MINUTES
Meeting of the KHHR Communities Network Committee (CNC)
7/20/2023
Hawthorne Memorial Center

Board Members:

Present: Donny Sandusky (JetCenter/Advanced Air/ HA LLC), Laurelia Walker (North Hawthorne Community Association), and Julie DeCoste (Hollyglen Neighborhood Association).

Quorum present? NO

Others Present:
Guido Fernandez (Secretary), Larri Frelow (FAA Community Engagement Officer), and Rachael Hall (Universal Hydrogen).

Proceedings:
Meeting began by Donny Sandusky at 6:03 pm.

The minutes of the April 20, 2023 could not be officially approved without a quorum.

Oral Communications:

We did not receive any public oral communications.

Agenda Item #2: Universal Hydrogen – Presentation

Donny Sandusky We have Rachael Hall from Universal Hydrogen. Rachael can explain more about Universal Hydrogen is but they happen to also be based at Hawthorne airport. Happy to have you take over from here.

Rachael Hall My name is Rachael Hall as Donny said. It's nice to meet all of you guys. Thank you for having me. A little background on me. I was born and raised in California. I've lived in Inglewood for about 2 years now and I've worked at Universal Hydrogen for about a year and a half. I'm the legal operations manager and the community liaison. I work directly under one of our co-founders, Jon Gordon, as well as our CEO, Paul Eremenko. Really our company as a whole is working to make aviation green. We are working to retrofit aircraft to make sure they run on hydrogen so that their only real emission is water which as the plane flies that will evaporate before it even hits the ground.

We are doing this to help meet the Paris Accord Agreements that are working to lower greenhouse gases by 2050. Without changes to aviation whether it is changes to fuel or changes to the actual structure of the aircraft the emissions that these aircraft are going to

contribute to greenhouse gases is only going to increase. Especially considering that the aircraft we are working on is regional so it's only going to be 500 miles and a lot of the aircraft that are running are regional. Most of the aircraft that are actually in the sky right now are regional aircraft so those are contributing to a lot of the greenhouse gases at the moment.

So our system that we have, our team has developed a powertrain that will take the place of the current engine in the aircraft as well as a hydrogen module that is easy to slid into the aircraft and pop out whenever the hydrogen has been depleted. So that there is no real big infrastructure changes that need to be made to make our vision possible. It's as simple as just popping in a hydrogen module, popping it out, and then retrofitting the engine for the aircraft which is somewhat standard procedure for aircraft to switch out their engines every 5 to 10 years.

We are also working on a hydrogen logistics train chain so it's easy for the hydrogen modules to go from the liquefaction facility unto hydrogen trucks or trains straight to the airport where they will be then off loaded from the vehicles and then inputted directly into the aircraft. So no real infrastructure change is needed to the airport themselves. An important thing we had our first test flight in March in Moses Lake and Donny was there. We were able to fly the world's largest hydrogen powered aircraft and to this day we have done 2 or 3 additional test flights and we just keep breaking our own records. We have flown it for over 4 hours. We used to have a testing facility over in Moses Lake and we now moved it to the Mojave and we were able to fly our aircraft solely on hydrogen from Moses Lake to about 1 hour away from Mojave until we ran out of hydrogen. Our team was very upset. Yeah there were people on board. Our team members were actually flying the aircraft.

Donny Sandusky So one engine is hydrogen the other is the traditional jet fuel so even though they ran out of hydrogen they are still flying then they switch over to the other one. Safe landing.

Rachael Hall It was successful. We just had to switch engines. An important thing to note about this aircraft because it does run on hydrogen it is significantly more quiet than the standard aircraft. I live over in Inglewood so I hear a lot of airplanes so this is definitely something that I hope becomes pretty standard. To date we have flown over 4 hours. We've flown up to 10,000 feet altitude wise and we are all really impressed. We continue to strive and make sure that our technology just keeps getting better and better. We have over 12 LOIs with different companies across 12 different countries. Letters of Intent (LOI) to purchase our retrofit system. Advanced Air is actually one of them. So we are pretty excited about that. We are all really excited.

Donny Sandusky When do you plan on this being in service.

Rachael Hall We plan to be up and in service by 2026. We are going to be starting our launch customer is going to be Connect Airlines in California. We are planning on flying approximately 33 planes in California and we are mostly going to be doing as I said regional flights. So it is going to be focusing on LAX and then Sacramento and San Jose but we are also going to be

flying to Phoenix Arizona and Nevada and Reno because they are in the radius. Phoenix, Reno, Las Vegas Nevada.

Guido Fernandez I have a question. The hydrogen is generating electricity. Correct?

Donny Sandusky It's a fuel cell. It's just like the Toyota Mirai vehicles which the fuel cell, hydrogen vehicles so it is a chemical reaction and the byproduct is electricity and water.

