COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

AN INVESTIGATION TO DETERMINE COMPLIANCE TO 807 KAR 5:022 BY KENTUCKY-OHIO GAS COMPANY REGARDING CONSTRUCTION OF A GAS TRANSMISSION PIPELINE	)))))	CASE NO. 95-023

O R D E R

In Case No. 93-144,[1] Kentucky-Ohio Gas Acquisition Corporation (Kentucky-Ohio) was granted a Certificate of Public Convenience and Necessity to construct an eight-inch transmission pipeline in the Ashland, Kentucky area. Phase I of the project was completed in May 1994. Phase II of the project consisted of a new tap with an existing interstate pipeline and construction of about 15 miles of pipeline. Due primarily to the route of the Phase II pipeline, which included some residential areas, considerable controversy arose over its construction.

On January 19, 1995, the Commission opened this case for the purpose of investigating the construction of the Phase II pipeline in Boyd and Greenup counties. A series of safety inspection reports by the Commission s Gas Pipeline Safety Branch during the period July 1994 through January 1995 indicated problems concerning compliance with gas safety regulations by the contractor for Kentucky-Ohio. While most

[1] Case No. 93-144, The Petition of Kentucky-Ohio Gas Company for Approval of a Certificate of Convenience and Necessity to Construct Pipeline Facilities, Approval of Financing and Approval of Special Contract.

problems were corrected at the time of discovery, the pattern was troublesome to Commission inspectors. In response to Commission inspection reports of problems with construction, Kentucky-Ohio employed Energy Management and Services (EMS) as a consultant and construction manager.[2] EMS assumed that position approximately halfway into the construction of the Phase II project. Boyd County Fiscal Court, the Boyd County Judge/Executive and several individual property owners (collectively Intervenors) expressed concern during the same period regarding the location of the pipeline and the practices of Kentucky-Ohio s contractor, B and L Utility Contractors (B & L). Boyd County government and several property owners were granted intervention in this case since they were parties in a prior case. [3] A public hearing was held in this case on February 24, 1995.

The route selected for the pipeline was raised at the hearing; however, this is not an issue that can be considered in this case. The route of a pipeline is included in an application for a certificate to construct, which was, in this case, considered as part of Case No. 93-144.

The Commission finds that the following relevant issues were developed in this case:

[2] Transcript of Evidence (T.E.) at 6-7, 27-28.

[3] Case No. 94-363, Boyd County Fiscal Court, Complainant, vs. Kentucky-Ohio Gas Acquisition Corporation. This case was dismissed by an Order dated January 19, 1995. A lawsuit to review the Commission s Order dismissing Case No. 94-363, was filed in Franklin Circuit Court in February of 1995 styled Boyd County Fiscal Court vs. Kentucky Public Service Commission, 95-CI-00226. It was dismissed by an Agreed Order entered June 30, 1998.

DESIGN ISSUES

Common trenching

The use of common trenching for buried facilities, such as gas and water pipelines, is a common practice among utilities, particularly when public rights-of-way are used by utilities to install buried facilities. Commission regulations require 12 inches of clearance for transmission pipelines from any other underground structure. 807 KAR 5:022, Section 7(14). During their inspections, Commission inspectors found no instances in which this requirement was not met. In addition, Kentucky's utility and underground facility damage prevention law requires an excavator to call before digging and the underground facility owner to mark its buried facilities prior to most excavation. See KRS 367.4901, Underground Facility Damage Prevention Act of 1994.

Planned Pressure

The Intervenors have expressed considerable concern regarding the proximity of residential dwellings to the pipeline. Pipeline safety regulations require additional safety measures to be performed when a pipeline is located in an area with dwellings nearby. 807 KAR 5:022, Section 1(3), provides for the assignment of a class location to the pipeline based upon the number of structures near the pipeline route and reads in part:

> Class location is determined by applying criteria set forth in this section: class location unit is an area that extends 220 yards on either side of the centerline of any continuous one (1) mile length of pipeline. Except as provided in paragraphs (d) and (f) of this section, class location is determined by buildings in the class location unit. For the purpose of this section, each separate dwelling unit in a multiple dwelling unit building is counted as a separate building intended for human occupancy.

This class location designation is then translated into several different requirements, such as number of welds requiring X-rays and depth of cover and

pressure testing, to determine the integrity of the pipeline. These progressive requirements as to construction and pressure tests are designed to provide for additional safety concerns as a pipeline route approaches more populated areas.

