

Staff Ride

Resources



Wildland Fire Leadership Development Program

South Canyon Fire – Facilitators Field Reference, May 2006

Note to Facilitators: This is a suggested format. Do not feel limited by the identified stands or discussion items. It is provided as a word document so that users may adapt and revise it to fit their specific audience and time demands.

Staff Ride Difficulty Rating:

Physical

Arduous (Stands 1-6, Helispot 1, East Drainage, West Drainage)

Moderate (Stands 1 - 6)

Light (Stands 1 – 3)

Walking segments vary from a maintained trail system in mountainous terrain to rugged broken ravines, gullies and steep ridges. Elevation: Colorado River - 5,680 feet; Zero Point - 7,000 feet; Storm King Mountain - 8,700 feet. From the trailhead to Stand 5 (The Lunch Spot) is approximately 2 miles. Access up the East Drainage to Stand 6 (Zero Point) is approximately 1 mile.

Logistics

Moderate – Adjacent to a major paved highway. Glenwood Springs, Colorado is approximately 3.5-hour drive from Denver, Colorado and approximately 1.5-hour drive from Grand Junction, Colorado. The trailhead (Stand 1) is approximately 7 miles west of Glenwood Springs, Colorado in the vicinity of Exit 109 off Interstate 70. Glenwood Springs has ample lodging and meal accommodations suitable for small or large groups. Access to the site is seasonal, dependent upon snow load, and spring break-up. In normal snow years, the trail up to the fire site may not clear until mid-April. Parking space is somewhat limited at the trailhead with only enough room for approximately 20 standard passenger vehicles.

Hazards

Terrain – The trail system is maintained regularly, however, the fire site itself has been maintained to closely resemble a fireline. The East and West Drainages are very rugged broken ravines set between steep ridges. When dry, the soils are loose and unstable footing is common. When wet, the soils become greasy and very slippery and unstable footing is common.

If the East Drainage is to be used as an egress route, arrange for transportation to be staged at Exit 111 in the parking area near the river boat ramp. Due to adjacent traffic and areas of debris roll-out, it is unsafe to travel by foot from the East Drainage to the trailhead along I-70.

If the West Drainage is to be used as an egress route, you must walk along about ¼ mile to the trailhead along I-70 behind a line of concrete barriers.

Other users – This trail is frequently used by locals and visitors alike. Maintain appropriate trail etiquette.

Weather – Given the nature of the terrain, cloud build-up can appear quickly. Thunderstorms and lightning occur frequently. Be prepared for all types of weather and check forecasts prior to your trip.

Snags – There are dead trees in the burn area. Be aware of the potential for snags to come down without notice - wear hard hats.

Rocks – Rolling rock and debris are common - wear hard hats.

Stand 1 – Trailhead

Maps

Travel Map

Topographic Map with stand locations

Access

GPS Coordinates (WGS 84): Lat: N39° 34' 25" Long: W107° 26' 04"

From Denver, Colorado:

I-70 West approximately 150 miles to Glenwood Springs, CO.

From Glenwood Springs, Colorado:

Take Interstate 70 West approximately 7 miles. Take Exit 109; then take an immediate right and follow the frontage road eastward; this road will dead-end at the trailhead parking lot.

From Grand Junction Colorado:

I-70 East approximately 90 miles to Exit 109; then go left back across the Interstate, take an immediate right and follow the frontage road eastward; this road will dead-end at the trailhead parking lot.

