Ninety-eight Fire
Facilitated Learning Analysis
Airboat Collision
July 11, 2025

Table of Contents

Executive Summary 3

Background 3

Support on the River 4

Rural Alaska 5

The Narrative 6

Scotty's Boat 6

The Supply Boat 7

The Unfortunate Crash 7

Initial injuries 8

Initial Response 11

Initial Patient Status 12

At Alaska Fire Service and Ladd Airfield 12

Landing and Loading at the Sandbar 14

Ferrying the Troops 15

After Action Review 15

Conclusion 16

Lessons Learned 16

Additional Resources 20

Facilitated Learning Analysis Team Members 20

Executive Summary

On June 19, 2025, the Ninety-eight Fire started in a remote part of the Yukon Training Area, which is co-managed by the military and the Bureau of Land Management (BLM). The fire started as a lightning strike, and due to the remote area, it was not considered a threat to any values at risk. By June 21 the fire had started to threaten several cabins along the Salcha River. Resources were therefore deployed for structure protection. On June 25, the fire was managed by an ad hoc Type 3 Incident Management Team. As the fire grew, additional ground resources were ordered. On June 28 an Interagency Hotshot Crew (IHC) from Region 5 arrived to support the Ninety-eight Fire. On the crew's 14th day, they were involved in a boating accident. The crew was headed downriver on an airboat when they collided with a supply airboat traveling upriver. Ultimately, seven individuals were involved in the accident. Three hotshots required medical attention and were flown to a hospital, two hotshots were "bruised up" but remained with the crew; the two boat operators were also "rattled."

Following this boating accident, the BLM and the U.S. Forest Service started the process to organize a Facilitated Learning Analysis (FLA) per the 2025 Statewide Master Agreement memorandum of understanding (MOU) between The State of Alaska, the Department of Interior, and the Forest Service. As the incident involved Forest Service employees and the fire was being managed by the BLM, the MOU dictated that a FLA would be used instead of a Serious Accident Investigation (SAI). Furthermore, it would be led by a Forest Service team lead with a BLM deputy. The following review is a FLA regarding the Ninety-eight Fire boat accident.

Background

The Ninety-eight Fire (named after Ninety-eight Creek) started by lightning on June 19, 2025, and slowly started to burn to the south out of the Yukon Training area. The Yukon Training area is a large training area that is owned by the BLM which the military uses as a training ground. As the area is co-managed by both the military and the BLM there is a dedicated military zone for Alaska Fire Service. The Fire Management Officer (FMO) for the military zone was aware of this lightning strike in the training area early on the 19th. This new start was one of 42 fires that ignited from lightning and was detected by the Moderate Resolution Imaging Spectroradiometer (MODIS). As the fire was within military controlled property and there were no immediate values at risk, the FMO prioritized other incidents first while continuing to monitor the Ninety-eight Fire.

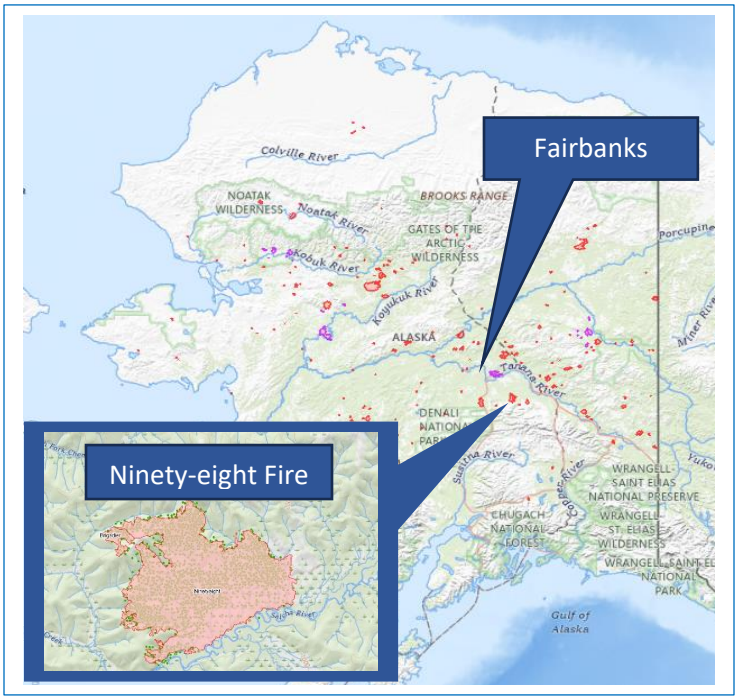

Image shows the vicinity and overview map of the Ninety-eight Fire.

By June 21, the fire had made several east and west runs, while continuing to move towards the Salcha River. Numerous values are located along the river, including homes, cabins, and other structures. Therefore, Alaska Fire Service collectively decided that point protection for individual properties would be the most efficient use of resources. The FMO ordered a load of smokejumpers onto the fire on June 21 with instructions to use point protection to protect the homes and cabins. Ten smokejumpers stayed on the fire for seven days while the fire made several large runs. At that point, additional resources were requested on the fire. The FMO ordered multiple boats to work with the jumpers while being supported by para-cargo supply drops. After two days the incident complexity had increased due to the acreage of the fire, resources needed, and the number of resources assigned. AFS determined that an ad hoc Type 3 Incident Management Team (IMT) would be needed to further manage the incident.

