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Energy

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GREAT PLAINS COAL GASIFICATION PROJECT

Quarterly Technical and Environmental Report for
Fourth Quarter, 1983

Work Performed Under Contract No. FM02-82FE55014

Great Plains Gasification Associates
Mercer County, North Dakota

Technical Information Center
Office of Scientific and Technical Information
United States Department of Energy

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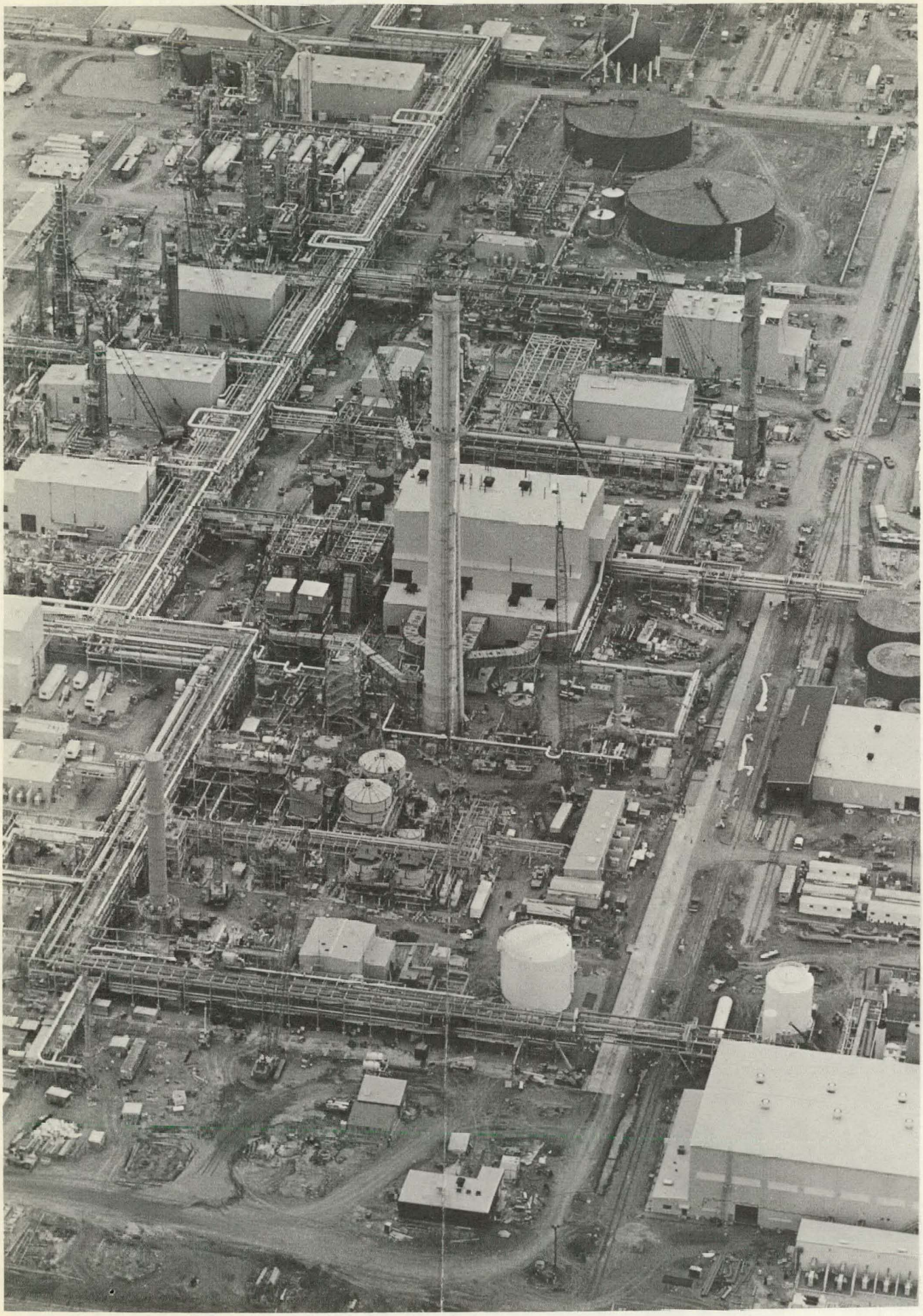

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GREAT PLAINS COAL GASIFICATION PROJECT

QUARTERLY TECHNICAL AND ENVIRONMENTAL REPORT

FOURTH QUARTER, 1983

GREAT PLAINS GASIFICATION ASSOCIATES

MERCER COUNTY, NORTH DAKOTA

PREPARED FOR:
U.S. DEPARTMENT OF ENERGY
CONTRACT NO. DE-FM01-82FE55014

GENERAL SUMMARY

Project

Activities remain on schedule to meet GPGA's full gas production date.

Gasification Plant

Detailed engineering in the Contractors' home office was completed in the fourth quarter. The remaining engineering tasks, which include field support activities and special projects, will be performed by the Contractors' Field Engineering Group.

A substantial amount of construction progress was achieved during the fourth quarter. Although the Plant's construction activities are still slightly behind schedule, it is currently forecasted that the construction schedule will be regained by the end of June, 1984.

Start-Up operations are continuing at a rapid pace. The current emphasis is on system turnover and commissioning activities.

The environmental permitting for the construction phase is complete.

Freedom Mine

Mine development activities remain on schedule.

FACT SHEET

GREAT PLAINS COAL GASIFICATION PROJECT

PROJECT OWNERS

Great Plains Gasification Associates is a consortium of five major energy companies building America's first commercial scale coal gasification plant.

- **Tenneco, Inc.**
  Ownership Share 30.0% (Tenneco SNG Inc.)
  Gas Share 30.0% (Tennessee Gas Pipeline Company)

- **American Natural Resources Company**
  Ownership Share 25.0% (ANR Gasification Properties Company)
  Gas Share 25.0% (Michigan Wisconsin Pipe Line Company)

- **Transco Energy Company**
  Ownership Share 20.0% (Transco Coal Gas Company)
  Gas Share 25.0% (Transcontinental Gas Pipe Line Company of America)

- **MidCon Corp.**
  Ownership Share 15.0% (MCN Coal Gasification Company)
  Gas Share 20.0% (Natural Gas Pipeline Company of America)

- **Pacific Lighting Company**
  Ownership Share 10.0% (Pacific Synthetic Fuel Company)

PROJECT MANAGER & PLANT OPERATOR

ANG Coal Gasification Company (Subsidiary of ANR).

PLANT LOCATION

Near Beulah in Mercer County, North Dakota, 75 miles northwest of Bismarck.

PLANT OUTPUT

- 125 million cubic feet/day of high Btu pipeline quality synthetic gas or 45 Bcf annually (20,000 b/d oil equivalent). Design Capacity is 137.5 million cubic feet/day.
- 93 tons/day of ammonia
- 85 tons/day of sulfur
- 200 million cubic feet/day of CO_2

COMMERCIAL PRODUCTION

Late 1984.

AVAILABLE FEEDSTOCK

125 million recoverable tons of lignite under contract with sufficient reserves for expansion.

PLANT INPUT

- 14,000 tons/day of lignite (4.7 million tons/annually)
- 75,000 kw/hour of electricity (600,000 megawatt hours/annually)
- 6.6 million gallons/day of water (7,000 acre feet/annually)
- 2,850 tons/day of oxygen (950,000 tons/annually)

GREAT PLAINS COAL GASIFICATION PROJECT

COAL PRICE TO PLANT
Priced at cost including a fixed profit per ton; production cost estimated at approximately $9.75 per ton in 1981 dollars and mine investment provided by Great Plains.

TYPE AND AMOUNT OF FEDERAL ASSISTANCE
Up to $2.02 billion loan guarantee was approved by the DOE on January 29, 1982. Funds are provided by the Federal Financing Bank.

AUTHORITY FOR ASSISTANCE
Federal Non-Nuclear Energy Research and Development Act.

ESTIMATED PROJECT COST (millions)

	Plant	Mine	Total
Thru 1981	$ 244	$ 27	$ 271
1982	542	24	566
1983	634	56	690
1984	537	49	586

AVAILABLE PROJECT FINANCING
Great Plains plans to borrow $1,552 million of the $2.02 billion loan guarantee approved by the DOE. Partners will invest $561 million in equity to finance the estimated project cost of $2,113 million. The remaining debt, up to $2.02 billion, along with additional partners' equity, is available for contingencies.

SUMMARY OF CONSTRUCTION ACTIVITIES
As of Oct. 31, 1983 construction was 85.7 percent complete and engineering was 99.8 percent complete. The overall project was 93.2 percent complete.

PRICING FORMULA
To be sold to pipeline sponsors at $6.75/million Btu, plus quarterly escalations starting April 1, 1981 based on the producer-price index and the price of #2 fuel oil. After the plant commences production of synthetic gas, the adjusted price under the formula cannot exceed (1) during the first five years, the price of #2 fuel oil unless such price is regulated; (2) during the sixth through tenth years of operation, the higher of the average prices paid by the pipeline affiliates for the highest priced 10 percent of domestic natural gas or for Canadian and Mexican gas, but in neither case higher than the unregulated price for #2 fuel oil; and (3) during the remaining life of the 25-year agreement, to such domestic natural gas prices unless such prices are then regulated in which case the Canadian and Mexican price will set the ceiling.

NUMBER OF EXPECTED PLANT OPERATIONS EMPLOYEES
- 1983 675
- 1984 800
- 1985 750

NUMBER OF CONSTRUCTION EMPLOYEES (Peak)
1983 (2nd quarter) 4,200

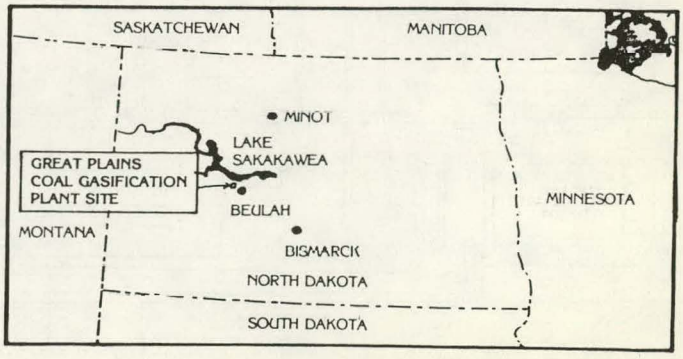
ENGINEER & CONTRACTOR
C-E Lummus, Bloomfield, New Jersey, a subsidiary of Combustion Engineering, Inc.
Raymond Kaiser Engineers, Inc., and Henry J. Kaiser Company, Oakland, California, subsidiaries of Raymond Kaiser Engineers, Inc.

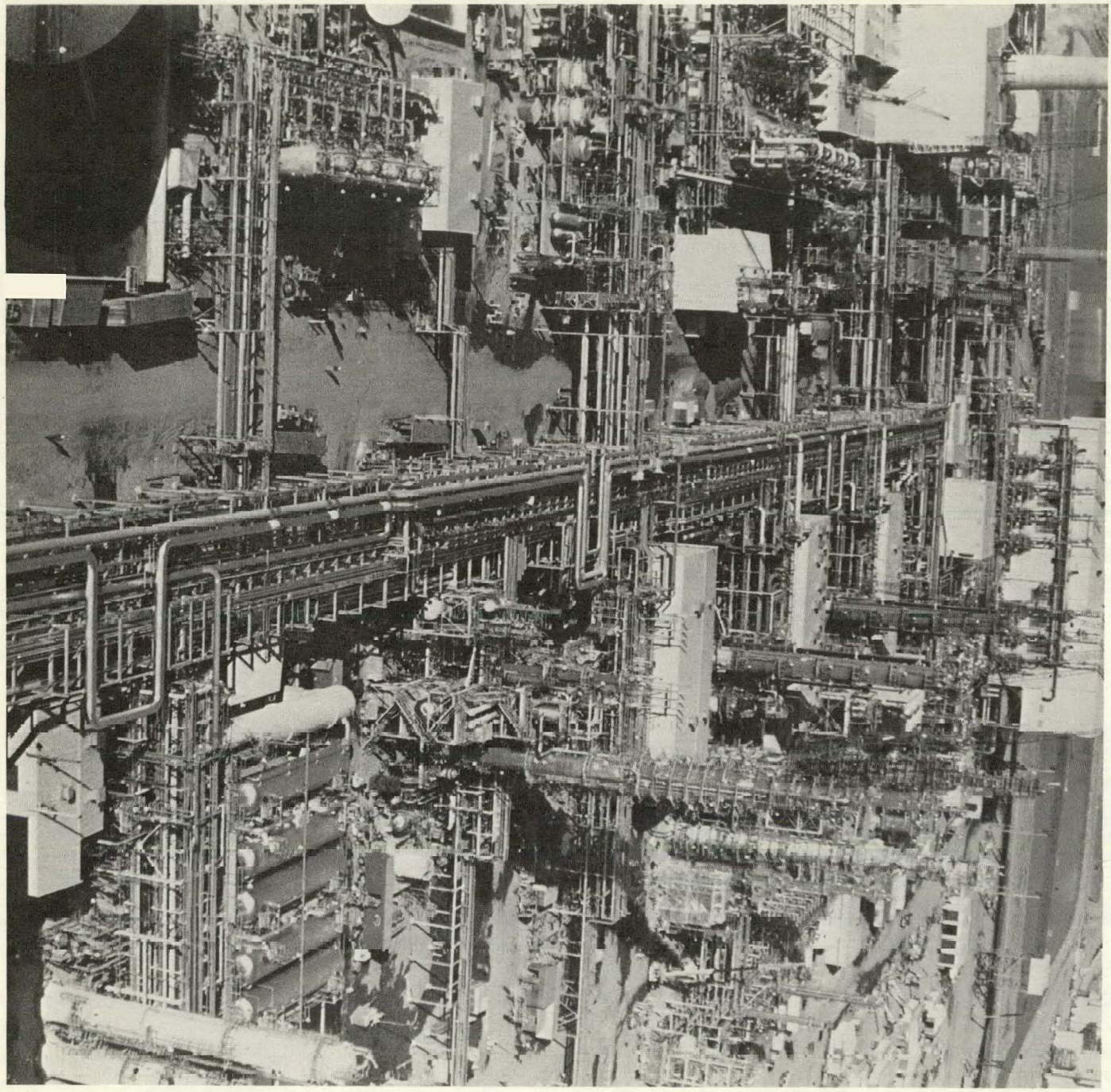
WATER RESOURCES
Permits obtained in 1974 sufficient to supply two plants of this design from Lake Sakakawea.

LABOR AGREEMENT
Labor Stabilization Agreement executed among the national leaders of all major construction unions and contractors which standardizes work rules and eliminates strikes.

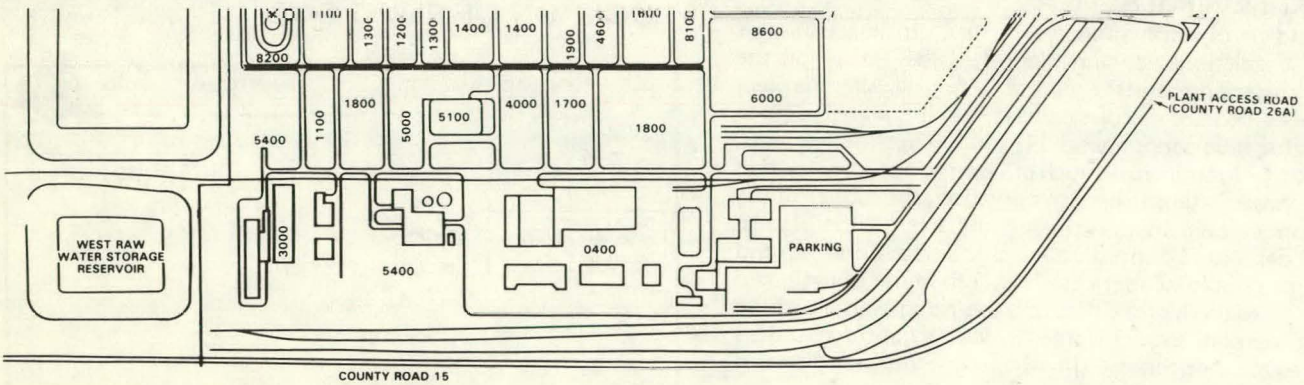
POWER SUPPLIES
Power supply contract executed with adjacent power plant.

LOCATION OF PLANT SITE





)ctober 31, 1983—Pipe Rack—Looking North



PLANT DESIGN - FOURTH QUARTER, 1983

INTRODUCTION

Detailed engineering at the Contractor's home office was completed on October 31, 1983. All Contractor engineering support after that date has been provided by the Contractor's Field Engineering Team located at the plant site. The only exceptions are specific requests for Contractor technical specialist assistance. These requests are reviewed and approved by ANG on a case basis.

There were no major engineering design changes which would constitute changes to the Technical Baseline.

There were no engineering problems which would have a reasonably forseeable impact on the scheduled start-up date for full gas production.

The Contractor's Field Engineering Team consisted of 30 personnel, in all disciplines, at the end of the fourth quarter. Work activities continue to be the type normally associated with a field engineering group. These activities include clarification of design documents, revisions to designs and drawings, technical consultation on field problems and the preparation of as-built drawings. This group will continue to demobilize as more plant areas are turned over to GPGA during the first quarter.

The GPGA Field Engineering Group consisted of 22 personnel at the end of the fourth quarter. This group continues to perform the detailed design and drafting for ANG design projects, as well as provide technical consultation, design and drafting assistance to the Contractor's engineering and construction groups and the

ANG/GPGA construction and operations groups. Administration of the Contractor's home office personnel located at the plant site is also a responsibility of this Group. Since the engineering for many of the larger ANG design projects was completed during the fourth quarter, the work load is now accented toward smaller piping/electrical/instrumentation projects. A minor reduction in the size of this Group is expected during the first quarter.

As predicted in Third Quarter Report, all remaining electrical/instrument engineering activity in the Contractor's home office was completed by the end of October. A minor amount of vendor document review continued in the home office during November and December. Any additional vendor document review will be performed in the field. The supplement to the vendor technical data books were not issued during the fourth quarter as forecasted. These addendums will be issued during the first quarter. Vendor information needed by contruction forces is being issued separately to the field.

The fourth quarter report will contain only two sections: Summary - Fourth Quarter and Engineering Evaluations.

The Summary Section will briefly describe engineering activity during the fourth quarter. An overall Summary as well as Contractor Field Engineering and GPGA Design Project subsections are included.

The Engineering Evaluations Section will summarize activity regarding technical studies in progress or completed during the fourth quarter. Four updates and five new issues are discussed.

I Summary - Fourth Quarter

1 - Overall Engineering Progress
   a) General
   b) Specific Issues

2 - Contractor Field Engineering Team

3 - GPGA Detailed Design Projects
   a) Summary
   b) Chemically Secure Landfill (8100 Area)
   c) Bleedstream Treatment (4000 Area)
   d) Dusty Tar Storage (6000 Area)
   e) Natural Gas Heater (1900 Area)
   f) Safety Showers
   g) Compressor Building Gas Monitors
   h) Flare Header Revisions (8300 Area)
   i) Miscellaneous Projects

I-1. Overall Engineering Progress

a. General

As indicated in the third quarter report, the contractor home office engineering design activity was closed out as of October 31, 1983.

The October home office engineering activity included reviewing the TDC-2000 system loop diagrams and updating the appropriate instrument and electrical drawings as well as completing the design for the fire alarm system and the standby electric generators.

Other technical activities performed in the home office during the fourth quarter included reviewing vendor documents, reviewing invoices and providing technical support for backcharges. After October 31, 1983, all home office activity required specific approval from ANG.

There were several instances where technical specialists from the home office were requested to perform specific tasks such as reviewing minimum temperature requirements for hydrostatic testing and providing consultation for repair/replacement of a column damaged in a vehicle accident. This activity also requires prior ANG approval.

In general, the concept of providing a relatively self contained contractor engineering group at the plant site was working very well by the end of the fourth quarter. Home office engineering involvement during 1984 is expected to be minimal.

During the fourth quarter, revisions were issued to about 400 AFC drawings. Eleven new AFC drawings (all electrical) were issued during the period. Five of these were issued to reduce overcrowding on electrical/instrument wiring drawings and six were for the addition of a complete manual operating mode, with all interlocks, for the coal handling system. Approximately 70% of the revised drawings were electrical. Approximately 100 revised electrical drawings were issued from the home office in October and the remaining revised/new drawings were issued from the field. About 25% of the revised drawings were piping orthographics, many of which were confirmations of work previously authorized by using field mark-ups.

Piping isometric drawing activity for the fourth quarter included revisions to approximately 350 drawings and the issuance of 86 new drawings. Most of the new drawings were for small bore (2" and under) piping.

Fifty as-built drawings were prepared and issued to GPGA during the fourth quarter. This activity is expected to increase significantly during the first quarter.

The policy of limiting design changes and drawing revisions to only those which are absolutely essential and are approved by ANG has been implemented and is working quite well.

All originals of AFC drawings and piping isometrics were sent to North Dakota during the fourth quarter. They are being stored for the contractors by GPGA until they are officially issued to GPGA as an as-built document. This will be done when the various plant areas are mechanically complete.

Updates for the instrument, project drawing and vendor document indexes were issued during the fourth quarter. These indexes, as well as the actual documents, must be kept current as construction completion approaches and documentation packages are prepared for portions of the plant turned over to GPGA. The masters for all of these indexes are being kept by the contractors field engineering team at the plant site.

The contractors field engineering team is involved in hundreds of technical tasks each week, such as providing sketches to clarify electrical terminations, evaluating as built conditions which deviate from drawings or specifications, checking settings for custom engineered pipe supports, providing recommendations for final plantsite grading, providing redesigns for leaking roofs, and making sketches for the relocation of piping to avoid head knockers and tripping hazards.

Some of the specific fourth quarter technical work tasks, both in the home office and the field, are discussed in the next section of this report.

I-1 b. Specific Issues

Control Room Halon Systems

Modifications necessary to satisfy all design rules and insurance requirements were made to the design of the halon systems for control rooms. The halon capacity of several systems was increased. All drawings and calculations were resubmitted to the insurance authorities and their final approval is expected early in the first quarter.

Glycol Drying Unit

Investigation of the design criteria for the glycol drying units (PA-1950/80) continued in the fourth quarter. The fact that other units with similar design characteristics are operating successfully, increased confidence that the GPGA dryers will also perform in an acceptable manner. A meeting was held to discuss all technical concerns with the vendor in October. Some proprietary information was obtained from the vendor indicating that the glycol property data and other absorption criteria were based, in part, on test results.

Post Engineering Review

Activity during the fourth quarter included the review of the Post Engineering Review (PER) by GPGA personnel. The engineering contractors were requested to respond to certain portions of the PER. Most comments were received from the contractors and put together with the results of the GPGA review. The review was about 90% complete at the end of the fourth quarter. All comments will be issued during the first quarter.

TDC-2000 Systems

The initial issue of the remaining "A" system loop diagrams was completed by the end of October. Review and correction of all loop diagrams continued through early December when all final copies for the TDC-2000 system were issued.

Retesting of the "A" system occured in October as planned. The test was successful and all hardware was shipped by the end of October. All TDC-2000 operator consoles and electronic racks are now at the plantsite.

Electric Heat Tracing

Computerized tabulations and summaries of the electric tracing systems are necessary in order to make final electrical terminations to the power and control panels as well as to reconcile all bills of material. These computerized tabulations were to be produced by the heat tracing vendor after receiving functional requirements and wire numbers from the engineering contractors. Unfortunately, problems arose regarding the compatibility between the type of data supplied by the contractors and the vendor's computer program which delayed this work. This has in fact caused some temporary wiring to be installed, in order to energize necessary heat tracing circuits. A meeting is scheduled with the vendor in early January to resolve all problems so that the computerized tabulations can be completed.

Vendor Documentation

Complete supplements to the vendor technical data books previously issued to GPGA will not be prepared during the first quarter. This was not done during the fourth quarter because too many documents were still outstanding at that time. Although some vendor documents were under review at the contractors home office during the fourth quarter, copies were forwarded to the plant site as soon as they were received. Starting in January, all vendor document reviews will be done by contractor personnel at the plant site. Since these last remaining documents are mostly certified drawings and standard manuals, they will require only minimal review. In order to insure that legible copies of vendor drawings can be made by GPGA, the contractor has been requested to provide a reproducible copy of the certified drawing which was issued directly by the vendor rather than one made by the contractor.

Shop Performance Testing

Several significant performance tests were witnessed by GPGA and contractor personnel during the fourth quarter as listed below:

1 - TDC-2000 "A" System (1100 Area).

2 - Analyzer racks for the 1700, 1900, 4900 Areas.

3 - Drive gears for compressors GB-1181 and GB-1452.

4 - Stack Gas Monitoring Data Acquisition System

The "A" System test is described in the section above on the TDC-2000 Systems.

The analyzer rack was retested because of compatibility problems between the input signals and the programmable controller.

The drive gears for the two compressors were retested because of design speed changes which developed after the initial test.

The Stack Gas Monitoring Performance Test was an initial test of this system which was purchased in the third quarter of 1983.

Conveyor Support Damage

A conveyor support in the 2000 Area was damaged when it was involved in a truck accident during the fourth quarter. One of the steel columns was severly deformed at the collision point. a structural engineering review of the damage determined that the load carrying capacity of the column was significantly reduced and that repair was

not feasible. Replacement of the column was necessary. Arrangements were made to temporarily support the conveyor, while the damaged material was removed and replaced.

I-2. Contractor Field Engineering Team

The Contractor's Field Engineering Team continued to provide technical support for construction forces and technical support for any necessary design revisions. The preparation of as-built drawings/documents was also initiated during the fourth quarter. With the home office engineering activity now complete all contractor technical contacts are made through this Field Team.

As of the end of the fourth quarter this group consisted of 30 personnel. A further decline is expected during the first quarter as construction completes more plant areas and turns them over to GPGA.

The field originated CCR's (Change/Clarification Record) continue to be the procedure for obtaining formal responses from the Field Engineering Team for engineering related construction questions and problems. About 30 CCR's per week were handled by the Field Engineering Team during the fourth quarter. These covered the gamit of the engineering/construction interfaces (hydrotest system boundaries, piping fit up problems, specifications clarifications, materials substitutions electrical conduit routing, etc.)

Some of the major fourth quarter activities performed by the Field Engineering Team are listed below:

1 Piping design: 86 new and 400 revised isometric/ orthograhic drawings issued. 100 piping support detail sheets (mostly revisions) issued.

2 Electrical heat tracing design: 100 termination sketches issued for heat tracing power and control panels.

3 Electrical/instrument design: 100 termination diagrams issued to clarify field and control panel instrument wiring.

4 Clarification of hydrostatic test P&ID's and test system descriptions, including requests from construction for revisions to test system boundaries due to field conditions.

5 Electrical/instrument design to provide a complete manual operation of the coal handling system with all interlocks operable. Six new electrical drawings were issued.

6 Preparation of guidelines for minimum test temperatures during winter hydrostatic testing of piping systems and equipment.

7 Final programming and checkout of software and hardware for the programmable controllers.

8 The compilation of all field documents for the preparation of as-built and as-built mark-up drawings in accordance with project requirements.

I-3. GPGA Detailed Design Projects

a. Summary

Significant progress was made on detailed engineering for the several large projects being handled by the GPGA Field Engineering Group during

the fourth quarter. The Chemically Secure Landfill, Dusty Tar Storage and Natural Gas Heater Projects were completed. The only previously assigned major project requiring a significant effort to complete during the first quarter is the Compressor Building Gas Monitors. One new project which is categorized as major (Flare Header Revisions) was assigned to the Field Engineering Group during the fourth quarter. Engineering for about 15 small projects was completed during the fourth quarter.

About 550 AFC drawings were issued during the fourth quarter. 70% of the drawings issued were piping, plot or plant arrangement type drawings; 25% were electrical/instrument drawings and 5% were civil drawings. Numerous pipeline lists, instrument lists, and loop diagrams were also issued. Approximately 175 requisitions were issued for materials during the fourth quarter. The bulk of these are for commodity items such as structural steel, piping and accessories and electrical wire/conduit/switchgear. Responses to construction questions on the ANG Design Projects has also been a major activity. Drafting assistance for the preparation of as-builts began late in the fourth quarter. Piping model work (as-builts and ANG Design Projects) was put on "hold" pending management review of the need for this activity.

The steady input of smaller projects and the requests for engineering design and drafting assistance from the Contractors Field Engineering Team, the ANG Construction Department and the GPGA Operations Department has kept the designer/draftsman personnel fully occupied.

