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THE PEAT DEVELOPMENT PROGRAM

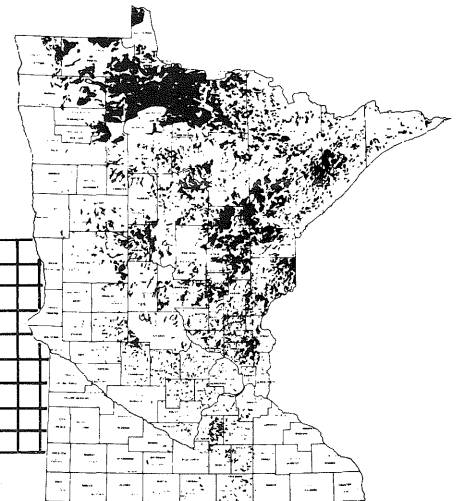
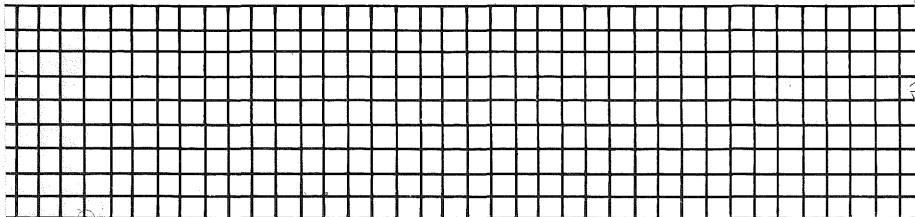
A SIX-MONTH PROGRESS REPORT

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The Peat Development Program...



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1984



Minnesota Department
of Natural Resources

THE PEAT DEVELOPMENT PROGRAM: A SIX-MONTH PROGRESS REPORT TO THE MINNESOTA LEGISLATURE

INTRODUCTION

The Peat Development Program began in late July, 1983. This six-month progress report will describe the work conducted and the accomplishments attained for each program sub-activity as of December 31, 1983. As an aid to the reader, the objectives of each project are restated within this report, followed by a brief description of the progress made to date. At the conclusion of the report is an accounting of all expenditures made for the various projects.

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PROJECT: Survey of the West Central Lakes Bog

OBJECTIVE: Site preparation is a costly and time-consuming undertaking which may be a significant barrier to firms considering entering the peat industry. Completion of this project will ensure that an adequate supply of state land is ready should the need for it arise.

CURRENT STATUS: A survey of the West Central Lakes Bog to determine its suitability for fuel peat development has been conducted by DNR. The results of this survey appear to indicate that this peat deposit is comprised in large part of sphagnum moss peat which make it more suitable as a site for horticulture than for energy development.

PROJECT: Conversion of State Facilities

OBJECTIVE: Several state facilities are currently burning eastern coal and/or fuel oil. Our objective is to determine which of these facilities can be economically retro-fitted to burn fiber fuels. Conversion of these facilities will demonstrate the state's commitment to using fuels produced in Minnesota.

CURRENT STATUS: A cooperative agreement between DNR, DMA, DOA, and DEED has been drafted to conduct a series of feasibility studies to convert public facilities to the use of fiber fuels. With funding provided by DNR in the form of a grant, DEED shall complete fuel conversion feasibility studies at Camp Ripley and DNR regional headquarters at Bemidji and report to the legislature by January 31, 1985.

PROJECT: Detailed Peat Survey

OBJECTIVE: Site-specific resource data are needed to develop resource estimates and peatland mining plans. Our objective is to provide the necessary data by surveying in detail those peatlands which have a high potential for development.

CURRENT STATUS: A detailed survey of the Fens Bog was conducted in conjunction with representatives of Rasjo Torv prior to delineating a lease site for that company. Another detailed survey has been discussed with Peatrex Ltd., concerning its lease site in Carlton County. This survey is tentatively scheduled for March, 1984.

Other peatland survey work conducted during this period was at a reconnaissance, or preliminary, level. These surveys were designed to locate peatlands with developmental potential based

on resource characteristics. Areas that have the greatest potential will be surveyed at a detailed level in the future.

