Pennsylvania: Keystone to Americas Energy Future

TO ALL INTERESTED PARTIES:

RE: Marcellus Shale En Banc Hearing on PUC Jurisdictional Issues.
Docket no. 1-2010-2163461

The Pennsylvania Independent Oil and Gas Association (PIOGA) is pleased to participate in the En Banc Hearing on PUC Jurisdictional Issues. PIOGA is the newly formed entity created by the merger of IOGA and POGAM. IOGA had been an active participant at the PUC on producer issues and PIOGA will continue in that role.

The Marcellus Shale in Pennsylvania is providing the Commonwealth with a unique opportunity to move toward independence from natural gas supplies outside of the state's borders. A fall 2008 study from Penn State University predicts that by 2014 Pennsylvania gas production will be capable of meeting all of the needs of our citizens versus the traditional twenty-five percent of supply from conventional gas development in the state.

We are pleased to see that the Commission is interested in how to best promote this resource in the Commonwealth. By minimizing the need for long line firm contracts from the Southwest, we believe that Pennsylvania natural gas supply will be clearly the low cost supply to Pennsylvania's residential, commercial and industrial customers.

We are however concerned that the focus on the Marcellus Shale becomes an opportunity or excuse for creating an unnecessarily increased regulatory burden on the producing industry in Pennsylvania. As IOGA, we have experienced issues in the past where we believe the Commission has attempted to exceed its statutory authority on our industry. We do not wish to see that happen again. We would point to the lawsuit by IOGA against the Commission over assessments on Natural Gas Suppliers which in our opinion (as well as Commonwealth Court's) was in clear conflict with the Natural Gas Competition Act.

Our industry is very focused on pipeline safety. We believe that the federal law on pipeline safety is adequate to protect the public. In reality, the legal liability of pipeline accidents and the public relations nightmare of having a pipeline accident is far more effective on companies to do a safe job of constructing and maintaining than anything any regulatory agency can accomplish.

Historically the producing industries record of safety has if anything exceeded the safety record of regulated pipelines. Much of this is a result of the rural nature of much of our operations as well as the decline in pressure over the life of a producing field. We believe this is the primary reason production lines are excluded in federal pipeline regulation.

PIOGA is neutral over whether the DOT or Pennsylvania PUC handles the inspection of pipelines under DOT regulation. That is assuming that the PUC would regulate those lines for safety under the same standards that the federal program currently regulates, and does not seek to expand beyond those regulations. We understand the need to fund inspections and as long as we see reasonable costs, we would be willing to accept a fee on pipelines to cover this funding. However, we strongly believe this should be based on size and mileage of pipeline, not pipeline revenues.

PIOGA believes that the Commission's duty and authority to regulate these lines be limited to pipeline safety only. We are opposed to the Commission setting rates, establishing exclusive service territories, or any other utility style regulation. Contrary to the opinion of the Commission and some in the legal profession, we believe that transport of producer's gas via gathering systems to a regulated pipeline is not "serving the public".

The Public Utility Code should be used for its original intent – to regulate the rates of monopoly distribution service to the consumer. Transportation of third party gatherers or producer owned gathering lines should not be considered as providing a service to the public, when we the producers are the group being served.

Rates for gathering lines, location of lines, and sizing and planning lines should be through negotiation between producer and gatherer with no involvement of any jurisdictional agency. To do anything else we delay, discourage and prolong the time it will take to provide the full benefit of local gas supply to the consumer.

During the eighties, the Commission had required each utility to have a lower transportation rate for local gas than for interstate supplies. We would like to see that position resume if the Commission wishes to promote the local supply of natural gas.

As an organization whose members producing conventional gas greatly outnumber our Marcellus producers, we too are concerned about crippling conventional production. We are against any regulatory or taxation scheme that disadvantages our producers. We are however concerned that the tendency of the General Assembly and the various regulatory bureaucracies in the state to obsess about regulating the Marcellus producers and single those producers out for excessive regulation of any kind.

PIOGA's conventional producers will have to compete with this new supply as we have already been competing with interstate supply. We intend to compete on a level playing field, not one that either advantages or disadvantages the Marcellus producers.

We thank the Commission for the opportunity to speak today and are open at this time to your questions.

Louis D. D'Amico
President and Executive Director
Pennsylvania Independent Oil and Gas Association.
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Wexford, PA 15090

Guidelines for the Definition of Onshore Gas Gathering Lines

API RECOMMENDED PRACTICE 80
FIRST EDITION, APRIL 2000

American Petroleum Institute

Helping You Get The Job Done Right.SM

Guidelines for the Definition of Onshore Gas Gathering Lines

Upstream Segment

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Suggested revisions are invited and should be submitted to the general manager of the Upstream Segment, American Petroleum Institute, 1220 L Street, N.W., Washington, D.C. 20005.

FOREWORD

This recommended practice was prepared by the Industry Coalition on Onshore Gas Gathering Line Definition (Coalition) that included representatives from the following industry associations:

Alaska Oil and Gas Association (AOGA)

American Petroleum Institute (API)

Appalachian Producers

Association of Texas Intrastate Natural Gas Pipelines (ATINGP)

Colorado Oil and Gas Association (COGA)

Domestic Petroleum Council (DPC)

Gas Processors Association (GPA)

Independent Petroleum Association of America (IPAA)

Independent Oil and Gas Association of New York (IOGA-NY)

Independent Oil and Gas Association of Pennsylvania (IOGA-PA)

Independent Oil and Gas Association of West Virginia (IOGA-WV)

Interstate Natural Gas Association of America (INGAA)

Kansas Petroleum Council (KPC)

Kentucky Oil and Gas Association (KOGA)

Louisiana Mid-Continent Oil and Gas Association (LMOGA)

Ohio Oil and Gas Association (OOGA)

Oklahoma Mid-Continent Oil and Gas Association (OMOGA)

Permian Basin Petroleum Association (PBPA)

Texas Independent Producers and Royalty Owners Association (TIPRO)

Texas Oil and Gas Association (TXOGA)

Virginia Oil and Gas Association (VOGA)

Western States Petroleum Association (WSPA)

In any subsequent revisions of this recommended practice, API intends to solicit input from the Coalition stakeholders, including state and federal regulators.

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Guidelines for the Definition of Onshore Gas Gathering Lines

1 General

1.1 PURPOSE AND SCOPE

This industry standard provides a functional description of onshore gas gathering pipelines for the sole purpose of providing users with a practical guide for determining the application of the definition of gas gathering in the federal *Gas Pipeline Safety Standards, 49 CFR Part 192*, and state programs implementing these standards.

The definition of "gas gathering" reflects the varied nature of the gas industry throughout the country. Because of the regional and operational diversity within the gas industry, additional guidance—either within the regulation or through incorporation of a recognized industry standard—is necessary to ensure appropriate and consistent application of the gas gathering line definition. This Recommended Practice was developed as such a standard through the joint efforts of the regulated community.

1.2 BACKGROUND

1.2.1 A definition for "gathering line" was adopted as part of the federal *Gas Pipeline Safety Standards* in August 1970 to implement the Natural Gas Pipeline Safety Act of 1968. The Office of Pipeline Safety (OPS) issued a Notice of Proposed Rulemaking (Docket No. OPS-31, Notice 74-7; 39 Fed. Reg. 34569) on September 20, 1974, to clarify this definition. Notice 74-7 was subsequently withdrawn because OPS determined that many words and phrases in the proposal were open to varied interpretation. On September 25, 1991, OPS again published a Notice of Proposed Rulemaking (Docket No. PS-122, Notice 1; 56 Fed. Reg. 48505) to revise the regulatory definition of "gathering line." A significant number of comments that opposed adoption of the definition as proposed were filed with the agency.

1.2.2 The Pipeline Safety Act of 1992 (Pub. L. 102-105), enacted October 24, 1992, and amended in 1996, directed the Department of Transportation (DOT) to define the term "gathering line" in its gas pipeline safety regulations and to consider the merit of revising pipeline safety regulation of such lines. On March 11, 1999, DOT issued a Request for Comments that announced an electronic public discussion forum and subsequent written comment period to provide an opportunity for public input to allow DOT to decide whether and how to modify the definition and regulatory status of gas gathering lines for the purposes of pipeline safety regulation. (Docket No. RSPA-98-4868, Notice 1; 64 Fed. Reg. 12147.) The official comment period closed October 7, 1999.

1.2.3 The Coalition determined that an API Recommended Practice should be published to document the industry standard developed during the comment process. In development of this Recommended Practice, comments and recommendations filed in the current and previous dockets—together with relevant discussions over the past 15 years with DOT, its Technical Gas Pipeline Safety Standards Committee, and state regulators—were considered.

1.3 HOW TO USE THIS RECOMMENDED PRACTICE

1.3.1 In addition to the text of the definitions of "gathering line" (2.2), "production operation" (2.3), and supplemental terms (2.4), the following information constitutes an integral part of these definitions:

- "Decision Trees" (Appendix A)
- Representative Applications (Appendix B)

1.3.2 The "Decision Trees" in Appendix A are graphical, logical representations of the "gathering line" definition. They were developed to help users understand and apply this definition.

1.3.3 The "Representative Applications" in Appendix B include both narrative and schematic descriptions of typical gas gathering systems and production operations. Every effort has been made to define critical terms, but the illustrated applications make the meaning much clearer than would otherwise be the case. The applications provide an extremely useful tool to help people with varying levels of experience with gas gathering to correctly and consistently interpret the definitions in this Recommended Practice. These real-life applications clarify the intent of the definitions with respect to many different facility configurations.

Note: These illustrations are not intended to describe every possible onshore gas gathering system or production operation configuration. They simply represent some typical examples for facilities located throughout the United States and the manner in which the "gas gathering" and "production operation" definitions are applied to those facilities.

2 Definitions

2.1 GENERAL DISCUSSION

In accordance with general industry practice, the definition of "gathering line" is based on the function performed by that type of pipeline. The pipeline safety definition of "gathering line" in 2.2 describes specified gathering line "endpoints" to

delineate the end of the gathering function. This style of definition is necessary to accommodate the wide variety of gas gathering pipeline configurations throughout the country. This Recommended Practice also defines "production operation" in 2.3 (to describe where the gathering function begins) and various other common terms (2.4) used in the gathering line and production operation definitions. In addition, there is a discussion of alternatives considered in development of the definition of gathering line (2.6).

2.2 DEFINITION OF ONSHORE GATHERING LINE

"Gathering Line"

(a) means any pipeline or part of a connected series of pipelines used to

(1) transport gas from the furthermost downstream point in a production operation to the furthermost downstream of the following endpoints, which physically may have intermediate deliveries (to other production operations, pipeline facilities, farm taps, or residential/commercial/industrial end users) that are not necessarily part of the gathering line:

(A) the inlet of the furthermost downstream natural gas processing plant, other than a natural gas processing plant located on a transmission line,

(B) the outlet of the furthermost downstream gathering line gas treatment facility,

(C) the furthermost downstream point where gas produced in the same production field or separate production fields is commingled,

(D) the outlet of the furthermost downstream compressor station used to lower gathering line operating pressure to facilitate deliveries into the pipeline from production operations or to increase gathering line pressure for delivery to another pipeline, or

(E) the connection to another pipeline downstream of:

(i) the furthermost downstream endpoint identified in (A), (B), (C) or (D), or (in the absence of such endpoint)

(ii) the furthermost downstream production operation; or

(2) transport gas from a point other than in a production operation exclusively to points in or adjacent to one or more production operations or gathering facility sites for use as fuel, gas lift, or gas injection gas within those operations; and

(b) does not include a natural gas processing plant.

The above definition is graphically illustrated by the Decision Trees in Appendix A. Additional definitions explaining the meanings of many of the terms used in this definition are found in 2.4. Basic "gathering line" definitional concepts are presented in 2.2.1. Representative applications of the "gathering line" definitions are shown and discussed in Appendix B.

2.2.1 Basic "Gathering Line" Definitional Concepts

The gathering of gas from multiple production operations can be a complex procedure. In many locations, one or more of the processes that may occur in the production operation may also occur downstream in the gathering function. The introduction of gas of varying quality into a gathering system may require further treatment/processing before the gas can be delivered into another pipeline or facility downstream of the gathering line. Because a gathering system may extend over a large geographical area, it is not uncommon for taps on gathering systems to serve numerous residential consumers as well as to make intermediate deliveries to local distribution facilities or large volume end users.

In determining where a gathering line ends, two important concepts are considered—the concepts of "function" and "furthermost downstream."

2.2.1.1 Function

"Function" recognizes that a gathering line continues to fulfill the gathering function until it reaches a defined and recognized endpoint regardless of intermediate processes and/or deliveries along the line. Because gas flowing into a gathering line from various locations may be of differing quality and flowing pressure, it is sometimes necessary to subject the gas stream to one or more intermediate processes. This is usually done to maintain efficient operation of the gathering line and/or maintain pressure in the line which will not result in an unacceptable back pressure on production or tributary gathering lines flowing into the gathering line. Regardless of the intermediate processes and/or deliveries that may occur along a gathering line, the gathering function—and therefore the gathering line—continues until the line terminates at a defined and recognized endpoint.

2.2.1.2 Furthermost Downstream

"Furthermost downstream" recognizes that the most downstream of all locations defined as potential endpoints is the endpoint for the gathering line. The endpoint of a "gathering line" is often defined by the furthermost downstream gas processing plant, gas treatment facility, gas gathering compressor, point of commingling of gas from two or more fields, or point of connection of the gathering line to another pipeline. These endpoints, together with related basic gathering line concepts, are discussed and illustrated in this section.

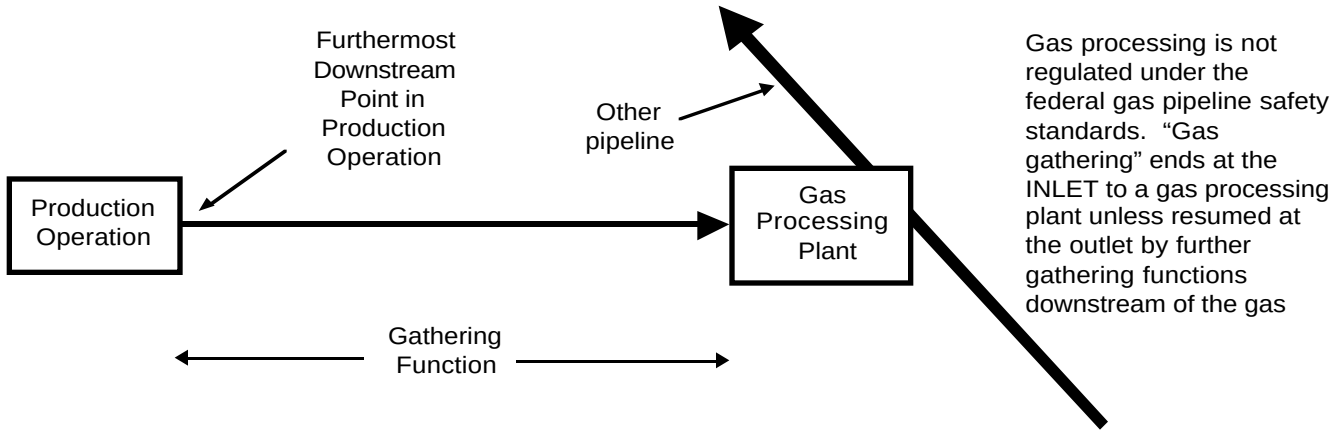

Figure 2-1—Gas Processing is Not a Pipeline Function

2.2.1.2.1 Natural Gas Processing

Natural gas processing is not regulated under the federal gas pipeline safety standards. Gas is removed from transportation for processing, and the residue gas after processing is returned to transportation at the plant outlet. For this reason, when there is no gas gathering beyond a natural gas processing plant as shown in Figure 2-1, the endpoint of gathering is the plant inlet.

2.2.1.2.2 Gas Treatment

Gas treatment often occurs in conjunction with gas processing or compression and in such cases is considered to be part of those operations. In some cases, however, gas treatment operations involve significant stand-alone facilities (e.g., a sulfur recovery or large dehydration facility). When there is no gas gathering beyond a stand-alone gas treatment facility as shown in Figure 2-2, the endpoint of gathering is the facility outlet.

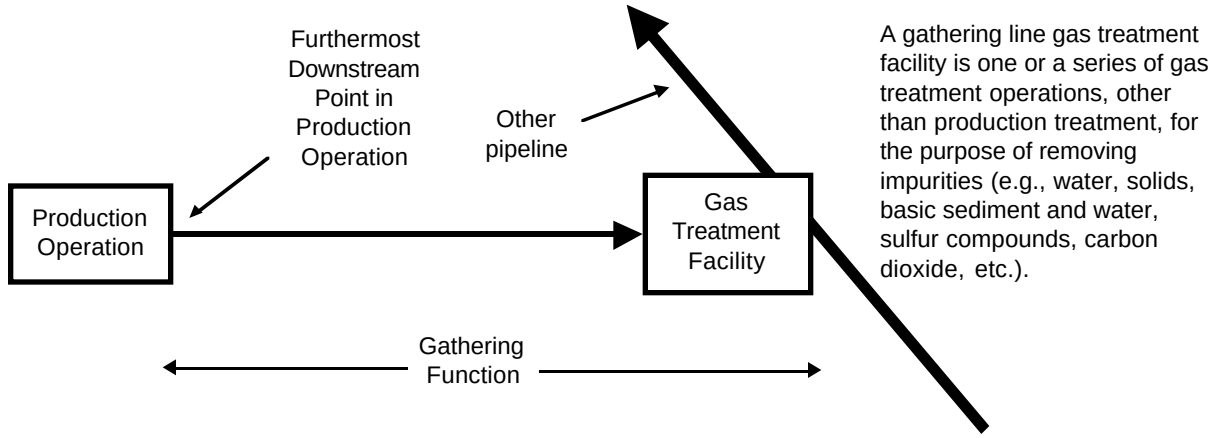

Figure 2-2—Gas Treatment is a Distinct Function on Many Gathering Systems

2.2.1.2.3 Commingling

By its very nature, a common function of gas gathering is to gather ("commingle") gas from different sources for processing, treatment, and/or delivery to an end-user or other pipeline.[1] Gathering is not limited to accumulation of gas from only one or two fields.[2] This feature of the "gathering function" is clearly evidenced by the gas commingling from numerous fields that occurs when gas is gathered for processing or treatment prior to delivery to a gas transmission line or other pipeline facility. The basic function of the gathering line—to "gather" gas for delivery to another pipeline (e.g., a gas transmission line) or to an end user—would not change if no processing or treatment were needed. The gathering function extends at least as far as the last point of commingling, as shown in Figure 2-3 and generally will extend downstream to the point of connection with another pipeline as shown in Figure 2-6.

