AirSpace Season 2, Episode 6

Help!

Emily:

Hi AirSpace fans. This episode contains dramatic rescue stories and has descriptions that some listeners might find disturbing. Please be advised.

Nick:

Welcome to AirSpace. Today on the show we're talking about the risky, remote and heroic efforts made during air rescue flights. They're there to help you out in a range of non-optimal situations.

Brian Shaw:

Heart attack, stroke, overdose, drowning, respiratory arrest, respiratory distress, a wolf attack.

Matt:

Yeah, I think I'd call wolf attack non-optimal.

Emily:

Some of the best pilots in the world are the ones that you hope never to see.

Matt:

Extreme conditions and often have to make incredibly difficult decisions about whether to, and how to, get into position to help.

Chris Kilgore:

There was another explosion and this explosion towered well over us. And we're probably still a couple 100 feet in the air, maybe a little bit less, but it definitely got our attention.

Nick:

Rescue flights, coming up next on AirSpace from the Smithsonian's National Air and Space Museum distributed by PRX.

Today we're talking about search and rescue flights, and as with a lot of aircraft at the National Air and Space Museum, the rescue helicopter on display at the Udvar-Hazy Center has a lot of harrowing history behind it.

Emily:

Is there something different or special about the helicopter that we're going to talk about today?

Matt:

Well, I think one of the words you might use to describe the helicopter of today is nimble. It's a helicopter that is designed to fly in and out of places that might not have good landing sites and where you really just want a small craft that's able to carry just a pilot and a couple of passengers in order to get the job done.

Nick:

All helicopters have a little bit of this DNA in them. Part of the thesis behind the helicopter, when Igor Sikorsky designed the modern one, was search and rescue. He was really hoping that it would completely redefine how people were rescued in bad situations.

Matt:

Yeah, so like a lot of helicopters that are still in service today, its design to actually dates back to the 1960s. But even though it's kind of an oldie but a goodie, it can still fly like 100 miles an hour.

Nick:

The Udvar-Hazy Center is laid out in kind of an open storage exhibit mentality. So a lot of stuff is just sitting on the floor for you to walk around, so the fact that the Coast Guard helicopter is suspended from the ceiling and kind of tilted-

Matt:

-as though it's in flight.

Nick:

It's really high up there. The ceiling at Hazy is a hundred feet up, but the observation platform terminates right at the helicopter so you can get right up next to it in the air and see inside of it.

Emily:

So size wise, how big is this bigger than a Volkswagen?

Nick:

Yeah. Bigger than a Volkswagen, bigger than a Volkswagen bus.

Emily:

Bigger than a Volkswagen bus?

Matt:

The rotor diameter is over 50 feet. So for perspective, that's kind of like flying with a telephone pole spinning horizontally over your head.

Nick:

A horizontal telephone pole being the tried and true evocative metaphor for so many things in life.

Matt:

Yeah.

Nick:

It's a little bit bigger than the orange Coast Guard helicopters that you see flying around above DC. It's the only aircraft, the only Coast Guard aircraft on display at the National Air and Space Museum. And this particular helicopter has a story. And that story begins like this.

Chris Kilgore:

Very first thing we were woken up by the SARTEL. It was early in the morning so we were probably sleeping lightly because I remember being immediately awake, usually are when the SARTEL goes off, because it's pretty obnoxious. This was different.

Nick:

That's Chris Kilgore and he was a Coast Guard pilot on duty the morning of November 1st, 1979. The SARTEL that he talked about is the search and rescue radio call. And when it woke them up that morning, they knew something was wrong and it was a little bit worse than usual. It was a collision between two ships in Galveston Bay, about 40 miles from where he was and one of the ships was on fire. That's everything that they knew when his crew leapt into action.

