PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	ROSEHILL OPERATING COMPANY
LEASE NO.:	NMNM 012280
WELL NAME & NO.:	004H TATANKA FED
SURFACE HOLE FOOTAGE:	230'/S & 436'/E
BOTTOM HOLE FOOTAGE	200'/N & 436'/E
LOCATION:	Section 11,R35E, T.26S,NMPM
COUNTY:	LEA County, New Mexico.

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Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

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Seed Mixture for LPC Sand/Shinnery Sites

Holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed shall be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed shall be either certified or registered seed. The seed container shall be tagged in accordance with State law(s) and available for inspection by the Authorized Officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). Holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. Seeding shall be repeated until a satisfactory stand is established as determined by the Authorized Officer. Evaluation of growth may not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

Species	lb/acre
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

*Pounds of pure live seed:

Pounds of seed **x** percent purity **x** percent germination = pounds pure live seed

drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

VIII. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

IX. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by

Raptor deterrence will consist of but not limited to the following: triangle perch discouragers shall be placed on each side of the cross arms and a nonconductive perching deterrence shall be placed on all vertical poles that extend past the cross arms.

6. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

7. The BLM serial number assigned to this authorization shall be posted in a permanent, conspicuous manner where the power line crosses roads and at all serviced facilities. Numbers will be at least two inches high and will be affixed to the pole nearest the road crossing and at the facilities served.

8. Upon cancellation, relinquishment, or expiration of this grant, the holder shall comply with those abandonment procedures as prescribed by the Authorized Officer.

9. All surface structures (poles, lines, transformers, etc.) shall be removed within 180 days of abandonment, relinquishment, or termination of use of the serviced facility or facilities or within 180 days of abandonment, relinquishment, cancellation, or expiration of this grant, whichever comes first. This will not apply where the power line extends service to an active, adjoining facility or facilities.

10. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

11. Special Stipulations:
- For reclamation remove poles, lines, transformer, etc. and dispose of properly.
- Fill in any holes from the poles removed.

Timing Limitation Stipulation/Condition of Approval for Lesser Prairie-Chicken: Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except

A copy of the grant and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. There will be no clearing or blading of the right-of-way unless otherwise agreed to in writing by the Authorized Officer.

5. Power lines shall be constructed and designed in accordance to standards outlined in "Suggested Practices for Avian Protection on Power lines: The State of the Art in 2006" Edison Electric Institute, APLIC, and the California Energy Commission 2006 . The holder shall assume the burden and expense of proving that pole designs not shown in the above publication deter raptor perching, roosting, and nesting. Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all powerline structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the holder without liability or expense to the United States.

legible condition for the life of the pipeline.

14. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder.

16. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, powerline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

17. Surface pipelines must be less than or equal to 4 inches and a working pressure below 125 psi.

18. Special Stipulations:

a. **Lesser Prairie-Chicken:** Oil and gas activities will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Normal vehicle use on existing roads will not be restricted.

C. ELECTRIC LINES

STANDARD STIPULATIONS FOR OVERHEAD ELECTRIC DISTRIBUTION LINES

expense of the holder. Such action by the Authorized Officer shall not relieve the holder of any responsibility as provided herein.

6. All construction and maintenance activity will be confined to the authorized right-of-way width of **20** feet. If the pipeline route follows an existing road or buried pipeline right-of-way, the surface pipeline must be installed no farther than 10 feet from the edge of the road or buried pipeline right-of-way. If existing surface pipelines prevent this distance, the proposed surface pipeline must be installed immediately adjacent to the outer surface pipeline. All construction and maintenance activity will be confined to existing roads or right-of-ways.

7. No blading or clearing of any vegetation will be allowed unless approved in writing by the Authorized Officer.

8. The holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky of duney areas, the pipeline will be "snaked" around hummocks and dunes rather then suspended across these features.

9. The pipeline shall be buried with a minimum of **24** inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

10. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. Excluding the pipe, all above-ground structures not subject to safety requirement shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.

13. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. Signs will be maintained in a

a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to activity of the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. The holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. The holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:

a. Activities of the holder including, but not limited to construction, operation, maintenance, and termination of the facility.
b. Activities of other parties including, but not limited to:
    (1) Land clearing.
    (2) Earth-disturbing and earth-moving work.
    (3) Blasting.
    (4) Vandalism and sabotage.
c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars ($1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

5. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil, salt water, or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil, salt water, or other pollutant, wherever found, shall be the responsibility of the holder, regardless of fault. Upon failure of the holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full

other methods of avian and terrestrial wildlife escape in the trenches according to the following criteria:

a. Any trench left open for eight (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, the contractor/operator shall inspect the trench for wildlife, remove all trapped wildlife, and release them at least 100 yards from the trench.
b. For trenches left open for eight (8) hours or more, earthen escape ramps (built at no more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench.

19. Special Stipulations:

Lesser Prairie-Chicken

Oil and gas activities will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

A copy of the application (Grant, Sundry Notice, APD) and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as

12. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

( ) seed mixture 1	( ) seed mixture 3
( ) seed mixture 2	( ) seed mixture 4
(X) seed mixture 2/LPC	( ) Aplomado Falcon Mixture

13. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2.

14. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. All signs and information thereon will be posted in a permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.

15. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder before maintenance begins. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway. As determined necessary during the life of the pipeline, the Authorized Officer may ask the holder to construct temporary deterrence structures.

16. Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

17. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes associated roads, pipeline corridor and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

18. Escape Ramps - The operator will construct and maintain pipeline/utility trenches that are not otherwise fenced, screened, or netted to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps, ladders, or

5. All construction and maintenance activity will be confined to the authorized right-of-way.

6. The pipeline will be buried with a minimum cover of **36** inches between the top of the pipe and ground level.

7. The maximum allowable disturbance for construction in this right-of-way will be **30** feet:

- Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed **20** feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)

- Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed **30** feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)

- The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately ___6___ inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

9. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

10. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire right-of-way shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted and a 6 inch berm will be left over the ditch line to allow for settling back to grade.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

4. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of holder, regardless of fault. Upon failure of holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

Painting Requirement
All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

B. PIPELINES

BURIED PIPELINE STIPULATIONS

A copy of the application (Grant, APD, or Sundry Notice) and attachments, including conditions of approval, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C.6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities
Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Exclosure Netting (Open-top Tanks)
Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

Chemical and Fuel Secondary Containment and Exclosure Screening
The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

Open-Vent Exhaust Stack Exclosures
The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

Containment Structures

Construction Steps

1. Salvage topsoil
2. Construct road
3. Redistribute topsoil
4. Revegetate slopes

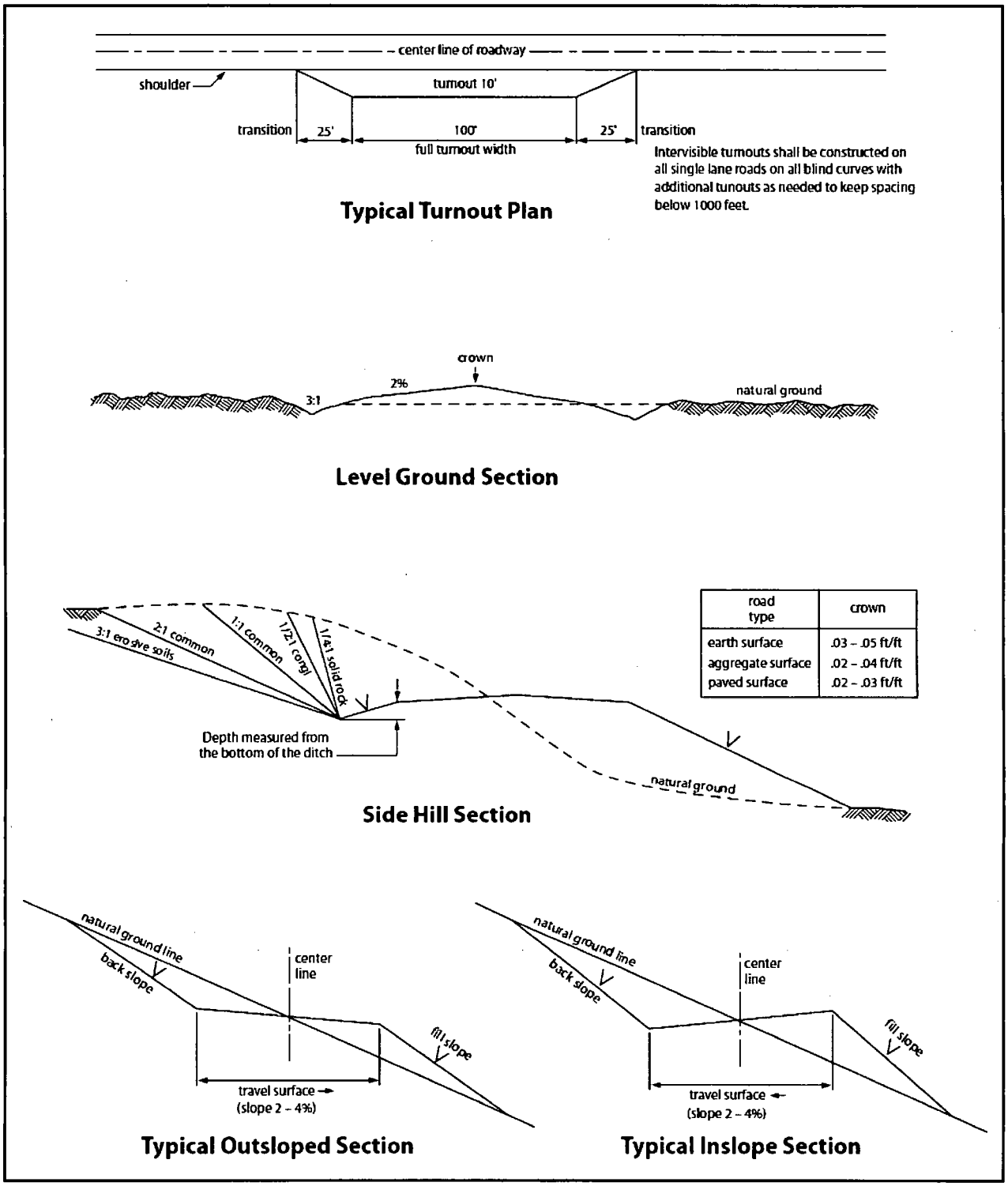


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

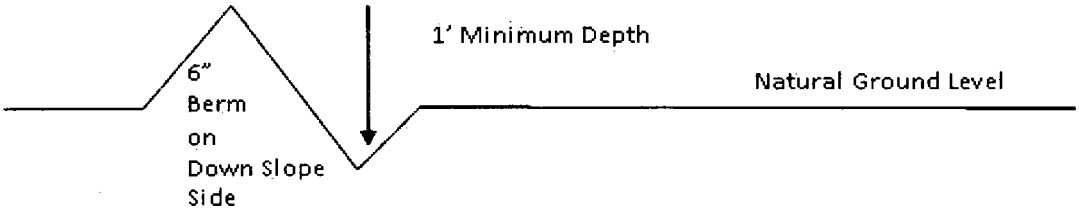
Livestock Watering Requirement
Any damage to structures that provide water to livestock throughout the life of the well, caused by operations from the well site, must be immediately corrected by the operator. The operator must notify the BLM office (575-234-5972) and the private surface landowner or the grazing allotment holder if any damage occurs to structures that provide water to livestock.

Public Access
Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

400 foot road with 4% road slope: $\frac{400'}{4\%} + 100' = 200'$ lead-off ditch interval

Cattle guards

An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattle guards that are in place and are utilized during lease operations.

Fence Requirement

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

Exclosure Fencing
The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

G. ON LEASE ACCESS ROADS

Road Width
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

Surfacing
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

Crowning
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching
Ditching shall be required on both sides of the road.

Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation. The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. EXCLOSURE FENCING (CELLARS & PITS)

Cattleguards

An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s). Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations. A gate shall be constructed on one side of the cattleguard and fastened securely to H-braces.

