

State of California

92
The Resources Agency
JUN 04 1992

Memorandum

TO : Mr. Rex N. Griggs
Chief, Region III
Department of Forestry
and Fire Protection

Date: May 28, 1992

F1

Telephone: CALNET (8) 453-9424
(916) 653-9424

From : Department of Forestry and Fire Protection

Subject: 1700 SAFETY
1716 Serious Accident Investigations
(Collins Fire - Burn Injury)
Firefighter I Craig Rogers
Region III

We have reviewed the report covering the injuries to Firefighter I Craig Rogers. We concur that a Board of Review is not necessary.

Pass on to the people who conducted the review and prepared the report; job well done.

Original signed by
William C. Teie

William C. Teie
Deputy Director for
Fire Protection

ak

cc: ~~Cathy~~ Liddicoat

State of California

M E M O R A N D U M

RECEIVED BY
Deputy Director for The Resources Agency
Fire Protection
MAY 19 1992

To : Richard Wilson CA Deputy Director for Forestry and Fire Protection
Attn: Bill Teie Date: May 19, 1992

Telephone ATSS (8) 632-4140
(714) 782-4140

From : REX N. GRIGGS, Chief, Region III
Department of Forestry and Fire Protection

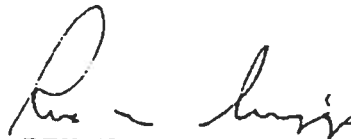
Subject: 1700 SAFETY
1716 Serious Accident Investigations
(Collins Fire - Burn Injury)
Firefighter I Craig Rogers
Region III

Attached for your review is a serious accident report on the fireline burn injury to Firefighter I Craig Rogers, Jr.

After reviewing the accident investigation report, it is our opinion that the accident was unavoidable and that no violations of safety occurred.

Due to the circumstances of the accident, we do not feel that a board of review, as required by policy, is necessary. We recommend that the Opinions and Conclusions signed by James M. Wright, Accident Investigation Team Leader, be accepted as written.

If you have any questions, please give me a call.



REX N. GRIGGS
Chief, Region III

lw
Attachments

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State Of California
Department Of Forestry
& Fire Protection



SERIOUS ACCIDENT

INVESTIGATION

REPORT

" COLLINS FIRE "

BDU INCIDENT #21377

REGION III

State of California
M E M O R A N D U M

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The Resources Agency
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REX N. GRIGGS
Chief, Region III

lw
Attachments

State of California

The Resources Agency

M E M O R A N D U M

May 18, 1992

To : Rex N. Griggs, Chief, Region III
Attention: Glen J. Newman, Assistant Chief

From : J. M. HARRIS, Ranger Unit Chief
Riverside Ranger Unit

Subject: 1700 SAFETY
1716 Serious Accident Investigations
"Collins Fire" Burn Injury
FFI Craig Rogers

Attached for your review is the serious accident investigation report of the fireline burn injury to Firefighter I Craig Rogers, Jr.

The following information, opinions and conclusions were derived from the investigation. It has been determined that this injury incident was accidental by means of Firefighter-I Rogers stumbling into an unrecognizable Beaver Lodge. Further, it is the opinion of said investigating team that this accident was, in fact, unavoidable.

The following were found to be contributing factors surrounding the accident: Firefighter-I Rogers unfamiliarity with the specific terrain hazards, coupled with the amount of ground litter and ash which concealed the Beaver Lodge which gave it a profile appearance that matched the surrounding terrain prevented Rogers from recognizing the hazardous terrain conditions.

Even though Rogers was wearing his required safety equipment he still received serious burns to the posterior of his right leg below the knee and a lesser degree burn to the right wrist. After examining evidence and obtaining information from the major principles involved the following have been established:

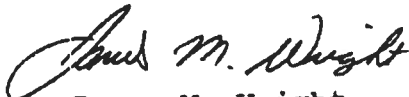
- o From the professional medical standpoint, the attending physician at the burn center is of the opinion that Firefighter Rogers' burn injuries are as a result of hot ash entering under his pant leg as he fell.
- o In addition to the hot ash theory noted above, it may also be possible that Rogers' clothing and nomex may have temporarily lost their insulative effect as he fell into the hole, thereby compressing hot material to his nomex outer wear and transferring heat through his clothing to the skin.

Glen J. Newman
May 18, 1992
Page Two

The specific mechanism whereby Firefighter Rogers received his burn injury may never be determined. It may indeed be possible that a combination of factors were involved. Nevertheless, the major cause/factor is that Firefighter Rogers simply had the misfortune to step into a hole packed with hot, smoldering material.

In conclusion, then, it is recommended that no further administrative action be taken regarding this incident.

J. M. HARRIS
Ranger Unit Chief


By: James M. Wright
Division Chief
Accident Investigation
Team Leader

JMH:at

SERIOUS ACCIDENT' INVESTIGATION REPORT

Accident Type. Fire Line Burn Injury
Incident Name/Number "Collins Fire" BDU 21377
Accident Date. April 14, 1992
Accident Location. Region III, San Bernardino R. U.
Investigation Level Regional Review

GLEN J. NEWMAN, ASST. REGION CHIEF

<u>Investigation Manager/Title</u>	<u>Signature</u>	<u>Date</u>
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JAMES M. WRIGHT, DIVISION CHIEF

<u>Investigation Team Leader/Title</u>	<u><i>James M. Wright</i></u> Signature	<u>5-12-92</u> Date
--	--	------------------------

Investigation Team Members:

JOE MC KIMMEY, R.O. III JAC RECRUITMENT COORDINATOR

FRANK KAWASKAI, FIRE CAPTAIN SPECIALIST, SAN BERNARDINO R. U.

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I. ANALYSIS

I. ANALYSIS

A. SUMMARY OF ACCIDENT

On April 14, 1992, at approximately 1250 hours, the California Department of Forestry and Fire Protection's resources from the Owens Valley Division responded to a reported vegetation fire along the Owens River north of Collins Road. The location is about 5-6 miles south east of the City of Bishop in heavy river bottom fuel.

Erratic winds posed significant fire suppression challenges to the responding firefighters as they attempted to contain the fire. Additional resources from outside of the Owens Valley Division were required to assist in containment and control as it grew to about 125 acres by 1500 hours, when the forward rate of spread was stopped and the weather calmed. The fire was declared contained at 2200 hours on the same date.

At approximately 1830 hours, a Firefighter I from Engine Company 3563 received burn injuries to his right leg during mop up operations. The firefighter, while advancing a hose line toward a hot spot, stepped and fell into an abandoned beaver lodge located within the burned area. Firefighter I Craig Rogers was treated immediately by CDF Emergency Medical Technicians on the scene, and was transported by San Bernardino County Sheriff's Aviation aircraft to the approved CDF burn treatment center at the Sherman Oaks Burn Center.

Upon evaluation, Firefighter Roger's burns were described as second and third degree burns over 6%-8% of his body. The Sherman Oaks Burn Center anticipates his stay to last about 10 days at the facility.

Notification per the Department's serious burn injury policy were initiated by on scene personnel, and relayed via the Inyo Interagency Dispatch Center to the San Bernardino Ranger Unit's Emergency Command Center by 1841 hours on April 14, 1992.

A CDF Accident Investigation Team was activated on April 14, 1992, with team members selected and notified by 2100 hours. The team was operational and enroute by 0800 hours on April 15, 1992.

B. FINDINGS

PERSONNEL

1. Firefighter Personal Data: Craig Rogers, Jr.
CDF Firefighter I
Age: 21 Social Security #:
DOB: July , 1970
Physical Condition: Excellent
Male, Hair: Brn Eyes: H21 Height: 5'11"
Weight: 170 Lbs.
Home Address: Rd.
Phelan, CA 92371

EQUIPMENT

1. All required personal protective equipment was in use, and was serviceable. The equipment was properly used.
2. The safety equipment used consisted of wildland helmet with nomex shroud and goggles, nomex shirt and pants, structural fire gloves, Red Wing 8" boots with lug soles, and cotton neckerchief. In addition, firefighter was wearing web gear with canteens and fire shelter. Uniform pants under nomex were 50% cotton 50% polyester. Tee shirt and briefs were 100% cotton.
3. Firefighter was using 1" cotton jacketed fire hose in mop up operations.

WEATHER

1. The skies were overcast, the temperature was estimated at 72 degrees, there was cumulus build up earlier in the day, the wind was out of the south east at about 10 miles per hour.
2. The area was clear of smoke, although due to the time of the day the visibility was limited by the setting sun.

TERRAIN

1. The area consisted of marshlands formed by a former course of the river. The vegetation was dense with willows, grasses and brush. In addition, cottonwood and black locust trees formed groves in the area.
2. The former river course was exposed when the river water receded. The area was about 8' below the level of the surrounding topography.

MANAGEMENT

1. The incident management appears to have been organized and responsive to the fire's behavior. The primary consideration during the active fire spread was safety.
2. The fire was in the mop up stages during the time of the accident.

C. CAUSAL ELEMENTS

CONTRIBUTING FACTORS TO THE INJURIES

1. PERSONNEL

- a. The firefighter was unfamiliar with specific local terrain features.

2. EQUIPMENT

- a. The firefighter's safety and uniform clothing were wet from earlier falls into the stream. Hot ash material managed to enter and work it's way up, inside pant leg of firefighter's safety/uniform clothing. Hot ash material entered wrist gauntlet area of right glove which caused burn injury to wrist.

3. WEATHER

- a. The atmospheric conditions permitted dead and dying fuels to produce sustained high heat output that ignited the protected fuels of the beaver lodge.

4. TERRAIN

- a. An accumulation of heavy fuel camouflaged the beaver lodge. In addition, with the abandonment by the beavers, the lodge assumed a lower profile, matching the surrounding marshlands.

CONTRIBUTING FACTORS TO NON-INJURY OR LESSENING OF INJURY

1. PERSONNEL

- a. The firefighter had prior experience in both structural and wildland fire suppression. In addition to the seasonal experience, he had time as a paid call firefighter.

- b. The physical condition of the firefighter was excellent. He was agile, and had been conditioning himself with a regular daily exercise program.

2. EQUIPMENT

- a. The firefighter was wearing his structural fire suppression gloves, instead of his wildland gloves. The gloves prevented severe burns to the rest of his hands; the gloves construction allows for a vapor barrier, thermal protection, and thicker leather construction.

3. MANAGEMENT

- a. Employee had received regular in-service training.
- b. Firefighter received safety advisories during the incident.

NON-CONTRIBUTING FACTORS

1. EQUIPMENT

- a. Some articles of the clothing were not labeled as CAL-OSHA compliant.
- b. Safety clothing and cotton t-shirt, protected the firefighter from flaming brands during earlier fire suppression activities.

II. SUPPORTING DATA

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A. Narrative of Investigation

At approximately 2030 hours April 14, 1992, a serious accident investigation team was selected and members were notified of their assignment. The team members consisted of the following:

Division Chief Jim Wright, RRU, Team Leader
Mr. Joe McKimney, RO III Headquarters
Fire Captain Specialist Frank Kawasaki, BDU, CDFEA
Representative

Initial information and instructions provided to the investigation team members was that the assignment was to investigate a fireline burn injury, which occurred to a CDF firefighter near Bishop, in Inyo County. Travel to the assignment was to originate from the Riverside Municipal Airport, utilizing a rental aircraft from Midfield Aviation and fly to the Bishop Airport.

At approximately 0730 hours April 15, 1992, investigation team members arrived and assembled at the Riverside Municipal Airport. Team Member Kawasaki provided the team with preliminary incident information which he had acquired from the San Bernardino Emergency Command Center. At approximately 0810 hours April 15, 1992, the investigation team members departed Riverside Municipal Airport, and arrived at the Bishop Airport at approximately 1020 hours April 15, 1992. Upon arrival at Bishop, contact was made with the Inyo Inter-agency Communications Center, for transportation arrangements. At approximately 1100 hours April 15, 1992, Division Chief Escher and Battalion Chief Stadick arrived at the Bishop Airport, and provided transportation for the investigation team to the Owens Valley Conservation Camp. Upon arrival at the Owens Valley Conservation Camp, the investigation team assembled and discussed the team's responsibilities, and duties. Team Leader Wright provided team members an excerpt of the 1700 Health and Safety Procedural Manual. Specifically, Section 1716 through 1717.5. This section outlines accident investigation team responsibilities, objectives, and procedures. An investigation action plan was established and implemented. The team first requested, and received an incident briefing from Division Chief Escher. Chief Escher also provided the Investigation team with a copy of a preliminary report of the incident. The preliminary report was prepared and submitted by Chief Escher to the San Bernardino Ranger Unit Headquarters. (Preliminary Report is included in the Attachment Section of this report.) Chief Escher also identified personnel which are assigned to the Owens Valley Conservation Camp, who had been identified as witnesses:

Fire Captain "B" Jan Gnass
Fire Apparatus Engineer Loren B. Fletcher
CDF Inmate Firefighter Bobby Garcia
CDF Inmate Firefighter James Hartley
CDF Inmate Firefighter Edward Wilson
CDF Inmate Firefighter Steve Luley

After the incident briefing, the investigation team requested to view and examine the safety equipment that was worn by Firefighter I Rogers. The safety clothing had been retrieved from the incident scene, and was secured in a locked storage room at the camp. Firefighter I Roger's wildland safety and uniform clothing was visually and physically examined and photographed. Examination comments are noted with the photograph of the specific clothing items in the attachment section of this report. Upon conclusion of the examination and photographing of the safety and uniform clothing, they were returned and secured. At approximately 1300 hours April 15, 1992, the investigation team traveled to the incident location, and arrived at approximately 1320 hours. Division Chief Escher gave the investigation team an orientation tour of the fire area, and then led the team to the accident site. The investigation team found that the accident site had been marked and flagged off with hazard marking tape. The accident site was located in an old river course area, along the west side of the Owens River, north of Collins Road. The investigation team accessed the accident site, examined the terrain and photographed the area. The location where Firefighter I Rodgers suffered his injury was found to be an abandoned beaver lodge that had become overgrown and covered with tulies and assorted vegetation ground debris. Additional photographs were taken of the surrounding area, to depict the vegetation fuel loading and terrain. Distance measurements were taken, and a preliminary area and site sketch was made.

At approximately 1430 hours, April 15, 1992, the investigation team departed the fire scene, and returned to Bishop to acquire lodging, meals, and film processing services. At 1630 hours April 15, 1992, the investigation team returned to the Owens Valley Conservation Camp. Investigators worked on tasks such as preparing maps and arranging investigative interviews of alleged witnesses. Personnel who participated in investigative interviews were briefed as to who the investigators were, and why the investigation was being conducted. Each person was interviewed with all team members present, and a tape recording was made during the interview discussion.

The first individual interviewed was Fire Captain "B" Jan Gnass, who is assigned to Owens Valley Crew 4. Captain Gnass provided the investigation team with a handwritten statement of his involvement, and observation of the accident situation. Captain Gnass's statement is located in the attachment section of this report.

Fire Apparatus Engineer Loren Fletcher also provided the investigation team members with a hand written statement. Engineer Fletcher described the events from the time of dispatch to the fire, through the first aid treatment, and transportation of Firefighter I Rogers. Engineer Fletcher also provided copies of Firefighter I Rogers training documents. The documents listed training subjects and hours Rogers received since being assigned to the Owens Valley Division. Engineer Fletcher also told the

investigation team that he viewed Firefighter I Rogers as a dedicated, hard working, and safety-conscious employee. It should be noted that Engineer Fletcher's supervision and action of first aid burn treatment of Firefighter I Roger's burn injury completely followed the procedures outlined in Health and Safety Temporary Directive #90-30.

The next individual interviewed was CDC Inmate Bobby Garcia (#H-09582), from Owens Valley Crew #4. Garcia advised investigators that he had assisted Firefighter Rogers by charging the hoseline Rogers was advancing. Inmate Garcia also witnessed Firefighter Rogers sink into the ground, and then struggle to pull himself up and out of the ground. Inmate Garcia then stated Firefighter Rogers rolled into a trench of water adjacent to where he went down, and then got up and began walking toward Garcia. Garcia also stated Rogers looked shocked or surprised, and said he had been burned.

The next interviewee was CDF Inmate James Hartley (#H-16456), of Owens Valley Crew #6. Hartley told investigators he was positioned on the east side of the Owens River, protecting against spot fires when he happened to be watching the actions of Firefighter Rogers. Inmate Hartley said he saw Rogers advancing and operating a hoseline, when he fell or dropped down. Inmate Hartley said Firefighter Rogers quickly got up, and stumbled into some nearby water. Inmate Hartley felt something was wrong because the look of what Inmate Hartley thought, was shock or surprise from Firefighter Rogers facial expression.

CDC Inmate E. Brian Wilson (#H-16370) was interviewed next. Inmate Wilson is also assigned to Owens Valley Crew #6, and was also positioned along the east side of the Owens River directly across from the accident site, when he saw the accident. Inmate Wilson told investigators he was watching Firefighter Rogers walking and pulling the hoseline Rogers suddenly dropped down quickly got up, and then stumbled into some water. Inmate Wilson said Firefighter Rogers appeared to be surprised as to what had happened.

The last person to be interviewed was CDC Inmate Steven Luley (#D-09582), of Owens Valley Crew #6. Inmate Luley was positioned along the east side of the Owens River with Inmates Wilson and Hartley. He also witnessed Firefighter Rogers fall and scramble backwards before getting back to his feet. Inmate Luley sensed, by watching Firefighter Rodgers movements, that something unusual had happened.

At approximately 2045 hours, investigation team members departed the Owens Valley Conservation Camp and traveled to Bishop for lodging.

On April 16, 1992 at 0800 hours, the investigation team reassembled at the Owens Valley Conservation Camp and prepared the preliminary report. Once the report was completed it was faxed to

Region III Headquarters. At approximately 1030 hours April 16, 1992, investigation team members returned to Bishop, to retrieve developed photographic evidence. Additionally, the preliminary medical report was obtained from Northern Inyo Hospital.

At approximately 1100 hours April 16, 1992, the investigation team arrived at the Bishop Airport, and prepared for the return trip to Riverside. At 1130 hours the investigation team was enroute via Midfield Aviation, to the Riverside Municipal Airport. Arrival at Riverside Municipal Airport was at approximately 1400 hours April 16, 1992. Team members disbanded, and returned to their respective units.

At approximately 1430 hours April 16, 1992, Team Leader Wright arrived at Region III Headquarters and delivered an original copy of the incident preliminary report.

At about 1030 hours April 17, 1992, Investigators Wright and Kawasaki arrived at the Sherman Oaks Burn Center to visit and interview Firefighter I Rogers. Burn center personnel advised Investigators Wright and Kawasaki that Rogers was unavailable because he had just undergone surgery, and was sedated.