Guido Fernandez So the engines I'm understanding they would not be your traditional.

Donny Sandusky It's just an electric engine.

Guido Fernandez Exactly. An electric engine in the aircraft.

Donny Sandusky That's why the noise. All you hear is the propeller. There's no real noise from the engine.

Guido Fernandez Which makes it way more quiet which I think we can all appreciate.

Larri Frelow (FAA) Can you explain that again about the hydrogen.

Donny Sandusky So it's a fuel cell. Essentially it takes hydrogen and then it runs it through the fuel cell and it's a chemical reaction that occurs within the fuel cell and it creates electricity and water. So the water is essentially a byproduct really but the electricity is the desired product from it. It's the same as the Toyota Mirai, have you seen the Toyota Mirai, it looks like a regular car but it's hydrogen powered which is a fuel cell vehicle, same process. So it's just taking hydrogen in gaseous form.

There's also liquid form but the problem with liquid is keeping it stored because it has to be negative 270 degrees at a minimum to keep it from boiling and then it becomes gaseous. So the issue is that it would take a lot of energy to keep it in that liquid form because of all the refrigeration required. So most of what Universal is doing first is gaseous, correct. You can only store gaseous hydrogen for so long because the pressure that builds. So they have these modules. They actually got a presentation. We probably can email it to everyone. There's actually a PowerPoint. It shows how this whole process works. Like Rachael was saying there's these pods they forklift into the airplane they are taking regional aircraft regional turbo prop airliners and they are taking seats out and they have traded that for hydrogen modules. So the airframe is modified somewhat. They have to make a big door to get these pods in and they just slide into the back of the airplane and then after they land they pull those out and put fresh ones in. Kind of like propane tanks for your barbecue, kind of the same idea. It's on a bid skid that forklifts on or however else they are going to do it. At this point it's forklifted right?

Rachael Hall Yes. There's a picture in the presentation. They lift it up and push it in. Its' going to be right between the backrow seats and the luggage compartment.

Larri Frelow (FAA) So how big is this?

Donny Sandusky Well the first airplanes you are working with a Q300 now which I think is a 50 passenger airplane but because you've pulled out some seats for this it's probably more like a 30 passenger plane now.

Rachael Hall Yes we are working a 50 passenger and there's going to be 3 rows of seats that are taking out but we've found out that with most of the regional aircraft it's not often that they are fully booked out so it should be.

Guido Fernandez So it would be similar to the passenger capacity of the Dornier.

Donny Sandusky Yes. Your launch aircraft is going to be called an ATR 72 which is made in France. Toulouse France actually assembled. ATR is between France and Italy actually owned by Airbus now a big portion. They're a 72 passenger total, potential capacity but they have it down to 55. So anyways they trade some seats for the fuel tanks. The fuel is hydrogen and I think everyone has that in their minds, hydrogen oh the zeppelin, the Hindenburg that exploded, most of that was, yes there is hydrogen which is flammable but it was the coating on the actual skin that was really the flammable part and lighting hit it and lit it on fire and there happen to be gas inside. Anyways, so it's a pretty stable fuel. If it were to have a leak, it's not going to cause any of us to have an issue breathing or something like that because it's hydrogen. It's not going to create nausea or anything else. So I guess it's fairly safe when handled properly even if it does have a leak.

Laurelia Walker You said that 4 hours was the maximum range. What are you aiming for? Is that going to be the maximum?

Rachael Hall Four hours was just what we've done to date and again this is only using 1 engine that is running on hydrogen. We are planning, I'm not sure the exact time, but we are aiming for 500 miles.

Donny Sandusky So that would be probably a 2 ½ hour flight in one those airplanes and then they have reserves. The ideal with your product is proof of concept to get it out there but then eventually it scales. Still the future and even for long range, Europe or whatever, like flying internationally is probably hydrogen but they still are coming up with ways to store it because it takes the volume, the size it takes to have enough energy stored to make those trips. Those airliners instead of using a fuel cell and converting it to electricity they would burn it like normal fuel so they would actually burn it with an engine but still the byproduct is just water. The key though is the storage of it and production of it. It takes a lot of energy to produce hydrogen. So if you can do green hydrogen which is using green energy, solar, wind, whatever it be but to where you are not using carbon to produce energy. That's green hydrogen. Then there's blue hydrogen. Blue hydrogen uses carbon based electricity but it's net zero because it's taking the carbon, storing it or capturing it all.

Rachael Hall We don't want net zero. We want zero.

Larri Frelow (FAA) So Rachael is this considered like a hybrid because I heard you say that you guys have an engine that ran out so will that always be in the aircraft? Will that always be on the aircraft, always have the option to switch.