[1]Commingling of production from multiple fields may, in some instances, occur as part of the production process and does not necessarily mean that gas is in "transportation."

[2]In some regions of the United States, "fields" may not be easily defined. It is anticipated that the furthermost downstream endpoint of "gathering" will be defined for those regions by one of the other endpoints identified in the definitions.

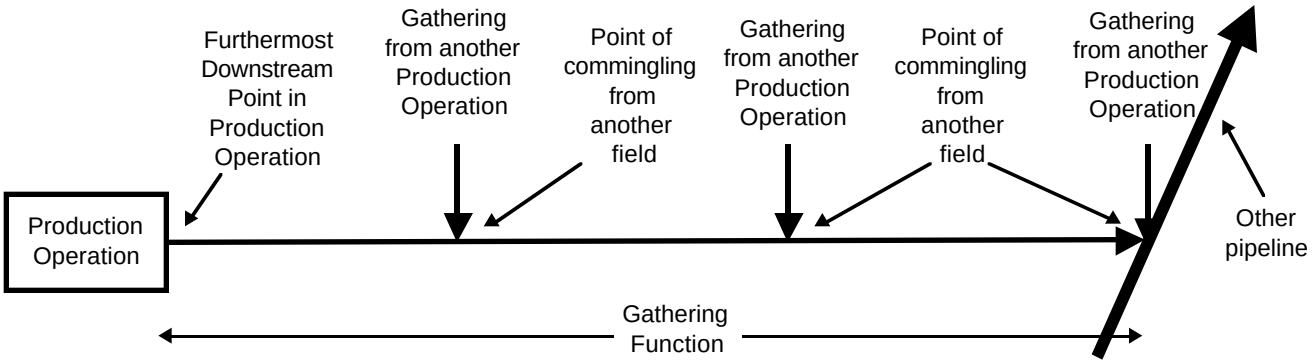

Figure 2-3—The Gathering Function Commingles Gas from Different Sources

2.2.1.2.4 Compression

Gas gathering compression is used to lower upstream gathering line operating pressure to facilitate gas deliveries from production operations into the pipeline or to increase downstream gathering line pressure so that the gas can be delivered to a processing plant, treatment facility, other pipeline, or other end user. Staged compression (compressors in series) may be needed to accomplish either or both of these objectives. In extensive gathering systems transporting gas from numerous fields, it is often necessary to have compression at several points along the gathering line to maintain upstream line pressures low enough to keep producers from having to operate a great number of individual production compressors to deliver into the gathering system. This concept is illustrated in Figure 2-4.

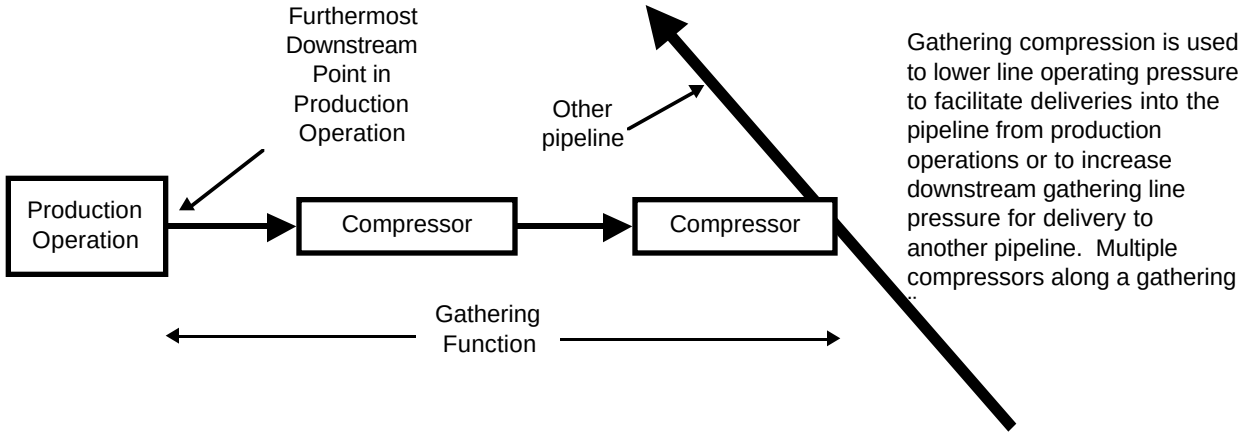

Figure 2-4—Gathering Lines Often Have Multiple Compressors in Series

2.2.1.2.5 Multiple Potential Endpoints

It is very common for a gathering system to have several of the facilities or characteristics listed in the proposed definition as potential endpoints. Sour gas production commingled from several different fields, for instance, might be compressed through several gathering compressors before reaching a desulfurization plant ("gas treatment facility") that sweetens the gas so that it can be delivered to a natural gas processing plant further down the pipeline. Although each of these operations—commingling, compression, treatment, and processing—are potential endpoints, the "gathering function" has not ended until all potential endpoints have occurred (and, some cases, more than once). For this reason, the definition provides for gathering to end at the "furthermost downstream" of the defined potential gathering endpoints. This concept is illustrated in Figure 2-5.

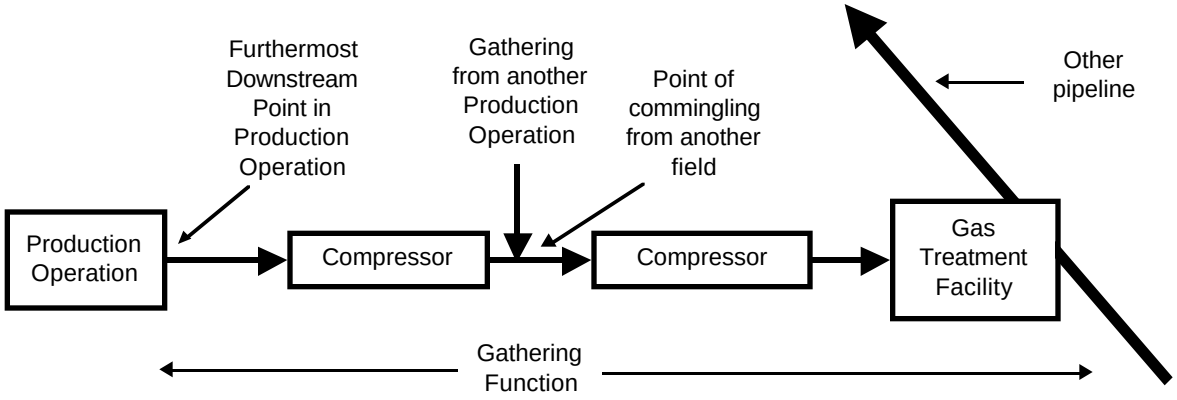

Figure 2-5—Gathering Extends to the Futhermost Downstream Endpoint

2.2.1.2.6 Incidental Gathering

In the case of gas processing or gas treatment, the connection to a transmission line is generally contained within the boundaries of the facility. This is not always the case, however. The gathering line operator may have to move the gas through a pipeline some additional distance from the plant to another pipeline. The pipeline moving the gas from the plant to another pipeline is termed "incidental gathering." The "incidental gathering" resumes at the plant outlet and continues to the other pipeline connection. Incidental gathering may also occur when a compressor is a potential endpoint. Incidental gathering normally is present when the point of last commingling is the last "identified endpoint." From a functional standpoint, this section of incidental gathering line is no different from the rest of the gathering system. The definition, therefore, includes recognition that gathering may continue downstream of the last endpoint identified by processing, treatment, commingling, or compression activities to the connection with another pipeline. Figure 2-6 illustrates this concept.

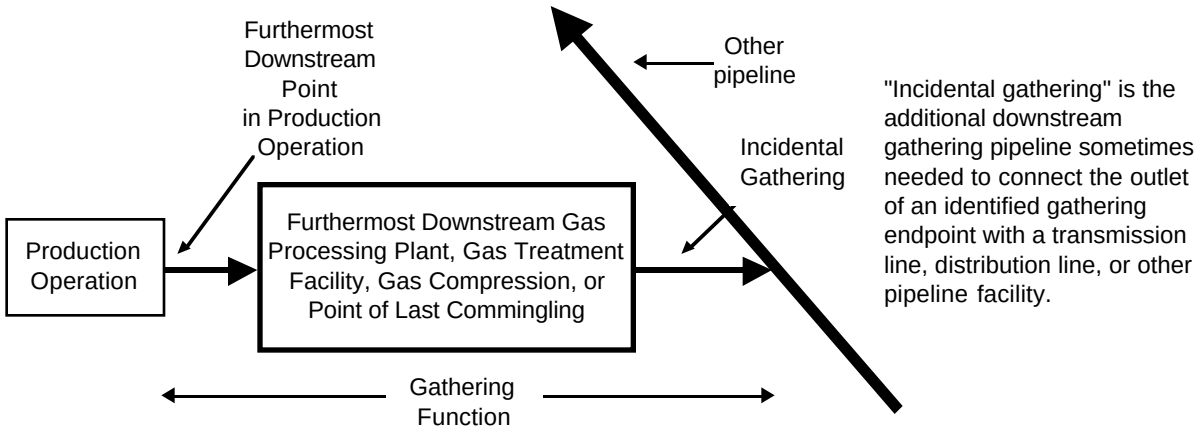

Figure 2-6—Incidental Gathering Downstream of an Identified Endpoint

2.2.1.3 Gas Return Lines

The definition of "gathering line" includes an additional function that is a logical extension of the gas gathering concept. Processed and/or treated gas is often returned to the gathering system compressors, gathering treatment facilities, and/or production operations for fuel gas, gas lift, or gas injection.[3] Typically (although not in every instance), the gas return lines are in the same right-of-way or easement as the gathering line delivering gas for treatment, processing, etc. A gas return line may also originate from a tap on a transmission or distribution line. In either situation, the gas return lines are normally operated by the operator of the gathering system or production operation. For pipeline safety purposes, these lines should be treated as gathering lines. The definition therefore addresses these gas return lines, when used solely by gathering or production facilities for fuel, gas lift, or gas injection, in the definition of "gathering line."

2.3 DEFINITION OF PRODUCTION OPERATION

As discussed in previous sections, definitions of additional terms and concepts have been provided to enhance the implementation of the gathering line definition. The following is the definition for "production operation" as it has been incorporated into the concept of gathering for the purpose of implementing pipeline safety regulations.

"Production Operation" means piping and equipment used for production and preparation for transportation or delivery of hydrocarbon gas and/or liquids and includes the following processes:

(a) extraction and recovery, lifting, stabilization, treatment, separation, production processing, storage, and measurement of hydrocarbon gas and/or liquids; and

(b) associated production compression, gas lift, gas injection, or fuel gas supply.

Additional definitions explaining the meanings of many of the terms used in this definition are found in 2.4. Basic "production operation" definitional concepts are presented below in 2.3.1. Representative applications of the "production operation" definition are shown and discussed in Appendix B.

2.3.1 Basic "Production Operation" Definitional Concepts

2.3.1.1 Production operations generally take place upstream of any gathering or other pipeline facilities that could be regulated as transportation under Title 49 U.S. Code Chapter 601 (Pipeline Safety Act). The production function, in most cases, extends well downstream of the wellhead and may include several processes required to prepare the gas for transportation. Such processes may include separation, dehydration, hydrocarbon liquid stripping or processing, desulfurization, CO_2 or N_2 removal and compression (including series, or "staged," compression) used to enhance the productive capacity of the wells. The scope of production operations may include any number of operators and can vary from one well to large consolidated lease blocks with many wells.

2.3.1.2 A gas producer with a gathering line connection may grant one or more other producers access (via flowlines or other production piping) to that connection. In such situations, the piping from the individual wells and the equipment and facilities used to treat the gas are all a part of the production operation as defined in this Recommended Practice. It should be noted that all or part of the gas from a production operation may go directly to a distribution facility, a transmission facility or a large volume end user without entering a gathering line.

2.4 SUPPLEMENTAL DEFINITIONS

Various oil and gas industry terms-of-art used in the preceding definitions of "gathering line" and "production operation" are defined below. These supplemental definitions serve to further explain the meaning, scope and application of the terms "gathering line" and "production operation." They also explain some of the differences between the use of certain equipment and processes (e.g., "compression" and "gas processing") in production operations and in transportation operations.

2.4.1 natural gas processing plant: A natural gas processing operation, other than production processing, operated for the purpose of commercially extracting natural gas liquids from the gas stream.

2.4.2 gathering line gas treatment facility: One or a series of gas treatment operations, other than production treatment, operated for the purpose of removing impurities (e.g., water, solids, basic sediment and water, sulfur compounds, carbon dioxide, etc.).

2.4.3 production field: An area that is underlain by at least one reservoir containing natural gas or natural gas associated with crude oil.

2.4.4 production: A blanket term referring to all of the operations enumerated in the following definitions.

a. **piping:** As used in the definition of "production operation," includes individual well flowlines, equipment piping, transfer lines between production operation equipment elements and sites, and tie-in lines to connect to gathering, transmission, or distribution lines.

[3]Like other "gathering lines," gas return lines do not extend into the "production operation" since the fuel gas, gas lift, and gas injection lines within the production operations are "production piping."

b. **extraction** and **recovery** (i.e. primary, secondary, and tertiary): Used synonymously to mean operations used to move liquid and/or gas products from their resident place in the underground reservoir to the surface and separate them into their individual components. These terms are amplified and further explained in some of the following terms.

c. **lifting:** Refers to mechanical and other means used to move liquid and/or products from the producing interval in the well to the surface. Examples of this kind of equipment are: wellheads, downhole tubing, beam lift pumping equipment, submersible pumps, and gas lift equipment.

d. **stabilization:** The treatment of produced fluids during which some gas may evolve. The gas is removed to make liquid product(s) less volatile. These techniques are fairly common operations used to adjust the equilibrium of produced fluids. An example of this technique is staged separation.

e. **separation:** The physical and/or chemical technique used to segregate produced well fluids (oil, water, gas), e.g., separator vessels, heater treaters, emulsion treaters, free water knockouts, chemelectric units, etc.

f. **treatment:** The physical and/or chemical technique used to enhance separation of produced well fluids and removal of impurities (e.g., water, solids, basic sediment and water, sulfur compounds, carbon dioxide, etc.). Examples include iron sponge units, field amine units, and dehydrators. In some cases, treatment can be a function or integral part of separation, and vice versa.

g. **measurement:** The process of gauging or determining the quantity of hydrocarbons (natural gas or liquid products). Equipment involved in these operations are meter runs, flow meters, metering skids, etc.

h. **production processing:** A commercial natural gas processing operation for the recovery of natural gas liquids from the gas and is limited to situations in which (A) there is no custody transfer of the gas, from production through processing and residue return; (B) there have been no intermediate production operations between the well and the processing facility; and (C) all residue gas goes back into the production and/or production support operations as fuel, gas lift gas, and/or injection.

i. **storage:** Temporary containment of liquids (condensate, oil, and/or produced water) normally associated with oil and gas producing operations. This does not refer to underground storage for natural gas.

j. **production compression:** Compression situated within the production field and used to (A) enhance production through reduced backpressure on the wells, gas lift, and/or gas injection, and/or (B) boost produced gas pressure to enhance delivery into a gas gathering line.

2.5 DECISION TREES

2.5.1 "Onshore Gas Gathering Decision Tree Alternative 1" (Figure A-1 in Appendix A) was developed as a visual illustration of the "gas gathering line" definitional concepts. Section designators such as "(a)(1)(A)" within the Decision Tree blocks refer to the corresponding subparagraphs in the gas gathering line definition. The Decision Tree provides the user a way to "walk through" the definition and determine which endpoint for the "gas gathering" function is applicable.

2.5.2 "Onshore Gas Gathering Decision Tree Alternative 2" (Figure A-2 in Appendix A) is another version of the Decision Tree and is also provided for users who may prefer this alternative representation of the same logic path. The end result will be the same regardless of which Decision Tree is applied.

2.5.3 For each of the "Representative Applications" of gas gathering discussed in Section 3, illustrations of the appropriate logic path are included using both Decision Tree versions.

2.6 COMMENTARY ON DEVELOPMENT OF DEFINITIONS

2.6.1 General

In formulating these definitions, the focus was upon the historical "functional concept of gas gathering" relative to application of regulatory pipeline safety standards. The intent was not to make wholesale changes in the way pipeline function is understood or applied. In addition, consideration of "gas gathering" has been limited to "*onshore* gas gathering." There has been no attempt to address or make any recommendations regarding "offshore gas gathering" in this recommended practice.

2.6.2 Major Concepts Considered and Rejected

In development of these definitions, several alternative approaches were considered in the interest of developing a definition that was short and simple as well as uniformly applicable. It was ultimately concluded that these approaches—many of which had been suggested in the past—could not encompass the great variety of scenarios involved in the gas gathering process.

2.6.2.1 Physical Parameters

Among the approaches considered and rejected in the development of a gathering line definition were physical parameters such as line size, length, and operating pressures. Such factors are not sufficiently correlative to actual pipeline function to be useful. Also found to be inadequate were determinations based on gas quality or gas throughput. These factors are often more dependent on producing reservoir characteristics than on surface operation. Neither gas quality nor gas throughput provides consistency in determining the nature of the facility handling the gas, and, therefore, neither are dependable indicators of pipeline function.