In addition to coordination of the ANG Design Project Activity, the senior members of the Field Group are also responsible for the administration of the Contractor's Field Engineering Team and the resolution of all engineering oriented CCR's (the field generated Change/Clarification Record). This has resulted in a greater involvement in the review and resolution of engineering problems with the contractor and operations technical personnel. Significant efforts were expended during the fourth quarter on issues such as the main flare revisions, electric heat tracing problems, temporary supports for hydrotest, substation roof leakage, and piping design for the vortex shedding flow meters.

The Field Group consisted of 22 personnel as of the end of the fourth quarter. A ratio of about three to one has been maintained between designer/ draftsman and engineering personnel. A reduction of two or three people is expected during the first quarter.

Technical assistance for the Field Group is still being supplied by the GPGA Engineering Group in Detroit, however, with the completion of most of the major design projects this effort is being reduced as indicated in the third quarter report.

A brief summary of third quarter developments for major projects assigned to the GPGA Field Engineering Group is provided below:

I-3 b. Chemically Secure Landfill (8100 Area)

Detailed design was completed during the fourth quarter. A total of six drawings were issued during

this period. The only additional work would be construction follow-up on as requested basis. This project is complete and will not be included in future reports.

I-3 c. Bleed Stream Treatment (4000 Area)

The detailed design effort is 98% complete for this project. Only final instrumentation documents remain to be issued. 33 drawings were issued during the fourth quarter, 75% of which were electrical/ instrument drawings. All final design documents will be issued early in the first quarter.

I-3 d. Dusty Tar Storage (6000 Area)

Work scope added to this project late in the third quarter included revising the system such that dusty tar could be diverted to the superheaters for use as fuel on automatic basis. Significant piping and instrument revisions were necessary to accomplish this. All civil, piping electrical and instrument design for this project was completed during the fourth quarter. All commodity requisitions were also issued. A total of 141 drawings were issued during the fourth quarter and with the exception of field follow-up, detailed design was completed. This project will not be included in future reports.

I-3 e. Natural Gas Heater (1900 Area)

Detailed design for this project was competed during the fourth quarter with the issuance of eight electrical and instrument drawings and all other line lists and instrument loop diagrams/indexes. This project will not be included in future reports.

I-3 f. Safety Showers

The detailed design effort for this project concentrated on electrical activity during the fourth quarter. 44 drawings were issued (90% electrical) during the period. Design details for only three or four showers remain to be completed. Detailed design will be totally completed during the first quarter.

I - 3 - g Compressor Building Gas Monitors

Technical specifications for the gas analyzers were finalized and were issued for quotation during the fourth quarter. Proposals were received and are under review. A purchase order will be issued early in the first quarter. Electrical/instrument detailed design was initiated in the fourth quarter and is about 25% complete. Vendor data is necessary to complete the design. Detailed design is expected to be 90% complete by the end of first quarter.

I - 3 - h Flare Header Revisions

This project involves increasing the size of the flare header from 42" to 54" between the flare knockout drums and the flare stack and the procurement/installation of a larger tip for the main flare. Nozzle redesign at the knockout drum and flare stack base is necessary as well as revision to external piping in the flare tip area. (See Section II-9 of this report for further discussion).

Detailed engineering was initiated in November and was about 75% complete at the end of the fourth quarter. 26 piping drawings were issued. Specifications/requisitions were also issued for major material items including the flare tip. Detailed engineering will be completed during the first quarter.

I-3 i. Miscellaneous Projects

The GPGA Field Engineering Team is currently handling about 35 small design/drafting projects.

A representative sample of projects which were active during the fourth quarter are listed below:

1 Ashwater heat exchanger
2 Flare line and KO pot for 4600 Area
3 Gas liquer tank heaters
4 Gas liquer line tracing & insulation
5 Start-up nitrogen purge line to flare
6 Phenol unloading line for start-up
7 Methanation compressor casing seal leak off system
8 Block valves and blinds for system isolation
9 Foam protection for tar separators and tanks
10 Piping connections for corrosion coupons
11 Additional 4" water line to oxygen plant
12 Thermal insulation support rings and lugs for Stretford absorption towers

II Engineering Evaluations

1 - Underground Piping Corrosion Protection

2 - Electric Heat Tracing

3 - Tank Settlement (1800, 6000, 8100/8600 Areas)

4 - Electric Power System Analysis (5300 Area)

5 - Tar Recirculation Valves (1100 Area)

6 - Vortex Shedding Flow Meters (1400,1700,5400 Areas)

7 - Waste Gas Drum Pressure Safety (5000/5100 Area)

8 - Stretford Absorber Column Insulation (4000 Area)

9 - Main Flare System Design Review (8300 Area)

II-1. Underground Piping Corrosion Protection

During the fourth quarter, an experienced corrosion consulting firm was retained to perform the design for the cathodic protection system for underground steel piping. Design work was initiated in December. A field trip is scheduled for January. The consultant's design work will be completed during the first quarter. After establishing electrical power requirements and their physical location, the engineering design to provide this power source will be performed by the GPGA Field Engineering Team.

II-2. Electric Heat Tracing

As indicated in the third quarter report, significant design revisions were necessary for the electric heat tracing systems because the initial design did not properly account for heat loss at the pipe supports. Modifications to some of the small bore pipe support design helped to reduce heat losses and the overall impact on the electric tracing design. During October and early November all heat transfer calculations for the individual heat tracing circuits were completed, new tracing circuit lengths were establilshed, design revisions for the electric power supply design were completed and pipe support revisions were finalized.

During the fourth quarter another engineering evaluation was made which resulted in the reduction of the number of metal temperature detectors and control circuits for the electric heat tracing system. The initial design used a thermocouple temperature measurement for most electric circuits. However, it became evident that when several circuits were used for a single pipe without takeoffs, some measurements were redundant. Acceptance

of this concept allowed a reduction in the number of control circuits and limited the additions to control panels where more circuits were necessary to accommodate heat losses at the supports.

II-3. Tank Settlement (1800, 6000, 8100/8600 Areas)

The analysis of the effects of tank settlements on design were completely evaluated by the end of October. Piping was redesigned for additional flexibility using the most conservative estimates of future settlement . All fill/settlement tests have now been completed. This evaluation is complete and it will not be included in this section of future reports.

II-4. Electric Power System Analysis (5300 Area)

The transient electric power analysis for the GPGA plant was completed and the report issued by the consultant in October. After minor revision the final report was issued in November. This study confirmed that the GPGA electric power system design is adequate even under the most severe transient conditions studied. The study also provided GPGA with data to properly respond to Basin Electric's concerns on the affect of GPGA transients on the external power source. A meeting with ANG/GPGA and Basin Electric personnel to formally present the findings of this study is scheduled for January. This evaluation is complete and will not be included in this section of future reports.

II-5. Tar Recirculation Valves (1100 Area)

The dusty tar circulation system for reinjection of the tar to the gasifier contains three severe service control valves which maintain back pressure for the high

pressure reinjection pumps at each gasifier. The adequacy of these three control valves was evaluated during the fourth quarter from the viewpoint of erosion potential in this slurry service. The life expentancy of the straight globe valve included in the current design may only be a few months under certain operating conditions. The use of sweep angle valves with upgraded metallurgy is being reviewed. The evaluation will be completed and recommendations issued to GPGA management early in the first quarter.

II-6. Vortex Shedding Flow Meter (1400, 1700, 5400 Areas)

Approximately 25 vortex shedding meters are used for gas and liquid flow measurement in the 1400, 1700 and 5400 Areas. Due to the original piping design and as-built piping conditions several of these meters have less than the recommended upstream and downstream straight length of piping. An evaluation of these conditions was initiated during the fourth quarter. Measurement accuracy must be maintained over a wide range of flows in many cases. In some applications the addition of straightening vanes or slight modifications to piping can produce the desired results. For other cases, especially with large diamter piping, the situation is more serious. The process requirements for measurement accuracy and the possible piping modifications must be carefully evaluated. Alternate flow measurement devices which require less straight piping may also be studied. The instrument manufacturers are being consulted to advise on measurment accuracy under less than ideal conditions. This evaluation will be completed during the first quarter and recommendations for modifications will be issued.

II-7. Waste Gas Drum Pressure Safety (5000/5100 Area)

The low BTU waste gas from the 4000 Area flows through the waste gas knockout drum (FA-5029) prior to being used as fuel in the utility steam generators. A review of the design during the fourth quarter found that the 30 psig design pressure was not compatible with upstream design criteria under upset and blocked-in conditions. An investigation was initiated to determine whether this drum can be re-rated for a higher pressure or whether additional pressure relief devices are necessary. All piping into and out of the drum is adequate for the highest possible pressure of 40 psig. This evaluation will be completed during the first quarter and modification recommendations will be issued.

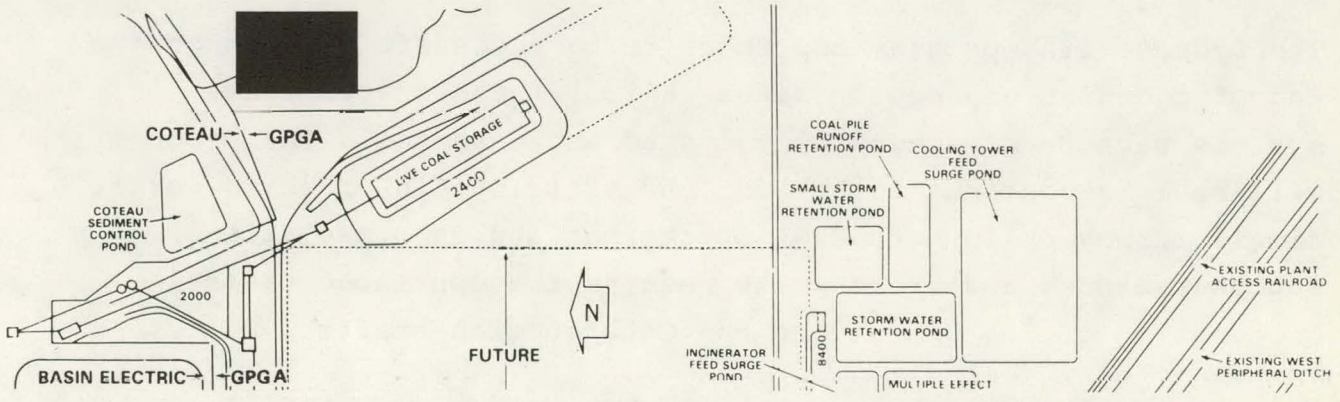
II-8. Stretford Absorber Column Insulation (4000 Area)

The initial design for the 4000 Area main absorption columns (DA-4001 A/B and DA-4051 A/B) included thermal insulation only up to the normal liquid level. Review during the fourth quarter indicated that although this design is satisfactory for operating conditions there is a concern for freezing of the Stretford solution in the tower during a winter shutdown. Normal gravity drainage from the column to the concrete basins will not significantly lower the liquid level. There is also a possibility that liquid will be trapped in the tower internals near the top of the absorber. Upon review and consultation with GPGA Operations personnel it was decided to thermally insulate and heat trace the upper portion of these absorption columns. This evaluation is complete and it will not be included in this section of future reports.

II-9. Main Flare System Design Review (8300 Area)

The GPGA operations group retained a consultant to review the plant flare (8300 Area) system design. The consultant concluded that the flare system was not adequately designed for the worst case (loss of cooling water) from the viewpoint of system pressure drop and flame stability at the flare tip. The report was reviewed and recommendations were made to modify the design by increasing the pipe size from the flare knockout drum to the flare stack and purchasing/ installing a larger flare tip. These recommendations were accepted. Since the flare system is needed for start-up during February and the plant will not be operating at full capacity until late in 1984 it was determined that a two part installation was acceptable. Flare tip and nozzle modifications will be pursued immediately and the pipe changeout will occur later during a planned shutdown of the flare system. Engineering design will be done by the GPGA Field Engineering Team. This evaluation is complete and will not be included in this section of future reports. (See Section I-3-h of this report).

October 31, 1983—Covered Stretford Purge Disposal Area



PLANT CONSTRUCTION - FOURTH QUARTER, 1983

Construction physical progress reached 90.8% complete at the end of this quarter as compared to a target progress of 94% as shown in the EPC Master Schedule contained in the Project Management Plan. As the construction physical progress was 82.6% at the end of the third quarter, 1983, there was a progress gain of 8.2% during the quarter for an average of 2.73 per month. The physical progress attained during the quarter as compared with the 1983-1984 winter seasonal plan target of 91.3% indicates continued progress was made on regaining the targeted progress of the EPC Master Schedule. It appears now that, although the EPC Master Schedule target was not attained, the steps taken to achieve the EPC plan by summer's end were effective in regaining most of the planned progress. The extreme bitter winter weather experienced in December hampered craftsmen in their efforts, especially in hydrotesting activities. Interior work proceeded well, and temporary shelters were erected to support critical outside activities.

The continuing efforts of GPGA Operation, H. J. Kaiser, and ANG Construction in closely monitoring turnover priorities to insure timely turnovers remains of the highest priority. The contingency plans of selective overtime and second shift work that have been used effectively thus far will continue to be utilized as necessary in order to achieve required Level II turnover dates.

The hydrotesting program continues to be successful. Through the end of the quarter, approximately 68% of the required test systems have been successfully tested and accepted. The program will have to continue to be fast and efficient in order to permit timely turnovers to both GPGA Operations and the insulation subcontractors, and these goals require the continued close cooperation of the Operations and Construction staffs.

Milestones achieved during the quarter include:

* Ran coal to the Gasifiers in accordance with the Coal Supply Contingency Plan.
* Completed all conveyor belt splicing.
* Turned over Boiler Number One and Boiler Number Two to GPGA and generated steam from both.
* Completed enclosure of the Live Coal Storage Shelter.
* Performed initial test of the Gasifier grates.

Quantities recorded for the period for all areas are as follows:

	Period	To Date
Concrete, Cubic Yards	950	139,260
Structural Steel, Tons	40	24,400
Power and Control Cable, Feet	2,320,870	4,589,870
Piping (Aboveground - Large Bore), Feet	14,630	522,750
Steam Tracing, Feet	125,330	620,560

AREA 1100 - GASIFICATION

Erection of stairs, handrail, grating, and the detailing of miscellaneous structural steel continues. Liner sheets, insulation panels, and finish sheets were completely installed on the exterior and roof of the building. Crews completed forming and pouring the exterior grade slab concrete. The elevator erection subcontractor, Otis Elevator, completed installation of the elevators on the northeast and southeast corners of the building. All Gasifiers and their associated equipment were successfully hydrotested. Pipefitters continue to install steam trace tubing with over 90% of the required tubing installed. Electrical cable pulling and instrumentation installation activities are ongoing. Equipment erection in the Lock Gas Compression area was completed.

AREA 1200 - CRUDE GAS SHIFT CONVERSION

Hydrotesting and insulation activities are continuing with approximately 94% of all lines hydrotested. Electricians continue terminating instrumentation and electrical equipment.

AREA 1300 - GAS COOLING

Raw Gas Cooling - The installation of instrumentation, electrical, hydrotesting, and insulation work continued during the period. All but one test system has been tested at the end of the period.

Converted Gas Cooling - The hydrotest program is nearing completion. Vessel and piping insulation is ongoing as electricians continue installing wire and cable and performing termination and testing work.

AREA 1400 - RECTISOL

Miscellaneous handrail, grating, and stair tread installation and bolt-up continued. Equipment is being inspected and turned over to Operations. Pipefitters have erected most of the spools in this area. Wiring of panels, motors, controls, and instruments continues. Approximately 41% of the planned hydrotests for this unit have been completed.

AREA 1600 - PHENOSOLVAN

The mechanical and piping subcontractor, Cherne Contracting Corporation, completed hydrotesting and punch list activities and has demobilized. Vessels and exchangers are being inspected and turned over to GPGA. Power and control wiring installation and termination continued throughout the quarter.

AREA 1700 - METHANATION

Methanation Recycle Gas Compressors GB-1701 and GB-1721 and their respective motor and turbine drivers were aligned and tested. The piping and mechanical subcontractor, Wallace - Comstock, completed installing large and small bore piping and steam tracing, and continued hydrotesting. Through the end of the period, all spools in this unit have been installed. Work continued on the installation of conduit, power and control wire, and lighting.

AREA 1800 - GAS LIQUOR SEPARATION AND STORAGE

The remainder of the dyke wall was formed and poured during the period. Piping erection has been completed and steam tracing installation continues. Miscellaneous handrail and grating bolt-up in the area structures continued concurrent with instrumentation and electrical installations. All motors have been terminated.

AREA 1900 - PRODUCT GAS COMPRESSION

Abovegrade piping erection continued with the installation of large and small bore pipe spools, bringing the percent piping installation in this area to approximately 90%. Instrumentation installation continued during the period as well as equipment insulation and steam tracing.

AREA 2000 - COAL PREPARATION AND HANDLING

In Secondary Crushing, the detailing of structural steel, grating, handrail, and stairs was completed. Piping and electrical crafts continue installing pipe spools and wiring respectively. In Primary Sampling, work on enclosing all wall penetrations is underway. In the Live Coal Storage area, the last roofing and siding panels were installed. Handrail and grating continued to be installed and bolted up in both the Fines Screen and the Secondary Sampling areas. The steam supply piping has been released for insulation in the Fines Screen Building. Elevator erection continued in the Fines Silos. All exterior roofing and siding is complete. As in all Coal Handling areas, electrical and instrumentation work is ongoing. All conveyor belt splicing has been completed and the belt splicing subcontractor has demobilized.

AREA 3000 - OXYGEN PLANT

Progress continues to be achieved on the cold boxes and in the Compressor Building. Both the electric driven and the steam driven Oxygen Compressors are being readied for start-up, along with the drivers. Equipment and piping insulation activities are

well underway, and the sub-tier contractor for the Liquid Oxygen Storage facilities is installing equipment and piping.

AREA 4000 - SULPHUR RECOVERY, STORAGE, AND LOADING

Boilermakers completed installation of internals in the Superstill DA-4601. Pipe spools continue to be placed and instrumentation and electrical activities go on.

AREA 4600 - AMMONIA RECOVERY

Cherne Contracting Corporation completed setting equipment and erecting piping, steam tracing, and supports. All electric motors have been bumped by the electrical subcontractor, Lord Electric.

AREA 4900 - METHANOL PRODUCTION

With the exception of four punch list items, all work on this process unit was completed.

AREA 5000 - STEAM SUPPLY

Linden-Alemak, the Boiler Stack Personnel Hoist installation subcontractor, completed their installation and demobilized. Piping, electrical, and instrumentation installations continue.

AREA 5100 - STEAM GENERATION AND PLANT INSTRUMENT AIR SUPPLY

Boilers Number One and Number Two were turned over to Operations and are generating steam. Boiler Number Three has been turned over for boil-out. Workmen are continuing activities associated with terminating and testing equipment and associated circuits in the area.

AREA 5200 & 5300 - ELECTRICAL DISTRIBUTION

Electricians continue pulling and terminating medium and low voltage wire and cable, and installing data highway conduit on the main pipe rack.

AREA 5400 - WATER TREATMENT AND FIREWATER SUPPLY

Instrumentation and electrical work continued throughout the period and most of the remainder of the unit was turned over to GPGA.

AREA 5500 - COOLING WATER SUPPLY

All steam tracing and insulation has been completed in this area.

AREA 6000 - PROCESS STORAGE FACILITIES

Equipment continues to be inspected and turned over to GPGA Operations personnel. Piping and equipment insulation activities are ongoing with the majority of equipment insulation completed.

AREA 7100 - INTERCONNECTING PIPING

The interconnecting piping is mechanically complete. Insulators continue applying insulation with completion at approximately 80%.

AREA 8100/8600 - WASTE EFFLUENT SYSTEM/DEEPWELL PRETREATMENT

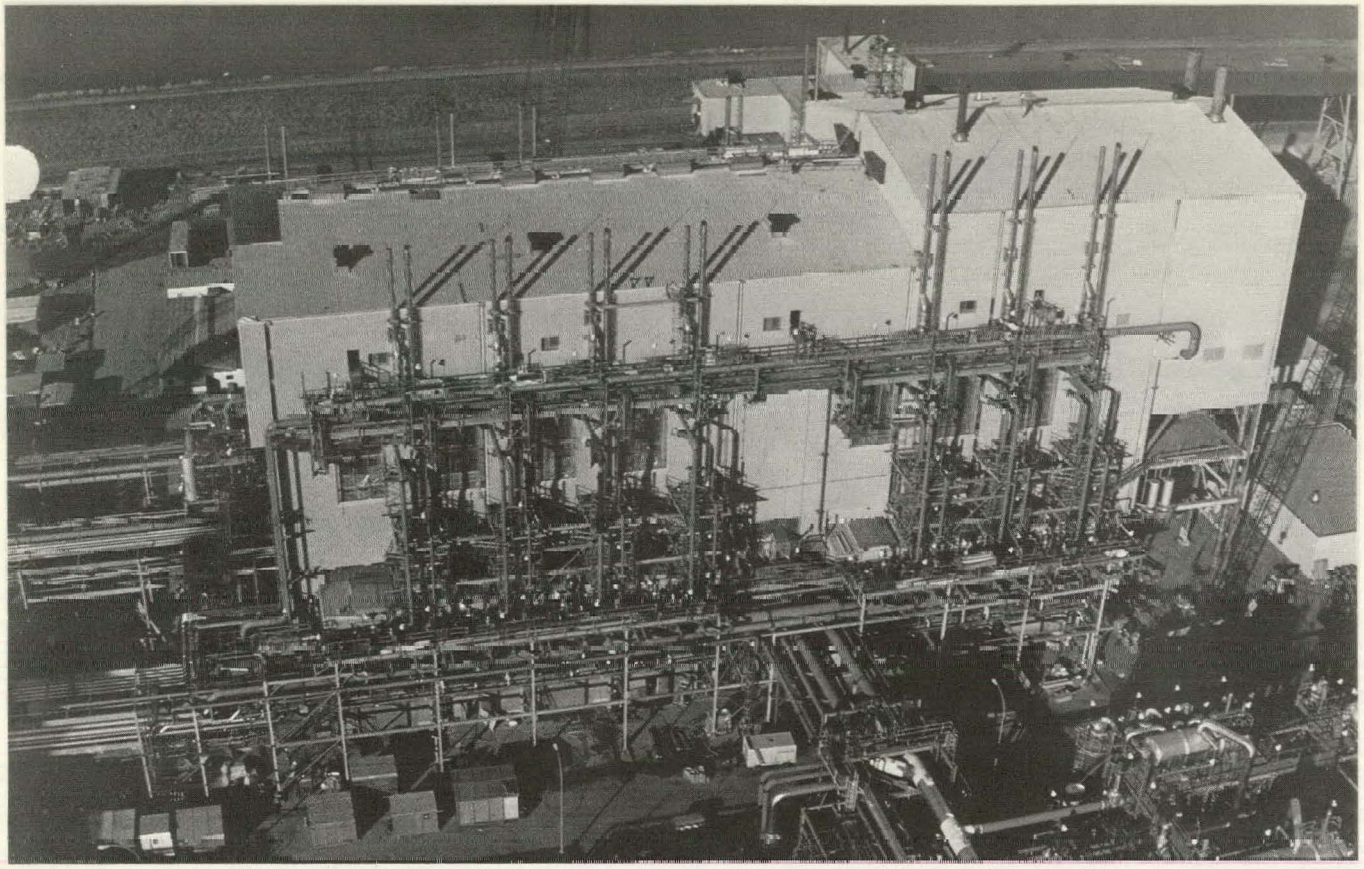
The remaining two large bore pipe spools were erected this period. Work associated with the installation of the TDC-2000 WW Console was completed. Insulation activities are continuing.

AREA 8200 - ASH DISPOSAL

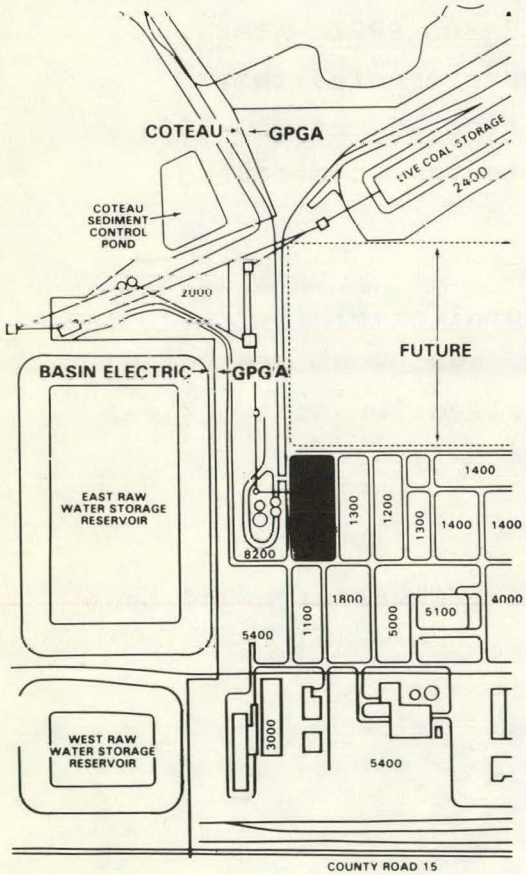
Ironworkers completed detailing the structural steel in Dewatering Building Number 8203. Pumps and equipment are being inspected and turned over to GPGA. Dust Collection ductwork was completed.

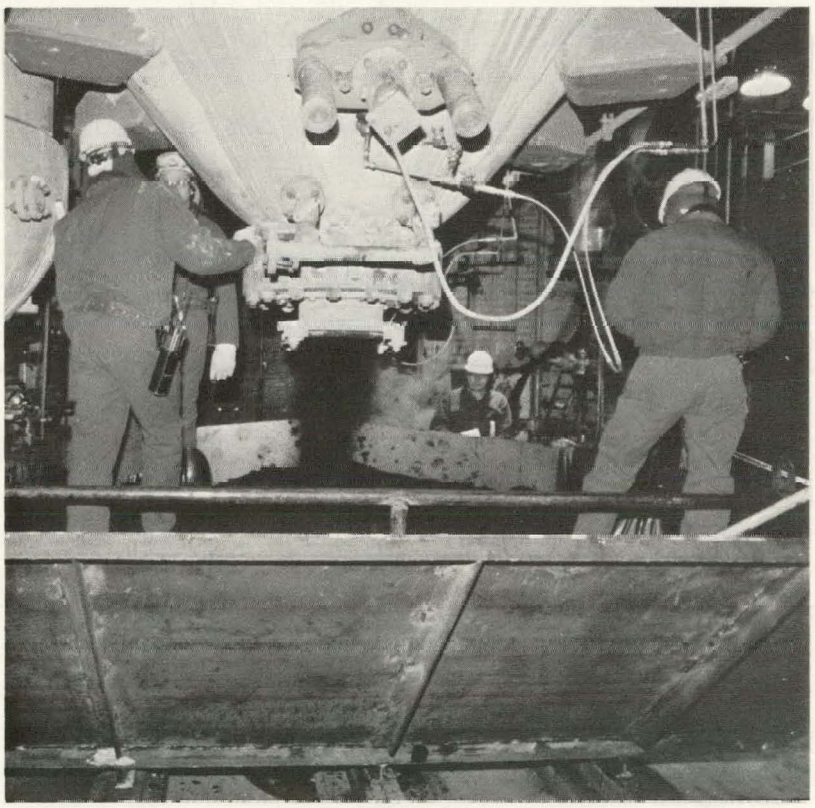
AREA 8300 - FLARE STACK

This area was completed with the exception of insulation and heat tracing.



tober 31, 1983—Area 1100—Gasifier Building—Looking North





December 15, 1983—Area 1100—Inside Gasifier Building—Testing Gasifier

PLANT PRE-OPERATIONS - FOURTH QUARTER, 1983

PLANNING OF OPERATIONS

1. Precommissioning Planning

During the first four months of commissioning, all major project milestones were accomplished. In November, three major project milestones were accomplished; they were, low pressure steam systems, demineralized water and softened water. All three systems have been put into operation. In December, Gasifier "G" was loaded with coal and the grate drive was successfully tested.

Commissioning work is now ongoing in nearly every area of the plant. While commissioning is being hampered by delays in turnovers, and completion of exception items, cooperative action is occurring between all parties to maintain the start-up program. At this time, no project milestones are in danger. A copy of the start-up progress is included in Attachment #1.

2. Materials Management

A. Procurement

With minor exceptions, all purchase orders are now being processed through COMPASS. Various problems with both the software and hardware being used have resulted in many delays in the input and processing of purchase orders. It is felt that corrections and enhancements to the software that have been requested, coupled with the "C" System upgrade to be installed in January 1984, should alleviate the majority of these problems.