At approximately 1415 hours April 20, 1992, Investigation Team Members Wright, McKimmey, and Kawasaki visited Firefighter I Rogers at the Sherman Oaks Burn Center. Investigators conducted a tape-recorded interview with Firefighter Rogers. Firefighter Rogers recalled that he was advancing a hoseline and extinguishing hot spots when he suddenly sank down, about waist deep, into ground material. Rogers said he quickly struggled to get up, and out of the hole he had fallen into. Rogers said after getting free, he rolled into a trench of water to cool his leg. He felt his leg had been burned. Rogers then made his way back to Engine 3563 and received medical treatment.

After interviewing Firefighter Rogers the investigation team returned to Region III Headquarters and worked on the informational summary report. A draft of the Summary report was and submitted for review.

On April 23, 1992, investigation team members assembled at Perris Headquarters and reviewed investigation information. Team members divided up work assignments, and concluded their meeting. In addition, Team Leader Wright went to Region III Headquarters and made corrections and revisions to the summary report and resubmitted.

During the period of April 24 through May 8, 1992, investigation team members continued to prepare investigation report information.

At 1715 hours May 8, 1992, Team Leader Wright contacted Doctor Karl Stein of the Sherman Oaks Burn Center by Phone to discuss the burn injury Firefighter Rogers had suffered. Doctor Steins

interview summary is located in the attachment section of this report.

Report package completed and submitted for review.

II SUPPORTING DATA

B. SEQUENCE OF EVENTS:

At approximately 1825 hours, April 14, 1992 mop-up fire suppression activities were being performed in the south east corner of fire area by Owens Valley Crew #4 and the crew of Engine 3563. A Firefighter I from Engine 3563 was utilizing a lateral hoseline to extinguish hot spots along and near the south east line. The firefighter noticed a hot spot, to which he advanced his hoseline. As he stepped onto a mound area near the hot spit, the ground gave way and he sank into a hole approximately waist deep. The firefighter struggled to remove himself from the hole, which was extremely hot from the smoldering, matted ground fuel debris and ash. As the firefighter pulled himself from the hole, he rolled into an adjacent trench of water to cool himself. As the firefighter realized he had received a burn to the back of his right leg, he returned to Engine 3563 and notified his supervisor. The firefighter immediately received first aid burn treatment and an ambulance was summoned to transport the firefighter to Northern Inyo Hospital for stabilization treatment. Arrangements were made to transfer the firefighter via aircraft to the Sherman Oaks Burn Center. It was determined that the firefighter received second and third degree burns to seven per cent (7%) of his body, consisting of his right wrist and right leg behind the knee and calf area.

C. SITE CONDITIONS:

Fuel

Type:

The fuels were a mixture of desert sage, rabbit brush, and grass, transitioning to river bottom fuels adjacent to the river. Trees were predominately cottonwood and black locust along the water ways. In addition, the site of the injury in a former river course had stands of willows and dead fuels carried and deposited by the river flows through the area.

Loading:

Fuel loading at the site was approximately 10 tons per acre.

Ratio:

The percentage of live fuel in the total fuel loading was greater than 40%.

Live fuel moisture in the grasses and sage was 50%.

Topography

Terrain:

The accident site was located on the west side of the Owens River bottom, approximately 200' north of the terminus of Collins Road where it dead ends at the current stream bed. The elevation is approximately 3980 feet and was flat with no significant elevation changes. The area was once a river bed and there are maps that depict a canal once traversed the area.

Aspect:

The site appeared to have an equal exposure with no significant influences.

Features:

The site is a low marsh area that has been overgrown with willows and has numerous small waterways that drain to the main river. It lies about 8 feet below the level of the surrounding terrain in an approximately 450 feet by 300 feet area. The marsh grasses, willows, and root systems have created a thick, soft soil, that has a high litter and decomposed matter content.

Weather:

The weather readings were taken at the Owens Valley Conservation Camp at 1300 hours, approximately 10 miles north west of the accident site. Wind speed was also measured by continuous monitoring at the National Weather Service at the Bishop Airport, approximately 5 miles to the north west of the site.

Wind Speed	10 MPH	Bishop Airport (1830 hours)
Wind Direction	140 (SE)	Bishop Airport
Wind Speed	0	Owens Valley Camp
Wind Direction	0	Owens Valley Camp
Temperature	68	Owens Valley Camp
10 Hr Fuel Stick	3	Owens Valley Camp

III ATTACHMENTS

**ACCIDENT NARRATIVE
BDU INCIDENT #21377**

**BY:
FIRE APPARATUS ENGINEER LOREN FLETCHER**

At approximately 1840 hours April 14, 1992, on the Collins Fire, I received word, (via Ht.), from Captain Gnass that a firefighter had been burned. (During the mop-up stages of this fire.) At the time, I was attending pumping operations and in the process of setting up adductor system at the engine. We were currently pumping a 400' hose lay with one lateral, (1") 100', which was being utilized by Firefighter Rodgers. In his immediate vicinity were approximately 12 crew members from OVCC and their captain, also in close proximity was another firefighter from his engine. (Div. 3505 was notified at the same time I was).

After receiving word from Captain Gnass, I looked up to see FF Rodgers limping hurriedly towards me. He was approximately 100' away. A grimace of pain was on his face, visible from my position at the engine. He made good time and was at my position quickly. As I came towards him he explained that he had been burnt on his leg and this was due to him stepping into a hole with hot coals. I placed a clean, new CalTrans garbage bag on the ground and had him sit on it while I calmed him. Before I could examine him properly he had pulled his pant leg up exposing part of his burns. I had him lay back while I retrieved the oxygen equipment, trauma bag, vitals kit, and burn kit.

At about this time, D-3505 and B-3515 arrived at my location. I asked for some help and proceeded to get a large new, clean tarp (sterile?), out of the trauma bag, and placed it on the ground adjacent to patient. As more help arrived, I had them retrieve a sleeping bag from the engine's hose bed and lay it down on the tarp, the sterile burn sheet was laid down next on top of the sleeping bag. This sheet came from the burn kit. Simultaneously I started to cut away the pants on the right leg to better access the injuries. At this time, sterile saline solution was applied to the burns to cleanse and cool affected area. The patient was moved to the burn sheet after removal of nomex pants and work pants. Moist burn dressings were applied to the leg burns and patient was covered with sleeping bag. An ambulance was ordered sometime during this process, as some shock symptoms were obvious (in addition to severity of burns). It was estimated that approximately 10% of patient was burned with second and possible third degree burns. Four liters of oxygen, via nasal canal was administered and vital were being checked. At this time it was noticed that there were additional burns on the right wrist, (redness only), no immediate blistering, but some pain. Another moist burn dressing was applied to this area. After taking pulse

and blood pressure, and pupils, the ambulance with medics arrived. They took over the patient care.

Safety was stressed many times throughout the fire. FF Rodgers fell previously on, and was cautioned to be careful. He slipped on a log while mopping up and was soaked with water to his thigh, in the canal west of the river. FF Rodgers is a competent firefighter and very knowledgeable. He also holds a high level of common sense and safety, in emergency situation.

Original Signed

By:

Loren B. Fletcher
Fire Apparatus Engineer
San Bernardino Ranger Unit
Owens Valley Division
Bishop Station 58

1 INT NARRATIVE

AT APPROX. 1840 (4-14-92) ON THE COLLINS FIRE I RECEIVED WORD, VIA HT, FROM CAPTAIN GNASS THAT A FIREFIGHTER HAD BEEN BURNED. (DURING THE MOP-UP STAGES OF THIS FIRE). AT THE TIME I WAS ATTENDING PUMPING OPERATIONS AND IN THE PROCESS OF SETTING UP AN EDUCTOR SYSTEM AT THE ENGINE. WE WERE CURRENTLY PUMPING A 400' HOSE LAY WITH ONE LATERAL, (1" ^{100'}), WHICH WAS BEING UTILIZED BY FIREFIGHTER ROGERS. IN HIS IMMEDIATE VICINITY WERE APPROX 12 CREW MEMBERS FROM OUCG AND R CAPTAIN, ALSO IN CLOSE PROXIMITY WAS ANOTHER FIREFIGHTER FROM HIS ENGINE. (DIV. 3505 WAS NOTIFIED AT SAME TIME ~~AS I WAS~~ ^{AS I WAS})

AFTER RECEIVING WORD FROM CAPTAIN GNASS I LOOKED UP TO SEE FF ROGERS LIMPING HURRIEDLY TOWARDS ME. HE WAS APPROX. 200' AWAY. A GRIMACE OF PAIN WAS ON HIS FACE ~~AND~~, VISIBLE FROM MY POSITION AT THE ENGINE. HE MADE GOOD TIME AND WAS AT MY POSITION QUICKLY. AS I CAME TOWARDS HIM HE EXPLAINED THAT HE HAD BEEN BURNT ON HIS LEG AND THIS WAS DUE TO HIM STEPPING INTO A HOLE WITH HOT COALS. I PLACED A CLEAN ^{NEW} CALTRANS GARBAGE BAG ON THE GROUND AND HAD HIM SIT IN IT WHILE I CALMED HIM. BEFORE I COULD EXAMINE HIM PROPERLY HE HAD PULLED HIS PANT LEG UP EXPOSING PART OF HIS BURNS. I HAD HIM LAY BACK WHILE I RETRIEVED THE O2 EQUIP., TRAUMA BAG, VITALS KIT, BURN KIT.

AT ABOUT THIS TIME D3505 AND B3515 ARRIVED AT MY LOCATION. I ASKED FOR SOME HELP AND PROCEEDED TO GET ~~AN~~ ^{NEW} LARGE CLEAN TARP (STERILE?) OUT OF THE TRAUMA BAG AND PLACED IT ON THE GROUND ADJACENT TO PT. AS MORE HELP ARRIVED I HAD THEM RETRIEVE A SLEEPING BAG FROM THE ENGINE'S HOSE BED AND LAY IT DOWN ON THE TARP. THE STERILE BURN SHEET WAS LAID DOWN NEXT ON TOP OF THE SLEEPING BAG. THIS SHEET CAME FROM THE BURN KIT. SIMULTANEOUSLY I STARTED TO CUT AWAY THE PANTS ON THE RIGHT LEG TO BETTER ASSESS THE INJURIES. AT THIS TIME STERILE SALINE SOLUTION ^{AFFECTED} WAS APPLIED TO THE BURNS TO CLEANSER + COOL AREA. THE PT. WAS MOVED TO THE BURN SHEET AFTER REMOVAL OF HOME PANTS AND WORK PANTS. ^{MOIST} BURN DRESSINGS WERE APPLIED TO THE LEG BURNS AND PT. WAS COVERED WITH SLEEPING BAG. AN AMBULANCE WAS ORDERED SOMETIME DURING THIS PROCESS AS SOME SHOCK SYMPTOMS WERE OBVIOUS (IN ADDITION TO SEVERITY OF BURNS). IT WAS ESTIMATED THAT APPROX. 10% OF PT. WAS BURNED, WITH 2ND + POSSIBLY 3RD DEGREE BURNS. 4 LITERS O₂ VIA NASAL CANULA WAS ADMINISTERED AND VITALS WERE BEING CHECKED. AT THIS TIME IT WAS NOTICED THAT THERE WERE ADDITIONAL BURNS ON THE RIGHT WRIST REDNESS ONLY NO IMMEDIATE ^W STERILING BUT SOME PAIN. ANOTHER MOIST BURN DRESSING WAS APPLIED TO THIS AREA. AFTER TAKING PULSE + BP + PUPILS THE AMBULANCE WITH MEDICS ARRIVED. THEY TOOK OVER PT. CARE.

SAFETY WAS STRESSED MANY TIMES THROUGHOUT THE FIRE. FF ROGERS FELL PREVIOUSLY ON AND WAS CAUTIONED TO BE CAREFUL. HE SLIPPED ON A LOG WHILE MOPPING UP AND WAS SOAKED WITH WATER TO HIS THIGH IN THE CANAL WEST OF THE RIVER. FF ROGERS IS A COMPETENT FIREFIGHTER AND VERY KNOWLEDGEABLE. HE ALSO HOLDS A HIGH LEVEL OF COMMON SENSE AND SAFETY IN EMERGENCY SITUATIONS.

Loren B. Fletcher 4-15-92

LOREN B. FLETCHER

FIRE ENGINEER

SAN BERNARDINO R.U.

OWENS VALLEY DIVISION

BISHOP STATION 58

ACCIDENT INVESTIGATION BDU 21377 "COLLINS" INCIDENT
SAN BERNARDINO RANGER UNIT / OWENS VALLEY DIVISION

GARCIA, Bobby, Inmate-Owens Valley Conservation Camp
California Dept of Corrections # H-09582 (W-GARCIA)

W-GARCIA was interviewed by the Accident Investigation Team at the Owens Valley Conservation Camp on 4-15-92, at about 1905 hours. W-GARCIA related the following information to the team.

W-GARCIA was assigned to Owens Valley Crew # 4 at the time of the injury. His crew was mopping up and assisting Engine 3563 in a hose lay on the west side of the Owens River. Specifically, W-GARCIA assisted Firefighter Rogers in laying a lateral from the main hose lay. W-GARCIA was asked by the firefighter to turn on the tee that fed the 1" lateral hose that was used in the mop up work.

W-GARCIA said he turned on the water from the tee, when the firefighter began advancing his line. When asked how much hose was laid, W-GARCIA stated that there was one length used. The firefighter was working toward a large mound that was burning. He also indicated that the line was stretched to the injury site before the water was turned on as the firefighter went only about two steps before he began to stumble.

W-GARCIA said the firefighter started going down then he let go of the hose and then became stuck in the mound. The firefighter went down and began struggling to get out but something was holding his feet within the burned mound. W-GARCIA saw the fire hose go wild and immediately shut off the lateral line. As this occurred the firefighter was able to extricate himself from the mound and turned to his right. W-GARCIA remembered the firefighter getting up and saying "Damn, I got burned." As the firefighter then started rolling around and splashing in the water. W-GARCIA watched the firefighter rolling around in the muddy water surrounding the mound, indicating that the accident happened so suddenly and was over before he could do anything to assist him. W-GARCIA said the firefighter was starting to walk towards the river when he was asked by W-GNASS what had happened. The firefighter talked to W-GNASS and was told to return to his engine.

W-GARCIA said he was having difficulty in walking around the area as there were many hazards such as the small creeks that cut through the area, the dirt was extremely soft and there was a lot of limbs and other material on the ground. He also stated that the area was clear of smoke and there were no visibility problems.

ACCIDENT INVESTIGATION BDU 21377 "COLLINS" INCIDENT
SAN BERNARDINO RANGER UNIT / OWENS VALLEY DIVISION

HARTLEY, James, Inmate-Owens Valley Conservation Camp
California Dept of Corrections # H-16456 (W-HARTLEY)

W-HARTLEY was interviewed by the Accident Investigation Team at the Owens Valley Camp on 4-15-92, at about 1935 hours. W-HARTLEY related the following information to the team.

W-HARTLEY was assigned to Owens Valley Crew # 6. He was a lookout for spot fires on the east side of the Owens River at the time of the injury. In addition, he was teamed with W-LULEY when they observed the firefighter.

They watched the engine company pull up and begin a hose lay with the help of Owens Valley Crew # 4. As the inmates watched the mop up with the hose lay, they noticed the firefighter was using a lateral from the main hose lay and advancing the line.

The firefighter began to sink in the ground. It appeared that he panicked. His movements were very quick and it seemed as if the area was hot. It looked like the firefighter had sunk up to his waist. The firefighter then turned around very quickly and got out of what appeared to be a hole.

W-HARTLEY said that when the firefighter got himself out, he appeared to be in shock or dazed. He also stated that he fell afterward, picked himself up, and began walking back towards the fire engine. W-HARTLEY said that the ground was very unstable in the area and that the crew had been on a control burn earlier in the year that was a similar area and terrain.

W-HARTLEY said there might have been a relaxed attitude since there was no active fire and it was then in a mop up stage.

ACCIDENT INVESTIGATION BDU 21377 "COLLINS" INCIDENT
SAN BERNARDINO RANGER UNIT / OWENS VALLEY DIVISION

WILSON, Brian, Inmate-Owens Valley Conservation Camp
California Dept of Corrections # H-16370 (W-WILSON)

The Accident Investigation Team interviewed W-WILSON on 4-15-92, at about 2000 hours. The interview was conducted at the Owens Valley Conservation Camp. W-WILSON related the following information to the team.

At the time of the accident, W-WILSON was assigned to Owens Valley Crew # 6 and couldn't remember who told him to be a lookout on the east side of the Owens River. He did remember that his job was to watch for spot fires occurring from the earlier fire spread when he noticed Firefighter Rogers advance a hose line.

As the firefighter advanced the hose line he stumbled several times. He suddenly made erratic movements, lurched forward as if he had lost his footing, and then began to sink below where W-WILSON could see. The soil in the area was unstable as W-WILSON had stumbled earlier when his crew was on the west side of the river. The firefighter then managed to get himself out after he sank. The firefighter appeared to have scrambled around. He then began to stumble around as if in shock. He noticed the facial expressions of the firefighter as he was only about 40 yards away from him and saw the look of shock.

W-WILSON said he was unable to assist the firefighter as he was across the river from him and saw other personnel that were in the immediate vicinity.

W-WILSON then indicated where his location was on a diagram that was provided by the investigation team. He then indicated that it was approximately 100 feet from his location to the injury site.

W-WILSON stated he knew the firefighter by name as he knew he was assigned to the facility and from being around the camp.

W-WILSON also said he felt that they were moving fast, which may have contributed to the accident conditions. He also said that the operations on west side of the river were aggressive for that stage of the fire.

ACCIDENT INVESTIGATION BDU 21377 "COLLINS" INCIDENT
SAN BERNARDINO RANGER UNIT / OWENS VALLEY DIVISION

LULEY, Steven, Inmate-Owens Valley Conservation Camp
California Dept of Corrections # D-09582 (W-LULEY)

W-LULEY was interviewed by the Accident Investigation Team on 4-15-92, at about 2020 hours, at the Owens Valley Conservation Camp. W-LULEY related the following information to the team.

At the time of the burn injury W-LULEY was assigned to Owens Valley Crew # 6, when an unnamed supervisor had him and other crew members placed as lookouts on the east side of the Owens River to watch for spot fires. He noticed that there was a hose lay being extended on the west side of the river across from him.

From his position, he noticed Firefighter Rogers with a hose spraying water on the various hot spots as the hose lay progressed. As the firefighter continued moving, he noticed that the firefighter began to sink, stumble, then fall. As the firefighter fell, the hose went wild. The firefighter then tried to pull himself out of what appeared to be a hole. The firefighter then struggled and pulled himself out of the apparent hole.

W-LULEY then said once the firefighter pulled himself out, he appeared to be confused and dazed.

W-LULEY was given a diagram of the injury site and was able to describe his location in relation to the firefighter.