2.6.2.2 Ownership/Physical Custody

Custody transfer—whether defined in terms of ownership or physical custody—was another factor judged unsuitable for representing pipeline function. This factor has become inherently unstable and unreliable for such purposes due to the rapidly evolving nature of transactions in the gas transportation industry and the increasingly frequent changes of ownership of the facilities themselves.

2.6.2.3 Geopolitical Boundaries

Movement of gas across geopolitical boundaries should not be considered in determining the function of the pipeline. It does not make a difference, for instance, whether the pipeline is moving gas across a state line.

2.6.2.4 FERC or Other Agency Regulatory Definitions

One other option considered was to define as an "endpoint" of gathering any instance in which a pipeline terminated by connection to another pipeline designated by the Federal Energy Regulatory Commission ("FERC") as a "transmission line." It was recognized that FERC or other agency pipeline designations were not developed with pipeline safety as the regulatory purpose and as such may represent and include concepts and assumptions that are not relevant to Pipeline Safety Act objectives. Conversely, the definitions presented herein are not designed to address issues—nor are they intended for application—in any regulatory context other than gas pipeline safety pursuant to the federal Pipeline Safety Act.

3 Representative Applications

This section is organized to complement the definition of gas gathering with representative examples of production operations and gas gathering systems.

The scenarios described in these examples may occur separately or in various combinations. They provide several concrete applications of the definitional concepts described in this Recommended Practice. They are not intended to represent every possible production or gathering scenario.

3.1 APPLICATIONS OF "PRODUCTION OPERATION" CONCEPTS

The following applications are illustrated in Appendix B, Figures B-1, B-8, and B-11. (Note that Scenarios A and B in Figure B-1 collectively illustrate that lease boundaries are irrelevant in the determination of the production function.)

3.1.1 On-Lease Gas Well Production Facilities

Refer to Scenario A in Figure B-1 (Appendix B). Several gas wells produce through flowlines to their respective on-lease[4] production facilities. The furthermost downstream point of each of the three production operations is located at the same site as the production separation, sweetening, and/or dehydration facilities for the lease and is the beginning of transportation.

3.1.2 Full-Wellstream Production to Off-Lease Commingled Facility

Refer to Scenario B in Figure B-1 (Appendix B). Several gas wells from different leases[5] are produced full-wellstream through flowlines to a commingled production separation facility. Production is allocated back to the individual wells on the basis of well tests (which could be done either with testing equipment at the production separation facility or with portable testing facilities). The furthermost downstream point of the production operation is the beginning of transportation.

3.1.3 Production Directly to Transmission Line With No Intermediate Operations

Refer to Scenario C in Figure B-1 (Appendix B). A single gas well produces through a flowline directly to a transmission line[6] with no intermediate production operations (other than metering) and no gathering. The furthermost downstream point of the production operation in this scenario is the point of connection to the transmission line and is the beginning of transportation. This scenario illustrates that there is not always a "gathering" function between production and transmission or distribution.

3.1.4 Central Production Handling Facility With Satellites

3.1.4.1 Refer to Figure B-8 (Appendix B). This application is based on an actual 15,000 acre, 160(+) well gas unitized production operation. Gas production from 15–20 wells is brought through individual flowlines to a satellite station where initial separation occurs. Production compressors used to reduce backpressure on the wells send the gas to a central production handling facility through production piping ("production transfer lines") for further separation, sweetening, and dehydration before leaving the production operation for gathering to a gas processing plant. Likewise, condensate and water from the satellite station is pumped separately to the central production handling facility for water removal and condensate storage. In this application, the furthermost downstream point of the production operation happens to be the

[4]Note that lease boundaries are irrelevant in the determination of the production function.

[5]Note that lease boundaries are irrelevant in the determination of the production function.

[6]A production operation may also produce directly to a distribution facility, service line of a large end user, or other pipeline facility with no intermediate gathering function.

final gas volume meter at the central production handling facility. (This does not imply that metering or custody transfer signifies a change of function.)

Moreover, the fact that the entire illustrated operation is "unitized" is not a primary factor in determining that the operations described above are "production operations." The application would have been equally valid had the situation been one in which production from several leases was commingled by the lease operator at a central production handling facility in the field (similar to Scenario B in Figure B-1) before being put into transportation. The determinative factor is that the production operation—the preparation of the gas and condensate for transportation—was not complete without the processes performed at the central production handling facility.

3.1.4.2 The production operation illustrated in this application also includes production piping that takes processed residue gas that has been delivered back to the central production handling facility out to each of the satellite stations for compressor fuel.

3.1.5 Typical Appalachian Production Operations

3.1.5.1 Refer to Figure B-11 (Appendix B). This application illustrates a type of production operation that is quite common, although not necessarily unique, to the Appalachian Region of the United States. This application is shown in the "Detail Inset" at the right of the attachment, "Example of Multi-Operator Cascading of Production Facilities."

3.1.5.2 The Appalachian Basin is very mature and contains the oldest producing fields found in the United States. While operators continue to make new discoveries, the new wells are typically long life, low pressure, and economically marginal. Typically the operators are small independent producers. Rarely are there large lease blocks managed by a single operator, but rather the typical pattern is smaller, non-contiguous leaseholds intermixed between multiple operators.

Over the years, the natural gas production, gathering and transmission systems have evolved around the producing fields in an interlacing grid that has moved gas from the wells to nearby markets. Local Distribution Companies ("LDCs") have built multi-use systems to production fields that gather and move gas directly into LDC distribution systems to service many local markets. Because of the maturity of the production, the wells, production systems and gathering grid are low pressure and low volume systems. A great deal of this production requires production field compression to simply lower backpressure to very low levels to achieve economic production rates.

Within this complex network of gathering, transmission and distribution systems, marginal natural gas producers must often seek economic efficiencies by arranging for their natural gas production to flow through existing production flowlines on offsetting leases to reach the gathering system. This practice avoids duplicative flowline or production piping, reduces the need for multiple metering, and thus lowers the costs of production. This practice assists the gathering companies or LDCs by reducing the number of meters servicing many marginal properties. Since these wells have particularly long lives but low volumes, these cost efficiencies are highly beneficial to both the producer and gas buyers.

3.1.5.3 The "Detail Inset" in Figure B-11 illustrates a production operation (owned by XYZ Company) delivering natural gas through a total production meter into a gathering company- or LDC-owned gas gathering system. XYZ's production operation includes 2-stage production compression to lower back pressure on the producing wells and discharge at high enough pressure to get into the gathering line, small gas drips to remove produced fluids, a small desiccant gas drying unit to dry the gas, and the total production meter station to measure the volume of gas being delivered to gathering.

In this application, KLM Company and ABC Company are outlying operators whose production will not support a separate production system or the cost of laying pipeline to the gathering system. Both KLM and XYZ have tied into adjoining production piping using "deduct meters" to measure the volume of gas being delivered by one producer into another producers' production operation.

3.1.5.4 The production operation illustrated in Figure B-11 "Detail Inset" also has several "customer taps" on flowlines or other production piping. It is very common for lease agreements to include provisions requiring lessees to furnish gas from their production operations for residential, agricultural, or other use. Similar demands are often made of gatherers in right-of-way or easement agreements. The fact that gas may be delivered to such use from a production operation or gathering line does not change the function of that operation as it continues on past the point at which the tap was made. The line that connects to the tap to furnish gas to the end-user or the LDC serving that end-user is the property and responsibility of the end-user and is not otherwise addressed in these comments.

3.2 APPLICATIONS OF "GATHERING LINE" CONCEPTS

The following applications are illustrated in Appendix B, Figures B-1 to B-22.

3.2.1 Gathering to a Processing Plant, With Extension Downstream to the Point of Connection With Another Pipeline

Refer to Scenario A in Figure B-1 (Appendix B). Gas from three distinct production operations is commingled, compressed, processed, and delivered to a transmission line. The Decision Trees in Figures B-2 and B-3 are marked to illus-

trate the determination as to the endpoint of gathering in this application. There is only one gas processing plant. From the inlet of the plant, there is no downstream gas treatment, commingling, or compression. The gathering function does extend further downstream from the gas processing plant to the point of connection with another pipeline, at which point the gathering function ends.

3.2.2 Gathering from a Single Production Operation, With Extension Downstream to the Point of Connection With Another Pipeline

Refer to Scenario B in Figure B-1 (Appendix B). Gas from a single production operation is gathered to a transmission line. The Decision Trees in Figures B-4 and B-5 are marked to illustrate the determination as to the endpoint of gathering in this application. Beginning at the furthermost downstream point of the production operation, there is no downstream gas processing, gas treatment, commingling, or compression. The gathering function does extend further downstream from the production operation to the point of connection with another pipeline, at which point the gathering function ends.

3.2.3 Production Operation Connection Directly to a Transmission Line

Refer to Scenario C in Figure B-1 (Appendix B). Gas from a single gas well is carried by flowline to connect to a transmission line. The Decision Trees in Figures B-6 and B-7 are marked to illustrate the determination that "gathering" never begins in this application; rather, "production" continues to the connection with the transmission line. Beginning at the furthermost downstream point of the production operation (the point of connection with the transmission line), there is no downstream gas processing, gas treatment, commingling, compression, or further gathering extension downstream from the production operation. There is therefore no gathering function in this application.[7]

3.2.4 Gas Return from a Processing Plant to a Production Operation

Refer to Figure B-8 (Appendix B). Gas from the production operation is gathered to a natural gas processing plant. (This particular application does not address whether the processing plant is the endpoint of this particular gathering operation.) Residue gas from the gas processing plant is returned to the production operation for fuel at the central production handling facility and satellites. This function is defined as "gathering." The Decision Trees in Figures B-9 and B-10 are marked to illustrate the determination as to the endpoint of gathering in this application. The gathering line does not begin at a production operation for transport to gas processing, gas treatment, commingling, compression, or another pipeline. The line does transport gas exclusively back to a production operation for use as fuel. The furthermost downstream point of delivery to the production operation, in this application, is the point at which it is metered onto the unit at the central production handling facility. Routing of the gas from that point to equipment within the central production handling facility and to the satellites is production piping.

3.2.5 Typical Appalachian Gas Gathering System

3.2.5.1 Refer to Figure B-11 (Appendix B). Gas from several multi-well and single-well production operations is commingled, compressed, and delivered to a transmission line connection. The Decision Trees in Figures B-12 and B-13 are marked to illustrate the determination as to the endpoint of gathering in this application. Gathering begins at the furthermost downstream point in each of the several production operations. There is no gas processing or gas treatment. The furthermost downstream point of commingling is shown in this application as the point at which the production operation whose individual operations are detailed in the Inset connects to the gathering line. There is compression downstream of the point of last commingling. From the outlet of the gathering compressor, there is a further extension of the gathering function downstream to the connection with another pipeline (in this example, a transmission line).

3.2.5.2 The application shown in Figure B-11 also has a compressor on the transmission line. This compression is not related to "gas gathering" and would not be part of the "furthermost downstream compression" determination in the Gas Gathering Decision Tree.

3.2.5.3 Like the production operation in the Figure B-11 "Detail Inset," this gathering line application has several customer taps for residential, agricultural, etc. use. The fact that gas may be delivered to such use from a gathering line does not change the function of that pipeline as it continues on past the point at which the tap was made. The line that connects to the tap to furnish gas to the end-user is the responsibility of the operator of that line and is not otherwise addressed[8] in this Recommended Practice.

3.2.6 Gas Gathering System with Multiple Compressors

3.2.6.1 Refer to Figure B-14 (Appendix B). This application is based on a 900-mile gathering system that covers six

[7]A similar situation exists if the production flowline connects to a distribution facility, service line of a large end user, or other pipeline facility.

[8]Nothing in the gas gathering line definition or discussion in this Recommended Practice is intended to alter the regulatory status of customer taps.

Texas Counties. Compressors are used in this system to reduce system pressure to facilitate gas deliveries into the system from numerous production operations in several fields. The pipeline system allows some short-term re-routing of gas when a compressor station is down. For instance, if either Compressor C or Compressor D is out of service, gas can be re-routed to be compressed by the other compressor. If Compressor X has to be by-passed, the line to the Gas Sales facility will carry low pressure gas which can be boosted to transmission line pressure by the compressors at the Gas Sales Facility.

3.2.6.2 The Decision Tree in Figures B-15 and F-16 are marked to illustrate the determination as to the endpoint of gathering illustrated in Figure B-14. Gathering begins at the furthermost downstream point in each of the several production operations. There is no gas processing. The furthermost downstream point of commingling is shown in this application as the point at which the gathering lines converge at the Gas Compression and Sales Facility. The farthest downstream compression relative to the point of last commingling is at the Gas Compression and Sales Facility. The outlet of the compression facility connects directly to another pipeline and is the endpoint of gas gathering.

3.2.7 Gas Gathering System with Fuel Gas Return Lines

3.2.7.1 Refer to Figure B-17 (Appendix B). In this application gathering from the production operations ends at the inlet to the gas processing plant; processed gas is delivered to a transmission line at the plant outlet. Some processed gas from the processing plant is returned to Compressor X, Compressor C, and Compressor E. In addition, gas from the transmission line is returned to Compressor A.

3.2.7.2 The Decision Trees in Figures B-18 and B-19 are marked to illustrate the determination as to the endpoint of gathering for the gas return lines in this application. The gathering line does not begin at a production operation for transport to gas processing, gas treatment, commingling, compression, or another pipeline. The line does transport gas exclusively back to a gathering facility for use as fuel. There are three separate furthermost downstream points of delivery to a gathering facility in this application—the points of delivery to Compressors X, E, and A with each designating the end of gathering for those respective pipelines.

3.2.7.3 The Decision Trees in Figures B-20 and B-21 are marked to illustrate the end of gathering from production operations in this particular example. There is only one gas processing plant downstream of production operations. From the inlet of the plant, there is no downstream gas treatment, no commingling, no compression and the gathering function does not extend further downstream from the gas processing plant. Thus, the inlet of the gas processing plant is the end of gathering.

3.2.8 Gas Gathering Systems with Different Ownership and in Multiple States

Refer to Figure B-22 (Appendix B). This application illustrates the principle that neither ownership nor political boundaries are factors in the determination of pipeline function. Company A owns a gathering system that ends at the inlet to a gas processing station. Company C, in another state, operates its own gathering system and a leased pipeline to connect its own gathering system to Company A's gathering system. Company B's gathering system ties into the leased pipeline also. The entire pipeline, beginning with Company C's system and ending at the gas processing plant, is "gas gathering" despite the changes of ownership and the interstate operation.

This premise—that line ownership is not a factor in the determination of pipeline function—is the reason that the definition of gathering line did not directly address the issue of one operator's gathering line beginning or ending with a connection to another operator's gathering line.

