UNREPORTED - NOT PRECEDENTIAL

UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

---

No. 98-6178

---

PENN FUEL GAS, INC.,
Petitioner

v.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY;
CAROL M. BROWNER, Administrator,
United States Environmental Protection Agency,
Respondents

*NE Hub Partners, L.P.,
Intervenor-Respondent

*(Pursuant to Clerk's Order dated 11/19/98)

---

On Petition for Review of a Final Action of the
Environmental Protection Agency
(UIC Appeal Nos. 97-3 and 97-4)

---

Argued June 1, 1999

Before: SCIRICA and McKEE, Circuit Judges,
and SCHWARZER, District Judge*

(Filed June 24, 1999)

---

*The Honorable William W Schwarzer, United States District Judge for the Northern District of California, sitting by designation.

DAVID G. LEITCH, ESQUIRE (ARGUED)
KAROL L. NEWMAN, ESQUIRE
Hogan & Hartson
555 13th Street, N.W.
Washington, D.C. 20004-1109

Attorneys for Petitioner

ROBIN M. RICHARDSON, ESQUIRE (ARGUED)
United States Department of Justice
Environmental Defense Section
P.O. Box 23986
Washington, D.C. 20026-3986

JAMES H. CURTIN, ESQUIRE
Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

Attorneys for Respondents

SUSAN D. SAWTELLE, ESQUIRE (ARGUED)
Wiley, Rein & Fielding
1776 K Street, N.W.
Washington, D.C. 20006

Attorney for Intervenor Respondent

## MEMORANDUM OPINION

SCIRICA, Circuit Judge.

This is a petition for review of the Environmental Protection Agency's grant of Underground Injection Control permits to intervenor NE Hub Partners in connection with NE Hub's construction of a natural gas salt cavern storage facility in Tioga County, Pennsylvania. Petitioner Penn Fuel Gas, Inc. asks us to reverse the decision to grant the permits because (1) the permits authorizing Class I and Class III wells fail to establish an Area of Review that assures protection of underground sources of drinking water and protection of Penn Fuel's natural gas storage fields from gas or brine migration; (2) the Class I permit violates the regulatory prohibition against "the injection of fluids at pressures which will initiate or propagate fractures in the injection zone;" (3) the Class III permit does not require NE Hub to perform a "cement bond log," a test Penn Fuel claims is necessary to prevent well leakage; and (4) EPA's failure to address significant changed circumstances constitutes a lack of reasoned decisionmaking.

We have jurisdiction under section 1448(a)(2) of the Safe Drinking Water Act, 42 U.S.C. § 300j-7(a)(2). We will affirm an agency decision unless it is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." See 5 U.S.C. § 706(2)(A).

I.

To help achieve the Safe Drinking Water Act's goal of minimizing contamination of underground sources of drinking water, EPA administers the Underground Injection Control permit system. The UIC system allows underground injection of contaminants only if the contaminants will not violate EPA's Primary Drinking Water Standards or otherwise endanger human health. UIC regulations contain technical standards applicable to five different classes of injection wells. Class III wells include wells in which injection occurs "for extraction of minerals . . . including [s]olution mining of salts." ("Class III solution mining permits"). Class I wells include "industrial disposal wells . . . disposal wells which inject fluids beneath the lowermost formation containing, within one quarter mile of the well bore, an underground source of drinking water." ( "Class I brine disposal permits").

NE Hub is a limited partnership that applied for EPA, Federal Energy Regulatory Commission and Pennsylvania Department of Environmental Protection permits to develop a salt cavern natural gas storage facility in and through the subterranean Oriskany formation in Tioga County, Pennsylvania. Penn Fuel owns and operates underground natural gas storage facilities in the same area as NE Hub's Tioga facilities and is a competitor of NE Hub. Because Penn Gas feared NE Hub's activities might harm its facilities or might cause gas from Penn Gas facilities to contaminate

nearby underground drinking water. Penn Fuel submitted several comments to EPA during NE Hub's permit process, alleging flaws in NE Hub's project.

Despite Penn Fuel's comments, EPA in February 1997 issued Class I and Class III permits to NE Hub for the Tioga facility. The Class III (or solution mining) permit authorizes drilling up to ten wells in the Salina Salt formation, followed by solution mining, a process in which fresh water and other fluids are injected into the formation to dissolve the salt and create storage caverns, and extraction of the resulting brine solution. The Class I (or brine disposal) permit authorizes injection of the brine solution through up to 10 underground disposal wells into the underlying Oriskany Sandstone formation and other nearby geologic formations. EPA later remanded the permits for further review, but reissued them unchanged in August 1997.

