

BC Wildfire Service

Facilitated Learning Analysis

Cameron Bluffs Wildfire

Tree Falling Accident

July 2023

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Executive Summary

On s.22
s.22

s.22 There was an increased amount of pressure relating to this fire as the terrain posed a great risk to crews and falling debris had caused the closure of the highway.

The Emergency Response Plan (ERP) that was set in place was effectively mobilized s.22

s.22

s.22 Many layers of leadership and systems were engaged during the events of the medical emergency response that coordinated, managed error and performed as intended.

Purpose of Facilitated Learning Analysis

The Facilitated Learning Analysis (FLA) is a tool meant to help learn from preconditions and human factors that led up to this event and how system standards can positively influence outcomes. This is done to nurture BCWS' strong learning culture and prevent future accidents. Special focus was placed on acknowledging error and actions in a non-fault-finding manner throughout this investigation.

This narrative was assembled based on individual interviews, dispatch log history, contemporaneous notes, a site visit and a facilitated dialogue session. It is told from the point of view of those on the ground, closest to the incident, and is written in a casual, conversational style that attempts to accurately reflect the headspace and impressions of those involved.

Introduction to Risk Based Analysis

Risk Based Approaches to supervision and decision making are applied to frame the assessment and mitigation strategies used to reduce error and accidents in high-risk work environments. Many factors of human and physical systems interact to influence the workplace behaviour and safety that can be identified, with applied controls for acknowledged risks.

Risk Management measures outlined in daily narratives are viewed as cumulative and assumed to be in effect for the duration of the incident narrative.

The criteria below are the selected factors that have been used to evaluate the systems risk of this specific incident.

Span of Control

The number of subordinates underneath a supervisor. Can be between 0-7, but ideally 5. This helps to limit workload. *

Worksite Hazards

Situational and physical hazards of a working area that create pre-conditions for error and accidents.

Qualifications

The knowledge, skill and attitude to successfully and appropriately complete job roles to established standards.

High Risk

Controls or changes to work plan are required to create safe workplace.

Medium Risk

Must actively monitor hazards while continuing normal operations.

Low Risk

Maintain awareness of hazards, but safe to work around.



Timeline of Events



Table of Characters

Danger Tree Faller	s.22
Danger Tree Faller / Assessor	Lou
Danger Tree Specialist	Yuri
IA Crew Leader / Strike Team Leader	Bo
Incident Commander	Bryn
IMT Safety Officer	Laine
IMT Operations Chief	Riley
Response Officer / Strike Team Leader / Division Supervisor	Quinn
Regional Wildfire Coordination Officer	Blair
RWCC Dispatcher	Sydney
RWCC Dispatcher	Kai

Saturday, June 3rd

Resources On Site:

- Response Officer

Daily Narrative:

A fire was reported around midnight on a bluff over the south side of Cameron Lake. Mosaic Timber was advised and sent a representative accompanied by BCWS response officer, Quinn, to find the fire. The two set out to locate the fire, determine its size, and investigate potential access routes that night using the roads above the fire.

Quinn completed an Initial Fire Report (IFR) for fire V70600, indicating it was perched on a rocky bluff overlooking Cameron Lake. The fire was approximately 0.5 hectares in size and displaying moderate surface fire behaviour (rank 2) in moss. Quinn remained onsite overnight but did not action the fire. He put in the request for crews to support in the morning.

Risk Management:

- ✓ Assessment of fire for resources and equipment
- ✓ Developing access plan for incident

Systems Risk:

Span of Control:



Resources
appropriate for
fire

Worksite Safety Risks:



Uneven ground and lack of
daylight

Qualifications:



Qualified individuals filling
required roles

Sunday, June 4

Resources On Site:

- 2 IA Crews
- Incident Commander (Level 4)

Daily Narrative:

The first-up Initial Attack (IA) crew was dispatched at 06:00. A second crew was dispatched at 09:00 in response to initial reports of active nighttime fire behaviour and difficult terrain.

Access was difficult and it took 45 minutes to hike in 600 metres due to forest regeneration and ground debris near steep slopes and large rocky outcrops. Burning material had fallen off several steep cliffs and landed in inaccessible terrain. Fire activity was progressing into a more aggressive surface fire (rank 3), with a large amount of spotting in dry, mossy areas. The weather forecast was for hot and dry conditions for the rest of the week.

The objective for the first day was to find workable ground at the bottom of the bluffs, which was difficult due to the complex terrain. Helicopters supported along the upper part of the fire, bucketing hot areas and filling the relay tank supported by IA Crews. Bo had started line scouting along the bottom of the steep cliffs that posed an access challenge for crews, which was difficult and slow going.

Zone Wildfire Coordination Officer (ZWCO) Bryn arrived at the fire by 15:00 to coach for this incident and support the Incident Commander (IC4), who was certified in less complex types of similar fires. He had to follow a flagged trail through open brush to arrive at the fire site, to meet with the IC to discuss his plans for the fire.

Resource planning showed signs of increasing complexity and this was expected to be an ideal fire for coaching and to conduct a fire review in support of the IC's leadership development.

Sunday, June 4

Daily Narrative Continued:

The fire was dependent on bucket support for water, which was going to run out quickly, as the medium helicopter supporting the incident had almost completed its duty day. Bryn and the IC worked on a plan to develop a stable line for water access up to a pond by the parking areas and ordered an additional helicopter to ensure that water for the day would last. This would pull some resources away from fire suppression to cut a trail but was a necessary step to develop a more reliable water source. Later that afternoon, while scoping out the water line along the bottom of the bluffs, Bo, the IA Crew Leader, encountered a near miss. He was mid-slope when a rock rolled down beside him, followed by a small rockslide from up on the bluffs. He reported this to Bryn and started making plans to leave and assess the fire edge from the bluffs in a safe area. All agreed night operations would be unsafe for workers and planned for IA crew 2 to set up camp and overnight at the fire site to be ready to work first thing in the morning. Bo's crew returned to base for gear and fuel.



Risk Management:

- ✓ Avoiding night operations
- ✓ Avoiding operations adjacent or directly below bluffs
- ✓ Ensuring cleared access and egress + hose trail

Systems Risk:

Span of Control:



Resources
appropriate for
fire

Worksite Safety Risks:



Steep terrain, rolling debris, bluffs,
large diameter timber

Qualifications:



Qualified individuals filling
required roles

Monday, June 5

Resources On Site:

- 3 IA Crews
- Chainsaw Specialist
- 1 Intermediate helicopter
- Incident Commander
- IA Crew Supervisor
- 2 Medium Helicopters

Daily Narrative:

Additional crews were sent as part of an IA module with a Chainsaw Specialist for falling support. In this case, the IA module was comprised of four IA crews, for a total of 16 firefighters. The fire was now 20 hectares and burning down slope into very challenging terrain. As the morning progressed, the fire was quickly transitioning into a Type 3 fire. To respond to the emerging complexity, Bryn assumed the role of Incident Commander. Hot and dry conditions were expected to persist for five more days, and the fire was burning aggressively, exhibiting consistent behaviour both day and night. Rolling trees and logs carried the fire further downhill throughout the day. Air support continued with multiple helicopters and an Air Tanker Request to improve the line along the top of the fire. The pace had picked up significantly.

Bryn knew this would be a hazardous fire and was clear that work from below required safe fire control lines, removed from the bluffs, to protect crews from rolling rocks and trees. Bo's crew was assigned to work the bottom end and see what could be established for water delivery and access. A heavy focus was placed on remaining aware of any trees or falling debris. However, more falling debris prompted him to make the decision to pull away from the bluffs. It was clear the fire was going to continue to shed debris on steep slopes. Winds picked up in the afternoon and the fire was now growing rapidly. Bo estimated that the fire had moved significantly down slope and was now burning roughly 200 metres above Highway 4.

"It was pretty unnerving to have a tree come down on the spot you were standing moments ago." – IA Crew Leader

Monday, June 5

Daily Narrative Continued:

The fire's proximity and potential to reach the highway was a growing concern. Bryn placed a request to call in a representative from the Ministry of Transportation (MOTI) and RCMP. Their job would be to assist a BCWS representative to ensure communication and coordination of any traffic



Fire activity below south staging

control along this critical roadway was managed for public safety. The plan was to assess what could happen if the highway was impacted by large debris and to consider the option of a single or full-lane closure of Highway 4.

Risk Management:

- ✓ Avoiding operations directly below bluffs
- ✓ Establish Traffic Control measures
- ✓ Ensuring cleared access and egress +hose trail
- ✓ Placing appropriate representatives in key positions

Systems Risk:

Span of Control:



Resources beginning to grow,
need for expansion of
leadership

Worksite Safety Risks:



Steep terrain, rolling debris, bluffs,
large diameter timber, proximity
to highway

Qualifications:



Qualified individuals filling
required roles

Tuesday, June 6

Resources On Site:

- 3 IA Crews
- Incident Commander
- Unit Crew
- 2 Intermediate Heli's
- 2 Medium Heli's
- 1 Skimmer Group

Daily Narrative:

The fire expanded overnight to an estimated 50 hectares, with significant downslope growth that spread wide across the slope. It seemed likely the fire would reach Highway 4 sometime during the day. Late that morning the RCMP, in consultation with BCWS, decided to temporarily close the eastbound lane of the highway out of concern for public safety. Soon after, MOTI and RCMP staff started to receive reports of small rocks being found on the highway. At that point, the decision was made by MOTI to completely shut down Highway 4. Not long after this call was made, large debris began to hit and cross the road.

It was also around this time that Bryn was starting to feel his maximum span of control was being reached. Communications were busy and it was becoming impossible to stay informed of all critical information related to the incident. It was hectic, but the leaders he had in place



Debris Blocking Highway 4

were working well as a team and trust in their judgement was high. This included representatives supporting traffic, Air Attack Officers coordinating aviation when present and pilots with high levels of experience. Operations had split the fire into a top and bottom structure; where the bottom of fire along Hwy 4 was being led by Quinn and the IA crews trying to establish a safe anchor point and the newly arrived unit crew supervisor was set to work on the upper section on the primary containment objective

"For every phone call I took, I would miss two important radio transmissions, attached to decisions." - Incident Commander

Tuesday, June 6

Daily Narrative Continued:

There was now an orchestra of aviation working on the fire with helicopters and fixed-wing skimmers keeping up suppression efforts with effective coordination of experienced pilots by the Air Attack Officers offering planning support. The busy airspace and limited visibility made reconnaissance flights challenging and limited to low elevations.

With the unit crew placed at the top of the fire and the IA crews were working the bottom, the dividing line was safely accessible terrain which presented a large gap. Working solely from the top down was too hazardous as the bluffs were steep and abrupt, and working from the bottom up presented its own set of complexities such as rolling debris and danger tree assessment challenges. It was clear to all that this was going to be a challenging fire to manage safely. The IA crews were regularly hearing trees fall near the area where they were working with an IA crew leader reporting a near miss where a tree fell towards the stump within minutes of a tree he just felled.

Bryn, when ordering resources for the fire in consult with the Regional Wildfire Coordination Officer (RWCO), requested first aid units for the bottom and top ends of the fire, four fallers capable of working in coastal timber and an Incident Management Team (IMT) to support the increasingly complex situation. A fire behaviour assessment validated the potential for this fire to grow to 2,000 hectares and it was evident this was going to be a complex incident.

Risk Management:

- ✓ Establish elevated Command and Control structure for incident
- ✓ Avoiding operations directly below bluffs
- ✓ Adjust Emergency Response Plan to compensate for Hwy closure
- ✓ Appropriate Supervisors in place
- ✓ Requesting specialized resources for falling
- ✓ Traffic control
- ✓ AAO interim Heli-Co

Systems Risk:

Span of Control:



Resources beginning to grow, IC filling multiple roles, beginning to red line

Worksite Safety Risks:



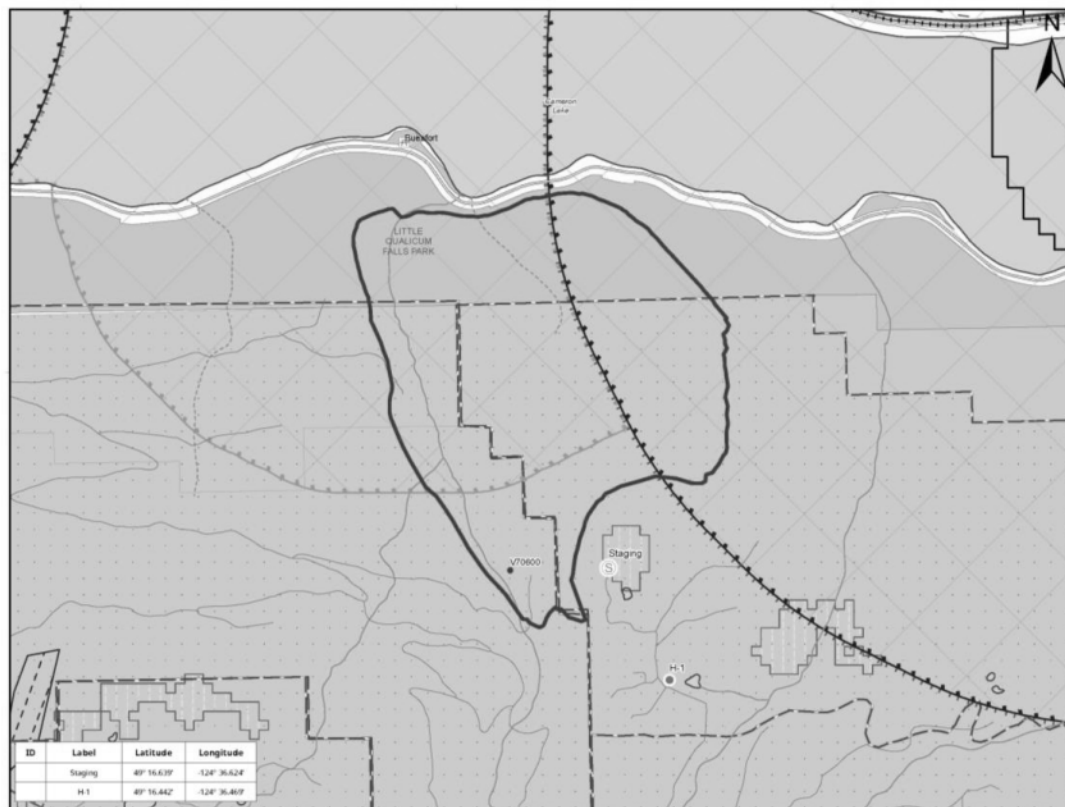
Steep terrain, rolling debris, bluffs, large diameter timber, proximity to highway

Qualifications:



Staff are qualified for tasks
Rolls going unfilled due to lack of resources

Tuesday, June 6



**Pictured above:
Operational map
from June 6th**

**Left: Aerial shot of
Cameron Bluffs
fire**

Wednesday, June 7

Resources On Site:

- 3 IA Crews
- Unit Crew Alpha
- 1 Skimmer Group
- MTC Medics
- Incident Commander
- 2 Int Heli – 2 Med

Daily Narrative:

The fire continued to grow significantly overnight and was now 140 hectares. It had reached a section of ground identified as the first line of containment for the top of the fire, directly adjacent to the initial staging area. Fire behaviour was presenting as aggressive surface fire with pockets of candling trees, where helicopters were tasked to continue bucketing the fire. Intermittent crown fire was observed on the steeper slopes below .

The Service Request for professional contract Danger Tree Fallers with coastal experience was placed by the Logistics Section at the fire centre. This order followed the “closest, best” method of resource selection from the three providers located within the Mid Island Fire Zone. The timber was assessed as very large and was situated on complex, steep slopes along the bottom of the fire.

Everyone on the fire was operating at maximum capacity but still managing to make effective safety decisions to reduce exposure to tumbling debris and aggressive fire. The focus was placed on what could be achieved in a safe manner and terrain that would avoid exposure to upslope hazards. Bryn wanted to ensure the safety of working areas was supported with qualified fallers and BCWS fallers were assigned to cut trail and would not be asked to fall many trees.

“When Placing orders, we follow the process as outlined in the rotation unless told otherwise but details on the fire are rarely given beyond directions”
- Logistics Officer

Wednesday, June 7

Daily Narrative Continued:

Aviation resources continued to be supported by Air Attack Officers who coordinated with experienced helicopter pilots to keep airspace organized. The pace of the incident remained intense, but the team communicated well, and leaders remained adaptable.

The IMT planned to received their first in-person briefing this evening at 19:00 with a planned turn over for Friday morning. The Plans Chief who was local to the area had started up on organizing for this meeting and received a flight of the fire to gain awareness. A paired down IMT had arrived, with only six members at this time, and the rest arriving the over next few days. The briefing clearly laid out the complexities involved on this fire. Terrain, coastal timber, crew safety, and the closure of Highway 4 were all highlighted as critical points of awareness. Additional complexities posed by Mosaic cut blocks and other values around Cameron Lake were also brought to the team's attention.