Fence Requirement

Where entry granted across a fence line, the fence must be braced and tied off on both sides of the passageway prior to cutting. Once the work is completed, the fence will be restored to its prior condition, or better. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

Livestock Watering Requirement

Structures that provide water to livestock, such as windmills, pipelines, drinking troughs, and earthen reservoirs, will be avoided by moving the proposed action.

-OR-

Any damage to structures that provide water to livestock throughout the life of the well, caused by operations from the well site, must be immediately corrected by the operator. The operator must notify the BLM office (575-234-5972) and the private surface landowner or the grazing allotment holder if any damage occurs to structures that provide water to livestock.

V. SPECIAL REQUIREMENT(S)

Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken: Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

- **The entirety of the well pads and facility surface sites would be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pads and surface sites. Topsoil should not be used to construct the berm. No water flow from the uphill side(s) of the pads should be allowed to enter the well pads. The berm should be maintained through the life of the wells and after interim reclamation has been completed.**
- **Any water erosion that may occur due to the construction of the well pads or facilities during the life of the project would be quickly corrected and proper measures would be taken to prevent future erosion.**
- **Stockpiling of topsoil is required. The topsoil would be stockpiled in an appropriate location to prevent loss of soil due to water or wind erosion and would not be used for berming or erosion control.**

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	ROSEHILL OPERATING COMPANY
LEASE NO.:	NMNM 012280
WELL NAME & NO.:	004H TATANKA FED
SURFACE HOLE FOOTAGE:	230'/S & 436'/E
BOTTOM HOLE FOOTAGE	200'/N & 436'/E
LOCATION:	Section 11,R35E, T.26S,NMPM
COUNTY:	LEA County, New Mexico.

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Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

☐ **General Provisions**
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☐ **Archaeology, Paleontology, and Historical Sites**
☐ **Noxious Weeds**
☒ **Special Requirements**
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- Watershed
- Range

☐ **Construction**
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- Topsoil
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- Federal Mineral Material Pits
- Well Pads
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- Well Structures & Facilities
- Pipelines
- Electric Lines

☐ **Interim Reclamation**
☐ **Final Abandonment & Reclamation**

Approval Date: 02/27/2018

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.

c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

e. The results of the test shall be reported to the appropriate BLM office.

f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:

    a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
    b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
    c. Manufacturer representative shall install the test plug for the initial BOP test.
    d. Operator shall perform the intermediate casing integrity test to 70% of the casing burst. This will test the multi-bowl seals.
    e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after

3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log.

3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.

4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

GENERAL REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ Chaves and Roosevelt Counties
Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.
During office hours call (575) 627-0272.
After office hours call (575)

☒ Eddy County
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 393-3612

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

   a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
   b. When the operator proposes to set surface casing with Spudder Rig
      - Notify the BLM when moving in and removing the Spudder Rig.
      - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
      - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

e. **If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.**

MHH 02242018

after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

d. If cement falls back, remedial cementing will be done prior to drilling out that string.

Intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.

2. The minimum required fill of cement behind the **10 3/4** inch first intermediate casing is:

    - Cement to surface. If cement does not circulate see B.1.a, c-d above.

3. The minimum required fill of cement behind the **7 5/8** inch second intermediate casing is:

    - Cement as proposed. Operator shall provide method of verification.

4. The minimum required fill of cement behind the **5** inch production casing is:

    - Cement as proposed. Operator shall provide method of verification. **Excess calculates to 12% - additional cement might be required.**

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).

2. **Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 10,000 (10M) psi.**

    a. **Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.**
    b. **If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.**
    c. **Manufacturer representative shall install the test plug for the initial BOP test.**
    d. **Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.**

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	ROSEHILL OPERATING COMPANY
LEASE NO.:	NMNM 012280
WELL NAME & NO.:	004H TATANKA FED
SURFACE HOLE FOOTAGE:	230'/S & 436'/E
BOTTOM HOLE FOOTAGE	200'/N & 436'/E
LOCATION:	Section 11,R35E, T.26S,NMPM
COUNTY:	LEA County, New Mexico.

Potash	◉ None	○ Secretary	○ R-111-P
Cave/Karst Potential	◉ Low	○ Medium	○ High
Variance	○ None	◉ Flex Hose	○ Other
Wellhead	○ Conventional	◉ Multibowl	
Other	☐4 String Area	☐Capitan Reef	☐WIPP

A. Hydrogen Sulfide

1. Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

B. CASING

1. The **13 3/8** inch surface casing shall be set at approximately **925** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours

Approval Date: 02/27/2018

Surface Use Plan of Operations

Introducti on

The following surface use plan of operations will be followed and carried out once the APD is approved. No other disturbance will be created other than what was submitted in this surface use plan. If any other surface disturbance is needed after the APD is approved, a BLM approved sundry notice or right of way application will be acquired prior to any new surface disturbance.

Before any surface disturbance is created, stakes or flagging will be installed to mark boundaries of permitted areas of disturbance, including soils storage areas. As necessary, slope, grade, and other construction control stakes will be placed to ensure construction in accordance with the surface use plan. All boundary markers will be maintained in place until final construction cleanup is completed. If disturbance boundary markers are disturbed or knocked down, they will be replaced before construction proceeds.

If terms and conditions are attached to the approved APD and amend any of the proposed actions in this surface use plan, we will adhere to the terms and conditions.

1. Existing Roads

a. The existing access road route to the proposed project is depicted on Proposed Facilities Plan Map. Improvements to the driving surface will be done where necessary. No new surface disturbance will be done, unless otherwise noted in the New or Reconstructed Access Roads section of this surface use plan..

b. The existing access road route to the proposed project does not cross lease or unit boundaries, so a BLM right- of-way grant will not be acquired for this proposed road route.

c. The operator will improve or maintain existing roads in a condition the same as or better than before operations begin. The operator will repair pot holes, clear ditches, repair the crown, etc. All existing structures on the entire access route such as cattleguards, other range improvement projects, culverts, etc. will be properly repaired or replaced if they are damaged or have deteriorated beyond practical use.

d. We will prevent and abate fugitive dust as needed, whether created by vehicular traffic, equipment operations, or wind events. BLM written approval will be acquired before application of surfactants, binding agents, or other dust suppression chemicals on roadways.

2. New or Reconstructed Access Roads

a. An access road will be needed for this proposed project. See the survey plat for the location of the access road.

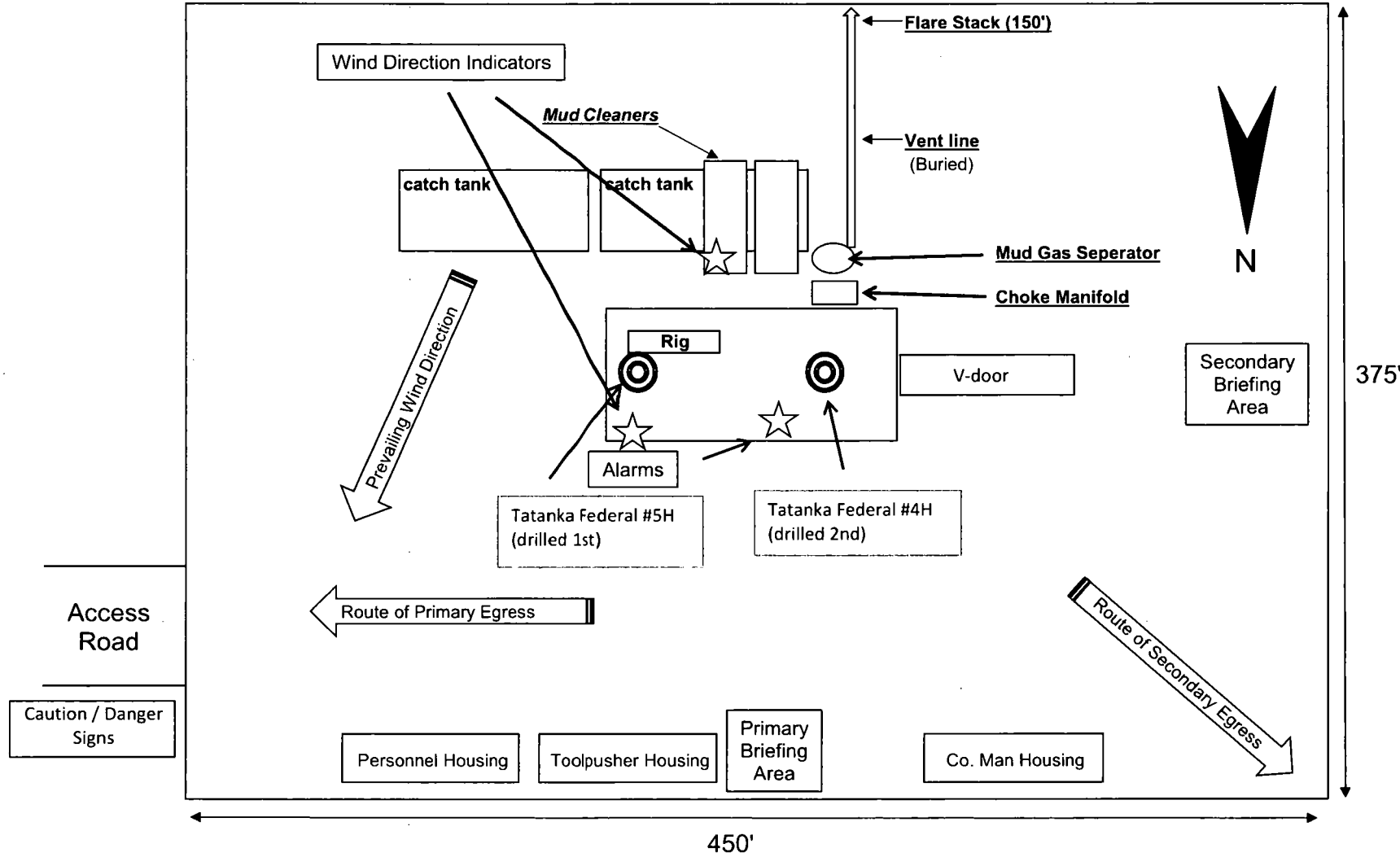
b. The length of access road needed to be constructed for this proposed project is about 7310 feet.

c. The maximum driving width of the access road will be 20 feet. The maximum width of surface disturbance when constructing the new East-West access road will not exceed 150 feet. The maximum width of surface disturbance for existing access road with utility line will not exceed 75 feet. All areas outside of the driving surface will be revegetated.

d. The access road will be constructed with 6 inches of compacted caliche.

Rosehill Operating
Tatanka Federal #004H

Well Site Diagram



e. When the road travels on fairly level ground, the road will be crowned and ditched with a 2% slope from the tip of the road crown to the edge of the driving surface. The ditches will be 3 feet wide with 3:1 slopes. See Road Cross Section diagram below.

f. The access road will be constructed with a ditch on each side of the road.

g. The maximum grade for the access road will be 1 percent.

h. No turnouts will be constructed on the proposed access road.

i. An appropriately sized cattleguard sufficient to carry out the project will be installed and maintained at the fence crossing(s). Prior to cutting the fence, the fence will be braced and tied off on both sides of the passageway with H braces to protect the integrity of the fence line. See the survey plat for the location of the proposed cattle guard.

j. No BLM right-of-way grant is needed for the construction of this access road.

k. No culverts will be constructed for this proposed access road.

l. No low water crossings will be constructed for the access road.

m. Since the access road is on level ground, no lead-off ditches will be constructed for the proposed access road.

n. Newly constructed or reconstructed roads, on surface under the jurisdiction of the Bureau of Land Management, will be constructed as outlined in the BLM "Gold Book" and to meet the standards of the anticipated traffic flow and all anticipated weather requirements as needed. Construction will include ditching, draining, crowning and capping or sloping and dipping the roadbed as necessary to provide a well-constructed and safe road.

