DISTRIBUTION CONTRACTORS ASSOCIATION

December 27, 2018

U.S. Department of Energy
Federal Energy Regulatory Commission

Comments on
Notice of Availability of Draft Guidance for Horizontal Directional Drill Monitoring, Inadvertent Return Response, and Contingency Plans

[Docket No. AD19—6—000]

The Distribution Contractors Association (DCA) represents contractors, suppliers and manufacturers who provide construction services including installation, replacement and rehabilitation of natural gas transmission and distribution pipelines, as well as water infrastructure, fiber optic and cable systems in communities across the country. DCA appreciates the opportunity to provide comments on the Federal Energy Regulatory Commission's (FERC) Notice of Availability of Draft Guidance for Horizontal Directional Drill Monitoring, Inadvertent Return Response, and Contingency Plans, published in the *Federal Register* on Friday, November 2, 2018 (83 FR; No. 213; 55163). DCA members engage in horizontal directional drilling (HDD) regularly as they install and replace natural gas transmission pipelines as well as gas distribution facilities, among other underground infrastructure. FERC asks for comments on the draft HDD Guidance from a broad range of stakeholders, including construction contractors "and other interested parties with special expertise in regards to preparation of HDD monitoring and contingency plans associated with natural gas projects."

General Comments

HDD currently accounts for approximately 40 percent of the gas distribution construction market and about 10 percent of the gas and oil transmission market, according to *Underground Construction* magazine. The many benefits that come with HDD installation are leading project owners to consider trenchless construction in other construction sectors, including telecommunications, water/sewer, electric power, and even wind and solar infrastructure. DCA applauds FERC for developing and soliciting industry comments on the draft Guidance, and we are available to discuss any issues or questions the commission has moving forward.

FERC indicates that the draft Guidance is intended to assist the pipeline industry with the development of HDD monitoring, how to appropriately respond to an IR, and what should be included in contingency plans maintained by entities engaged in HDD. In addition to helping improve the quality and consistency of HDD plans, FERC also hopes to increase the efficiency and effectiveness of FERC's environmental review authority. The following are general comments about the draft Guidance and related issues DCA believes should be addressed by contractors, operators, permitting entities and regulatory bodies to improve the overall effectiveness of HDD planning as well as preventing and mitigating inadvertent returns (IRs).

Overall, DCA believes the draft Guidance provides a comprehensive description of what should be included in an effective HDD plan. However, DCA believes the Guidance should not be considered a blueprint for future regulation, and we encourage FERC and other regulatory entities to avoid micromanagement of HDD. As with any regulatory outline, the draft Guidance should not be considered a "one size fits all" approach to HDD planning.

<u>Inadvertent Returns</u>

DCA appreciates the opportunity to weigh in on the subject of inadvertent returns. Inadvertent returns (IRs) are defined as unintended surface release of drilling fluids during HDD operations. During HDD operations, the cuttings are transferred through the annulus of the drilled hole using drilling fluid. For this drilling fluid is subject to pressure to overcome hydrostatic fluid pressure and cutting transfer pressure. This pressure may cause the formation to fracture or IRs to occur through pre-existing fractures in the formation. IRs are receiving increased attention, much of which requires an educated response.

Although IR risks can be reduced by using proper design and construction practices, IRs are inevitable in some HDD installations despite adopting the best practices. An HDD plan and execution should not only include best practices to avoid IR occurrences, but also a mitigation and cleanup procedure should an IR occur. It is not a good practice to stop, terminate or close a project down in cases of IRs. It is a good practice to implement IR mitigation and cleanup plan and continue with the drilling operation. Stoppages of operation often cause the degradation of the drill hole and increase potential of further IRS to occur, collapsed hole, increased string torque, lodged tooling or stuck pipe.

<u>Geotechnical Information</u>

In general, the draft Guidance addresses geotechnical issues, including appropriate depths of cover and the monitoring of annular pressure and drilling fluid properties. As subsurface ground conditions change, fluid properties and maximum annular pressure is adjusted in a way that best address those changes. It is not effective, or safe, to assume that data related to these issues can be considered constant for the length of the bore.

