BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In Re: Application for Determination of Need for an Intrastate Natural Gas Pipeline by SunShine Pipeline Partners	Docket No.: 920807-GP Filed: March 8, 1993

DIRECT TESTIMONY

OF

JOHN P. LUCIDO

FOR

SUNSHINE PIPELINE PARTNERS

BEFORE THE PUBLIC SERVICE COMMISSION

DOCKET NO. 920307-GP

DIRECT TESTIMONY OF

JOHN P. LUCIDO

ON BEHALF OF SUNSHINE PIPELINE PARTNERS

Q. **Will you please state your name and business address?**

A. My name is John P. Lucido. My business address is ANR Pipeline Company, 500 Renaissance Center, Detroit, Michigan 48243.

Q. **Please describe your current position at ANR Pipeline?**

A. I am Vice President of Engineering and Construction for ANR Pipeline, a position I assumed in the fall of 1988. I am responsible for overseeing all engineering and construction work associated with ANR Pipeline Company's natural gas pipeline and compressor station facilities. My responsibilities also include land acquisition, safety code compliance, and environmental planning and compliance.

Q. **Please describe your educational background and work experience?**

A. I graduated from the University of Detroit in 1970

with a B.S. Degree in Electrical Engineering. I was employed in May, 1970 as a Communications Engineer in the Engineering Department of Michigan Consolidated Gas Company, which provided corporate engineering services as a subsidiary of ANR. In 1976, I assumed the position of Supervisor of Communications Engineering for the Michigan Wisconsin Pipeline Company, which subsequently changed its name to ANR Pipeline Company. In 1980, I became Manager of Corporate Communications in the ANR Information Services Department. In 1983, I returned to the ANR Engineering Department as Director of Electrical Engineering. In that position, I was responsible for electrical power design, instrumentation and control design, and communications systems design. In 1984, I assumed the position of Director, Electrical Engineering and Laboratory Services. In addition to retaining my previous responsibilities, I also supervised ANR's Chemical and Metallurgical Laboratory Services Function and the Applications Engineering Department. I continued in that job until being assigned to Director of Engineering in 1987 and subsequently to my current position in 1988.

Q. **What are your responsibilities in connection with**

the SunShine Pipeline Project?

A. ANR will be responsible for constructing the pipeline along the route approved by the State of Florida. As V.P. of Engineering and Construction for ANR, I will be responsible for all aspects of the design and construction of the pipeline, including the safety and integrity of the project as well as environmental compliance. ANR's Engineering Department will design or contract for the design of pipeline system components, compressor stations, meter stations, and related instrumentation and control systems. We will also specify all materials used in the pipeline system construction.

Q. **What is the purpose of your testimony in this proceeding?**

A. The purpose of my testimony in this proceeding is to describe the SunShine Pipeline Project, including an explanation of the initial design capacity and operating pressures of the pipeline, the estimated total cost of the project and in-service date, to describe all compressor stations, and to give evidence of the safety and integrity of the proposed project.

Project Description

Q. What is the SunShine Pipeline Project?

A. The SunShine Pipeline Project is a high pressure natural gas transmission facility that will provide customers in Florida with access to additional supplies of natural gas and additional pipeline capacity to meet their growing energy needs. It will consist of a 30-inch diameter mainline system with laterals ranging in diameter from 4 inches to 24 inches.

Q. What is the projected in-service date for the initial phase of the project and all subsequent phases?

A. The initial system including the 30-inch diameter mainline is projected to be in service in early 1995 subject to receiving applicable regulatory approvals. Incremental expansions are planned to be placed in-service in 1998 and 1999.

1995 System Description

Q. What facilities do you propose to construct for the initial operation of the SunShine Pipeline?

A. The geographical location of SunShine's initial facilities as well as the proposed expansions for 1998 and 1999 are illustrated in Exhibit JPL-1; the mainline will originate at the interconnection with the proposed interstate natural gas pipeline system

known as Sunshine Interstate Transmission Company ("SITCO") at a point in Okaloosa County, in Western Florida, and will proceed in an East/Southeast direction to Sumter County in Central Florida.

Q. **What is the length, initial design capacity, and proposed maximum operating pressure of the SunShine project?**

A. A schematic of the SunShine project illustrating pipeline lengths and diameters, locations of compressor stations, receipt and delivery points is shown in Exhibit JPL-2. The system will be designed to operate at a maximum allowable operating pressure ("MAOP") of 1200 psig. The mainline consists of 361.5 miles of 30-inch pipe. The initial design capacity is approximately 249,500 Mcf per day.

Q. **Please describe the laterals proposed to be in-service in 1995 off of the mainline.**

A. There are seven laterals proposed to be constructed in the initial phase of the SunShine Pipeline Project. They are described as follows:

The Ocala Lateral is a 5.0 mile, 4-inch diameter pipeline located in Marion County.

The Leesburg Lateral is a 7.5 mile, 8-inch diameter pipeline which originates in Sumter County

and ends in Lake County.

The Anclote lateral is a 63.4 mile, 20-inch diameter pipeline beginning in Sumter County and extending through Hernando and Pasco Counties into Pinellas County.

The FCS lateral is a 16.5 mile, 6-inch diameter pipeline beginning in Pasco County where it branches off from the Anclote lateral and ends in Hernando County.

The Dade City lateral is a 5.8 mile, 12-inch pipeline which branches off from the Anclote lateral in Pasco County.

