-----Original Message-----
From: Thomas E. Stewart [mailto:tstewart@ooga.org]
Sent: Friday, July 12, 2002 9:36 AM
To: Robert W. Middleton (WHTFEPS)
Cc: W. Jonathan Airey
Subject: Pipeline Safety

Bob - thank you for meeting with Jon Airey and I this Tuesday to discuss several issues.

First, let me restate our appreciation for your effective work on the Wayne National Forest. WNF officials called Danny Thompson yesterday and advised him that, as promised, the new amended EA and DN/FONSI necessary for the lease sale will be released on July 19 and opened for public comment. I credit your involvement in this issue for getting us to this point. Please stay close to this issue.

Regarding pipeline safety, please refer to the following attached documents:

1. OOGA's comments to DOT regarding the most recent effort to define gathering lines for pipeline safety. OOGA represented several Appalachian association's in these proceedings.

2. The industry coalition's comments regarding same, filed under API's letterhead.

3. Supporting schematics to API's comments, contained in an EXCEL spreadsheet.

4. Another copy of API Recommended Practice 80 in PDF format.

We firmly believe that DOT 's intransigence to join with industry and to properly define gathering lines and clarify jurisdictional boundaries between where production facilities end and gathering begins disrupts and has an adverse impact on the the production domestic natural gas. I understand that you have already made inquiries into the issue. Airey and I will be do whatever is necessary to support your investigation of the issue. If necessary, we will come to D.C. - if you think we need to be there for discussions.

Once again Bob - thanks you for your efforts. Let us know what you need from our end.

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UNITED STATES OF AMERICA
BEFORE THE
DEPARTMENT OF TRANSPORTATION
RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION

In re Gas Gathering Line Definition : Docket No. RSPA-98-4868, Notice 1

JOINT COMMENTS OF THE OHIO OIL AND GAS ASSOCIATION, THE INDEPENDENT OIL AND GAS ASSOCIATION OF PENNSYLVANIA AND THE INDEPENDENT OIL AND GAS ASSOCIATION OF NEW YORK

The following comments are being jointly filed on behalf of the Ohio Oil and Gas Association, the Independent Oil and Gas Association of Pennsylvania and the Independent Oil and Gas Association of New York (referred to collectively as the "Joint Parties"). They are made in response to the Request for Comment on the proposed Gas Gathering Line Definition issued by the Research and Special Programs Administration ("RSPA") on March 11, 1999. *See* 64 Fed. Reg. 12,147 (Mar. 11, 1999).

SUMMARY INTRODUCTION

The Joint Parties have reviewed, participated in the development of, and strongly support the gathering line consensus definition recently filed in this docket by the Industry Coalition.

The definition of "gathering line" proposed by the Coalition is a consensus definition recommended by over 20 national, regional and state oil and gas industry associations representing every facet of our national oil and gas industry, including production, gathering, processing and transmission operations. Although drafting the definition may have been a complex and time-consuming process, an industry consensus was reached among all of the oil and gas producing basins in the country. This is especially significant where prior efforts have failed in large part because of the complex nature of the issue and the failure to take into consideration Appalachian Basin issues.

Moreover, the Joint Parties agree that the term "gathering line" is impossible to define independent of the operations surrounding it. That is, a gathering line generally begins at the end point of a production operation and ends at the beginning of a transmission/distribution system. Consequently, the Joint Parties believe that the term "gathering line" is properly defined in the context of those endpoints, as the Coalition has recommended.

Although the existing definition of "gathering line" has proven to be workable over the past twenty-eight years, the Coalition's proposed definition provides greater clarity in what has otherwise been an area rife with ambiguity. Accordingly, the Joint Parties firmly support the Coalition's common-sense approach to defining the term "gathering line" based upon the functions of pipeline systems.

THE JOINT PARTIES

The Ohio Oil and Gas Association ("OOGA") is a trade association comprised of oil and natural gas producers, natural gas pipeline companies, natural gas marketers, and other businesses providing services, goods, and equipment to the oil and natural gas industry in the State of Ohio. The fundamental purpose of OOGA is to protect, promote, foster and advance the common interests of those engaged in all aspects of the Ohio oil and natural gas industry. The OOGA's membership totals 1300 members, the majority of which are small business entities.

The Independent Oil and Gas Association of Pennsylvania ("IOGA-PA") is the principal non-profit trade association representing Pennsylvania's independent oil and gas producers, marketers, service companies and related businesses. IOGA-PA member companies drill and operate the majority of the state's 45,000 natural gas wells and a

significant number of its crude oil wells. Established in 1981, IOGA-PA is the leading advocate for independent producers in Pennsylvania.

The Independent Oil and Gas Association of New York ("IOGA-NY") is the principal non-profit trade association representing New York's independent oil and gas producers, marketers, service companies and related businesses. IOGA-NY represents approximately 121 oil and natural gas producer-member companies who drill and operate the majority of the state's natural gas wells and a significant number of its crude oil wells. IOGA-NY is the leading advocate for independent producers in New York.

COMMENTS OF THE JOINT PARTIES

The Coalition's Proposal.

Attached for purposes of clarity are the definitions proposed by the Coalition, and being filed contemporaneous with this filing, now being supported by the Joint Parties. See Attachment 2 to the Industry Coalition Proposal, attached hereto. The Joint Parties also have attached the Decision Tree proposed by the Coalition to assist entities in determining whether a facility is gathering. Attachment 3 to the Industry Coalition Proposal, attached hereto. This Decision Tree helps bring clarity to how the Coalition Proposal works and is fully supported by the Joint Parties as a necessary part of that Proposal.

The Coalition's Recommended Definition Is Properly Consistent with the Historical Industry Understanding of the Gas Gathering Function.

When used in the industry, the term "gas gathering line" has historically referred to the pipeline system used to transport gas from the endpoint of a production operation to the point where the gas first enters a transmission/distribution system – i.e., in terms of functionality. Often, that pipeline gathering system encompasses more than simply the pipelines themselves – for example, historically a "gas gathering line" has included at times

intermediate points of delivery that might exist on the systems, as well as compression, treatment and processing operations, depending on the fields and gas characteristics involved. The Coalition's proposed Gas Gathering Line Definition is consistent with that historical industry understanding.

The Coalition's focus on the "production operation" as the entry into the gathering line is well-considered. "Production operation" must be defined to set forth the beginning point of gas gathering. Production operations generally take place upstream of any gathering facility, frequently extend well downstream of a well site and will often include several processes required to prepare the gas for transportation. As such, the definition of "production operation" must include all of the facility elements, and combinations of elements, commonly used in such an operation. The Joint Parties believe that the Coalition's recommended definition of "production operations" achieves this goal and assists in establishing one of the parameters of the gathering line definition. The "production operations" definition brings clarity to a complex group of issues. Further, the "production operations" are regulated by the state oil and gas regulatory agencies with expertise in production operations.

Likewise, the Coalition's approach to defining the terminating point of a "gathering line" is appropriate. Gas flows into a gathering line from various locations and often consists of different qualities and pressures. It is therefore necessary to subject the gas to one or more intermediate processes. The furthermost downstream point – whether it be a gas processing plant, gas treatment facility, gas gathering compressor, the commingling of two or more fields or the interconnection with another pipeline – thus properly defines the

endpoint of a "gathering line" by accounting for the overall gathering function of those intermediate processes.

The Coalition's Recommended Gas Gathering Line Definition Serves to Protect Marginal Production.

Independent oil and gas producers are responsible for a significant portion of the oil and gas produced and consumed in this country. Much of that oil and gas comes from stripper wells in the areas represented by the Joint Parties – i.e., from low-volume, marginal wells. By clearly defining the terms "gathering line" and "production operation" for purposes of Pipeline Safety Act jurisdiction, the Coalition's recommendation serves to protect that marginal oil and gas production from economic shut-in.

As of January 1, 1998, Ohio had approximately 62,568 stripper oil and gas wells. Pennsylvania had approximately 47,000 such wells. And, New York had approximately 9,424 stripper oil and gas wells. Marginal Oil & Gas Rpt. (Interstate Oil and Gas Compact Comm., 1998 ed.) Because of the marginal nature of these wells, they are extremely sensitive to economic impacts, including those occasioned by governmental regulation. By clearly defining "production operation" to include these 119,000 stripper wells, and thereby excluding them from Pipeline Safety Act regulation as gathering, the Coalition's proposal serves to protect these low-volume wells from being shut-in solely for economic reasons by unnecessary increased costs for changes in the regulation of production facilities.[1]

Nor is there any reason to believe that this result will somehow jeopardize the public welfare. Oil and gas production operations have historically been regulated, in terms of safety and otherwise, by the states in which those operations are located. That state's oil

[1] This is fully consistent with the statement made in the 1991 RSPA proposal: "It is not the intent of this notice to extend the jurisdiction of part 192 to cover additional pipelines."

and gas regulator authorities will maintain their historic role for production operations which has proven more than adequate to date.

Example of Appalachian Basin Operations.

The Appalachian Basin is very mature and contains the oldest producing fields found in the United States. While operators continue to find new discoveries and the wells are typically long life, low pressure, and often 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 ("LDC's") 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 in order to achieve economic production rates.

Within this spaghetti bowl 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 costs of production. This practice assists the gathering companies or LDC's 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.

The inset in Attachment 7 to the Coalition proposal (a copy is attached for convenience) illustrates a production operation (owned by XYZ Company) delivering natural gas through a master 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 master meter station to measure the volume of gas being delivered to gathering.

In this example, 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.

The production operation illustrated in the Attachment 7 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.

This attachment illustrates how well the Industry Coalition's proposal works for typical Appalachian Basin producers.

CONCLUSION

In summary, OOGA, IOGA-PA and IOGA-NY request that the RSPA adopt the Industry Coalition's recommended definition of "gathering line." The Coalition's recommended definition is well-reasoned, balances the unique characteristics, operating practices and conditions of the oil and gas industry nationwide, and is consistent with the historic industry understanding of the gas gathering function.

Respectfully submitted

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Tim Sampson
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October 4, 1999

Dockets Management System
U.S. Department of Transportation
Room PL-401
400 Seventh Street, SW
Washington, DC 20590-0001

Re: Research and Special Programs Administration (RSPA)
Department of Transportation (DOT)
Request for Comment: 49 CFR Part 192, Gas Gathering Line Definition
64 FR 12147, March 11, 1999, Docket No. RSPA-98-4868

The following comments and recommendations are filed on behalf of an industry coalition (the "Coalition") in response to RSPA's request for public input as to the need and preferred form for re-definition of "gas gathering line" in the federal gas pipeline safety standards.

The American Petroleum Institute, the Gas Processors Association, the Independent Petroleum Association of America, and the Appalachian Producer Organizations recognized the benefits of a cooperative approach to this long-standing issue and took the lead in organizing the Coalition. The Coalition includes representatives from numerous national, regional, and state oil and gas industry associations and a broad range of stakeholders from companies that conduct oil and gas production, gathering, processing, and transmission operations throughout the United States. Attachment 1 is a listing of these trade associations with representatives who have participated in formulating the Coalition recommendations.

The Coalition comments and recommendations are the result of over five months of intensive effort to develop a unified industry response to the RSPA request. This broad-based cooperative industry effort to incorporate nationwide input and perspectives has been a unique event in the history of the gas gathering definitional debate. The resulting Coalition work product carefully balances the unique characteristics, operating practices and conditions of the domestic oil and gas industry across the nation.