**INTERVIEW SUMMARY
BDU INCIDENT #21377
BY:**

**KARL STEIN M.D.,
SHERMAN OAKS BURN CENTER**

At 1715 hours May 8, 1992, Division Chief Jim Wright contacted Doctor STEIN of the Sherman Oaks Burn Center by Phone, (818) 788-9037, to discuss Firefighter Rogers burn injury. Doctor STEIN was Rogers attending physician at the Burn Center.

Doctor STEIN was asked about the mechanism of which Firefighter Rogers may have received his burn injury. Doctor STEIN's opinion was that he felt the burn injury was caused by hot ash material coming into contact with the skin. STEIN thought that the hot ash material may have been forced up the pat leg when Roger's leg sank into the hole in the ground.

Doctor STEIN was also asked about the possibility of the burn injury being caused by steam. It was questioned whether or not the possibility existed that when the wet clothing worn by Firefighter Rogers created a steam affect when the clothing was exposed to the high temperature of the smoldering ground material. STEIN stated he was unaware of the wet clothing circumstance at the time the injury was incurred. STEIN did not feel that a steam situation created the burn injury because of the unevenness of the burn. STEIN clarified this opinion by explaining that a burn caused by steam should have created a more evenly distributed burn to the skin and should have encompassed more of the leg rather than being confined to the posterior side.

STEIN, however, did state that the steam theory may have some merit, and may have been a slight contributing factor but he was reasonably sure; seventy per-cent, that it was most likely the hot ash material that caused the burn injury to Firefighter Rogers.

B. RECORDS/DOCUMENTATION

INCIDENT SUMMARY
INCIDENT "BDU-21377"
FIRE NAME : "COLLINS"
DATE: APRIL 14, 1992

THIS INCIDENT WAS REPORTED TO THE BISHOP POLICE DEPARTMENT VIA 9-1-1 AT APPROXIMATELY 1253 HOURS. THE INCIDENT WAS REPORTED AS A BRUSH FIRE LOCATED AT THE END OF COLLINS ROAD, AT THE OWENS RIVER, APPROXIMATELY FIVE MILES SOUTHEAST OF THE CITY OF BISHOP, CALIFORNIA.

DIVISION 3505 (ESCHER) COPIED THE FIRE DISPATCH AND REQUESTED THE OWENS VALLEY COMMUNICATIONS CENTER (OVICC) DISPATCH ENGINE 3563, DOZER 3543, AND USFS ENGINE 3-1 IF AVAILABLE; AND ADVISED THEM HE WAS ENROUTE TO THE INCIDENT.

AT 1303 HOURS, THE OVICC DISPATCHED OWENS VALLEY CREW 4 TO THE INCIDENT. AT 1305 HOURS, DIVISION 3505 ADVISED THE OVICC OF THE ACCESS TO THE FIRE.

AT 1310 HOURS USFS CAR 3-2 ARRIVED ON SCENE AND ADVISED OVICC THAT THE FIRE WAS 1.5 TO 2 ACRES, BURNING WITH A GOOD RATE OF SPREAD, IN A SOUTHERLY DIRECTION TOWARD COLLINS ROAD. HE ALSO ADVISED THE FIRE WAS PRESENTLY BETWEEN THE CANAL AND THE RIVER, BURNING IN HEAVY FUELS.

DIVISION 3505 ARRIVED ON SCENE AT 1310 HOURS AND ASSUMED THE INCIDENT COMMANDER ROLE. AT THIS SAME TIME ONE ADDITIONAL HAND SAW WAS ORDERED.

THE WEATHER AT THE TIME OF ARRIVAL WAS:

WIND: ERRATIC, SW TO W CALM TO 20 MPH GUST
TEMP: ESTIMATED AT 75

STATE OF WEATHER: CUMULUS BUILD UPS OVER SIERRA'S AND
WHITE MOUNTAINS, WITH A BUILD UP
BEGINNING OVER THE FIRE AREA

RATE OF SPREAD: MODERATE TO EXTREME

DUE TO WEATHER CONDITIONS AND SPREAD OF FIRE, ADDITIONAL FIRE SUPPRESSION FORCES WERE ORDERED.

AT 1346 HOURS, DIVISION 3505 REQUESTED A STRIKE TEAM OF TYPE 3 ENGINES, AND ADVISED DISPATCH THE FIRE WAS NOW 20 TO 30 ACRES WITH ERRATIC WINDS.

AT 1412 SPOTTING BEGAN TO OCCUR IN AREAS NORTH OF THE ORIGIN.

AT 1437 DIVISION 3505 ADVISED DISPATCH THE FIRE WAS APPROXIMATELY 50 TO 75 ACRES, ON BOTH SIDES OF THE RIVER, VERY ERRATIC RATE OF SPREAD DUE TO WINDS; AND THE FIRE WAS NOW BURNING IN LIGHT TO MEDIUM FUELS.

AT 1655 DIVISION 3505 ADVISED OVICC DISPATCH THE FORWARD RATE OF SPREAD HAD BEEN STOPPED AS THE WINDS HAD DIED DOWN. THE FIRE WAS NOT CONTAINED, THERE WERE STILL CUMULUS BUILDUP AROUND THE FIRE, AND THE ACREAGE WAS ESTIMATED TO BE APPROXIMATELY 150 ACRES. DIVISION 3505 ADVISED BATTALION 3515 WOULD BE THE IC TEMPORARILY, WHILE HE TOOK A MAP TO THE DISPATCH CENTER AND CONFIRMED UNITS ON SCENE.

APPROXIMATELY 1745 HOURS, DIVISION 3505 RETURNED TO THE FIRE AND ASSUMED THE IC ROLE. FIRE LINES WERE ALMOST COMPLETED AROUND THE FIRE, AND THE WINDS HAD DIED DOWN ALLOWING THE FIRE UNITS TO BEGIN MOPPING UP THE FIRE.

AT APPROXIMATELY 1830, DOZER 3543 CONTACTED DIVISION 3505 ASKING IF HE COPIED OWENS VALLEY CREW 4. AS 3505 HAD NOT COPIED CREW 4, DOZER 3543 ADVISED THAT CREW 4 REQUESTED 3505 RETURN TO THE END OF COLLINS ROAD. ENROUTE TO THE END OF COLLINS ROAD, CREW 4 (CAPTAIN JAN GNASS) ADVISED THAT A CREWMAN HAD SUFFERED BURNS, AND WAS AT ENGINE 3563'S LOCATION (EAST END OF COLLINS ROAD, AT THE OWENS RIVER).

APPROXIMATELY 1835 DIVISION 3505 AND BATTALION 3515 (RIDING WITH 3505) ARRIVED AT ENGINE 3563'S LOCATION AND OBSERVED CDF FIRE FIGHTER CRAIG ROGERS LYING TO THE REAR OF THE ENGINE, BEING ADMINISTERED FIRST AID BY ENGINEER LOREN FLETCHER. DIVISION 3505 AND BATTALION 3515 BEGIN ASSISTING ENGINEER FLETCHER IN THE FIRST AID AND GETTING FF ROGERS TREATED UTILIZING THE CDF BURN KIT OFF OF ENGINE 3563.

AT 1842 HOURS OVICC DISPATCH WAS ADVISED OF THE BURN INJURY. APPROXIMATELY ONE MINUTE LATER, AN AMBULANCE WAS REQUESTED TO TRANSPORT TO NORTHERN INYO HOSPITAL.

WHILE FF ROGERS WAS BEING ATTENDED BY SYMONS AMBULANCE PARAMEDICS, DIVISION 3505 ADVISED ENGINEER FLETCHER AND CREW CAPTAIN GNASS TO POINT OUT WHERE THE INJURY TOOK PLACE. THEY WERE THEN ADVISED TO MARK THE AREA FOR FURTHER INVESTIGATIVE NEEDS.

DURING QUESTIONING REGARDING THE INJURY, DIVISION 3505 WAS ADVISED BY ENGINEER FLETCHER THAT THE FIREFIGHTER WAS MOPPING UP, AND WHILE WORKING IN SOME TREES, HAD STEPPED INTO A HOLE FULL OF HOT ASHES.

AT 1938 HOURS, DIVISION 3505 ADVISED OVICC DISPATCH THAT THE VICTIM WAS AT NORTHERN INYO HOSPITAL IN BISHOP. THE VICTIM WAS ACCOMPANIED BY CREW CAPTAIN CLARK SOMERS IN THE AMBULANCE RIDE TO THE HOSPITAL.

WHILE AT THE HOSPITAL, CREW CAPTAIN SOMERS ADVISED DIVISION 3505 THAT THE FIREFIGHTER HAD TOLD HIM HE HAD STEPPED INTO A HOLE FILLED WITH HOT ASHES. THE FIREFIGHTER STATED HE HAD JUMPED INTO THE RIVER TO STOP THE BURNING.

FIREFIGHTER ROGERS WAS ATTENDED TO BY DR. DILLON, AT THE HOSPITAL EMERGENCY ROOM. DR. DILLON WAS ADVISED BY DIVISION 3505 OF CDF'S POLICY REGARDING BURN VICTIMS.

AFTER INITIAL EXAMINATION BY DR. DILLON, THE DOCTOR ADVISED DIVISION 3505 THAT THE BURNS COVERED APPROXIMATELY SEVEN PERCENT OF THE RIGHT LEG, WITH APPROXIMATELY TWO PERCENT BEING CONSIDERED THIRD DEGREE. THE DOCTOR WAS CONCERNED WITH THE AREA OF THE THIRD DEGREE BURNS, IN THE BEND AREA UNDERNEATH THE KNEE, AS THIS WAS IN HIS WORDS, A DELICATE TISSUE AREA.

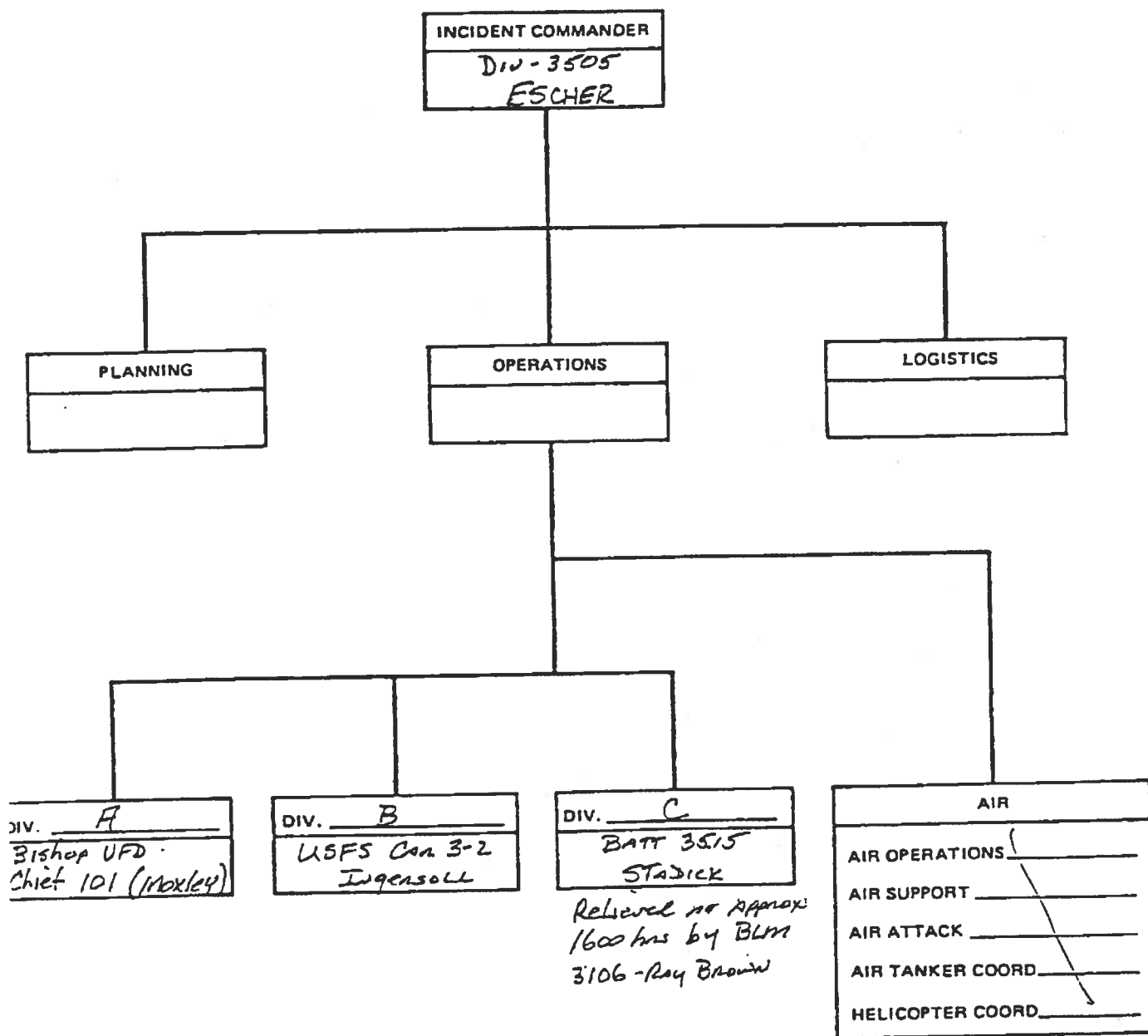
FLIGHT ARRANGEMENTS WERE MADE TO TRANSPORT THE FIREFIGHTER VICTIM TO SHERMAN OAKS BURN CENTER. AT 1145 HOURS THE VICTIM DEPARTED BISHOP AIRPORT, VIA SAN BERNARDINO COUNTY SHERIFF'S TWIN ENGINE AIRCRAFT, ENROUTE TO VAN NUYS AIRPORT. TWO MEDICS AND TWO PILOTS ASSISTED IN THE FLIGHT.

THIS IS A BRIEF SUMMARY OF THIS INCIDENT, PENDING FURTHER INVESTIGATION.



DONALD S. ESCHER
DIVISION CHIEF (3505)
OWENS VALLEY DIVISION
04/15/92

6. CURRENT ORGANIZATION



INCIDENT BRIEFING

1. INCIDENT NAME

COLLINS

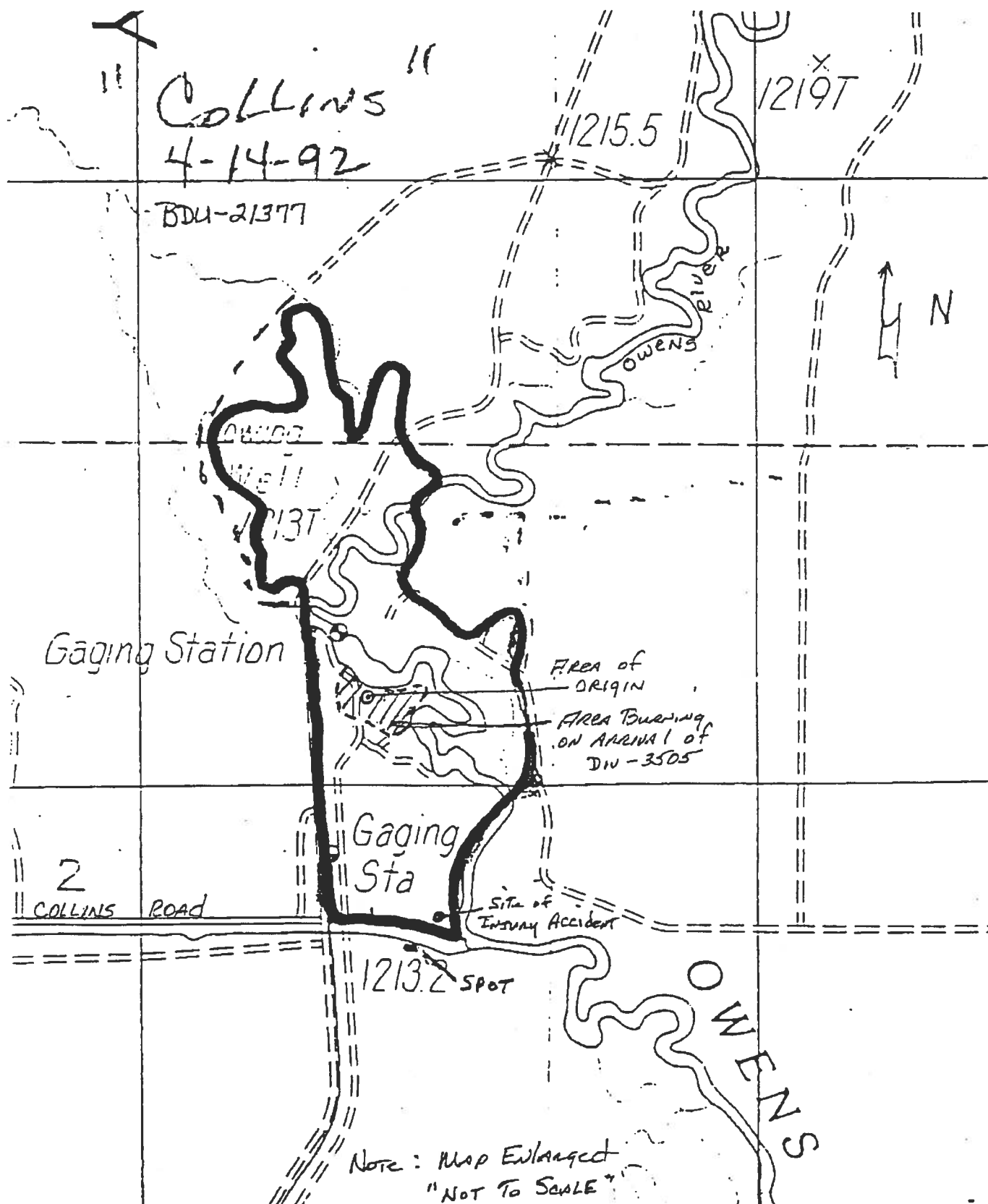
2. DATE
PREPARED

4-14-92

3. TIME
PREPARED

1630 EST

4. MAP SKETCH



201

ICS
3-82

PAGE 1

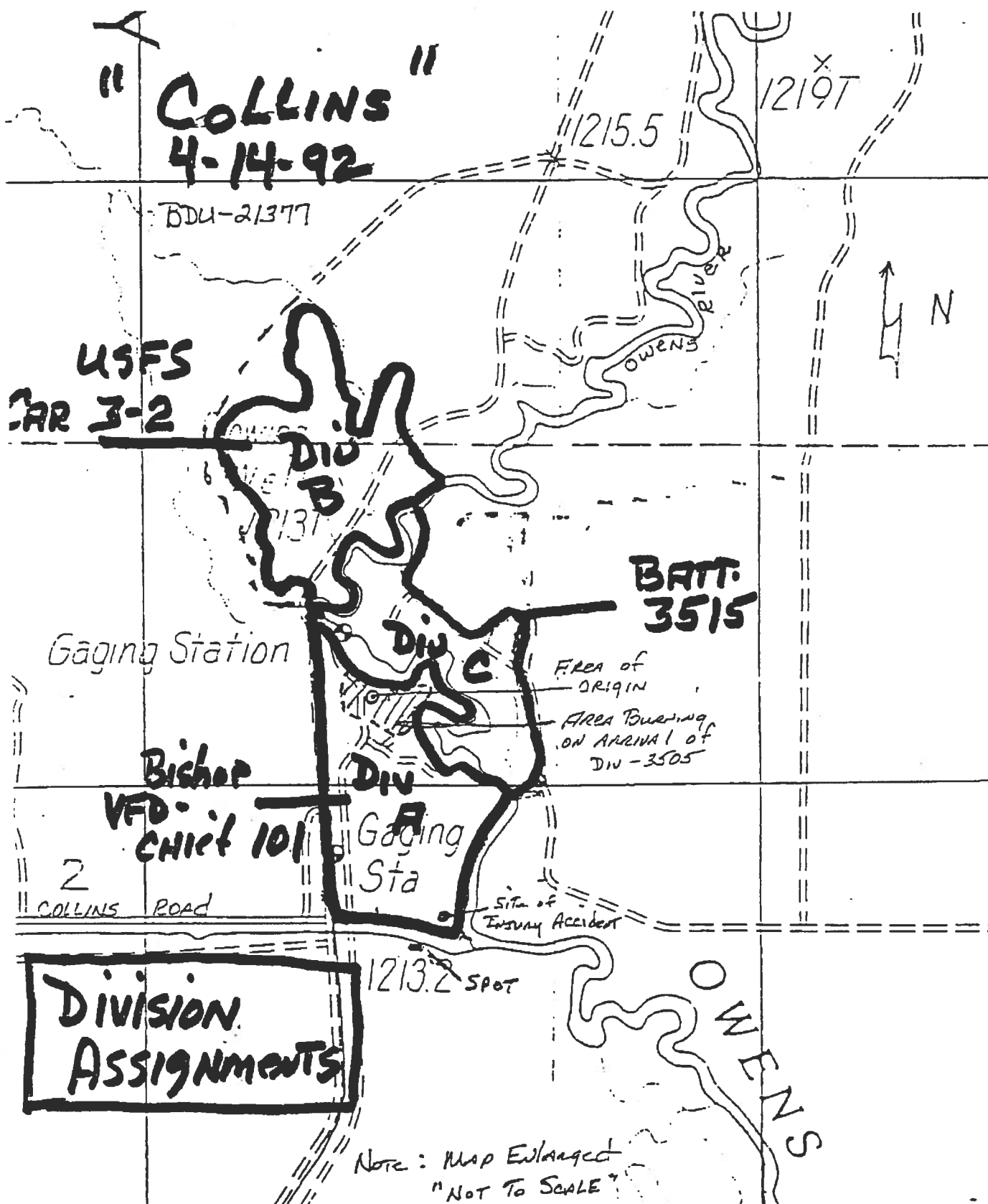
B. PREPARED BY (NAME AND POSITION)

