

124 FERC ¶ 61,042
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Joseph T. Kelliher, Chairman;
Sudeen G. Kelly, Marc Spitzer,
Philip D. Moeller, and Jon Wellinghoff.

Southern Star Central Gas Pipeline, Inc.

Docket No. CP07-89-000

ORDER ISSUING CERTIFICATE

(Issued July 16, 2008)

1. On February 23, 2007, Southern Star Central Gas Pipeline, Inc. (Southern Star) filed an application under section 7(c) of the Natural Gas Act (NGA) for a certificate of public convenience and necessity to authorize changes at its North Welda storage field in Anderson County, Kansas. Southern Star requests authorization to: (1) expand the North Welda storage field's certificated boundary and buffer zone, (2) install a natural gas compressor, and (3) reclassify the cap rock. Southern Star states that the purpose of the proposal is to protect the integrity of the field by expanding the field boundary both geographically and geologically and to collect gas that has migrated beyond the existing certificated field boundary. Southern Star also seeks additional property rights within the currently certificated boundary, as well as in the proposed expansion area. Finally, Southern Star proposes to increase the maximum certificated shut-in wellhead pressure to 433 pounds per square inch (psig) from 430 psig, and to decrease the storage field's maximum certificated capacity from 15.5 billion cubic feet (Bcf) to 13.3 Bcf.

2. As discussed below, we find that approval of aspects Southern Star's proposal is in the public interest to protect the integrity and maintain the performance and reliability of the North Welda storage field. However, Southern Star has not sufficiently supported its assertion that storage gas is migrating into all of the proposed expansion area. Accordingly, we will grant the requested authorizations, in part, subject to the conditions stated herein.

I. Background

3. Southern Star is a natural gas company that owns and operates seven natural gas storage fields in Kansas and one in Oklahoma.¹ Storage operations at the North Welda storage field, which was in service prior to enactment of the NGA, were authorized by the Commission's predecessor, the Federal Power Commission, in 1943.² The North Welda field has a maximum certificated storage capacity of approximately 15.5 Bcf, including a certificated working capacity of 4.4 Bcf. The field's current certificated wellhead shut-in pressure is 430 psig. Southern Star states that the maximum deliverability for the field is approximately 108,000 dekatherms per day (Dth/day). Southern Star seeks to expand the field's certificated boundaries, reduce the maximum certificated capacity to 13.3 Bcf and increase the wellhead shut-in pressure to 433 psig. The field's working capacity of 4.4 Bcf would not be reduced.

4. In addition to the subject North Welda storage field, Southern Star's Welda storage complex includes the South Welda storage field and the Colony storage field. The North Welda field is bordered by Southern Star's South Welda storage field on its south boundary, and the South Welda storage field is bordered on its south boundary by Southern Star's Colony storage field. Gas flow for all three fields is controlled by compression at the existing 25,607 horsepower (hp) Welda compressor station. All three storage fields are located within Anderson County, Kansas with some acreage in Allen County, Kansas.

5. The three storage fields in the Welda complex are geologically connected by the Colony Sand (also referred to as the Colony Sandstone) formation, which is laterally continuous as a narrow "shoestring" across the Welda storage complex. Southern Star's storage gas is stored within the Colony Sand formation in the three storage fields.

6. Southern Star states that the Colony Sand was originally developed as a gas production field in the early 1920s and has been utilized for gas storage by Southern Star and its predecessors since 1934. The certificated boundary of the North Welda field currently includes approximately 6,660 acres, 69 injection/withdrawal wells, 6 observation wells, and approximately 12.55 miles of storage lateral lines, which use compression at the Welda compressor station to inject and withdraw storage gas. As a

¹ Southern Star is a Delaware corporation authorized to do business in the States of Arkansas, Colorado, Delaware, Kansas, Kentucky, Missouri, Nebraska, Oklahoma, Texas, and Wyoming.

² See *Cities Service Gas Company*, 4 FPC 471 (1943).

result of its ongoing monitoring efforts and the requirements of Kansas statutes and regulations,³ Southern Star states that it contracted with Netherland, Sewell and Associates, Inc. (NSA) to perform an integrated geologic and engineering study of the Colony Sand formation at the North Welda field to identify specific storage field characteristics.

7. The Colony Sandstone certificated for Southern Star's storage of gas is the lowest formation of the Upper Cherokee Group, which begins approximately 800 feet below the surface. The Upper Cherokee Group also includes other formations. Above the Colony Sandstone are the Lower and Upper Squirrel Sandstones. The Squirrel Sandstones are heterogeneous in nature and comprised of laterally discontinuous sand lenses with limited horizontal and vertical distribution. Between the Colony Sandstone and the Lower Squirrel Sandstone and between the Lower Squirrel Sandstone and the Upper Squirrel Sandstone are shale and siltstone strata. The heterogeneous Squirrel Sands also include significantly impermeable strata of shale and siltstone with the sand lenses.

8. The shale and siltstone should form a non-permeable barrier and, along with the Squirrel Sandstone layers in the Upper Cherokee, are presently classified as the confining layer or cap rock above the Colony Sandstone in which gas is stored. However, Southern Star states that NSA's study, dated December 2006, revealed that gas has migrated both vertically and horizontally into the laterally discontinuous Squirrel Sand formation overlying the Colony Sand formation. The NSA study submitted by Southern Star reports that as a result of both ongoing crude oil operations since the 1950s and gas storage well completion practices of the late 1970s, pathways have been created for storage gas to migrate upward from the Colony Sandstone into the oil-bearing Squirrel Sandstone of the Upper Cherokee. The NSA report states that the upward migration of storage gas has occurred over a fairly significant area where the Squirrel Sandstone formations overlie the Colony Sandstone reservoir. While the report indicates some lateral movement of storage gas that has migrated up from the Colony Sandstone, the

³ In 2002, the Kansas Corporation Commission (KCC) adopted regulations pursuant to Kan. Stat. Ann. § 55-1, 115(a) governing underground porosity storage of natural gas. Kan. Admin. Regs. § 82-3-1000 *et seq.* The regulations establish natural gas storage regulations for storage fields in Kansas. These regulations require a geologic and hydrogeologic evaluation of storage fields, monitoring and reporting requirements, and periodic inspections and testing of wells. Southern Star states that it is now operating under provisional permits from the KCC pending the acquisition of additional acreage to expand the North Welda storage field's certificated boundaries and to provide an additional buffer zone, as requested in this application.

report states that the heterogeneity of the Squirrel Sandstone and the general lack of permeability in the Squirrel Sand formations are major limiting factors for lateral movement of storage gas that has migrated upward into the Squirrel Sandstone.

II. Proposal

9. To prevent the migration of storage gas from the North Welda storage field, Southern Star proposes to: (1) expand the field's certificated storage boundary and buffer zone and acquire certain property rights; (2) acquire additional specific property rights within the certificated boundary; (3) reclassify the cap rock; and (4) install compression.