Terrain Orientation

Interstate 70

Colorado River

Canyon Creek Estates – Helibase for South Canyon Fire

Actual location of South Canyon proper

Discussion Guide

- During the winter of 1993 and 1994, Colorado experienced a very dry winter, with very little snowfall in the higher elevations. The Glenwood Springs area had received only 58 percent of normal precipitation since October 1993.
- During the month of June Colorado experienced record high temperatures. The Grand Junction District's Management Team had issued a directive that all fires be initial attacked and suppressed as soon as possible. Statewide fire prevention restrictions were issued for Colorado on June 29, 1994.
- In the Glenwood Springs Resource Management Plan, the South Canyon Fire area is designated as a Fire Exclusion Zone, an area where all fires are to be fully suppressed. The objective for fire suppression in the Grand Junction District Fire Management Activity Plan for the Fire Exclusion Zone is to have 90 percent of fires controlled at 10 or fewer acres.
- The Bureau of Land Management's Grand Junction District was experiencing a severe fire season. Fire danger indices for July were at the highest levels recorded in 21 years. As of early July the number of fires was twice the annual average. Type I and II Incident Management Teams had responded to five times the number of fires that they would respond to in a normal year.
- Beginning July 2, a weather pattern of dry thunderstorms caused a rash of wildfires. Red flag watches and warnings were issued for western Colorado based on forecasts for dry thunderstorms with strong and gusty winds. Western Colorado was in extreme drought, as reflected by the Palmer Drought Index.
- Dry lightning storms had started 40 new fires in BLM's Grand Junction District in the two days before the South Canyon Fire started, requiring the District to set priorities for initial attack. The highest priority was given to fires threatening life, residences, structures, fire spread and utilities. All initial attack firefighting resources on the Grand Junction District were committed.
- The primary fuel type burning on July 3, 4 and 5 was pinyon-juniper. Gamble oak was the predominant fuel consumed on July 6 when the fire made its significant run. The Gamble oak ranged from 6 to 12 feet high and the live fuel moisture was 125 percent. Live fuel moisture in the under burned Gamble oak was so low (60 percent) that it reacted much like dead fuel. Both annual and perennial grasses were completely cured.
- South Canyon Fire was ignited on July 2 – cause is lightning; reported to the Bureau of Land Management on July 3. The fire began on a ridge, which was paralleled by two deep drainages (East & West drainage). In its early stages the fire burned in the pinyon-juniper fuel type and was thought to have little potential for spread, fire size was 11 acres on July 4 at 2200 hours.

Handout and Conduct Tactical Decision Game #1 or Strategic Discussion Points #1.

Handout Tactical Decision Game #2 or Strategic Discussion Points #2 prior to leaving Stand 1.

Tell participants to have their solutions ready when they arrive at Stand 2.

Stand 2 – Overlook Ridgeline

Maps

West Flank Aerial Photo

Access

GPS Coordinates (WGS 84): Lat: N39° 34' 33" Long: W107° 25' 39"

From Stand 1 hike approximately .5 mile up the memorial trail system (N/NE heading) to the crest of the ridgeline, which overlooks the West drainage. This location provides an excellent vantage point enabling participants to get a full overview of the Double Draws, Lunch Spot, Petrilli's photo point, Longanecker's position and the West Drainage. Anywhere along this ridgeline between the Overlook site and where the trail first crests the ridge can serve as Stand 2.