Dale Anderson - Burn 3101

7540-130-0282

INCIDENT BRIEFING	1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED
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4. MAP SKETCH

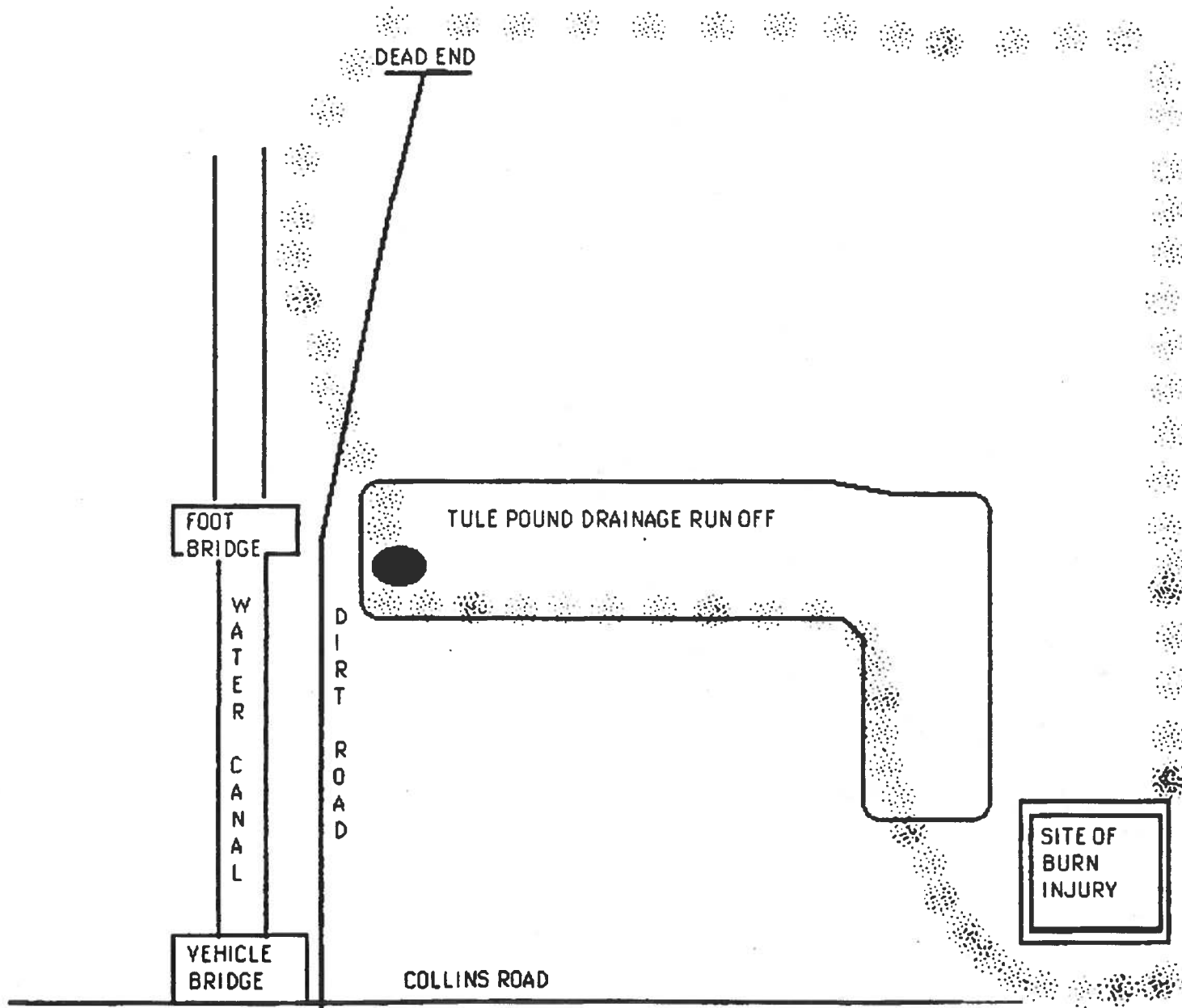
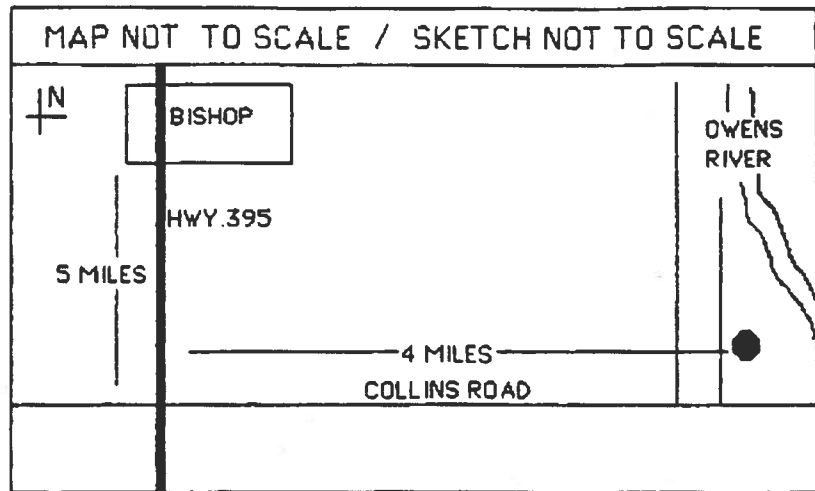


Note: Map Enlarged
"NOT TO SCALE"

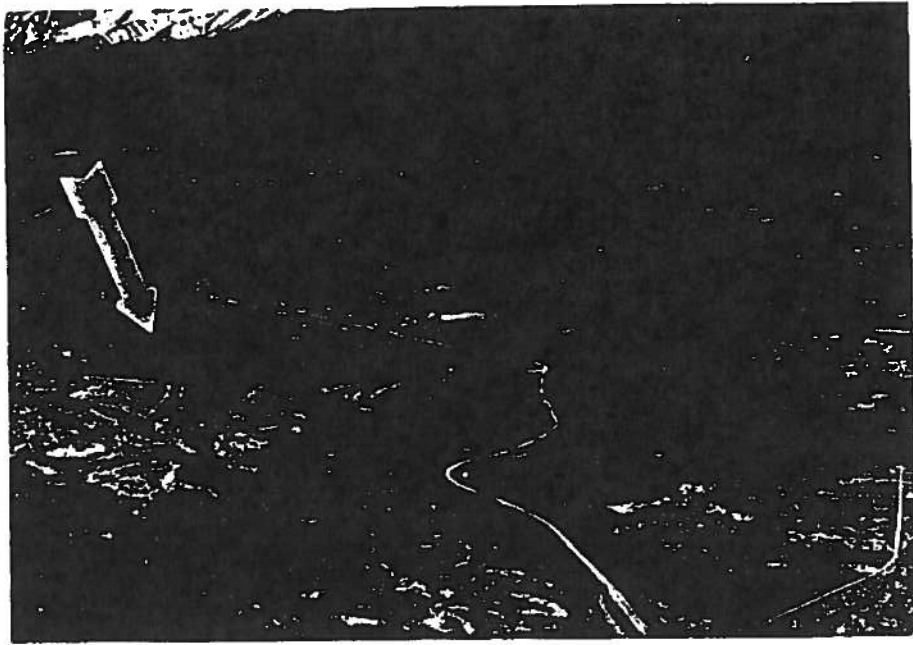
COLLINS
JC. 21377
INYO COUNTY
C.D.F. 92-3521-102
4-14-92

FIRE ORIGIN ●
BURN INJURY SITE □
FIRE PERIMETER

SUBMITTED BY:
CLYDE GAMMA F.C.S.
C.D.F. / S.B.C.O.F.W.D.



C. VISUAL DOCUMENTATION



Aerial photos of fire area. Red
arrows point to accident scene location

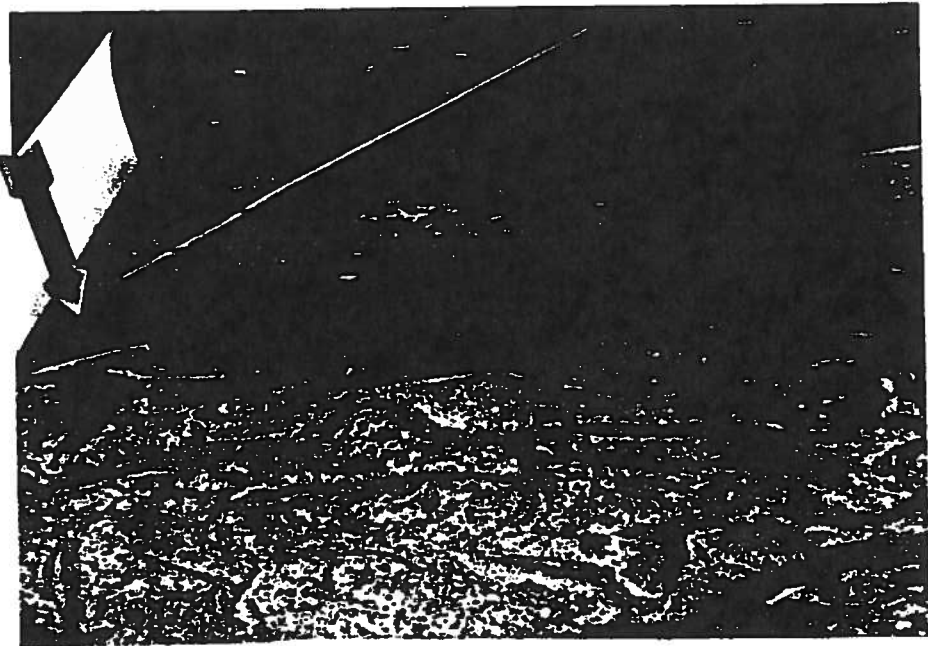




Photo of entrance to fire area from
Collins Road and canal. Facing N/E
note fire area in background.



Photo of accident scene facing N/E
from Collins Road. Note hazard flagging
tape, arrow points to accident site.

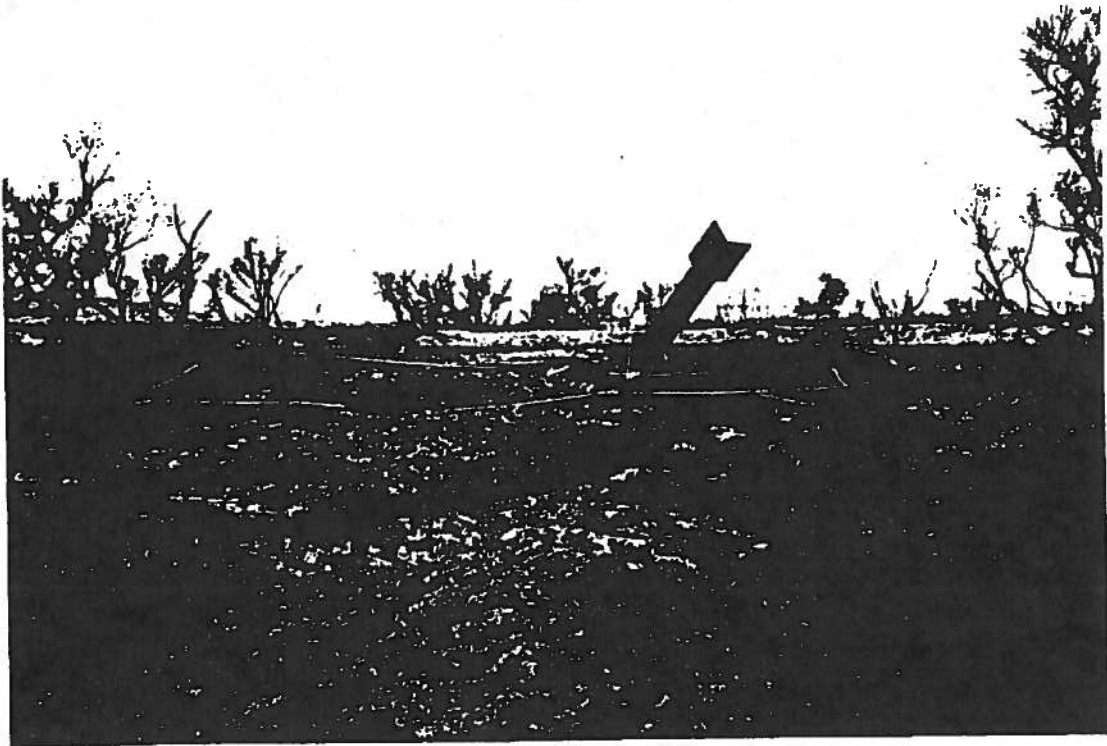
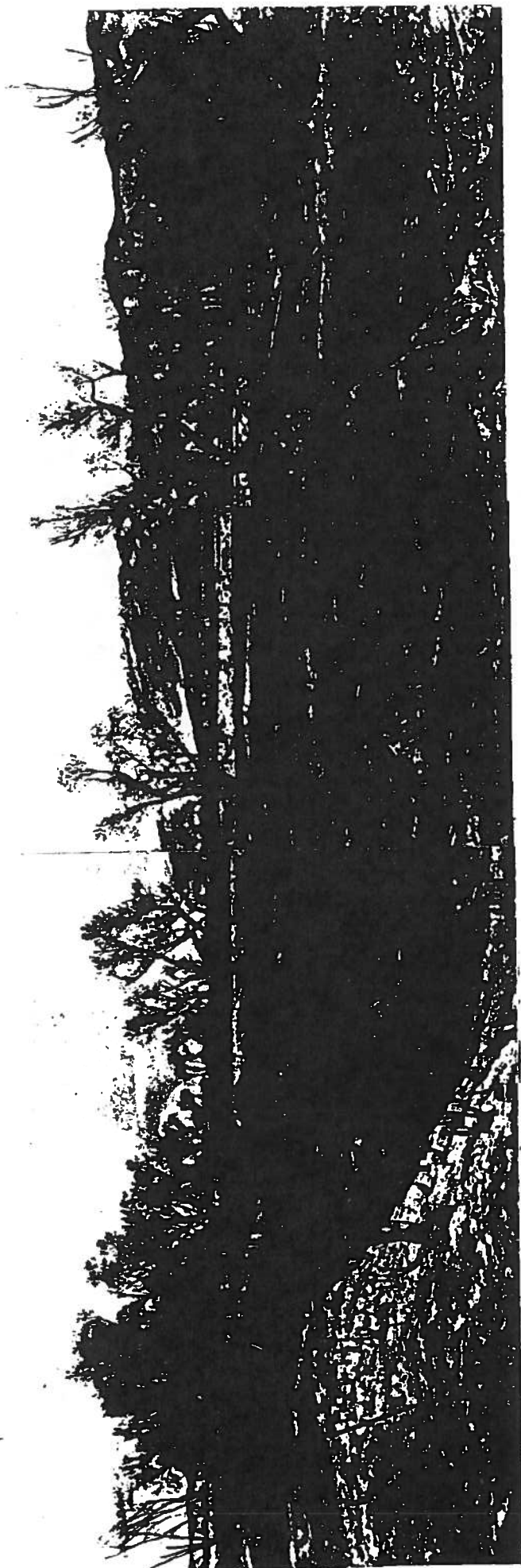


Photo of accident scene facing west
from Owens River. Arrow points to
accident site.



Panorama view of accident scene. Photos pan west to east. Arrow indicates accident site.



Photos of river bottom terrain and fuel
types in an area N/W of accident scene.