3. Location of Existing Wells

a. Proposed Facilities Plan Map of the APD depicts all known wells within a one mile radius of the proposed well.

b. There is no other information regarding wells within a one mile radius.

4. Location of Existing and/or Proposed Production Facilities

a. All permanent, lasting more than 6 months, above ground structures including but not limited to pumpjacks, storage tanks, barrels, pipeline risers, meter housing, etc. that are not subject to safety requirements will be painted a non-reflective paint color, Shale Green, from the BLM Standard Environmental Colors chart, unless another color is required in the APD Conditions of Approval.

b. A 3-phase Test separator will be connected to each wellhead on the well pad, it will be strategically placed to allow for maximum interim reclamation, recontouring, and revegetation of the well location.

c. Production from the proposed well will be transported to the production facility named Tatanka 11S Tank Battery. The location of the facility is as follows: SW Qtr of the SE Qtr of Sec.11, T26S, R35E.

c.i. We plan to connect to the new 6 inch carbon steel line and 6 inch and 4 inch buried Fiberspar gathering pipelines along the north side the proposed well pads A, C and F to collect all the gas and liquid fluids to transfer to the 11S production facility, as described in Surface Use Plan for Tatanka Federal #001H.

c.ii. The proposed pipeline does not cross lease boundaries, so a right of way grant will not need to be acquired from the BLM.

If any plans change regarding the production facility or other infrastructure (pipeline, electric line, etc.), we will submit a sundry notice or right of way (if applicable) prior to installation or construction.

5. Location and Types of Water

a. The location of the water well is as follows: Current plan is to use the following: Beckham water source is from mega pit located in Section 6-26S-36E or City of Jal municipal water well located in Section 13-26S-35E.

b. The operator will use established or constructed oil and gas roads to transport water to the well site. The operator will try to utilize the identified access route in the surface use plan.

6. Construction Material

a. Clean caliche from BLM or third party source will be used.

7. Methods for Handling Waste

a. Drilling fluids and produced oil and water from the well during drilling and completion operations will be stored safely and disposed of properly in an NMOCD approved disposal facility.

b. Garbage and trash produced during drilling and completion operations will be collected in a trash container and disposed of properly at a state approved disposal facility. All trash on and around the well site will be collected for disposal.

c. Human waste and grey water will be properly contained and disposed of properly at a state approved disposal facility.

d. After drilling and completion operations, trash, chemicals, salts, frac sand and other waste material will be removed and disposed of properly at a state approved disposal facility.

e. The well will be drilled utilizing a closed loop system. Drill cutting will be properly disposed of into steel tanks and taken to an NMOCD approved disposal facility.

8. Ancillary Facilities

a. No ancillary facilities will be needed for this proposed project.

9. Well Site Layout

a. The following information is presented in the well site survey plat or diagram:

a.i. reasonable scale (near 1":400')

a.ii. well pad dimensions

a.iii. well pad orientation

a.iv. drilling rig components

a.v. proposed access road

a.vi. elevations of all points

a.vii. topsoil stockpile

a.viii. reserve pit location/dimensions if applicable

a.ix. other disturbances needed (flare pit, stinger, frac farm pad, etc.)

a.x. existing structures within the 600' x 600' archaeoligical surveyed area (pipelines, electric lines, well pads, etc

b. The proposed drilling pad was staked and surveyed by a professional surveyor. The attached survey plat of the well site depicts the drilling pad layout as staked.

c. The submitted survey plat does depict all the necessary information required by Onshore Order No. 1.

d. Topsoil Salvaging

d.i. Grass, forbs, and small woody vegetation, such as mesquite will be excavated as the topsoil is removed. Large woody vegetation will be stripped and stored separately and respread evenly on the site following topsoil respreading. Topsoil depth is defined as the top layer of soil that contains 80% of the roots. In areas to be heavily disturbed, the top 6 inches of soil material, will be stripped and stockpiled on the perimeter of the well location and along the perimeter of the access road to control run-on and run-off, to keep topsoil viable, and to make redistribution of topsoil more efficient during interim reclamation. Stockpiled topsoil should include vegetative material. Topsoil will be clearly segregated and stored separately from subsoils. Contaminated soil will not be stockpiled, but properly treated and handled prior to topsoil salvaging.

10. Plans for Surface Reclamation

Reclamation Objectives

i. The objective of interim reclamation is to restore vegetative cover and a portion of the landform sufficient to maintain healthy, biologically active topsoil; control erosion; and minimize habitat and forage loss, visual impact, and weed infestation, during the life of the well or facilities.

ii. The long-term objective of final reclamation is to return the land to a condition similar to what existed prior to disturbance. This includes restoration of the landform and natural vegetative community, hydrologic systems, visual resources, and wildlife habitats. To ensure that the long-term objective will be reached through human and natural processes, actions will be taken to ensure standards are met for site stability, visual quality, hydrological functioning, and vegetative productivity.

iii. The BLM will be notified at least 3 days prior to commencement of any reclamation procedures.

iv. If circumstances allow, interim reclamation and/or final reclamation actions will be completed no later than 6 months from when the final well on the location has been completed or plugged. We will gain written permission from the BLM if more time is needed.

v. Interim reclamation will be performed on the well site after the well is drilled and completed. Reclamation Diagram depicts the location and dimensions of the planned interim reclamation for the well site.

Interim Reclamation Procedures (If performed)

1. Within 30 days of well completion, the well location and surrounding areas will be cleared of, and maintained free of, all materials, trash, and equipment not required for production.

2. In areas planned for interim reclamation, all the surfacing material will be removed and returned to the original mineral pit or recycled to repair or build roads and well pads.

3. The areas planned for interim reclamation will then be recontoured to the original contour if feasible, or if not feasible, to an interim contour that blends with the surrounding topography as much as possible. Where applicable, the fill material of the well pad will be backfilled into the cut to bring the area back to the original contour. The interim cut and fill slopes prior to re-seeding will not be steeper than a 3:1 ratio, unless the adjacent native topography is steeper. Note: Constructed slopes may be much steeper during drilling, but will be recontoured to the above ratios during interim reclamation.

4. Topsoil will be evenly respread and aggressively revegetated over the entire disturbed area not needed for all-weather operations including cuts & fills. To seed the area, the proper BLM seed mixture, free of noxious weeds, will be used. Final seedbed preparation will consist of contour cultivating to a depth of 4 to 6 inches within 24 hours prior to seeding, dozer tracking, or other imprinting in order to break the soil crust and create seed germination micro-sites.

5. Proper erosion control methods will be used on the area to control erosion, runoff and siltation of the surrounding area.

6. The interim reclamation will be monitored periodically to ensure that vegetation has reestablished and that erosion is controlled.

Final Reclamation (well pad, buried pipelines, etc.)

1. Prior to final reclamation procedures, the well pad, road, and surrounding area will be cleared of material, trash, and equipment.

2. All surfacing material will be removed and returned to the original mineral pit or recycled to repair or build roads and well pads.

3. All disturbed areas, including roads, pipelines, pads, production facilities, and interim reclaimed areas will be recontoured to the contour existing prior to initial construction or a contour that blends indistinguishably with the surrounding landscape. Topsoil that was spread over the interim reclamation areas will be stockpiled prior to recontouring. The topsoil will be redistributed evenly over the entire disturbed site to ensure successful revegetation.

4. After all the disturbed areas have been properly prepared, the areas will be seeded with the proper BLM seed mixture, free of noxious weeds. Final seedbed preparation will consist of contour cultivating to a depth of 4 to 6 inches within 24 hours prior to seeding, dozer tracking, or other imprinting in order to break the soil crust and create seed germination micro-sites.

5. Proper erosion control methods will be used on the entire area to control erosion, runoff and siltation of the surrounding area.

6. All unused equipment and structures including pipelines, electric line poles, tanks, etc. that serviced the well will be removed.

7. All reclaimed areas will be monitored periodically to ensure that revegetation occurs, that the area is not redisturbed, and that erosion is controlled.

11. Surface Ownership

a. The surface ownership of the proposed project is Federal.

12. Other Information

a. Onsite was conducted 11/1/17. Hydraulic Frac submittal will be provided at a later date. The flow line for this well will be 4" or less in diameter. Elevation diagrams can be furnished upon request. We request a waiver of the three-day BLM notification of interim reclamation activities.

13. Maps and Diagrams

Proposed Facilities Plan Map

Rosehill Operating Company, LLC

Hydrogen Sulfide Plan Summary

A. All personnel shall receive proper H2S training

B. Briefing Area: two perpendicular areas will be designated by signs and readily accessible.

C. Required Emergency Equipment:

- Well control equipment
  a. Flare line 150' from wellhead to be ignited by flare gun.
  b. Choke manifold with a remotely operated choke.
  c. Mud/gas separator

- Protective equipment for essential personnel.

  Breathing apparatus:
  a. Rescue Packs (SCBA) — 1 unit shall be placed at each briefing area, 2 shall be stored in the safety trailer.
  b. Work/Escape packs —4 packs shall be stored on the rig floor with sufficient air hose not to restrict work activity.
  c. Emergency Escape Packs —4 packs shall be stored in the doghouse for emergency evacuation.

  Auxiliary Rescue Equipment:
  a. Stretcher
  b. Two OSHA full body harness
  c. 100 ft 5/8 inch OSHA approved rope
  d. 1-20# class ABC fire extinguisher

- H2S detection and monitoring equipment:
  The stationary detector with three sensors will be placed in the upper dog house if equipped, set to visually alarm @ 10 ppm and audible @ 14 ppm. Calibrate a minimum of every 30 days or as needed. The sensors will be placed in the following places: Rig floor / Bell nipple / End of flow line or where well bore fluid is being discharged.
  (Gas sample tubes will be stored in the safety trailer)

- Visual warning systems.
  a. One color code condition sign will be placed at the entrance to the site reflecting the possible conditions at the site.
  b. A colored condition flag will be on display, reflecting the current condition at the site at the time.
  c. Two wind socks will be placed in strategic locations, visible from all angles.

Casing Assumptions Worksheet-Tatanka Federal #004H

The below table illustrates the proposed casing design, as well as the minimum acceptable design factors for casing loads per Rosehill Operating Standards.

Csg Type	Hole Size	Interval	Csg OD	Weight	Grade	Conn	DF_{min} Collapse	DF_{min} Burst	DF_{min} Tension	DF_{min} Coupling
Surface	17.5"	0 – 925'	13.375 "	54.5#	J55	STC	1.125	1.25	1.60	1.6
Intermediate	12.25"	0 – 5100'	10.75"	45.5#	HCL-80	SFII	1.125	1.25	2.0	2.0
Intermediate	9.875"	0' – 11,600'	7.625"	29.7#	HCP110	GBCD	1.125	1.25	1.60	1.6
Production	6.75"	0'- 17,122'	5"	18#	HCP110	DQX	1.125	1.25	1.60	1.6

The actual safety factors specific to the Tatanka Federal #1H well are listed in the table below.

Csg Type	DF_{min} Collapse	DF_{min} Burst	DF_{min} Tension	DF_{min} Coupling
Surface	2.8	1.8	9.2	5.5
Intermediate	2.4	3.5	3.5	2.9
Intermediate	1.32	1.25	2.1	2.1
Production	1.57	1.27	1.48	1.48

These design factors are derived based on the following assumptions:

Surface:
Collapse – full evacuation
Burst – 1500 psi casing test
Tension – buoyant weight of casing at depth + 50,000 lb allowable overpull
Coupling– buoyant weight of casing at depth + 50,000 lb allowable overpull

First Intermediate:
Collapse – half evacuation with minimum mud weight of 10#
Burst – 1500 psi casing test
Tension – buoyant weight of casing at depth + 100,000 lb allowable overpull
Coupling– buoyant weight of casing at depth + 100,000 lb allowable overpull

Second Intermediate:
Collapse – half evacuation with minimum mud weight of 10#
Burst – max expected pore pressure minus gas column to surface
Tension – buoyant weight of casing at depth + 150,000 lb allowable overpull
Coupling - buoyant weight of casing at depth + 150,000 lb allowable overpull

Production
Collapse – full evacuation
Burst – 11,000 psi frac pressure
Tension – buoyant weight of casing at depth + 200,000 lb allowable overpull
Coupling - buoyant weight of casing at depth + 200,000 lb allowable overpull

- Mud program:
  The mud program has been designed to minimize the volume of H2S circulated to surface. The operator will have the necessary mud products to minimize hazards while drilling in H2S bearing zones.