PROJECT: Identification of private peatlands suitable for development.

OBJECTIVE: It is believed that thousands of acres of privately-owned peatland could be converted to peat fuel production quickly and economically. Our objective is to identify these areas and construct a data base incorporating such information as location, ownership, peat type, present condition, and estimated time and cost to put the land into production.

CURRENT STATUS: DNR has begun to examine privately-owned peatlands that have energy potential in Aitkin and southwest St. Louis counties, using the computerized data base at the Land Management Information Center. These two counties were selected for the initial phase of this process because of development interest, proximity to potential users along the Iron Range and Duluth, and the availability of existing peat resource information that identifies the location, depth, and type of peat. To date, about 20,000 acres of privately-owned peatland meeting the US DOE's depth criterion for fuel-grade peat have been identified in these two counties. Of these peatland acres, almost half also have existing ditches, thus minimizing additional environmental disturbance should development take place. Work has begun to determine the legal descriptions of these parcels, to identify their owners and, if possible, to determine the level of interest in developing them.

PROJECT: Environmental Monitoring

OBJECTIVE: It is necessary for the state to understand the hydrological and water quality impacts associated with peat mining for the preparation of reclamation rules and developing permit standards. Our objective is to determine the hydrological and water quality response of peatlands to a small peat mining project.

CURRENT STATUS: The Rasjo Torv pilot project mining area has been instrumented with hydrological and water quality monitoring equipment. Preliminary water quality and flow data has been obtained, and additional data will continue to be collected for the next 18 months. A contract has been awarded to the University of Minnesota to model the hydrological response of surface water in mined peatland.

PROJECT: Analysis of Weather Patterns

OBJECTIVE: The time required (and available) for field drying peat is often problematic in Minnesota. No information on the number of drying days has been compiled for the state and the estimates currently in use may be in error. Our objective is to analyze available weather data and to develop a methodology which will enable us to predict the expected number of drying days for milled peat and sod peat available in a typical mining season.

CURRENT STATUS: The Office of the State Climatologist has compiled thirty years of weather data for eight sites in northern Minnesota. A preliminary report was presented to DNR in early October 1983. A more detailed final report is presently being prepared for publication.

PROJECT: Peatland Reclamation Rules

OBJECTIVE: To ensure the long-term usefulness of Minnesota's peatlands, the Legislature has directed the Department of Natural Resources to develop peatland reclamation rules. The objective of this project is to meet the legislatively assigned deadline for rules adoption of July 1, 1985.

CURRENT STATUS: The DNR has established a Peat Reclamation Rules Committee to develop draft rules for the reclamation of mined peatlands. A preliminary draft of these rules is expected to be completed in March, 1984 for review by the DNR. A broader review of the rules is scheduled for the Spring and Summer, 1984. At that time, representatives of the peat industry, environmental groups, and other regulatory agencies will participate. It is expected that the hearing process will begin in January, 1985, which should allow promulgation of the rules by June, 1985.

PROJECT: Fuel Peat Acquisition

OBJECTIVE: Sufficient quantities of fuel peat produced under controlled conditions and processed for use in industrial scale boilers are essential for adequate testing; this testing is necessary if consumers are to consider conversion to peat fuels.

Our objective is to ensure that several thousand tons of raw material, in the form of sod and/or milled peat, are available by September 15, 1983. Funding allocated to this project will be used to purchase peat from the private sector and, if necessary, to supplement that supply with peat produced at Wilderness Valley Farms.

CURRENT STATUS: On September 7, 1983, FenCo at Zim was awarded a contract to supply up to 7500 tons of fuel peat for the state's testing program. To date, 5218 tons of peat sods have been purchased at a cost of \$23.75 per ton on a moisture free basis (or approximately \$1.40 per million Btu). At the outset of the program it was anticipated that the moisture content of the peat sods purchased for the testing program would fall within the 45% to 50% range, resulting in a purchase price of from \$11.88 to \$13.06 per ton.

By late September it was determined that there would be an adequate supply of peat for combustion testing. Samples of the windrowed material were taken on September 29, 1983 and the subsequent analysis indicated that the peat met or exceeded all criteria established for fuel peat acquisition.