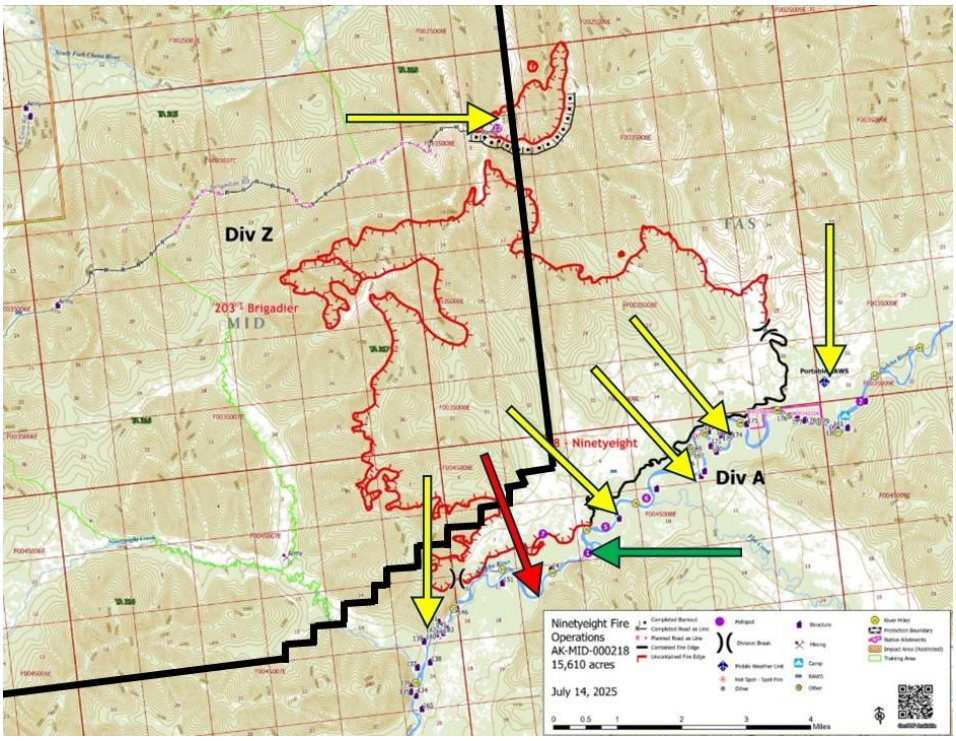

Image shows the yellow arrows as values at risk, the red arrow is the accident site, the green arrow is H1, and the black line is the military boundary.

As the IMT began to take over the Ninety-eight Fire, it made several runs over the course of several days in all directions. The primary values at risk were to the south along the river, where there were homes and cabins—many being occupied at the time. The Crow's Nest II military communication site with powerlines and infrastructure was located to the north and uphill of the fire. East and west had fewer values at risk, but could only be accessed by airboats or jetboats.

Support on the River

Access to the Ninety-eight fire could only be made by helicopters or boats. The IMT utilized both tools to set up several camps at designated helispots along the river. H1 was the main helispot where supplies and backhaul were staged enabling incoming and outgoing boats and helicopters

to load and unload in one designated area. The farthest helispot away from the fire was H12. This is also where the boats would launch as there was road access into H12. From H12 to H1 is 38.5 river miles and takes over an hour to travel that distance upriver. Additionally, flight time from H12 to H1 is approximately 10 minutes.

For resupply orders, the team would have the order delivered to H12 at the boat ramp. From there, equipment and supplies would be loaded onto the airboats and ferried upriver. The orders were supplies such as fuel, pumps, hoses, food, and other items necessary to support several crews camping near H1. While helicopters were available and utilized on occasion, fan boats were the primary method of shuttling crews and supplies between H12 and H1. This meant that most personnel had been shuttled in by boat and were familiar with travel distances and times between the various reference points on the Salcha River between H12 and H1.

Image shows an airboat being used by Alaska Forest Service on the Salcha River.

The Salcha River is a shallow water river that requires airboats or jetboats to navigate the waters. Airboats use an air rudder to turn, meaning they need to be going about 25 or 30 mph forward for the rudder to be able to turn. Additionally, airboats turn gradually, not immediately, like a jetboat. Airboat operators also prefer to run in more shallow water as there is a type of "in ground effect" that helps level the boat. The result is that airboat operators will move side to side up and down the river where the water is preferable. While traditional maritime rules indicate that you should pass on the right (starboard) side of the oncoming boat, it does not always happen on the river as the better water may be to the left of the oncoming boat. Another river custom is that boats coming downriver (with the current) have the right-of-way, as it is more difficult to control the boat travelling downstream. Boat operators on the Salcha River need to have good experience and great knowledge to be moving heavy supply loads quickly up and downriver.

Rural Alaska

Crews who are ordered to Alaska are made aware that support and resupply may not happen every day. Therefore, crews know that they need to be sufficient for at least 24 to 72 hours at a time, if not more. While aerial cargo and helicopter support is efficient and effective, crews cannot count on having aviation resources as a primary asset. With the number of fires that may be occurring on the same day and the potential to get weathered out, helicopter use may be limited for suppression or resupply.

Medical concerns are an additional hazard while working in remote areas in Alaska. Crews that work in the wilderness will often have their own emergency medical technicians (EMT) with the crew to care for basic injuries. However, many of these EMTs are not equipped to handle serious injuries that may last 24 hours or longer. To mitigate that risk, AFS embraced the Operational

Medical Support Program (OMSP) decades ago to train AFS EMTs at all levels and provide Alaska EMTs with advanced skills and supplies. The OMSP in Alaska focuses on the four major factors that have seriously injured or killed firefighters in Alaska in the past. The focus areas are trauma management, airway management, infection control, and pain management. While no EMS care provider, up to and including physicians, would consider it ideal to attempt to stabilize and manage a critical patient in an austere prehospital setting for up to 24 hours, OMSP AFS EMTs do have additional training and the equipment to help manage those focus areas for prolonged extrications.