We strongly commend the agency for its cooperative and leading-edge approach to addressing this highly complex issue, and its use of the Internet discussion forum for providing an excellent opportunity for all stakeholders to fully participate in the regulatory development process. We support and encourage you to continue this cooperative and open approach in future regulatory development.

Our comments and recommendations are attached and are presented in the following format:

A. Definition of "Gathering Line"

B. Definition of "Production Operation"

C. Additional Definitions

D. Guiding Principles: Commentary on Proposal Development

E. Treatment of Lines Reclassified to Transmission or Non-Rural Gathering

F. Examples to Illustrate "Production Operation" Concepts

G. Examples to Illustrate "Gathering Line" Concepts

On behalf of the Coalition, thank you for the opportunity to provide these recommendations and comments. We would be pleased to respond to questions or provide additional information.

Sincerely,

Attachments

INDUSTRY COALITION DETAILED COMMENTS
RSPA REQUEST FOR RECOMMENDATIONS
49 CFR PART 192 GAS GATHERING LINE DEFINITION
64 FR 12147; March 11, 1999 Docket No. RSPA-98-4868.

The following recommendations regarding the definition of "gathering line" in the federal gas pipeline safety standards are filed on behalf of a broad industry coalition (the "Coalition") representing the oil and gas production, gas processing, and gas pipeline transportation industry across the nation. (Attachment 1 lists represented industry associations). They are made in response to the Request for Comment published by RSPA on March 11, 1999 (64 FR 12,147).

The Coalition's proposal defines the term "gathering line" on the basis of the function performed by that type of pipeline. Coalition recommendations for a regulatory definition of "gathering line" include definitions of "production operation" and specified gathering line "endpoints" to help describe the beginning and ending points of the gathering function.

The Coalition proposal discusses factors, issues, and alternatives considered in development of the proposed definition. The proposal includes several examples to illustrate application of the definition. These examples are an integral part of the Coalition's recommendation.

A. DEFINITION OF "GATHERING LINE"

1. Coalition Proposal

"**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, with possible intermediate deliveries to other production operations, pipeline facilities, farm taps, or residential/commercial/industrial end users:

(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.

This proposal, with its supplementary definitions, is found in **Attachment 2** and is graphically illustrated in the Decision Tree in **Attachment 3**. Examples of "gathering lines" are shown and discussed in **Attachments 5 -10**.

2. Rationale: Basic "Gathering Line" Concepts Embodied in the Definition

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 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 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 must be considered. These are the concept of "function" and the concept of "furthermost downstream."

"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.

"Furthermost downstream" recognizes that the most downstream of all defined end points is the endpoint for the gathering 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 end point.

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 below and illustrated in **Attachments 4A and 4B**.

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 a gas gathering line terminates at a natural gas processing plant the endpoint of gathering is the plant inlet as shown in **Attachment 4A**.

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 a gas gathering line terminates at a stand-alone gas treatment facility, the endpoint of gathering is the facility outlet as shown in **Attachment 4A**.

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. As shown in **Attachment 4A**, gathering is not limited to accumulation of gas from only one or two fields[1] (suggested by RSPA in its 1991 proposal and challenged by API in its comments on that proposal). 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. 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.

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 **Attachment 4B**.

[1] In some regions of the United States, "fields" are neither well-defined nor statically 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 Coalition proposal.

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" in this case has not ended until all four have occurred (and, in the cases of commingling and compression, more than once). For this reason, the Coalition proposal is for gathering to end at the "furthermost downstream" of the defined gathering endpoints. This concept is illustrated in **Attachment 4B**.

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 deliver the gas some additional distance from the plant to another pipeline. The "incidental gathering" resumes at the plant outlet and continues to the other pipeline connection. This situation is even more common when a compressor is the "identified endpoint," and it is the normal case 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 Coalition has therefore included in its proposal a recognition that gathering continues downstream of the last endpoint identified by processing, treatment, commingling, or compression activities to the connection with another pipeline. The final example in **Attachment 4B** illustrates this concept.

All of the above concepts are consistent with the historical industry understanding of the gas gathering function. The Coalition proposal for definition of "gathering line" includes a concept that is utilized by some state regulators as a logical extension of the current regulatory program for gas gathering. 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.[2] 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. They are operated by the gathering system operator. For all of these reasons, it makes sense to regulate these lines in the same manner as gathering lines. The Coalition therefore has proposed that these gas return lines, when used solely by gathering or production facilities for fuel, gas lift, or gas injection, be included in the definition of "gathering line."

Application of all of the above concepts continues to be protective of public safety because the gathering lines <u>are</u> fully regulated and subject to the same pipeline safety standards as transmission lines in any areas where the lines are non-rural (within city limits, designated residential or commercial areas, etc.).

[2] 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. DEFINITION OF "PRODUCTION OPERATION"

1. Coalition Proposal

> **"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:
>
> (1) extraction and recovery, lifting, stabilization, treatment, separation, production processing, storage, and measurement of hydrocarbon gas and/or liquids; and
>
> (2) associated production compression, gas lift, gas injection, or fuel gas supply."

Examples of "production operations" are shown and discussed in **Attachments 5 -7**.

2. Rationale

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 wording of the current federal gas pipeline safety regulations does not adequately describe this beginning point of gas gathering. A gathering line is defined as "a pipeline that transports gas from a current production facility to…." The term "current production facility" is neither defined nor a common "term-of-art" within the oil and gas industry. This circumstance has led to past misinterpretations by both regulators and the courts.

In reality, the production function, in most cases, extends well downstream of a well site and may include several processes required to prepare the gas for transportation. Such processes may include separation, dehydration, hydrocarbon liquid stripping or processing, desulfurization, CO2 or N2 removal and compression (including series, or "staged," compression) used to enhance the productive capacity of the wells. The scope of production operations may vary from large consolidated lease blocks to single well drilling units. In most production areas there are numerous wells operated by a single operator or by multiple operators.

By mutual agreement and/or contract, 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 document. 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.

For all of these reasons, the Coalition has proposed to define "production operation," as shown above, in order to define the beginning point for gas gathering. This approach is consistent with that of RSPA in 1991, and the Coalition's proposed definition of "production operation" is similar to that proposed by RSPA. Both the Coalition proposal and the 1991 RSPA proposal are broader than the "production facility" definition in the federal hazardous liquid pipeline safety standards, 49 CFR Part 195. Gas is handled in virtually all parts of a crude oil or natural gas production

operation, and this definition needs to include all of the facility elements and combinations of elements commonly used in such an operation.

C. ADDITIONAL DEFINITIONS

To ensure a mutual understanding of the various oil and gas industry terms-of-art that are used in the preceding definitions of "gathering line" and "production operation," the Coalition has defined these terms. A full listing of these "additional definitions" is included along with the industry proposal for definitions of "gathering line" and "production operation" in **Attachment 2**. The Coalition recommends that these supplemental definitions be adopted as part of the federal gas pipeline safety standards or that they be incorporated in the standards by reference (e.g., through an API Recommended Practice currently under development by the Coalition). These supplemental definitions serve as Coalition comments to further explain the meaning and scope of "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.

D. GUIDING PRINCIPLES: COMMENTARY ON PROPOSAL DEVELOPMENT

In formulating its current recommendations, the Coalition focused on the industry's historical "functional concept of gas gathering." The Coalition was guided by the intent of the agency not to make wholesale changes in the way pipeline function is understood or applied. This concept was expressed by RSPA in its September 25, 1991 Federal Register notice of intent to redefine "gathering line" (and has been re-affirmed by RSPA staff).

In addition, the Coalition - guided by RSPA staff comments in the internet discussion forum – has limited its consideration of "gas gathering" to "**onshore** gas gathering"; i.e., the Coalition has simply not attempted to address or make any recommendations regarding "offshore gas gathering" in its proposal.

In Coalition deliberations, several alternative approaches (briefly discussed below) were considered in the interest of developing a definition that was short and simple as well as accurate. The Coalition ultimately concluded that these approaches - many of which had been attempted in the past - could not encompass the great variety of scenarios involved in the gas gathering process.

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. 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.

One other option considered was to define as an "end-point" 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." The Coalition 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 and the "Recommended Practice" now under development 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.

Having given careful consideration to these and other factors and issues, the Coalition developed this proposal based almost exclusively on pipeline function from a pipeline safety perspective. The Coalition has borrowed some of the basic concepts presented in the 1991 RSPA proposal and a subsequent Gas Processors' Association (GPA) proposal published in the Federal Register on March 11, 1999. The Coalition has added to those definitions significantly to provide a comprehensive description of the gas gathering function that captures the variety of scenarios that do exist.

As mentioned above, the Coalition proposal for regulatory definition language in 49 CFR Part 192 is supplemented and supported by a graphical "decision tree" and by examples of "production operation" and "gathering line" scenarios. This explanatory material is an integral and inseparable part of the current Coalition proposal. Every effort has been made to define critical terms, but the illustrations make the meaning much clearer than would otherwise be the case. The examples thus provide an extremely useful tool to help people with varying levels of experience with gas gathering to correctly and consistently interpret the proposed definition. In the absence of such real-life examples of facility configurations, for instance, it might be possible to suggest that the effect of the Coalition proposal is to inappropriately expand the scope of "production" and to extend "gathering" indefinitely. Such is not the case, as the examples illustrate.

In a parallel effort, the Coalition has begun development of a guideline document that ultimately will include these definitions and examples and any other relevant material as guidance to industry and other interested parties regarding the delineation between the various functions in the production and transportation of gas. Current plans are to publish this guidance as an API "Recommended Practice." This Recommended Practice will be suitable for incorporation by reference by RSPA into the federal gas pipeline safety standards if the agency so chooses, and the Coalition will urge that this be done.

E. TREATMENT OF LINES RECLASSIFIED TO TRANSMISSION OR NON-RURAL GATHERING

The intent of the Coalition proposal is to avoid significant reclassification of lines to or from gathering or production operation service by the application of the Coalition's proposed definitions. It is, however, possible that this could occur in some instances. The Coalition recommends that, as stated in the 1991 RSPA proposal, "…(such) lines would only be subject to the operating and maintenance requirements and RSPA (would) assist the pipeline operator in overcoming any problems encountered in complying with those regulations." If necessary, the Coalition will comment further on this issue in the future.

F. EXAMPLES TO ILLUSTRATE "PRODUCTION OPERATION" CONCEPTS (ATTACHMENTS NO. 5 – NO. 7)

This discussion describes the furthermost downstream point of the production operations.

1. Attachment 5 – "Examples of Common Gas Production and Gathering Operations"

Attachment 5 illustrates three different types of simple production operations.

In Scenario A, several gas wells produce through flowlines to their respective on-lease 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.

In Scenario B, several gas wells from different leases 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.

In Scenario C, a single gas well produces through a flowline directly to a transmission line with no intermediate production operations (other than metering) and no gathering. The furthermost downstream point of the production operation is the point of connection to the transmission line and is the beginning of transportation.

2. Attachment 6 – "Example of a Central Production Facility with Satellites"

This particular example is based on an actual 15,000 acre, 160(+) well gas production operation unitized so that it operates in the same manner as a single lease with one operator. 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 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 facility for water removal and condensate storage. In this example, the furthermost downstream point of the production operation happens to be the final gas volume meter at the central production facility. (This does not imply that metering or custody transfer signifies a change of function.)

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

In 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 example 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 facility in the field (similar to Scenario B in Attachment 5) 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 facility.