<u>Flexibility Needed During Pullback Process</u>
While HDD operations are complex, there are generally three major steps: pilot boring, reaming to enlarge the hole, and the pullback process to install the product pipe. Once the drilled hole has been enlarged to the required diameter and appropriately cleaned, the pipeline is installed. When appropriate, the pipeline can be pre-assembled in a single string, placed on rollers, and then pulled back towards the entry point until fully installed.

The pullback stage of the HDD process is one that requires flexibility for the HDD operator to get the job done right. Project owners need to provide enough space for the HDD operator to effectively complete the project, at least as much area as provided during the pilot bore phase of the project.

Lack of available space and time needed for effective pullback, restrictions on single-string pullback, and other limitations related to noise ordinances can cause delays that may lead to situations that require re-permitting parts of a project. This can compromise and even doom an HDD project. Flexibility is needed on the part of both permitting agencies as well as project owners to ensure all stages of an HDD project are afforded the time, space and resources needed.

Specific Comments

<u>Sec. 1.0 – Introduction</u>
The draft Guidance states that will help "industry professionals" improve the quality of their HDD plans. DCA believes FERC should make it clear that "qualified industry professionals" are required to plan HDD projects, and that more information is needed as to the qualifications needed by those involved with HDD planning.

<u>Sec. 2.0 – Preparing HDD Plans for Natural Gas Act Applications</u>
The draft Guidance refers to FERC's *Wetland and Waterbody Construction and Mitigation Procedures* that require the filing of a site-specific plan, including details regarding the HDD crossings of wetlands and/or waterbodies, including diagrams with project details that show minimum disturbed areas needed to conduct the crossing, information regarding containment and clean up following an inadvertent return, and details related to contingency planning. However, FERC states that information that may not be required but may be considered during internal environmental review, should also be included in

HDD plans. Specifically, FERC calls for "crossing-specific geotechnical information and crossing profiles showing the feasibility of the crossing…"

More details are needed regarding how often and where geotechnical samples should be taken. Additionally, the Guidance should make it clear that sample depth should extend 20-feet beyond the planned drill profile depths to provide consistent data, and HDD planners should take special care to ensure that sample bores do not become paths for potential inadvertent returns.

DCA believes the following information (in **bold** text) should be included in FERC's site-specific plan requirements:

1) *site-specific construction diagrams that show the location of mud pits, **product** pipe assembly areas, **stringing and** all areas to be disturbed or cleared for construction;*
2) ***Number of pipe strings needed for the pullback process**;*
3) *justification that disturbed areas are limited to the minimum needed to conduct the crossing;*
4) *identification of any aboveground disturbance or clearing between the HDD entry and exit workspaces during construction **(i.e. survey coil, water access, etc.)**;*
5) *a description of how inadvertent release of drilling mud would be contained and cleaned up;*
6) *a contingency plan for crossing the waterbody or wetland in the event the HDD is unsuccessful; and*
7) *how the abandoned drill hole would be sealed, if necessary.*

<u>Sec. 3.0 – HDD Plan Contents</u>

The draft Guidance includes a list of what FERC believes should be included in an adequate HDD plan.

DCA agrees with this list, but offers the following revisions for FERC's consideration.

- *Introduction*
- *Personnel and Responsibilities**, with resumes***
- ***Equipment – rigs (and spare rig availability), mud pumps, cleaning systems, spare rigs/parts and locations***
- ***Planned downhole tooling***
- *Pre-Construction Activities*
- *Documentation*
- *Drilling Fluid Management**, including plan and list of proposed additives***
- *HDD Operational Conditions and Response Actions*
- *Responding to IRs*
- *Restoration*
- *Contingency Planning*

<u>Table 3.1.2 – HDD Wetland Crossings</u>

DCA believes that Table 3.1.2 would provide for collection of appropriate information needed to effectively plan an HDD wetland crossing. However, the "Entry/Exit Elevation Difference (feet)" would be improved if additional data were collected. While the entry/exit elevations are imperative, the elevation of the start of the wetland (or water body) should be considered when determining the necessary depth of cover under the respective wetland (or water body) to ensure the design is appropriate to mitigate an inadvertent return. Not uncommon, HDD crossings are approved and issued for construction outside of industry standards. Attached is a conceptual drawing displaying an HDD in which the entry and exit points are fixed due to elevation restraints ultimately providing minimum cover under a waterbody. “Open cut” excavation may not be a viable option, and other trenchless excavation methods may not be able to overcome the hydrostatic pressures associated with the depth, and extending the HDD may not be feasible due to the extended length by trying to reach out to an acceptable entry and exit location while lowering the total depth of the bore path. Table 3.1.3 should be revised accordingly to provide for this information during waterbody crossings.