Operational Medical Support Program (OMSP)

"The BLM OMSP is authorized under the Fire and Aviation Directorate to primarily take care of employees working in remote and potentially hazardous conditions where traditional emergency medical services (EMS) may be significantly delayed or unable to respond. We train specifically to perform initial resuscitation, incident medical leadership, and to extract patients to our EMS partners or a higher level of care."

The Narrative

Scotty's Boat

On the morning of July 11, the IHC was on their 14th day, while planning on extending to 21 days. They had camped at H6, a sandbar upriver of H1, later called "Tatanka Camp." The crew had settled into a routine of being on at 0700 for crew briefing and readiness. They had grown accustomed to the 0800-radio briefing. The IHC Superintendent recalled that it had been the same nearly every day they had been there. They knew that they were going to be cutting and stacking black spruce into the black on the same section of line they had been working on the day before.

As the IHC was listening to the briefing, the jetboat operator was making his way upriver to H1. As he passed by the cabin where one of the airboat operators was staying (Scotty), he saw Scotty's boat with the back end in the water, but no one was around. He continued upriver to H1 and reported to the Task Force Leader (TFLD) and the IHC Superintendent that "there is a boat down river that is sunk, it's tied up at a cabin." The TFLD, IHC Superintendent and the boat operator knew someone was going to have to check on Scotty.

The Division Trainee (DIVS(t)) radioed Operations (OPS) over the command channel that "there was a boat with its back end in the water." The IHC crew was already loading five crew members onto an airboat, they overheard the announcement on command—as well as hearing about it from a conversation between the IHC Superintendent and boat operator.

The Salcha River is classified as a "navigable waterway" by the U.S. Coast Guard. Some homes and many cabins are located along the river that can only be accessed by airboats. As such, these waterways are like many highway and county roads in the lower 48 states. The local boat operators had many years of combined experience on the river, as this is where they live and work.

The IHC Superintendent had told the boat operator "Sounds like Scotty's boat is sunk at John's place. Can you go check on him?" This is when the intensity of the situation was felt to elevate by many. The boat operator loaded a winch onto the boat and departed with the five IHC crew members to see if they could help with the sunk boat and make sure Scotty was ok. Although Scotty's boat was farther

downriver than where they had been working, it was not too far out of the way. And it made sense for the IHC crew members to assist with an evolving situation.

The Supply Boat

Supply boats had been making frequent runs almost daily up and down the Salcha River. On July 11 a supply boat was loaded heavily with fuel for the generators, boats, and chainsaws on the Ninety-eight fire. While the supply boat normally arrives around 0900 or later, this morning it was running early. The order was at H12 earlier than the previous weeks and several runs were planned for the day. To get all the runs completed, the boat operator started earlier than the previous days and was loaded onto the airboat around 0745.

The sun glare on the river is much like driving into the sun in the morning or evening. However, the long summer days in Alaska have longer "glare times." Additionally, the glare bouncing off the water is more like driving in the snow in similar conditions.

Because H12 was well west of H1, and the river runs generally east/west, there was a distinct glare on the river from the sun. The jetboat operator explained that it is best to be going downriver in the morning and upriver in the evening—to keep the glare out of your eyes. However, he also acknowledged that while it wouldn't be possible with this operation, it was preferred.

Additionally, with the weight of the cargo, the boat operator was navigating the river in shallow water to help keep the boat balanced and provide more control. This required him to slide from one side of the river to the other as he avoided obstacles. The largest obstacle on the river was sharp river bends with trees and vegetation blocking views. With the need to go fast to turn, as well as navigating sharp turns, the airboat operator had to commit to the turn but simultaneously stay vigilant of oncoming traffic that may be blocked by the turns or glare from the sun.

The Unfortunate Crash

By 0845 the crew transport boat had only made it a quarter mile down river from H1. The accident occurred before their normal drop off point for the previous day's worksite. There were five IHC crewmembers on the airboat. The front passenger area was occupied by four IHC crewmembers, sitting in two rows of two—two on the right side (starboard) of the boat and two on the left side (port). The fifth IHC crewmember was sitting in a seat in the boat cab, on the right side of the boat operator (starboard stern). This stretch of river was mostly straight. However, they were coming into a large sweeping bend to the right and were hugging the northside of the river where the shallow water was most stable.

On the supply boat, the operator was by himself. He was coming out of the bend on his left side and in the same patch of shallow water the crew boat was utilizing as they came down river. The sun was glaring off the river as he was coming out the bend. The supply boat operator recalls that he saw the other airboat at the very last second and pulled to the right as quickly as possible.

Images show the damage to both the supply boat (left), transport boat (middle), and damage to the fan (right).

The crew transport airboat operator and IHC crewmembers saw the supply airboat from several hundred feet away, prior to impact. The crew boat operator made multiple attempts to maneuver out of the way of the oncoming supply airboat. But it seemed as though every time the crew boat adjusted direction, the supply boat mirrored the movement. It would later be discussed that what appeared to be mirrored movements were merely an unfortunate coincidence as the supply boat operator stated he could not see the crew transport due to the sun glare coming off the river—until the very last moment. As soon as he saw the crew boat, the supply boat operator pulled hard to his right, toward the middle channel of the river. At the very last moment, the crew boat pulled hard to the left, also toward the middle channel of the river, as the sandbar was to his immediate right. The result was a very hard, parallel side-to-side impact to the right side of the crew boat and to the left side of the supply boat. As the boats collided, the fan cage of the supply boat was damaged and the fan began to strike the cage.