3. Attachment 7 – "Example of Typical Appalachian Production, Gathering, and Transmission"

This example illustrates a type of production operation that is quite common, although not necessarily unique, to the Appalachian Region of the United States. This example is shown in the inset at the right of the attachment, "Example of Multi-Operator Cascading of Production Facilities."

The Appalachian Basin is very mature and contains the oldest producing fields found in the United States. While operators continue to find new discoveries and the wells are typically long life, low pressure, and often 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 in order to achieve economic production rates.

Within this spaghetti bowl 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.

The inset in Attachment 7 illustrates a production operation (owned by XYZ Company) delivering natural gas through a master 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 master meter station to measure the volume of gas being delivered to gathering.

In this example, 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.

The production operation illustrated in the Attachment 7 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.

G. EXAMPLES TO ILLUSTRATE "GATHERING LINE" CONCEPTS (ATTACHMENTS NO. 5 – NO. 10)

1. Attachment 5 – "Examples of Common Gas Production and Gathering Operations"

Attachment 5 illustrates three different "gas gathering scenarios."

In Scenario A, gas from three distinct production operations is commingled, compressed, processed, and delivered to a transmission line. The Decision Tree in Attachment 5A is marked to illustrate the determination as to the endpoint of gathering in this example. 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.

In Scenario B, gas from a single production operation is gathered to a transmission line. The Decision Tree in Attachment 5B is marked to illustrate the determination as to the endpoint of gathering in this example. 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.

In Scenario C, gas from a single gas well is carried by flowline to connect to a transmission line. The Decision Tree in Attachment 5C is marked to illustrate the determination that "gathering" never begins in this example; 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 example.

2. Attachment 6 – "Example of a Central Production Facility with Satellites"

Gas from the production operation is gathered to a natural gas processing plant; this particular example does not address if this 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 facility and satellites. This function is defined as "gathering" in the Coalition proposal. The Decision Tree in Attachment 6A is marked to illustrate the determination as to the endpoint of gathering in this example. 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 example, is the point at which it is metered onto the unit at the central production facility. Routing of the gas from that point to equipment within the central production facility and to the satellites is done through production piping.

3. Attachment 7 – "Example of Typical Appalachian Production, Gathering, and Transmission"

Gas from several multi-well and single-well production operations is commingled, compressed, and delivered to a transmission line connection. The Decision Tree in Attachment 7A is marked to illustrate the determination as to the endpoint of gathering in this example. 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 example as the point at which the production facility whose 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).

The example shown in Attachment 7 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.

Like the production operation in the Attachment 7 Inset, this gathering line example 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 property and responsibility of the end-user and is not otherwise addressed[3] in these comments.

4. Attachment 8 – "Example of a Gas Gathering System with Multiple Compressors"

This example is based on a 900-mile gathering system that covers six 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.

The Decision Tree in Attachment 8A is marked to illustrate the determination as to the endpoint of gathering illustrated in Attachment 8. 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 example 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.

5. Attachment 9 – "Example of a Gas Gathering System with Fuel Gas Return Lines"

In this example gathering from the production operations ends at the inlet to the gas processing plant; the residue gas is delivered to a transmission line at the plant outlet. Residue 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.

The Decision Tree in Attachment 9A is marked to illustrate the determination as to the endpoint of gathering for the gas return lines in this example. 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 example - the points of delivery to Compressors X, E, and A with each designating the end of gathering for those respective pipelines.

The Decision Tree in Attachment 9B is marked to illustrate the end of gathering from production operations. 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 <u>not</u> extend further downstream from the gas processing plant. Thus, the inlet of the gas processing plant is the end of gathering.

[3] Nothing in the Coalition's recommendation is intended to alter the jurisdictional status of customer taps.

6. Attachment 10 – "Example of Gas Gathering Systems with Different Ownership and in Multiple States"

This example 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 Coalition proposed 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.

Attachment 1

GAS GATHERING LINE DEFINITION COALITION
INDUSTRY ASSOCIATION REPRESENTATION

Alaska Oil and Gas Association (AOGA)

American Petroleum Institute (API)

Appalachian Producers

American Gas Association Gas Pipeline Technical Committee (GPTC)

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)

Attachment 2

49 CFR PART 192 GAS GATHERING LINE DEFINITIONS
October 4, 1999 Industry Coalition Proposal

"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, with possible intermediate deliveries to other production operations, pipeline facilities, farm taps, or residential/commercial/ industrial end users:

(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

(F) the connection to another pipeline downstream of:

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

(iv) 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.

"PRODUCTION OPERATION"

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:

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

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

ADDITIONAL DEFINITIONS

Natural gas processing plant is a natural gas processing operation, other than production processing, operated for the purpose of commercially extracting natural gas liquids from the gas stream.

Gathering line gas treatment facility is 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.).

Production field means an area that is underlain by at least one reservoir containing natural gas or natural gas associated with crude oil.

Production is a blanket term referring to all of the operations enumerated in the following definitions.

1) **Piping, as used in the definition of "production operation,"** includes individual well flowlines, equipment piping, transfer lines between production facility equipment elements and sites, and tie-in lines to connect to gathering, transmission, or distribution lines.

2) **Extraction** and **recovery** (i.e. primary, secondary, and tertiary) are 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.

3) **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.

4) **Stabilization** is 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.

5) **Separation** is 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.

6) **Treatment** is 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.

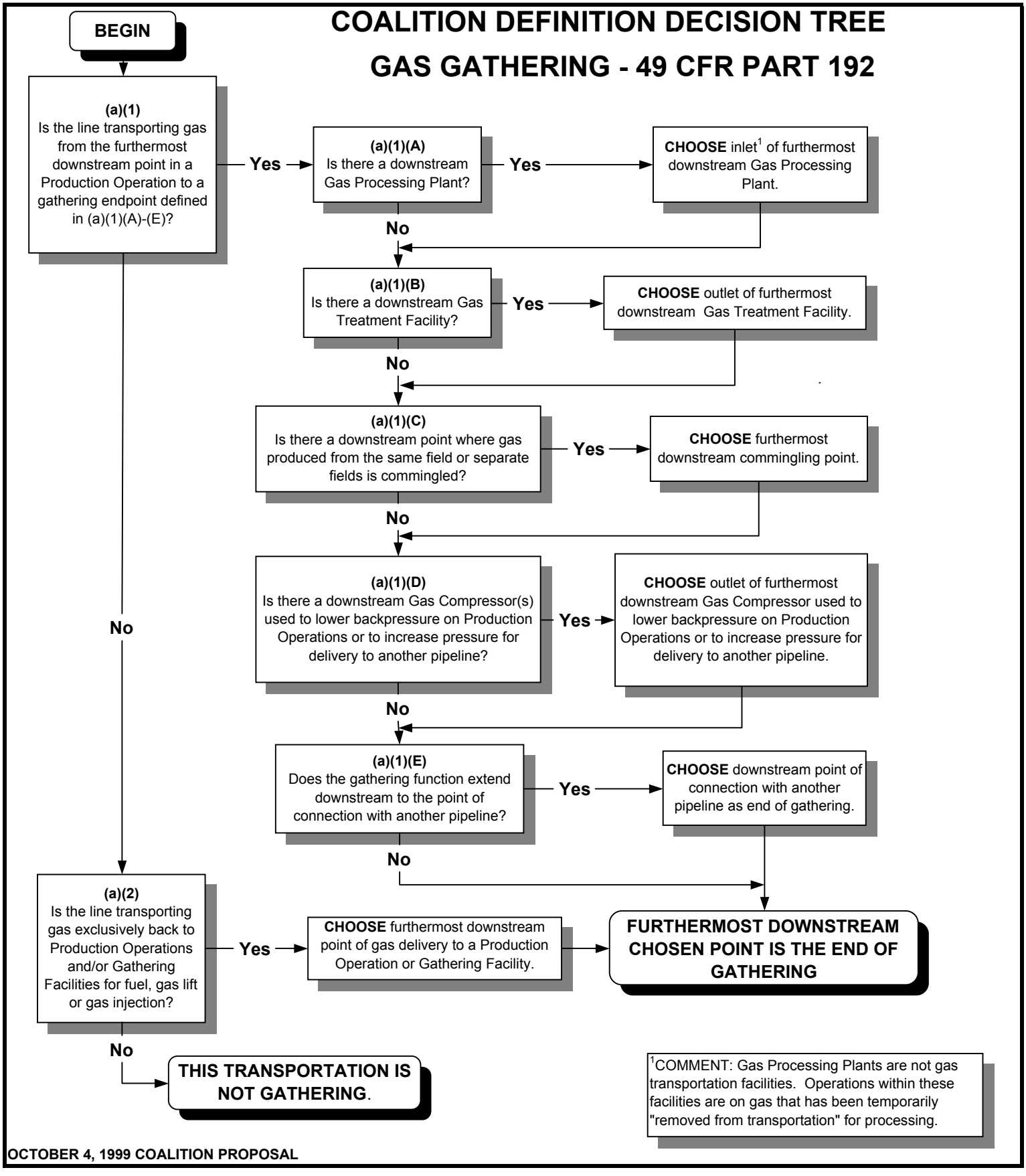
7) **Measurement** is the process of gauging or determining the quantity of hydrocarbons (natural gas or liquid products). Equipment involved in these operations are meter runs, flow meters, metering skids, etc.

8) **Production processing** is a commercial natural gas processing operation for the recovery from the gas of natural gas liquids and is limited to situations in which (1) there is no custody transfer of the gas, from production through processing and residue return; (2) there have been no intermediate production operations between the well and the processing facility; and (3) all residue gas goes back into the production and/or production support operations as fuel, gas lift gas, and/or injection.

9) **Storage** is 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.

10) **Production compression** is compression situated within the production field and used to (1) enhance production through reduced backpressure on the wells, gas lift, and/or gas injection, and/or (2) boost produced gas pressure to enhance delivery into a gas gathering line.