Risk Management:

- ✓ Avoiding operations directly below bluffs
- ✓ Communications and Logistics for a community with blocked access
- ✓ Establish Airspace management
- ✓ Requesting more resources as fire grows
- ✓ IMT planning to support expanded operations
- ✓ Adjust Emergency Response Plan to compensate for Hwy closure

Systems Risk:

Span of Control:



Resources required continuing to grow, IC filling multiple roles, beginning to red line

Worksite Safety Risks:



Steep terrain, rolling debris, bluffs, large diameter timber, proximity to highway

Qualifications:



Staff are qualified for tasks
Rolls going unfilled due to lack of resources

Thursday, June 8

Resources On Site:

- 3 IA Crews
- MTC Medics
- Danger Tree Faller/Assessor
- 2 Unit Crews
- Structure Protection Specialist
- IMT

Daily Narrative:

The upper staging location had become compromised by fire overnight, and a new staging location had to be established near an old ski resort. The fire was continuing to exhibit aggressive behaviour, moving up drainages and cresting the top of the hill. Bryn, and now 2 Unit Crews, started to make a new plan for containment up top that involved a planned ignition. The goal of this ignition was to box the fire in along existing roads. Crews would use ground ignition tactics that would create a new anchor point to re-establish work from.

The IMT began work at the established Incident Command Post (ICP) at the Qualicum Fire Department and were getting ready to take over the fire completely for the next operational day.

Contract fallers, Lou and s.22 arrived onsite for their first fireline day. They had been paired up for this fire and were still getting to know each other, with Ray having Coastal falling experience and Lou being experienced on wildfires. Their assignment was to help the firefighting crews with the danger tree assessments (DTA) and danger tree falling (DTF), specifically on the east end of the fire adjacent to Highway 4.

Bo led the Initial Safety Meeting with Lou and s.22 including a walk-through of the area where crews were planning work. The faller pair's first assignment was to establish a fuel-free line and mitigate any tree hazards. The area was in challenging terrain, surrounded by very tall and large Douglas Fir old growth with equally large Western Hemlock and Cedar understory. Root and stem rot was prevalent in the forest but the use of No Work Zones (NWZ) in areas of actively burning trees allowed for a level of confidence in their plan to avoid hazards. Bo mentioned that quite often trees fell within one hour of the flame front passing. They all estimated that a burning danger tree would be on the ground by the next day and NWZ's were the best tactic.

In the early afternoon, IMT Safety Officer Laine arrived at the NE flank of the fire. As he arrived, he met the fallers s.22 and Lou, as they were exiting the bush for the day. They chatted briefly regarding the briefing they received, objectives and tasks for the day, and safety. Laine noted neither faller was outfitted with appropriate flame resistant (FR) gear.

"The fallers were great at helping us build a plan and determine the need for No Work Zones to let hot trees burn down on their own"

- Crew Leader

Thursday, June 8

Daily Narrative Continued:

Laine instructed them to obtain proper personal protective equipment (PPE) for the following day. This prompted a [Notice to Comply](#) to be sent to the company and delayed falling/assessing operations for the crews in this location until this contract and safety obligation was met.

In Laine's conversation with danger tree assessor (DTA) Lou, they talked about §.2 having coastal falling experience, and Lou who had more experience with falling on fires. He mentioned that he had experience with large-diameter timber, but not the coastal experience as his partner. Lou shared that he was mostly there to complete assessments, while §.2 would do the falling.

Laine then met with Strike Team Leader, Quinn, where they discussed making blasting available for uncuttable hazards. They also discussed the ordering of a boat for crews to be able to continue working the west flank of the fire without having to pass underneath the hazards along the highway.

He then met up with the identified BCWS/MOTI Liaison and they walked the highway, assessing and checking out the logs that had fallen on the road. Laine remarked that the fire at the bottom of the slope was a high-hazard area with steep terrain, large-diameter timber, and a completely burnt-out [duff layer](#). The awareness of the potential hazards prompted a resource request for a Danger Tree Specialist and a Falling Coordinator that could blast trees. .

The Emergency Response Plan (ERP) was being reviewed by the safety officer with consideration given to the helipad locations. A helipad site was located on the beach at Cameron Lake about 500 metres from the fire's edge.

Risk Management:

- ✓ Establish indirect operations plans
- ✓ Appropriate Supervisors in place
- ✓ Requesting more resources as fire grows
- ✓ IMT
- ✓ Emergency Response Plan
- ✓ Medevac equipment inspection
- ✓ Equipment inspection of fallers
- ✓ Plan for Alternate means for falling

Systems Risk:

Span of Control:



Resources required continuing to grow, IC filling multiple roles, to red lining

Worksite Safety Risks:



Steep terrain, rolling debris, bluffs, large diameter timber, proximity to highway, no medical plan

Qualifications:



Requests put in for qualified individuals to fill identified roles

Friday, June 9

Resources On Site:

- 3 IA Crews
- Strike Team Leader
- MTC Medics
- 3 Unit Crews
- Division Supervisor
- Incident Management Team

Daily Narrative:

The fire had grown to 208 hectares and was actively burning in the cut blocks above the cliffs in the south division. The bottom portion was not growing, and the general weather was slightly cooler. Another Unit Crew was starting their first operational day on the line to work on the west side of the fire.

The fire was fully turned over to the IMT in the morning. As a result, Bryn shifted into a Branch role for his last day on the fire and was feeling much more in control now that aviation and command responsibilities were passed on. He could now focus on a few operational turnover plans for the IMT before days off. He shared that it was nice to catch up on the many small tasks left uncompleted from the previous few days. He was now able to focus on setting up the onsite resources for success before he left for days of rest.

Laine was focused on the medevac plan and in contact with Coastal Fire Centre Regional Air Branch Coordinator (RABCO) to clarify the availability of stretcher kits in the helicopters onsite. They adjusted the plan to use the medium bucket machine for medevac operations while the 206L helicopter would return the next day, June 10, with its stretcher kit. Crews excavated a beach helipad and an additional helipad closer to the staging area. Basket stretchers were suggested for the west side of the fire near the road pad on Hwy 4 since it was shut down. Victoria General Hospital was identified as the location for all major incidents. It was also noted that West Coast Hospital in Port Alberni was only to be used for minor incidents.

“Finally having the bandwidth to complete a task and turnover was a relief.” - Bryn

Friday, June 9

Daily Narrative Continued:

The faller pair arrived back onsite in the morning with proper FR shirts but had not been able to find pants. As a result, they were sent back into town for a second time to obtain appropriate clothing. Later in the afternoon, the fallers returned to the fire with all necessary PPE.

Light rain helped cool some of the fire behaviour and conditions began to improve such that fire behaviour became less aggressive, with smouldering ground fire and small pockets of open flame. The DTAs continued to discover danger trees with the use of No Work Zones and fallers to remove hazards .

Risk Management:

- ✓ Avoiding operations directly below bluffs
- ✓ Appropriate Supervisors in place
- ✓ IMT long term planning with MOTI
- ✓ Helicopter Pad planning for ERP
- ✓ Faller Plan development
- ✓ No Work Zone use on active burning trees

Systems Risk:

Span of Control:



IMT takes over, span of control reduces to appropriate size

Worksite Safety Risks:



Steep terrain, rolling debris, bluffs, large diameter timber, proximity to highway, medical plan in place

Qualifications:



Qualified individuals filling required roles

Saturday, June 10

Resources On Site:

- 5 IA Crews
- 2 Danger Tree Faller/Assessor
- IMT
- Division Supervisor
- 3 Unit Crews
- Strike Team Leader
- MTC Medics

Daily Narrative:

The morning of s.22 was significantly cooler than days prior. The light rain from the previous day meant fire activity had subsided, and direct attack was now a viable tactic. The objective for the day was for one of the Unit Crews to start a 100-foot mop up on the west flank, beginning at Highway 4 and moving up slope. The IA module of crews had a similar objective along the east flank. This was also the first day for Yuri, the Danger Tree Assessor, on the fire.

Lou and s.22 were tasked with assessing and working along the highway. The idea was to manage the dangerous trees so crews could get in to suppress the fire and cleanup planning could begin for the Hwy 4 corridor. Ignition operations had been successful along the south flank of the fire, and containment was progressing well along established lines.

Early in the day, crews identified a five-foot, burning Douglas fir log that was creating a lot of smoke close to the fire edge, near the highway. Crews wanted to extinguish this log. The initial DTA sweep identified a dangerous Douglas fir tree half height snag with a defect that would have to be removed before crews could access the area for suppression. The DTA/DTF pair were brought in to deal with the situation and mitigate the hazard. s.22

s.22

Risk Management:

- ✓ Reassess Danger Trees and NWZ
- ✓ Planning for Danger Tree Management
- ✓ Faller Inspections

Systems Risk:

Span of Control:



IMT in charge, appropriate span of control.

Worksite Safety Risks:



Steep terrain, rolling debris, bluffs, large diameter timber, proximity to highway, medical plan in place

Qualifications:



Qualified individuals filling required roles.



s.22

Accident Perspectives



Accident Perspectives

The Perspectives:

Danger Tree Specialist & Strike Team Leader

Yuri and Bo were in the field and had both had discussions with the faller prior to the incident. Yuri was tasked with completing an assessment on the faller pair that morning and was only about 150 metres away when the accident occurred. They were some of the first to attend the accident site and jumped into action to help the injured faller.

Division Supervisor

The Division Supervisor was on the fire from day one and was very aware of the complex ground this fire covered. He coordinated the accident response and played an important role in communication around the incident.

Regional Wildfire Coordinating Centre

The RWCC received the call that a Danger Tree Faller had been injured in the field. The staff quickly prepared for the incoming radio transmissions and worked to relay the critical information from the Medical Evacuation Request Form to the BC Emergency Health Services paramedics.

IMT Safety Officer

In the days leading up to the accident, the IMT Safety Officer refined the Emergency Response Plan so procedures were updated and in place in the event of an accident. He also worked to gather information after the accident and alerted the appropriate individuals.

IMT Operations Chief

The IMT Operations Chief responded to the incident and noted that the crews and responders appeared to be working efficiently and effectively. Being in a leadership role, he remarked on the importance of showing calm for others in a situation like this. He also actively managed the exposure of the staff to a traumatic injury and made efforts to minimize impact to their mental wellbeing.

Danger Tree Specialist (Yuri) & Strike Team Leader (Bo)

Yuri arrived off the ferry the morning of the §.22 and was enroute to fire V70600 to fill the role of Danger Tree Specialist and get his assignment. Yuri arrived at the ICP in Qualicum to check in with the IMT, then proceeded to the fire for a briefing.

When Yuri arrived at the fire's main staging, he received a briefing from Quinn, Division Supervisor, and Safety Officer Laine. Yuri's first assignment was to check on the faller pairs, ensure they were qualified and supported in the falling plan along Highway 4, and develop a Danger Tree Plan to manage risk of upslope hazards along the road. Yuri and Strike Team Leader Bo met up with the first set of fallers, Lou and §.22 to discuss an area that crews wanted to access and suppress a large burning log. Lou had some questions for Yuri regarding the DTA process and the identified area. Bo mentioned that it had a few highly visible "Hollywood smokes" and he wanted to put them out as they were an "eye sore." Bo and the crew continued to assess for danger trees in the area, plan hose trails and move up slope to give the DTS and faller pair their space to work.

While assessing the area §.22 saw a 22-inch-diameter (Class 6) half height Fir danger tree that he described as having a "feeble broken top". This presented a danger for potential work in the area. Yuri and the fallers discussed how to best mitigate the hazard so crews could work in the area safely. They explored the options of using pusher trees, also known as "bullets," and identified multiple options for this in the area. §.22 and Yuri developed a plan to cut a smaller hemlock tree upslope to knock off the defective area of the Fir danger tree. Other pusher tree options were also identified. All agreed that working under the overhead hazard of the Fir snag was a bad idea.

Feeling comfortable with this plan, Yuri left the area to give the faller space to work as he knew that sometimes extra eyes can cause more stress and he was planning to work with the pair for the day. Yuri and Lou went about 150 metres away from the falling area and continued assessing the work ahead. Yuri liked the way Lou and §.22 were communicating and thought that, from the few trees felled earlier that day, §.22 work was meeting the expected standard.

Yuri and Lou had left the falling area. One tree was felled, and §.22 continued to make cuts. The sawing noises could be heard when §.22 suddenly called out "#\$%& pinched on a brand-new bar!" §.22 then asked Lou if he could come back to lend him his saw. Lou returned to §.22 location to see that he had been removing a 24-inch Hemlock out in front of the Fir snag. He noticed that the tree had sat back hard on §.22 saw and was now leaning towards the Fir snag. Once the power head was off the pinched saw, §.22 decided to place falling cuts in the Fir danger tree and move to an 18-inch Hemlock further back. The idea was to push the other two trees over using the Hemlock, which was going to require some heavy wedging.

Bo noted that he could hear §.22 carrying out heavy wedging on a tree at this time. The sound continued for a while, and it was later revealed that there were multiple wedges driven into the tree. About five minutes after this, he heard what sounded like multiple falling trees.

§.22 had missed the push and brushed the two cut up trees; the situation was becoming increasingly more frustrating. Next, he decided to use the cut-up Hemlock he had pinched in earlier, that was leaning back towards the Fir danger tree, as a pusher tree. He hoped to bring the snag back, away from its current lean by re-falling it as well. He placed falling cuts into the Fir snag using the original back cut as a new undercut and establishing a new back cut. Afterwards, he moved to the Hemlock and placed re-falling cuts three feet above the original cuts, towards the Fir. The undercut went well; however, mid-way through the back cut the stump split, shifted away from the fir snag and started to fall early. This released the Fir danger tree from the branches of the Hemlock, which then proceeded to fall towards §.22. He moved back, away from the stump into an escape route 10 feet away, which was blocked by two logs. He became trapped there as he watched the danger tree fall towards the Hemlock stump and deflect sideways, towards him.

Within 30 seconds of the trees hitting the ground, both Bo and Yuri heard Lou on the radio stating that there had been a falling accident and first aid was required.

Yuri, Bo, and his crew quickly responded to the accident site. It was immediately clear that §.22

Bo contacted his Division Supervisor and advised him that there had been an accident and medical aid was needed. Bo quickly felt the pressure of being the person responsible for directing the ERP at the site, but the team was responsive and communicated well as he instructed the available IA crews to collect the first aid equipment from the trucks. Bo supported the first aid attendants as he collected patient information for the Medical Evacuation Request (MER) to relay out to the RWCC. Yuri had arrived and assigned Lou the task of cutting the trail as a distraction from the scene and to ensure first aid was on task.

Yuri recalled six to eight people arriving quickly to respond to the situation, either by cutting trail or attending to §.22. The first aid attendants were busy preparing the SKED stretcher by placing it into a hollow of the best flat ground available and using everyone available to shift §.22 onto the flexible Vacuum Splint. Staff helped to make §.22 as comfortable as possible before making the splint rigid and securing the SKED. This took about 20 minutes, after which the group started moving toward the road.

Accident Site Photos



Left: Position the faller was in when re-felling trees, showing split of the tree and position of deflected log from faller's perspective of the accident.

Right: Evident rot in Hemlock tree that resulted in a weak stump. Char from tree strike to deflect the log towards faller in top of stump.



Division Supervisor (Quinn)

The call came in by radio at noon that there had been a falling accident. Quinn was in transit by boat around the shut down highway and had to slow down to listen, but it was clear that a ^{s.22} call was made from the crew onsite and a faller had been injured. Quinn called Operations to report the incident and share requirements for transport. He proceeded to the beach near the incident site to coordinate with the rest of the people on scene.

Quinn instructed all activities on the fire, including nonrelated radio transmissions, to stop and asked for workers to move to staging areas should they be required for support of the medevac. He then tasked Bo with completing the Medical Evacuation Request (MER) form and started to take control of the communication with the Fire Centre. He began to communicate over repeater to advise Fire Centre of the patient status and plans for transport. Quinn was having a hard time with his radio transmissions, and he had to repeat himself several times.

Once onsite, Quinn noticed the injured faller's partner, Lou, was cutting trail. He asked a few IA Crew members to assist Lou to ensure this was completed quickly. The other two Crews started to get the backpacks for the SKED and other first aid equipment to the injured worker to package and transport. All members of the IA module were engaged in the response. Quinn also received a call from the Unit Crew working on the other end of the fire that they had a trained paramedic available. Quinn sent the boat over to transport this highly trained resource to assist.

The established plan was for BC Wildfire crews to manage all the bush work for packaging and transport of the injured worker, while the contracted Emergency Transport Vehicle (ETV) transported from the pavement to a higher level of care with the paramedic onboard. Once the helicopter identified for medevac arrived Quinn instructed the pilot to shut down and prepare for transport. The two discussed the fuel and transport details, and it sounded like a straight flight to Victoria was not going to have sufficient fuel.

The patient was loaded into the ETV and was driven to the helipad, about a kilometre away, by an IA crew member while the three first aiders performed their duties. To those on scene, it felt like it took an excessively long time to move the stretcher out of the ETV due to prepping the patient for transfer. s.22

s.22

The next objective was to move down the beach between the ETV and helicopter, which resulted in more discomfort when passing the SKED over some logs. The pilot took control of the patient being loaded into the machine and was very organized throughout the operation. The pilot provided good preparation and planning, was very calm and organized, and ensured that the set up for his part of the transfer was efficient. Throughout the entire experience, the faller was being comforted and assured that he was in good hands. While this is a critical incident and intervention needed to be swift and smooth, it was important that a level of verbal reassurance and comfort in a frightening time was provided to the individual.

Once the patient was safely enroute to the hospital, Operations directed all resources except for Quinn, the Safety Officer, the falling partner and DTS to go to the Fire Centre and complete a debrief of the incident.