10. Southern Star's proposed lateral expansion of the certificated storage boundary and buffer zone at North Welda would add approximately 1,240 additional acres (expansion area) along the northeast and southeast portions of the currently certificated boundary of the North Welda storage field.⁴ Southern Star seeks certificate authority that will enable it to acquire property rights in the proposed lateral expansion area to include all wells, oil and gas leases, oil, gas, mineral rights and interests (including but not limited to all working interests and royalty interests), surface rights, easements, gas storage rights (including but not limited to gas storage development rights and rights to inject, withdraw, and store gas), and all property that may be adequate to examine, prepare, maintain, and operate such underground natural gas storage facilities. Southern Star avers that acquisition of these rights is essential to protect the integrity of the storage field. Southern Star states that its acquisition of these rights would limit oil exploration efforts and the drilling of wells by shallow oil producers in the area of the storage field, thus limiting the likelihood that storage gas could be "produced" with the oil.

11. Within the currently certificated North Welda storage boundary, Southern Star asserts that it currently owns all gas, gas rights and privileges, as well as storage rights and privileges from the surface to 1,050 feet below the surface. However, Southern Star does not own all of the oil rights.

12. Because Southern Star believes that its gas storage field has been compromised due to oil well development activities above the Colony Sandstone in which its gas is

⁴ Southern Star states that the proposed 1,240 acre of lateral expansion area consists of two parcels. The first parcel of 1,160 acres is located adjacent to the northeast edge of the currently certificated North Welda boundary, and the second parcel of 80 acres is located at the southeast edge of the boundary. The second parcel would be aligned with the northeast border of the adjacent South Welda storage field.

stored, it seeks certificate authority that will enable it to acquire all wells, oil and gas leases, oil, mineral rights and interests (including but not limited to all working interests and royalty interests), surface rights, easements, and all property that may be required to adequately examine, prepare, maintain, and operate underground natural gas storage facilities on five leases within the currently certificated boundary.⁵ Southern Star asserts that acquisition of the aforementioned rights and interests will provide Southern Star with complete control of all minerals on these five leases, as well as control and ownership of Squirrel wells #1 through #5,⁶ with the ability to connect certain wells as part of Southern Star's plan for recovering upwardly migrated storage gas and returning it to storage in the Colony Sandstone.⁷

13. To further limit the possibility of oil production activities recovering migrated storage gas, Southern Star seeks to redefine the cap rock for the North Welda storage field as the interval from the base of the Ft. Scott Limestone (which lies above the Upper Cherokee) to the top of the Pawnee Limestone.⁸ As proposed, the new cap rock will consist of shale and dense limestone with an average thickness of more than 90 feet across the site and with no porosity. As described above, Southern Star asserts that the 100-foot thick section of the Upper Cherokee currently classified as the cap rock over the Colony Sandstone has become compromised due to oil producers' activities to stimulate production, including formation fracturing. These activities have allowed gas to migrate upward from the Colony Sandstone into the Upper and Lower Squirrel Sandstones in the Upper Cherokee, from whence it is being brought to the surface along with native oil in

⁵ The five oil leases Southern Star seeks to obtain in the certificated boundary include the Lytle Lease, Summers Lease, Cameron Lease, Kellstadt Lease, and Rocky Roost Triangle Lease. Southern Star's application at pp. 6-7.

⁶ Southern Star states that Squirrel well #6 has been acquired, but a portion of the easement needed to lay a lateral line to well #6 has not been acquired.

⁷ The purpose of Southern Star's gas recovery plan is to collect storage gas from the Upper Cherokee including the Squirrel Sands and recycle the gas back into the Colony Sandstone. The plan's ultimate goal is to terminate oil production in this area in order to protect the integrity of the North Welda storage field. *See* Response No. 8 of Southern Star's June 20, 2007 response to staff's June 5, 2007 data request.

⁸ *See* NSA report figure 8.5.

the Squirrel Sandstones, and vented. Southern Star states that no wells will be developed to inject gas into the Squirrel Sands and that the Squirrel Sands will only be used for recovery of migrated storage gas, not for gas storage.

14. Finally, Southern Star seeks to install and operate an AJAX DPC-180 skid mounted natural gas compressor package with building and auxiliary facilities on a 150 foot by 150 foot lot in Anderson County, Kansas. Southern Star states that the compressor will be used as part of the gas recovery plan designed to capture and re-inject the storage gas back into the main storage reservoir of the Colony Sandstone. Additional facilities at the compressor site will include two measurement settings (one measuring fuel gas and one measuring gas recovered from the Squirrel Sand oil wells), a filter separator, and a waste tank. Southern Star seeks Commission approval for a range of horsepower to be installed from 110 to 288 base horsepower (bhp). Southern Star avers that after the rental unit becomes operational, the unit may need to be traded for higher or lower compression as flow characteristics may dictate, and the actual unit initially installed will be dependant upon the units that are available from the supplier at that time.

15. Additionally, Southern Star states it will be installing certain minor facilities under its Part 157 blanket certificate, issued in Docket No. CP82-479-000,⁹ in order to recover and recycle storage gas. These facilities will include approximately 3.5 miles of 4-inch diameter suction storage lateral, 300 feet of 4-inch discharge lateral, and three oil/gas separators with collection tanks. The recovery/recycle system will be configured by connecting the lateral to the six existing oil wells, Squirrel wells #1 through #6, in the Squirrel Sands. The six oil wells will be converted to pressure recovery wells only. The gas recovered by the six Squirrel wells will flow through the compressor, into the discharge lateral, then into the existing storage field lateral system near the North Welda field's existing injection/withdrawal (I/W) well #58. Three oil/gas separators will be installed, one serving Squirrel wells #1 and #2, one serving Squirrel wells #3, #4, and #5, and one serving Squirrel well #6.

16. Southern Star states that the six Squirrel wells will act as pressure relief wells, such that gas will only be withdrawn, when appropriate, to allow for gas to move back into the storage reservoir in the Colony Sand. Southern Star asserts that it will never inject gas into any of the six Squirrel wells and that it has no intention to use the Squirrel Sands as a storage reservoir. Southern Star states that acquisition of certain property rights, as previously described in both the expansion area and the currently certificated field, the redefinition of the cap rock, and the installation of facilities necessary for gas

⁹ *Cities Service Gas Company*, 20 FERC ¶ 62,592 (1982).

recovery operations will serve to protect and maintain the performance and reliability of Southern Star's North Welda storage field. Southern Star states that it will finance the estimated project costs of \$3,503,000 with internally generated funds.

17. Further, Southern Star seeks authorization to revise the maximum certificated wellhead shut-in pressure of the North Welda storage field from its currently certificated pressure of 430 psig to 433 psig, the maximum certificated wellhead shut-in pressure of the adjacent Colony storage field. Southern Star asserts that this proposed change would simplify operations at the Welda compressor station, located at the South Welda storage field, which controls compression for the entire Welda storage complex.

18. Southern Star also seeks to restate its total maximum certificated storage capacity from the current level of 15.5 Bcf to 13.3 Bcf. Southern Star avers that NSA's analysis of the storage field's apparent pore volume (APV) revealed that a downward adjustment is warranted. Southern Star asserts that the current working gas capacity of the field, the current deliverability of the field, and the certificated service level to its customers, will not be affected by either the revision of the maximum certificated shut-in wellhead pressure or revision of the maximum certificated storage capacity.