Image shows where the crew members were sitting at the time of the impact.

Initial injuries

Upon impact, several things happened to the crew at the same time. The most critical injuries happened to the crew member in the bow of the boat, on the right side (C-1). This is the crew member identified as the "most critical 'Red' patient" for the duration of the Incident Within an Incident. As the boats quickly decelerated, the crew member seated front right side was launched into the air over the top of the supply boat and came down hard on top of the supply boat fan cage. This

impact is likely when he was impaled by a 3-inch piece of metal, described as a “broken hog wire,” that made up the protective shroud of the supply boat fan. The 3-inch piece of broken wire penetrated 6-8 inches into the muscle tissue of his rear-right shoulder blade.

Due to its size, shape and depth, the metal hog wire projectile was not discovered during initial assessments on scene. It was visualized during a CT scan at the hospital. The impact with the fan boat fan is also likely when he sustained numerous lacerations to his back, ribs were fractured, his right lung was punctured, and his pelvis was fractured.

After impacting the supply boat fan, he bounced off the fan cage and landed in waist deep and very cold water. While the accident happened rapidly, there remain several unknowns regarding exactly which boat surfaces were impacted. C-1 remembers being “underneath one of the boats and struggling to get out from under it for a while before being able to surface for air.” Some of his injuries may have resulted from this time pinned under one of the two boats.

Another IHC crew member sitting in the middle of the transport boat on the right side (C-2), recognized the impending collision. He ducked down into the boat to brace for impact. Upon impact, this crew member was flung into the side of his own crew transport boat where his leg was then pinned between the collapsed wall of the boat and one of the gun rails. Once he freed his leg from its pinned position, he realized he also had a 2-inch laceration behind his right ear that was bleeding profusely.

At the hospital, it would later be discovered that this laceration was the result of a quarter-sized piece of “expanded metal” grating, which was likely a projectile from the supply boat’s fan cage when the propeller collided with its protective cage, and both rapidly disassembled into pieces of shrapnel.

The metal piece lodged between his scalp and skull where it remained until discovered and removed at the hospital. This crew member was initially labeled as a “Yellow” but soon would be upgraded to a “Red” as the IWI unfolded.

Image shows part of the fan cage that was removed from C-2’s head.

The third crew member that would be labeled as one of the IWI patients was sitting in the middle of the crew boat on the left side (C-3). When the impact occurred, he was flung hard to his right, striking the right side of his face and head on an unknown solid object.

The impact resulted in an almost immediate black eye that rapidly was swelling shut, and some minor facial bleeding. He reported slight memory loss associated with the event and symptoms consistent with a concussion.

Within a few seconds of the impact, he regained consciousness or focus and immediately began assisting with the management of the IWI and attending to his more visibly injured buddies. He was initially given a “Yellow” triage designation but would later be upgraded to “Red” to convey the need for rapid transport on the helicopter medevac flight conducted by 22Z, as he was rapidly swelling, and the IWI IC was concerned about a serious head injury.

C-3 explained that he knew he was a little confused and his head felt "fuzzy" due to his own head injury, but since he was doing so many things to assist his visibly injured friends while also helping provide information to the IWI IC, he was initially confused as to who they were referencing as the "third patient." It took him several minutes to realize "wait a minute, I am the third patient." He continued to help his buddies for the duration of the IWI.

All five of them had visible injuries to one extent or another, visible bleeding, bruising, deformity etc. AND they all had heard their squad leader identify "one 'Red,' two 'Yellow' during initial IWI radio traffic, meaning there were only three patients. During the next several minutes they all worked to help one another as best they could in their injured states before anyone explicitly identified who was being considered patients and what their triage color label was (Red vs. Yellow).

The fourth IHC crew member was sitting in the cab of the crew transport boat, next to and on the right side of the crew boat operator (C-4). When the collision happened, he was thrown from his position, hard to the right and struck the right side of his head on an unknown surface of either the crew boat or the supply boat, before landing in the Salcha River.

He remembered the entirety of the event and never lost consciousness. As soon as he popped up, he realized the water was only a couple feet deep and started to walk towards the shore. Within a few steps he caught a glimpse over his shoulder of the other crew member that had been thrown farther out into the river. Recognizing his buddy was injured and struggling to walk out of the river, this fourth crew member turned back into the river to assist his friend. Supporting one another with an arm over his shoulder, the two made their way out of the river and up onto the sandy bank.

The fifth IHC crew member was the squad leader. He was initially sitting in the front left seat of the airboat boat (C-5). When he realized the impact of the crash was imminent, he gripped the left railing of the boat to brace himself. His injuries were limited to extensive bruising of his lower legs from unknown impacts and superficial lacerations to his left hand. These limited injuries and the fact that he remained in the original boat allowed him to respond to the situation swiftly, first notifying the IHC Superintendent over their internal crew channel that the accident had occurred.

In hindsight, the entire IHC recognized this IWI would be considered a Mass Casualty Incident (MCI) as they had 5-7 patients if boat drivers were included. They believe the best term for all 5 IHC crew members would be "walking wounded" since yes, they had injuries, but they were still functional to some extent and were all working together to take care of one another.

This was immediately followed by initial IWI notifications to the Division trainee (DIV(t)) over command. The squad leader quickly recognized that everyone, including himself, had some form of injury from mild to severe but wanted to keep the IWI communications simplified and focused on the significant injuries that needed immediate medical attention. Therefore, his initial IWI communication to DIV(t) was: "We had a boat collision a quarter-mile down river from H1; 1 Red, 2 Yellow." Both boat operators involved in the crash reported no injuries, however, in total, seven people were involved in the crash.