Three of the initial four contract buyers are still employed to reduce the workload and demands being placed on the Purchasing Department. Immediate forecasts see no lessening of this workload in the first half of 1984. To alleviate this situation, all personnel have been working minimum ten hour days and will continue to do so as long as the situation remains unchanged.

B. Warehouse and Inventory Control Activity

1) Material Control

Storage bins have been ordered for storage of the small pipe fittings and fasteners. These bins are scheduled for shipment January 5, 1984. Additional shelves and drawer inserts have been purchased. These will be installed in the existing cabinets to more beneficially use the storage space available in these units. A vertical storage plate steel rack was constructed by Maintenance and is now in use.

An additional person was added to the 2nd and 3rd shifts providing for one Material Technician and one contract person on each shift. All Material Control and Inventory Control personnel have been trained to enter material receipts and issues on line into the COMPASS System.

The majority of all warehouse items received to date have been placed in their proper area along with the bin locations input on the COMPASS System.

A considerable amount of overtime was required to keep current with the influx of supplies received during this quarter.

2) Inventory Control

The following identifies the progress in assigning stores item numbers as of December 31, 1983.

	Stores Item Number	Projected No. of Items	Percentage of Completion
Maintenance	11,404	13,000	* 88 %
Instrumentation	4,548	6,000	75.8%
Commodities	6,308	8,000	78.9%
TOTAL	22,260	27,000	82 %

*Due to additional vendor information, projected number of items for maintenance spare parts has been adjusted.

All incoming requisitions for new stores items are being analyzed to determine their effect on the EAC Budget.

3. COMPASS Status Report

Due to the file capacity of our IBM 8100B Model computer exceeding 87% usage, and the extremely slow response time, the decision was made to lease the additional equipment to update our present system to an 8100C Model. When this is completed in January, 1984, our storage capacity should be increased by 50% and the response time will be improved.

3. Catalyst and Chemical Schedule

Specification and evaluation of process chemicals has been completed. All suppliers of process chemicals have been identified. Most purchase orders for these chemicals has

been placed with the suppliers. Some purchase orders, however, have been held up to confirm construction completion dates of tanks and equipment required to store these materials. All process chemicals will be ordered during January, 1984. Continuing activity in this area is expected to be minimum.

Attachment #2 is Revision 18 of the Catalyst and Chemical Report Summary.

4. Manual Preparation Status

Progress on Process Manual preparation was 10 percent for the fourth quarter 1983. The Operating Standard Manuals were 100 percent complete as of December 15, 1983. Eleven of the twenty-one manuals have been printed and distributed. The remaining ten manuals will be printed and distributed in January 1984. The Analytical Manual was completed during the fourth quarter 1983.

5. Management Information System (MIS) Development/ TDC 2000 Implementation

Setpoint, Incorporated completed the development of special software to support the generation of special reports. This software has been installed on the MIS and tested utilizing test data.

The data entry of the data base points from TDC 2000 is completed. The implementation of the a) graphic displays is 97% complete; b) the management reports is complete; and c) the periodic shift reports is 90% complete.

The MIS Computer is still running on temporary construction power while waiting for engineering and construction to get appropriate power and isolation transformers specified and installed.

Construction is scheduled to have the data hiways installed between the MIS and the individual TDC 2000 systems by January 20, 1984. Thereafter, the checkout of the data base with each TDC 2000 will begin.

A contract for development of special software for calculation of fuel allocation to the boilers was awarded to Setpoint, Incorporated and is to be completed by April, 1984.

6. Equipment Inspection Activity

The majority of the safety relief valve testing program was completed with a total of 900 valves being verified. Approximately 150 safety relief valves remain to be checked. About 15 percent of the relief valves tested required either resetting or some type of maintenance.

Turnover of mechanical equipment from Construction to Operations continued through this quarter. Sixteen hundred items have been accepted.

Completed testing of cooling tower packing materials. Preliminary results indicate no significant difference in the use of PVC, poly-phrophylene or polyethylene.

Special welding procedures were given to Plant Maintenance technicians to qualify them for structural welding. Several technicians have been qualified on these procedures.

Initiated corrosion probe monitoring of the plant cooling water system. Corrosion rates were in the 15-25 mills per year range during the first months operation. Nalco is working on a solution to lower the rates.

7. Laboratory Activities

During the last quarter of 1983, occupancy was taken of the chemical laboratory building, and significant effort was directed toward the installation of equipment and the organization of the laboratory. The analytical operations were switched in early November from the Nalco mobile laboratory to the permanent facility without an interruption of service. Representatives from Hewlett-Packard, Beckman, LECO and Varian were on site for the installation of gas chromatographic, HPLC, coal analysis and atomic absorption instrumentation. The vendors also provided initial operational and maintenance training.

Four additional technicians were added to the staff during the quarter bringing the total staff to the authorized level of 26 personnel.

Laboratory personnel completed formal training in the operation of the inductively coupled plasma instrumentation. Additional training classes are scheduled on the operation of analytic instruments during January and February.

The laboratory can now provide Operations with analytical support in the following areas; general boiler and water chemistry, selected metals, complete coal analyses, limited gas analyses, cation and anion analyses, total organic carbon determinations and liquid chromato-graphic analyses. It is anticipated the remaining services required by Operations will be available by February, 1984.

During the reporting period, all parts of the analytical methods manual were completed, reviewed and corrected, and the final copy was submitted for typing, printing and binding. This completes the initial analytical methods manual.

During the current quarter, analytical support for Operations continued at an increasing rate. Operations submitted approximately 3,000 samples to the laboratory for analysis. Determination for approximately 19,000 analytical parameters were requested on the samples submitted.

8. Maintenance Activities

A. Instrumentation Program

Power wiring for the hot spares is essentially complete except for outlets.

The Control Systems Group has completed the gasifier simulator. Process Operations and the Control Systems Group are making trial runs with the simulator and debugging the hardware. The representative from SASOL, Johan DuToit, will arrive in mid-January and participate on these functions.

We are continuing our review of control systems for improvements in Areas I and II. Identified improvements to date include Vortex Shedding Meter modifications especially on surge control applications and additional control modifications are proposed for the compressor flows which require pressure temperature compensation.

Documentation of the programmable controller programs is nearing completion. Our next effort will be toward annotating these programs.

B. Maintenance Shop Program

During the quarter, all machine shop equipment was received and installation completed. Weld shop equipment is in the final stages of set up with 90% of welding

equipment in full operation supporting start-up activities. Fabrication work on field modifications, steam blowing lines, and drip leg installations is being performed in the weld shop. The machine shop is being utilized for work as required to support plant start-up.

All shop areas are conducting safety meetings and training sessions. Additional welder qualifications are being completed for shift and area personnel to qualify on plate fillet welding. This is being done under the direction of the Plant Inspection Department.

The maintenance shops are functional at this time and supporting start-up activities on a full time bases. With the shops being functional, the Maintenance Shop Program will not be included in future DOE Reports.

9. Safety and Loss Prevention

Mr. Homer K. Lambie, a Safety Consultant, visited the plant in October, 1983. During his visit, Mr. Lambie held meetings with all members of supervision plus several other professional and management groups. Mr. Lambic concentrated his discussions on the human element factor in accident causes and prevention.

The company's fire insurers (Industrial Risk Insurers) accompanied by representatives from associated underwriters, visited the plant in October, 1983, and conducted an inspection of the plant facilities and fire systems. The group's findings and initial recommendations were reviewed with management, pending submission of their final report.

The Loss Control group and area superintendents conducted the first hazard review study of the methanation area. Their report was circulated and a meeting was held with management in December to determine necessary action arising from the group's recommendations. Plans were established to continue the program of studies on an area by area basis.

Commissioning work continued with the plant fire protection systems. During the quarter, GPGA took over custody of the plant firewater pumps and the firewater system.

Representatives of the Security group and the Design Engineering Department worked on preparing detailed proposals for certain changes and additions to the physical security of the plant considered necessary to minimize manpower and at the same time, ensure adequate protection of the facility after takeover from the contractor.

Representatives continued working with Purchasing and Warehouse personnel to ensure availability of personal protective equipment as Operations employees began moving out into the plant areas involved in start-up. Arrangements were made for a vendor's safety shoemobile to visit the site to facilitate employee purchase of safety shoes under the company subsidized program.

Supervisory and employee safety training programs were continued including special training on the use of test instruments, respiratory equipment and emergency first aid.

10. Medical Services

Medical Services is now fully operational for start-up and regular plant operations. Major work emphasis is directed toward accumulating baseline medical test data on all employees.

A commercially available computer-based occupational health information system (FLOW GEMINI) is presently being set up. Since the system is quite comprehensive and flexible, only minor modifications to input and report formats should be required to satisfy GPGA's requirements. Several of these modifications have been made. Other modifications will be accomplished as the system is used. Employee file identification data were entered into the computer in early December. Presently, actual medical test data are now being entered into the system. The system will provide rapid access to the data on the environment and work force and facilitate epidemiological studies in medical monitoring for current and future use.

11. Start-up Plan Development

A. Utilities

Commissioning activities have moderated slightly due to the onset of cold weather and the resulting effect this has had on the Contractor completing new systems for Operations.

Despite this fact, another key commissioning milestone was achieved with turnover and boilout of the remaining two Main Plant Boilers. Upon completion of pressure relief valve calibration in early January, these units will be ready for initial high pressure steam production. This is anticipated to occur by mid-January as the 1150 and 550 PSIG steam headers are completed for use.

Numerous other start-up related activities during December centered around either stabilizing existing utility operations and/or learning to run these systems during the rapid onset of severe wintertime weather that gripped the area during the last two weeks of the year.

B. Process Area

Turnover of the Phenosolvan and Phosam Areas during the month has allowed commissioning activity to begin in this portion of the plant. Although the absence of heat tracing and insulation have impaired some of the planned work, Operations personnel have made significant progress in checkout of utility systems in these areas.

C. Gasification

Besides turnover of additional process and utility systems during December, a project milestone was reached on December 15 when the first coal was run through "G" Gasifier in a test designed to determine the adequacy of the mechanical grate drive on this unit. With technical assistance from Lurgi and SASOL, a number of carefully controlled operations were performed to verify the torque required to drive the grate, ash removal pattern exhibited by our design, and volumetric carryout capacity of the system. Analysis of the data revealed no abnormalities which might negatively affect successful start-up of the GPGA gasifiers.

OPERABILITY, RELIABILITY AND MAINTAINABILITY

As of December 31, 1983, 98 percent of major plant equipment has been reviewed and spare parts recommended. To ensure that the remaining equipment is covered, a special status report of outstanding equipment is maintained. The last release of the report did not contain any critical pieces of equipment. Also, a 90 day projection of equipment to be commissioned is prepared monthly and checks are being made to ensure that the ordered material will be available for start-up. As the spare parts activity begins to wind down, other checks of the spare parts information in "COMPASS" are being made to ensure that the information in the computer is complete and correct. Vibration monitoring of rotating equipment is being conducted as the equipment is commissioned. The Maintenance Department has compiled a list of portable vibration monitoring equipment needed for both preventive maintenance and start-up analyses. The equipment candidates selected for the preventive maintenance program are based on such factors as economic impact of downtime, criticality, and horsepower.

To date, 623 work orders have been initiated and 339 have been closed-out. The status of each work order is tracked manually by Maintenance Planning personnel who meet daily with Operations to prioritize schedules. Because formal planning and scheduling features of "COMPASS" are not available, formal procedures have been developed to ensure that material needed to complete the work order will be available when needed. Finally, procedures have been established to do computer searches of warehouse material on a limited scale. With the acquisition of faster "COMPASS" hardware, these procedures will be expanded for use by all Maintenance personnel.

STAFFING - PLANNING AND STATUS

1. Staffing Program

H.C. Cazalas, formerly with Reynolds Aluminum, assumed the duties of Plant Personnel Manager effective November 16, 1983.

A major project of defining objective criteria for promoting field technicians was developed and is expected to be implemented by April 1, 1984.

During the quarter, 56 new employees joined GPGA. Included in this group were five employees who transferred from ANG. There were eight terminations.

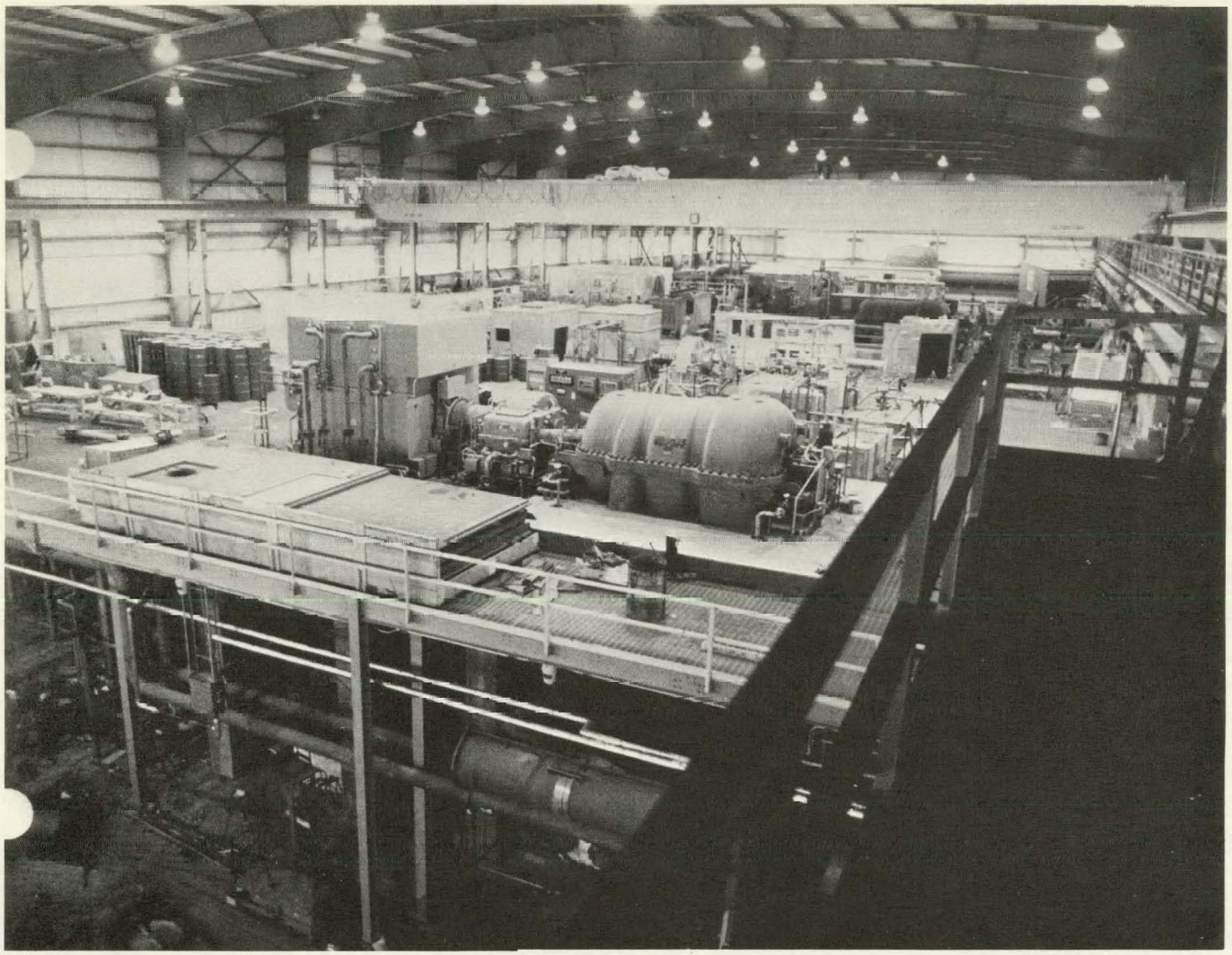
As part of a program of plant wide employee communications, bulletin boards have been placed in 10 key areas throughout the plant.

Christmas parties were held for GPGA employees and spouses/guests. Also, a children's party was held for ANG/GPGA employees' children.

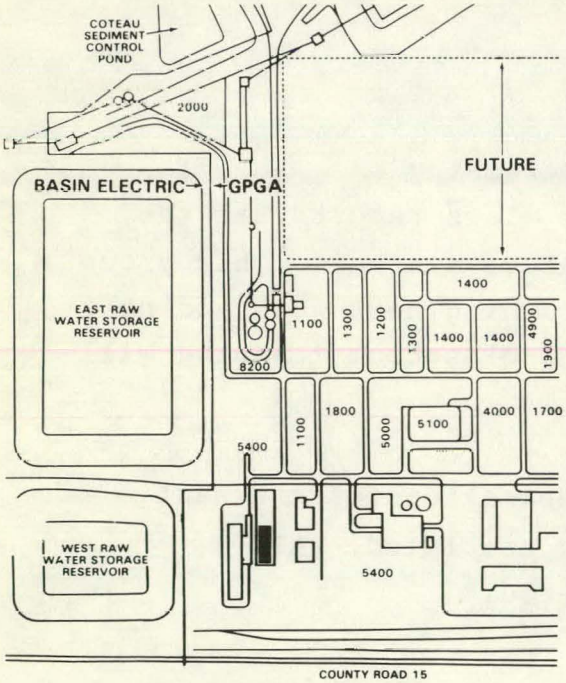
2. Training Status

The Operations training class is progressing satisfactorily. Instructors for the class report that the students enthusiasm and grades are above average. This group will begin two weeks of simulator training next week and no problems are anticipated. Formalized classroom training will be completed January 27, 1984.

Planning, facilities and teacher preparation for the next Maintenance training class have been completed. All classroom materials have been delivered.



January 4, 1983—Area 3000—Inside Oxygen Plant—Looking Northeast



October 31, 1983—Area 3000—Oxygen Plant and Main Electrical Substation—Looking East

PRE-OPERATIONS

ATTACHMENT 1

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AUGUST
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NOVEMBER
DECEMBER
2 ELECTRIC POWER SUPPLY
4 PRIMARY WATER
6 FIREWATER
8 COOLING WATER
12 ELECTRIC DRIVEN INSTRUMENT AND PLANT AIR
11 DEEPWELL
12 SANITARY TREATMENT AND STORM WATER
13 START-UP BOILER AND LOW PRESSURE STEAM SYSTEMS
20 OILY WATER SEWER
24 GASEOUS FUEL
32 FUEL STORAGE
46 GASIFICATION COMMISSIONING TRAIN B
14 WATER SOFTENERS
36 ASH HANDLING
30 BOILER #1 AND HIGH PRESSURE STEAM SYSTEM
26 DEMINERALIZERS
16 POTABLE WATER
22 N2 STORAGE
42 GAS LIQUOR SEPARATION
40 LOCK GAS COMPRESSION
34 COAL PREPARATION AND HANDLING
50 INCINERATOR/BACKUP FLARE/START-UP SCRUBBER
44 BOILER #2
52 RAW GAS COOLING TRAIN B
56 PHENOSOLVAN
70 CONVERTED GAS COOLING TRAINS A AND B
38 OXYGEN/NITROGEN ELECTRIC TRAIN
48 STM. INT. P.A. COMP.
18 FLARE
53 LOW PRESSURE DEAERATOR
58 AMMONIA RECOVERY
64 RECTISOL TRAIN B
49 GASIFICATION COLD OPERATIONS TRAIN B
39 STORAGE
74 METHANATION TRAIN B
57 IPE AND AMMONIA STORAGE
54 SULFUR RECOVERY
43 GAS LIQUOR FILTRATION
28 LIQUID WASTE EVAPORATOR
29 LIQUID WASTE INCINERATOR
60 OXYGEN/NITROGEN STEAM TRAIN A
62 BOILER #3
68 SHIFT CONVERSION TRAIN B
76 PRODUCT GAS COMPRESSION TRAIN B
72 SUPERHEATER #1
59 GASIFICATION HOT OPERATIONS TRAIN B
80 GASIFICATION COMMISSIONING TRAIN A
65 LIQUID HYDROGEN AND METHANOL STORAGE
78 METHANOL
82 RECTISOL TRAIN A
TRAIN A
TRAIN B
84 SHIFT CONVERSION TRAIN A
86 RAW GAS COOLING TRAIN A
90 METHANATION TRAIN A
88 SUPERHEATER #2
92 PRODUCT GAS COMPRESSION TRAIN A
83 GASIFICATION TRAIN A START-UP HOT OPERATIONS
FILLED IN FLAG INDICATES TURNOVER 100% COMPLETE
FIRST TURNOVER BEGAN
THIS IS OPERATIONAL
MILESTONE ACHIEVED
START-UP FUNCTIONAL STATUS
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PRE-OPERATIONS
ATTACHMENT 2

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GREAT PLAINS GA[illegible]CATION ASSOCIATES

CATALYST & CHEMICAL REPORT SUMMARY

Chemicals to be Purchased by Plant

SHEET 1
REVISION NO. 13
ISSUE DATE 1-3-84
BY M. D. Dowden

NOTE 3

DESCRIPTION	PLANT AREA	UNITS	QUANTITY REQUIRED	GRADE OR TYPE	'82 OCT	'82 NOV	'82 DEC	1983 JAN	1983 FEB	1983 MAR	1983 APR	1983 MAY	1983 JUNE	1983 JULY	1983 AUG	1983 SEPT	1983 OCT	1983 NOV	1983 DEC	1984 JAN	1984 FEB	1984 MAR	1984 APR	1984 MAY	1984 JUNE	1984 JULY	1984 AUG	1984 SEPT	1984 OCT	1984 NOV	1984 DEC
Activated Carbon	5400	cu. ft.	1,058	pacarb 1000																										
Alum	8100	pound	2,500																											
Anthracite	5400	cu. ft.	300	anthra-filt																										
Ammonia, Anh.	1400	pound	256,462	99.98%																										
Ammonia, Aqua.	4600	gallon	6,583	29.4%																										
A.D.A.	4000	pound	52,500	Note 5																										
Antifoam	1800	gallon	Note 4																											
Antifoam	4600	gallon	1,100	Betz 178																										
Antifoam	4600	gallon	55	Betz 205																										
Antifoam	4600	gallon	55	Calgon C-1																										
Biocide	8600	gallon	Note 4																											
Corrosion Inhibitor	8600	gallon	Note 4																											
Citric Acid	All	pound	1,000																											
Diatomaceous Earth	8100	pound	9,000																											
EDTA (Sodium)	5400	gallon	560																											
Emulsion Breaker	1100	gallon	Note 4																											
Ethylene Glycol	4900	gallon	110	Ucar 17																										
Ethylene Glycol	5100	gallon	1,110	Ucar 17																										
Flocculant	1100	gallon	Note 4																											
Formaldehyde	5400	pound	500	37%																										
Fuel Oil	5000	barrel	8,800	#6																										
Glycerine	5400	gallon	6																											

LEGEND:
- △ - SPECIFICATION
- ⬡ - REQUEST FOR QUOTE
- □ - BID TABULATION
- ◇ - P.O. ISSUE
- ○ - RECEIVED IN PLANT
- ▽ - INSTALLED

NOTES:
1. Revisions are noted by (1).
2. Solid symbols represent completed activities.
3. Quantities indicated are initial fill & inventory - 2 trains.
4. Material and usage to be determined after start-up.
5. Quantity reported as 100% material.

GREAT PLAINS GA[illegible]ICATION ASSOCIATES

CATALYST & CHEMICAL REPORT SUMMARY

Chemicals to be Purchased by Plant

SHEET 2 OF 3
REVISION NO. 15
ISSUE DATE 1-5-84
BY M. D. Dowden

NOTE 3

DESCRIPTION	PLANT AREA	UNITS	QUANTITY REQUIRED	GRADE OR TYPE	'82 OCT	'82 NOV	'82 DEC	1983 JAN	1983 FEB	1983 MAR	1983 APR	1983 MAY	1983 JUNE	1983 JULY	1983 AUG	1983 SEPT	1983 OCT	1983 NOV	1983 DEC	1984 JAN	1984 FEB	1984 MAR	1984 APR	1984 MAY	1984 JUNE	1984 JULY	1984 AUG	1984 SEPT	1984 OCT	1984 NOV	1984 DEC
Filter Sand	1800	cu. ft.	1,215							▲		⬢	■						◇	○	▽									
Filter Sand	5400	cu. ft.	245	.5-.6 mm						▲		⬢	■						◇	○	▽									
Hydrochloric Acid	8600	gallon	Note 4																											
Hydrogen (liq.)	1700	gallon	44,000												▲	⬢		■	◇		○		▽							
Isopropyl Ether	1600	gallon	287,700												▲	⬢		■		○		▽								
Methanol	1400	gallon	366,000	99.85%											▲	⬢	■		◇		○		▽							
Methanol	5000	gallon	1,100	99.85%														◆ ● ▼												
Mineral Oil	8600	gallon	165														▲ ◆ ● ▽													
Nitrogen (liq.)	3000	ton	70									▲		⬢				■		○	▽									
Oxygen (liq.)	3000	ton	500									▲		⬢				■			○	▽								
Phenol	1600	gallon	66,834											▲	⬢	■				○		▽								
Phosphoric Acid	4600	gallon	11,350	75%						▲		⬢	■						◇	○	▽									
Phosphoric Acid	5400	gallon	30	75%						▲		⬢	■						◇	○	▽									
Propylene Glycol	1400	gallon	55																△	⬡	○		▽							
Sodium Bicarbonate	4000	pound	611,100								▲	⬢	■						◇		○	▽								
Sodium Bisulfite	5400	pound	2,500							▲		⬢	■			⬢ ● ▼														
Sodium Carbonate	5500	pound	1,000													▲ ◆ ● ▼														
Sodium Carbonate	All	pound	1,000													▲ ◆ ● ▼														
Sodium Chloride	5400	ton	200							▲		⬢	■		◆	●	▼													
Sodium Chloride	8600	ton	113							▲		⬢	■				◆ ▼													
Sodium Hypochlorite	5400	gallon	1,395	10.8%						▲		⬢	■			◆ ● ▼			◇	○ ▽										
Sodium Tripolyphosphate	5400	pound	100							▲		⬢	■																	

LEGEND:
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◇ - P.O. ISSUE
○ - RECEIVED IN PLANT
▽ - INSTALLED

NOTES:
1. Revisions are noted by (1).
2. Solid symbols represent completed activities.
3. Quantities indicated areinitial fil[illegible] & inventory- 2 trains.
4. Material and usage to be determined after start-up.
5. Quantity reported as 100% material.

104-11/82/300

GREAT PLAINS GA[illegible]ICATION ASSOCIATES

CATALYST & CHEMICAL REPORT SUMMARY

Chemicals to be Purchased by Plant

SHEET 3
REVISION NO. 18
ISSUE DATE 1-5-84
BY M. D. Dowden

DESCRIPTION	PLANT AREA	UNITS	QUANTITY REQUIRED (Note 3)	GRADE OR TYPE	'82 OCT	'82 NOV	'82 DEC	1983 JAN	1983 FEB	1983 MAR	1983 APR	1983 MAY	1983 JUNE	1983 JULY	1983 AUG	1983 SEPT	1983 OCT	1983 NOV	1983 DEC	1984 JAN	1984 FEB	1984 MAR	1984 APR	1984 MAY	1984 JUNE	1984 JULY	1984 AUG	1984 SEPT	1984 OCT	1984 NOV	1984 DEC
Sodium Hydroxide	1500	gallon	3,325	Note 6						▲		⬢	■						◇		○									
Sodium Hydroxide	4000	gallon	18,900	Note 6						▲		⬢	■						◇	○										
Sodium Hydroxide	4600	gallon	3,250	Note 6						▲		⬢	■						◇	○										
Sodium Hydroxide	5400	gallon	77,325	50%						▲		⬢	■		◆	●▼														
Sodium Hydroxide	8100	gallon	68,590	50%						▲		⬢	■						◇	○										
Silica Gel	3000	pound	3,000																											
Solvent	1100	gallon	Note 4																											
Sulfuric Acid	5400	gallon	16,450	93.2%						▲		⬢	■		◆	●▼														
Sulfuric Acid	5500	gallon	1,200	93.2%						▲		⬢	■																	
Sulfuric Acid	8100 8600	gallon	4,175	93.2%						▲		⬢	■				◆	●▼												
Surfactant	2000	gallon	Note 4																											
Triton CF-54	5400	gallon	6	Rhom Haas							▲	⬢	■						◇	○										
Triethylene Glycol	1900	gallon	4,000								▲	⬢	■		◆	●▼														
Triethylene Glycol	1400	gallon	55								▲	⬢	■																	
Vanadium (SAV)	4000	pound	61,500								▲			⬢				■	◇	○		▽								

LEGEND:
- △ - SPECIFICATION
- ⬡ - REQUEST FOR QUOTE
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- ◇ - P.O. ISSUE
- ○ - RECEIVED IN PLANT
- ▽ - INSTALLED

NOTES:
1. Revisions are noted by (1).
2. Solid symbols represent completed activities.
3. Quantities indicated are initial fill & inventory - 2 trains.
4. Material and usage to be determined after start-up.
5. Quantity reported as 100% material.
6. Originates from 5400 Area tanks.

