

# Bakken Well Factory and the Importance of Local Roads

February 2023



- Introduction to Hess
- Bakken Development – Overview of Below Surface Operations
- Surface Activity and Road Usage Summary for New Well Development
  - Construction Activity
  - Rig Moves and Drilling Operations
  - Frac Moves and Frac Operations
- How Do We Minimize Our Impact to Roads?



# 2023 Operations at a Glance



2023 Net Production

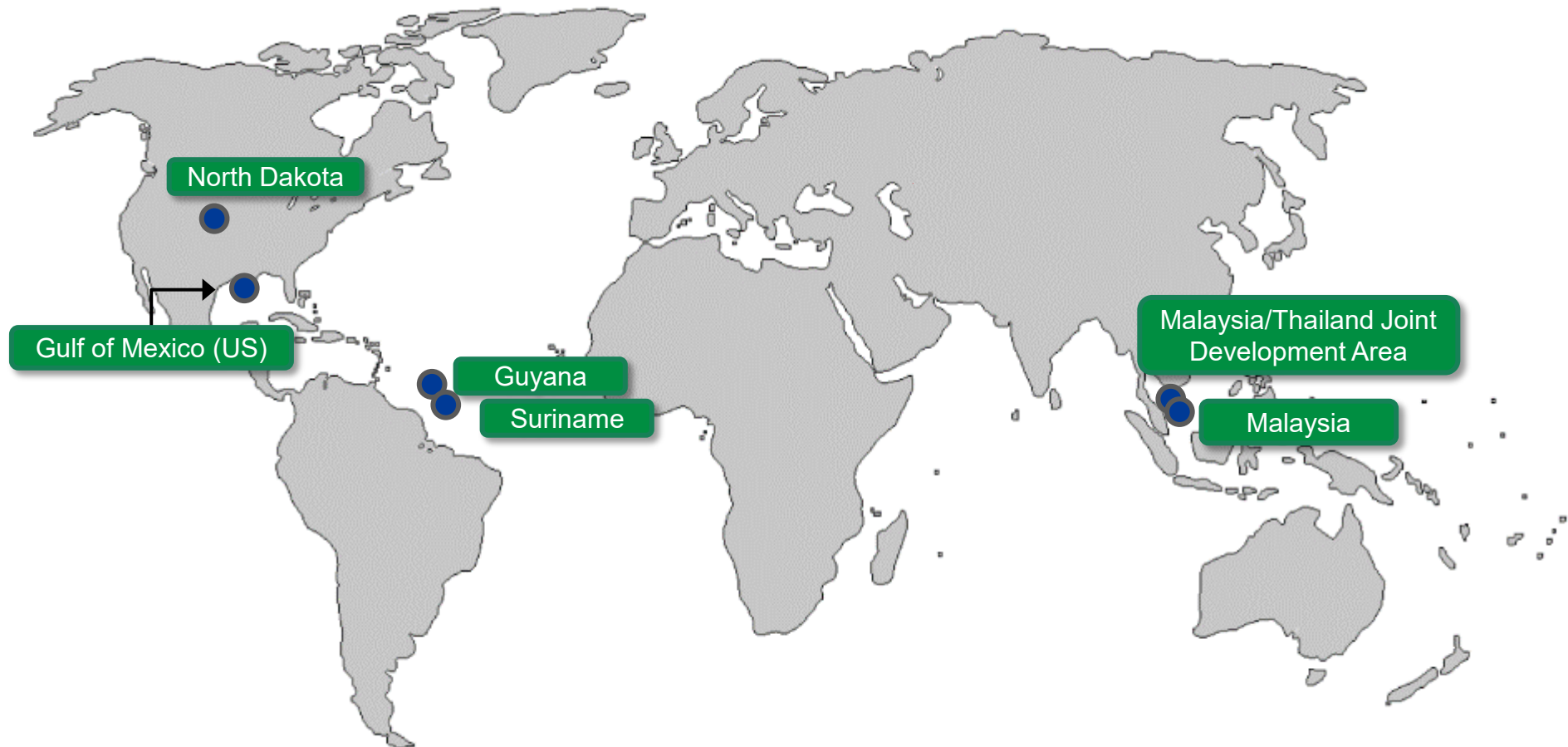
**355,000 to 365,000 barrels  
of oil equivalent per day**