Rachael Hall No, this is just for testing purposes. Once we are certified the whole aircraft will be hydrogen powered. 2026. We got one of our certifications the other day. So we are excited. We are on the move.

Donny Sandusky It will be a much simpler engine too compared to the current engines because there are way less moving parts. More reliable.

Guido Fernandez Electric in general, we've learned from some of the meetings, lower maintenance.

Donny Sandusky Sure. Anyone who has an electric car can attest to that, right.

Julie DeCoste Curious to know the cost versus gas, gasoline fuel. Is it going to be a lot. I'm just curious to know the difference.

Rachael Hall There are hydrogen tax credits that we are going to be using that will put us more or less on par with jet fuel. Also, we are getting help from Exim which is going to be helping finance the retrofitting of the aircraft so that the cost is not all on the airlines.

Julie DeCoste So the cost to fly the airplane will be less expensive than putting fuel into it or you don't know yet?

Donny Sandusky From what I've seen the cost currently to fly your airplane compared to that same airplane with jet powered fuel is about the same right now but as hydrogen becomes more available it will become cheaper and therefore will be less than flying it with JetA.

Julie DeCoste And much better for the environment and much better for us.

Guido Fernandez And quieter.

Julie DeCoste I'm curious to know are you the first company to do this or are there other companies.

Rachael Hall Yeah, there are a few other companies. There are also companies that are working on the more international larger aircraft. But we, I like to say the most successful. I might be biased. We are the first and still the only one to fly the largest hydrogen fuel cell aircraft.

Julie DeCoste How long has your company been in existence?

Rachael Hall Since 2020. So we are moving fast.

Donny Sandusky We've been around a few startups but they are the only one that truly delivered and stayed pretty much on time and with the new technology like this it's pretty impressive. The other company that is doing something similar is in the UK, right?

Rachael Hall ZeroAvia.

Donny Sandusky But some of their goals are pretty lofty from what I understand.

Rachael Hall Yeah and I think they just recently flew a 10 seater. Not to bash them.

Guido Fernandez And I think that tends to be kind of normal right in emerging technologies like with the EVTOLs where you have several companies in the beginning and eventually you see who kind of dominates the market and it's like a funnel and eventually you have a few.

Donny Sandusky Some of your investors are airlines as well, right?

Rachael Hall Yes definitely. We have Airbus, I think it's an investor, a strategic adviser. JetBlue.

Donny Sandusky I think even Boeing has given some money, right?

Rachael Hall I believe so. I would have to pull up my full list to see.

Guido Fernandez I read the articles because I subscribe to aviation magazines and every time I see Universal Hydrogen I'm like what are they doing, what's going on. That's how I found out about that flight and I was like wow they are moving to Mojave. That's pretty impressive. Oh yeah. I'm always, right Donny.

Donny Sandusky Yeah, he sends me the articles. You see this.

Guido Fernandez Look Donny. There's news from Universal Hydrogen and look and I'm a biased of course but that makes me feel proud because they are at the Hawthorne Airport. How often can an airport say that you know someone with innovative technology that is going to reduce or eliminate emissions, is going to be better for the environment, is actually based at your airport. So I think that is really exciting. And yes I'm biased I guess.

Donny Sandusky They have 3 fairly large hangars at the airport.

Rachael Hall Yes and we also have a facility over at Toulouse, France. We are testing now in Mojave. So we just set that up this month and we are going to be testing our aircraft there. We are also working on setting up a manufacturing and kitting facility in Albuquerque, New Mexico.

Julie DeCoste So they have hangars at our airport meaning they have planes at our airport?

Donny Sandusky No.

Rachael Hall Those are in Mojave. We have 2 aircraft. One that is actually fit for flight testing and that' over in Mojave right now but we are working on the powertrain and the engineering over in the hangars.

Donny Sandusky Essentially development in the hangars.

Guido Fernandez Thank you Rachel.

Donny Sandusky Thank you Rachel.

Rachael Hall Thank you guys.

Julie DeCoste That's the most positive news I've heard in our meetings in I don't know how long.

Guido Fernandez And you know what makes me feel bad is that only a few of us are here. What happened? Rachel, just for the record, we tend to usually have more people.

Rachael Hall Is it because I'm here?

Guido Fernandez No. Not at all.

Donny Sandusky It's because it seems to be summer.

Guido Fernandez Yes, the summer meeting.

Rachael Hall I'll come back in the winter.

Donny Sandusky Yes, updates. Any more questions for Rachael?

Larri Frelow I look forward to seeing your presentation.

Rachael Hall Yes, it's pretty cool. I don't think it's in it but we have a video of our first flight. I could send you that also.

Guido Fernandez Yes, I will. If you get it to me I'll send it to all the members and I'll make them feel bad for not showing up.