104-11/82/300

GREAT PLAINS GASIFICATION ASSOCIATES

CATALYST & CHEMICAL REPORT SUMMARY

SHEET 4 OF 6
REVISION NO. 18
ISSUE DATE 1-2-84
BY DOWDEN

	DESCRIPTION	PLANT AREA	UNITS	QUANTITY REQUIRED	GRADE OR TYPE	'82 OCT	'82 NOV	'82 DEC	1983 JAN	1983 FEB	1983 MAR	1983 APR	1983 MAY	1983 JUNE	1983 JULY	1983 AUG	1983 SEPT	1983 OCT	1983 NOV	1983 DEC	1984 JAN	1984 FEB	1984 MAR	1984 APR	1984 MAY	1984 JUNE	1984 JULY	1984 AUG	1984 SEPT	1984 OCT	1984 NOV	1984 DEC
Catalyst	Activated Carbon	5400	cu.ft.	4,808				●										▼10								Initial Fill by GACO					
	Anthracite	5400	cu.ft.	3,372				●								▼25										Initial Fill by GACO					
	Methanation	1700	cu.ft.	8,568							△	●		□				◇			○	▽	○	▽							
	Methanol	4900	cu.ft.	56											○											Initial Fill by GACO					
	Shift	1200	cu.ft.	9,020							△	●		□				◇			○	▽	○	▽							
Catalyst Support	Ceramic Ball	1200	cu.ft.	1,426						●													▽14			Purchased by Cummus					
	Ceramic Ball	1700	cu.ft.	894						●														▽13		Purchased by Cummus					
	Ceramic Ball	1200	cu.ft.	896						●													▽14			Purchased by Cummus					
	Ceramic Ball	1700	cu.ft.	419						●														▽13		Purchased by Cummus					
	Ceramic Ball	1200	cu.ft.	336						●													▽14			Purchased by Cummus					
	Ceramic Ball	1700	cu.ft.	314						●														▽13		Purchased by Cummus					
	Filtrilur CP	1800	cu.yc.	142.5										●							▽11					Initial Fill by Belco					
Filter Gravel	8.0-12.5 MM	1800	cu.yc.	5										●							▽11					Initial Fill by Belco					
	3.15-5.6 MM	1800	cu.yc.	5										●							▽11					Initial Fill by Belco					
	2.0-3.15 MM	1800	cu.yc.	5										●							▽11					Initial Fill by Belco					
Filter Sand	1.0-2.0 MM	1800	cu.yc.	45										●							▽11					Initial Fill by Belco					
		5400	cu.ft.	2,264			●									▽21										Initial Fill by Infilco					
		8100 8600	cu.yc.	38.5			●											▽1								Initial Fill by Infilco					
	Molecular Sieve	3000	Pounc	300,000																	▽					Initial Fill by Lotepro					
	Pumice	1800	cu.yc.	38.5										○							▽11					Initial Fill by Belco					
	Silica Gel	3000	Pounc	6,300																						Initial Fill by Lotepro					

LEGEND:
△ - SPECIFICATION
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◇ - P.O. ISSUE
○ - RECEIVED IN PLANT
▽ - INSTALLED

NOTES:
(1) REVISED ITEMS ARE NOTED
(2) Quantities Represent Initial Fill & Inventory - 2 Trains
(3) Solid Symbols Represent Completed Activities
(4) Number in Box is Day of Month

GREAT PLAINS GASIFICATION ASSOCIATES

CATALYST & CHEMICAL REPORT SUMMARY

Vessel Fill Requirement

SHEET 5 OF 6
REVISION NO. 18
ISSUE DATE 1-15-84
BY DOWDEN

	DESCRIPTION	PLANT AREA	UNITS	QUANTITY REQUIRED	GRADE OR TYPE	'82 OCT	'82 NOV	'82 DEC	1983 JAN	1983 FEB	1983 MAR	1983 APR	1983 MAY	1983 JUNE	1983 JULY	1983 AUG	1983 SEPT	1983 OCT	1983 NOV	1983 DEC	1984 JAN	1984 FEB	1984 MAR	1984 APR	1984 MAY	1984 JUNE	1984 JULY	1984 AUG	1984 SEPT	1984 OCT	1984 NOV	1984 DEC
Ion Exchange Resins	Anion	5400	cu.ft.	1,135				(28)											▽												
	Cation	5400	cu.ft.	945				(1)											▽												
	Zeolite	5400	cu.ft.	3,390				(10)										▽													
	Mixed Bed	6000																													
Tower Packing Material	1-in Pall Ring	1400	cu.ft.	53								(6)																			
	1½-in Pall Ring	1400	cu.ft.	4,620								(8)																			
	1½-in Pall Ring	1400	cu.ft.	150								(9)																			
	2-in Pall Ring	1400	cu.ft.	112								(9)																			
	2-in Pall Ring	4000	cu.ft.	2,784		(6)																									
	3-in Pall Ring	4000	cu.ft.	9,955		(8)																									
	1-in Raschig Ring	1800	cu.ft.	29														○			▽4										
	2-in Tellerets	8100	cu.ft.	2,252	Limited Shelf Life																										
	Intalox Saddles	5400	cu.ft.	450				(8)										▽5													
	Cartridge Filter	8600	Units																			Initial Fill by Infilco Degremont									

Initial Fill by GACO

Initial Fill by GACO

Initial Fill by GACO

Purchased by Lummus

Purchased by Lummus

Purchased by Lummus

Purchased by Lummus

Purchased by Lummus

Purchased by Lummus

Purchased by Lummus

Initial Fill by Trane

Initial Fill by GACO

LEGEND:

- △ - SPECIFICATION
- ⬡ - REQUEST FOR QUOTES
- □ - BID TABULATION
- ◇ - P.O. ISSUE
- ○ - RECEIVED IN PLANT
- ▽ - INSTALLED

NOTES:
(1) REVISED ITEMS ARE NOTED.

(2) Quantities Represent Initial Fill & Inventory

(3) Solid Symbols Represent Completed Activities

(4) Number in Box is Day of Month

GREAT PLAINS GASIFICATION ASSOCIATES

CATALYST & CHEMICAL REPORT SUMMARY

CHEMICALS SUPPLIED WITH SERVICE CONTRACT

SHEET 6 OF 6
REVISION NO. 1B
ISSUE DATE 1-5-84
BY Dowden

	DESCRIPTION	PLANT AREA	UNITS	QUANTITY REQUIRED	GRADE OR TYPE	'82 OCT	'82 NOV	'82 DEC	1983 JAN	1983 FEB	1983 MAR	1983 APR	1983 MAY	1983 JUNE	1983 JULY	1983 AUG	1983 SEPT	1983 OCT	1983 NOV	1983 DEC	1984 JAN	1984 FEB	1984 MAR	1984 APR	1984 MAY	1984 JUNE	1984 JULY	1984 AUG	1984 SEPT	1984 OCT	1984 NOV	1984 DEC
COOLING WATER SYSTEM	Nalco 7302	5500	Gal.	165	SUPPLIED BY NALCO						▲	⬢		■	◆		●	▼													
	Nalco 7307	5500	Gal.	55							▲	⬢		■	◆		●	▼													
	Nalco 7309	5500	Gal.	3,355							▲	⬢		■	◆		●	▼													
	Nalco 7330	5500	Gal.	165							▲	⬢		■	◆		●	▼													
	Nalco 7384	5500	Gal.	90							▲	⬢		■	◆		●	▼													
	Nalco 3WT-368	5500	Gal.	1,925							▲	⬢		■	◆		●	▼													
	Nalco 2WT-575	5500	Gal.	2,990							▲	⬢		■	◆		●	▼													
	Nalco 8330-M	3000	Gal.	625														⬡	○	▽											
STEAM & BFW SYSTEM	Adjunct - B		Lb.	700	SUPPLIED BY DREW					▲	⬢			■	◆	●		▼													
	Adjunct - F		Lb.	3,000						▲	⬢			■	◆	●		▼													
	Adjunct - HL	5600	Lb.	2,580						▲	⬢			■	◆	●		▼													
	Adjunct - T	5600	Lb.	6,300						▲	⬢			■	◆	●		▼													
	Amercor-8750	5000, $100,	Lb.	13,760						▲	⬢			■	◆	●		▼													
	Amertrol-1123	5000, $100,	Lb.	6,510						▲	⬢			■	◆	●		▼													
	Amerzine - 35	5000, $100,	Lb.	2,700						▲	⬢			■	◆	●		▼													
	Drew Plex 502	5000, $100,	Lb.	7,200						▲	⬢			■	◆	●		▼													
	Drew Clean 26	5000, $100,	Lb.	515						▲	⬢			■	◆	●		▼													
	Cat. Sulfite	5000, $100,	Lb.	3,600						▲	⬢			■	◆	●		▼													

LEGEND:

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- ▽ - INSTALLED

NOTES:
(1) REVISED ITEMS ARE NOTED

104-11/82/300

NOTES: 1. Revised items are note by (1).

2. Quantities represent initial fill & inventory.

3. Solid symbols represent completed activity.

PRE-OPERATIONS

ATTACHMENT 3

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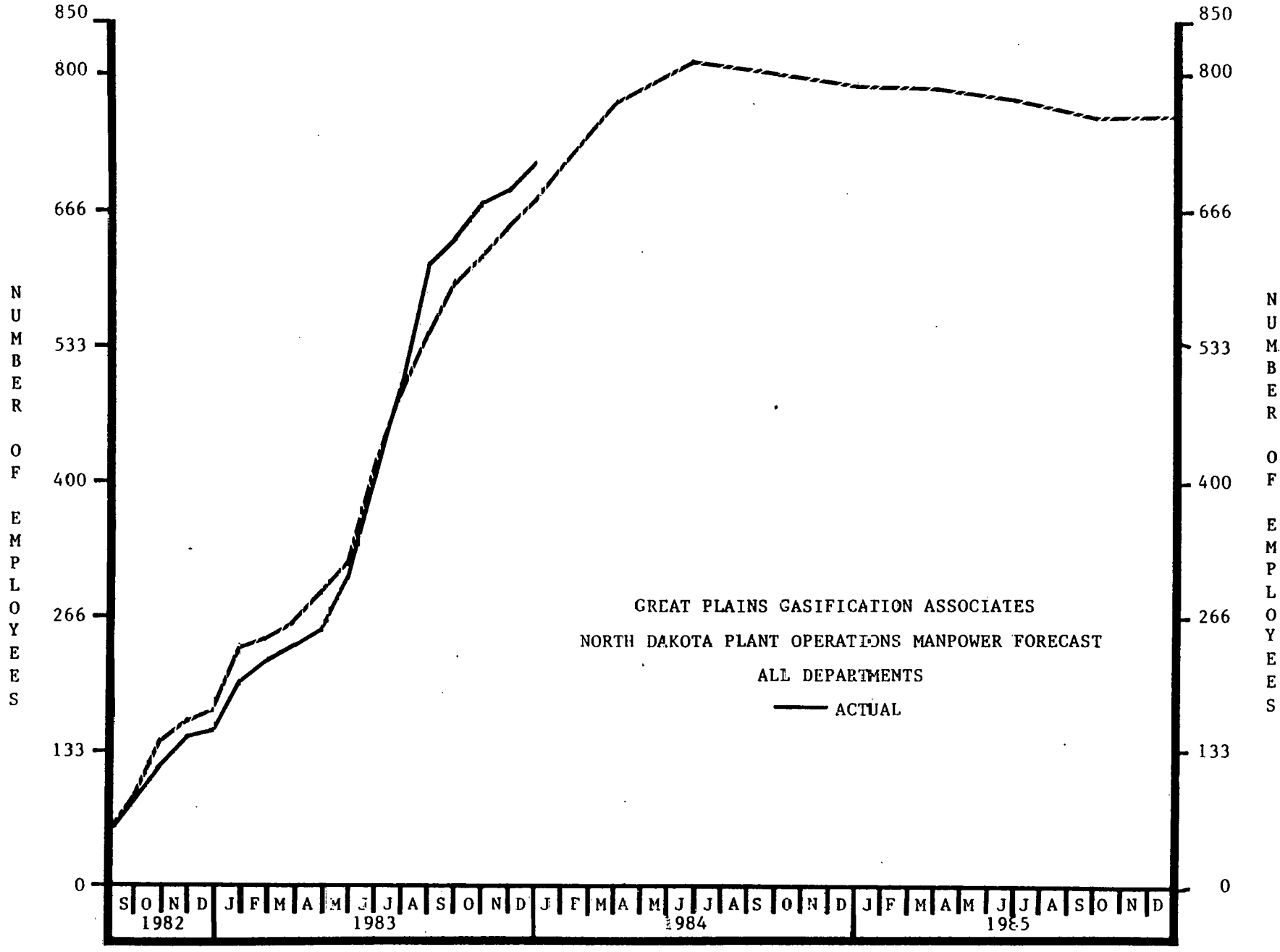
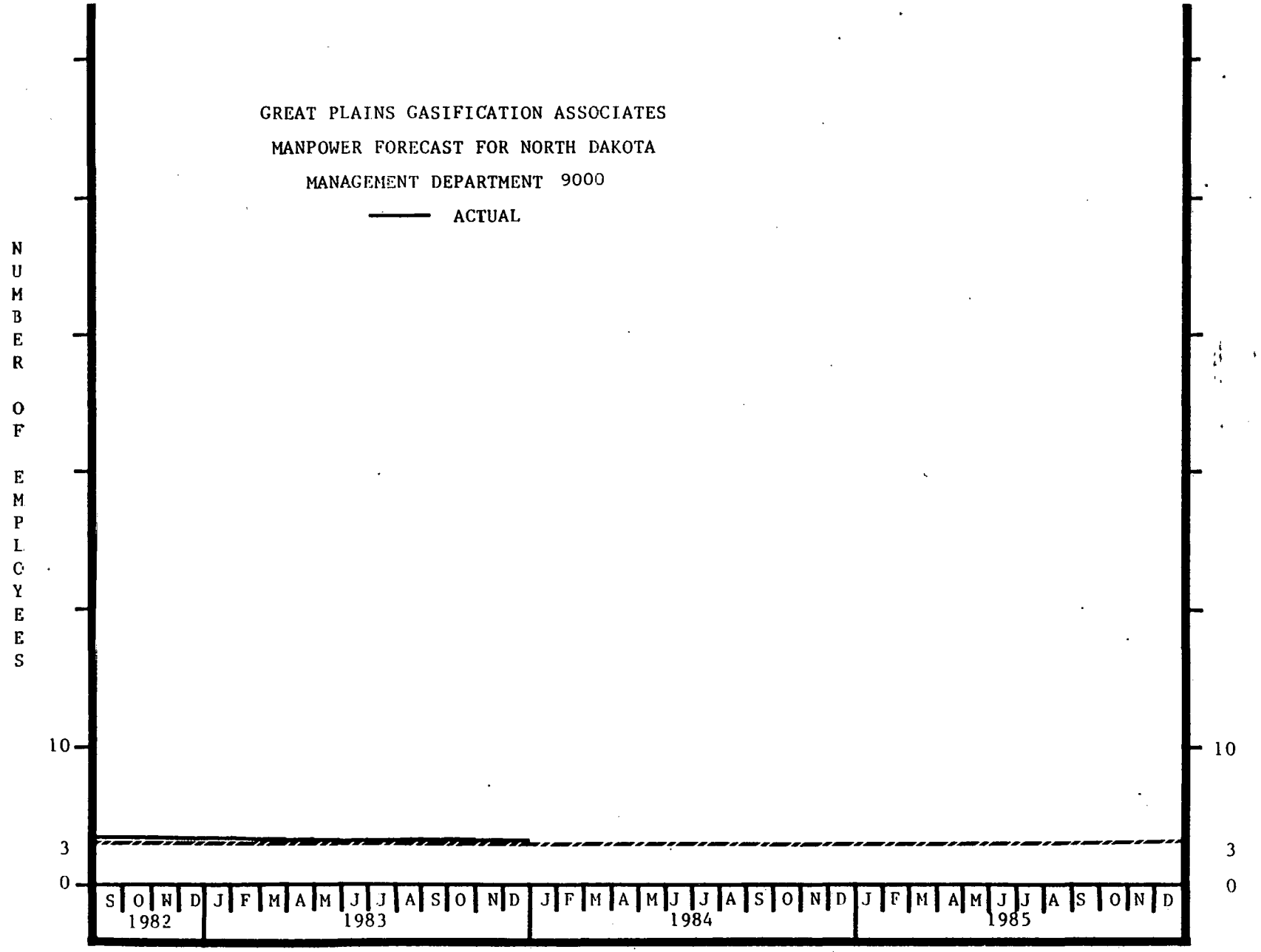
(1) Actual Headcount 12-31-83
(2) December Forecast

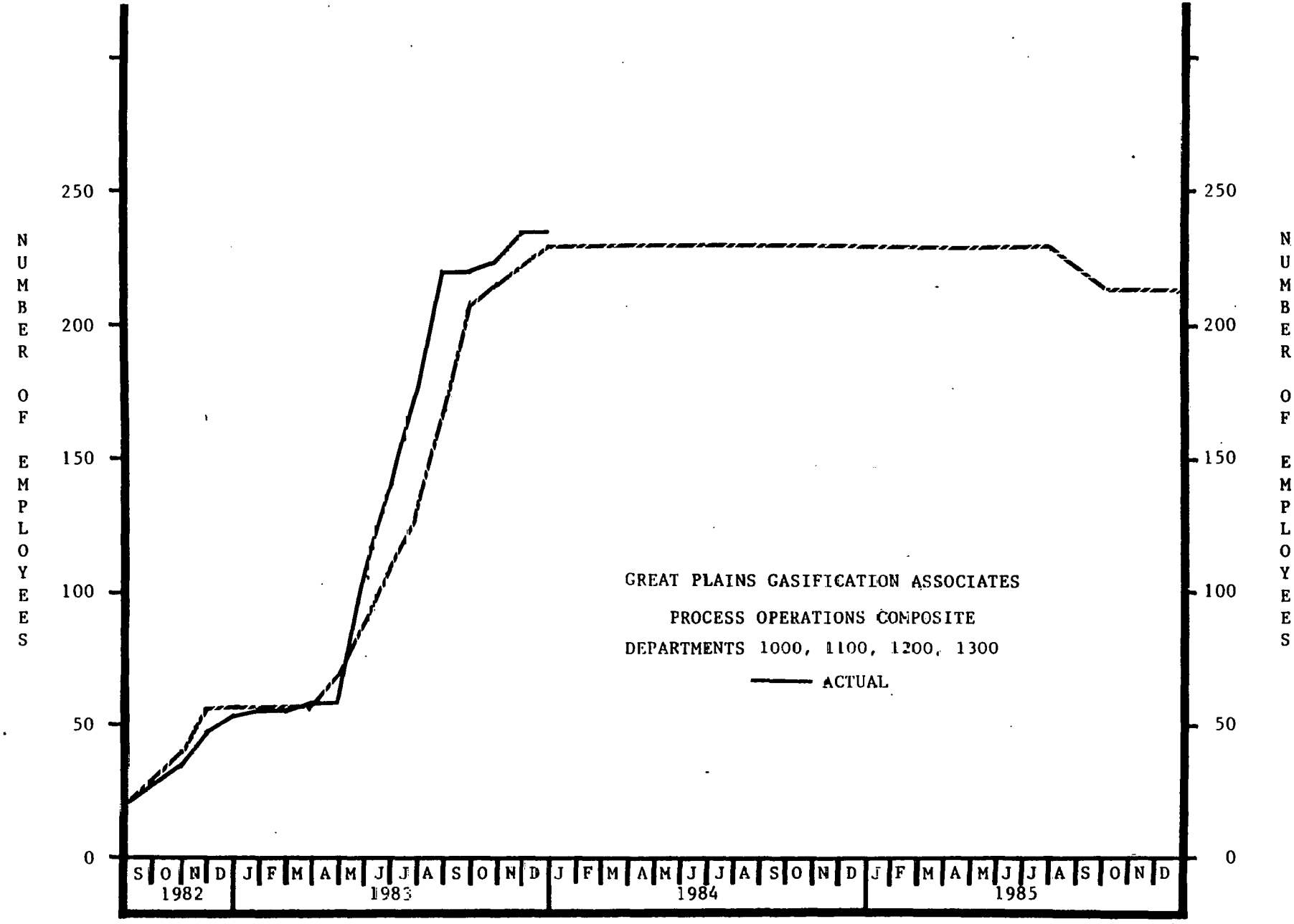
GREAT PLAINS GASIFICATION ASSOCIATES
MANPOWER FORECAST
PLANT OPERATIONS DEPARTMENTS
as of 12-31-83

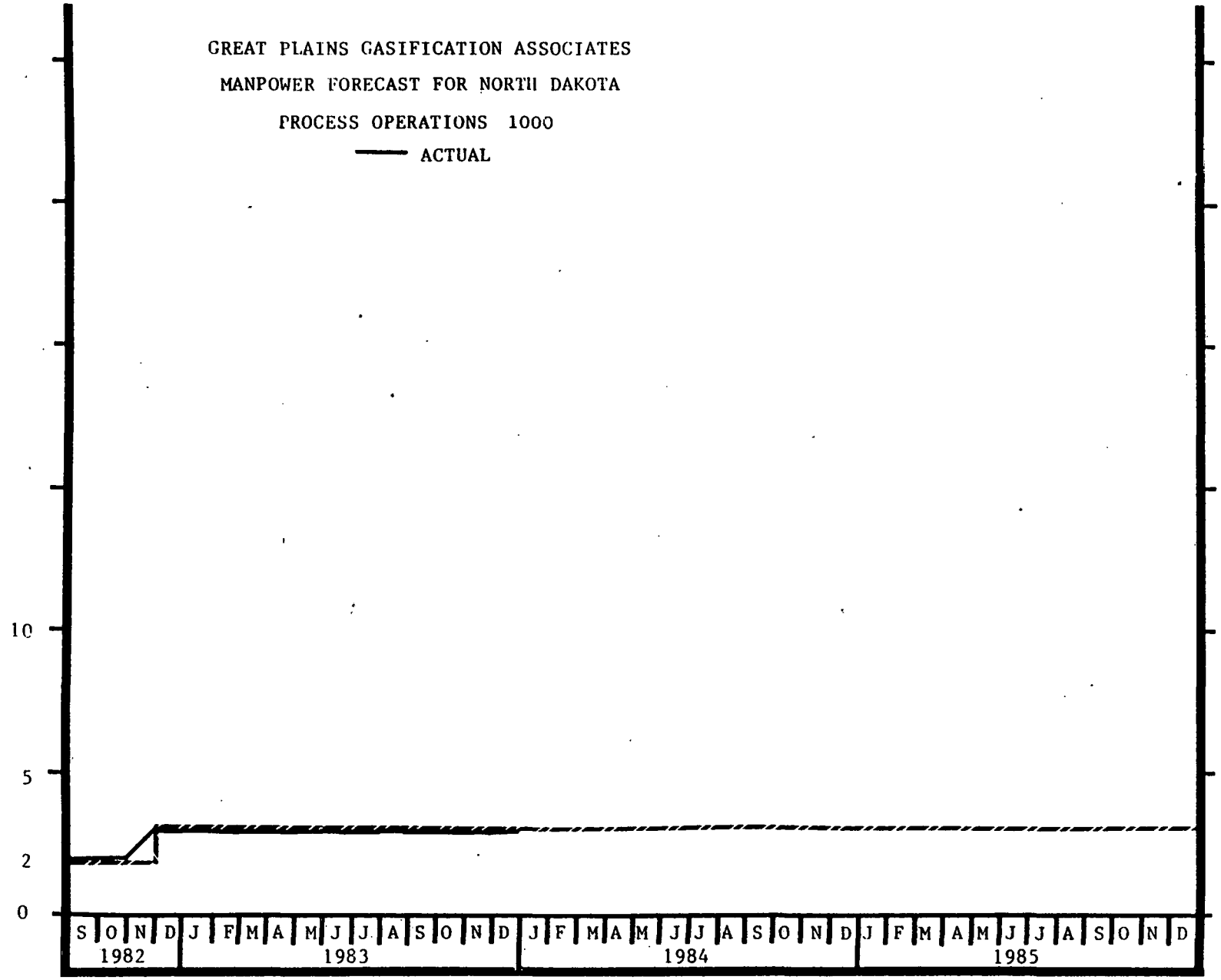
Date 1-1-83
Revision 012-83

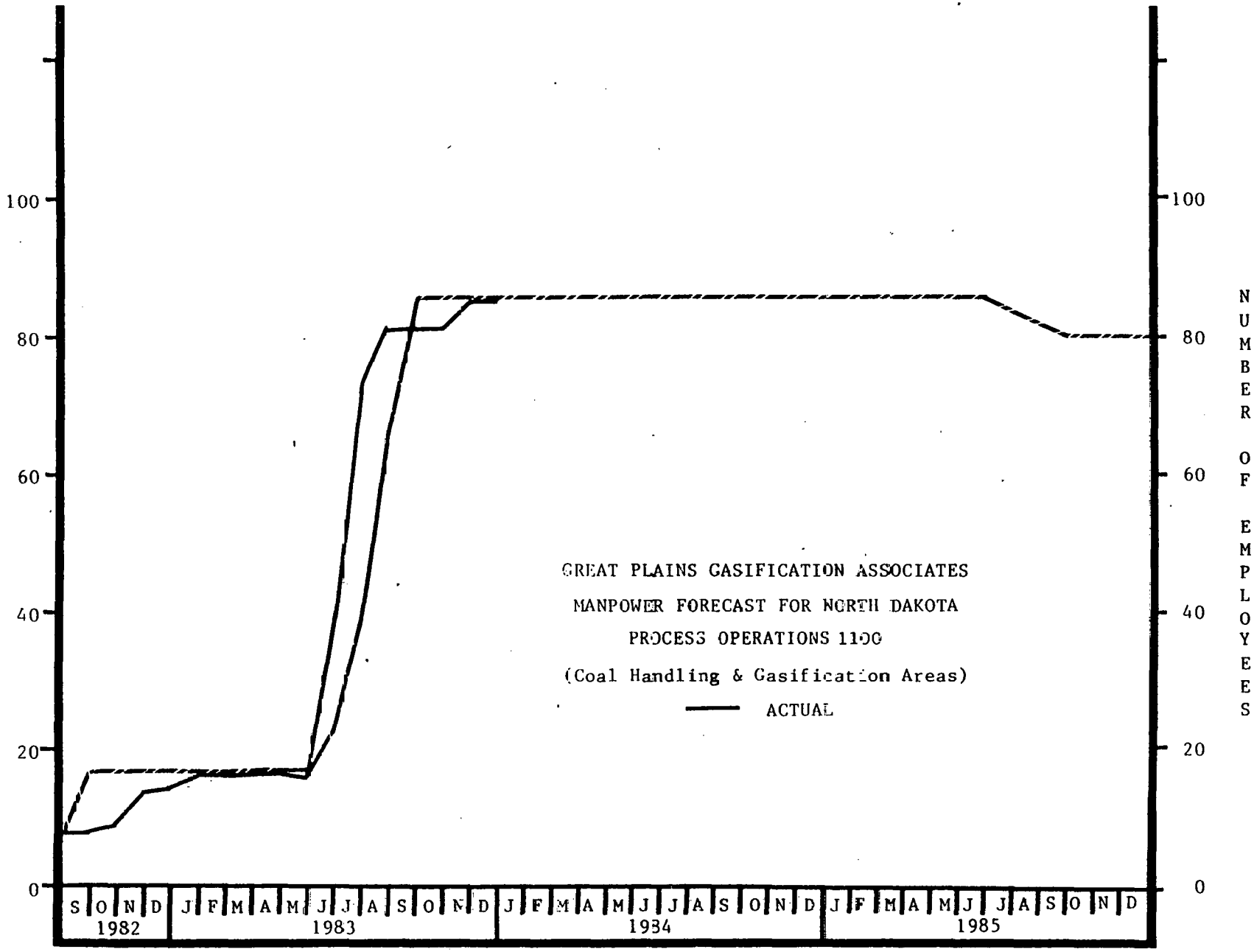
	North Dakota Based Departments	1982			1983												1984				1985			
		O	N	D	J	F	M	A	M	J	J	A	S	O	N	D[1]	D[2]	1st	2nd	3rd	4th	1st	2nd	3rd	4th
9000	Management	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1000	Proc. Operations	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1100	Coal Handling and Gasification	11	14	15	17	17	17	17	16	40	73	81	81	81	86	86	86	84	84	84	84	84	84	78	78
1200	Purif. & Comp.	12	18	18	18	18	19	20	22	22	26	62	64	66	69	68	67	66	66	66	66	66	66	62	62
1300	Utilities	9	13	17	18	19	20	18	56	75	76	74	72	73	78	78	75	77	77	77	77	70	70	70	70
2000	Maintenance	14	21	22	24	27	29	30	32	80	106	158	176	185	184	183	160	255	255	255	255	255	255	255	255
9300	Admin. Services	10	13	14	17	19	20	24	27	28	28	31	36	31	31	30	39	31	31	31	31	31	31	31	31
9400	Tech. Services	10	13	13	17	27	28	31	40	42	47	54	54	61	63	62	64	66	66	66	66	66	66	66	66
9450	Process Start-up	7	8	9	10	13	13	13	13	16	21	21	22	22	22	22	22	22	22	22	22	22	22	22	22
9460	Plant Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9500	Materials Mgmt.	4	5	5	9	10	12	13	12	17	20	22	23	24	24	24	24	26	26	26	26	26	26	26	26
9600	Safety & Loss Prev.	5	5	5	5	7	8	8	11	17	25	25	25	25	25	25	27	27	27	27	27	27	27	27	27
9700	Plant Controller	0	0	0	7	8	11	12	14	14	15	14	16	20	21	22	21	23	28	28	35	35	35	35	35
9800	Personnel	6	6	7	8	9	10	10	10	10	10	9	9	9	9	10	10	9	9	9	9	8	8	8	8
9090	Ops. Planning	5	5	5	8	10	10	10	10	10	10	10	10	12	12	12	11	11	11	11	11	8	8	8	8
9100	Plant Design	0	0	0	2	2	3	7	9	15	19	21	25	32	31	31	35	47	51	51	43	43	43	43	43
9850	Environmental and Health Eng.	3	3	3	3	3	3	4	7	8	10	14	15	15	16	17	17	17	17	17	17	17	17	17	17
9200	Plant Info. System	2	2	2	2	2	2	2	3	3	4	6	6	7	7	7	6	7	7	7	7	7	7	7	7
9050	Medical Services	0	0	0	0	0	1	1	2	3	3	4	4	3	4	4	4	4	4	4	4	4	4	4	4
	Subtotal	103	132	141	171	197	212	226	290	406	499	612	644	672	688	687	674	778	787	787	786	775	775	765	765
	Detroit Based Departments																								
9400	Tech. Services	2	2	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0074	Process Engineering	0	0	0	9	9	9	9	9	6	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
9100	Plant Design	0	0	2	6	7	7	4	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9850	Environmental and Health Eng.	6	6	6	6	7	7	6	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Subtotal	8	8	10	22	24	24	19	14	8	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	111	140	151	193	221	236	245	304	414	500	613	644	672	688	687	674	778	787	787	786	775	775	765	765