Pictured Above: Fire Activity on Saturday, s.22

Regional Wildfire Coordination Centre (RWCC)

At 12:14 in the middle of the day Coastal Fire Centre RWCO, Blair, was alerted to an accident that had just occurred on fire V70600. The IMT Incident Commander had reached out via text to give the Fire Centre, particularly Dispatch and Operations, heads up that a faller had been injured by a tree strike and a call will be coming in shortly. Upon receiving the text, Blair went to the dispatch room, explaining the situation and assigning clear roles to each of the dispatchers. He assigned Sydney, a dispatcher on deployment from another Fire Centre, to take the transmission of the MER, and Kai, a local dispatcher, to relay information to the BC Emergency Health Services (BCEHS) via phone. Blair then requested the other two dispatchers stay quiet, available, and out of the way to avoid congestion. He then closed the doors of the dispatch room and waited for the call.

Shortly after, the call was received and a request was put in to launch L1, the identified Medevac machine, from the Coastal Fire Centre. MER info was then relayed from Strike Team Leader Bo to Sydney. As the information was being received, Sydney logged the updates into dispatch. From these logs Kai, who was on the phone with BCEHS, could read them directly and provide clear information regarding the status of the injured faller. Blair asked the dispatchers to put an emphasis on the mechanism of injury as he felt that was a crucial piece in alerting paramedics to the severity of the situation. Sydney noted that the communication line was poor and that she had to ask Bo to repeat a few times, which she felt took up extra time in a critical moment.

Victoria was identified as the appropriate hospital for the care the individual required. Kai was informed by the hospital that they have a helipad, but that the Medevac machine being used was not cleared to land there due to engine requirements. They pivoted and planned to transfer the patient to BCEHS before arriving at hospital. They began to discuss transfer locations.

Blair suggested the Medevac fly the patient back to the Coastal Fire Centre, where he could be transferred to BCEHS care. This was relayed to BCEHS by Kai. They then suggested the Medevac fly to Ascent, where Critical Care paramedics were stationed. The decision was made by BCEHS that it would be best for the Medevac machine to fly to Ascent and complete the transfer there.

The decision was relayed to Coordination Centre (CC) Ops at the time of the incident, who then let Blair know what the plan was. The Manager representative on duty was informed by Blair who then called the IMT IC back and instructed him to call WorkSafeBC and report the accident immediately.

There was a tense period in the dispatch room after the transfer, as the BCEHS Air Ambulance stayed at the Ascent hanger for s.22

s.22 RWCC staff noted that they were

unaware that intervention was being completed prior to take off and there were feelings of frustration regarding the delayed lifting to hospital. The communication into the Fire Centre was no longer a requirement as the BCEHS was now in control. This was noted as a source of stress for those staff directly involved. Eventually, Blair did receive an update that s.22

s.22 which he shared with those involved.

Immediately after the incident, the two dispatchers who were not directly involved checked in with Kai and Sydney to see how they were feeling. s.13; s.22

s.13; s.22

s.13; s.22

. Blair then closed the doors to all sections in the RWCC and asked any staff not directly involved to stay out of the dispatch room and to keep comments to a minimum.

RWCC Logistics, who had been responsible for procuring the Faller pair involved in the critical incident was taking her lunch break shortly after the incident, when she was contacted by the company owner. He informed CC Logistics that he had been told one of his employees had been seriously injured and was asking for details. All she was aware of and provided at the time was that a Medevac had occurred on fire V70600. The company owner provided information on blood type, allergies, and let her know he was working on emergency contacts.

After this, CC Logistics attempted to contact Blair to give details, but there was no answer. She then moved on to calling RWCC Operations to pass this information along to BCEHS via dispatch.

IMT Safety Officer (Laine)

At 12:01 IMT Operations was talking with Safety Officer Laine when he got the call that a faller had been injured and it would be s.22 [REDACTED] On the way out to the scene with Riley, Laine phoned the Coastal Fire Centre and instructed them to launch the Medevac machine to the northeast staging helipad. The stretcher kit had been made available that morning and was available for the time of the accident. Fireline operations were completely shut down after this and radios went silent.

Enroute to the accident scene, the severity was still unknown to the Safety Officer, who had only heard that there was an RTC as the result of a tree strike. He could hear Quinn calling it in over the radio but noted that it was very broken. As he arrived onsite, he advised Quinn to keep his transmissions short and clear. Also, by this time the injured faller was already being transported out of the bush (which was within 20 minutes of the actual accident). Laine began to make sure trucks were cleared from the roadway and gathered those not directly involved to a bystander position. He then asked that some of the IA module go and standby at the helipad and wait for the MTC and help unload patient and carry to the helicopter.

Once the MTC had left the site where the patient was loaded, Safety Officer Laine tried to gather the remaining personnel together for a quiet moment. He wanted them to relax a bit to allow the adrenaline to come down. He then started asking them questions about themselves in a calm manner as he didn't know everyone there.

Once he knew who was first on scene and had been the direct FA, he started assigning by standing crews to tasks away from the fireline, to keep them occupied. Laine then proceeded to discuss the series of events with those directly involved and to get a clearer picture of what had happened. He tried to leave a bit of time between the patient leaving and asking questions relating to the incident. However, he wanted to get the information while it was still fresh in everyone's mind. He then returned to the accident scene where he began taking photos and flagging off access. During this time, he also called the IMT IC and asked if he could phone WorkSafe and inform them of the incident.

He was then contacted by WorkSafe and asked for him to be onsite for their arrival, as well as for a manager representative to come out and be available for staff.

IMT Operations Chief (Riley)

Operations Chief Riley was at the Incident Command Post in Qualicum discussing safety and objectives with the team when, around 12:00, the call came from Quinn that a faller had been hit by a tree. Immediately being notified of a severely injured worker is a shock and Riley could tell Quinn was stressed about the incident.

Riley decided the fastest way to the site would be by truck and immediately started driving. Thoughts of what could have happened and how things were playing out had him rushing to offer support. s.22

s.22

s.22

Once onsite, Riley observed quickly that the IA crews conducted their first aid work with highly effective communication of critical information. He noted that their directive work was very self-organized. His assessment of the highly effective team made him feel very comfortable. This allowed him to maintain a directive role while showing calm for the sake of those around him.

Riley felt no need to get in the way but remarked that it was odd to sit back and look at the small coordination details required of the Operations Chief during such a critical incident. At this point, Riley noticed the large number of bystanders and became concerned for their exposure to a critical incident scene and first aid response. These individuals were gathered back to a safe location a distance away. The sense of urgency to move along while watching the delay in transport started to cause some anxiety for him and others despite recognizing the need for first aid to perform their duties.

Soon after the helicopter departed and people were starting to settle down, Riley decided to ensure that people would receive the proper debrief required for an incident like this. He then instructed everyone to return to the Fire Centre. The mental wellbeing of staff was present in his mind, and he did not want to put them into a hazardous situation with the mental distraction of the critical incident so operations for many was stopped for the rest of the day.

The people that remained were informed that a WorkSafeBC investigation team was enroute to start collecting information on the accident .



Successes



Successes – Quick Look

Situations like this, when they do occur, are important that staff are capable to respond effectively and efficiently. Through the actions of BCWS staff and Mobile Treatment Centre (MTC) medics onsite, successful first aid occurred that contributed to the quick transfer of the patient to critical care paramedics. We can learn from the actions of our coworkers and carry them into the field with us in the future.

Emergency Response Training

How does training for low-frequency events like this one allow for quick response to an injured person?

Emergency Response Plan (ERP)

How does the creation and daily evaluation of the Emergency Response Plan help in a situation like this?

Medical Evacuation Request (MER) Form

How does the MER form allow for clear communication to first aid professionals?

SKED and Vacuum Splint Use

What are the benefits of the SKED and vacuum splint in a bush rescue?

Critical Incident Stress Management (CISM)

Why is it so important to take care of mental health after an accident like this, and what does that look like?

Internal Higher Level of Care

How did the actions of the BCWS staff and MTC medics aid the transition to critical care paramedics?

Successes

“By the time I got down the hill and to the accident site, everything was well under way and^{s.22} was well into being moved into the SKED. It was a seven-minute hike!”

— Crew Leader

Emergency Response Training

Emergency intervention for this incident was quick and effective, with the injured faller being pulled out of the bush within 20 minutes of the tree strike and successfully transferred to BCEHS within 58 minutes. This fast action would not have been possible without staff training and the multiple safety systems and protocols in place.

The successful response to this incident underscores the importance of training and preparation for low-probability/high-consequence events. Many of the people involved participated in training for a similar situation, with MER process drills between crews and dispatch, three weeks prior. They reported that this practice helped to minimize stress and ensure rescue efforts were successful. This intentional, 'practice how you play' initiative driven by the dispatch and crew staff was a major contributor to a positive outcome and effective MER use.

Training for critical response situations helps the people involved to clearly understand their role on site and how best to assist. This allows staff to quickly respond to critical communications and reduces some sense making error.

Staff working on the sidelines of the incident also contributed to success by stopping any high-risk activities and preparing to support if needed.



Successes

“The best thing about this was that no one had to do everything perfect, everyone just had to do one or two things well.” – Bo (IA Crew Leader / Strike Team Leader)

Emergency Response Plan (ERP)

All new workers on site must participate in a review of the ERP as part of the Initial Safety Meeting when they arrive on site. The ERP is a component of the Incident Action Plan (IAP), which can be referenced in the event of an emergency. It is a critical tool for successful coordination of an effective response.



The Incident Commander and Safety Officer constantly reviewed and adjusted the ERP, which was tailored to the specifics of the site. This was critical for quickly mobilizing available resources as the incident evolved. This incident had three separate plans for each work location based on ground and air transport constraints.

Occupational First Aid 3's had site-specific plans for equipment and medical emergency resources, which allowed for quick response, communication and handover plans for higher level care on the incident.

It was highly valuable for responders in the field to know regional hospital locations and travel times in order to make informed logistical decisions. This event reinforces the importance of coordination with BC Emergency Health Services (BCEHS) who are the decision makers for access to higher level care and longer distance transport.

Successes

“I have been part of many medevacs in the duty room and have never seen one go this smooth.” – RWCO

Medical Evacuation Request (MER) Form

The use of the MER was identified by several individuals as beneficial for the efficient transfer of information regarding the injured party. It was recognized as a simple and clear way to relay information from the incident site to dispatch, who could then share direct answers to BCEHS.

One of the dispatchers, who was on the phone with BCEHS at the time of the emergency response, had led a MER training with crews a few weeks prior. The IA crew that communicated the MER had participated in the training, which was beneficial for all involved. Practice with the form is important when the probability of a scenario happening is low, but the severity can be high. Staff working in high-risk environments, such as falling or on the fireline, need to be prepared for when accidents happen.

The benefit of this form was that it did allow for more information to be collected in a consistent format onsite for communication to dispatch and BCEHS. The individual,^{s.22}

s.22

s.22

RWCO ensured the dispatcher and STL could focus on the mechanism of injury and clear details from the MER to provide a more accurate picture of the magnitude of the accident. This use of the form and clarification of injury mechanism allowed BC Emergency Health Services to make a transport decision that ensure the highest level of care was made readily available by diverting the transport helicopter to Critical Care Paramedics a short flight away.

Successes

“The SKED was invaluable in this situation”
– Bo (IA Crew Leader / Strike Team Leader)

SKED and Vacuum Splint Use

Use of the SKED kit and vacuum splint was beneficial for the attending crews as the individual was found in an area with difficult terrain for packaging. Carrying the kit through the bush was as simple as carrying a backpack, which meant they were able to meet the injured faller more quickly than if a spine board was used. They were able to deploy the kit on the uneven terrain and slide the injured faller onto the mat with relative ease. It took four individuals to pack the patient up and between six to eight to carry him out of the bush.



The SKED was described as “invaluable” as it allowed those transporting to slide the individual under and lift him over hazards relatively easily. The ability to lift over and under meant time was saved during extraction as those cutting the trail were not required to buck logs to get them out of the way. As well, the SKED packaging made for an easy transition into the MTC.

Critical Incident Stress Management (CISM)

The application of Resilient Minds practices and CISM following the incident allowed employees space to debrief and verbalize their thoughts and feelings about the incident. This time also allowed for a discussion of what had occurred, so staff were aware, minimizing the amount of speculation and rumors. The importance of CISM and peer support occurring as soon as possible after the accident was emphasized. For some these incidents contribute to cumulative stress, and peer support is necessary for healing.



Successes

Internal Higher-Level Care

After the incident occurred and the radio call had been made, BCWS resources, including the trained paramedic on the crew, were made available to assist and moved to the accident site to support. One of the first attending crew members that packaged the injured worker was also a ski patroller and was familiar with packaging on a SKED.

The Mobile Treatment Centre (MTC), equipped with an onsite paramedic, was also alerted to the incident and drove to the specified meeting location. Within 20 minutes the injured faller had already been extracted from the bush and moved into the MTC on the highway.



Assessment completed by BCWS staff prior to loading in the helicopter helped determine the extent of the injuries, ensured appropriate interim treatment ^{s.22} and supported a thorough handover report to critical care paramedics. This assessment helped the paramedic team to perform the necessary interventions to ^{s.22} of the injured worker prior to a longer travel leg.

Throughout the entire experience, the faller was being comforted and assured that he was in good hands from people that could speak with certainty. While this is a critical incident and intervention needed to be swift and smooth, it was important that a level of verbal reassurance and comfort in a frightening time was provided to the individual.

Understanding how long it would take for the transition to higher-level care is important for managing ^{s.22}

^{s.22}

^{s.22}

Managing an injured worker for longer duration transport requires planning for the necessary equipment when working in confined spaces like a truck-mounted ETV box or helicopter.

Quick thinking, adaptability, and a willingness to step up and assist the medics supported good outcomes for the patient.



Human Factors



Human Factors – Quick Look

“Human Factors” is a scientific study that evaluates and seeks to understand human interactions in relation to other elements of a workplace system. It applies theory, principles, data and design methods to optimize safety, well-being, and overall system performance. There were several human factors that could have played a role leading up to the event, the event itself, and its outcome

Culture

What are the cultural differences between BCWS and industry fallers? What impact does this have on our working partnerships?

Efficiency/ Thoroughness Trade Off

How thorough do we need to be when we are also trying to be efficient? What is the cost of focusing too much on either?

Rapport

What is the importance of relationships between falling partners and what effect does it have on performance outcomes?

Fire Complexities/ Procurement Influences

How do we adapt to complex fire environments, and what role does this play when requesting DTA/F falling pairs?

Contract Faller Integration

How well do we work alongside and collaborate with contracted industry fallers?

When in Fight or Flight

How does personal frustration with a situation feed our decision making and effect our risk tolerance?

Human Factors

Culture

Although BCWS and contractor/industry staff work together on the fireline; often, they tend to have different cultures when it comes to falling timber. In production falling, a faller is expected to remove all trees in a timely manner. This can create a pressure to perform placed on the individuals by a profit driven company. These environments breed a mindset of productivity where stopping to address falling difficulties or safety concerns may be viewed as a cost.

Fallers are often rewarded for being willing to take risks. This may be a consequence of the pressure to perform and get as many trees down as they can. When a faller is new to a worksite, they may also feel pressure to display a higher risk tolerance, as they want to ensure they are not sent home after their initial inspection for not being qualified or productive.

BCWS expectations of industry fallers is to show professionalism by following established standards with high levels of skill. This expectation is rooted in knowing what can be cut safely and when adjustments to firefighting tactics like [No Work Zones](#) are needed. “We are paying for them to say No when it gets too risky” was the response of many BCWS supervisors when asked. “It is much easier for the BCWS to adjust a plan fire edge in the effort to reduce exposure to risk than a falling boundary.”

Production fallers see the value in the tree, whereas BCWS staff see the hazards in a workplace. A [No Work Zone](#) is common on a BCWS work site, but contractors view this tool as an interruption or contrary to why they were assigned to the fire to remove hazards. Additionally, the use of pusher trees is a common practice in industry which is highly effective when of sufficient size. This can lead to fuel loading and flare ups which can become problematic for suppression when alternate means that may require additional planning such as blasting or burning trees down can be used.

Human Factors

Efficiency / Thoroughness Tradeoff

Yuri, the assigned Danger Tree Specialist, had a lot to make sense of when he arrived onsite. He needed to inspect the fallers, identify the danger tree risk for planning, and get familiar with the landscape. He was the qualified falling supervisor and took some time to complete a verbal evaluation with the fallers and look at their previous work, which he thought was good. To align his multiple goals, it made sense to take the time to assess the hazards and develop a plan that the fallers could validate. By observing their approach towards decision making and hazard management of the job site, he could assess their competence while planning work.

When leaders are confronted with multiple objectives it is tempting to find ways to complete multiple simultaneously and allow for dependencies to evolve in unison. Thoroughness often requires dedicated time and focus, which may conflict with the ability to complete multiple objectives early in an evolving incident.

Regulation requires that a supervisor be focused on faller safety through the tasks of planning, inspecting and documenting work for the faller. In this case the planning and inspecting objectives were in conflict as other goals that demanded the same time in the day. In general, the supervisor's priority is to assess for hazards and plan for the work. This is important as it allows them to know what the faller will be expected to do in their absence and/or determine what additional supports may be required for the worksite. An argument towards thoroughness in this case could have resulted in fallers standing by until the supervisor was able to complete a detailed inspection, common in planned worksites, which may not have been necessary given the observed work was meeting the standard.

