



**UPPER COLORADO RIVER
INTERAGENCY FIRE MANAGEMENT**
NPS Colorado National Monument
BLM Grand Junction and Colorado River Valley
USFS White River, Grand Mesa and
Uncompahgre National Forests



Oil and Gas Guide for Wildland Firefighters



An added facet of fire suppression within the UCR is the large number of oil and gas (O&G) facilities, industry personnel and contractors that are present in the response area.

Wildland fires in O&G fields create atypical safety issues and hazards that may dictate different tactics and mitigation procedures.

This guide is designed to help firefighters identify oil and gas industry facilities common to western Colorado.

This information along with a briefing from UCR managers will aid you in assessing and managing risk as you respond to fires.



Rat Hole Rig

What does it do?

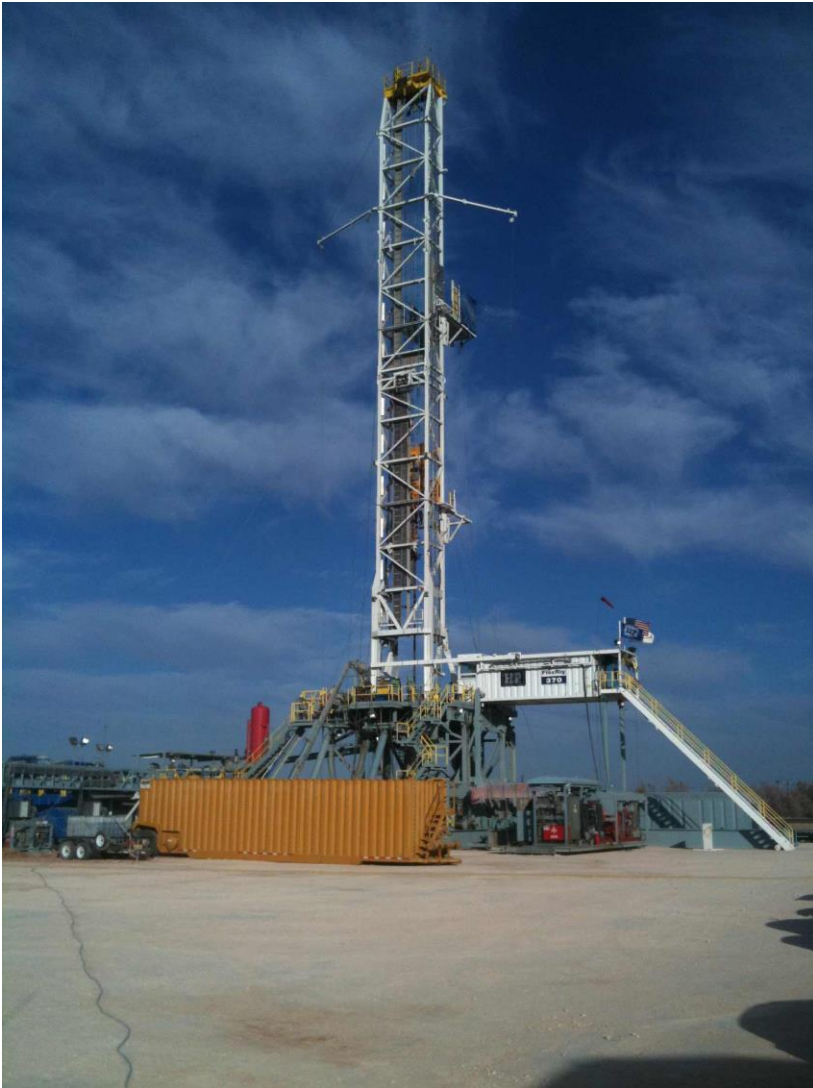
Drills shallow holes (20-120 feet) to set up casing for drill rig.

What are the hazards?

Flammable liquids, other existing wells.

How many people may be there?

2-3 operators.



Drilling Rig

What does it do?

Drills holes up to 14,000 feet. Can drill 1-22 + wells on one pad.

What are the hazards?

Liquid fuels, hydraulic fluids, existing producing gas wells, pits with flammable liquids, chemicals, electrical hazards, single access road.

How many people may be there?

8- 20 + people



Workover Rig

What does it do?

Completes and stimulates existing well of a well, repair and maintain an existing well.

What are the hazards?

Guy wires, live gas production lines (high pressure) from existing well, liquid fuels, hydraulic fluids, existing producing gas wells, tanks & pits with flammable liquids, chemicals, single egress/ingress access road.

How many people may be there?

4 + people



Frac Operations

What does it do?

Pumps liquids and sand underground to open up gas deposits. High pressures and volumes



What are the hazards?

High pressure surface lines, flammable liquids, chemicals, tanks/pits. Large numbers of people/vehicles. Single ingress/egress road.

How many people may be there?

20-30 people



Snubbing Unit

What does it do?