850
800
666
533
400
266
133
0
NUMBER OF EMPLOYEES
S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1982
1983
1984
1985
GREAT PLAINS GASIFICATION ASSOCIATES
NORTH DAKOTA PLANT OPERATIONS MANPOWER FORECAST
ALL DEPARTMENTS
ACTUAL


GREAT PLAINS GASIFICATION ASSOCIATES
MANPOWER FORECAST FOR NORTH DAKOTA
MANAGEMENT DEPARTMENT 9000
ACTUAL
NUMBER OF EMPLOYEES
10
3
0
S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1982
1983
1984
1985


NUMBER OF EMPLOYEES
250
200
150
100
50
0
S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1982
1983
1984
1985
GREAT PLAINS GASIFICATION ASSOCIATES
PROCESS OPERATIONS COMPOSITE
DEPARTMENTS 1000, 1100, 1200, 1300
ACTUAL


GREAT PLAINS GASIFICATION ASSOCIATES
MANPOWER FORECAST FOR NORTH DAKOTA
PROCESS OPERATIONS 1000
ACTUAL
NUMBER OF EMPLOYEES
0
2
5
10
S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1982
1983
1984
1985


NUMBER OF EMPLOYEES
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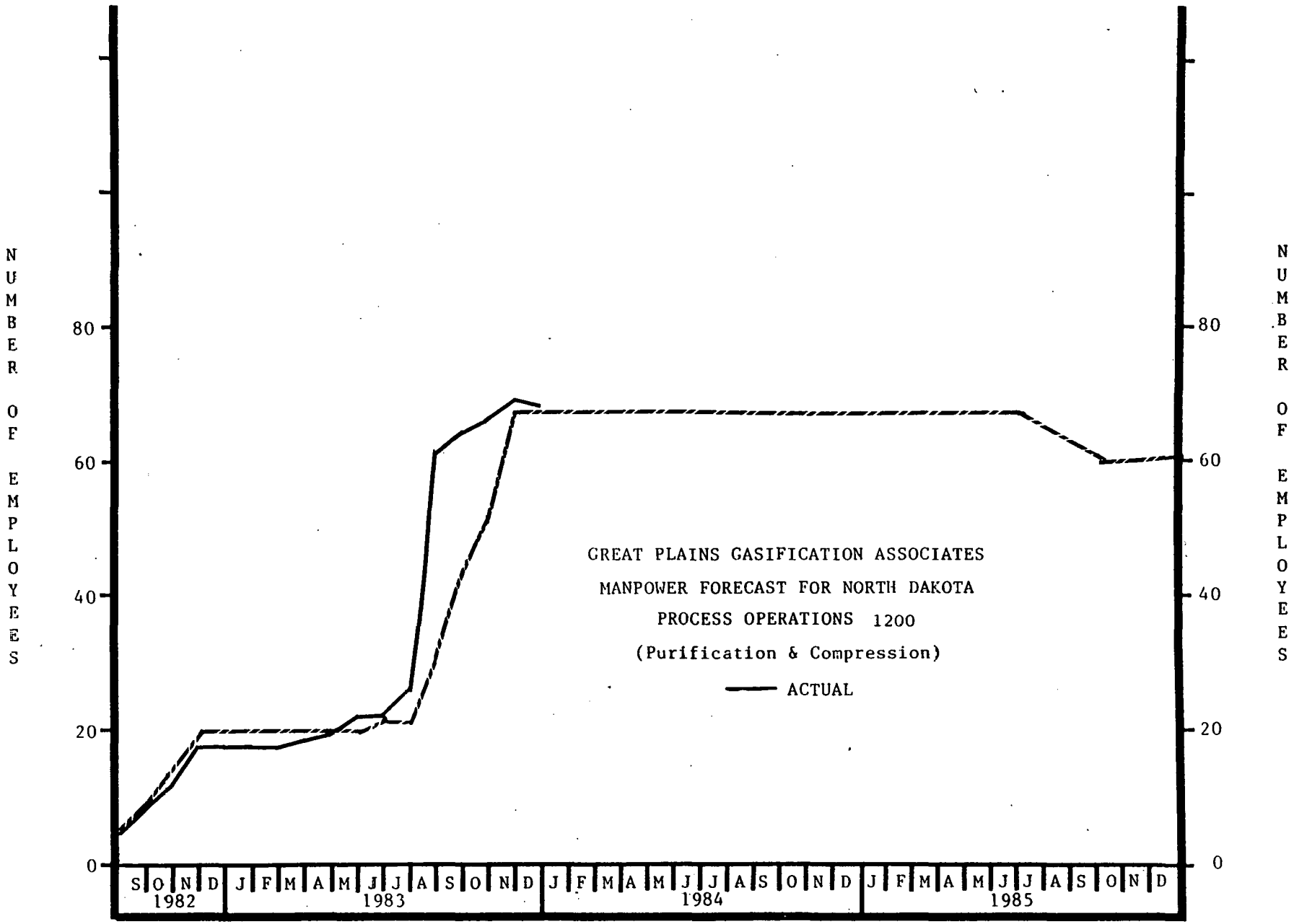
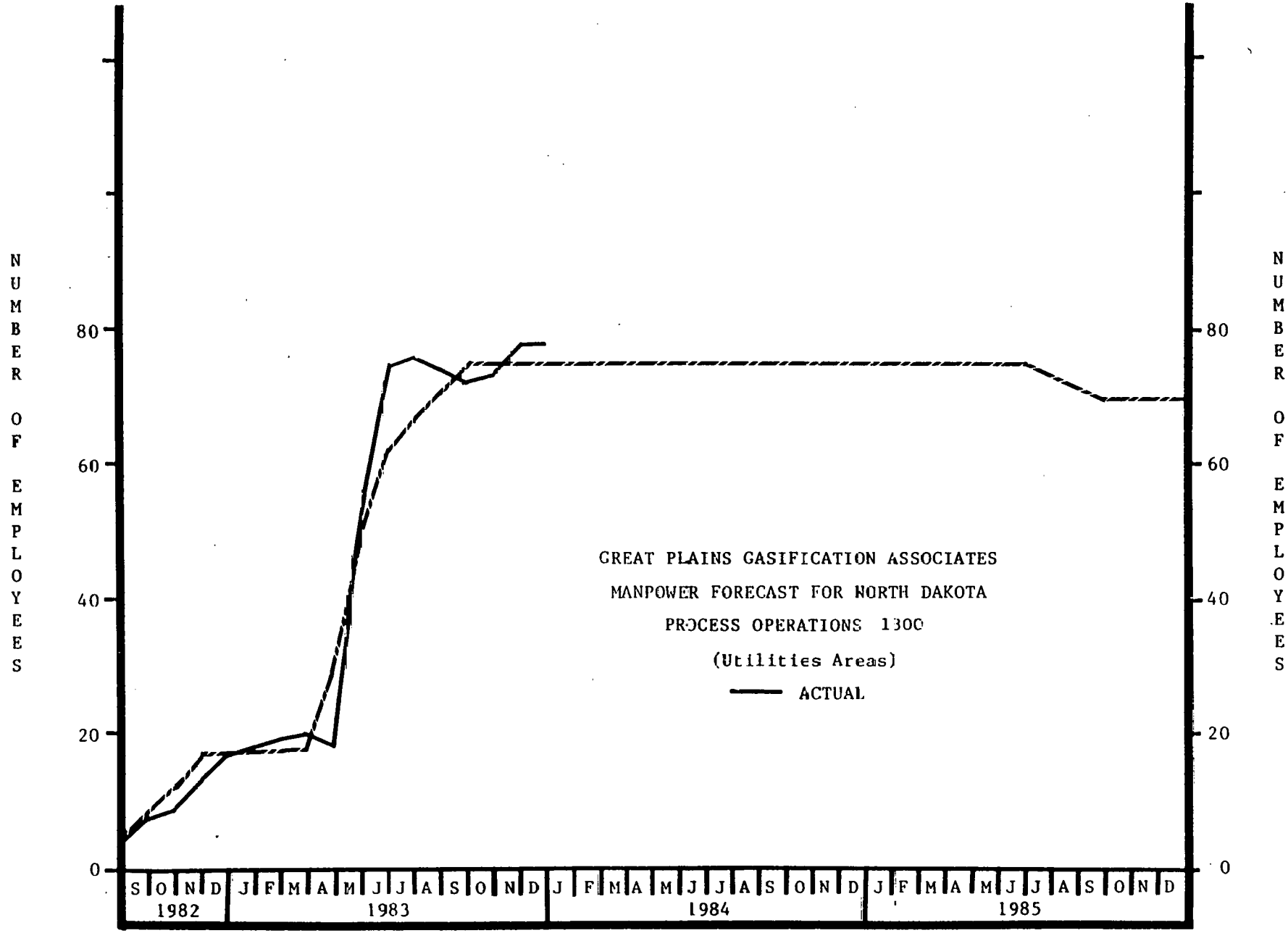
80
60
40
20
0
S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1982
1983
1984
1985
GREAT PLAINS GASIFICATION ASSOCIATES
MANPOWER FORECAST FOR NORTH DAKOTA
PROCESS OPERATIONS 1100
(Coal Handling & Gasification Areas)
ACTUAL


NUMBER OF EMPLOYEES
80
60
40
20
0
S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1982
1983
1984
1985
GREAT PLAINS GASIFICATION ASSOCIATES
MANPOWER FORECAST FOR NORTH DAKOTA
PROCESS OPERATIONS 1200
(Purification & Compression)
ACTUAL
NUMBER OF EMPLOYEES


NUMBER OF EMPLOYEES
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60
40
20
0
S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1982
1983
1984
1985
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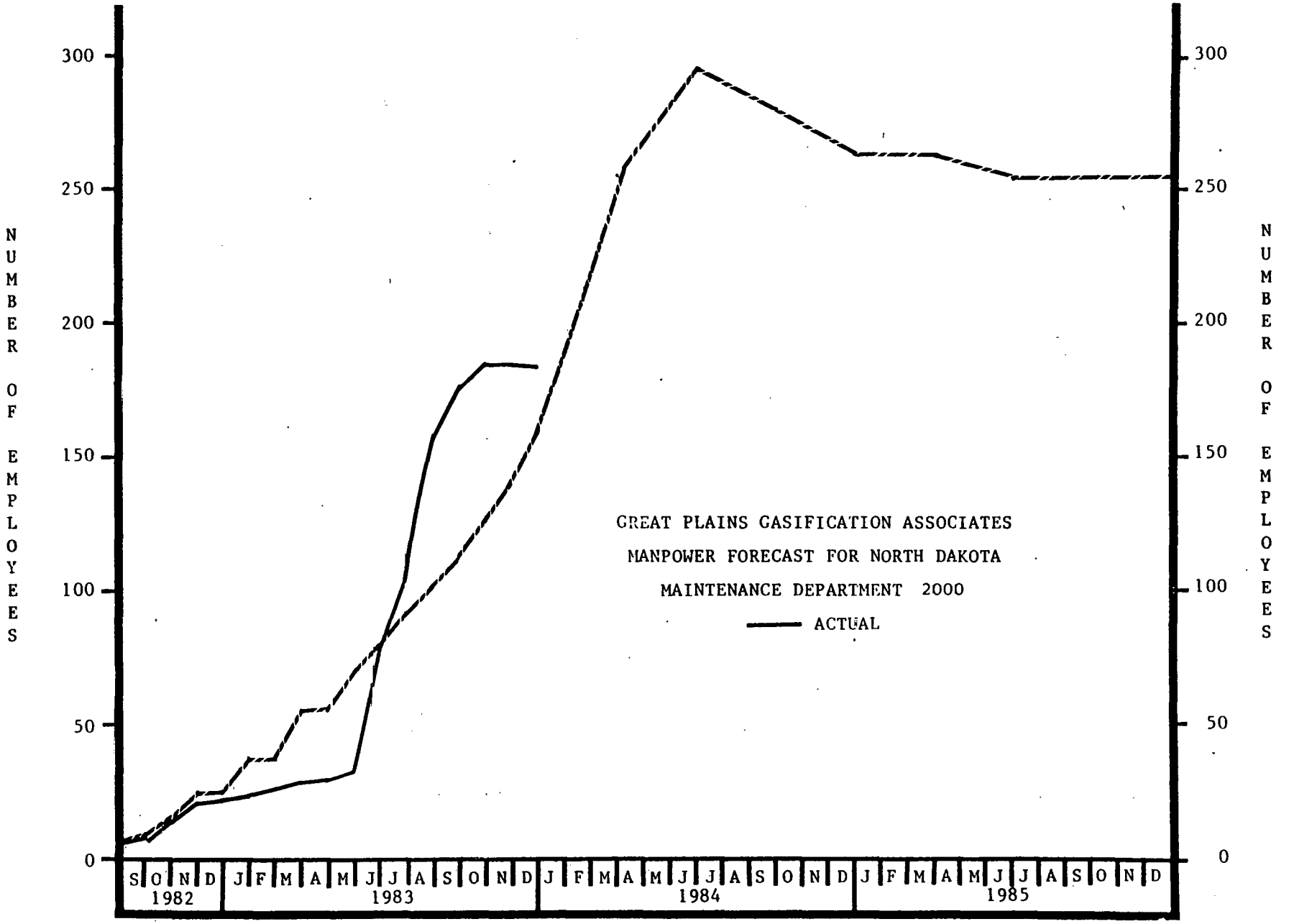
MANPOWER FORECAST FOR NORTH DAKOTA
PROCESS OPERATIONS 1300
(Utilities Areas)
ACTUAL
NUMBER OF EMPLOYEES


NUMBER OF EMPLOYEES
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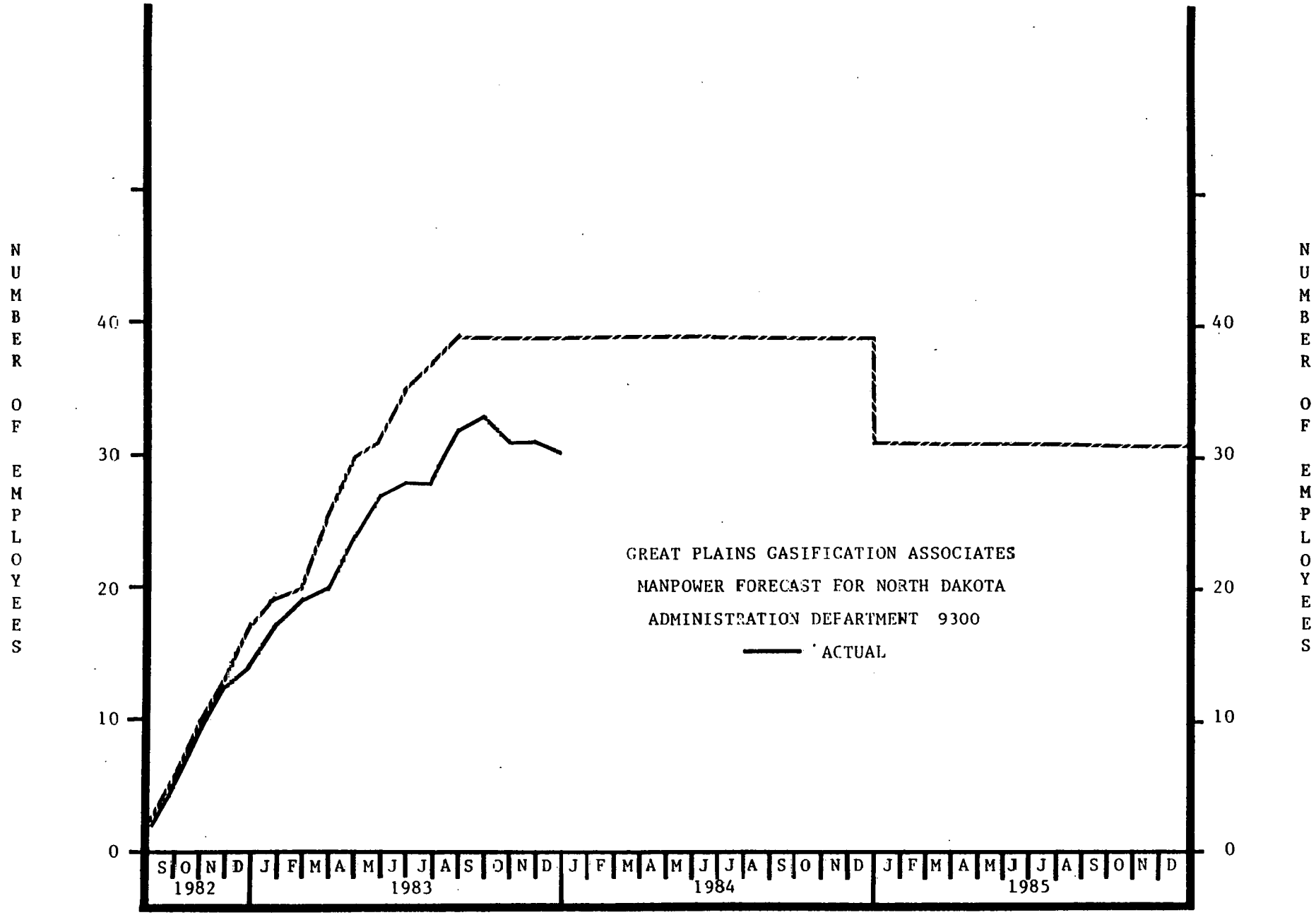
250
200
150
100
50
0
S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1982
1983
1984
1985
GREAT PLAINS GASIFICATION ASSOCIATES
MANPOWER FORECAST FOR NORTH DAKOTA
MAINTENANCE DEPARTMENT 2000
ACTUAL


NUMBER OF EMPLOYEES
0
10
20
30
40
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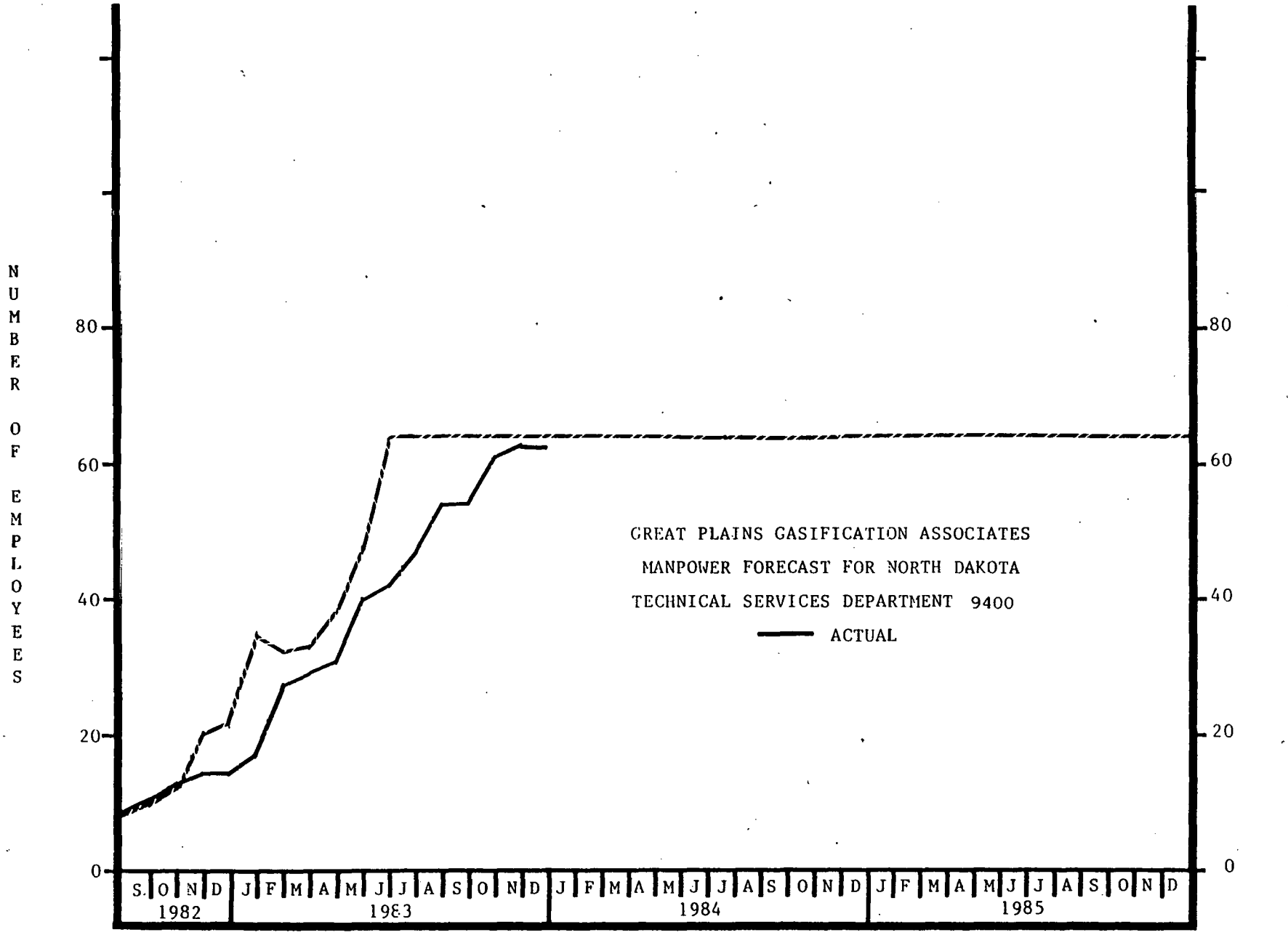
1982
1983
1984
1985
GREAT PLAINS GASIFICATION ASSOCIATES
MANPOWER FORECAST FOR NORTH DAKOTA
ADMINISTRATION DEPARTMENT 9300
ACTUAL