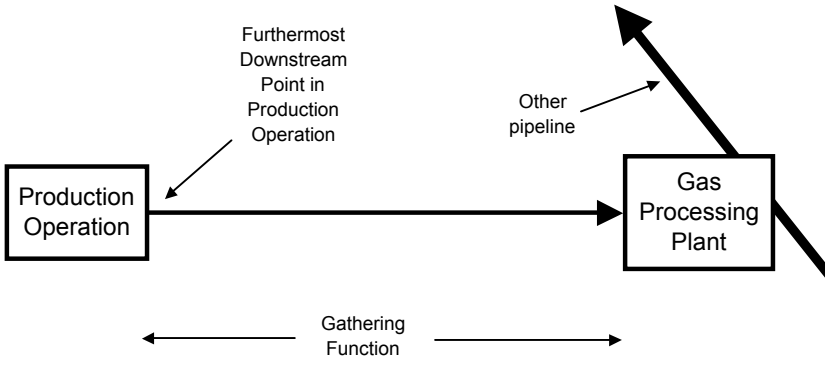
Attachment 3



Attachment 4A

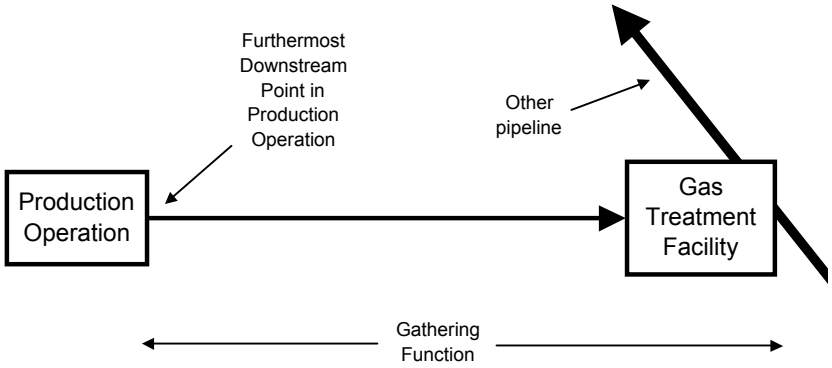
BASIC "GATHERING LINE" CONCEPTS

"GAS PROCESSING" IS NOT A PIPELINE FUNCTION



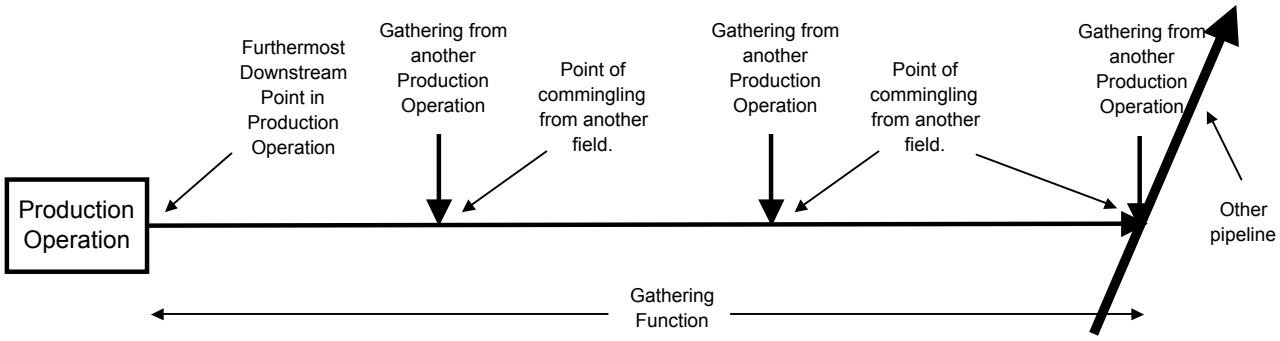
Gas processing is not regulated under the federal gas pipeline safety standards. "Gas gathering" ends at the INLET to a gas processing plant unless resumed at the outlet by further gathering functions downstream of the gas processing plant.

"GAS TREATMENT" IS A DISTINCT FUNCTION ON MANY GATHERING SYSTEMS



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

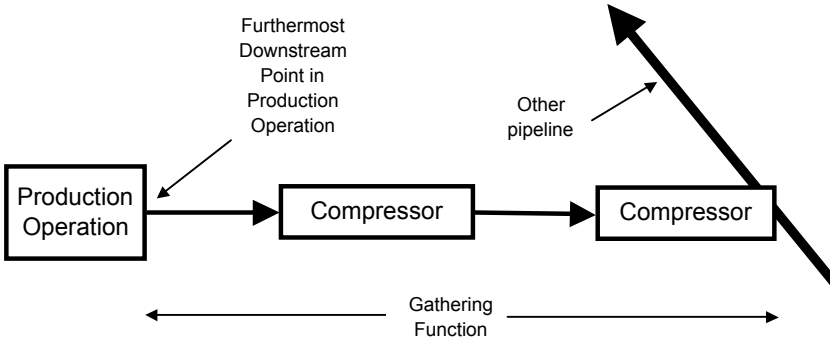
THE "GATHERING" FUNCTION COMMINGLES GAS FROM DIFFERENT SOURCES



Attachment 4B

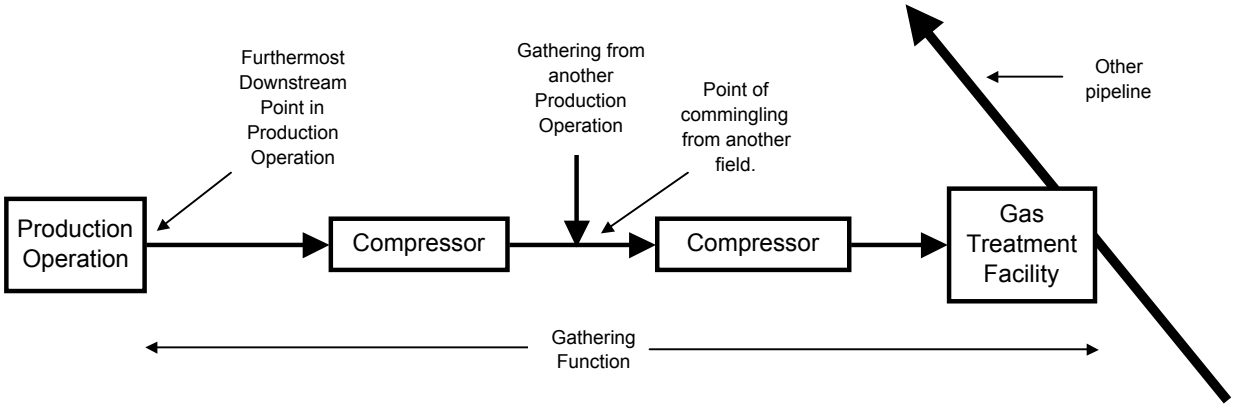
BASIC "GATHERING LINE" CONCEPTS

GATHERING LINES OFTEN HAVE MULTIPLE COMPRESSORS IN SERIES

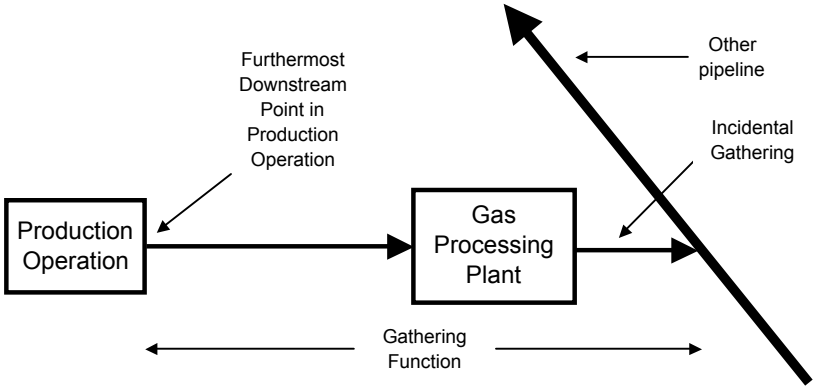


Gathering compression is used to lower line operating pressure to facilitate deliveries into the pipeline from production operations or to increase downstream gathering line pressure for delivery to another pipeline. Multiple compressors along a gathering line are common.

GATHERING EXTENDS TO THE FURTHERMOST DOWNSTREAM "ENDPOINT"



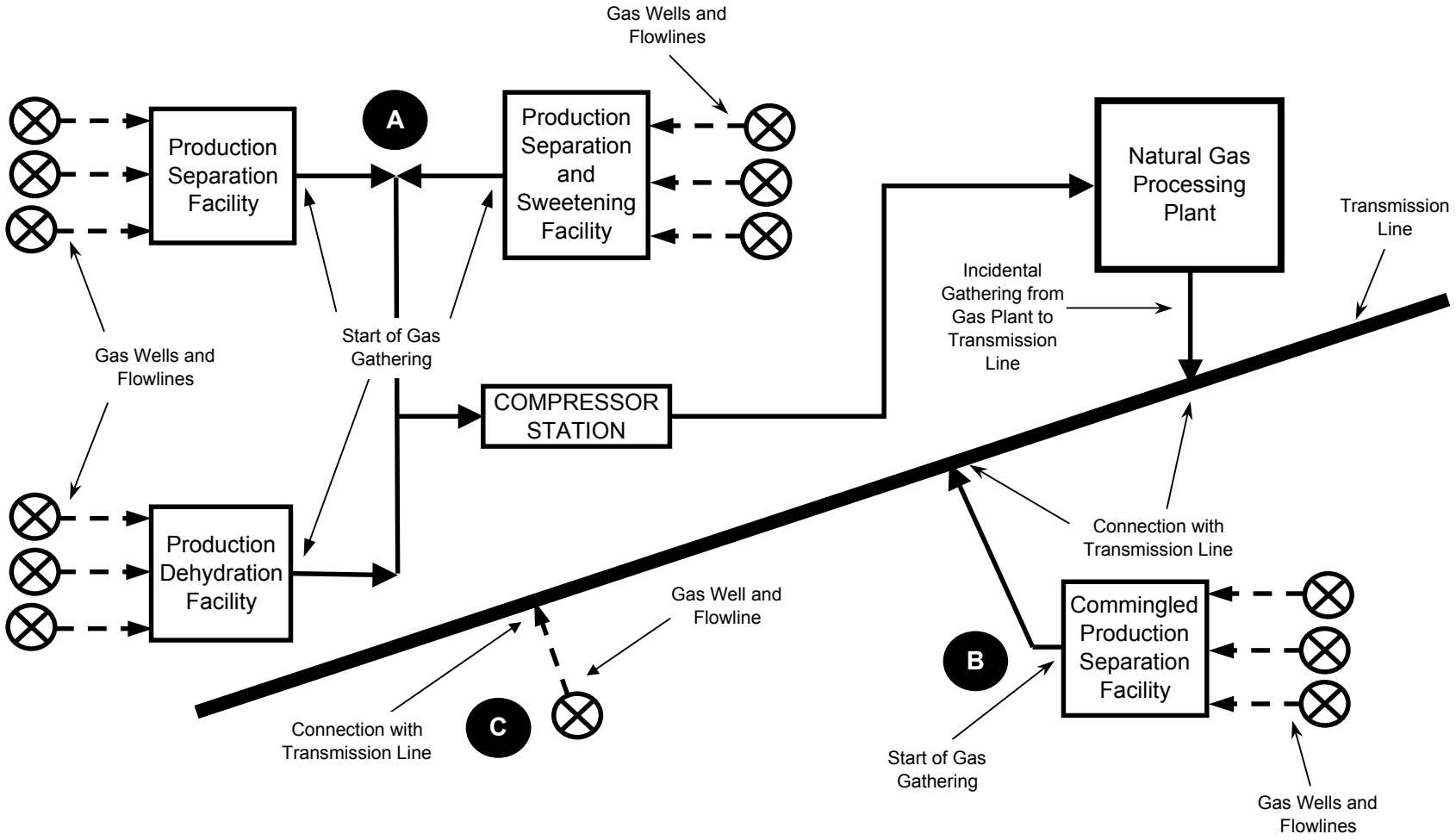
"INCIDENTAL GATHERING" DOWNSTREAM OF AN IDENTIFIED ENDPOINT