Outcomes in hindsight would point towards a need for thoroughness however the pressure of sense making, and plan development are equally valued as overriding uncertainties when a supervisor is new to a worksite.

Human Factors

Rapport

Although Lou and s.22 worked for the same company this was the first time they had worked together as a falling pair. Falling danger trees is a high-risk job and a falling pair needs to be in sync and trust one another. Lou and s.22 may have still been in the “feeling each other out” stage of their partnership. A new working relationship can make it difficult to question or support a new partner’s decision to say no. Low rapport with other BCWS staff in the workplace may have also played a role in neither faller wanting disclose the creation of a safety hazard.

When you work with someone before learning their non-verbal cues (cues that indicate what they may be feeling) or reactions to stress, it is difficult to understand what they are likely to do without asking them. Nonverbal cues and the ability to be aware of your partners habits are valuable assets in the high-risk world of danger tree falling.

DTS Yuri had not met Lou or s.22 before s.22 Yuri is an experienced DTF/A with a background in large timber. He understands the pressures of a faller and the anxiety that can come with the feeling of being watched by a supervisor while trying to fall a tree, especially in challenging conditions. As Yuri had just met s.22 he did not want to make him feel uncomfortable by watching him while he was cutting a tree. As a professional courtesy, he made the choice to allow s.22 to work, free from immediate supervision. After the two had agreed on a plan and other work and observations checked out, he stepped away, this decision had an implicit agreement of nonjudgement should the faller need to ask for assistance.

Often as wildfire incidents evolve, many people must work together in challenging environments. BC Wildfire Service operations are based on the core assumption of trust and reliability. Trust is often strained by difficult decisions and circumstances, despite everyone doing their best. This makes the development of brave spaces for people to speak up crucial. Speaking out is often is a call to courage that is magnified in new relationships and must be recognized as a risk when integrating resources.

Human Factors

Fire Complexities / Procurement Influences

This was an extremely complex and unforgiving fire in all elements. The terrain was steep and cliffy, with large timber that was damaged by a wildfire. This is what is referred to “Type 1 ground,” which requires qualified and experienced individuals.

Experience is a key factor that carries an individual from “certified” to “qualified”, where the tasks of the job required might still be specialized to be considered qualified. s.22 had lots of experience falling in the coast with large-diameter timber on steep slopes but zero experience falling on the fireline. Lou had wildfire falling experience but little experience falling coastal timber and took the role of a DTA. Adding the qualifications of each faller together does not make them qualified for this type of environment, nor does it meet qualified assistance requirements.

Logistics in the Fire Centre may not be aware of an incident's onsite complexities, and when a Resource Request comes in for fallers, they do their job and follow established procurement practices until a company has resources available. The ability to send fallers who have experience working on fires falling steep coastal timber is often left to the company. They are the ones who can determine what resources are qualified for the assignment, however, they may not always know all the complexities. This leads to a double-blind system where the BCWS and contractors are left to assume what risks may be encountered.

Although there is a reluctance to classify faller skill levels, it is evident that "one size does not fit all." There is a need to ensure fallers are pre-qualified to an adequate skill level, and capable of performing safely on complex coastal wildfire operations. The resource requesting system does not allow for the best possible resource since there is no skills-matching mechanism. This disadvantages a company despite them sending their most competent people for the high-risk environment.

Human Factors

Contract Faller Integration

Meaningful inclusion, clear and concise information sharing, and an established reporting/support structure are proven elements of successful contract faller integration.

Failure to successfully integrate contractors into operations may result in one or several of the following:

- Decreased levels of safety and production
- Fallers and workers exposed to unnecessary risk
- Lack of information sharing may lead to miscommunication and varied response in the event of an emergency
- Isolation or perceived lack of support for fallers
- Failure to build a sense of team may foster a feeling of "us vs. them," ultimately creating undue stressors and lack of rapport

Clear and deliberate contract faller Integration is critical to creating a safe and effective environment for fallers to operate within.

Contract faller Integration should include the following:

- Incident briefings that identify resources available to raise concerns
- Daily inclusion/participation in site-specific briefings
- Faller inspection completed and documented
- Ongoing review of objectives and ERP that make sense for fallers
- Ensuring that any issue raised by a contract faller is followed up on and concerns are not minimized

Human Factors

When in Fight or Flight Response

There comes a point for many fallers where they will have that feeling of “I just want to get this tree on the ground” so the unsafe situation is over. During this incident, s.22 chainsaw got pinched in a 20-inch-diameter tree causing him to remove the power head and leave his chain in the tree. This was the first stressor in a chain of events:

- He now had to use his partner’s chainsaw to cut it out, which can be embarrassing for a faller and despite it being a common occurrence
- His next actions were a change from the original plan, now they are stepping into risky practices of cutting under overhead hazards.
- A tree required heavy wedging (four wedges) to create lift, which can be tiring and raise stress levels.
- Add frustrations that the danger tree was not yet on the ground, despite working on it for over 30 minutes.
- He was already sent off the work site for inadequate PPE. This had set him and his partner back a day and half on their objectives and now they were getting an inspection from a supervisor.

These factors may have contributed to feelings of pressure that can push a person out of their window of tolerance and into fight or flight. The cumulative nature of stress can either reduce a person’s window of tolerance or cause hyper-arousal, which can easily lead to unsafe practices with little regard for the consequences. Add the additional stressor of fire and this can lead to action-oriented work where staff don’t take the time to calm down or reassess the situation. Our thinking minds are just not working in these situations and the perception of risk that would normally trigger alternate planning or the need to stop will not register.

Each person has a window of tolerance that can impact how they manage stressful situations and whether they recognize when a scenario becomes unsafe.

For more information on the Window of Tolerance, scan the QR code.



Conclusion

The lead-up to the accident on ^{s.22} paints a picture of a complex fire environment riddled with hazards and stressors. The combination of challenging terrain, aggressive fire behaviour, proximity to the highway, and large-diameter timber meant that those on the fire needed to react with safety in mind.

A tree strike is a serious accident that we never want to see, however, it does occur and reinforces our need to be prepared for low-frequency/high-consequence events. By analyzing the circumstances of the incident, and the factors that might have affected an individual's decision making, we come away with important context about how we may meet similar situations. We are also able to applaud the action taken by crews and first responders who successfully executed BCWS standards in response to an onsite injury.

The FLA and investigation team is grateful to the crews, officers, teams and other parties for their work in this process and contributing to a positive and safe culture in the workplace.

Facilitated Learning Analysis Team

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Chris Spronken – Provincial Chainsaw Coordinator
Kennedy Wiebe – Cariboo Fire Center
Ryan Stirling – Kamloops Fire Center
Sarah Budd – Provincial Communications
Patrick Davie – Retired WorkSafeBC Manager
Lena Knox – Provincial Wildfire Reporting
Julia Caranci – Coastal FC Communications
Kimberly Kelly – Coastal FC Communications

Please provide feedback through the survey linked below. Scan the code to participate



Appendix a. Glossary of Terms

Duff Layer	The layer of partially and fully decomposed organic materials lying below the litter and immediately above the mineral soil.
Duty Day	Includes all fireline days (days assigned to an incident or Wildfire Coordination Centre) that exceed 7 hours and all field days exceeding 8.5 hours shift length. This includes days worked on pre-identified days of rest (SAT/SUN and Statutory Holidays).
Hollywood Smoke	A smoke plume that draws a lot of attention and creates a large amount of smoke into an area.
Interdependent Processes	Processes and functions that rely on each other to achieve a mutually desired result.
No Work Zone	An area that is determined to be unsafe to work in, and is therefore, sectioned off until it is otherwise posted.
Notice to Comply	An order given to a contract company requiring that they comply with BCWS standards or face action. A warning.
Relay Tank	A self-supporting type of bladder system. An open topped, water storage unit used to supply water in hard-to-reach areas.
Rapid Transport Criteria	An injury that meets the criteria for an immediate transport to hospital.

Appendix b. MER Form

"Fire Centre this is ____ // I have a med-evac request // RTC (or) Non-RTC // (Heli Requested) // Stand-by for MER"

Medical Evacuation Request (MER)											
Incident:		# Of Patients:		RTC: YES NO		Reason for RTC:		Time of Injury:			
Geographic:				Extraction Latitude:			Extraction Longitude:				
Patient 1 Details					Patient 2 Details (if applicable)						
AGE	SEX	BREATHING?		VITALS		AGE	SEX	BREATHING?		VITALS	
		YES	NO	STABLE	UNSTABLE			YES	NO	STABLE	UNSTABLE
L O C	Eyes	Verbal	Motor	Total		L O C	Eyes	Verbal	Motor	Total	
Chief Complaint:					Chief Complaint:						
Mechanism of Injury:					Mechanism of Injury:						
PAPA – Communication Methods			QUEBEC – Preferred Method of Extraction			ROMEO – Alternative Extraction Methods		SIERRA – Available on Scene			
Repeater: _____ T _____ Repeater: _____ T _____ Simplex: _____ AIR: _____ SAT: _____ Cellular: _____			<input type="checkbox"/> 1. Ground <input type="checkbox"/> 2. Helispot <input type="checkbox"/> 3. Hover Exit <input type="checkbox"/> 4. Hoist/Class D <input type="checkbox"/> 5. Other: _____			<input type="checkbox"/> 1. Ground <input type="checkbox"/> 2. Helicopter <input type="checkbox"/> 3. Hover Exit <input type="checkbox"/> 4. Hoist/Class D <input type="checkbox"/> 5. Other: _____		<input type="checkbox"/> 1. Truck <input type="checkbox"/> 2. MTC <input type="checkbox"/> 3. Heli <input type="checkbox"/> 4. Type: _____ <input type="checkbox"/> 5. Hoist/Class D <input type="checkbox"/> 6. None <input type="checkbox"/> 7. Other: _____			
TANGO – Road Access					UNIFORM – Meet BCAS?						
<input type="checkbox"/> 1. No <input type="checkbox"/> 2. Yes: _____ m N S E W of current location Directions: _____ _____					<input type="checkbox"/> 1. No <input type="checkbox"/> 2. Yes Suggested Location: _____ _____						
VICTOR – Helipad Type		WHISKEY – Pad Inspected		X-RAY – Helipad Coordinates		YANKEE – Highest Level of First Aid on Scene					
<input type="checkbox"/> 1. Class 1 <input type="checkbox"/> 2. Class 2 <input type="checkbox"/> 3. Class 3 <input type="checkbox"/> 4. Class 4 <input type="checkbox"/> 5. N/A		<input type="checkbox"/> 1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/> 3. N/A Comments: _____ _____		<input type="checkbox"/> Same as Above <input type="checkbox"/> N/A <input type="checkbox"/> Nearest Helipad Pad #: _____ Latitude: _____ Longitude: _____		<input type="checkbox"/> 1. OFA 1 <input type="checkbox"/> 2. OFA 2 <input type="checkbox"/> 3. OFA 3 <input type="checkbox"/> 4. EMR <input type="checkbox"/> 5. PCP <input type="checkbox"/> 6. ACP <input type="checkbox"/> 7. Other: _____					
ZULU – Resources Requested					Treatment Provided:						
<input type="checkbox"/> 1. ETV <input type="checkbox"/> 2. Truck <input type="checkbox"/> 3. Helicopter <input type="checkbox"/> 4. Stretcher Kit <input type="checkbox"/> 5. Level 3 Kit <input type="checkbox"/> 6. Oxygen <input type="checkbox"/> 7. AED <input type="checkbox"/> 8. Other: _____					 						
Additional Comments:											
Reported by:		Received by:		Date Reported:		Time Reported:					

CARIBOO: 778-799-2030 // COASTAL: 250-951-4200 // KFC: 250-554-7701 // PGFC: 250-960-2300
SEFC: 250-365-4001 // NWFC: 250-847-6633

Appendix b. MER Form

Patient Reassessments

	RTC	Non-RTC
ABC's	5 min	10 min
Vitals	10 min	30 min
Head-Toe	30 min	
10 - 50 = Accident 10 - 45 = Fatality		

Glasgow Coma Scale

Eye-Opening Response	Spontaneous	4
	To voice	3
	To pain	2
	None	1
Verbal Response	Normal	5
	Confused but coherent	4
	Simple, inappropriate words	3
	Incomprehensible speech	2
	No speech	1
Motor Response	Obeys commands	6
	Localizes to pain	5
	Withdraws from pain	4
	Decorticate response (flexion)	3
	Decerebrate response (extension)	2
	No response	1
Total	Highest possible score	15
	Lowest possible score	3

Triage of Patients

Rules of Triage:

- Only immediately life-threatening conditions – e.g., airway obstruction, distressed breathing, major external hemorrhage – are identified and treated in the initial triage round
- Salvage of life takes precedence over salvage of limbs

Colour Codes:

- Green – minor injury – walking wounded
- Yellow – delayed – can wait
- Red – immediate
- Black – expectant or deceased

Assessing Triage Patients

- R = Respiratory
- P = Perfusion
- M = Mental Status

Respirations:

- Breathing absent – patient unresponsive?
 - Open the unresponsive patient's airway. Is patient now breathing normally? **Tag RED**
 - Patient's airway is open, but patient is still not breathing normally or with only occasional gasping breaths? **Tag BLACK**
- Breathing present? Assess adequacy of breathing.
 - Not breathing adequately? **Tag RED**
 - Yes, breathing adequately? Assess perfusion criteria

Perfusion:

- Radial pulses?
 - Absent radial pulses? **Tag RED**
 - Present radial pulses? Assess mental status
- Mental Status:
 - Follows simple commands?
 - Unable? (unconscious or altered mental status) **Tag RED**
 - Able? (follows simple commands) **Tag YELLOW**

Rapid Transport Criteria

Mechanism of Injury

- Free fall from a height greater than 6.5 m (20 ft)
- Severe deceleration in a motor vehicle accident characterized by:
 - High-speed accident and/or major vehicular damage
 - Broken windshield, bent steering wheel, or significant damage to the passenger compartment
 - Occupant thrown from vehicle
 - One or more vehicle occupants killed
 - Roll-over type of accident – e.g., with a forklift
- Pedestrian, motorcyclist, or bicyclist struck at greater than 30 km/h (20mph)
- Severe crush injuries
- Smoke or toxic-gas inhalation, or carbon monoxide poisoning
- Decompression illness
- Drowning
- Electrical injuries

Anatomy of Injury

- Severe brain injury, defined as one or more of the following:
 - Glasgow Coma Score of 13 or less
 - Pupillary inequality greater than 1 mm and sluggish response to light with altered level of consciousness
 - Depressed skull fracture
- Penetrating injury to the head, neck, chest, abdomen, or groin
- Pelvic fracture
- Two or more proximal long-bone fractures e.g., femur, humerus
- Flail chest
- Pregnant woman with significant trauma – e.g., a limb fracture, or chest or abdominal trauma

Burns:

- Inhalation injury
- Extensive facial burns
- Electrical burns
- Second-degree (partial thickness) burns to more than 10% of the body surface
- Third-degree (full thickness) burns to more than 2% of the body surface
- Burns encircling a limb
- Major burns to the hands, feet, or genitalia
- Chemical burns
- Amputation of an extremity other than a toe or finger
- Spinal cord injury, paraplegia, or quadriplegia
- Penetrating eye injuries

Findings in the Primary Survey

- Decreased level of consciousness (LOC) (does not respond with clear speech)
- Partial or complete airway obstruction
- Any condition requiring assisted ventilation
- Cardiac arrest
- Suspected heart attack
- Obvious circulatory shock
- Bleeding requiring the application of a tourniquet
- Acute poisoning, if directed by Poison Control Centre
- Status epilepticus
- Stroke
- Anaphylactic reaction
- Moderate or severe hypothermia
- Heatstroke

