

## FILE FOLDER

### DESCRIPTION ON TAB:

NL62470-80-3801 (Solid waste/wood)

Waste Burning & Cogeneration Study

- Outside/inside of actual folder did not contain hand written information**
- Outside/inside of actual folder did contain hand written information**  
**\*Scanned as next image**

21 Apr 86

6280  
MAIN

Base Maintenance Officer  
Assistant Chief of Staff, Facilities

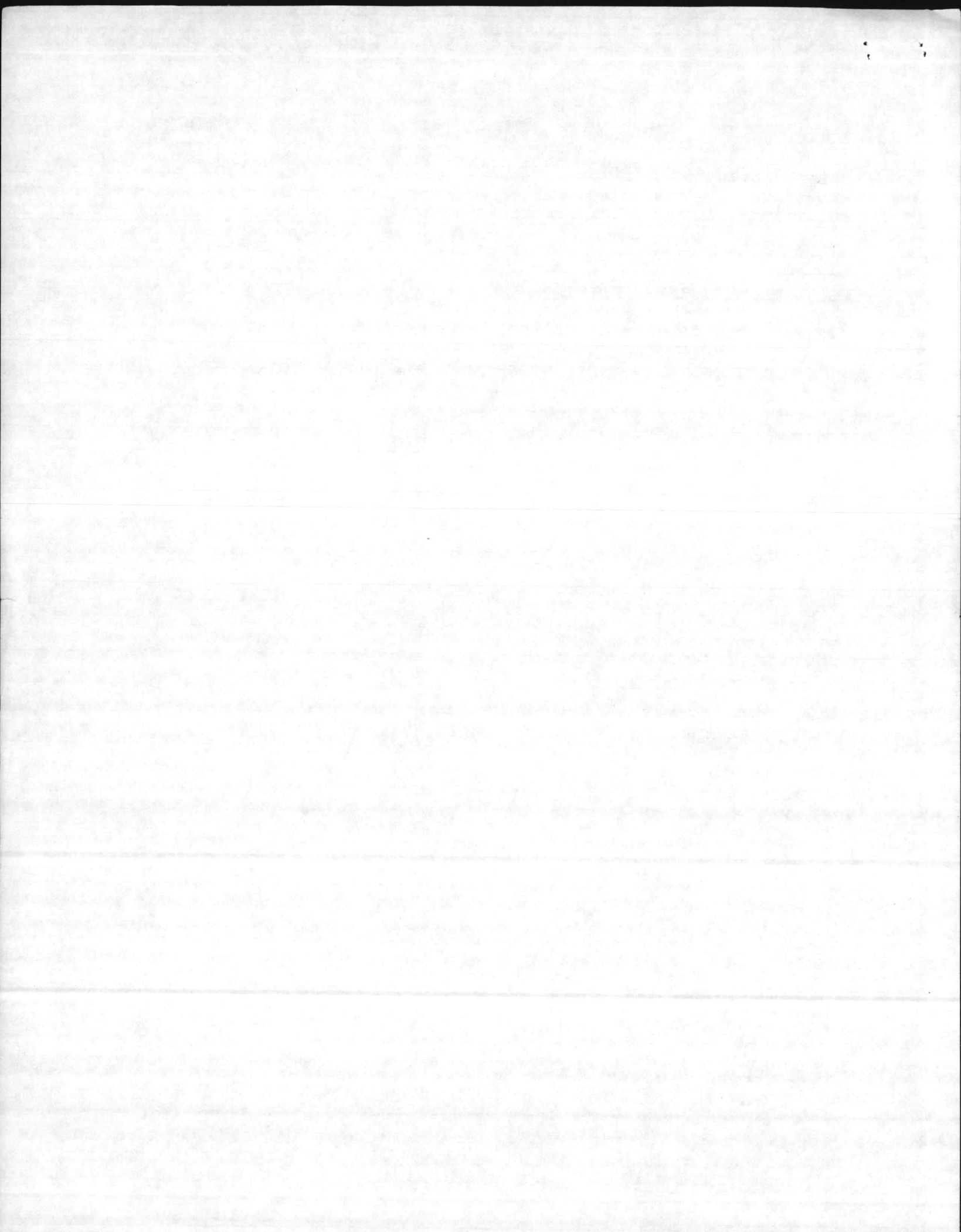
**SOLID WASTE BURNING PLANT**

Encl: (1) Background Information, Solid Waste Burning Plant

1. As requested, the enclosure is provided for your information.

W. M. RICE

CC: Bmo  
Dir, Util

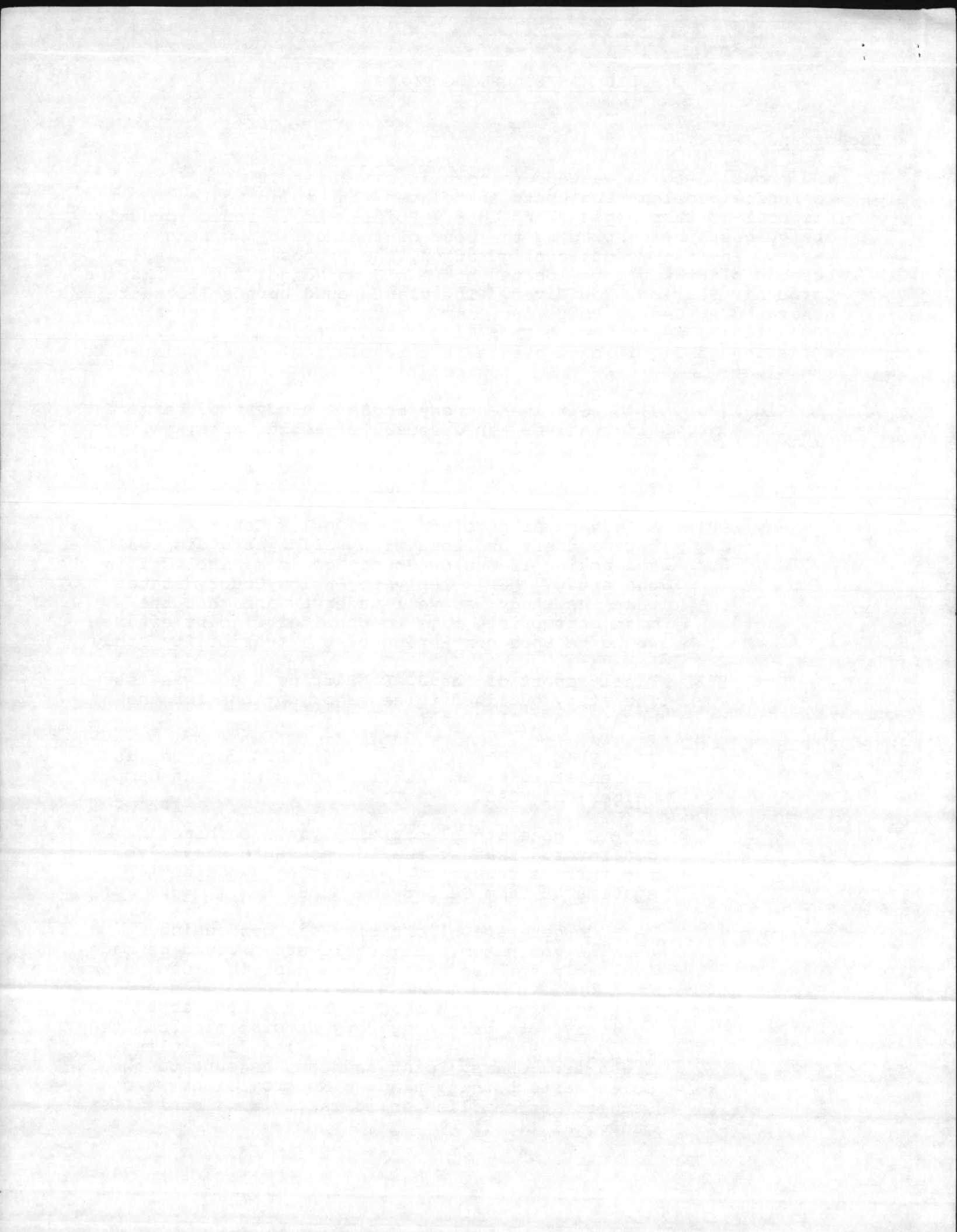


## SOLID WASTE BURNING PLANT

### Background

The proposed solid waste burning plant is a result of efforts to reduce problems and costs associated with solid waste disposal at Camp Lejeune and Cherry Point; and to reduce overall energy costs by displacing the cost of fuel oil by burning solid waste. In its present configuration, the proposed solid waste burning plant would be located between Camp Geiger and the Marine Corps Air Station, New River. The plant would burn solid waste generated at Cherry Point and Camp Lejeune and provide steam at 100 - 150 PSIG for use at Camp Geiger and MCAS. The following is a listing of significant events in chronological order related to the plant:

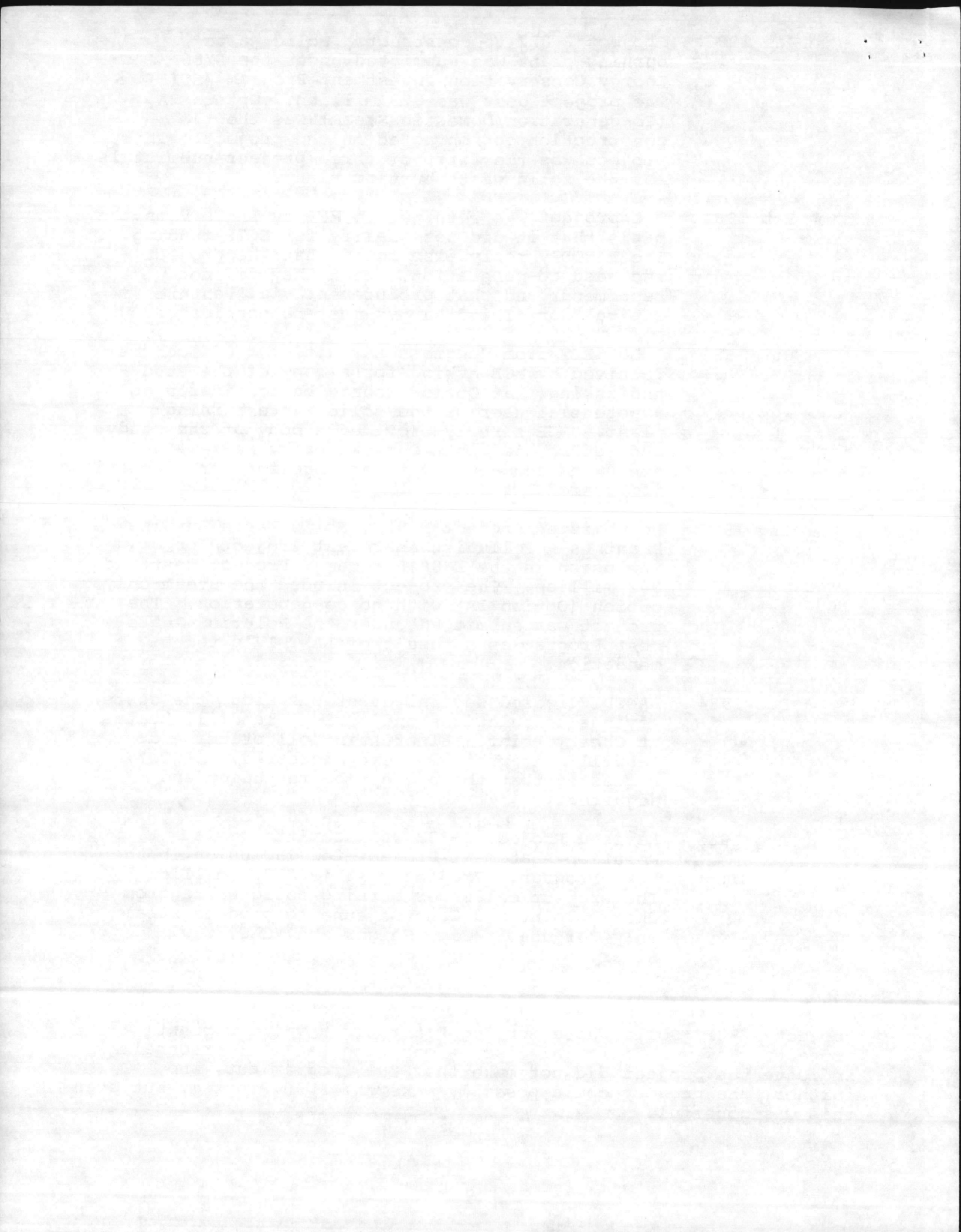
- Mid-1980 J. E. Surrine Company began a study to determine alternatives for disposal of solid waste, including the possibility of burning solid waste and wood to produce steam and electricity. Burning of wood was later removed from the study.
- May 1981 A letter was received from Onslow County indicating their problems with solid waste disposal and asking if Onslow County could be included in the study. MCB's reply to Onslow County stated that the study was well underway and that the most appropriate time to consider a joint effort would be upon completion of the feasibility study.
- Oct 1982 Final report of the J. E. Surrine Study was issued. The study outlined three major options for the burning of solid waste:
- 1A - Produce steam only at 150 PSIG for use via the existing steam distribution systems at Camp Geiger and MCAS.
  - 2A - Co-generate electricity via a turbine generator. Exhaust the low pressure steam from the turbine generator to existing distribution systems at Camp Geiger and MCAS.
  - 3A - Co-generate electricity via condensing turbine generator. No usable steam would be made available for use through the distribution system.
- Options 1A and 2A proved to be the most economical options, both providing very favorable calculated savings. All three options called for hauling trash from Cherry Point and Camp Lejeune to the solid waste burning plant. No provisions were studied for handling solid waste from local municipalities.



- Jan 1983 Project P-822 to construct a solid waste burning plant was submitted under the FY86 Energy Conservation Investment Program (ECIP). The project cost was \$23 million. Option 2A (Co-generation/Domestic Steam) was the construction option noted in the project. This project was the first of three project submittals for the solid waste burning plant.
- Feb 1984 The project was returned to MCB by LANTDIV on the basis that it did not qualify for ECIP funding. The LANTDIV reply also noted that the project included co-generation, which they did not recommend, and that procurement via "Venture Capital" or "Third Party" must be considered.
- Jun 1984 A CONGRIT from Congressman Whitley's Office was received by MCB asking for a copy of the study and asking that Onslow County be considered as a potential user of the solid waste burning plant. MCB's reply provided a copy of the study and recommended that Onslow County review the study and contact MCB to arrange further discussions, if desired.
- Aug 1984 Resubmitted Project P-822, Solid Waste Burning Plant, as a Pollution Abatement Project for inclusion in the FY88 Program. Project cost was \$42 million. The project included the steam-only option (Option 1A) with no co-generation. The project was submitted under the Pollution Abatement Program as a result of LANTDIV's recommendation.
- Dec 1984 LANTDIV raised several questions about the costs/savings calculations and current landfill status at Cherry Point. Fluctuating oil prices and landfill alternatives were addressed. LANTDIV requested that the project be restudied and adjusted.
- Aug 1985 Revised Project P-822 was submitted as a Pollution Abatement Project for inclusion in the FY89 Program. Project cost is \$13.4 million. The project calls for burning solid waste from Cherry Point and Camp Lejeune to produce steam only for use at Camp Geiger and MCAS, New River.

### Status

Project P-822, Solid Waste Burning Plant, is a valid, current project. However, informal discussions with LANTDIV personnel indicate the project did not make the FY89 Program cut, and, further, the project could possibly make the FY90 Program, but even this was doubtful.

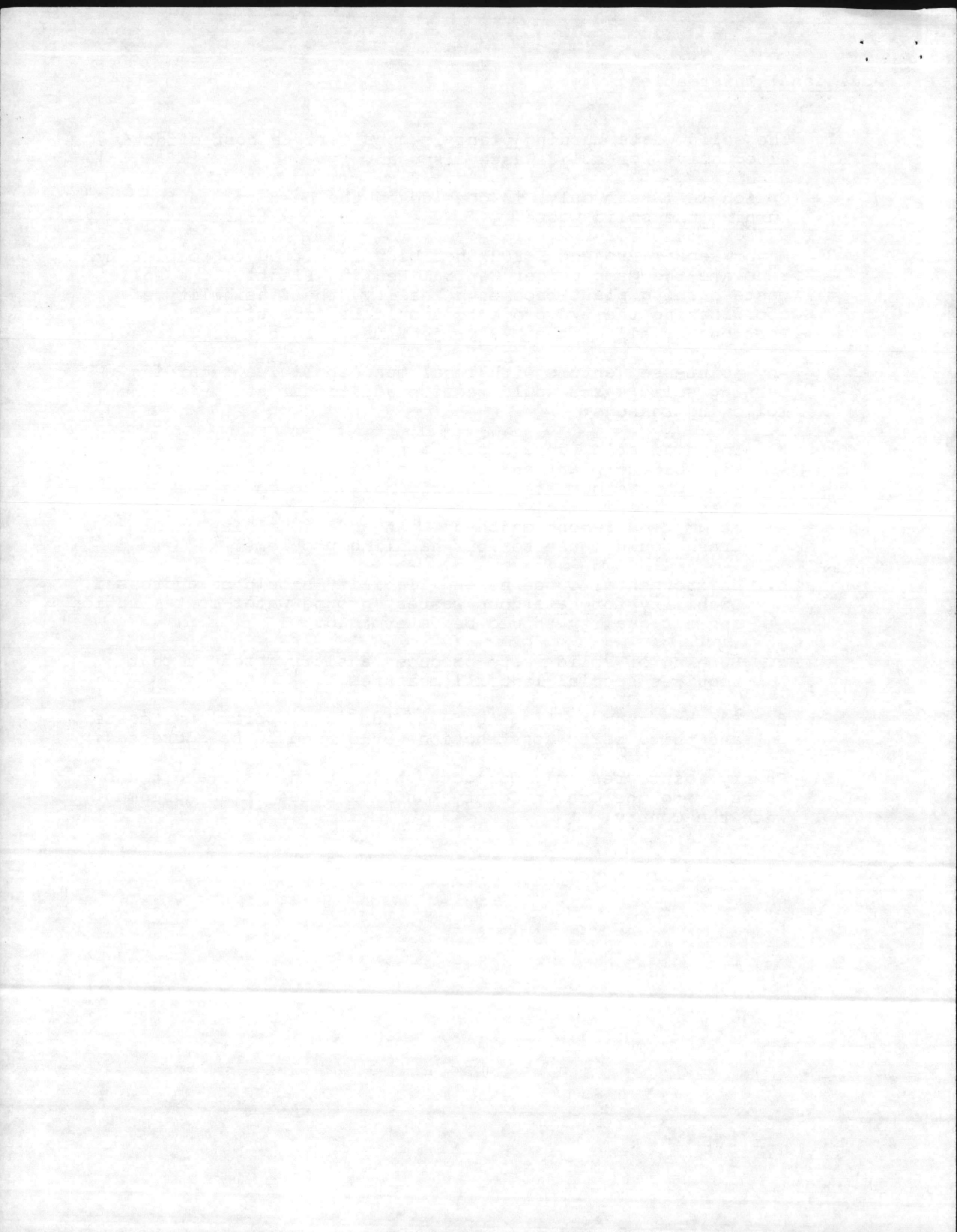


## Additional Information

1. The solid waste burning plant is considered a cost effective alternative for solid waste disposal.
2. Option 1A (Steam only) is considered the best option for burning the solid waste.
3. Major Repair Project LE802M has been submitted to completely renovate the Camp Geiger Central Heating Plant. If a solid waste burning plant becomes a reality, the feasibility of coordinating the two projects should be investigated. Portions or all of the M-2 project may possibly be deleted.
4. Any joint-use venture with local municipalities regarding burning solid waste would require additional study for the following reasons:
  - a. The available tonnage of trash must be matched to the size of the plant and the need for the produced steam. The MCAS/Geiger area was originally chosen as the plant site in the study because of the trash available/steam requirement match-up. An additional influx of trash could cause serious handling problems.
  - b. Environmental concerns and liability should be addressed. Liability for hazardous wastes, ground water contamination and air quality should be determined.
  - c. Burning of solid waste produces a slurry product that requires special landfill measures.
  - d. Factors such as tipping fees, funding, operational costs and third party construction would need to be addressed.
5. Cherry Point presently compacts their solid waste and transports it to the Craven County Landfill based on an agreement with the County.

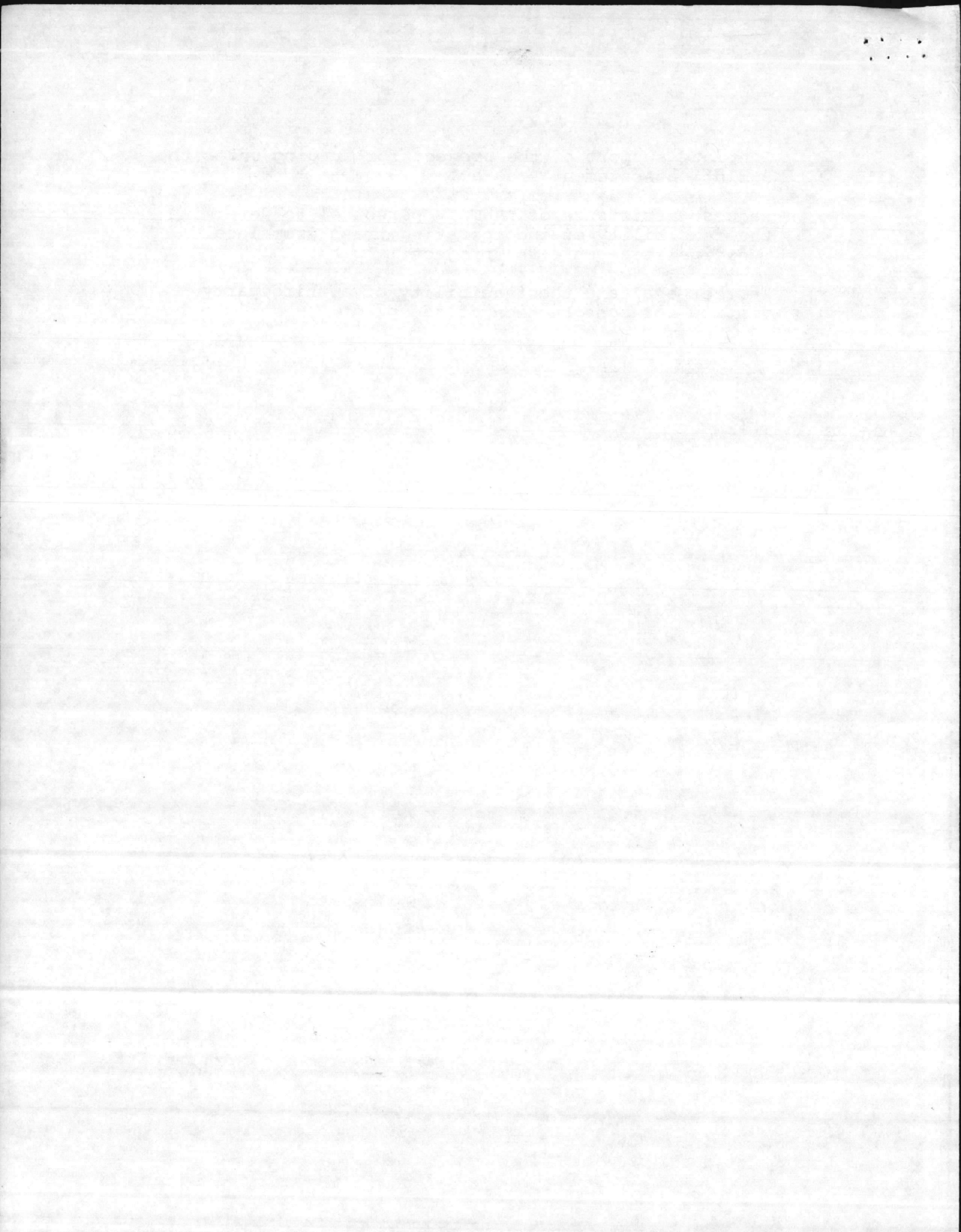
1,540,000 PR 3 Boucks & Assoc. EQUIP.






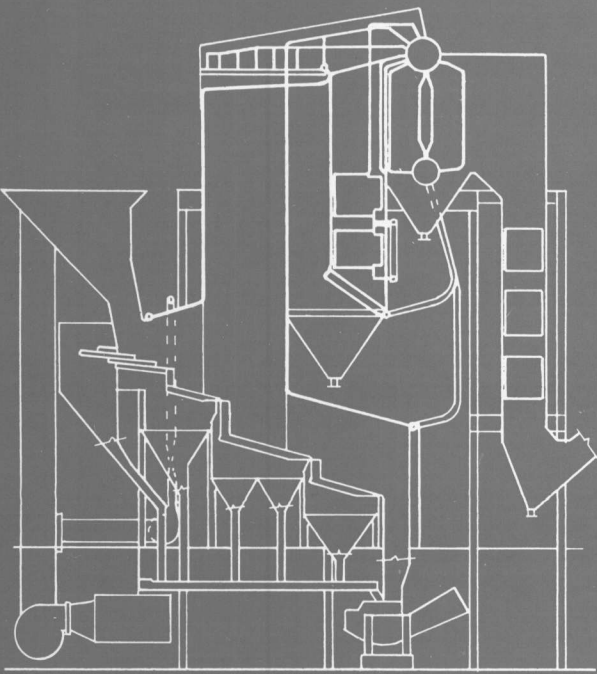
Recommendations

1. Continue support of the project for funding under the Pollution Abatement Program.
2. Request assistance of LANTDIV personnel to determine the feasibility of incorporating trash from local municipalities into the project.
3. Further evaluate the feasibility of a third party venture for construction of the plant.



# Riley Resource Recovery Systems

**RILEY**   
**STOKER**  
RILEY STOKER CORPORATION  
BOX 547, WORCESTER, MASS. 01613





---

---

# Riley Resource Recovery Systems

Resource recovery is an environmentally acceptable and economically sound alternative to landfill disposal of municipal waste. Riley's Resource Recovery systems burn refuse completely and consistently under automatic control while minimizing pollution. The reliability of the system makes resource recovery an acceptable solution to refuse disposal and the sale of steam and electricity reduces the refuse disposal costs.

Through Riley's Turnkey Services, we will furnish complete resource recovery plants. Riley's scope of work includes the entire project, from initiation through design, material selection and erection. We'll even handle staffing, training, operation and maintenance. You take possession of an operating resource recovery plant supported by contract guarantees.

For three quarters of a century, Riley Stoker Corporation has been meeting the fuel burning and steam generating needs of industry and utilities. We're proud of our reputation for successfully firing conventional and unconventional fuels—solid, liquid, gaseous and waste product.

Since 1968 we've been designing, manufacturing, erecting and starting up boilers for resource recovery projects. Riley boilers have been chosen time and time again because of their reputation for reliability and our record

of successful on-time and on-budget start-ups. This proven performance is one of the reasons why Riley is included in the 3000 tons per day (tpd) Solid Waste Recovery Project in Pinellas County, FL, the 1500 tpd Northeast Solid Waste Recovery Project in Andover, MA and the 1200 tpd Resource Recovery Project in Hillsborough County, FL.

The soon to be built Olmsted County Waste to Energy Facility in Rochester, MN includes two 100 tpd refuse recovery boilers designed, manufactured and erected by Riley. The system's waste burning equipment is furnished and erected by Riley. The step grate stoker incorporates advanced and proven technology licensed from Takuma Co., Ltd. through C. Itoh (America), Inc.

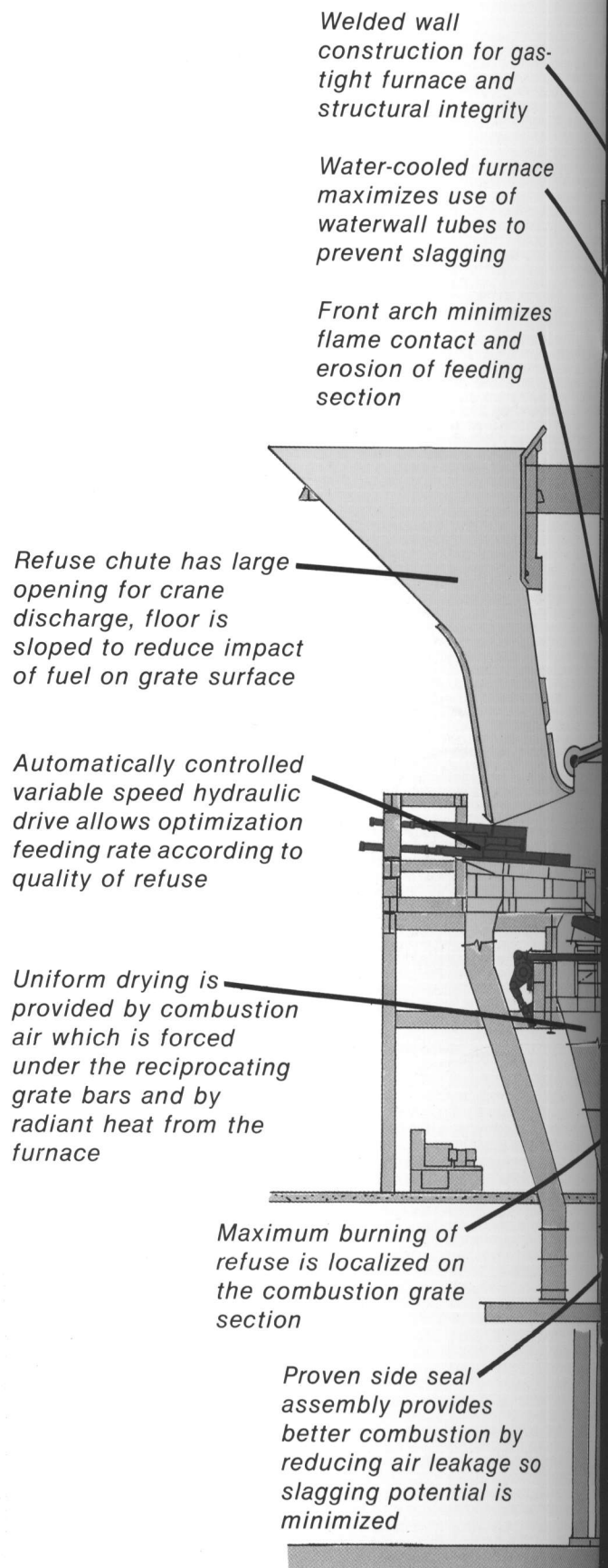
The appointment of Riley as the exclusive U.S. supplier of the Takuma Step Grate Stoker combines a technology especially suited to municipal waste burning with proven boilers reflecting Riley's leadership in refuse boiler technology. The result is a resource recovery system designed for consistent performance, day-in and day-out reliability, with minimum maintenance cost.

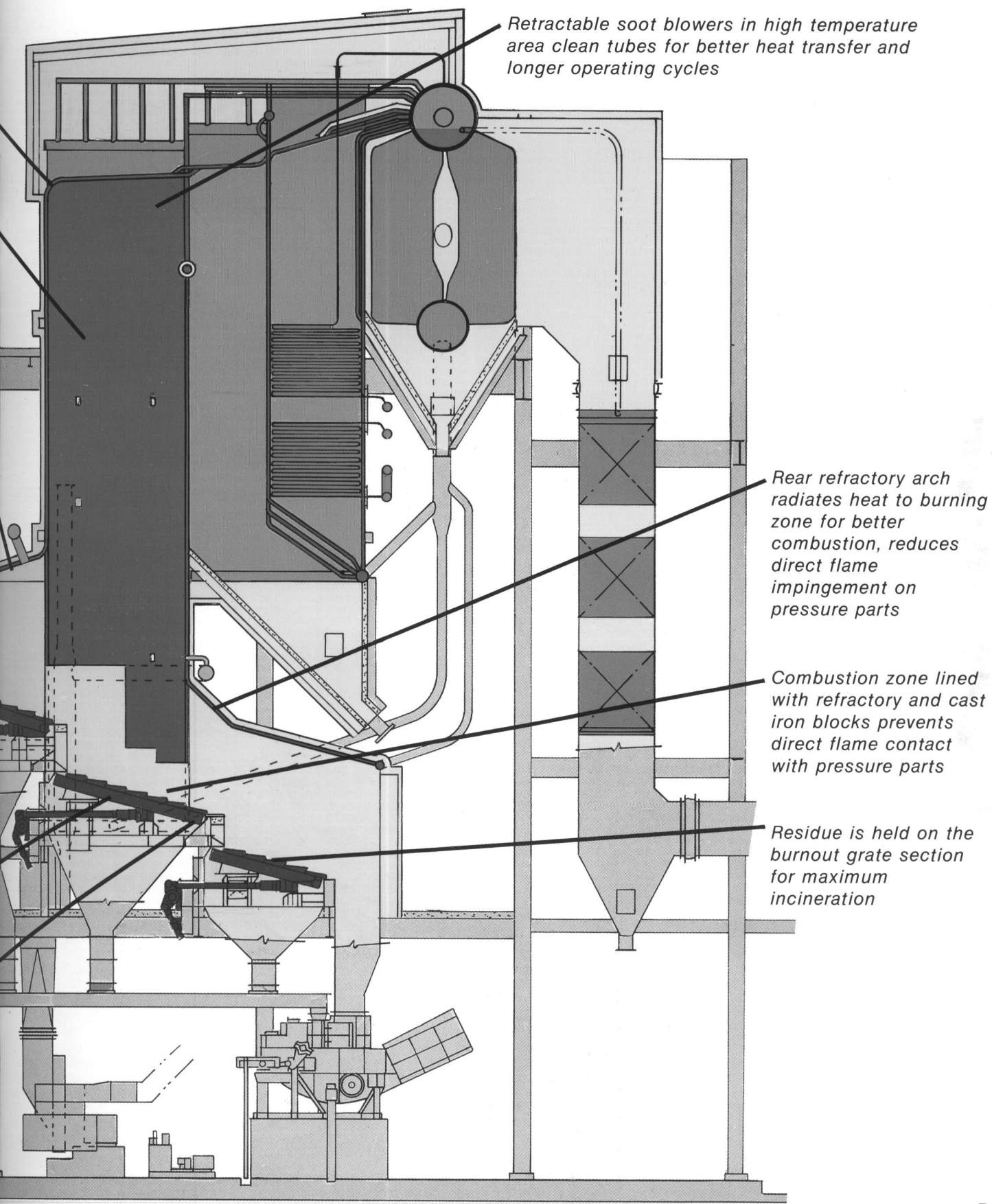
For more information on how the quality and performance in Riley Resource Recovery Systems can benefit you, contact the Riley Sales Office nearest you.

The composition and heat content of refuse fuel varies considerably from load to load. The key to combustion reliability is the exclusive Automatic Combustion Control system. Sensors in the furnace walls monitor the level of refuse on the grate and the temperature in the combustion zone. These signals control the refuse feed rate and both the quantity and temperature of the combustion air. The result is a system providing complete combustion, constant steam conditions and reduction in the formation of nitrogen oxides (NO<sub>x</sub>), with minimal operator attention.



Takuma's Step Grate Stoker is designed for high reliability and consistent performance. The grate surface consists of hollow reciprocating grate bars which channel high-pressure air for combustion and grate cooling. Since most of the air flows through the sides of the grates, shielded from the refuse, plugging of air openings is reduced. The quantity of air can be adjusted in each row for uniform burning across the whole stoker width. Forward and backward motion of the grate bars lifts and aerates the refuse with no metal-to-metal contact of the bottom of one row of grates and the top of the next. When grates must be replaced, removal of a few bolts releases the entire row.





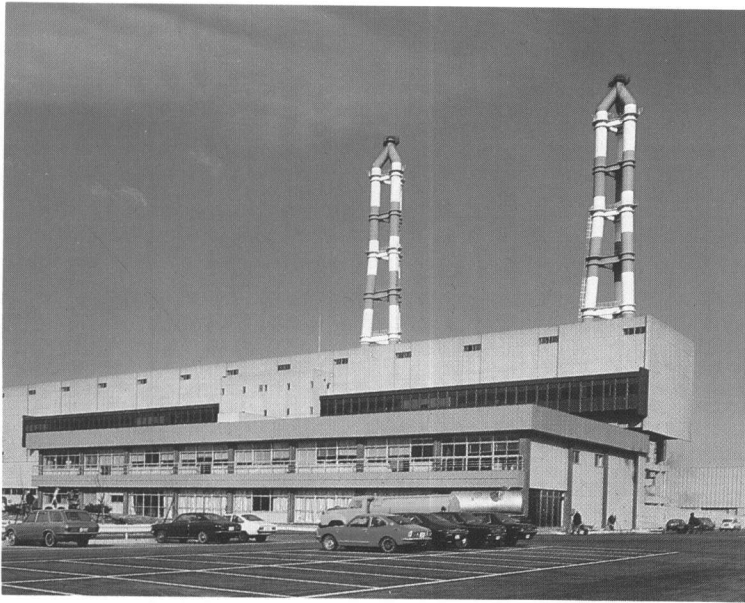
*Retractable soot blowers in high temperature area clean tubes for better heat transfer and longer operating cycles*

*Rear refractory arch radiates heat to burning zone for better combustion, reduces direct flame impingement on pressure parts*

*Combustion zone lined with refractory and cast iron blocks prevents direct flame contact with pressure parts*

*Residue is held on the burnout grate section for maximum incineration*



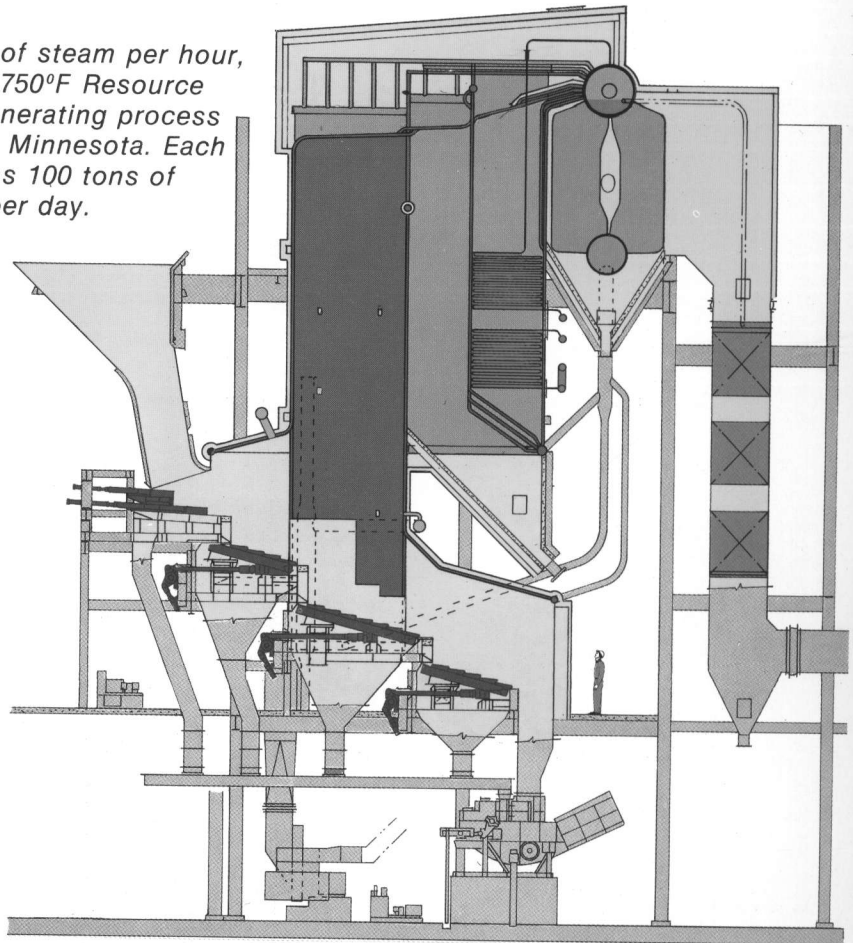


*Tokyo Plant, 2000 tpd*

# Resource Recovery Experience

Takuma Co., Ltd. is Japan's largest supplier of resource recovery systems. More than 450 Takuma units have been installed in over 230 plants with a combined capacity of 50,000 tons per day. The largest installation is the Tokyo plant which burns 2000 tpd of unprepared refuse. Takuma's proven technology conforms to today's stringent pollution regulations including air, water, noise and odor emissions. Takuma plants are good neighbors.

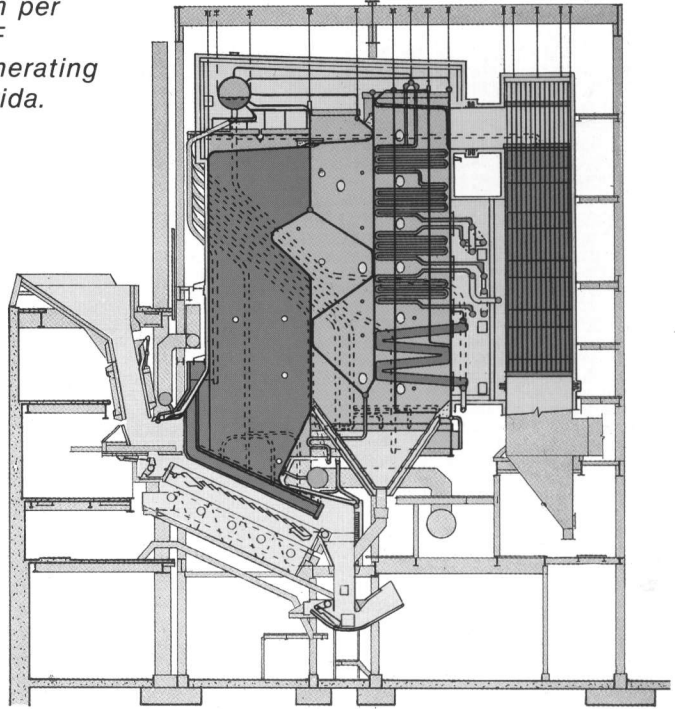
*Two 24,000 pounds of steam per hour, 615 psig operating, 750°F Resource Recovery Boilers generating process steam and power in Minnesota. Each Takuma Stoker burns 100 tons of unprepared refuse per day.*



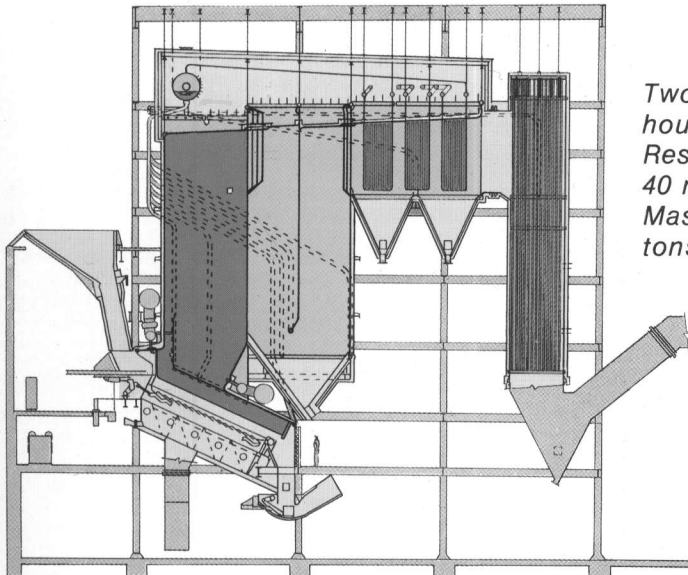
*Three 265,000 pounds of steam per hour, 615 psig operating, 750°F Resource Recovery Boilers generating 75 megawatts of power in Florida. Each unit burns 1000 tons of unprepared refuse per day.*



*Osaka City Plant, 800 tpd*



Riley's Resource Recovery Boiler is sized for efficient combustion, temperature control and retention time to promote complete combustion, and reduction of pollutants, particulate carryover and odor. The proven design promotes uniform gas flow distribution, predictable performance, and easy access and maintenance.



*Two 172,750 pounds of steam per hour, 612 psig operating, 750°F Resource Recovery Boilers generating 40 megawatts of power in Massachusetts. Each unit burns 750 tons of unprepared refuse per day.*

# **Riley Stoker Corporation Products and Services**

## **Industrial and Utility Water Tube Steam Generators**

**Shop Assembled Modular, Field-erected and Packaged Boilers**

**Stoker-fired, Front-fired and TURBO® Furnaces**

**Resource Recovery Boiler Systems**

**Fluidized Bed Boiler Systems**

**Refuse Furnaces and Waste Fuels Boilers**

## **Fuel Burning Equipment**

**ATRITA, Vertical Roller and Ball Tube Mill Coal Pulverizers**

**Spreader, Mass Burning and Water Cooled Grate Stoker Systems**

**Coal, Oil and Gas Burners**

## **Plant Improvement Services**

**Maintenance, Repair, Modification of Existing Equipment**

**Life Extension Evaluations**

**NO<sub>x</sub> Control Systems**

**Availability and Inspection Programs**


**Replacement Parts**

**Engineering Studies and Tests**

## **Turnkey Power Projects**

## **Construction Services**

## **Research and Development**

**RILEY**   
**STOKER**

**RILEY STOKER CORPORATION  
BOX 547, WORCESTER, MASS. 01613**

The Company reserves the right to make technical and mechanical changes or revisions resulting from improvements developed by its research and development work, or availability of new materials in connection with the design of its equipment, or improvements in manufacturing and construction procedures and engineering standards.



**RILEY STOKER  
CORPORATION**

Address reply to: Riley Stoker Corporation  
4108 Park Road, Suite 315  
Charlotte, NC 28209  
Telephone: (704) 527-8877  
FAX: (704) 527-8877

POST OFFICE BOX 547  
WORCESTER, MASSACHUSETTS 01613  
(617) 852-7100 TELEX 920426

January 22, 1986

Mr. William Rice  
MLB Camp LeJeune  
MOQ 2719  
Camp LeJeune, NC 28542

Dear Mr. Rice:

Thank you for your interest in the Riley/Takuma Resource Recovery Technology.