Terrain Orientation

Ignition Point

West Drainage

Double Draws

Petrilli's photo point

Longanecker's position

Spot fire location

Storm King Mountain

Discussion Guide

Conduct Tactical Decision Game #2 or Strategic Discussion Points #2

- BLM Engine Crew arrived at the scene and met with Garfield County Sheriff. The Engine Foreman completed the initial size-up and confirmed that the fire was on BLM administered land. The Engine Foreman recommended that the fire be observed until firefighting resources could be obtained. The Grand Junction District Fire Control Officer arrived at the scene and agreed with the Engine Foreman's assessment and recommendation.
- Three aircraft – Lead 64, Jumper 49, and Air Tanker 14 previously ordered were diverted to other priority fires in the area. The Fire Control Officer called the Western Slope Coordination Center and requested more firefighting resources for the South Canyon Fire.
- Over the next two days the South Canyon Fire increased in size, the public expressed more concern about it, and some initial attack resources were assigned. On the afternoon of July 4 the District sent two engine resources, arriving at 1830 at the base of the ridge near Interstate 70; the crew sized up the fire but decided to wait until morning to hike to the fire and begin firefighting efforts.
- On the morning of July 5, a BLM crew of seven accessed the fire from the East drainage. The hike to the fire took approximately 2 ½ to 3 hours. The crew cut a helispot (H-1) on the ridge above the fire and began direct fireline construction downhill along the fire edge below the helispot. The Incident Commander ordered another Engine Crew, a helicopter, and a 20-person Crew. A load of eight Smokejumpers was substituted for the 20-person Crew and was sent to the fire.
- An air tanker drop was requested to support fireline construction. Two loads of retardant were utilized on the fire. The Incident Commander and the air tanker pilot agreed that more retardant drops would be ineffective because of steep terrain and gusty winds.
- The Incident Commander and BLM Crew left the fire to refurbish their equipment. Afterwards, eight Smokejumpers parachuted into the fire at 1745. The Incident Commander directed them to work on the fireline from the helispot downhill toward the West drainage.
- The Jumper in Charge informed the Incident Commander that the fire had crossed the fireline constructed earlier and was burning actively. After sizing up the fire, the Jumper in Charge called Grand Junction District Dispatch and ordered two Type 1 crews. The Jumpers then began building a fireline down the east side of the ridge.
- On July 5, the fire grew from 29 acres at 08:00 to 50 acres at 22:00.

Handout Tactical Decision Game #3 or Strategic Discussion Points #3 prior to leaving Stand 2.

Tell participants to have their solutions when they arrive at Stand 3.

Stand 3 – Overlook

(This is the last identified stand at the South Canyon Fire site when conducting a light duty staff ride. Optional off-site locations may be used for additional stands, such as the helibase site in Canyon Creek Estates; the East Drainage access point at Exit 111 off I-70; or Two Rivers Park in Glenwood Springs).

Maps

West Flank Aerial Photo

Access

GPS Coordinates (WGS 84): Lat: N39° 34' 40" Long: W107° 25' 23"

From Stand 2 follow the trail due north along the *ridgeline approximately .3 miles.

Terrain Orientation

Jump Spot

H-1 & H-2

Zero Point

West Flank Fireline

Lunch Spot

Fatality sites (Smokejumper / Hotshot / Helitack)

Discussion Guide

Conduct Tactical Decision Game #3 or Strategic Discussion Points #3

- Ten red flag warnings were issued for the BLM Grand Junction District between June 1 and July 6. On July 5 and 6 the Haines Index was 6. A red flag warning was issued to Grand Junction Dispatch on July 6.
- Early in the morning on July 6 (00:30 hours) the Jumpers abandoned their line construction on the East side of the fire because of darkness and the hazards of rolling rocks. The fire continued to flare up throughout the night, and the jumpers become concerned about the fire burning over the jump site where they had left their parachutes and equipment.
- The Jumper in Charge ordered a helicopter for gear removal and requested a fixed-wing aircraft with an aerial observer. After discussions with dispatch it was agreed upon to use the helicopter for recon instead of the fixed-wing aircraft and aerial observer.
- Because of difficulties in acquiring tools and equipment, the Prineville Hotshots did not arrive at Canyon Creek Estates until 12:00 on July 6.
- The Incident Commander and the Jumper in Charge discussed strategy and tactics for the day. The plan was to improve the fireline on the ridge between H-1 and H-2 and to have the eight jumpers and the Prineville Hotshot Crew start building a fireline along the fire edge on the West flank.
- The Incident Commander and several of the jumpers programmed their radios to the NOAA weather channel and received the following general Grand Junction area weather forecast: “Windy and cooler, highs in the mid 80’s, west to northwest winds 15 to 25 mph with some stronger gusts, sunny in the morning, partly cloudy by afternoon. In the evening, cooler with possible record low temperatures, lows 50 to 55, partially cloudy with isolated showers, decreasing Northwest winds.”

Handout Tactical Decision Game #4 or Strategic Discussion Points #4 prior to leaving Stand 3.

Tell participants to have their solutions when they arrive at Stand 4.