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

- Communication:
  Communication will be via cell phones and land lines where available.

Rosehill Operating Company, LLC

Emergency Assistance Telephone List

PUBLIC SAFETY:		**911 or**
Lea County Sheriff's Department		(575) 396-3611
Fire Department:		
Carlsbad		(575) 885-3125
Artesia		(575) 746-5050
Hospitals:		
Carlsbad		(575) 887-4121
Artesia		(575) 748-3333
Hobbs		(575) 392-1979
Dept. of Public Safety/Carlsbad		(575) 748-9718
Highway Department		(575) 885-3281
New Mexico Oil Conservation		(575) 476-3440
U.S. Dept. of Labor		(575) 887-1174

Rosehill Operating Company, LLC

Midland	Office	(432)684-2605
Houston	Office	(281)675-3400

Company Drilling Consultants:

TBA

Drilling Engineer

Robert Brosig	Office	(432) 686-3609
	Cell	(432) 894-1256

Drilling Superintendent

Jason Richey	Cell	(940) 531-2470

H&P Drilling

H&P Drilling	Office	(432) 563-5757

Safety

Chris Colston (HSE Manager)	Office	(281) 675-3400
	Cell	(832) 823-8995

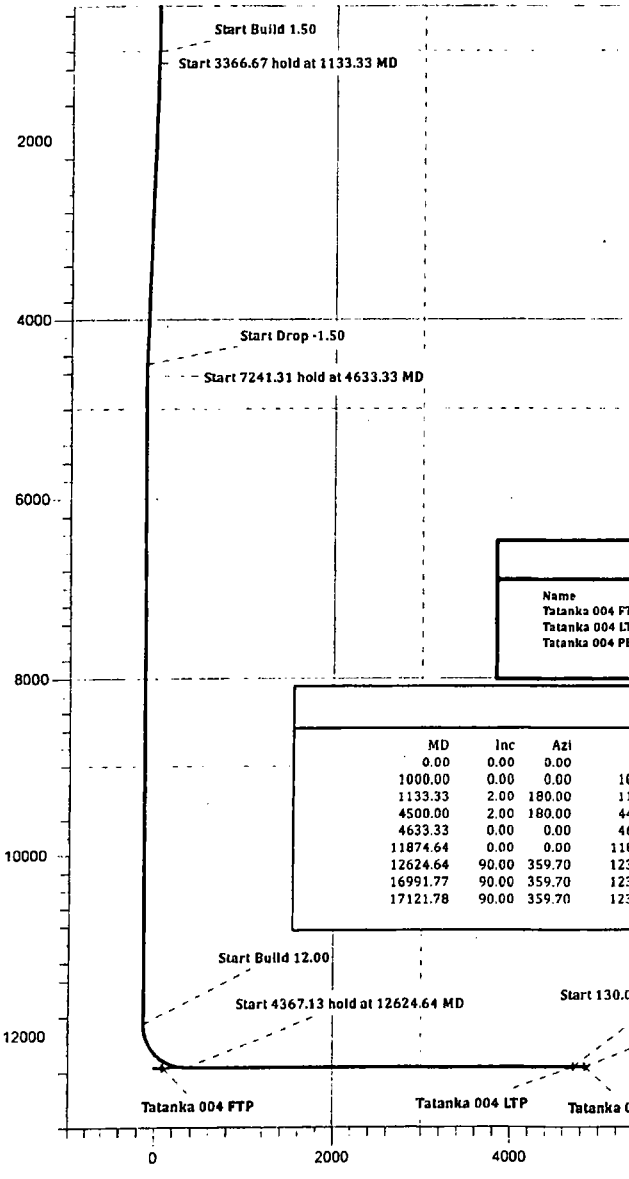
Rosehill Operating

DrilTech, LLC

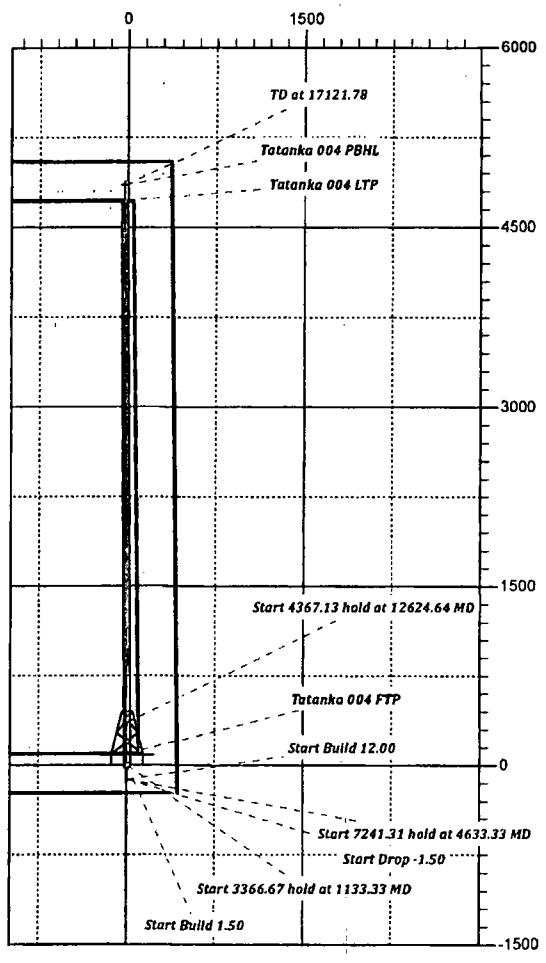
Lea County, NM (NAD 83)
Tatanka Federal Locations
Tatanka Federal 004H
Wellbore #1
Plan #1
TBD

ROSEHILL RESOURCES

SURFACE LOCATION			
US State Plane 1983 New Mexico Eastern Zone Elevation: 3030' + 25' KB @ 3055.00ft (TBD)			
Northing	Easting	Latittude	Longitude
383788.29	851829.13	32° 3' 4.148 N	103° 19' 52.228 W



Vertical Section at 359.69° (2000 ft/in)



WELLBORE TARGET DETAILS (MAP CO-ORDINATES)					
Name	TVD	+N/-S	+E/-W	Northing	Easting
Tatanka 004 FTP	12350.00	99.99	-0.41	383888.28	851828.72
Tatanka 004 LTP	12350.00	4722.38	-25.64	388510.66	851803.49
Tatanka 004 PBHL	12350.00	4852.39	-26.49	388640.67	851802.64

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00
1133.33	2.00	180.00	1133.31	-2.33	0.00	1.50	180.00	-2.33
4500.00	2.00	180.00	4497.92	-119.82	0.00	0.00	0.00	-119.82
4633.33	0.00	0.00	4631.23	-122.15	0.00	1.50	180.00	-122.15
11874.64	0.00	0.00	11872.54	-122.15	0.00	0.00	0.00	-122.15
12624.64	90.00	359.70	12350.00	355.31	-2.53	12.00	359.70	355.32
16991.77	90.00	359.70	12350.00	4722.38	-25.64	0.00	0.00	4722.45
17121.78	90.00	359.70	12350.00	4852.39	-26.33	0.00	0.00	4852.46

DRILTECH

Rosehill Operating

Lea County, NM (NAD 83)
Tatanka Federal Locations
Tatanka Federal 004H

Wellbore #1

Plan: Plan #1

Standard Planning Report

04 December, 2017

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Tatanka Federal 004H
Company:	Rosehill Operating	**TVD Reference:**	3030' + 25' KB @ 3055.00ft (TBD)
Project:	Lea County, NM (NAD 83)	**MD Reference:**	3030' + 25' KB @ 3055.00ft (TBD)
Site:	Tatanka Federal Locations	**North Reference:**	Grid
Well:	Tatanka Federal 004H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Project Lea County, NM (NAD 83)

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site Tatanka Federal Locations

Site Position:		**Northing:**	383,753.34 usft	**Latitude:**	32° 3' 4.173 N
From:	Map	**Easting:**	847,765.59 usft	**Longitude:**	103° 20' 39.443 W
Position Uncertainty:	0.00 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	0.52 °

Well Tatanka Federal 004H

Well Position	**+N/-S**	34.95 ft	**Northing:**	383,788.29 usft	**Latitude:**	32° 3' 4.148 N
	+E/-W	4,063.55 ft	**Easting:**	851,829.13 usft	**Longitude:**	103° 19' 52.228 W
Position Uncertainty		0.00 ft	**Wellhead Elevation:**		**Ground Level:**	3,030.00 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	12/4/2017	6.78	59.94	47,815.45922431

Design Plan #1

Audit Notes:

Version:	**Phase:**	PROTOTYPE	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	359.69

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,133.33	2.00	180.00	1,133.31	-2.33	0.00	1.50	1.50	0.00	180.00	
4,500.00	2.00	180.00	4,497.92	-119.82	0.00	0.00	0.00	0.00	0.00	
4,633.33	0.00	0.00	4,631.23	-122.15	0.00	1.50	-1.50	0.00	180.00	
11,874.64	0.00	0.00	11,872.54	-122.15	0.00	0.00	0.00	0.00	0.00	
12,624.64	90.00	359.70	12,350.00	355.31	-2.53	12.00	12.00	0.00	359.70	
16,991.77	90.00	359.70	12,350.00	4,722.38	-25.64	0.00	0.00	0.00	0.00	Tatanka 004 LTP
17,121.78	90.00	359.70	12,350.00	4,852.39	-26.33	0.00	0.00	0.00	0.00	Tatanka 004 PBHL