Enclosed are several brochures which provide information related to the mass burning of municipal solid waste and Riley's experience with Resource Recovery Systems.

We are dedicated to the Resource Recovery Market and can provide a single source responsibility for the Boiler and Stoker equipment.

If we can provide additional information, please contact me in the Charlotte, North Carolina, Office.

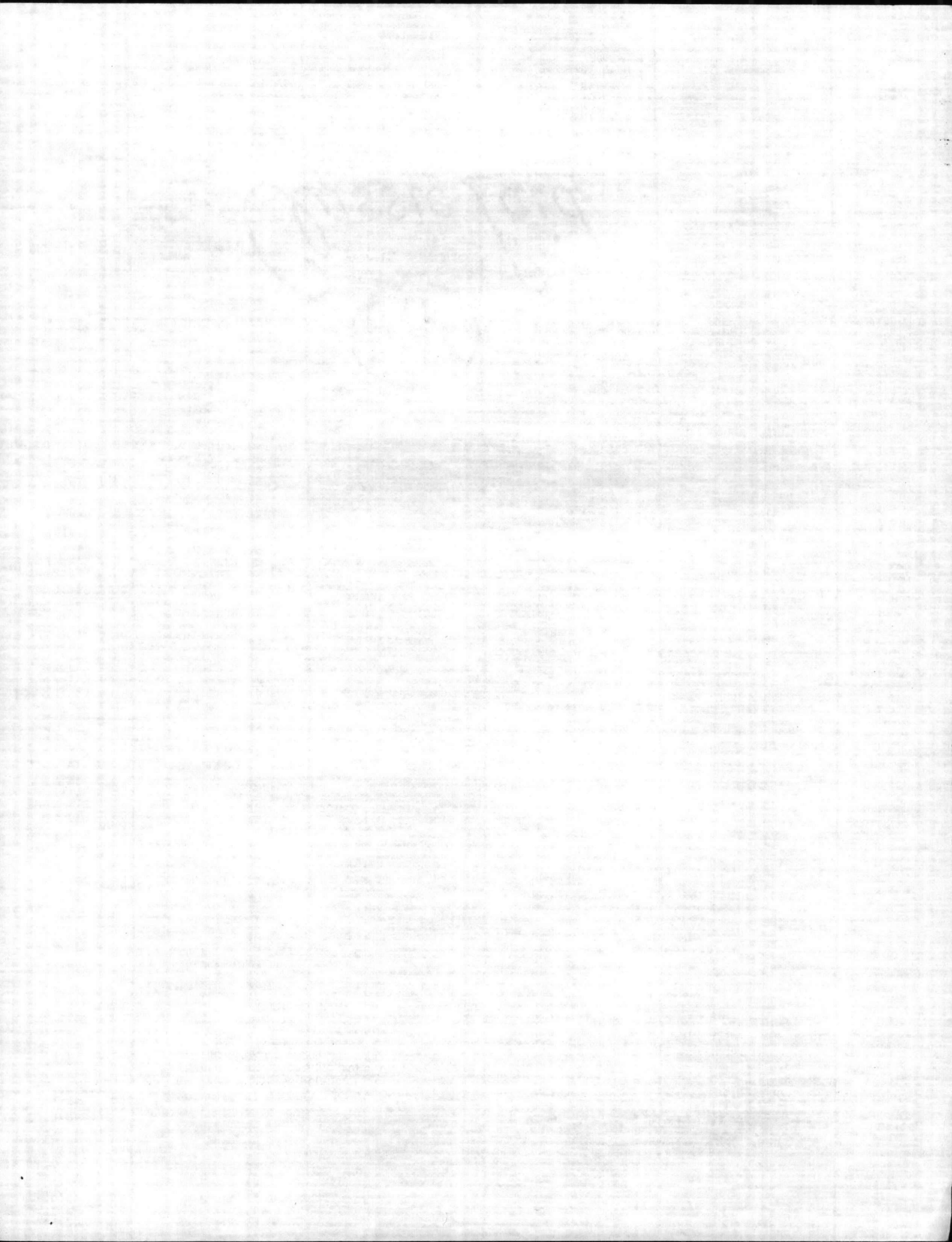
Sincerely,

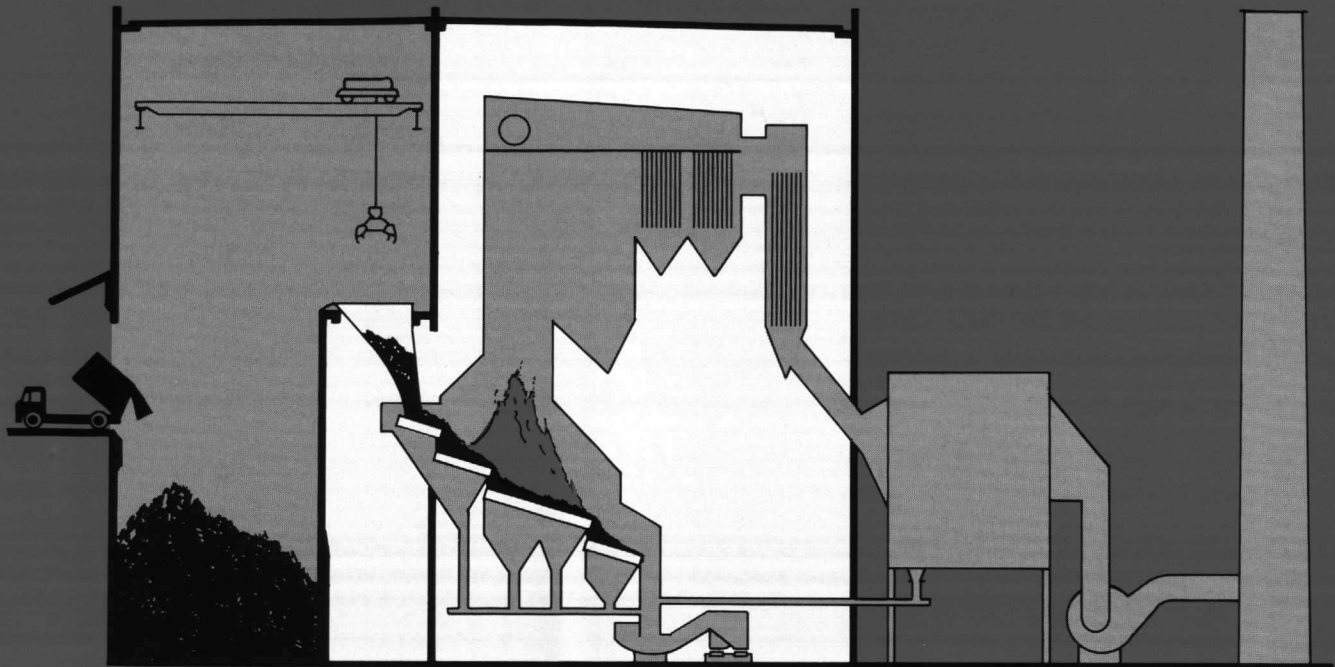
*W. B. Keene, Jr.*

W. B. Keene, Jr.  
Manager Business Development

WBK:fas

Enclosure





## Riley/Takuma—new source for resource recovery experience

When your challenge is to produce energy from municipal solid waste, look to Riley/Takuma for the engineering expertise and proven products that lead to reliable resource recovery.

### **Riley: capacity leader**

Riley Stoker has been in the boiler and fuel burning business since 1913, in solid waste burning since 1958 and resource recovery systems since 1968. Riley has won 30% of the mass burning boilers with

44% of the capacity based on resource recovery contracts over 100 tons per day publicly awarded since 1980.

### **Takuma: technology leader**

The mass burning energy recovery technology developed by Takuma Co., Ltd. of Japan is now marketed exclusively in the U.S. by Riley, under license from C. Itoh & Co. (America) Inc. Since 1963 there have been more than 450 Takuma units installed, with a total burn-

ing capacity in excess of 50,000 tons per day. This represents more than 230 plants with capacities up to 2000 tons per day of solid waste.

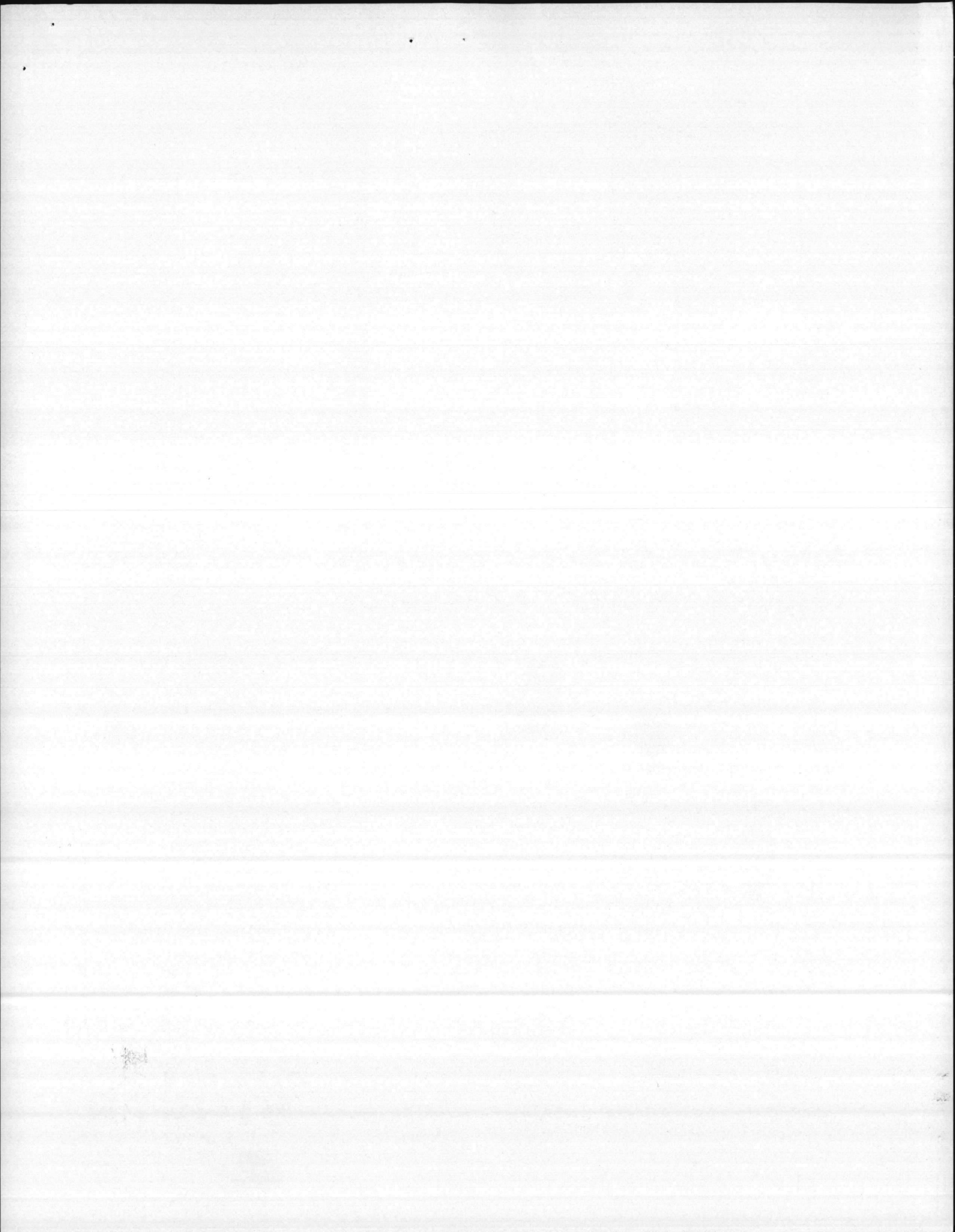
The combined know-how and experience of Riley and Takuma make Riley/Takuma a leader in resource recovery. To share in our solutions to resource recovery challenges, contact the Riley Stoker sales representative nearest you or at the address below.

Riley experience...  
put it to work for you

**RILEY** RILEY  
**STOKER**

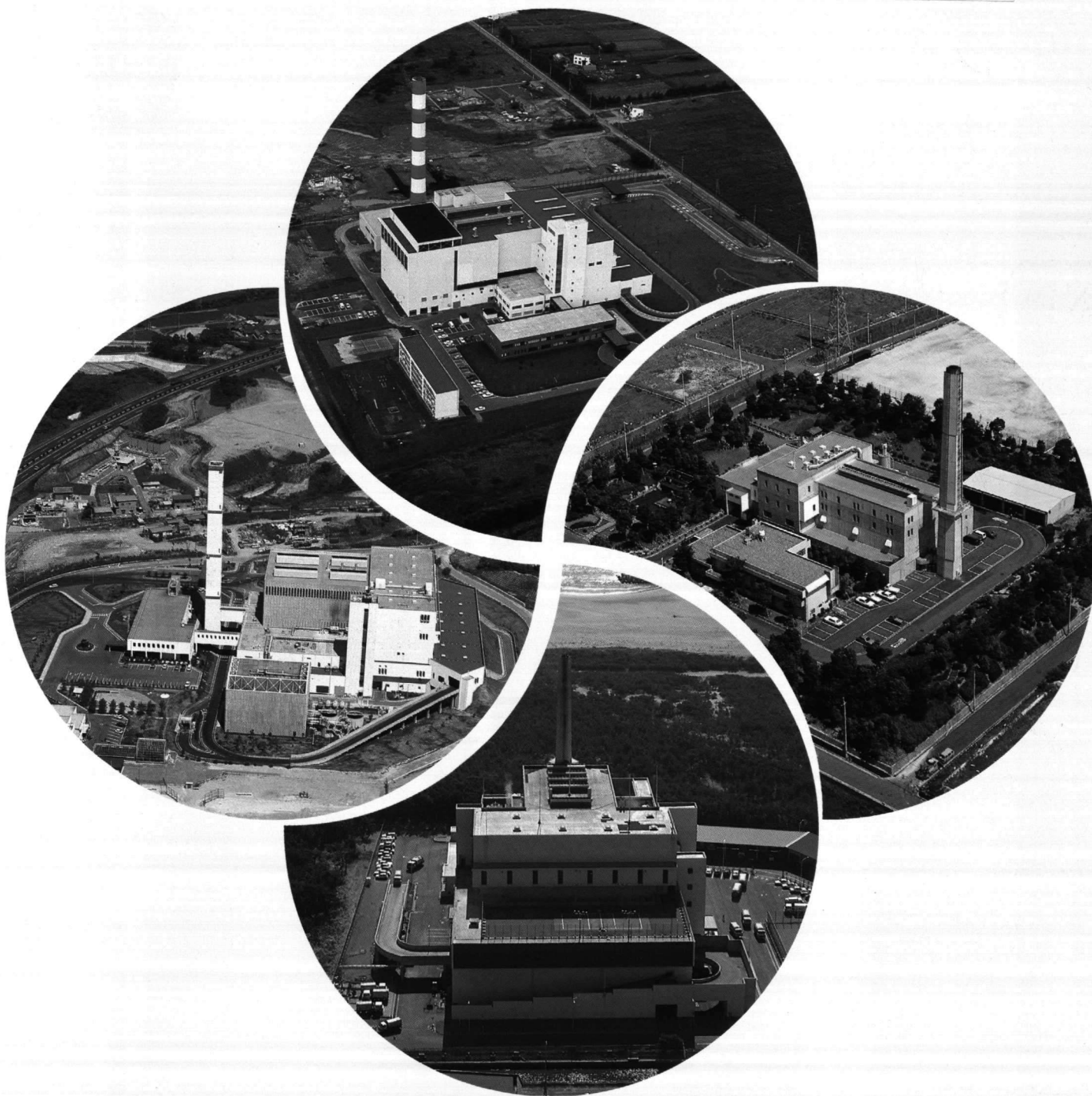
RILEY STOKER CORPORATION  
BOX 547, WORCESTER, MASS. 01613

An Ashland Technology Company Ashland



# **ITOH TAKUMA RESOURCE RECOVERY SYSTEMS**

**RILEY** RILEY  
**STOKER**  
An Ashland Technology Company Ashland



**TAKUMA CO., LTD.**



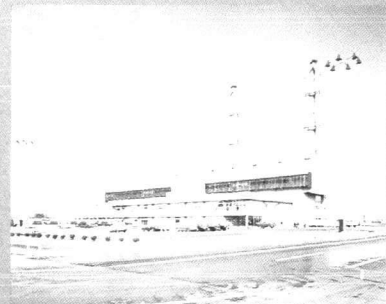
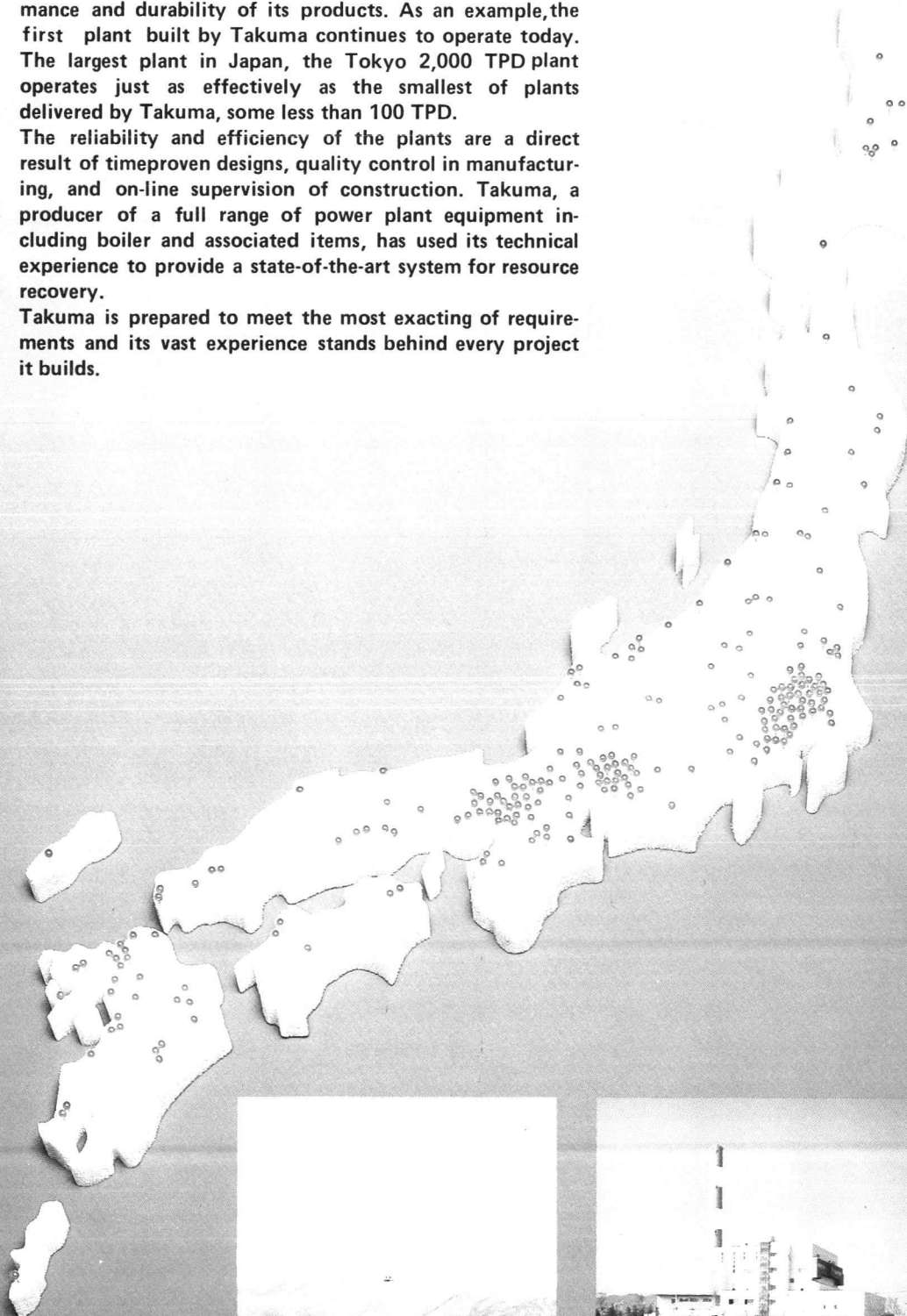
## Advanced Solid Waste Incineration Recovery Systems

More than 50,000 tons per day of incineration capacity has been installed in over 230 plants in Japan by Takuma since 1963.

Takuma has become the largest supplier of resource recovery plants in Japan as a result of the outstanding performance and durability of its products. As an example, the first plant built by Takuma continues to operate today. The largest plant in Japan, the Tokyo 2,000 TPD plant operates just as effectively as the smallest of plants delivered by Takuma, some less than 100 TPD.

The reliability and efficiency of the plants are a direct result of timeproven designs, quality control in manufacturing, and on-line supervision of construction. Takuma, a producer of a full range of power plant equipment including boiler and associated items, has used its technical experience to provide a state-of-the-art system for resource recovery.

Takuma is prepared to meet the most exacting of requirements and its vast experience stands behind every project it builds.



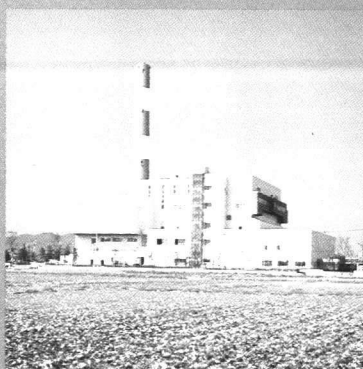
Tokyo, Koto (2,000TPD : 333TPD × 6Units)



Okayama City (500TPD : 165TPD × 3Units)



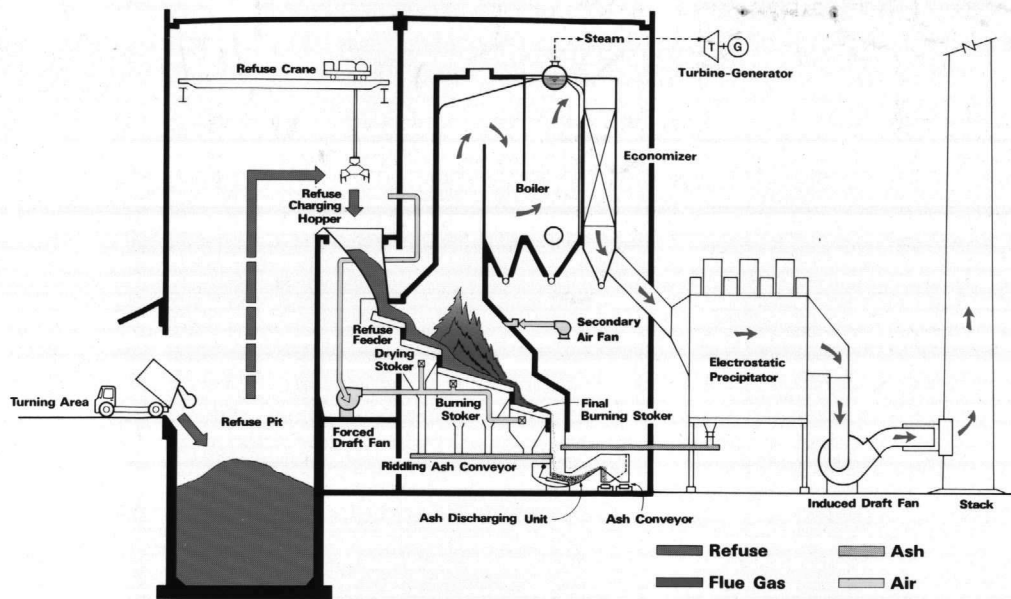
Toyama City (660TPD : 220TPD × 3 Units)



Ashikaga City (330TPD : 110TPD × 3 Units)



Osaka City, Nanko (800TPD : 400TPD × 2 Units)



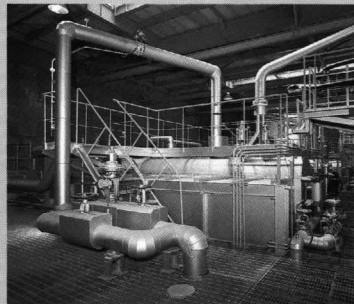
**Refuse Flow** The Takuma designs can accommodate a broad range of refuse qualities. Coincineration of sludge and other wastes is a design option.

**Ash Flow** The ash produced by the system is of the highest quality with a minimum of combustibles, putrescibles, and moisture content.

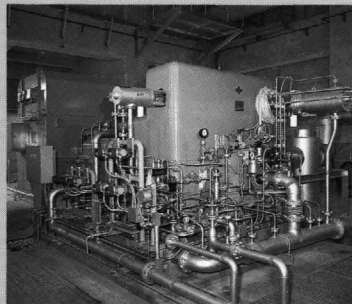
**Gas Flow** The combustion process, precisely controlled by an Automatic Combustion Control System, efficiently converts the products of incineration into a high quality steam available for power generation or process sales.

**Air Flow** Primary combustion air, supplied under the grates, and secondary air, supplied in the combustion chamber, is drawn from the refuse pit area, maintaining a negative pressure in the processing building.

● The incineration process provides a vast amount of energy which is converted to usable forms by a water-wall, heat recovery boiler. The steam, used either for process or electrical generation, provides a revenue source which assures an economic project for the community or industrial client.



Heat Recovery Boiler



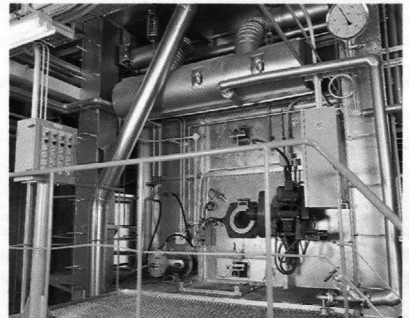
Steam Turbine



Heated Swimming Pool



Refuse Pit and Crane



Incinerator



Stoker in Furnace

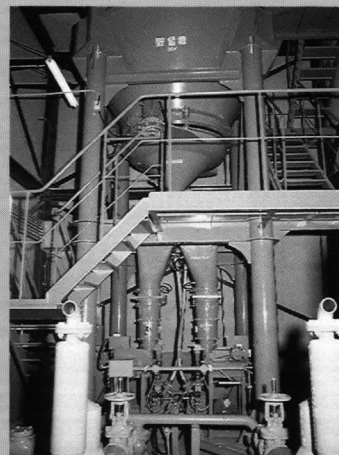
● **High Speed Incineration**

The inclined, reciprocating grates are designed to provide a large amount of agitation of the refuse and mixing of the combustion air while maintaining a uniform bed of fuel across the grates. The result is a complete and controlled incineration of the refuse. The grate system is a proven Takuma design ensuring a minimum of maintenance and operating requirements.



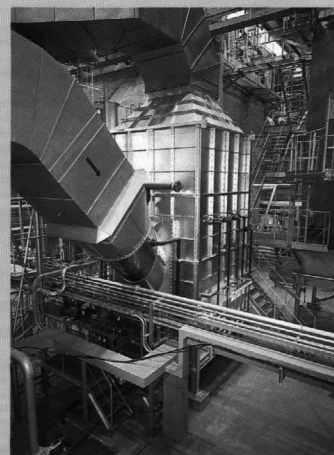
● **Electrostatic Precipitator**

This proven design is capable of removing the finest of dust particles entrained in the flue gases.



● **Dry-type scrubber**

Especially effective for HCl removal, this component has been perfected for continuous and reliable operation.



● **Wet-type scrubber**

The noxious chemicals including HCl and SOx are removed with minimum expense and maximum efficiency.

**Pollution Control**

Being a major supplier of plant and equipment in Japan, Takuma is accustomed to meeting the most severe pollution standards including regulations for the control of all emissions including air, water, noise and odor. Takuma also takes pride in designing plants which have a pleasant appearance as well. Takuma has developed proprietary technology to assure conformance to the most stringent of pollution regulations. The equipment has been designed and engineered by Takuma and is manufactured to the highest of standards.

## Company Profile

Takuma is a fully integrated supplier of power plant systems and associated equipment with a world-wide reputation for quality and dependability.

Takuma started over 45 years ago as a boiler manufacturer, has pioneered the only major Japanese resource recovery system. In this field, Takuma enjoys the Number ONE position in Japan.

In the environmental sciences, Takuma continues to cooperate with agencies of the Japanese government in developing more sophisticated methods for monitoring and systems for control of plant emissions. In addition, a primary goal is the more efficient production of energy from the refuse and the recovery of valuable materials from the residue.

A state-of-the-art technology is maintained throughout the systems using the latest of computers and micro-processors for combustion control. A full range of associated equipment is available from Takuma including sludge dryers, waste water treatment systems, ash processing equipment, and pollution control components.

In the boiler field, Takuma has a long history of providing fossil fuel plants and solid fuel boilers and grates. Takuma is a leading international supplier of bagasse and wood chip boiler systems.

Takuma is committed to maintaining the highest levels of technology and manufacturing excellence. A complete technical assistance package has been prepared for plant start-up and testing as well as operator training.



## TAKUMA CO., LTD.

- Established** : June 10, 1938  
**Capital** : 3,223,000,000 Yen  
**President** : Junkichi Fukuda  
**Head Office** : 3-23, Dojima Hama 1-chome, Kita-ku, Osaka, Japan.  
Cable : TAKUMA OSAKA  
Telex : 0523-3672 TAKUMA J  
Telephone : 06-346-5161  
Telefax : 06-341-5734
- Tokyo Office** : Eitaro Bldg.,  
(Export Dept.) 2-5, Nihonbashi 1-chome, Chuo-ku, Tokyo, Japan.  
Cable : TAKUMA TOKYO  
Telex : 0222-2878 TAKUMA J  
Telephone : 03-276-7266  
Telefax : 03-272-1098
- Branches** : Nagoya, Fukuoka, Sapporo, Hiroshima, Sendai, Yokohama,  
Hokuriku
- Factories** : Harima, Kyoto
- Employees** : 1,050

### N. American Licensee

C. ITOH & CO. (AMERICA) INC.  
270 Park Avenue New York, New York 10017  
212-953-5524

To: BMO

11013  
Fac  
17 May 85

From: BASE FACILITIES

To: BMO: (att: Fred Goner)

Subj: POL Project P-822, Refuse Burning  
Supplemental Steam Plant

Encl (1) CMC Sta: 6280/9, LFL/2-82, 02 Apr 85

1. The Enclosure forwarded two Pollution Abatement  
Projects for Comments. They are:

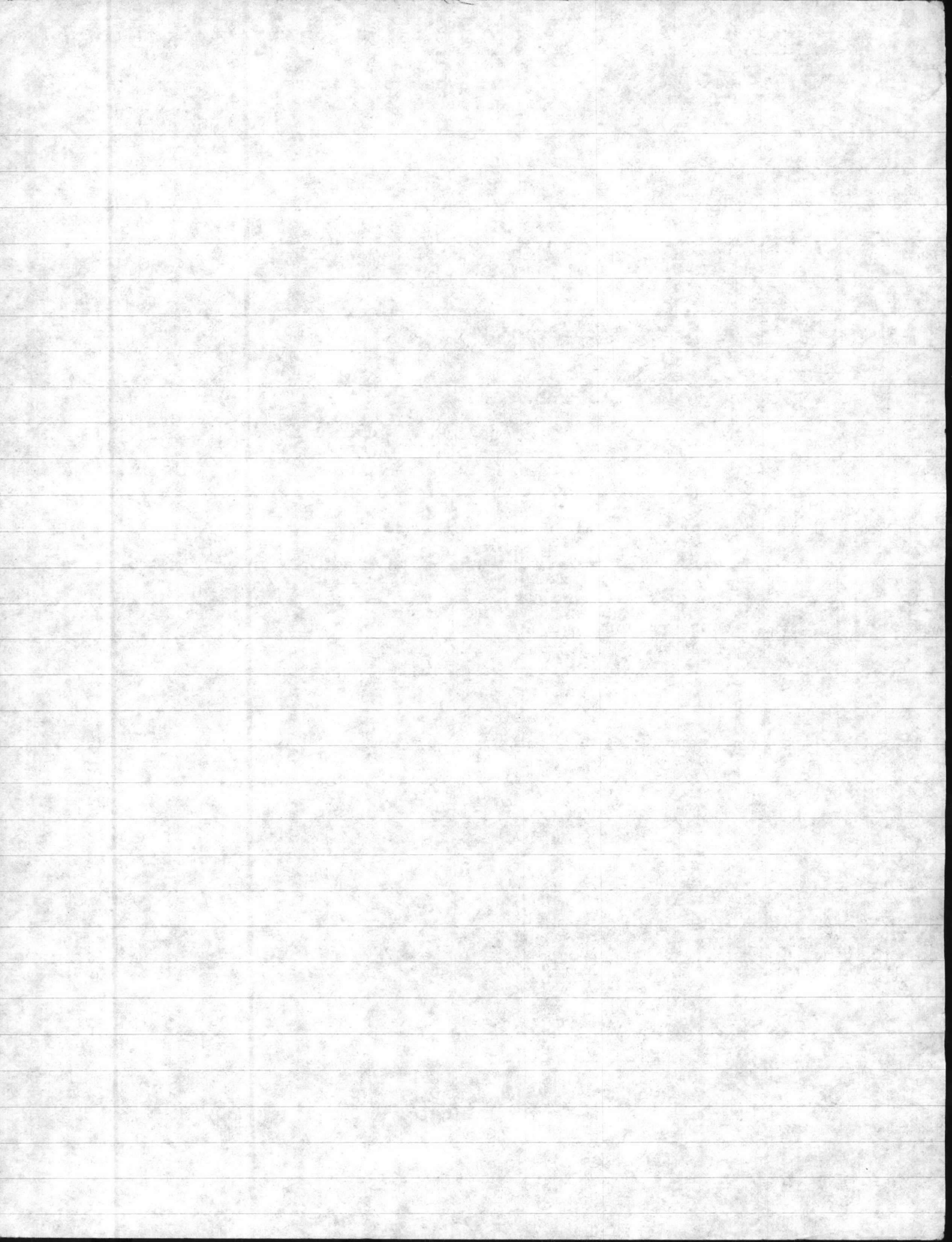
P-822 Refuse Burning Supplemental Steam Plant

P-845 Vehicle Wash Facilities, Bldg 450

2. Request you provide Comments for P-822.  
Environmental Engr/PWO are providing  
Comments for P-845.

VR  
A Austin

2615  
WADBY PEEK



**MAIL CONTROL FORM**  
 MCBCL 5216/3 (REV. 5-84)

CONTROL NO. (Assigned by Base Adjutant)  
 203

RETURN THIS FORM AND ATTACHED CORRESPONDENCE TO BASE CENTRAL FILES. NUMBERS INDICATE ORDER OF ROUTE.

FROM:  
 Commandant of the Marine Corps

DATE OF CORRESPONDENCE:  
 2 Apr 1985

ORIGINATOR'S SYMBOL:  
 LFL/2-82

SUBJECT:  
 FY88 POLLUTION ABATEMENT PRO

REPLY DUE:

DATE RECEIVED:  
 5 April

*22 Apr 85*  
 Mr. Alexander

Bob - pls  
 Review & provide your  
 comments before  
 we send to  
 Pub & B Main

VR  
 AL

*A 30 Apr*

*Admin,  
 Mr Austin for Staff  
 Action ~~Director~~*

*BR*

AC/S LOGISTICS				
AC/S SPECIAL SERVICES				
RASC				
PMO				
SJA				
ADJUTANT		1	11	

*By way of 1950*  
 SEE  
 AL

NUMBERS INDICATE ORDER OF ROUTE

RECEIVED BY THE DIRECTOR

DATE

TIME

STATE OF TEXAS

COMMISSIONER OF THE GENERAL LAND OFFICE

AT THE CITY OF DALLAS

THIS 15th DAY OF

190

AT 10 O'CLOCK

A PUBLIC HEARING

WAS HELD AT

THE OFFICE OF THE

STATE OF TEXAS  
COMMISSIONER OF THE GENERAL LAND OFFICE  
AT THE CITY OF DALLAS  
THIS 15th DAY OF  
190

**MAIL CONTROL FORM**  
**MCBCL 5216/3 (REV. 5-84)**

CONTROL NO. (Assigned by Base Adjutant)  
**203**

RETURN THIS FORM AND ATTACHED CORRESPONDENCE TO BASE CENTRAL FILES. NUMBERS INDICATE ORDER OF ROUTE.

FROM: <b>Commandant of the Marine Corps</b>	REPLY DUE:
DATE OF CORRESPONDENCE: <b>2 Apr 1985</b>	DATE RECEIVED: <b>5 April</b>
ORIGINATOR'S SYMBOL: <b>LFL/2-82</b>	
SUBJECT: <b>FY88 POLLUTION ABATEMENT PROGRAM</b>	

	ACTION	INFO	INITIAL	COMMENTS
COMMANDING GENERAL				
CHIEF OF STAFF		2	<i>8 Apr 85</i>	
INSPECTOR				
AC/S MANPOWER				
AC/S TRAINING				
AC/S FACILITIES	3	<i>8 APR 90 gpr/10 gpr</i>	<i>5 APR 1985 BWR</i>	<i>RETAIN To PWO for review + BMO</i>
AC/S COMPTROLLER				
AC/S PERSONNEL SERVICES				
AC/S LOGISTICS				
AC/S SPECIAL SERVICES				
RASC				
PMO				
SJA				
ADJUTANT		1	<i>M</i>	

NUMBERS INDICATE ORDER OF ROUTE



THE UNIVERSITY OF CHICAGO

1954

THE UNIVERSITY OF CHICAGO

500 + 2000



DEPARTMENT OF THE NAVY  
HEADQUARTERS UNITED STATES MARINE CORPS  
WASHINGTON, D.C. 20380

6280/9  
LFL/2-82  
02 APR 1985

From: Commandant of the Marine Corps  
To: Commanding General, Marine Corps Base, Camp Lejeune,  
NC 28542-5001

Subj: FY88 POLLUTION ABATEMENT PROGRAM

Encl: (1) Second Endorsement on MCB Camp Lejeune ltr 11013 PWO  
of 31 Aug 1984

1. We request your comments regarding the adequacy of the recommended changes to Military Construction projects P-822 and P-845 proposed by the enclosure.
2. Our point of contact is Mr. Paul Hubbell (LFL) on A/V 227-1890/1.

A handwritten signature in black ink, appearing to read "R F Wemheuer", is written above the typed name.

ROBERT F. WEMHEUER  
By direction

6280A  
19112-82

To: Commanding General, Marine Corps Base, Camp Lejeune,  
Marine Corps  
No. 28542-5007

Subject: PWR POLLUTION ABATEMENT PROGRAM

Re: (1) Second Enforcement of MCR Camp Lejeune Ltr 11012-PWQ  
of 21 Aug 1981

1. We request your comments regarding the adequacy of the  
reimbursement charges for Military Construction projects 1-812 and  
1-845 proposed by the contractor.

2. Our point of contact is Mr. Paul [unclear] (TEL) on AVV  
227-18871.

*[Signature]*  
ROBERT V. WENHURK  
By Director





DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING COMMAND  
200 STOVALL STREET  
ALEXANDRIA, VA 22332 -2300

IN REPLY REFER TO  
1122B/GKC  
**10 JAN 1985**

SECOND ENDORSEMENT on MCB CAMP LEJEUNE Ltr 11013 PWO of 31 Aug 1984

From: Commander, Naval Facilities Engineering Command  
To: Commandant of the Marine Corps (LFF)

Subj: FY88 POLLUTION ABATEMENT PROGRAM

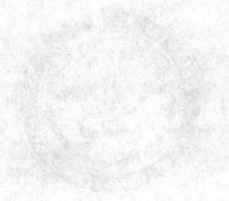
Ref: (d) COMLANTNAVFACENGCOM ltr 11010, 09A21BB of 20 Dec 84

1. Forwarded for reevaluation as outlined in reference (d). Our point of contact is Mr. George Clouden, NAVFACENGCOM (1122B), Autovon 221-8531, Commercial (202) 325-8531.

A handwritten signature in cursive script, appearing to read "P. J. Yaroschak", is written above the typed name.

P. J. YAROSCHAK  
By direction

Copy to:  
COMLANTNAVFACENGCOM  
MCB CAMP LEJEUNE  
CG 2ND MARDIV (ATTN: FACO)



10 JAN 1952

SECOND REGIMENT, INFANTRY, 101ST AIRBORNE DIVISION, AIRBORNE

FROM: [Faint text] TO: [Faint text]

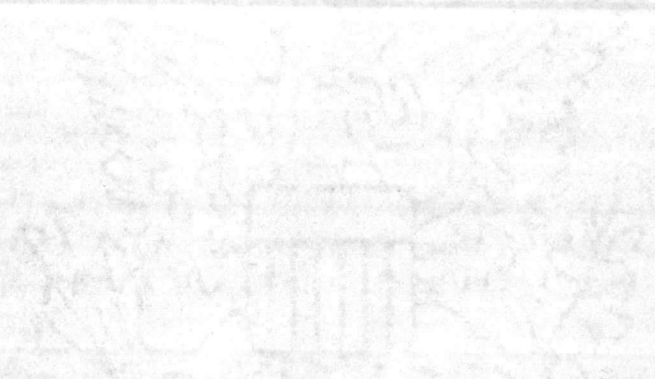
RE: [Faint text]

1. [Faint text]

2. [Faint text]

BY DIRECTION  
J. YAROSHAK

FOR THE  
[Faint text]





DEPARTMENT OF THE NAVY

ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511-6287

TELEPHONE NO.  
444-9670

IN REPLY REFER TO:  
11010  
09A21B3

20 DEC 1984

FIRST INDORSEMENT on MCB CAMP LEJEUNE ltr 11013 PWO dtd 31 Aug 1984

From: Commander, Atlantic Division, Naval Facilities Engineering Command  
To: Commandant of the Marine Corps (LFF)  
Via: Commander, Naval Facilities Engineering Command

Subj: FY-88 POLLUTION ABATEMENT PROGRAM

Ref: (c) MCB CAMP LEJEUNE AC/S Base Maintenance Utilities, Natural Resources and Environmental Affairs, LANTNAVFACENGCOM mtg on 29 Oct 1984

Encl: (3) Technical Data Sheet 84-18, dtd Oct 1984  
(4) ESR U2036 dtd Dec 1982

1. Review of P-822 reveals the project may no longer pay for itself. Savings calculations should be redone and adjusted from \$11.40/MBTU to \$4.56/MBTU for No. 6 oil.
2. The landfill alternative to P-822 should also be studied. Comparison cost of MCAS CHERRY PT continuing to use Craven County landfill versus cost of trucking to MCB CAMP LEJEUNE and compare cost of MCB CAMP LEJEUNE continuing to use an on-station landfill or using an off-station landfill.
3. Air pollution controls for P-822 appear low by about \$1 million (\$500,000 more for precipitators and \$500 more for combustion controls.)
4. Enclosure (3) is forwarded for your information on P-822.
5. Reference (c) review of potential waste water violations (up to \$25,000/day fines) indicated the only major item was Building 1450 (P-845). Thus, to make certain future projects include pollution abatement requirements and funds, request the following:
  - a. Insure MCB CAMP LEJEUNE projects are sent via LANTNAVFACENGCOM for pollution abatement review.
  - b. Advise whether MCON P-678 can/will provide the appropriate facilities as recommended by enclosure (4).
6. An AQDF (Army) type "Bird Bath" washrack for Building 1450 appears excessive for this problem and should be value engineered. The cost reduction is incorrect if the bird bath is kept.
7. Additional design considerations for Building 1450 should include:

ENERGY NAVFAC, BILL TAYLER AU 221-0362  
EPA 7-811 Frank MARGINKOWSKI AU 221-8531/38

1881

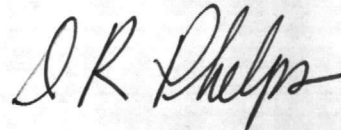
ARTIFICIAL BOND

ARTIFICIAL BOND

1881

Subj: FY-88 POLLUTION ABATEMENT PROGRAM

- a. Providing swing arm waste oil funnels and tank (P-996 design).
  - b. Providing "passive" storm water bypasses (leaping mains) in lieu of canopies.
  - c. Providing POL drum storage with containment.
  - d. Sizing the sedimentation basin(s) to allow clean out with a front end loader.
  - e. P-845 should complete the road from Building 1400 to the 1800 area (behind Buildings 1775 and 1750), if appropriate.
8. If there are questions, please contact the Project Manager, Mr. M. L. Bryant, P. E., of this Command, telephone AUTOVON 564-9670, or Mr. D. Goodwin, Environmental Quality Branch, telephone AUTOVON 564-9556.



Copy to:  
MCB CAMP LEJEUNE  
CG, 2nd MARDIV (Attn: Fac0)

D. R. PHELPS  
By direction



Subj: 84-88 POLLUTION ABATEMENT PROGRAM

- a. Providing swing-arm waste oil funnels and tank (P-006 design).
- b. Providing "passive" storm water bypasses (leading mains) in lieu of canopies.
- c. Providing POL drum storage with containment.
- d. Sizing the sedimentation basin(s) to allow clean out with a front end loader.
- e. P-005 should complete the road from Building 100 to the 1800 area (behind Buildings 1775 and 1750), if appropriate.
- f. If there are questions, please contact the Project Manager, Mr. M. L. Bryant, P. E., of this Command, telephone-AUTOVON 654-9570, or Mr. D. Godwin, Environmental Quality Branch, telephone-AUTOVON 654-9556.