APPENDIX A—ONSHORE GAS GATHERING DECISION TREES

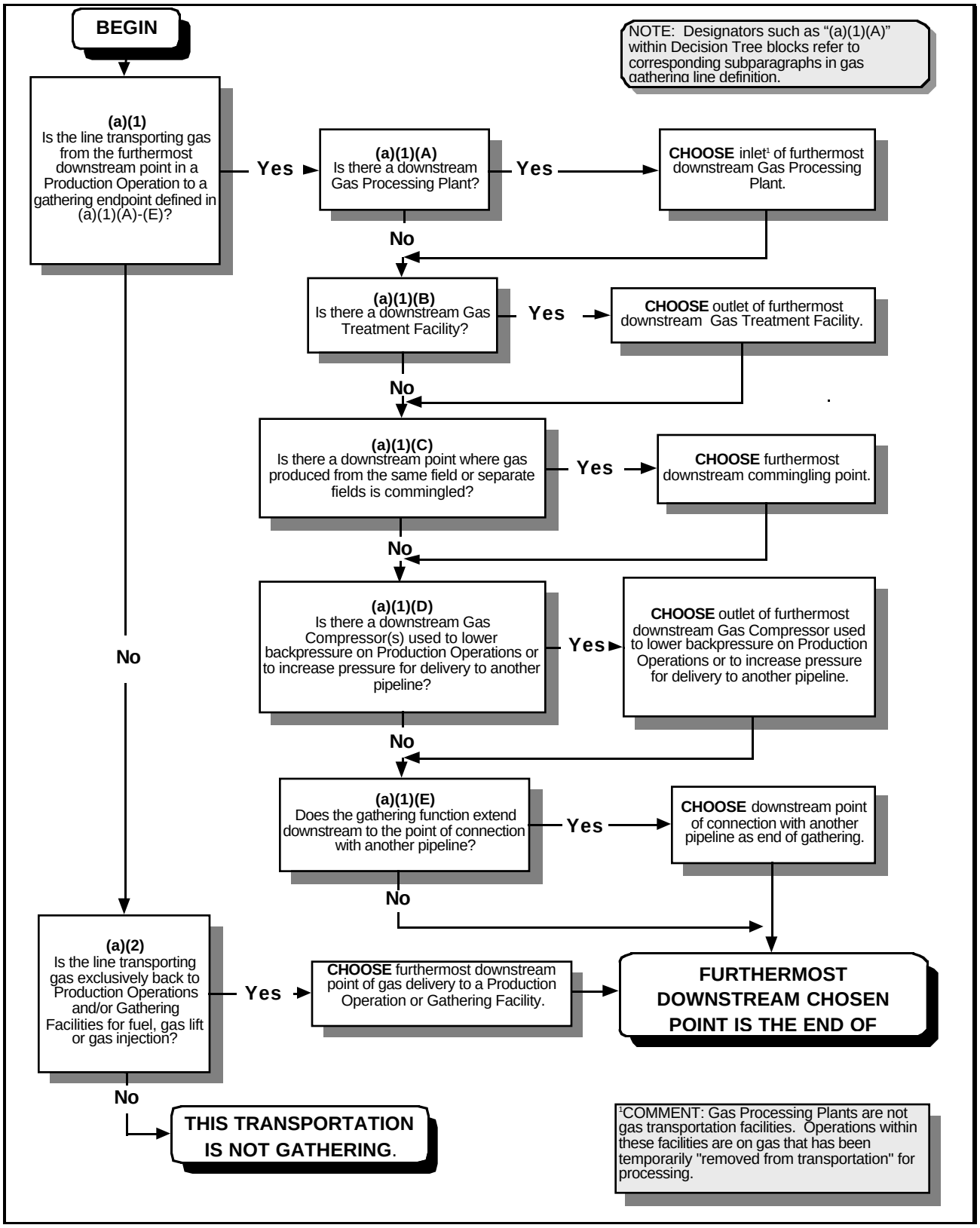

Figure A-1—Onshore Gas Gathering Decision Tree—Alternative 1

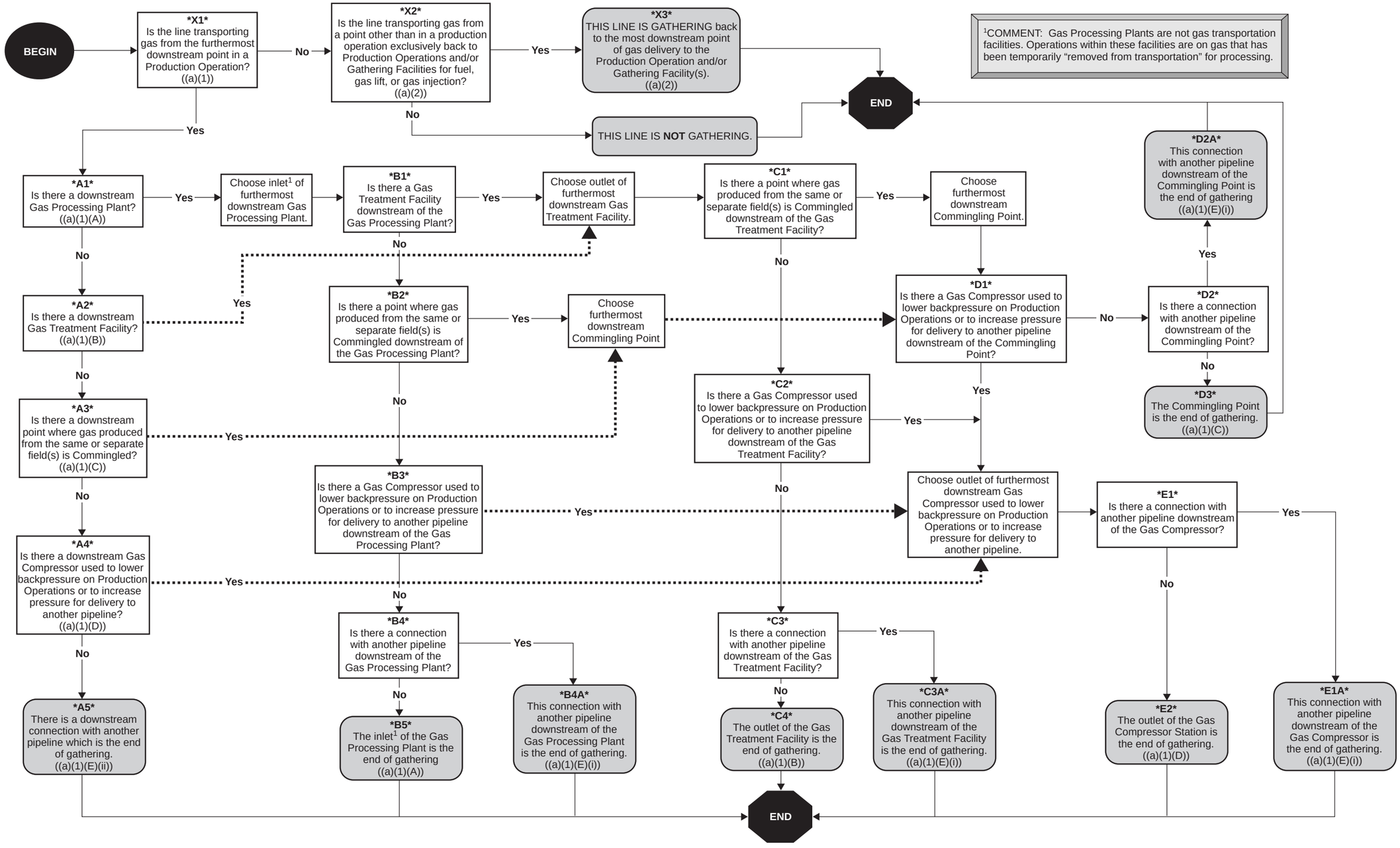

Figure A-2—Onshore Gas Gathering Decision Tree—Alternative 2

APPENDIX B—APPLICATIONS

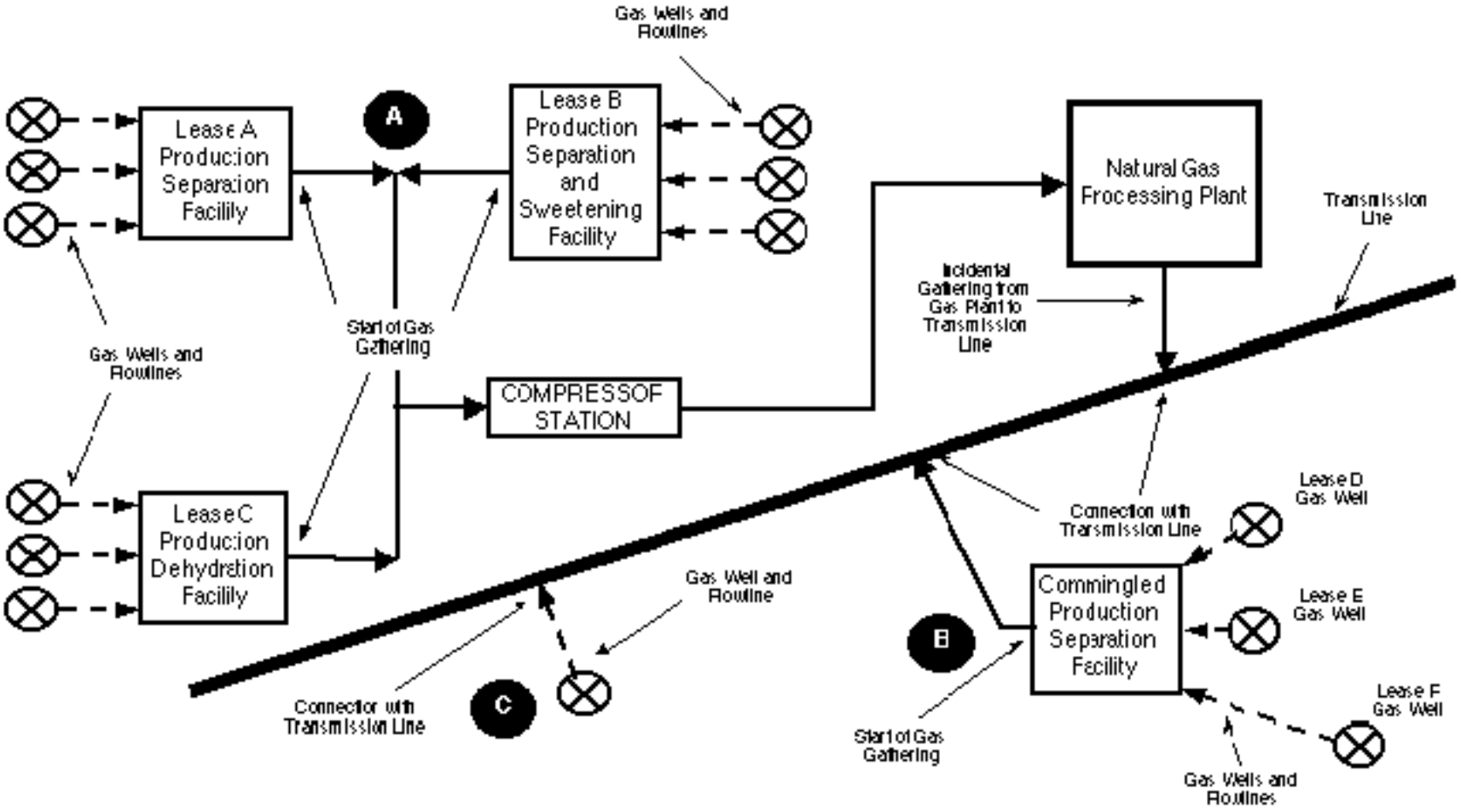

Figure B-1—Examples of Common Gas production and Gathering Operations

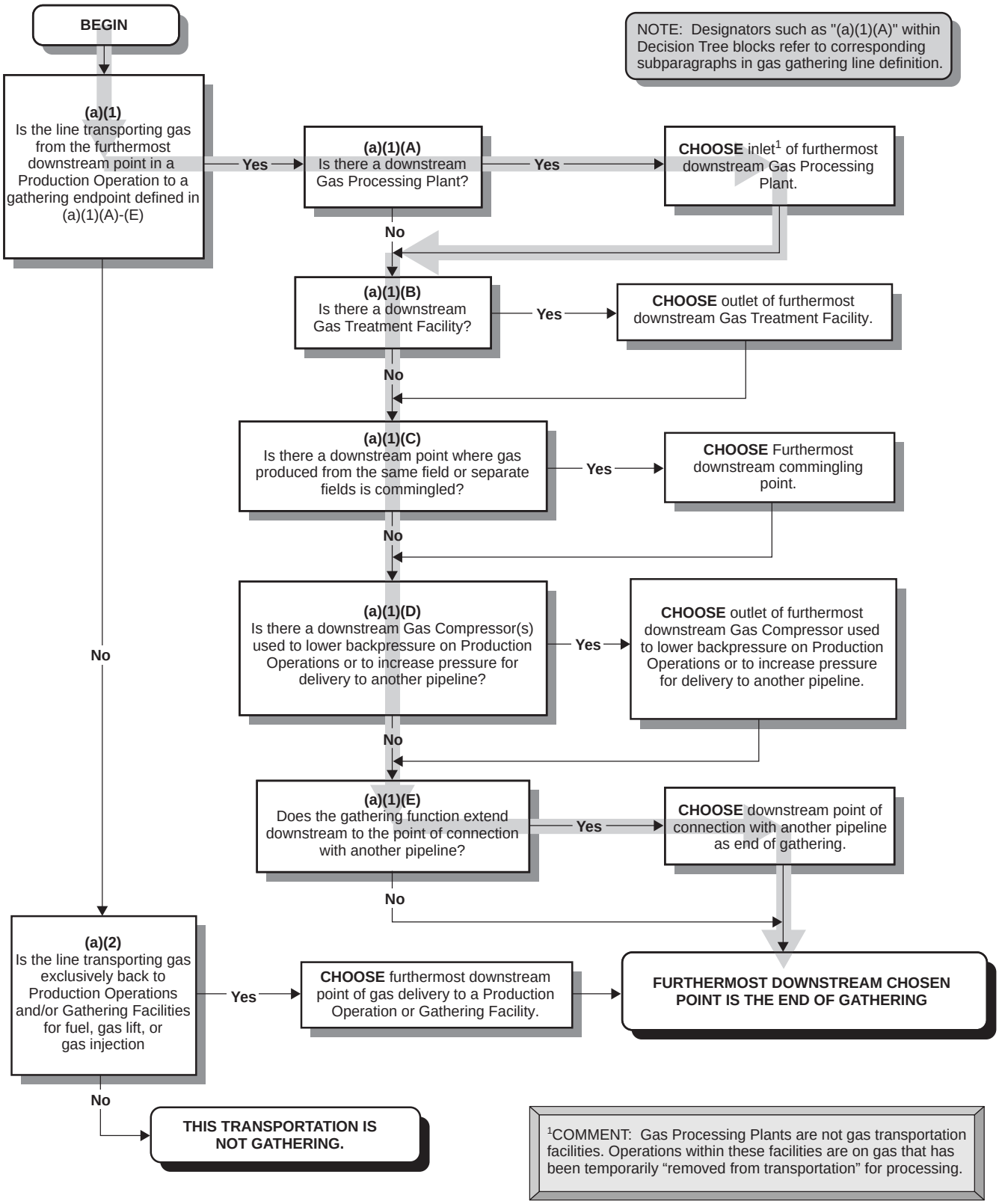

Figure B-2—Alternative1 Decision Tree for Figure B-1 (Scenario A)

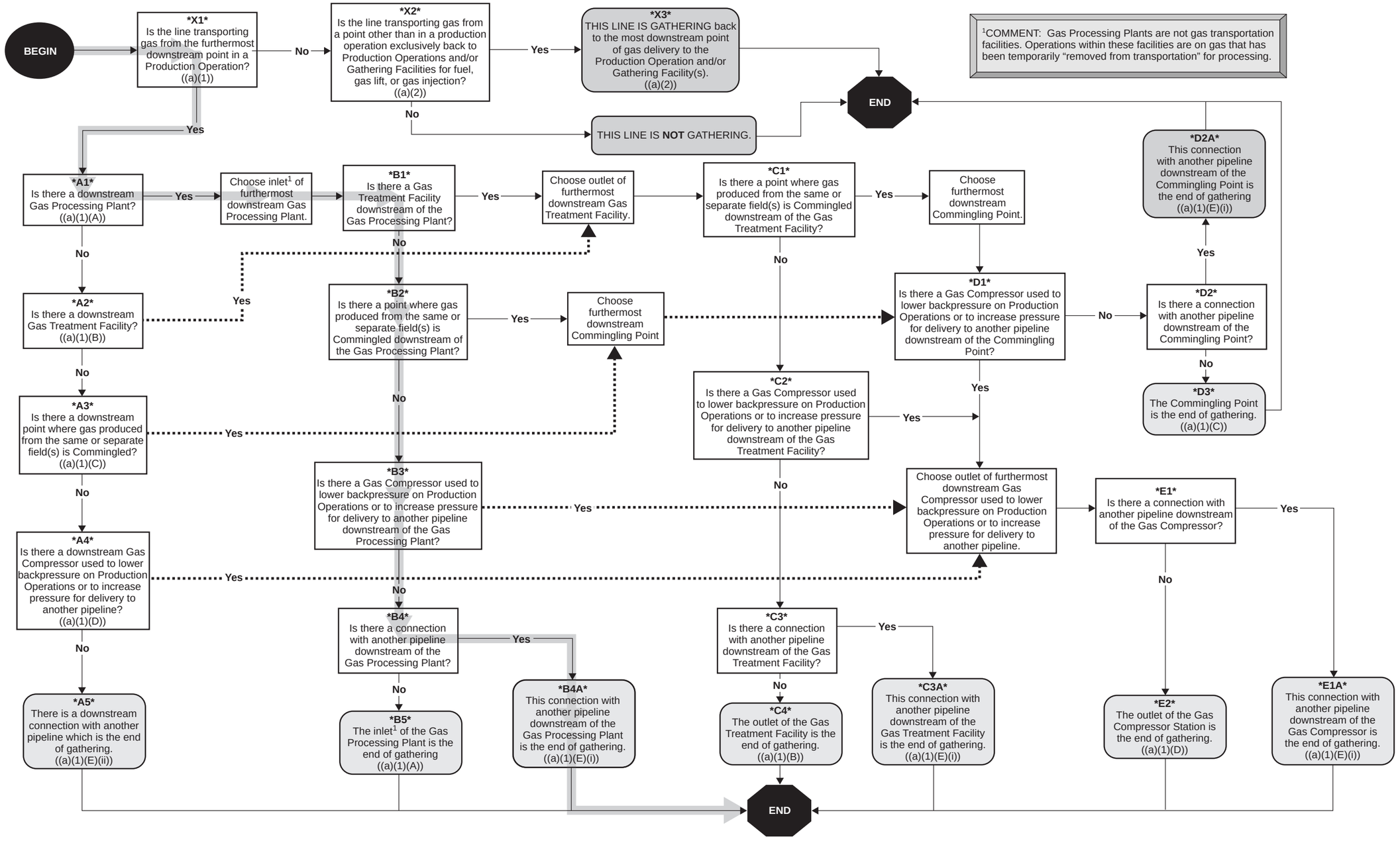

Figure B-3—Alternative 2 Decision Tree for Figure B-1 (Scenario A)