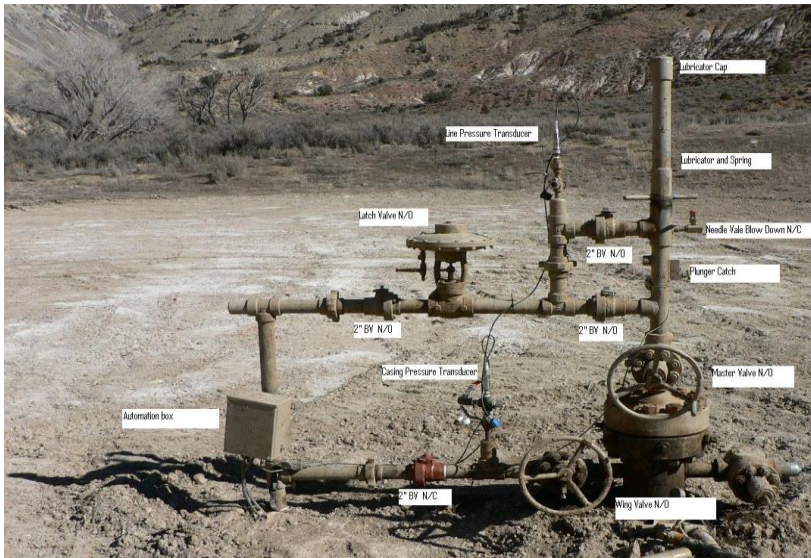
Completes wells under well bore pressures.

What are the hazards?

Live production lines on surface, high pressure (700 psi), tanks and pits with flammables.

How many people may be there?

6 + people



Single & Multi-Well Pads

What do they do?

Where the gas well exits the ground. A series of valves directs gas to a separator

What are the hazards?

Natural gas under high pressure. Tanks and pits with flammables.

How many people may be there?

Normally unoccupied – is maintained by a pumper.



Separator / Dehydrator

What do they do?

Separator takes water out of natural gas. Glycol (antifreeze) is used in the dehydrator to extract water from the gas in the winter.

What are the hazards?

Natural gas under high pressure, high temperature dehydrator, glycol

How many people may be there?

Normally unoccupied – is maintained by a pumper.





Water and Condensate Tanks

What do they do?

Collection point for condensate and produced water from wells on the pad.

What are the hazards?

Flammable liquids, truck traffic

How many people may be there?

Normally unoccupied – trucks may be present to transport fluids.



Compressor

What does it do?

Compresses natural gas to help move it to gas plants and pipelines.



What are the hazards?

High pressure lines, natural gas.

How many people may be there?

Normally unoccupied – but mechanics maintain equipment.

Water Management Facilities

What does it do?

**Storage, evaporation and recycling point
for produced water**



What are the hazards?

**Personnel falling into ponds. Cold water
in winter. (There are rope ladders and
flotation rings located around ponds.)**

Constant truck traffic.

How many people may be there?

Varies with truck traffic.

Gas Plants

What do they do?

Gas plant processes include CO₂ stripping, water removal, Natural Gas Liquids (NGL) extraction and gas compression.



What are the hazards?

Pressurized natural gas, pressurized vessels, natural gas liquids (vapors heavier than air), amine (skin irritant), buried installations

How many people may be there?

Control room operated 24 hours-365 days with various personnel

Hydrogen Sulfide (H₂S)

Hydrogen Sulfide (H₂S) also called sour gas

- Toxic , colorless
- Heavier than air (21%)
- In low concentrations smells like rotten eggs
- Deadens sense of smell and is flammable in higher concentrations
- Potentially deadly in concentrations above 100 PPM. This gas may or may not smell and is heavier than air and tends to sink to low areas. Avoid low areas and stay up wind. Clear with industry representative or agency resource advisor before engaging and then only if you are confident it is safe to do so and gas monitors are in use.
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Symptoms include: Eye irritation, nose and throat irritation, headache, dizziness, nausea, cough, difficulty breathing, loss of smell, vomiting.



Suppression Resources

Consider the following during Size Up, LCES

- Identify Safety Zones remembering that well sites (pads) MAY have known or unknown harmful and flammable gases present.
- Identify oil and gas facility hazards and safety concerns that differ from more traditional wildland fire hazards (fuels/slope/snags etc.).
- Identify the location of any O&G facility that may be threatened by fire and notify dispatch with any information about land ownership.
- At the request of the IC, Dispatch will order an Agency Resource Advisor and/or Industry representative.
- Be aware that toxic gases may be present in the proximity of O&G facilities. Use gas monitors and monitor personnel for gas exposure symptoms.
- If the fire is within a ½ mile of a known H2S location consider it a haz-mat response for toxic and harmful gases.
- Fire within ½ mile of an H2S location with known concentrations above 10 PPM, or if a monitor goes off, may be suppressed, by appropriate management responses including: indirect attack or the use of air resources.
- Do not use any oil & gas “produced” water, or water of unknown origin.
- Do not engage any fire that has involved any O&G facilities. Monitor the fire from a safe location, secure the scene and order appropriate resources.
- Develop evacuation procedures for industry personnel who may potentially be threatened.

- Assume all above ground and buried pipelines contain gas or water with hazardous chemicals. Do not drive over exposed pipelines.
- Avoid driving on pipelines, especially exposed pipelines whenever possible. Buried pipelines should have risers that are visible from one to the next. Do not assume pipelines are buried deeply or are directly under their markers. Do not assume that because there are no markers there are no pipelines.
- Dozer and heavy equipment operations should only be considered after all involved parties have been consulted and after jurisdictional agency administrator(s) approval.
- Avoid establishing ICPs, camps or staging areas in or near O&G facilities or well pads.
- When parking keep in mind the hazards of oil and gas facilities and vehicle traffic patterns.
- Maintain a high level of situational awareness for all of the hazards that may be present.
- Ensure escape routes are always available.
- Do not attempt to shut in wells, turn valves, and move O&G equipment.