

30-015-38477

COG Operating LLC

HYDROGEN SULFIDE DRILLING OPERATIONS PLAN

I. HYDROGEN SULFIDE TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

- A. The hazards and characteristics of hydrogen sulfide (H₂S).
- B. The proper use and maintenance of personal protective equipment and life support systems.
- C. The proper use of H₂S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
- D. The proper techniques for first aid and rescue procedures.



In addition, supervisory personnel will be trained in the following areas:

- A. The effects of H₂S on metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
- B. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
- C. The contents and requirements of the H₂S Drilling Operations Plan and the Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H₂S zone (within 3 days or 500 feet) and weekly H₂S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H₂S Drilling Operations Plan and the Public Protection Plan. This plan shall be available at the well site. All personnel will be required to carry documentation that they have received the proper training.

II. H₂S SAFETY EQUIPMENT AND SYSTEMS

Note: All H₂S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonably expected to contain H₂S.

A. Well Control Equipment:

Flare line.

Choke manifold.

Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.

Auxiliary equipment to include: annular preventer, mud-gas separator, rotating head.

B. Protective equipment for essential personnel:

Mark II Surviveair 30-minute units located in the dog house and at briefing areas.

C. H₂S detection and monitoring equipment:

2 - portable H₂S monitor positioned on location for best coverage and response. These units have warning lights and audible sirens when H₂S levels of 20 ppm are reached.

D. Visual warning systems:

Caution/Danger signs shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used, when appropriate. See example attached.

E. Mud Program:

The mud program has been designed to minimize the volume of H₂S circulated to the surface.

F. Metallurgy:

All drill strings, casings, tubing, wellhead, blowout preventers, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H₂S service.

G. Communication:

Company vehicles equipped with cellular telephone and 2-way radio.

COG Operating LLC has conducted a review to determine if an H₂S contingency plan is required for the above referenced well. We were able to conclude that any potential hazardous volume would be minimal. H₂S concentrations of wells in this area from surface to TD are low enough; therefore we do not believe that an H₂S Contingency Plan would be necessary.

W A R N I N G

**YOU ARE ENTERING AN H₂S AREA
AUTHORIZED PERSONNEL ONLY**

- 1. BEARDS OR CONTACT LENSES NOT ALLOWED***
- 2. HARD HATS REQUIRED***
- 3. SMOKING IN DESIGNATED AREAS ONLY***
- 4. BE WIND CONSCIOUS AT ALL TIMES***
- 5. CK WITH MARBOB FOREMAN AT MAIN OFFICE***

COG Operating LLC

1-575-748-6940

EMERGENCY CALL LIST

	<u>Office</u>	<u>Mobile</u>	<u>Home</u>
COG West Ofc	575-748-6940		
Sheryl Baker	575-748-6940	432-934-1873	575-748-2396
Ron Beasley	575-746-2010	432-254-9883	
Seth Wild	575-748-6940	432-528-3633	
Dean Chumbley	575-748-3303	575-748-5988	575-748-2426

EMERGENCY RESPONSE NUMBERS

Eddy County, New Mexico

State Police	575-748-9718
Eddy County Sheriff	575-746-2701
Emergency Medical Services (Ambulance)	911 or 575-746-2701
Eddy County Emergency Management (Harry Burgess)	575-887-9511
State Emergency Response Center (SERC)	575-476-9620
Carlsbad Police Department	575-885-2111
Carlsbad Fire Department	575-885-3125
New Mexico Oil Conservation Division	575-748-1283
Indian Fire & Safety	800-530-8693
Halliburton Services	800-844-8451

COG Operating LLC
MULTI-POINT SURFACE USE AND OPERATIONS PLAN

Blue Thunder 5 Federal #4H
Surf: 480' FSL & 500' FEL
BHL: 480' FSL & 330' FWL
Section 5, T19S, R31E
Eddy County, New Mexico

This plan is submitted with Form 3160-3, Application for Permit to Drill, covering the above described well. The purpose of this plan is to describe the location of the proposed well, the proposed construction activities and operations plan, the magnitude of the surface disturbance involved and the procedures to be followed in rehabilitating the surface after completion of the operations, so that a complete appraisal can be made of the environmental effect associated with the operations.

1. EXISTING ROADS:

- a. The well site and elevation plat for the proposed well are reflected on the well site layout; Form C-102. The well was staked by Madron Surveying Inc.
- b. Exhibit 2 is a portion of a topo map showing the well and roads in the vicinity of the proposed location. The proposed wellsite and the access route to the location are indicated in red on Exhibit 2. Right of way using this proposed route is being requested if necessary.
- c. Routine grading and maintenance of existing roads will be conducted as necessary to maintain their condition as long as any operations continue on this lease.