807 KAR 5:022, Section 11, prescribes the minimum strength test requirements for pipelines. This section of the regulation, in combination with Section 13(11), prescribes the desired maximum allowable operating pressure (MAOP). These regulations require the utility, before operation of a pipeline may commence, to test the pipeline to substantiate the designed MAOP. In this case, Kentucky-Ohio s plan called for a MAOP of 700 pounds per square inch (psi).[4] This is the MAOP Kentucky-Ohio would have to meet in the test required by the regulations. Kentucky-Ohio, at the hearing in 1995, proposed to perform pressure tests and conduct certain surveys on the pipeline beyond the requirements of the regulations or standard industry practice.[5] The findings as to the results of the required test and those additional tests will be discussed below in reference to tests conducted after completion of the pipeline.

CONSTRUCTION PRACTICES

Casing

At the hearing, evidence was presented concerning casing - the practice of installing a pipe within another pipe for additional safety protection. Thomas D. Honn, President of EMS and Harold L. Baldridge, a consulting engineer appearing for

[4] T. E. at 20-21.

[5] T. E. at 18-21.

Intervenors, presented different opinions on the merits of pipe casing.[6] However, Commission regulations do not require casing.[7] In the areas where either a state road or railroad tracks are crossed by the pipeline route, the entity granting the crossing permit may require the pipe to be cased. Once casing is required it must meet the requirements of 807 KAR 5:022, Section 7. Honn testified that these requirements were being met, and that the remaining portions of the pipeline were not cased.[8] In their training courses conducted by United States Department of Transportation, Office of Pipeline Safety, the Commission Gas Pipeline Safety inspectors are advised to discourage casing in gas pipeline projects.[9]

Cover

The Intervenors also expressed concern about areas where Kentucky-Ohio's pipeline runs parallel to, or may be under, a roadway. In such places, especially when heavy equipment is present, the Intervenors believe the pipeline should have been cased to help provide more protection. According to the Intervenors, inadequate cover over the pipeline in some places may also be a contributor to this potential problem. The amount of cover placed over a pipeline is specified by 807 KAR 5:022, Section 7(15), and that section prescribes the minimum cover as shown by the chart contained in the regulation. This chart calls for 36 inches or 24 inches of cover in normal soil or rocky ground, respectively, for Class 2, 3 or 4.

[6] T. E., Honn, at 53-54, 65-66; Baldridge at 188-190.

[7] T. E. at 92.

[8] T. E. at 53-56.

[9] T. E. at 92-93.

Honn testified that the design of the pipeline along with the required depth of cover compensates even for heavy equipment that may travel the roads. In the few instances where the Commission's safety inspectors did find inadequate cover, it was corrected.[10]

Pipe Coating

The type of pipe used for this project is received from the manufacturer with a coating. Such a coating is a protection against external corrosion and is required by 807 KAR 5:022, Section 10(4)(a)1. It is required, among other things, to have sufficient strength to resist damage due to handling and soil stress.

There was evidence that B & L s lack of care in handling the pipe may have damaged the coating. However, testimony indicated that damage to the coating was discovered and repaired or patched.[11] Honn, in his testimony, explained the purpose of a holiday detector - an instrument in use during Kentucky-Ohio's construction to locate places (holidays) on the pipe where the protective coating has been damaged prior to or during installation of the pipe.[12] Honn stated that the use of the holiday detector and the results of the cathodic protection surveys should determine and locate any damage to the pipe's protective coating due to faulty handling of the pipe during construction.[13] Commission inspection staff has witnessed holiday detection tests at various times

[10] T. E. at 51-56.

[11] T. E. at 15, 87.

[12] T. E. at 31-32.

[13] T. E. at 91.

during construction along this line as noted in the Interim Construction Inspection Reports.

Welds

All welders credentials were inspected and in only one incident was a welder s certification found to be in question. That problem was corrected.[14]

A much more serious question was whether X-ray tests were being performed on the welds. X-ray testing is a process of non-destructive testing to detect defects in a pipe weld.

807 KAR 5:022, Section 5(9) addresses nondestructive testing and the frequency thereof based upon pipe classification:

> (a) Nondestructive testing of welds shall be performed by any process, other than trepanning, that will clearly indicate defects that may affect the integrity of the weld.
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> (b) Nondestructive testing of welds shall be performed:
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> 1. In accordance with written procedures; and
>
> 2. By persons trained and qualified in established procedures and with equipment employed in testing.
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> (c) Procedures shall be established for proper interpretation of each nondestructive test of a weld to ensure acceptability of the weld under subsection (8)(c) of this section.
>
> (d) When nondestructive testing is required under subsection (8)(b) of this section, the following percentages of each day's field butt welds, selected at random by the operator, shall be nondestructively tested over their entire circumference:
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> 1. In Class 1 locations, at least ten (10) percent.
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> 2. In Class 2 locations, at least fifteen (15) percent.

[14] T. E. at 10, 104-105.