In September 1997, Penn Fuel petitioned the EPA Environmental Appeals Board to review the grant of the permits. On May 1, 1998, the appeals board denied the petitions. Penn Fuel appealed the EAB decision to this court on July 17, 1998. EPA issued a Minor Modification to the Class I permit on September 8, 1998 in connection with a revision to NE Hub's FERC approvals.

There are four issues on appeal: (1) whether the EPA's "area of review" for the Class I well was arbitrary or capricious; (2) whether EPA's determination of the "maximum injection pressure" governing N.E. Hub's Class I well was arbitrary or capricious; (3) whether the EPA's failure to require a "cement bond log" on N.E. Hub's

Class III well was arbitrary or capricious; and (4) whether EPA's failure to address changed circumstances requires vacating the permits.

II.

A. The Area of Review

For Class I brine disposal wells, EPA's UIC regulations require the agency to determine a geographical "area of review" so that the impact of underground injections can be monitored and corrective action, if necessary, can be taken. EPA can calculate AOR either through the "fixed radius method" or the "zone-of-endangering method." Under the fixed radius method, the AOR is a quarter-mile radius around each well. EPA calculates the zone of endangering using several factors, including the anticipated life of the wells, "geologic parameters specific to the injection zone," the thickness of the injection zone and the flow rate at which the brine will be injected into the well. When the zone of endangering is less than the quarter-mile fixed radius, EPA requires permit applicants to use the fixed radius method.

In this case, NE Hub applied for a fixed radius AOR, but EPA rejected its request, stating it would use the zone of endangering method and asked NE Hub for additional information to determine the appropriate zone. After analyzing this information, EPA set the AOR as a quarter-mile radius beginning at the "entire disposal well facility boundary" rather than at the well itself.

Penn Fuel claims EPA's AOR was based on grossly deficient information as to reservoir fill-up. It argues that while EPA asked NE Hub to estimate the "reservoir fill-up over the project's life," NE Hub only provided EPA with a 1996 Brine Disposal Evaluation Report (the "SIMTECH Report") which assumed brine injection over only a three year period and the development of only two caverns, not the ten permitted by the permits. Penn Fuel notes that ten caverns will generate approximately 220 million gallons of brine and claims that various NE Hub reports conclude the brine disposal area can only handle between 19.16 million and 29.4 million barrels of brine over a five-year period.

Penn Fuel claims that an AOR which addresses the disposal of 29.4 million barrels of brine over a three-year period is inadequate for developing a Corrective Action Program or a Monitoring Program for a project that will produce over 200 million barrels over a ten-year period. It argues EPA's decision to grant a permit containing an inappropriate AOR violates its own rules and fails to protect Penn Fuel's storage field and nearby underground sources of drinking water. In addition, Penn Fuel asserts the permit does not require a Corrective Action Program or a Monitoring Program consistent with EPA regulations.

NE Hub asserts several reasons for rejecting Penn Fuel's challenge to the AOR. The first is that Penn Fuel failed to challenge the calculation of the AOR below and has therefore waived this argument. Second, NE Hub contends Penn Fuel's argument

that EPA did not consider how many wells NE Hub would construct ignores EPA's explanation that the AOR would not have been altered by the number of wells in use. Third, NE Hub maintains EPA's determination that it had sufficient information to calculate the AOR and its calculation of the AOR are both technical decisions entitled to deference.

EPA also responded to Penn Fuel's allegations. First, it maintains it based the AOR on data submitted by NE Hub and that the AOR is reasonable. Second, EPA contends it reasonably established a Corrective Action Program and a monitoring system. Third, EPA claims the appeals board recognized that it established an appropriate monitoring system specific to Penn Fuel's brine disposal wells and took into account Penn Fuel's storage area. In addition, EPA claims because Penn Fuel did not challenge the EPA's reliance on NE Hub's data in its comments on the AOR, it has waived this challenge.

After reviewing the parties' contentions and the record, we hold that EPA's determination of the area of review for the Class III wells was not arbitrary or capricious. The evidence establishes that EPA's decision was based on careful consideration of the evidence and was arrived at only after the agency rejected another method of calculating the proposed area of review.

B. The Maximum Injection Pressure

EPA regulations require Class I brine disposal wells to limit the pressure at which brine is injected into rock to a "maximum injection pressure" that assures "that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone." 40 C.F.R. § 146.13(a)(1). The regulations do not specify a method for calculating MIP but allow EPA regions to select the calculation method most appropriate to area geology. EPA Region III, the Region in which NE Hub's Tioga facility is located and therefore the Region that considered its application, bases MIP on Instantaneous Shut-In Pressure, which varies from site to site and is determined from site-specific fracture stimulation. In an ISIP test, fluid is injected into a geologic formation (called the "injection zone") until the rock fractures; injection then ceases and the pressure in the rock declines. The point at which pressure "levels off" is the ISIP, or the minimum pressure necessary to reopen an existing fracture. At ISIP, no new fractures will occur nor will any existing fractures lengthen. EPA claims the ISIP method of determining MIP was developed specifically for wells in Pennsylvania and explains that because ISIP is always less than fracture pressure, it is a conservative method for determining MIP.