FenCo was well equipped to **produce** peat, but the company was poorly equipped to **stockpile and ship** peat. Thousands of tons of sods left in the field to air-dry could not be turned, windrowed, or stockpiled because the company lacked sufficient equipment to accomplish these operations in an efficient and timely manner. This, coupled with the onset of the rainy season in October, created a situation which placed the entire combustion testing program in jeopardy. By mid-October, the sods in the field actually began to take on moisture as the rains began to fall. Moreover, those sods which had been air dried were in danger of not being stockpiled and shipped to American Bio Energy for pelletization as scheduled. Both of these factors were to play major roles in the events and decisions which followed.

By early November the situation in the field reached crisis proportions: supplies of useable sods were trickling in to American Bio Energy but in quantities far below those needed to operate that plant efficiently. Perhaps even more serious was the possibility that many tons of useable peat fuel might be abandoned in the field and lost to frost. On November 2, 1983 DNR representatives toured the FenCo and American Bio Energy facilities to assess the situation. At a meeting between FenCo, American Bio Energy, and DNR it was determined that additional harvesting equipment (tractors and wagons) were needed to create a centralized stockpile of peat and a means of efficiently loading trucks had to be devised and implemented before frost. The strategy devised to accomplish this "rescue operation" called for cooperation between the private and public sectors to mobilize the needed equipment. Carlson Tractor Co. of Rosemount, Minnesota (a distributor of peat mining equipment) sent three tractors and wagons to FenCo, American Bio Energy made trucks available for hauling equipment, IRRRB sent two bog wagons, and DNR pledged financial support for the additional transportation charges which would be incurred during the course of operations. Within two days, shipments of peat from FenCo to the American Bio Energy plant increased dramatically.

The contract price for the purchase of fuel peat was determined on a moisture-free basis and that price was inversely proportional to moisture content; i.e. as the moisture content of the purchased material increased, the purchase price for that material declined. Due to a higher moisture content, the average price for sods purchased and shipped to American Bio Energy was \$7.25 per ton. Additional charges paid for by the Department amounted to approximately \$12,600.

Most of the peat purchased thus far has been further processed to produce densified peat fuel. Four hundred thirty-eight tons of 7/8" diameter pellets were produced for testing by American Bio Energy of Virginia, MN. These pellets have been used in tests conducted at the Virginia Municipal Powerplant, the US Bureau of Mines, the University of Minnesota, Duluth, and Pacific Molassas Company. Seventy-five tons of material were processed into briquettes resembling hockey pucks by Cole Forest Products of Grand Rapids, MN. This fuel was used in gasification testing conducted at the University of Minnesota, Duluth. Currently, the DNR has approximately 2900 tons of peat sods stockpiled at FenCo and about 150 tons of pellets stockpiled at American Bio Energy awaiting further testing.

PROJECT: Mechanical Dewatering of Peat

OBJECTIVE: The cost of drying peat is a major impediment to its use as a fuel. Solar drying is often insufficient to reduce the moisture content of peat to desired levels and a reliable and economical alternative has yet to be found. Many mechanical dewatering methods have been tried, but none have proven satisfactory. A new product, the Anderson Shear-Press, has been developed but is, as yet, untested. It is our objective to determine if this device will dewater peat to 50% moisture content, and to estimate the economics of the process.

CURRENT STATUS: The Federal Department of Energy and the Institute of Gas Technology have two related projects, wet carbonization, and mechanical dewatering, currently underway. DNR will contribute funding, in the form of a \$20,000 grant to DOE to help support the mechanical dewatering project. The work will be done in two phases. Phase I, with an estimated budget of \$40,000, consists of the construction and testing of a lab scale model press. This model has been built and some initial tests conducted by the Institute of Gas Technology (IGT). Phase II is predicated on the successful completion of Phase I and shall consist of the construction and testing of a prototype machine. DNR's costs for Phase II are estimated to be \$170,000.

PROJECT: Evaluation and selection of a densification plant.