Initial Response

As C-1 and C-4 made their way out of the water, C-1—who was launched onto the other boat and then landed in the river—needed a lot of help to get to the shore. C-4 recognized his buddy needed help. C-4 went back into the river and assisted C-1 to shore, helped lay him down on the sand and started an initial assessment. The IHC squad leader (C-5), was relatively uninjured with only superficial bleeding from his hand and got out of the boat to make his way to shore. The squad leader assumed the role of the Incident Within an Incident (IWI) incident commander (IC). All radios on scene had been submerged in the river. Therefore, the initial notification sounded garbled and took additional time to relay. The three injured crew members were staged together on the shore as the squad boss recovered his radio from the boat and called his IHC Superintendent on their crew channel. He said, "We collided with another boat and have three injured" "we need EMTs and med gear immediately." "One 'Red,' two 'Yellow.'" His next call was to DIVS(t) at H1, reporting over command that there had been a boat accident, he was assuming IWI IC, and that he was requesting EMTs as well as helicopter extraction at 0852.

Video shows the view of the supply airboat coming up-stream, without the morning glare.

At H1, the DIVS(t) was near the R10 crew, who had just come onto the fire the night prior. They had been briefed by the TFLD. This was their first operational shift. R10 was still at H1. The DIVS(t) requested that both their EMTs respond to the developing IWI. The two "medics" grabbed their gear and loaded onto the jetboat. DIVS(t) was coordinating with the IHC at H1 to be ready for the jetboat to pick them up. The jetboat operator and the two R10 EMTs loaded the boat and quickly made it to H6. The jetboat could only hold five personnel including the driver. The IHC crew was bringing the IHC Assistant Superintendent and their two medics, which meant that one of the crew members was going to have to stay behind. The boat operator and IHC assistant looked at one of the R10 EMTs and asked them to stay behind. They all agreed, and the boat began back down the river.

As the jetboat arrived on scene, they could see the IWI IC on the radio and one crew member standing and mobile. The three other crew members were lying on the sand. As the EMTs

approached the patients, the two IHC EMTs focused on the more critical patient that had been launched onto the other boat. The R10 medic began to work on the crew member with the head injury. The Assistant Superintendent took over responsibility for the IWI and the EMTs started to provide patient status information to DIVS(t).

Initial Patient Status

As the EMTs provided information to the IWI IC, they initially determined that there was one "Red" medical and two "Yellow medicals." The IC also requested helicopter support with "medics" on board. The injuries to the "Red" medical patient included lacerations to the back, pain in the hips, likely broken ribs, and pain on a scale of 8-10. The first "Yellow" (quickly elevated to "Red") patient had a head injury and was bleeding severely on the back of his head. His pain was manageable, and it did not appear that there was a brain injury. The third "Yellow" (also quickly elevated to "Red") patient had several smaller cuts and was bruised up from being tossed into the boat. The EMTs began to package their respective patients. The patient status was now three "Reds," as the EMTs were not sure of the extent of the injuries and wanted to ensure that all of them were transported directly to the hospital.

At Alaska Fire Service and Ladd Airfield

During Planning Level 5 (PL5), AFS conducted 0900 briefings with fire personnel at the operations center. Two members of that briefing were the Unit Aviation Manager (UAM) and the FMO. At about 0905, the UAM received a text and quickly stepped out of the meeting. Several seconds later, the FMO received the notification, and he left to tie in with the UAM. They were both receiving the report of the boating incident at the same time.

The term "medic" has a range of interpretation from EMTs to military and to other medical fields. The ambiguity can lead to some confusion during medical emergencies. During this IWI, the term "medic" was meant to infer the need for a higher level of care than EMT-Basic, or specifically an EMT-P, or paramedic, whereas the overhead receiving the call interpreted it as any EMT with OMSP and AFS training.

The UAM understood the request for the helicopters and began calling the helicopter managers. The helicopters had staggered start times, meaning that one ship was on at 0900 to support an adjacent fire and the other two did not come on until 1000 to support the Ninety-eight Fire. The UAM contacted the manager for 1NS and asked if they could start to spool up. Because they did not come on until 1000, the manager was still driving but he said he would contact the other helicopter managers. 9AE was the helicopter that came on at 0900 and was conducting pre-flight checks to fly to a separate fire they were assigned to. The UAM contacted that manager and asked if they were able to redirect and head to the medical call. She agreed and asked that they check with the fire to make sure that it's cleared and then began to enter frequencies into the radio for the Ninety-eight Fire.

The UAM was able to get in touch with the manager for 22Z, a medium-sized ship and asked if they could come on early to respond. Most of the 22Z helicopter crew had already arrived at the helibase and started to do pre-flight operations before the UAM had called. They were therefore able to start flight operations earlier than anticipated. 1NS was also coming on but they would be delayed as most of his crew and his pilot had not made it into work for their assigned duty day.

Two of the helicopters finished their preflight by 0915 and the third was quickly behind them. The helicopter manager on 22Z later recalled that it was a very efficient process. The pilot of 9AE also noted that there were no cut corners, but they could not have done their checks any faster. The FMO noted that it was a very short time from notice to when the helicopters took off.

While the helicopters were being organized, Sawyer, the OMSP program lead, noticed the UAM and the FMO walk out of the meeting together, indicating that there had been an incident. He also left the meeting and headed towards the helibase where his medical cache was located. He tied-in with several of the helicopter managers and quickly received the ask from the FMO to grab some medics as there was an IWI with one "Red" and two "Yellows." Sawyer then started making calls and tying-in with his EMTs as quickly as possible.