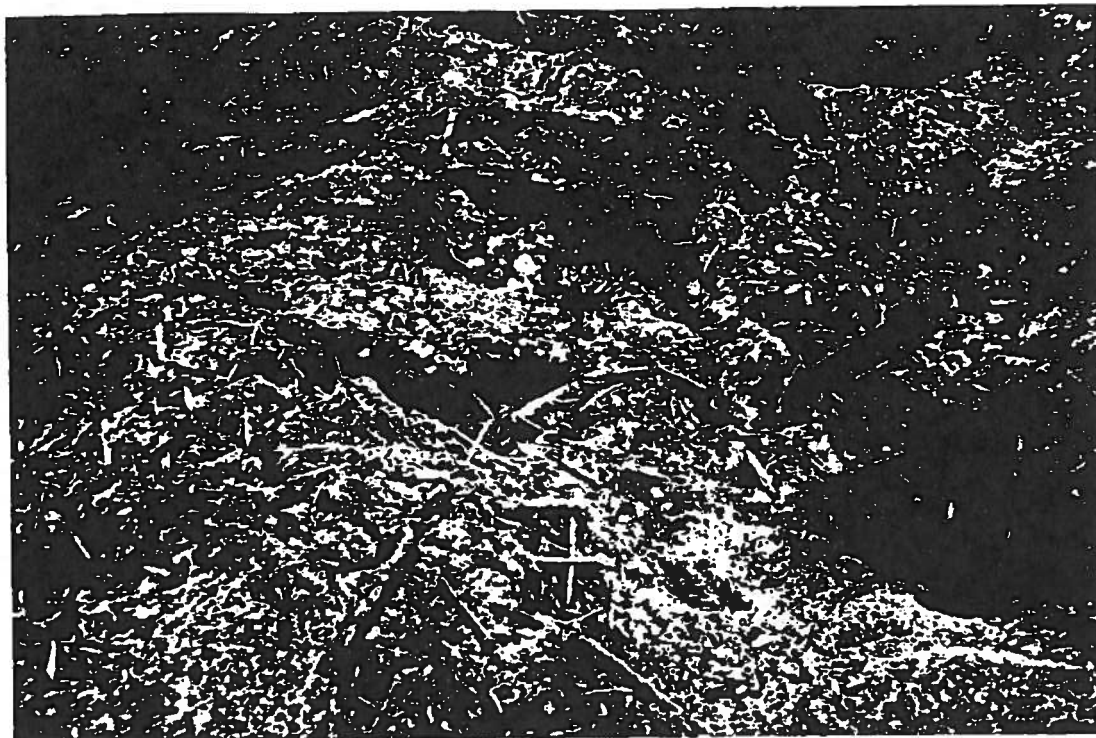
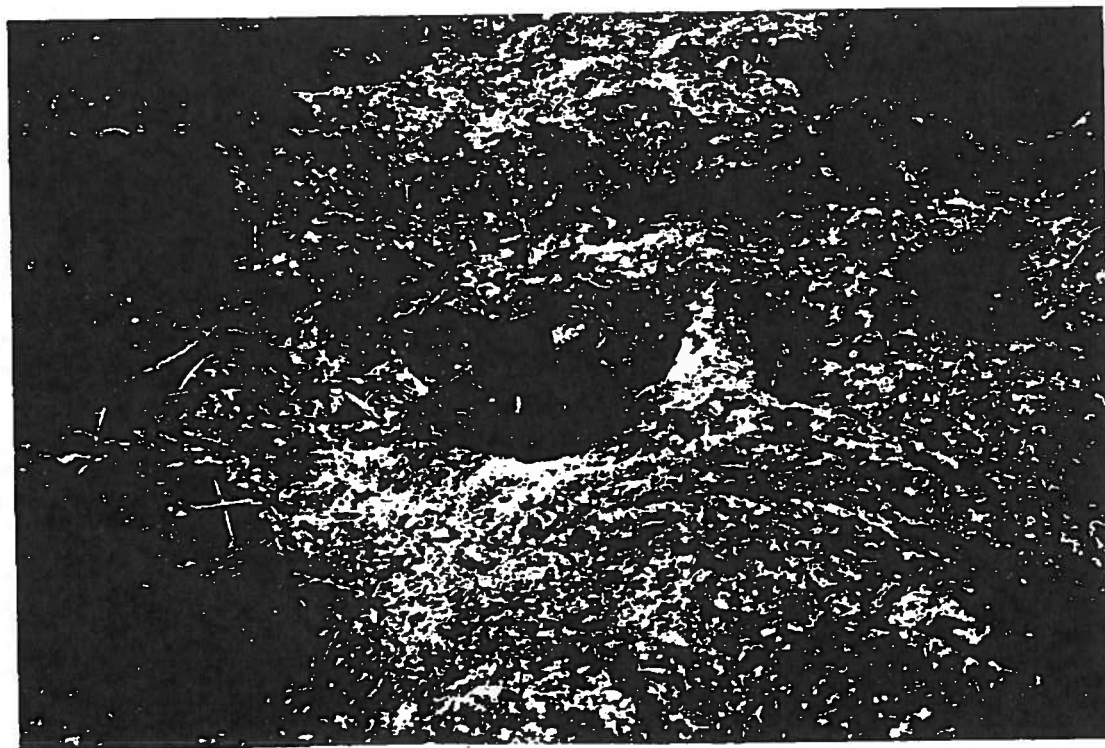
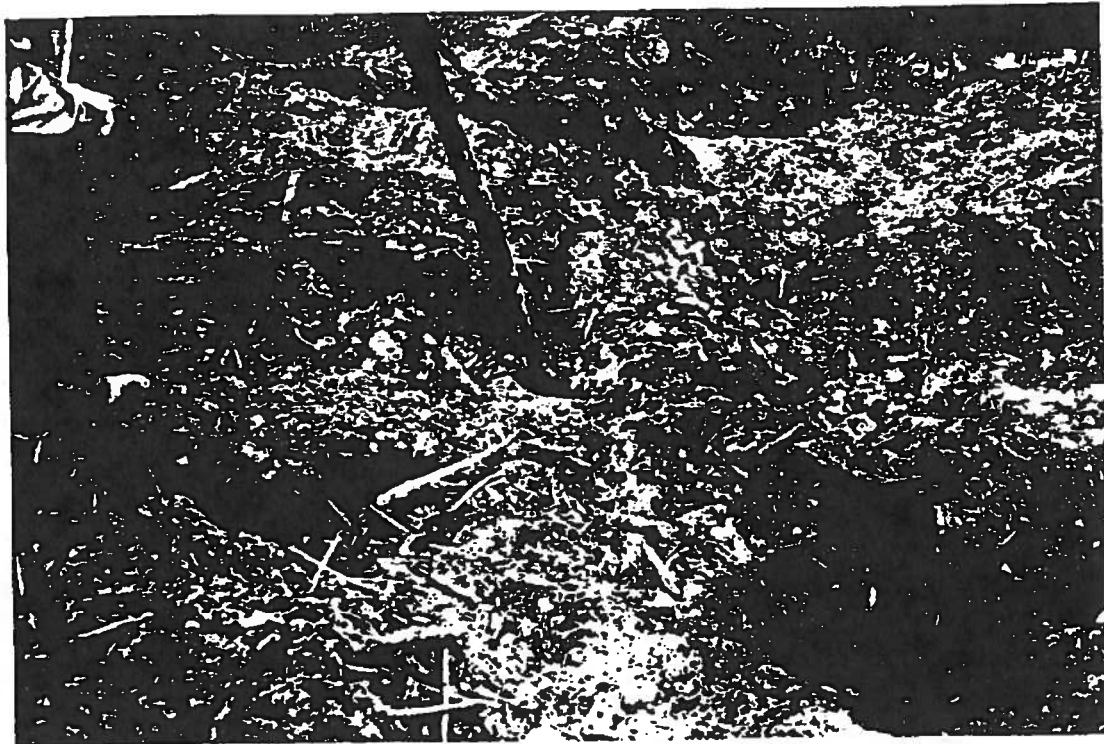


Photo of accident site where ground surface collapse occurred. Arrow points to area where it is believed FF I Rogers' leg sank into ground.





Photos of depth measurement being made
with branch. Depth was approximately
 $3\frac{1}{2}$ ' from arrow to arrow.



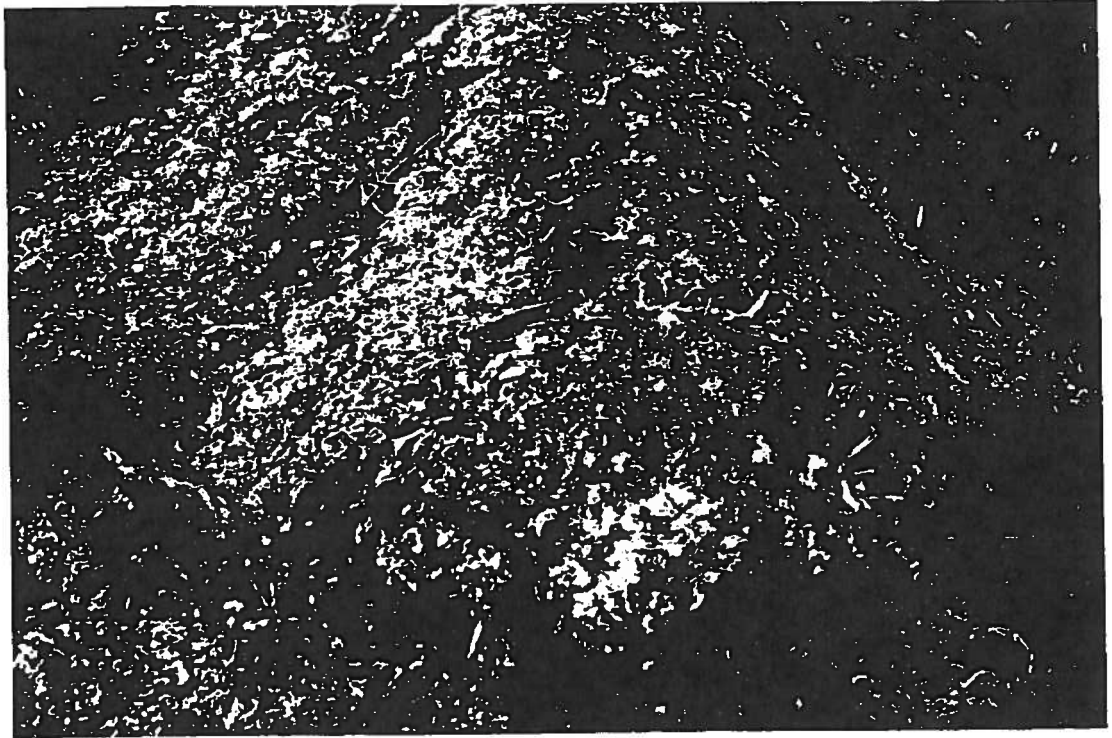


Photo of smoldering ground material
at accident site.



Photo of fuel type and density located
on the south side of Collins Road south
of fire area.

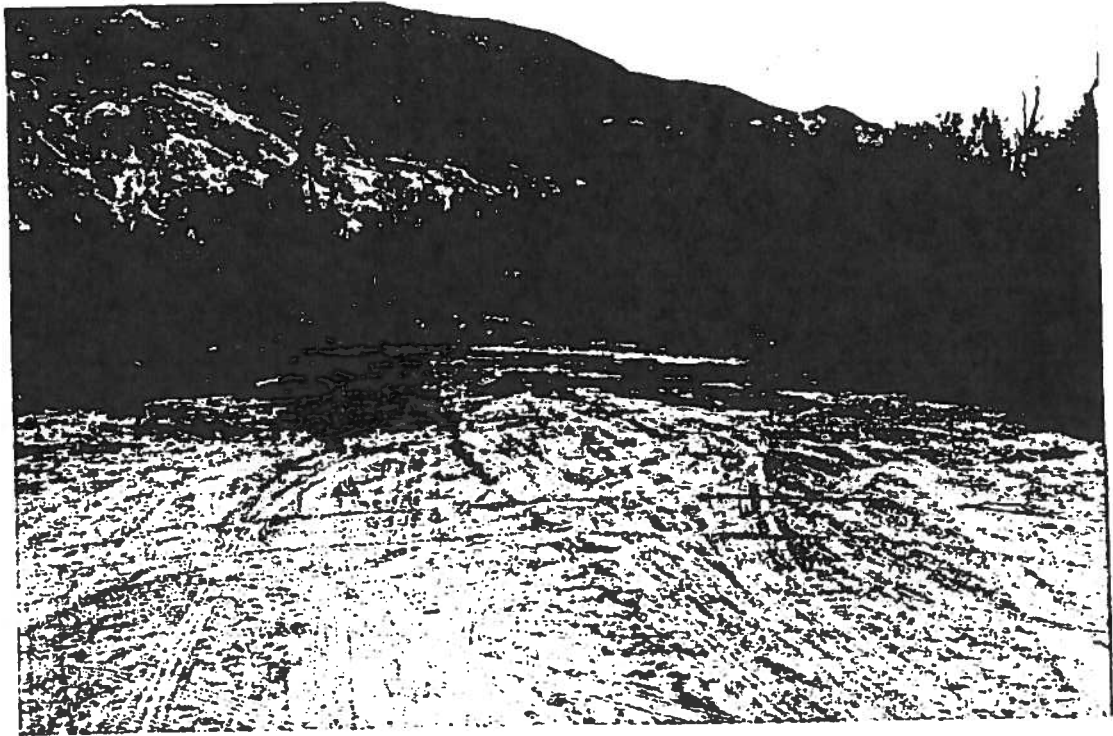


Photo of east end of Collins Road
where E-3563 was located at time of
injury to FF I Rogers.

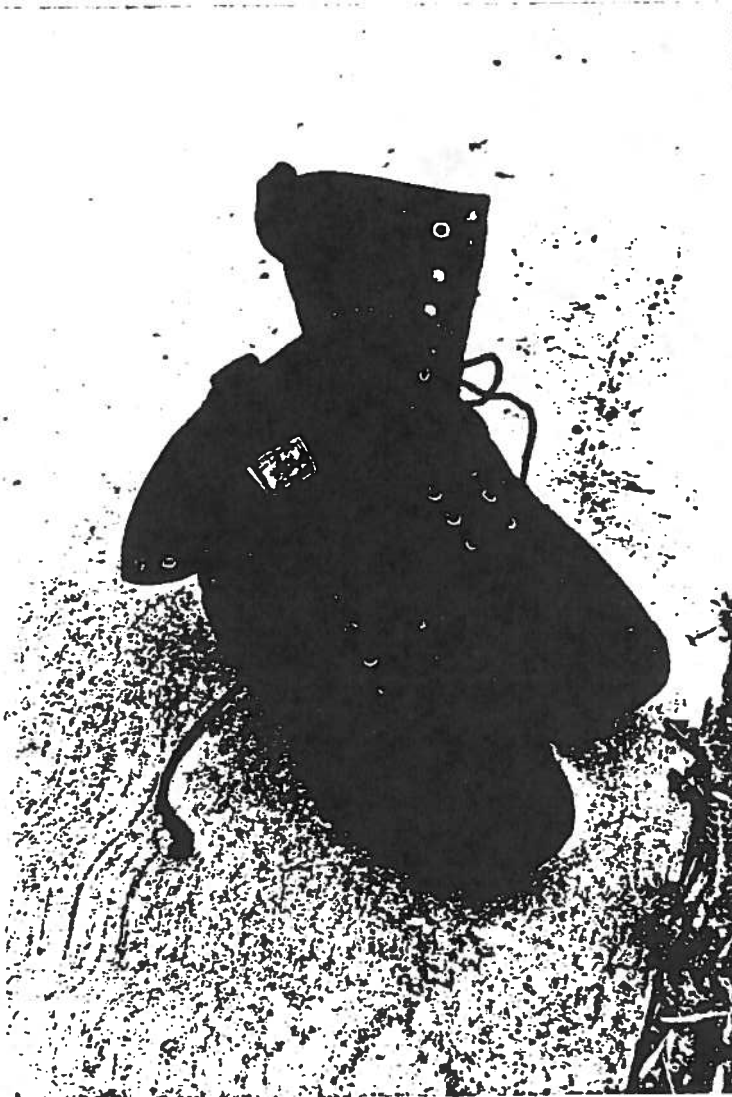
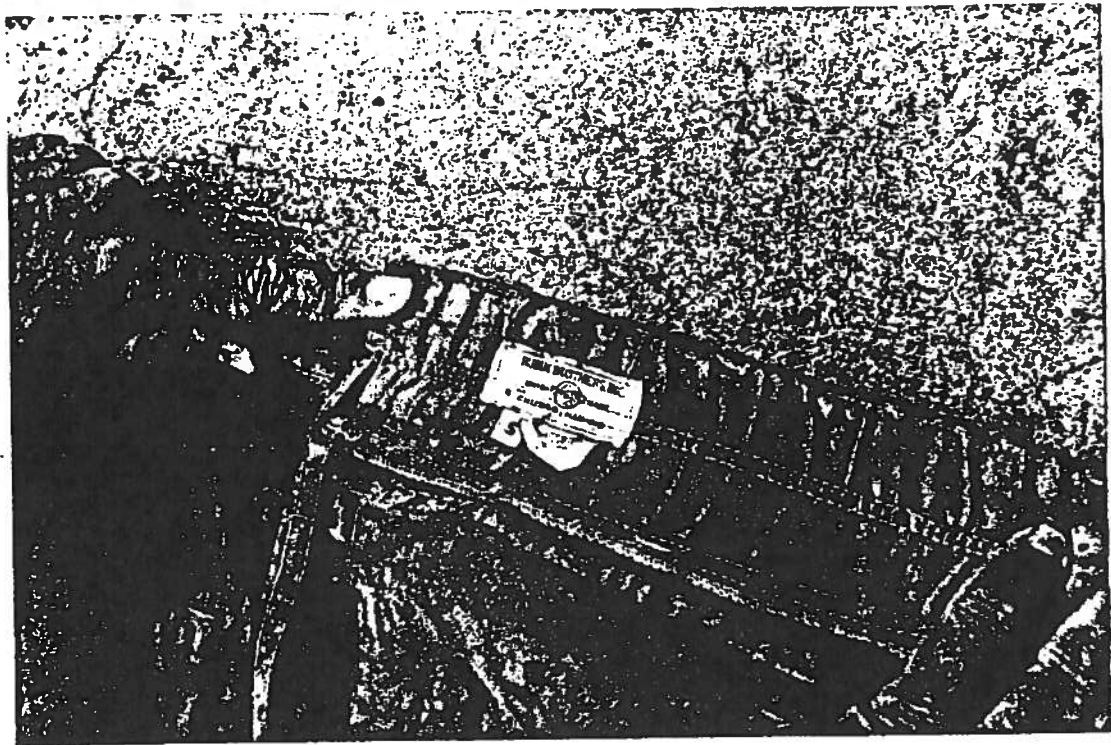


Photo of boots worn by FF I Rogers.
Department approved boot, Red Wing
brand, 8½" high, lug sole, lace up.