The N. Tampa lateral is a 6.9 mile, 6-inch diameter pipeline which branches off from the Anclote lateral in Pasco County.

The Auburndale lateral is a 35.4 mile, 24-inch diameter pipeline beginning in Sumter County and ending in Polk County.

Q. **Please describe the initial operation of these facilities.**

A. The initial steady state system operation is shown in Exhibit JPL-3. No compressor stations are planned to be placed into service during the initial phase of the project. Gas volumes will be received from SITCO at a pressure which is

sufficient to transport the gas volumes to all delivery points.

1998 and 1999 System Description

Q. **Does the project anticipate future expansion?**

A. Yes, it does.

Q. **What is the anticipated design capacity of the mainline after the planned expansion?**

A. Capacity will be approximately 424,500 Mcf per day in 1998 and 549,500 Mcf per day in 1999.

Q. **Are additional pipeline facilities required to achieve these capacity levels? If so, please describe them.**

A. Yes, three additional lateral segments will be added by 1998. The 25.6 mile, 24-inch diameter Polk extension is located in Polk County.

The 5.0 mile, 16-inch diameter Power Park lateral is located in Polk County commencing at the terminus of the Polk extension.

The 82.5 mile, 20-inch diameter Okeechobee lateral commences at the terminus of the Polk extension in Polk County and extends into Okeechobee County.

Q. **Are there any compressor stations proposed for this expansion? If so, please describe each compressor station, including the type and horsepower of all**

compressors.

A. There will be five compressor stations placed into service to complete the project. Four of the stations, including Oakwood, Shady Grove, Dixie and Marion Oaks, will be 10,000 HP stations. The other station, Auburndale, will be a 5,000 HP station. As currently envisioned, the units to be installed will be 5,000 HP class turbines. The compression at Shady Grove and Marion Oaks will be installed for operation in 1998. Oakwood, Dixie and Auburndale will be installed for 1999 operation.

Q. **Please describe the operation of the system in 1998 and 1999.**

A. The system will be expanded to deliver an additional 175,000 Mcf per day in 1998, and an additional 125,000 Mcf per day in 1999. The steady state operations of the system for 1998 and 1999 are shown on Exhibit JPL-4 and Exhibit JPL-5, respectively. As shown in Exhibits JPL-3, (JPL-4) and (JPL-5), the receipt pressure from SITCO will decline as volumes increase. Sunshine will install compression as this occurs, to transport the increased volumes to delivery points.

<u>Design Basis</u>

Q. What is the design basis for this system?

A. This system was designed to serve the daily and hourly market requirements of the customers. Over a 24-hour daily period, SunShine (also referred to as "Transporter") will be designed to receive, transport and redeliver up to 249,500 Mcf per day in the initial operation, 424,500 Mcf per day in 1998 and 549,500 Mcf per day in 1999.

Cost of Facilities

Q. What is the estimated cost of facilities for the initial and subsequent phases of the project, and what are these costs based upon?

A. The initial phase of the project is estimated to cost $437.5 million, with an additional investment of $127.9 million projected for facilities to be in-service by January 1, 1998 and an additional $53.5 million for facilities to be in-service by January 1, 1999. The total estimated cost for the entire project is $618.9 million. All of these costs reflect year-of-occurrence dollars. The cost estimate is based on current quotations, applicable price lists from suppliers, cost quotations from contractors and applicant's experience with the installation of similar facilities.

Construction and Operation

Q. Are you familiar with Chapter 368, Florida Statutes, Chapter 25-12, Florida Administrative Code, and the Federal rules and regulations, and codes and standards incorporated therein?

A. Yes.

Q. Will the engineering, construction, and operation of the project comply with Chapter 368, Florida Statutes, Chapter 25-12, Florida Administrative Code, and the Federal rules and regulations, and codes and standards incorporated therein?

A. Yes.

Q. Please explain some of the details of how the project will comply?

A. Sunshine will design, construct, test, operate, and maintain the proposed project to meet or exceed the requirements of Chapter 25-12 of the Florida Administrative Code and the Federal Pipeline Safety Regulations (49 CFR Part 192) as referenced therein. All intrastate natural gas transmission pipelines in Florida must meet at least the minimum requirements of 49 CFR Part 192, as well as those special provisions included in Chapter 25-12 of the Florida Administrative Code. As an intrastate transmission pipeline being constructed by ANR Pipeline Company, SunShine will adopt the current

practices and programs that have contributed to the operation of a safe and reliable pipeline.

Q. **Describe what some of these practices and programs are.**

A. 1. Nondestructive Testing of Girth Welds - Sunshine will radiograph (X-ray) 100% of all girth welds, a rate which is significantly higher than required by the Florida Administrative Code.

2. Mainline Valves - Each valve will be equipped with actuators for both manual and automatic operation. The power actuators on the mainline valves operators are designed to automatically close on both ends of the particular pipeline valve section in the unlikely event of a line failure. Neither 49 CFR Part 192 nor the Florida Administrative Code requires automatic valve operator devices.

3. Pressure Testing Procedures - SunShine's testing procedure will incorporate the latest research in the hydrostatic testing of pipelines to minimize the likelihood of in-service failures due to material defects. This includes the use of a 15-minute pretest,

where such pretesting is beneficial in removing detrimental defects, at levels of at least 25% above the minimum test levels required by the regulations.

4. Pig Launchers and Receivers - Pig launchers and receivers will be installed to accommodate the use of an in-line electromagnetic inspection device (smart pig) discussed later in my testimony.