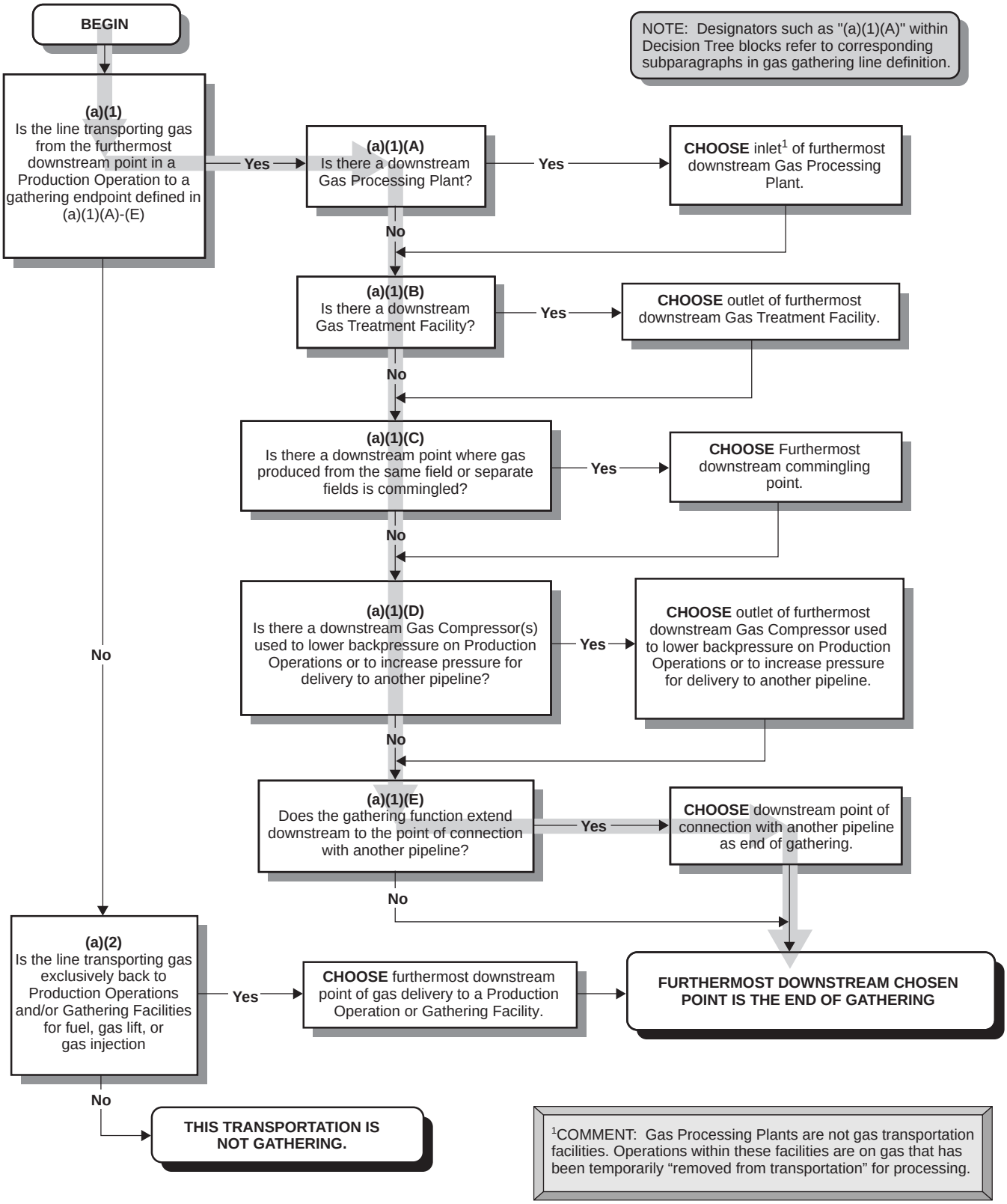

Figure B-4—Alternative 1 Decision Tree for Figure B-1 (Scenario B)

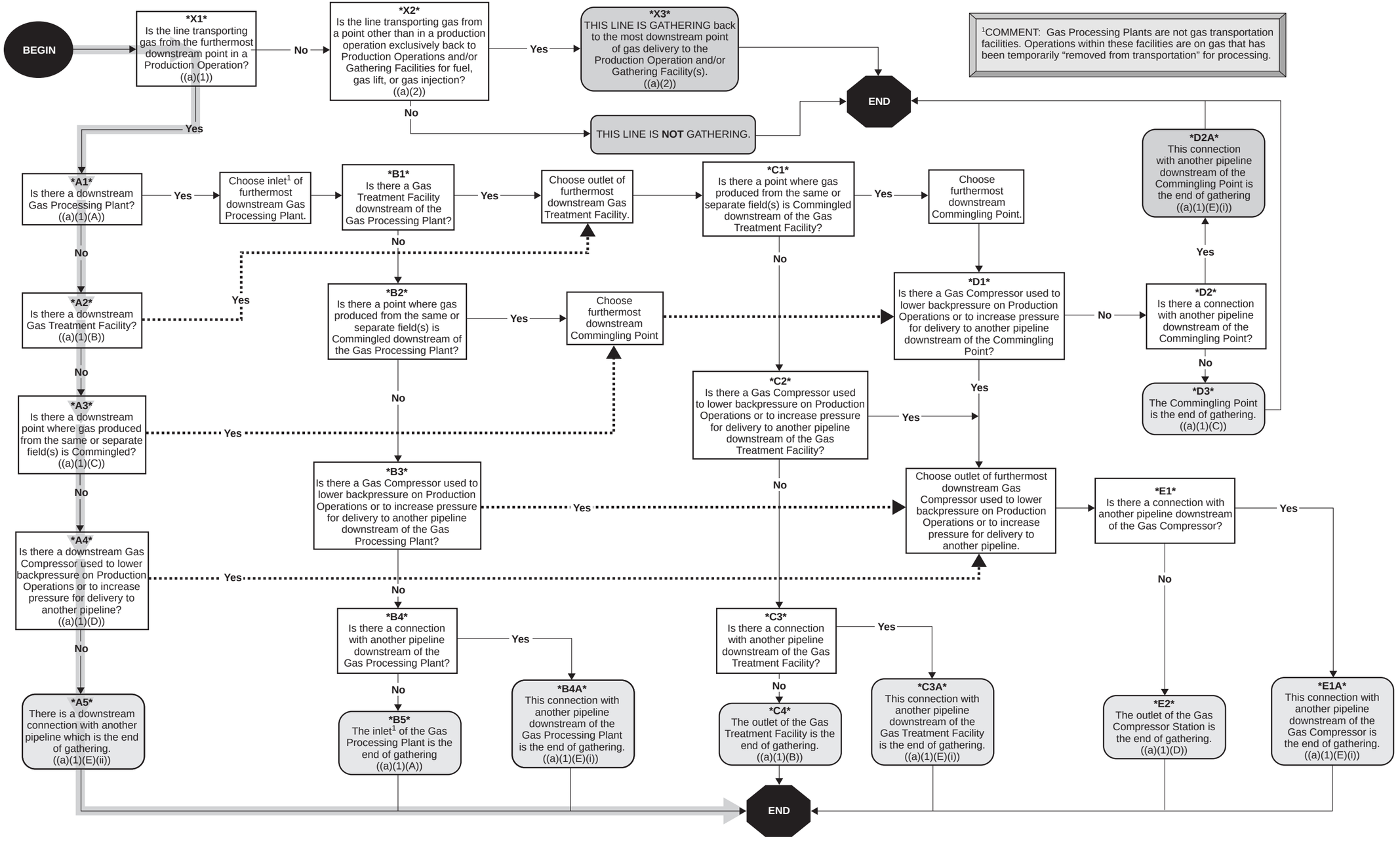

Figure B-5—Alternative 2 Decision Tree for Figure B-1 (Scenario B)

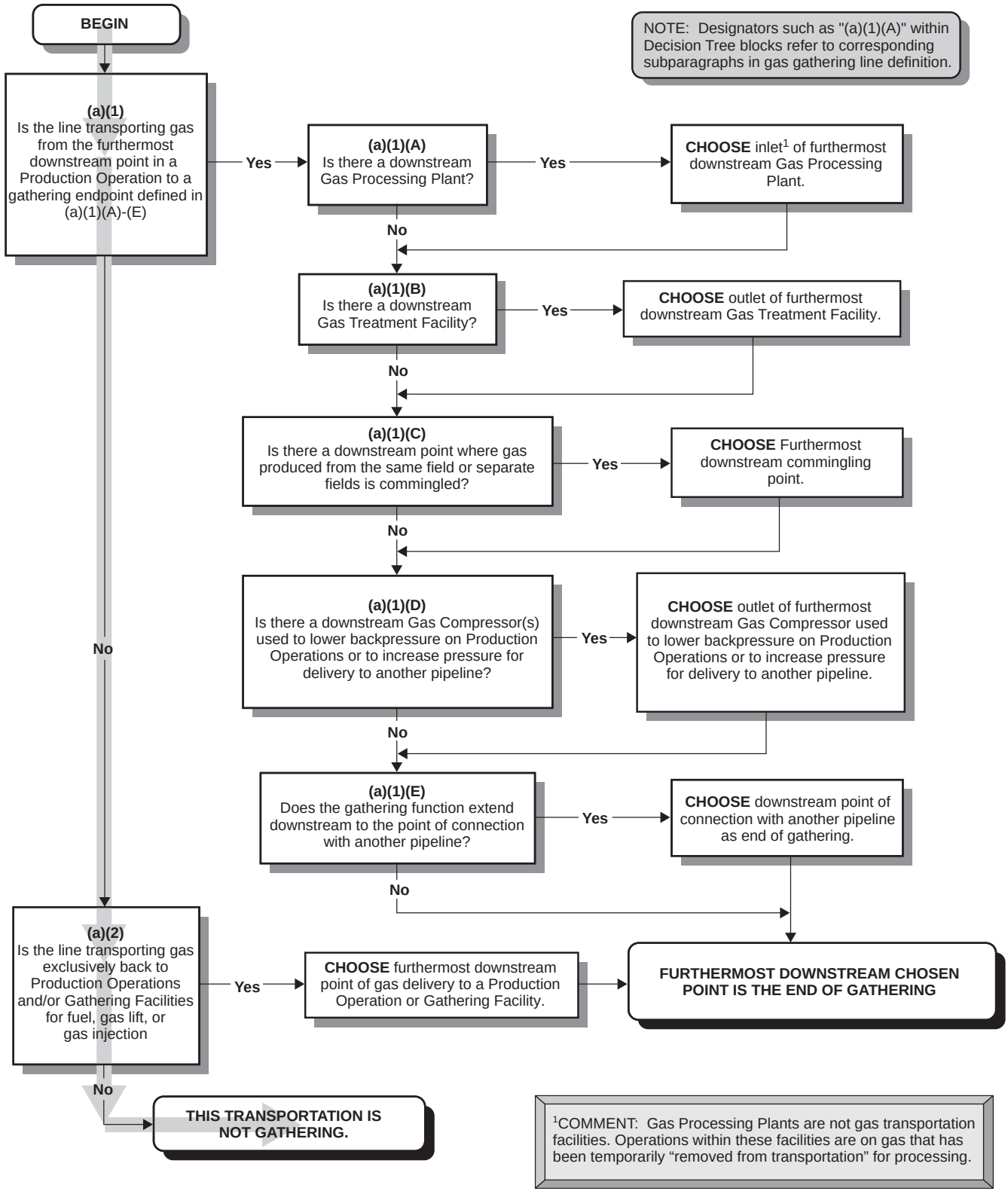

Figure B-6—Alternative 1 Decision Tree for Figure B-1 (Scenario C)

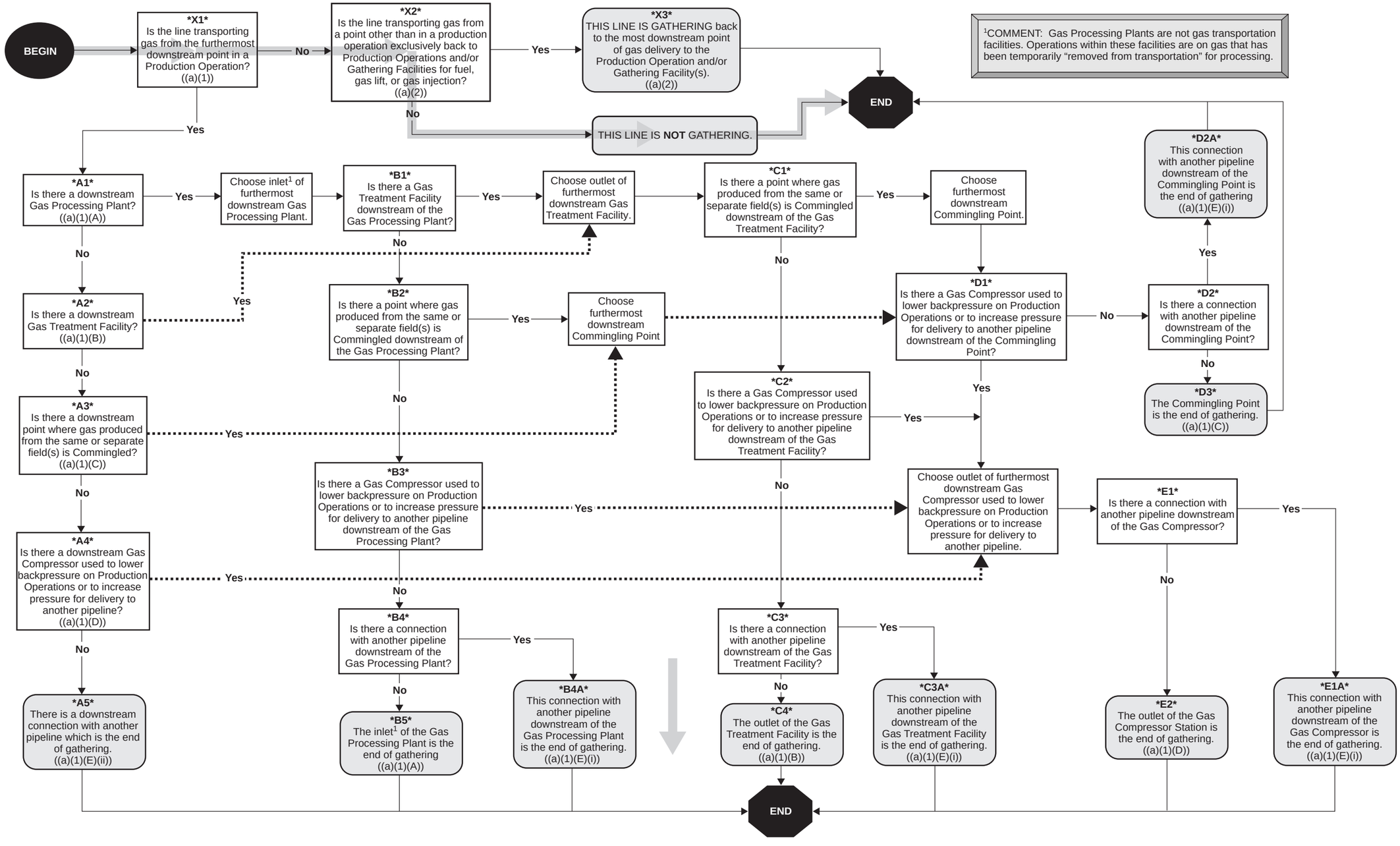

Figure B-7—Alternative 2 Decision Tree for Figure B-1 (Scenario C)