A second way to determine ISIP is through the "Closure Pressure" (CP) method. Closure Pressure is the pressure necessary to hold open an existing fracture.

This method is used in EPA Region V, which includes Illinois, Wisconsin, Minnesota, Indiana, Ohio and Michigan.

Penn Fuel claims NE Hub's own studies confirm "fracturing of the injection zone is essential to its use as a brine disposal area." It notes that NE Hub's initial application for a Class II permit acknowledged that "[t]he proposed brine disposal by underground injection will require injection pressures above the formation fracture pressure in order to make the project economically feasible." It also claims the studies NE Hub filed with EPA admitted that fracturing the injection zone was necessary and that fractures would propagate as the project went on. In addition, Penn Fuel argues that EPA acknowledged the fracture issue in responses to Penn Fuel's comments and contends EPA should have scrutinized the fracture data and "selected [CP], the most conservative approach in calculating [fracture] pressure" instead of choosing ISIP, which Penn Fuel claims is the most liberal approach.

Penn Fuel also claims the MIP selected by EPA will permit both the initiation and propagation of fractures because it is too high. Penn Fuel argues that EPA should have used CP rather than ISIP in determining the MIP because in 1984 EPA issued "guidance" acknowledging CP is just as good a method and because a sister region uses only CP when determining MIP for Class I wells. Finally, Penn Fuel argues the permit's prohibition on initiating and propagating fractures is meaningless when the permit authorizes an MIP that will certainly initiate and propagate fractures.

NE Hub responds that this issue involves nothing more than a "battle of the experts" that should be resolved with some deference to EPA's scientific judgment in issuing the Class I permit. It adds that compliance with the Class I permit will not initiate or propagate fractures because the permit unambiguously prohibits the injection of fluids at pressures that would do so. Finally, it contends we should defer to the EPA Region III's practice of calculating MIP through ISIP because that method was developed with Pennsylvania geology in mind while CP, the method Penn Fuel advocates, was developed for and is used in the midwestern United States.

EPA claims that it properly computed the Tioga facility's MIP using the conservative ISIP method and data provided by NE Hub and Penn Fuel. It explains that the permit granted expressly includes the regulatory standard prohibiting the creation of new fractures and the propagation of existing ones, adding that NE Hub will be subject to civil fines if any fracturing occurs—even at injection pressures allowed by the permits. Finally, EPA claims Penn Fuel's reliance on NE Hub's application statements regarding fractures is misplaced because those statements were made in the context of an application for a Class II permit, which does allow fracturing.

EPA also maintains it was reasonable to reject the "closure pressure" method advanced by Penn Fuel. It claims CP was developed for an area in which fracturing is a much greater concern than it is in Pennsylvania, where many rock formations can typically support a high amount of injection pressure. In addition, EPA

claims ISIP has a successful track record in Pennsylvania, and has not, as far as the agency knows, caused a fracture in the 15 years it has been used. It also argues that, contrary to Penn Fuel's claim, Region V does not require MIP for all Class I wells to be determined via CP.

After review, we hold that Penn Fuel has not established that EPA's computation of the maximum injection pressure was arbitrary and capricious. At most, it has shown that EPA could have used a different and apparently less appropriate method of computing maximum injection pressure. Were we to require this alternative method on this record, we would be substituting our own judgment for the scientific expertise possessed by EPA. We have repeatedly refused to do so. See Stardyne, Inc. v. NLRB, 41 F.3d 141, 148 & n.6 (3d Cir. 1994) (stating that when agency chooses between two reasonable alternatives, court will not disturb its decision).

C. The Cement Bond Log

According to EPA, a well is constructed, like a telescoping spyglass, of segments (called "casings") of different diameter. The segment with the largest diameter is at the surface; the smallest is at the bottom. The outside of each casing is cemented to the surrounding rock to provide structural stability and to prevent the movement of fluid between the casing and the rock. A casing and its protective layer of cement are called a "cemented casing." A "cement bond log" is a test that allows monitoring of the cement bond's integrity. Maintaining a strong cement bond is important because EPA

regulations prohibit the issuance of a Class III solution mining permit to a well that allows the migration of contaminants into underground sources of water. See 40 C.F.R. §§ 144.1(g) and 146.32(a).