5. Operation and Maintenance - SunShine will adopt ANR's Operating and Maintenance Standards, which ANR uses to operate its natural gas transmission system. These standards have evolved since the inception of service by ANR in 1949. Appropriate revisions will be incorporated into the standards to meet requirements of the Florida Administrative Code. ANR has developed and instituted programs to ensure that public safety is its first priority.

Q. **Describe some of the public safety programs developed and instituted by ANR.**

A. Some of the programs which ANR has developed and which also will be applied to the SunShine system include:

- Air patrols will be performed periodically;
- All field employees will attend an in-house training program every six months to review those procedures necessary in the event of a pipeline emergency;
- Local fire and police will be contacted at least once each year to review emergency plans and procedures regarding pipeline emergencies;
- All property owners, utilities, and other parties along the route of the pipeline will be contacted annually and informed of the pipeline location and the procedures to follow in reporting or responding to a pipeline emergency;
- SunShine will join as appropriate at least one, if not all, of the "One Call" programs available in Florida - "Florida One Call", "First Call of Florida" or "No Cut" - as part of Florida's Damage Prevention Program. Currently, ANR is a member of 15 "One Call" programs in other states in which it operates pipelines; and

- SunShine will audit its field locations periodically to ensure compliance with existing operating and maintenance standards and safety procedures.

Q. How will the facilities be operated and maintained?

A. As previously stated, SunShine will adopt ANR's Operating and Maintenance Standards amended to incorporate Florida requirements. ANR's standards are based on proven, reliable pipeline practices which ensure the safe operation and maintenance of the pipeline so that an uninterrupted, reliable supply of natural gas can be delivered. Within these standards are provisions for continuing surveillance of the pipeline facilities for conditions that may affect pipeline safety so that appropriate actions may be taken to maintain the integrity of the pipeline. An integral part of these provisions is the frequent patrolling of surface conditions on and adjacent to the pipeline facilities for indications of activities which may affect operation and safety, including changes in population density which may require adjustments in the class location.

Q. Please explain the meaning of the term "class location".

A. Class Location is an index of population density along the pipeline route used to establish design safety factors, inspection intervals and operating pressure levels for the pipeline. It is generally measured based on the number of buildings intended for human occupancy within 660 feet of the pipeline along any one-mile length. Special consideration is given to establishments and areas within 300 feet of the pipeline where people frequently congregate.

There are four classifications of class location ranging from Class 1 to Class 4. Class 3 locations generally have the highest building density and Class 1 locations the lowest. Class 4 locations are areas where buildings having four or more stories are prevalent. The higher the class location designation, the greater are the Florida Administrative Code required safety design factors for the pipeline as well as the frequency of inspection.

Q. **What maintenance activities will routinely be conducted?**

A. Maintenance activities will include regularly scheduled surveys. All fence posts, signs, aerial markers, and decals will be painted or replaced as

needed to ensure that the pipeline location is visible from the air and the ground. All valves will be inspected and cycled periodically.

Q. **Will there be other maintenance activities routinely conducted?**

A. As previously stated, the pipeline will be patrolled by air periodically, the scheduling of such aerial surveys being determined by considerations such as population density and activity along the route. These surveys provide information on possible leaks, construction activities, erosion, exposed pipe, and other potential problems which may affect the safety and operation of the pipeline.

Other right-of-way maintenance activities will include periodic mowing of the right-of-way, repairing terraces and replacing backfill and periodic inspection of water crossings.

Q. **Are there any other methods which will be used to protect the integrity of the pipeline?**

A. Yes. A cathodic protection system will be installed along the pipeline to protect it from corrosion. This system will be installed prior to placing the pipeline in service.

Q. **What is cathodic protection?**

A. Cathodic protection is a method of mitigating corrosion on a buried or submerged pipeline by flowing a small amount of direct current (D.C.) through the ground or electrolyte onto the pipeline surface. This makes the pipeline cathodic and mitigates corrosion. The direct current source is a ground bed that is correspondingly anodic and preferentially corrodes. The ground bed consists of anodes that are designed for a long life span.

Q. How will this cathodic protection be maintained?

A. Immediately following installation and adjustment of the cathodic protection system, a program of detailed survey will be initiated. Detail survey is defined as a pipe-to-soil potential survey composed of readings taken at regular intervals along the pipeline so that any and all irregularities in the potential profile are revealed.

During the second calendar year, and each calendar year thereafter, at intervals not exceeding 15 months, an annual survey will be conducted by monitoring cathodic protection test stations located at approximately every mile along the entire pipeline length. This will be a pipe-to-soil potential survey composed of readings made

at test leads, valves, and all other points where electrical contact normally can be made with the pipeline.

Corrective action will be taken when safety is not a factor within a three month period as required by the Florida Administrative Code, when any deficiency in the cathodic protection system is found.

Q. **In general, what has been the record on reliability and safety for natural gas pipelines?**

A. Natural gas transmission pipelines have been supplying the energy needs for millions of customers for the past 50 years. Currently, over 300,000 miles of transmission pipelines provide a link between the wellhead and over 50 million consumers of natural gas. Given this critical role played by natural gas transmission lines, it is essential that they be safe and reliable. The natural gas transmission industry has an excellent safety record which translates into outstanding reliability.

Q. **What has ANR's experience been?**

A. ANR, which will design and manage construction of SunShine, has had an excellent safety record over the 40 plus years it has operated its extensive

interstate pipeline transmission system.