III. Interventions and Protest

19. After due notice by publication in the *Federal Register* on March 1, 2007 (72 Fed. Reg. 10,200), timely, unopposed motions to intervene were filed by Missouri Gas Energy, a division of Southern Union Company, Aquila, Inc. d/b/a Aquila Networks, and Atmos Energy Corporation.¹⁰ The Kansas Corporation Commission (KCC) and the Missouri Public Service Commission (MPSC) filed timely notices of intervention.¹¹

20. Kansas Gas Service, a Division of ONEOK, Inc., filed a late motion to intervene. The Commission finds that granting the motion to intervene out of time will not delay, disrupt, otherwise prejudice this proceeding, or place an additional burden on existing parties. Therefore, for good cause shown, we will grant the motion.¹²

¹⁰ Timely, unopposed motions to intervene are granted by operation of Rule 214(d) of the Commission's Rules of Practice and Procedure. 18 C.F.R. § 385.214(d) (2008).

¹¹ Having filed timely notices of intervention, the KCC and MPSC are parties to the proceeding pursuant to Rule 214(a)(2) of the Commission's Rules of Practice and Procedure. 18 C.F.R. § 385.214(a)(2) (2008).

¹² 18 C.F.R. § 385.214(d) (2008).

21. The KCC filed a protest with its notice of intervention in which it expressed concern that Southern Star's proposal did not provide adequate assurance that storage gas will not migrate to the Squirrel formation where it may be vented by oil operators and lost. The KCC also expressed concern that Southern Star's proposal did not adequately provide for the recapture and reinjection into storage of migrated gas.
22. On February 14, 2008, the KCC withdrew its protest based on its conclusion that the gas recovery system proposed by Southern Star at North Welda mitigates its economic and safety concerns regarding the potential for venting gas in this area.

IV. Discussion

23. Southern Star's proposal would expand the certificated boundary and operational conditions of its jurisdictional North Welda facility used for the storage of natural gas transported in interstate commerce subject to the jurisdiction of the Commission; therefore, the proposal is subject to the requirements of subsections (c) and (e) of section 7 of the NGA.

A. Certificate Policy Statement

24. The Commission's September 15, 1999 Certificate Policy Statement provides guidance as to how we will evaluate proposals for certificating new construction.¹³ It established criteria for determining whether there is a need for a proposed project and whether the proposed project will serve the public interest. The Certificate Policy Statement explains that in deciding whether to authorize the construction of major new pipeline facilities, we balance the public benefits against the potential adverse consequences. Our goal is to give appropriate consideration to the enhancement of competitive transportation alternatives, the possibility of overbuilding, subsidization by existing customers, the applicant's responsibility for unsubscribed capacity, the avoidance of unnecessary disruptions of the environment, and the unneeded exercise of eminent domain in evaluating new pipeline construction.

25. Under this policy, the threshold requirement for pipelines proposing new projects is that the pipeline must be prepared to financially support the project without relying on subsidization from its existing customers. The next step is to determine whether the applicant has made efforts to eliminate or minimize any adverse effects the project might

¹³ *Certification of New Interstate Natural Gas Pipeline Facilities*, 88 FERC ¶ 61,227, at 61,748 (1999); *order on clarification*, 90 FERC ¶ 61,128 (2000); and *order on clarification*, 92 FERC ¶ 61,094 (2000) (Certificate Policy Statement).

have on the applicant's existing customers, existing pipelines in the market and their captive customers, or landowners and communities affected by the route of the new pipeline. If residual adverse effects on these interest groups are identified after efforts have been made to minimize them, we will evaluate the project by balancing the evidence of public benefits to be achieved against the residual adverse effects. This is essentially an economic test. Only when the benefits outweigh the adverse effects on economic interests will we proceed to complete the environmental analysis where other interests are considered.

26. The Commission finds, as discussed below, that Southern Star's proposed compression facilities and, as discussed below, its acquisition of some of the additional property rights that it seeks are necessary to recapture and prevent further migration of gas from the North Welda storage field. Further, decreasing the maximum certificated capacity and increasing the maximum certificated shut-in wellhead pressure of the field will serve to establish appropriate operating parameters. Southern Star states that the proposal will not decrease working gas capacity, result in increased revenues, or have a significant effect on operating expenses. In its June 20, 2007 data response, Southern Star stated that the estimated \$3,503,000 total costs associated with the proposed facilities will be included in its storage property, plant, and equipment accounts and will be used to derive the overall storage cost of service and associated rates for providing storage services in its next general rate case proceeding.

27. The Policy Statement notes that projects designed to improve service for existing customers, by replacing existing capacity, improving reliability (as proposed in the instant proceeding), or providing flexibility, are for the benefit of existing customers. Increasing the rates of the existing customers to pay for these kinds of improvements is not a subsidy and, therefore, the Policy Statement provides for a presumption that a company will be allowed to roll the costs of such projects into its generally applicable rates a future rate proceeding.¹⁴

28. Additionally, since the proposed project only affects Southern Star's system, Southern Star's proposal will not have an adverse impact on other pipelines or their customers. Further, while the Commission does not agree that all of the additional property interests that Southern Star seeks to acquire are necessary, as discussed below, the success of its gas recovery plan does depend on its acquisition of certain property interests, and no landowners or owners of other potentially affected property interests

¹⁴ *Certificate Policy Statement*, 88 FERC at 61,746, *Southern Star Central Gas Pipeline, Inc.*, 115 FERC ¶ 61,219 (2006) and 123 FERC ¶ 61,138 (2008).

have protested Southern Star's proposal. In any event, we find that the benefits of Southern Star's proposals that are approved by this order outweigh any potential adverse impacts to landowners or holders of other property interests.

B. Expansion of the Certificated Storage Boundary and Buffer Zone

29. The Commission grants jurisdictional storage field operators additional certificate authority to revise the boundary of storage fields when the applicant can demonstrate, with engineering and geological data, that such authorizations are required by the public convenience and necessity in order to improve the operation of the storage fields or to maintain their integrity.¹⁵ In deciding whether public convenience and necessity require approval of a company's request to enlarge its storage boundary due to gas migration problems, a material consideration is whether the storage reservoir has expanded and whether the company's estimations of the reservoir and protective boundaries are reasonable.¹⁶ Here, our analysis also considered whether storage gas has migrated from the storage reservoir, into a separate and distinct reservoir, and whether Southern Star's estimation of migration and protective boundaries are reasonable.

30. The Commission's staff thoroughly analyzed Southern Star's proposal and issued a series of data requests seeking additional information to supplement the record.¹⁷ Based upon the information provided by Southern Star, the upper portion of the Upper Cherokee presently classified as the cap rock for Southern Star's certificated storage area in the Colony Sandstone at North Welda is no longer providing an impermeable barrier to prevent upward migration of storage gas. Therefore, the Commission is convinced that the success of Southern Star's gas recovery plan requires: (1) reclassification of the cap rock so that it is above the Upper Cherokee and (2) granting Southern Star certificate authority to (a) acquire the remainder of the Upper Cherokee which includes the Squirrel Sandstone into which its storage gas is upwardly migrating so that it becomes part of Southern Star's certificated storage facility; (b) acquire all existing oil wells in

¹⁵ See *Williams Natural Gas Company*, 83 FERC ¶ 61,120 (1998); *Williams Natural Gas Company*, 77 FERC ¶ 61,150 (1996); *ANR Pipeline Company*, 76 FERC ¶ 61,263 (1996), *reh'g denied*, 78 FERC ¶ 61,122 (1997); and *Columbia Gas Transmission Corporation*, 35 FERC ¶ 61,345 (1986).