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Tatanka Federal 004H
Company:	Rosehill Operating	**TVD Reference:**	3030' + 25' KB @ 3055.00ft (TBD)
Project:	Lea County, NM (NAD 83)	**MD Reference:**	3030' + 25' KB @ 3055.00ft (TBD)
Site:	Tatanka Federal Locations	**North Reference:**	Grid
Well:	Tatanka Federal 004H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 1.50									
1,100.00	1.50	180.00	1,099.99	-1.31	0.00	-1.31	1.50	1.50	0.00
1,133.33	2.00	180.00	1,133.31	-2.33	0.00	-2.33	1.50	1.50	0.00
Start 3366.67 hold at 1133.33 MD									
1,200.00	2.00	180.00	1,199.93	-4.65	0.00	-4.65	0.00	0.00	0.00
1,300.00	2.00	180.00	1,299.87	-8.14	0.00	-8.14	0.00	0.00	0.00
1,400.00	2.00	180.00	1,399.81	-11.63	0.00	-11.63	0.00	0.00	0.00
1,500.00	2.00	180.00	1,499.75	-15.12	0.00	-15.12	0.00	0.00	0.00
1,600.00	2.00	180.00	1,599.69	-18.61	0.00	-18.61	0.00	0.00	0.00
1,700.00	2.00	180.00	1,699.63	-22.10	0.00	-22.10	0.00	0.00	0.00
1,800.00	2.00	180.00	1,799.57	-25.59	0.00	-25.59	0.00	0.00	0.00
1,900.00	2.00	180.00	1,899.51	-29.08	0.00	-29.08	0.00	0.00	0.00
2,000.00	2.00	180.00	1,999.45	-32.57	0.00	-32.57	0.00	0.00	0.00
2,100.00	2.00	180.00	2,099.38	-36.06	0.00	-36.06	0.00	0.00	0.00
2,200.00	2.00	180.00	2,199.32	-39.55	0.00	-39.55	0.00	0.00	0.00
2,300.00	2.00	180.00	2,299.26	-43.04	0.00	-43.04	0.00	0.00	0.00
2,400.00	2.00	180.00	2,399.20	-46.53	0.00	-46.53	0.00	0.00	0.00
2,500.00	2.00	180.00	2,499.14	-50.02	0.00	-50.02	0.00	0.00	0.00
2,600.00	2.00	180.00	2,599.08	-53.51	0.00	-53.51	0.00	0.00	0.00
2,700.00	2.00	180.00	2,699.02	-57.00	0.00	-57.00	0.00	0.00	0.00
2,800.00	2.00	180.00	2,798.96	-60.49	0.00	-60.49	0.00	0.00	0.00
2,900.00	2.00	180.00	2,898.90	-63.98	0.00	-63.98	0.00	0.00	0.00
3,000.00	2.00	180.00	2,998.84	-67.47	0.00	-67.47	0.00	0.00	0.00
3,100.00	2.00	180.00	3,098.77	-70.96	0.00	-70.96	0.00	0.00	0.00
3,200.00	2.00	180.00	3,198.71	-74.45	0.00	-74.45	0.00	0.00	0.00
3,300.00	2.00	180.00	3,298.65	-77.94	0.00	-77.94	0.00	0.00	0.00
3,400.00	2.00	180.00	3,398.59	-81.43	0.00	-81.43	0.00	0.00	0.00
3,500.00	2.00	180.00	3,498.53	-84.92	0.00	-84.92	0.00	0.00	0.00
3,600.00	2.00	180.00	3,598.47	-88.41	0.00	-88.41	0.00	0.00	0.00
3,700.00	2.00	180.00	3,698.41	-91.90	0.00	-91.90	0.00	0.00	0.00
3,800.00	2.00	180.00	3,798.35	-95.39	0.00	-95.39	0.00	0.00	0.00
3,900.00	2.00	180.00	3,898.29	-98.88	0.00	-98.88	0.00	0.00	0.00
4,000.00	2.00	180.00	3,998.23	-102.37	0.00	-102.37	0.00	0.00	0.00
4,100.00	2.00	180.00	4,098.17	-105.86	0.00	-105.86	0.00	0.00	0.00
4,200.00	2.00	180.00	4,198.10	-109.35	0.00	-109.35	0.00	0.00	0.00
4,300.00	2.00	180.00	4,298.04	-112.84	0.00	-112.84	0.00	0.00	0.00
4,400.00	2.00	180.00	4,397.98	-116.33	0.00	-116.33	0.00	0.00	0.00
4,500.00	2.00	180.00	4,497.92	-119.82	0.00	-119.82	0.00	0.00	0.00
Start Drop -1.50									
4,600.00	0.50	180.00	4,597.90	-122.00	0.00	-122.00	1.50	-1.50	0.00
4,633.33	0.00	0.00	4,631.23	-122.15	0.00	-122.15	1.50	-1.50	0.00
Start 7241.31 hold at 4633.33 MD									
4,700.00	0.00	0.00	4,697.90	-122.15	0.00	-122.15	0.00	0.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Tatanka Federal 004H
Company:	Rosehill Operating	**TVD Reference:**	3030' + 25' KB @ 3055.00ft (TBD)
Project:	Lea County, NM (NAD 83)	**MD Reference:**	3030' + 25' KB @ 3055.00ft (TBD)
Site:	Tatanka Federal Locations	**North Reference:**	Grid
Well:	Tatanka Federal 004H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,800.00	0.00	0.00	4,797.90	-122.15	0.00	-122.15	0.00	0.00	0.00
4,900.00	0.00	0.00	4,897.90	-122.15	0.00	-122.15	0.00	0.00	0.00
5,000.00	0.00	0.00	4,997.90	-122.15	0.00	-122.15	0.00	0.00	0.00
5,100.00	0.00	0.00	5,097.90	-122.15	0.00	-122.15	0.00	0.00	0.00
5,200.00	0.00	0.00	5,197.90	-122.15	0.00	-122.15	0.00	0.00	0.00
5,300.00	0.00	0.00	5,297.90	-122.15	0.00	-122.15	0.00	0.00	0.00
5,400.00	0.00	0.00	5,397.90	-122.15	0.00	-122.15	0.00	0.00	0.00
5,500.00	0.00	0.00	5,497.90	-122.15	0.00	-122.15	0.00	0.00	0.00
5,600.00	0.00	0.00	5,597.90	-122.15	0.00	-122.15	0.00	0.00	0.00
5,700.00	0.00	0.00	5,697.90	-122.15	0.00	-122.15	0.00	0.00	0.00
5,800.00	0.00	0.00	5,797.90	-122.15	0.00	-122.15	0.00	0.00	0.00
5,900.00	0.00	0.00	5,897.90	-122.15	0.00	-122.15	0.00	0.00	0.00
6,000.00	0.00	0.00	5,997.90	-122.15	0.00	-122.15	0.00	0.00	0.00
6,100.00	0.00	0.00	6,097.90	-122.15	0.00	-122.15	0.00	0.00	0.00
6,200.00	0.00	0.00	6,197.90	-122.15	0.00	-122.15	0.00	0.00	0.00
6,300.00	0.00	0.00	6,297.90	-122.15	0.00	-122.15	0.00	0.00	0.00
6,400.00	0.00	0.00	6,397.90	-122.15	0.00	-122.15	0.00	0.00	0.00
6,500.00	0.00	0.00	6,497.90	-122.15	0.00	-122.15	0.00	0.00	0.00
6,600.00	0.00	0.00	6,597.90	-122.15	0.00	-122.15	0.00	0.00	0.00
6,700.00	0.00	0.00	6,697.90	-122.15	0.00	-122.15	0.00	0.00	0.00
6,800.00	0.00	0.00	6,797.90	-122.15	0.00	-122.15	0.00	0.00	0.00
6,900.00	0.00	0.00	6,897.90	-122.15	0.00	-122.15	0.00	0.00	0.00
7,000.00	0.00	0.00	6,997.90	-122.15	0.00	-122.15	0.00	0.00	0.00
7,100.00	0.00	0.00	7,097.90	-122.15	0.00	-122.15	0.00	0.00	0.00
7,200.00	0.00	0.00	7,197.90	-122.15	0.00	-122.15	0.00	0.00	0.00
7,300.00	0.00	0.00	7,297.90	-122.15	0.00	-122.15	0.00	0.00	0.00
7,400.00	0.00	0.00	7,397.90	-122.15	0.00	-122.15	0.00	0.00	0.00
7,500.00	0.00	0.00	7,497.90	-122.15	0.00	-122.15	0.00	0.00	0.00
7,600.00	0.00	0.00	7,597.90	-122.15	0.00	-122.15	0.00	0.00	0.00
7,700.00	0.00	0.00	7,697.90	-122.15	0.00	-122.15	0.00	0.00	0.00
7,800.00	0.00	0.00	7,797.90	-122.15	0.00	-122.15	0.00	0.00	0.00
7,900.00	0.00	0.00	7,897.90	-122.15	0.00	-122.15	0.00	0.00	0.00
8,000.00	0.00	0.00	7,997.90	-122.15	0.00	-122.15	0.00	0.00	0.00
8,100.00	0.00	0.00	8,097.90	-122.15	0.00	-122.15	0.00	0.00	0.00
8,200.00	0.00	0.00	8,197.90	-122.15	0.00	-122.15	0.00	0.00	0.00
8,300.00	0.00	0.00	8,297.90	-122.15	0.00	-122.15	0.00	0.00	0.00
8,400.00	0.00	0.00	8,397.90	-122.15	0.00	-122.15	0.00	0.00	0.00
8,500.00	0.00	0.00	8,497.90	-122.15	0.00	-122.15	0.00	0.00	0.00
8,600.00	0.00	0.00	8,597.90	-122.15	0.00	-122.15	0.00	0.00	0.00
8,700.00	0.00	0.00	8,697.90	-122.15	0.00	-122.15	0.00	0.00	0.00
8,800.00	0.00	0.00	8,797.90	-122.15	0.00	-122.15	0.00	0.00	0.00
8,900.00	0.00	0.00	8,897.90	-122.15	0.00	-122.15	0.00	0.00	0.00
9,000.00	0.00	0.00	8,997.90	-122.15	0.00	-122.15	0.00	0.00	0.00
9,100.00	0.00	0.00	9,097.90	-122.15	0.00	-122.15	0.00	0.00	0.00
9,200.00	0.00	0.00	9,197.90	-122.15	0.00	-122.15	0.00	0.00	0.00
9,300.00	0.00	0.00	9,297.90	-122.15	0.00	-122.15	0.00	0.00	0.00
9,400.00	0.00	0.00	9,397.90	-122.15	0.00	-122.15	0.00	0.00	0.00
9,500.00	0.00	0.00	9,497.90	-122.15	0.00	-122.15	0.00	0.00	0.00
9,600.00	0.00	0.00	9,597.90	-122.15	0.00	-122.15	0.00	0.00	0.00
9,700.00	0.00	0.00	9,697.90	-122.15	0.00	-122.15	0.00	0.00	0.00
9,800.00	0.00	0.00	9,797.90	-122.15	0.00	-122.15	0.00	0.00	0.00
9,900.00	0.00	0.00	9,897.90	-122.15	0.00	-122.15	0.00	0.00	0.00
10,000.00	0.00	0.00	9,997.90	-122.15	0.00	-122.15	0.00	0.00	0.00
10,100.00	0.00	0.00	10,097.90	-122.15	0.00	-122.15	0.00	0.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Tatanka Federal 004H
Company:	Rosehill Operating	**TVD Reference:**	3030' + 25' KB @ 3055.00ft (TBD)
Project:	Lea County, NM (NAD 83)	**MD Reference:**	3030' + 25' KB @ 3055.00ft (TBD)
Site:	Tatanka Federal Locations	**North Reference:**	Grid
Well:	Tatanka Federal 004H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,200.00	0.00	0.00	10,197.90	-122.15	0.00	-122.15	0.00	0.00	0.00
10,300.00	0.00	0.00	10,297.90	-122.15	0.00	-122.15	0.00	0.00	0.00
10,400.00	0.00	0.00	10,397.90	-122.15	0.00	-122.15	0.00	0.00	0.00
10,500.00	0.00	0.00	10,497.90	-122.15	0.00	-122.15	0.00	0.00	0.00
10,600.00	0.00	0.00	10,597.90	-122.15	0.00	-122.15	0.00	0.00	0.00
10,700.00	0.00	0.00	10,697.90	-122.15	0.00	-122.15	0.00	0.00	0.00
10,800.00	0.00	0.00	10,797.90	-122.15	0.00	-122.15	0.00	0.00	0.00
10,900.00	0.00	0.00	10,897.90	-122.15	0.00	-122.15	0.00	0.00	0.00
11,000.00	0.00	0.00	10,997.90	-122.15	0.00	-122.15	0.00	0.00	0.00
11,100.00	0.00	0.00	11,097.90	-122.15	0.00	-122.15	0.00	0.00	0.00
11,200.00	0.00	0.00	11,197.90	-122.15	0.00	-122.15	0.00	0.00	0.00
11,300.00	0.00	0.00	11,297.90	-122.15	0.00	-122.15	0.00	0.00	0.00
11,400.00	0.00	0.00	11,397.90	-122.15	0.00	-122.15	0.00	0.00	0.00
11,500.00	0.00	0.00	11,497.90	-122.15	0.00	-122.15	0.00	0.00	0.00
11,600.00	0.00	0.00	11,597.90	-122.15	0.00	-122.15	0.00	0.00	0.00
11,700.00	0.00	0.00	11,697.90	-122.15	0.00	-122.15	0.00	0.00	0.00
11,800.00	0.00	0.00	11,797.90	-122.15	0.00	-122.15	0.00	0.00	0.00
11,874.64	0.00	0.00	11,872.54	-122.15	0.00	-122.15	0.00	0.00	0.00
Start Build 12.00									
11,900.00	3.04	359.70	11,897.88	-121.48	0.00	-121.47	12.00	12.00	0.00
12,000.00	15.04	359.70	11,996.46	-105.79	-0.09	-105.78	12.00	12.00	0.00
12,100.00	27.04	359.70	12,089.62	-69.95	-0.28	-69.94	12.00	12.00	0.00
12,200.00	39.04	359.70	12,173.29	-15.52	-0.56	-15.52	12.00	12.00	0.00
12,300.00	51.04	359.70	12,243.82	55.11	-0.94	55.12	12.00	12.00	0.00
12,395.59	62.51	359.70	12,296.10	134.94	-1.36	134.95	12.00	12.00	0.00
Tatanka 004 FTP									
12,400.00	63.04	359.70	12,298.12	138.87	-1.38	138.87	12.00	12.00	0.00
12,500.00	75.04	359.70	12,333.82	232.08	-1.87	232.09	12.00	12.00	0.00
12,600.00	87.04	359.70	12,349.36	330.68	-2.40	330.69	12.00	12.00	0.00
12,624.64	90.00	359.70	12,350.00	355.31	-2.53	355.32	12.00	12.00	0.00
Start 4367.13 hold at 12624.64 MD									
12,700.00	90.00	359.70	12,350.00	430.67	-2.93	430.68	0.00	0.00	0.00
12,800.00	90.00	359.70	12,350.00	530.67	-3.46	530.68	0.00	0.00	0.00
12,900.00	90.00	359.70	12,350.00	630.67	-3.98	630.68	0.00	0.00	0.00
13,000.00	90.00	359.70	12,350.00	730.66	-4.51	730.68	0.00	0.00	0.00
13,100.00	90.00	359.70	12,350.00	830.66	-5.04	830.68	0.00	0.00	0.00
13,200.00	90.00	359.70	12,350.00	930.66	-5.57	930.68	0.00	0.00	0.00
13,300.00	90.00	359.70	12,350.00	1,030.66	-6.10	1,030.68	0.00	0.00	0.00
13,400.00	90.00	359.70	12,350.00	1,130.66	-6.63	1,130.68	0.00	0.00	0.00
13,500.00	90.00	359.70	12,350.00	1,230.66	-7.16	1,230.68	0.00	0.00	0.00
13,600.00	90.00	359.70	12,350.00	1,330.66	-7.69	1,330.68	0.00	0.00	0.00
13,700.00	90.00	359.70	12,350.00	1,430.65	-8.22	1,430.68	0.00	0.00	0.00
13,800.00	90.00	359.70	12,350.00	1,530.65	-8.75	1,530.68	0.00	0.00	0.00
13,900.00	90.00	359.70	12,350.00	1,630.65	-9.28	1,630.68	0.00	0.00	0.00
14,000.00	90.00	359.70	12,350.00	1,730.65	-9.81	1,730.68	0.00	0.00	0.00
14,100.00	90.00	359.70	12,350.00	1,830.65	-10.34	1,830.68	0.00	0.00	0.00
14,200.00	90.00	359.70	12,350.00	1,930.65	-10.86	1,930.68	0.00	0.00	0.00
14,300.00	90.00	359.70	12,350.00	2,030.65	-11.39	2,030.68	0.00	0.00	0.00
14,400.00	90.00	359.70	12,350.00	2,130.64	-11.92	2,130.68	0.00	0.00	0.00
14,500.00	90.00	359.70	12,350.00	2,230.64	-12.45	2,230.68	0.00	0.00	0.00
14,600.00	90.00	359.70	12,350.00	2,330.64	-12.98	2,330.68	0.00	0.00	0.00
14,700.00	90.00	359.70	12,350.00	2,430.64	-13.51	2,430.68	0.00	0.00	0.00
14,800.00	90.00	359.70	12,350.00	2,530.64	-14.04	2,530.68	0.00	0.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Tatanka Federal 004H
Company:	Rosehill Operating	**TVD Reference:**	3030' + 25' KB @ 3055.00ft (TBD)
Project:	Lea County, NM (NAD 83)	**MD Reference:**	3030' + 25' KB @ 3055.00ft (TBD)
Site:	Tatanka Federal Locations	**North Reference:**	Grid
Well:	Tatanka Federal 004H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
14,900.00	90.00	359.70	12,350.00	2,630.64	-14.57	2,630.68	0.00	0.00	0.00
15,000.00	90.00	359.70	12,350.00	2,730.64	-15.10	2,730.68	0.00	0.00	0.00
15,100.00	90.00	359.70	12,350.00	2,830.63	-15.63	2,830.68	0.00	0.00	0.00
15,200.00	90.00	359.70	12,350.00	2,930.63	-16.16	2,930.68	0.00	0.00	0.00
15,300.00	90.00	359.70	12,350.00	3,030.63	-16.69	3,030.68	0.00	0.00	0.00
15,400.00	90.00	359.70	12,350.00	3,130.63	-17.22	3,130.68	0.00	0.00	0.00
15,500.00	90.00	359.70	12,350.00	3,230.63	-17.74	3,230.68	0.00	0.00	0.00
15,600.00	90.00	359.70	12,350.00	3,330.63	-18.27	3,330.68	0.00	0.00	0.00
15,700.00	90.00	359.70	12,350.00	3,430.63	-18.80	3,430.68	0.00	0.00	0.00
15,800.00	90.00	359.70	12,350.00	3,530.62	-19.33	3,530.68	0.00	0.00	0.00
15,900.00	90.00	359.70	12,350.00	3,630.62	-19.86	3,630.68	0.00	0.00	0.00
16,000.00	90.00	359.70	12,350.00	3,730.62	-20.39	3,730.68	0.00	0.00	0.00
16,100.00	90.00	359.70	12,350.00	3,830.62	-20.92	3,830.68	0.00	0.00	0.00
16,200.00	90.00	359.70	12,350.00	3,930.62	-21.45	3,930.68	0.00	0.00	0.00
16,300.00	90.00	359.70	12,350.00	4,030.62	-21.98	4,030.68	0.00	0.00	0.00
16,400.00	90.00	359.70	12,350.00	4,130.62	-22.51	4,130.68	0.00	0.00	0.00
16,500.00	90.00	359.70	12,350.00	4,230.62	-23.04	4,230.68	0.00	0.00	0.00
16,600.00	90.00	359.70	12,350.00	4,330.61	-23.57	4,330.68	0.00	0.00	0.00
16,700.00	90.00	359.70	12,350.00	4,430.61	-24.10	4,430.68	0.00	0.00	0.00
16,800.00	90.00	359.70	12,350.00	4,530.61	-24.63	4,530.68	0.00	0.00	0.00
16,900.00	90.00	359.70	12,350.00	4,630.61	-25.15	4,630.68	0.00	0.00	0.00
16,991.77	90.00	359.70	12,350.00	4,722.38	-25.64	4,722.45	0.00	0.00	0.00
Start 130.01 hold at 16991.77 MD - Tatanka 004 LTP									
17,000.00	90.00	359.70	12,350.00	4,730.61	-25.68	4,730.68	0.00	0.00	0.00
17,100.00	90.00	359.70	12,350.00	4,830.61	-26.21	4,830.68	0.00	0.00	0.00
17,121.78	90.00	359.70	12,350.00	4,852.39	-26.33	4,852.46	0.00	0.00	0.00
TD at 17121.78 - Tatanka 004 PBHL									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Tatanka 004 PBHL	0.00	0.07	12,350.00	4,852.39	-26.49	388,640.67	851,802.64	32° 3' 52.164 N	103° 19' 52.013 W
- plan misses target center by 0.16ft at 17121.78ft MD (12350.00 TVD, 4852.39 N, -26.33 E)									
- Point									
Tatanka 004 FTP	0.00	0.07	12,350.00	99.99	-0.41	383,888.28	851,828.72	32° 3' 5.138 N	103° 19' 52.222 W
- plan misses target center by 64.25ft at 12395.59ft MD (12296.10 TVD, 134.94 N, -1.36 E)									
- Point									
Tatanka 004 LTP	0.00	0.07	12,350.00	4,722.38	-25.64	388,510.66	851,803.49	32° 3' 50.878 N	103° 19' 52.017 W
- plan hits target center									
- Rectangle (sides W50.00 H4,722.45 D0.00)									