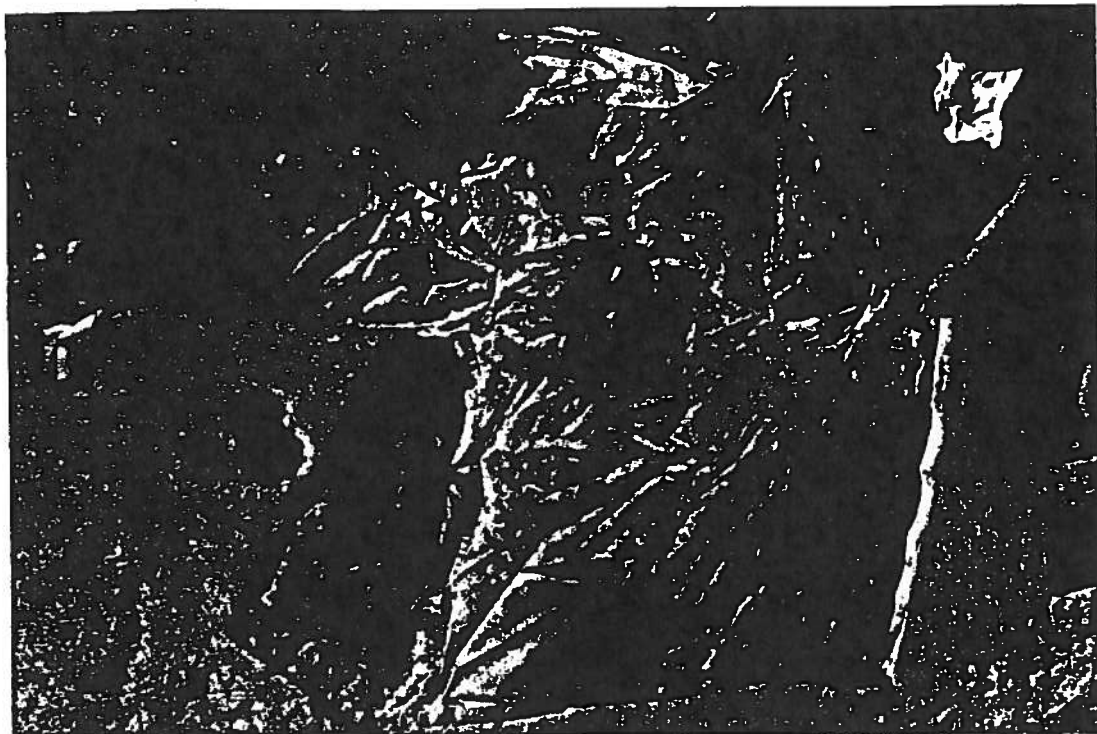


Photo of outer side of Nomex pants
worn by FF I Rogers. Pants were found
to be wet and dirty from soot and mud.
Top photo - rear side, Bottom photo- front
side

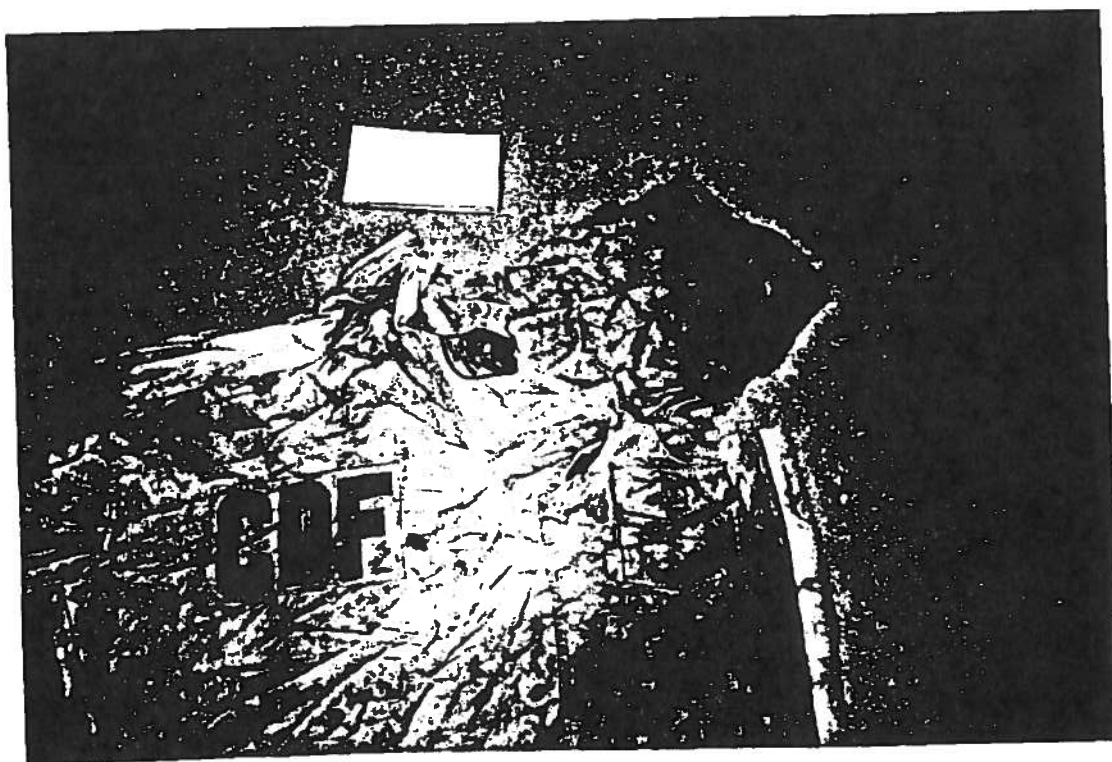




Manufacturers label affixed to waist band of Nomex pants. Smaller label indicates 6 oz. Nomex material. However, there was no Cal-Osha label attached to pants.

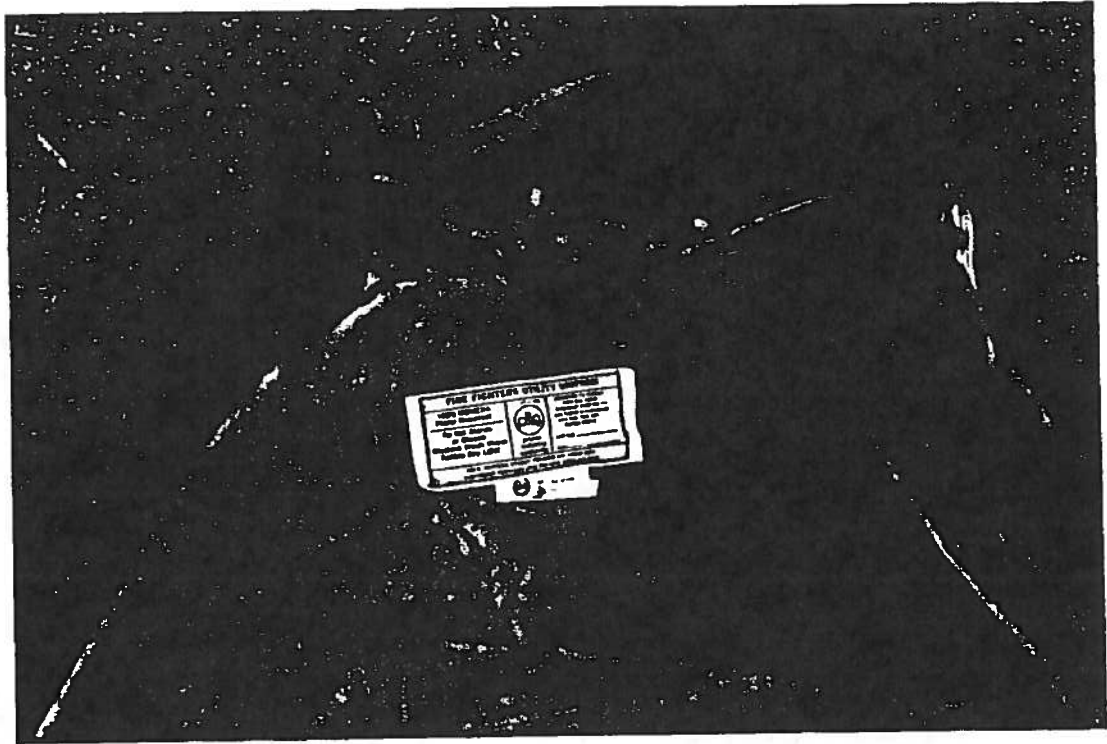


Rear outer side of Nomex shirt worn by
FF I Rogers. Note right sleeve was cut
off during treatment of wrist burn. Shirt
was found to be wet and dirty from soot.

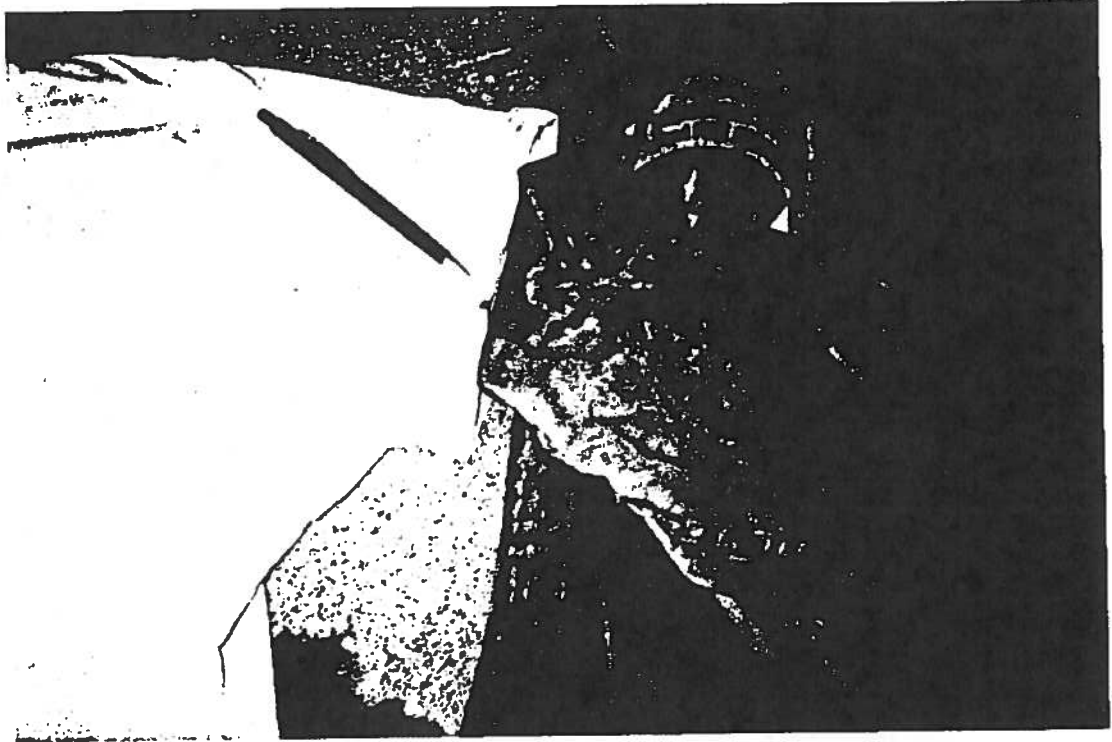




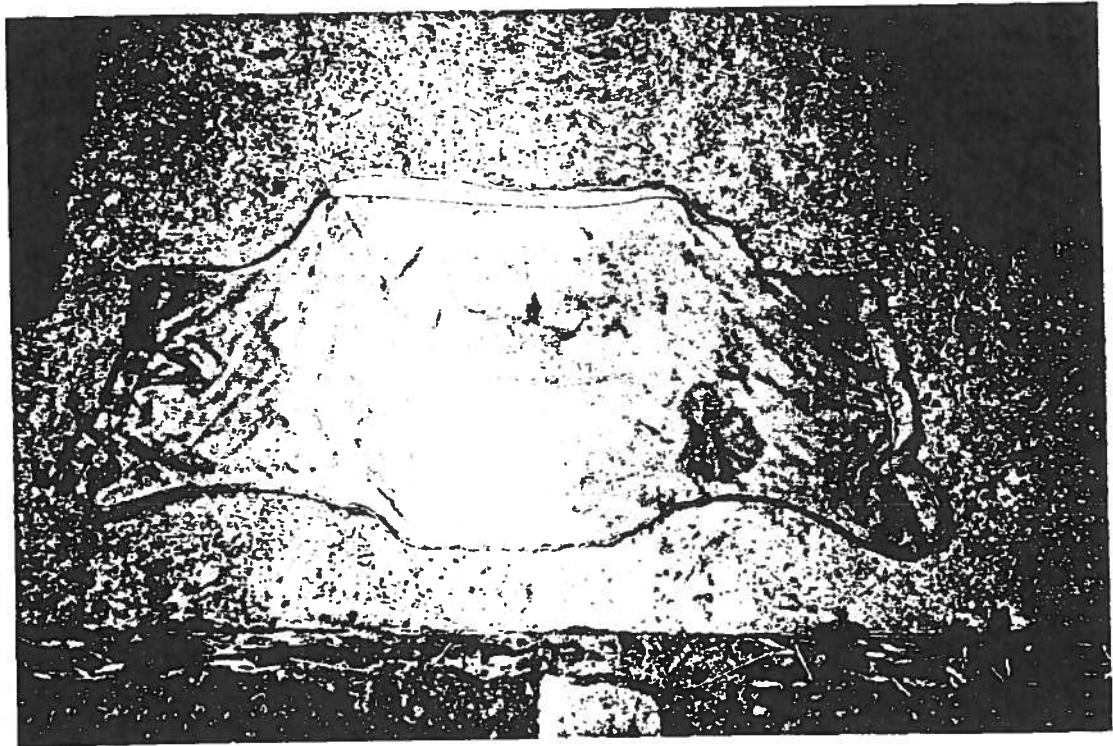
Inside view of Nomex shirt with right
sleeve material shown in place.



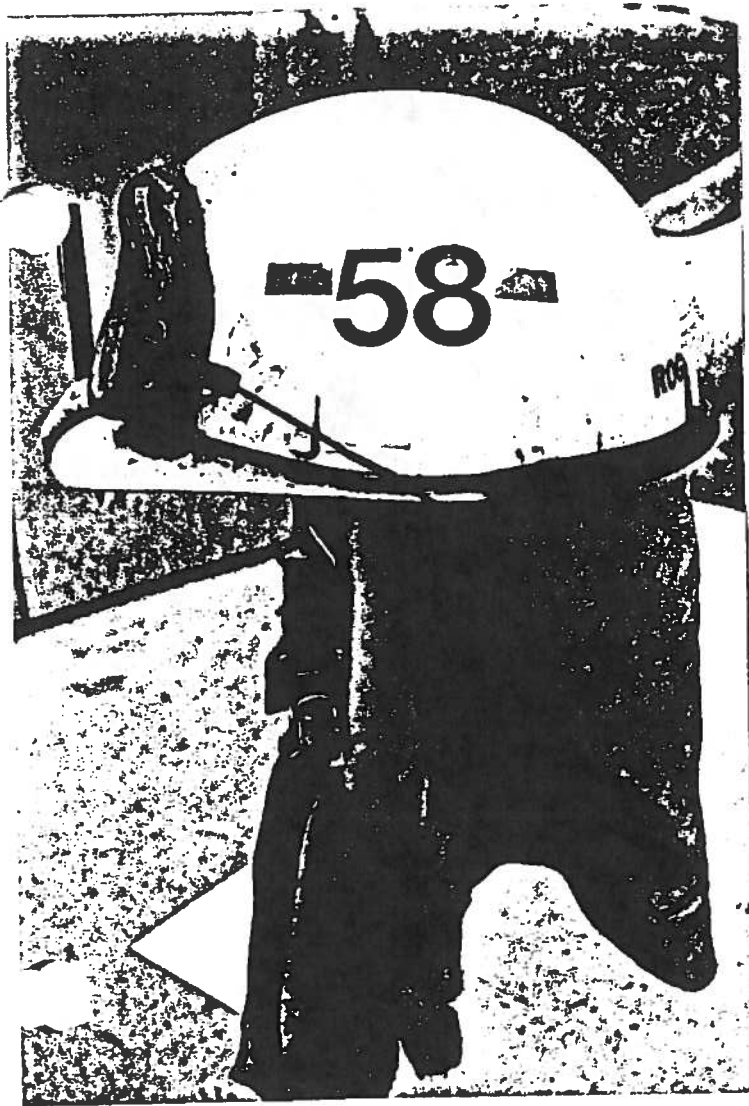
Manufacturers label inside Nomex shirt with Cal-Osha notation.



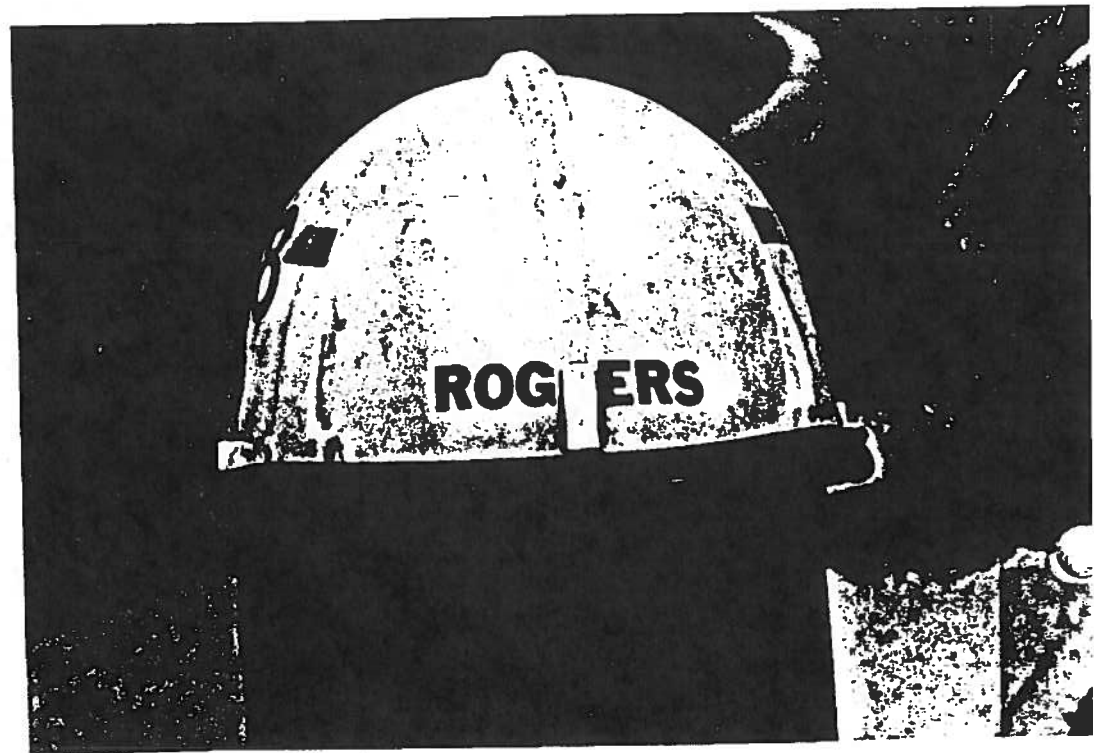
Ember burn spots on left sleeve. Burn spot on tee-shirt corresponds to location of burn spots on Nomex shirt. Caused by wind blown embers earlier in fire suppression activities.