Stand 4 – West Flank Fireline (the Stump)

Maps

Topographic Map with fire progression for July 6

Access

GPS Coordinates (WGS 84): Lat: N39° 34' 33" Long: W107° 25' 14"

From Stand 3, follow trail down into West Drainage and up the opposite side to Zero Point Ridge. Go south on Zero Point Ridge until you see West Flank Fireline, follow West Flank Fireline down through fatality site until you see the marker for the Stump.

Terrain Orientation

West Drainage (point out the west aspect & steep slopes)

Discussion Guide

Conduct Tactical Decision Game #4

- Helicopter 93R arrived on the fire at 0930 but was limited to 4 hours flying time because of anticipated new fires. The Incident Commander and Jumper in Charge took a reconnaissance flight of the fire and directed the jumpers to start building a fireline downhill on the West flank. The Jumper in Charge and a Jumper on the ground discussed the lack of safe areas on the fire. Follow-up discussion on the ground resulted in continuing with the original plan.
- On July 6 between 11:35 and 13:00, two flare-ups occurred on the west flank line, which forced the group of Jumpers to momentarily retreat up the fireline toward the top of the ridge. Several of the Jumpers discussed their concerns about the safety of building the fireline. After a water drop from the helicopter cooled the flare-up, the Jumpers proceeded back down the fireline; the tree that flared up was cut down leaving the stump as identified by Stand 4.
- Eight additional Smokejumpers arrive at 1030 and 10 Prineville Hotshots arrive at 1330 at H2.
- The Incident Commander, Jumper in Charge and IHC Superintendent discussed strategy and agreed to send nine hotshots down the west flank to reinforce the Jumpers.
- The arrival of the second half of Prineville IHC was delayed due to competing priorities for bucket drops. They arrived at H-2 by helicopter at 15:15 and were instructed to help improve the fireline and put out spot fires along the ridge between H-1 and H-2.

Handout Tactical Decision Game #5 prior to leaving Stand 4.

Tell participants to have their solutions when they arrive at Stand 4.

Stand #5 – Lunch Spot

Maps

Map D – Topographic Map with fire progression for July 6

Access

GPS Coordinates (WGS 84): Lat: N39° 34' 30" Long: W107° 25' 20"

From Stand 4 continue along the West Flank Fireline; observe the fuel types, topography and general terrain. The line will continue to the Lunch Spot.

Petrilli's Photo Point is located just below the Lunch Spot:

GPS Coordinates (WGS 84): Lat: N39° 34' 27" Long: W107° 25' 22"

Terrain Orientation

Lunch Spot & Lunch Spot Ridge

Double Draws

Longanecker's position

Spot fire across West Drainage

H-1

Ignition Point

West Flank Fireline

Discussion Guide

Conduct Tactical Decision Game # 5

- After a lunch break, three Jumpers were instructed to work back up the west flank looking for hot spots and improving the line with the hotshots. The Line Scout continued south and down the hill past the end of the fireline to size up the next section of fireline.
- The Line Scout requested all the jumpers at lunch spot to continue hike down to his location. Six jumpers proceeded down the hill approximately 75 yards from lunch spot. There was a discussion about whether to continue with line construction when they were already having problems holding the line already constructed. Some of the jumpers thought they were already spread too thin and did not want to commit any further down the hill.
- The request from the Line Scout was denied. He then requested one saw and a couple of diggers. Three jumpers continued down the hill another 10 yards when they noticed the slope above the Line Scout making significant runs. The three jumpers informed the Line Scout that they didn't want to come down to his location and suggested he pull out of the area.
- At approximately 15:20, a dry cold front with strong winds passed over the fire area. Fire activity immediately began to pick up.
- The fire made several rapid runs with 100-foot flame lengths within the burned area just above the Line Scout. A short time later, helicopter water drops were called for on the west drainage and the ridgeline. At this point, fire activity was so intense that water drops were not effective. The people improving the handline noticed the activity and started walking out the west flank fireline towards "zero point."
- At 16:00, the fire blew up, crossing the West drainage at the base of the gully below the Line Scout. Within seconds, a wall of flame raced up to the opposite ridge. A jumper who viewed the blow-up called the Line Scout to get out of the area. The Incident Commander directed the Jumper in Charge to bring the firefighters up from the bottom of the fireline. The jumper with the view of the blow-up called the Jumper in Charge to tell him that the fire had crossed the main drainage and was "rolling."
- The fire rushed up the West side of the drainage pushed by 30 mph winds. In 10 to 12 minutes, the fire had progressed up the canyon to a point across from the firefighters hiking up the fireline.
- At 16:11, the Incident Commander called Dispatch to report that he was losing the fire on the side where the homes were and that he needed air tankers. At 16:20, an air tanker was dispatched.
- Between 16:14 and 16:18, the fire was observed to spot back to the east side of the drainage below the crew that was walking out the fireline towards "zero point". As the fire raced up the slope, it was influenced by stronger winds of 40 mph. The spot fire reached the ridgeline in 2 minutes. During the run, the fire's rate of spread accelerated from 3 to 11 mph.
- At the time of the accident 16 Smokejumpers, 20 Hotshots, a six-person helitack crew (2 on the fire and 4 at the helibase), and 12 BLM / USFS firefighters (11 on the fire and 1 at the helibase) were assigned to the fire; 54 firefighters total.