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Tatanka Federal 004H
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Project:	Lea County, NM (NAD 83)	**MD Reference:**	3030' + 25' KB @ 3055.00ft (TBD)
Site:	Tatanka Federal Locations	**North Reference:**	Grid
Well:	Tatanka Federal 004H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
1,000.00	1,000.00	0.00	0.00	Start Build 1.50
1,133.33	1,133.31	-2.33	0.00	Start 3366.67 hold at 1133.33 MD
4,500.00	4,497.92	-119.82	0.00	Start Drop -1.50
4,633.33	4,631.23	-122.15	0.00	Start 7241.31 hold at 4633.33 MD
11,874.64	11,872.54	-122.15	0.00	Start Build 12.00
12,624.64	12,350.00	355.31	-2.53	Start 4367.13 hold at 12624.64 MD
16,991.77	12,350.00	4,722.38	-25.64	Start 130.01 hold at 16991.77 MD
17,121.78	12,350.00	4,852.39	-26.33	TD at 17121.78

Rosehill Operating

Lea County, NM (NAD 83)
Tatanka Federal Locations
Tatanka Federal 004H

Wellbore #1

Plan: Plan #1

Standard Planning Report - Geographic

04 December, 2017

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Tatanka Federal 004H
Company:	Rosehill Operating	**TVD Reference:**	3030' + 25' KB @ 3055.00ft (TBD)
Project:	Lea County, NM (NAD 83)	**MD Reference:**	3030' + 25' KB @ 3055.00ft (TBD)
Site:	Tatanka Federal Locations	**North Reference:**	Grid
Well:	Tatanka Federal 004H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Project Lea County, NM (NAD 83)

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site Tatanka Federal Locations

Site Position:		**Northing:**	383,753.34 usft	**Latitude:**	32° 3' 4.173 N
From:	Map	**Easting:**	847,765.59 usft	**Longitude:**	103° 20' 39.443 W
Position Uncertainty:	0.00 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	0.52 °

Well Tatanka Federal 004H

Well Position	**+N/-S**	0.00 ft	**Northing:**	383,788.29 usft	**Latitude:**	32° 3' 4.148 N
	+E/-W	0.00 ft	**Easting:**	851,829.13 usft	**Longitude:**	103° 19' 52.228 W
Position Uncertainty		0.00 ft	**Wellhead Elevation:**		**Ground Level:**	3,030.00 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	12/4/2017	6.78	59.94	47,815.45922431

Design Plan #1

Audit Notes:

Version:	**Phase:**	PROTOTYPE	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	359.69

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,133.33	2.00	180.00	1,133.31	-2.33	0.00	1.50	1.50	0.00	180.00	
4,500.00	2.00	180.00	4,497.92	-119.82	0.00	0.00	0.00	0.00	0.00	
4,633.33	0.00	0.00	4,631.23	-122.15	0.00	1.50	-1.50	0.00	180.00	
11,874.64	0.00	0.00	11,872.54	-122.15	0.00	0.00	0.00	0.00	0.00	
12,624.64	90.00	359.70	12,350.00	355.31	-2.53	12.00	12.00	0.00	359.70	
16,991.77	90.00	359.70	12,350.00	4,722.38	-25.64	0.00	0.00	0.00	0.00	Tatanka 004 LTP
17,121.78	90.00	359.70	12,350.00	4,852.39	-26.33	0.00	0.00	0.00	0.00	Tatanka 004 PBHL