2023 CAPEX

**~\$3.7 billion**

YE 2022 Proved Reserves

**1.26 billion barrels  
of oil equivalent**

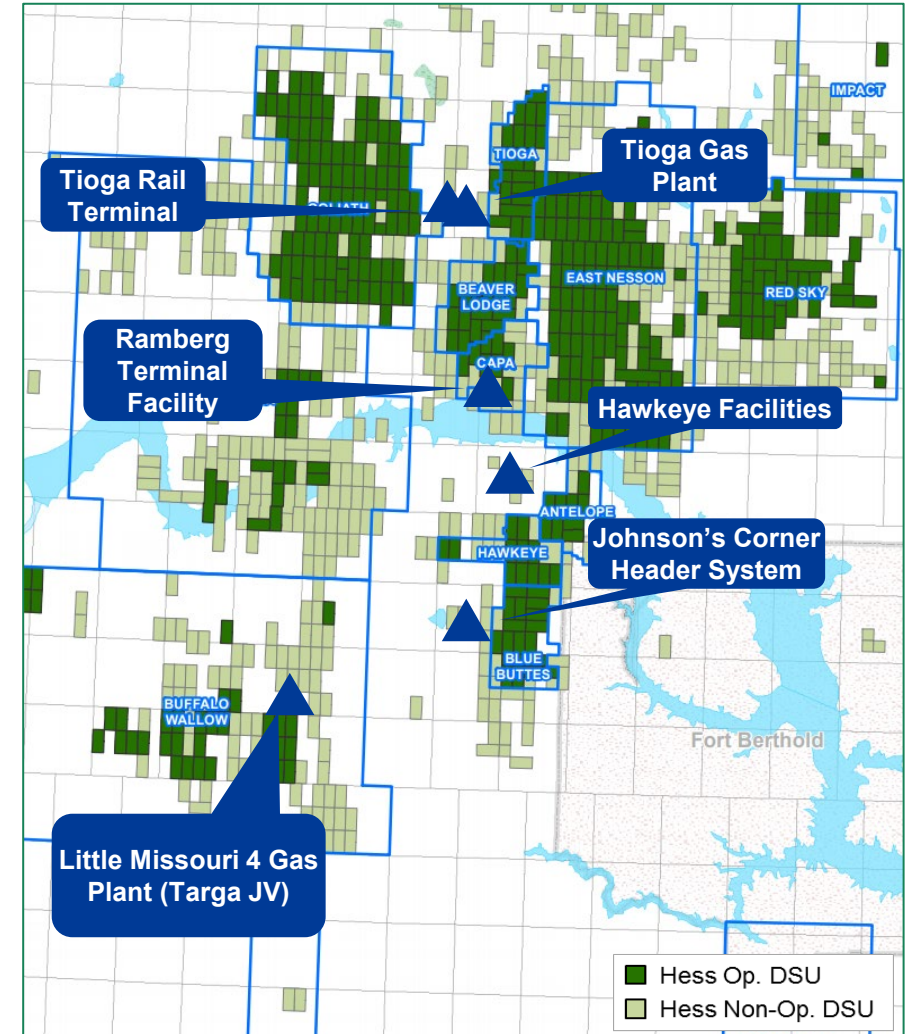


# Hess Leading Acreage Position in the Bakken

Growing production while being a role model for our community



- **Long history in basin; focus on core acreage with stable existing production and substantial future drilling inventory**
  - Drilled first well in 1951; ~\$8 billion invested in last 5 years
  - Operating in ~460,000 net acres;
  - ~1,600 Hess operated wells / support; ~1,500 non-op wells
  - ~1,800 future Hess locations, 60+ rig years at \$60 WTI
  - ~80% of recoverable resources yet to produce
- **Increasing activity to grow production**
  - 4<sup>th</sup> rig added July '22; expect to maintain program
  - 4 rigs grows net production to 200 MBOEPD
  - Planning to spend ~\$1.1 billion in 2023; ~110 new wells online
- **Sustainable practices create value for all stakeholders**
  - Environmental risks can be addressed while still providing safe, affordable and reliable energy
  - Actively working to reduce our operational GHG emissions focusing on reducing flaring and improving total gas capture
  - Committed to eliminating routine flaring by year-end 2025