Copy to:  
MCR CAMP LEGUNE  
CC, 2nd MARDIV (Attn: Fac0) (encl) (S) only)



UNITED STATES MARINE CORPS  
MARINE CORPS BASE  
CAMP LEJEUNE, NORTH CAROLINA 28542

IN REPLY REFER TO

11013

PWO

31 AUG 1984

From: Commanding General, Marine Corps Base, Camp Lejeune  
To: Commandant of the Marine Corps (LFF)  
Via: (1) Commander, Atlantic Division, Naval Facilities Engineering Command,  
Norfolk, VA 23511 (Code 09A21B3)  
(2) Commander, Naval Facilities Engineering Command, 200 Stovall Street  
Alexandria, VA 22332

Subj: FY-88 POLLUTION ABATEMENT PROGRAM

Ref: (a) MCO P11000.12B  
(b) CMC ltr LFF-1 FDB:tat of 7 Mar 84

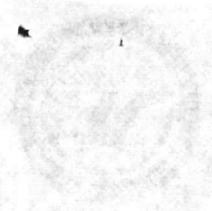
Encl: (1) Project package for P-822, Refuse Burning Supplemental Steam Plant,  
Marine Corps Base, Camp Lejeune and Marine Corps Air Station (H),  
New River; consisting of DD Form 1391/1391c and Site Location Map  
all dtd 24 Aug 84  
(2) Project package for P-845, Vehicle Wash Facilities/Grease Racks,  
Building #1450; consisting of DD Form 1391/1391c and Site Location  
Map all dtd 15 Aug 84

1. References (a) and (b) provided detailed guidance for submission of subject program. Accordingly, enclosures (1) and (2) are submitted.
2. The Atlantic Division, Naval Facilities Engineering Command is requested to certify the cost of this project to the Commander, Naval Facilities Engineering Command.

L. H. BUEHL

Copy to:  
CG, 2dMarDiv (Attn: FacO) (encl (2) only)

11/178



OFFICE OF THE CHIEF OF BUREAU OF ENGINEERING  
NAVY DEPARTMENT, WASHINGTON, D.C.

DATE: 1918  
NO. 1234

TO: Commanding General, Marine Corps Base, Camp Lejeune, North Carolina  
FROM: (1) Commander, Atlantic Division, Naval Facilities Engineering Command, Norfolk, VA 23501 (Dues 254111)  
(2) Commanding General, Naval Facilities Engineering Command, San Antonio, Texas 78243

SUBJECT: 22-89 CONTRACT WITH THE BUREAU OF ENGINEERING  
(a) NO. 22-89-1234  
(b) THE CONTRACT WITH THE BUREAU OF ENGINEERING

1. The contract with the Bureau of Engineering, No. 22-89-1234, is hereby approved for execution by the Commanding General, Marine Corps Base, Camp Lejeune, North Carolina. The contract is to be executed in accordance with the terms and conditions of the contract and the specifications attached hereto. The contract is to be executed in accordance with the terms and conditions of the contract and the specifications attached hereto. The contract is to be executed in accordance with the terms and conditions of the contract and the specifications attached hereto.

2. The contract with the Bureau of Engineering, No. 22-89-1234, is hereby approved for execution by the Commanding General, Marine Corps Base, Camp Lejeune, North Carolina. The contract is to be executed in accordance with the terms and conditions of the contract and the specifications attached hereto. The contract is to be executed in accordance with the terms and conditions of the contract and the specifications attached hereto. The contract is to be executed in accordance with the terms and conditions of the contract and the specifications attached hereto.

1234

FOR THE COMMANDER (Signature)  
OFFICE OF THE CHIEF OF BUREAU OF ENGINEERING



UNITED STATES MARINE CORPS  
MARINE CORPS BASE  
CAMP LEJEUNE, NORTH CAROLINA 28542

407: A/eng

11013  
PWO  
31 AUG 1984

From: Commanding General, Marine Corps Base, Camp Lejeune  
To: Commandant of the Marine Corps (LFF)  
Via: (1) Commander, Atlantic Division, Naval Facilities Engineering Command,  
Norfolk, VA 23511 (Code 09A21B3)  
(2) Commander, Naval Facilities Engineering Command, 200 Stovall Street  
Alexandria, VA 22332

Subj: FY-88 POLLUTION ABATEMENT PROGRAM

Ref: (a) MCO P11000.12B  
(b) CMC ltr LFF-1 FDB:tat of 7 Mar 84

Encl: (1) Project package for P-822, Refuse Burning Supplemental Steam Plant,  
Marine Corps Base, Camp Lejeune and Marine Corps Air Station (H),  
New River; consisting of DD Form 1391/1391c and Site Location Map  
all dtd 24 Aug 84  
(2) Project package for P-845, Vehicle Wash Facilities/Grease Racks,  
Building #1450; consisting of DD Form 1391/1391c and Site Location  
Map all dtd 15 Aug 84

1. References (a) and (b) provided detailed guidance for submission of  
subject program. Accordingly, enclosures (1) and (2) are submitted.
2. The Atlantic Division, Naval Facilities Engineering Command is requested  
to certify the cost of this project to the Commander, Naval Facilities  
Engineering Command.

L. H. BUEHL

Copy to:  
CG, 2dMarDiv (Attn: FacO) (encl (2) only)

UNITED STATES MARINE CORPS  
MARINE CORPS BASE  
CAMP LEONARD NORTH CAROLINA 2814



31 AUG 1964

Cost Estimate

DEPARTMENT DIRECT COST SUMMARY

CASE 2 - BACK PRESSURE TURBINE

Equipment	\$ 8,984,000	
Equipment Erection	170,600	
Equipment Foundations and Other Costs	294,400	
Buidings & Structures	3,700,000	
Electrical Installation Cost	463,000	
Instrumentation Installation Cost	250,000	
Piping Cost	2,246,000	
Area Cost	<u>380,000</u>	
SUBTOTAL CONSTRUCTION COST		\$ 16,488,000
SIOH @ 5.5% (Supervision, inspection & overhead)		906,800
Contingency @ 10%		<u>1,739,500.</u>
TOTAL CONSTRUCTION COST		\$ 19,134,300

*VOID*

*VOID*

*SHUETS 4/28 -> 10/28*

*407:ARLT  
10/10/89*



ITEMIZED CONSTRUCTION COST ESTIMATE

EQUIPMENT LIST  
CASE 2

<u>Item Description</u>	<u>Motor HP-RPM</u>	<u>Equipment \$</u>	<u>Equipment Erection \$</u>	<u>Equip. Supports Platforms and Other Costs \$</u>
1. Boiler, 100 T/D Maximum Input 600 PSIG 725°F Unit No. 1		2,750,000	w/Equipment	w/Bldg. Cost
2. F.D. Fan Coupling Controls Motor Intake Silencer	50	Incl. Incl. Incl. Incl. Incl.	w/Equipment w/Equipment w/Equipment w/Equipment w/Equipment	4,000
3. Combustion Controls		Incl.	w/Equipment	
4. Boiler Breeching		Incl.	w/Equipment	w/Bldg.
5. Economizer		Incl.	w/Equipment	w/Bldg.
6. Stoker	10	Incl.	w/Equipment	w/Boiler
7. I.D. Fan Coupling Fluid Drive Motor	75	Incl. Incl. Incl. Incl.	w/Equipment w/Equipment w/Equipment w/Equipment	7,000
8. Precipitator No. 1		600,000	w/Equip. Cost	20,000
9. Ductwork - To Precip., Fan, Stack w/Insulation		45,000	D&E	65,000
10. Expansion Joints		12,000	2,000	N/A
11. Isolation Damper	5	28,000	2,000	Incl.
12. Boiler, 100 T/D Maximum Input 600 PSIG 725°F Unit No. 2		2,750,000	w/Equip. Cost	w/Bldg.
13. F.D. Fan Coupling Controls Motor Intake Silencer	50	Incl. Incl. Incl. Incl. Incl.	Incl. Incl. Incl. Incl. Incl.	4,000 Incl. Incl. Incl. Incl.

*VOID*



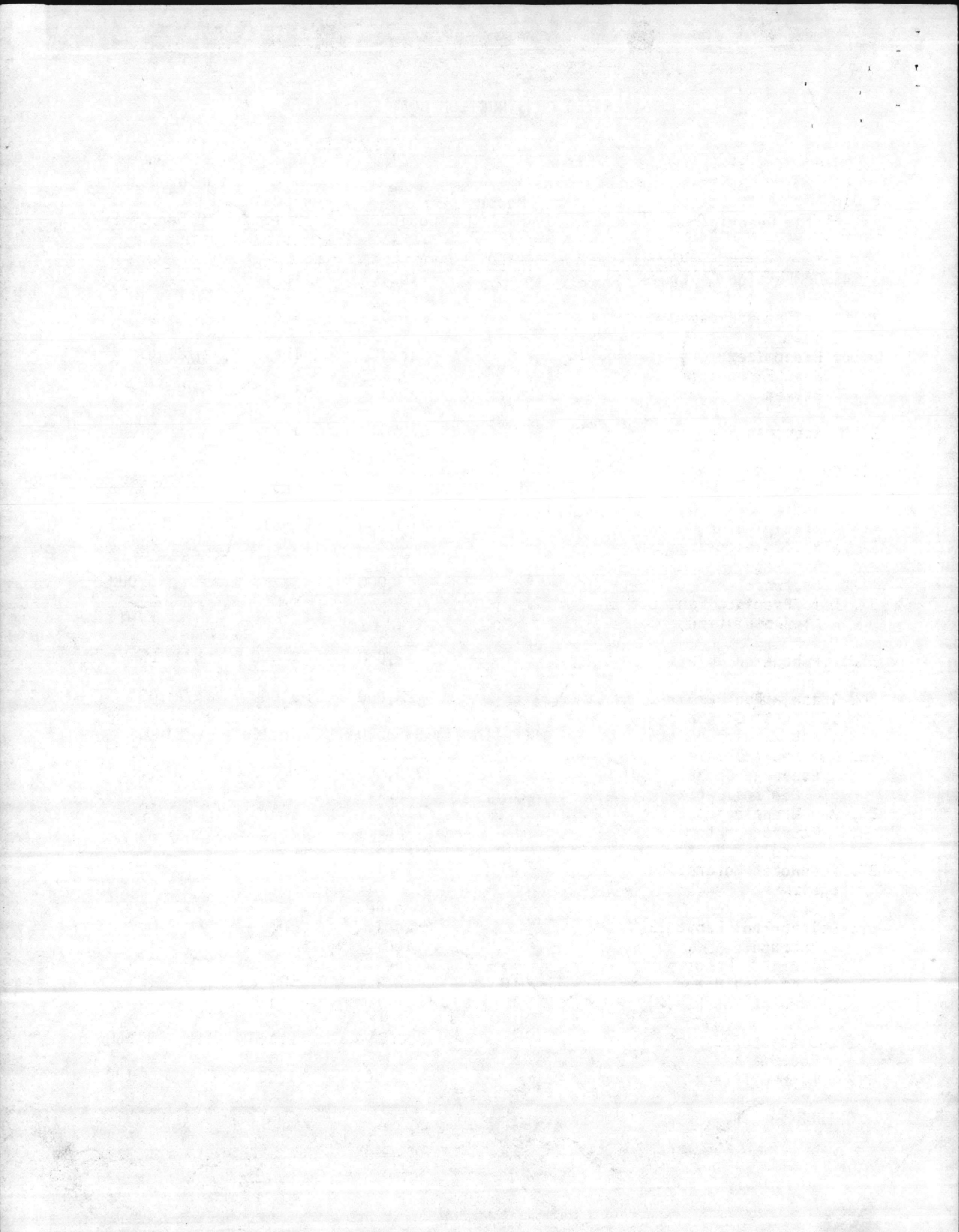


ITEMIZED CONSTRUCTION COST ESTIMATE

EQUIPMENT LIST  
CASE 2

<u>Item Description</u>	<u>Motor HP-RPM</u>	<u>Equipment \$</u>	<u>Equipment Erection \$</u>	<u>Equip. Supports Platforms and Other Costs \$</u>
14. Combustion Controls		Incl.	Incl.	
15. Boiler Breeching		Incl.	Incl.	w/Bldg.
16. Economizer		Incl.	Incl.	w/Bldg.
17. Stoker	10	Incl.	Incl.	w/Boiler
18. I.D. Fan		Incl.	Incl.	7,000
Coupling		Incl.	Incl.	
Fluid Drive		Incl.	Incl.	
Motor	75	Incl.	Incl.	
19. Precipitator No. 2		600,000	Incl.	20,000
20. Ductwork - To Precip., Fan, Stack w/Insulation		45,000	D&E	65,000
21. Expansion Joints		12,000	2,000	N/A
22. Isolation Damper	5	28,000	2,000	N/A
23. Ash Handling System	80 (Total)	575,000	Incl.	w/Bldg.
24. Overhead Crane - 5 Ton		375,000	50,000	w/Bldg.
Control Cab		Incl.		
Grapple		Incl.		
Bridge Motor	15	Incl.		
Trolley Motor	10	Incl.		
Hoist Motors (2)	10 (Ea)	Incl.		
25. Spare Crane		375,000	50,000	w/Bldg.
Control Cab		Incl.		
Grapple		Incl.		
Bridge Motor	15	Incl.		
Trolley Motor	10	Incl.		
Hoist Motors (2)	10 (Ea)	Incl.		
26. Deaerator		30,000	2,000	1,500
27. Blow-Off Tank		5,000	1,000	100

021882



ITEMIZED CONSTRUCTION COST ESTIMATE

EQUIPMENT LIST  
CASE 2

<u>Item Description</u>	<u>Motor HP-RPM</u>	<u>Equipment \$</u>	<u>Equipment Erection \$</u>	<u>Equip. Supports Platforms and Other Costs \$</u>
28. Continuous Blowdown System		17,000	2,500	500
Flash Tank		Incl.	Incl.	
Heat Exchanger		Incl.	Incl.	
Valves		Incl.	Incl.	
29. Condensate Tank		15,000	1,000	100
30. Condensate Transfer Pump		3,000	500	200
Motor	10	Incl.	500	200
31. Air Compressor	25	6,000	500	200
Air Receiver		Incl.		
32. Air Compressor	25	6,000	500	200
Air Receiver		Incl.		
33. Air Dryer		3,000	200	100
34. Stack - Dual Wall (2) 150' x 9'-0" Dia.		310,000	Incl.	90,000
35. Raw Water Booster Pump		3,000	500	100
Motor	20	Incl.	Incl.	Incl.
36. Raw Water Booster Pump		3,000	500	100
Motor	20	Incl.		
37. Feedwater Treatment Equipment	30 Total	70,000	8,000	1,000
38. Boiler Feed Pumps (2)		16,000	1,000	1,000
Motor	2 @ 75	Incl.	Incl.	Incl.
39. Boiler Feed Pump		8,000	500	500
Turbine		12,000	Incl.	Incl.
40. Chemical Feed Equipment	2 @ 5	10,000	800	300

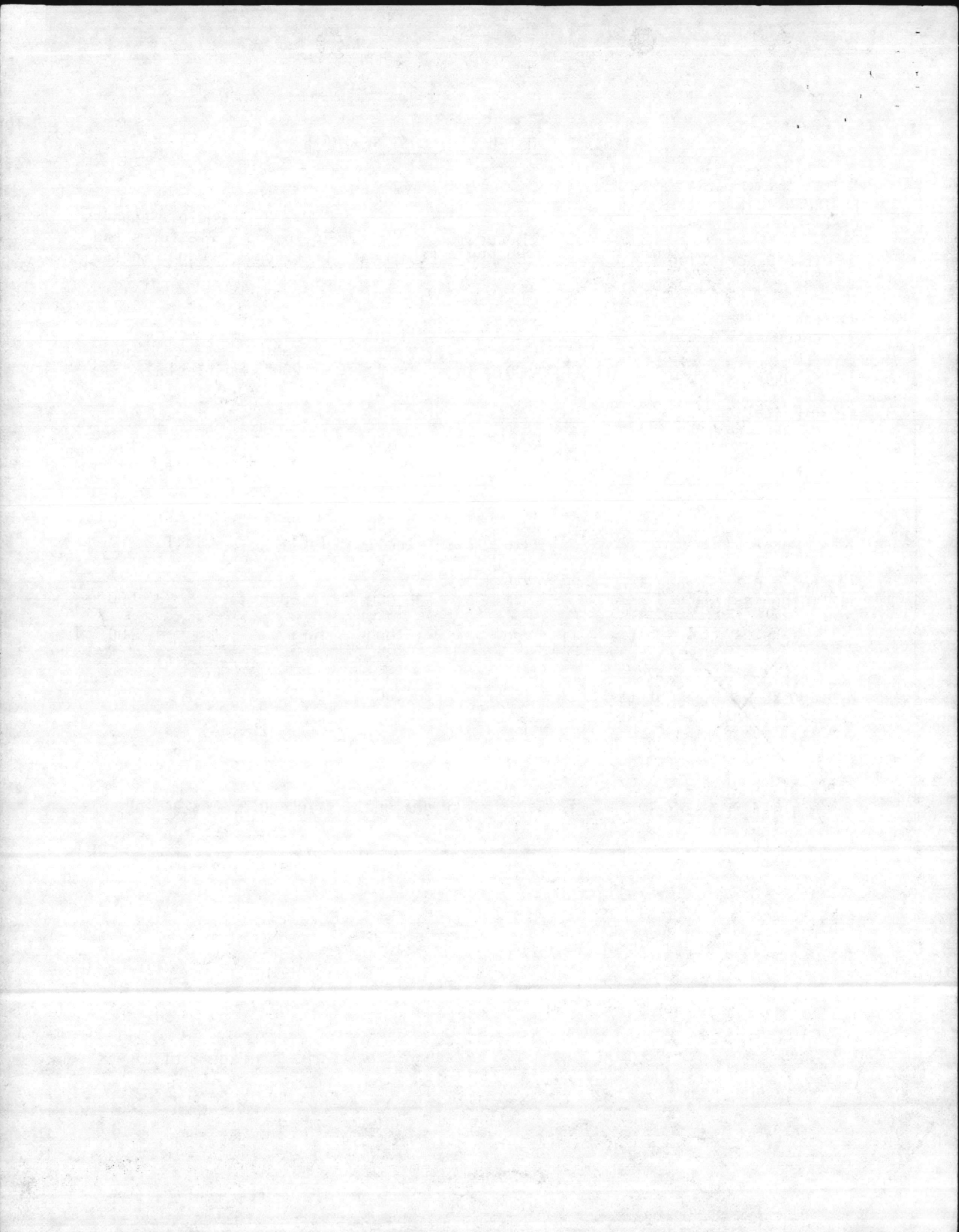
*VOID*



ITEMIZED CONSTRUCTION COST ESTIMATE

EQUIPMENT LIST  
CASE 2

<u>Item Description</u>	<u>Motor HP-RPM</u>	<u>Equipment \$</u>	<u>Equipment Erection \$</u>	<u>Equip. Supports Platforms and Other Costs \$</u>
41. Camp Geiger Condensate Transfer Pump Motor	30	7,000 Incl.	500 200	Incl. 100
42. Air Station Condensate Transfer Pump Motor	50	7,000 Incl.	500 200	Incl. 100
43. Condensate Collection Tank Pump Motor	10	15,000 3,000 Incl.	500 200 Incl.	200 100 Incl.
44. No. 2 Oil Storage Tank & Pump 10,000 Gallon	5	25,000	500	500
45. HVAC Equipment	20	15,000	Incl.	500
46. Turbine Generator 900 KW Nominal Output 12,470 Volt Generator 1175 KVA Rating		200,000	40,000	4,800
<b>TOTAL, Equipment</b>		<b>\$8,984,000</b>	<b>\$170,600</b>	<b>\$294,400</b>



ITEMIZED CONSTRUCTION COST ESTIMATE

CASE 2

47. Buildings and Structures

Structural Steel	\$ 880,000
Excavation and Backfill	445,000
Refuse Pit and Basement	690,000
Mat	365,000
Piling	86,000
Roof Deck and Roofing	190,000
Walls and Siding	270,000
Intermediate Floors	89,000
Stairs, Doors and Drains	160,000
Miscellaneous Steel and Grating	135,000
Support Steel and Miscellaneous	<u>390,000</u>

TOTAL, Building and Structures \$ 3,700,000

48. Electrical

Building Lighting	63,000
Electrical Equipment & Wiring	<u>400,000</u>

TOTAL, Electrical \$ 463,000

49. Instrumentation

\$ 250,000

50. Piping

Boiler Plant	870,000
Export Steam & Condensate Return Lines	<u>1,376,000</u>

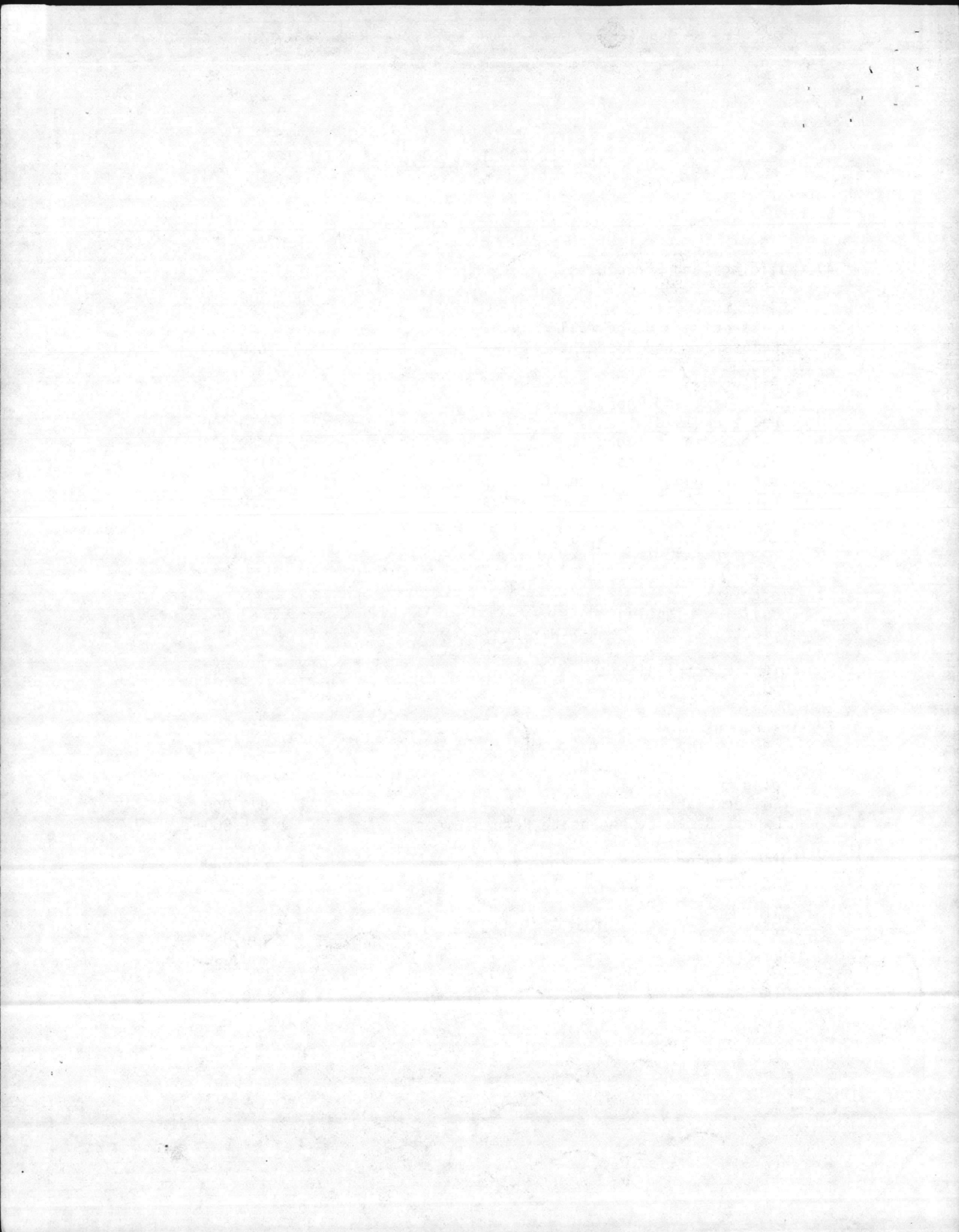
TOTAL, Piping \$ 2,246,000

51. Area

Area	\$ 130,000
Road Paving	<u>250,000</u>

TOTAL, Area \$ 380,000





CASE 2

DESIGN ANALYSIS COMPUTATIONS

JANUARY 1982

(Present Value = 1986 Dollars)

ALTERNATIVE A - Refuse-Burning Plant

1. Investment Cost

a. Refuse-Burning Plant Capital Costs (from equipment list)

Construction \$16,488,000

Escalated to April 1985

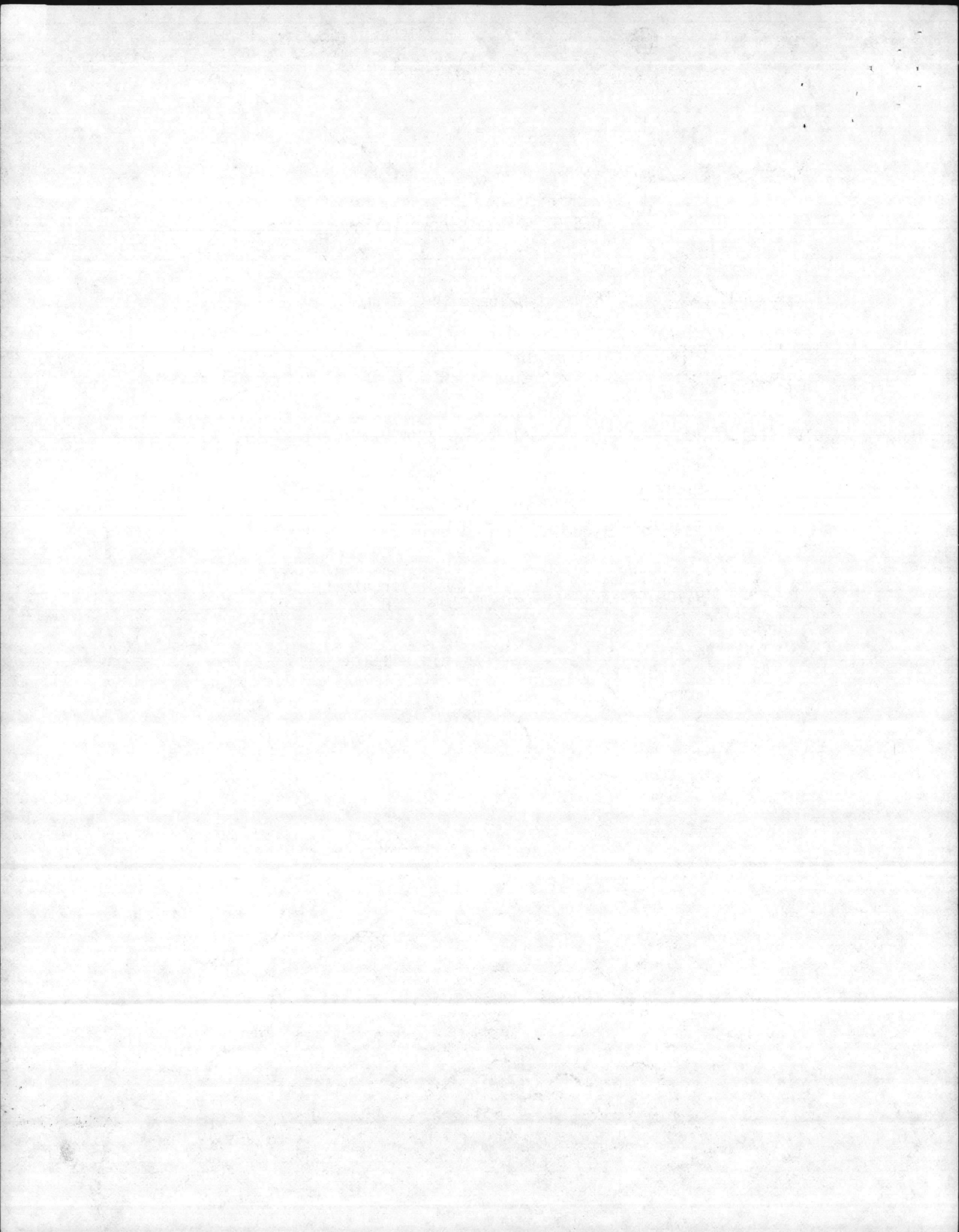
$$\frac{\$16,488,000 \times 2167}{1870} = \$19,106,682$$

Escalated to FY86 10% Discount (2% differential)

$$\$19,106,682 \times 1.0384 = \$19,840,378$$

Total Escalated Cost	\$19,840,378
Contingency @ 10%	1,984,037
S.I.O.H. @ 5.5%	<u>1,200,342</u>

TOTAL 23,024,757



Engineering @ 6% = \$989,280

Escalated to April 1984

$$\frac{\$989,280 \times 2066}{1870} = \$1,092,969$$

Escalated to FY-86

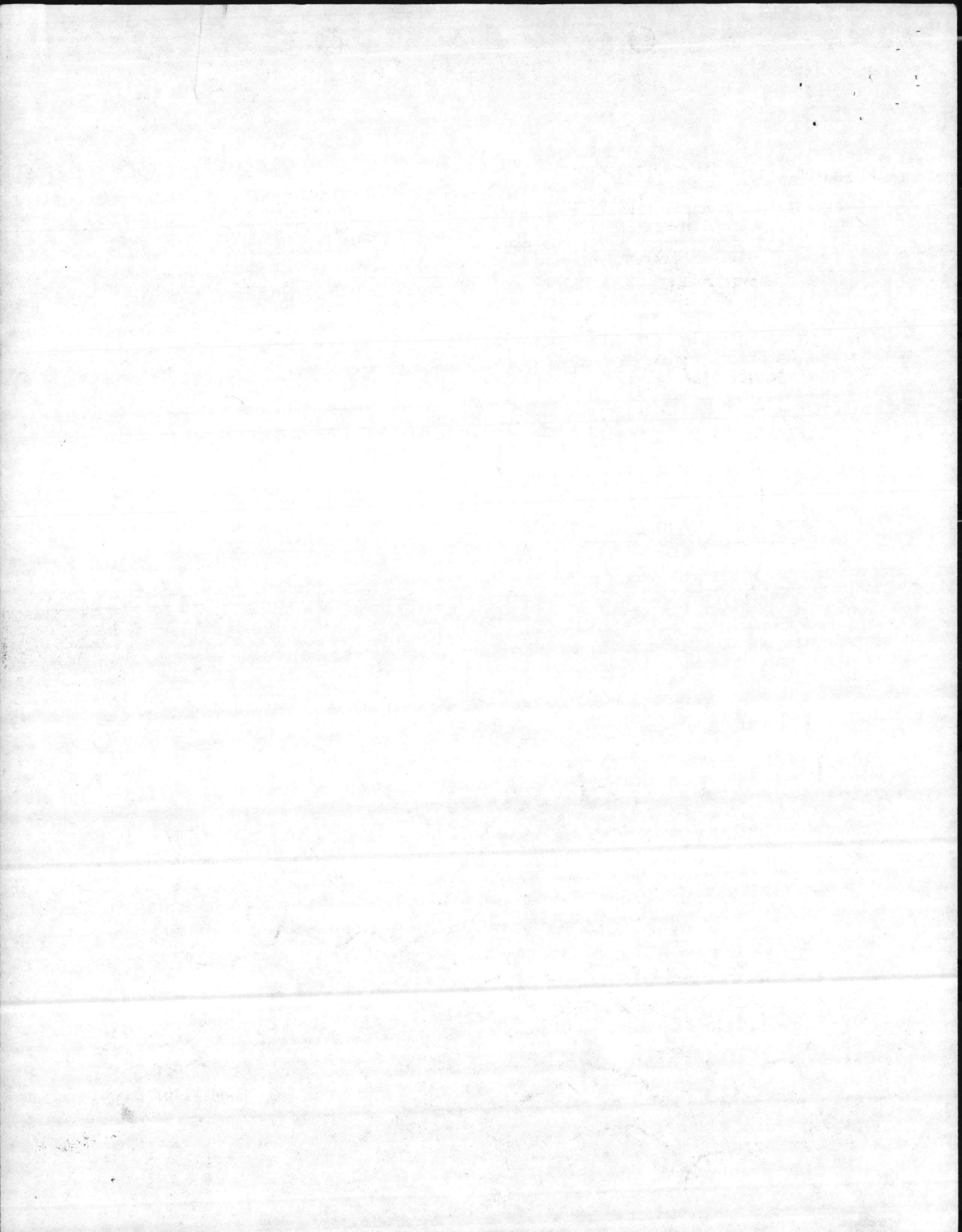
10% Discount (2% differential)

$$\$1,092,969 \times 1.1198 = \$1,223,906$$

Total Present Value Construction & Engineering

\$23,024,757  
+1,223,906

TOTAL \$24,248,663

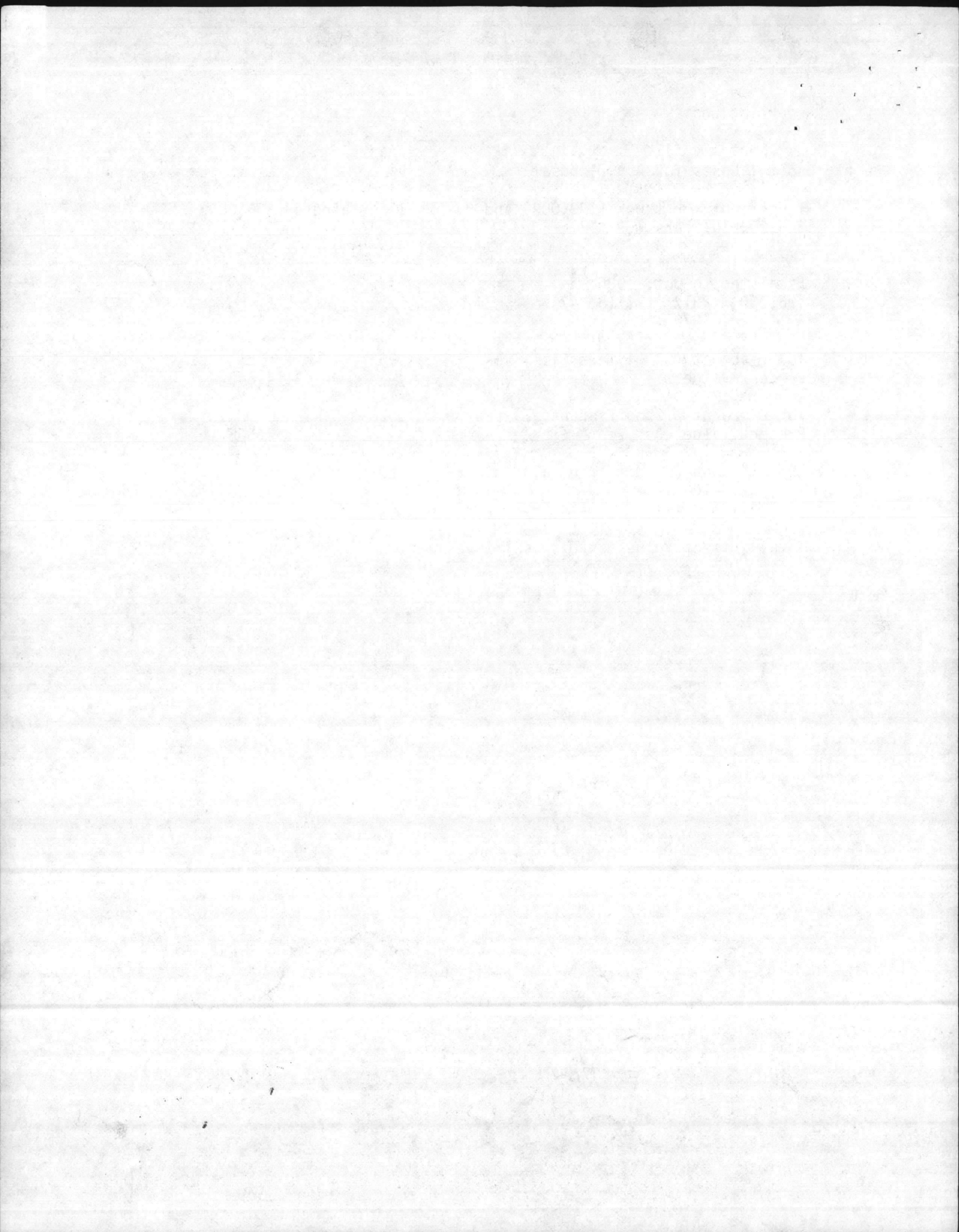


b. Capital Costs for Ash Disposal

Investment for truck (\$70,000) and disposal containers (\$26,000)  
\$96,000 in years 1, 9, 17

Escalated to Oct. 1986  
$$\frac{\$96,000 \times 2317}{1870} = \$118,947$$

10% Discount (2% differential) year 1	.963	
Present Value		\$114,545
10% Discount (2% differential) year 9	.526	
Present Value		\$ 62,566
10% Discount (2% differential) year 17	.288	
Present Value		<u>34,256</u>
Total Present Value Ash Disposal Investment		\$211,367



2. Recurring Costs

a. Annual Boiler Plant Labor Costs

- 4 Crane Operators (WG-8) @ \$9.98/hr. (incl. benefits)
- 4 Boiler Operators (WG-7) @ 9.43/hr. (incl. benefits)
- 4 Boiler Mechanics (WG-10) @ 11.09/hr. (incl. benefits)
- 3 Supervisors (WS-7) @ \$12.78/hr. (incl. benefits)

Unescalated Labor Cost

$$(4 \times 9.98 \times 2080) + (4 \times 9.43 \times 2080) + (4 \times 11.09 \times 2080) + (3 \times 12.78 \times 2080) = \$333,508$$

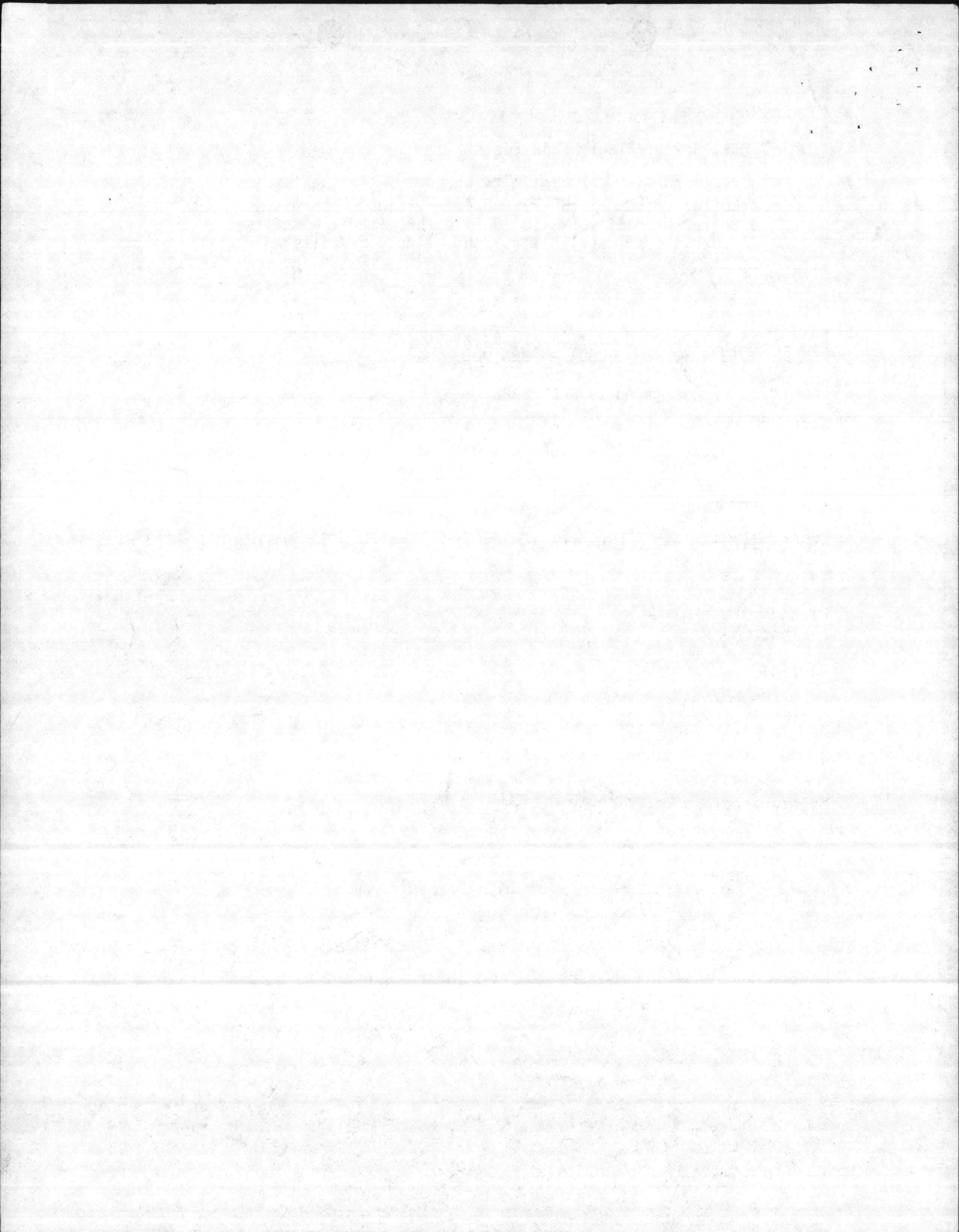
Labor escalated to Oct. 1986

	FY82	FY83	FY84	FY85	FY86	
\$333,508	x 1.056	x 1.056	x 1.056	x 1.056	x 1.056	= 437,951

10¢ Discount (0% differential) 9.524

Present Value Labor Cost \$4,171,048





b. Annual Boiler Maintenance Cost

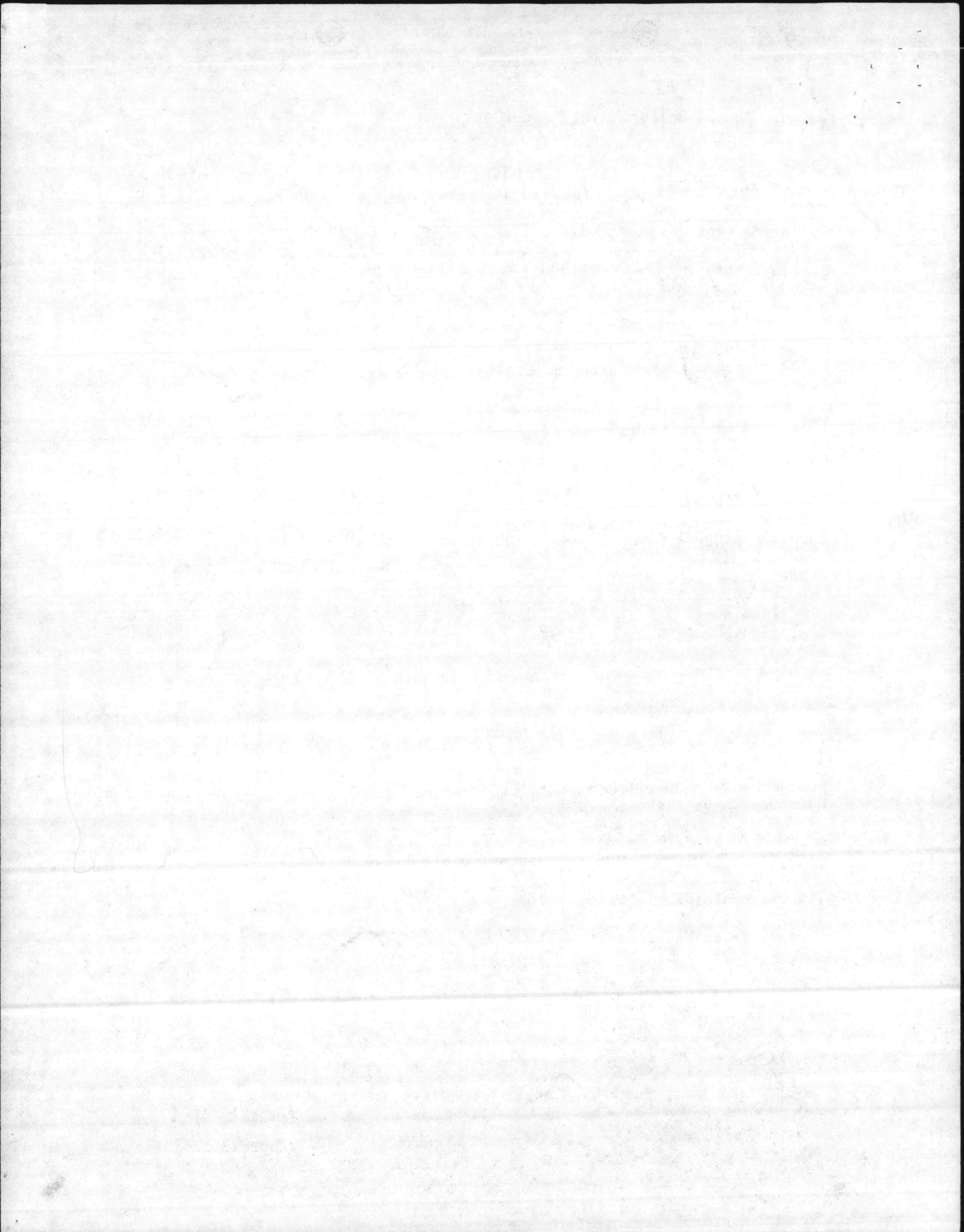
<u>ITEM</u>	<u>INSTALLED COST (\$ X 10<sup>3</sup>)</u>	<u>MAINT. FACTOR</u>	<u>COST (\$ X 10<sup>3</sup>)</u>
Boilers & Fans	3,250	0.025	81.25
Precipitators	1,200	0.015	18.00
Ducts & Stack	245	0.010	2.45
Ash Handling	575	0.025	14.38
Pumps	33	0.015	0.50
Water Treatment	37	0.020	.74
Building	3,400	0.005	17.00
Internal Piping	740	0.005	3.70
Export Piping	1,376	0.010	13.76
Cranes	850	0.020	17.00
Electrical Instrumentation	538	0.020	10.76
Turbine Generator	200	0.020	<u>4.00</u>
Total Unescalated Maintenance			183.54

Maintenance escalated to Oct. 1986

$$\$183,540 \times 1.056 \times 1.056 \times 1.056 \times 1.056 \times 1.056 = \$241,018$$

10% Discount (0% differential) 9.524

Present Value Maintenance Costs \$2,295,459



c. Plant Overhaul

\$ 50,000 every 5 years

Escalated to Oct. 1986

$$\$ 50,000 \times 1.056^{\text{Fy 82}} \times 1.056^{\text{Fy 83}} \times 1.056^{\text{Fy 84}} \times 1.056^{\text{Fy 85}} \times 1.056^{\text{Fy 86}} = \$65,658$$

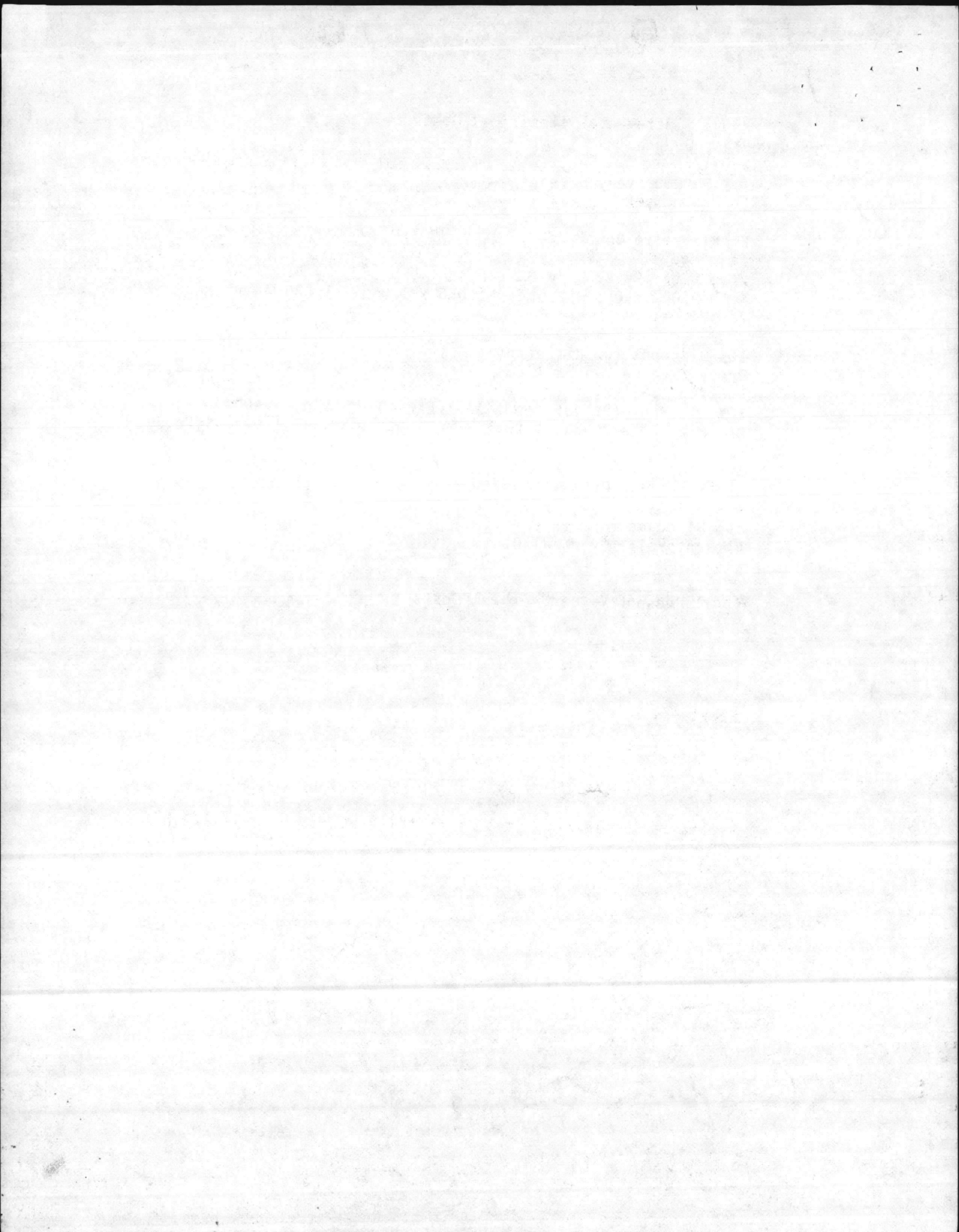
10% Discount (0% differential) year 5 Present Value Overhaul Cost	.652	\$ 42,809
--	------	-----------

10% Discount (0% differential) year 10 Present Value Overhaul Cost	.405	\$ 26,591
---	------	-----------

10% Discount (0% differential) year 15 Present Value Overhaul Cost	.251	\$ 16,480
---	------	-----------

10% Discount (0% differential) year 20 Present Value Overhaul Cost	.156	\$ 10,242
---	------	-----------

Total Present Value Overhaul Costs		<u>\$ 96,122</u>
------------------------------------	--	------------------



d. Annual Incremental Electrical Costs

<u>SERVICE</u>	<u>POWER (KW)</u>	<u>USE FACTOR</u>	<u>EFFECTIVE POWER</u>
Pumping Power*	110	0.8	88
Crane Operation	30	1.0	30
Precipitators	400	0.8	320
Ash Handling	60	0.8	48
TOTAL			486 KW

\* NOTE: Feedwater pumping is not included since a reduction in existing feedwater pumping will be realized. Adjustment is made for higher pressure feedwater.

