

Category: *Large Company*

Program Title:

“Next-Generation Facilities Enhance Environmental Protection in Colorado”

Nominee Information:

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Submission Contents:

Submission and supporting material contained within. No additional attachments.

Anadarko Petroleum Corporation
Award Submission in the Category of *Large Company*

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As one of the largest operators in the DJ Basin in northern Colorado and moving large quantities of produced oil every day, Anadarko is continually seeking to improve its operations and protect the environment, including in the oil gathering process. With 85 percent of its oil transported from the field by pipeline, Anadarko recognized in 2014 that it was approaching pipeline capacity that would require more oil to be transported by truck. The oil would have to be transported by truck from more than 150 individual Lease Automatic Custody Transfer, or LACT, units on individual batteries. To solve this challenge, Anadarko identified an opportunity to transport oil from our existing central gathering location (see Figure 1) where the pipelined oil was currently being collected, by building a 101 Oil Loadout Facility next to the main pipeline receipt location. The new Facility consists of two oil tanks, two emission control devices, or ECDs, and appropriate lines to load trucks and vent lines to the ECD.

This 101 Oil Loadout Facility minimizes and almost eliminates emissions, is centrally located and increases the efficiency in preparing oil for transit.

Reducing Emissions

The 101 Oil Loadout Facility is a closed-loop system, which creates an environmental benefit by minimizing emissions from oil storage tanks and during the oil truck loading process. With this facility, vapors from the oil tanks are sent to an ECD (see Figure 2). As trucks prepare to load oil, the vapors created when the air inside the truck is displaced by oil are sent to an ECD, thus capturing emissions and enhancing emissions control in the surrounding environment.

Reducing Truck Traffic

The centralized location of the facility offers multiple environmental benefits as well. As oil from the field enters the main pipeline header location, it requires only a valve turn to flow the oil to the 101 Oil Loadout Facility, eliminating the need to transport the oil from individual LACT units by truck. Trucking from individual LACTs requires trucking companies to know when there is sufficient oil to transport, which can be difficult to determine due to varying production from a limited number of wells. The 101 Oil Loadout Facility ensures a sufficient oil amount from numerous wells being pipelined into the facility. Additionally, trucks hauling oil are more easily monitored from this central location through Anadarko's Integrated Operations Center, or IOC. Truck traffic to various locations is also greatly reduced with the oil trucks collecting from a centralized facility. Anadarko is committed to being a strong community partner through increased dialogue with our stakeholders and so the Company strategically located the facility – which is several miles east of Platteville, Colo. – in a sparsely populated area (see Figure 4). Lastly, the centralized location for oil transport has created consistency in the

journey management plan, increasing driver familiarity with the prescribed route that may help prevent spills, further protecting the environment.

The oil delivery points that receive the Company's oil production are best suited to receive oil gravity in the mid-40s. Throughout the field, oil gravities range from 40 to 60, depending on the well, which can create a challenge if transporting the oil from individual LACTs. Anadarko's pipeline infrastructure allows the oil that enters the pipeline receipt point to commingle, resulting in an end-product oil mixture within the range required by oil delivery points.

Anadarko removed its permitted amount of 900,000 barrels of oil from the 101 Oil Loadout Facility between April 2014 and September 2014. In this five-month period, nearly 4,900 loads were transported from just one facility in place of 4,900 loads transported from more than 150 facility locations, some of which are located in densely populated areas. This oil gathering pipeline system eliminated more than 12 million truck traffic miles in 2014.

Enhancing Real-Time Monitoring

The Integrated Operations Center (IOC), located in Anadarko's Platteville office, is the pinnacle of monitoring and managing Anadarko's operations in the Wattenberg field and was created as a central communications center to provide real-time remote-monitoring capabilities for 6,800+ wells and 3,700+ tank facilities, associated equipment and field personnel. The main job responsibilities within the IOC include:

- Alarm management
- Fluid management
- Incident and emergency call management
- Customer service

The IOC gives Anadarko the ability to quickly shut in a well if necessary from the office. This remote capability increases the safety of an operation by removing the necessity for operators to be on location to shut in a well, reducing risk. Additionally, depending on the situation, the faster response time provided by the IOC can reduce or eliminate environmental impacts.

Anadarko employees are trained to make their first call to the IOC (other than 911 if necessary). The IOC is staffed 24 hours a day, 7 days a week and operates out of an open-office area designed for the group's specific needs (see Figure 5). The IOC has become an integral and essential piece of Wattenberg field operations, and its enhanced field communications and reduced response time lead enhance protection of health and the environment.