¹⁶ *ANR Pipeline Company*, 76 FERC ¶ 61,263 at 62,346.

¹⁷ Southern Star has responded to eight Commission staff data requests. The responses were filed on February 23, 2007, June 20, 2007, July 20, 2007, August 15, 2007, August 29, 2007, October 1, 2007, October 30, 2007, and November 1, 2007.

accordance with its Gas Recovery Plan¹⁸ which enter the Squirrel Sandstone above the existing certificated boundary of the North Welda storage field; (c) acquire all mineral and leasehold interests within the proposed lease acquisition areas which include the right to produce oil from the Squirrel Sandstone above the existing certificate boundary of the North Welda storage field; and (d) install compression facilities and convert certain specific oil wells to gas recovery wells as described in its application. Granting Southern Star certificate authority to acquire such property interests could prevent the continuation of oil production activities above the gas storage area and, as a result, the venting of migrated gas and will enable Southern Star to capture migrated gas and re-inject it into storage in the Colony Sandstone.¹⁹

31. In view of the above considerations and the discussion below, the Commission is not persuaded that maintaining the integrity of the North Welda storage field also requires expanding the certificated boundary of the North Welda storage field laterally to encompass an approximately 1,240 additional acres. Granting Southern Star such certificate authority would enable it to obtain by eminent domain two separate parcels of land, 1,160 acres to the northeast and 80 acres to the southeast border of North Welda.

32. As stated above, Southern Star submitted a report produced by NSA to support its proposal to mitigate storage migration.²⁰ A basic understanding of the geology in North Welda's currently certificated boundary and proposed expansion area is essential in evaluating the gas migration issues presented in this proceeding.²¹ NSA states, and our analysis confirms, that the Colony Sandstone is an assemblage of interbedded sands and shales deposited as a series of stacked channel-fill, overbank, and meandering deposits. The North Welda storage reservoir, consisting of the Colony Sandstone, is entirely contained within the currently certificated boundary. The Colony Sandstone continues south of the certificated boundary of North Welda where it is also the active storage

¹⁸ Response No. 8 of Southern Star's June 20, 2007 data response details the components of its Gas Recovery Plan.

¹⁹ A July 20, 2007 data response included a report prepared by Discovery Capital, L.L.C. assessing the economic evaluation of oil assets both within the certificated boundary and the expansion area. Within the certificated boundary, the Lytle, Cameron and Rocky Roost leases are listed as "Non Producing" and "Non-Economic"; the Summers and Kellstadt leases are listed as "Non-Economic."

²⁰ See Exhibit Z-1 of Southern Star's application.

²¹ See NSA report, figure 8.5.

reservoir for the South Welda and Colony storage fields. Overlying the Colony Sandstone are the Lower and Upper Squirrel Sandstones (Squirrel Sands), which are found sporadically inside and outside the certificated boundary. The Lower Squirrel Sand is present in a relatively large area in the south-central portion of North Welda, which is where Squirrel well #2 is located.

33. Four smaller “islands” of the Lower Squirrel are present within the certificated boundary and overlie the Colony Sandstone. The Upper Squirrel is only present above one of these areas. An extension of the Lower Squirrel from South Welda also extends into the extreme southeast corner of North Welda, but does not overlie the Colony Sandstone in North Welda.

34. In the south-central portion of North Welda, three discontinuous Upper Squirrel “islands” directly overlie the Lower Squirrel Sandstone, where the Lower Squirrel Sand directly overlies the Colony Sandstone.²² A significant deposit of the Upper Squirrel Sandstone is present in a small area within the certificated boundary and overlies the Colony Sandstone in portions of sections 27 and 22.²³ The Upper Squirrel extends northward through section 22,²⁴ where the Colony Sandstone is not present below, and into the proposed expansion area where it is present in sections 14, 15, 22, and 23.²⁵ However, neither the Lower Squirrel nor the Colony Sandstone is present in these expansion areas.

35. The Commission’s staff evaluated the likelihood that gas, after migrating upward from the Colony Sandstone into either the Lower or Upper Squirrel Sands, could then migrate laterally to the proposed expansion areas where oil producers’ operations could

²² Injection well #58 and Squirrel well #1 are completed in two of the three “islands.”

²³ Squirrel wells #3, #4 and #5 are located in the northern portion of section 27 where the Upper Squirrel overlies the Colony Sandstone.

²⁴ Section 22 is located due north of section 27; section 23 is east of section 22.

²⁵ Section 15 is located north of section 22; section 14 is located north of section 23 and east of section 15.

capture and vent the gas.²⁶ For gas to migrate laterally to the proposed additional 1,160 acres of expansion area, the gas would need to first move upward into the overlying Squirrel Sands, and then migrate northeasterly approximately 4,750 feet to the nearest oil well which Southern Star avers demonstrates that storage gas is present in the proposed expansion area.²⁷

36. The NSA report included numerous statements testifying to unlikely lateral or horizontal migration of gas through the Squirrel Sands beyond the currently certificated boundary of the North Welda storage area.²⁸ The NSA report stated that “the lack of permeable Squirrel Sandstone deposition is a major limiting factor of gas movement, as is the general heterogeneity of the Squirrel sand lenses which provide a minimal pathway for lateral movement of gas.... Because of the heterogeneous nature of the Squirrel Sandstones, lateral movement has been somewhat limited. Storage gas that has moved upward into the Squirrel Sandstone typically does not appear to travel over any great distance as it is produced locally as part of the oil and waterflooding operations.... If storage gas were to migrate back into the Squirrel Sandstone at significant rates, it will likely occur as a near wellbore phenomenon with gas being drawn quickly into certain high connectivity Squirrel Sandstone producing wells.” Thus, Southern Star’s consultant has concluded that lateral migration of storage gas into the proposed lateral expansion area is unlikely.

37. Given NSA’s comments, our analysis of the data submitted, and shut-in wellhead data supporting gas presence in a low percentage of wells within the proposed lease acquisition areas within the certificated boundary, it appears that gas associated with oil production is relatively confined as a near wellbore phenomenon and therefore horizontal migration is not likely. This phenomenon is evident within the certificated boundary

²⁶ Staff’s analysis focused upon several factors including: the geologic characteristics of the Squirrel Sandstone, anecdotal information provided by operators, gas compositional analysis, and the potential presence of an oil field whose production may include associated gas, which has a different composition from that of storage gas.

²⁷ A gas sample was collected and analyzed from Well Benjamin 14 on the Benjamin-Otto Lease in section 22.

²⁸ As previously stated, the Upper Squirrel Sandstone is the only Squirrel Sand present in the north expansion area and Southern Star’s storage reservoir, the Colony Sandstone, does not underlie the Upper Squirrel in this area.

where the Squirrel Sands directly overlie the Colony Sandstone, yet documentation of storage gas presence was seen in only nine of 116 wells in the proposed lease acquisition area for which data was submitted.