Annual Demand Cost Increase  
 $486 \text{ KW} \times \$ 73.598/\text{KW} = \$ 35,769/\text{yr.}$

Annual KWH Increase  
 $486 \text{ KW} \times 7000 \text{ hrs/yr.} = 3,402,000 \text{ KWh/yr.}$

Annual Dollar Increase per KWH  
 $3,402,000 \text{ KWh/yr.} \times \$ .02726/\text{KWh} = \$ 92,738/\text{yr.}$

Total Annual Increase Electrical Cost  
 $\$ 35,769 + \$ 92,738 = \$ 128,507$

Escalated to Oct. 1986  
 $\$ 128,507 \times 1.13 \times 1.13 \times 1.13 \times 1.13 \times 1.13 = \$ 236,765$

10% Discount (7% differential) 18.049

Present Value Incremental Electrical Cost \$4,273,386



Summary Sheet Alternative 2A - Total Present Value

Investment Cost

Boiler Plant	\$24,248,663
Ash Disposal	211,367

Recurring Costs

Labor	4,171,048
Maintenance	2,295,459
Plant Overhaul	96,122
Incremental Electrical	4,273,386
Trash Transfer	2,840,615
Ash Disposal	<u>170,968</u>

Total Present Value Cost	\$38,307,628
--------------------------	--------------

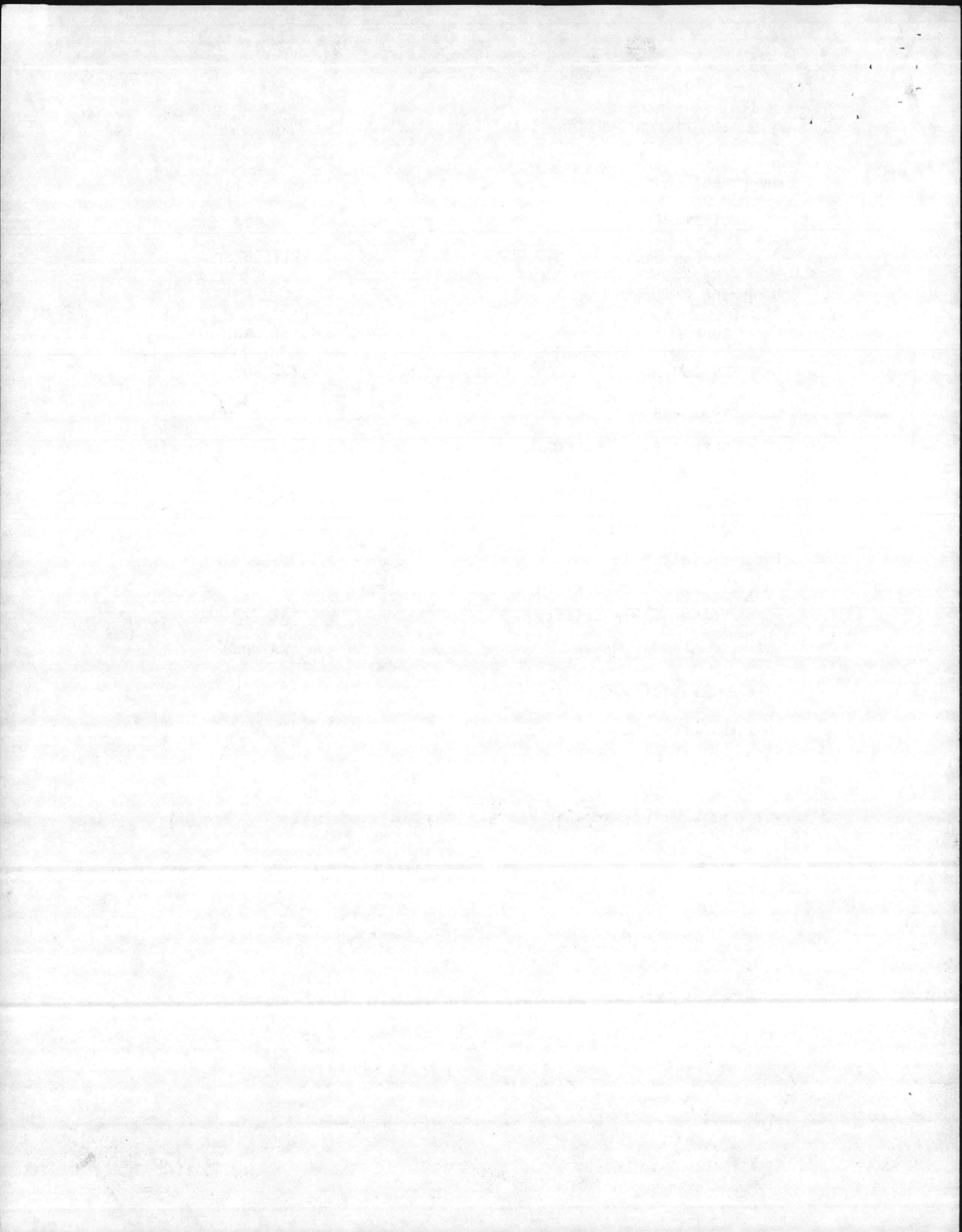
Less Present Value Benefits Sale of Electricity	<u>8,542,724</u>
--	------------------

Net Present Value Alternative 2A	\$29,764,904
----------------------------------	--------------

Discount Factor 9.524

Uniform Annual Cost	\$ 3,125,252
---------------------	--------------





e. Annual Trash Transfer Cost from Cherry Point to Lejeune

*~ 50 mi TRIP*

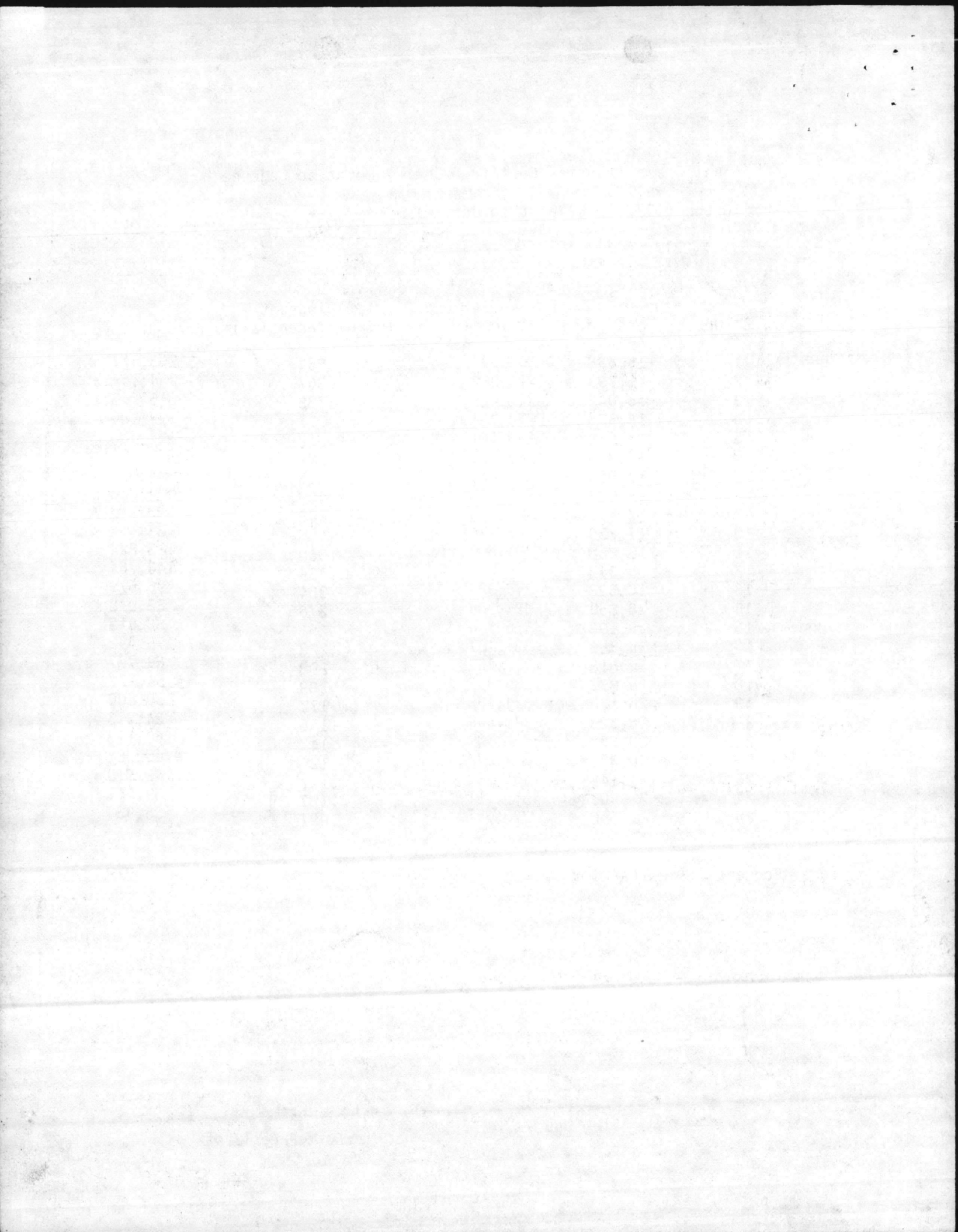
\$10/ton (1977) escalated to Oct. 1986

$$\frac{\$10 \times 2317}{1355} = \$17.10$$

	<u>Yr. of Op.</u>	<u>Tons/yr.</u>	<u>\$/yr.</u>	<u>10% Discount (0% differential)</u>	<u>Present Value</u>
1986	1	15,538	\$ 265,699	.954	\$ 253,477
	2	15,793	270,060	.867	234,142
	3	16,048	274,420	.788	216,243
	4	16,303	278,781	.717	199,886
1990	5	16,558	283,141	.652	184,608
	6	16,813	287,502	.592	170,201
	7	17,068	291,862	.538	157,022
	8	17,323	296,223	.489	144,853
	9	17,578	300,583	.445	133,759
	10	17,833	304,944	.405	123,502
	11	18,088	309,304	.368	113,824
	12	18,343	313,665	.334	104,764
	13	18,598	318,025	.304	96,679
	14	18,853	322,386	.276	88,978
2000	15	19,108	326,746	.251	82,013
	16	19,363	331,107	.228	75,492
	17	19,618	335,467	.208	69,777
	18	19,873	339,823	.189	64,227
	19	20,128	344,188	.172	59,200
	20	20,383	348,549	.156	54,373
	21	20,638	352,909	.142	50,113
	22	20,893	357,270	.129	46,087
	23	21,148	361,630	.117	42,310
	24	21,403	365,991	.107	39,161
2010	25	21,658	370,351	.097	35,924

Total Present Value Transfer Cost

\$2,840,615



f. Annual Ash Disposal Cost

	<u>Yr. of Op.</u>	<u>1982 \$*</u>	<u>1986 \$*</u>	<u>10% Discount (0% differential)</u>	<u>Present Value</u>
1986	1	\$ 13,702	\$ 16,886	.954	\$ 16,109
	2	13,756	16,952	.867	14,698
	3	13,862	17,083	.788	13,461
	4	13,916	17,150	.717	12,296
1990	5	14,022	17,280	.652	11,267
	6	14,075	17,346	.592	10,268
	7	14,128	17,411	.538	9,367
	8	14,950	18,424	.489	9,009
	9	15,003	18,489	.445	8,227
	10	15,110	18,621	.405	7,541
	11	15,163	18,686	.368	6,876
2000	12	15,216	18,752	.334	6,263
	13	15,269	18,817	.304	5,720
	14	15,323	18,884	.276	5,212
	15	15,376	18,949	.251	4,756
	16	15,429	19,014	.228	4,335
	17	15,535	19,145	.208	3,982
	18	15,588	19,210	.189	3,630
	19	15,642	19,277	.172	3,315
	20	15,748	19,407	.156	3,027
	21	15,802	19,474	.142	2,765
2010	22	15,855	19,539	.129	2,520
	23	15,908	19,605	.117	2,293
	24	16,014	19,735	.107	2,111
	25	16,067	19,800	.097	1,920
	Total Present Value Ash Disposal Cost				

\* Escalation from 1982 to 1986 =  $\frac{2317}{1880} = 1.2324$

Ash - 80 lbs/cf. 30% moisture

Ash Disposal - 5 days per week



3. Benefits -

Revenues generated from sales of electricity to CP&L

Year	Av. Kw/hr Generated	*Net Revenue Jan. 1982 \$	** Oct, 1986 \$	10% Discount (7% differential)	Present Value	
1986	1	640	\$232,640	\$428,624	.986	\$ 422,623
	2	646	234,821	432,642	.959	414,904
	3	655	238,092	438,669	.933	409,278
	4	660	239,910	442,019	.908	401,353
	5	670	243,545	448,716	.883	396,216
	6	674	244,999	451,395	.859	387,748
	7	680	247,180	455,413	.836	380,725
	8	685	248,998	458,763	.813	372,974
	9	690	250,815	462,110	.791	365,529
	10	700	254,450	468,808	.769	360,513
	11	705	256,268	472,157	.748	353,174
	12	710	258,085	475,505	.728	346,168
	13	715	259,902	478,853	.708	339,028
	14	720	261,720	482,202	.688	331,755
2000	15	725	263,538	485,552	.670	325,320
	16	730	265,355	488,899	.651	318,273
	17	740	268,990	495,597	.634	314,208
	18	745	270,808	498,946	.616	307,351
	19	750	272,625	502,294	.600	301,376
	20	750	276,260	508,991	.583	296,742
	21	766	278,441	513,009	.567	290,876
	22	770	279,895	515,688	.552	284,660
	23	775	281,712	519,036	.537	278,722
	24	785	285,348	525,735	.522	274,434
2010	25	790	287,165	529,083	.508	268,774

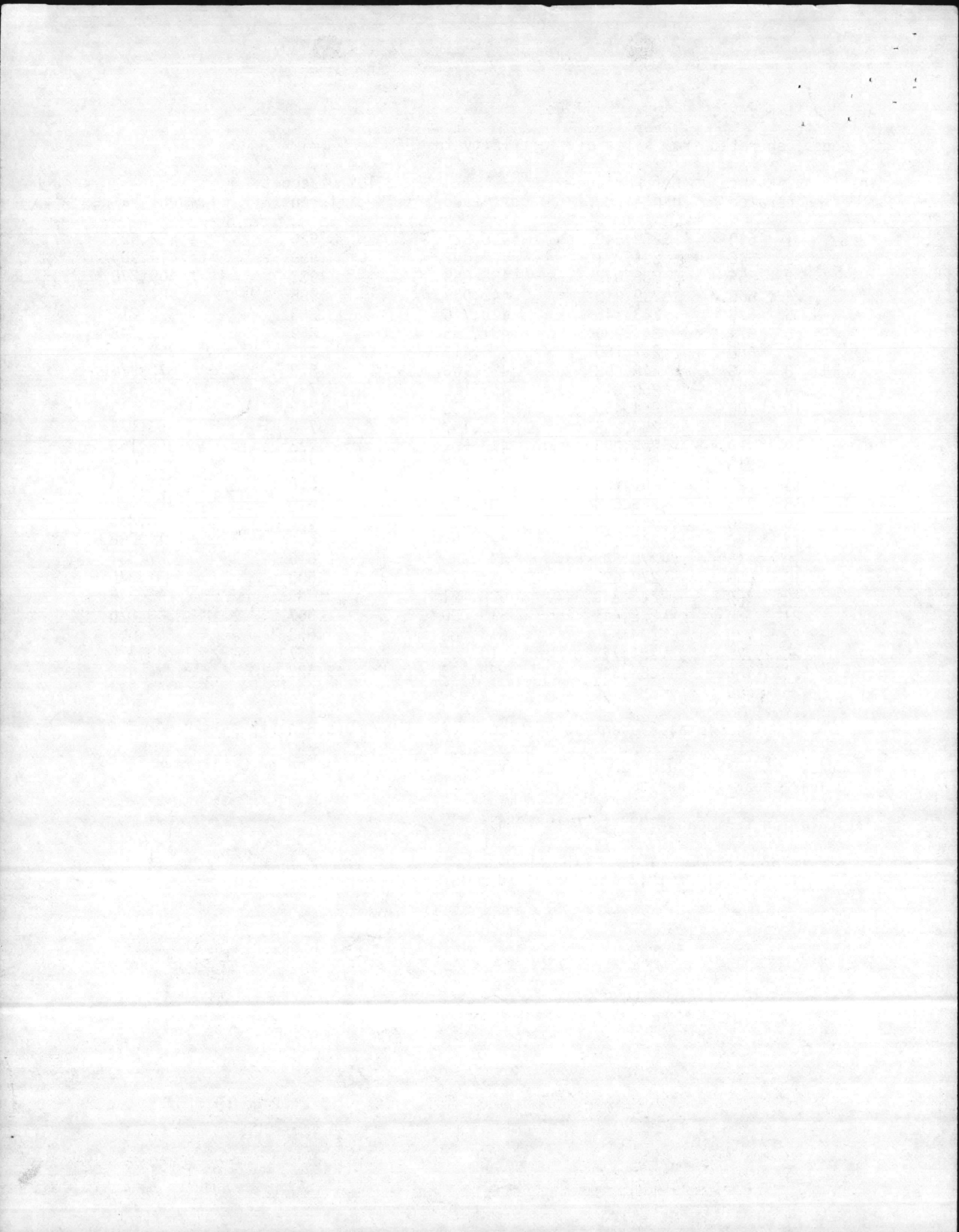
Total Present Value Electricity Revenues Benefit \$8,542,724

\* Source: CP&L Schedule CSP-3B effective 9-24-82 Variable Energy Credit and 10-Year Capacity Credit

\*\*Escalation from Jan. 1982 to Oct. 1986 =

$$\text{FY82} \quad \text{FY83} \quad \text{FY84} \quad \text{FY85} \quad \text{FY86}$$

$$1.13 \times 1.13 \times 1.13 \times 1.13 \times 1.13 = 1.842435$$



ALTERNATIVE B - Incremental Cost of Refuse Landfills at Cherry Point and  
Camp Lejeune

1. Investment Costs

a. Incremental Cost of Landfill - Cherry Point

Capital Cost

\$298,704 (1977) in year 5

Escalated to Oct 86

\$298,704 X  $\frac{2317}{1355}$  = \$510,772

10% Discount (2% differential) year 5 .712

Present Value Capital Cost \$363,669

Capital Cost

\$36,000 (1977) in years 8, 16, 23

Escalated to Oct. 1986

\$36,000 X  $\frac{2317}{1355}$  = \$61,558

10% Discount (2% differential) year 8 .568

Present Value Capital Cost \$ 34,965

10% Discount (2% differential) year 16 .310

Present Value Capital Cost \$ 19,082

10% Discount (2% differential) in year 23 .183

Present Value Capital Cost \$ 11,265

Total Present Value Capital Costs - Cherry Point \$428,981





b. Existing Boiler Plant Replacement/Upgrading Cost

Camp Geiger Capital Cost  
\$2,000,000 (1982\$) in 1989

Escalated to Oct. 1986  
 $\$2,000,000 \times \frac{2317}{1880} = \$2,464,893$

10% Discount (2% differential) year 2 .893

Present Value Capital Cost \$2,201,150

Air Station Capital Cost  
\$2,000,000 (1982) in 1996

Escalated to Oct. 1986  
 $\$2,000,000 \times \frac{2317}{1880} = \$2,464,893$

10% Discount (2% differential) year 10 .488

Present Value Capital Cost \$1,202,867

Total Present Value Replacement Costs \$3,404,017



2. Recurring Costs

a. Annual Incremental Landfill Development Cost - Cherry Point

Year	Yr. of Op.	1977\$	1987\$*	10% Discount (2% differential)	Present Value
1986	1	53,312	91,161	0.963	\$ 87,788
	2	54,208	92,694	0.893	82,775
	3	55,104	94,226	0.828	78,019
	4	56,000	95,758	0.768	73,542
	5	56,896	97,290	0.712	69,270
	6	57,792	98,822	0.660	65,223
	7	60,438	103,347	0.612	63,248
	8	61,334	104,879	0.568	59,571
	9	62,230	106,411	0.526	55,972
	10	63,126	107,943	0.488	52,676
	11	64,022	109,475	0.453	49,592
	12	64,918	111,007	0.420	46,623
	13	65,814	112,539	0.389	43,778
	14	66,710	114,071	0.361	41,180
2000	15	67,606	115,604	0.335	38,727
	16	68,502	117,136	0.310	36,312
	17	69,398	118,668	0.288	34,176
	18	70,294	120,200	0.267	32,093
	19	71,190	121,732	0.247	30,068
	20	72,086	123,264	0.229	28,227
	21	72,982	124,796	0.213	26,582
	22	73,878	126,328	0.197	24,887
	23	74,774	127,861	0.183	23,398
	24	75,670	129,393	0.170	21,997
2010	25	76,566	130,924	0.157	20,555

Total Present Value Development Cost - Cherry Point = \$1,186,279

\*Escalation from 1977 to 1986 =  $\frac{2317}{1355} = 1.70996$

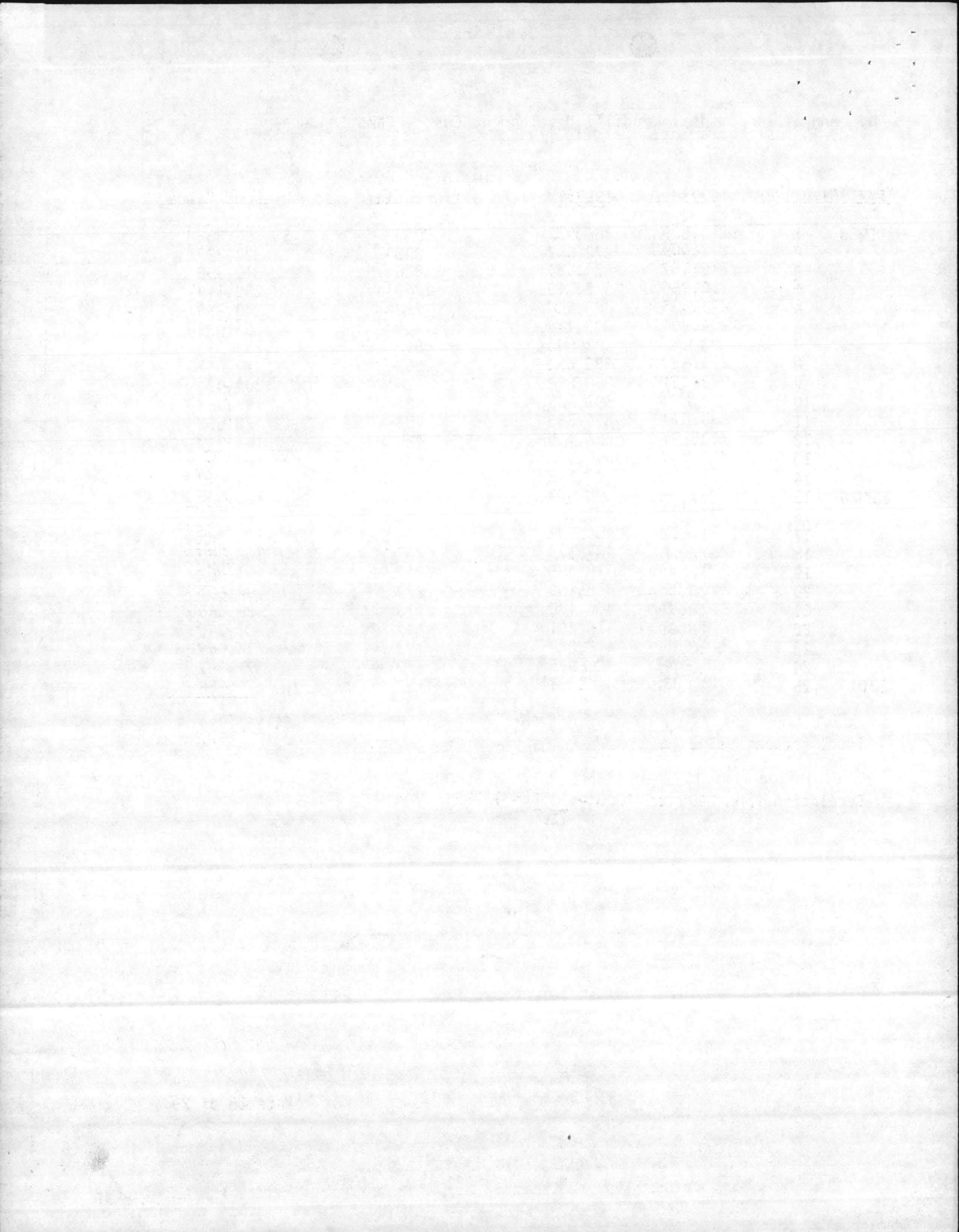


b. Annual Incremental Landfill Development Cost - Camp Lejeune

Yr. of Op.	1977\$*	1987\$*	10% Discount (2% differential)	Present Value
1986 1	\$215,809	368,960	.963	\$ 355,308
2	217,609	372,037	.893	332,229
3	219,157	374,684	.828	310,238
4	220,956	377,760	.768	290,119
5	222,505	380,408	.712	270,850
6	224,304	383,484	.660	253,099
7	223,732	382,506	.612	234,093
8	225,532	385,583	.568	219,011
9	227,331	388,659	.526	204,434
10	228,879	391,305	.488	190,957
11	230,679	394,383	.453	178,655
12	230,107	393,405	.420	165,230
13	231,906	396,480	.389	154,231
14	233,706	399,558	.361	144,240
2000 15	233,134	398,580	.335	133,524
16	234,933	401,656	.310	124,513
17	236,481	404,302	.288	116,439
18	238,281	407,379	.267	108,770
19	240,080	410,455	.247	101,382
20	241,629	413,103	.229	94,601
21	243,428	416,179	.213	88,646
22	242,856	415,201	.197	81,795
23	244,655	418,277	.183	76,545
24	246,204	420,925	.170	71,557
2010 25	248,003	424,001	.157	66,568

Total Present Value Development Costs - Camp Lejeune \$4,367,034

\* Escalation from 1977 to 1986 =  $\frac{2317}{1355} = 1.70966$



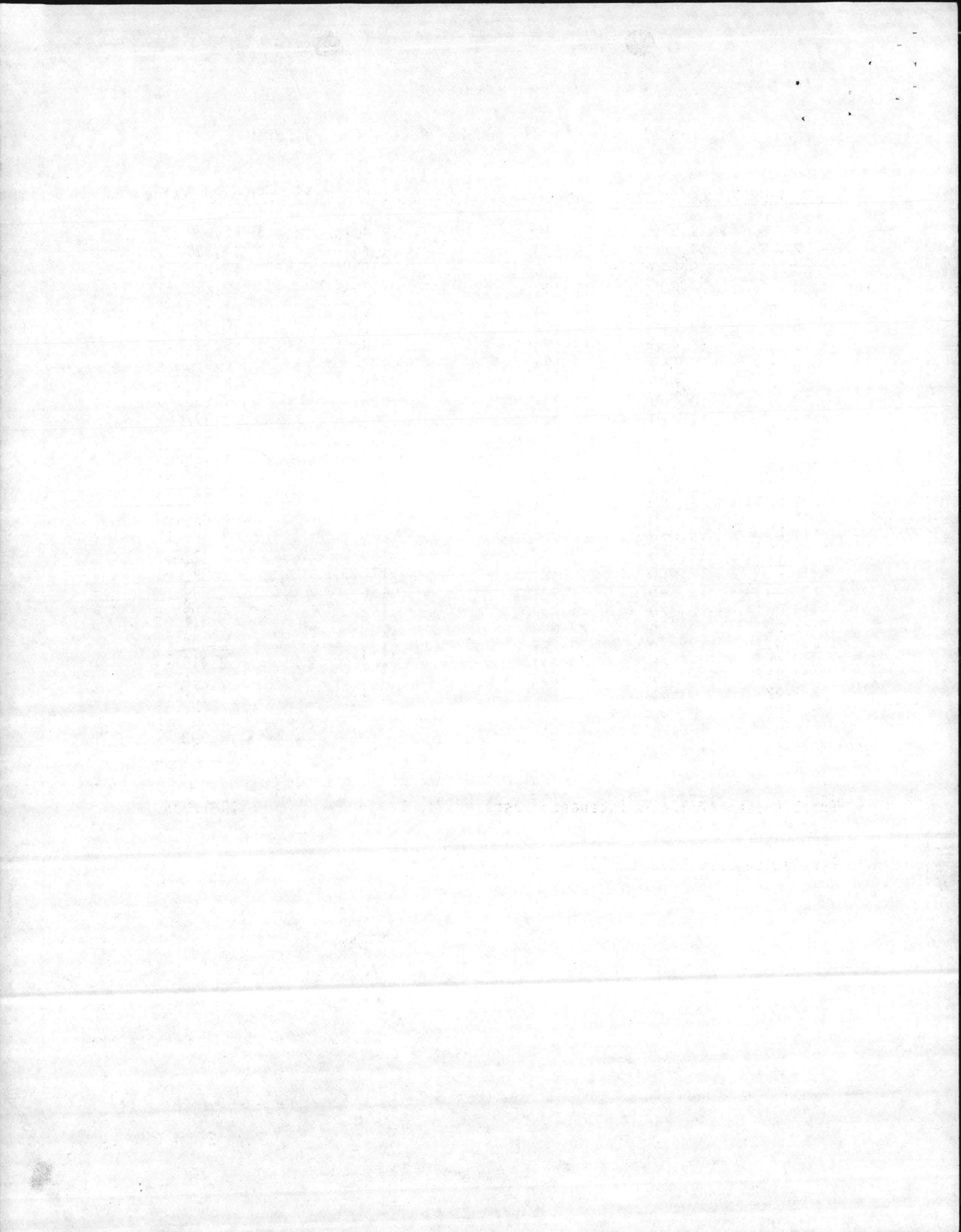
c. Annual Incremental Landfill Maintenance Cost - Cherry Point

<u>Year</u>	<u>Yr. of Op.</u>	<u>1977\$*</u>	<u>1986\$*</u>	<u>10% Discount (0% differential)</u>	<u>Present Value</u>
1986	1	\$ 9,520	\$ 16,278	.954	\$ 15,530
	2	9,680	16,552	.867	14,350
	3	9,840	16,826	.788	13,258
	4	10,000	17,099	.717	12,260
	5	10,160	17,373	.652	11,327
	6	10,230	17,492	.592	10,355
	7	10,480	17,920	.538	9,643
	8	10,640	18,194	.489	8,896
	9	10,800	18,467	.445	8,218
	10	10,960	18,741	.405	7,590
	11	11,120	19,014	.368	6,997
	12	11,280	19,288	.334	6,442
	13	11,440	19,561	.304	5,946
	14	11,600	19,835	.276	5,474
2000	15	11,760	20,109	.251	5,047
	16	11,920	20,382	.228	4,647
	17	12,080	20,656	.208	4,296
	18	12,240	20,929	.189	3,955
	19	12,400	21,203	.172	3,647
	20	12,560	21,477	.156	3,350
	21	12,720	21,750	.142	3,088
	22	12,880	22,024	.129	2,841
	23	13,040	22,297	.117	2,608
	24	13,200	22,571	.107	2,415
2010	25	13,360	22,845	.097	2,215

Total Present Value Maintenance Costs - Cherry Point \$174,393

\* Escalation from 1977 to 1986 =  $\frac{2317}{1355} = 1.70966$



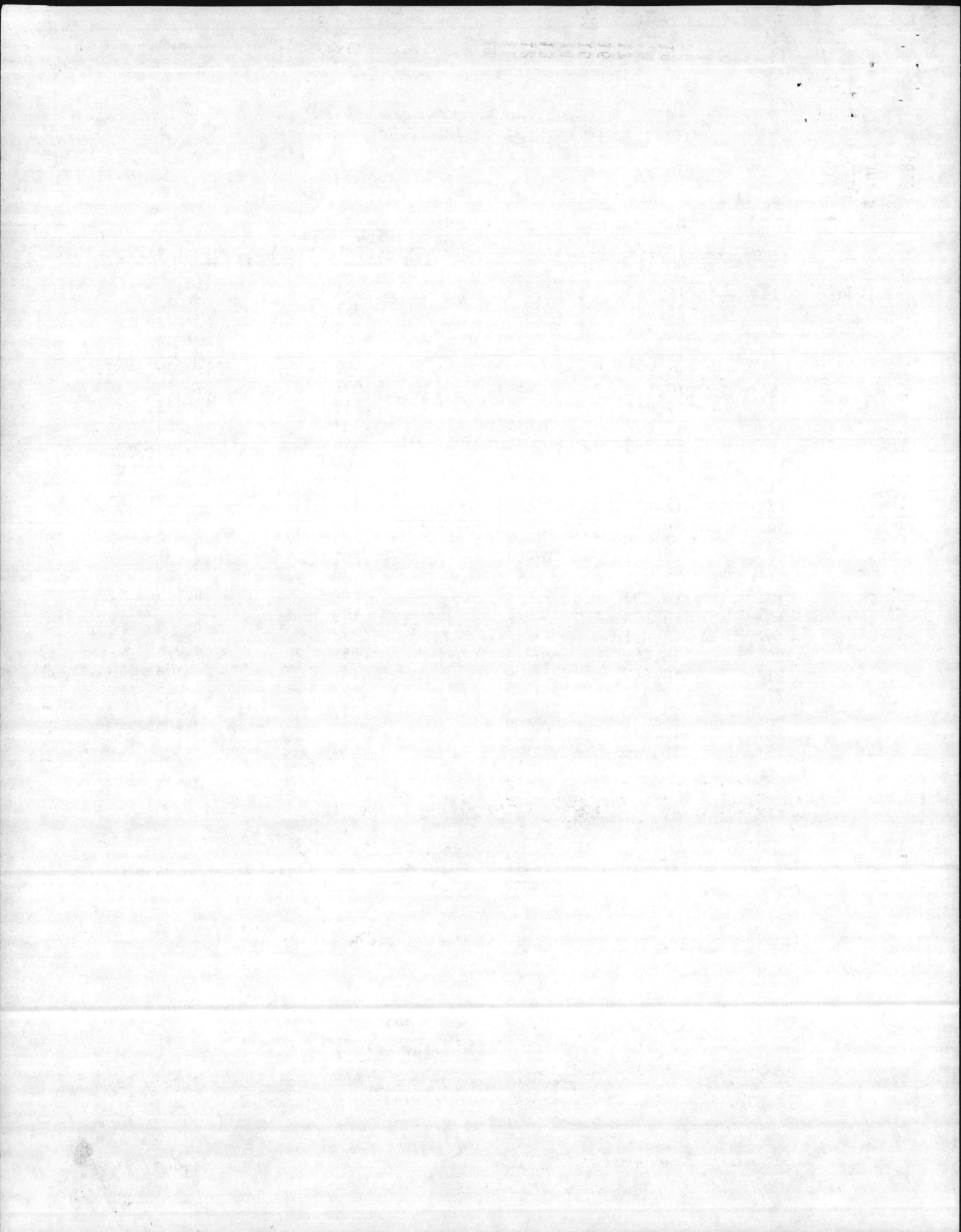


d. Annual Incremental Landfill Maintenance Cost - Camp Lejeune

Yr. of Op.	1977\$*	1986\$*	10% Discount (0% differential)	Present Value
1986				
1	\$ 16,460	\$ 28,145	.954	\$ 26,851
2	16,597	28,380	.867	24,605
3	16,715	28,582	.788	22,522
4	16,853	28,818	.717	20,662
5	16,971	29,019	.652	18,920
6	17,108	29,254	.592	17,318
7	17,064	29,178	.538	15,698
8	17,202	29,414	.489	14,383
9	17,339	29,649	.445	13,193
10	17,457	29,850	.405	12,089
11	17,594	30,085	.368	11,071
12	17,551	30,011	.334	10,023
13	17,688	30,211	.304	9,184
14	17,825	30,480	.276	8,412
2000				
15	17,781	30,404	.251	7,631
16	17,919	30,640	.228	6,986
17	18,037	30,842	.208	6,415
18	18,174	31,076	.189	5,873
19	18,311	31,311	.172	5,385
20	18,429	31,512	.156	4,916
21	18,567	31,748	.142	4,508
22	18,523	31,673	.129	4,085
23	18,660	31,907	.117	3,733
24	18,778	32,109	.107	3,435
2010				
25	18,915	32,343	.097	3,137

Total Present Value Maintenance Costs - Camp Lejeune \$281,035

\* Escalation from 1977 to 1986 =  $\frac{2317}{1355} = 1.70966$



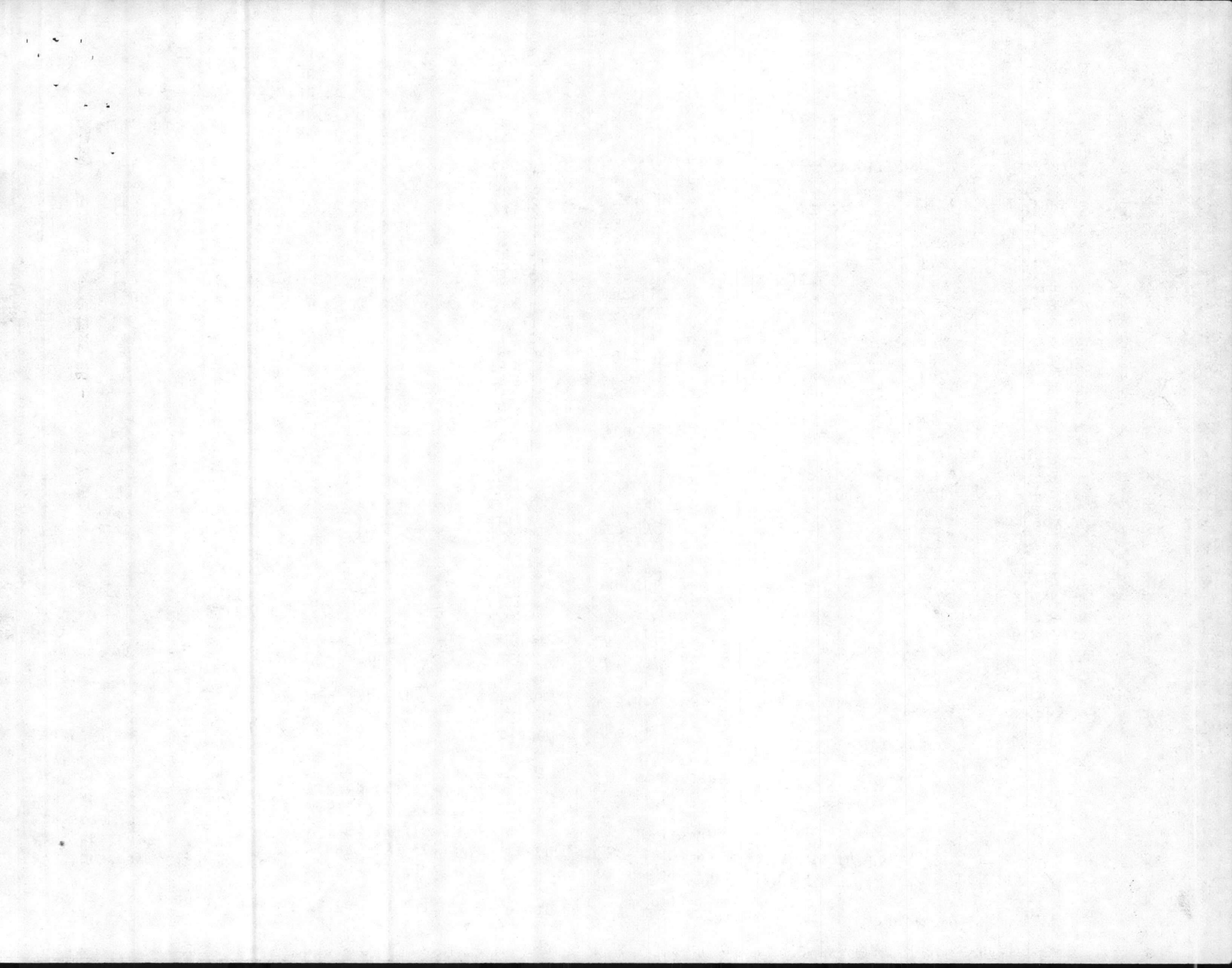
e. Annual Incremental Cost of #6 Fuel Oil at Camp Geiger and Air Station Plants

av. tons/day trash burned	- 24 hours/day	= tons/hr trash
tons/hr trash	X 5830 lb. steam/ton trash	= equivalent lbs steam/hr*
lbs steam/hr	X 1254 Btu/lb**	= MMBtu/hr
MMBtu/hr	X \$12.99/MMBtu***	= \$/hr
\$/hr	X 8760 hrs/yr	= \$/yr
\$/yr	X discount factor	= present value