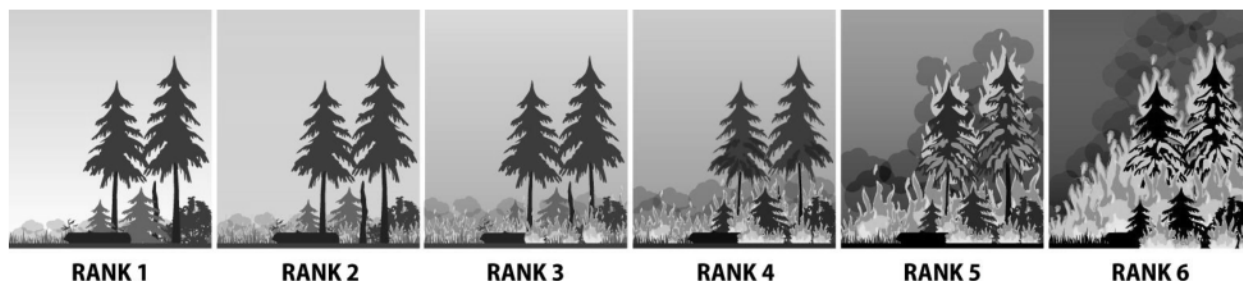
Appendix c. SKED and Vacuum Splint



Appendix d. ICS Medical Plan

ICS [®] Medical Plan (ICS 206-WF)									
1. INCIDENT NAME		2. OPERATIONAL PERIOD		Date From:	Date	Date To:	Date		
Fire Number and/or Complex Name				Time From:	Time	Time To:	Time		
3. INCIDENT MEDICAL AID STATION									
Medical Aid Stations	Location			Contact (number or frequency)			Paramedics Yes No		
4. TRANSPORTATION (indicate air or ground)									
Medivac Services	Location			Contact (number or frequency)			Level of Service ALS BLS		
5. HOSPITALS									
Hospital Name	Address (Lat. and Long if Helipad)	Travel Time		Contact (number or frequency)	Helipad		Burn Ctr.		
		Air	Grnd		Y	N	Y	N	
6. MEDICAL EMERGENCY PROCEDURES									
<p>Special Medical Emergency Procedures: All injuries are to be reported to the supervisor immediately. Medic, Safety Officer, and Fire Centre will be notified by the supervisor.</p> <ul style="list-style-type: none"> Crew first aid attendant will assess the injury and treat. The first aid attendant will notify the Medic and determine the level of treatment required. First Aid Attendant or Medic in charge of the patient will determine the method of transport and the transport location. Requests for transport will be made through the supervisor. Supervisor will ensure that necessary documents are completed and turned in to the Safety Officer. <p>AIR MEDIVAC PROCEDURES: SERIOUS INJURIES</p> <ul style="list-style-type: none"> Requests for air medivac will be made through Fireline Supervisor who will inform Fire Centre Dispatch. Dispatch will coordinate BC Ambulance Service (BCAS) response. Appropriate aircraft will be designated for medivac, by AOBD. First Aid Attendant in charge will determine the destination in consultation with Dispatch: ambulance or hospital. BCAS may change the destination or rendezvous enroute. <p>NOTES:</p> <p>GROUND TRANSPORT PROCEDURES: MINOR INJURIES</p> <ul style="list-style-type: none"> First Aid Attendant in charge will render First Aid and determine that ground transport is adequate. Patient is either released or transported by vehicle to ambulance or hospital. Patient transfer to ambulance will occur as soon as possible. Other minor injuries will be directed to the hospital as required. 									
7. PREPARED BY	Position:				Name:				
8. APPROVED BY	Position:				Name:				

Appendix e: Wildfire Ranks and Behaviour



Rank 1 - Smouldering ground fire

No open flame, white smoke, slow rate of fire spread

Rank 2 – Low vigour surface fire

Surface fire, visible open flame, unorganized or inconsistent flame front, slow rate of spread

Rank 3 – Moderately vigorous surface fire

Organized flame front – fire progressing in organized manner, occasional candling may be observed along the perimeter and/or within the fire, moderate rate of spread

Rank 4 – Highly vigorous surface fire with torching fire

Grey to black smoke, organized surface flame front, moderate to fast rate of spread on the ground, short aerial bursts through forest canopy, short range spotting

Rank 5 – Extremely vigorous surface fire or active crown fire

Black to copper smoke, organized crown fire front, moderate to long-range spotting and independent spot fire growth

Rank 6 – A blow up or conflagration; extreme and aggressive fire behaviour

Organized crown fire front, long-range spotting and independent spot fire growth, a dominant smoke column may develop which influences fire behaviour

Rapid Lesson Sharing

Post/For Information

Cariboo Fire Centre – Chilcotin Zone

Date of Event: August 14, 2023

Location: VA1456 – Kappan Complex

Narrative: A crew was working on the north side of Telegraph Creek in an area that had been Danger-Tree-Assessed to Low LOD that morning. At approximately 12:30 a birddog passed low overhead; it did not make radio contact or sound a warble, so the crew continued working. Less than 10 minutes later the birddog returned with skimmers following close behind. Two crew members, realizing they were within the probable drop zone, proceeded put their hand tools down and lay down on the ground. A total of 6 skimmers dropped on the area. Both individuals caught in the drop zone reported hearing a loud ‘thud’ when the second skimmer dropped. They remained on the ground until all 6 skimmers had passed. When it was safe to do so, the two crew members stood up to leave the area. They saw that the ‘thud’ had been a pine tree that was knocked down by the drop. It landed within 1 meter of one crew member and within 2 meters of the second.

Nobody was injured by the skimmer drops or the tree that was knocked over. The crew members who were caught in the drop zone promptly removed all foam from themselves and their clothing. The near miss was debriefed on scene and at the end of the day. If the birddog had contacted the crew or sounded the warble on its first pass, there would have been enough time for all personnel to clear the area. If the crew had been notified on the birddog’s second pass, there still would not have been enough time to get out of the drop zone.

The tree was 10-12m tall with a 10cm DBH. It was a live, green tree with no evidence of damage or health defects. The root system may have been shallow/underdeveloped due to the presence of numerous, large rocks in the soil. Two other trees in the area were also suspected to have been knocked over by the skimmer drops, one of which was dead but comparatively well-rooted. A faller reported more than one instance where a danger tree was identified and flagged for falling during DTA but had fallen before they had a chance to fall the tree. The DTA site overview indicated multiple environmental factors that could contribute to increased risk of tree instability and reassessments were being conducted regularly. However, even at a High LOD, the tree that fell near the workers *would not have been assessed as dangerous.*

The Air Attack Officer (AAO) had been told to restrict skimming activities to the area south of Telegraph Creek because there was a crew working on the north side. The AAO was given the simplex information and the crew leader’s callsign for an on-the-ground contact.

Lessons:

- Ground personnel need to ensure situational awareness is maintained regarding all aviation activity. Even when contact has not been made by aircraft, there is still the potential for ground activities to be impacted by aviation objectives.
- When drought conditions and high BUIs persist, the DTA Site Assessment Overview becomes even more critical.

BC Wildfire Service, Safety

Even when trees are not assessed as dangerous, stand conditions can contribute to increased risk of tree failure – especially when subjected to unanticipated external factors.

- AAO to confirm crew location on incidents prior to commencing operations.
- Birddog must use siren in all new areas prior to air tanker drops.



Submitted By: Nicole Hack, Cariboo Safety & Staff Development Coordinator

Follow-up Report

Post/For Information

Southeast Fire Centre – Cranbrook Fire Zone

Date of Event: July 19, 2023

Location: N11805

Activity: Assessing work area near distribution powerlines for worker safety

Number and Nature of Injuries: No injuries were sustained.

Property Damage: No property damage

Narrative: Fire N11805 began on the afternoon of Monday July 17 in a residential area. On Wednesday July 19, a Strike Team Leader (STL) was tasked with assessing the area around the powerlines for the ability of workers to safely action hot spots in the area while also allowing the powerlines to be re-energized. The STL had been informed at 1100 that day that the powerlines were de-energized. They tasked a BCWS Crew Member and a Contract Crew Leader with completing the assessment.

Sometime between 1200 and 1230 the powerlines were reenergized, and this communication did not make to the STL or the workers under their supervision.

Sometime between 1300 and 1330, while assessing the ability for workers to safely work under the powerlines, a tree that was deemed dangerous was physically pushed and fell towards the powerline. It landed on the powerline, causing a series of arcs and sparks. The workers were able to safely leave the work area and initiated an incident investigation.

A full investigation is being completed, and a Lessons Learned Review will be forthcoming.

Submitted By: Kelly McQuade, N11805 Safety Officer

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s.14 ; s.15 ; s.22

24 Hour Incident Report

Post/For Information

Kamloops Fire Centre – Penticton Fire Zone

Date of Event: August 25, 2023

Location: Grouse Complex - K52767

Activity: Heavy Equipment Operation

Number and Nature of Injuries: Serious near miss. No injuries.

Property Damage: 1 Vehicle Damaged

Narrative: A worker was driving down Cinnabar FSR, following a skidder to new assignment. The skidder came to an unexpected stop. The driver crept forward a couple meters when the skidder unexpectedly reversed. The driver honked but the operator did not notice it. The driver moved to shift the truck into reverse and missed the gear, and the reversing skidder impacted the front end. Upon impact, the skidder came to a stop immediately. The impact damaged the front end/hood and radiator. The driver was able move the truck to a safer location. No injuries have been reported at this time.



Pictures:

Submitted By: Jonathan Baggio, KFC CC Safety Officer

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Withheld pursuant to/removed as

s.14 ; s.15 ; s.22

Rapid Lesson Sharing

Post/For Information

Southeast Fire Centre – Cranbrook Zone

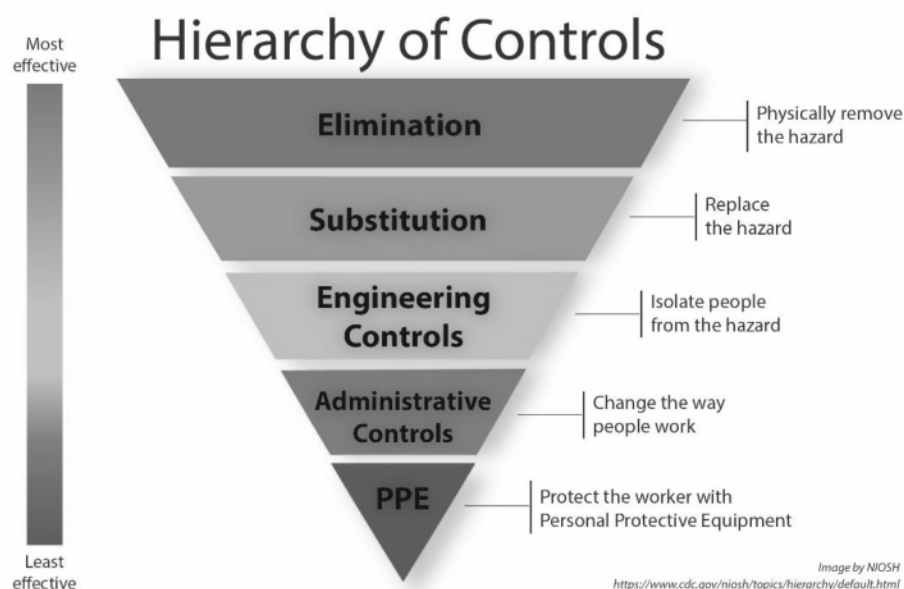
Date of Event: March 17, 2023

Location: Gold Creek Chainsaw Training Site. The site where the incident occurred was on a N/W aspect and didn't receive direct sunlight until late in the day, around 1500. The site was mostly covered in snow from 12-36" of snow. The weather for the week had been around -10°C in the morning and warming up later in the day resulting in wet slushy snow.

Narrative: The morning of March 17th was colder than previous. It was only -6°C at the zone office and was much colder out on site, at -15°C. This was the 4th day of the bucking camp. Moisture that accumulated in the workers boot over the course of the day combined with hiking and working in deep snow resulted in the worker losing feeling in their toes on their right foot. When they took their boots off that afternoon, they noticed a minor malformity to their second toe, which by Saturday morning had developed into a large, painful blister that was swollen and painful to the touch.

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Lessons: When considering lessons learned in this scenario, we look at the hierarchy of controls and consider them for cold weather work and for the worksite. This thought process can be used in any location for field-based training that occurs during our colder shoulder seasons.



Reference: <https://www.cdc.gov/niosh/topics/hierarchy/default.html>

1. **Elimination:** This control requires removing the hazard at the source. For training that is proposed to occur during a period of cold weather on a snow covered site, this could mean not doing the training until temperatures and site conditions improve.
Another option is considering ways to eliminate the need to stand in snow while still doing the work. Can workers utilize snowshoes? Can the wood be moved to a different location? Can there be mats to stand on while bucking?
2. **Substitution:** This control means using a safer alternative to the source of the hazard. A question to ask could be Can we pick a site that is south facing and has less snow cover? When considering substituting, we want to ensure we are not creating greater risk. In the instance of picking an alternative training site, we wouldn't want to pick a site with less snow cover that is further down a logging road and therefore less accessible to medical aid.
3. **Engineering Controls:** These controls reduce or prevent workers from coming into contact with hazards. Some of the controls mentioned in the elimination process could also be considered engineering controls, as they can prevent the snow from coming into contact with the workers boots and feet.
4. **Administrative Controls:** These controls establish work practices that reduce the duration, frequency, or intensity of exposure to hazards. Administrative controls as it relates to cold weather work is outlined by OHS Regulation Part 7 Division 4. It is highly recommended to review the whole section, but some key points as it relates to cold weather work:
 - 7.34(b): "If a worker is or may be exposed to thermal conditions that could cause a worker's core body temperature to fall below 36°C, the employer must develop and implement a cold exposure control plan."
 - 7.36: "If a worker is exposed to a thermal environment with an equivalent chill temperature less than -7°C (19°F, a nearby heated shelter must be available to the worker"
 - For our work sites, this could be as simple as leaving a truck idling near a site that a cold worker can climb into and warm up with the heater.
 - 7.37 (1): "A worker who is or may be exposed to [cold conditions] must wear adequate insulating clothing and personal protective equipment.
 - 7.38: "If a worker exposed to cold shows signs or reports symptoms of cold stress or injury, the worker must be removed from further exposure and treated by an appropriate first aid attendant, if available, or a physician."
5. **PPE (Personal Protective Equipment):** Proper PPE (especially for feet and hands) is essential for winter work. Proper waterproof and insulated boots are preferred. Drying of boots overnight is also important, either with boot driers if they are supplied at a zone, or taking the personal responsibility to take work boots home to ensure they are ready for the next day of training.

Some other lessons that have been learned from this scenario:

- Limited knowledge of frostbite symptoms and associated actions to avoid was a contributing factor. Not all staff were familiar with working in winter conditions and may not have been aware what to look out for. Site supervisors should familiarize themselves with this site-specific hazard and other hazards for cold weather work and ensure the topics are covered in the Field Safety Plan and site briefing.
- The theme of the bucking camp was to experience bucking fatigue as staff may experience on the fire line. This goal may have contributed to staff not speaking up to share hazard or safety concerns, or suggesting stopping work as it was hoped that staff would experience consistent work throughout the week.

Pictures:

s.22

Submitted By: Kelly McQuade, Safety and Staff Development Coordinator (SEFC)



24 Hour Incident Report

Post/For Information

Prince George – VanJam 71W24GE

Date of Event: August 11, 2023

Location: G51279 – Along a spur road at 9km on the Rikki FSR.

Activity: Driving in thick brush during ignitions operations.

Number and Nature of Injuries: One crew member suffered s.22

Property Damage: No property damage.

Narrative: Crew was traveling in a vehicle through dense brush at a speed of approximately 20km/h. The injured party was sitting in the rear passenger seat with the window fully down. A dragging branch under tension released and impacted the worker through the open window above the s.22

Submitted By: Adam Wixx – Safety Officer – VanJam MZOC

Rapid Lesson Sharing - Non Veg Smoke Exposure

Post/For Information

Prince George Fire Centre – Fort St. John Zone

Date of Event: June 12, 2023

Location: Donnie Creek Complex

Narrative: Crews were assigned to retrieve equipment from a staging area previously set up at a gas camp. As workers approached the site of the objective, black smoke was visible from an adjacent camp upwind. Upon further inspection, the camp across the road from the staging area was fully involved. Smoke was observed from burning trailers as well as from compromised propane tanks. Crews recognized the presence of non-vegetative smoke, notified their supervisor and proceeded to practice avoidance by retreating from the scene. In leaving the scene the crew recognized that a member of the public was still on site. They contacted the individual to notify them of the danger. In doing so the crew was exposed to non-vegetative smoke for approximately 4-8 minutes. After relaying the hazard to the individual, the crew proceeded with their retreat. Upon return from the field,

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Lessons:

- Crews must practice avoidance of all non-vegetative smoke and stay-up wind at a safe working distance to reduce the likelihood of harmful exposure.
- Completing an initial hazard assessment en route to an objective is essential to identify the presence of non-vegetative material and the potential for harmful non-vegetative smoke exposures.
- Maintaining clear communication between the crew and their supervisor throughout the incident provided accurate information from their hazard assessment.
- Maintaining the safety of first responders is the number one priority on any incident.
- Non-vegetative fires can be proactively identified by their dense and dark smoke that is highly toxic.
- Non-vegetative smoke exposures must be reported to incident safety, zone supervisors or CC Safety.
- It is highly recommended that individual exposures be submitted through the [WorkSafeBC Exposure Registry Program](#)



Submitted By: Campbell Burwash, Donnie Creek Complex Safety Officer

Published Date: 2023-06-16

Rapid Lesson Sharing

Post/For Information

Northwest Fire Center – Nadina Fire Zone

Date of Event: July 27, 2023

Location: Nadina MZOC 71W24RA, Hwy 35

Narrative: A crew was driving back to camp at the end of the day on Hwy 35 from incident R21234. The crew was about 10 minutes from camp. At approximately 18:30 the driver fell asleep. The vehicle drove off the road and collided with a signpost, breaking the grill and the windshield. The driver woke back up and quickly applied the brakes. The vehicle came to a stop in the ditch approximately 150 metres from where it left the road. At the time of the incident, all but one passenger, who was sitting in the back seat, were asleep. The crew exited the vehicle. Three non-wildfire related MTC units that were driving by stopped to help and called 911. The crew was assessed by BC Ambulance s.22

s.22

All members returned to work the next day.

Lesson: Fatigue management: All personnel should be monitoring their cumulative fatigue level, especially when driving. Stop to take a break if needed. Rotate drivers as required. Ensure front seat passengers are practicing “Professional Passenger” guidelines by ensuring they are maintaining their alertness and interacting with the driver while also paying attention to the road).