The first EMT that was available was Alex, one of the EMTs from the OMSP program coming back from days off. He was already assigned to the fire as an EMT and was heading back to the fire with the Ninety-eight Fire Safety Officer and the timekeeper. He received a call from Sawyer, explaining that there was a medical on the fire and he wanted him to respond as soon as possible. The three of them were only five minutes away from the helibase and immediately turned around. As Alex was completely resupplied for 14 days in the field, he quickly transferred his equipment to the 9AE as the helitack crew gave him a flight briefing.

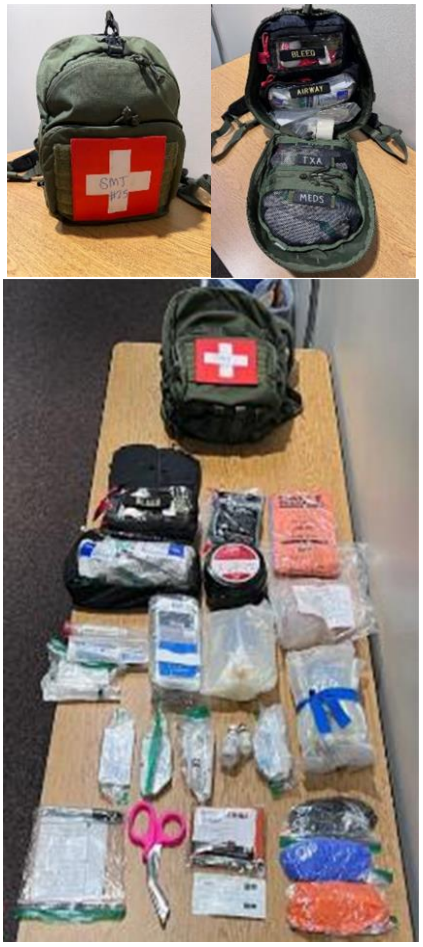

Image shows a standard medical kit available at the AFS cache on Ladd Airfield.

Sawyer had grabbed a utility terrain vehicle (UTV) off the flight line and began shuttling EMT trauma kits and additional medical gear to each of the helicopters. He made sure Alex had all the equipment he needed and then continued onto the other two helicopters as more of his EMTs arrived. The next two EMTs were Sam and Dakota who were coming in from the jump base. They were assigned to 22Z and began to meet the crew and receive their flight briefing.

At 0938, 9AE took off from Ladd Airfield enroute to H1 for the medical incident. Approximately five minutes later, 22Z took off with two EMTs also enroute to H1. The last EMT to arrive was Charlie who tied-in with Sawyer. The 1NS crew had arrived and began pre-flight so Sawyer and Charlie tied-in with that crew for their flight briefing. They took off approximately 10 minutes after 22Z enroute for H12 to stage for transport.

The IMT Safety Officer who was with Alex remained at the helibase and monitored the crew coordination as they loaded the helicopters and responded to the medical incident. He recalled that it was a very efficient operation. From the time of the call from OPS to the UAM (0905) to when the first helicopter took off (0938) was a very quick response.

While the helicopters were loading, Yukon Dispatch contacted 911 on the base and was then transferred to city 911. They were requesting three ambulances to travel to H12 on the fire and standby for three patients. Dispatch also called the military to see if they had an available helicopter, but it was more than 4 hours away. Once the IMT knew they had other resources, they confirmed declining the military aircraft. Dispatch called to see if there were air ambulances nearby—the closest air ambulance was in Anchorage and it was a fixed wing. They also contacted the hospital to ensure that they were aware that there were at least three patients coming in from the Ninety-eight Fire. The hospital was ready to receive them and coordinated three ambulances to receive the patients when they landed.

Landing and Loading at the Sandbar

As 9AE approached the sandbar at the crash site, the pilot saw that ground crews were directing them to land on the west end of the sandbar. However, because the medium-sized helicopter was coming in right behind them, they chose to land on the east end as there was more room for the larger helicopter to land on the west side. They landed at 1001 and would remain "hot" on the ground as it would expedite take-off time.

Alex tied-in with the IWI IC to coordinate transport immediately for the "Red" patient. He first looked to see if the backboard the patient was on would fit in the helicopter, which it would. He asked the helicopter manager to configure for transport, which required taking the manager's seat out of the front left of the helicopter. Alex then tied-in with the EMTs onsite for patient condition. He recalls looking at the patients and thinking: "They did an amazing job packaging them." He focused on the "Red" medical and did a blood sweep, running his hands up and down the patient's body, to ensure he hadn't missed anything and then administered some pain control. All the EMTs then assisted in carrying the backboard to 9AE and helped to load the patient.

Image shows crew member C-1 during transport to Fairbanks Memorial Hospital.

At the same time, 22Z had landed on the sandbar and the two EMTs onboard tied-in with the IWI IC. They tied-in with the EMT from R10 and began an assessment as well. No additional care was needed for either of the medicals, however the EMTs collectively decided to load the "Yellow" with the headwound onto an air-splint type of backboard. Both "Yellows" (now "Reds") were to be loaded onto 22Z with both the EMTs off 22Z. At 1035, 17V came overhead as the air attack, reconned the fire and was released at 1056 back to Ladd.