Year	tons/day	tons/hr.	lbs steam/hr.	Displaced Oil Input MMBtu/hr.	\$/hr.	\$/yr.	10% Discount (8% differential)	Present Value
986 1	128	5.33	31,093	38.99	\$ 444.87	\$3,893,697	.991	\$3,858,654
2	129	5.38	31,336	39.30	448.02	3,924,655	.973	3,818,689
3	131	5.46	31,822	39.90	454.86	3,984,573	.955	3,805,267
4	132	5.50	32,065	40.21	458.40	4,015,531	.938	3,766,568
990 5	134	5.58	32,551	40.82	465.35	4,076,448	.921	3,754,409
6	135	5.62	32,794	41.12	468.77	4,106,407	.904	3,712,192
7	136	5.67	33,037	41.43	472.30	4,137,365	.888	3,673,980
8	137	5.71	33,280	41.73	475.72	4,167,324	.871	3,629,739
9	138	5.75	33,522	42.04	479.26	4,198,282	.856	3,593,729
10	140	5.83	34,008	42.65	486.21	4,259,199	.840	3,577,727
11	141	5.88	34,251	42.95	489.63	4,289,158	.825	3,538,556
12	142	5.92	34,494	43.26	493.16	4,320,116	.810	3,499,294
13	143	5.96	34,737	43.56	496.58	4,350,075	.795	3,458,310
14	144	6.00	34,980	43.86	500.00	4,380,035	.781	3,420,807
15	145	6.04	35,223	44.17	503.54	4,410,992	.766	3,378,820
000 16	146	6.08	35,466	44.47	506.96	4,440,952	.752	3,339,595
17	148	6.17	35,952	45.08	513.91	4,501,869	.739	3,326,881
18	149	6.21	36,194	45.39	517.46	4,532,826	.725	3,286,299
19	150	6.25	36,438	45.69	520.87	4,562,786	.712	3,248,703
20	152	6.33	36,923	46.30	527.82	4,623,703	.699	3,231,968
21	153	6.38	37,166	46.61	531.35	4,654,661	.687	3,197,752
22	154	6.42	37,409	46.91	534.77	4,684,620	.674	3,157,434
23	155	6.46	37,652	47.22	538.30	4,715,578	.662	3,121,712
24	157	6.54	38,138	47.82	545.15	4,775,496	.650	3,104,072
010 25	158	6.58	38,381	48.13	548.68	4,806,454	.638	3,066,517
<b>Total Present Value Fuel Oil Cost</b>								<b>\$86,567,674</b>

\* Includes blowdown and feedwater heating  
 \*\* Includes Camp Geiger Plant Efficiency  
 \*\*\* \$5.92 (Jan. 82) escalated to Oct. 87  

$$\text{\$5.92} \times 1.14 \times 1.14 \times 1.14 \times 1.14 \times 1.14 = 11.40$$



Summary Sheet Alternative 2B - Total Present Value

Investment Costs

Cherry Point Capital Costs	\$ 428,981
Boiler Plant Replacement Cost	3,404,017

Recurring Costs

Cherry Point Development	1,186,279
Camp Lejeune Development	4,367,034
Cherry Point Maintenance	174,393
Camp Lejeune Maintenance	281,035
Fuel Oil	<u>\$86,567,674</u>

Total Present Value Alternative 2B	96,409,413
------------------------------------	------------

Discount Factor	9.524
-----------------	-------

Uniform Annual Cost	10,122,785
---------------------	------------



## CAMP LEJEUNE COGENERATION

ECONOMIC LIFE: 25

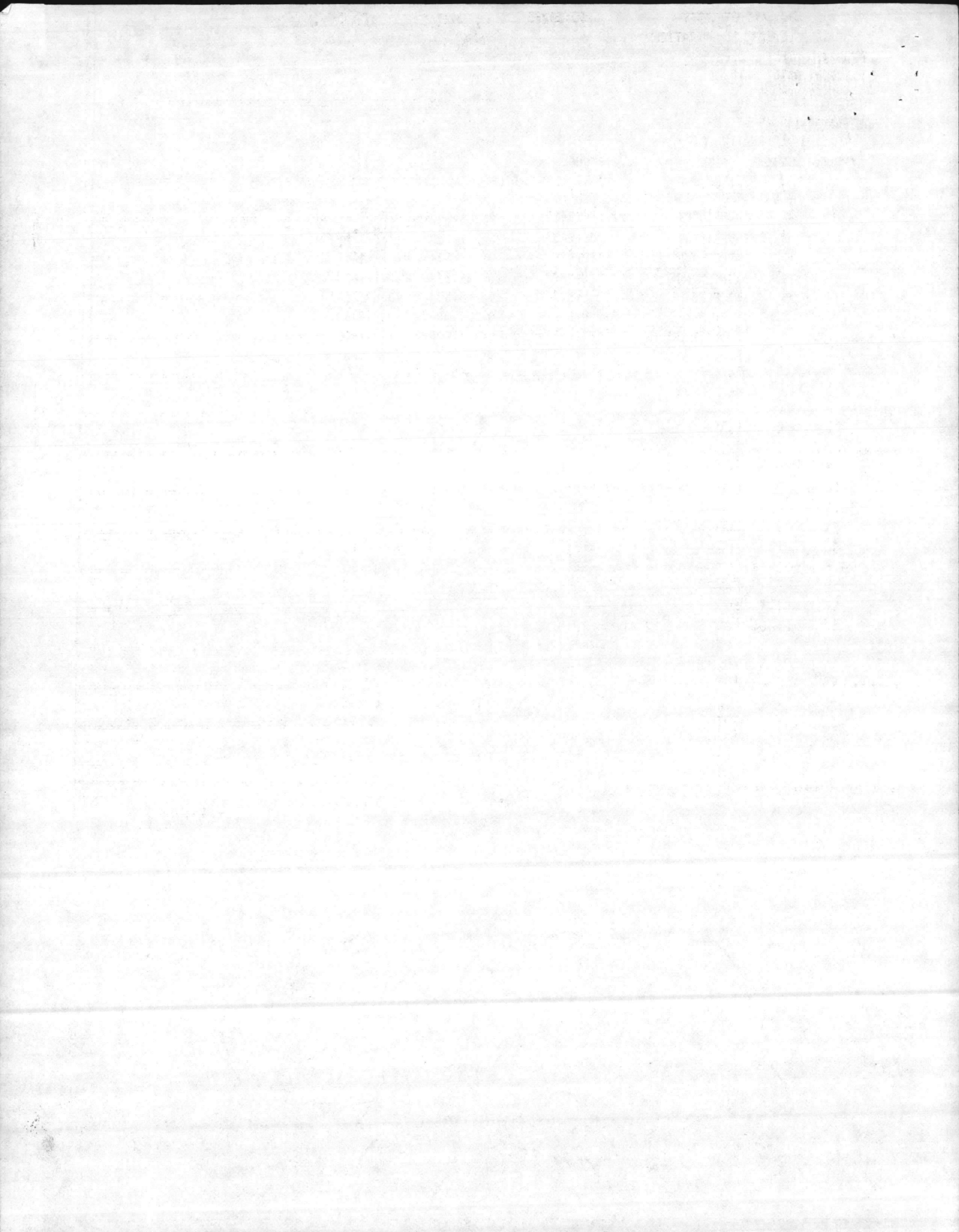
DISCOUNT RATE: 10

ALTERNATIVE:

## CASE 1 ALTERNATIVE A

PROJECT YEARS		ITEM	ANNUAL	DIFF	PV	PV
START	FINISH		COST		FACTOR	COST
0	0	INVESTMENT	22,798,246	0	1.000	22,798,246
0	0	INVESTMENT	238,225	0	1.000	238,225
1	25	LABOR	462,476	0	9.524	4,404,474
1	25	MAINTENANCE	248,969	0	9.524	2,371,101
1	25	INC ELECT	245,527	0	9.524	2,338,321
0	0	TRASH TRANS	3,290,806	0	1.000	3,290,806
0	0	ASH DISP	193,781	0	1.000	193,781
			TOTAL			35,634,955





## CAMP LEJEUNE COGENERATION

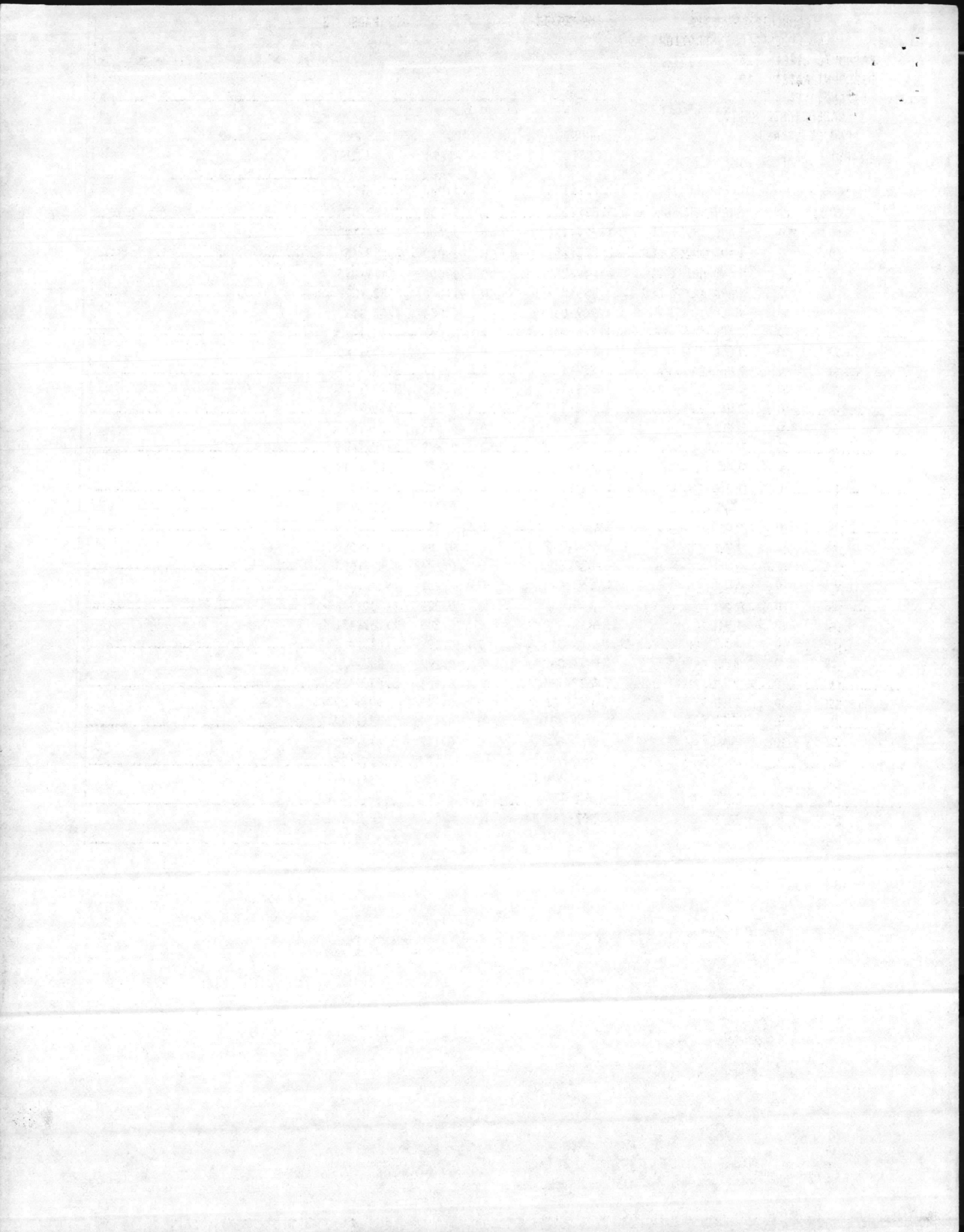
ECONOMIC LIFE: 25

DISCOUNT RATE: 10

ALTERNATIVE:

## CASE 1 ALTERNATIVE B

PROJECT YEARS		ITEM	ANNUAL	DIFF	PV	PV
START	FINISH		COST -		FACTOR	COST
0	0	LANDFILL INVST	496,934	0	1.000	496,934
0	0	PLANT UPGRADE	3,857,028	0	1.000	3,857,028
0	0	LAND INVST CP	1,374,128	0	1.000	1,374,128
0	0	LAND INVST LEJ	5,053,651	0	1.000	5,053,651
0	0	LAND MAINT CP	119,295	0	1.000	119,295
0	0	LAND MAINT LEJ	325,577	0	1.000	325,577
1	0	FUEL	4,739,018	0	0.954	4,520,183
2	0	FUEL	4,776,042	0	0.867	4,141,362
3	0	FUEL	4,850,089	0	0.788	3,823,245
4	0	FUEL	4,887,113	0	0.717	3,502,209
5	0	FUEL	4,961,160	0	0.651	3,232,066
6	0	FUEL	4,998,183	0	0.592	2,960,169
7	0	FUEL	5,035,207	0	0.538	2,710,997
8	0	FUEL	5,072,230	0	0.489	2,482,664
9	0	FUEL	5,109,254	0	0.445	2,273,442
10	0	FUEL	5,183,301	0	0.405	2,096,719
11	0	FUEL	5,220,325	0	0.368	1,919,723
12	0	FUEL	5,257,348	0	0.334	1,757,580
13	0	FUEL	5,294,372	0	0.304	1,609,052
14	0	FUEL	5,331,396	0	0.276	1,473,004
15	0	FUEL	5,368,419	0	0.251	1,348,394
16	0	FUEL	5,405,442	0	0.228	1,234,266
17	0	FUEL	5,479,490	0	0.208	1,137,431
18	0	FUEL	5,516,513	0	0.189	1,041,015
19	0	FUEL	5,553,537	0	0.172	952,729
20	0	FUEL	5,627,584	0	0.156	877,465
21	0	FUEL	5,664,608	0	0.142	803,127
22	0	FUEL	5,701,631	0	0.129	734,887
23	0	FUEL	5,738,655	0	0.117	672,418
24	0	FUEL	5,812,702	0	0.107	619,176
25	0	FUEL	5,849,726	0	0.097	566,473
TOTAL						59,716,624



## CAMP LEJEUNE COGENERATION

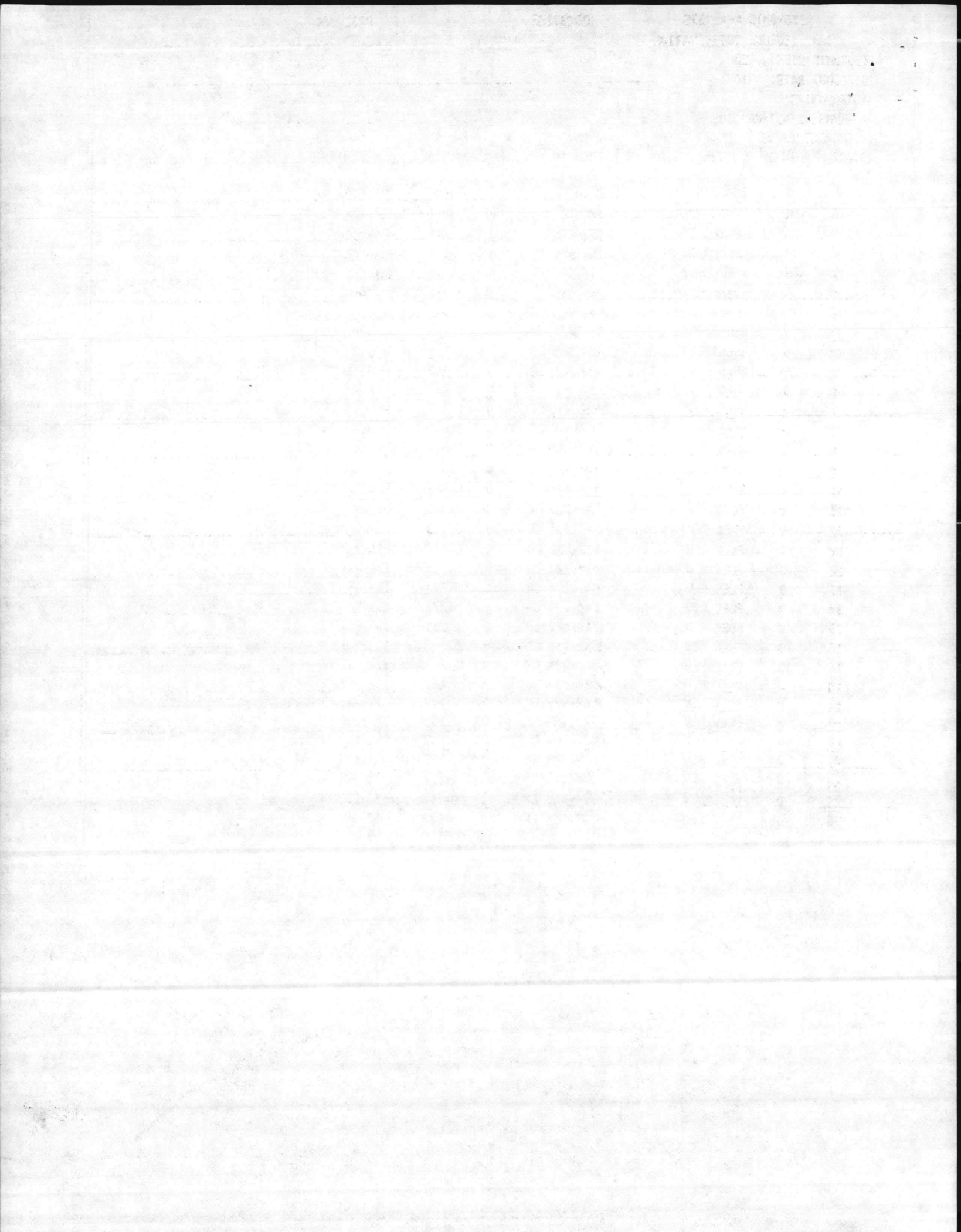
ECONOMIC LIFE: 25

DISCOUNT RATE: 10

ALTERNATIVE:

CASE 2 ALTERNATIVE A

PROJECT YEARS		ITEM	ANNUAL	DIFF	PV	PV
START	FINISH		COST		FACTOR	COST
0	0	INVESTMENT	28,201,512	0	1.000	28,201,512
0	0	INVESTMENT	238,225	0	1.000	238,225
1	25	LABOR	462,476	0	9.524	4,404,474
1	25	MAINTENANCE	254,515	0	9.524	2,423,919
0	0	PLANT O&M	101,516	0	1.000	101,516
1	25	INC ELECT	267,545	0	9.524	2,548,013
0	0	TRASH TRANS	3,290,806	0	1.000	3,290,806
0	0	ASH DISP	193,781	0	1.000	193,781
1	0	ELECT REV	484,345 CR	0	0.954	461,979 CR
2	0	ELEC REV	488,886 CR	0	0.867	423,918 CR
3	0	ELEC REV	495,697 CR	0	0.788	390,749 CR
4	0	ELEC REV	499,481 CR	0	0.717	357,938 CR
5	0	ELEC REV	507,049 CR	0	0.651	330,329 CR
6	0	ELEC REV	510,076 CR	0	0.592	302,052 CR
7	0	ELEC REV	514,617 CR	0	0.538	277,074 CR
8	0	ELEC REV	518,401 CR	0	0.489	253,737 CR
9	0	ELEC REV	522,185 CR	0	0.445	232,354 CR
10	0	ELEC REV	525,752 CR	0	0.405	214,292 CR
11	0	ELEC REV	533,536 CR	0	0.368	196,202 CR
12	0	ELEC REV	537,320 CR	0	0.334	179,631 CR
13	0	ELEC REV	541,104 CR	0	0.304	164,451 CR
14	0	ELEC REV	544,888 CR	0	0.276	150,546 CR
15	0	ELEC REV	548,672 CR	0	0.251	137,810 CR
16	0	ELEC REV	552,456 CR	0	0.228	126,146 CR
17	0	ELEC REV	560,024 CR	0	0.208	116,249 CR
18	0	ELEC REV	563,808 CR	0	0.189	106,395 CR
19	0	ELEC REV	567,592 CR	0	0.172	97,372 CR
20	0	ELEC REV	575,160 CR	0	0.156	89,700 CR
21	0	ELEC REV	579,701 CR	0	0.142	82,189 CR
22	0	ELEC REV	582,728 CR	0	0.129	75,108 CR
23	0	ELEC REV	586,512 CR	0	0.117	68,723 CR
24	0	ELEC REV	594,080 CR	0	0.107	63,282 CR
25	0	ELEC REV	597,864 CR	0	0.097	57,895 CR
			TOTAL			36,466,074



## CAMP. LEJEUNE COGENERATION

ECONOMIC LIFE: 25

DISCOUNT RATE: 10

ALTERNATIVE:

CASE 2 ALTERNATIVE B

PROJECT YEARS		ITEM	ANNUAL COST	DIFF	PV	PV
START	FINISH				FACTOR	COST
0	0	LANDFILL INVST.	496,934	0	1.000	496,934
0	0	PLANT UPGRADE	3,857,028	0	1.000	3,857,028
0	0	LAND INVST CP	1,374,128	0	1.000	1,374,128
0	0	LAND INVST LEJ	5,053,651	0	1.000	5,053,651
0	0	LAND MAINT CP	119,295	0	1.000	119,295
0	0	LAND MAINT LEJ	325,577	0	1.000	325,577
1	0	FUEL	4,436,884	0	0.954	4,232,001
2	0	FUEL	4,471,547	0	0.867	3,877,331
3	0	FUEL	4,540,873	0	0.788	3,579,495
4	0	FUEL	4,575,537	0	0.717	3,278,927
5	0	FUEL	4,644,863	0	0.651	3,026,007
6	0	FUEL	4,679,526	0	0.592	2,771,445
7	0	FUEL	4,714,189	0	0.538	2,538,158
8	0	FUEL	4,748,852	0	0.489	2,324,383
9	0	FUEL	4,783,516	0	0.445	2,128,500
10	0	FUEL	4,852,842	0	0.405	1,963,043
11	0	FUEL	4,887,505	0	0.368	1,797,332
12	0	FUEL	4,322,168	0	0.334	1,444,941
13	0	FUEL	4,956,831	0	0.304	1,506,468
14	0	FUEL	4,991,494	0	0.276	1,379,093
15	0	FUEL	5,026,157	0	0.251	1,262,427
16	0	FUEL	5,060,821	0	0.228	1,155,576
17	0	FUEL	5,130,147	0	0.208	1,064,915
18	0	FUEL	5,164,810	0	0.189	974,646
19	0	FUEL	5,199,473	0	0.172	891,988
20	0	FUEL	5,268,800	0	0.156	821,710
21	0	FUEL	5,303,463	0	0.142	751,924
22	0	FUEL	5,338,126	0	0.129	688,035
23	0	FUEL	5,372,789	0	0.117	629,548
24	0	FUEL	5,442,115	0	0.107	579,701
25	0	FUEL	5,476,778	0	0.097	530,357
				TOTAL		56,424,576



## CAMP LEJEUNE COGENERATION

ECONOMIC LIFE: 25

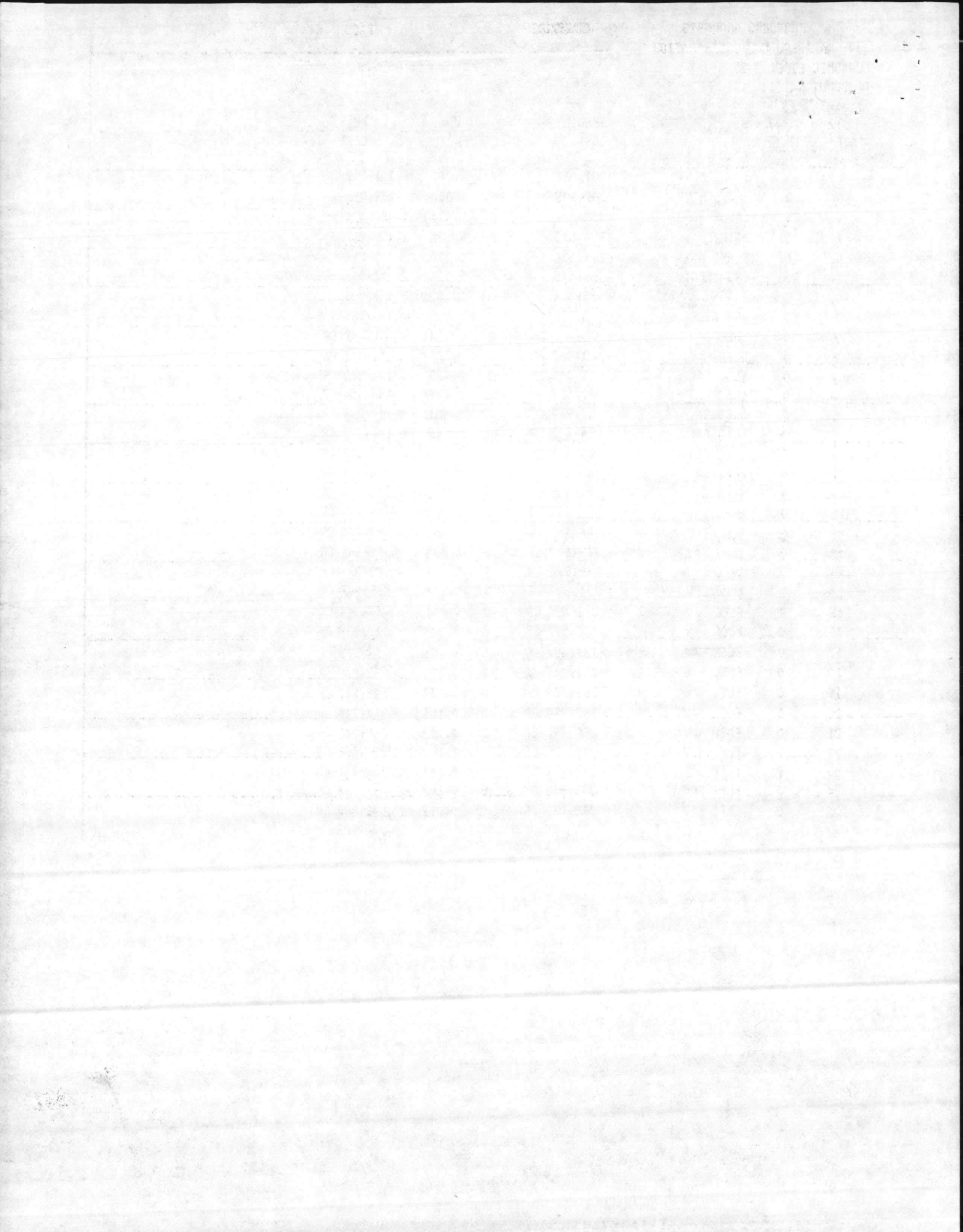
DISCOUNT RATE: 10

ALTERNATIVE:

CASE 3 ALTERNATIVE A

PROJECT YEARS			ANNUAL		PV	PV
START	FINISH	ITEM	COST	DIFF	FACTOR	COST
0	0	INVESTMENT	28,201,512	0	1.000	28,201,512
0	0	INVESTMENT	238,225	0	1.000	238,225
1	25	LABOR	462,476	0	9.524	4,404,474
1	25	MAINTENANCE	254,515	0	9.524	2,423,919
0	0	PLANT OVM	101,516	0	1.000	101,516
1	25	INC ELECT	267,545	0	9.524	2,548,013
0	0	TRASH TRANS	3,290,806	0	1.000	3,290,806
0	0	ASH DISP	193,781	0	1.000	193,781
1	0	ELEC SAV	241,606 CR	0	0.954	230,449 CR
2	0	ELEC SAV	243,872 CR	0	0.867	211,464 CR
3	0	ELEC SAV	247,269 CR	0	0.788	194,918 CR
4	0	ELEC SAV	249,157 CR	0	0.717	178,551 CR
5	0	ELEC SAV	252,932 CR	0	0.651	164,778 CR
6	0	ELEC SAV	254,442 CR	0	0.592	150,693 CR
7	0	ELEC SAV	256,707 CR	0	0.538	138,213 CR
8	0	ELEC SAV	258,594 CR	0	0.489	126,571 CR
9	0	ELEC SAV	260,482 CR	0	0.445	115,905 CR
10	0	ELEC SAV	264,257 CR	0	0.405	106,895 CR
11	0	ELEC SAV	266,145 CR	0	0.368	97,872 CR
12	0	ELEC SAV	268,032 CR	0	0.334	89,605 CR
13	0	ELEC SAV	269,920 CR	0	0.304	82,033 CR
14	0	ELEC SAV	271,807 CR	0	0.276	75,097 CR
15	0	ELEC SAV	273,695 CR	0	0.251	68,744 CR
16	0	ELEC SAV	275,582 CR	0	0.228	62,925 CR
17	0	ELEC SAV	279,357 CR	0	0.208	57,988 CR
18	0	ELEC SAV	281,245 CR	0	0.189	53,073 CR
19	0	ELEC SAV	283,133 CR	0	0.172	48,572 CR
20	0	ELEC SAV	286,908 CR	0	0.156	44,745 CR
21	0	ELEC SAV	288,795 CR	0	0.142	40,945 CR
22	0	ELEC SAV	290,683 CR	0	0.129	37,446 CR
23	0	ELEC SAV	292,570 CR	0	0.117	34,281 CR
24	0	ELEC SAV	296,345 CR	0	0.107	31,567 CR
25	0	ELEC SAV	298,233 CR	0	0.097	28,880 CR
TOTAL						30,930,007





## CAMP LEJEUNE COGNERATION

ECONOMIC LIFE: 25

DISCOUNT RATE: 10

ALTERNATIVE:

CASE 3 ALTERNATIVE B

PROJECT YEARS		ITEM	ANNUAL COST	DIFF	PV FACTOR	PV COST
START	FINISH					
0	0	LANDFILL INVST	496,934	0	1.000	496,934
0	0	PLANT UPGRADE	3,857,028	0	1.000	3,857,028
0	0	LAND INVST CP	1,374,128	0	1.000	1,374,128
0	0	LAND INVST LEJ	5,053,651	0	1.000	5,053,651
0	0	LAND MAINT CP	119,295	0	1.000	119,295
0	0	LAND MAINT LEJ	325,577	0	1.000	325,577
1	0	FUEL	4,436,884	0	0.954	4,232,031
2	0	FUEL	4,471,547	0	0.867	3,877,331
3	0	FUEL	4,540,873	0	0.788	3,579,495
4	0	FUEL	4,575,537	0	0.717	3,278,927
5	0	FUEL	4,644,863	0	0.651	3,026,007
6	0	FUEL	4,679,526	0	0.592	2,771,445
7	0	FUEL	4,714,189	0	0.538	2,538,158
8	0	FUEL	4,748,852	0	0.489	2,324,383
9	0	FUEL	4,783,516	0	0.445	2,128,500
10	0	FUEL	4,852,842	0	0.405	1,963,043
11	0	FUEL	4,897,505	0	0.368	1,797,332
12	0	FUEL	4,322,168	0	0.334	1,444,941
13	0	FUEL	4,956,831	0	0.304	1,506,468
14	0	FUEL	4,991,494	0	0.276	1,379,093
15	0	FUEL	5,026,157	0	0.251	1,262,427
16	0	FUEL	5,060,821	0	0.228	1,155,576
17	0	FUEL	5,130,147	0	0.208	1,064,915
18	0	FUEL	5,164,810	0	0.189	974,646
19	0	FUEL	5,199,473	0	0.172	891,988
20	0	FUEL	5,268,800	0	0.156	821,710
21	0	FUEL	5,303,463	0	0.142	751,924
22	0	FUEL	5,338,126	0	0.129	688,035
23	0	FUEL	5,372,789	0	0.117	629,548
24	0	FUEL	5,442,115	0	0.107	579,701
25	0	FUEL	5,476,778	0	0.097	530,357
TOTAL						56,424,576



## CAMP LEJEUNE COGENERATION

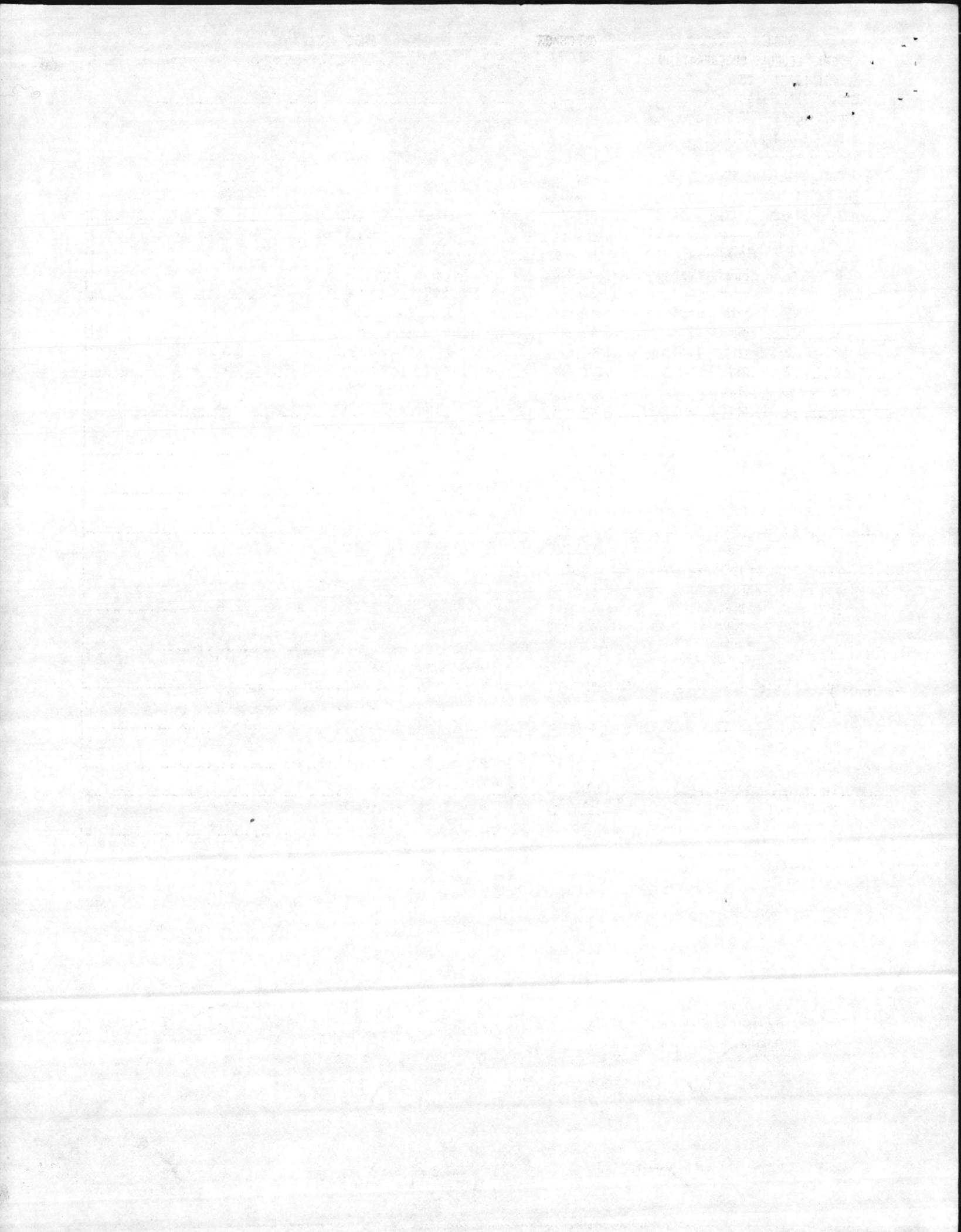
ECONOMIC LIFE: 25

DISCOUNT RATE: 10

ALTERNATIVE:

## CASE 1 ALTERNATIVE A

PROJECT YEARS			ANNUAL		PV	PV
START	FINISH	ITEM	COST	DIFF	FACTOR	COST
0	0	INVESTMENT	22,798,246	0	1.000	22,798,246
0	0	INVESTMENT	238,225	0	1.000	238,225
1	25	LABOR	462,476	0	9.524	4,404,474
1	25	MAINTENANCE	248,969	0	9.524	2,371,101
1	25	INC ELECT	245,527	7	18.049	4,431,401
0	0	TRASH TRANS	3,290,806	0	1.000	3,290,806
0	0	ASH DISP	193,781	0	1.000	193,781
				TOTAL		37,728,035



## CAMP LEJEUNE COGENERATION

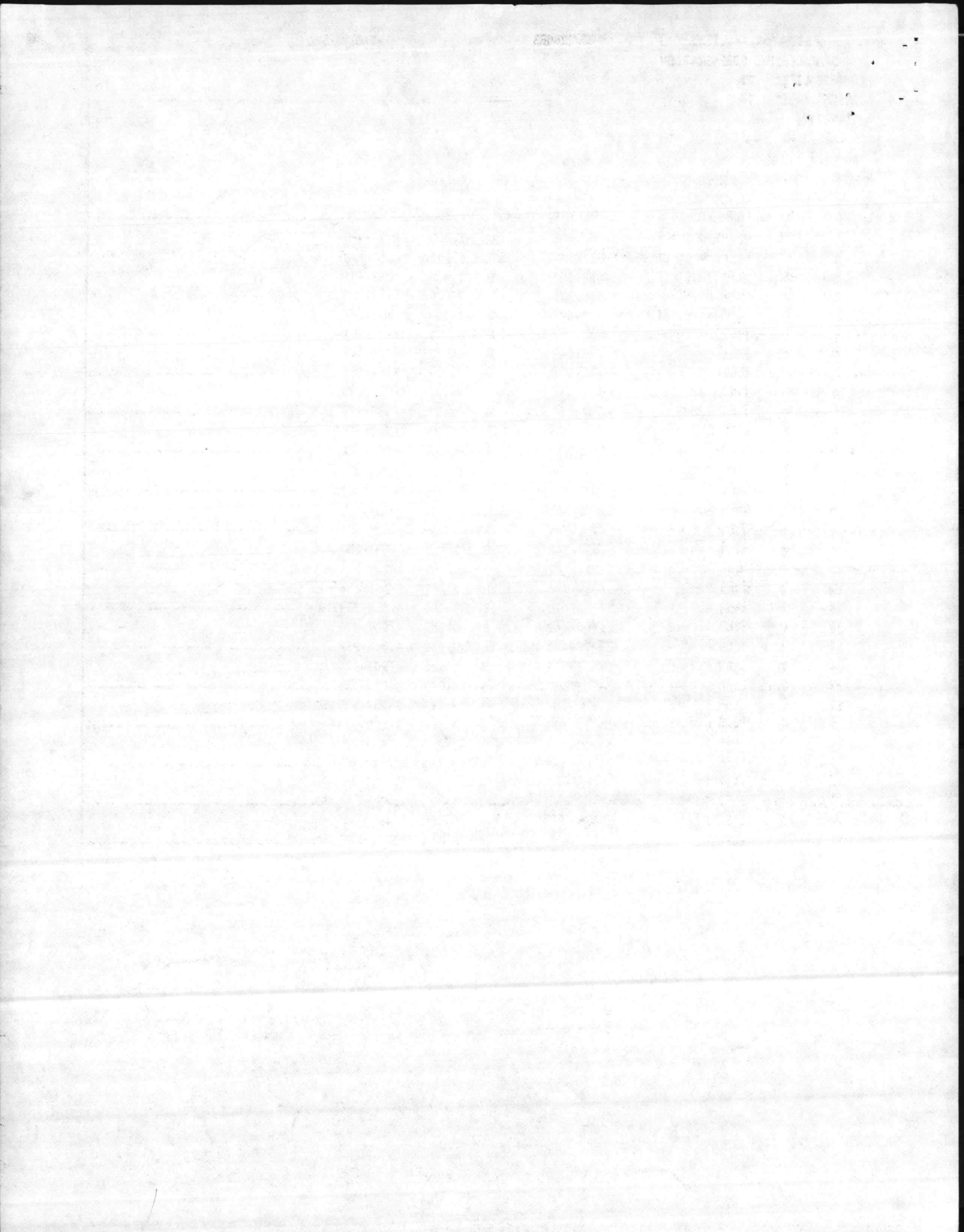
ECONOMIC LIFE: 25

DISCOUNT RATE: 10

## ALTERNATIVE:

## CASE 1 ALTERNATIVE B

PROJECT YEARS		ITEM	ANNUAL	DIFF	PV	PV
START	FINISH		COST		FACTOR	COST
0	0	LANDFILL INVST	496,934	0	1.000	496,934
0	0	PLANT UPGRADE	3,857,028	0	1.000	3,857,028
0	0	LAND INVST CP	1,374,128	0	1.000	1,374,128
0	0	LAND INVST LEJ	5,053,651	0	1.000	5,053,651
0	0	LAND MAINT CP	119,295	0	1.000	119,295
0	0	LAND MAINT LEJ	325,577	0	1.000	325,577
1	0	FUEL	4,739,018	8	0.991	4,695,801
2	0	FUEL	4,776,042	8	0.973	4,646,442
3	0	FUEL	4,850,089	8	0.955	4,632,689
4	0	FUEL	4,887,113	8	0.938	4,583,180
5	0	FUEL	4,961,160	8	0.921	4,568,029
6	0	FUEL	4,998,183	8	0.904	4,518,443
7	0	FUEL	5,035,207	8	0.888	4,469,151
8	0	FUEL	5,072,230	8	0.871	4,420,158
9	0	FUEL	5,109,254	8	0.856	4,371,469
10	0	FUEL	5,183,301	8	0.840	4,354,190
11	0	FUEL	5,220,325	8	0.825	4,305,559
12	0	FUEL	5,257,348	8	0.810	4,257,257
13	0	FUEL	5,294,372	8	0.795	4,209,288
14	0	FUEL	5,331,396	8	0.781	4,161,656
15	0	FUEL	5,368,419	8	0.766	4,114,364
16	0	FUEL	5,405,442	8	0.752	4,067,416
17	0	FUEL	5,479,490	8	0.739	4,048,169
18	0	FUEL	5,516,513	8	0.725	4,001,421
19	0	FUEL	5,553,537	8	0.712	3,955,035
20	0	FUEL	5,627,584	8	0.699	3,934,900
21	0	FUEL	5,664,608	8	0.687	3,888,774
22	0	FUEL	5,701,631	8	0.674	3,843,023
23	0	FUEL	5,738,655	8	0.662	3,797,651
24	0	FUEL	5,812,702	8	0.650	3,776,714
25	0	FUEL	5,849,726	8	0.638	3,731,665
			TOTAL			116,579,069



## CAMP LEJEUNE COGENERATION

ECONOMIC LIFE: 25

DISCOUNT RATE: 10

## ALTERNATIVE:

## CASE 2 ALTERNATIVE A

PROJECT YEARS			ANNUAL		PV	PV
START	FINISH	ITEM	COST	DIFF	FACTOR	COST
0	0	INVESTMENT	28,201,512	0	1.000	28,201,512
0	0	INVESTMENT	238,225	0	1.000	238,225
1	25	LABOR	462,476	0	9.524	4,404,474
1	25	MAINTENANCE	254,515	0	9.524	2,423,919
0	0	PLANT O&M	101,516	0	1.000	101,516
1	25	INC ELECT	267,545	7	18.049	4,828,793
0	0	TRASH TRANS	3,290,806	0	1.000	3,290,806
0	0	ASH DISP	193,781	0	1.000	193,781
1	0	ELECT REV	484,345 CR	8	0.991	479,928 CR
2	0	ELEC REV	488,886 CR	7	0.959	469,037 CR
3	0	ELEC REV	495,697 CR	7	0.933	462,602 CR
4	0	ELEC REV	499,481 CR	7	0.908	453,420 CR
5	0	ELEC REV	507,049 CR	7	0.883	447,737 CR
6	0	ELEC REV	510,076 CR	7	0.859	438,126 CR
7	0	ELEC REV	514,617 CR	7	0.836	429,971 CR
8	0	ELEC REV	518,401 CR	7	0.813	421,320 CR
9	0	ELEC REV	522,185 CR	7	0.791	412,821 CR
10	0	ELEC REV	529,752 CR	7	0.769	407,381 CR
11	0	ELEC REV	533,536 CR	7	0.748	399,101 CR
12	0	ELEC REV	537,320 CR	7	0.728	390,970 CR
13	0	ELEC REV	541,104 CR	7	0.708	382,986 CR
14	0	ELEC REV	544,888 CR	7	0.688	375,146 CR
15	0	ELEC REV	548,672 CR	7	0.670	367,449 CR
16	0	ELEC REV	552,456 CR	7	0.651	359,892 CR
17	0	ELEC REV	560,024 CR	7	0.634	354,873 CR
18	0	ELEC REV	563,808 CR	7	0.616	347,527 CR
19	0	ELEC REV	567,592 CR	7	0.600	340,318 CR
20	0	ELEC REV	575,160 CR	7	0.583	335,450 CR
21	0	ELEC REV	579,701 CR	7	0.567	328,828 CR
22	0	ELEC REV	582,728 CR	7	0.552	321,579 CR
23	0	ELEC REV	586,512 CR	7	0.537	314,840 CR
24	0	ELEC REV	594,080 CR	7	0.522	310,205 CR
25	0	ELEC REV	597,864 CR	7	0.508	303,667 CR
			TOTAL			34,027,792