DIRECTIONS:

From the intersection of CR 249 (Westfall Rd) and CR 222 (Shugart RD) Go north on CR 22 for 250 ft, Turn left (west) on caliche road, go 0.58 miles to a caliche rd, Turn left (south) and go 0.6 miles to well site. TURN SW and proceed (0.2 mi) to location

2. PLANNED ACCESS ROAD:

COG Operating LLC will be using an existing access road TO THE Adjoining well, and the building approx. 2 of a mile of new Road. (See 2 A)

3. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES:

- A. In the event the well is found productive, the Blue Thunder 5 Federal #4H tank battery would be utilized and the necessary production equipment will be installed at the well site.
All flow lines will adhere to API standards
- B. If electricity is needed, power will be obtained from Central Valley Electric. Central Valley Electric will apply for ROW for their power lines.

C. If the well is productive, rehabilitation plans are as follows:

- i. The original topsoil from the well site will be returned to the location. The drill site will then be contoured as close as possible to the original state.

4. LOCATION AND TYPES OF WATER SUPPLY:

This location will be drilled using a combination of water mud systems (outlined in the Drilling Program). The water will be obtained from commercial water stations in the area and hauled to location by transport truck using the existing and proposed roads shown in Exhibit #2. On occasion, water will be obtained from a pre-existing water well, running a pump directly to the drill rig. In these cases where a poly pipeline is used to transport water for drilling purposes, the existing and proposed road shown in Exhibit "2" will be utilized.

5. CONSTRUCTION MATERIALS:

All Caliche utilized for the drilling pad and proposed access road will be obtained from an existing BLM approved pit or from prevailing deposits found under the location. All roads will be constructed of 6" rolled and compacted caliche. Will use BLM recommended use of extra caliche from other locations close by for roads, if available. The topsoil will be placed on the ~~north~~ ^{South} side of location.

6. METHODS OF HANDLING WASTE MATERIAL:

- a. All trash, junk and other waste material will be removed from the wellsite within 30 days after finishing drilling and/or completion operations. All waste material will be contained in trash cages or trash bins to prevent scattering. When the job is completed, all contents will be removed and disposed of in an approved sanitary landfill.
- b. The supplier, including broken sacks, will pick up slats remaining after completion of well.
- c. A porto-john will be provided for the rig crews. This equipment will be properly maintained during the drilling and completion operations and will be removed when all operations are complete.
- d. Disposal of fluids to be transported by an approved disposal company.

7. ANCILLARY FACILITIES:

No campsite or other facilities will be constructed as a result of this well.

8. WELLSITE LAYOUT:

- a. Exhibit 3 shows the proposed well site layout with dimensions of the pad layout.
- b. This exhibit indicates proposed location of fresh water sump pits if utilized and living facilities.
- c. Mud pits in the active circulating system will be steel pits and a closed loop system will be utilized.

TEN
12/15/10

9. PLANS FOR SURFACE RECLAMATION:

- a. After finishing drilling and/or completion operations, if the well is found non-commercial, the caliche will be removed from the pad and transported to the original caliche pit or used for other drilling locations. The road will be reclaimed as directed by the BLM. The original top soil will again be returned to the pad and contoured, as close as possible, to the original state.
- b. The location and road will be rehabilitated as recommended by the BLM.
- c. If the well is deemed commercially productive, the reserve pit will be restored as described in 10(A) within 120 days subsequent to the completion date. Caliche from areas of the pad site not required for operations will be reclaimed. The original top soil will be returned to the area of the drill pad not necessary to operate the well. The West & North sides of the well pad that is unused will be contoured, as close as possible, to match the original topography.

10. SURFACE OWNERSHIP:

The surface is owned by the US Government and is administered by the Bureau of Land Management. The surface is multiple use with the primary uses of the region for the grazing of livestock and the production of oil and gas. The proposed road routes and the surface location will be restored as directed by the BLM.

11. OTHER INFORMATION:

- a. The area surrounding the well site is grassland. The topsoil is very sandy in nature. The vegetation is moderately sparse with native prairie grass, some mesquite bushes and shinnery oak. No wildlife was observed but it is likely that deer, rabbits, coyotes, and rodents traverse the area.
- b. There is no permanent or live water in the general proximity of the location.
- c. There are no dwellings within 2 miles of location.
- d. A Cultural Resources Examination will be completed by Boone Archeological and forwarded to the BLM office in Carlsbad, New Mexico.

12. OPERATOR'S REPRESENTATIVE:

A. Through A.P.D. Approval:

Rand French
Regulatory Coordinator
COG Operating LLC
2208 W Main Street
Artesia, NM 88210
Phone: 575-748-6940
Cell: 575-513-1835

B. Through Drilling Operations:

Sheryl Baker
Drilling Superintendent
COG Operating LLC
2208 W Main Street
Artesia, NM 88210
Phone: 575-748-6940
Cell: 575-934-1873

CERTIFICATION:

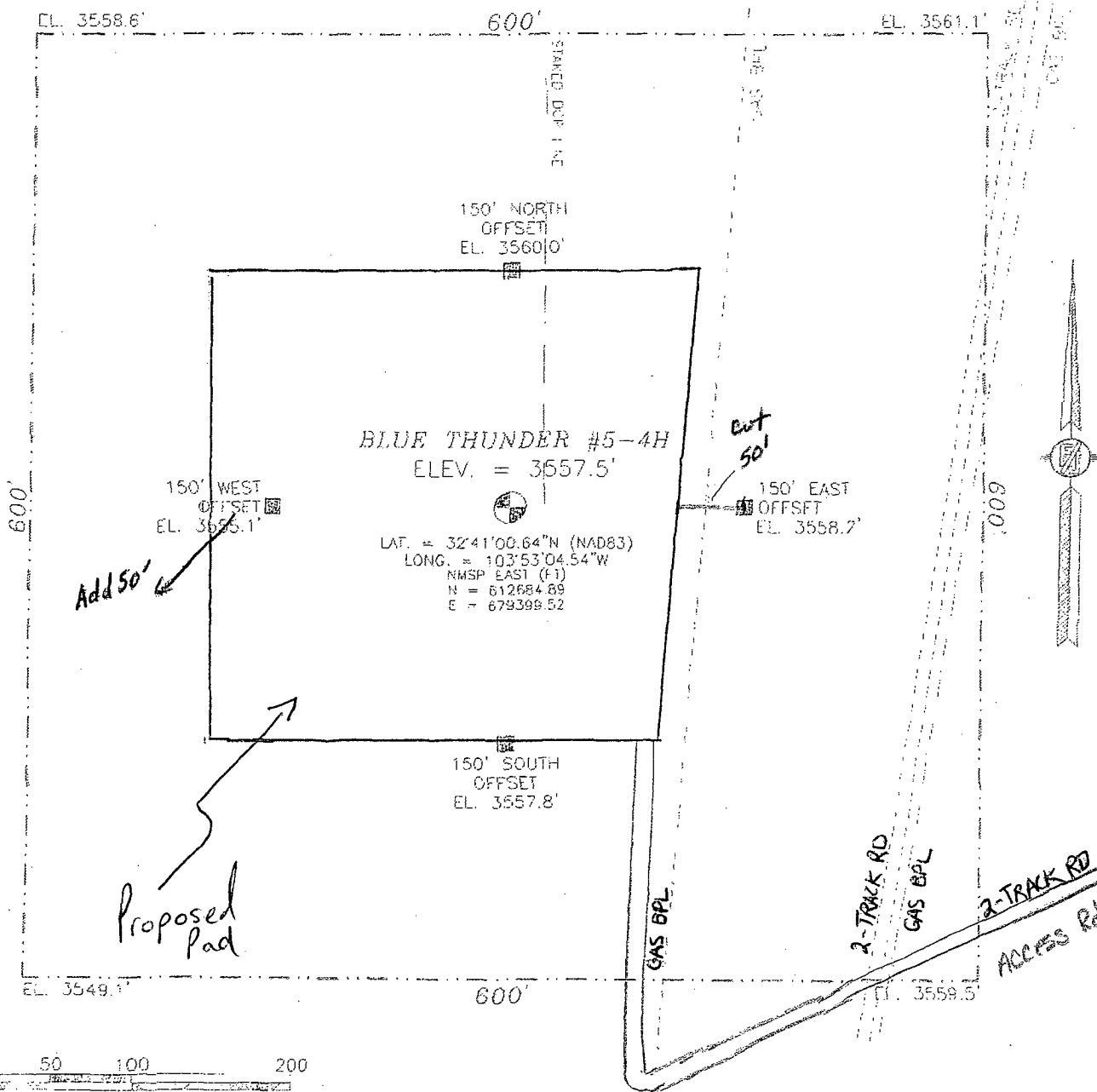
I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route, that I am familiar with the conditions which presently exist; that the statements made in this plan are to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by COG Operating LLC and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

12-2-10
Date

COG Operating LLC


Sheryl Baker
Drilling Superintendent

SECTION 5, TOWNSHIP 19 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO



0 10 50 100 200

SCALE 1" = 100'

DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF CR 249 (WESTFALL RD.) AND CR 222 (SHUGART RD) GO NORTH ON CR 222 FOR 250 FT. TURN LEFT (WEST) ON A CALICHE RD. GO 0.58 MILES TO A CALICHE RD. TURN LEFT (SOUTH) AND GO 0.60 MILES TO ~~old well site~~. TURN SW proceed .2 miles to site

COG OPERATING, LLC
BLUE THUNDER #5-4H
LOCATED 180 FT. FROM THE SOUTH LINE
AND 500 FT. FROM THE EAST LINE OF
SECTION 5, TOWNSHIP 19 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