As the EMTs began to load the other two IMT crew members onto 22Z, 9AE began to take off at 1033. Initially, all helicopters had planned to go to H12 where there were three ambulances. However, they were directed to go straight to Fairbanks Memorial Hospital (FMH) by OPS. 9AE called dispatch to have them inform FMH that they were enroute. Because the radio was not being monitored at the hospital, Yukon Dispatch called the direct number and informed them that two

Image shows 22Z landing at H12 as well as audio between 22Z and 9AE.

helicopters would be transporting three patients in the next 20 minutes to the landing pad. 9AE took off and 22Z was loaded and followed behind them. 1NS was instructed to fly to H12 and await further instructions and landed at 1030.

As 9AE landed at FMH at 1106, there was an ambulance and several people waiting nearby. The helicopter shut down fully as he was not familiar with the additional people and did not want anything adverse to happen. The "Red" medical patient was transferred to the local ambulance, who then transported him to the nearby hospital for care.

22Z took a lap around the landing pad while 9AE was there, as there was only room for one helicopter at a time. Once the patient had been transferred, 9AE took off to Ladd and 22Z landed. There were two additional ambulances that received each of the "Yellow" patients and transferred them to the emergency room. 22Z remained "hot" and the patients were unloaded in four minutes.

Ferrying the Troops

At 1222, 1NS flew to H1 to pick up the IHC overhead and transport them to Ladd Airfield. AFS had a pickup truck waiting for them to transport them to the hospital and tie-in with their injured crew members. 1NS then returned to Ladd Airfield to drop off the crew and refuel.

At 1246, 9AE, 1NS, and 22Z all began to head back towards the Ninety-eight Fire. 9AE picked up their manager and seat at the sandbar and then flew to H1 for an EMT and then to H6 for the other EMT and returned to Ladd. 1NS picked up Sawyer at H1 and then returned to Ladd. 22Z began to ferry the IHC from H6 to H12. They ferried four loads of passengers and gear, then flew from H12 back to Ladd. By 1500, all the helicopters had returned to Ladd Airfield.

The IMT was able to redirect a travel bus at H12 for the IHC to return to Fairbanks for demob. Initially, they were transported to the Mob Center in Fairbanks, however the IHC Superintendent declined to stay at the Mob Center and took the crew to a local hotel to debrief and decompress in a quieter and more manageable atmosphere.

After Action Review

The following morning, AFS wanted to conduct an after-action review (AAR) on this incident from the day before. The IMT Safety Officer facilitated the conversation to include as many people as possible that were involved in the event. This included the EMTs, several dispatchers, helicopter managers, IHC overhead, the Ninety-eight Fire IMT members, as well as other AFS overhead. There were approximately 20-25 participants in the room with several others that were on virtually via Microsoft Teams.

From an AFS perspective, participants believed that they had done an excellent job. AFS was able to organize, outfit, and launch three helicopters with EMTs inside 40 minutes, which seemed very

quick. The EMTs that responded were able to tie-in with the other EMTs, provide basic pain management, load patients, and take off—all in approximately 40 minutes. The flight time to the hospital was also short as well—approximately 20 minutes. In total, AFS felt that the event was a success and that in roughly two hours three patients were being treated at the hospital.

The IHC Superintendent, however, did not feel that it was a success. He recalled being told by AFS and IMT personnel that medics with Advanced Life Support (ALS) would be available within 20 minutes of an incident and later found out that the helicopters were not on at the same time his crew began to work. He had seriously injured crew members, one who was still in the hospital, one who had shrapnel pulled out of the back of his head, and another who was bruised badly.

Additionally, they had five crew members who were in the accident, and the other two were—at a minimum—Green patients. There was surprise and dissatisfaction that the helicopters were not available while they were both engaged in fire suppression and running high-speed airboats up and down the river. With a severely injured crew member in high pain on the shore, the crew felt helpless that the response time was so long. When they ordered a "medic," they were conveying that they needed a paramedic to receive a higher level of care for their injured crew member. The IHC Assistant Superintendent as the IWI IC already had four EMTs that were working on their patients and did not feel an additional EMT-1(Basic) was going to be helpful.

Conclusion

Both the IHC and AFS had valid points considering their concerns. AFS is an outstanding fire service that has the utmost care and consideration with the safety and health of their responders. The IHC is a premiere firefighting organization that also had several crew members injured very quickly, and one severely. The combined perspectives of all the people involved have helped to generate the lessons learned below that may help firefighters and managers in the future.

Lessons Learned

1- **Medical response times may vary greatly during wildland fire IWIs.** Factors such as geography, resources available, time of day, and unforeseen circumstances are a few of the factors that may delay or enhance transport to definitive care. The following considerations were commented on or developed by the FLA Team and participants for consideration:

   a. **Communicating geographical transport limitations to incoming resources, specifically making that information available for EMTs that will be staged in the field.** Several participants commented that they had been working under the impression that helicopter transport time would be within 20 minutes and that there would be civilian medical helicopters available. According to Alaska medical professionals, LifeFlight can be available near Fairbanks, however, it is cost prohibitive to the company and not regularly available to wildland fire services.

   b. **Communicating medical needs using the Medical Incident Report (MIR) for each patient may help ensure the proper medical response is initiated.**

Although the MIR was completed for the "Red medical," dispatch only had secondhand information to pass on to the hospital. Additionally, the MIR may help to indicate what level of EMT is being requested on Line 5, Additional Resources/Equipment Needed.

c. **Clearly stating the resources needed using specific language will help dispatch communicate what is enroute, what is available, and expand their search for additional resources if not available.** During this incident, a "medic" was requested as the IWI IC believed he was requesting a paramedic for advanced care. While a paramedic was available, that intent was not received by the UAM, FMO, or dispatch. He was therefore staged at H12.

d. **Continued investment in both funding and training will increase the amount of available and well-trained EMTs available for medical emergencies.** The OMSP has a robust program, especially in Alaska where training and equipment is largely available for EMTs. The U.S. Forest Service EMS program is still developing and has no specific budget available for EMTs for training or equipping medics. Therefore, Forest Service resources mobilizing to DOI fires, such as those in Alaska, may not be as well trained or equipped as their counterparts. Both agencies should also consider standardized language for EMT typing as it varies from location to location.