Chris Kilgore:

I ran right out and jumped into the left seat of the aircraft. Aircraft commander was J.C Cobb and the crewman was Tommy Wynn, that was the crew. And as I had already pre-flighted the aircraft earlier in the night, the crew chief was, right there getting in the aircraft too. You're ready to go. And for a night launch such as this, we have to be in the air within one hour of notice.

But from the time of notification, until we called airborne was seven minutes. That's pretty astounding. We were pretty amazed ourselves.

Nick:

What happens next?

Chris Kilgore:

As soon as we lifted off, we got a notice on the panel that the radar altimeter had failed. We are prohibited from making over-water flights at night without a radar altimeter because there is no depth perception, there's a very little over-water period, and there is none at night. Normally, what the procedure would call for at that point is put the helicopter down and get another one, and that would take time, and we really didn't feel like we had time. I looked at J.C, J.C looked at me, not a word was said, not one word. And we just pressed on.

Nick:

In your experience up to that point, was the altimeter judgment the first time that you had overruled that kind of protocol.

Chris Kilgore:

I mean as a practical matter, it would be light by the time we got there because it was about 40 miles. We knew there was plenty of light on scene because we could already see it 40 miles away on the horizon. The radar altimeter was not going to be necessary by the time we got there. So that was the first interesting event we departed directly from the pad pointed directly to the sea buoy in Galveston and fly as fast as we could. We saw the globe fairly quickly after, because it's just flat as a pancake out there anyway, and it was a clear night. It just absolutely clear night. There was a strong winds from the north and you could see forever.

Nick:

Chris Kilgore and his air search and rescue team arrived on the scene to see the two giant ships, which had collided. One was freighter called the Mimosa and it had unloaded all of its oil in Galveston Port a bit earlier. The other ship, which the Mimosa collided with was the Burmah Agate and it was not empty when the Mimosa hit it, it burst into flames, and a lot of it's 387,000 barrels of crude oil were spilling into the sea, which was now also on fire.

Chris Kilgore:

That crude from the breach of the hull is flowing out into the water fairly rapidly and quite a distance. So all the water around the ship, around most of the ship, more so on the starboard side and aft was on fire. It's a sea of fire and we're probably still a couple 100 feet in the air, maybe a little bit less...Explosion. And this explosion towered well over us. And it was-

Nick:

So you are describing a fireball rising above your helicopter, which is still 200 feet in the air. Had you ever seen anything like this?

Chris Kilgore:

No, I had not. This was definitely once in a career event.

Matt:

Can we pause Chris's story for just a second and we're going to come back to Chris's story, but Nick, flying into a burning shipwreck, this seems really dangerous.

Nick:

Right. Yeah. And to an extent that's exactly what they train for, but also it doesn't happen all the time. So this was an unusual set of circumstances. Chris and his team were not necessarily sure that there was going to be a lot they could do.

Emily:

So it's kind of part of the job, right? When you're a search and rescue pilot it's to fly into situations that people are trying to get away from. I mean, at some point as a search and rescue professional, you have to make a decision about when you're going to go in and when you can't go in, because you can't actually help the situation. So I want to back up just a little bit and try and help define how air rescue flights can be sort of broken up into two different categories. So these two categories are search and rescue also nicknamed SAR and air ambulance flights. Search and rescue is usually a government function, whereas air ambulance flights are often private or civilian companies that have been contracted to perform these kinds of emergency services or routine pickup services in relatively remote places.

Nick:

In the case of Chris's story, the things that they would have taken into account are where the accident is located, the geography of the rescue, how many people might be involved and the severity of the need. In Chris's case, we know that there was a literal fire. There was a high degree of urgency, but sometimes these things can be really, really complex and take a little bit more preparation, but the need is still there. There was a story just a couple of years ago, where there was a medical emergency at the South

Pole in winter, which isn't really what you want to happen if you're visiting the South Pole if you're a researcher-

Emily:

You don't visit in the winter.

Nick:

No, no, you don't fly, you don't visit, you kind of hunker down and stay inside.