Sec. 3 of the draft Guidance also indicates that HDD plans should identify other unique conditions or features “that may increase the risk of drill failure or potential impacts (e.g., existing contamination, artesian groundwater, karst features, significant grade change, presence of retaining walls, abandoned and/or orphan oil and gas wells, specially managed infrastructure [such as levees], proximity to residences [and basements]) and measures that would be implemented to minimize any risks.”

DCA suggests that adding “cobbles or boulders visible on surface, existing sink holes,” be added to the list of features and conditions.

Sec. 3.2 - Personnel and Responsibilities

As is true with most construction operations, safety is paramount and the single most important asset a contractor has is his/her people. HDD work, from planning through construction, requires experienced and capable personnel to perform the work, and all those involved have right equipment needed to do the job right.

DCA is not suggesting that prescriptive training requirements are needed to ensure that HDD operations are performed competently. Individuals who perform HDD work for DCA member companies are put through rigorous training and testing regiments before performing HDD operations in the field. While there is no single curriculum or apprenticeship that is widely considered superior to others, it is safe to say that contractors effectively train HDD workers through a variety of methods, including classroom education, use of simulators and computer-based training and eventually “on-the-job” training before they are sent to the field.

The goal of HDD process is to install a product line with minimal disturbance to the area outside of the borehole. Allowing for contractors to have the necessary tools in their toolbox and the ability to execute proper steps when necessary is essential minimize and prevent disruption outside of the borehole. Providing the best equipment available is critical here. There is a wide variety of state-of-the-art drilling and monitoring technologies available and they need to be utilized. Mud pumps and equivalent drilling fluid recycling systems used for drilling fluid management must meet capacity needs, and the right drilling sized rigs needed to complete the project must be employed.

The importance of meeting all responsibilities needed for effective HDD planning and operations do not end with the HDD contractor. Project engineers, many of whom are reluctant to "change," must be open minded to learn more about HDD and the many benefits that come with it. Pipeline operators and representatives from permitting entities need to include drilling contractors earlier in the planning process and should communicate more often with the contractor during the HDD process.

DCA believes more information is needed in the Guidance about management of drilling fluids. While controversies over fluids, especially with regards to disposal and inadvertent returns, have gained increased attention, they play a critical role in both avoiding and mitigating inadvertent returns.

Above we address having qualified personnel on the job site. Having qualified drilling fluids personnel on staff or on contract will be necessary to create and maintain drilling fluid properties. The properties that are required from a drilling fluid should be decided by the geology, equipment, and drilling practices that will be utilized during HDD operations. Drilling fluid products that can create those properties need to be available for the contractor to use.

Drilling fluids primarily consist of bentonite which is a clay mineral found naturally. Typical clay formations consist of minerals like kaolinite, montmorillonite and illite clay minerals. However, clays found in Wyoming consist primarily of bentonite mineral. Therefore, the bentonite commonly used for drilling are mined in Wyoming. Since bentonite is a naturally occurring clay mineral, it does not create hazard but forms small percentage of soil mineral amongst other minerals in the formation. The main difference between bentonite minerals and other clay minerals is that bentonite has higher expansive properties.

Other than bentonite, commonly used additives are sodium carbonate or soda ash which is another naturally occurring mineral. Sodium carbonate is used to soften the water and reduce pH of the drilling fluid water. Soda ash is also commonly used in municipal water treatment plants for the same purpose.

In some situations, manufactured polymers may also be used to enhance the properties of drilling fluids to overcome challenging drilling conditions. These polymers are non-toxic and SDSs for these polymers are submitted prior to drilling. The SDSs for all drilling fluid additives are also required to be kept on site.

Finally, DCA believes the list of responsibilities in the draft Guidance should include the responsibility to "ensure the bore plan minimum depth can be achieved or maintained beyond areas between inadvertent returns and surface locations.