OBJECTIVE: A plant dedicated to peat densification co-located with the mining operation could result in higher efficiencies through a greater degree of quality control, reduced transportation costs and smoother scheduling. However, a production run of at least 5000 tons would be required to make this option competitive. Our objective is to determine whether it would be better to install a trailer-mounted densification plant to produce quantities of fuel peat for testing rather than using existing densification plants.

CURRENT STATUS: Upon approval of the Biennial Workplan, the Department began an effort to secure a reliable supply of densified peat fuel. This effort proceeded concurrently along two tracks. The first was to contact existing producers of densified fiber fuels, inform them of our project, and if possible, contract with them to produce small quantities of fuel on an experimental basis. Our results were only partially successful. Of the three firms contacted only one, Cole Forest Products of Grand Rapids, MN, indicated a willingness to conduct an experimental run. A contract was signed with Cole and a run of approximately 65 tons completed.

As negotiations were being conducted with existing operators, the Department also evaluated two proposals for the operation of plants which would be wholly-dedicated to the production of those pellets needed for the Department's testing program. The first of these, proposed by Peat Energy Systems, Inc., a division of Carlson Tractor & Equipment Co., of Rosemount, MN, called for a semi-portable pelletizing operation to be constructed on the site of our choice. Conceptually, co-locating a densification plant with one's source of raw material is ideal due to the fact that transportation costs would be minimized and quality control and operating efficiencies maximized. This proposal was a well reasoned attempt to configure a densification facility capable of producing peat pellets at rates of up to ten (10) tons per hour. At the heart of this system was to have been a large capacity dryer-pulverizer built, but as yet untested, by Ken Harris of Rapid City, South Dakota. Other components were to have been standard equipment commonly used in other pelletizing operations. Evaluation of this proposal by the Department indicated two possible problem areas. First, the production estimates for the plant had to be tempered by the unproven nature of the dryer. Second, as originally proposed this project exceeded our budgetary guidelines. Subsequent negotiation between the Department and Peat Energy Systems focused on these issues. During the course of these negotiations the dryer-pulverizer was moved from its Minneapolis fabrication site to the Harris Company's Rapid City, South Dakota site for an extended demonstration of bentonite drying. The departure of the dryer

and the lack of real progress regarding total project costs resulted in the termination of negotiations.

The Department also negotiated to re-open the idle Aspenal plant in Virginia, Minnesota. Aspenal, a company which produced densified wood fuel, was forced by financial considerations to cease operation earlier this year. Preliminary discussions with two of Aspenal's main creditors (Norwest Bank of Virginia and Viking Explosives, Inc. of Chisholm) indicated that the plant could be re-opened and a production run begun on densifying peat soon after an initial inspection and evaluation of the facilities were concluded. At the time these discussions were taking place, Viking Explosives was negotiating with American Bio Energy, Inc., of St. Paul for sale of the plant. The Department was advised by Viking Explosives to negotiate directly with American Bio Energy for a contract to produce the necessary densified fuel. These negotiations led to a contract signed between the Department and American Bio Energy on October 24, 1983.

PROJECT: Peat Densification

OBJECTIVE: Densified peat will be needed for testing in some of the installations identified as possible test burn sites. The objective of this project is to determine whether any of the existing installations (pelletizers, log-makers, or cubers) presently processing materials such as wood waste, can produce sufficient densified peat with those physical characteristics necessary for efficient combustion testing.

CURRENT STATUS: DNR contracted with two private firms, Cole Forest Products, of Grand Rapids, MN and American Bio Energy, of Virginia, MN to produce densified peat fuel. Cole Forest Products produced 65 tons of briquettes on an experimental basis which were used in gasification testing at UMD. American Bio Energy produced 438 tons of 7/8" peat pellets which were used for combustion testing conducted at the Virginia Municipal Powerplant, US Bureau of Mines, UMD, and Pacific Molassas.

Serious processing problems, resulting in extraordinary processing costs, were encountered at the American Bio Energy plant as a result of the high moisture content of the raw peat. In addition to higher drying costs, physical damage to the plant, also directly attributable to high moisture content peat, were incurred. American Bio Energy documented these costs and damages to the satisfaction of the Department and were reimbursed.