Emily:

There's usually what about 40 people who winter over in Antarctica?

Nick:

Yeah, yeah.

Matt:

Don't they have like winter and then they have second winter?

Nick:

Yeah.

Matt:

Winter winter.

Nick:

The sun never rises above the horizon. It's dark. It's the coldest, most isolated scariest place.

Emily:

So it's pretty inaccessible.

Nick:

Yeah, no, you don't want to twist your ankle. And this was a little bit more severe if they were calling for a rescue and they had to assemble a specialized team out of Canada that flew two aircraft to the South Pole in the middle of winter. It was a very, very dangerous flight. There were two aircraft because they had to presume that one of them might go down and you would need an aircraft to rescue the original rescue crew. But they pulled them out.

Emily:

But there's some other locations that are just not accessible, right? Like Mount Everest. I mean, you never hear about a search and rescue with some kind of aircraft of people at Mount Everest.

Matt:

Right? There are some altitudes above which helicopters just aren't useful. They can't actually go up that high.

Nick:

Right. There've been a couple of helicopter evacuations from some of the Everest base camps, but they're very dangerous.

Emily:

Well, and there's other limitations to helicopters. I mean, helicopters don't make transatlantic flights. They don't make flights across the country. I mean, helicopters have to physically have sufficient fuel or be able to carry sufficient fuel out to the site, be able to perform their emergency services and then still get everybody including the crew back safely to wherever they're going to be, whether that's land or I don't know, do sometimes helicopters land on boats?

Matt:

Yes.

Emily:

Is that a thing they do? Okay. So get back to their boat. But the point being that the pilots that are trained to do this search and rescue, they have to be taking all of those factors into consideration when deciding whether or not to continue with their operation.

Nick:

And as we are hearing from Chris's story, even with the best possible information, there can still be a lot of unknowns in these situations.

Emily:

So search and rescue flights are the types we hear about the most often. But in fact, they're pretty rare, meaning that fewer than a 1000 people might be rescued that way each year. But air ambulance is run somewhere around 400,000 flights per year.

Matt:

So the decision-making process for an air ambulance pilot is a little different than search and rescue, but it still ultimately comes down to the pilot to decide when to go and when to stay. Brian Shaw, an AirSpace listener actually was able to shed some light on how this process works because he makes these decisions every day, multiple times a day.

Brian Shaw:

My name is Brian Shaw. I'm a pilot with the government of Saskatchewan Air Ambulance Service in Saskatoon, Saskatchewan, Canada. We're an agency of the provincial government of Saskatchewan and we're administered by the Ministry of Health.

Matt:

Brian's actually one of our listeners and he wrote into the show and his note, it ultimately inspired this episode that we're in here recording today. So I asked Brian what he thinks of as the main differences between his work as a pilot versus other pilots across North America.

Brian Shaw:

What kind of differentiates my job from any normal pilot's job? The best example I can give was several winters ago, myself and my partner were sent out in the middle of the night to go pick up a kid in a remote community. And this kid was in some type of medical or respiratory distress.

They brought their kid out to the airport and once they had the kid loaded on the plane, we got our engine started, we got our checks down and I turned around to get the thumbs up from medical to start going, like we always do. And my nurse looked at me and she shook her head. And then she started pointing at the heart monitor. And then from the point from the point that she pointed at the monitor, it was about eight seconds. And then she started CPR on this child and then they got the child's heart going, they got the child breathing again and all said and done it was probably five minutes. And then she looked up, she gave me a thumbs up and I turned my head around and I said, "all right, we're good to go." And I released the park break and then we took that $6 million airplane off of a half mile runway into the blackness of the Canadian winter. And the next morning when I was thinking about it, I thought to myself, regular pilots don't do this.

Matt:

Brian's flight team actually runs rescues out of 61 airports and 49 of them are considered to be high risk. He explained that that essentially means that he's taking off and landing in areas with basically nothing.