Donny Sandusky Ok. We will move to the next item. The status of current city projects. Can you give us an update.

Agenda Item #3: Status of City's current projects:

Guido Fernandez Last time I mentioned that we were working on the airport lighting and signage update project and we were at 30% design. We have already past that, I reviewed it, and now it's back with the engineers. We are hoping that sometime between August and September we will get to 90% and at that point what we are going to do is send it to the FAA for review. Then they will let us know if we have to make any changes or if they have any concerns as we progress to the final 100%. The goal is by the end of the year to be at 100% completed with that project. Yes, so we are moving on. Just to recap the whole purpose of that is to have LED lights at the airport to replace the flush lights, the raised lights, the runway, the taxiway lights. To redo the signs as well, to replace our beacon on top of our air traffic control tower, and also some obstruction lights that the FAA is telling us that we have to have in order to implement some of the procedures. Your familiar with one of those, runway 7 procedures. So that's our goal. Yeah, it's moving forward, it's progressing. I'm excited about that. That's all I have to report right now.

Agenda Item #4: Comments/Discussion:

Donny Sandusky Alright. So item 4. Any committee member that wishes to make a closing comment. I do have one thing to add. We do have a handout that we are going to be passing out to all jet and turbine pilots. I just got it as a deliverable but just for noise. For low noise departure and noise abatement procedures and it's copied what is the standard for the National Business Aircraft Association recommendations. It's the same thing that Santa Monica has published but essentially to give it to every customer that comes in and becomes standard for our company but just to try to minimize the noise impact or foot print as much as we can.

Larri Frelow What is the handout called?

Donny Sandusky Departure, low noise departure procedure for Hawthorne. I think it might be titled something else but I'll get it to Guido and he can share it with everyone else just to see what the pilots will be seeing.

Guido Fernandez During the last meeting you reminded me in the minutes Doug was talking that he had seen something was it at John Wayne?

Donny Sandusky That's right. John Wayne. Santa Monica and this one is actually copied now you see that from John Wayne. You have all the people that are on the departure end John Wayne a lot of them still use those jets but they are very noise sensitive there too.

Guido Fernandez He made a comment that you were working on it.

Donny Sandusky So I have it. I just got it sent to me. I will send it over to Guido so you guys can all see it.

Guido Fernandez Thank you. That's big.

Donny Sandusky That was my closing comment but that's anyone else have comments?

Julie DeCoste I have a question. I want to say thank you though. That was really informative. As we were driving here we saw some airplanes flying over and I didn't think it was an actual flight path we were driving heading east on El Segundo Blvd. and we saw little small airplanes just sort of going up and turning.

Donny Sandusky You saw them coming in from the north and then turning. That's the air traffic pattern or the departure procedure for VFR aircraft so the small planes that are not in an IFR flight plan. That's where they are technically supposed to go. Pretty much down Hawthorne Blvd. and then follow El Segundo Blvd. That's the pattern but as we've said before when you are flying and dependent on how much experience you got you may well offset from those desired tracks.

Julie DeCoste We were just curious because they we were staying in Hollyglen right now and I was explaining to them the flight path and then we were watching the planes and like what.

Guido Fernandez I think you're used to like I'm used to Ramona the IFR, the jets and what have you.

Donny Sandusky So VFR you're on your own. You still have to follow the rules but it's up to you to decide where you are going for the most part but there are still some requirements. It's not like IFR to where if you start to go off course ATC all of the sudden saying to you hey N123 where are you going? Hey get back on course or if you don't here copy this phone number because you need to phone me when you land and basically you are calling and you get a violation and it's all down hill from there.

Julie DeCoste For small aircraft they have a different flight path.

Donny Sandusky Well they can still fly IFR as well but yeah if they are doing any sort of traffic pattern work or just buzzing around the basin, yes.

Guido Fernandez Is it fair to say that IFR, not always, but the majority are turbo props and jets?

Donny Sandusky Those are almost always IFR. I would say 95% of them. Jets 99% and turbo props maybe 1 out 10 go VFR whereas it's the opposite with pistons, the small planes, where 1 out of 10 of those are IFR and 9 out of 10 are VFR.

Guido Fernandez So for the turbo props do you know what I'm referring to? The bigger, for example the KingAir350 or the Pilatus the PC12, the SurfAir, the white ones.

Donny Sandusky Ok. Well. I guess thanks to the few who showed up.

Guido Fernandez Yes. I learned a lot.

Donny Sandusky If there are no additional comments from committee members then we will call this meeting adjourned at 6:35 pm.

- Meeting ended at 6:35 pm.
- Minutes were recorded by City of Hawthorne.
- Minutes were reviewed and submitted by the Secretary, Guido Fernandez.