At the present time approximately 150 tons of pellets are stockpiled at American Bio Energy awaiting further testing.

PROJECT: Design of combustion tests using existing industrial boilers

OBJECTIVE: Owners and operators of large scale boilers will be induced to convert to peat only after successful testing has been conducted according to strict engineering standards. Our objective is to design several test burns to be conducted at various large facilities in northern Minnesota. These tests will use the fuel produced in the Harvesting and Densification projects. Previously identified target firms will be asked to participate in the testing. Most of these organizations have already indicated some interest in conducting test burns. Therefore it is likely that four to six burns could be conducted during the 1984-85 heating season.

CURRENT STATUS: The combustion testing at the Virginia Municipal Powerplant is currently underway. These tests are being conducted by DEED with fuel supplied by DNR. Fluidyne Engineering has been retained to administer the tests, monitor the results, and produce a final report.

Minnesota Power and the DNR have agreed to share costs of a \$45,000 study to be conducted by Black & Veatch Inc. to determine the feasibility of conducting a combustion test at Minnesota Power's Syl Laskin powerplant. The study is scheduled for completion on April 1, 1984.

Fifteen other organizations, identified as part of the Peat Market Profile, will be contacted early in 1984 and arrangements made to conduct combustion tests at their facilities during the 1984-85 heating season.

PROJECT: Peat Fuel Characterization

OBJECTIVE: A combination of standardized data and actual experience in commercial equipment is needed to establish consumer confidence in peat fuels. Standardized tests must be conducted using American Standards for Testing and Materials (ASTM) procedures, so that the data obtained on peat fuels is comparable to existing data for conventional fuels. These tests could show that equipment designed to use residual fuel could be converted to burn peat and that the cost of conversion to peat would be less than the cost of conversion to coal. The objective of this project is to develop standardized engineering test data such that manufacturers of boilers, burners, and associated fuel handling equipment can design, build, and warrant equipment to efficiently burn peat fuel.

CURRENT STATUS: The Department has contracted with Hanna Mining Company to produce and characterize briquettes and pulverized peat made from material processed through the Harris Dryer during tests conducted in Upton, Wyoming in October, 1983. Hanna will also pulverize additional material procured from FenCo. The Department will then be able to evaluate peats having both high and normal levels of ash in combustion systems using pulverized fuel. Various tests necessary to sufficiently characterize each fuel shall be performed and a report submitted to the Department.

Preliminary contacts were made with DOE/Pittsburgh and the COEN Burner Company. The purpose of these contacts was to determine the costs of alternative testing programs.

PROJECT: Peat Wet Carbonization -- Process Optimization

OBJECTIVE: The wet carbonization of peat starts with a wet mining process that eliminates the need for solar drying. It produces a fuel having a higher Btu content and bulk density than other peat fuels. Wet carbonized peat fuel may become economically feasible if process costs can be reduced by lowering the requirements for process water, or by combining wet carbonization with chemical extraction. A substantial savings could be realized both in necessary equipment and effluent processing, if process optimization can be achieved.

The objective of this project is to seek optimization of the wet carbonization process through testing using the process development unit at the Institute of Gas Technology.

CURRENT STATUS: The contract between DOE and the Institute of Gas Technology (IGT) was signed in late summer. IGT's workplan was approved by DOE and DNR in early November and immediately thereafter preliminary tests of the wet carbonization process were conducted in the process development unit. Approximately sixty tons of Minnesota peat were sent to IGT for use in this test program.

PROJECT: Chemical Extraction In the Wet Carbonization Process

OBJECTIVE: Previous work has shown that raw peat contains potentially valuable waxes, resins, and acids. However, their concentrations are too low to justify building a plant only to extract chemicals. It may be possible to economically extract chemicals during wet carbonization such that each process enhances the other. The objective of this project is to determine whether valuable chemicals can be extracted from peat prior to or during the wet carbonization process.

CURRENT STATUS The Department contracted with Bemidji State University to develop a lab-scale wet carbonization and mechanical dewatering system to test raw peat, peat water, and dewatered peat as chemical feedstocks. Work will continue through June 30, 1985.