Pictures:

Submitted By: John Hanemaayer, Safety Officer Nadina MZOC

Rapid Lesson Sharing

Post/For Information

Cariboo Fire Centre – Cariboo Central Zone

Date of Event: July 3, 2023

Location: C21104, Trailer Park north of Williams Lake

Narrative: An IA crew and RO responded to a mutual aid request from local fire departments within fire department jurisdiction. Four tightly packed trailers were on fire, with vehicles, garbage, and trees in close proximity. The fire department was concerned they would be unable to prevent the fire from turning into a wildfire. Responding crews were instructed by the RWCO to be familiar with the new BCWS Non-Vegetative Smoke SOG before responding. When on scene, the IA crew stayed 100m upwind while the RO talked to the fire department chief. It was quickly determined there were no objectives for BCWS staff, so the crews returned to base.

Notes:

- All fire department activities took place within 15m of the structures. The RO was required to enter the initial isolation zone to make contact the Fire Department IC.
- The IA crew stopped 100m back upwind from the structures as per the new SOG. The crew did not get closer. All responding personal (fire, police, ambulance, the public) were within 30m of the fire.
- The crew reviewed the SOG before departing and went to the fire with the understanding that they were not expected to action the fire unless required and safe to do so. They were able to consider the response through the guidance in the new SOG.
- After returning to base, the IA crew could smell smoke on their clothes and in their truck.

Lessons:

- Prior to dispatch, the RWCC took the time to highlight the key points of the new SOG, which enabled crews to make informed decisions that adhered to current best practices.
- The RO was required to go into the initial isolation zone to contact the Fire Department IC. If BCWS crews had contact information/radio channels for the FD Chief on site this would have limited the exposure for the RO.
- The most significant exposure occurred when the crew accessed the area via the main highway downwind of the fire. More thorough pre planning before leaving for the fire would have identified alternative routes that kept crews up wind and out of the initial isolation zone on approach.
- The radius of 100m for an initial isolation zone is significant in a community setting. A radius of 600-700m for a protective action zone would have covered the entire (downwind) community. In this and similar situations, the new SOG makes for a low likelihood of achievable objectives. Going forward, information on materials burning, wind direction, expectations from onsite authorities, etc. should be gathered prior to dispatch to confirm if a ground response is the best option.
- After reading the SOG, crews were still unsure what the proper isolation distances for structures should be. Additional clarity around identifying different materials or how to classify structures would be helpful.
- Our partner agencies play a pivotal role in our application of the non-veg SOG. Engagement and education of our partner agencies to new BCWS guidance is required for a successful joint response to these incidents.

Submitted by: Nicklas Pankratz, CIFAC Crew Supervisor Orin Caddy, Safety and Staff Development Coordinator

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Safety Bulletin

Post/For Information

Safe Travel on Resource Roads

Background: Resource roads (forest service roads) are gravel roads built for industry use, often for logging trucks and heavy equipment. They are often used by the public and commercial operators as “crucial links for rural communities and access to recreational opportunities.”¹ All users have a responsibility to ensure the safety of resource road travelers by using road resource (RR) channels to communicate the direction of travel, location, and hazard notification (tree down, washout, etc.).

Note: “Most Forest Service Roads and natural resource roads are radio-assisted, but not all roads are radio-controlled. Road users are reminded not to drive exclusively according to the radio. Where posted, road users using mobile radios must use the posted channels and call protocols.”²

Safety Issue: With Area Restrictions being lifted on several of our access networks, we should anticipate an increase in volume and category of road users. There have been reports of significant increases in industry traffic associated with the resumption or start of major industry projects on some of these roads. Additionally, be mindful that members of the public may or may not have radios or adhere to call protocols.

Steps to Ensure Safety:

- Observe and note the sign at the start of the resource road for accurate radio communication procedures and channels
- Yield to industrial traffic and always drive according to the weather/road conditions
- Use the truck radio for the resource road channel(s) and a handheld for Fireline channels to ensure no safety communications are missed
- Review and refresh your understanding through the resources provided below



Resources to Share:

- Radio Use and Road Calling Procedures - YouTube
- Resource Road Orientation Video - Work Here, Play Here, Stay SafeHere - YouTube
- Resource Road User Safety Guide

Adapted from a May 16, 2022 submission: Original by Olivia Hughes, Safety & Staff Development Coordinator; adapted by Tamara Brooks, Safety & Staff Development Coordinator, and Richard King, Provincial Safety Coordinator

¹ <https://www2.gov.bc.ca/gov/content/industry/natural-resource-use/resource-roads>

² <https://www2.gov.bc.ca/gov/content/industry/natural-resource-use/resource-roads/radio-communications>

Safety Bulletin

Post/For Information

Drone Airspace Incursions

Background: On Friday, June 21, a personal drone was used in dangerous proximity to a crew and helicopter responding to an incident in the Penticton Fire Zone. This is the latest in a number of drone incursions in fire airspace this year.

Safety Issue: Airspace incursion is a serious threat to the safety and operational effectiveness of resources at any stage of a fire and shall be treated as a serious hazard. Whenever there is a remotely piloted aircraft system (RPAS) in your airspace, there are steps that you need to take to ensure the safety of all personnel.

Steps Taken: Full details are outlined in the [Standard Operating Procedure for Unauthorized RPAS in Restricted Airspace](#); however, consider the following summary points below.

Whenever a RPAS is spotted or reported in the airspace of a wildfire incident, you will:

- Shut down all air operations within at least 5 nautical miles of the incident. The on-site aviation supervision will notify all air resources and direct them to a practical landing space.
- Attempt to identify the RPAS – location, size, colour, type, etc. – and communicate this information through the chain-of-command to the command or general staff at the incident or Centre.
- The Incident Commander may request the RCMP to secure the scene or investigate.
- The Incident Commander may authorize one aircraft *with a spotter* to lift airborne to locate the RPAS and/or operator. However, a ground search may be safer and more effective.
- If the RPAS is *confirmed clear* from the airspace, the air operations on the fire may resume. If RPAS **cannot** be confirmed as clear from the airspace, but all local roads have been checked for operators, air operations may be cautiously resumed after 45 minutes.
- Document the incursion and report it:
 - [BC Wildfire Aviation Occurrence Report](#)
 - [Transport Canada "Report a Drone Incident" Report](#)



Pictures:

Submitted By: Richard King, Provincial Safety Coordinator and Mark Karlstrom, Provincial Air Branch Coordinator

Safety Bulletin

Post/For Information

Limits on Hand Faller Training During Wildfires

Background: Hand falling requires very high levels of skill and can be very dangerous. The BC Wildfire Service is responsible to ensure that all falling activities on wildfire worksites is carried out in a responsible and safe manner.

Safety Issue: There is significant risk associated with faller training activities, especially on the fireline. To reduce this risk, BCWS restricts on who is eligible fall on BCWS worksites. Additionally, BCWS has implemented limits on how planned training can occur on these worksites.

Restrictions:

- No falling activity, training or otherwise, can be undertaken by Type 3 contract crews. If falling is required in areas where these crews are working, BCWS approved fallers are to be assigned to conduct the falling activity.
- BCWS approved fallers are as follows:
 - BCWS certified and qualified fallers
 - Certified and qualified Danger Tree Fallers operating under a falling contract
 - Hotshot Fallers certified to Level 1 and who have been evaluated by a Qualified Supervisor Trainer (QST)
 - Designated qualified fallers attached to a Type 2 contract crew
- Type 2 contract crew faller trainees are not considered qualified for operations on wildfires.

BCWS recognizes that opportunity for developing skills as a faller is a challenge and the perception of availability to gain experience is present on a wildfire. The risk associated with training low experience fallers is very high, a distraction from work objectives and cannot be permitted on fires because we must remain focused on safety and fire suppression objective completion.

BC Faller Training Standard Info Flips: [BC Faller Training Standard](#) | [WorkSafeBC](#)

Submitted By: Chris Spronken, Provincial Chainsaw Coordinator

Safety Bulletin

Post/For Information

Working in the Wildland Urban Interface and exposure to non-vegetative smoke

Background: Due to recent fire growth into the Wildland Urban Interface Fires (WUI) in many areas of the province, fireline personnel have been working in and around non-vegetative smoke. This exposure is creating a significant safety risk to workers as they do not have the training or equipment to safely work in these conditions.

Safety Issue: Non-vegetative fires, including burning structures, vehicles, garbage, etc. can cause highly toxic smoke. Additionally, these fires burn in an unpredictable manner and may cause explosions, pollutants, and other health impacts. BCWS personnel, contract fire crews, and equipment operators do not have the training, mandate, or Personal Protective Equipment (PPE) to suppress non-vegetative fires. However, due to the extreme fire behaviour fireline objectives, social pressures, and/or lack of knowledge may put workers in harm's way.

*It is understood that in situations when homes and livelihoods are under threat, the pressure to put yourself in danger is extreme. However, **it is critically important to recognize that wildland firefighters and support personnel do not have any protection against the toxins that are present in non-vegetative smoke.** The toxins can cause severe illness and injury that may permanently affect workers.*

Steps Taken:

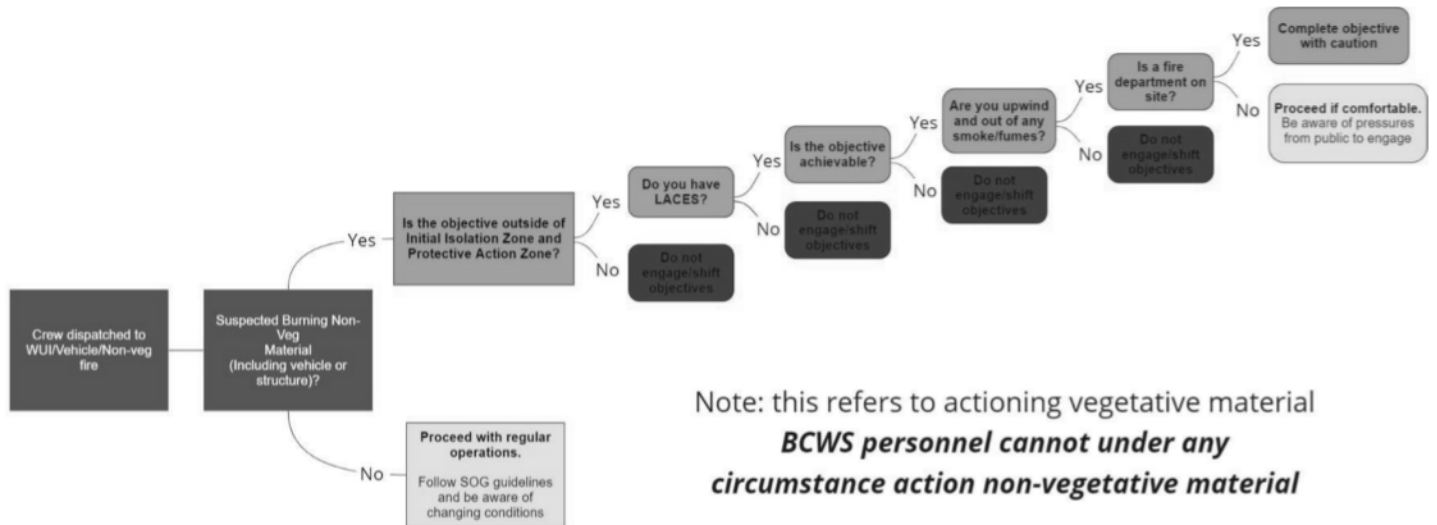
All BCWS personnel and those working for BCWS must follow the WUI and Non-Vegetative Smoke SOG

Consider the following:

- Only personnel specifically trained and equipped to deal with non-vegetative fires are to work on and near these fires. This generally means only structural fire departments.
- All workers have the right and responsibility to refuse unsafe work. This includes being given objectives where insufficient controls are in place to ensure the safety of personnel.
- No BCWS personnel or contractors will be intentionally exposed to smoke, or fumes from confirmed or suspected non-vegetative material fires.
- Under no circumstances will BCWS staff or contractors take direct action against non-vegetative fires, even in the presence of the structural fire department. Consider other tactics to protect values and ensure the safety of personnel.
- While exact safe distances without proper PPE from burning non-vegetative material are not known, the WUI and non-vegetative Smoke SOG describes that wildfire personnel are not to work within 400m upwind of burning structures or vehicles. Downwind, or in the presence of explosives or burning chemicals, these distances can increase significantly. Distances can be especially difficult to determine in areas where large amounts of non-vegetative material have been burned (e.g., multiple structures affected) so personnel should confirm with structural fire personnel.
- Even if there is no smoke, fireline personnel must not approach areas of burned material until cleared to do so by relevant (non-BCWS) authorities.
- If fireline personnel are exposed to any confirmed or suspected non-vegetative material burning, they must clean their Nomex and wash their bodies immediately post-shift.
- If any exposure occurs, a first aid report must be completed by a first aid attendant and/or supervisor as soon as practicable. Determination will be made whether medical aid is required. Workers should monitor

themselves for 3-5 days post-exposure for any exacerbation of symptoms. Workers should record all exposures on the WSBC exposure registry

Pictures:



Summary:

1. Workers CANNOT be exposed to non-vegetative smoke.
2. Workers must refuse unsafe work if they suspect exposure to non-vegetative smoke.
3. Supervisors must support crews in their decision to refuse unsafe work.
4. If working near, but a safe distance away, always stay upwind and monitor changing wind patterns.
5. If exposure occurs, Nomex must be cleaned, exposure must be documented, and the exposure registry should be filled out.

If the smoke is black, move back.

If plastics are burning, you should be turning.

If structures are on fire, get on the wire (call your IC).

Submitted By: Provincial Safety Coordinator

Safety Bulletin

Post/For Information

July 2023 Preliminary Guidance for Working Around Dangerous Trees

Background: There continues to be a high number of incidents involving danger trees. To support staff through these unprecedented conditions and ensure that fireline personnel can work safely, BCWS is issuing the following *preliminary* guidance to BCWS staff, contractors, support personnel, and out of province resources. This guidance will be updated as we learn from ongoing investigations, and through consultation with partners in the Wildlife Dangerous Tree committee, other fire agencies and government agencies, the contract community and industry.

Safety Issue: Extreme drought in many areas of the province is causing increased occurrences of tree failures. This issue was identified and shared out on a previous [safety bulletin published July 10, 2023](#). The interventions identified in this publication, along with additional control measures identified below are critical to ensuring all fireline workers are safe until permanent measures can be implemented.

Preliminary Guidelines:

- Ensure that you have appropriate resourcing for Danger Tree Assessment (DTA) requirements. The PWCC will support in this area as much as possible, especially for out of province resources less familiar with BC's DTA requirements.
- When assessing trees under high BUI conditions, consider the impact of continuous burning and loss of rooting layers on tree stability. Site Assessments for current tree failure risk is the primary way to reduce exposure to danger trees.
- Where possible, Dangerous Trees should be removed with adequately guarded machinery.
- Consider using spotters to identify changes in disturbance level such as wind. Reduce the threshold for stop-work considerations in wind and other disturbances.
- Increase the use of no-work-zones in all areas.
- Re-confirm all staff understand their rights and responsibilities for refusal of unsafe work and "when in doubt, back out". Ensure that all workers are encouraged to speak up and identify hazards.
- Consider the capacity (e.g., experience level, fatigue, familiarity with situation) of your resources, and adjust objectives accordingly. Confirm that everyone understands assignments – do not assume.
- If you come across situations that would not be covered by this guidance, conduct a hazard assessment, develop control measures, and implement the safe work procedures. Document these steps and share the documentation to your Fire Centre to ensure that information is shared provincially, if relevant.

This guidance will change as we gain more understanding of the issue and identify appropriate long-term solutions to the issues seen in the field.

Submitted By: Richard King, Provincial Safety Coordinator

Safety Bulletin

Post/For Information

Use of Off-Road Vehicles

Safety Issue: The BC Wildfire Service is releasing the following direction regarding the use of Off-Road Vehicles (ORVs), including All Terrain “quad” type Vehicles (ATVs) and Side-by-Side Utility Vehicles (UTVs).

The following applies to all ORVs used on BC Wildfire Service worksites, regardless of ownership:

Legal Requirements

- All operators (and passengers if in a side-by-side) must wear an approved safety helmet. Safety helmets must meet SNELL, DOT (based on FMVSS 218), or ECE Regulation 22 safety standards.
 - Hard hats are not acceptable. They are designed to protect workers from small falling objects, not falls or motor vehicle accidents.
- Seat belts must be worn, if equipped. If equipped but broken, the machine must be taken out of service.
- ORVs must be equipped with working headlights and taillights for use in low-visibility conditions.
- All operators must carry photo ID. Additionally, if an operator will be using the machine on a resource road, highway, or public road (even if closed the public) they must have a valid driver’s license.
- All ORVs must be registered with ICBC and display a number plate or sticker.

The following applies to all BCWS and Wildfire Teams personnel, stat hires, and out of province personnel. Contract personnel will continue to be guided by the terms of their respective contracts unless otherwise noted.