# Overview of How We Develop the Bakken

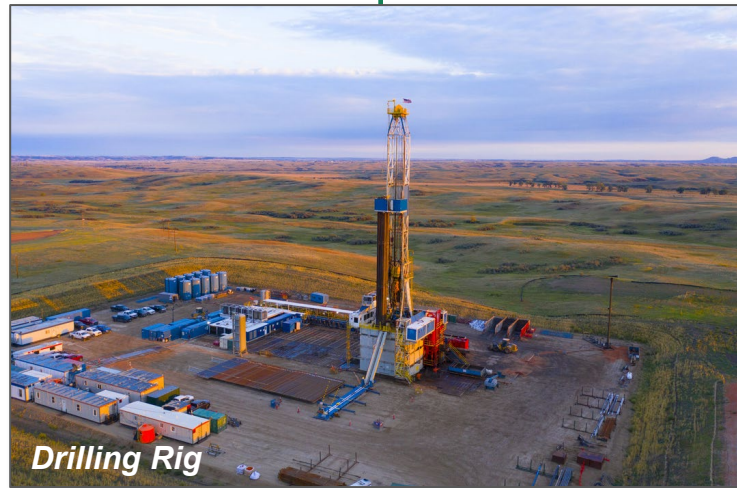
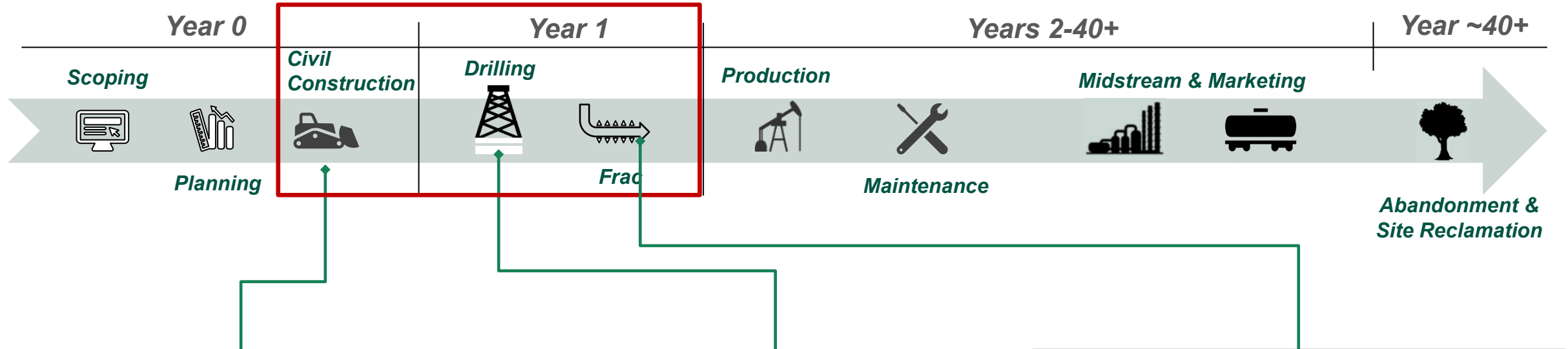
Drilling to wells online and how it connects below the surface



API (Energy From Shale). (2023, January 18<sup>th</sup>), Hydraulic Fracturing [Video]. [Hydraulic Fracturing - YouTube](#)