Sec. 3.3 – Pre-Construction Activities

DCA believes the Guidance should include language describing the need for HDD operators to notify their respective one-call center with details of where HDD activities, or any form of excavation, will take place in order to have facilities located and marked prior to excavation. The roles and responsibilities of the damage prevention process are clear: excavators notify the one-call center prior to excavation, and facility operators belong to the one-call center, provide accurate maps, as-built documentation and other information about the location of their facilities, and ensure their facilities are accurately located before excavation activities commence. If either party fails to meet their responsibility in the process, damage prevention is compromised.

3.3.1 – Training

Typically, training on environment and health safety is one of the key pre-construction activities done before HDD installations. The HDD pre-construction training should include awareness training should consist of training on IR monitoring and management practices. Monitoring training may also include monitoring of the drilling parameters like fluid returns, thrust force, torque, and annular pressures which are typically indicators of IRs before or while they occur. The training should also include walk out or drone inspections and their frequencies. Finally, the field personnel should be fully trained on IR response plan for the particular project as laid out in pre-construction plan.

3.3.2 – Site Inspection

DCA suggests that the site inspection/site investigation consist of adequate geotechnical borings to indicate subsurface conditions likely to be encountered during the drilling operations. Typically, owner and/or designers of the project would perform the subsurface investigation. With current engineering practice and expertise available to the industry, the risks for IRs can be evaluated during the design phase. Typically, higher risks for IR are in soft clay formations and highly fractured rock formations where drilling fluid can release to surface through pre-existing fractures. Cobbles, boulders, and high gravel content formations are also susceptible to high risks of IRs primarily because of challenges related to hole stability. The annular pressure required to transfer the larger cuttings and through unstable hole is generally high and therefore IR risks significantly increase.

However, IR may occur in any expected soil conditions because the geotechnical bores, however extensive, only cover very small percentage of actual drill profile. Therefore, IR monitoring and response plan should be included with any HDD execution plan. The field personnel should be trained as per Section 3.3.1 above.

Table 3.4.1 – Documentation Maintained

The current state of the HDD industry is that the downhole pressure can be monitored while the drilling operation is ongoing. The maximum risk of formation fracture and IR to occur during the HDD operation is when the pilot hole is drilled. This is because, in a stable hole, the annular space is the minimum during the pilot hole phase of the HDD operation. Since the downhole or annular pressure is directly related to IR risks, we recommend that annular pressure be recorded and monitored during pilot hole phase of HDD operations. However, we do not recommend requiring annular pressure monitoring during the reaming phase because the risks of IR during this phase is minimal and pressure monitoring causes unwanted delays that in turn may create hole stability problems and increase chances of IR. The annular pressures along with other drill data like torque, thrust, pumping rates, etc. should be well documented. Electronic data recorders (EDRs) are now available that electronically record such data. EDRs may be used for monitoring and documentation purposes.

Sec. 3.5 – Drilling Fluid Management

The draft Guidance states that HDD plans include a drilling fluid management plan that addresses details for each crossing, source of drilling water and anticipated use, as well as any analysis of the water source. Several DCA members are engaged in producing drilling fluids and offer the following observations.

The draft Guidance does not mention the need for a lost circulation (LC) or partial loss contingency plan as part of the drilling fluid management plan. An LC plan should be developed prior to commencing HDD work so that LC can be recognized and remedied as soon as possible. LC plans are used in response to inadvertent returns that have occurred, but can also help develop prevention of them.

Sec. 3.5.1 – Drilling Fluid Additives

3.5.1 – There are a few items in the drilling fluid section of the draft Guidance that are difficult to interpret. For example, the draft Guidance says that “only pre-approved, non-petrochemical-based, non-hazardous additives that comply with permit requirements and environmental regulations should be utilized." The term "non-petrochemical-based" is very vague. There are materials used that may be considered relatively harmless by the Environmental Protection Agency (EPA) that do include of some level of petrochemical base. DCA recommends they clarify this term or remove references to "non-petrochemical-based" materials.

The term "non-hazardous" is very ambiguous. Is this non-hazardous for transportation or does it refer to signal words on the product label? DCA believes this term should also be clarified or removed from the draft Guidance.