## CAMP LEJEUNE COGENERATION

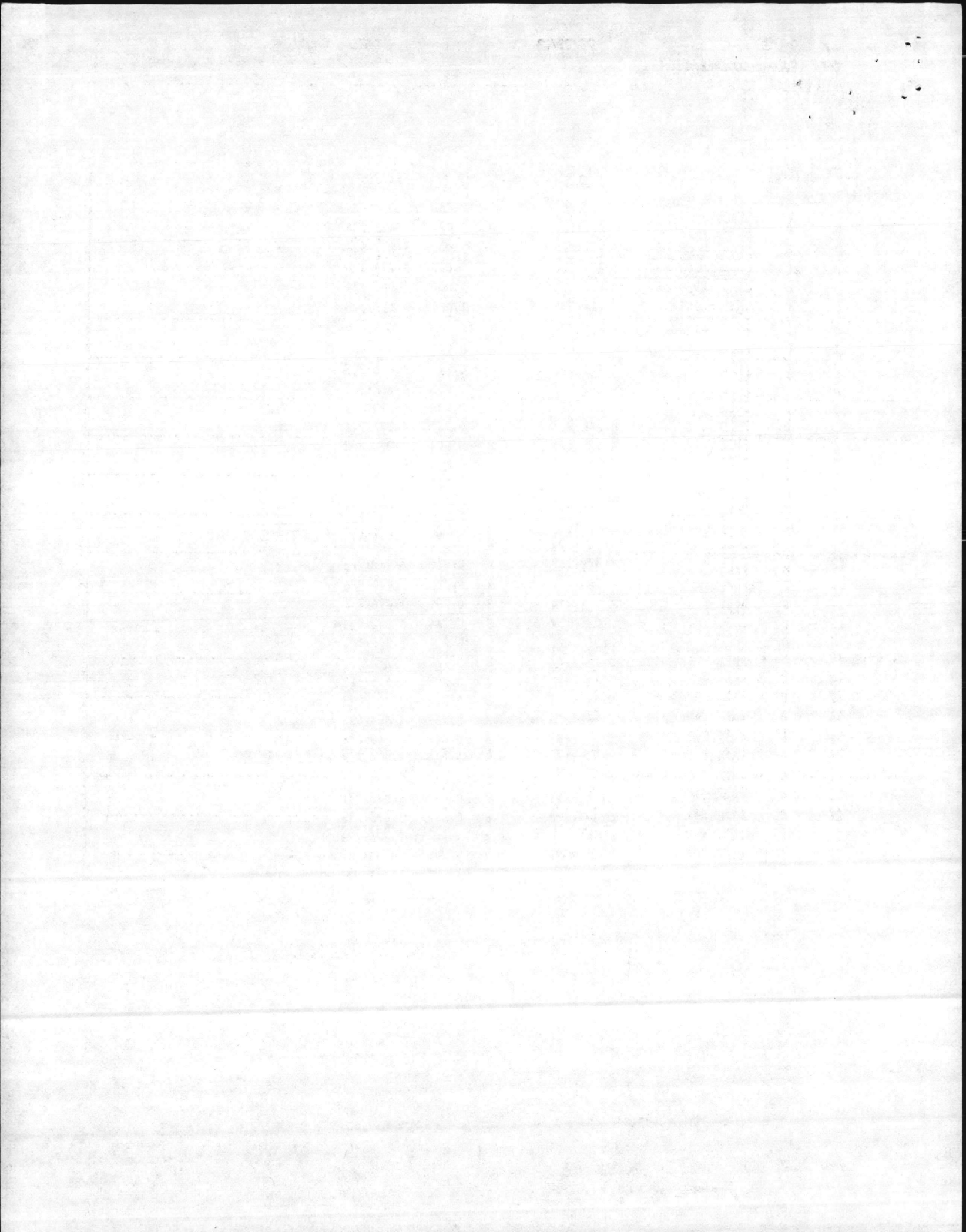
ECONOMIC LIFE: 25

DISCOUNT RATE: 10

ALTERNATIVE:

## CASE 2 ALTERNATIVE B

PROJECT YEARS		ITEM	ANNUAL COST	DIFF	PV	PV
START	FINISH				FACTOR	COST
0	0	LANDFILL INVST	496,934	0	1.000	496,934
0	0	PLANT UPGRADE	3,857,028	0	1.000	3,857,028
0	0	LAND INVST CP	1,374,128	0	1.000	1,374,128
0	0	LAND INVST LEJ	5,053,651	0	1.000	5,053,651
0	0	LAND MAINT CP	119,295	0	1.000	119,295
0	0	LAND MAINT LEJ	325,577	0	1.000	325,577
1	0	FUEL	4,436,884	8	0.991	4,396,422
2	0	FUEL	4,471,547	8	0.973	4,350,209
3	0	FUEL	4,540,873	8	0.955	4,337,333
4	0	FUEL	4,575,537	8	0.938	4,290,981
5	0	FUEL	4,644,863	8	0.921	4,276,796
6	0	FUEL	4,679,526	8	0.904	4,230,372
7	0	FUEL	4,714,189	8	0.888	4,184,222
8	0	FUEL	4,748,852	8	0.871	4,138,352
9	0	FUEL	4,783,516	8	0.856	4,092,768
10	0	FUEL	4,852,842	8	0.840	4,076,591
11	0	FUEL	4,887,505	8	0.825	4,031,060
12	0	FUEL	4,322,168	8	0.810	3,499,973
13	0	FUEL	4,956,831	8	0.795	3,940,926
14	0	FUEL	4,991,494	8	0.781	3,896,331
15	0	FUEL	5,026,157	8	0.766	3,852,054
16	0	FUEL	5,060,821	8	0.752	3,808,100
17	0	FUEL	5,130,147	8	0.739	3,790,079
18	0	FUEL	5,164,810	8	0.725	3,746,312
19	0	FUEL	5,199,473	8	0.712	3,702,883
20	0	FUEL	5,268,800	8	0.699	3,684,032
21	0	FUEL	5,303,463	8	0.687	3,640,846
22	0	FUEL	5,338,126	8	0.674	3,598,013
23	0	FUEL	5,372,789	8	0.662	3,555,533
24	0	FUEL	5,442,115	8	0.650	3,535,931
25	0	FUEL	5,476,778	8	0.638	3,493,753
				TOTAL		109,376,498



## CAMP LEJEUVE COGENERATION

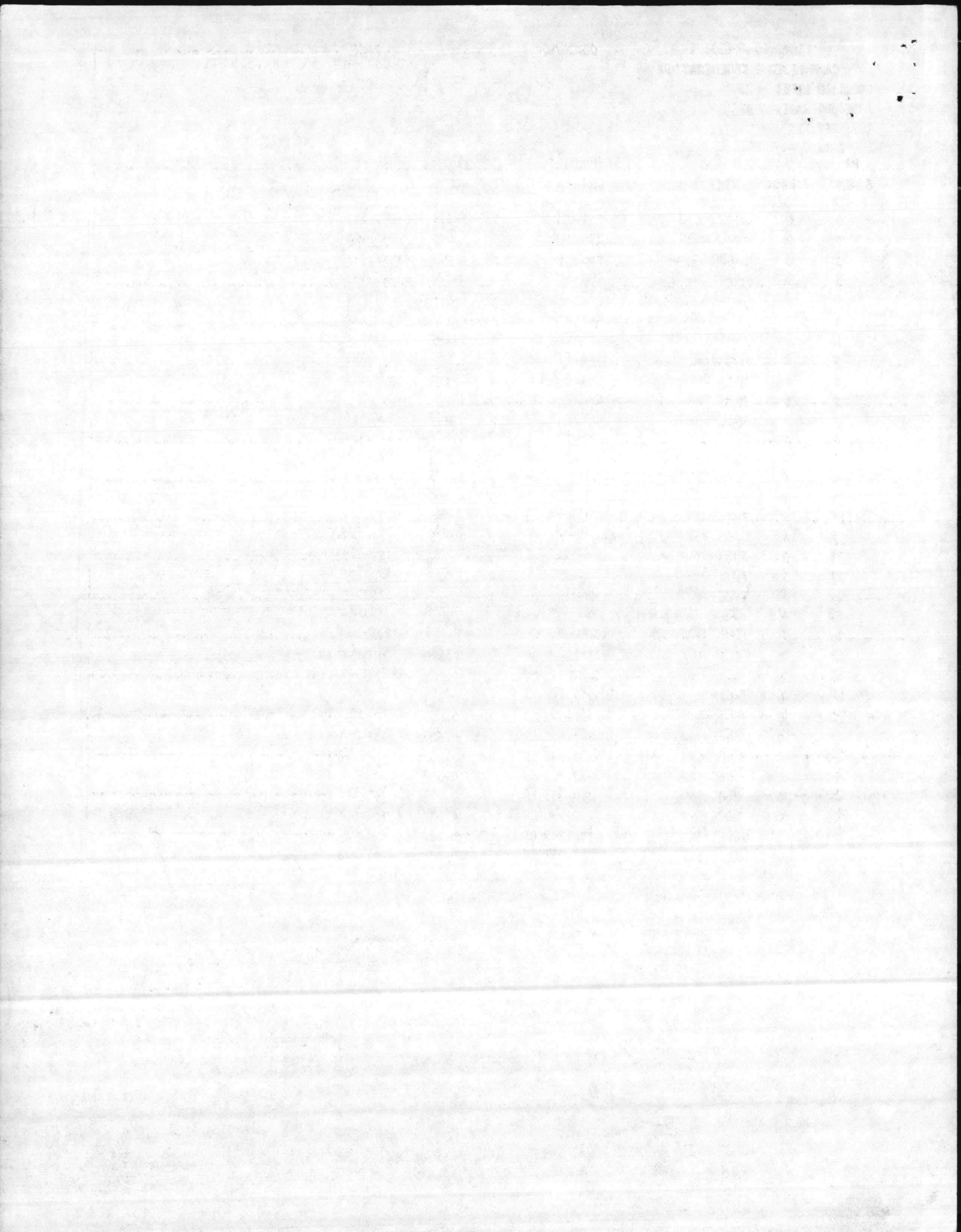
ECONOMIC LIFE: 25

DISCOUNT RATE: 10

ALTERNATIVE:

## CASE 3 ALTERNATIVE A

PROJECT YEARS			ANNUAL		PV	PV
START	FINISH	ITEM	COST	DIFF	FACTOR	COST
0	0	INVESTMENT	28,201,512	0	1.000	28,201,512
0	0	INVESTMENT	238,225	0	1.000	238,225
1	25	LABOR	462,476	0	9.524	4,404,474
1	25	MAINTENANCE	254,515	0	9.524	2,423,919
0	0	PLANT O&M	101,516	0	1.000	101,516
1	25	INC ELECT	267,545	7	18.049	4,828,793
0	0	TRASH TRANS	3,290,806	0	1.000	3,290,806
0	0	ASH DISP	193,781	0	1.000	193,781
1	0	ELEC SAV	241,606 CR	7	0.986	238,296 CR
2	0	ELEC SAV	243,872 CR	7	0.959	233,971 CR
3	0	ELEC SAV	247,269 CR	7	0.933	230,760 CR
4	0	ELEC SAV	249,157 CR	7	0.908	226,180 CR
5	0	ELEC SAV	252,932 CR	7	0.883	223,345 CR
6	0	ELEC SAV	254,442 CR	7	0.859	218,551 CR
7	0	ELEC SAV	256,707 CR	7	0.836	214,483 CR
8	0	ELEC SAV	258,594 CR	7	0.813	210,167 CR
9	0	ELEC SAV	260,482 CR	7	0.791	205,928 CR
10	0	ELEC SAV	264,257 CR	7	0.769	203,214 CR
11	0	ELEC SAV	266,145 CR	7	0.748	199,084 CR
12	0	ELEC SAV	268,032 CR	7	0.728	195,028 CR
13	0	ELEC SAV	269,920 CR	7	0.708	191,045 CR
14	0	ELEC SAV	271,807 CR	7	0.688	187,134 CR
15	0	ELEC SAV	273,695 CR	7	0.670	183,295 CR
16	0	ELEC SAV	275,582 CR	7	0.651	179,525 CR
17	0	ELEC SAV	279,357 CR	7	0.634	177,021 CR
18	0	ELEC SAV	281,245 CR	7	0.616	173,357 CR
19	0	ELEC SAV	283,133 CR	7	0.600	169,761 CR
20	0	ELEC SAV	286,908 CR	7	0.583	167,333 CR
21	0	ELEC SAV	288,795 CR	7	0.567	163,840 CR
22	0	ELEC SAV	290,683 CR	7	0.552	160,413 CR
23	0	ELEC SAV	292,570 CR	7	0.537	157,051 CR
24	0	ELEC SAV	296,345 CR	7	0.522	154,739 CR
25	0	ELEC SAV	298,233 CR	7	0.508	151,478 CR
			TOTAL			38,868,016



## CAMP LEJEUNE COGENERATION

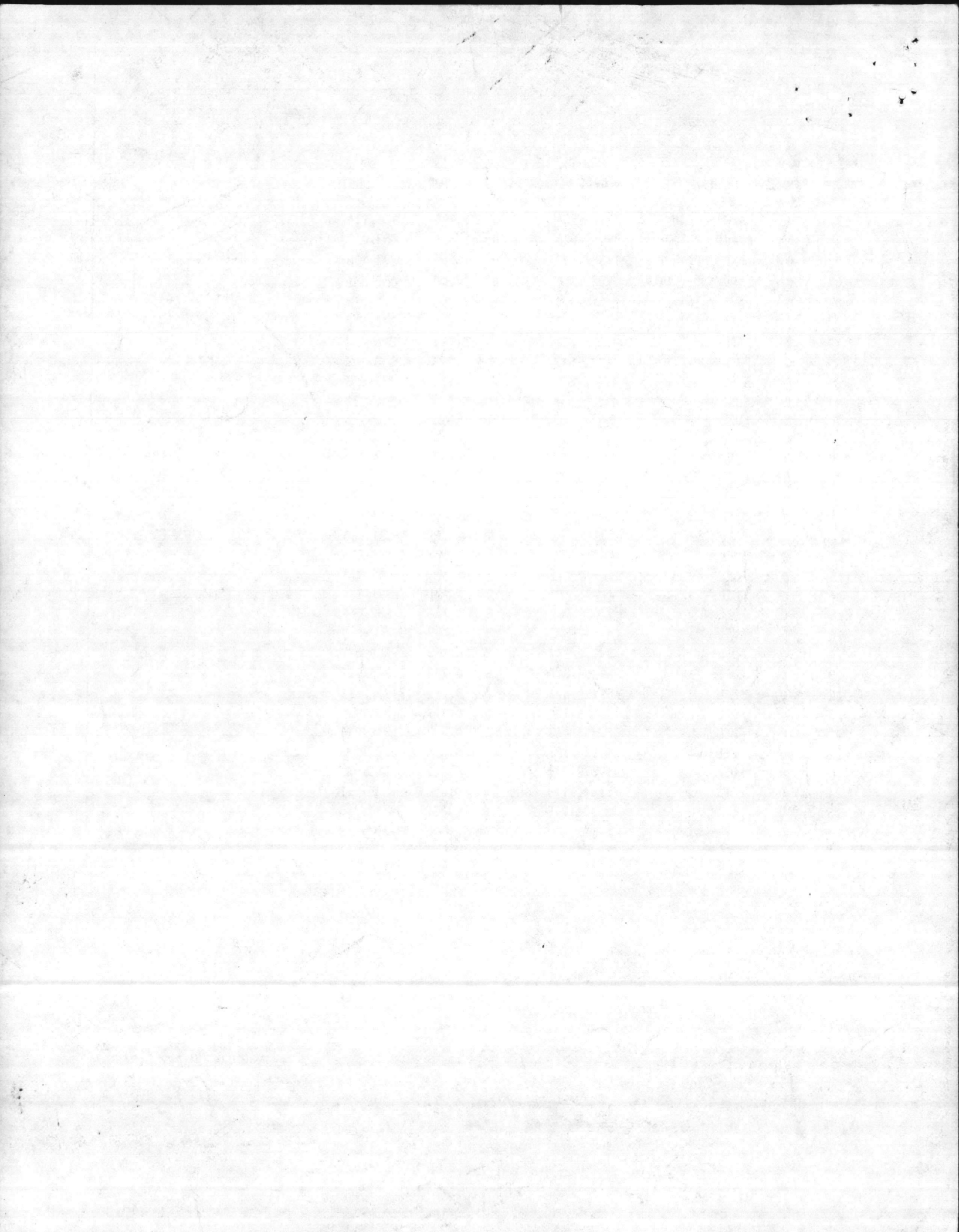
ECONOMIC LIFE: 25

DISCOUNT RATE: 10

ALTERNATIVE:

CASE 3 ALTERNATIVE B

PROJECT YEARS			ANNUAL		PV	PV
START	FINISH	ITEM	COST	DIFF	FACTOR	COST
0	0	LANDFILL INVST	496,934	0	1.000	496,934
0	0	PLANT UPGRADE	3,857,028	0	1.000	3,857,028
0	0	LAND INVST CP	1,374,128	0	1.000	1,374,128
0	0	LAND INVST LEJ	5,053,651	0	1.000	5,053,651
0	0	LAND MAINT CP	119,295	0	1.000	119,295
0	0	LAND MAINT LEJ	325,577	0	1.000	325,577
1	0	FUEL	4,436,884	8	0.991	4,396,422
2	0	FUEL	4,471,547	8	0.973	4,350,209
3	0	FUEL	4,540,873	8	0.955	4,337,333
4	0	FUEL	4,575,537	8	0.938	4,290,981
5	0	FUEL	4,644,863	8	0.921	4,276,796
6	0	FUEL	4,679,526	8	0.904	4,230,372
7	0	FUEL	4,714,189	8	0.888	4,184,222
8	0	FUEL	4,748,852	8	0.871	4,138,352
9	0	FUEL	4,783,516	8	0.856	4,092,768
10	0	FUEL	4,852,842	8	0.840	4,026,591
11	0	FUEL	4,887,505	8	0.825	4,031,060
12	0	FUEL	4,322,168	8	0.810	3,499,973
13	0	FUEL	4,956,831	8	0.795	3,940,926
14	0	FUEL	4,991,494	8	0.781	3,896,331
15	0	FUEL	5,026,157	8	0.766	3,852,054
16	0	FUEL	5,060,821	8	0.752	3,808,100
17	0	FUEL	5,130,147	8	0.739	3,790,079
18	0	FUEL	5,164,810	8	0.725	3,746,312
19	0	FUEL	5,199,473	8	0.712	3,702,883
20	0	FUEL	5,268,800	8	0.699	3,684,032
21	0	FUEL	5,303,463	8	0.687	3,640,846
22	0	FUEL	5,338,126	8	0.674	3,598,013
23	0	FUEL	5,372,789	8	0.662	3,555,533
24	0	FUEL	5,442,115	8	0.650	3,535,931
25	0	FUEL	5,476,778	8	0.638	3,493,753
			TOTAL			109,376,498



6280/P-822  
FAC  
16 AUG 1985

From: Commanding General, Marine Corps Base, Camp Lejeune  
To: Commandant of the Marine Corps (LPL)

Subj: FY-88 POLLUTION ABATEMENT PROGRAM (P-822)

Ref: (a) NAVFAC 2d End 1122B/GKC dtd 10Jan85 on MCB, CamLej  
ltr 11013 PWO dtd 31Aug84  
(b) CMC ltr 6280/9 over LPL/2-82 dtd 2Apr85

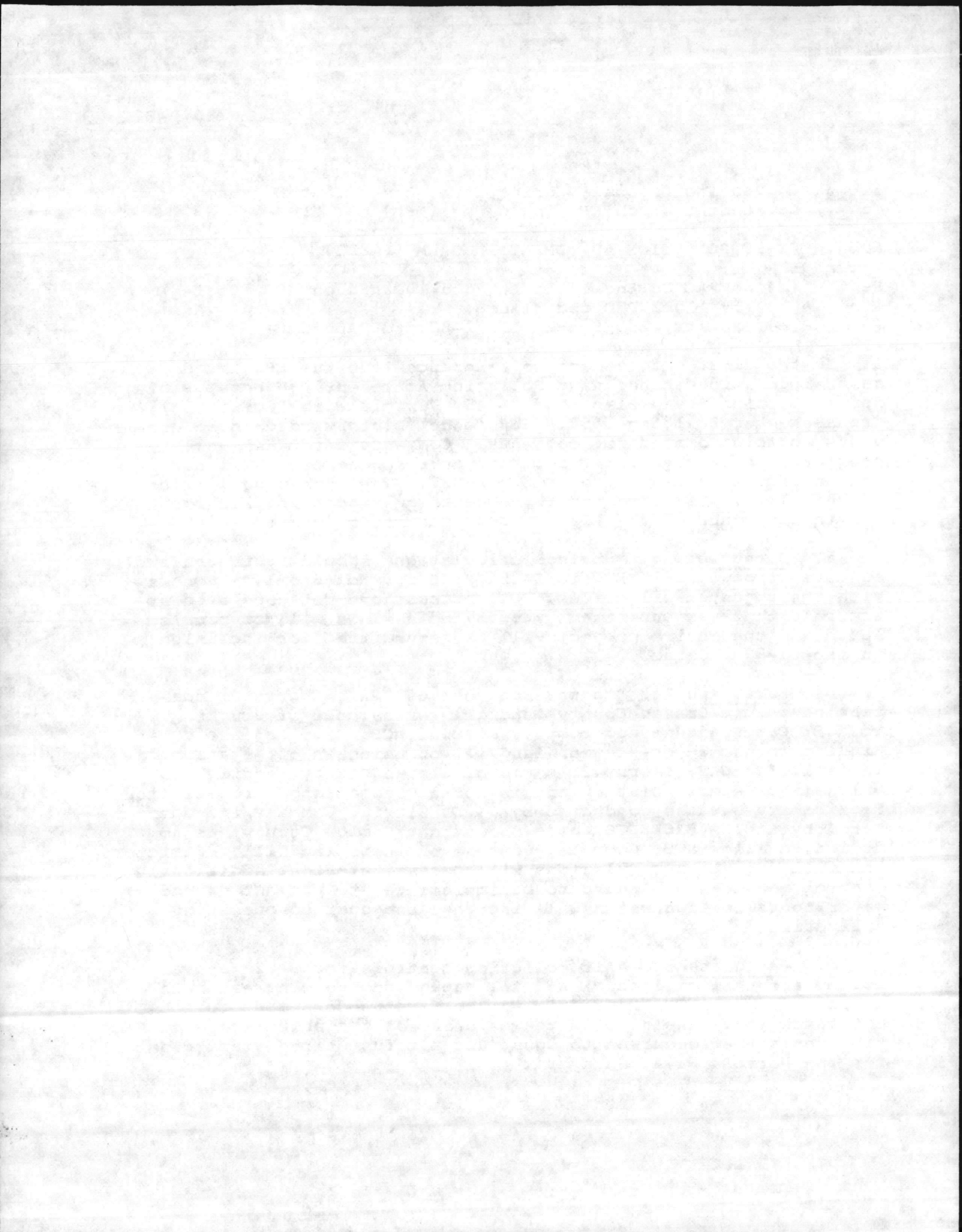
1. In the first endorsement to reference (a), the EPD asked several questions concerning Pollution Abatement Projects, P-822, Refuse Burning Steam Plant and P-845, Vehicle Wash Facilities/Grease Racks, Building 1450. Reference (b) forwarded those comments to this Command for comments. Comments for P-845 were previously forwarded under separate correspondence. This correspondence provides comments for P-822. The remaining portion of this letter is addressed to comments/questions in paragraphs one through four of the first endorsement to reference (a).

a. Paragraph 1: "Savings calculations should be redone and adjusted from \$11.40/MBTU to \$4.56/MBTU for No. 6 oil." Concur with the adjusted oil prices. Oil prices have not escalated at the rate that was submitted. Costs and savings will be recalculated and the entire project will be resubmitted for inclusion in the FY-89 Program.

b. Paragraph 2: "Comparison cost of MCAS, Cherry Pt continuing to use Craven County Landfill versus cost of trucking to MCB, Camp Lejeune and compare cost of MCB, Camp Lejeune continuing to use an on-station landfill or using an off-station landfill." MCAS, Cherry Pt's use of Craven County Landfill is only a short-term solution and is not a viable long term solution. Feasibility studies conducted by J. E. Surrine Company and administered by LANTNAVFACENGCOM have shown that Onslow County has no desire to allow MCB, Camp Lejeune use of their landfill. Stricter landfill operation regulations will necessitate that additional control measures will have to be implemented to prevent groundwater contamination which will increase the cost of operating a landfill.

c. Paragraph 3: "Air pollution controls for P-822 appear low by about \$1 million." We will depend on the cost estimate as revised by LANTNAVFACENGCOM in the first endorsement to reference (a). Their estimate was based on the actual construction costs that occurred to construct a refuse fired steam plant for the Norfolk Naval Shipyard.





Subj: FY-88 POLLUTION ABATEMENT PROGRAM (P-822)

d. Paragraph 4: Technical Data Sheet 84-18 is an excellent tool to be used when a base is considering a refuse fired plant. MCB, Camp Lejeune utilized specific information developed by studies conducted by J. E. Serrine Company to support project P-822.

2. Hopefully, these comments will assist you in determining the adequacy of the recommended changes. If additional information is required, please contact Al Austin at AV 484-3034.

R. A. TIEBOUT  
By direction

Blind copy to:  
PWO  
EnvEngr

Writer: A. A. AUSTIN  
Typist: D. W. MCGUIRE, FAC, 14AUG85



2431684

ROUTING SLIP

ACTION

INFO

INITIAL

BMO

ABMO

AC

F&

MA

TR

OP

PI

UI

U

SI

C

M

W

gmr

FRED.

Should this go to

UTILITIES NOW.

Need to get w/ Gene Jones  
& submit petition about

PROTEST

Need to get with JR.

W \$ go w/ Fred to see Gene Jones.

tion  
propel

					SECRETARY
					TITLE
					OFFICE
					DEPARTMENT
					AGENCY
					PROJECT
					DATE
					TIME
					LOCATION
					CONTACT
					REMARKS

COMMENTS:

*Handwritten notes:*  
 A... ..  
 ... ..  
 ... ..

2431684

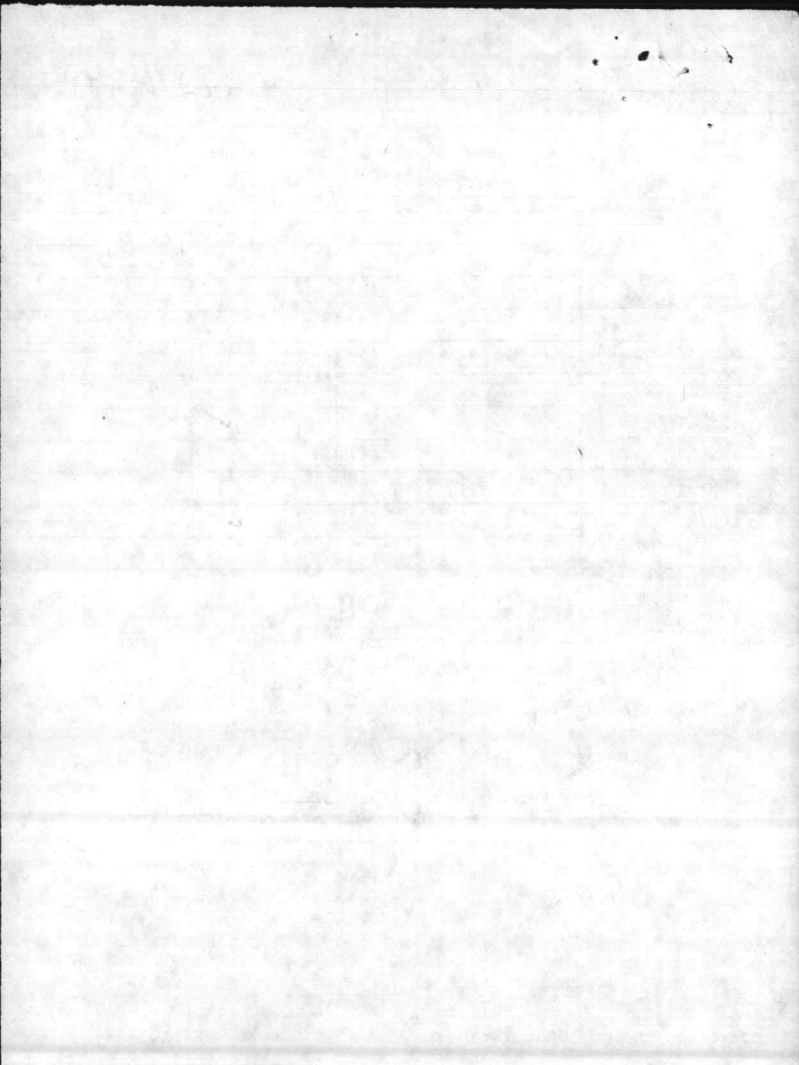
ROUTING SLIP

	ACTION	INFO	INITIAL
BMO			✓ gm
ABMO			
ADMIN			
F&A			
MAINT NCO			
M&R			
OPNS			✓
PROP			
UMACS			
UTIL			✓
SECRETARY			

COMMENTS:

MR Cone  
what now?  
gm

Need Pollution  
Abatement Project



ASSISTANT CHIEF OF STAFF, FACILITIES  
HEADQUARTERS, MARINE CORPS BASE

DATE 24 Feb 1984

TO:

BASE MAINT O

DIR, FAMILY HOUSING

PUBLIC WORKS O

DIR, UNACCOMPANIED PERS HSG

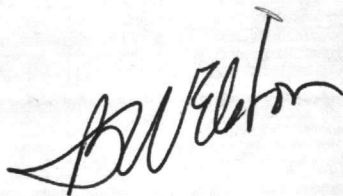
COMM-ELECT O

BASE FIRE CHIEF

DIR., NAT. RESOURCES & ENV. AFFAIRS

ATTN: Col Marshall

1. Attached is forwarded for info/action.
2. Please initial, or comment, and return all papers to this office.
3. Your file copy.



"LET'S THINK OF A FEW REASONS  
WHY IT CAN BE DONE"





THE UNIVERSITY OF CHICAGO

1952

PHYSICS DEPARTMENT

REPORT OF THE PHYSICS DEPARTMENT

FOR THE YEAR 1952

CHICAGO, ILLINOIS

1952

1952

PHYSICS DEPARTMENT

CHICAGO, ILLINOIS



DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

TELEPHONE NO.

(804) 444-9582

IN REPLY REFER TO:

111:JDT:ssw  
11300  
1 7 FEB 1984

From: Commander, Atlantic Division, Naval Facilities Engineering Command  
To: Commanding General, Marine Corps Base, Camp Lejeune

Subj: Salvage Fuel Boiler Plant; implications concerning the proposed

Ref: (a) MCB CAMP LEJEUNE ltr PWO:408:VM:mkt 11000 of 12 Jan 1983  
(b) Meeting between LANTNAVFACENGCOC and MCB CAMP LEJEUNE on 30 Mar 1983  
(c) FONECON MCB CAMP LEJEUNE (Mr. Fred Cone)/LANTNAVFACENGCOC  
(Mr. Dave Goodwin) of 30 Nov 1983

Encl: (1) NAVFACENGCOC ltr 1113/DMH of 27 Jan 1984

1. Reference (a) submitted MCB CAMP LEJEUNE Project P-822, Facility Energy Improvements, (Salvage Fuel Boiler Plant) for Energy Conservation Investment Program (ECIP) funding. Reference (b) returned P-822 on the basis that the project did not qualify for ECIP funding and the project, as written, included cogeneration which was not recommended over steam generation only.

2. Per reference (c), LANTNAVFACENGCOC stated that a revised subject project could qualify for FY-87 Pollution Abatement MCON funding. Also per reference (c), MCB CAMP LEJEUNE agreed to resubmit the revised subject project. The revised subject project was to be based on steam generation only.

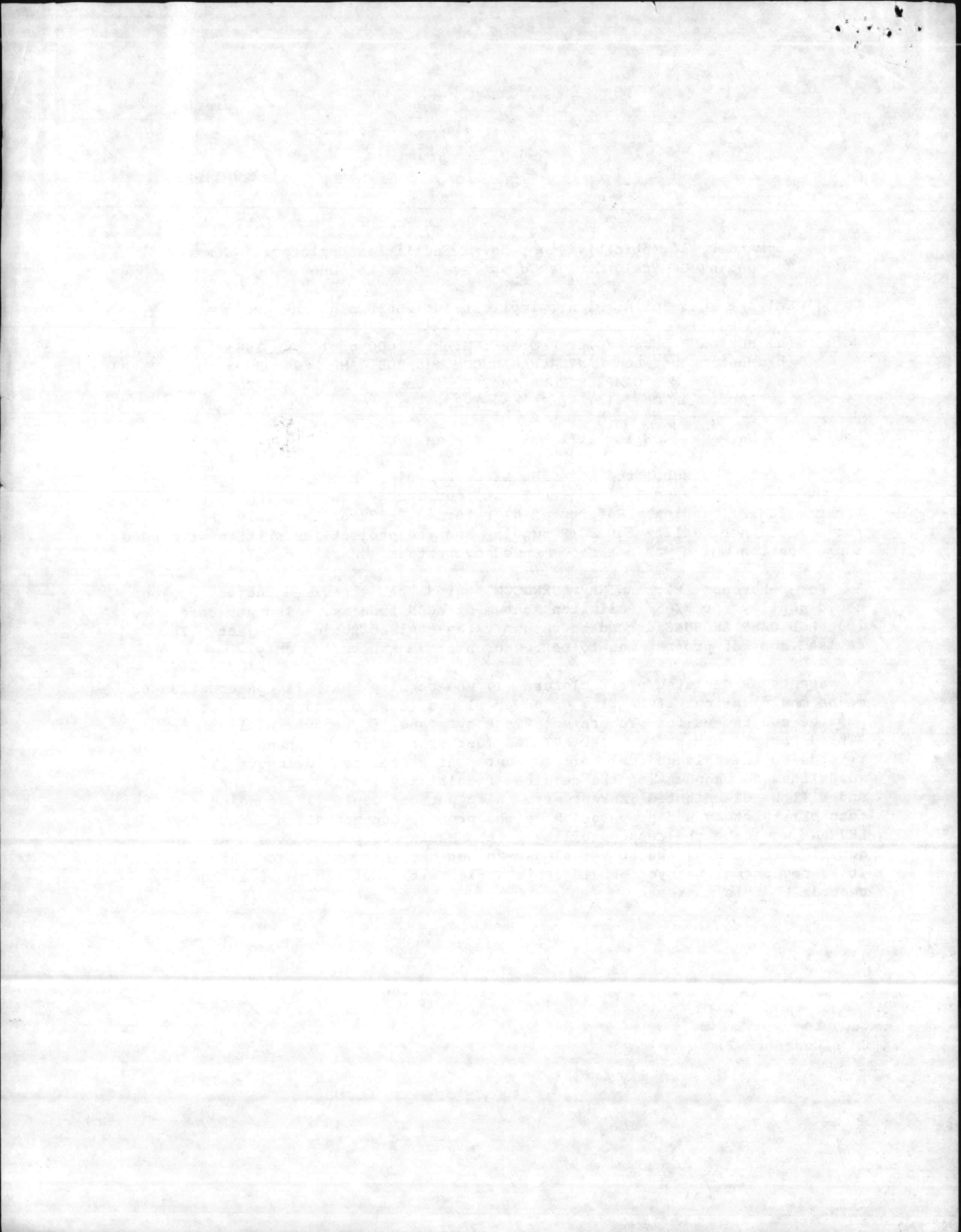
3. Events as dictated per enclosure (1) now require that all construction or major modifications of heating or power plants (cost of \$15 million or more) must be considered for procurement first by means of "Venture Capital" or "Third Party". Thus, MCB CAMP LEJEUNE must proceed in this manner with regards to the salvage fuel boiler plant. As stated per enclosure (1), guidelines for conducting the required feasibility studies are being prepared and will be distributed in February. Also per enclosure (1), funding for the feasibility study and preparation of the project documentation at MCB CAMP LEJEUNE would be the responsibility of the Marine Corps. If there are any questions regarding the above, please do not hesitate to contact this office. It is requested that you provide this office with your course of action in regards to this matter.

A. J. HANSEN  
By direction

Copy to:  
CMC (Code LFF-2)

5006

Reg (b)



28 JUN 1984

The Honorable Charles O. Whitley  
House of Representatives  
Cannon House Office Building, Room 104  
Washington, DC 20515

Dear Mr. Whitley:

This is in response to your letter of June 15, 1984 concerning the feasibility study at Camp Lejeune relative to incineration of solid waste with steam as a by-product. A copy of the study is enclosed as requested.

As a matter of information, the study recommended a solid waste burning plant at Camp Geiger which would burn solid waste from Cherry Point and Camp Lejeune. The energy produced, in the form of steam, would be used at Camp Geiger and the Marine Corps Air Station (Helicopter), New River. The project was submitted for funding under the Navy's Energy Conservation Improvement Program, however, it did not qualify. At present, the project is being considered for resubmission for FY87 Pollution Abatement Military Construction funding.

A most important factor in determining whether such a venture may be economically feasible is quantifying the amount of fuel (solid waste) available. Following the determination of fuel availability comes the determination of how and where to use the energy produced. Obviously, many complex engineering alternatives must then be considered to reach a decision.

Concerning your request to have Onslow County considered as a potential user of the incineration plant, and considering the complexity of the subject, I would recommend Mr. Leary first review the study. If the county is then still interested in pursuing a joint venture, I would recommend they contact Marine Corps Base to arrange further discussions. Point of contact at Marine Corps Base is the Assistant Chief of Staff, Facilities, Colonel M. G. Lilley, telephone 919-451-2323.

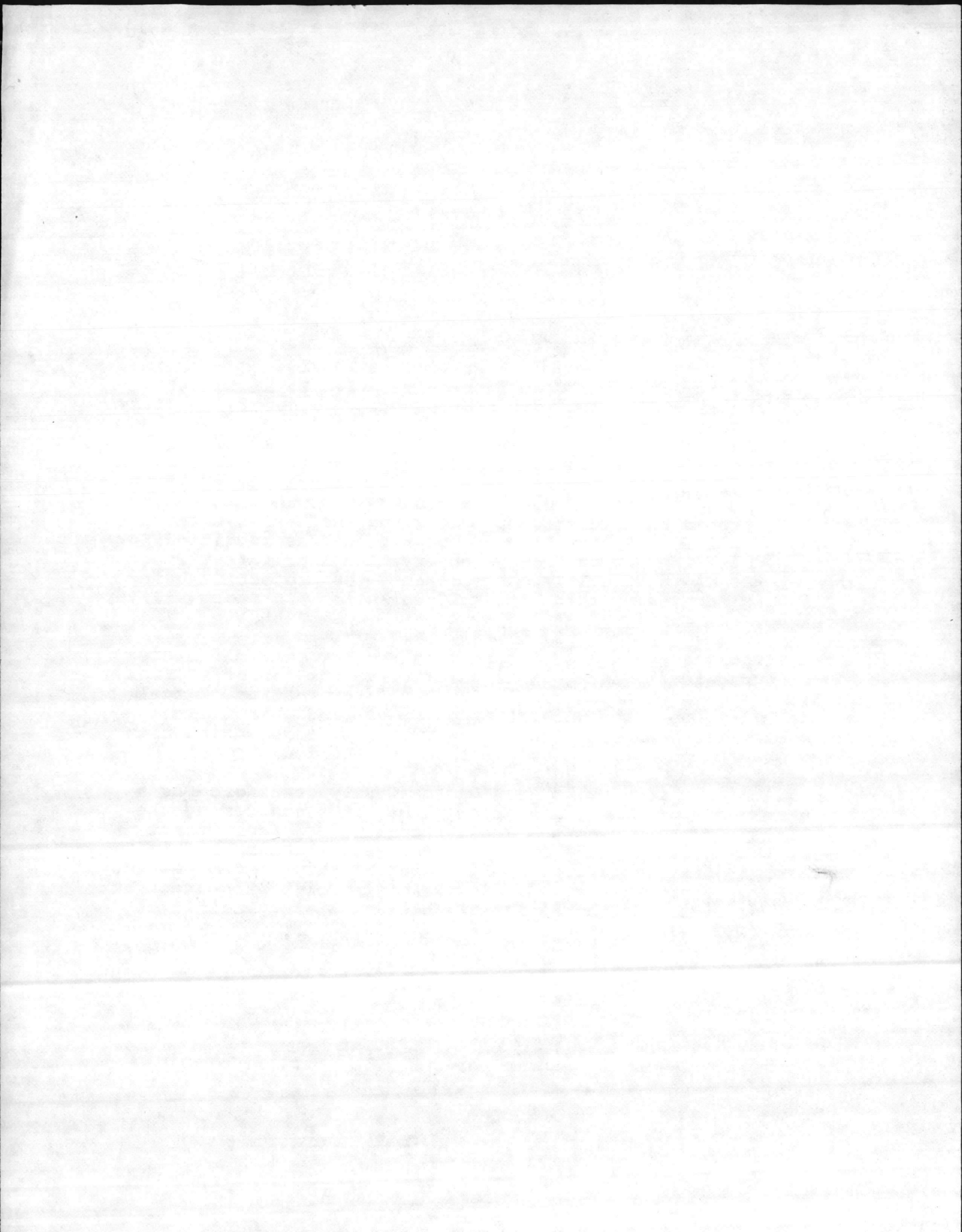
Sincerely,

L. N. BUEHL  
Brigadier General, U.S. Marine Corps  
Commanding

Encl:

(1) Solid Waste & Wood Waste Burning/Coal Generation Study

Drafter: B.W. Elston, FAC, #3034, 28Jun84  
Typist: H. Foster, 28Jun84



MAIN/FEC/rn  
11370  
31 Jan 1983

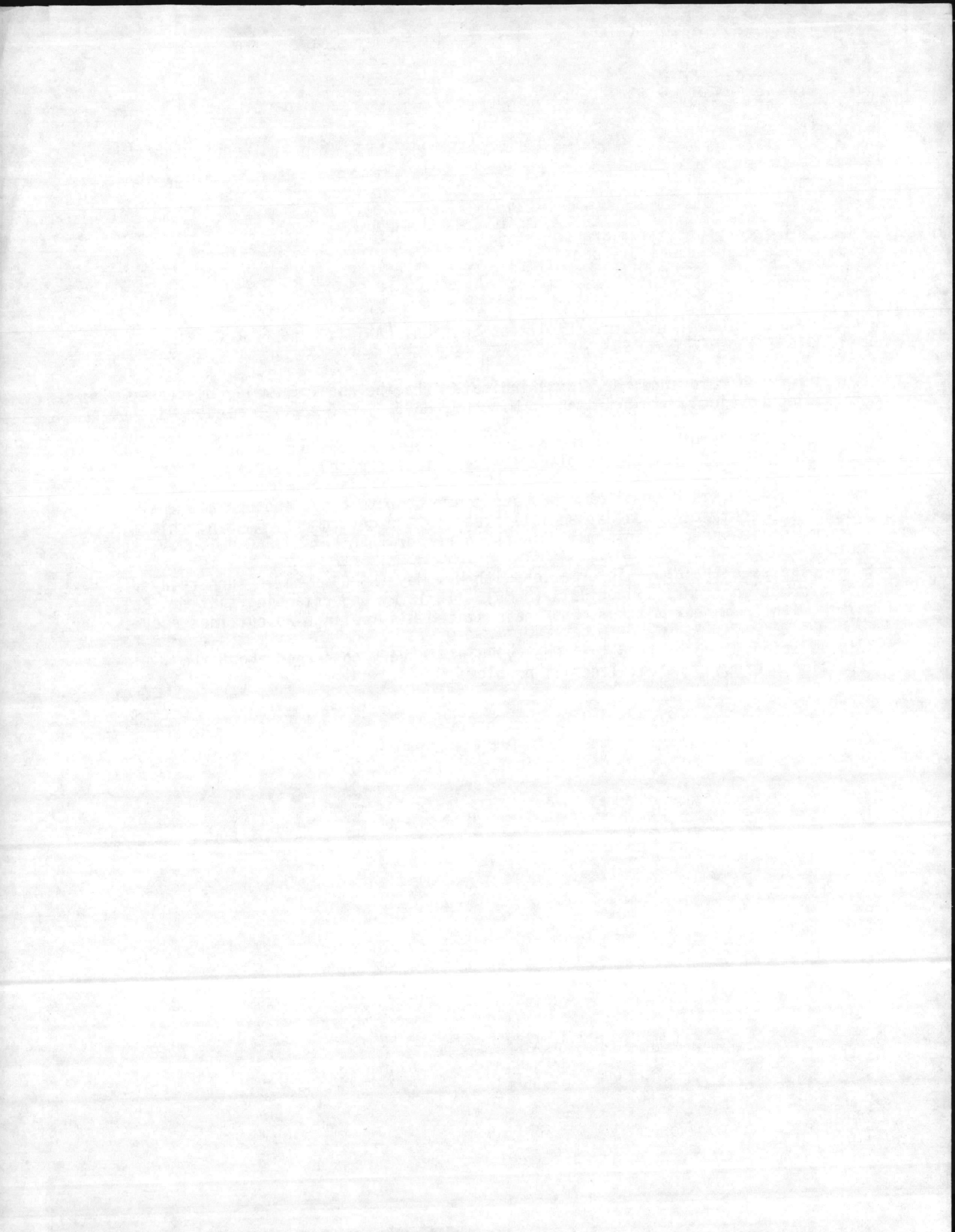
From: Director, Utilities Branch  
To: Base Maintenance Officer

Subj: Solid Waste Co-generation Plant (N62470-80-B-3801)

Ref: FONECON btwn Jim Torma (Utilities Section, LANTDIV) and Fred Cone  
(MAIN) of 28 Jan 1983

1. During the reference, Mr. Torma indicated that he had informally discussed the subject project with a Commander Mitchum (NAVFAC) and that Commander Mitchum was against using ECIP funds for a project such as this. His reasoning was that ECIP money was tight and that the government should not be building plants such as this. He feels that if the plant is economical for the government, then it would be economical for a third party. Therefore, he is recommending that the project be advertised to allow a private contractor to build and operate the plant. The contractor would then sell steam to the government. Again, this information is based on informal discussion rather than set NAVFAC policy.
2. I discussed the above information with Mr. Moy (HQMC), who in turn relayed the information to Mr. Elwood Ball (HWMC). It is my understanding that Mr. Ball talked with Commander Mitchum, who again stated his feelings as outlined above.
3. In addition, I understand that Cherry Point is very concerned about the situation because of their landfill problems.