During the past 20 years, ANR has voluntarily established programs to minimize the possibility of a pipeline incident. One program which has proven to be particularly effective has been the In-Line Electromagnetic Inspection Program.

Q. **What is the In-Line Electromagnetic Inspection Program?**

A. In 1984, ANR established an in-line electromagnetic inspection program. ANR pipelines 10 inches or more in diameter are periodically inspected by an in-line electromagnetic inspection device (commonly referred to as a "smart pig") for corrosion and other pipe anomalies and to determine the status of cased highway and railroad crossings. To date, ANR has inspected over 7,500 miles of existing transmission pipeline. For the past 8 years, ANR has inspected an average of 940 miles of pipeline per year. ANR is also currently developing criteria to establish a risk assessment program for prioritizing future inspections using the "smart pig". The program will take into consideration electrical interference, corrosion history, ground movement, waterway crossings, safety, and security of supply. After 1993, pipelines will be inspected

based on the risk assessment program.

Q. How does the In-Line Electromagnetic Inspection Program enhance safety?

A. This program prevents pipeline incidents from occurring long before they become a potential hazard by identifying and removing all potential metal loss features in the pipe which are capable of expanding. ANR has developed this risk assessment and testing program to reduce the probability of pipeline incident. ANR believes its safety record is, in part, a direct result of the operation of this safety program, which will be applied to the SunShine Project.

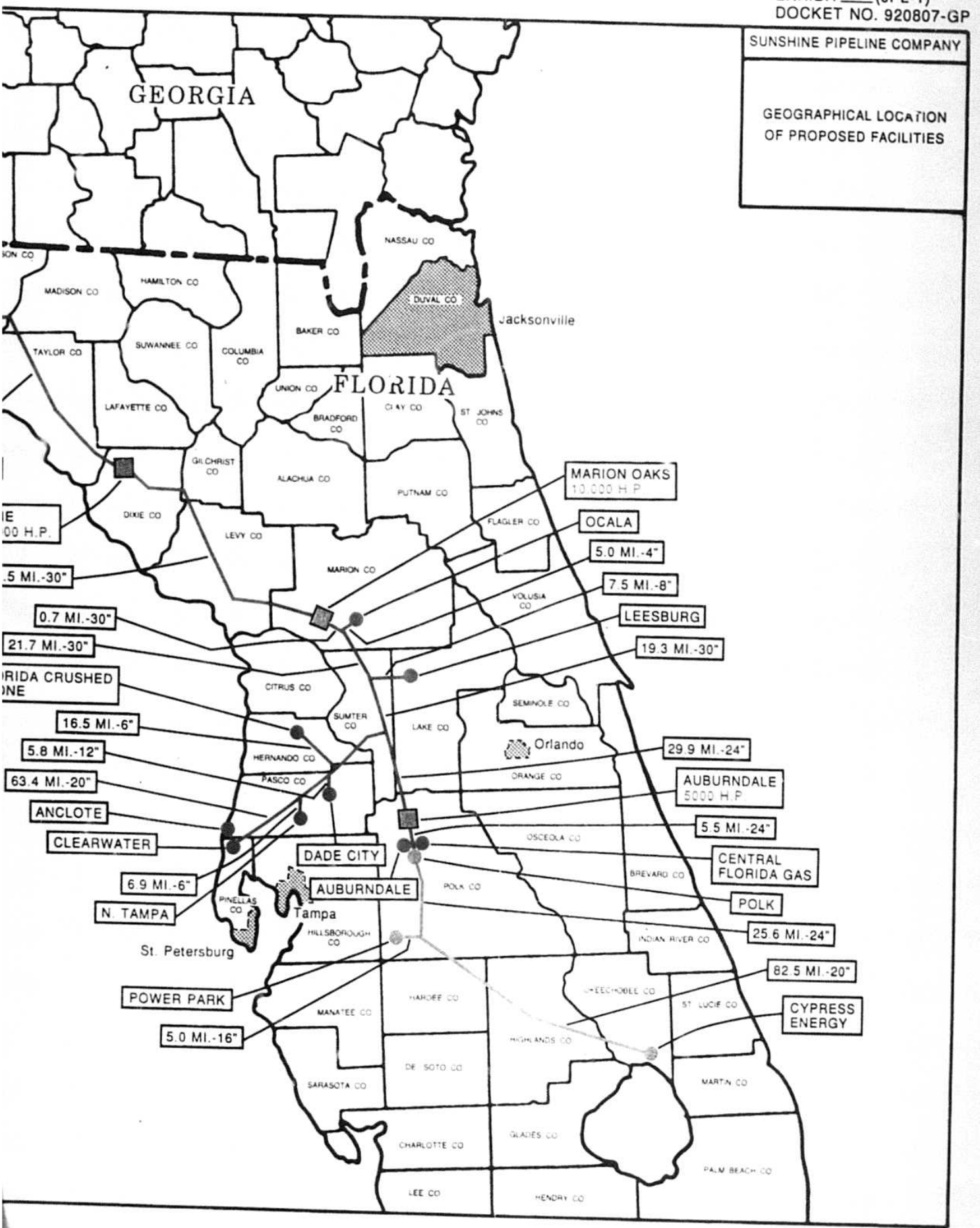
Q. Does this complete your testimony?