This draft Guidance also states that HDD planner should "indicate the ecotoxicity of each additive. That could be interpreted in several ways, and there are existing sources to refer to when determining ecotoxicity. DCA encourages FERC to specify the testing method to determine ecotoxicity be:

- US Environmental Protection Agency, October 2002. *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms,* EPA-821-R-02-012

- U.S. Fish and Wildlife Service, October 1984. *Research Information Bulletin: Acute Toxicity Rating Scales.* (DCN T10500)

This information is readily available and it should not be problematic for fluid manufacturers to provide it.

Additionally, Sec. 3.5.1 states that if "drilling fluid is sourced from an off-site location (transported from another drill site). If the water supply is a non-municipal source, the drilling fluid/water source should be tested for environmental contaminants prior to initial use.

<u>Sec. 3.5.2 – Drilling Fluid Physical Properties</u>

Several very important fluid properties are not included in the list of properties the draft Guidance document that FERC says should be monitored. We recommend filtrate loss and rheology also be monitored.

<u>Sec. 3.5.3 – Drilling Fluid Disposal</u>

The draft Guidance recommends compliance with FERC's *Upland Erosion Control, Revegetation and Maintenance Plan* at section III.E. This section consists of two sentences of the total 20-page document and is overly ambiguous. DCA encourages FERC to include details regarding:

- traditional fluid disposal at a local facility permitted to receive drilling fluids in liquid state;
- disposal of drilling fluid that has been separated in to liquids and solids for beneficial reuse; and
- disposal of solidified liquid materials.

Sec. 3.7 – Responding to IRs

The draft HDD Guidance calls for a description of procedures to be followed if an IR is observed at locations that are inside certificated workspaces, outside of certified construction work areas, in inaccessible areas and within environmentally sensitive areas such as wetlands or waterbodies.

Sec. 3.7.1 – IR Response Materials and Equipment

FERC describes the equipment and materials that should be available at each HDD entry and exit point, as well as mechanized and other equipment that should be immediately available. DCA generally agrees with these items but recommends the following revisions (in **bold** and strikethrough text).

Equipment and materials required to contain an IR should be available at each HDD entry point and exit point. Examples of expendable materials and equipment to be maintained on site in sufficient supply depending on the extent of sensitive environmental resources at each crossing may include:

- *spill sorbent pads and booms;*
- *straw bales (certified weed-free);*
- *wood stakes;*
- *sandbags;*
- *silt fence;*
- *plastic sheeting;*
- *corrugated plastic pipe;*
- *shovels;*
- *push brooms; and*
- ***super absorbent polymers;***
- ***mud solidification polymers; and***
- ***other/etc.***

Additionally, mechanized and other equipment should be maintained on site or be immediately available to the site depending on the extent of sensitive environmental resources at each crossing and may include:

- *centrifugal, trash, and sump pumps;*
- *vacuum truck;*
- ~~*rubber-tired or wide-track backhoe;*~~
- ~~*bobcat (if needed);*~~ ***skid loader(s)***
- *storage tanks; and*
- *floating turbidity curtains for use in large waterbodies.*

Sec. 3.9 – Contingency Planning

FERC encourages a description of criterial for identifying what would be deemed a "failed" HDD operation, and planned contingencies "to address an HDD failure, such as a new drill path, drill hole abandonment, or alternate crossing measure." DCA believes that contingency planning is an imperative part of HDD planning. Pipeline operators and other project owners, as well as permitting and regulatory authorities, must know what a driller plans to do when the inevitable unforeseen circumstances arise. HDD contractors must have contingency plans in place to react to these situations. At the same time, operators and project owners must understand that contingency plans vary, as well as the costs associated with them.