PROJECT: Low/Medium-BTU Gasification

OBJECTIVE: Many existing boilers and industrial processes are designed to burn either natural gas or fuel oil. Conversion of these facilities to burn peat solid fuels could be quite costly, and in some cases impossible. Since a synthetic gas could be used in such facilities, a potentially large market for peat-derived low-Btu or medium-Btu gas exists if peat can be gasified at a cost close to that of natural gas.

CURRENT STATUS: Two preliminary low-Btu gasification tests have been conducted to date. The first, conducted at the US Bureau of Mines in October, 1983 consumed approximately 36 tons of pelletized peat. A full report of this gasification test will be available in February, 1984. The second test was conducted at the University of Minnesota, Duluth in December, 1983. This test utilized approximately fifteen tons of "hockey pucks" produced by Cole Forest Products. The pucks were blended with bituminous coal at a ratio of 1:4. This test was successful enough to schedule an extended run using approximately sixty tons of pellets produced by American Bio Energy.

The Department has signed a contract with Erie Mining Company to design the modifications necessary to utilize Erie's 1/5-scale combustion chamber presently located at the US Bureau of Mines Testing Facility. A final report will be issued upon completion of this contract.

PEAT DEVELOPMENT PROGRAM EXPENDITURES - JULY THROUGH DECEMBER 1983

| | CURRENT BUDGET FY84 | BUDGET FY85 | PROJECT SUPPORT | PREPARE STATELAND | CONVERT FACILITIES | PEATLAND SURVEY | ID PRIVATE PEATLANDS | ENVIRON MONITORING | WEATHER ANALYSIS | RECLAM RULES | FUEL ACQUISIT | MECH DEWATER | PEAT DENSIFIC | EVALUATE DENS PLNT | COMBUST TESTING | FUEL CHARACTER | WET CARB | CHEMICAL EXTRACT | LOW/MED GASIFIC | TOTAL LIQUIDATED |
|-----------------------|---------------------------|----------------|--------------------|----------------------|-----------------------|--------------------|-------------------------|-----------------------|---------------------|-----------------|------------------|-----------------|------------------|-----------------------|--------------------|-------------------|-------------|---------------------|--------------------|---------------------|
| PROJECT ALLOCATION | | | 490350.00 | 200000.00 | 111550.00 | 75000.00 | .00 | 115000.00 | .00 | 75000.00 | 88000.00 | 40000.00 | 33900.00 | 175000.00 | 200000.00 | 61200.00 | 150000.00 | 85000.00 | 100000.00 | 2000000.00 |
| ===== | | | | | | | | | | | | | | | | | | | | |
| OBJECT CODES: | | | | | | | | | | | | | | | | | | | | .00 |
| PERSONNEL SERVICES | | | | | | | | | | | | | | | | | | | | .00 |
| 01-REG CLASSIFIED | .00 | .00 | | | | | | | | | | | | | | | | | | .00 |
| 02-REG UNCLASS | 51000.00 | 51000.00 | 5630.25 | | | | | | | | | | | | | | | | | 5630.25 |
| 03-PART TIME | 20000.00 | 20000.00 | | | | | | 8000.00 | | 3000.00 | | | | | | | | | | |
| ===== | | | | | | | | | | | | | | | | | | | | |
| 1-2 EXP/CONTRACT SVC | | | | | | | | | | | | | | | | | | | | .00 |