Penn Fuel claims the Class III solution mining permit is inadequate because EPA did not require a cement bond log on the intermediate string of casing (or 20-inch diameter casing) that passes through the Oriskany formation and Penn Fuel's storage area. Penn Fuel contends that running a cement bond log is required to ensure that gas will not leak from the Tioga Storage Field to underground sources of drinking water. It maintains that neither temperature logs nor cementing records will determine the adequacy of the cement bond and argues that a pressure shoe test provides information only on the quality of the cement bond on the base of the intermediate casing, not the bond at the level of the Oriskany, where gas would migrate out of the well.

Penn Fuel explains that a cement bond log is especially crucial for this project because the size of the casing and its penetration into the Tioga Storage Field will make it exceptionally difficult to obtain an adequate cement bond. It adds that the Federal Energy Regulatory Commission recognized the need for a cement bond log and conditioned its approval of the project on maintenance of a cement bond log. Penn Fuel claims that since the issuance of FERC's order, NE Hub has "submitted to FERC, EPA and PaDEP a revised cementing program that calls for performing cement bond logs" and concludes "[g]iven the overwhelming record evidence that such a log is essential, and NE

Hub's representation that it will perform a cement bond log on the 20-inch casing," it is clear error for EPA to fail to require NE Hub to run a cement bond log.

EPA claims its regulations require casing and cementing to prevent fluid migration but do not mandate the use of a cement bond log. In addition, it argues the casing construction conditions imposed on NE Hub adequately ensure that no fluid migration will occur. Furthermore, it asserts cementing records and temperature logs are reasonable methods to determine the integrity of the cement bond and are authorized by EPA regulations. It also maintains Penn Fuel has repeatedly acknowledged that when EPA issued its permits, cement bond logs were not available for intermediate size casings like the one at issue here. Finally, EPA contends that FERC's insistence on a cement bond log makes redundant and unnecessary any cement bond log requirement in its permit.

NE Hub contends the solution mining permit imposes conditions sufficient to ensure that contaminants will not migrate to underground sources of drinking water and discusses the conditions mentioned by EPA. It also notes the permits require it to conduct surface and subterranean "gamma ray, compensated density and caliper" tests before installing the casing and a "bond/variable density log or Ultra Sonic Image Log" after installation. NE Hub then challenges Penn Fuel's argument that the permits do not require a cement bond log test. NE Hub explains that the Ultra Sonic Image test is a

particular type of cement bond log tool that will perform the cement bond log testing Penn Fuel desires.

After review, we are not certain Penn Fuel has shown EPA failed to order a cement bond log. But if so, it has not demonstrated a cement bond log is so important that the failure to order one renders the EPA's decision arbitrary and capricious. Instead, the record shows the numerous required tests were chosen by EPA after considerable analysis and represent a choice that was not arbitrary or capricious. Requiring additional tests would represent prohibited "second-guessing" of EPA's scientific judgments. See Southwestern Pennsylvania Growth Alliance v. Browner, 121 F.3d 106, 117 (3d Cir. 1997).

D. Changed Circumstances

40 C.F.R. § 124.14(b) provides that if data submitted during a permit's public comment period "appear[s] to raise substantial new questions" concerning the permit, the EPA "may . . . prepare a new draft permit [and/or] reopen the comment period."

Penn Fuel claims that when EPA issued the final permits on August 28, 1997, it knew that the brine disposal area could not handle the brine the project would generate, that the authorized injection pressures "might very well" initiate or propagate fractures, that NE Hub had restricted the scope of its projects to two caverns, that NE Hub had agreed to a FERC prohibition against underground disposal of any brine, and that NE

Hub had withdrawn its PaDEP applications for all ten wells. Penn Fuel argues that knowledge of this information makes unreasonable EPA's assertion that it was unaware of any new information that would necessitate a change in either permit and requires that we vacate the permits.

NE Hub contends that its decision to apply to FERC and PaDEP for fewer permits than EPA granted is irrelevant to the reasonableness of EPA's decisions. It also argues that if the decision to build fewer wells than planned gives rise to the possibility of permit revocation, permit holders will be encouraged to pursue the environmentally hazardous policy of developing the full extent of their permits.

EPA maintains that reissuing the permits was reasonable because none of the alleged changes amounted to a significant change in the scope of the project. Permits are granted for meritorious applications. Whether wells are actually drilled is irrelevant. EPA also maintains that the size of the brine disposal area and the amount of maximum injection pressure were addressed by EPA when it issued the permits. Finally, EPA contends that it properly responded to Penn Fuel's arguments against reissuing the permits.

Most of Penn Fuel's contentions on this point restate arguments we have rejected previously. In addition, we do not believe NE Hub's intention to construct fewer wells than allowed presents "substantial new questions." NE Hub has pointed to no

evidence suggesting the construction of fewer wells undercuts the basis on which the permits were granted.

III.

For these reasons, we will deny the petition for review.

TO THE CLERK:

Please file the foregoing opinion.

/s/ Anthony J. Scirica
Circuit Judge

DATED: June 24, 1999