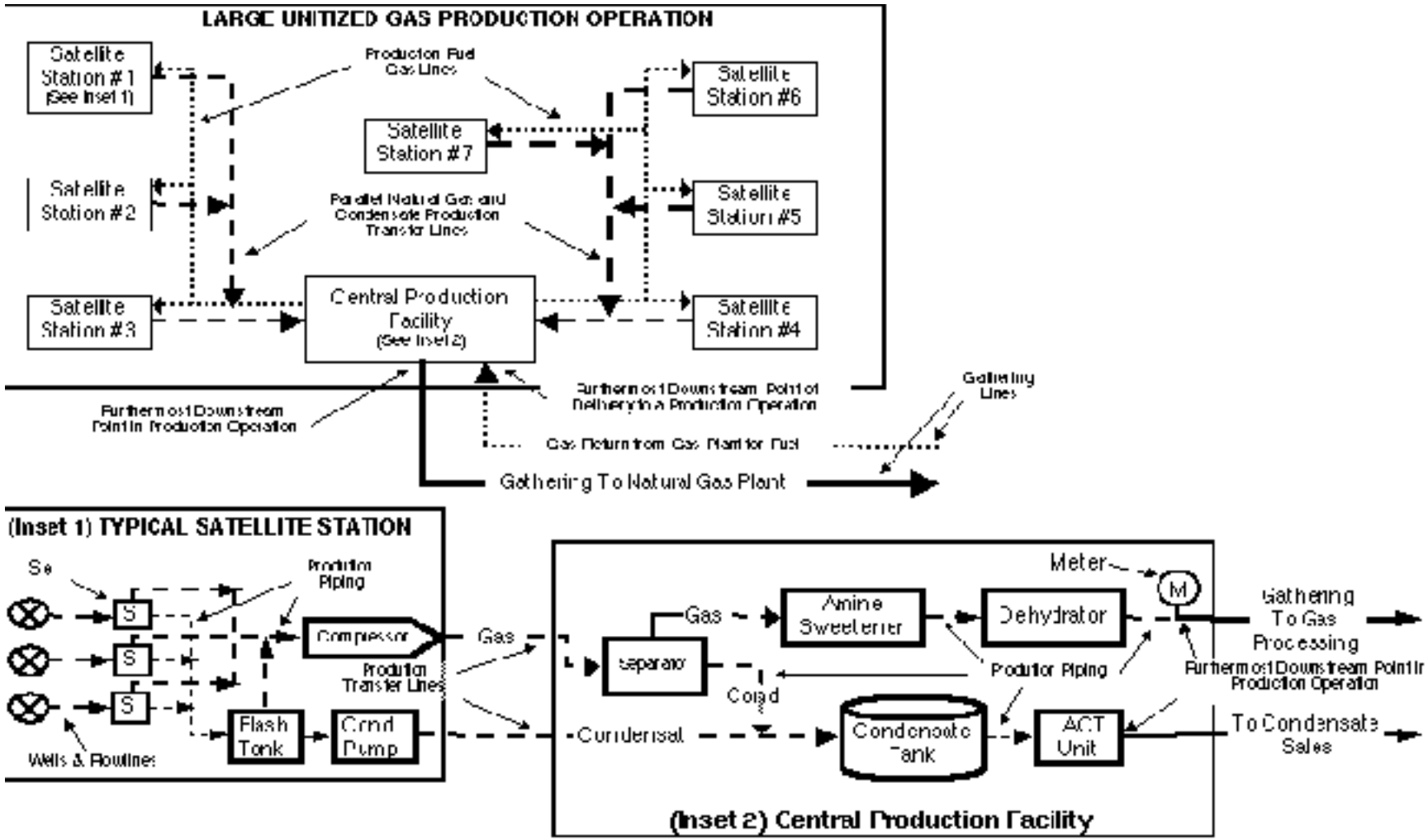

Figure B-8—Example of a Central Production Facility With Satellites

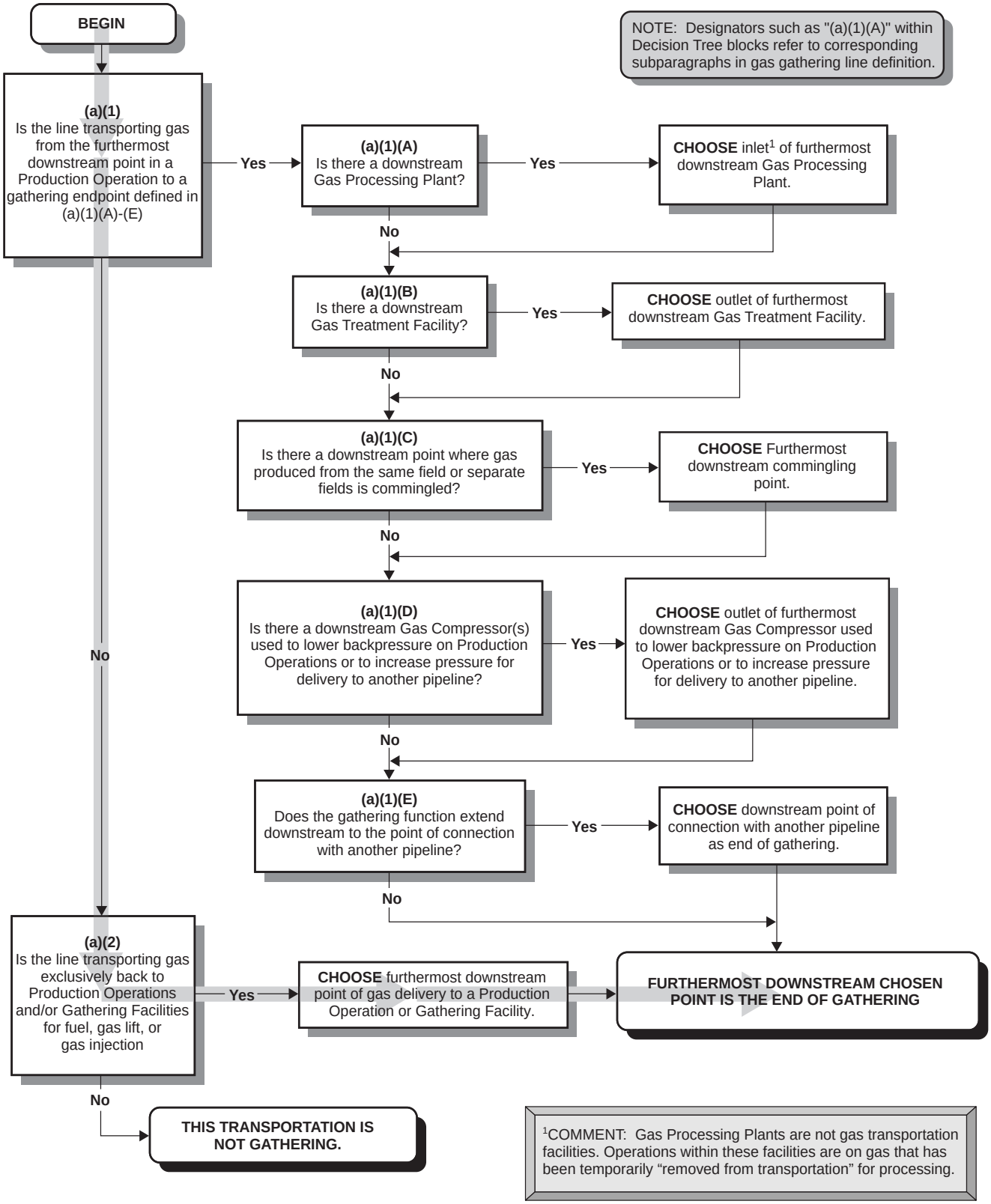

Figure B-9—Alternative 1 Decision Tree for Figure B-8

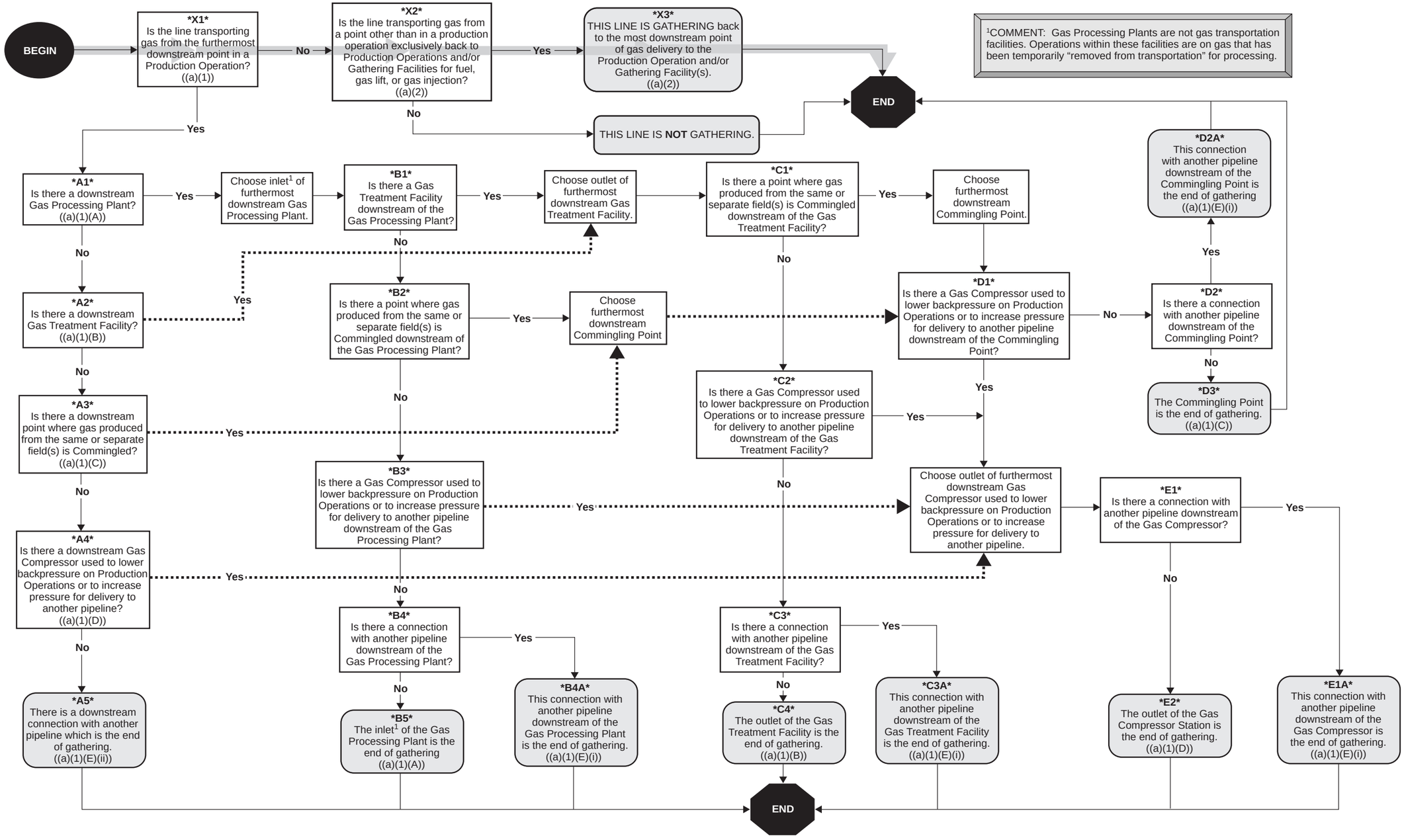

Figure B-10—Alternative 2 Decision Tree for Figure B-8

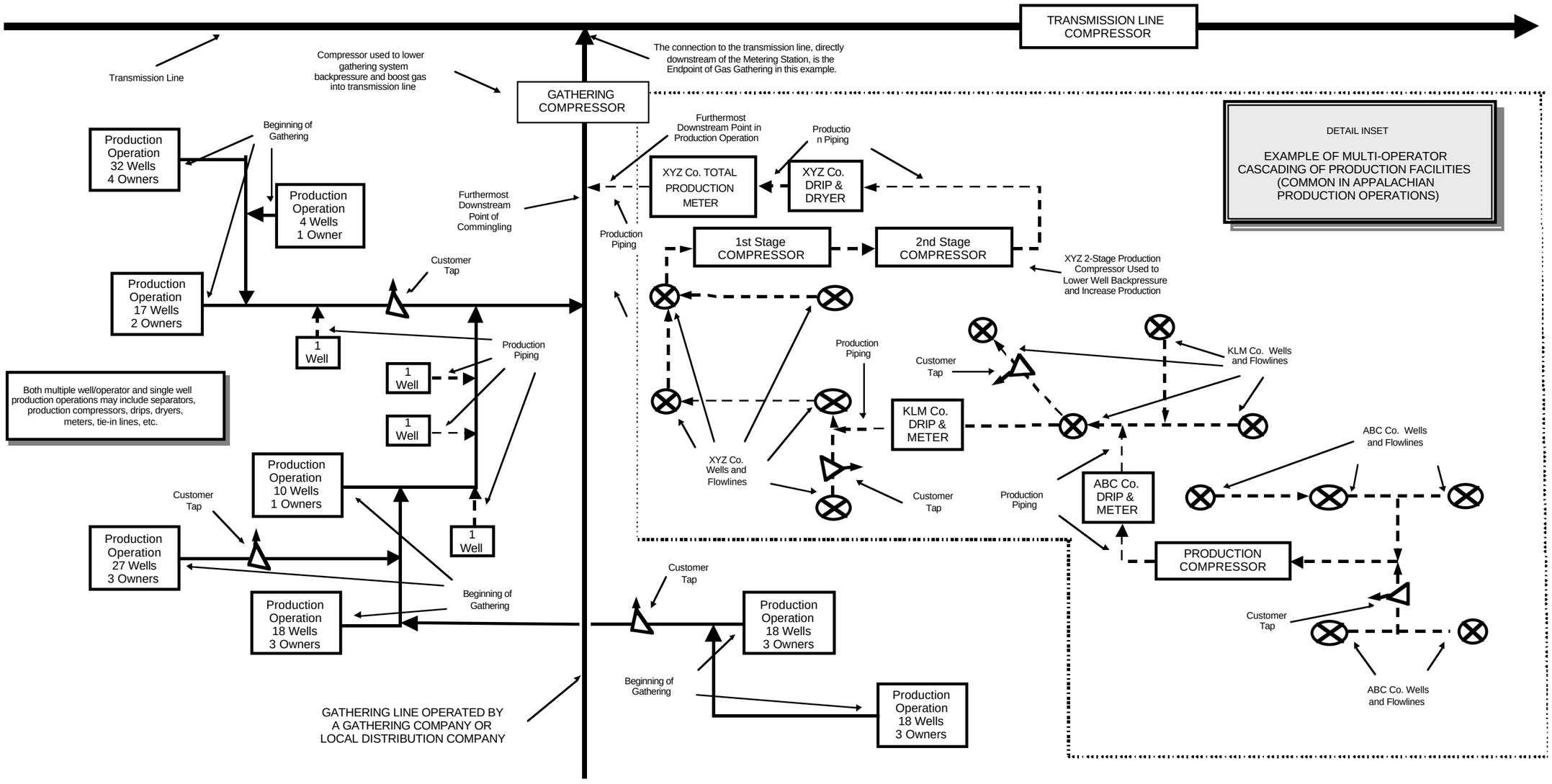

Figure B-11—Typical Appalachian Production Operation and Gas Gathering Applications