Operational Requirements

- All operators, regardless of previous training, must be assessed by a qualified person prior to operating any ORV. This assessment is located on [the BCWS Intranet](#), and a copy has been attached to this bulletin. A copy of completed assessments are to be filed on the incident and in Training Partner.
 - Previously conducted assessments will be honored, but it is the responsibility of Incident Commanders to ensure that all assessments have been completed and documentation available prior to ORV use.
 - A qualified person is someone who has taken the Canadian Safety Council (CSC) course or equivalent, has significant experience riding ATVs, and has shown competence in instruction. During fireline operations, Incident Commanders will approve qualified persons.
- A comprehensive pre-trip inspection must be completed prior to any ORV operation.
- Passengers may only be carried in side-by-sides. Passengers are not allowed on ATVs. Unless required to address a specific safety issue (e.g. transporting a patient to care), ORVs operated by government personnel must only carry other government workers.

Resource Sharing

- ORVs owned and procured by government are not to be loaned to non-government personnel unless their contract or resource sharing agreement specifically addresses this use. This includes type 2 and 3 contract personnel, contracted DTA/DTF, equipment operators, industry personnel, or fire departments.
 - Use of ORVs by these groups (e.g. those they brought) must be addressed in contract or agreement language and must be appropriately registered and insured. CWS Contracts will oversee these requirements.

Submitted By: Richard King, Provincial Safety Coordinator

BC Wildfire Service

ALL TERRAIN VEHICLE (ATV) CERTIFICATION REPORT

Employee Name: _____

Zone or Work Unit: _____

Supervisor's Name: _____

ATV PRACTICAL SKILLS ASSESSMENT

- Before being authorized to operate an ATV, the employee shall be evaluated by a qualified instructor* on his/her ability to satisfactorily perform, without the need for assistance, the applicable tasks listed on the skills checklist (see reverse). This checklist only needs to be completed once.
- Any curriculum can be used to instruct, but the ATV Riding Tips manual is a great resource.
- If the employee cannot satisfactorily perform the applicable tasks, then he or she is not authorized to operate this equipment. However, in order to gain experience and practice the necessary skills for authorization, the Instructor/Examiner may authorize the employee to operate the equipment provided the employee is under the direct supervision of a qualified operator. This, along with any other performance strengths/weaknesses must be noted below in **“Comments.”**

- ☐ Can satisfactorily perform all applicable skills.
- ☐ Cannot satisfactorily perform all applicable skills.

COMMENTS:

The above named person is:

- ☐ Is **certified** as a qualified **Operator**
- ☐ Is **not certified**
- ☐ Is **certified** as a qualified **Instructor**

Instructor/Examiner's Name (Print): _____

Address: _____ Phone #: _____

Signature: _____ Date: _____

Instructor/Examiner must send copies of this report and completed checklist to:

- ☐ Employee ☐ Supervisor ☐ Personal File

Once certified as a qualified operator, the supervisor will add “ATV Skills Checklist” to the employee’s Training Partner record.

*In most cases, a “qualified Instructor” would be someone who has taken the Canadian Safety Council (CSC) course, has significant experience riding ATVs, and has shown competence in instruction.

SKILLS CHECKLIST: ALL TERRAIN (ATV) VEHICLE OPERATION

<u>The Operator's Pre-Trip Responsibilities</u>	<u>Can Perform Satisfactorily</u>
<ul style="list-style-type: none"> Can conduct a Pre-Trip Critical Component Inspection including: <ul style="list-style-type: none"> front/rear brake cables throttle cable..... steering post front/rear lights..... rear brake peddle..... tires..... drive chain..... towing components and trailer hook-up..... tie downs..... familiar with owner/operator manual..... 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<u>Personal Protective Equipment</u>	
<ul style="list-style-type: none"> Can demonstrate the proper use/maintenance of the following required personal protective equipment: <ul style="list-style-type: none"> approved safety headgear..... eye protection..... hand protection..... footwear..... 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<u>Operator Skills</u>	
<ul style="list-style-type: none"> Can safely load & secure/unload ATV onto a carrying vehicle/trailer..... Can explain and demonstrate a proper ATV "warm-up" procedure..... Can describe and demonstrate proper "body english"..... Can describe and demonstrate how to turn a stalled ATV on an uphill slope..... Can describe and demonstrate how to safely climb a steep grade..... Can describe and demonstrate how to safely descend a steep grade..... Can describe the dangers of an on-grade turn with an ATV..... Can describe the functions & demonstrate the use of all ATV controls..... Can describe and demonstrate how to safely cross a river/stream..... Can describe and demonstrate the safe way of traversing a slope..... Can safely operate the ATV in reverse..... 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<u>Loads</u>	
<ul style="list-style-type: none"> Can demonstrate how to determine the safe load limits/trailer load..... Can demonstrate how to load an ATV for proper weight distribution..... Can demonstrate how to safely "tie down" the load..... Can demonstrate how to safely "hook up" a towed unit..... Can demonstrate how to safely trailer a load/loades ATV..... Can demonstrate how to safely "reverse" a towed unit..... 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<u>Basic Mechanical</u>	
<ul style="list-style-type: none"> Can describe and demonstrate how to prime an out-of-gas ATV..... Can describe and demonstrate how to change a wheel..... Can describe and demonstrate how to change a chain..... Can describe the ATV tools carried and their function..... Can demonstrate an "in-service" inspection..... Can conduct a "post-trip" equipment inspection..... 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

-END OF CHECKLIST-

Safety Bulletin

Post/For Information

Drought Stricken Trees

Background: Currently in the northeastern region of BC, firefighters are seeing increased occurrences of trees failing in forest stands where drought conditions are present in conjunction with rooting problems.

Safety Issue: Tree failures are putting crews at increased risk of tree strikes. High BUIs/drought conditions have been escalating as the season progresses leading to further instability due to continuous active burning of anchoring soils and roots. Failures have typically been seen in shallow-rooted trees or duff anchored tree species (Spruce, Cedar, and Hemlock).

Steps Taken: When assessing shallow-rooted trees under high BUI conditions, consider the impact of continuous burning and loss of rooting layers on tree stability.

Site Assessment for current tree failure risk is the primary way to reduce exposure to danger trees.

- Review evidence of tree failures in the area and use that information to determine what trees pose a risk on the worksite.
- There has been recent/new tree-altering disturbance (ie: green area is now burnt, area of widespread tree failures, etc.).
- Determine if there is a wind threshold that may require avoidance of high failure potential work areas or trees!

Remember that reassessments of trees should be undertaken as conditions dictate:

- BUI values are above established thresholds **AND** there is continuous burning within the area of work,
- Work activity in the area creates more disturbance than what the area was originally assessed for (ie: Level of Disturbance has increased)

-Where possible, Dangerous Trees should be removed with adequately guarded machinery

Staff must also assess all **Work Areas** to the appropriate LOD where staff are exposed to a **RISK** presented by **Danger Trees**.

RISK = HAZARD x EXPOSURE

Work area Includes area of actual fire fighting within the fire perimeter and adjacent areas by 1½ or more tree lengths, as well as **access roads, evacuation routes, helicopter landing areas, rest areas, staging areas, marshalling points, and incident facilities.**

**WE CAN'T CHANGE THE HAZARD BUT WE CAN MANAGE THE EXPOSURE WITH
GOOD PLANNING AND NO WORK ZONES.**



Severity of fire/burn
and BUI thresholds

- depth and severity of burn
- amount of root burn
- damage to anchoring soil layer
- deep basal stem burn

Canadian Forest Fire Danger Rating System	
Fuel Type	BUI Threshold Value
C-1	>40
C-2, C-3, C-4, C-5, C-6	>60
C-7	>80
D-1	>30
M-1, M-2, M-3, M-4	>40

Submitted By: T.J. Sweetnam, CC Safety Trainee



Safety Learning

No Work Zones

Background:

Conditions for all people involved in fire suppression activities have been incredibly challenging in recent weeks. Record drought conditions have impacted shallow-rooted trees, led to a high area burnt, and elevated forest health issues. The challenges when dealing with elevated levels of tree risk requires effective utilization of No Work Zones (NWZ).

Safety Issue: *Above average reports on near misses, incidents, or accidents from tree failure.*

Steps to be Taken

By actively recognizing a safety risk and feeling empowered to make the decision to adapt work for the conditions, staff can better manage worksite risk and mitigate the potential for serious injury.

To avoid exposing workers to foreseeable hazards, like large areas of severely fire-damaged forests, we recommend considering large and small-scale NWZs in both time and space. This tool can easily fit into your work plan and can be clearly communicated to workers.

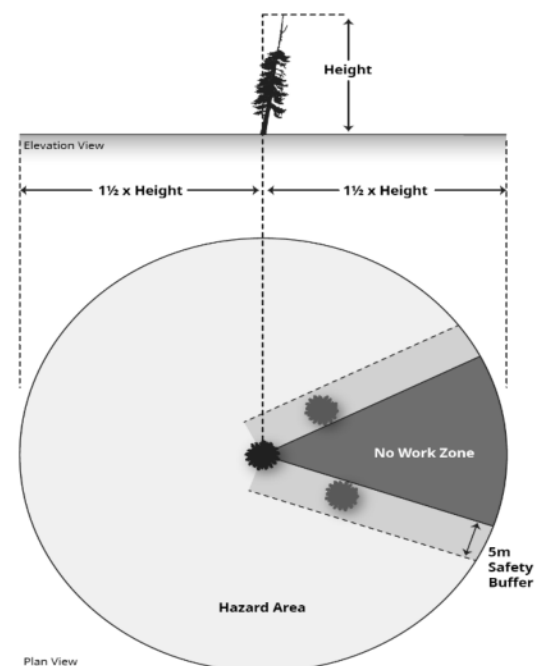
This bulletin is focused on adaptable solutions that can reduce crew exposure to hazards.

Initial Attack Tactics

Short-duration NWZ – When fires are hot and the trees are actively deteriorating, Short-duration NWZs can be an effective tool to reduce exposure to potential danger tree falls with little notice. When implementing a Short-duration NWZ, set a time and safe distance to wait a tree out and ensure all workers are aware.

NWZ Impact Area Marking – Often a tree failure can be buffered by adjacent standing safe trees, provided they can safely guide the tree to the ground without being pushed over. The main feature of a buffered NWZ is that it requires a five-metre set back from the **critical impact area that is marked with flagging tape**.

Multiple re-assessments may be required to ensuring that rapidly deteriorating trees are monitored for the speed of their burn damage.



Extended Attack Fire Tactics

Planning to reduce exposure to high-hazard timber types is an effective way to create a safe workplace. Small steps can be taken at the planning stage by multiple layers of the operation to avoid exposure to hazardous timber.

Working with supervisors to build a plan, it is necessary to ask some of the following questions to determine if a NWZ may or may not be supportable.

Where can we work safely?

- Are there natural features, roadways or other barriers we can utilize that avoid hazardous timber and slope positions?
- Do we need to create a bigger box? Does that box move work to a safer location?
- Could ignitions reduce hazard exposure? Do the holding operations expose workers to danger trees?
- Could sprinklers outside of the established NWZ be an effective tool?

Do secondary operations outside of the established NWZ meet objectives?

- Is this critical ground to be held? Why or why not?
- Does the fire behaviour allow for a patient or patrol-focused approach?

Can machinery be used to create an NWZ? – Use of guarded equipment can safely establish fire containment lines in high-hazard locations but can create many dangerous trees in the process.

Some basic requirements for unprotected workers to recognize after the equipment has left:

- NWZs must be clearly marked.
- Fire mop-up activities are not permitted.
- Hose lays should be set up to run outside of the identified NWZ and away from the hazard.
- Work activities must be planned 1.5 tree lengths outside of the NWZ.
- If travel routes cross the NWZ on roads, workers must ensure they **Do Not Stop** and there should be road clearing plans in place to reduce exposure during crew travel times.

Wind Criteria and Helicopter Operations – Setting criteria around when wind conditions become unsafe is a great way to recognize when the forest hazard is likely to increase. This process may also rule out having workers exposed to rotor wash and heli flight paths since these activities can create winds above 20km/h.

It must also be recognized that many tree failures this year have been associated with low or no-wind conditions where roots have been compromised by drought, forest health and fire.

Documentation, flagging and communication of No Work Zones is a critical piece of the safety puzzle.

Everyone has the right to refuse unsafe work and we all share the responsibility to make good choices.

Rapid Lesson Sharing

Post/For Information

Southeast Fire Centre – Boundary Zone

Date of Event: May 20, 2023

Location: Sutherland Prescribed Burn (Christina Lake BC)

Narrative: The Sutherland PB was planned to occur over two days, with the first day of burning on May 19th, 2023. The first day and a half of burning had consistent, predictable, and favourable winds.

Burning on May 20th commenced at about 1035 and the first unit was finished at 1200. At approximately 1100 on May 20th, the burn boss received a weather advisory that thunder cells would be in the area early afternoon that day. This was communicated to all personnel on the work site. It was decided that burning would cease for the day due to the incoming weather. Upon finishing burn operations, crews noted over the radio that they could feel an increase in wind and that storm cells could be seen on the horizon. Crews were then tasked with quieting the north flank of the burn, as wind shifts associated with the incoming thunder cells could push fire into the adjacent heavy timber.

After waiting for the smoke to abate, 10 workers ranging in experience from new recruits to an assistant crew supervisor headed up to action the north flank around 1345. The work included cutting trail through patches of timber and between the burn block and timbers edge and following up with water delivery. At around 1450, a crew leader on site shut down saw activity due to an increase in wind to about 25km/h. At around 1457 it was decided that crews would start heading back to the trucks due to a further increase in winds to about 35-40km/h.

Around 1500, workers were gathering gear and beginning to hike down the hose trail. A gust of wind greater than 50km/hr blew in from the west, blowing smoke and ash from the recently burned block into and through the workers' current location on the north flank. Workers reported that visibility decreased to less than 5 feet and they had to walk and breath through heavy smoke. They could hear but not see numerous medium sized trees falling around them, approximately 10 to 20cm DBH. The crew hunkered under the closest stable tree for approximately one minute until the gust ended. Shortly thereafter, the smoke and ash cleared, allowing crews to find their way to safety. It was observed that both spruce and balsam trees had fallen ranging in size from about 10 to 20cm DBH. Multiple trees fell across the access/egress hose trail.

No one was injured by a tree strike, although many people noted that their throats and lungs did not feel great the following day due to the smoke exposure. Experienced workers on the site noted that they had never been hit so suddenly by a gust of wind that strong, nor been so close to being hit by a tree. The incident was debriefed at the end of day and debriefed further in an AAR the following day.

Lessons:

- On site supervisors need to ensure weather advisories are received by all personnel under their supervision. On this incident, the supervisor on site relayed the weather advisory to all personnel, and the lead personnel confirmed that they had received the advisory and were aware of changing conditions.
- Most of the day was spent burning in a cutblock where the primary safety hazards were changes in fire behavior and direction, and less around danger trees and overhead hazards. When work shifted to the edge of a forest, worker's primary safety concerns should have shifted to the new site hazards.

BC Wildfire Service, Safety

- Spruce trees are shallowly rooted and are susceptible to failing in wind events, especially when burned out at the roots. Based on this site hazard and the information received in the weather advisory, the trigger point to pull crews out of the area could have been more conservative than it was.
- Consider changing workers assignments based on changing weather conditions to increase on-site situational awareness. In this instance, a call was made to shut down saw work due to increased winds on site. Cutting hose trail with a chainsaw can be a "heads down" exercise, causing workers to lose some of their situational awareness such as a change in tree movement due to incoming winds.
- Finding a shelter tree to wait out the increased winds was likely the safer option (compared to fleeing the site during the wind gust).

Pictures:



Submitted By: Kelly McQuade, Safety and Staff Development Coordinator (Southeast Fire Centre)

Rapid Lesson Sharing Southeast Fire Centre – Invermere

Post/For Information

Date of Event: August 4, 2023

Location: 71W24NA Horsethief Creek Complex – N21453 Yearling Creek

Number and Nature of Injuries: 2 crew members injured, s.22

Property Damage: Two trucks damaged, vehicle #1 damage to rear bumper and tailgate, vehicle #2 damage to front grill, bumper and left front quarter panel.

Narrative: 2 trucks were travelling from one area of the fire to another along a Forest Service Road (FSR). The lead truck in the convoy stopped for wildlife entering the road. The truck following was unable to stop in time, and rear ended the lead truck. Road conditions at the time were very dry, dusty, and smokey; resulting in poor visibility.

Lessons:

1. Drive to road conditions:
 - When it's dusty or smokey, slow down so you can react to traffic, potholes, wildlife, changing road conditions and unexpected hazards.
 - Travel at a speed that allows you to stop within half of your range of sight (other vehicles need room to stop too).
 - Don't try to keep up with the lead vehicle, drive at the speed appropriate for the conditions and location.
 - Be prepared for unexpected conditions, conditions may change rapidly.
 - Be prepared to stop, quickly and safely. Dust means traffic.
2. Maintain best practices when using resource radio for communicating location, hazards, or emergencies.
3. Daily Circle check – keep your lights clean.
4. Don't rely on automatic light function in your vehicles, ensure lights are always turned on manually for travel.
5. Be that professional passenger, manage fatigue.
6. Review your crew standards for traveling on resource roads, adjust if necessary.