38. To support the contention that storage gas is also migrating laterally after migrating upward, NSA's report states that wells "that produce more than a slight hydrocarbon vapor or show any significant wellhead pressure (gas-filled wellbore) are considered to be producing storage gas."²⁹ NGA's report states that Southern Star provided "anecdotal information" from Squirrel Sandstone oil producers operating outside the certificated boundary of the North Welda storage field which would indicate that lateral migration of storage gas is occurring. However, this assertion is not supported by the data response filed by Southern Star on July 20, 2007 in response to staff's request for documentation of the anecdotal information. In that data response, Southern Star submitted an internal memo dated October 5, 2006 (October 5, 2006 memorandum) highlighting survey results of visual field inspections and phone discussions with oil operators who have wells located in the proposed lateral expansion area. The approximate northern halves of sections 22 and 23 and the approximate southern halves of sections 14 and 15 comprise the proposed expansion area.³⁰

39. The October 5, 2006 memorandum, focused on six oil operators in the area of concern: C-S Oil Co., Adams Oil, Caldwell Enterprises, B&B Oil, Miller Oil, and an operator identified as "Sec 23." Of the data submitted, only three wells were reported to have gas presence. C-S Oil Co. (operator Claron Benjamin) reported a low volume of gas mingled with oil production from one well, and a pressure of approximately 250 psi on a shut-in well in section 14. Samples were obtained from both wells on May 3, 2005, and are identified as BK1-1 and BK2.³¹ The C-S Oil leases reported no other gas evident in section 13 or 14.

40. Adams Oil reported no gas in wells in section 13, which is not a part of the proposed expansion area.

41. Caldwell Enterprises reported no gas in section 14 and no gas in section 13.

²⁹ NSA study at 5.

³⁰ All of the sections referenced in Southern Star's proposal are located in T21S-R19E.

³¹ On September 28, 2005, a second gas sample was obtained from the shut-in well, this sample is referred to as BK1-2.

42. B&B Oil reported a low volume of gas mingled with oil production in one well in the northeast quarter of section 22, and a gas sample was collected from this well for analysis.³² B&B Oil also reported that no other gas is evident in B&B Oil leases in section 15 or 22.

43. Miller Oil reported no gas in section 13.

44. The final entry in the October 5, 2006 memorandum, only identified as “Sec 23,” reports no gas in section 23 and no active leases. The October 5, 2006 memorandum, only reported three wells as having gas presence, BK1 and BK2 in section 14 and the B&B well in section 22. Additionally, in the July 20, 2007 data response, Southern Star provided pressure information on another well, Benjamin #14, located in the southwest quarter of section 14 in the Benjamin Knight Lease.³³ Therefore, the data presented and our analysis indicates that four wells within the proposed expansion area may potentially contain storage gas.

45. The July 20, 2007 data response also included a map titled “Requested Expansion Acreage Northeast Area” (Expansion Acreage Map), which included a tabular listing of the leases within the proposed expansion area, the individual wells within the respective leases, the section, township, and range in which each well is located, and the type of completion of the well (i.e., oil, dry hole, injection).³⁴ Our analysis of the Expansion Acreage Map demonstrated that for gas to migrate laterally within the Squirrel Sands beyond currently certificated boundaries to the nearest of the four wells identified as having gas presence in the October 5, 2006 memorandum, the gas would have to migrate approximately 4,750 feet through “the Squirrel sand lenses which provide a minimal pathway for lateral movement of gas”³⁵ to the B&B well near the northeast corner of section 22.³⁶ The Expansion Acreage Map shows that the theoretical migration path

³² The gas sample is identified as the B&B well in the gas compositional analysis.

³³ The information provided indicates an original shut-in pressure of 253 psi taken on September 1, 2004.

³⁴ The leases included in the Expansion Acreage Map are the Benjamin Knight, Rogers Guy, Benjamin-Otto, Gregg, and Benjamin Leonard leases.

³⁵ NSA study at 3.

³⁶ Southern Star’s August 29, 2007 data response clarifies that the B&B well is also identified as the Benjamin-Otto Lease well. Benjamin #14 in the northeast quarter of section 22, T21s, R19e as seen on the Expansion Acreage Map.

would require the storage gas to travel past a number of wells within the proposed lateral expansion area in section 22 that are part of the Gregg and Benjamin-Otto Leases.³⁷ It is unlikely migration could follow such a path without evidence of some gas presence in the oil wells along the path.

46. Seven oil wells identified on the Expansion Area Map are located within approximately 700 feet of the North Welda storage field's existing certificated boundary and in the theoretical gas migration path. Of these seven wells, three are identified as "dry holes."³⁸ Another well, Benjamin #9, is listed as an Enhanced Oil Recovery (EOR) Injection well and appears to provide service for nearby Benjamin #10.³⁹ NSA asserts that this type of oil recovery mechanism, employed at Benjamin #9, allows for gas associated with active oil wells to be "produced locally as part of the oil and waterflooding operations" and that any gas present in the area "does not appear to travel over any great distance."⁴⁰ This theory appears to support the oil operators' comments from the October 5, 2006 memorandum, indicating that other than the B&B well in the northeast corner of section 22, "[n]o other gas is evident in the B&B Oil leases to the Northeast of the field in section 15 or 22-21s-19e."

47. Therefore, our analysis of the data presented does not support the presence of storage gas along the theoretical migration pathway to the proposed lateral expansion area. Although gas presence has been documented in the B&B well in section 22 and the Benjamin Knight Lease wells (BK1, BK2, and Benjamin #14) in section 14, the gas compositional analysis of these wells shows that the gas from the B&B well is more closely correlated to the gas from wells BK1 and BK2, rather than to storage gas.

³⁷ Southern Star's August 29, 2007 data response stated that B&B Oil Recovery is the operator of the Benjamin-Otto Lease and the Guy Rogers Lease within the proposed expansion area. B&B Oil, the operator of the Benjamin-Otto Leases in section 22, only identified the B&B well as having gas presence in section 22 or in section 15 located north of section 22. The twelve Gregg Lease wells located mostly in the southwest portion section 22 in the expansion area are identified as "abandoned oil well" or "dry hole" on the Expansion Area Map.

³⁸ The dry holes include Gregg 11, Mayfield 1, and Neff & Decker 1, all in an area documented in the October 5, 2006 memorandum as having no gas presence.

³⁹ A June 20, 2007 data response identified an injection well in section 22, T21s, R19e owned and operated by B&B Oil Recovery.

⁴⁰ NSA study at 5.

Typically, natural gas that is native to producing formations, including crude oil production formations with associated gas, has a different composition when compared to stored natural gas. For example, stored natural gas might generally have a higher methane content and predictable minor amount of other gases because pipeline quality gas starts with various native gases that are processed into marketable, pipeline quality gas.

48. NSA performed a gas compositional analysis to compare one well known to contain storage gas, Squirrel well #1⁴¹ and three wells in the expansion area reported to have gas presence, BK1, BK2, and the B&B well.⁴² In its assessment, NSA states, “[t]he comparative gas compositional data appear to indicate that the Benjamin Knight lease wells and the B&B lease well producing from the Squirrel Sandstone contain relatively small, if any, concentrations of storage gas... .”⁴³ The Commission’s analysis of the data submitted leads us to concur with NSA’s statements.

49. Based upon our analysis of the data in the record, including, the October 5, 2006 memorandum, data responses, and NSA’s comments regarding the limited potential for lateral gas migration within the Squirrel Sands, the Commission finds that Southern Star has not presented evidence to support the presence of its storage gas within the proposed lateral expansion area. Since Southern Star’s assertion of lateral migration of storage gas within the Squirrel Sands is unsupported by the record, its proposed lateral expansion to

⁴¹ Response No. 5 of Southern Star’s November 1, 2007 data response indicates that Squirrel well #1 is alternatively referred to as Summers 2A as it appears in the NSA report.