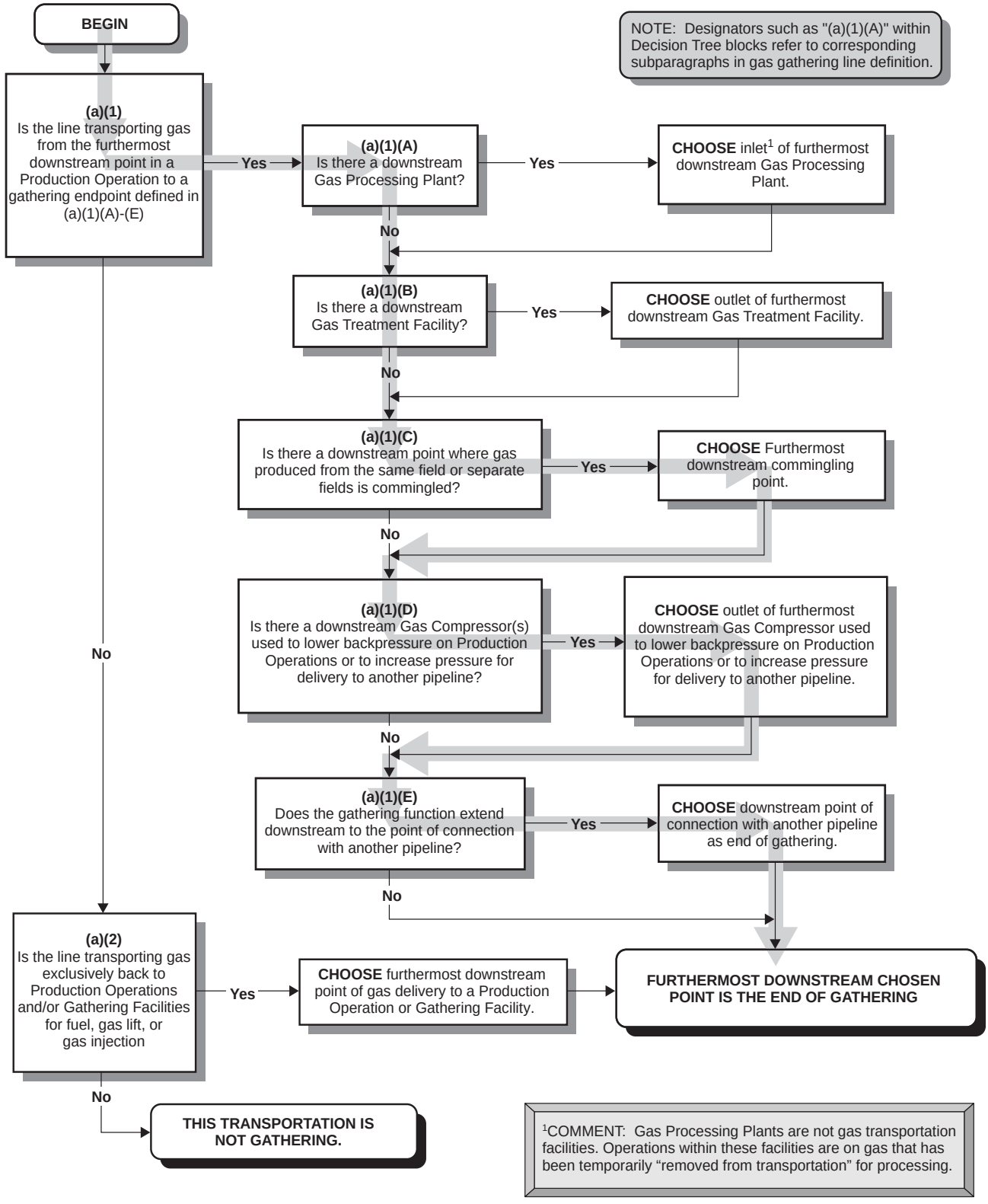

Figure B-12—Alternative 1 Decision Tree for Figure B-11

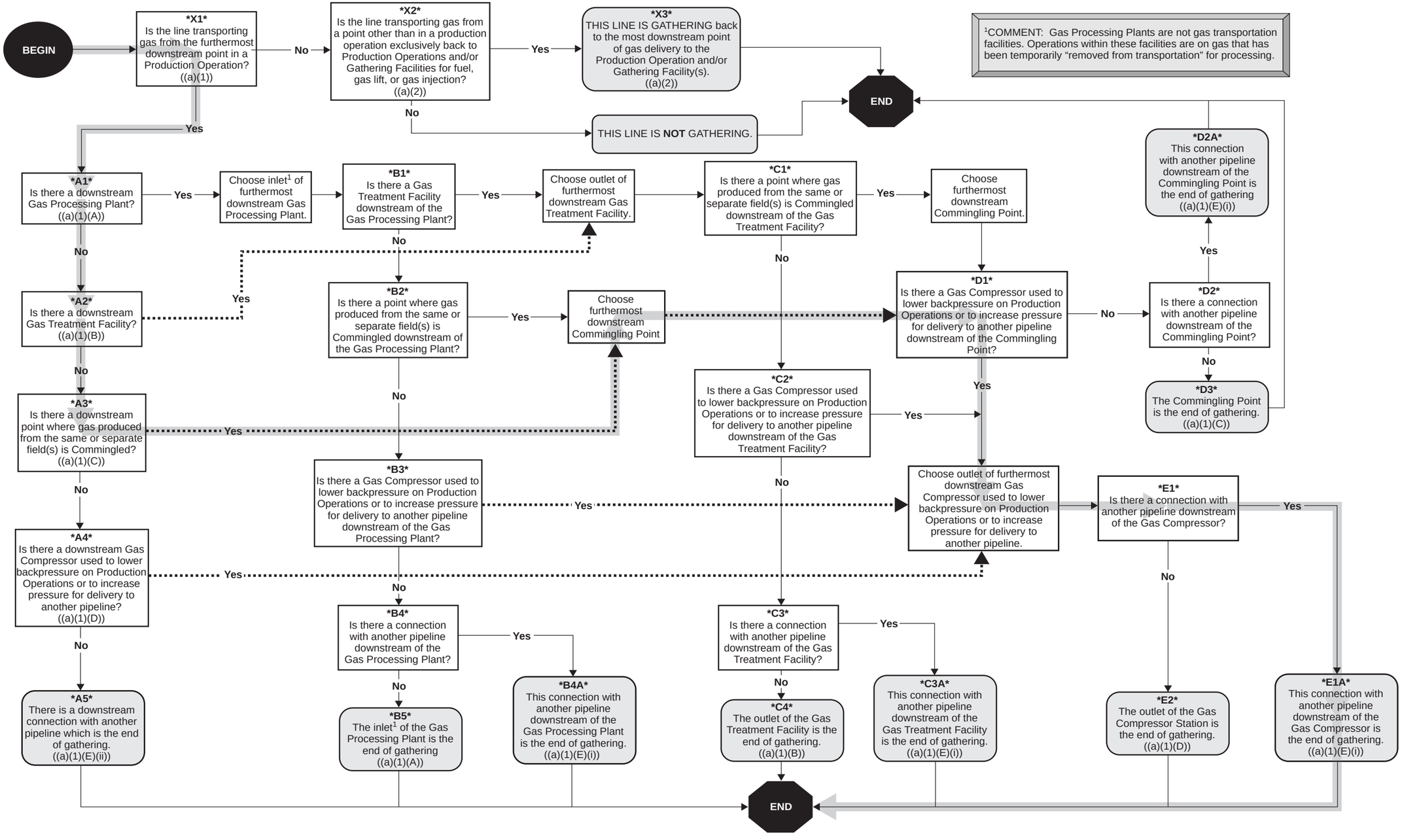

Figure B-13—Alternative 2 Decision Tree for Figure B-11

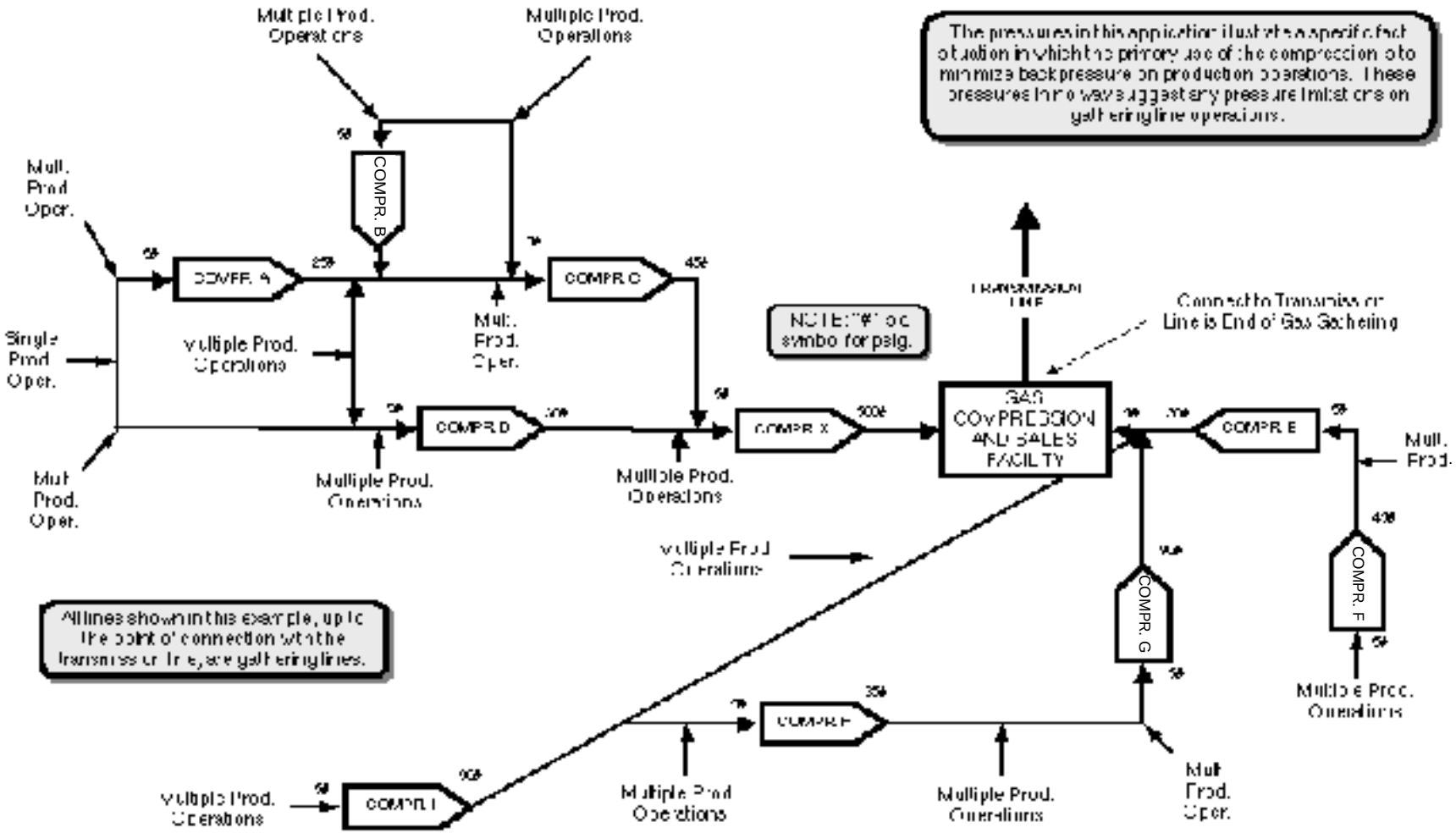

Figure B-14—Example of a Gas Gathering System with Multiple Compressors

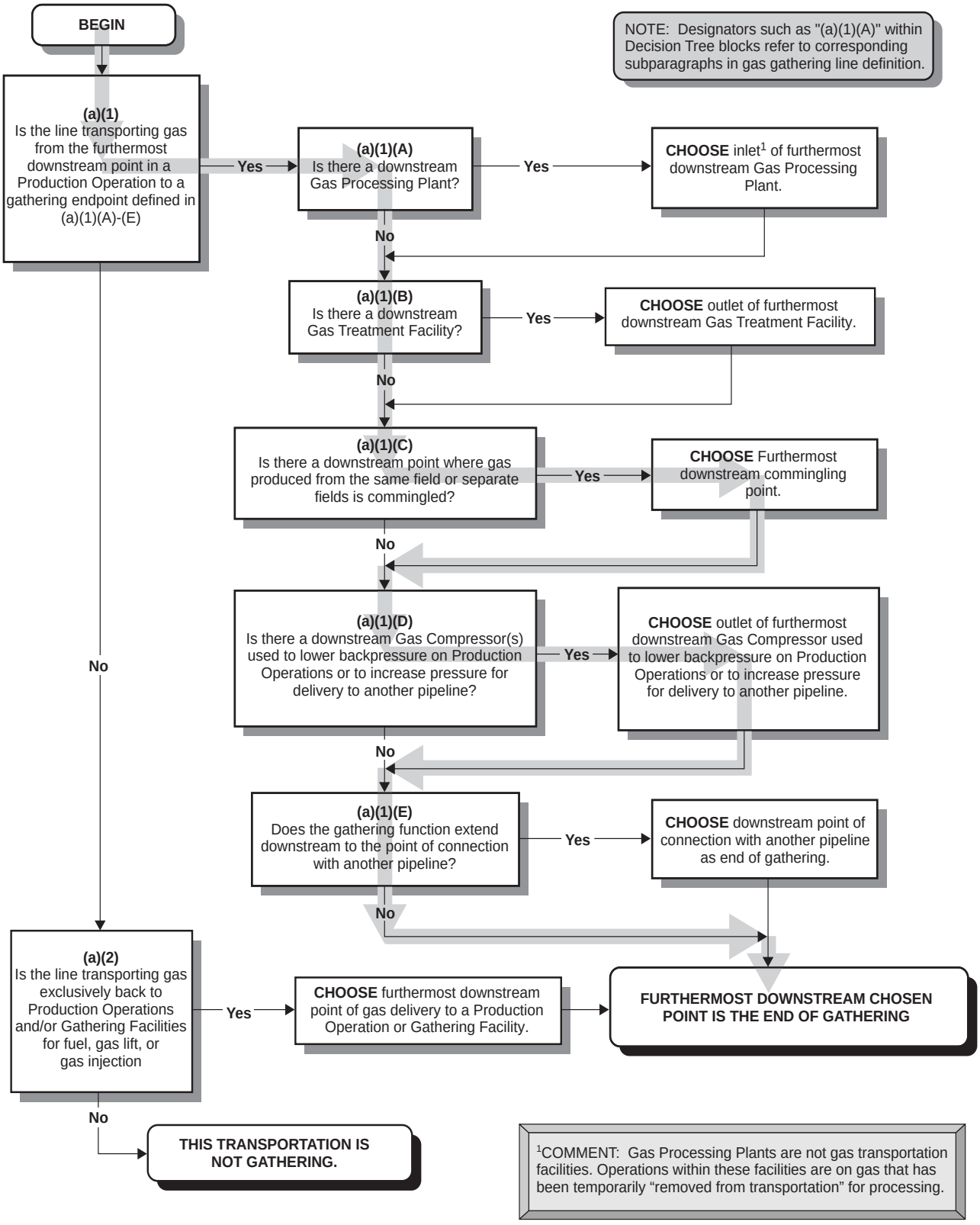

Figure B-15—Alternative 1 Decision Tree for Figure B-14

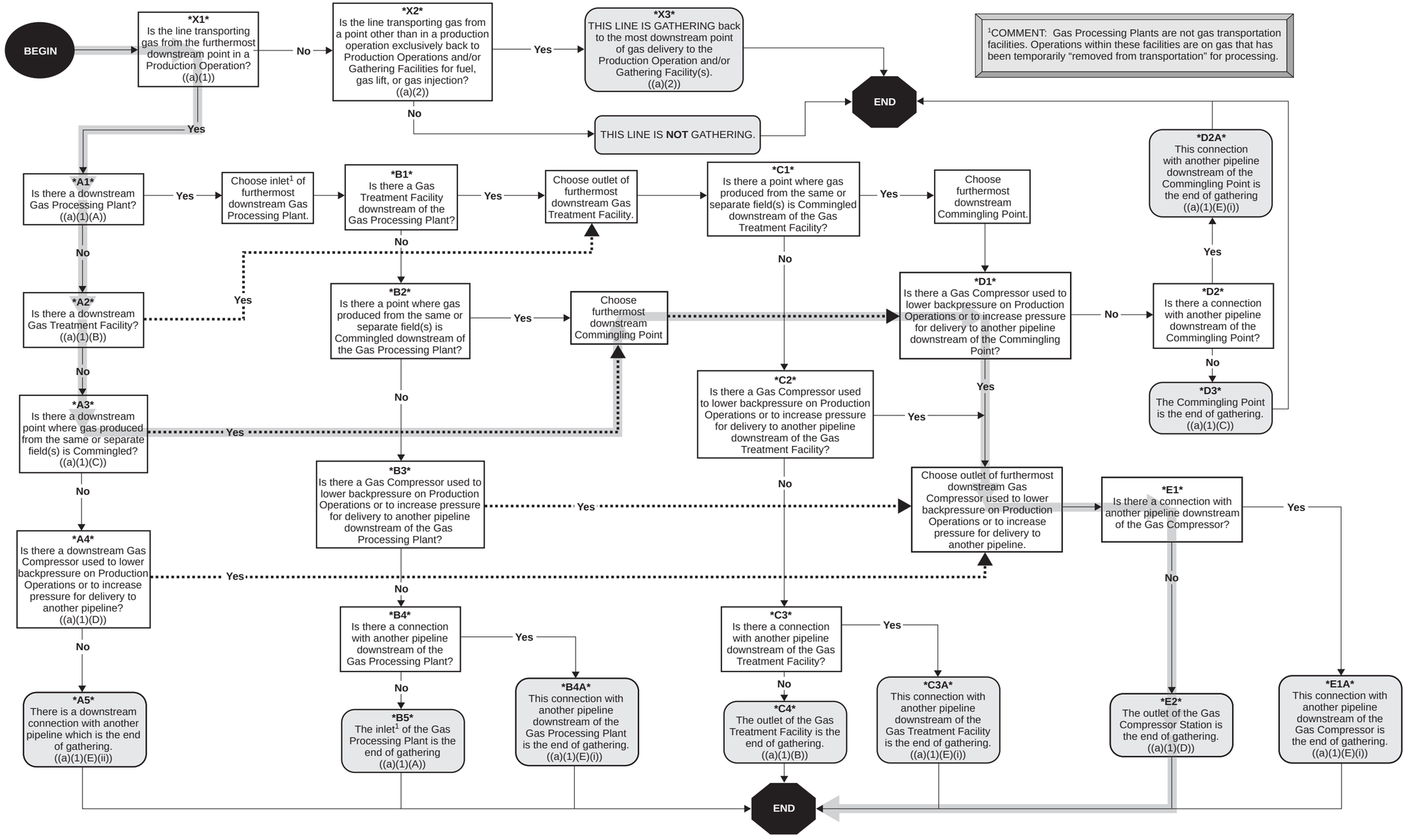

Figure B-16—Alternative 2 Decision Tree for Figure B-14

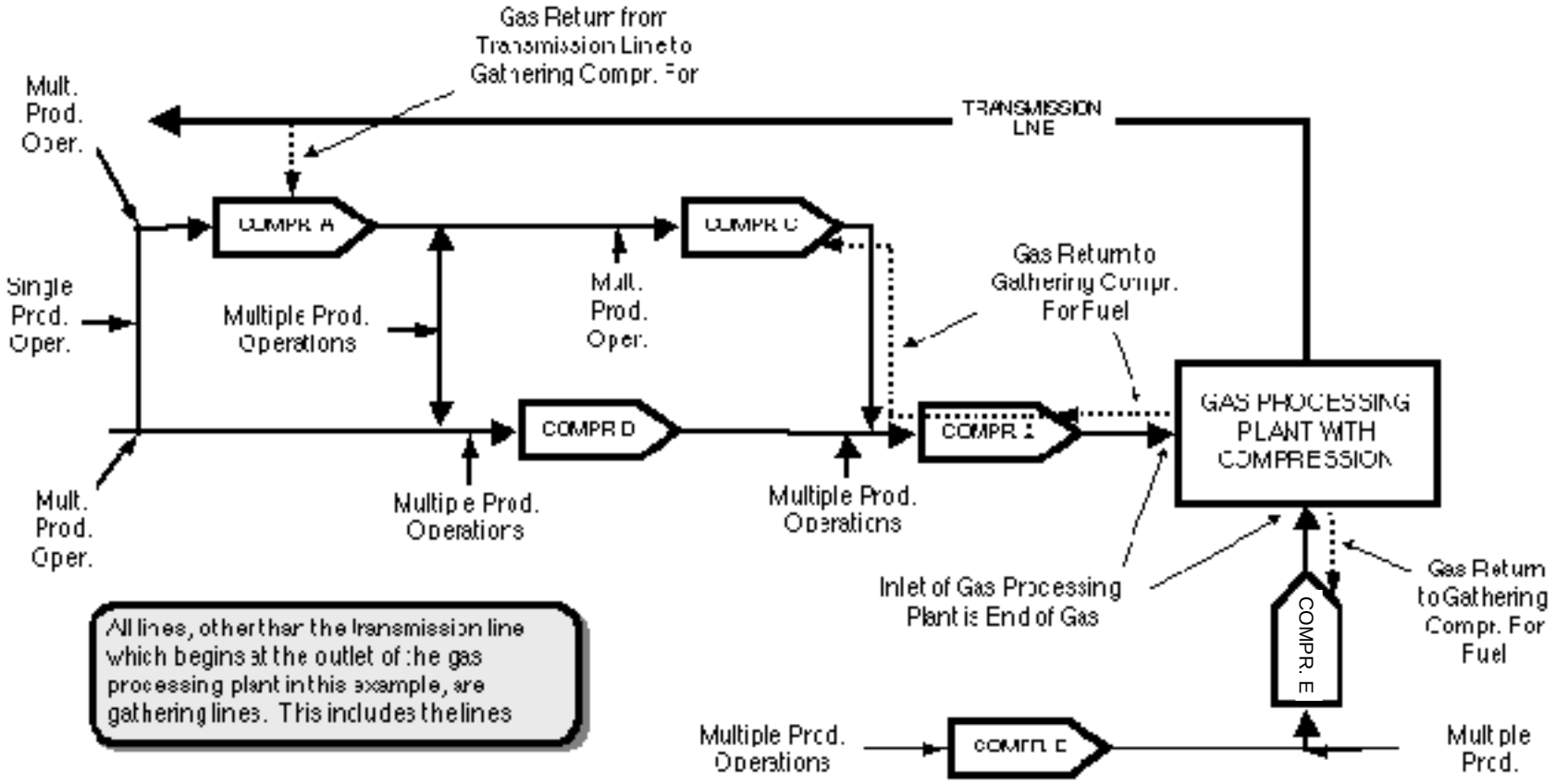

Figure B-17—Example of a Gas Gathering System With Fuel Gas Return Lines

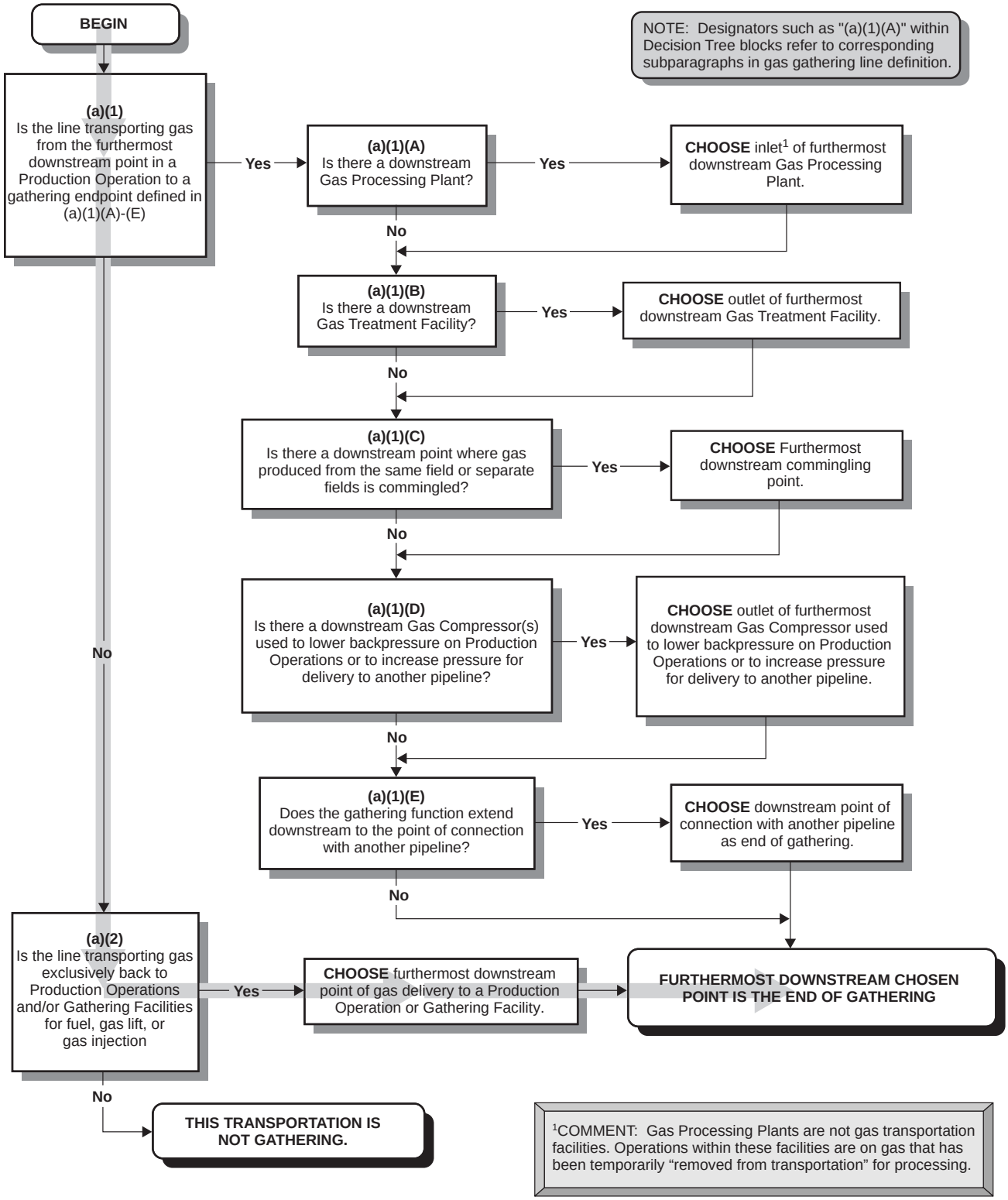

Figure B-18—Alternative 1 Decision Tree for Figure B-17 (Gas Return Lines)