F. E. CONE



ASSISTANT CHIEF OF STAFF, FACILITIES  
HEADQUARTERS, MARINE CORPS BASE

DATE 19 June 1984

TO:

BASE MAINT O

DIR, FAMILY HOUSING

PUBLIC WORKS O

DIR, UNACCOMPANIED PERS HSG

COMM-ELECT O

BASE FIRE CHIEF

DIR., NAT. RESOURCES & ENV. AFFAIRS

ATTN: Mr. Cone

1. Attached is forwarded for info action.

*Submit response NLT noon  
22 June.*

2. Please initial, or comment, and return all papers to this office.

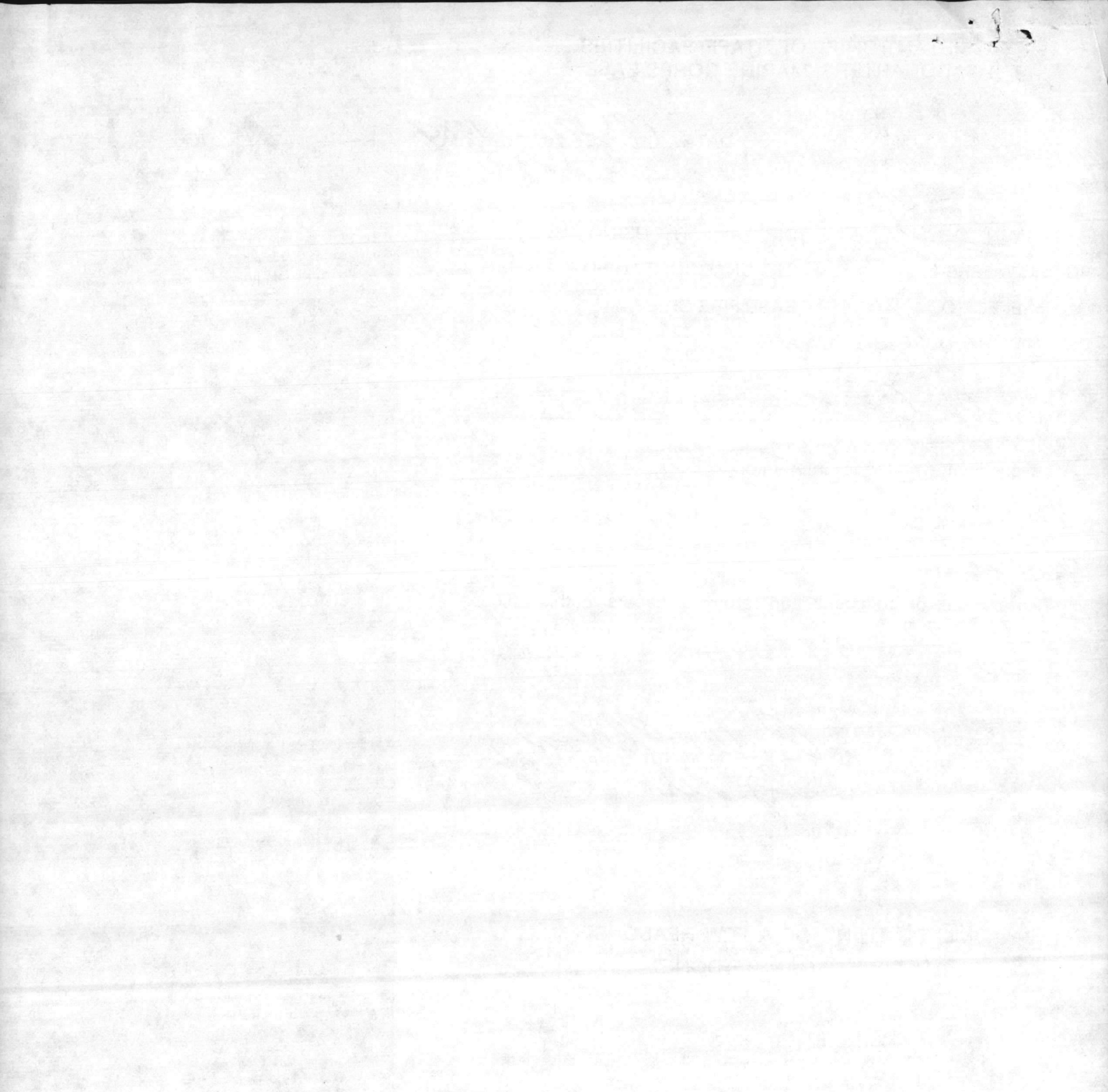
3. Your file copy.

*B. W. Cloton  
By dir*

"LET'S THINK OF A FEW REASONS  
WHY IT CAN BE DONE"

*Ref (a)*







UNITED STATES MARINE CORPS  
MARINE CORPS BASE  
CAMP LEJEUNE, NORTH CAROLINA 28542

IN REPLY REFER TO  
5730  
ADJ  
18 Jun 1984

FIRST ENDORSEMENT on Mr. Charles O. Whitley's ltr of 15 Jun 1984

From: Commanding General, Marine Corps Base, Camp Lejeune  
To: Assistant Chief of Staff, Facilities

Subj: CONGRINT; INCINERATION OF SOLID WASTE

1. Forwarded.
2. It is requested that reply be made directly to Mr. Whitley not later than 25 Jun 1984.

H. J. MEDEIROS  
By direction

*Jan says ltr  
to be signed  
by CG.*





Congress of the United States  
House of Representatives  
Washington, D.C. 20515

WASHINGTON OFFICE:  
ROOM 104  
CANNON HOUSE OFFICE BUILDING  
205-225-3415

DISTRICT OFFICE:  
FEDERAL BUILDING  
ROOM 208  
GOLDSBORO, NORTH CAROLINA 27530  
919-733-1344

June 15, 1984

Bridagier General Louis H. Buehl, III  
Commanding General  
U.S. Marine Corps  
Camp Lejeune, N.C. 28542

Dear Bridagier General Buehl:

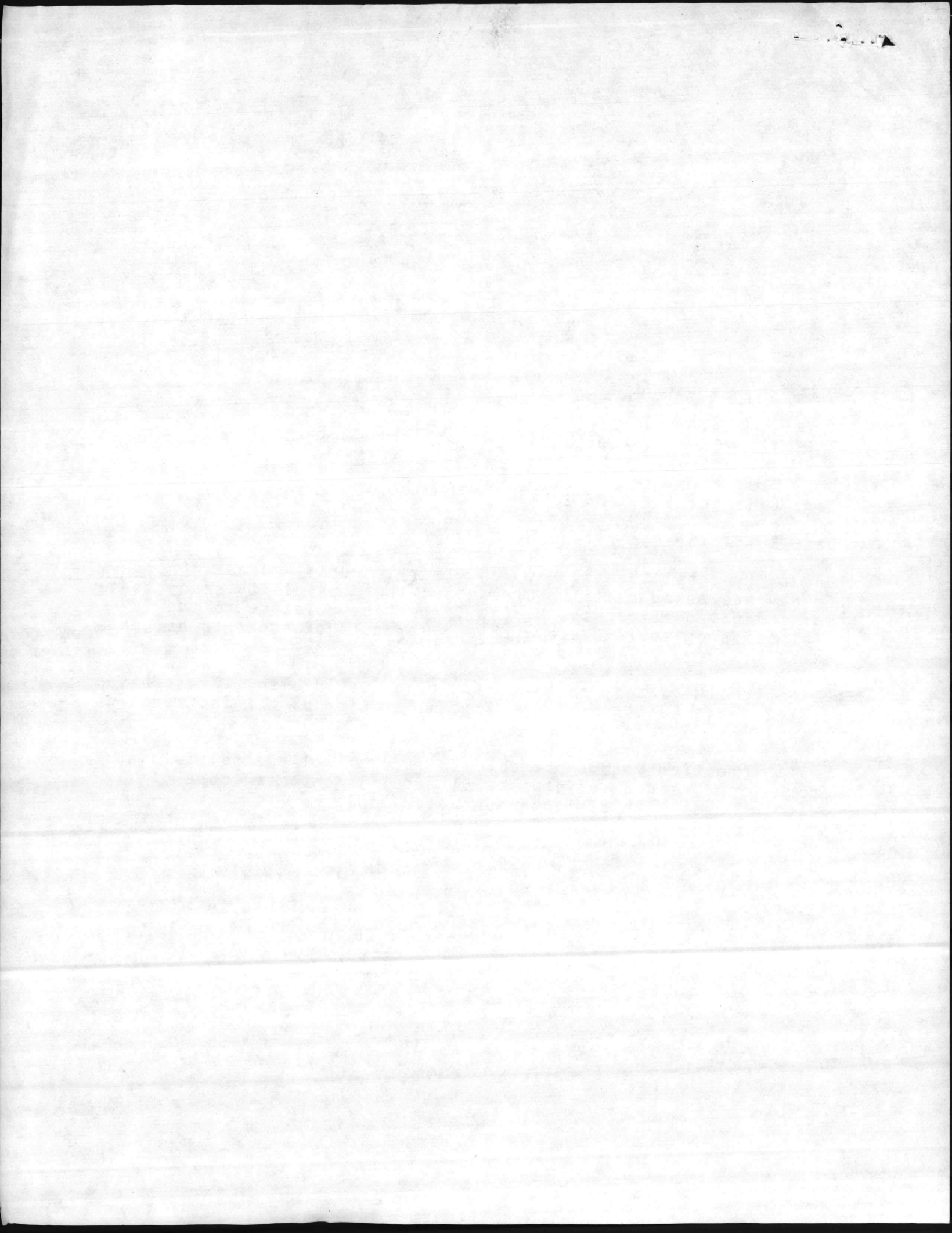
One of my constituents, Mr. R.G. Leary, County Manager, Onslow County has asked me to inquire about the feasibility study that was conducted abroad the Marine Corps Base relative to the incineration of solid waste with a by-product of steam to be generated.

He would like a copy of this report and would also like to have Onslow County considered as a potential user of the incineration plant.

Any information you may be able to furnish will be helpful and appreciated, since solid waste disposal is becoming more difficult in areas with a high groundwater table.

Sincerely,

Charles O. Whitley  
Member of Congress



ROUTING SLIP

JUN 1 1981

ACTION INFO INITIAL

	ACTION	INFO	INITIAL
BMO		✓	NO
ABMO		✓	<del>NO</del>
ADMIN		✓	<del>NO</del>
ENVIRON AFF		,	
F&A BRANCH			
MAINT NCO			
M&R			
OPNS			
PROP			
TELE			
UMACS			
UTIL		✓	JAP/W

SECRETARY  
COMMENTS:

File

1861



200

17 1

1



UNITED STATES MARINE CORPS  
MARINE CORPS BASE  
CAMP LEJEUNE, NORTH CAROLINA 28542

IN REPLY REFER TO

FAC:KPM:mkc  
5700/11300/1

11 JUN 1981

Mr. Kenneth N. Windley, Jr.  
Planning Director  
Planning Department  
107 New Bridge Street  
Jacksonville, NC 28540

Dear Mr. Windley:

In response to your letter of May 20, 1981, an engineering study to assess the feasibility of burning solid waste for its energy value is currently being conducted through the Atlantic Division, Naval Facilities Engineering Command, Norfolk, VA. The study will evaluate various alternatives for producing steam and/or electricity at both Camp Lejeune and Cherry Point, or possibly only at Camp Lejeune with Cherry Point waste being transported to Camp Lejeune. Completion of the study is scheduled for January 1982. That would seem to be the most appropriate point at which to consider a joint effort, as the study is now well underway and will identify the various options available.

On the surface, a joint effort appears attractive, as there are certainly economies in scale associated with solid waste generating plants.

Sincerely,

J. R. FRIDELL  
Colonel, U. S. Marine Corps  
Chief of Staff  
By direction of the Commanding General

Blind copy to:

→ BMO  
PWO

Encl (5)



UNITED STATES MARINE CORPS

MARINE CORPS BASE

AMP, ELIZABETH NORTH CAROLINA 28343



1 JUN 1961

Handwritten mark or signature at the bottom right of the page.

# ONslow COUNTY

---

---

Office of the  
Planning Department

107 New Bridge Street  
Jacksonville, NC 28540  
Telephone (919) 455-3661

May 20, 1981

General David Barker  
Commanding General  
Marine Corps Base  
Camp Lejeune, N. C. 28542

Dear General Barker:

In reviewing the draft of Onslow County's Land Use Plan for the next five years, solid waste has become a topic of extreme interest. We have become aware of a study being conducted by the Navy for Camp Lejeune and Cherry Point concerning the use of waste in the generation of energy. I would like to know if Onslow County can be included in this study. If not, may I receive a copy when it is completed. //

What to do with solid waste is becoming a big problem these days, especially with Onslow County. The high cost of land and equipment, the short life span of our existing landfill, and the problems associated with finding a suitable landfill site all may lead us to cooperating with each other. Please notify me as to the status of your study and the possibility of a joint effort. //

Sincerely,

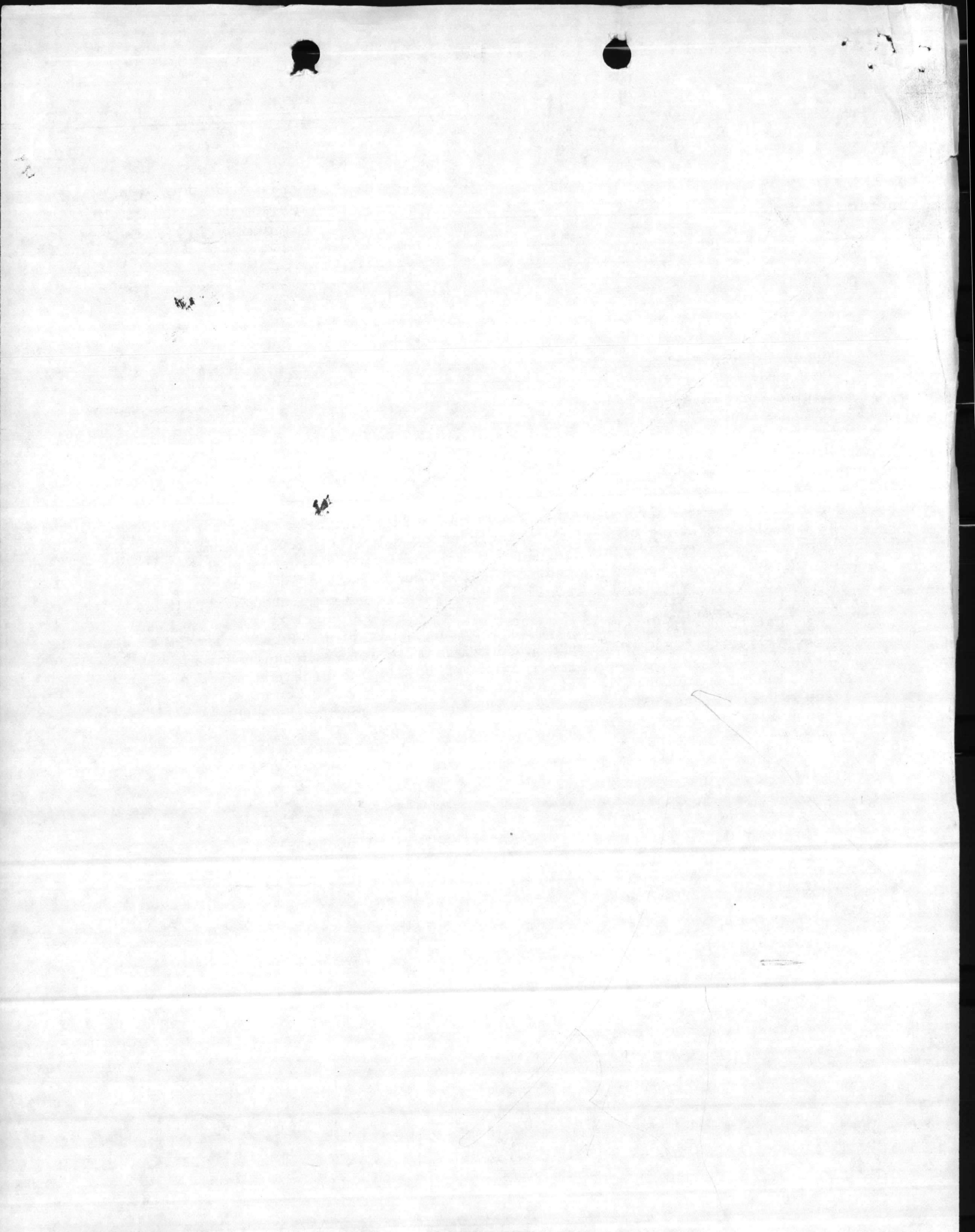
*Kenneth N. Windley, Jr.*

Kenneth N. Windley, Jr.,  
Planning Director

KNWJR:llt

cc: Dave Clement  
Sarah Humphries

*Encl 41*



MAIN/FEC/rn  
11370  
31 Jan 1983

From: Director, Utilities Branch  
To: Base Maintenance Officer

Subj: Solid Waste Co-generation Plant (N62470-80-B-3801)

Ref: FONECON btwn Jim Torma (Utilities Section, LANTDIV) and Fred Cone  
(MAIN) of 28 Jan 1983

1. During the reference, Mr. Torma indicated that he had informally discussed the subject project with a Commander Mitchum (NAVFAC) and that Commander Mitchum was against using ECIP funds for a project such as this. His reasoning was that ECIP money was tight and that the government should not be building plants such as this. He feels that if the plant is economical for the government, then it would be economical for a third party. Therefore, he is recommending that the project be advertised to allow a private contractor to build and operate the plant. The contractor would then sell steam to the government. Again, this information is based on informal discussion rather than set NAVFAC policy.
2. I discussed the above information with Mr. Moy (HQMC), who in turn relayed the information to Mr. Elwood Ball (HWMC). It is my understanding that Mr. Ball talked with Commander Mitchum, who again stated his feelings as outlined above.
3. In addition, I understand that Cherry Point is very concerned about the situation because of their landfill problems.

F. E. CONE

1957  
21 Jan 1957

From: Director, Political Branch  
To: Head Maintenance Unit

Subject: 1957 Maintenance Program  
Re: 1957 Maintenance Program (LAW/AC) and 1957 (LAW/AC) of 23 Jan 1957

During the reference period, it was indicated that the subject project with a Commander Mithum (LAW/AC) and that Commander Mithum was advised that the project should not be put into effect until the money was available and that the government should not be put into effect until the money was available. It is recommended that the project be advised to allow a private company to build and operate the plant. The doctor would then sell it to the government. It is recommended that the information be based on informal discussion rather than see LAW/AC policy.

2. I discussed the above information with Mr. May (LAW/AC) who in turn relayed the information to Mr. Edward Ball (LAW/AC). It is my understanding that Mr. Ball talked with Commander Mithum, who again stated his feelings as outlined above.

3. In addition, I understand that General Ford is very concerned about the situation because of their political problems.

F. J. KOFF



DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

TELEPHONE NO.  
AUTOVON 690-9582

IN REPLY REFER TO:  
111:JDT:aed  
11300

2 4 JAN 1983

From: Commander, Atlantic Division, Naval Facilities Engineering Command  
To: Commanding General, Marine Corps Base, Camp Lejeune.

Subj: Solid Waste and Wood Waste Burning and Co-generation Study, Contract  
N62470-80-B-3801

Ref: (a) LANTNAVFACENCOM ltr 111:JDT:aed 11300 of 3 Nov 1982

Encl: (1) J. E. Serrine Company ltr of 26 July 1982

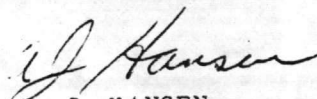
1. Per reference (a), LANTNAVFACENCOM forwarded the subject study final report and recommended that the steam only trash burning project option (Case 1). Justification of the selection was based largely on enclosure (1) in which the J. E. Serrine Company recommended the Case 1 option because of the unknown factor of boiler tube corrosion in Case 2 where higher pressure and temperatures are required for steam to generate electricity.

2. Other reasons for LANTNAVFACENCOM supporting the steam only project option are based on experience with the development of the trash burning co-generation plant at the Norfolk Naval Shipyard, Portsmouth, Virginia. These reasons are as follows:

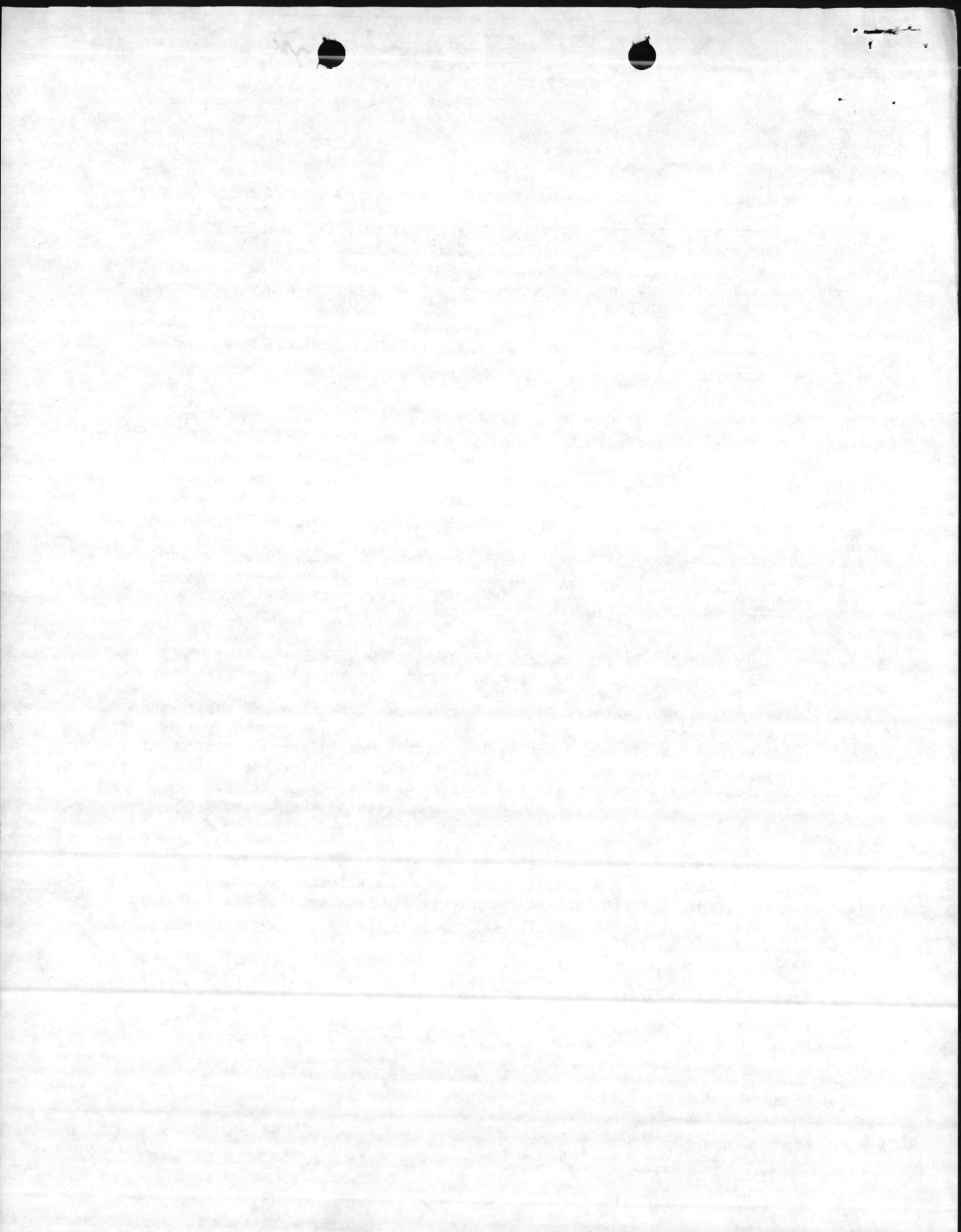
a. The economic advantage of the cogeneration option is based on the sale of electricity to the utility at their avoided cost and payment of a capacity credit. The Navy does not have authority to sell electric power to electric utilities. Specific legislation from Congress will be required to provide such authority. Authority from Congress to sell excess electricity from a proposed Refuse Fired Power Plant at the Norfolk Naval Shipyard, Portsmouth, Virginia, required that revenue received from the sale of electricity, adjusted for actual expenses incurred, be returned to the U.S. Treasury. Under this condition there is no economic advantage to the Activity to cogenerate.

b. The internal use of the cogenerated electricity by the Activity would decrease the amount of electricity purchased. This reduced cost is approximately one-half the revenue available from the sale of electricity to the utility. The decreased economic benefit eliminates the economic advantage of the cogeneration option.

3. If so requested, LANTNAVFACENCOM will visit your Activity to discuss in more detail the above items.

  
A. J. HANSEN  
By direction

Copy to:  
CG MCB CAMP LEJEUNE  
(Assistant Chief of Staff of Facilities,  
Utilities Division Director and ←  
Public Works Officer



ESTABLISHED 1902



POST OFFICE BOX 12748 RESEARCH TRIANGLE PARK NORTH CAROLINA 27709 TELEPHONE (919)541-2081

July 26, 1982

Department of the Navy  
Atlantic Division  
Naval Facilities Engineering Command  
Norfolk, Virginia 23511

Attention: Mr. J. D. Torma

Subject: Cogeneration Feasibility Study  
MCB Camp Lejeune and MCAS  
Cherry Point, N. C.  
Contract N62470-80-B-3801  
Sirrine Job No. R-1628

Gentlemen:

The following are our responses to the comments made by H. A. Gorges and J. H. Watson and sent to us through your letter of June 17, 1982.

Response to H. A. Gorges:

The number in Tables V-25 and VI-26 for BTU/LB (1086) is the number agreed upon during the February 22, 1982 review meeting. A more reasonable number is 1254 BTU/LB (1003/.8) and is used for the recalculated economic analysis.

The KW output has also been recalculated according to increasing the amounts of refuse burned through the life of the project.

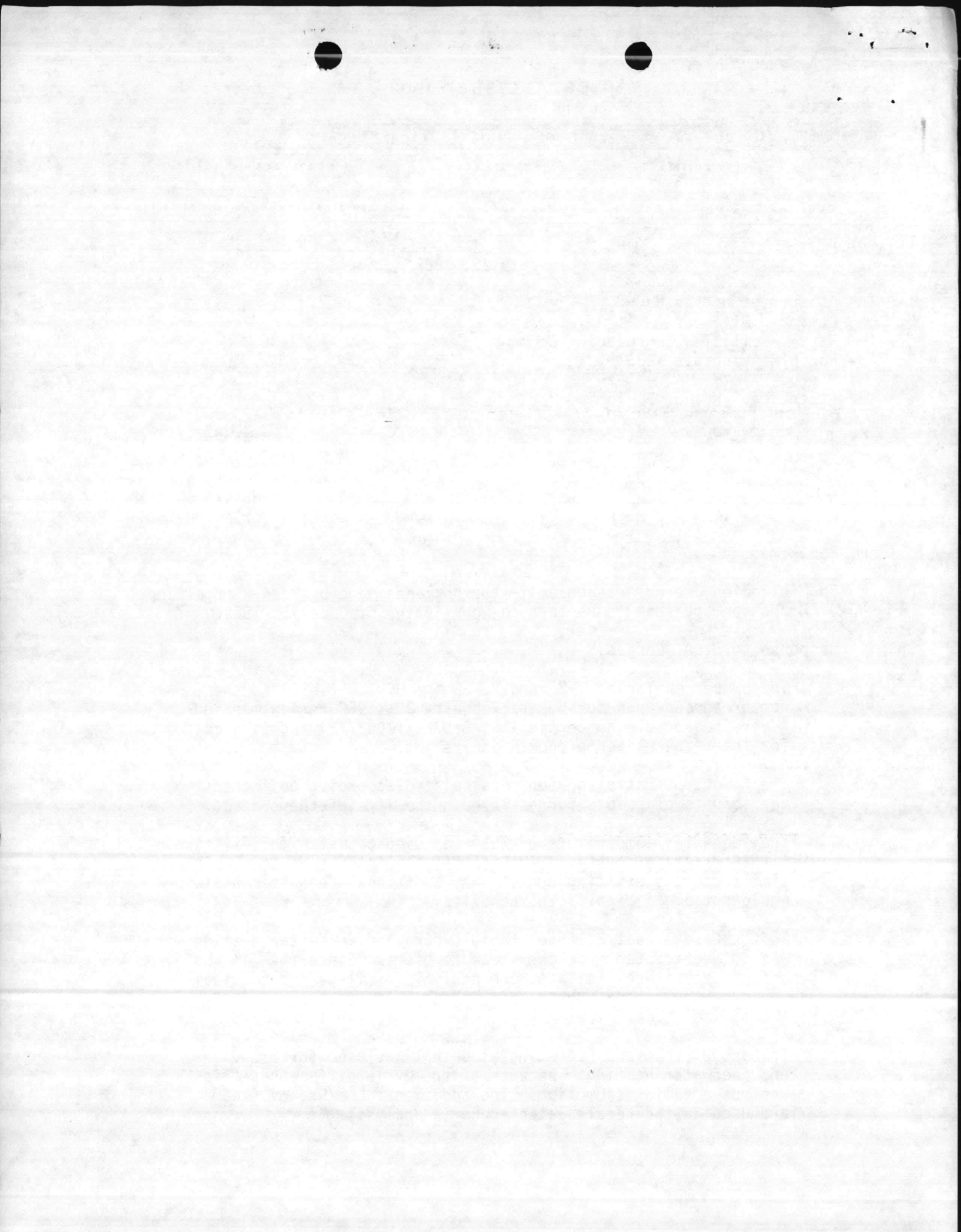
The feedwater temperature of 228° was used to match the existing 5 PSIG deaerator system. In Case 2A, the intent was to remain similar to the existing cycle. Any additional feedwater heaters would not add a significant benefit.

In the Case 1 Heat Balance, the blowdown and feedwater heating was not subtracted from the steam to users. Since the oil and refuse cycles are the same, the equivalent oil generated steam would be the same as subtracting these allowances and then adding them back.

In Case 2, the same reasoning as Case 1 was used for blowdown and feedwater heating. Because of the cycle differences this was not a valid assumption. The additional Lbs/Hr. of steam are used in the recalculated economic analysis.

Enclosure (1)



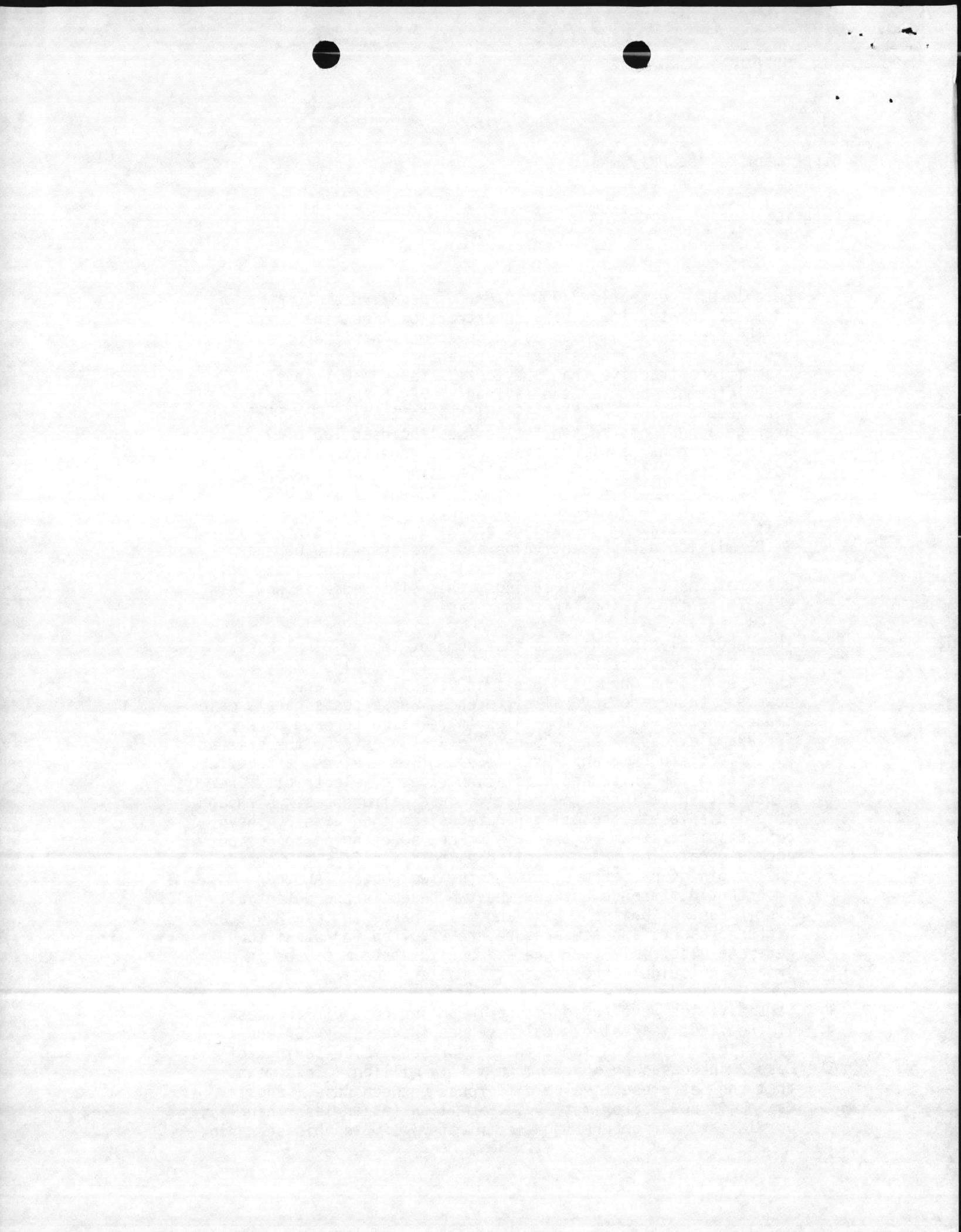


Department of the Navy  
Sirrinc Job No. R-1628  
July 26, 1982  
Page Two

Because of the nearly 2,000 Lb/Hr. of desuperheating water added to the turbine generator extraction line, the cost of the Case 2 incremental oil displacement has increased over the initial analysis. The re-analysis now makes this case more attractive than previously stated. Originally, the difference between the savings of Cases 1 and 2 had a net present value of \$11 million or more than \$1 million average annual net present value (see enclosed Table 1). In this original analysis, the case of generating steam only is obviously the most cost effective recommendation. However, after all recalculations, but specifically because of the increased equivalent oil Lb/Hr. of steam, the difference between the savings of Cases 1 and 2 is now only \$ .85 million net present value and less than \$100,000 per year (see enclosed revised Table 1). Although the steam only case retains the highest savings, this difference is now less than 1% of the savings in either case.

This new analysis indicates that some of the original basic assumptions must be scrutinized more thoroughly. Many of the assumptions and costs basis in Cases 1 and 2 are the same; however, there are several differences whose costs have a major impact on the value of the cases in relation to each other. For example, Case 2 has a benefit of revenues from the sale of electricity to CP&L and Case 1 does not; therefore, assumptions concerning the price and escalation rates of electricity are important in defining the relative case differences. Although Case 1 displaces more oil generated steam than Case 2, they both displace steam at the same price, so changing the price and/or escalation rates of oil does not significantly change the margin of difference between the two cases. Another important difference between the two cases is the potentially higher cost of boiler repair and maintenance in Case 2 where higher pressure and temperature are required for steam to generate electricity. Higher temperature steam causes increased chloride corrosion to the boiler tubes.

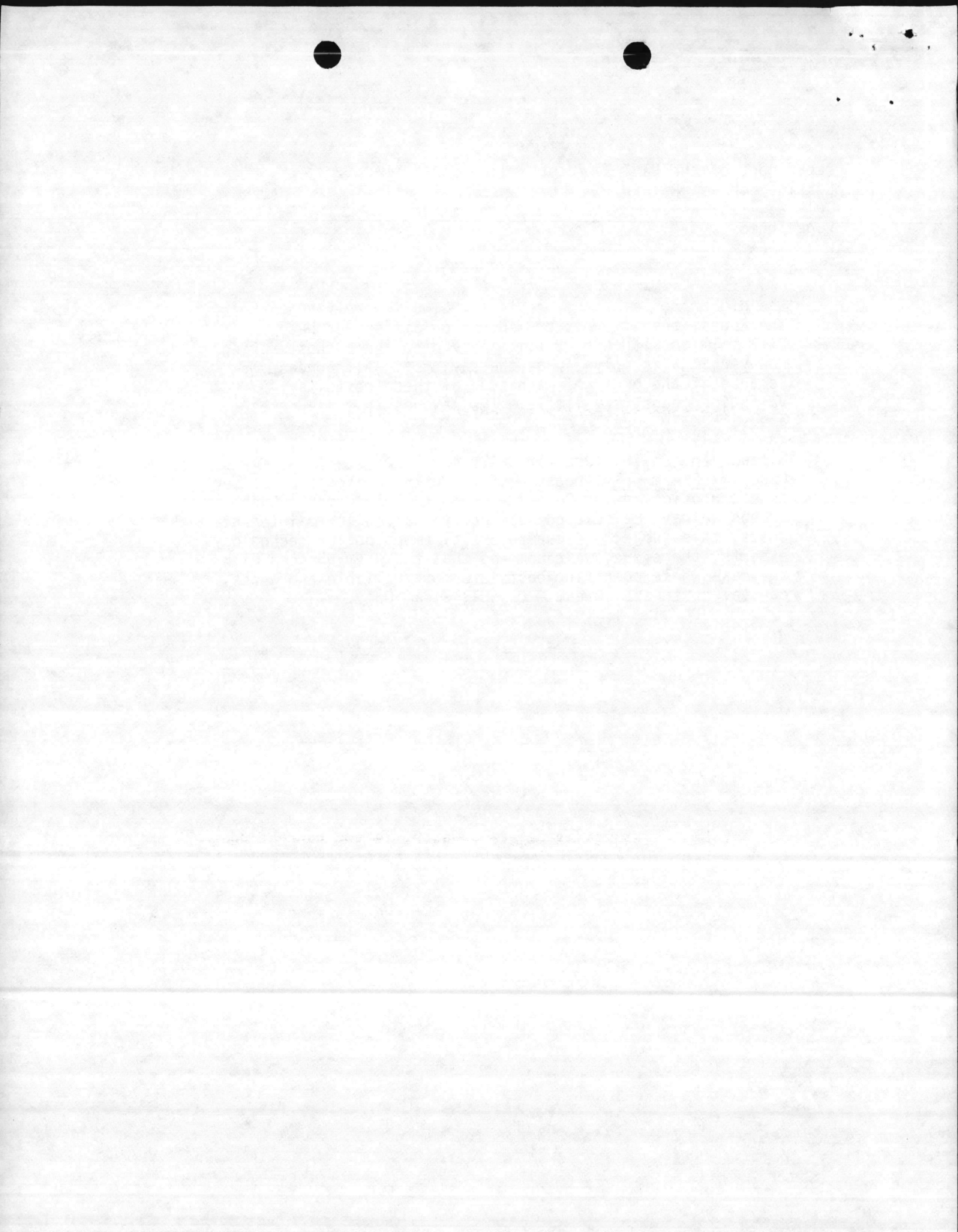
Sensitivities were run on these two major cost differences. If the first year electrical revenues increase by 20% and all else remains the same, the net present value savings of Case 2 increases by approximately \$1.4 million. This means that the net present value difference between Case 1 and Case 2 is now approximately \$ .5 million (again less than 1%), but in favor of generating electricity. If, to this scenario,



Department of the Navy  
Sirrime Job No. R-1628  
July 26, 1982  
Page Three

the higher boiler repair costs (\$100,000 every five years) are added, then the net present value difference becomes \$ .3 million with Case 2 still providing the highest savings. However \$ .3 is only .4% of the savings in either case. Because of the order of magnitude of these costs, a .4% variation means very little. The savings in these cases are virtually equal.

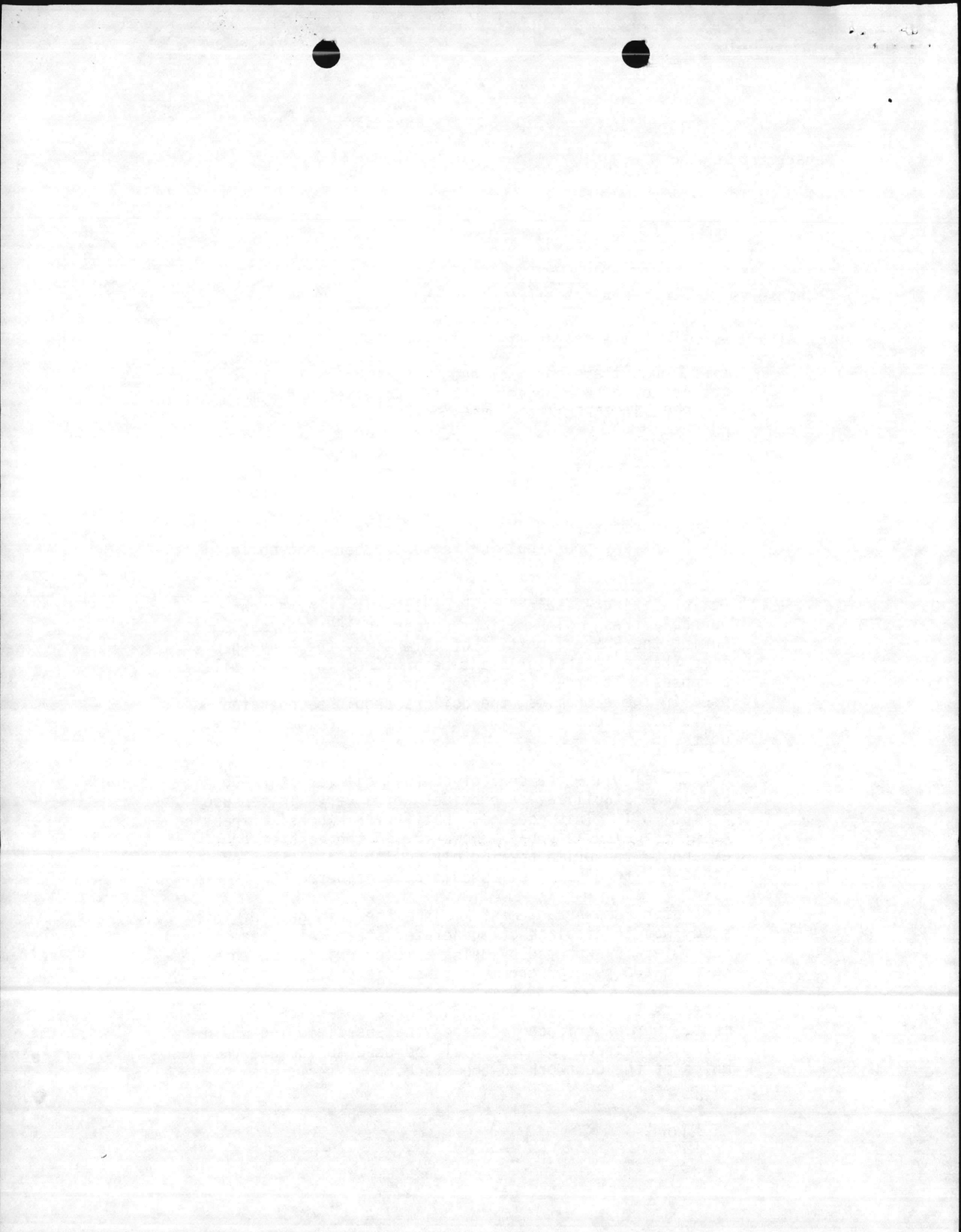
Because the savings are virtually equal, we still recommend Case 1 - Steam Only, because of the unknown factor of boiler tube corrosion in the Case 2 - cogeneration option. Even though we have calculated some additional boiler maintenance costs, this subject is controversial among boiler technology experts; therefore, we recommend that the Navy proceed with the case whose operating costs are most reliable and whose capital costs are lowest - Case 1, Steam Only.