Helmet shroud from FF I Rogers helmet.
No Cal-Osha labeling was found on this
garment.



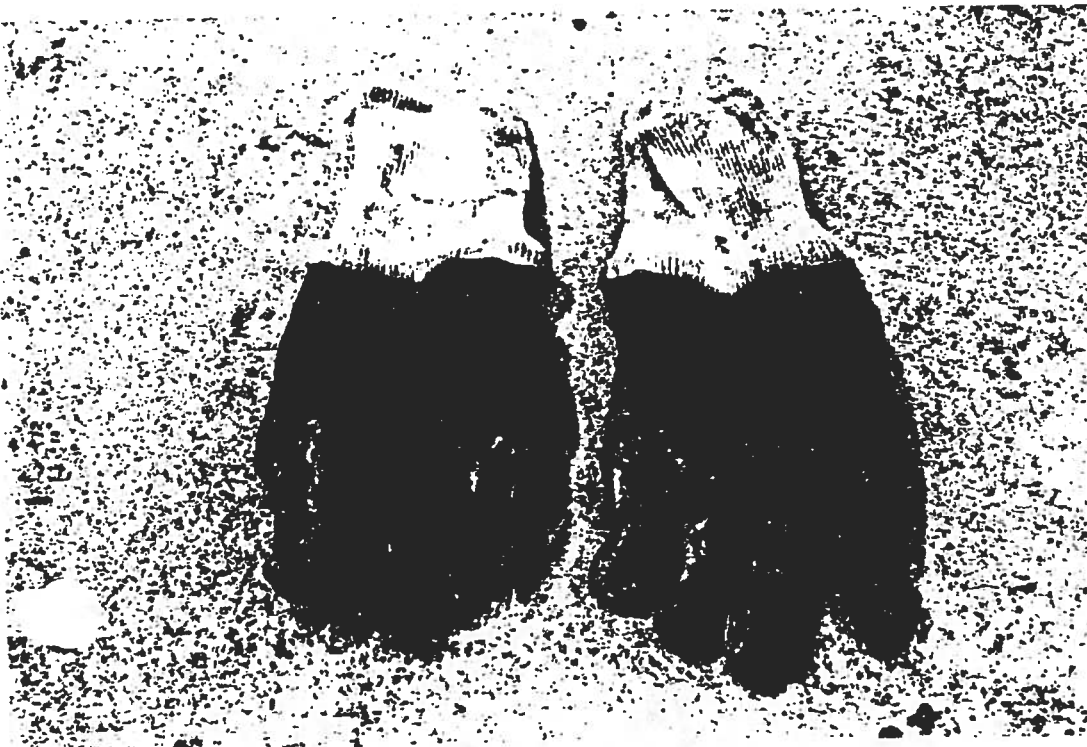
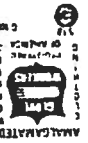
Helmet worn by FF I Rogers. MSA
Topguard Helmet - ANZI 289.1 1981
Class "B"





Structural gloves worn by FF I Rogers.
Manufacturer label displayed.

MADE IN U.S.A.
A UNION LABEL PRODUCT



LINED

#A2993
Aluminum Back Lined
Fed. Osha & Cal. Osha
Structural #3407



Web gear with fire shelter which was
worn by FF I Rogers

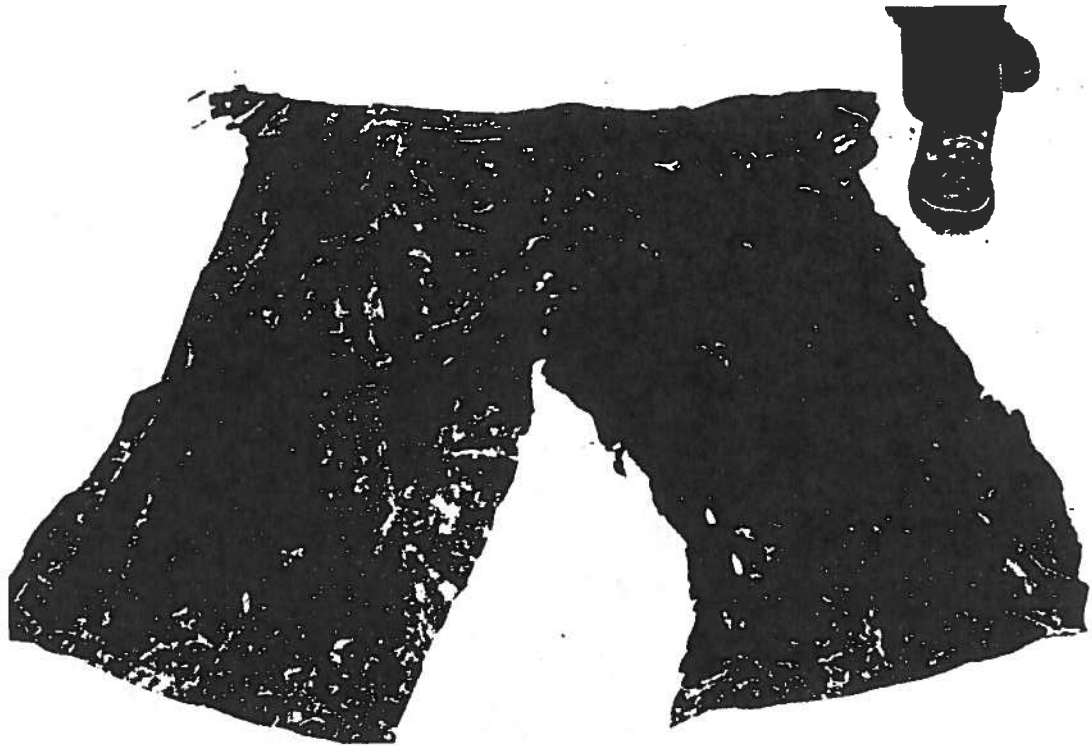
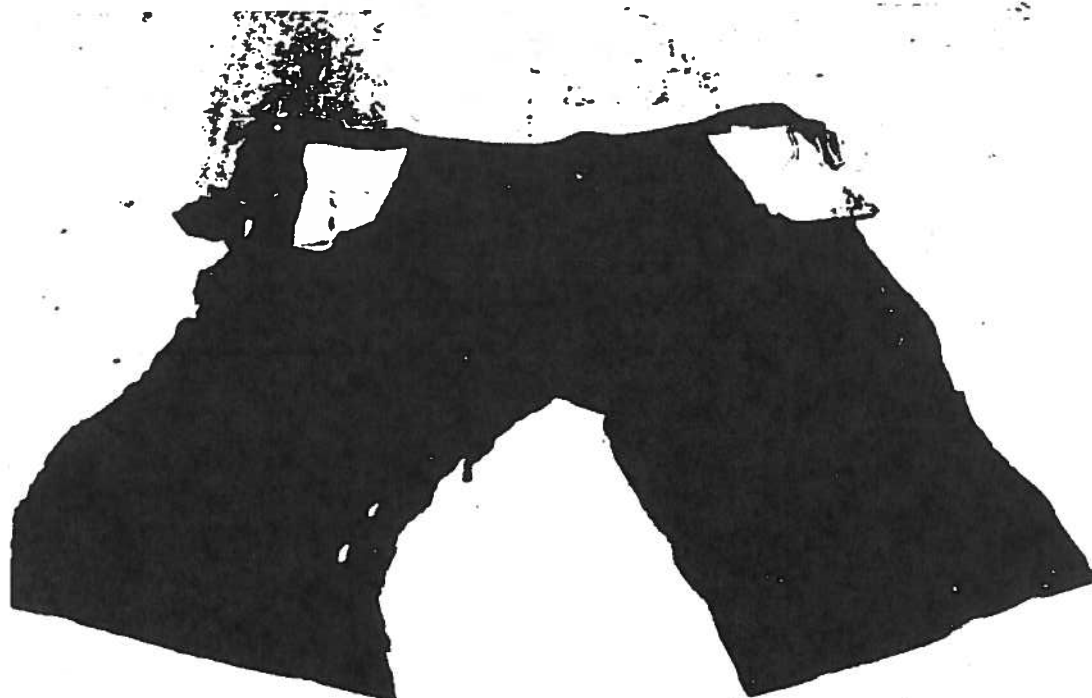
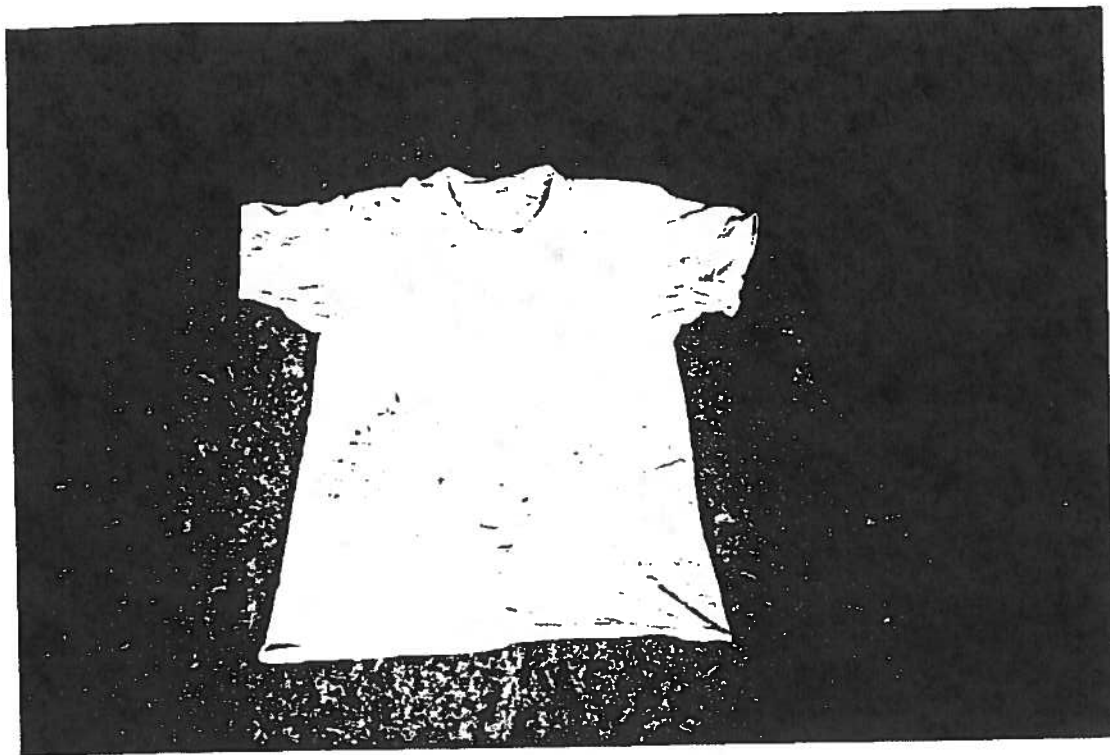


Photo of uniform pants worn by FF I Rogers beneath Nomex pants. Department approved Oshkosh brand, 50% cotton 50% polyester. Pants were found to be wet and dirty from soot and mud. No burn marks were found.



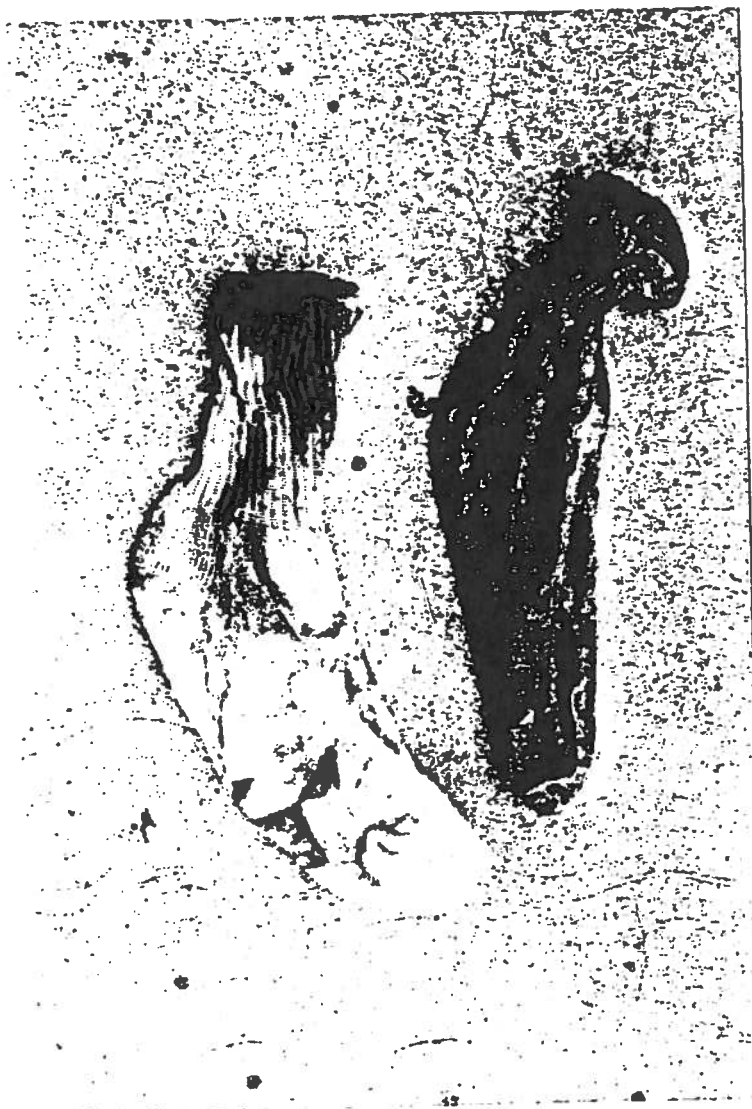


100% cotton white tee-shirt which
was worn by FF I Rogers.



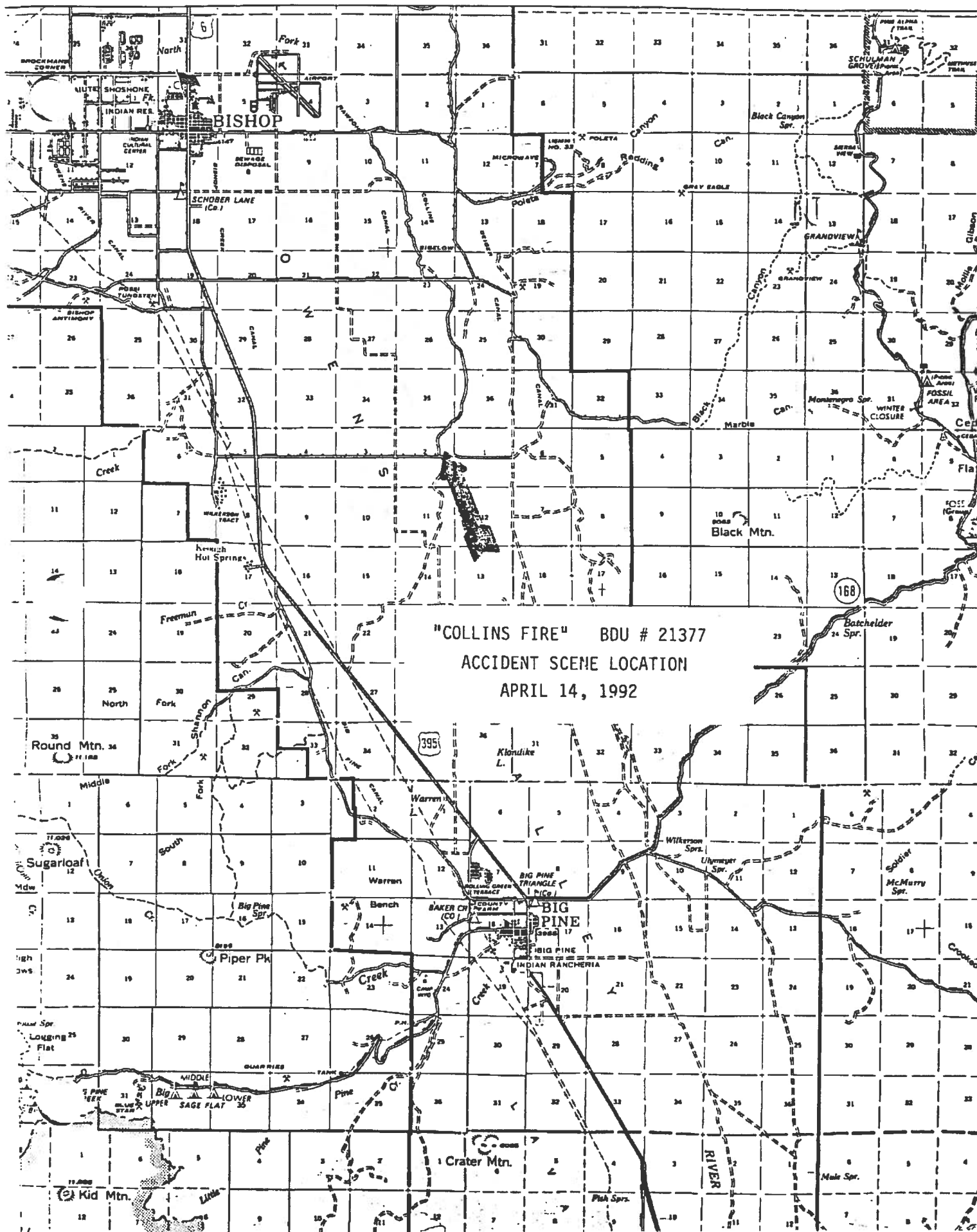


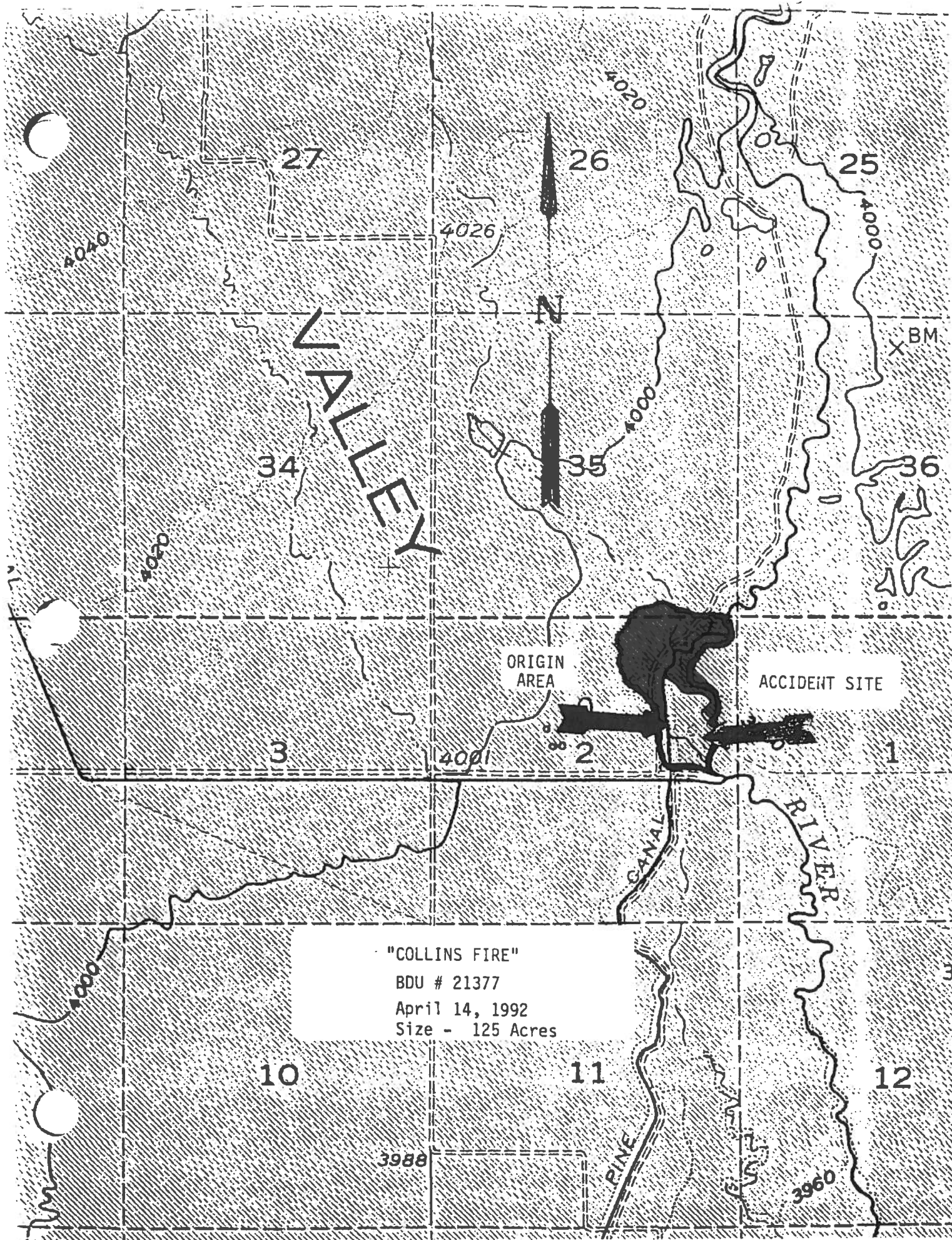
100% cotton brief undershorts worn
by FF I Rogers.