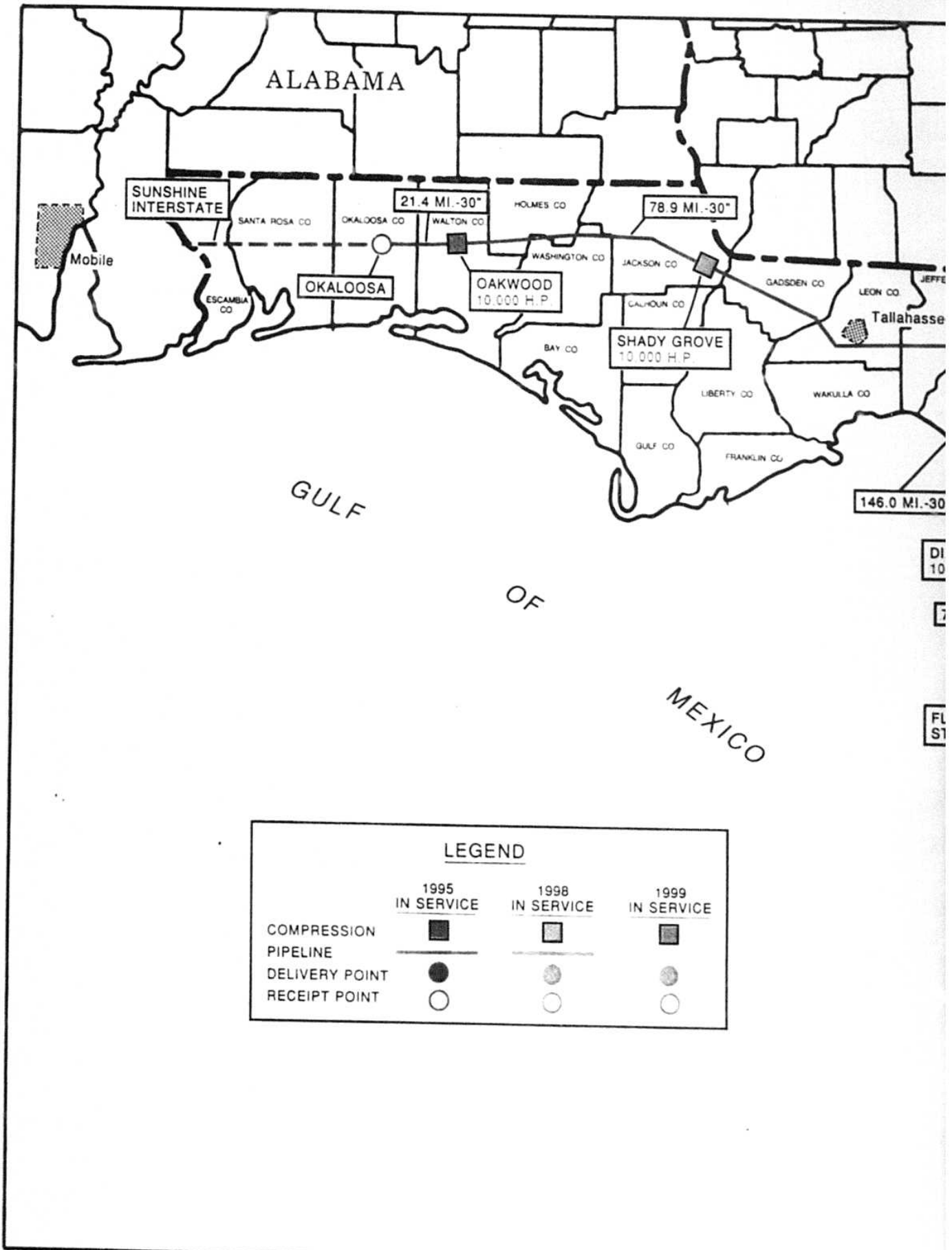
A. Yes.