2- **Large fire events such as dry lightning storms often require strategic management and staging of resources while operationally engaging multiple incidents.** It is not uncommon for resources, especially aerial resources, to be staged away from Incident Command Posts (ICPs) and assigned to where they can support the larger strategy. During this incident, one helicopter was assigned to the incident while the other two were supporting adjacent incidents, and their start times were staggered. This meant that the crews would be engaged in operations without a dedicated medical transport helicopter. This is also not uncommon on non-complex incidents; however, the risk is still there. Fire resources and leadership may consider some of the following lessons when engaging in remote fireline activities:

a. **Consider your Dutch Creek Protocols.** While the term "Dutch Creek Protocols" often elicits concern, it is also helpful in understanding that medical planning, reporting, enhanced training, communications, and refresher training are important aspects for response—especially when working in remote areas. When referencing these protocols, crews often understand that they need to be ready to respond internally to a serious accident where access and extraction will be immensely difficult. These protocols may be considered strategically before placing crews in remote areas.

b. **Having a predetermined IWI protocol and communications plan available for strategic and operational resources may help reduce the confusion during an IWI.** While AFS and the local IMT did have an IWI plan, it was not clearly

communicated to all resources. While the IWI IC was able to manage the incident, a developed and rehearsed plan could have reduced the amount of uncertainty during the incident.

c. **Using additional tools such as the Risk Management Assistance Dashboard ground evacuation times may help crews and IMTs determine evacuation and communications plans**. In highly remote locations, such as the Ninety-eight Fire, there are no evacuation times available, indicating that it will be longer than an hour for transport to definitive care.

d. **Later start times for crews on the line may help to ensure that they are working at the same time as aviation resources and are therefore more likely available.** While crews do not prefer to come on later in the day, it may be necessary if the risk is high and emergency plans are developed around aerial transport.

3- **Developing a medical in-briefing video as part of the in-briefing package may help crews and teams to understand what resources are available and what limitations exist when working with AFS in Alaska**. While other videos exist to enhance in briefing, there is nothing available for the OMSP and AFS-specific SOPs and capabilities.

4- **As airboats and jetboats are a critical resource in some remote areas, a comprehensive and standardized SOP for safety may reduce the potential for future incidents**. Boat operations are on an Emergency Rental Agreement (ERA) and do not have many requirements as to what their hazards are, especially for crew transport. Basic information such as the following may help units reduce the risk during operations:

a. **Developing a comprehensive Risk Assessment (RA) for boat operations, to include airboats and jetboats, may help in communicating hazards to passengers, crews, IMTs and others utilizing them.** While AFS has used boats for a while, a RA has not been developed to determine their operational risk.

b. **Developing an SOP or other administrative program tools will help to standardize and oversee boat operations.** A few things that were mentioned and developed by participants include but are not limited to:
   i. Accident reporting protocols
   ii. Coast waivers and registry
   iii. Standardized PPE
   iv. Requirements for contractor participation in briefings

c. **Understanding and communicating airboat safety may help reduce future incidents**. AFS worked immediately to release an RLS on airboat safety. (See the link below for more information.)

5- **Emotional and mental impacts can spread far and wide, especially with nationally available resources.** This incident on the Ninety-eight Fire had significant emotional and mental impacts for some of those involved. Following the incident, AFS and the Forest Service requested a peer support team to work with impacted individuals in both Region 5 and Region 10. Some of the resources below may help to expedite communication and understanding during emotional distress:

   a. **The 2023 updated stress continuum model may be an effective way to communicate YOUR level of stress** or help determine if those around you are in critical stress. (See the link below for more information.)

   b. **Understanding how to engage with CAP/CISM early may help to resolve and assist with additional concerns later.** Each agency has their own CAP or CISM program. (Below are some links for basic information.) To understand more, contact your local safety manager or CAP coordinator.

   c. **The Federal Wildland Firefighter Health and Wellbeing Program supports wildland fire personnel across USDA Forest Service and the Department of the Interior.** The BHO Program takes a comprehensive approach to improving the health and wellbeing of federal and Tribal wildland firefighters by working alongside existing agency services to provide additional support tailored to the unique experiences and needs of wildland firefighters. The Behavioral Health Officers are a component of that program and serve as a navigation resource to bridge firefighters to mental health care outside of acute (e.g. CISM) response. The program also recently launched a new wildland firefighter therapy service, which provides free access to a network of licensed mental health professionals with expertise in addressing the unique needs of emergency responders. (Please see the link below for more information about the program.)

   d. **The Employee Assistance Program may be an additional tool to help first responders cope during and after stressful situations.** All employees have access to EAP and are encouraged to reach out to their safety managers for more information. (See the links below for agency-specific EAP information.)

Additional Resources

Scan or click on the QR codes below for more information

AFS Handy Dandy

BLM OMSP

FS Medical Program

FS CAP

Stress First Aid

BHO Program

FS EAP Program

DOI EAP Program

WFSTAR Medevac Video

RMA Dashboard

Ninety-eight Fire RLS

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