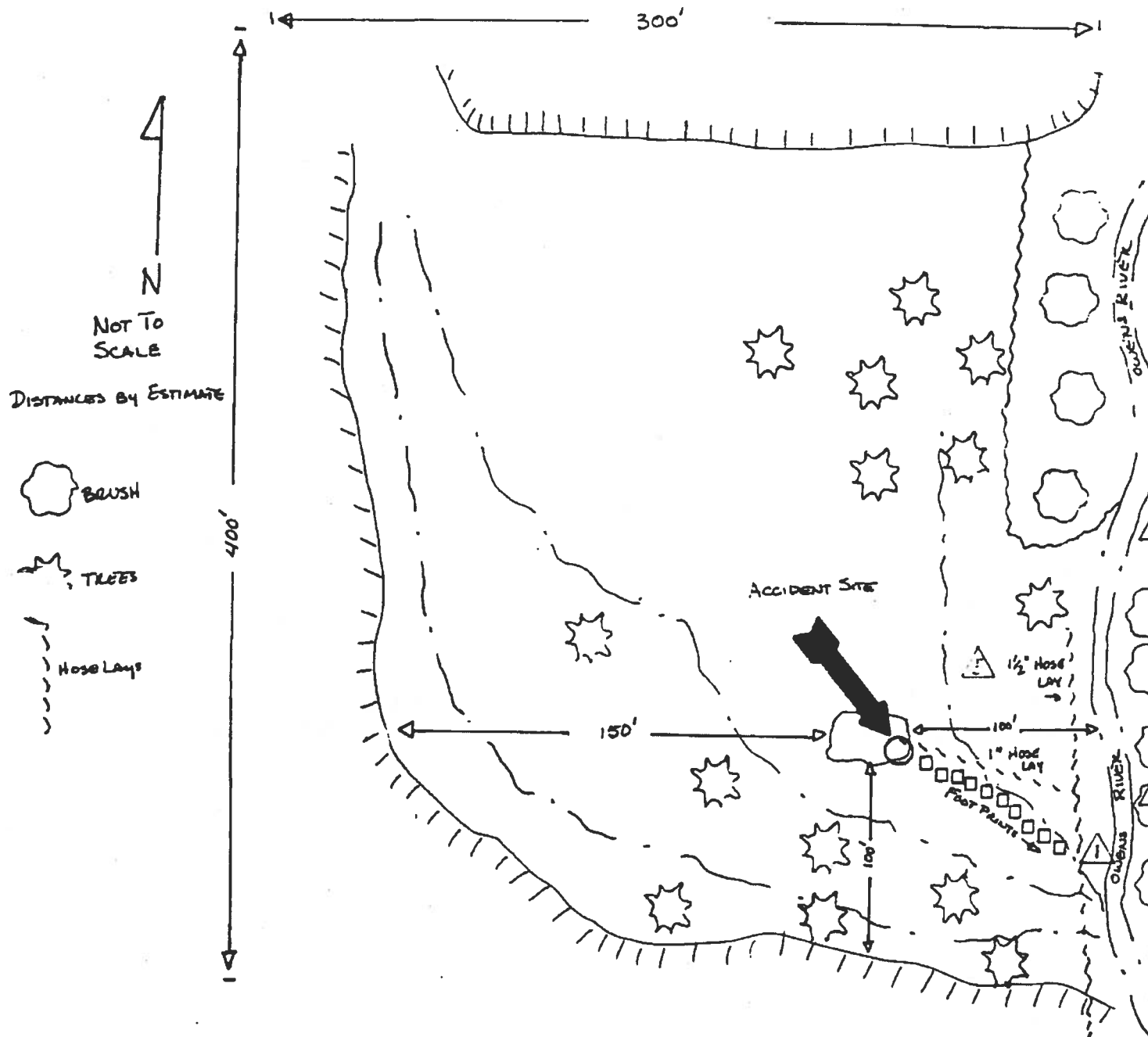


Cotton socks which were worn by
FF I Rogers.

R. 34 E.







COLLINS ROAD

E3563

ACCIDENT SITE MAP
COLLINS INCIDENT
FDU 21377

APRIL 14, 1992

LOCATION INMATE GARCIA

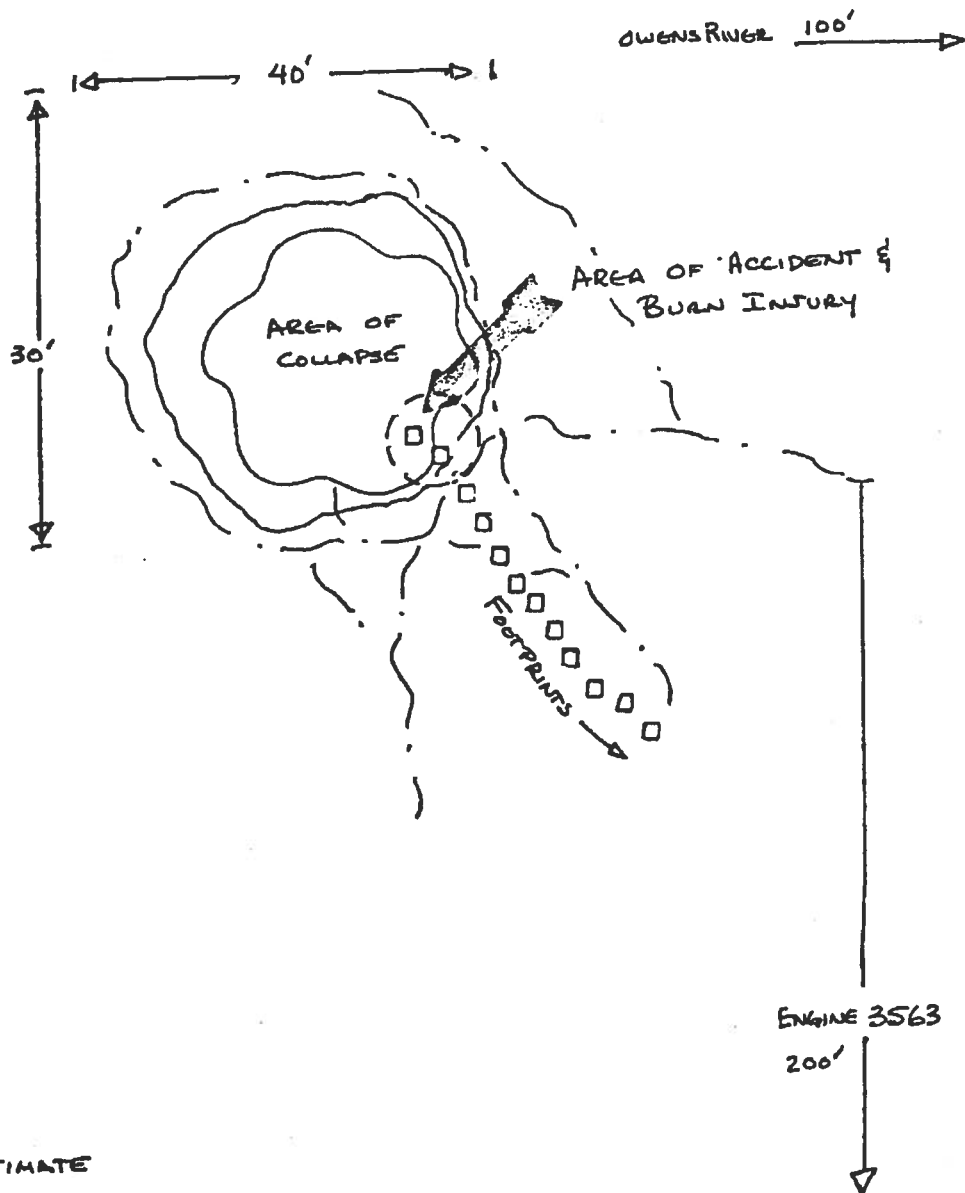
5 LOCATION FIRE CAPTAIN GNASS

2 LOCATION INMATE HARTLEY

6 LOCATION ENGINEER FLETCHER

3 LOCATION INMATE WILSON

4 LOCATION INMATE LULEY



NOT TO SCALE

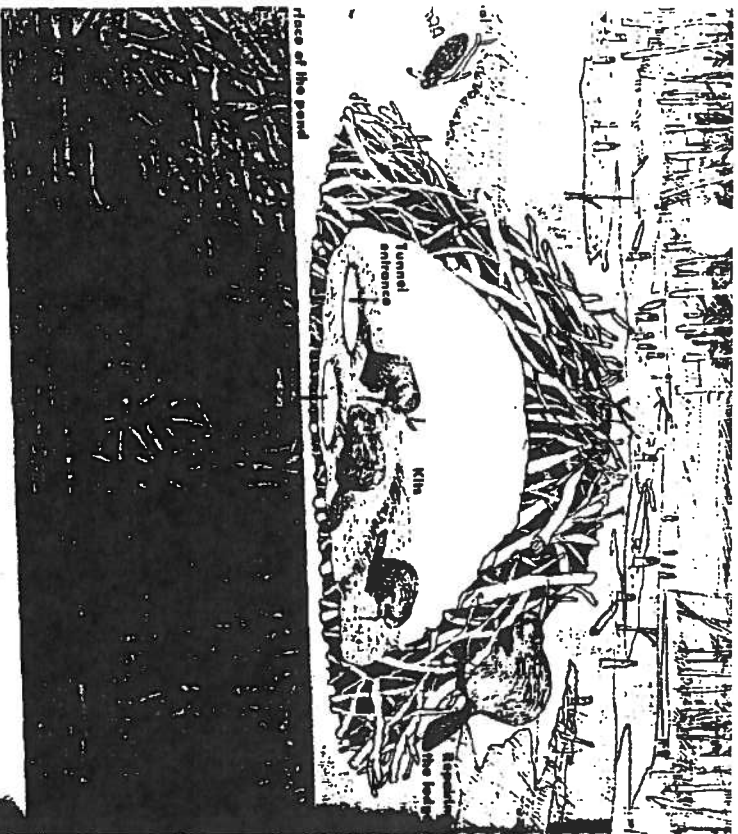
DISTANCES BY ESTIMATE

LOW UP OF ACCIDENT SITE

COLLINS INCIDENT

BDU 21377

APRIL 14, 1992



las with Activity. The busy animals cut down trees and use the wood to build lodges. They store food for winter, and take twigs into the lodge for the young-

to the animal's skin. The trapped beaver blanket that keeps the beaver

Life of a Beaver

c in family groups. As many as 12 pups a family, but generally there are up to six. The adult male and female usually stay with the pups for the year before, and the newborn pups are usually born in the fall. Their enemies include coyotes, wolves, and man. A wolf's enemies are living in the water and on land. They eat meat or work.

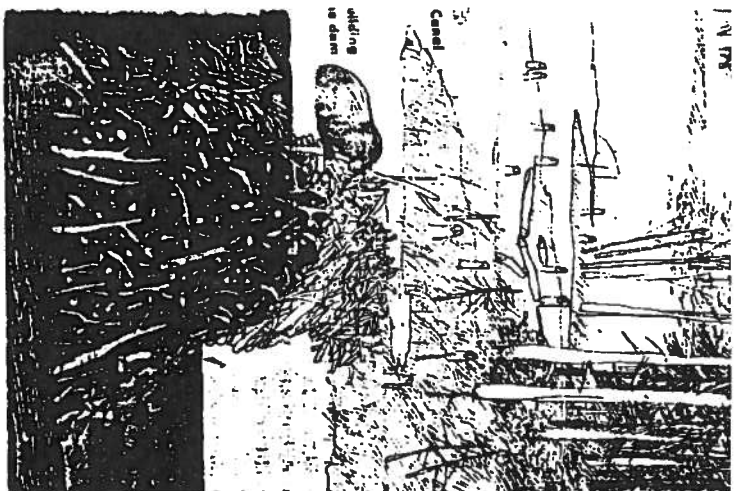
the beaver carries her young inside her body for three months before they are born. At birth, the young are about 1 1/2 inches (38 centimeters) long, weigh 1/4 to 1 1/4 pounds (0.2 to 0.68 kilograms), and are about 3 1/2 inches (8.9 centimeters) long. They are blind and helpless at birth, and their eyes are not open until they are about two weeks old. They are then driven from the family group. These young are then forced out to make their own way in the new world.

born. Beavers rarely fight with each other except in spring, when the 2-year-olds are driven away.

Food—Beavers eat the bark, twigs, leaves, and inner bark of deciduous trees, especially of trees and shrubs. Poplar trees are among their favorites. They also eat the bark of cottonwoods, and willow trees are especially important. One acre (0.4 hectare) of poplars can support a family of beavers for one to two years. Beavers also eat aquatic plants, and especially like the roots and tender stems of water lilies.

Cutting Down Trees. A beaver uses its sharp teeth to cut down trees and to peel off the bark from branches.

To cut a tree, the beaver stands on its hind legs, uses its tail as a prop. It places its front paws on the trunk, and turns its head sideways. Then it bites the trunk to make a cut in it. The animal then cuts farther down on the trunk. The distance between the two cuts depends upon the size of the tree. The cuts are farther apart on large trees than on small ones. The beaver takes several bites at the same place. Then the animal pulls off a chip and

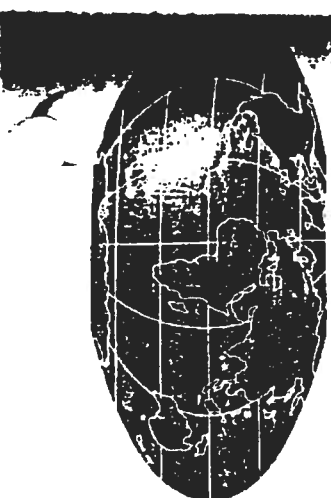


WORLD BOOK Illustration by George Suptech

ood between the cuts with its teeth. It keeps cutting and tearing out pieces of wood until the tree falls, leaves usually cut the wood away around a tree trunk, so they may cut the trunk from only one side. A beaver cannot control the direction in which the tree falls. It cuts until the trunk starts to break, and then runs to safety. The animal usually dives into the water nearby. It waits there until it is sure that no other beavers have been attracted by the noise of the falling

BEAVERS LIVE

Dark areas in the map, below, show the parts of the world where beavers are found. Most beavers live in North America.



branches may be used to enlarge or repair dam and the lodge. Beavers often work alone, b. sometimes several work together.

Building Dams and Canals. The beaver's habits of building and of storing food seem to be *instinctive* (unlearned). A beaver cuts down trees even if it has no place to build a dam or a lodge, and even if it has more than enough food.

A whole beaver family, and sometimes beavers from other families, may join in building a dam. Beaver dams are made of logs, branches, and rocks plastered together with mud. Beavers use mud and stones for the base of a dam. Then they add brush and log poles. They strengthen the dam by placing the poles so that the tips lean in the same direction as the water flows. The beavers plaster the tops and sides of the poles with more mud, stones, and wet plants. They do most of this work with their front teeth and front paws. They bring mud from the river bottom by holding it against their chests with their front paws.

The beavers build their dam so that the top is above the water. Some dams are more than 1,000 feet (300 meters) long. Beavers may keep their dams in good condition for many years. Most beavers that live in lakes do not build dams, but some build dams across the outlets of small lakes.

Sometimes beavers dig canals so they can move logs to their dens or lodges easily and quickly. The canals are 12 to 18 inches (30 to 46 centimeters) deep, 18 to 24 inches (46 to 61 centimeters) wide, and may be more than 700 feet (210 meters) long. A beaver canal may run from a wooded area to a lake or riverbank. Or it may cut across a piece of land that sticks out into the water.

Building lodges. A beaver lodge looks somewhat like a topee. A family of beavers builds its lodge with the same materials and in much the same way as it builds a dam. The lodge may stand on the riverbank or in the water like an island. The tops of most lodges are 3 to 6 feet (91 to 180 centimeters) above the water. Each lodge has several underwater entrances and tunnels, all of which lead to an inside chamber. The floor of the chamber is 4 to 6 inches (10 to 15 centimeters) above the water. Here, young beavers can stay warm and dry in winter, and the adults can dry off after bringing in food. Holes between the branches in the ceiling let in fresh air.

The size of the lodge depends on the size of the family and the length of time the beavers have lived there. The animals enlarge and repair the lodge as long as they live in it. Most beavers abandon their lodge only if they have eaten all the food in the area, or if too many enemies move nearby.

Beavers that live in large lakes or swift rivers may dig dens in the banks. These dens, like lodges, have underwater entrances and tunnels.

DANIEL BEAVER

See also **ANIMAL** (picture: Animals of the Temperate Forests); **FUR**; **TRAPPING**.