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Tatanka Federal 004H
Company:	Rosehill Operating	**TVD Reference:**	3030' + 25' KB @ 3055.00ft (TBD)
Project:	Lea County, NM (NAD 83)	**MD Reference:**	3030' + 25' KB @ 3055.00ft (TBD)
Site:	Tatanka Federal Locations	**North Reference:**	Grid
Well:	Tatanka Federal 004H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	383,788.29	851,829.13	32° 3' 4.148 N	103° 19' 52.228 W
100.00	0.00	0.00	100.00	0.00	0.00	383,788.29	851,829.13	32° 3' 4.148 N	103° 19' 52.228 W
200.00	0.00	0.00	200.00	0.00	0.00	383,788.29	851,829.13	32° 3' 4.148 N	103° 19' 52.228 W
300.00	0.00	0.00	300.00	0.00	0.00	383,788.29	851,829.13	32° 3' 4.148 N	103° 19' 52.228 W
400.00	0.00	0.00	400.00	0.00	0.00	383,788.29	851,829.13	32° 3' 4.148 N	103° 19' 52.228 W
500.00	0.00	0.00	500.00	0.00	0.00	383,788.29	851,829.13	32° 3' 4.148 N	103° 19' 52.228 W
600.00	0.00	0.00	600.00	0.00	0.00	383,788.29	851,829.13	32° 3' 4.148 N	103° 19' 52.228 W
700.00	0.00	0.00	700.00	0.00	0.00	383,788.29	851,829.13	32° 3' 4.148 N	103° 19' 52.228 W
800.00	0.00	0.00	800.00	0.00	0.00	383,788.29	851,829.13	32° 3' 4.148 N	103° 19' 52.228 W
900.00	0.00	0.00	900.00	0.00	0.00	383,788.29	851,829.13	32° 3' 4.148 N	103° 19' 52.228 W
1,000.00	0.00	0.00	1,000.00	0.00	0.00	383,788.29	851,829.13	32° 3' 4.148 N	103° 19' 52.228 W
Start Build 1.50									
1,100.00	1.50	180.00	1,099.99	-1.31	0.00	383,786.98	851,829.13	32° 3' 4.136 N	103° 19' 52.229 W
1,133.33	2.00	180.00	1,133.31	-2.33	0.00	383,785.96	851,829.13	32° 3' 4.125 N	103° 19' 52.229 W
Start 3366.67 hold at 1133.33 MD									
1,200.00	2.00	180.00	1,199.93	-4.65	0.00	383,783.64	851,829.13	32° 3' 4.102 N	103° 19' 52.229 W
1,300.00	2.00	180.00	1,299.87	-8.14	0.00	383,780.15	851,829.13	32° 3' 4.068 N	103° 19' 52.229 W
1,400.00	2.00	180.00	1,399.81	-11.63	0.00	383,776.66	851,829.13	32° 3' 4.033 N	103° 19' 52.230 W
1,500.00	2.00	180.00	1,499.75	-15.12	0.00	383,773.17	851,829.13	32° 3' 3.999 N	103° 19' 52.230 W
1,600.00	2.00	180.00	1,599.69	-18.61	0.00	383,769.68	851,829.13	32° 3' 3.964 N	103° 19' 52.230 W
1,700.00	2.00	180.00	1,699.63	-22.10	0.00	383,766.19	851,829.13	32° 3' 3.930 N	103° 19' 52.231 W
1,800.00	2.00	180.00	1,799.57	-25.59	0.00	383,762.70	851,829.13	32° 3' 3.895 N	103° 19' 52.231 W
1,900.00	2.00	180.00	1,899.51	-29.08	0.00	383,759.21	851,829.13	32° 3' 3.861 N	103° 19' 52.232 W
2,000.00	2.00	180.00	1,999.45	-32.57	0.00	383,755.72	851,829.13	32° 3' 3.826 N	103° 19' 52.232 W
2,100.00	2.00	180.00	2,099.38	-36.06	0.00	383,752.23	851,829.13	32° 3' 3.792 N	103° 19' 52.232 W
2,200.00	2.00	180.00	2,199.32	-39.55	0.00	383,748.74	851,829.13	32° 3' 3.757 N	103° 19' 52.233 W
2,300.00	2.00	180.00	2,299.26	-43.04	0.00	383,745.25	851,829.13	32° 3' 3.723 N	103° 19' 52.233 W
2,400.00	2.00	180.00	2,399.20	-46.53	0.00	383,741.76	851,829.13	32° 3' 3.688 N	103° 19' 52.233 W
2,500.00	2.00	180.00	2,499.14	-50.02	0.00	383,738.27	851,829.13	32° 3' 3.654 N	103° 19' 52.234 W
2,600.00	2.00	180.00	2,599.08	-53.51	0.00	383,734.78	851,829.13	32° 3' 3.619 N	103° 19' 52.234 W
2,700.00	2.00	180.00	2,699.02	-57.00	0.00	383,731.29	851,829.13	32° 3' 3.584 N	103° 19' 52.235 W
2,800.00	2.00	180.00	2,798.96	-60.49	0.00	383,727.80	851,829.13	32° 3' 3.550 N	103° 19' 52.235 W
2,900.00	2.00	180.00	2,898.90	-63.98	0.00	383,724.31	851,829.13	32° 3' 3.515 N	103° 19' 52.235 W
3,000.00	2.00	180.00	2,998.84	-67.47	0.00	383,720.82	851,829.13	32° 3' 3.481 N	103° 19' 52.236 W
3,100.00	2.00	180.00	3,098.77	-70.96	0.00	383,717.33	851,829.13	32° 3' 3.446 N	103° 19' 52.236 W
3,200.00	2.00	180.00	3,198.71	-74.45	0.00	383,713.84	851,829.13	32° 3' 3.412 N	103° 19' 52.237 W
3,300.00	2.00	180.00	3,298.65	-77.94	0.00	383,710.35	851,829.13	32° 3' 3.377 N	103° 19' 52.237 W
3,400.00	2.00	180.00	3,398.59	-81.43	0.00	383,706.86	851,829.13	32° 3' 3.343 N	103° 19' 52.237 W
3,500.00	2.00	180.00	3,498.53	-84.92	0.00	383,703.37	851,829.13	32° 3' 3.308 N	103° 19' 52.238 W
3,600.00	2.00	180.00	3,598.47	-88.41	0.00	383,699.88	851,829.13	32° 3' 3.274 N	103° 19' 52.238 W
3,700.00	2.00	180.00	3,698.41	-91.90	0.00	383,696.39	851,829.13	32° 3' 3.239 N	103° 19' 52.238 W
3,800.00	2.00	180.00	3,798.35	-95.39	0.00	383,692.90	851,829.13	32° 3' 3.205 N	103° 19' 52.239 W
3,900.00	2.00	180.00	3,898.29	-98.88	0.00	383,689.41	851,829.13	32° 3' 3.170 N	103° 19' 52.239 W
4,000.00	2.00	180.00	3,998.23	-102.37	0.00	383,685.92	851,829.13	32° 3' 3.136 N	103° 19' 52.240 W
4,100.00	2.00	180.00	4,098.17	-105.86	0.00	383,682.43	851,829.13	32° 3' 3.101 N	103° 19' 52.240 W
4,200.00	2.00	180.00	4,198.10	-109.35	0.00	383,678.94	851,829.13	32° 3' 3.066 N	103° 19' 52.240 W
4,300.00	2.00	180.00	4,298.04	-112.84	0.00	383,675.45	851,829.13	32° 3' 3.032 N	103° 19' 52.241 W
4,400.00	2.00	180.00	4,397.98	-116.33	0.00	383,671.96	851,829.13	32° 3' 2.997 N	103° 19' 52.241 W
4,500.00	2.00	180.00	4,497.92	-119.82	0.00	383,668.47	851,829.13	32° 3' 2.963 N	103° 19' 52.241 W
Start Drop -1.50									
4,600.00	0.50	180.00	4,597.90	-122.00	0.00	383,666.29	851,829.13	32° 3' 2.941 N	103° 19' 52.242 W
4,633.33	0.00	0.00	4,631.23	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
Start 7241.31 hold at 4633.33 MD									
4,700.00	0.00	0.00	4,697.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Tatanka Federal 004H
Company:	Rosehill Operating	**TVD Reference:**	3030' + 25' KB @ 3055.00ft (TBD)
Project:	Lea County, NM (NAD 83)	**MD Reference:**	3030' + 25' KB @ 3055.00ft (TBD)
Site:	Tatanka Federal Locations	**North Reference:**	Grid
Well:	Tatanka Federal 004H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,800.00	0.00	0.00	4,797.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
4,900.00	0.00	0.00	4,897.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
5,000.00	0.00	0.00	4,997.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
5,100.00	0.00	0.00	5,097.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
5,200.00	0.00	0.00	5,197.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
5,300.00	0.00	0.00	5,297.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
5,400.00	0.00	0.00	5,397.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
5,500.00	0.00	0.00	5,497.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
5,600.00	0.00	0.00	5,597.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
5,700.00	0.00	0.00	5,697.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
5,800.00	0.00	0.00	5,797.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
5,900.00	0.00	0.00	5,897.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
6,000.00	0.00	0.00	5,997.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
6,100.00	0.00	0.00	6,097.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
6,200.00	0.00	0.00	6,197.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
6,300.00	0.00	0.00	6,297.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
6,400.00	0.00	0.00	6,397.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
6,500.00	0.00	0.00	6,497.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
6,600.00	0.00	0.00	6,597.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
6,700.00	0.00	0.00	6,697.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
6,800.00	0.00	0.00	6,797.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
6,900.00	0.00	0.00	6,897.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
7,000.00	0.00	0.00	6,997.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
7,100.00	0.00	0.00	7,097.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
7,200.00	0.00	0.00	7,197.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
7,300.00	0.00	0.00	7,297.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
7,400.00	0.00	0.00	7,397.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
7,500.00	0.00	0.00	7,497.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
7,600.00	0.00	0.00	7,597.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
7,700.00	0.00	0.00	7,697.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
7,800.00	0.00	0.00	7,797.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
7,900.00	0.00	0.00	7,897.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
8,000.00	0.00	0.00	7,997.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
8,100.00	0.00	0.00	8,097.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
8,200.00	0.00	0.00	8,197.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
8,300.00	0.00	0.00	8,297.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
8,400.00	0.00	0.00	8,397.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
8,500.00	0.00	0.00	8,497.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
8,600.00	0.00	0.00	8,597.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
8,700.00	0.00	0.00	8,697.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
8,800.00	0.00	0.00	8,797.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
8,900.00	0.00	0.00	8,897.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
9,000.00	0.00	0.00	8,997.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
9,100.00	0.00	0.00	9,097.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
9,200.00	0.00	0.00	9,197.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
9,300.00	0.00	0.00	9,297.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
9,400.00	0.00	0.00	9,397.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
9,500.00	0.00	0.00	9,497.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
9,600.00	0.00	0.00	9,597.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
9,700.00	0.00	0.00	9,697.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
9,800.00	0.00	0.00	9,797.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
9,900.00	0.00	0.00	9,897.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
10,000.00	0.00	0.00	9,997.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
10,100.00	0.00	0.00	10,097.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
10,200.00	0.00	0.00	10,197.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Tatanka Federal 004H
Company:	Rosehill Operating	**TVD Reference:**	3030' + 25' KB @ 3055.00ft (TBD)
Project:	Lea County, NM (NAD 83)	**MD Reference:**	3030' + 25' KB @ 3055.00ft (TBD)
Site:	Tatanka Federal Locations	**North Reference:**	Grid
Well:	Tatanka Federal 004H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,300.00	0.00	0.00	10,297.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
10,400.00	0.00	0.00	10,397.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
10,500.00	0.00	0.00	10,497.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
10,600.00	0.00	0.00	10,597.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
10,700.00	0.00	0.00	10,697.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
10,800.00	0.00	0.00	10,797.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
10,900.00	0.00	0.00	10,897.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
11,000.00	0.00	0.00	10,997.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
11,100.00	0.00	0.00	11,097.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
11,200.00	0.00	0.00	11,197.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
11,300.00	0.00	0.00	11,297.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
11,400.00	0.00	0.00	11,397.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
11,500.00	0.00	0.00	11,497.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
11,600.00	0.00	0.00	11,597.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
11,700.00	0.00	0.00	11,697.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
11,800.00	0.00	0.00	11,797.90	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
11,874.64	0.00	0.00	11,872.54	-122.15	0.00	383,666.14	851,829.13	32° 3' 2.940 N	103° 19' 52.242 W
Start Build 12.00									
11,900.00	3.04	359.70	11,897.88	-121.48	0.00	383,666.81	851,829.13	32° 3' 2.947 N	103° 19' 52.242 W
12,000.00	15.04	359.70	11,996.46	-105.79	-0.09	383,682.50	851,829.04	32° 3' 3.102 N	103° 19' 52.241 W
12,100.00	27.04	359.70	12,089.62	-69.95	-0.28	383,718.34	851,828.85	32° 3' 3.456 N	103° 19' 52.239 W
12,200.00	39.04	359.70	12,173.29	-15.52	-0.56	383,772.77	851,828.56	32° 3' 3.995 N	103° 19' 52.237 W
12,300.00	51.04	359.70	12,243.82	55.11	-0.94	383,843.40	851,828.19	32° 3' 4.694 N	103° 19' 52.233 W
12,395.59	62.51	359.70	12,296.10	134.94	-1.36	383,923.23	851,827.77	32° 3' 5.484 N	103° 19' 52.230 W
Tatanka 004 FTP									
12,400.00	63.04	359.70	12,298.12	138.87	-1.38	383,927.16	851,827.75	32° 3' 5.523 N	103° 19' 52.230 W
12,500.00	75.04	359.70	12,333.82	232.08	-1.87	384,020.37	851,827.25	32° 3' 6.445 N	103° 19' 52.225 W
12,600.00	87.04	359.70	12,349.36	330.68	-2.40	384,118.97	851,826.73	32° 3' 7.421 N	103° 19' 52.221 W
12,624.64	90.00	359.70	12,350.00	355.31	-2.53	384,143.60	851,826.60	32° 3' 7.664 N	103° 19' 52.220 W
Start 4367.13 hold at 12624.64 MD									
12,700.00	90.00	359.70	12,350.00	430.67	-2.93	384,218.96	851,826.20	32° 3' 8.410 N	103° 19' 52.216 W
12,800.00	90.00	359.70	12,350.00	530.67	-3.46	384,318.95	851,825.67	32° 3' 9.400 N	103° 19' 52.211 W
12,900.00	90.00	359.70	12,350.00	630.67	-3.98	384,418.95	851,825.14	32° 3' 10.389 N	103° 19' 52.207 W
13,000.00	90.00	359.70	12,350.00	730.66	-4.51	384,518.95	851,824.62	32° 3' 11.379 N	103° 19' 52.202 W
13,100.00	90.00	359.70	12,350.00	830.66	-5.04	384,618.95	851,824.09	32° 3' 12.368 N	103° 19' 52.197 W
13,200.00	90.00	359.70	12,350.00	930.66	-5.57	384,718.95	851,823.56	32° 3' 13.358 N	103° 19' 52.193 W
13,300.00	90.00	359.70	12,350.00	1,030.66	-6.10	384,818.95	851,823.03	32° 3' 14.347 N	103° 19' 52.188 W
13,400.00	90.00	359.70	12,350.00	1,130.66	-6.63	384,918.94	851,822.50	32° 3' 15.337 N	103° 19' 52.184 W
13,500.00	90.00	359.70	12,350.00	1,230.66	-7.16	385,018.94	851,821.97	32° 3' 16.326 N	103° 19' 52.179 W
13,600.00	90.00	359.70	12,350.00	1,330.66	-7.69	385,118.94	851,821.44	32° 3' 17.316 N	103° 19' 52.174 W
13,700.00	90.00	359.70	12,350.00	1,430.65	-8.22	385,218.94	851,820.91	32° 3' 18.305 N	103° 19' 52.170 W
13,800.00	90.00	359.70	12,350.00	1,530.65	-8.75	385,318.94	851,820.38	32° 3' 19.295 N	103° 19' 52.165 W
13,900.00	90.00	359.70	12,350.00	1,630.65	-9.28	385,418.94	851,819.85	32° 3' 20.284 N	103° 19' 52.160 W
14,000.00	90.00	359.70	12,350.00	1,730.65	-9.81	385,518.94	851,819.32	32° 3' 21.274 N	103° 19' 52.156 W
14,100.00	90.00	359.70	12,350.00	1,830.65	-10.34	385,618.93	851,818.79	32° 3' 22.263 N	103° 19' 52.151 W
14,200.00	90.00	359.70	12,350.00	1,930.65	-10.86	385,718.93	851,818.26	32° 3' 23.253 N	103° 19' 52.146 W
14,300.00	90.00	359.70	12,350.00	2,030.65	-11.39	385,818.93	851,817.74	32° 3' 24.242 N	103° 19' 52.142 W
14,400.00	90.00	359.70	12,350.00	2,130.64	-11.92	385,918.93	851,817.21	32° 3' 25.232 N	103° 19' 52.137 W
14,500.00	90.00	359.70	12,350.00	2,230.64	-12.45	386,018.93	851,816.68	32° 3' 26.221 N	103° 19' 52.133 W
14,600.00	90.00	359.70	12,350.00	2,330.64	-12.98	386,118.93	851,816.15	32° 3' 27.211 N	103° 19' 52.128 W
14,700.00	90.00	359.70	12,350.00	2,430.64	-13.51	386,218.92	851,815.62	32° 3' 28.200 N	103° 19' 52.123 W
14,800.00	90.00	359.70	12,350.00	2,530.64	-14.04	386,318.92	851,815.09	32° 3' 29.190 N	103° 19' 52.119 W
14,900.00	90.00	359.70	12,350.00	2,630.64	-14.57	386,418.92	851,814.56	32° 3' 30.179 N	103° 19' 52.114 W
15,000.00	90.00	359.70	12,350.00	2,730.64	-15.10	386,518.92	851,814.03	32° 3' 31.169 N	103° 19' 52.109 W