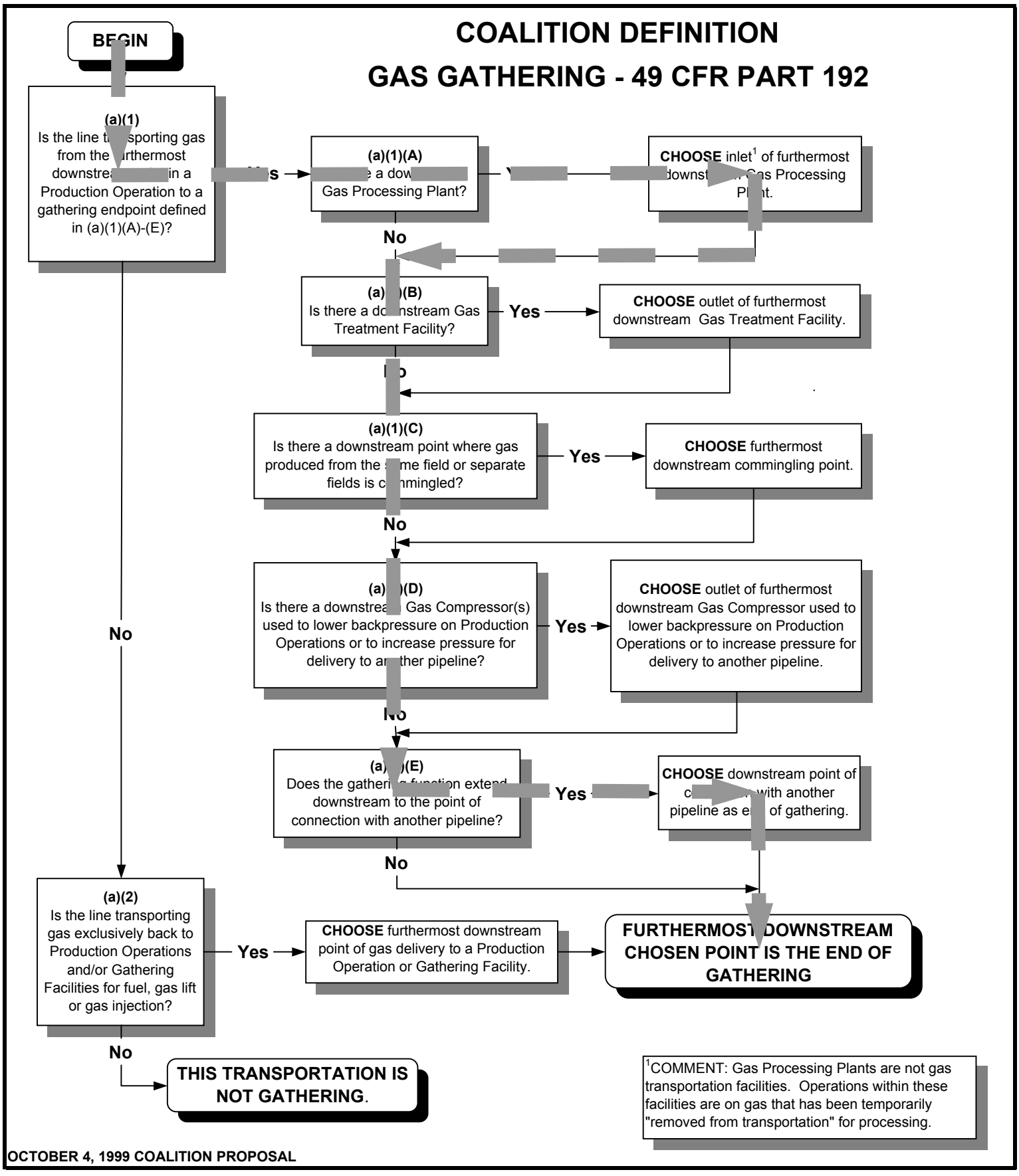
"Incidental gathering" is the additional downstream gathering pipeline sometimes needed to connect the outlet of an identified gathering endpoint with a transmission line, distribution line, or other pipeline facility.

Attachment 5

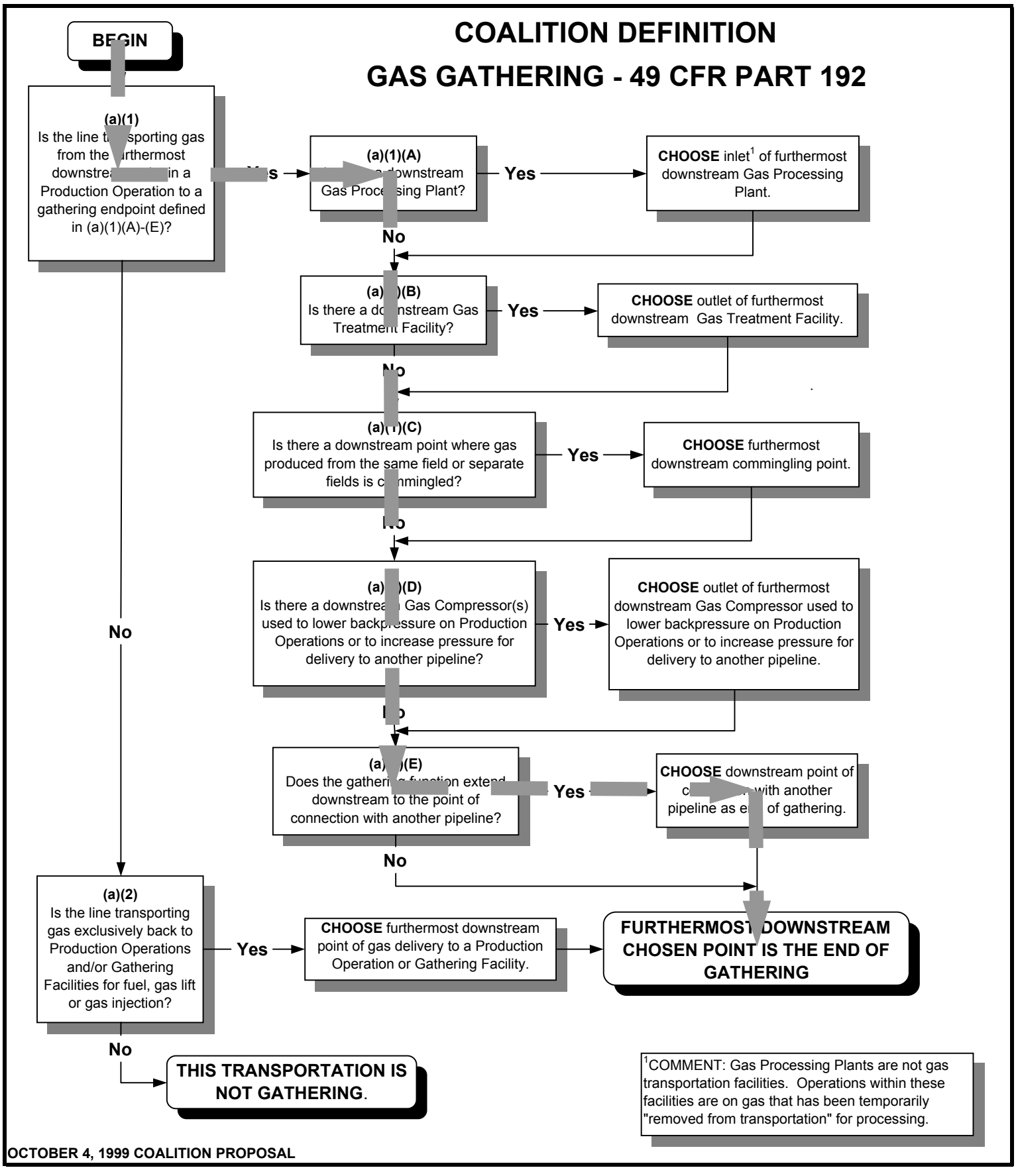
EXAMPLES OF COMMON GAS PRODUCTION AND GATHERING OPERATIONS