NOVEMBER 22, 2010

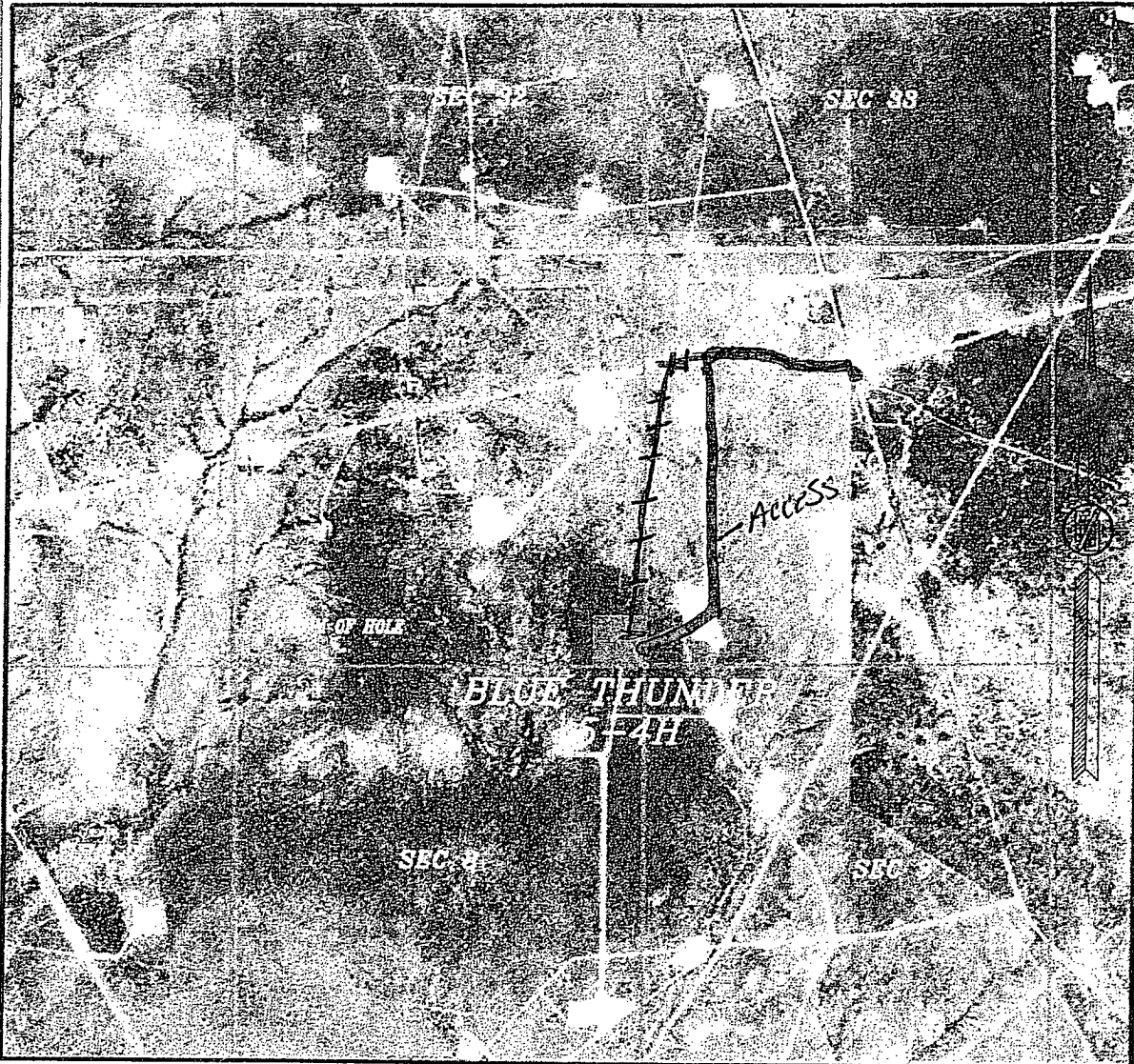
SURVEY NO. 260-R1

MADRON SURVEYING, INC. 301 SOUTH CANAL (775) 857 5823 CARLSBAD, NEW MEXICO

TEN 1/4/11

SECTION 5, TOWNSHIP 19 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

AERIAL PHOTO



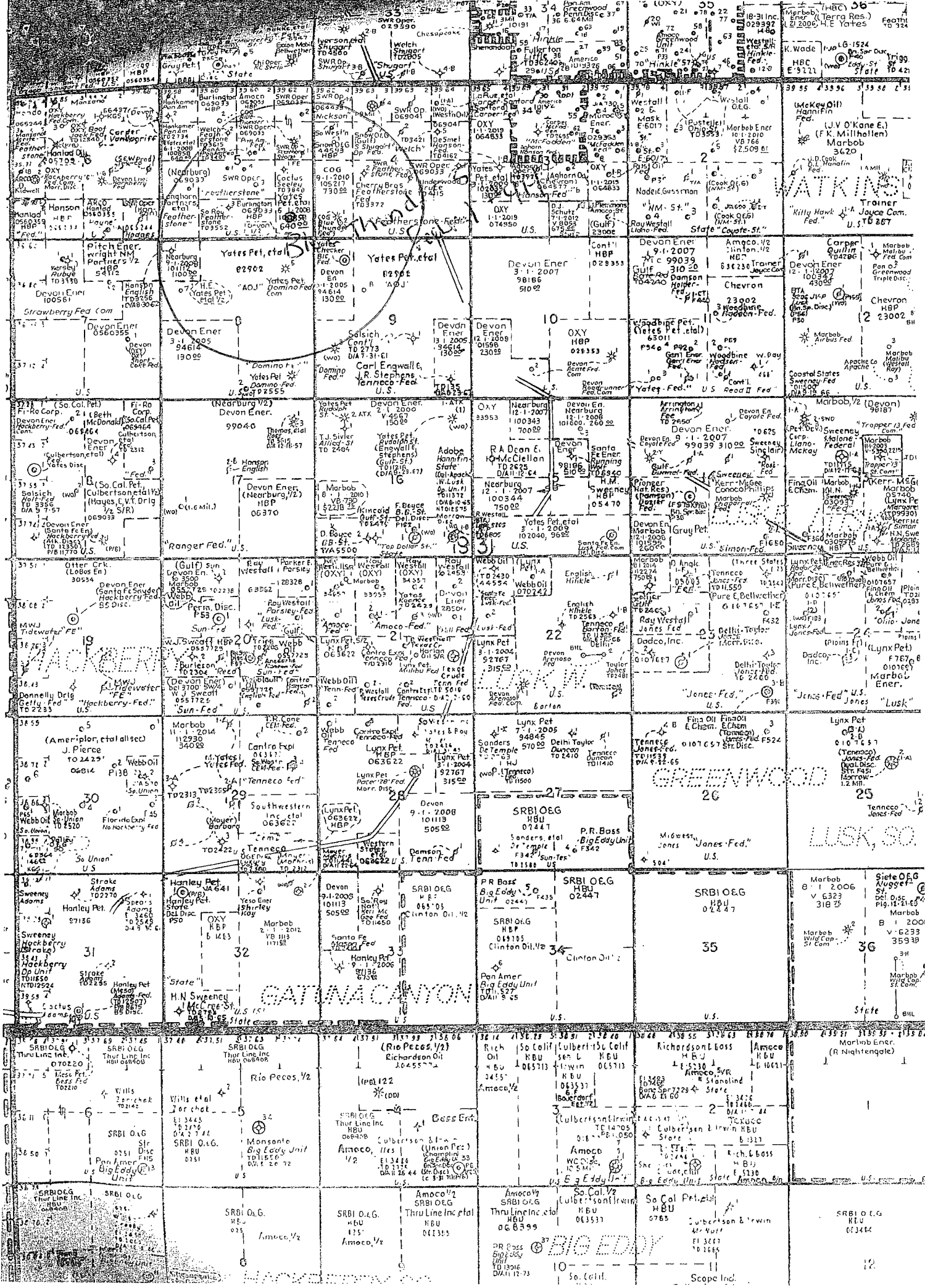
NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
USDA - AUG, 2009

COG OPERATING, LLC
BLUE THUNDER #5-4H
LOCATED 330 FT. FROM THE SOUTH LINE
AND 330 FT. FROM THE EAST LINE OF