NUMBER OF EMPLOYEES
80
60
40
20
0
S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1982
1983
1984
1985
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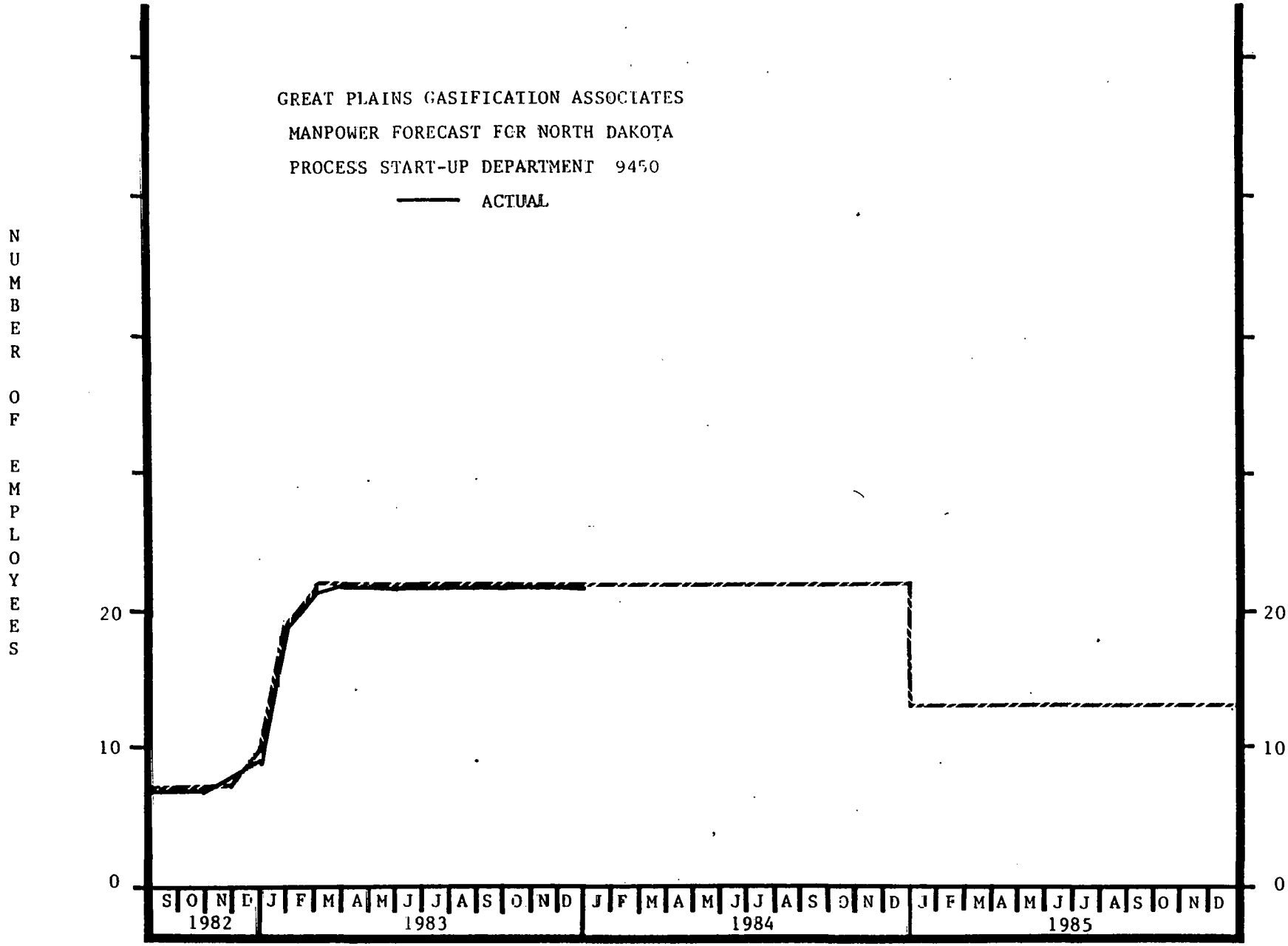
TECHNICAL SERVICES DEPARTMENT 9400
ACTUAL
NUMBER OF EMPLOYEES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PROCESS START-UP DEPARTMENT 9450
ACTUAL
NUMBER OF EMPLOYEES
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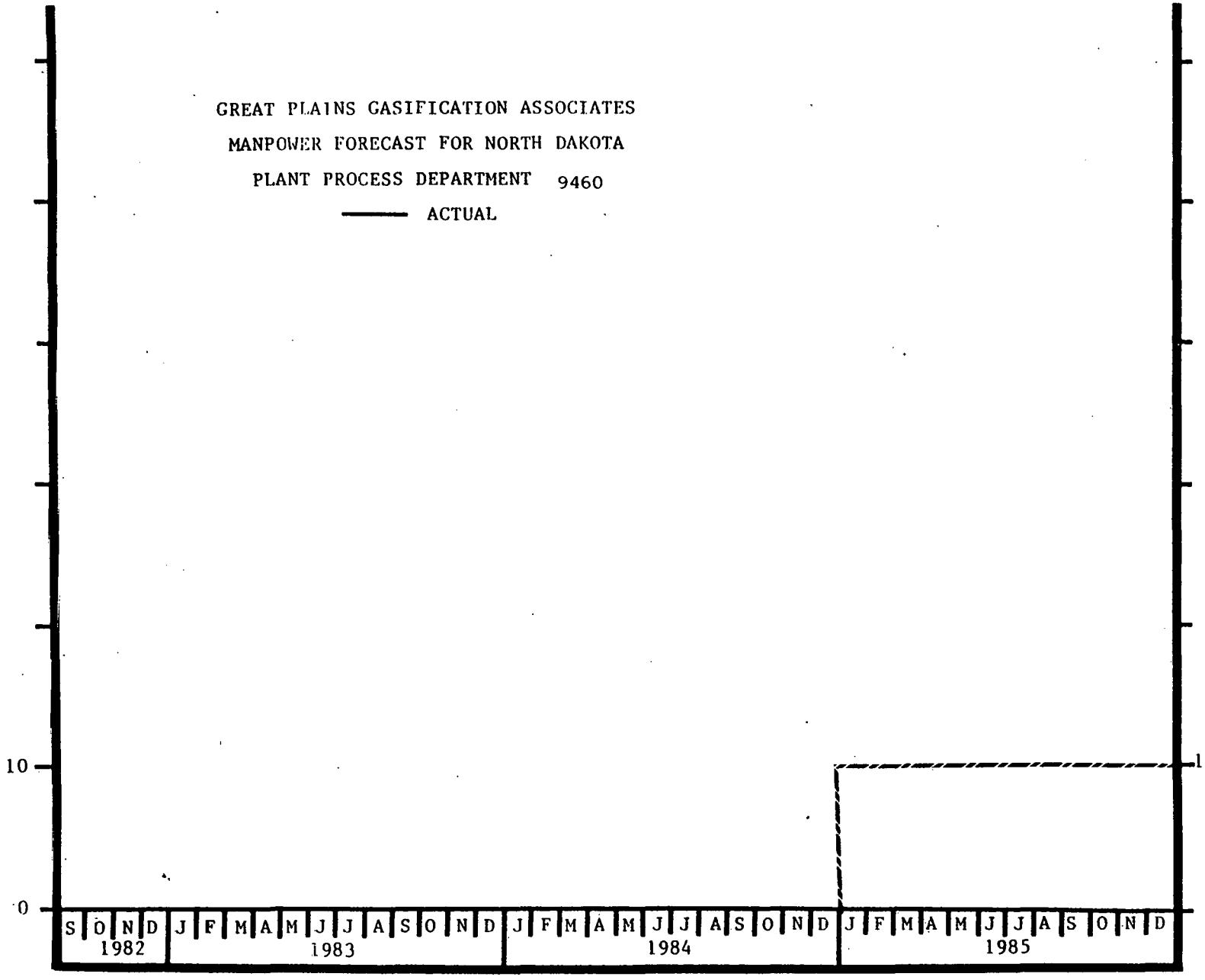
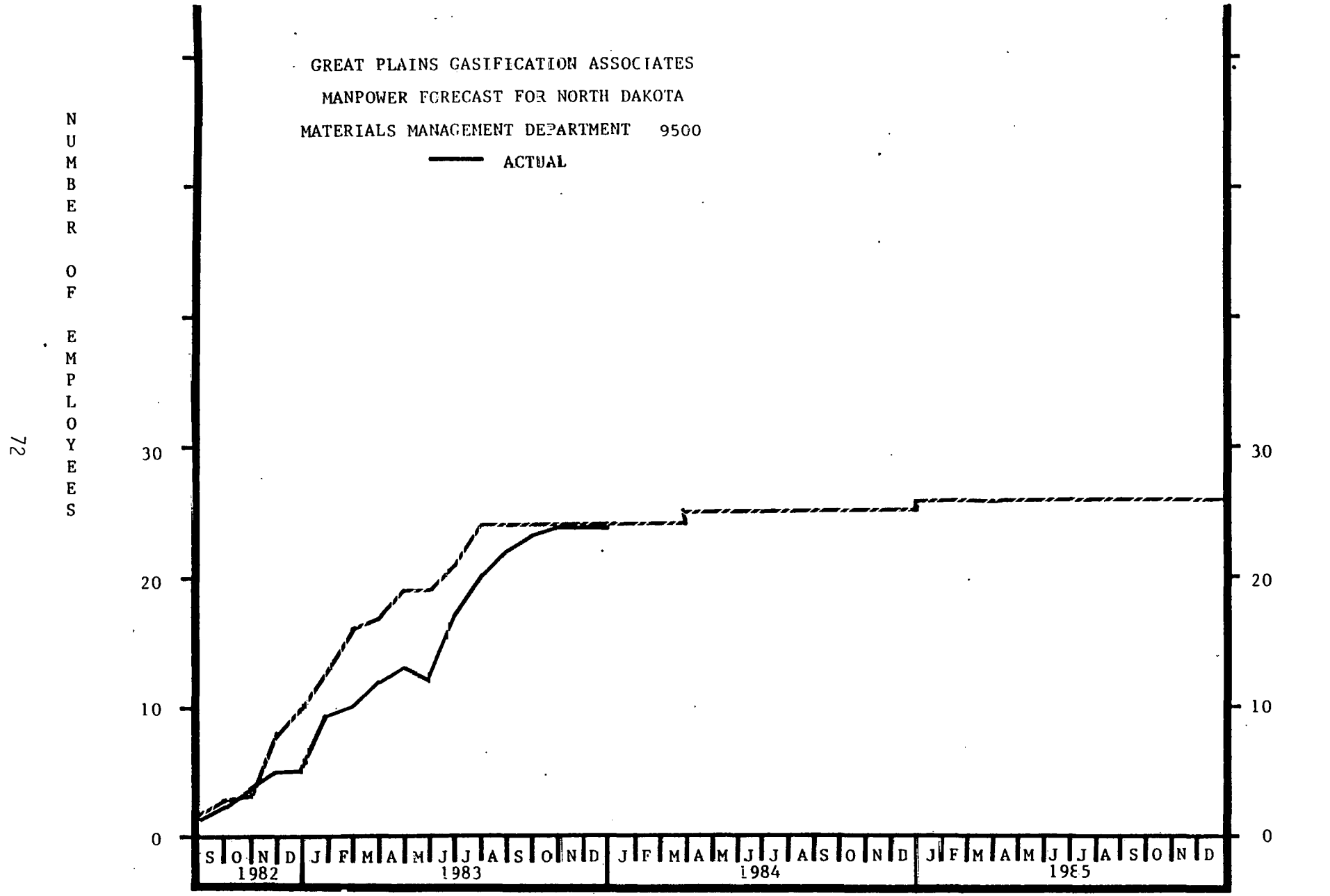
1982
1983
1984
1985



NUMBER OF EMPLOYEES


GREAT PLAINS GASIFICATION ASSOCIATES
MANPOWER FORECAST FOR NORTH DAKOTA
MATERIALS MANAGEMENT DEPARTMENT 9500
ACTUAL
NUMBER OF EMPLOYEES
0
10
20
30
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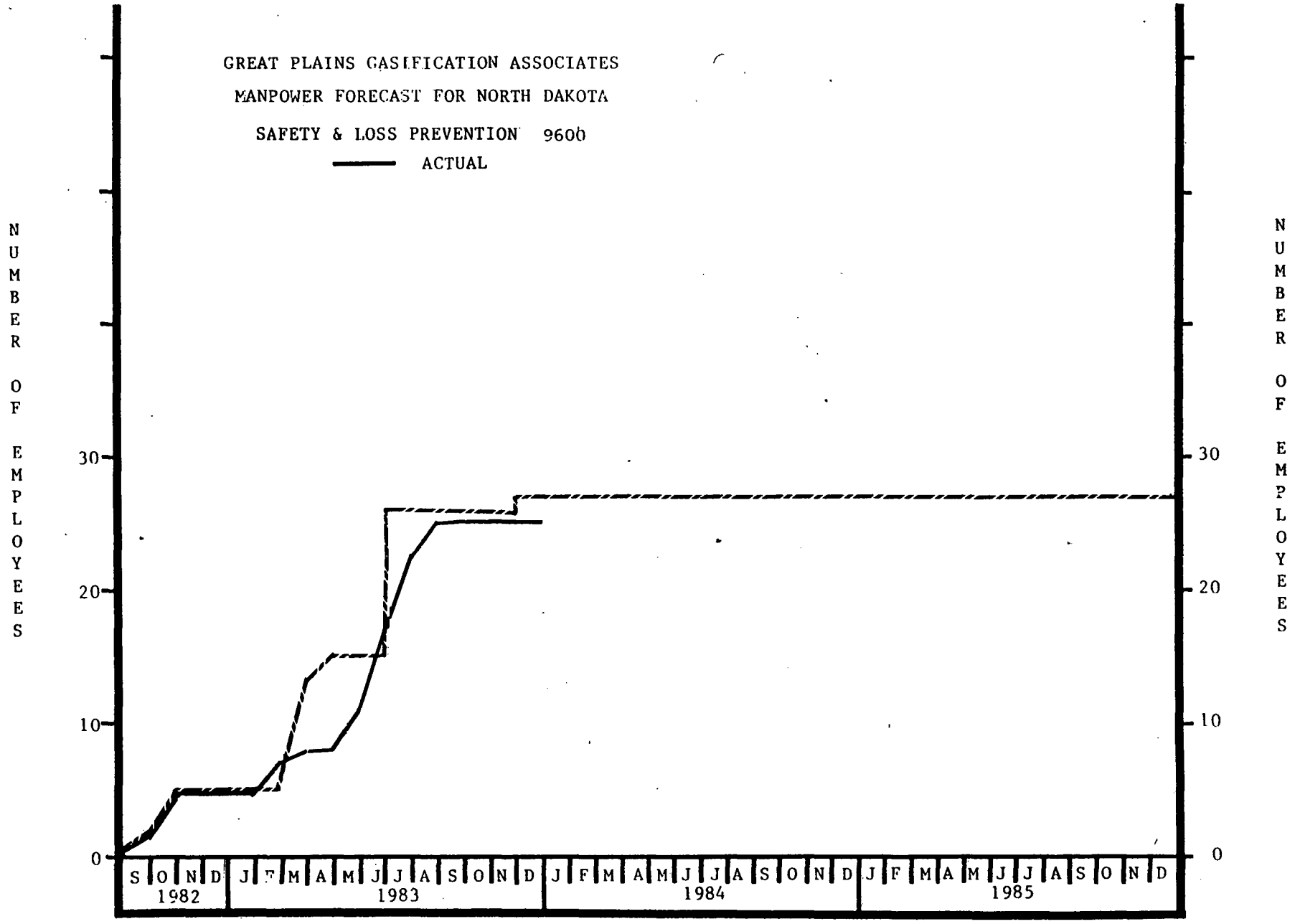
1982
1983
1984
1985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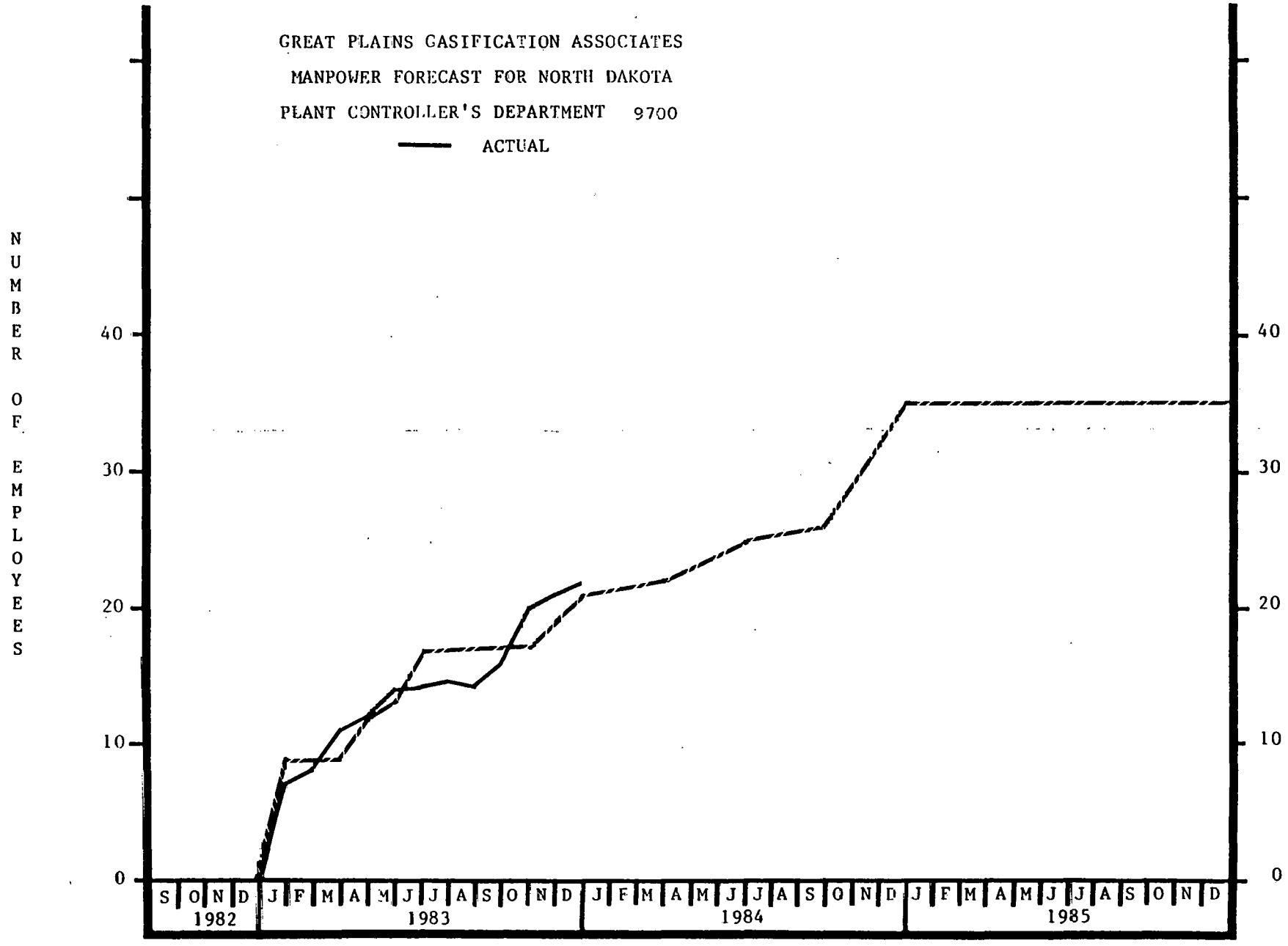
MANPOWER FORECAST FOR NORTH DAKOTA
SAFETY & LOSS PREVENTION 9600
ACTUAL
NUMBER OF EMPLOYEES
NUMBER OF EMPLOYEES
0
10
20
30
S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1982
1983
1984
1985


GREAT PLAINS GASIFICATION ASSOCIATES
MANPOWER FORECAST FOR NORTH DAKOTA
PLANT CONTROLLER'S DEPARTMENT 9700
ACTUAL
NUMBER OF EMPLOYEES
0
10
20
30
40
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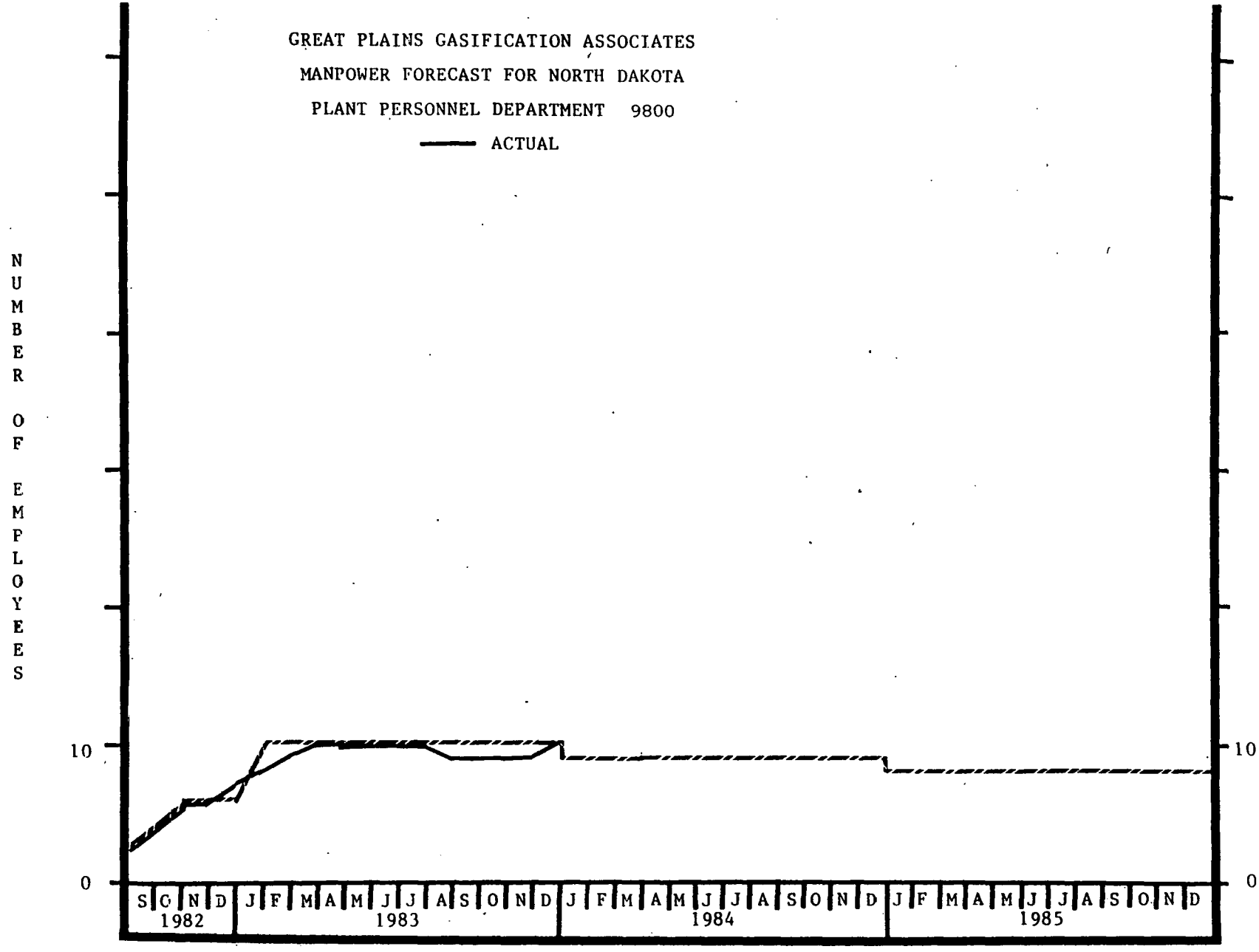
1982
1983
1984
1985


GREAT PLAINS GASIFICATION ASSOCIATES
MANPOWER FORECAST FOR NORTH DAKOTA
PLANT PERSONNEL DEPARTMENT 9800
ACTUAL
NUMBER OF EMPLOYEES
NUMBER OF EMPLOYEES
10
0
10
0
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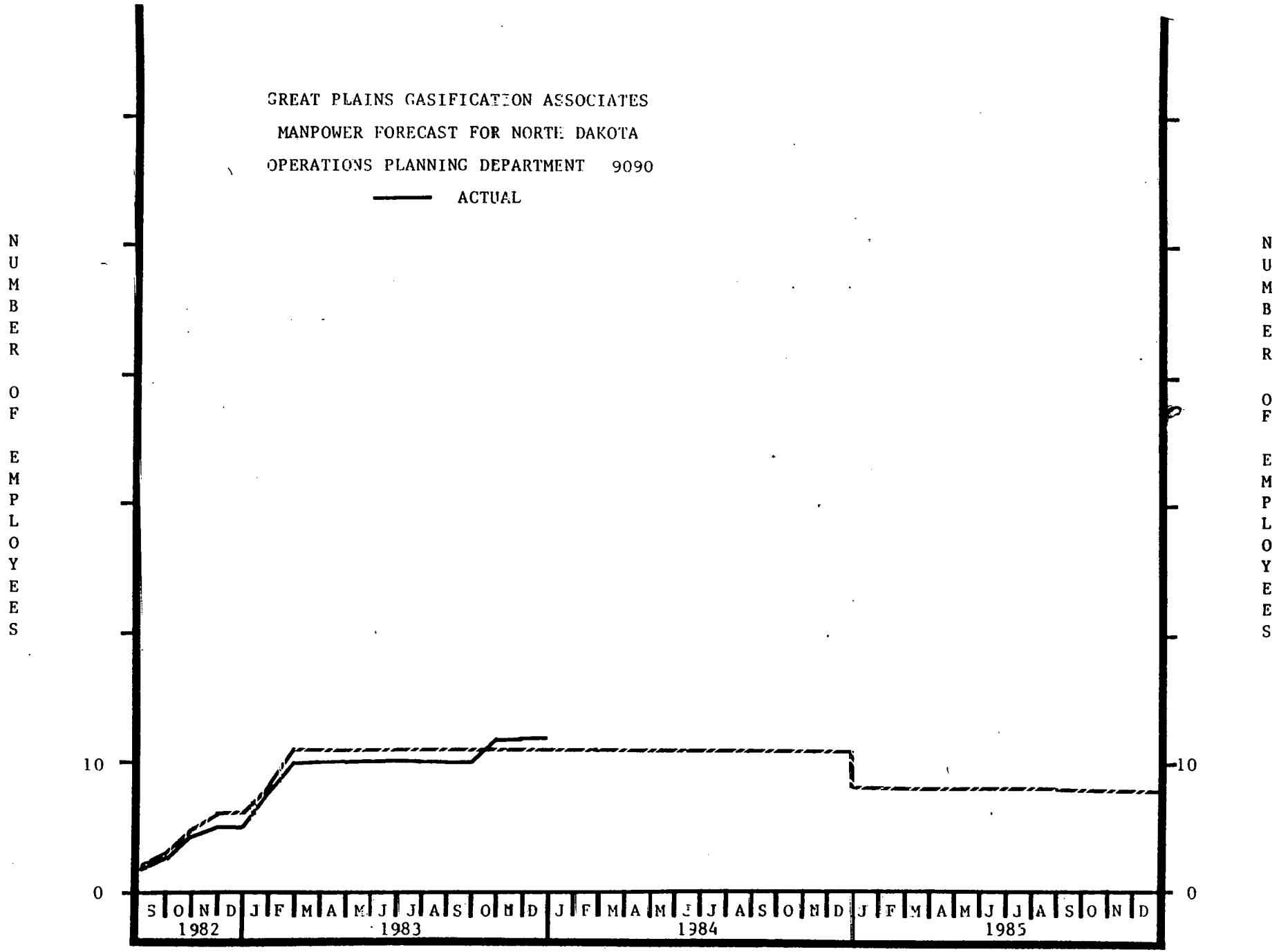
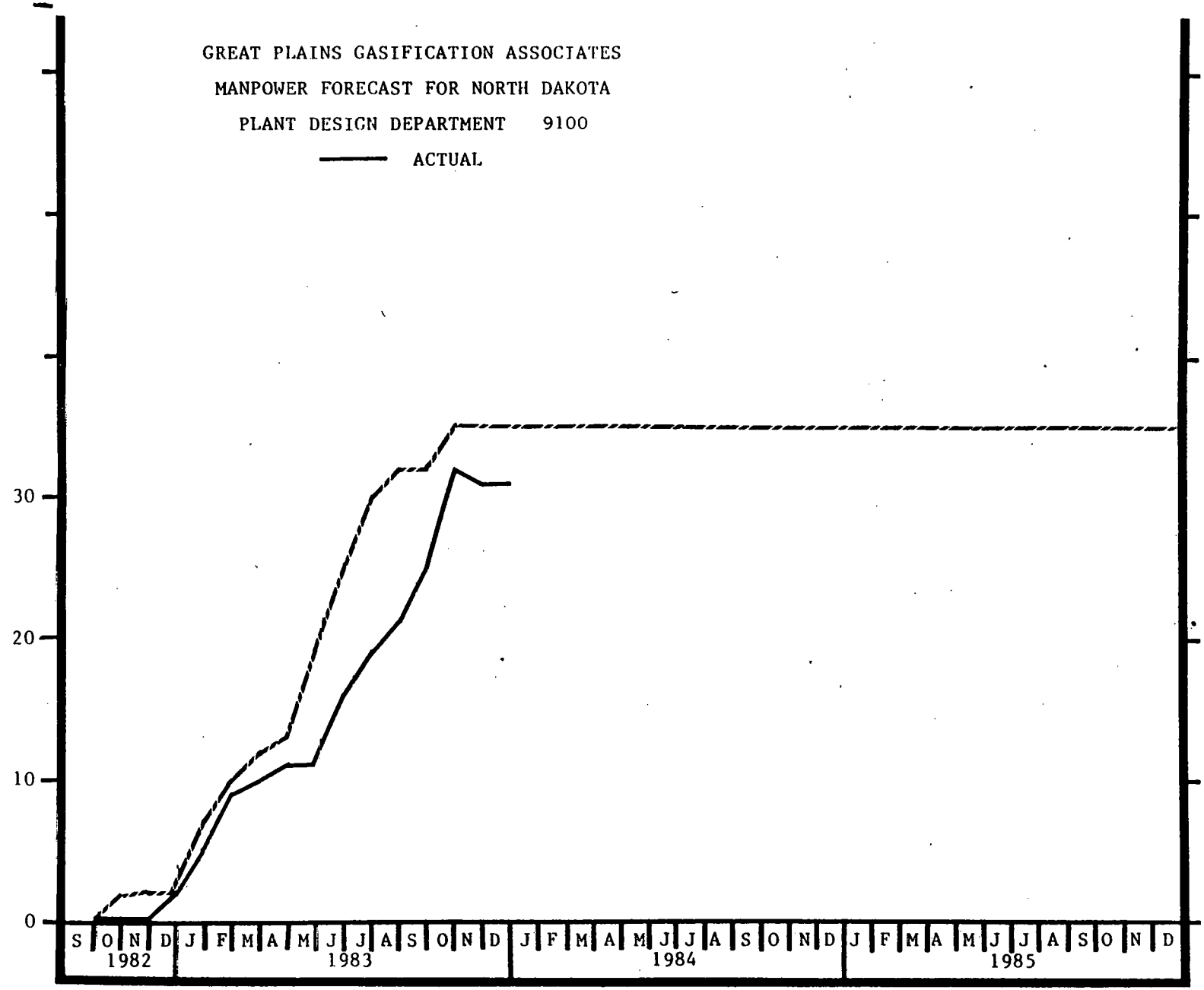
1982
1983
1984
1985