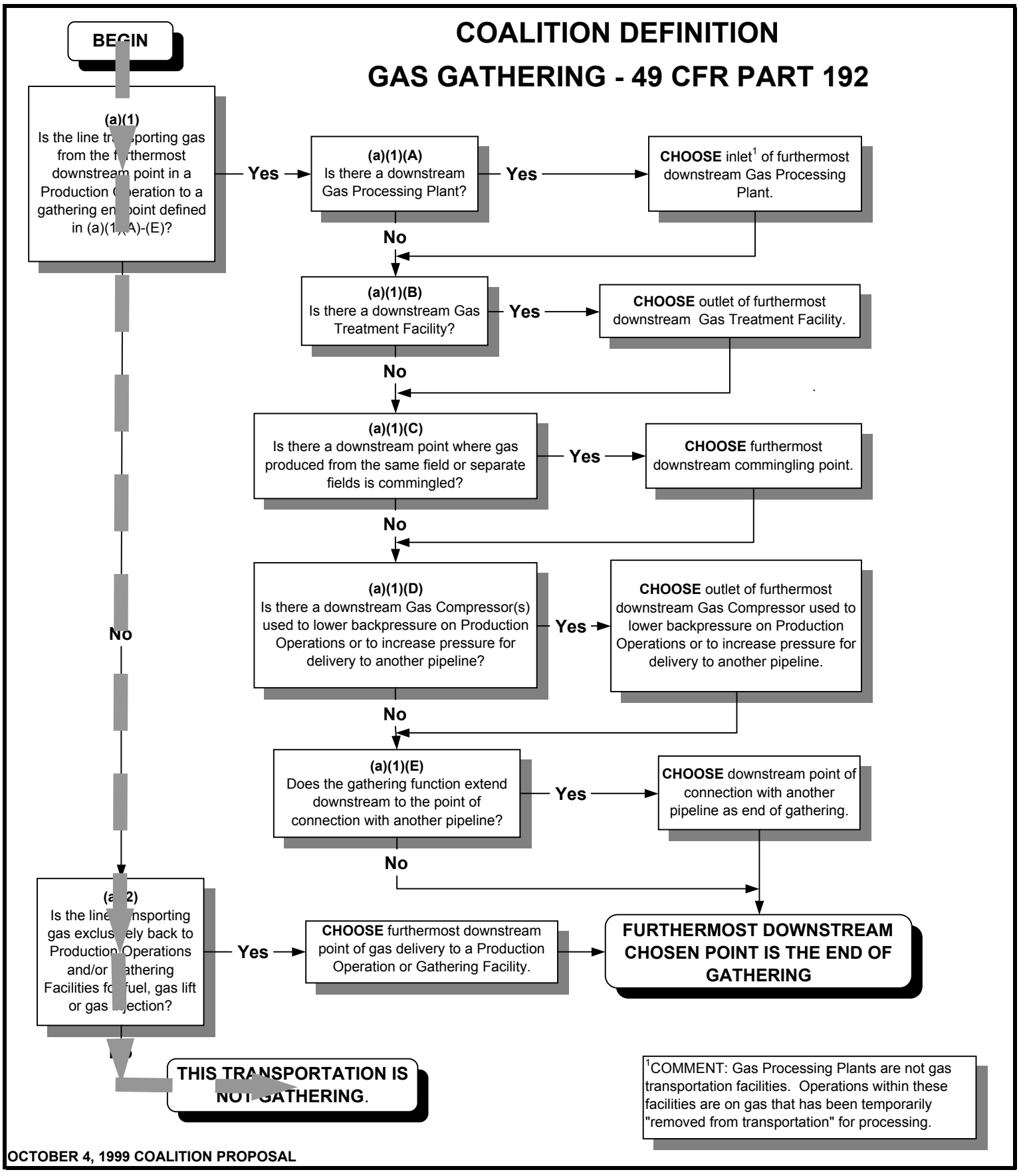
Attachment 5A



Attachment 5B

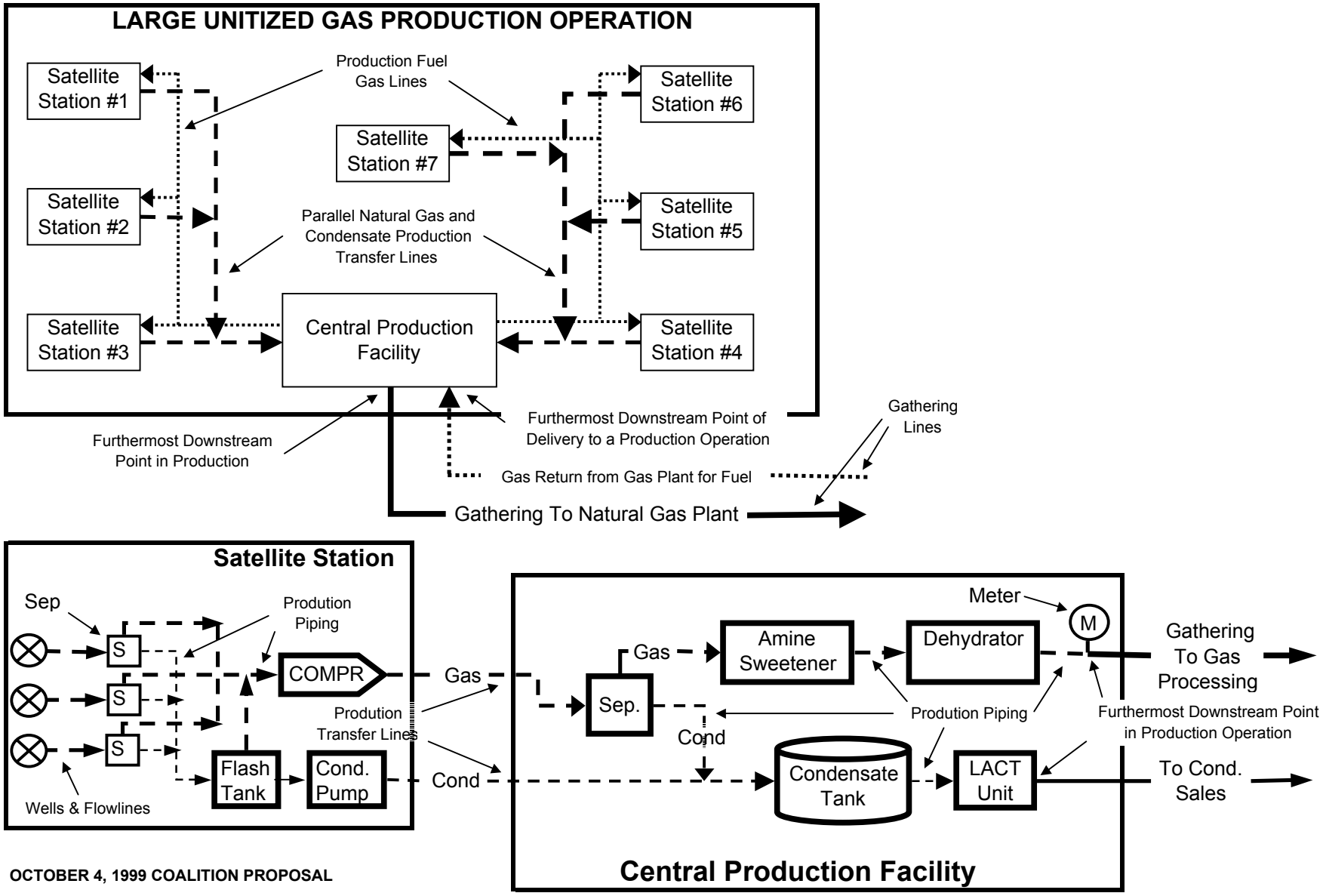


Attachment 5C

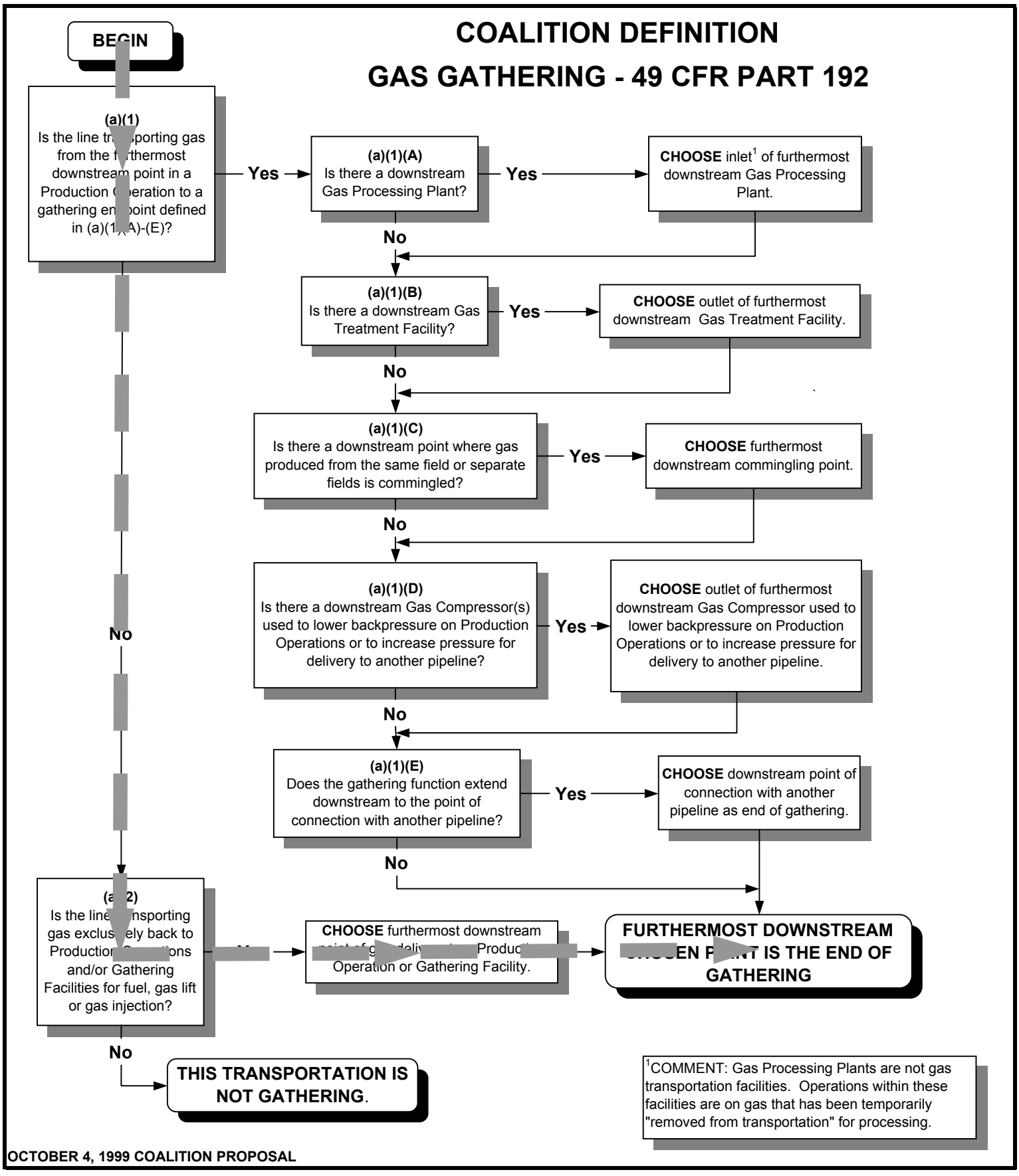


Attachment 6

EXAMPLE OF A CENTRAL PRODUCTION FACILITY WITH SATELLITES

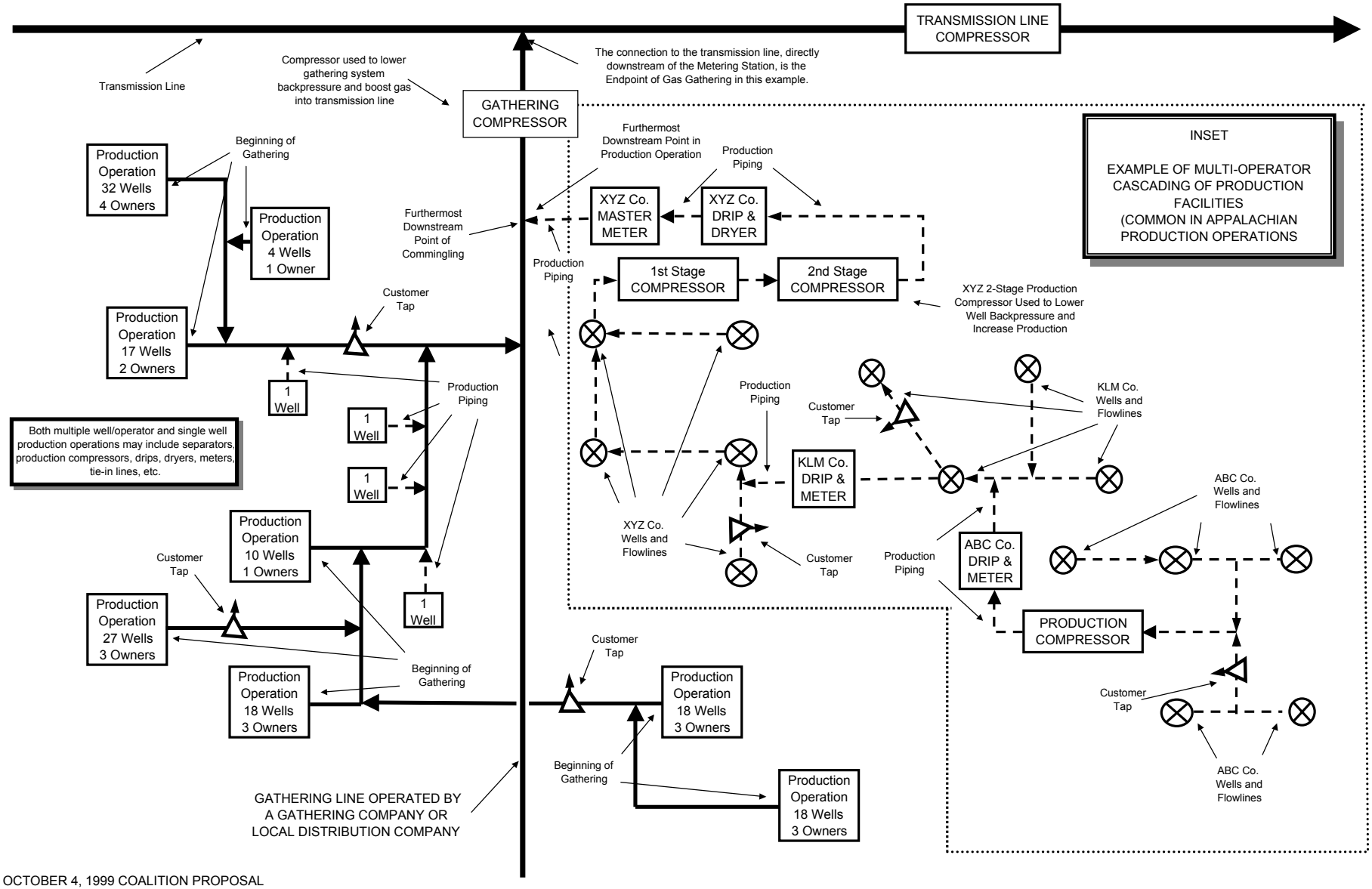


Attachment 6A