> 3. In Class 3 and Class 4 locations, at crossings of major or navigable rivers, and offshore, and within railroad or public highway rights-of-way, including tunnels, bridges, and overhead road crossings, 100 percent unless impracticable, then at least ninety (90) percent. Nondestructive testing shall be impracticable for each girth weld not tested.

Commission inspectors found that Kentucky-Ohio had not tested a section of the pipeline as required by the above regulation. The Commission directed the disinterment of that part of the pipeline and the testing of all welds. Commission inspectors observed the excavation or dig out on February 9-16, 1995 at the Meadow Lane section of this pipeline.[15] On February 27, 1995, EMS reported to the Commission that a section of pipeline along Meadow Lane and Meade Springer Roads had been excavated and tested. It was reported that 125 welds were X-rayed with 7 welds rejected. Any rejected weld was cut out, replaced, and re-inspected by X-ray. This report was filed with the Commission and accompanied with the Radiographic Inspection Reports.[16] All welds made in the Meade-Springer Road and Meadow Lane areas have been X-rayed and are in compliance per the X-ray contractor's interpretations.[17]

Kentucky-Ohio has X-rayed all welds on the pipeline as required by Commission regulations, with copies of each X-ray on file at Kentucky-Ohio.[18]

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[15] PSC inspection report dated February 17, 1995.

[16] Letter from Energy Management & Services Co., to Scott Smith, PSC, dated February 27, 1995, with attachments.

[17] Letter from Energy Management & Services Co. to Scott Smith, PSC, dated February 27, 1995, with attachments. Inspection Report dated February 2, 1995.

[18] T. E. at 10-13.

Commission regulations require Kentucky-Ohio to pressure test the pipeline prior to operation. 807 KAR 5:022, Section 13, sets out the requirements and procedures for such a pressure test as follows:

> Operations (1) Scope. This section prescribes minimum requirements for operation of pipeline facilities.
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> (11) Maximum allowable operating pressure: steel or plastic pipelines.
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> (a) Except as provided in paragraph (c) of this subsection, no person shall operate a segment of steel or plastic pipeline at a pressure that exceeds the lowest of the following:
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> 1. Design pressure of the weakest element in the segment, determined in accordance with Sections 3 and 4 of this administrative regulation.

It was Kentucky-Ohio s plan to have an operating pressure at 700 pounds. Based upon the design parameters and location of the pipeline, and the proposed maximum pressure at which the pipeline may operate, a pressure test had to be conducted at 1,050 psig and be held for at least 8 hours. Honn, in his testimony, proposed that an additional test be held at 1,740 psig for 2 hours.[19]

On May 19 and May 22, 1995, the pipeline was tested in accordance with applicable regulations to establish its MAOP. On May 22, 1995, Commission Staff observed the testing of a portion of the pipeline as indicated above. There were no failures reported, and the MAOP was established at 700 psig. Not only was the pipeline tested as required by regulations, it was further tested at 1,740 psig, or 2.6 times its MAOP, for two hours.[20]

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[19] T. E. at 20.

[20] Order dated June 2, 1999.

At the hearing of February 24, 1995, both Baldridge and Honn agreed that the purpose of a pressure test, once construction has been completed but prior to operating the pipeline, is to determine the integrity of the pipeline. Baldridge, in his testimony, may have said it best. When asked if there is anything else the Commission or Kentucky-Ohio could do to ensure the integrity of the material or workmanship of the pipeline, he replied:

> A. No, for the simple reason that, when it comes down to testing time, then that s it.[21]

Kentucky-Ohio has successfully completed tests that meet the minimum requirements of Commission pipeline safety regulations. The Commission finds that the pipeline has met the requirements of the regulations for its MAOP.

The quality of pipeline construction can also be determined prior to operation through a cathodic protection survey. Both Baldridge and Honn agreed the results of such a survey determine the extent to which coating on the pipeline has been damaged.[22] Commission regulations require a cathodic protection system designed to protect the pipeline in its entirety to be installed and placed in operation within one (1) year after completion of construction. During July of 1995, following completion of the pipeline, a close interval cathodic survey was performed on the pipeline. In a close interval cathodic survey, readings are taken at intervals or spaces, closer together than those required by Commission regulations. EMS filed a report that contains a copy of the survey conducted by Corrosion Technical Services of West Chester, Ohio, and

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[21] T. E. at 209-210.

[22] T. E. at 31, 91-92,191, 210-211.

indicates acceptable cathodic readings, except for interference between two stations on the line. It was determined this was caused by a rectifier of Columbia Gas Transmission Corporation (Columbia) where Kentucky-Ohio s new line crosses Columbia s existing line. A bond -- also referred to as an interference bond, which is a wire link -- was made between the Columbia line and the Kentucky-Ohio line. Acceptable readings were then obtained.[23]

Inspection During Construction

The Intervenors devoted considerable time to the number and presence of company inspectors during construction. Commission regulation 807 KAR 5:022, Section (4), requires that the utility have an inspector on site during construction, and the Commission's safety inspectors found no violations. Commission inspectors conducted inspections of this line during construction on a weekly basis.[24]

FINDINGS

The Commission, having considered the testimony and the evidence placed in the record of this case, finds that Phase II of the Kentucky-Ohio pipeline was constructed according to Commission pipeline safety regulations. 807 KAR 5:022 (1990).