Brian Shaw:

When I say nothing like there is literally nothing at the airport, there's no terminal, there's no fire department. There's no phone. There's literally just a rectangle of gravel cut into the trees and then a tiny little spot for us to park.

Nick:

So Matt, what you're saying is just like a clear spot, the trees.

Matt:

Yeah, it's like showing up at my house.

Nick:

Your clearing is not that big.

Matt:

Yeah, I don't think you could land a helicopter on my deck. So, it became clear pretty quickly in hearing from Brian that like a lot of air ambulance pilots, he operates from a substantially different standard of comfort than probably a lot of the commercial pilots we typically interact with. And with all that in mind, I still wanted to understand how he makes his decisions. What is too risky and what is just risky enough?

Nick:

So how does that work? Does he get a 911 call or a briefing from a dispatcher?

Matt:

No, actually other people field those calls, Brian said he gets much less.

Brian Shaw:

All I get is a text message that just has a destination on it and no other information whatsoever. And that kind of relieves me as a pilot for any type of decision-making bias upon what the patient's condition is, whether or not somebody knows the patient or how dire the circumstances are. And that allows me to make a decision purely based off of flight safety. When it comes to the idea of flight safety, things like thunderstorms or severe icing would stop us. But overall there isn't a whole bunch that would really, really stop us.

Matt:

Now if it was me, I can imagine I would want to know as much as possible about all the aspects of the situation and not just the weather. What's the nature of the emergency, for example? What's the view from the ground? Brian has been flying for over 18 years. I asked him if he ever has faced a situation where he just didn't trust his own judgment.

Brian Shaw:

I had a situation in 2013 where a cousin of mine, who I was very, very close with when I was growing up, was going to be transported by air ambulance. And I got the call early from my family member telling me that they were going to transport him to Saskatoon and I was working that day and when I got into work, I knew that if I was to be the person who was going to get assigned to that flight, my decision-making wouldn't be sound. So I actually asked somebody to switch with me. If that call came in for me as it turned out I wasn't assigned to that trip, but I knew that if I knew that I was flying that person, like my cousin, my decision making wouldn't be sound.

Matt:

So Emily, Nick, as you can imagine, air ambulance pilots do a lot to keep their emotions compartmentalized. Brian made it clear that being tuned into his own heart and the feelings of his passengers is really important.

Brian Shaw:

I meet people on the worst day of their lives. They never ever imagined when they woke up that morning, that they would be sitting in the back of an air ambulance. You try to be as compassionate as you can. It's definitely not something that most pilots have to deal with.

Nick:

We have a lot of fun with a lot of our stories, but that sounds really hard.

Matt:

Yeah. It must take an incredible amount of wherewithal to keep your calm during situations like that.

Emily:

Matt, I still have one question for you. After talking with Brian, what would you say is the main difference between the ways that air ambulance pilots make their rescue flight decisions and how pilots flying search and rescue, like Chris Kilgore, who Nick spoke with make their decisions?

Matt:

Right, so I asked Brian for his take on that one and he basically said, air ambulance pilots mostly focus on the journey to, and from a situation. And they consider whether it's safe to do so. And for search and rescue, it's really a little different.

Brian Shaw:

When it comes to search and rescue, whether it's Armed Forces or the Coast Guard, they don't know exactly what they're going into a lot of the time. I think a lot of their job is adaptability, to first of all search out and find the victims, and then at that point, go in and assess and rescue those people. Where, as an air ambulance service, more often than not we know what we're going to get. We can prepare for that situation. Whereas I would say that search and rescue kind of has to be very fluid and adaptable in those situations.

Matt:

So for both types of rescue flights, the pilots have the full say they, the captains of the aircraft, make the call and both types of rescue pilots take that responsibility extremely seriously.