⁴² Two samples were collected from BK1, identified as BK1-1 and BK1-2.

⁴³ NSA study at 6. A July 20, 2007 data response identified the Bush City oil field to possibly be present within the northern expansion acreage, which could have gas associated with oil production. A separate July 20, 2007 data response included a report prepared by Discovery Capital, L.L.C. assessing the economic evaluation of oil assets both within the certificated boundary and the expansion area. This report indicated that the Benjamin Knight Lease operated by C&S Oil Company was a “proved producing” field from the Bush City Shoestring having produced 54,620 barrels of oil to date from the Simpson reservoir. The Expansion Area Map lists eight “Oil” wells completed beginning in 1981 from the Benjamin Knight Lease. The other leases evaluated in the Discovery Capital, L.L.C. report were identified as being in the Colony-Welda field, with the exception of one “un-named” field.

include the 1,160 acre area located north of the currently certificated boundary in portions of sections 14, 15, 22, and 23 is not reasonable. Therefore, we will not approve Southern Star's proposal to expand into this area, nor any of the rights it seeks within this area.⁴⁴

50. Nor will we approve Southern Star's proposal to expand the certificated boundary of the North Welda storage field to include the 80 acre parcel located near the southeast corner of North Welda in section 35. The Upper and Lower Squirrel Sands are present only to a very limited degree in this proposed expansion 80-acre expansion area,⁴⁵ and Southern Star has presented no evidence of gas migrating laterally into this proposed expansion area, nor any other compelling data to support expansion into this area.

C. Upward Migration of Gas into the Squirrel Sands Formation within the Currently Certificated Boundary

51. Southern Star also seeks to acquire additional property rights and interests above the currently certificated North Welda storage field boundary. Southern Star asserts that it currently owns all gas, gas rights and privileges, as well as storage rights and privileges from the surface to 1,050 feet below the ground surface. However, Southern Star does not own the oil rights above the Colony Sandstone, the formation in which its gas is stored. Southern Star states that the storage field has been compromised due to development activities by certain oil producers. In order to minimize those activities and mitigate storage gas loss, Southern Star proposes to acquire all wells, oil and gas leases, oil, mineral rights and interests (including but not limited to all working interests and royalty interests), surface rights, easements, and all property that may be required to adequately examine, prepare, maintain, and operate underground natural gas storage facilities on five leases within the currently certificated boundary.

52. Southern Star states that its gas recovery plan is dependent on these additional rights in order to enable Southern Star to recover gas from the Squirrel Sands, through Squirrel wells #1 through #5 within the certificated boundary, to recycle back into the Colony Sandstone. After obtaining the requested rights, Southern Star intends to end oil production in the Squirrel Sands, to protect the integrity of the storage field. Based upon

⁴⁴ Southern Star has acquired the working interest in the Benjamin Knight Oil and Gas Lease. Proposed Squirrel well #6 is located within this lease and we will not authorize it to be an active component of the gas recovery plan.

⁴⁵ The total acreage of the Squirrel Sands present appears to be less than 5 acres. We note that the Colony Sandstone, in which gas can be stored, is not present beneath this proposed 80-acre expansion area.

the limited data presented within the existing certificated boundary, the Commission finds that certain oil wells are producing upwardly migrated storage gas and we will grant Southern Star certificate authority to acquire and convert these oil wells to gas recovery wells.

53. In an October 1, 2007 data response, Southern Star submitted shut-in wellhead pressures from wells on the Lytle, Summers, and Cameron Leases within the currently certificated area and asserted that it knows of no other potential source of natural gas that could be moving into this area encompassing the Lytle, Summers, Cameron, Kellstadt, and Rocky Roost Leases at the measured gas pressure, other than storage gas from the Colony Sandstone. Additionally, Southern Star provided a table listing 116 oil wells active within the lease areas based on well completion reports filed with Kansas state agencies.⁴⁶ Pressure data was only provided for eight wells within the proposed Lytle, Summers, and Cameron lease acquisition areas for the years 2005 through 2007.⁴⁷ Three of the eight wells exhibited zero pressure to a trace of pressure.⁴⁸ An October 30, 2007 data response provided five pressure measurements for a ninth well, Squirrel #5.⁴⁹ The average pressure for Squirrel wells #1, #2, #3, #4, and #5 included in the gas recovery plan was 247 psi.

54. NSA states that “[b]ecause of the heterogeneous nature of the Squirrel Sandstones, lateral movement [of gas] has been somewhat limited. Storage gas that has moved upward into the Squirrel Sandstones typically does not appear to travel over any great distance as it is produced locally as part of the oil and waterflooding operations.”⁵⁰ The shut-in pressures provided by Southern Star indicate nine wells within the lease area as

⁴⁶ Southern Star states that in some cases, oil and gas operators have not filed the required well completion reports with the KCC or the Kansas Geological Society (KGS).

⁴⁷ The eight wells include: Squirrel well #1, Squirrel well #3 (Lytle #2), Squirrel well #4 (Lytle #13), Summers well 181, Summers well 179, Cameron well 175, Cameron well 4, and Cameron well 183.

⁴⁸ These wells were Summers well 181, Summers well 179, and Cameron well 175. Thirty measurements were provided for Summers well 181; 29 of the 30 readings were recorded as “trace” or “0,” one pressure measurement was 63 psi.

⁴⁹ Squirrel well #5 is located on the Lytle lease, and was formerly referred to as Lytle #5.

⁵⁰ NSA study at 5.

containing gas. When this data is assessed in conjunction with NSA's statements, it appears that gas migration may occur from the Colony storage reservoir upward into the Squirrel Sandstones. However, the migration appears to be very limited in nature and appears to be most pronounced in those particular oil wells that Southern Star proposed to include in its gas recovery system.

55. In its October 1, 2007 data response, the KCC provided information regarding Squirrel well #1, as well as Squirrel well #2.⁵¹ In its response, the KCC states that wellhead flowmeter pressure testing of Squirrel wells #1 and #2 was conducted on December 2, 2003. This testing indicated that Squirrel well #1 vented at 216 Mcf/d and Squirrel well #2 vented at a rate greater than 440 Mcf/d. However, when Southern Star submitted its November 1, 2007 data response, it was not aware of any gas venting at the North Welda storage field. The Commission is satisfied that Squirrel wells #1 and #2 contain storage gas, as well as concentrations of native gas.

56. Southern Star states that Squirrel wells #1 through #5 will act as pressure relief wells, such that gas will only be withdrawn when appropriate to allow for gas to move back to the original storage reservoir. Southern Star asserts that it will never inject gas into any of the five authorized wells and that it has no intention of ever using the Squirrel Sands as a storage reservoir. Southern Star states that the redefinition of the cap rock and the installation of facilities necessary for gas recovery operations will serve to protect and maintain the performance and reliability of Southern Star's North Welda storage field.

57. We are satisfied that Southern Star's proposal to convert Squirrel wells #1 through #5 to gas recovery wells is appropriate to recover gas that has migrated from the Colony storage reservoir into the Squirrel Sands. Thus, we will approve the acquisition and conversion of these oil wells to gas recovery wells.