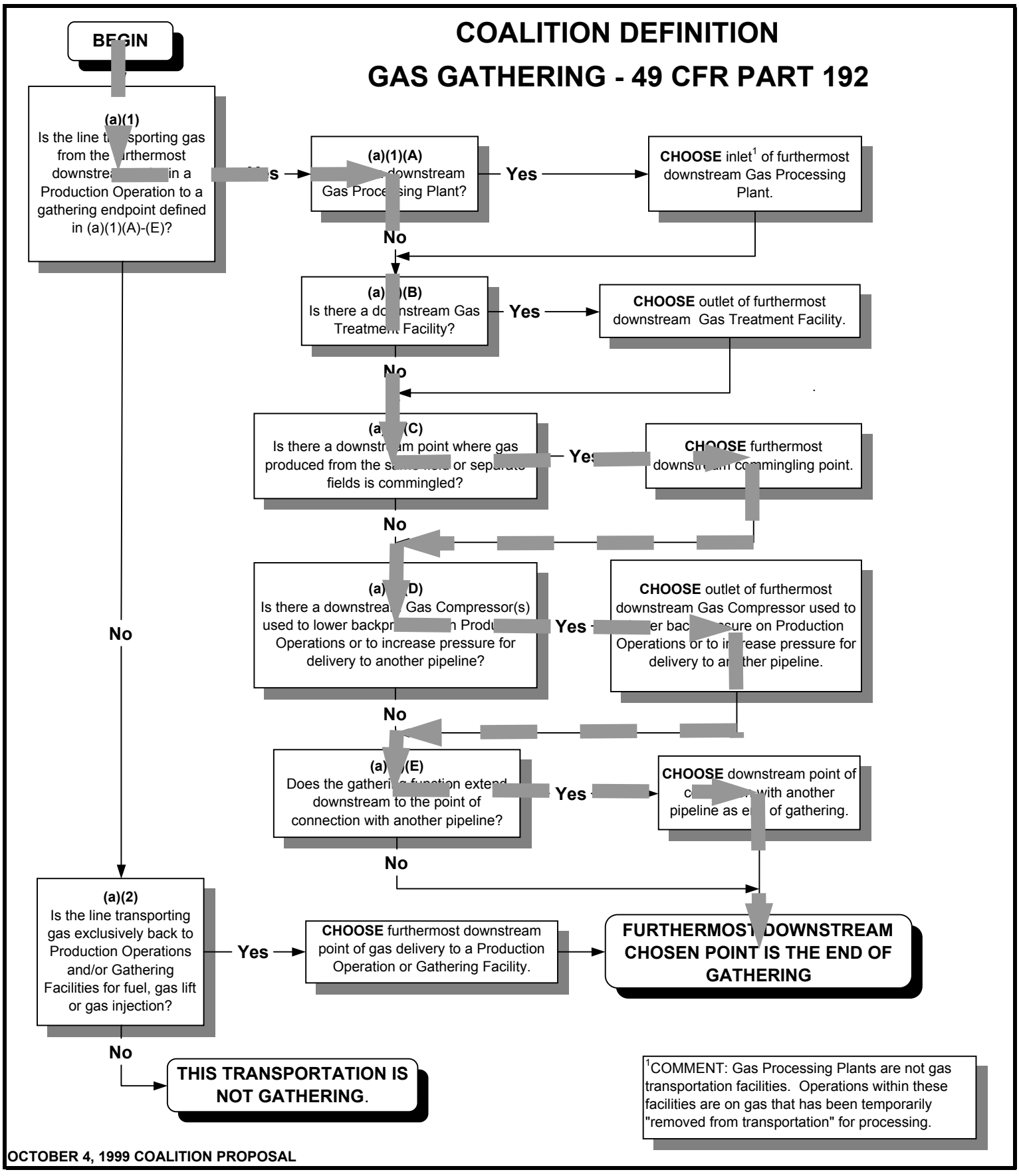


Attachment 7

EXAMPLE OF TYPICAL APPALACHIAN PRODUCTION, GATHERING, AND TRANSMISSION

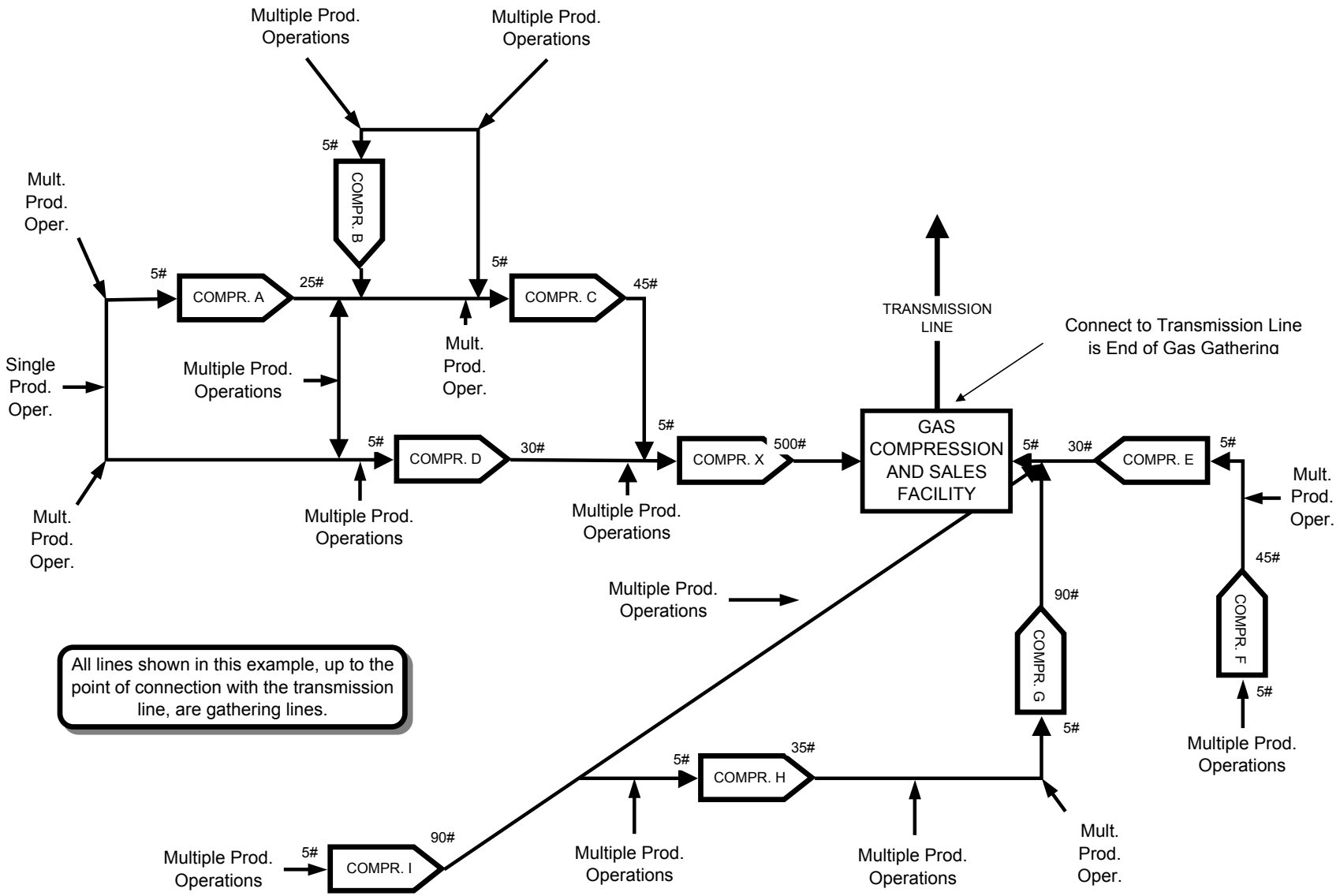


Attachment 7A

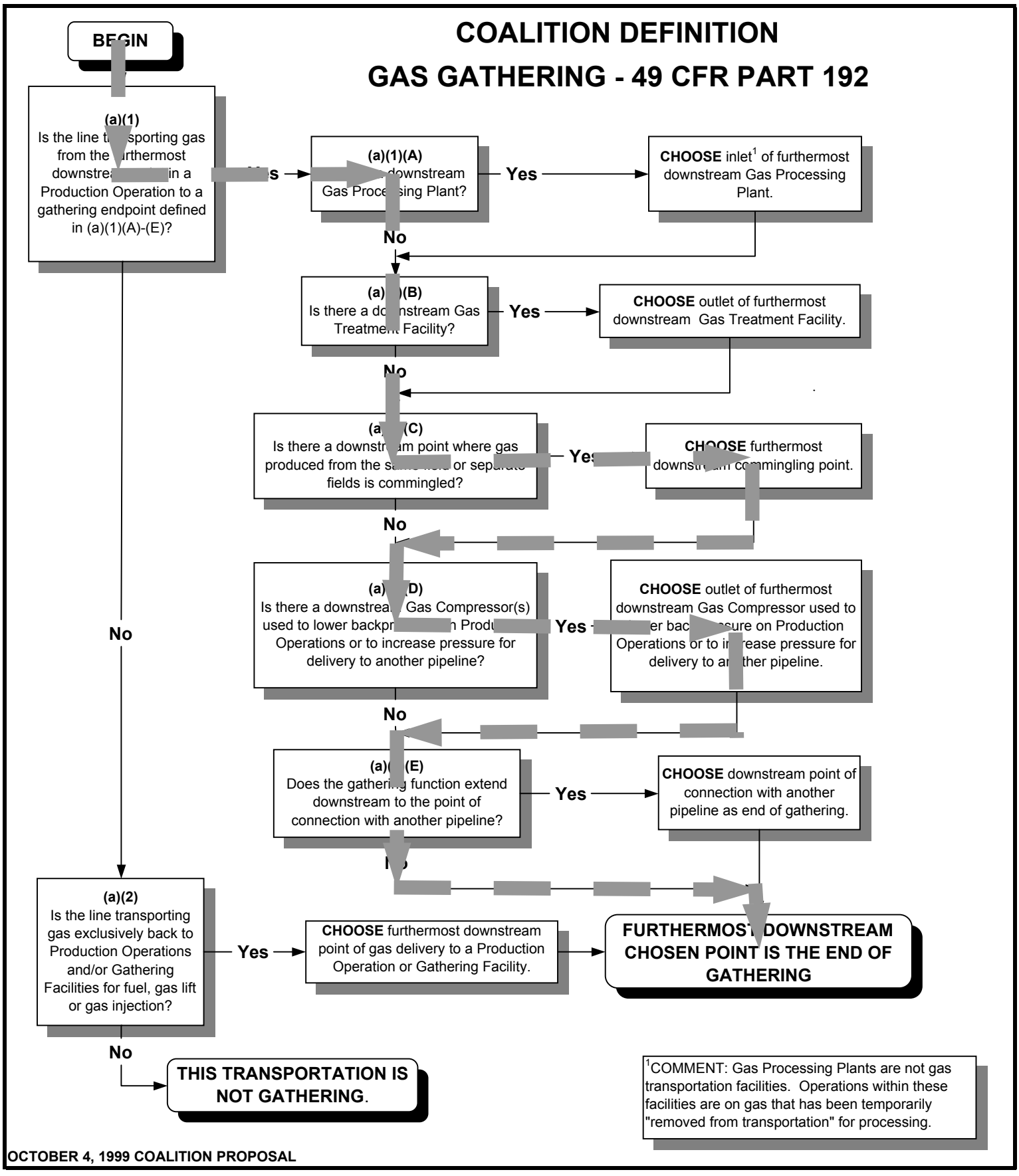


Attachment 8

EXAMPLE OF A GAS GATHERING SYSTEM WITH MULTIPLE COMPRESSORS