EXHIBIT___(JPL-1)
DOCKET NO. 920807-GP

SUNSHINE PIPELINE COMPANY

GEOGRAPHICAL LOCATION
OF PROPOSED FACILITIES





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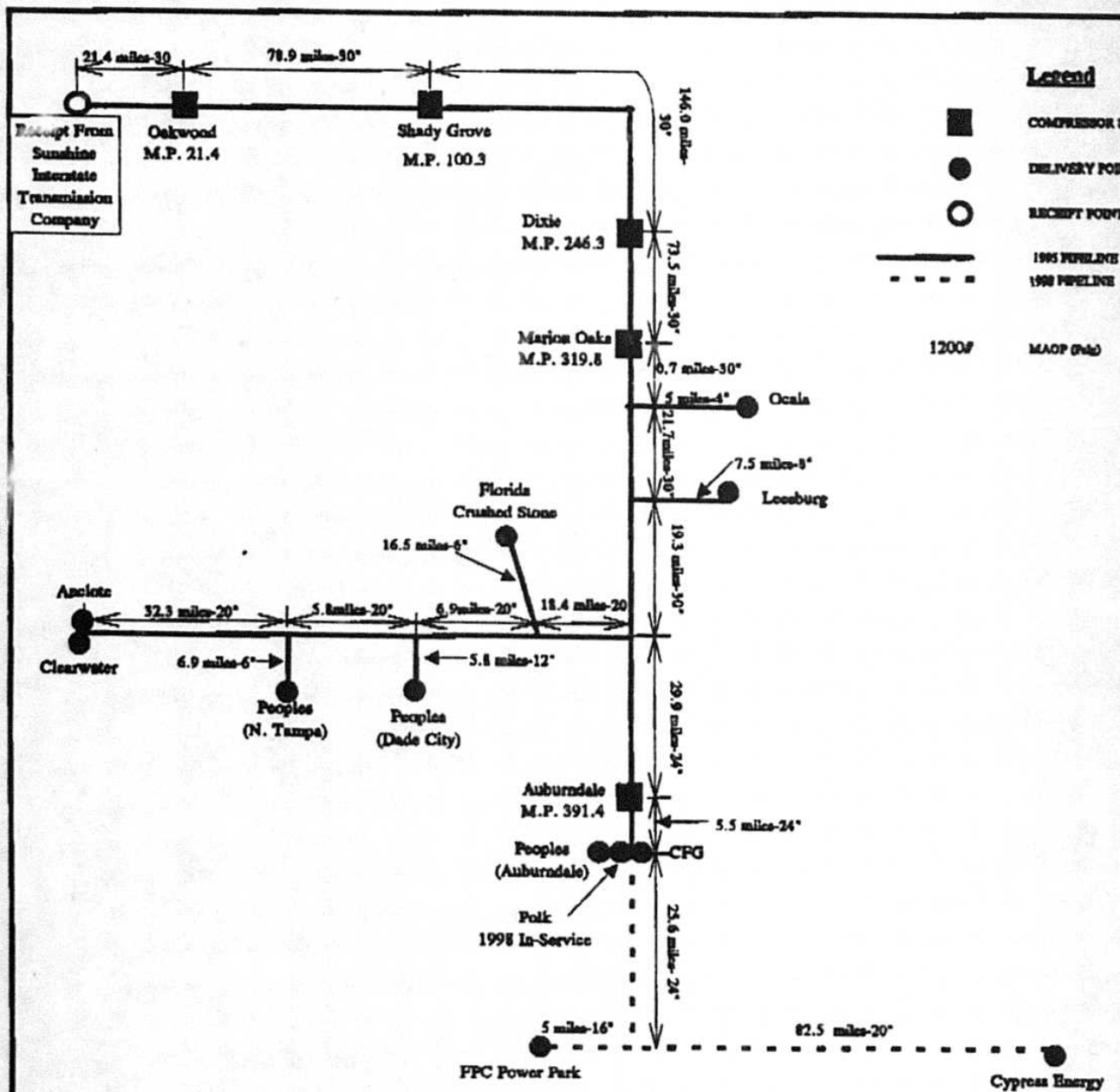
EXHIBIT_____(IPL-2)
DOCKET NO. 920807-GP



COMPRESSOR STATION SUMMARY

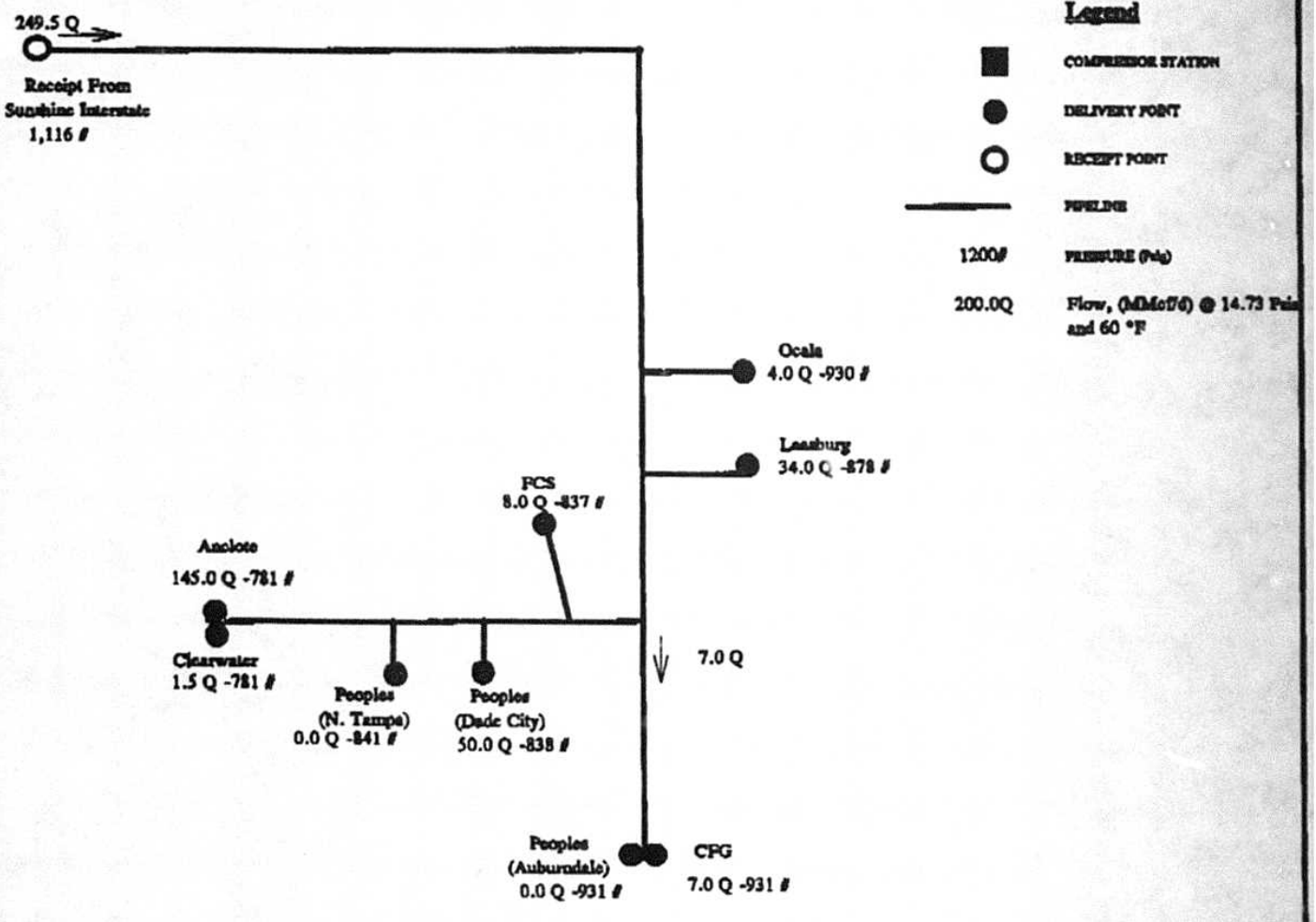
Station	Oakwood Turbine TOTAL HP	Shady Grove Turbine TOTAL HP	Dixie Turbine TOTAL HP	Marion Oaks Turbine TOTAL HP	Auburndale Turbine TOTAL HP	Year
	0	0	0	0	0	1995
	0	10,000	0	10000	0	1998
	10,000	10,000	10,000	10,000	5,000	1999