58. The upper portion of the Upper Cherokee, including the Squirrel Sands, is currently classified as the cap rock for Southern Star's gas stored in the Colony Sandstone in the lower portion of the Upper Cherokee. However, as discussed above, because this portion of the Upper Cherokee has been compromised, it can no longer constitute an effective cap rock for Southern Star's storage gas in the Colony Sandstone below. Therefore, Southern Star also seeks to reclassify the cap rock for the North Welda storage field as the interval from the base of the Ft. Scott Limestone (top of the Cherokee Group) to the top of the Pawnee Limestone. The reclassification of the cap rock would now include the Squirrel Sands as part of the certificated gas storage reservoir.

⁵¹ Southern Star identifies Summers well 8P as Squirrel #2 in its October 1, 2007 data response.

Reclassification of the cap rock in this manner and granting certificate authority for Southern Star to include all of the Upper Cherokee in its certificated gas storage formation will enable Southern Star to gain the necessary control of the Squirrel Sands to recover its migrated stored gas and prevent it from being captured and vented by oil producers. However, Southern Star emphasizes that no wells will be developed to inject gas into the Squirrel Sands and that the Squirrel Sands will not be used for gas storage operations.

59. We approve the reclassification of the cap rock as the interval from the base of the Ft. Scott Limestone (top of the Cherokee Group) to the top of the Pawnee Limestone. Our approval is conditioned upon Southern Star developing no wells to inject gas into the Squirrel Sands and the Squirrel Sands not being used for gas storage operations.

60. In addition to seeking reclassification of the cap rock and the right to acquire and convert certain oil wells to gas recovery wells, Southern Star seeks to acquire, as described above, all rights and interests, including surface rights, in five oil leases above the currently certificated North Welda storage reservoir. Oil is being economically produced from the Squirrel Sands as a result of water flooding techniques used by oil operators. However, this oil production technique has contributed to compromising the present cap rock including the Squirrel Sands, and further water flooding will exacerbate the migration of storage gas from the Colony Sandstone into the Squirrel Sands above. To be able to prevent further oil production activities, Southern Star must be able to acquire the oil interests from the mineral owners as well as the lease rights. If Southern Star were only to acquire and hold the lease rights to oil production in the Squirrel Sandstone, Southern Star would be required to produce the oil and pay the mineral owners a royalty or the lease would expire and the mineral owners would be able to grant a lease to another operator, which would result in further oil production activities like those that those have already compromised the storage field. Thus, we will authorize Southern Star to gain all rights and interests in the remainder of the Upper Cherokee which includes the Squirrel Sandstone, including both mineral owners' and lessees'/operators' interests in the five oil leases in order to ensure that there will be no further oil production activities above the existing storage reservoir of the North Welda storage field which could lead to increased upward migration of storage gas from the Colony Sandstone below.

61. As discussed above, Southern Star's application proposes how it plans to use certain specific oil wells in its gas recovery system and this order grants certificate authority for the conversion of those wells. However, Southern Star's application indicates that it also may want to use some of the other oil wells in its gas recovery system. Southern Star has detailed the procedures by which these additional wells will be assessed for potential acquisition in its Gas Recovery Plan. Further, Southern Star will be

acquiring oil wells for which it will have no use. In view of these considerations, Southern Star must file, within 90 days, a plan pursuant to the prior notice procedures of its Part 157 blanket certificate notifying the Commission of the oil wells it plans to plug, convert to observation wells, or connect to its gas recovery system.⁵² Southern Star must meet the total cost requirements of section 157.213, the conversion or plugging of the wells cannot be segmented to meet the cost requirements of this section. Southern Star must consult with the U.S. Fish and Wildlife Service, the Kansas State Historic Preservation Officer, the Kansas Department of Wildlife and Parks, and the KCC to develop and implement procedures to avoid effects to threatened or endangered wildlife or historic properties that might result from plugging or converting these wells.

62. Finally, we will authorize Southern Star's proposal to install and operate an AJAX DPC-180 skid mounted natural gas compressor package that will be used as part of the gas recovery plan designed to capture and re-inject the storage gas back into the main storage reservoir of the Colony Sandstone.⁵³ Southern Star seeks approval for a range of horsepower to be installed from 110 to 288 bhp. We will authorize a unit of up to 288 bhp in order to accommodate Southern Star's proposal within the currently certificated boundary.

63. In view of the above considerations, the Commission will authorize Southern Star to: (1) reclassify the cap rock for its North Welda storage field so that the certificated storage facility includes the entire Upper Cherokee Group, including the Squirrel Sandstones, above the currently certificated boundary, as discussed above; (2) install compression facilities up to 288 hp; and (3) to convert and use Squirrel wells #1, #2, #3, #4, and #5 for withdrawal use only. Therefore, the Commission is convinced that the success of Southern Star's gas recovery plan requires: (1) reclassification of the cap rock so that it is above the Upper Cherokee and (2) granting Southern Star certificate authority to (a) acquire the remainder of the Upper Cherokee which includes the Squirrel Sandstone into which its storage gas is upwardly migrating so that it becomes part of Southern Star's certificated storage reservoir; (b) acquire all existing oil wells in accordance with its Gas Recovery Plan which enter the Squirrel Sandstone above the existing certificated boundary of the North Welda storage field; (c) acquire all mineral and leasehold interests in the proposed lease acquisition areas which include the right to produce oil from the Squirrel Sandstone above the existing certificate boundary of the North Welda storage field; and (d) install compression facilities and convert certain

⁵² 18 C.F.R. § 157.213(b).

⁵³ The gas recovery plan includes Squirrel wells #1, #2, #3, #4 and #5 within the currently certificated area.

specific oil wells to gas recovery wells as described in its application. Granting Southern Star certificate authority to acquire such property interests will prevent the continued venting of migrated gas as the result of oil production operation and will enable Southern Star to capture or migrated gas and re-inject it into storage in the Colony Sandstone.

D. Proposal to Increase the Maximum Certificated Shut-In Wellhead Pressure and to Decrease the Maximum Certificated Capacity.

64. Southern Star proposes to increase the maximum certificated shut-in wellhead pressure to 433 psig from 430 psig, and to decrease the storage field's maximum certificated capacity from 15.5 Bcf to 13.3 Bcf. Southern Star avers that the slight increase in the certificated shut-in wellhead pressure to 433 psig aligns with the maximum certificated shut-in wellhead pressure of 433 psig at the Colony storage field and that a common maximum certificated shut-in wellhead pressure would simplify operations at the Welda compressor station. We agree, and thus authorize this increase.

65. Southern Star also requests authorization to revise the total certificated capacity downward from 15.5 Bcf to 13.3 Bcf by adjusting the base gas capacity. Southern Star states that NSA recommended the revision due to its analysis of a recent Apparent Pore Volume (APV) study. NSA states that using annual material balance-based estimates of APV averaged over five and ten years during gas storage operations, gas-in-place volumes ranging from 13.2 to 13.4 Bcf were calculated at the maximum shut-in wellhead pressure limit. NSA further states that any storage gas that migrated into the Squirrel Sandstone is not seen in the annual APV calculations; such gas is not readily connected to the Colony Sandstone and is likely produced off and or pools in relatively small quantities. We are satisfied that the reduction in base gas, based upon NSA's APV study, will not adversely affect storage operations, or in meeting its contractual obligations to its shippers at North Welda. Working gas capacity will remain at 4.4 Bcf and the base gas will be reduced from 11.4 Bcf to 8.9 Bcf for a total certificated capacity of 13.3 Bcf and the proposed changes will not result in increased revenues for Southern Star.

