulysses, Cassini, and Pathfinder Projects. Prior to working at JPL, he worked at North American Rockwell on the Apollo program for over 20 years. His daughter Marian (Tomey) Kuri and his granddaughter Michelle (Tomey) Colizzi are currently employed at JPL. Tommy is survived by his 5 children and their spouses, 10 grandchildren, 3 great grandchildren, and his brother Jimmie Tomey.

Cledith (Clay) Aardahl, 98, long-time resident of Pasadena, passed away peacefully in his home on May 3, 2020 with family by his side. He served as a pilot in the U.S. Army Air Forces 1943-1945 and worked in aerospace design at JPL until retirement. Surviving members of his family are three sons, their spouses, a sister, 6 grandchildren, 4 great grandchildren, and nieces and nephews. Memorial services are to be determined at a future date.

Debbie Drake died on Feb. 29, 2020, in Gardnerville, Nevada. She worked at JPL for 33 years before her retirement in 2018.

Her support as a storekeeper for EEE Parts Inventory and then as a Parts Acquisition Order Desk person in Section 514 was instrumental to numerous missions, including Cassini, MISR, CloudSAT, Deep Impact, DS1, DSAC, Genesis, Grace Follow-On, GRAIL, Jason-2 and 3, Juno, Kepler, Lunar Flashlight, MCO, and such Mars missions as MarCo, MGS, Pathfinder and 2020, plus Aquarius, MIRI, M3, NISAR, OCO-2, OCO-3, Phoenix, Planck, PSYCHE, Sentinel-6, SMAP, Spitzer, Stardust, SWOT, TES and WISE.

Drake received the Space Awareness Award in 1998.

Debbie is survived by her husband, Brad Drake, who also retired from JPL in 2018.