Sec. 3.9.1 – Alternate Crossing Measures

When describing appropriate contingencies, DCA recommends adding a few viable contingency measures (in **bold** text). The language would be revised to say:

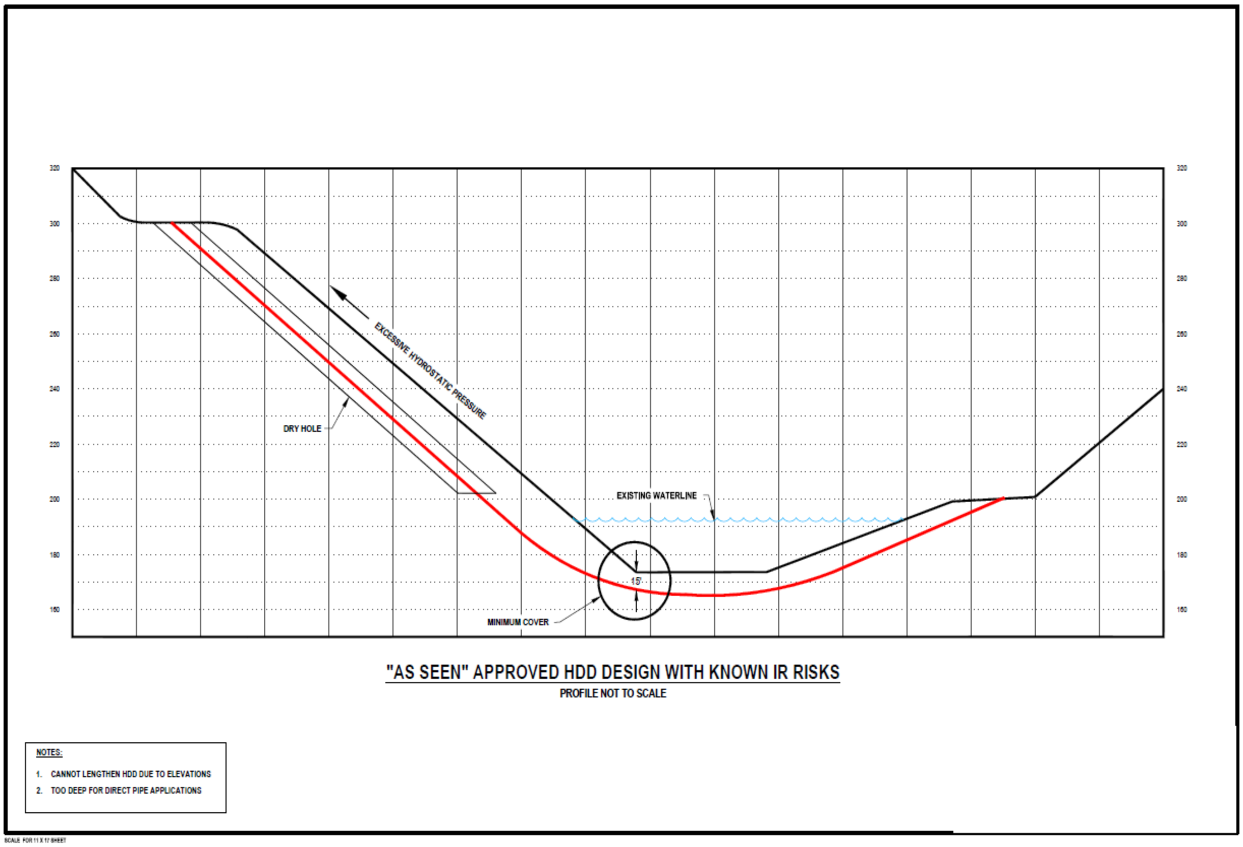
*HDD contingencies may include, for example, **casing installation, grout mitigation, open excavations,** defining a new drill path to avoid the problematic area, relocating the crossing, or defining a new method such as direct pipe installation, if feasible.*

Sec. 4.0 – HDD Plan Attachments

FERC recommends that site-specific crossing plans are filed for each proposed HDD, and that these plans should include drawings that identify all impacted areas and a list and status of all required permits. FERC also recommends HDD operators review geotechnical studies early in the planning process to determine whether HDD is a suitable method for the specific crossing location.

Conclusion

DCA's membership includes many construction firms that specialize in HDD, manufacturers and distributors of the equipment involved in HDD projects, as well as producers of the drilling fluids that facilitate drilling operations. Indeed, DCA represents the entire range of players involved in HDD work, and the association is available to meet with FERC staff to discuss any questions the commission may have regarding HDD and what the industry is doing to prevent and mitigate IRs during HDD operations. We thank you again for the opportunity to comment on the draft Guidance and we look forward to future discussions on HDD and its role in the construction of pipeline infrastructure.



Attachment 1