[23] Letter from EMS to Smith, PSC, dated September 6, 1995.

[24] T. E. at 99-100.

Operational Safety

In three comprehensive safety inspections, Kentucky-Ohio has been found to be in substantial compliance with Commission pipeline safety regulations and to have corrected any deficiencies.

As was noted previously in this Order, a cathodic protection survey can be used to determine if the pipe coating has been damaged prior to placing the pipeline in operation. Likewise, a cathodic protection survey can determine if the pipe coating has been damaged. Damaged coating could result in corrosion to the pipe after it has been placed in the ground. It is for this reason Commission regulation 807 KAR 5:022, Section 10(3)2, requires that a cathodic protection system designed to protect the pipeline in its entirety be installed and placed in operation within one year after completion of construction. Once this system is in place, Commission regulation 807 KAR 5:022, Section 10(9)(a), requires that a cathodic protection survey be conducted once each calendar year. Commission safety inspectors have reviewed the results of these cathodic protection surveys.

In the January 14-15, 1998 comprehensive inspection, it was noted by the inspector that certain close interval surveys on the new high pressure line had not been conducted. This was in reference to surveys Kentucky-Ohio had proposed to conduct in addition to the cathodic protection survey performed as noted on page 10 of this Order. These surveys are over and above those required by Commission regulations. On July 17, 1998, Commission staff inspectors observed a partial close interval survey performed by Kentucky-Ohio. The staff report stated that only one inadequate reading was found. This reading was at an intersection with a Columbia pipeline. Kentucky-

Ohio and Columbia worked together to correct the problem. On July 31, 1998, Commission staff checked the spot again and this reading was found to be in compliance with Commission regulations. During the March 24 and 26, 1999 inspections, the same area was found to have an inadequate reading. On April 1, 1999, it was reported that the problem was at the intersection with the Columbia pipeline, and that it had resulted from the bonds being broken during a meter replacement. The bond was restored and an acceptable reading was obtained.[25]

The Commission finds that a cathodic protection system is in place as required by regulations and that cathodic protection surveys have been conducted as required by Commission regulations. These partial close interval surveys have indicated some minor problems have occurred that were subsequently corrected. Commission regulations require continued monitoring of the cathodic protection system for possible trouble spots.

While the Commission finds that the Kentucky-Ohio pipeline has been constructed and is presently being operated in conformity with Commission regulations, the Commission is also charged with the responsibility of determining safe and adequate practices and rules for a utility. KRS 278.280. The Commission finds that to maintain adequate vigilance for leaks, Kentucky-Ohio should increase its patrols for leaks on both Phase I and Phase II. These additional leak surveys will help ensure the continued integrity of the pipeline and will assist Kentucky-Ohio in providing for its safe and secure operation.

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[25] Appendix D of PSC Order dated June 2, 1999, Report from Kentucky-Ohio dated April 9, 1999.

The Commission finds that since part of this line was placed in the same ditch used by other utilities and laid along the right-of-way of public roads, Kentucky-Ohio should be required to maintain line markers conspicuously along this pipeline route.

The Commission finds that its Gas Pipeline Safety Staff should conduct annual, comprehensive inspections of Phase I and Phase II of the Kentucky-Ohio system.

The Commission, having considered the entire record of this case and being sufficiently advised, HEREBY ORDERS that:

1. The Kentucky-Ohio Phase II pipeline was constructed within Commission safety regulations.

2. Kentucky-Ohio shall patrol the entire system, both Phase I and Phase II, for leaks at least four times per year until further Orders of the Commission.

3. Kentucky-Ohio shall, within 10 days of the date of this Order, inform the Commission of the present operating pressure of this pipeline, both Phase I and Phase II. Kentucky-Ohio shall immediately inform the Commission of any plan to increase the maximum operating pressure of the Phase II line.

4. Kentucky-Ohio shall maintain line markers along both Phase I and Phase II in such a manner that a marker may be noticed at any spot along the route viewed in either direction.

5. Commission Gas Pipeline Safety Staff shall continue to conduct annual comprehensive inspections of Phase I and Phase II of the Kentucky-Ohio pipeline system.

6. This case shall be removed from the Commission s docket.

Done at Frankfort, Kentucky, this 29th day of October, 1999.

By the Commission

ATTEST:

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Executive Director