SECTION 5, TOWNSHIP 19 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

OCTOBER 13, 2010

SURVEY NO. 260

MADRON SURVEYING, INC. 551 SOUTH CANAL (575) 887-5830 CARLSBAD, NEW MEXICO



WATKINS

Trainer
Kitty Hawk
U.S. 2067

Marbub
Airbus Fed.
U.S. 23002

Marbub
Airbus Fed.
U.S. 23002

Marbub
Airbus Fed.
U.S. 23002

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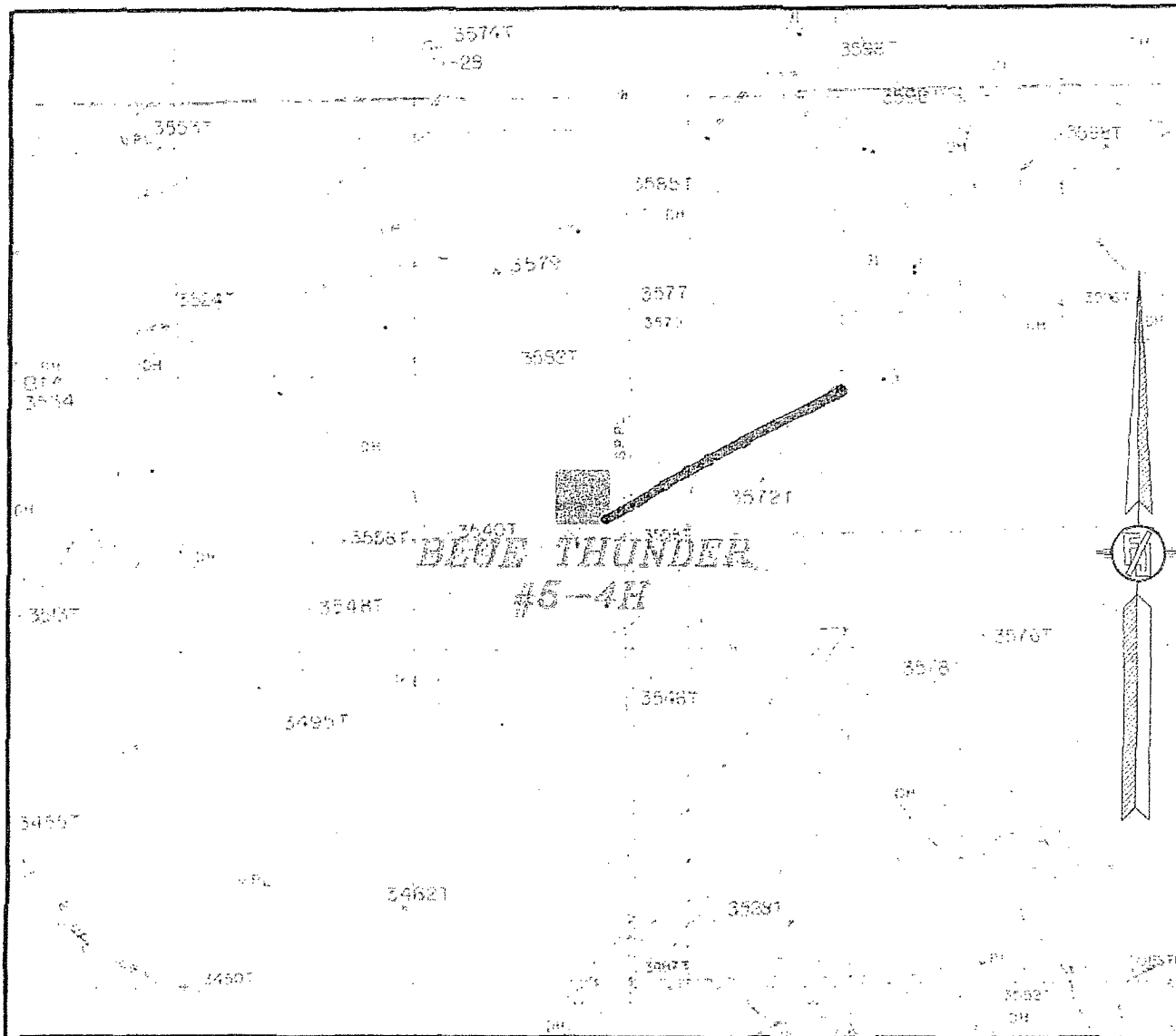
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U.S. 23002