SUNSHINE PIPELINE COMPANY

DIMENSION DIAGRAM

1ASUNG.XLS

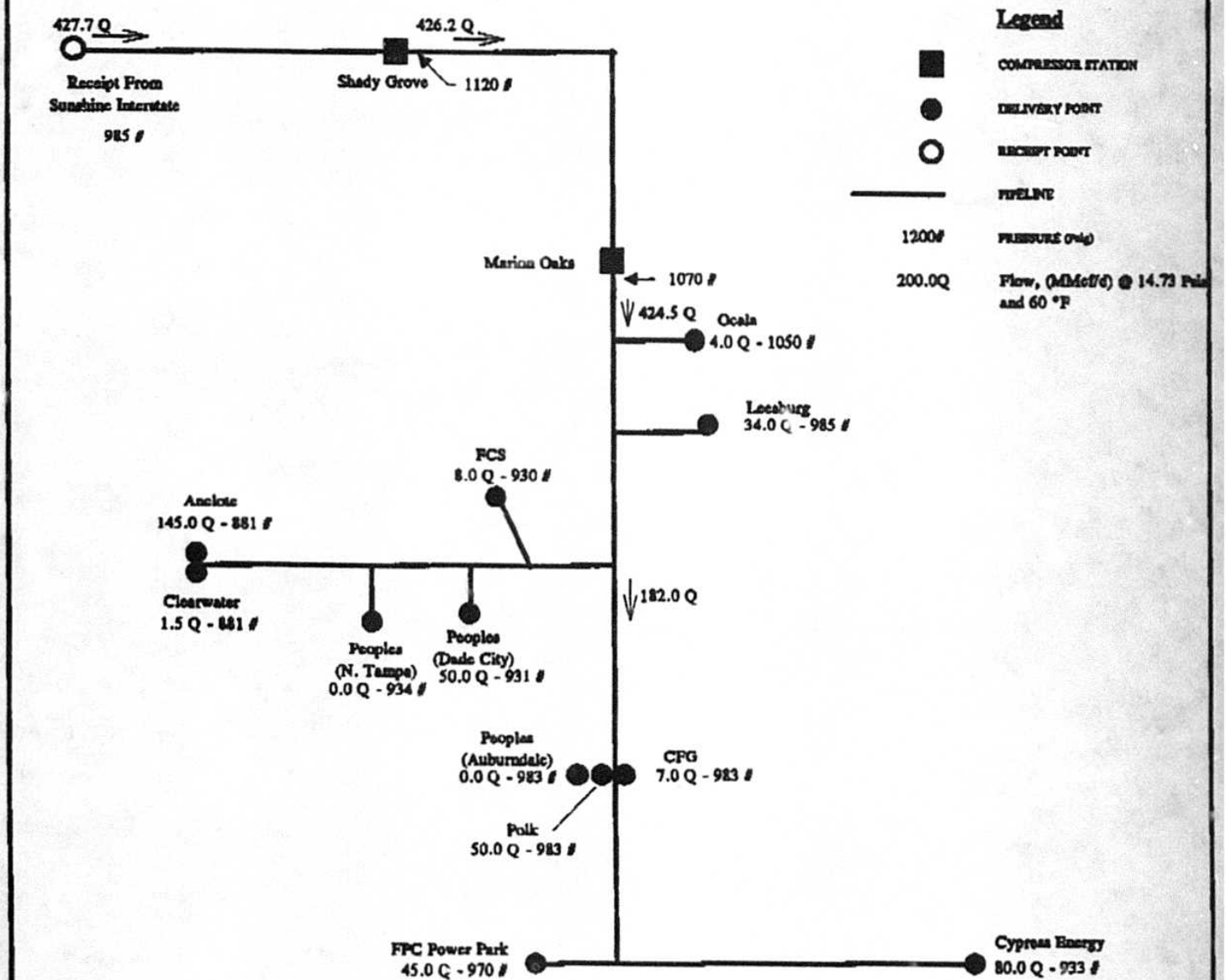
EXHIBIT_____(JPL-3)
DOCKET NO. 920807-GP