Handout TDGS #6

After conducting Tactical Decision Game # 5 and the Stand 5 discussions, allow time for participants to explore the area. Select an appropriate location to conduct the Integration session based on Tactical Decision Game # 6.

Stand #6 – Zero Point

Maps

Map D – Topographic Map with fire progression

Access

GPS Coordinates (WGS 84): Lat: N39° 34' 35" Long: W107° 25' 04"

From Stand 5 participants can hike the West Flank Fireline back to “Zero Point”. Another option is for participants to hike up Lunch Spot Ridge to H-1 and walk due north to “Zero Point”.

Terrain Orientation

Zero Point

Fatality sites

H-1 & H-2

East Drainage

Zero Point provides a good place to build a terrain model and discuss sequence of events, crew movements, fire behavior, and terrain features that shaped the outcome of this incident.

Discussion Guide

- Discuss the causal factors associated with the fuels, weather, topography, predicted fire behavior, and the observed fire behavior.
- Describe the strategy and tactics regarding incident management of the South Canyon Fire to include safety briefings, identified concerns, LCES, 10 Standard Fire Orders and the 18 Watch Out Situations.
- Is it possible to not “bend” or “break” the 10 Standard Fire Orders? Reference the Quentin Rhoades article.
- The USFS has recently developed a Fire Doctrine. Discuss how this doctrine may or may not have a significant impact on the fire service as it relates to fatality fires that have driven programmatic policy changes.
- The involved personnel were cited as having a “Can Do” attitude, which led to a compromise of the 10 Standard Fire Orders and a lack of recognition of the 18 Watch Out Situations.
- Discuss the human factors associated with the personnel on the fire who recognized that their situation was dangerous and questioned the strategy and tactics, however, chose to continue with the assignment.
- Discuss the contributory causes associated with Incident Management, control mechanisms, and support structure.
- The tragedy of the South Canyon Fire produced numerous policy-changing recommendations and prompted the agencies to conduct program management reviews. Discuss the effects of this on fire management today. Such as, the recommended changes in the areas of training, policy, weather information, fire danger recognition, fire behavior prediction and preparedness.
- Following the soul searching, multiple-agency investigations, and special conferences on safety stimulated by the 1994 South Canyon incident that killed 14 firefighters, a new idea arose: that the usual things sought in fatality investigations were not sufficient. There were likely to be organizational cultural problems, leadership issues, human factors problems, and possibly other issues that were underlying the firefighter safety problems. Ted Putnam, of the Forest Service, articulated this need in a landmark paper (Putnam, 1995).
- Gamble oak was recognized as a highly flammable and hazardous fuel type in the accident report on the Battlement Creek fire (in the Grand Junction District within 30 miles of the South Canyon Fire), which killed three firefighters in 1976. Of the firefighters assigned to the South Canyon Fire, how many were aware of this fatality fire and the factors associated with it?

Conduct Tactical Decision Game # 6 or other form of Integration session for the Staff Ride.