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well Tatanka Federal 004H
Company:	Rosehill Operating	**TVD Reference:**	3030' + 25' KB @ 3055.00ft (TBD)
Project:	Lea County, NM (NAD 83)	**MD Reference:**	3030' + 25' KB @ 3055.00ft (TBD)
Site:	Tatanka Federal Locations	**North Reference:**	Grid
Well:	Tatanka Federal 004H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
15,100.00	90.00	359.70	12,350.00	2,830.63	-15.63	386,618.92	851,813.50	32° 3' 32.158 N	103° 19' 52.105 W
15,200.00	90.00	359.70	12,350.00	2,930.63	-16.16	386,718.92	851,812.97	32° 3' 33.148 N	103° 19' 52.100 W
15,300.00	90.00	359.70	12,350.00	3,030.63	-16.69	386,818.91	851,812.44	32° 3' 34.137 N	103° 19' 52.095 W
15,400.00	90.00	359.70	12,350.00	3,130.63	-17.22	386,918.91	851,811.91	32° 3' 35.127 N	103° 19' 52.091 W
15,500.00	90.00	359.70	12,350.00	3,230.63	-17.74	387,018.91	851,811.38	32° 3' 36.117 N	103° 19' 52.086 W
15,600.00	90.00	359.70	12,350.00	3,330.63	-18.27	387,118.91	851,810.85	32° 3' 37.106 N	103° 19' 52.082 W
15,700.00	90.00	359.70	12,350.00	3,430.63	-18.80	387,218.91	851,810.33	32° 3' 38.096 N	103° 19' 52.077 W
15,800.00	90.00	359.70	12,350.00	3,530.62	-19.33	387,318.91	851,809.80	32° 3' 39.085 N	103° 19' 52.072 W
15,900.00	90.00	359.70	12,350.00	3,630.62	-19.86	387,418.90	851,809.27	32° 3' 40.075 N	103° 19' 52.068 W
16,000.00	90.00	359.70	12,350.00	3,730.62	-20.39	387,518.90	851,808.74	32° 3' 41.064 N	103° 19' 52.063 W
16,100.00	90.00	359.70	12,350.00	3,830.62	-20.92	387,618.90	851,808.21	32° 3' 42.054 N	103° 19' 52.058 W
16,200.00	90.00	359.70	12,350.00	3,930.62	-21.45	387,718.90	851,807.68	32° 3' 43.043 N	103° 19' 52.054 W
16,300.00	90.00	359.70	12,350.00	4,030.62	-21.98	387,818.90	851,807.15	32° 3' 44.033 N	103° 19' 52.049 W
16,400.00	90.00	359.70	12,350.00	4,130.62	-22.51	387,918.90	851,806.62	32° 3' 45.022 N	103° 19' 52.044 W
16,500.00	90.00	359.70	12,350.00	4,230.62	-23.04	388,018.90	851,806.09	32° 3' 46.012 N	103° 19' 52.040 W
16,600.00	90.00	359.70	12,350.00	4,330.61	-23.57	388,118.89	851,805.56	32° 3' 47.001 N	103° 19' 52.035 W
16,700.00	90.00	359.70	12,350.00	4,430.61	-24.10	388,218.89	851,805.03	32° 3' 47.991 N	103° 19' 52.030 W
16,800.00	90.00	359.70	12,350.00	4,530.61	-24.63	388,318.89	851,804.50	32° 3' 48.980 N	103° 19' 52.026 W
16,900.00	90.00	359.70	12,350.00	4,630.61	-25.15	388,418.89	851,803.97	32° 3' 49.970 N	103° 19' 52.021 W
16,991.77	90.00	359.70	12,350.00	4,722.38	-25.64	388,510.66	851,803.49	32° 3' 50.878 N	103° 19' 52.017 W
Start 130.01 hold at 16991.77 MD - Tatanka 004 LTP									
17,000.00	90.00	359.70	12,350.00	4,730.61	-25.68	388,518.89	851,803.45	32° 3' 50.959 N	103° 19' 52.017 W
17,100.00	90.00	359.70	12,350.00	4,830.61	-26.21	388,618.89	851,802.92	32° 3' 51.949 N	103° 19' 52.012 W
17,121.78	90.00	359.70	12,350.00	4,852.39	-26.33	388,640.67	851,802.80	32° 3' 52.164 N	103° 19' 52.011 W
TD at 17121.78 - Tatanka 004 PBHL									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Tatanka 004 PBHL	0.00	0.07	12,350.00	4,852.39	-26.49	388,640.67	851,802.64	32° 3' 52.164 N	103° 19' 52.013 W
- plan misses target center by 0.16ft at 17121.78ft MD (12350.00 TVD, 4852.39 N, -26.33 E)									
- Point									
Tatanka 004 FTP	0.00	0.07	12,350.00	99.99	-0.41	383,888.28	851,828.72	32° 3' 5.138 N	103° 19' 52.222 W
- plan misses target center by 64.25ft at 12395.59ft MD (12296.10 TVD, 134.94 N, -1.36 E)									
- Point									
Tatanka 004 LTP	0.00	0.07	12,350.00	4,722.38	-25.64	388,510.66	851,803.49	32° 3' 50.878 N	103° 19' 52.017 W
- plan hits target center									
- Rectangle (sides W50.00 H4,722.45 D0.00)									

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Project:	Lea County, NM (NAD 83)	**MD Reference:**	3030' + 25' KB @ 3055.00ft (TBD)
Site:	Tatanka Federal Locations	**North Reference:**	Grid
Well:	Tatanka Federal 004H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
1,000.00	1,000.00	0.00	0.00	Start Build 1.50
1,133.33	1,133.31	-2.33	0.00	Start 3366.67 hold at 1133.33 MD
4,500.00	4,497.92	-119.82	0.00	Start Drop -1.50
4,633.33	4,631.23	-122.15	0.00	Start 7241.31 hold at 4633.33 MD
11,874.64	11,872.54	-122.15	0.00	Start Build 12.00
12,624.64	12,350.00	355.31	-2.53	Start 4367.13 hold at 12624.64 MD
16,991.77	12,350.00	4,722.38	-25.64	Start 130.01 hold at 16991.77 MD
17,121.78	12,350.00	4,852.39	-26.33	TD at 17121.78

Rosehill Operating

Lea County, NM (NAD 83)
Tatanka Federal Locations
Tatanka Federal 004H

Wellbore #1
Plan #1

Anticollision Report

05 December, 2017