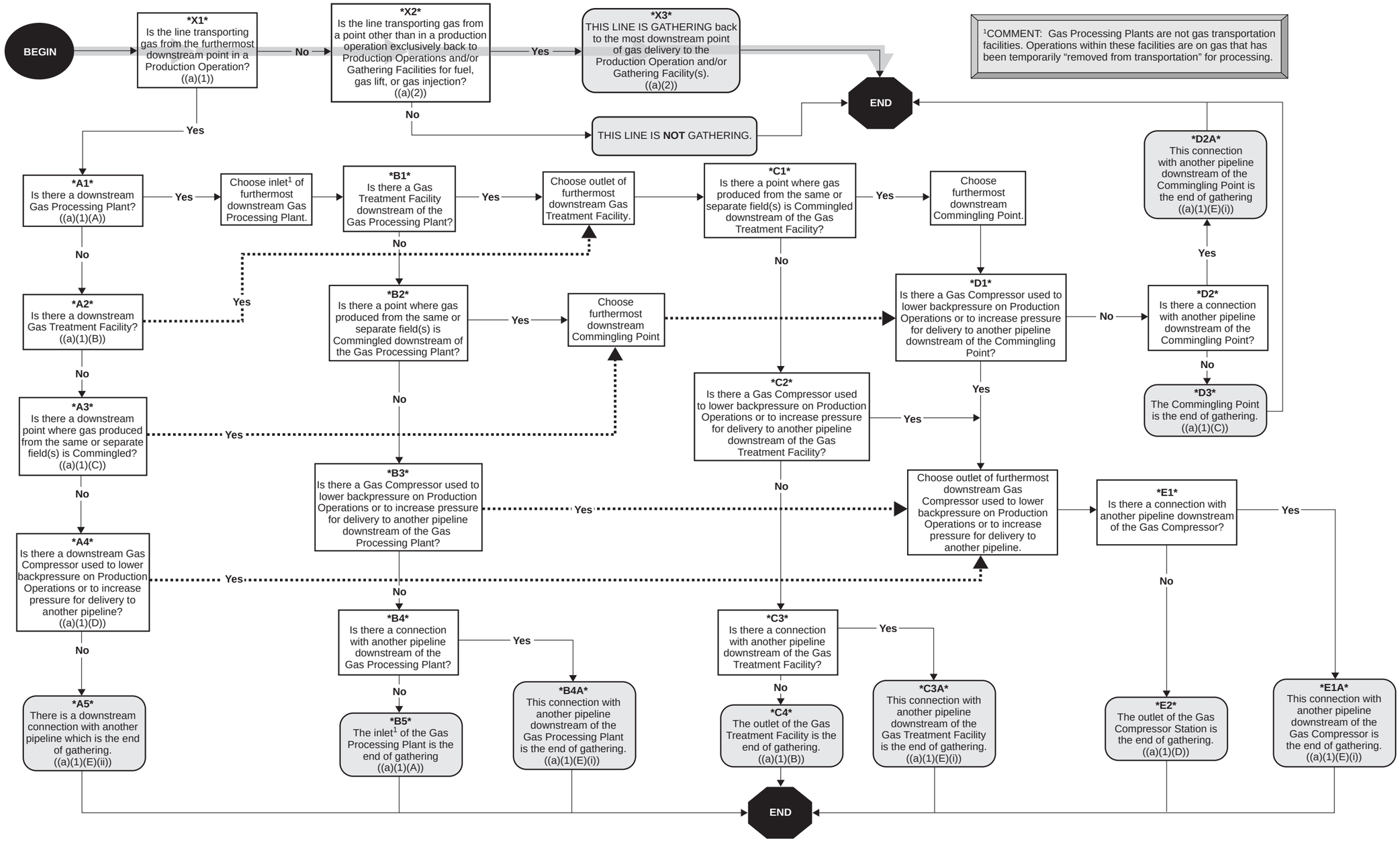

Figure B-19—Alternative 2 Decision Tree for Figure B-17 (Gas Return Lines)

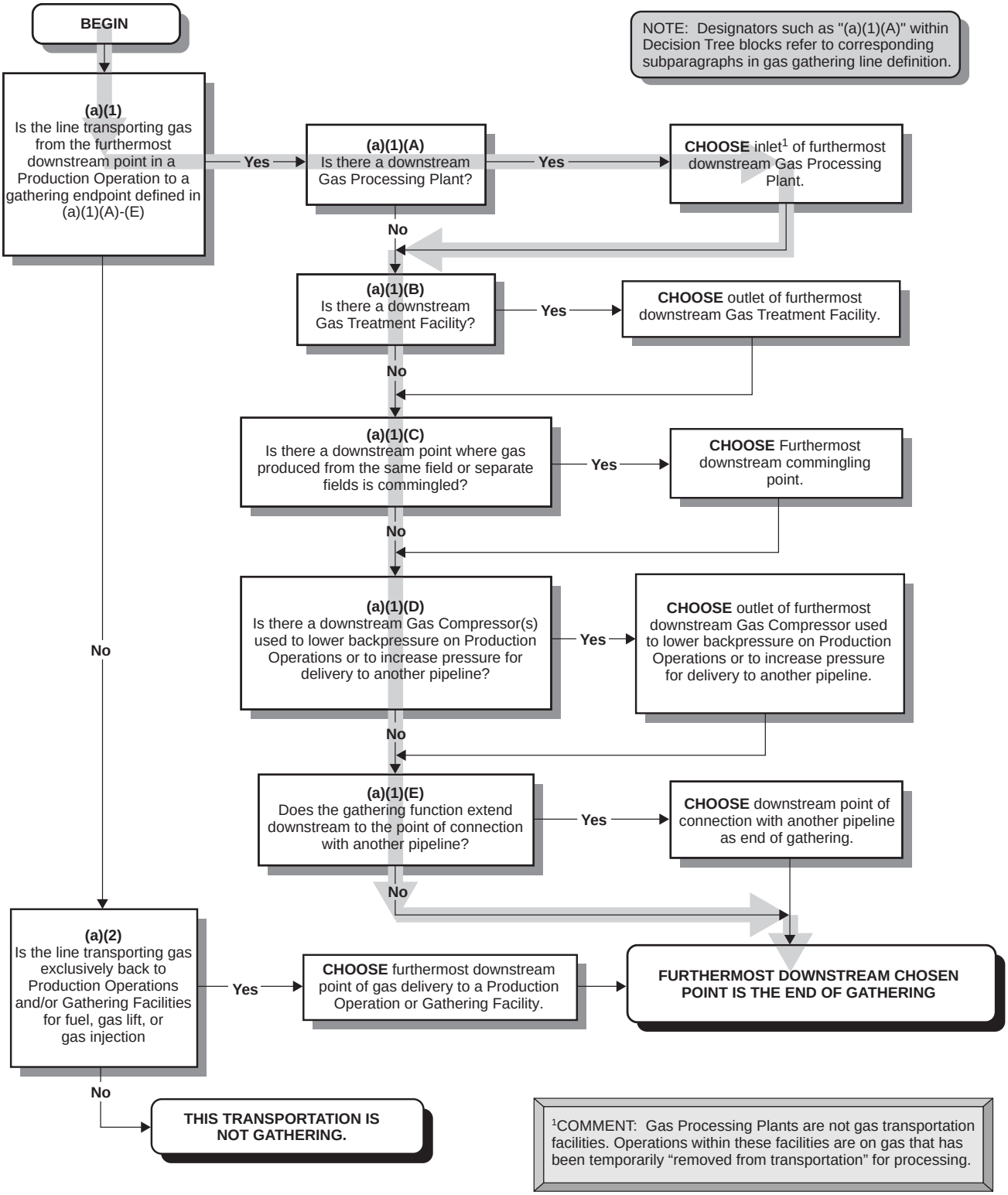

Figure B-20—Alternative 1 Decision Tree for Figure B-17 (Production Gathering)

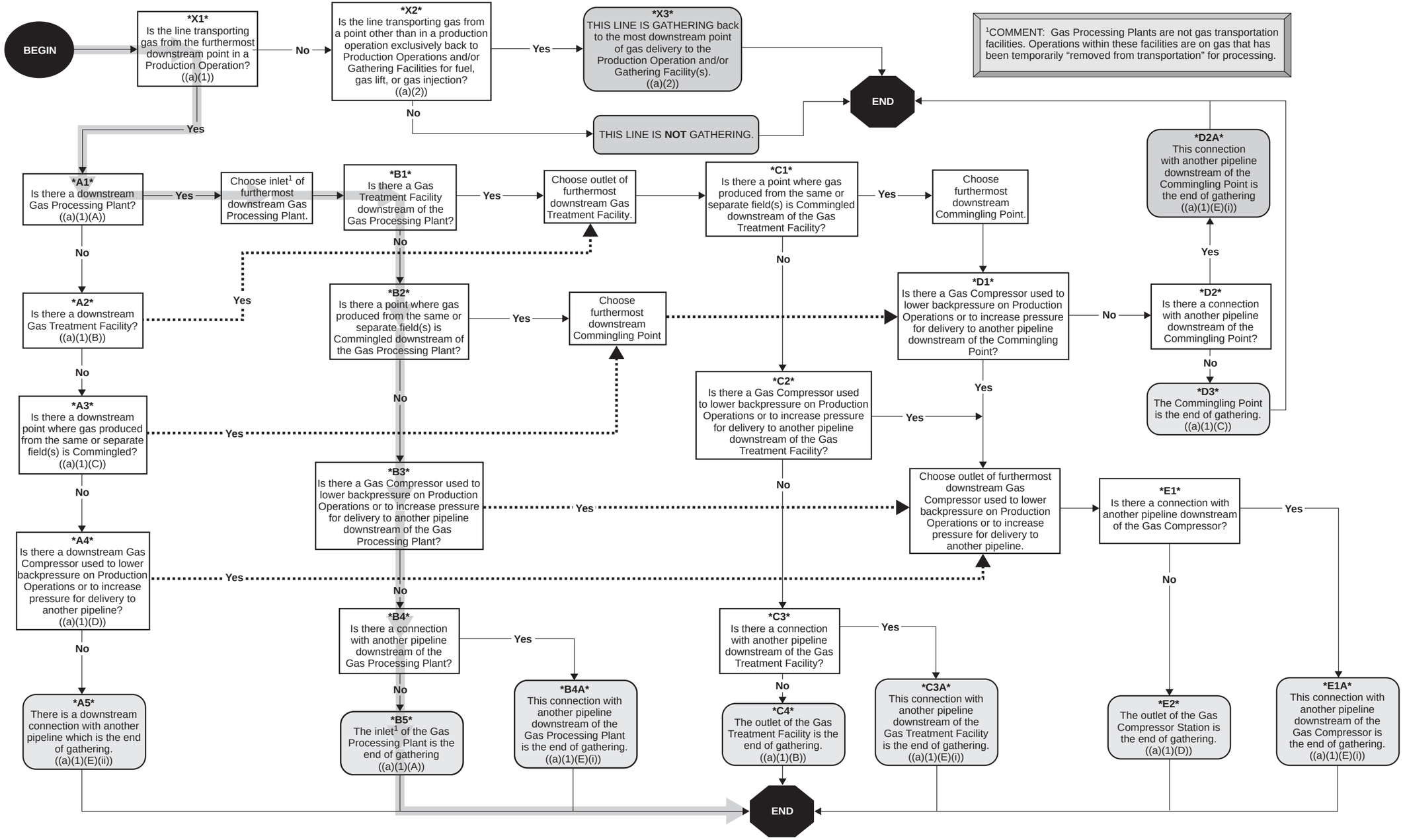

Figure B-21—Alternative 2 Decision Tree for Figure B-17 (Production Gathering)

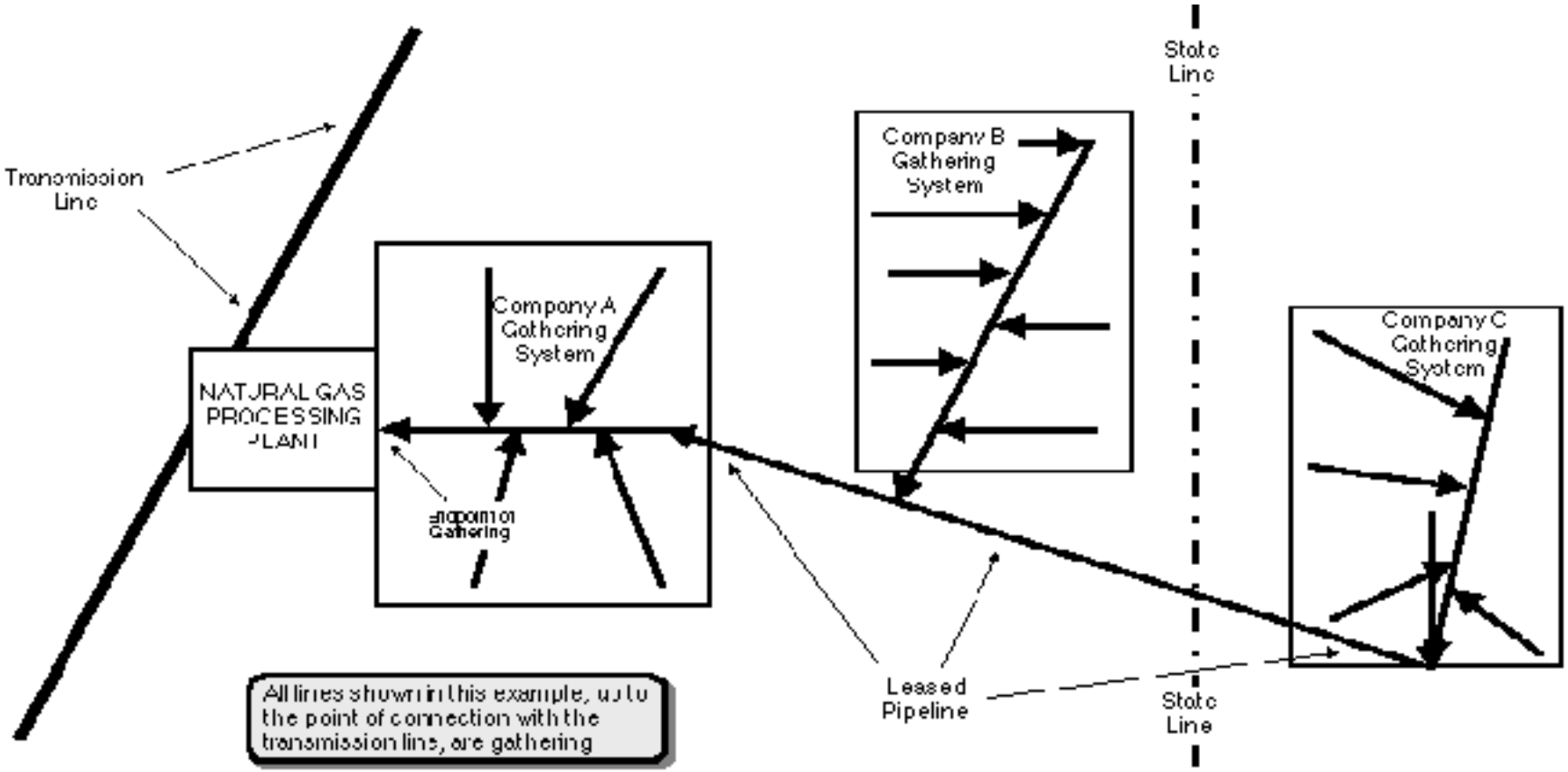

Figure B-22—Example of Gas Gathering Systems With Different Ownership and in Multiple States

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