GREAT PLAINS GASIFICATION ASSOCIATES
MANPOWER FORECAST FOR NORTH DAKOTA
OPERATIONS PLANNING DEPARTMENT 9090
ACTUAL
NUMBER OF EMPLOYEES
NUMBER OF EMPLOYEES
10
0
10
0
S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1982
1983
1984
1985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MANPOWER FORECAST FOR NORTH DAKOTA
PLANT DESIGN DEPARTMENT 9100
ACTUAL
NUMBER OF EMPLOYEES
0
10
20
30
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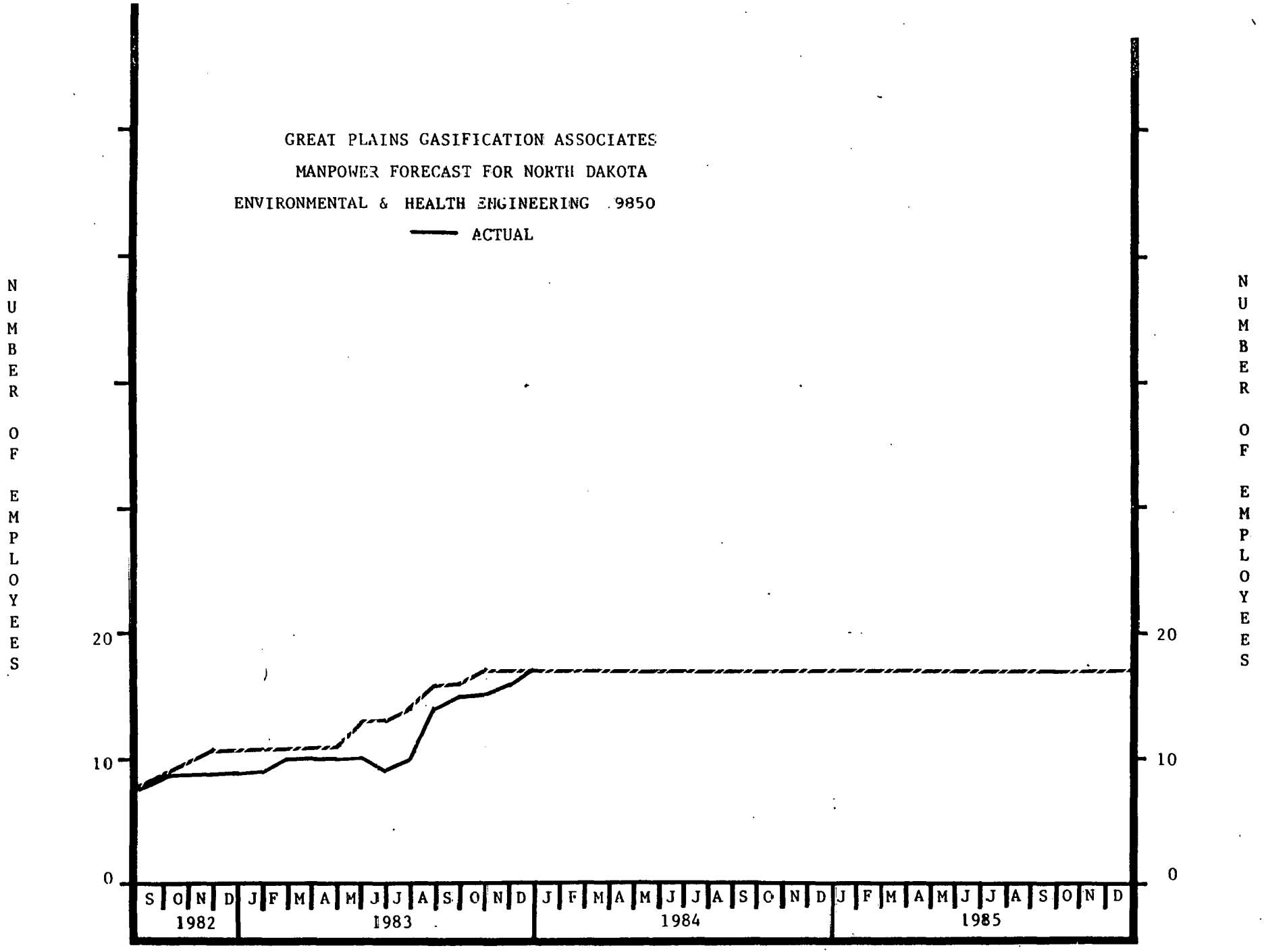
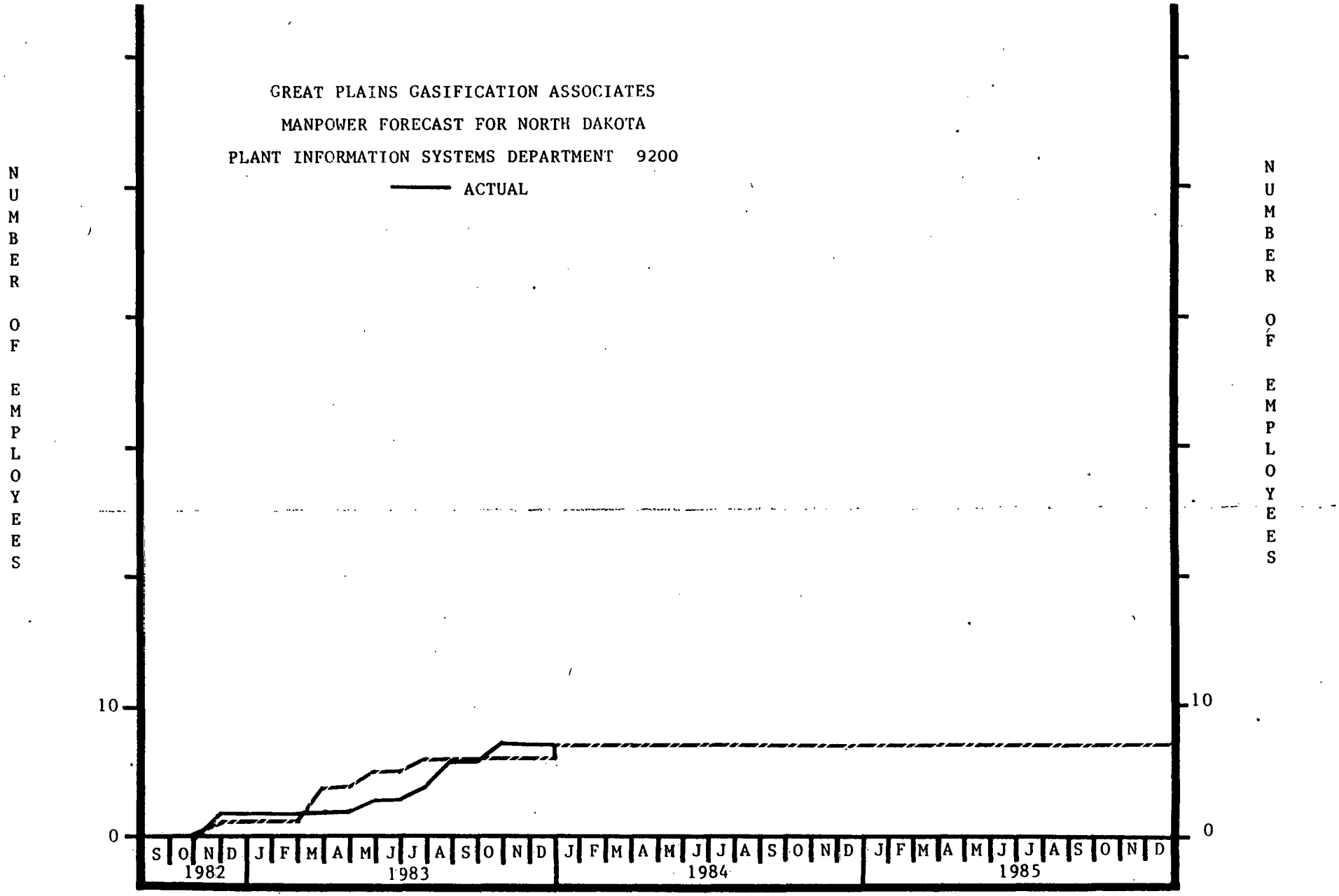
1982
1983
1984
1985


GREAT PLAINS GASIFICATION ASSOCIATES
MANPOWER FORECAST FOR NORTH DAKOTA
ENVIRONMENTAL & HEALTH ENGINEERING 9850
ACTUAL
NUMBER OF EMPLOYEES
NUMBER OF EMPLOYEES
0
10
20
S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1982
1983
1984
1985


GREAT PLAINS GASIFICATION ASSOCIATES
MANPOWER FORECAST FOR NORTH DAKOTA
PLANT INFORMATION SYSTEMS DEPARTMENT 9200
ACTUAL
NUMBER OF EMPLOYEES
NUMBER OF EMPLOYEES
10
0
10
0
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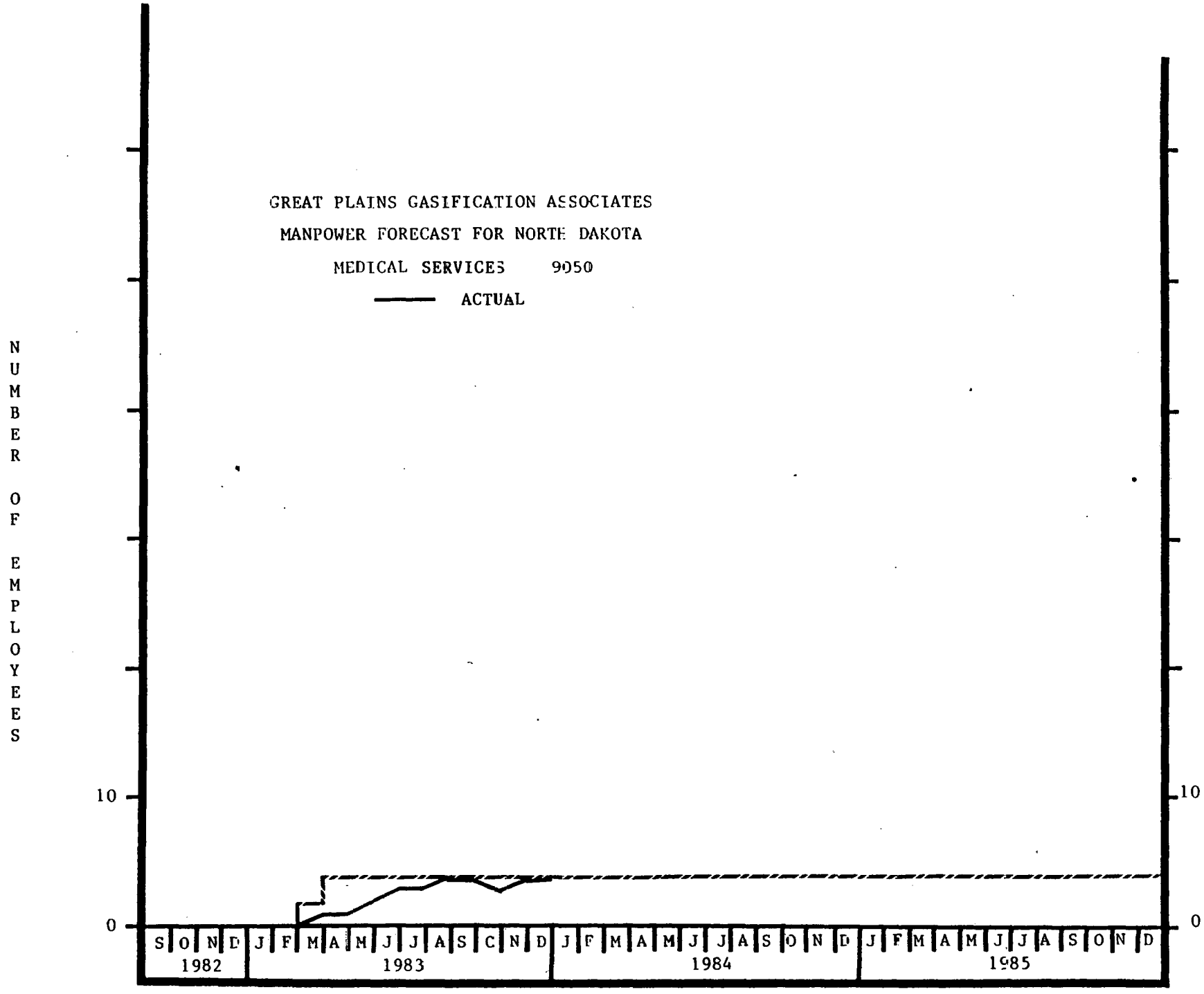
1982
1983
1984
1985


GREAT PLAINS GASIFICATION ASSOCIATES
MANPOWER FORECAST FOR NORTH DAKOTA
MEDICAL SERVICES 9050
ACTUAL
NUMBER OF EMPLOYEES
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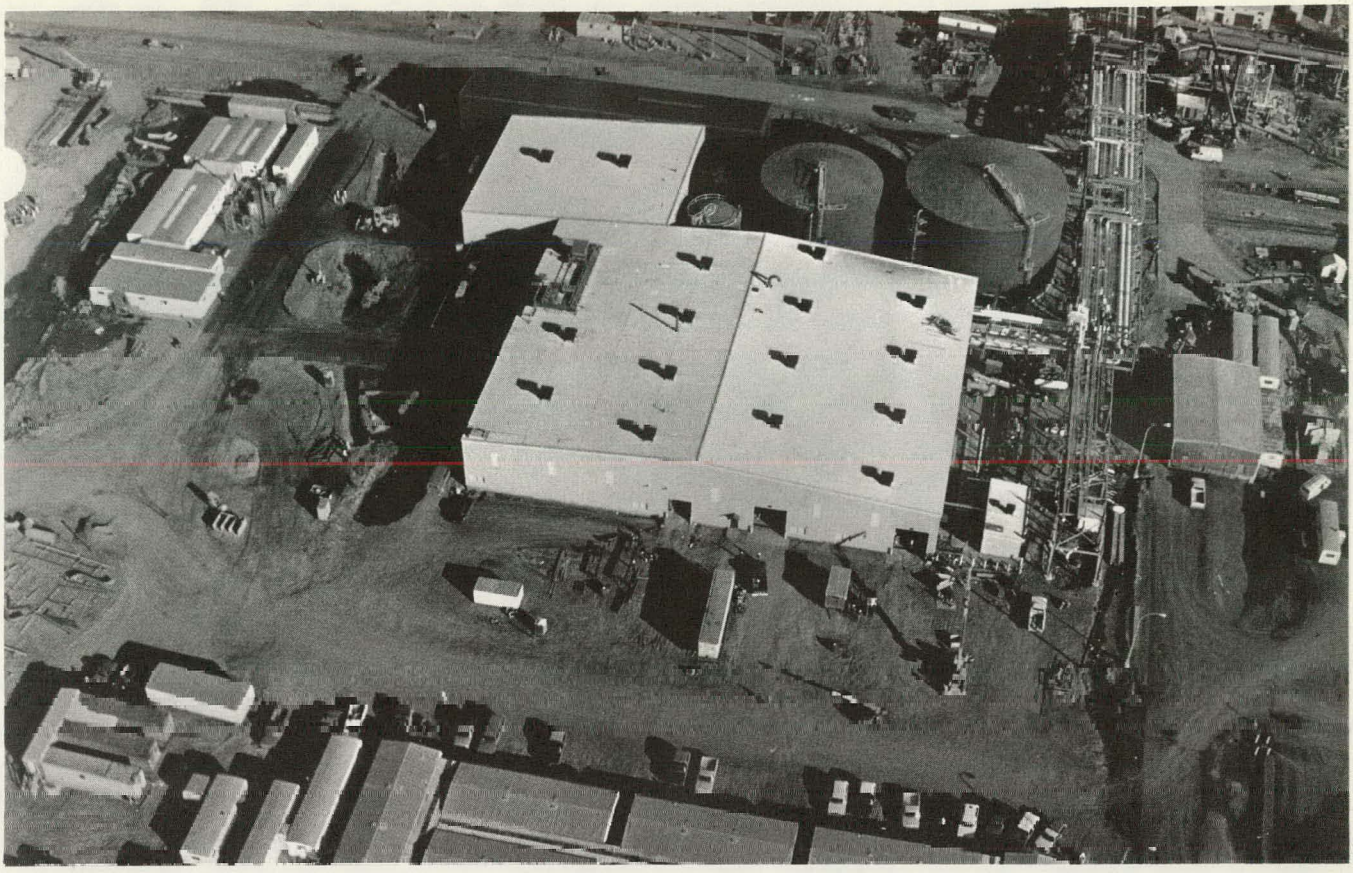
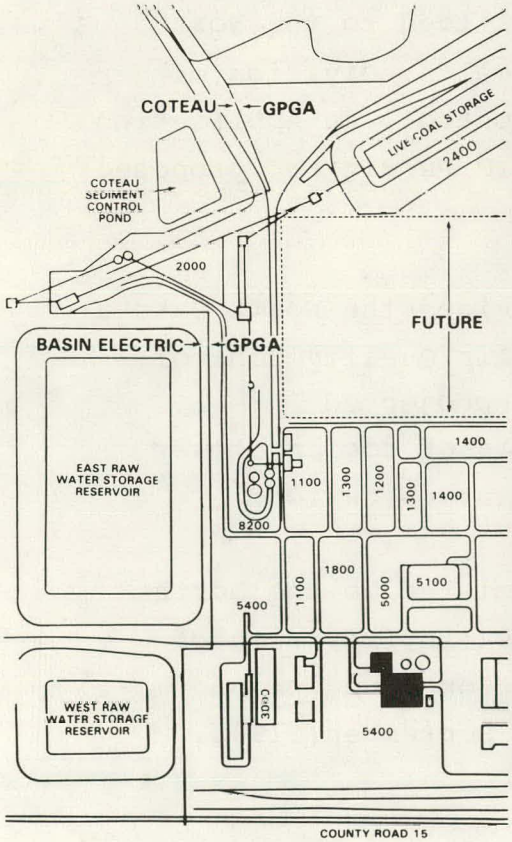
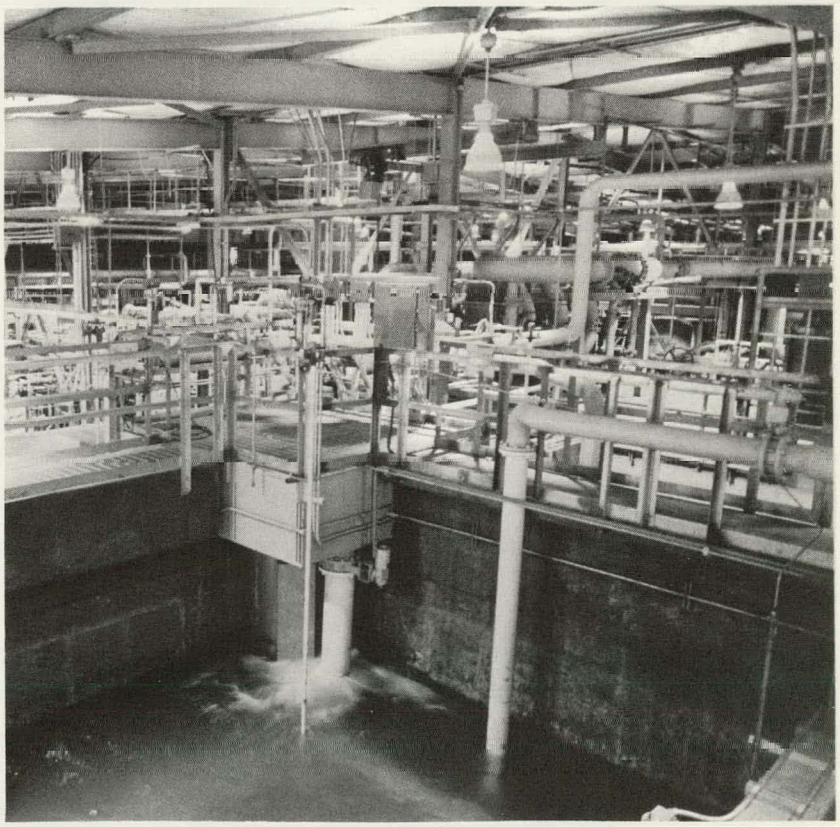
1982
1983
1984
1985



October 31, 1983—Area 5400—Water Treatment and Storage—Looking East





January 4, 1984—Area 5400—Inside Water Treatment Plant—Looking Southeast

ENVIRONMENTAL AND SOCIOECONOMIC SECTION

I. COAL GASIFICATION PLANT

A. List of Outstanding Permits Requiring Further Action

The plant has received 44 permits from federal, state and local authorities. The Underground Injection Control Permit for the #2 Deepwell Disposal System was applied for in October, 1983 and will be issued early in the first quarter of 1984. A remaining permit, which is the Permit to Operate will not be issued until late in 1985.

B. Action Taken by ANG and Regulatory Agencies

During the past quarter, the following permit-related action occurred:

1. On October 12, 1983, ANG submitted to the North Dakota State Department of Health, Division of Water Supply and Pollution Control, an Application and Technical Report for a UIC Permit for proposed Disposal Well No. 2.

2. On October 17, 1983, ANG provided the North Dakota State Department of Health, Air Quality Control Division, information on the projected concentrations and odor levels of cooling tower emissions expected during plant operation.

3. On October 18, 1983, ANG submitted to the North Dakota State Department of Health, Division of Environmental Engineering, a Construction and Start-up Progress Report for September, 1983.

4. On October 18, 1983, ANG forwarded to the North Dakota Public Service Commission a copy of the September, 1983, Construction Progress Report.

5. On October 19, 1983, ANG reported to the North Dakota State Department of Health, Air Quality Control Division, the progress and future planning for the GPGA Fire Training Program.

6. On October 21, 1983, ANG forwarded to the North Dakota State Department of Health, Division of Water Supply and Pollution Control, review comments on an advance copy of the Draft Permit Amendments for the No. 1 GPGA Disposal Well.

7. On November 7, 1983, the North Dakota State Department of Health provided a draft copy of Underground Injection Control Permit No. ND-UIC-101 for ANG review.

8. On November 7, 1983, ANG requested approval from the North Dakota State Department of Health to use 2% Sulfur No. 6 fuel oil for boiler fire tests.

9. On November 7, 1983, ANG submitted to the U.S. Environmental Protection Agency a Revised Part A Hazardous Waste Permit Application.

10. On November 9, 1983, the North Dakota State Department of Health provided to ANG a review of ANG's estimated cooling tower emissions during plant operation.

11. On November 9, 1983, the EPA filed a complaint against ANG for alleged violations of regulations concerning PCB's.

12. On November 10, 1983, the North Dakota State Department of Health granted a conditioned approval to ANG to use 2% Sulfur No. 6 fuel oil for boiler fire tests.

13. On November 11, 1983, ANG submitted to the North Dakota Public Service Commission a bond release application for Permit Number ANGF-8303.

14. On November 14, 1983, ANG requested the North Dakota State Department of Health for approval of a pH control program for surface run-off pond effluent.

15. On November 14, 1983, ANG submitted the October, 1983, Construction Progress Report to the North Dakota Public Service Commission.

16. On November 14, 1983, ANG submitted the October, 1983, Construction and Start-up Progress Report to the North Dakota State Department of Health.

17. On November 14, 1983, ANG requested the U.S. Department of Energy for approval of their recommended Contractor for the vapor phase and absorbed organic compounds ambient air monitoring program.

18. On November 15, 1983, the North Dakota State Department of Health provided a report of their inspection of the Desulfurization Waste Site to ANG.

19. On November 15, 1983, ANG submitted to the North Dakota State Department of Health the Third Quarter 1983 Hydrogen Sulfide and Meteorological Monitoring Data Report.

20. On November 16, 1983, the North Dakota State Department of Health provided to ANG a review of the Underground Injection Control Permit Application and Technical Report for Proposed Disposal Well #2.

21. On November 21, 1983, the North Dakota Public Service Commission notified ANG of a scheduled Bond Release Inspection of the area under Permit Number ANGF-8303.

22. On November 21, 1983, the North Dakota State Department of Health provided to ANG a review of the "Great Plains Coal Gasification Project Ambient Air Quality Monitoring Quality Assurance Plan".

23. On November 22, 1983, ANG received from the North Dakota Public Service Commission an inspection report of the desulfurization waste initial disposal pit.

24. On November 22, 1983, the U.S. Department of Energy notified ANG of their approval of Radian Corporation to do the ambient vapor phase and absorbed organic compounds monitoring.

25. On November 23, 1983, ANG submitted to the North Dakota State Department of Health comments on the proposed hazardous waste management program which constitutes part of the State's application for EPA authorization to regulate the program within the state.

26. On November 29, 1983, ANG submitted to the North Dakota Public Service Commission a copy of the public notice for permit bond release as required by law.

27. On December 5, 1983 , the U.S. Department of Energy notified ANG of their preparation of a generic format to develop a Worker Registry as part of a synthetic fuels industry health study program.

28. On December 5, 1983, ANG notified the North Dakota State Department of Health that the oily water sewer jumper line to the stormwater sewer has been blocked and the API separator will receive the wastewater load.

29. On December 7, 1983, the North Dakota State Department of Health forwarded a draft copy of the No. 2 Well Underground Injection Control Permit to ANG for review.

30. On December 7, 1983, the North Dakota State Department of Health requested ANG to complete a questionnaire as part of the Department's preliminary assessment of Hazardous Waste Sites.

31. On December 9, 1983, ANG requested that the North Dakota State Department of Health amend the ANG Radioactive Material License to include two additional sources.

32. On December 14, 1983, ANG requested from the North Dakota State Department of Health permission to use the boilout wastewater for dust control next spring. An analysis of the wastewater was provided.

33. On December 15, 1983, the North Dakota State Department of Health informed ANG that pH adjustment of stormwater pond effluent was acceptable until the high pH water source is identified.

34. On December 17, 1983, ANG requested that the North Dakota State Department of Health amend the ANG Radioactive Material License to include an additional source.

35. On December 19, 1983, ANG submitted to the North Dakota Public Service Commission a Construction Progress Report for November, 1983.

36. On December 19, 1983, ANG submitted the November, 1983, Construction Start-up Progress Report to the North Dakota State Department of Health.

37. On December 22, 1983, ANG received from the North Dakota State Department of Health an Amended Underground Injection Control Program Permit (#ND-UIC-101) to cover modifications to Disposal Well #1.

38. On December 27, 1983, ANG submitted to the North Dakota State Department of Health a copy of the hydrotesting procedure and spill control plan.

39. On December 27, 1983, ANG forwarded to the North Dakota State Department of Health a response to NDSDH comments on the technical report for Disposal Well #2. Baseline water quality data and a statistical summary of this information were also submitted.

40. On December 27, 1983, ANG forwarded to the North Dakota State Department of Health additional information regarding radioactive sources to be included in the Radioactive Materials License.

41. On December 27, 1983, ANG requested that the North Dakota State Department of Health amend the ANG Radioactive Materials License to include five additional users. A report of a formal training course at the plant site on radioactivity was included as part of this letter.

42. On December 29, 1983, ANG notified the North Dakota State Department of Health of necessary modifications to increase the capabilities of the main flare.

C. Permitting Delays

No significant permitting delays are presently being encountered.

D. Permits Which Have Been Issued With Conditions Requiring Further Action

No permits requiring further action were issued during the past quarter.

E. Violations of Environmental Permits

EPA issued a complaint against ANG on November 9, 1983, alleging violations of regulations concerning PCB's. ANG does not agree with the complaint and will attempt to demonstrate to EPA that no violations occurred.

On two occasions (October 11 and 12) the NPDES suspended solids concentrations limits were exceeded by 5 mg/l and 12 mg/l, respectively, because of the accelerated hydrotest program. There were no violations during November and December of 1983.

F. Socioeconomic Related Requirements and Activities

Great Plains continues to be an active member of the Inter-Industry Technical Assistance Team (ITAT). Two reports are published on a monthly basis by ITAT, the Available Housing Research in Mercer County Report and the ITAT Construction Workforce Report. Brief narratives of workforce and housing trends in Mercer County in the past year follow and are summarized in Tables I-1 and I-2 respectively.

1. Workforce

Table I-1 summarizes the workforce-related data from the ITAT Construction Workforce Reports. The reports summarize construction workforce characteristics and actual/estimated construction employment levels for coal-related projects under construction in Mercer County, North Dakota.

The data is summarized to indicate workforce trends at the Great Plains project. Table I-1 includes workforce data from each month in the past quarter, as well as from one year ago in December, 1982. As expected, the table indicates that employee levels at Great Plains have increased within the past year, from 3,278 employees (December, 1982) to 5,194 (September, 1983). However, employee levels from September to November of 1983 have decreased by 1,014 persons, or 19.5%.

2. Housing

The housing data found in Table I-2 was compiled from the ITAT Available Housing Research in Mercer County Reports. These monthly reports identify

housing available for purchase or rent within Mercer County by type, size, and location. These monthly ITAT reports are also submitted to DOE in the monthly report.

The data in Table I-2 is summarized to indicate housing trends within Mercer County. The table includes data from each month from the past quarter, as well as data from December, 1982. The data indicates that housing availability within the past year has increased significantly from 195 units to 263 units. Available rental units are increasing in number as more homes are being purchased and the construction workforce is beginning to decrease.