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U.S. 23002

Marbub
Airbus Fed.
U.S. 23002

SECTION 5, TOWNSHIP 19 SOUTH, RANGE 31 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
LOCATION VERIFICATION MAP



CONTOUR INTERVAL:
 HACKBERRY LAKE

NOT TO SCALE

COG OPERATING, LLC
BLUE THUNDER #5-4H
 LOCATED 480 FT. FROM THE SOUTH LINE
 AND 500 FT. FROM THE EAST LINE OF
 SECTION 5, TOWNSHIP 19 SOUTH,
 RANGE 31 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO

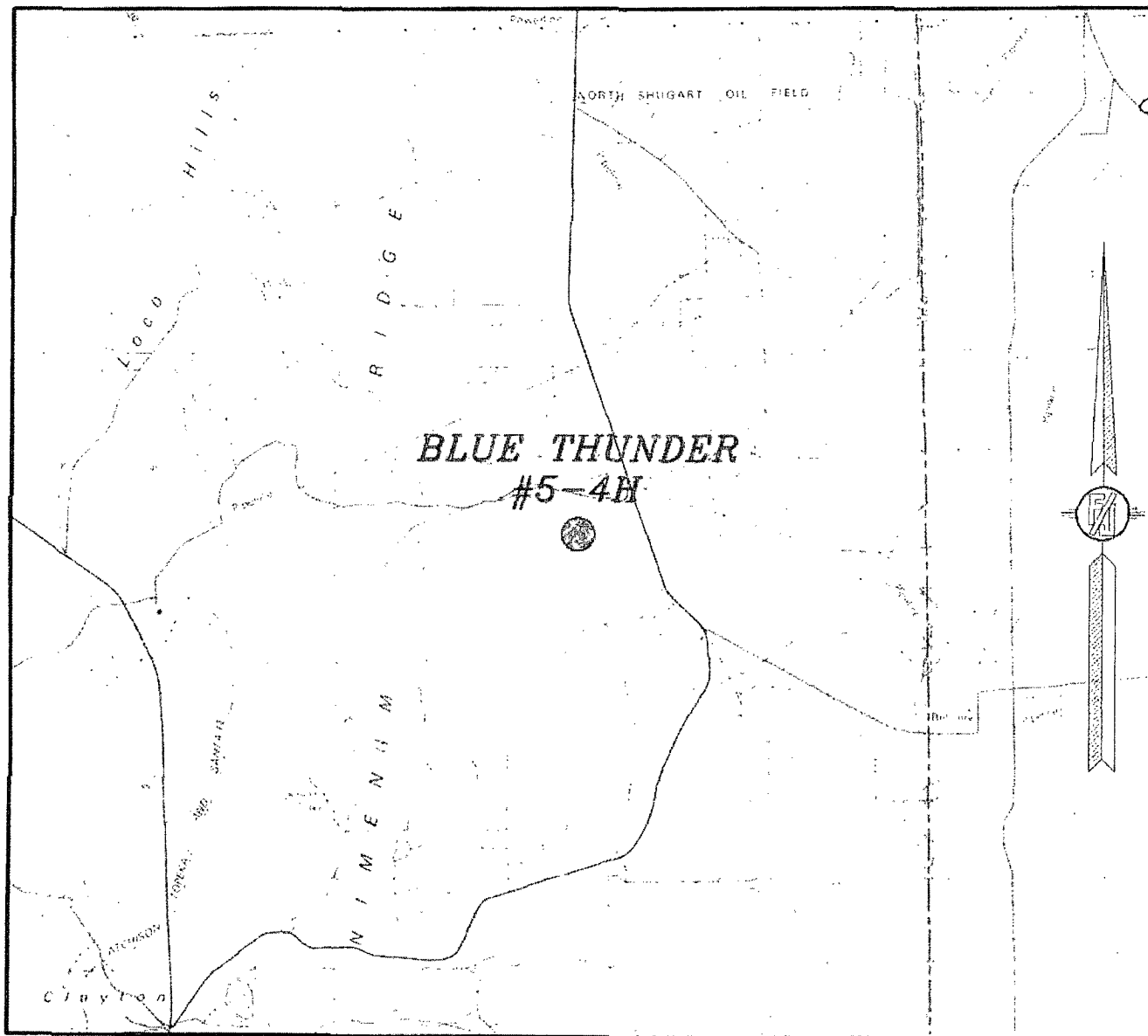
NOVEMBER 22, 2010

SURVEY NO. 260-R1

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

30' 50.311' (M.M.)
 10751 867-1836

SECTION 5, TOWNSHIP 19 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
VICINITY MAP



NOT TO SCALE

COG OPERATING, LLC
BLUE THUNDER #5-4H
LOCATED 480 FT. FROM THE SOUTH LINE
AND 500 FT. FROM THE EAST LINE OF
SECTION 5, TOWNSHIP 19 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