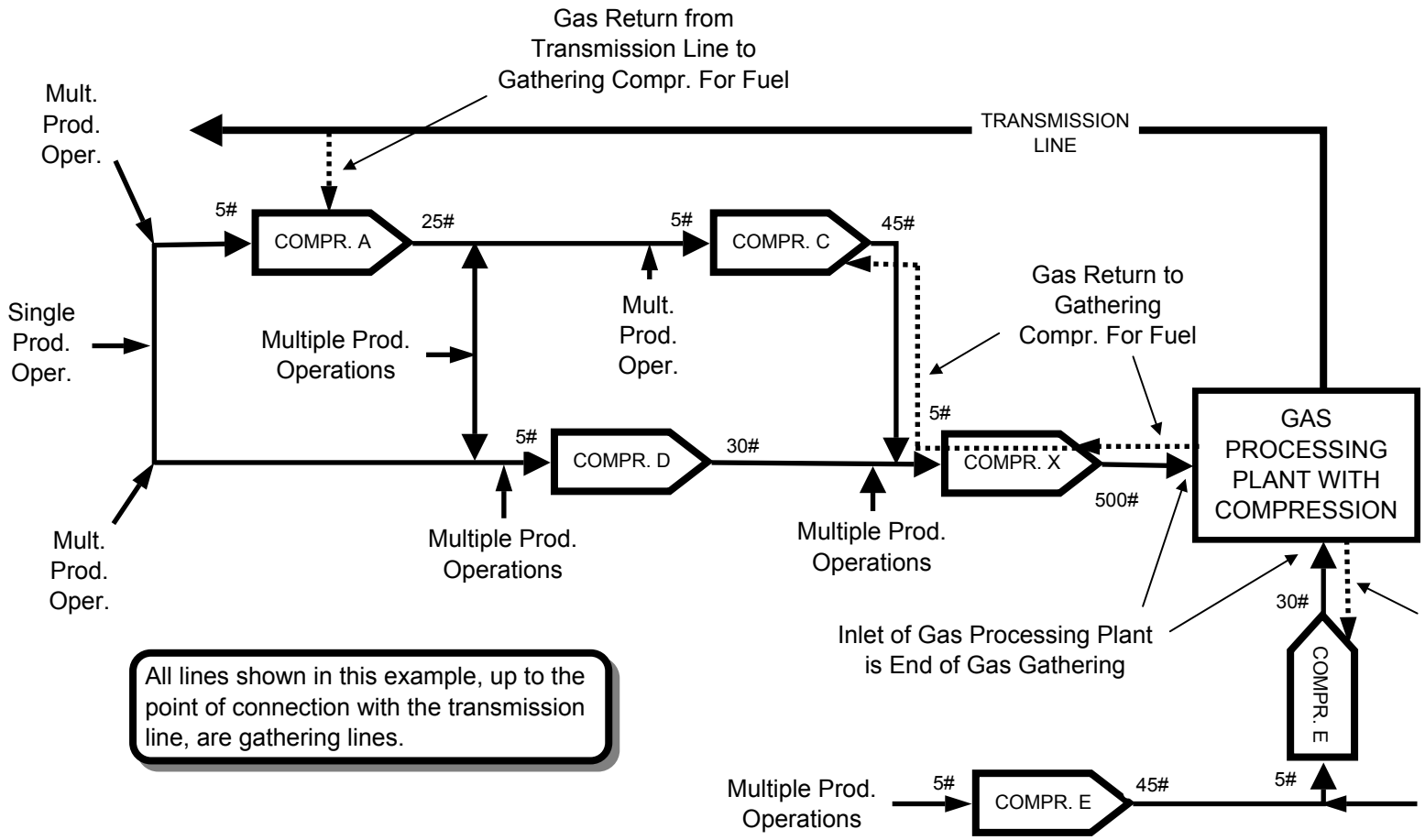


Attachment 8A

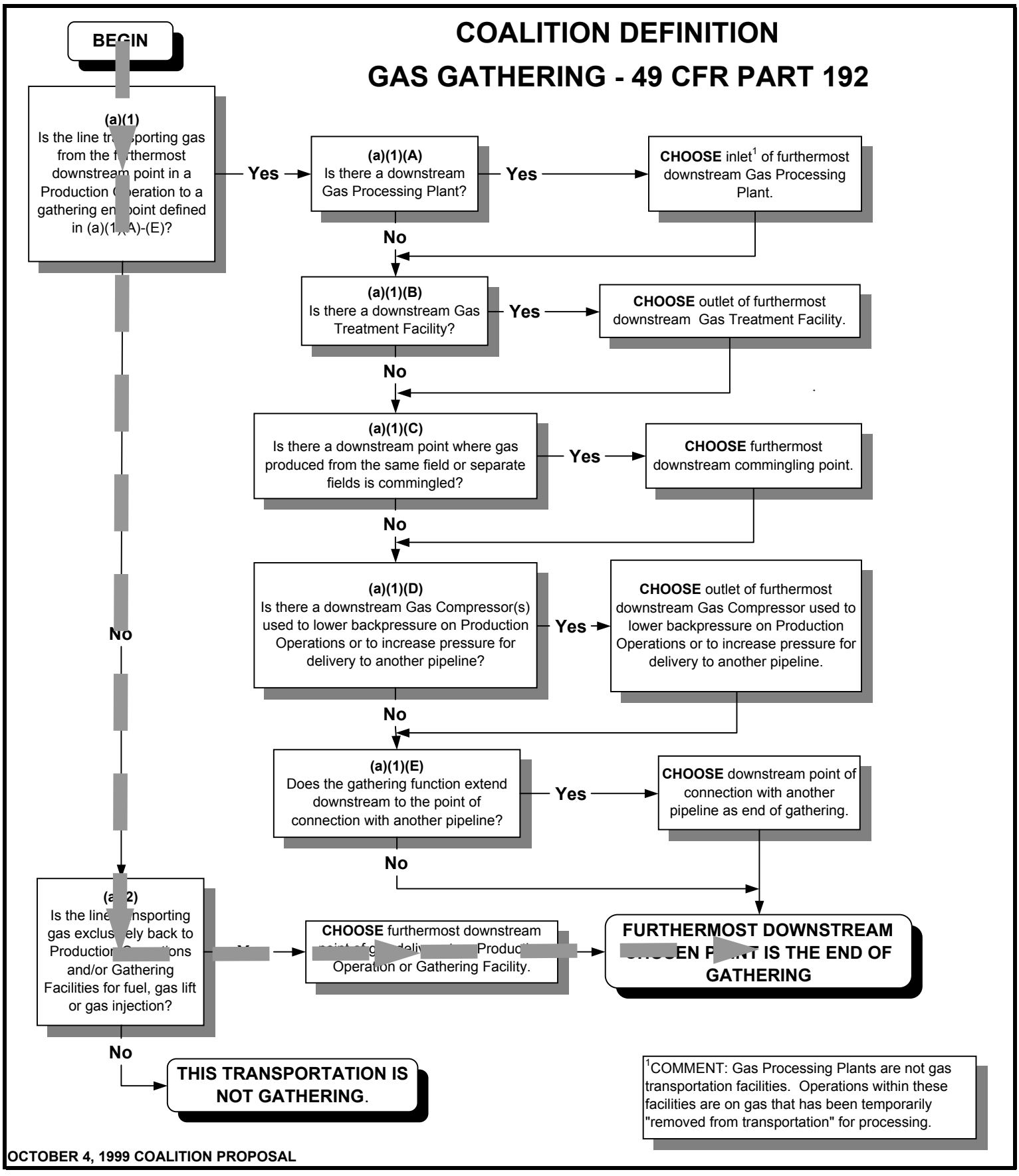


Attachment 9

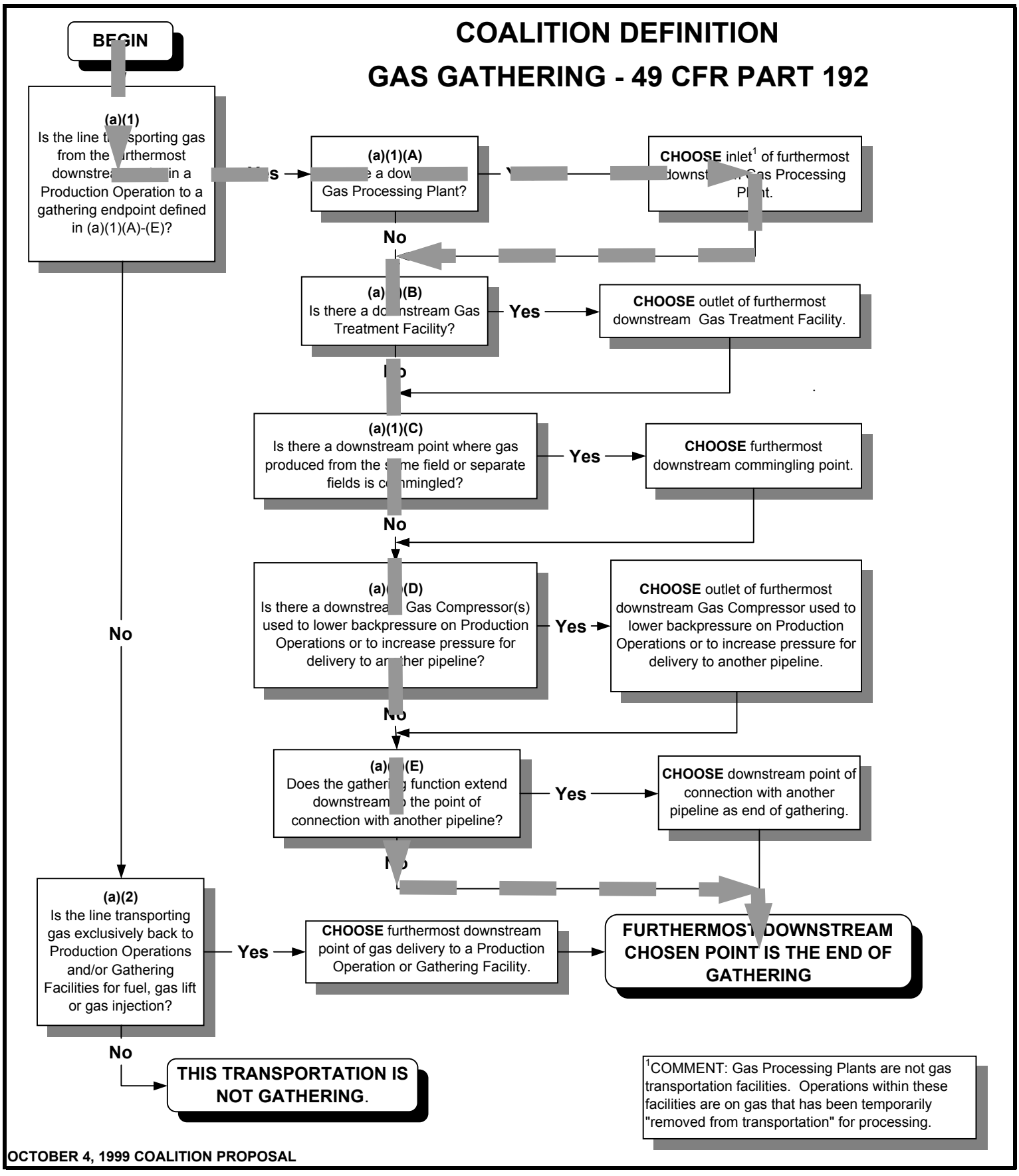
EXAMPLE OF A GAS GATHERING SYSTEM WITH FUEL GAS RETURN LINES



Attachment 9A



Attachment 9B



EXAMPLE OF GAS GATHERING SYSTEMS WITH DIFFERENT OWNERSHIP AND IN MULTIPLE STATES