# Bakken Asset Well Factory

Life cycle of well extends to 40+ years





# Well Pad & Facility Construction

What does it take to Plan and Build a Pad and Facility for New Bakken Well



- **6 months to complete surface well planning**
  - Survey (topographic and environmental), design, land agreements, permits
  - Longer for wells that require federal permits
  - Up to 2 years ahead of planned drilling date
- **30 days for pad construction**
  - Earthwork, underground flowlines, surfacing
- **20 days for new facility construction**
  - Facility build
  - \*Excludes pipeline scope

Activity	Approximate Impact
Civil Construction Loads	120 loads (5 permitted)
Facility Construction Loads	20 loads (5 permitted)
Heaviest Load	100,000 lbs.
Count of people on site	5 - 25



# Drilling Operations and Moves

What does it take to drill a Bakken Well?



- **12.5 days per well (was 30 days in 2012)**
  - Average duration per well includes rig up, drilling wells, rig walks, rig down
- **7 days for drilling the vertical and curve**
- **5 days for drilling horizontal**
- **.5 days to walk from well to well**
  - Rig “walks” 33’ from well to well
- **5 days for rig move from site to site**



Activity	Approximate Impact
Move in rig	95 loads (40 permitted)
Total weight of equipment	1,844,000 lbs. (Rig)
Heaviest Load	93,000 lbs.
# of trucks during operations per well (casing, cement, cuttings, fuel)	45/well
# of trucks for rig move	25
Count of people on site	20-50



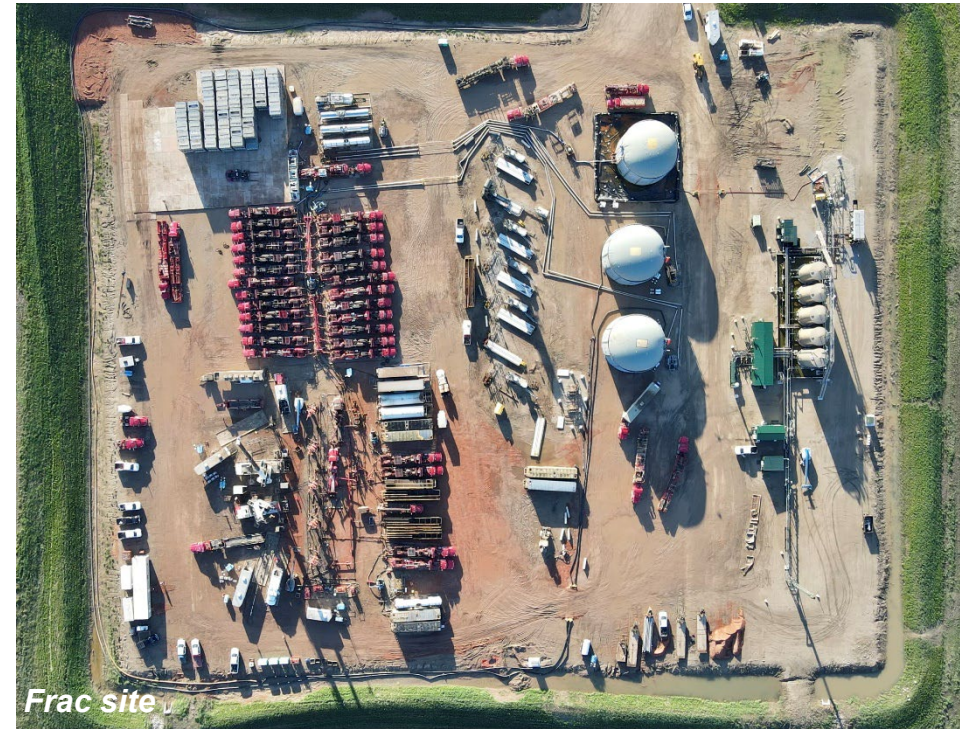
# Completions Operations and Moves

What does it take complete a Bakken well?