NOVEMBER 22, 2010

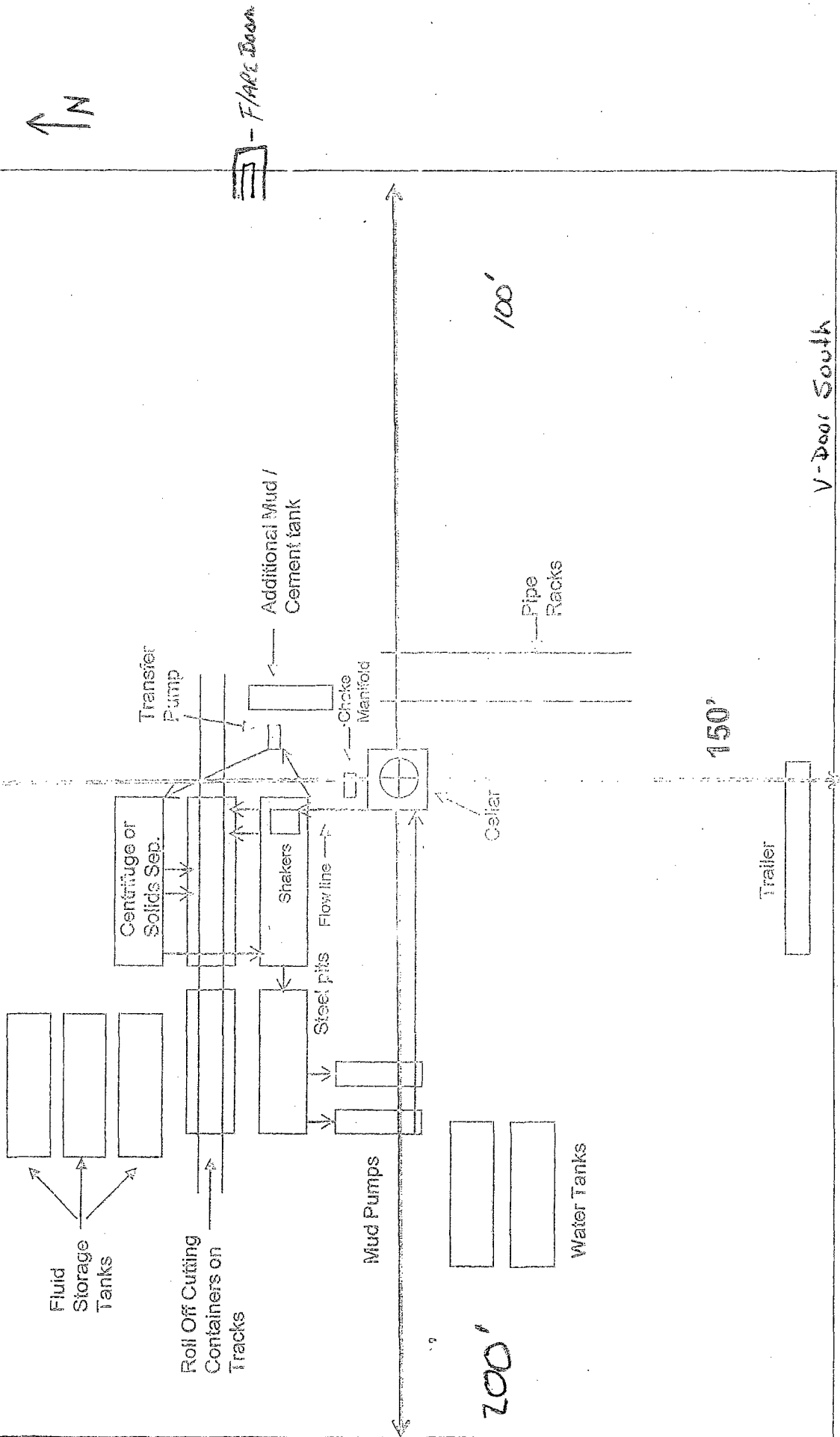
SURVEY NO. 260-R1

MADRON SURVEYING, INC. 301 SOUTH CANAL (505) 897-5830 CARLSBAD, NEW MEXICO

COG Operating LLC

Rig Plat & Closed Loop Equipment Diagram

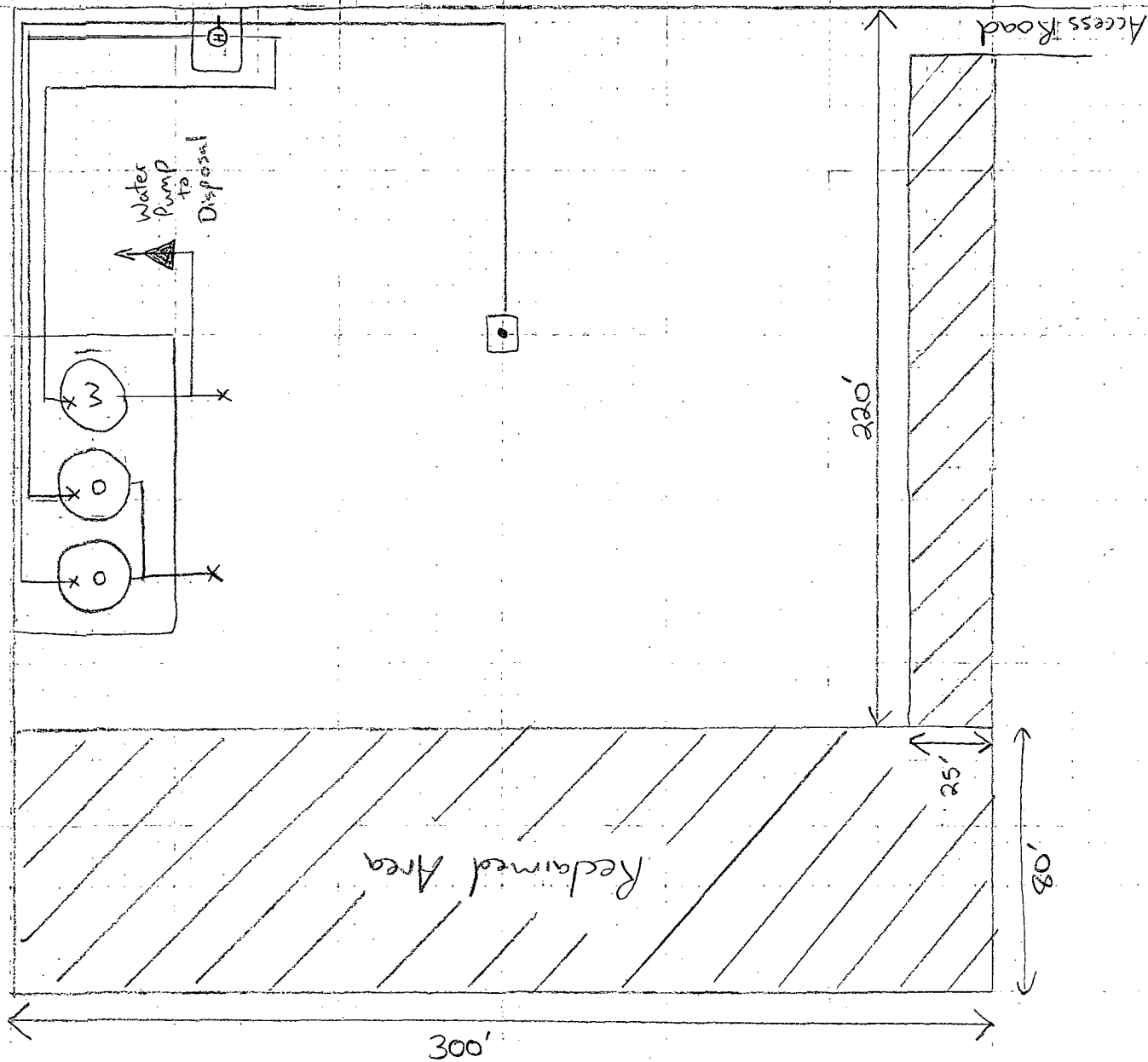
Well pads will be 300' X 300'
with cellar in center of pad



TOP SOIL ON SOUTH SIDE

Production Facility Layout

Blue Thunder 5 Fed. #41H



Scale

1" = 5' x 5'

LEGEND

○ = 500 BBL steel oil tank

⊙ = 500 BBL steel water tank

⊞ = 6x20' Heater