Brian Shaw:

Yeah. After the very first time that I ever finished a captain qualification, the person who was finishing, who was doing my ride said to me, "four bars is a heavy weight on your shoulders." And that refers to the four bars on the epaulets that we wear on our shoulders. When you really start thinking about the decisions that you're making and how that affects other people's lives, it is a heavy weight on your shoulders at the end of the day.

Matt:

I mentioned earlier that Brian wrote in to the show. If you listeners have a story idea for us, you can reach us at AirSpace@si.edu. That's AirSpace at S as in Smithsonian, I, as in institution dot edu.

Emily:

We're going to take a short break.

Matt:

When we come back we'll revisit the search and rescue story off the coast of Galveston, Texas.

Nick:

And we'll explain how 22 people came together to make history with a helicopter and something a little bit like an Easter basket. That's coming up next on AirSpace.

Let's get back to the scene off the coast of Texas. When we last heard from pilot, Chris Kilgore, he was describing how his search and rescue flight team had just missed getting hit by a 200 foot fireball that was running from one of the ships that was on fire.

Emily:

So it was November, 1979 and there was the freighter called Mimosa and another ship called the Burmah Agate.

Nick:

Yes. And now they're searching for survivors from this collision, amid all of this burning wreckage. Now this next part gets a little bit more graphic.

Chris Kilgore:

We were kind of making a survey flight, if you will, or pass, survey pass. We're noticing bodies in the water at the time. There wasn't anybody in the water that appeared to be alive. And that's when Tommy reported seeing the two persons on the deck.

Nick:

What happened then?

Chris Kilgore:

We slid in the basket, kind of swung over to the rail.

Nick:

Matt and Emily. What do you picture when we hear him say baskets?

Emily:

I mean, I feel like maybe I've seen something like it on the news, but I kind of picture one of those cages they put people in to study sharks in the ocean.

Nick:

I picture the recovery baskets that they use to get the astronauts up and into the helicopter to take them back to the aircraft. But something that we should point out there is that those were astronauts. They've trained for this a lot-

Emily:

Right.

Nick:

In a scenario like this, the people that you're picking up don't necessarily know how to operate this equipment.

Matt:

So do they lower someone with the basket to help them get in?

Nick:

Not in this case, no. So this is how Chris describes the basket.

Chris Kilgore:

Think like a giant Easter basket. Not quite as dense. It's a wire basket. It's open, if you will. So water and air can flow through it. It is designed to carry one person, one person sitting down in the basket. That's what it's designed for.

Nick:

So it's like a giant metal Easter basket, and that analogy seems kind of light-hearted, but then you reflect on what Easter baskets are supposed to carry. That's really fragile stuff in there.

Chris Kilgore:

These two seaman jumped in it and we slid immediately off to the left, back out to the left, away from the vessel.

Nick:

Do you, at that point, call it a successful rescue mission and head back to shore?

Chris Kilgore:

Well, no, we still have another vessel out there to see what's what. Now both of these individuals were in fairly good shape, all things considered. They were not seriously injured. If they were seriously injured, we would probably head immediately to the hospital with them. And so we proceeded to Mimosa to see what we could see there.

Nick:

What was the scene at the Mimosa?

Chris Kilgore:

Uncommanded slow, right turn. And all of the crew, the forward portion of Mimosa was on fire. First thing we noticed when we got there is all of the people on the bridge wing, they had all crowded up there.

Nick:

The Mimosa is not at anchor, but is making uncontrolled turns and on fire through a field of oil wells, basically.

Chris Kilgore:

Yeah. As this thing is doing its turns, it's also drifting with a current that's just a matter of time before it runs into something else.

Nick:

Chris and his team get into position to lower the basket, but it's not like a normal basket hoist that they would do on a standard search and rescue because the ship is in motion and the winds are high.