| 10-RENTS/LEASES | .00 | .00 | | | | | | | | | | | | 500.00 | | | | | | 500.00 |
| 11-ADVERTISING | 2500.00 | 2500.00 | | | | | | | | | | | | | | | | | | .00 |
| 12-REPAIRS/MAINT | 500.00 | 500.00 | | | | | | | | | | | | | | | | | | .00 |
| 14-PRINTING | 4500.00 | 4500.00 | 743.71 | | | | | | | | | | | | | | | | | 743.71 |
| 16-PROF/TECH SVCS | 900400.00 | 900400.00 | | | | | | | | | | | | | | | | | | .00 |
| COLE FOR PROD | 7150.00 | | | | | | | | | | | | 2133.75 | | | | | | | 2133.75 |
| LERCH BROS | 10000.00 | | | | | | | | | | 5845.50 | | | | | | | | | 5845.50 |
| BEMIDJI STATE | 85000.00 | | | | | | | | | | | | | | | | | | | .00 |
| AMER BIO ENERGY | 64710.16 | | | | | | | | | | | | 64710.16 | | | | | | | 64710.16 |
| MINN POWER | 25000.00 | | | | | | | | | | | | | | | | | | | .00 |
| ERIE MINING | 14700.00 | | | | | | | | | | | | | | | | | | | .00 |
| HANNA MINING | 20264.00 | | | | | | | | | | | | | | | | | | | .00 |
| NORM CORNISH | 18000.00 | | | | | | | | | | | | | | | | | | | .00 |
| PEAT CONSULT | 15400.00 | | | | | | | | | | | | | | | | | | | .00 |
| FENCO | 88000.00 | | | | | | | | | | 35161.97 | | | | | | | | | 35161.97 |
| 17-DATA PROCESS | 4500.00 | 4500.00 | | | | | | | | | | | | | | | | | | .00 |
| 18-PURCHASED SVC | .00 | .00 | | | | | | 5000.00 | | | | | | | | | | | | 5000.00 |
| 20-COMMUNICATIONS | 3500.00 | 3500.00 | 167.15 | | | | | | | | | | | | | | | | | 167.15 |
| 21-TRAVEL INSTATE | 5500.00 | 5500.00 | | | 143.35 | | | 2500.00 | | | 149.94 | | | 178.88 | | | | 52.00 | 529.32 | 3553.49 |
| 22-TRAVEL OUTSTATE | 4600.00 | 4600.00 | 619.35 | | | | | | | | | | | 7.00 | 1431.50 | | | 622.39 | | 2680.24 |
| 29-FEES | | | | | | | | | | | | | | | | | | | | .00 |
| ===== | | | | | | | | | | | | | | | | | | | | |
| 3-SUPPLIES/MATERIALS | | | | | | | | | | | | | | | | | | | | .00 |
| 30-SUPPLIES/PARTS/MAT | 1500.00 | 1500.00 | 44.12 | | | | | | | | 130.07 | | | | | 2165.00 | | | | 2339.19 |
| ===== | | | | | | | | | | | | | | | | | | | | |
| 4-EQUIPMENT | | | | | | | | 10000.00 | | | | | | | | | | | | 10000.00 |
| 40-EQUIPMENT | 1500.00 | 1500.00 | 900.00 | | | | | | | | | | | | | | | | | 900.00 |
| ===== | | | | | | | | | | | | | | | | | | | | |
| TOTAL LIQUIDATED | 1000000.00 | 1000000.00 | 8104.58 | .00 | 143.35 | .00 | .00 | 25500.00 | .00 | 3000.00 | 41287.48 | .00 | 66843.91 | 685.88 | 1431.50 | 2165.00 | .00 | 674.39 | 529.32 | 139365.41 |
| REMAINING BALANCE | 860634.59 | 1000000.00 | 482245.42 | 200000.00 | 111406.65 | 75000.00 | .00 | 89500.00 | .00 | 72000.00 | 46712.52 | 40000.00 | -32943.91 | 174314.12 | 198568.50 | 59035.00 | 150000.00 | 84325.61 | 99470.68 | 1849634.59 |
| ===== | | | | | | | | | | | | | | | | | | | | |
| * CONTRACT BALANCES | | | | | | | | | | | | | | | | | | | | 240372.78 |
| PROGRAM BALANCES | | | | | | | | | | | | | | | | | | | | 1609261.81 |

* FOR THE PURPOSES OF THIS REPORT, "CONTRACT BALANCES" MEANS THE TOTAL AMOUNT OF ALL CONTRACTS AWARDED UNDER THIS APPROPRIATION, LESS THE TOTAL AMOUNT EXPENDED FOR THESE CONTRACTS TO DATE.