- Completions includes Frac, Coil Tubing, Flowback
- 3.5 days per well for a frac
  - Pumping water and proppant downhole
- 2 days per well for coil tubing
  - “Cleaning out” well
- 10 days per well for Flowback
  - Initial production of the well

Activity	Approximate Impact
Move in frac equipment	76 (36 permitted)
Total weight of equipment	4,700,000 lbs (Frac Equipment)
Heaviest Load	98,500 lbs
# of trucks during operations	28/well
# of people on location during operations	74
# of sand trucks	245/well
# number trucks required if water is not piped into location	2220/well



# Process from Start to Well Producing

Timelapse of how it all comes together...





# Mitigating the Impacts to the Roads Where we Operate



What does Hess do from planning to execution to minimize our impact?

## ■ Upfront planning

- Development plans
  - Well planning
    - Multi-batch pads
    - Extended laterals
  - Utilizing existing infrastructure (including roadways)
    - Constructed/Improved roughly 4 miles of public roadway in 2021 and 2022
- Development schedules
  - Rig move and frac timing
  - Planning around county road projects

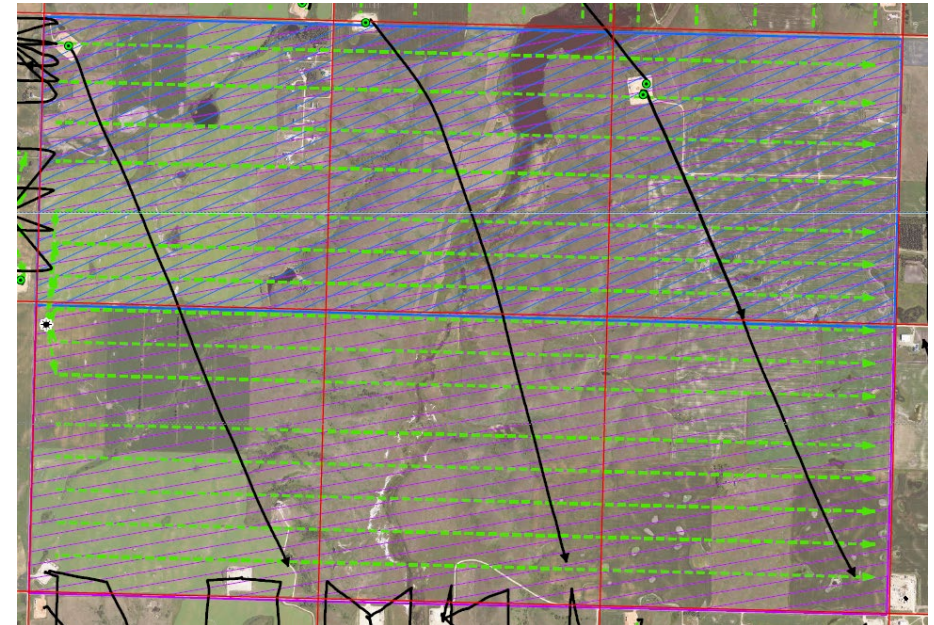
## ■ Operational changes

- Water handling during completions
- X-rigs
  - More divisible than other rigs
  - Moving rigs from generator power to line power
- Production volumes from truck to pipelines

*Example of multi-well batch pads*



*Example of extended lateral development*



- **Extensive process to develop a Bakken well**
- **There is efficient traffic associated with Bakken well development**
  - **Pad/Facility Construction, Drilling and Completions**
- **Things we do to help reduce our impact on roadways**
  - **Planning**
  - **Operational improvements**





# Typical Well Pad Facility Layout



## Typical Layout

1. Flare
2. Separation Vessel/Skid
3. Production Tanks (oil and produced water)
4. Pipeline Tie-Ins
5. Producing Wells
6. Site Containment ditch and Controlled Stormwater Discharge