Chris Kilgore:

So as the ship is turning under us, the helicopter has to maintain the same relative position to the wind. So we're having to let the ship turn under us and what it wound up was is as the ship would pass under on the right side and start coming out the left side, we'd just pass the controls, J.C passed the controls to me and I would do the hoist as I had visual on the vessel. And then as it came back more to his side give him, he passed the controls back to him and he would do the hoists while it was on that side. That was

an unusual and first and only time I've encountered something like that. So that complicated it a little bit that complicated at quite a bit.

Emily:

So how many people were they able to fit into the helicopter?

Nick:

Eventually they squeezed 12 survivors onboard, that's plus the crew of the helicopter and that's really more than the helicopters deigned to carry.

Chris Kilgore:

And as soon as we moved off the side of the vessel, what we were enjoying was the updrafts from the fire and from the wind hitting the side of the vessel, the north wind would hit the side of the vessel and come up, so we had a little help from that. And as soon as we came off of that and the helicopter just literally started falling sort of, as it was moving forward. Fortunately, we reached flying speed, which is in the helicopter called translational lift, probably 10 or 15 feet above the water, where you transitioned from a hover to forward flight. The helicopter is much more efficient at that point. It was a long way down and for a second there, was a big oops upfront, but it all worked out just fine.

Nick:

So Chris and his team successfully unloaded the first round of survivors and returned to the burning ship and came back two more times full of evacuees.

Matt:

So flying into a burning ship wreck once seems pretty harrowing, flying back into it two more times, I mean, that's heroic stuff.

Nick:

Yeah. 100%. And eventually other aircraft arrive to help and the entire operation was considered very, very successful. And lest we forget how harrowing the collision between these two ships and the ensuing oil fire was the Burmah Agate and the water around it burned for 68 days.

Emily:

68?

Nick:

That's exactly what I said when I found out yes, 68 days.

Emily:

So in the extreme conditions that search and rescue pilots experience on their day-to-day jobs, is there any part of search and rescue flights considered typical?

Nick:

We think of these guys as action heroes, but they train for this so thoroughly that a whole lot of what they do, everything that they can anticipate is routine and standardized and practiced and checklisted until it becomes second nature. So I asked Chris, was there anything normal about the flight with the Burmah Agate and the Mimosa? And he said, "yeah, a lot of it." The operations of the baskets, how they navigated everything about how the rescue team operated was exactly according to the standards and protocols for how they execute these kinds of missions.

Matt:

That routine probably only goes so far, right? It can't erase all the challenges. Some challenges to pilots are not even in the air. Brian Shaw mentioned that pilots and crew working with air ambulances themselves face some pretty daunting statistics.

Brian Shaw:

The latest statistics I've seen are two deaths per a 100,000 hours worked. I think there was a height in 2013 where it was five deaths per 100,000 hours worked, which I think even exceeded things like loggers and Bering sea fishermen. And that can actually cause us to not be able to get life insurance. Several of my colleagues simply were not able to get life insurance on their mortgages. And there's certain banks that simply just won't touch you as soon as they find out that you're an air ambulance pilot.

Matt:

It's not slowing him down or sending him looking for new work.

Brian Shaw:

Myself, I don't consider that my job necessarily is dangerous, but there are risks involved that maybe other people don't have to deal with.

Emily:

That's it for this episode of AirSpace.

Matt:

Thanks again to Brian Shaw for writing to us. Listeners, if you have a story idea for us, please send us a note. Our email is AirSpace@si.edu, AirSpace@si.edu.

Emily:

AirSpace is produced by Katie Moyer, Jocelyn Frank, Lizzie Peabody, and Ellen Rolfes. Mixed by Tarek Fouda. Special thanks to Justin Voke, Thomas Edward, Genevieve Sponsler, Jason Orfanon and John Barth.

Nick:

We'll be back with another episode of AirSpace in two weeks.

Emily:

And we're going to talk about the playlist of the cosmos.

Matt:

Talk about the music that was taken into space by the Apollo astronauts and also the classic rock that was inspired by the Apollo missions and putting humans on the moon.

Emily:

You don't want to miss it.