SUNSHINE PIPELINE COMPANY
1995 STUDY
PROPOSED OPERATION

IASUNP95.XLS

EXHIBIT_____(JPL-4)
DOCKET NO. 920807-GP

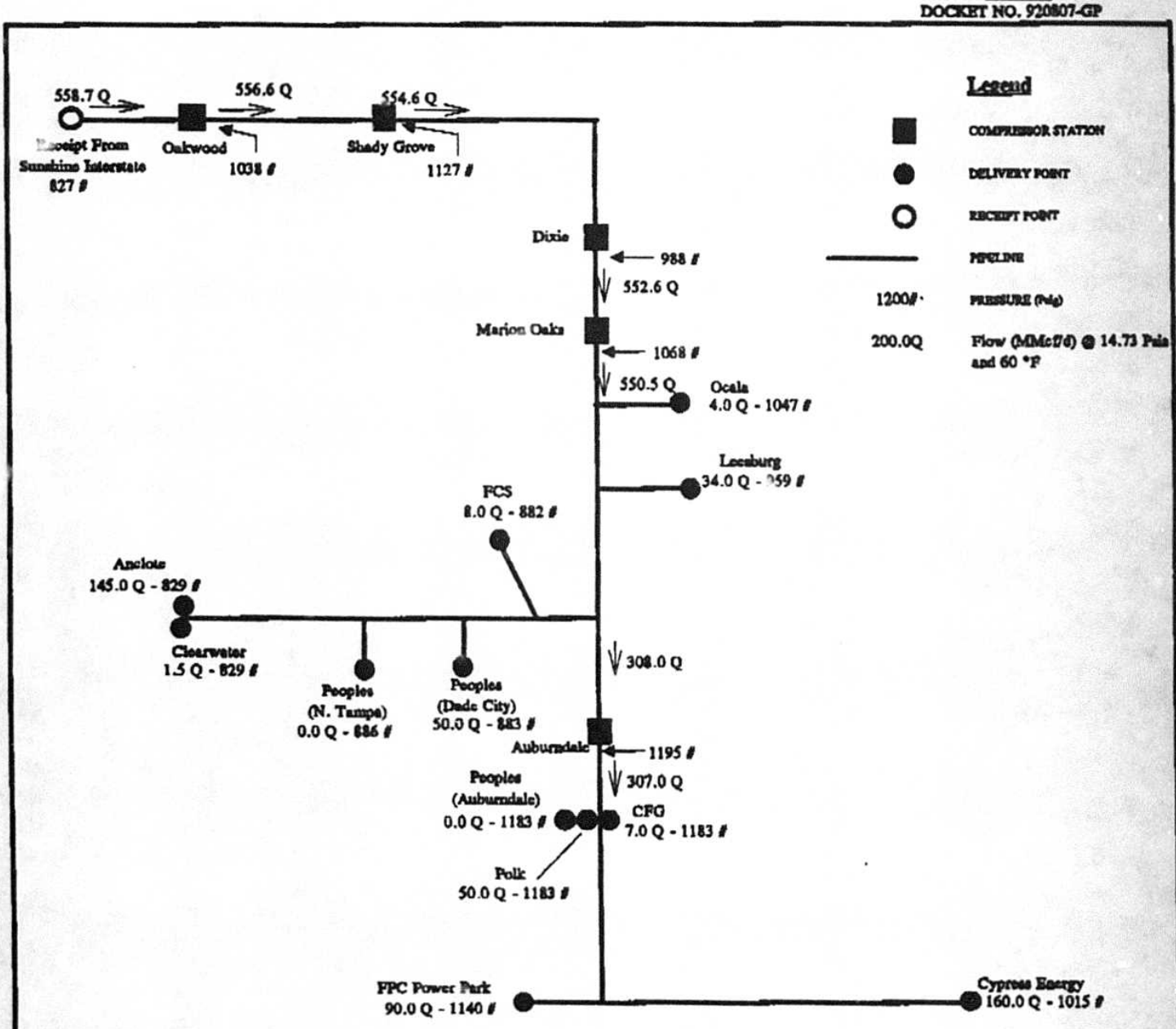


Station Name	Shady Grove	Marion Oaks
HP Installed	-	-
HP Proposed	10,000	10,000
Total HP	10,000	10,000
HP Available	10,000	10,000
HP Utilized	7,698	8,125
Suction Press.(Psig)	806	757
Discharge Press.(Psig)	1,125	1,075
Comp. Ratio	1.389	1.412
Pumpage (MMcf/d)	426.2	424.5
Fuel (MMcf/d)	1.5	1.7

SUNSHINE PIPELINE COMPANY
1998 STUDY
PROPOSED OPERATION

IASUNF98.XLS

EXHIBIT_____(JPL-5)
DOCKET NO. 920807-GP



Station Name	Oakwood	Shady Grove	Dixie	Marion Oaks	Auburndale
HP Installed	-	10,000	-	10,000	-
HP Proposed	10,000	-	10,000	-	5,000
Total HP	10,000	10,000	10,000	10,000	5,000
HP Available	10,000	10,000	10,000	10,000	5,000
HP Utilized	10,000	10,000	10,000	10,000	4,998
Suction Press.(Psig)	750	811	714	768	885
Discharge Press.(Psig)	1,043	1,132	993	1,073	1,200
Comp. Ratio	1.383	1.388	1.384	1.389	1.350
Pumpage (MMcf/d)	556.6	554.6	552.6	550.5	307.0
Fuel (MMcf/d)	2.1	2.0	2.0	2.1	1.0

SUNSHINE PIPELINE COMPANY
1999 STUDY
PROPOSED OPERATION

IASUN99.XLS