ITAT has issued a letter addressing the anticipated decrease of construction work force as the GPGA and Antelope Valley II Station construction winds down. This letter reiterated the information of the ITAT booklet. The letter was sent to the Mercer County Commissioners, Planning and Zoning Board members, city mayors, school superintendents, banks and savings & loans, the Land Use Administrator and the Hazen and Beulah councils.

3. New Housing Construction

Private housing development has stopped due to winter freeze up. There are some homes that were on a pre-sold contract or on spec, that were started before freeze up and are now being completed.

The stock of housing units for sale, which include new homes, older residences, condominiums, townhouses, duplexes and mobile homes is quite large and is increasing.

These numbers will probably continue to increase as the construction work force drops through the next two quarters. Up to this point the newly hired operational people have taken units that are available or have opened up from construction layoffs. As operational hiring slows, the demand for housing units will drop. Although the stock of housing units is large, the asking price for new and used housing has not changed from a higher than normal range.

The high demand for rental units and trailer lots is starting to ease. This is due to the dropping in the construction force and a number of apartment buildings that were started last quarter are finished and occupied. There are twelve additional 4-plex units that were started before freeze up that will be coming available during the next quarter. The apartment rental price is running very high.

G. Environmental Monitoring Tests

During the next quarter, the following environmental monitoring tests will be conducted:

1. Baseline Environmental Monitoring Programs

Meteorological baseline data monitoring will continue. The monitoring station is fully operational.

2. Ongoing Environmental Monitoring Programs

a. Stormwater discharge monitoring will continue in accordance with the NDPDES permit requirements. Discharge Monitoring Reports are submitted quarterly to the North Dakota State Department of Health.

b. Quarterly samples are taken for the Instream Surface Water Quality Monitoring Program. The samples are immediately analyzed and results are summarized annually.

c. Quarterly groundwater samples are taken from monitoring wells for the desulfurization waste landfill, the solid waste disposal landfill and the deepwell injection site. These samples are immediately analyzed and the annual report mentioned above summarizes groundwater monitoring results from these monitoring wells.

d. Groundwater sampling will continue at fifteen groundwater monitoring wells in the vicinity of the desulfurization waste landfill and the surge ponds.

e. The Regional Air Monitoring Program (RAMP) will continue to collect ambient air quality data in the vicinity of the Great Plains Gasification Project, the Antelope Valley Power Station and the Coyote Power Station.

f. The first testing under the Supplemental Environmental Plan will be conducted during the First Quarter, 1984. Ambient concentrations of vapor phase and absorbed organics will be monitored.

g. Medical monitoring will continue in the form of pre-employment physicals, annual physical examinations for existing employees and data computerization.

h. Socioeconomic monitoring will continue in the form of ITAT workforce, housing and infrastructure assessments.

i. Ambient Air particulate size distribution will be performed at the Regional Air Monitoring Program (Station No. 2).

j. Monitoring for hydrogen sulfide at the GPGA meteorological tower will continue during the First Quarter, 1984.

Table I-1

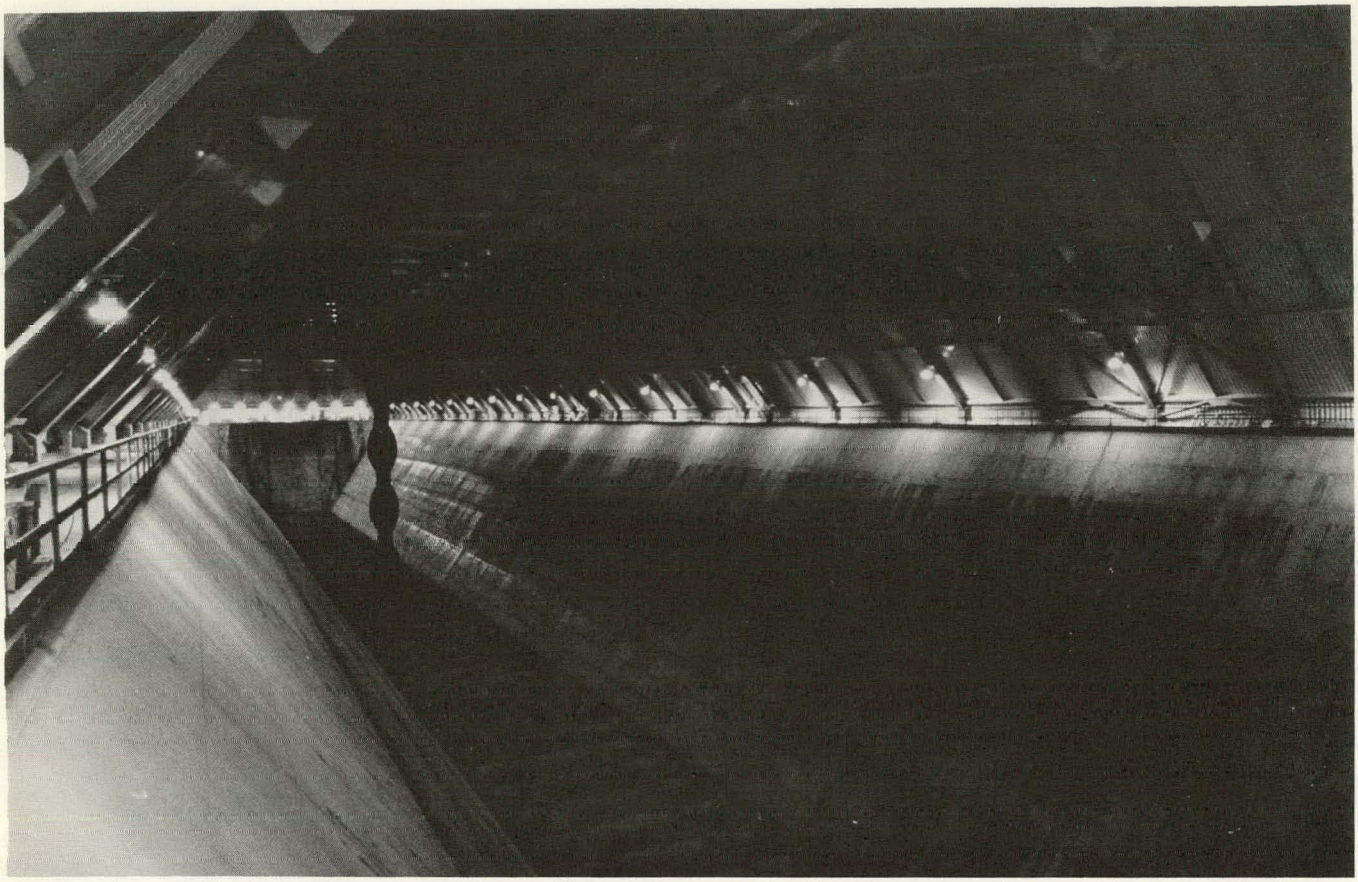
Workforce - Great Plains Gasification Associates

	Dec. 1982	Sept. 1983	Oct. 1983	Nov. 1983
Local Labor Force	170 (5.2%)	158 (3.0%)	138 (2.9%)	131 (3.1%)
Daily Commuters	1362 (41.6%)	2295 (44.2%)	2032 (43.1%)	1795 (42.9%)
Weekly Commuters	385 (11.7%)	619 (11.9%)	548 (11.6%)	437 (10.5%)
Relocated Workers	1361 (41.5%)	2122 (40.9%)	1996 (42.4%)	1817 (43.5%)
	3278 (100%)	5194 (100%)	4714 (100%)	4180 (100%)

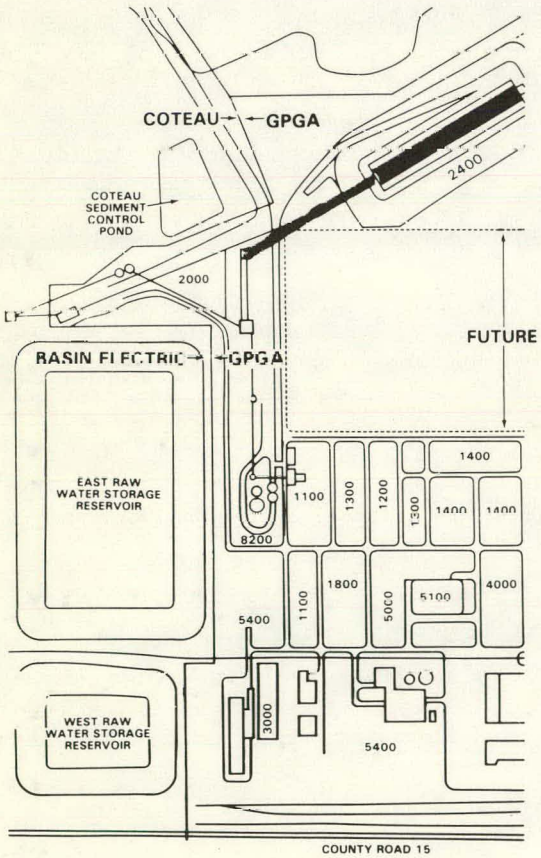
Table I-2

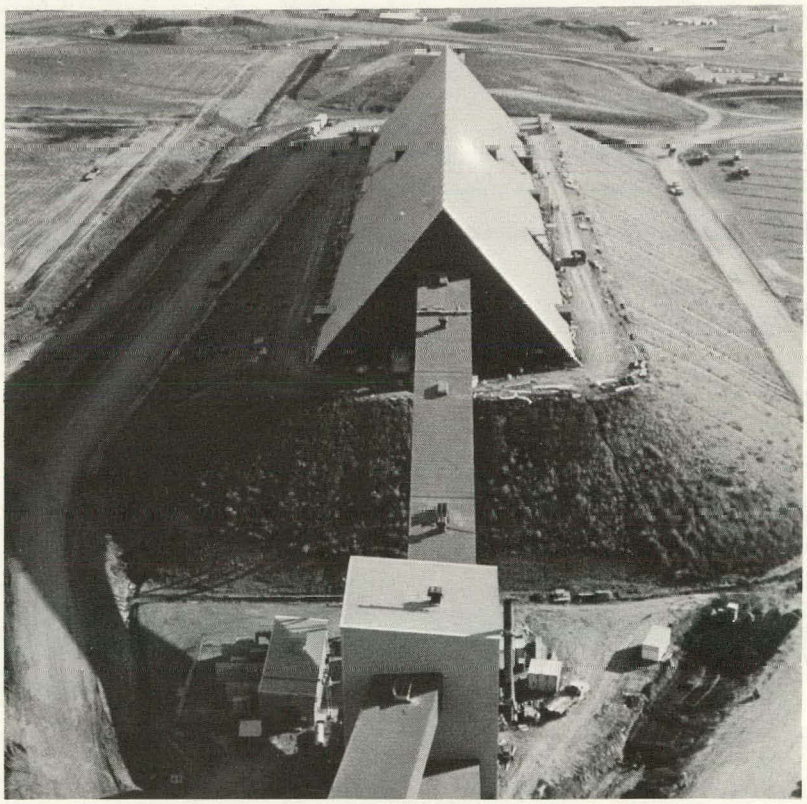
Housing - Mercer County

	12-82	10-83	11-83	12-83
Total new houses available for purchase	97	123	139	142
Total old houses available for purchase	47	54	55	49
Total houses available for rent	2	3	4	13
Total mobile homes available for purchase	33	54	46	52
Total mobile homes available for rent	1	2	1	3
Total aparts. & rooms available for rent	15	1	1	4
Total of all types of housing	195	237	246	263



uary 4, 1984—Area 2400—Inside Live Coal Storage—Looking North





October 31, 1983—Area 2400—Live Coal Storage—Looking South

FREEDOM MINE DEVELOPMENT

DESIGN

Background

On February 4, 1982, ANG Coal Gasification Company directed The Coteau Properties Company to initiate mine development engineering, procurement, and construction activities for a 9.9 million ton per year mine, providing the annual lignite requirements of 4.7 million tons and 5.2 million tons to Great Plains Gasification Associates' gasification project and Basin Electric Power Cooperative's Antelope Valley Station, respectively.

Through the first three quarters of 1982, Coteau design engineering efforts had been directed toward mine development activities that would provide run-of-mine coal deliveries to Basin Electric commencing March 1, 1983, and to Great Plains beginning March 1, 1984. However, during the fourth quarter, 1982, Basin Electric confirmed their intention to delay initial run-of-mine deliveries from March 1, 1983 until January 1, 1984, a result of declining demand for electricity. At the same time, Basin Electric also concluded that earlier low sodium coal requirements, to eliminate boiler fouling, would probably not be necessary for the Antelope Valley Station.

ANG requested Coteau to evaluate the engineering and mine development ramifications of the Basin Electric coal delivery delay, as well as the delayed development of Mine Area 2 (designated as a low sodium reserve for use in blending with higher sodium coal being delivered to Basin Electric). A plan to incorporate these delays into Coteau's mine planning and development efforts was reviewed by ANG and Basin Electric, whereupon parameters and assumptions associated with the revised mining plan, development schedule, and control estimate were approved by ANG. Subsequently, ANG requested Coteau to prepare a

formal mining plan and control estimate revision (Engineering Report 401, Capital Revision 2) detailing a mining plan, development schedule, and capital cost estimate within the framework of the approved parameters and assumptions.

Engineering Report 401, Capital Revision 2 was completed by Coteau during May, 1983. Upon review of the revised mine development plan and capital cost estimate by ANG/Great Plains and Basin Electric, approval was granted Coteau to implement the mine development plan set forth within the report, as well as to adjust cost and schedule baselines accordingly.

With the approval of Engineering Report 401, Capital Revision 2 incorporating Basin Electric's delayed initial coal deliveries and delayed development of Mine Area 2, all mine development activities and expenditures are being conducted in accordance with the revised mine development plan, schedule, and control estimate.

Progress to Date

Engineering progress through the fourth quarter, 1983, continued to include mine development and operations planning such as coal haulage and access road design and location, surface water control pond design, topsoil and subsoil stockpiling requirements, mining pit sequencing and configurations, land reclamation requirements, as well as electrical distribution system design and layout. Mine plan engineering activities continued on the future mine production development requirements beyond the initial pits to be opened in the southern portion of Mine Area 4, as well as development requirements for the initial pits to be opened in the northern portion of Mine Area 4. Also continued were environmental activities associated with the acquisition of future mining permits to encompass mine development areas beyond the boundaries of the existing Mining Permit "A", approved and issued by the North Dakota Public Service Commission (NDPSC) on

October 5, 1981. Coteau's application for Mining Permit "B" was submitted to the NDPSC on April 20, 1982, with approval being granted July 7, 1983. Also, environmental work related to the revision, where necessary, of Mining Permit "B" and related to an application for Mining Permit "E" (which will provide the land area for topsoil and subsoil stockpiles) is ongoing.

At ANG's request, Coteau continues to review engineering parameters related to Great Plains' solid waste disposal requirements for gasifier ash. Coteau has also completed the cost estimate of capital and operating costs associated with Great Plains' solid waste disposal requirements for gasifier ash. The cost estimate, completed on December 15, 1983, is currently being reviewed by ANG.

During the fourth quarter, Coteau prepared a proposed 1984 Operating Budget and a Mine Development Expenditure Estimate for 1984 through 1986. ANG and Basin Electric are currently reviewing these reports.

Finally, Coteau continued equipment specification development for mining equipment scheduled for delivery in 1983 and 1984. with, as mentioned earlier, all equipment acquisition being scheduled in accordance with the revised Coteau mine development plan and schedule.

Configuration Changes

No mine design or development configuration changes were made in the fourth quarter, 1983.

Engineering Studies

In consideration of future budget planning requirements, Coteau, at the request of ANG, has commenced a life of mine production cost estimate.

Technical Milestones

Within the fourth quarter, 1983, there were no mine development technical milestones scheduled. During the first quarter, 1984, Coteau will continue mine development engineering activities related to the continued start-up of mining in Mine Area 4, as well as those environmental engineering activities required for future mine expansion. These efforts will be conducted within the guidelines of Coteau's revised mining plan and development schedule.

Construction

Construction activities through the month of December, 1983, included continued earthwork activities for mine development, including pre-mining earthwork consisting of topsoil and subsoil removal, haul road construction, and water management control structures in Mining Permit "B". Topsoil and subsoil removal continued from the initial pit area in Mining Permit "A". Other earthwork activities included overburden cut and fill construction in the mine service building complex area, the placement of scoria at various locations, and a number of miscellaneous projects.

During October the Coteau workforce moved into the offices of the mine service building complex, maintenance shop, and warehouse.

Erection of Dragline "B" continued with welding of boom and mast, erection of the house enclosure panels, installation of the automatic lubrication system, mounting of the filterhouse assembly, installation of propel machinery and motors, continued work on electrical installation, completion of welding of the second 110 cubic yard bucket, and completion of liner and wear plate installation on the first 110 cubic yard bucket. Completion of Dragline "B" is at least two months ahead of the scheduled July, 1984 checkout.

Painting of the coal Loading Shovel No. 1 was completed in October, 1983 and the shovel was placed into operation on October 31, 1983.

All major construction activities are progressing well, with no difficulties foreseen at this time.

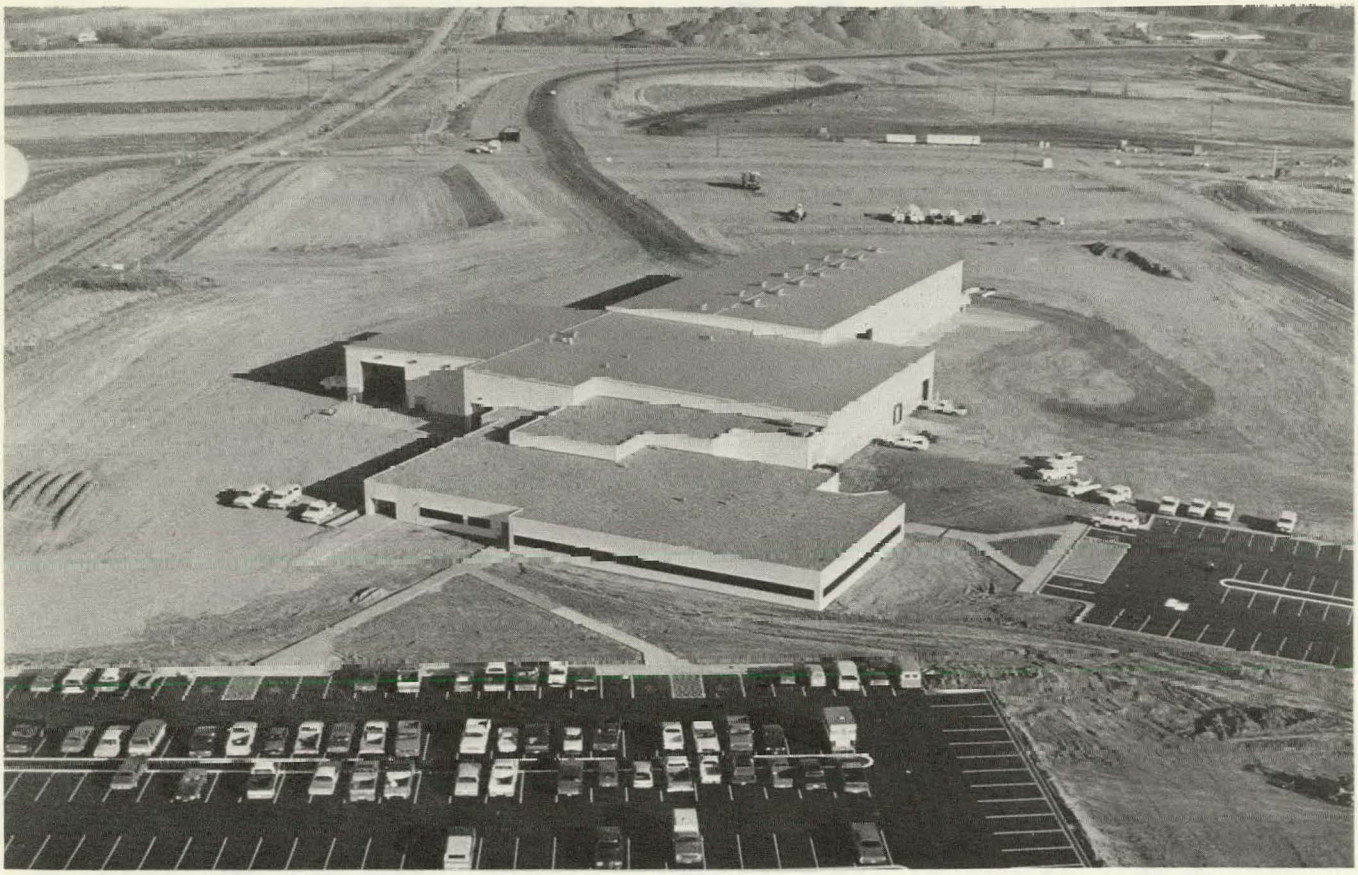
Pre-Operation

Overburden removal continued with Dragline "A" at the site of the initial pit area in Mine Area 4 through November 28, 1983. The Bucyrus-Erie Company is now performing warranty repair on the Dragline "A" swing gear rack. The recommended repair is progressing on schedule with no anticipated difficulties in maintaining the coal delivery schedule.

Initial coal deliveries to Basin Electric, which began on August 15, 1983, discontinued after September 2, 1983. After a start-up review of Unit No. 1, coal deliveries recommenced to Antelope Valley Station on December 15, 1983.

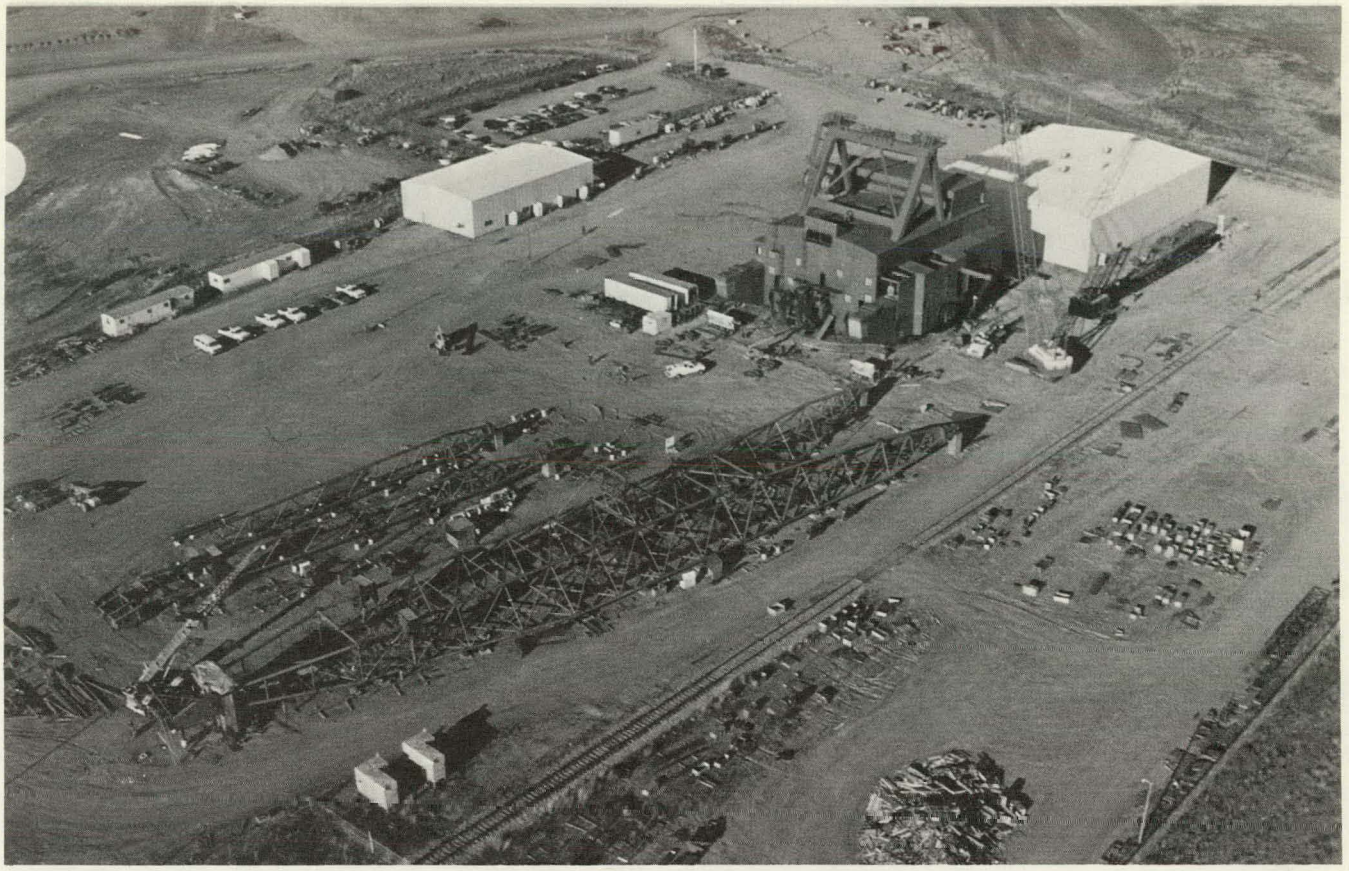
Through December, 1983 approximately 322,300 tons of coal have been delivered to the Antelope Valley Station. Basin Electric's 1984 coal delivery schedule requires 1,600,000 tons. Great Plains' coal deliveries shall begin March 1, 1984.

Other pre-operation activities will continue commensurate with Coteau's revised mining plan through the first quarter, 1984.



tober 31, 1983—Code 4000—Completed Mine Service Building Complex

October 31, 1983—Dragline A—Removing Overburden



tober 31, 1983—Code 2200—Dragline B. Erection—Erection Site

)ecember 6, 1983—Code 2200—Dragline B Boom Fabrication and Welding

II MINE - The Coteau Properties Company

A. List of Outstanding Permits Requiring Further Action

The Coteau Properties Company has currently obtained all of the permits required to construct and commence operation of the mine. Listed in Table II-1 is the present status of the permits needed to continue mine expansion through 1986. Approval by the Federal Office of Surface Mining for mining Federal coal lands in Permit B was issued January 5, 1984. However, the permit is not effective until a performance bond for the Federal tract is provided, which is scheduled for April, 1984.

B. Action Taken by Coteau and Regulatory Agencies

The Coteau Properties Company is solely responsible for mine permitting and compliance with environmental regulations applicable to the mine. In correspondence dated October 25, 1983, the North Dakota State Department of Health approved Coteau's outdoor water and sewer piping systems for the mine service building complex. On November 3, at the request of the Department of Health, Coteau sent additional design information for the equipment washdown evaporation pond, the associated lift station, and the potable water treatment system. Coteau is presently awaiting written approval of these designs.

Revision No. 1 to Permit B, which proposes construction of a sediment trap in lieu of a diversion ditch, was approved by the North Dakota Public Service Commission (PSC) on November 15. This revision will reduce reclamation costs.

C. Permit Delays

No significant permitting delays were encountered.

D. Permits Which Have Been Issued With Conditions Requiring Further Action

The North Dakota Public Service Commission conditioned their Permit "B" Mine Plan Approval with the condition that no federally owned coal may be mined without an Office of Surface Mining approval of the mine plan. This permit was issued January 5, 1984.

Mercer County issued a Conditional Use Approval for Permit "B" planning with no stipulations attached.

E. Violations of Environmental Permits

No permit violations are known to have occurred during the past quarter.

F. Socioeconomic Related Requirements and Activities

The socioeconomic impact resulting from the workforce at the mine is regularly addressed by ITAT in the monthly, semiannual and annual reports, copies of which are provided to DOE. In general, the mine workforce is small in relation to the construction workforce for the gasification plant and the incremental socioeconomic impacts are not significant.

G. Environmental Monitoring Tests

The Coteau Properties Company will continue to perform the environmental monitoring programs necessary to support their permits including:

1. Air quality monitoring for particulates

2. Sedimentation pond effluent monitoring

3. Surface water monitoring

4. Groundwater monitoring

5. Mine fish and wildlife monitoring

Table II-I

Status of the Mine Permits

Permit	Agency	Filing Date	Approval Date
Mine Plan Approval Permit "B"	OSM	Filed 04-20-82	Granted 01-5-84
Mine Plan Approval Permit "E"	NDPSC	Anticipated 01-23-84	Anticipated 05-21-84
Mine Plan Approval Permit "B"	NDPSC	Filed 04-20-82	Granted 07-7-83
Coal Exploration Permits	Industrial Commission	Anticipated 05-84	Anticipated 06-84
Air Permit to Operate	NDSDH	Anticipated 06-84	Anticipated 10-84
Conditional Use Permit "B"	Mercer County	Filed 07-01-83	Granted 08-02-83

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