In addition to rapid response to reported issues, the IOC team monitors field operations via real-time video and data streaming and feeds from field facilities and operations, including:

- Midstream – pipeline and gathering infrastructure and facilities
- 101 Oil Loadout Facility
- Salt water disposal facility
- Rail transport

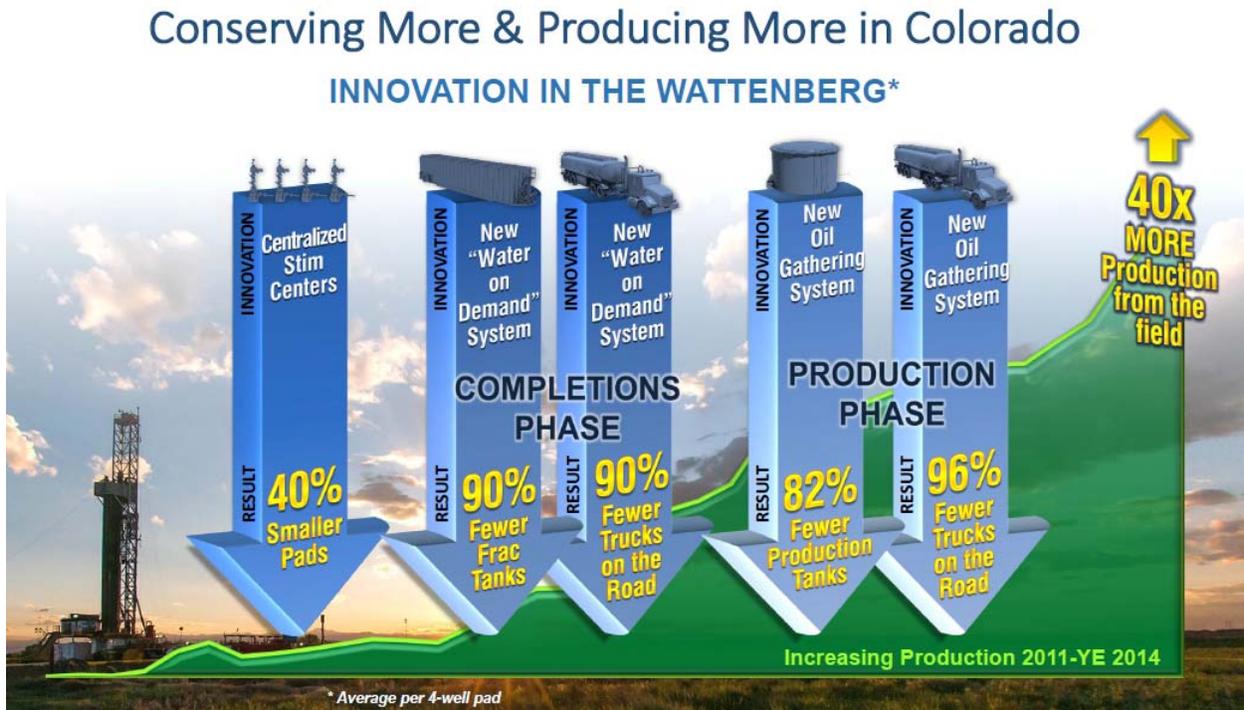
- Oil polishing facility
- Horizontal wells

The IOC design includes a separate smart board positioned at eye level to allow the team to gather in front of streaming data to more easily assess a situation. For example, a map can be displayed showing the location of all Anadarko vehicles in a certain area. This enables the IOC to quickly identify employees in close proximity to specific locations when necessary.

About Anadarko Petroleum Corporation

Anadarko Petroleum Corporation's mission is to deliver a competitive and sustainable rate of return to shareholders by exploring for, acquiring and developing oil and natural gas resources vital to the world's health and welfare. As of year-end 2014, the company had approximately 2.86 billion barrels-equivalent of proved reserves, making it one of the world's largest independent exploration and production companies.

Visual Aid:



Visual Aid:



Figure 1: Oil pipeline receipt point where oil in the field enters before being pumped into the pipeline.



Figure 2. Lines from the tanks running to Emission Control Device (ECD).

Visual Aid:



Figure 3: Two-inch vent line that pulls vapors from the oil truck to the ECD

Visual Aid:



Figure 4: Rural location of the 101 Oil Loadout Facility and away from population areas.



Figure 5. Integrated Operators Control (IOC) in Platteville Office.