Picture #1 Lead Vehicle



Picture #2 Vehicle following

Submitted By: Cameron Paterson, Safety Officer IMT#4

Rapid Lesson Sharing

Post/For Information

Prince George Fire Centre – Fort St. John Zone

Date of Event: May 21, 2023**Location:** Donnie Creek Complex**Narrative:**

While travelling to the fire line, a Unit Crew was driving in a convoy of six trucks when they came across an extremely dusty section of road. Visibility quickly dropped as the first two trucks drove through the dusty portion. The lead truck radioed to advise the other trucks of the changing conditions. The third truck in the convoy hit a wall of dust and proceeded to stop. Shortly after, the fourth and fifth truck rear-ended the third truck causing a hard impact to all vehicles involved. The fourth (middle) truck sustained damage to the front and rear. s.22

s.22 The crew activated their ERP as a result. s.22

s.22 and moved out of the incident area. To avoid another incident, the crew vehicles were moved to the side of the road. Based on the ERP, the location of the incident, and the nature of the injuries, s.22

s.22

s.22

Lessons:

- Changing road conditions are important cues for drivers to consider their speeds, following distances, and driving style. Similarly, as communications or environmental factors change, it is important to update behaviours in response to the situation. It was recognized that in this situation, the communication from the front vehicle and increased dust did not immediately alter others' actions. Driving is one of the most dangerous fireline activities. It is important to drive cautiously, especially on secondary roads and with changing environmental conditions. Leaving extra following distance will allow the driver sufficient time to respond to unexpected events. Additionally, while the driver controls the vehicle, all passengers must act as professional passengers and help the driver maintain accurate situational awareness.
- Adding signage to the road after the incident was a valuable outcome since it alerted other drivers of an existing hazard. It is important to communicate and mitigate hazards to everyone who may be affected by them. Additionally, it is acknowledged that safety briefings are an important opportunity to update everyone on those hazards and two-way communication tools, such as read-backs, can be useful tools to ensure everyone receives and understands the messages.
- BCWS vehicles do not have amber flashing lights, but it was acknowledged that it could have been a helpful tool which may have helped alert drivers of vehicles' position.
- Finally, the fire environment is dynamic and stressful, which often creates a sense of urgency. During stressful situations, it is important to influence factors that are in your control. Slowing down, especially while driving, is a way to help bring the situation under your influence so you can better respond to and control the outcome.

Pictures:



Submitted By: Iain Berglund, Donnie Safety

24 Hour Incident Report

Post/For Information

Cariboo Fire Centre – Central Fire Zone

Date of Event: July 30, 2023

Location: Cariboo Fire Centre, Central Zone, C22325.

Activity: Fire Suppression and mop-up

Number and Nature of Injuries: s.22

s.22 .

Property Damage: None.

Narrative: On Sunday July 29th, an initial attack crew in the Central Fire Zone in the Cariboo Fire Centre was dispatched to a new initial attack incident. The incident was a small 20 x 20-meter fire burning on the edge of a grassy meadow in a spruce stand. The fire was under control with mop-up ongoing. A danger tree assessment had been completed and identified danger trees had been felled. A spruce tree with fire impacted roots failed, striking a worker who was hosing an area adjacent to the tree.s.22

s.22

s.22 The spruce tree that struck the worker had been previously assessed and deemed safe for the work activities taking place. Thunderstorm cells in the area were producing wind gusts and the spruce tree may have been affected by these winds.

Pictures:



Submitted By: Allan Gossen. Cariboo Fire Centre Safety Officer

24 Hour Incident Report

Post/For Information

Kamloops Fire Centre – Kamloops Fire Zone

Date of Event: August 3, 2023

Location: K22024

Activity: Driving

Number and Nature of Injuries: Serious Near Miss. 1 Worker involved, no physical injuries.

Property Damage: Vehicle Damage

Narrative: Crews were supporting equipment on a newly built fire guard. A crew member was tasked with moving a BCWS vehicle to another section. After turning down a section of guard they encountered increased (rank 3-4) fire behaviour and dense smoke which made it difficult to see. The crew member began turning around when the vehicle became high centered on a stump. With the vehicle stuck the mirror began to melt, the crew member abandoned the vehicle and retreated down the guard to meet with their crew leader.

Pictures:



Submitted By: Adams Safety A

24 Hour Incident Report

Post/For Information

Kamloops Fire Centre – Lillooet Fire Zone

Date of Event: August 12, 2023**Location:** Bendor Complex**Activity:** Reconnaissance flying and bucketing**Number and Nature of Injuries:** Serious near miss. No physical injury.**Property Damage:** Not applicable.

Narrative: Two medium helicopters were in a circuit bucketing out of the Fraser River on a fire when a third, intermediate helicopter performing reconnaissance approached the fire. The intermediate helicopter had a pilot that was new to the complex and on board was a Branch Director who was also new to the complex and two members of the local first nation. The intermediate helicopter was experiencing FM radio issues that day and there was large amount of radio traffic within the complex and conversations happening within the cockpit.

The intermediate helicopter had both bucketing helicopters in sight as it approached. One medium was up high going into their drop and the other medium had completed its drop and appeared to be leaving site due to the extended descent path that the intermediate pilot and passenger observed. The intermediate pilot made an advisory call on the active victor frequency that they would be doing a “quick recce and had eyes on the bucket ships”. The intermediate pilot did not receive positive confirmation from the medium bucketing aircraft. As the intermediate began their lower-level recce, the pilot heard that a helicopter was coming “out of the dip” and realized that this call could not have come from the one medium helicopter that he still could see. The rear passenger then pointed out that there was another aircraft at their eight o’clock position. The medium helicopter that the pilot and passenger thought had left the incident was climbing “out of the dip” with the intermediate below and at its two or three o’clock position. The intermediate had to immediately maneuver to clear this medium’s flight path.

The occurrence occurred in the late afternoon in complex terrain within a steep and tight valley that was experiencing the effects of shadowing.

Submitted By: J.J. Lum, Provincial Air Branch Coordinator

24 Hour Incident Report

Post/For Information

Prince George – Dawson Creek

Date of Event: May 6, 2023

Location: G70241, One Island Lake Road

Activity: Fire Suppression

Number and Nature of Injuries: s.22

Property Damage: None

Narrative: Upon arrival on the incident various locals and oil and gas personnel were suppressing the fire. They had various trucks with water tanks and pump systems. The fire was largely grass with a small component into the mixed timber stand. During the preliminary fire assessment as the RO and Crew Leader were establishing control of the incident; a tree came down and struck an oil and gas employee wrangling a hose. The tree was a dead ½ original height aspen approximately 35cm DBH on the edge of the cleared right of way. The fire burned into the defects of the tree which caused it to fail. The victim was not wearing a hard hat and was struck directly on the head and upper body.



Pictures:

Submitted By: Colton Kopp, Wildfire Assistant

Published Date: 2023-05-07

Note/Definition: Following any serious near miss or serious injury, a 24 Hour Incident Report can be issued. The benefit of these reports is that they represent a timely notification of an incident, which limits the spread of false information and enables other workers in similar situations to look at their operations and adjust their actions accordingly. These reports should be made early in the investigative process and should not include recommendations or conclusions. A 24 Hour Incident Report should not be more than one page in length. Delete this note before submitting for publication.

Instructions: Upon completion, convert the document to PDF file format and submit it to the Regional Wildfire Coordination Officer (RWCO).



24 Hour Incident Report Planned Ignitions

Post/For Information

Prince George Fire Centre – Fort St. John Zone

Date of Event: July 4, 2023

Location: G80280 – Donnie Creek Complex

Activity: Conducting Planned Ignitions

Number and Nature of Injuries s.22

s.22

Narrative: A crew on the Donnie Creek Complex was conducting planned burning operations. A change in weather conditions led to fire activity that compromised the crew's ability to safely exercise their escape route. The affected crew members had to travel through areas where there was fire on both sides of their escape route. Their proximity to fire en route to their safety zone led to s.22

Submitted By: Nicole Hack, Donnie Safety C

24 Hour Incident Report

Post/For Information

Prince George Fire Centre – Fort Nelson Zone

Date of Event: June 23, 2023

Location: G90709

Activity: Slinging gear with a longline.

Number and Nature of Injuries: No physical injuries.

Property Damage: Tail and tail rotor detached from helicopter; tail boom damaged. One hose bag containing overnight gear was destroyed.

Narrative: After getting dropped off at a staging area for G90709 by an A-Star, a crew unloaded the gear they had brought with them. They piled the gear neatly beside the helicopter and left it in place as the helicopter departed.

Around 1630, the A-Star BA returned to the staging area with a sling load of gear. The loaded net was placed on the ground 20 meters in front of the original gear pile. The helicopter laid its longline on the ground as it was landing, backing up the machine in the process. When the back of the skids contacted the ground, the tail rotor dipped down and hit the gear pile. This rotated the helicopter sideways before both skids were on the ground. It resulted in the tail and tail rotor being ripped off the helicopter as well as significant damage to the tail boom and machine. The backpack that was hit was shredded, with debris spread over a large area.

The crew and a fueler were standing next to a fuel bowser when the incident happened, approximately 40' from the strike. Once everything had stopped moving, they approached and made sure the pilot was uninjured. All shrapnel appeared to be thrown to the rear of the helicopter, and not in the direction of the crew or the bowser.

Pictures:



Submitted By: Mike Feduck, Staff & Safety Development Coordinator

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Withheld pursuant to/removed as

s.14 ; s.15 ; s.22

24 Hour Incident Report

Post/For Information

Cariboo Fire Centre – Chilcotin Fire Zone

Date of Event: April 28, 2023**Location:** Redstone Flat 1**Activity:** Prescribed Burn**Number and Nature of Injuries:** s.22**Property Damage:** Smaller sections of wooden snake fencing

Narrative: While completing blackline operations in preparation for a controlled burn in matted, dry grass to follow, the teams working on the site experienced a change in wind direction that was forecasted to arrive a couple hours later. As a result, the fire's rate of spread increased to a point where it outflanked one of the burn teams, impacted a wooden snake fence identified as a value adjacent to area being black-lined and engulfed them in smoke. While working to address the spread along the snake fence, a firefighter operating an ATV became aware that the fire had spread such that the ATV was trapped between the fence line and flame. While others jumped the fence, the firefighter was faced with the decision to let the quad burn or drive it through the flame front. As a result, s.22 Fortunately, the firefighter had his gloves on and sleeves rolled down so there was very limited skin exposure. An incident investigation is underway.

Submitted By: Orin Caddy, CaFC RWCC Safety Officer

24 Hour Incident Report

Post/For Information

Prince George – Fort St John

Date of Event: May 13, 2023

Location: 71W24GA (G80223) Red Creek Road

Activity: Fire Suppression

Number and Nature of Injuries: s.22

Property Damage: None

Narrative:

Fire crews were mopping up after a controlled burn from a machine guard: DTA/DTF operations had been performed in the area. Winds were gusting from 10-30 km/h and throughout the largely Cottonwood and Spruce stand, several trees were blown down. A firefighter working in line with a Cottonwood (approximately 12 inches in diameter) fell, breaking off 2 feet from the ground, exposing the center to be rotten: there were no indicators that the tree was dangerous. As the tree was coming down, a second firefighter called out “tree falling” which prompted the first firefighter to move outside the path of the first tree falling. The tree then struck a second tree that fell at a 90-degree angle from the first: it fell in the same direction in which the firefighter was attempting to escape the first tree. The second tree struck the firefighter in the head, knocking him to the ground and pinning him under the tree. The tree came to rest on a previously felled danger tree and provided space for the firefighter.

s.22



Submitted By: John Hanemaayer, North Peace Safety Alpha

Published Date: May 15, 2023

24 Hour Incident Report

Post/For Information

Kamloops Fire Centre – Penticton Fire Zone

Date of Event: August 5, 2023

Location: K52318

Activity: Driving

Number and Nature of Injuries: s.22
s.22

Property Damage: 2 Vehicles Damaged

Narrative: A single resource was traveling westbound on a highway adjacent to the fire perimeter. To access their work area the driver initiated a lefthand turn towards a residential street when their truck collided with a civilian vehicle traveling eastbound. The front of the civilian vehicle impacted the passenger side wheel well of the work truck. Airbags in both vehicles deployed before they came to a stop nearby. The Emergency Response Plan was initiated by the driver and all parties involved in the collision s.22
s.22



Pictures:

Submitted By: Eagle Bluff Safety

24 Hour Incident Report

Post/For Information

Coastal Fire Centre – Fraser Fire Zone

Date of Event: June 7, 2023

Location: V10618, Statliu Creek Fire.

Activity: Fire control. Wet/black lining fire edge for containment.

Number and Nature of Injuries: s.22

s.22

Property Damage: No Property Damaged

Narrative: On June 7th, 2023, s.22

was injured on the Statliu Creek Fire (V10618).

The crew member was working on the low side of a logging road in steep terrain. A log, approximately 8 feet long and 20-inch diameter dislodged, falling down hill, knocking the worker over. The log landed on top and trapped the crew member's legs underneath. Other Firefighters in the immediate area responded and were able to lift the log and help the crew member from underneath the log and up onto the road. The injured worker was assessed by the crew's 1st aid attendants. s.22

s.22



Submitted By: RWCC Safety Officer, Coastal Fire Centre

24 Hour Incident Report

Post/For Information

Prince George Fire Centre – VanJam Fire Zone

Date of Event: May 31, 2023**Location:** Striegler Pit Training Site**Activity:** Pump and hose lay training**Number and Nature of Injuries:** s.22**Property Damage:** Two broken stranglers**Narrative:**

While doing a pump relay for training purposes, a worker attempted to strangle 1.5" hose to continue the progressive hose lay. The Mark-III Pump was throttled at 2 notches above start, 10 lengths of hose (1000 feet) away from the pump. The worker's strangler failed suddenly under pressure applied by worker. After the strangler failure, s.22

s.22

The injured worker was promptly administered first aid by the onsite

Level III attendant.

Immediately after, another worker used a second strangler to continue the progressive hose lay. This strangler had been stored in the same canopy cubby in the same truck as the first failed strangler. This strangler immediately failed in the same manner as the first. See photos below. The second employee was not injured and was wearing gloves at the time of the failure.

Both stranglers were stored in a metal truck canopy and had been outside the entire night previous.

Temperatures fell from ~18 degrees the day prior down to below freezing and had risen again to ~18 degrees at the time of the failures.



Submitted By: Mitch Sorensen, VanJam ZWCO

24-Hour Incident Report

Post/For Information

Kamloops – K7, Lillooet

Date of Event: August 20, 2023

Location: 71W24KA, Gott Creek, Hwy 99

Activity: Driving to work

Number and Nature of Injuries: s.22

Property Damage: The contractors truck sustained major damage

Narrative: Forty-five minutes into the morning commute along Duffy Lake Road to the fireline a vehicle operated by a contracted firefighter drove off the road, over a steep embankment before coming to a rest on its side in the Gott Creek waterbody. Fortunately, the vehicle following was also traveling to the fire, witnessed the incident, and was able to stop and assist in the extraction of the driver. The driver was assumed to be affected by the result

s.22

Pictures:



Note to crews:

Fatigue-related incidents are extremely common, and individuals should monitor themselves and others before stepping behind the wheel, especially pre- and post-shift. Having a passenger is best practice and that passenger should be alert, awake, and aware of those inside and potential hazards outside. If possible, is to best have at least one person designated to stay awake to support the driver, be an active participant, and speak up if you or the driver are exhibiting signs of fatigue. Those working alone are encouraged to ask for a passenger especially when driving on monotonous roads, or roads that you have been driving for days on end.

Submitted By: Iain Berglund, Bendor Safety



24 Hour Incident Report

Post/For Information

Coastal Fire Centre – Mid Island Fire Zone

Date of Event: June 10, 2023

Location: V70600, Cameron Bluffs Fire

Activity: Fireline danger tree falling operations.

Number and Nature of Injuries: s.22

Property Damage: Not applicable.

Narrative: While conducting danger tree falling operations on V70600, Cameron Bluffs, a worker s.22
s.22 BCWS first aid attendants were on site immediately after the tree
strike injury. The worker was quickly transported to an awaiting medivac machine and flown to location where
they were transferred to the care of a BCEHS air ambulance team.

A full investigation is being conducted by both BC Wildfire Service and WorkSafe BC.

Submitted By: Coastal Fire Centre RWCO

24 Hour Incident Report

Post/For Information

Kamloops Fire Centre

Date of Event: August 30, 2023

Location: K71649 – Downton Lake Fire – Goldbridge BC

Activity: Tactical Camp Relocation

Number and Nature of Injuries: N/A Wildlife encounter

Property Damage: To be determined

Narrative: On August 29th, 2023, the Bendor Complex Gun Creek Camp had a black bear and grizzly bear roam the perimeter of camp. The following morning August 30th, a dumpster on site was replaced with a bear proof locking lid. The same day a grizzly was spotted amongst the tents foraging on berries. That evening a grizzly sow and two cubs entered camp.

RCMP were notified and reported that the sow was separated from the cubs by the kitchen trailers onsite. RCMP utilized their sirens and honked the horn of their truck to deter the bear with no success. A helicopter also bucketed on the bear; this had no affect. A discussion with the BC Conservation Officer Coordinator confirmed a decision to move camp that night. The camp was packed up in two hours under the watch of the RCMP onsite. Once packed up a convoy was formed and escorted by the RCMP to Lillooet BC. All staff from the Gunn Creek Camp were relocated to alternate camp locations in Lillooet where staff could sleep and work from the following day or until more mitigation efforts could be put in place.

On August 31st the IMT and BC Conservation Officer Service, with RCMP began investigating the situation to provide expert advice to ensure a desirable outcome for the bears and BCWS is achieved.

Pictures:



Submitted By: Noah Hambly, Safety Officer Trainee