V. Environmental Analysis

66. On April 30, 2007, we issued a Notice of Intent to Prepare an Environmental Assessment for the Proposed North Welda Storage Field Expansion Project and Request for Comments on Environmental Issues (NOI). In response to our NOI, we received a comment from the U.S. Fish and Wildlife Service (FWS) on a potential project impact to a federally listed endangered plant species.

67. Our staff prepared an environmental assessment (EA) for Southern Star's proposal. The EA addresses geology, soils, mineral resources, vegetation, wildlife,

threatened and endangered species, cultural resources, water resources, wetlands, land use, air quality, noise, residential impacts, reliability, safety, and alternatives as well as the FWS's comments. The EA concludes that if constructed in accordance with Southern Star's application, approval of this proposal would not constitute a major Federal action significantly affecting the quality of the human environment.

68. The FWS commented that a federally listed threatened plant species, Mead's milkweed, may occur within the vicinity of the proposed project facility. The EA noted that Mead's milkweed is commonly associated with undisturbed, native prairie. The construction and operation of the proposed project would only affect pasture and old vegetative communities. The Commission staff determined that since no prairie would be affected by the construction and operation of the proposed project, there would be no adverse effects to Mead's milkweed.

69. Any state or local permits issued with respect to the jurisdictional facilities authorized herein must be consistent with the conditions of this certificate. The Commission encourages cooperation between interstate pipelines and local authorities. However, this does not mean that state and local agencies, through application of state or local laws, may prohibit or unreasonably delay the construction or operation of facilities approved by this Commission.⁵⁴ Southern Star shall notify the Commission's environmental staff by telephone or facsimile of any environmental noncompliance identified by other Federal, state, or local agencies on the same day that such agency notifies Southern Star. Southern Star shall file written confirmation of such notification with the Secretary of the Commission within 24 hours.

70. The Commission on its own motion received and made a part of the record in this proceeding all evidence, including the application and exhibits thereto, submitted in support of the authorizations sought herein, and upon consideration of the record,

The Commission orders:

(A) A certificate of public convenience and necessity pursuant to section 7(c) of the Natural Gas Act is issued to Southern Star in Docket No. CP07-89-000 for its North Welda storage field, authorizing it to: (1) install up to 288 hp of compression; (2) connect Squirrel wells #1, #2, #3, #4, and #5 into its gas recovery system; (3) increase

⁵⁴ See, e.g., *Schneidewind v. ANR Pipeline Co.*, 485 U.S. 293 (1988); *National Fuel Gas Supply v. Public Service Commission*, 894 F.2d 571 (2d Cir. 1990); and *Iroquois Gas Transmission System, L.P., et al.*, 52 FERC ¶ 61,091 (1990) and 59 FERC ¶ 61,094 (1992).

the maximum shut-in wellhead pressure to 433 psig; (4) decrease the maximum certificated capacity to 13.3 Bcf; and (5) reclassify the cap rock for the North Welda storage field as the interval from the base of the Ft. Scott Limestone (which lies above the Upper Cherokee) so that the certificated storage facility includes the entire Upper Cherokee Group, including the Squirrel Sandstones. The certificate authority granted in this Ordering Paragraph shall include authority for Southern Star to acquire all existing oil wells in accordance with its Gas Recovery Plan which enter the Squirrel Sandstone above the existing certificated boundary of the North Welda storage field and to acquire all mineral and leasehold interests within the proposed lease acquisition areas which include the right to produce oil from the Squirrel Sandstone above the existing certificate boundary of the North Welda storage field.

The authorizations issued in Ordering Paragraph (A) are conditioned on Southern Star's:

- (1) constructing and the facilities described herein within one year of the date of the order in this proceeding as required by section 157.20(b) of the Commission's regulations;
- (2) complying with all regulations under the NGA including, but not limited to, Parts 154 and 284, and paragraphs (a), (c), (e), and (f) of section 157.20 of the Commission's regulations;
- (3) complying with the environmental conditions in the Appendix attached to this order;
- (4) conducting an annual inventory verification study;
- (5) not utilizing the Upper or Lower Squirrel formations for the injection of natural gas;
- (6) converting and using the Squirrel wells #1, #2, #3, #4, and #5 wells for withdrawal use only; and,
- (7) reporting of all drillers' reports, well logs, mechanical integrity compliance reports, and well abandonment and plugging reports, if required pursuant to KCC regulations.

(B) Within 90 days, Southern Star must file a plan pursuant to the prior notice procedures of its Part 157 blanket certificate notifying the Commission of how it proposes to utilize each of the oil wells it acquires. Southern Star shall consult with the U.S. Fish and Wildlife Service, the Kansas State Historic Preservation Officer, the

Kansas Department of Wildlife and Parks, and the KCC to develop and implement procedures to avoid effects to threatened or endangered wildlife or historic properties that might result from the plugging, conversion or other activities involving these wells.

(C) Southern Star's proposal to expand its certificated boundary laterally to include an additional 1,240 acres and to acquire certain rights within such proposed lateral expansion area is denied.

(D) Southern Star shall notify the Commission's environmental staff by telephone and/or facsimile of any environmental noncompliance identified by other federal, state, or local agencies on the same day that such agency notifies Southern Star. Southern Star shall file written confirmation of such notification with the Secretary of the Commission within 24 hours.

By the Commission.

(S E A L)

Kimberly D. Bose,
Secretary.

APPENDIX

As recommended in the EA, this authorization includes the following conditions:

1. Southern Star shall follow the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests) and as identified in the EA, unless modified by the Commission order. Southern Star must:
 - a. request any modification to these procedures, measures, or conditions in a filing with the Secretary of the Commission (Secretary);
 - b. justify each modification relative to site-specific conditions;
 - c. explain how that modification provides an equal or greater level of environmental protection than the original measure; and
 - d. receive approval in writing from the Director of the Office of Energy Projects (OEP) before using that modification.
2. The Director of OEP has delegation authority to take whatever steps are necessary to ensure the protection of all environmental resources during construction and operation of the project. This authority shall allow:
 - a. the modification of conditions of the Commission order; and
 - b. the design and implementation of any additional measures deemed necessary (including stop work authority) to assure continued compliance with the intent of the environmental conditions as well as the avoidance or mitigation of adverse environmental impact resulting from project construction and operation.
3. **Prior to any construction**, Southern Star shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, environmental inspectors, and contractor personnel will be informed of the environmental inspector's authority and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs **before** becoming involved with construction and restoration activities.
4. Southern Star shall file a noise survey with the Secretary no later than 60 days after placing the proposed compressor station in service. If the noise attributable to the operation of all equipment authorized by this order at the compressor station at full load exceeds a day night sound level (L_{dn}) of 55 decibels on the A-weighted

scale (dBA) at any nearby noise sensitive areas (NSAs), Southern Star shall file a report on what changes are needed and shall install the additional noise controls to meet that level **within 1 year of the in-service date**. Southern Star shall confirm compliance with the L_{dn} of 55 dBA requirement by filing a second noise survey with the Secretary **no later than 60 days** after it installs the additional noise controls.