# Typical Frac Layout

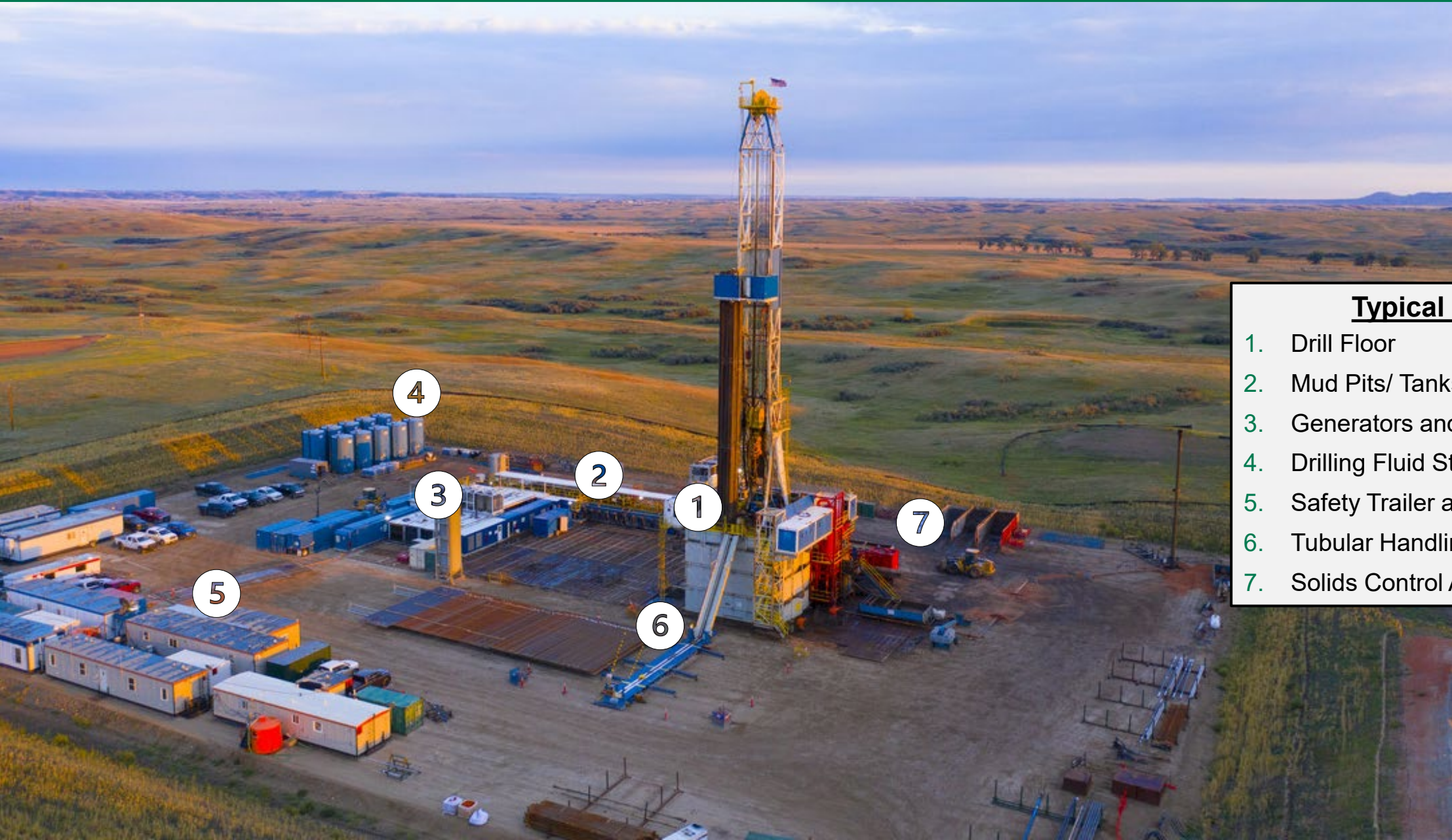


## Typical Layout

1. Crane & Wireline Operations
2. Well Heads
3. Horsepower Units & Missile
4. Data Van
5. Sand Delivery
6. Above Ground Water Tanks
7. Safety Trailer & PIC Quarters



# Typical Rig Layout



## Typical Layout

1. Drill Floor
2. Mud Pits/ Tanks
3. Generators and Mud Pumps
4. Drilling Fluid Storage Tanks
5. Safety Trailer and Crew Quarters
6. Tubular Handling Equipment
7. Solids Control Area