Department of the Navy  
Sirrime Job No. R-1628  
July 26, 1982  
Page Four

Response to J. H. Watson:

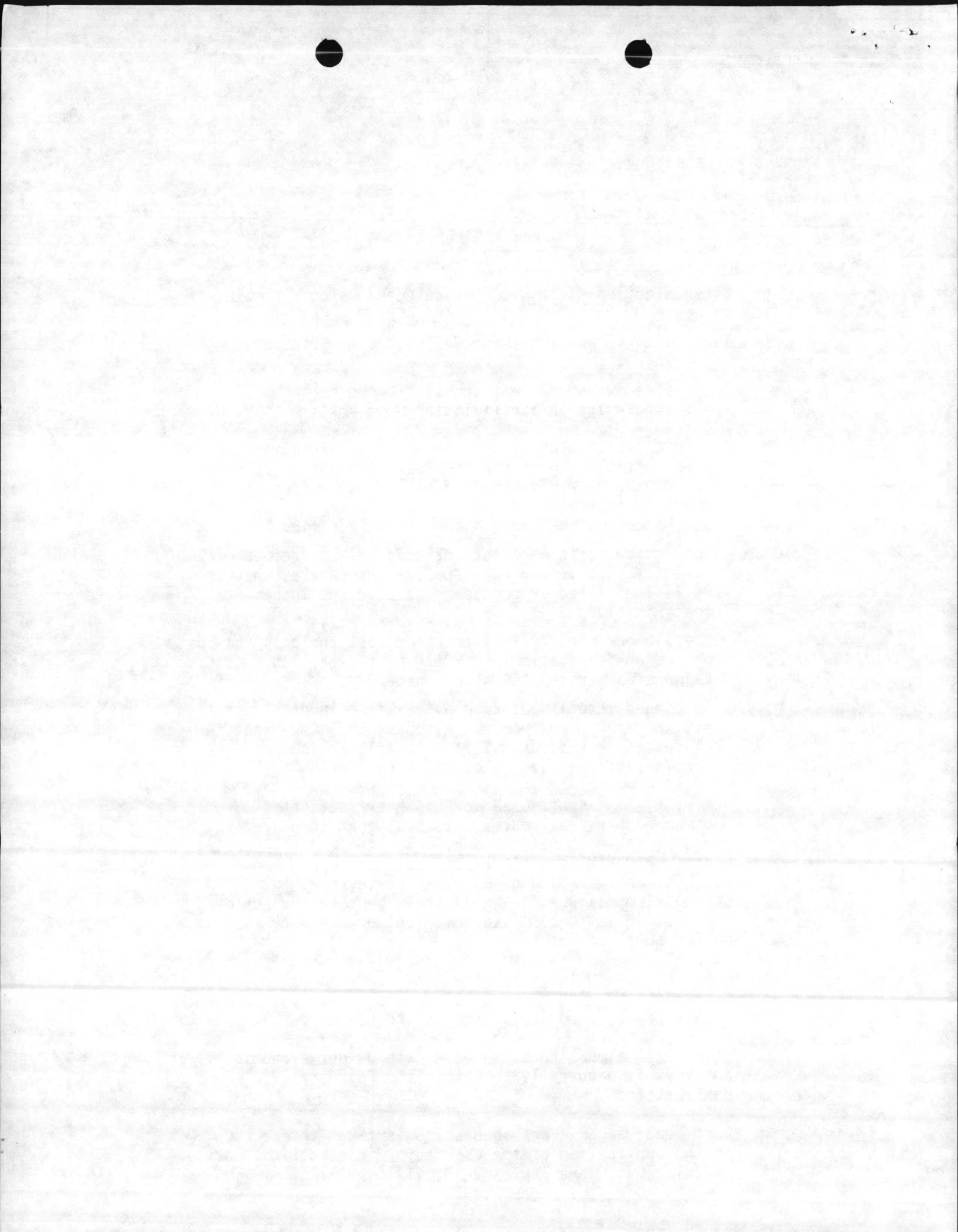
- 1.a. Battery Limit - This means all equipment in the boiler system complex. All provisions for fuel input and steam output are not included. Hypothetically, the module could be plugged in at any location and remain the same in concept and cost.
- b. Mass Firing not Practical for Power Generation - The concept of massing firing is practical for power stations and has been successfully accomplished at many European locations. The only U. S. plant to attempt this has been at Hempstead, N. Y. Unfortunately, its operation has been very poor, but for reasons other than boiler design.
- c. Boiler Sizing - Table 2 on Page III-8 tabulates tons of burnable trash. The maximum number is 167 tons/day. During the Phase I portion of this study the Navy specified that a two-boiler plant be provided for reliability purposes. In order to achieve the availability of 80% used in the economics, the boilers should be operated at 75-80% of design rating; therefore, two 100 ton/day units.
- d. No. 2 Fuel Oil - The concept of fuel oil for start-up and flame stabilization provides for a very limited use of fuel oil. This does not justify the expense of heating a No. 6 fuel oil supply. However, if the concept does expand to the prime heating plant with package boiler stand-by, then No. 6 oil should be considered.
- e. Feedwater Pump Arrangement - Since the main goal of this study was to displace oil generated steam, all steam possible was exported by using a motor drive. In this case, a two pump arrangement is sufficient.
- f. Separate Stacks - The drawings show a one stack arrangement. Our experience indicates that partitioning would not be required. Dampers would be used to isolate the units at the ductwork to the stack.



Department of the Navy  
Sirrime Job No. R-1628  
July 26, 1982  
Page Five

- g. Site Selection - The site was selected using two main criteria:
1. A site between the Camp Geiger and Air Station complexes,
  2. A site away from well-traveled areas because of the "garbage burner" malodor.
- h. Refuse Collection and Cost - Generally, refuse information was not detailed in either the Phase I or Phase II reports because Sirrine was instructed by the Navy to use information previously generated in a report by SCS Engineers, "Solid Waste Management Master Plans". More specifically:
- Collection costs were not included because refuse will have to be collected and deposited somewhere, whether it is landfilled or burned. There are no incremental costs involved.
  - The \$10 per ton (1977 \$) transfer cost includes the cost of a transfer station for MCAS and the haul cost to Camp Lejeune as per the SCS study, page 276.
  - Continued manual operation of existing landfills at each station is not an incremental cost; therefore, not included in this study. This cost will be incurred regardless of the outcome of the study.
- i. Staffing - The staff used for O & M evaluation is a minimum number required. It is true that some credits could be taken in staff reduction at the control heating plants; however, see "Instructions for Preparation of Economic Analysis", page 8. This states that "NO LABOR SAVINGS (emphasis - the Navy) shall be computed, unless a reduction in forces is documented, or the work is performed by contract..."
- j. Line Losses - No cost is shown for line losses, but is taken into account by generating steam at a considerably higher pressure than required at the users.
- k. Economic Analysis Format - Note date on our economic analysis is January 1982, before the February 1982 publication.
- l. Part Load Usage - Part load usage is taken into account in the application of the use factor in electrical cost calculations. See Tables V-15, VI-15, VII-15.





Department of the Navy  
Sirrine Job No. R-1628  
July 26, 1982  
Page Six

- m. Screw Feed - This is a wood only boiler.
  - n. Recommendations for revising Navy accounting procedures are not within the scope of this project.
  - o. Pollution Control - The limit for wood boilers in N. C. up to 100M BTU/Hr. input is 0.41 Lbs/million BTU. It has been our experience that this can be met with a primary and secondary mechanical collectors.
  - p. Amount of Steam Available - This might be better worded by saying, "less steam is available at the boiler outlet because of a greater heat differential in the boiler".
2. The next step of the project is detailed conceptual design, including a more definite cost estimate ( $\pm 10\%$ ). After the detailed conceptual design, the project could be let for design/construct bids.

We will await further comments prior to re-issuing the revised report.

Yours very truly,

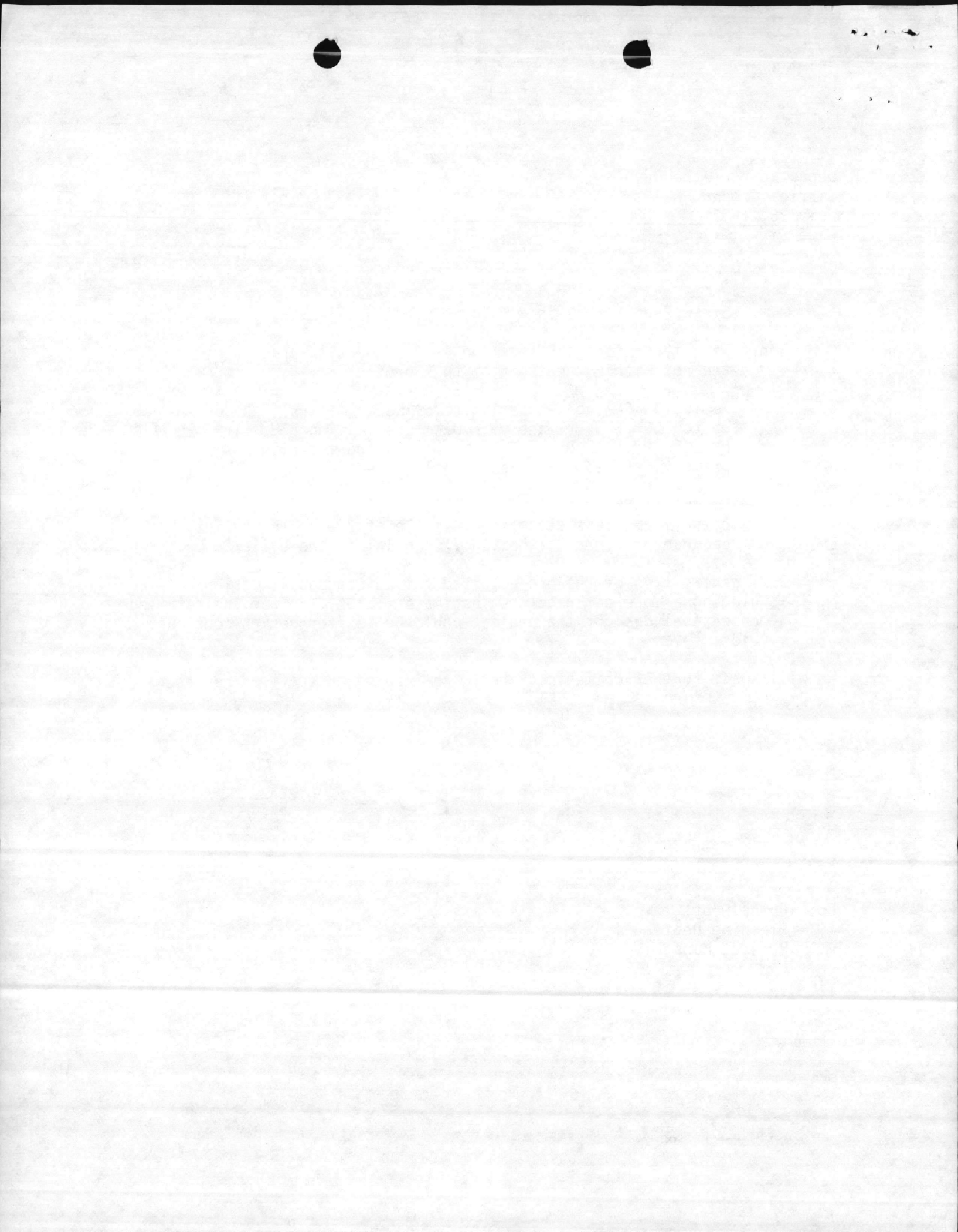
J. E. SIRRINE COMPANY

*GJ Freeman*

G. J. Freeman, P. E.

GJF/jos

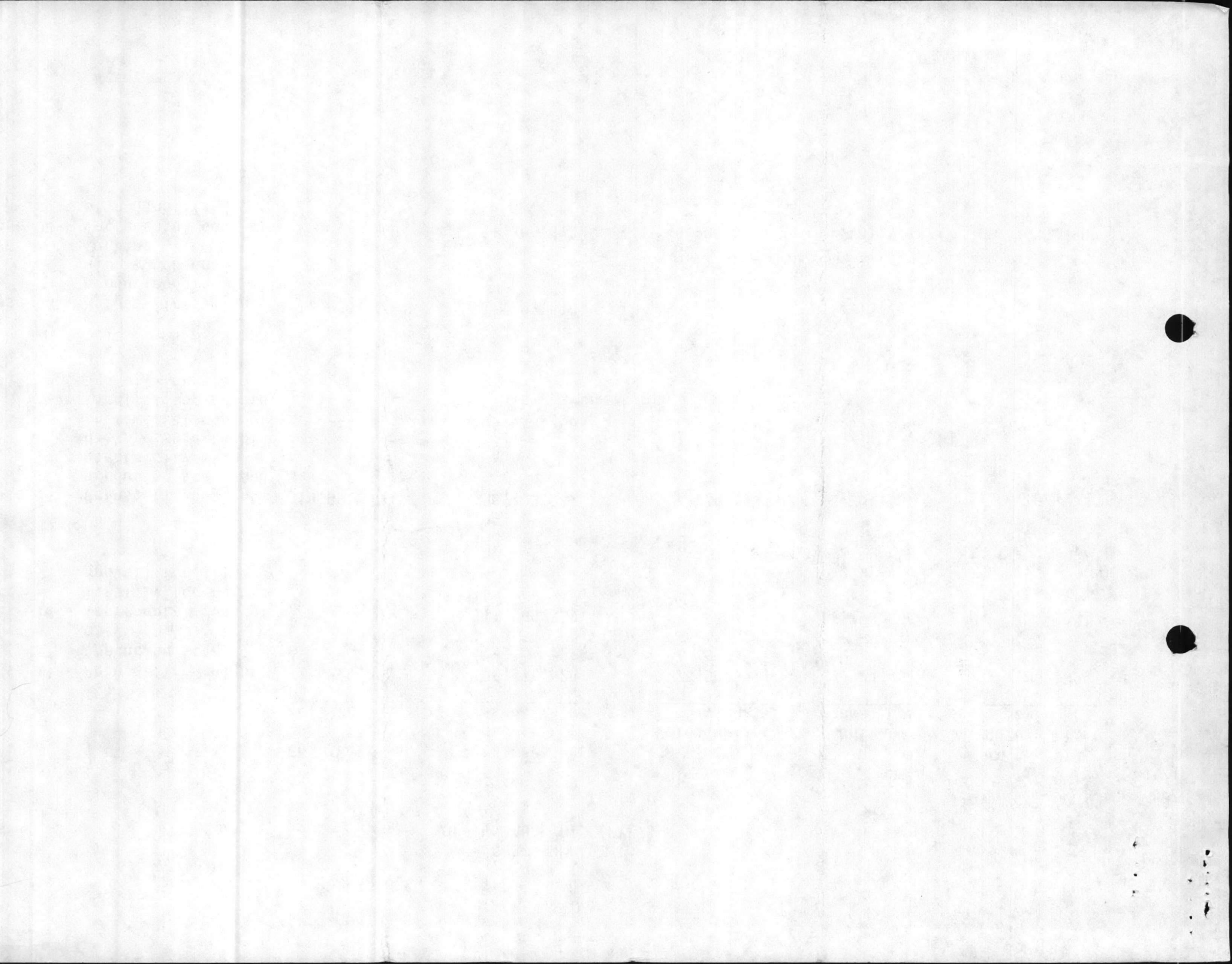
cc: Power Dept.  
Planning Dept.  
Project Manager



REVISED

TABLE 1  
COST SUMMARY  
DESIGN ANALYSIS (FY87)

	<u>Construction Costs (1982 \$)</u>	<u>Total Project Cost Present Value</u>	<u>Total Refuse Plant Savings</u>	<u>Uniform Annual Cost</u>	<u>Annual Refuse Plant Savings</u>
Case 1A - Refuse-fired plant producing steam only	15,229,000	37,376,628	74,592,911	3,924,467	7,832,099
Case 1B - Incremental cost of landfill for refuse and oil for steam	--	111,969,539	--	11,756,566	--
Case 2A - Refuse-fired plant producing steam and electricity with a backpressure turbine	18,891,000	36,203,932	73,744,834	3,801,337	7,743,053
Case 2B - Incremental cost of landfill for refuse and oil for steam	--	109,948,766	--	11,544,390	--
Case 3A - Refuse-fired plant producing electricity with a condensing turbine	17,936,200	17,293,310	--	1,815,761	--
Case 3B - Incremental cost of of a landfill	--	11,306,613	<5,986,697>	1,187,171	<628,590>





DEPARTMENT OF THE NAVY  
HEADQUARTERS UNITED STATES MARINE CORPS  
WASHINGTON, D.C. 20380

IN REPLY REFER TO  
LFF-2:MGA:gdj  
22 JAN 1982

From: Commandant of the Marine Corps  
To: Department of the Navy, Atlantic Division, Naval Facilities  
Engineering Command, Norfolk, Virginia 23511

Subj: Solid waste, waste wood burning and co-generation options  
at MCB, Camp Lejeune and MCAS, Cherry Point; feasibility  
study for

Ref: (a) LANTNAVFACENGCOM ltr 1111:JDT 11300 of 20 Nov 1981  
w/revised scope of work, Phase II Task Definition,  
Contract N62470-80-B-3801

Encl: (1) ASD, (MRA&L) ltr of 6 May 1981

1. By receipt of the reference this Headquarters was advised that the scope of work for the subject study was revised to exclude a detailed evaluation of waste wood. Originally the study was to determine wood waste availability, commitment of wood waste supply, heat content of available wood waste, problems and solutions of wood handling, chipping operations, transportation, equipment and manpower requirements.
2. In response to increasing energy demands and costs, decreasing commercial demand for selected timber products, and Department of Defense actions contained in the enclosure, this Headquarters considers that a detailed evaluation of wood fuel is mandatory. Accordingly, it is requested that the utilization of wood and selected wood products for fuel in accordance with approved forest management practices be accomplished for Marine Corps Base, Camp Lejeune in conjunction with the subject study.
3. This Headquarters has maintained a high interest in this phase of the study, and is prepared to provide additional coordination if required. Mr. Marlo G. Acock (AV 224-3188) and Mr. Elwood G. Ball (AV 224-1425) are the primary contacts at this Headquarters.

JOHN P. BURKE  
BY DIRECTION

Copy to:  
CG MCB CAMP LEJEUNE  
CG MCAS CHERRY POINT

NOV 1952

NOV 1952

JOHN W. ...  
MONTGOMERY



ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D.C. 20301

MANPOWER  
SERVE AFFAIRS  
AND LOGISTICS

6 MAY 1981

Honorable Milton J. Socolar  
Acting Comptroller General  
United States General Accounting Office  
Washington, D.C. 20548

Dear Mr. Socolar:

This is in response to the March 3, 1981, letter concerning the General Accounting Office (GAO) final report of March 3, 1981, "The Nation's Unused Wood Offers Vast Potential Energy and Product Benefits," EMD-81-6, OSD Case Number 5528. The letter requested a statement of Department of Defense (DoD) actions taken in response to recommendations on page 87 of the GAO report.

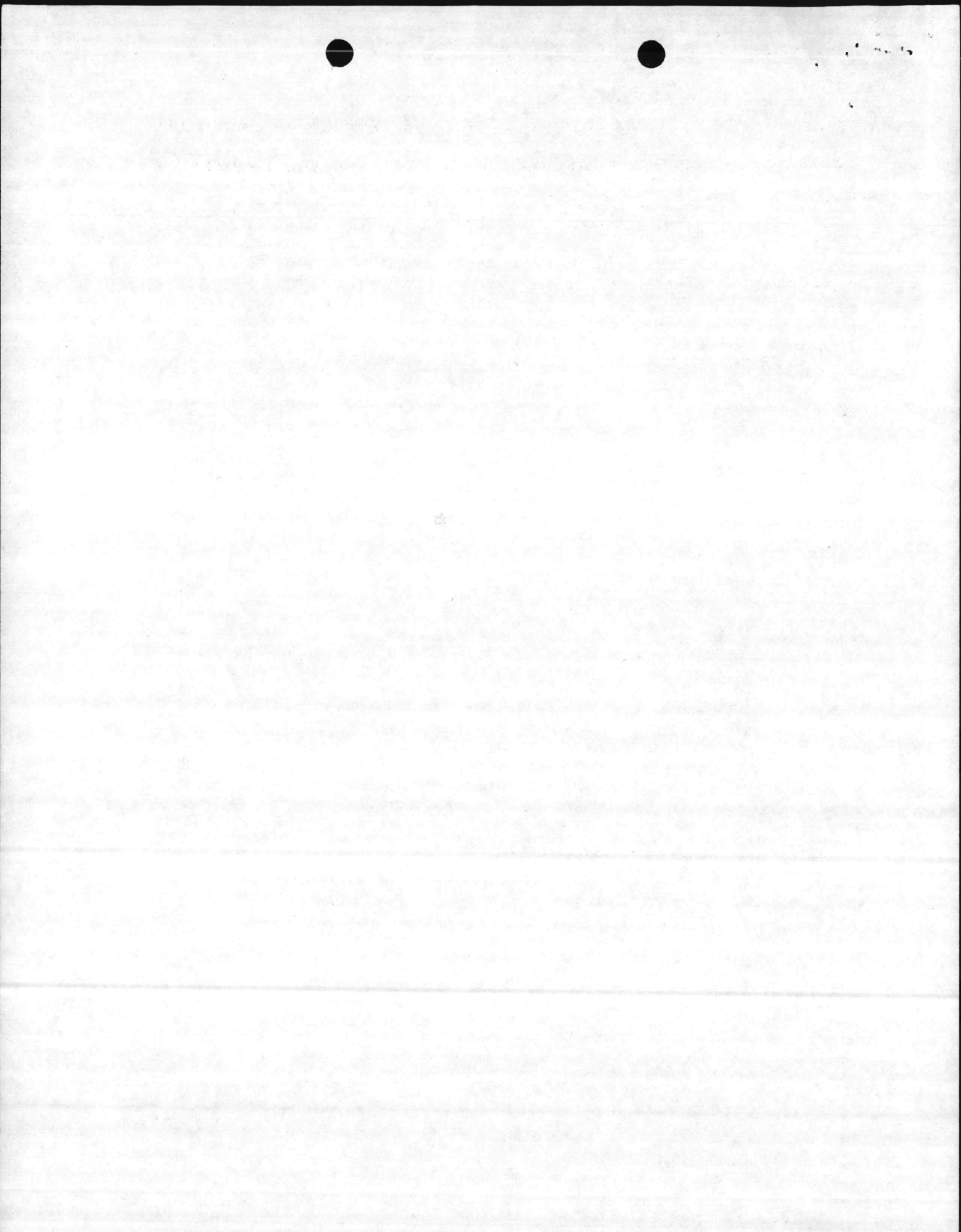
The report recommended that DoD:

- Assure that wood is given equal consideration with coal in forested regions of the country in the conversion of heating plants from oil and natural gas to alternate fuels,
- Canvass wood conversion opportunities at all military facilities,
- Test the results of the canvass with the standard feasibility evaluation methods that the Forest Service of the Department of Agriculture (DoA) and the Department of Energy (DoE) will develop, and
- Issue procurement guidelines urging that residue-based wood products be considered carefully as an alternate material in all construction and related applications.

Our detailed response is enclosed. Briefly, it is DoD policy to extend to wood the same priority given to coal, refuse derived fuels, municipal solid waste, and geothermal energy to meet defense fuel conversion goals. We have provided

Encl 1

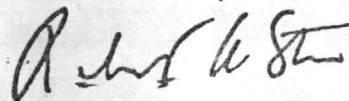




information relative to our efforts to canvass successfully wood conversion opportunities in DoD. We offer our complete cooperation to work with DoA and DoE to test the results of our canvasses with the standard feasibility evaluation methods being developed, and we explain in the enclosure our policy on evaluation of materials, including wood, for inclusion in guide specifications used for military construction.

I trust that you will find the DoD actions in response to the GAO recommendations to be satisfactory. In the interest of using fully wood resources and residues at military bases, DoD will cooperate with other federal departments to overcome any potential barriers identified to increased wood use.

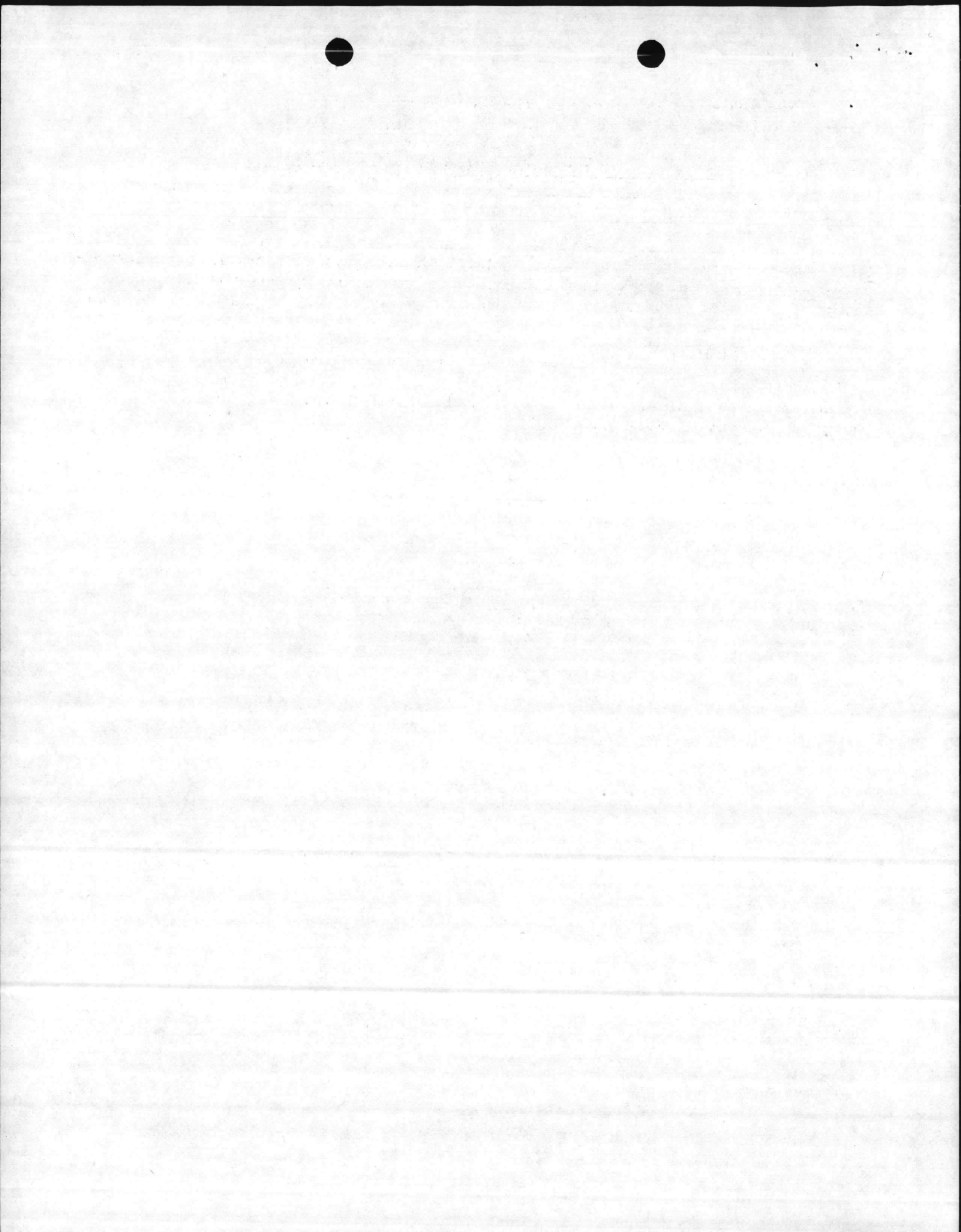
Sincerely,



Robert A. Stone  
Acting Assistant Secretary of Defense  
(Manpower, Reserve Affairs & Logistics)

Enclosure

cc: Secretary of Energy  
Secretary of Agriculture



Department of Defense Actions Taken in Response  
to the GAO Final Report of March 3, 1981,  
"The Nation's Unused Wood Offers Vast  
Potential Energy and Product Benefits,"  
EMD-81-6, OSD Case Number 5528

GAO Recommendation (1): Assure that wood is given equal consideration with coal in forested regions of the country in the conversion of heating plants from oil and natural gas to alternate fuels.

DoD Action (1): The Defense Energy Management Plan (DEMP) published on March 1, 1981, provides a statement of Department of Defense (DoD) energy goals, programs, plans, and progress for energy supply and conservation. It includes defense energy program policy memoranda that:

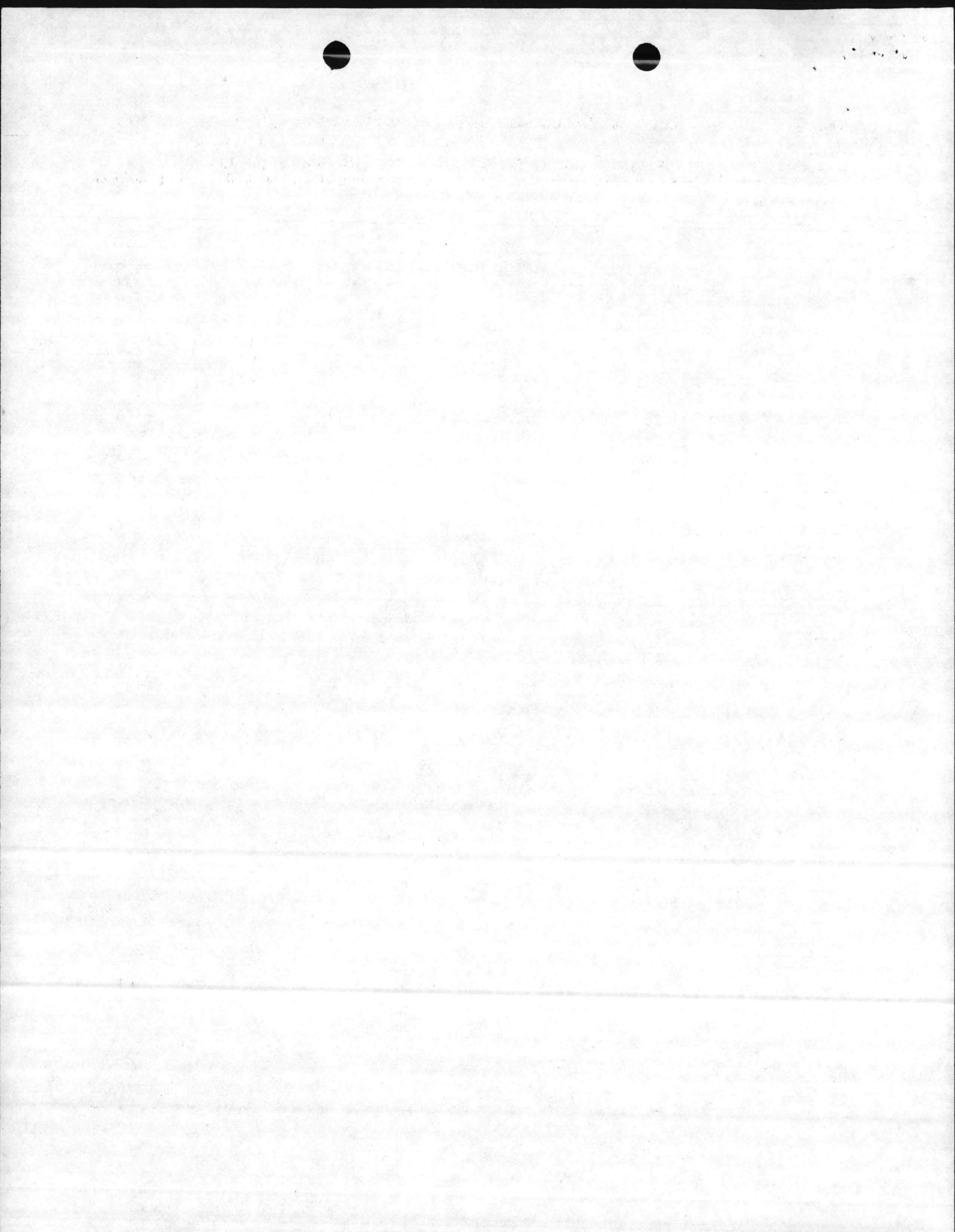
- Establish DoD energy management priorities for 1981 and
- Establish DoD energy management goals and objectives to the year 2000.

In the area of alternate energy sources, our 1981 energy management priorities require the development of a comprehensive plan for fuel conversions and replacements in defense fixed facilities. The DEMP requires that these conversions result in an increased percentage of total defense facility energy from alternate energy sources, as follows:

- 10 percent by 1985,
- 15 percent by 1990,
- 20 percent by 1995, and
- 35 percent by 2000.

Alternate fuels are listed explicitly to include:

- Coal,
- Municipal solid waste,
- Refuse derived fuel,
- Wood, and
- Geothermal energy.



There is no effort made to prioritize alternate fuels or to give preference to one fuel over another. The military services do rank fuel conversion and replacement projects within their military construction programs using the following criteria:

- Life cycle cost,
- Conformance with applicable regulations,
- Technical feasibility,
- Fuel supply, vulnerability, and mission support requirements, and
- Planning, design, and construction timing.

How well wood compares to other alternate energy sources using these criteria will determine ultimately its use in the conversion of heating plants from oil to alternate fuels.

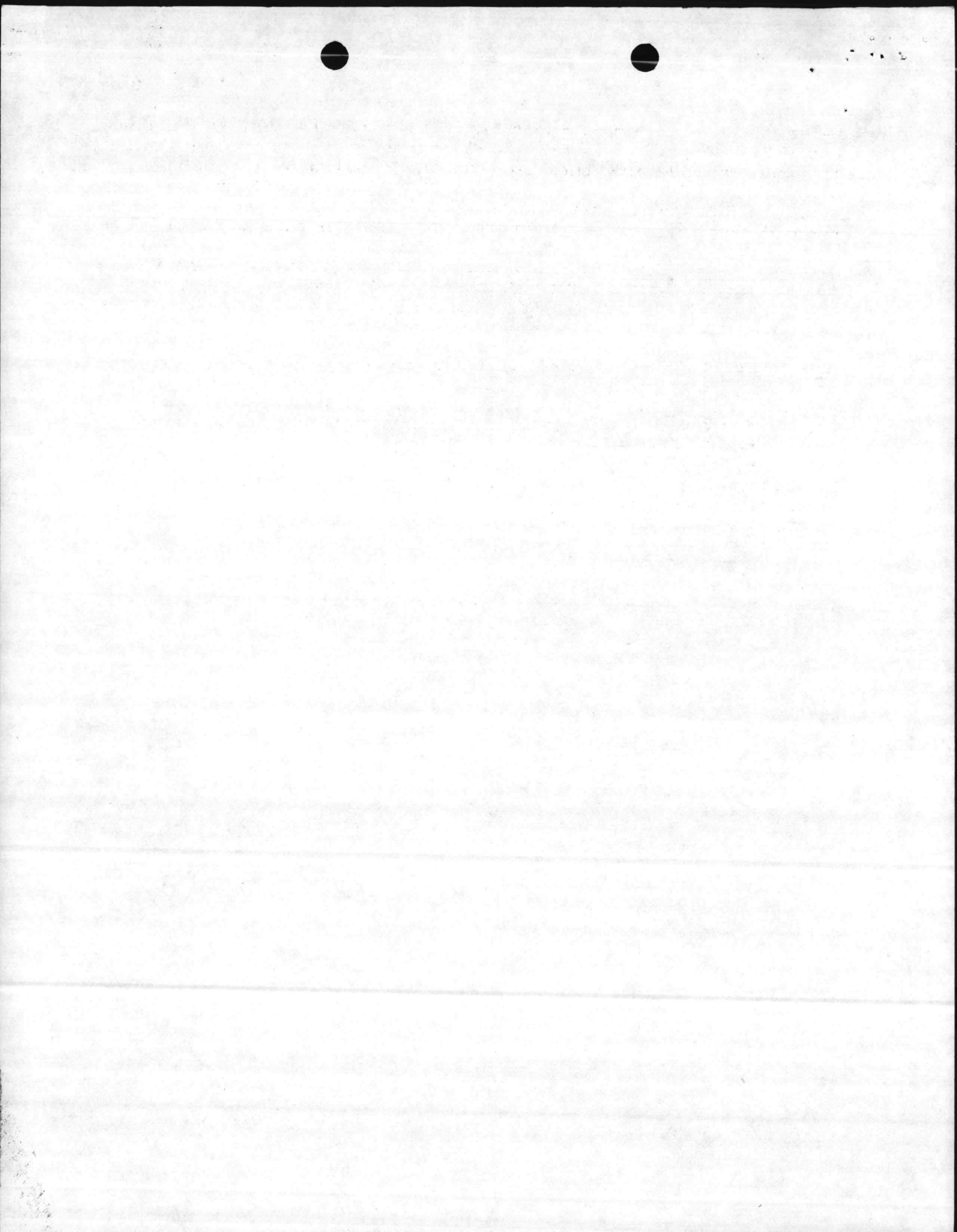
GAO Recommendation (2): Canvass wood conversion opportunities at all military facilities.

DoD Action (2): Under the DoD Energy Engineering Analysis Program (EEAP), the military services have canvassed wood conversion opportunities at all bases. As a result of this continuing program, the services:

- Know acreage on military bases that is wooded,
- Know how much marketable timber is available from this acreage,
- Conduct forest management programs, and
- Evaluate wood conversion opportunities at these bases. If a wood conversion or replacement project meets the criteria identified in response to the GAO recommendation above, those projects are submitted as military construction candidates.

GAO Recommendation (3): Test the results of the canvass with the standard feasibility evaluation methods that the Forest Service of the Department of Agriculture (DoA) and the Department of Energy (DoE) will develop.

DoD Action (3): We support the recommendation to the Secretary of Agriculture and the Secretary of Energy to evaluate more fully potential barriers to wood residue use. This includes their developing standardized methods to evaluate the costs and

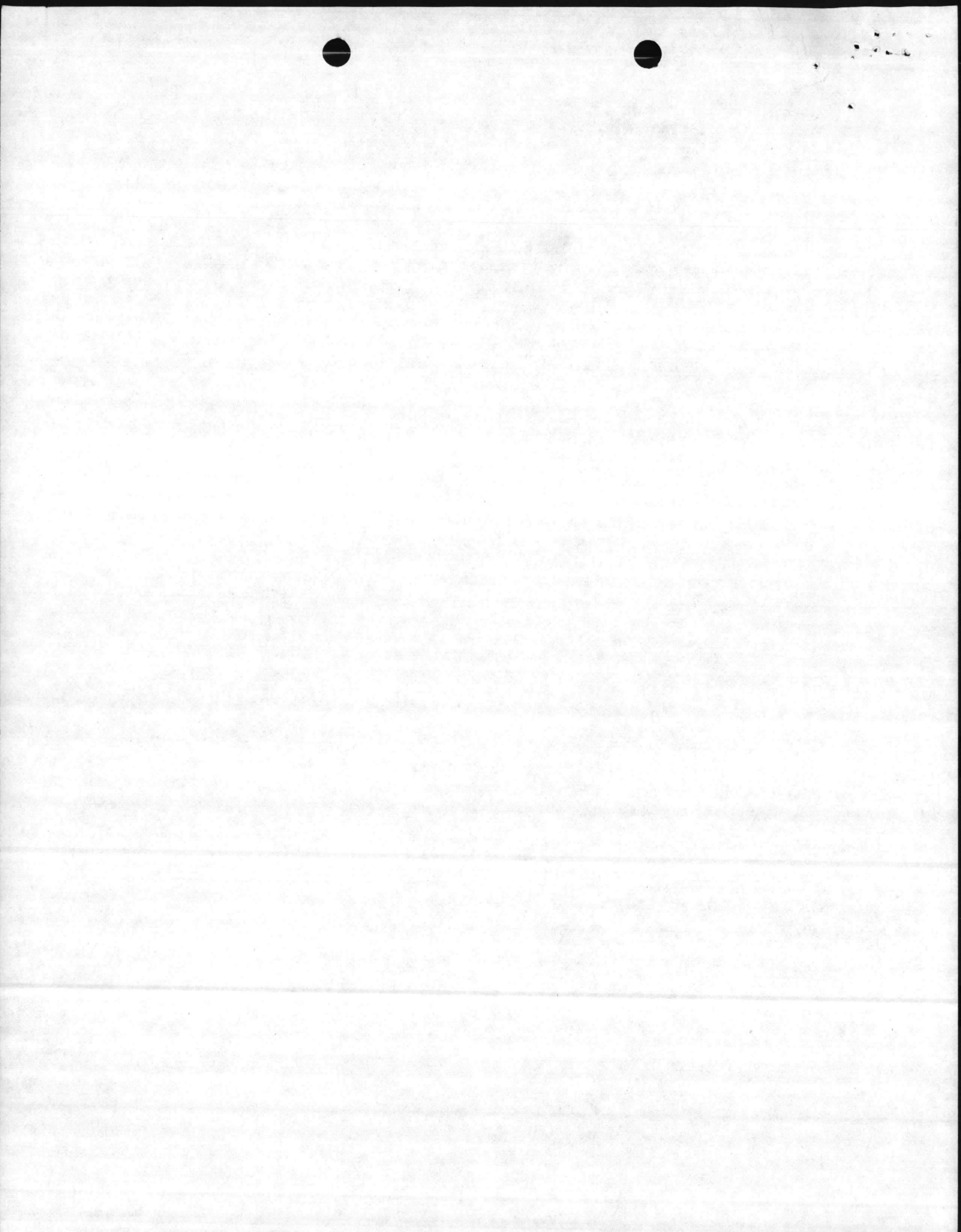


benefits of using wood fuels in federal facilities. When DoA and DoE have prepared these standard feasibility evaluation methods, we will use them to test the results of the wood canvasses conducted under the DoD EEAP. A copy of this response has been forwarded to both DoA and DoE to advise them of our desire to cooperate with them in this effort.

GAO Recommendation (4): Issue procurement guidelines urging that residue-based wood products be considered carefully as an alternate material in all construction and related applications.

DoD Action (4): We have a formal method to evaluate new products and alternate construction materials. This procedure is presented in a June, 1980, document entitled "Criteria and Format for Submission and Evaluation of Materials, Equipment, and Methods for Inclusion in Guide Specifications Used for Military Construction." Many residue based wood products are used presently in military construction. Sheathing, underlayment, and siding are some examples where those products are used. Our policy is to consider commercially available products as alternative materials, provided the material meets performance requirements and is cost competitive. When residue wood products meet our construction standards and engineering criteria, and are competitive with competing materials, they are considered and often used.



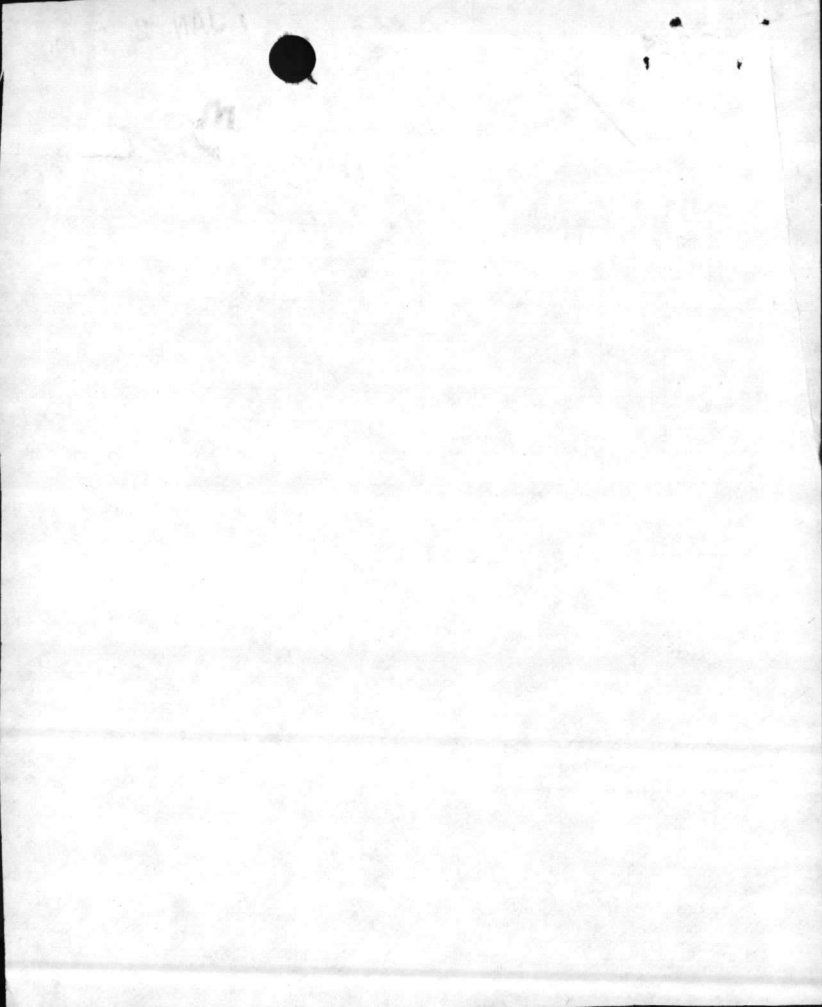


## ROUTING SLIP

JAN 27 1982

ACTION	INFO		INITIAL
BMO		✓	M
ABMO		✓	MVE
ADMIN		✓	S
ENVIOR AFF		✓	
F&A SEC			
MAINT NCO			
M&R			
OPNS			
PROP			
UMACS			
UTIL		✓	Jm
SECRETARY			

COMMENTS:





File

DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

TELEPHONE NO.  
444-9582  
AUTOVON 690-9582

IN REPLY REFER TO:  
111:JDT  
11300

2 3 DEC 1981

From: Commander, Atlantic Division, Naval Facilities Engineering Command  
To: Distribution List

Subj: Solid and Wood Burning and Co-generation Study, Contract No. 80-B-3801  
at Marine Corps Base, Camp Lejeune, and Marine Corps Air Station,  
Cherry Point; status of

Ref: (a) Meeting J. E. Sirrine Company/MCB CAMP LEJEUNE on 28 Sep 1981  
(b) Meeting J. E. Sirrine Company/MCB CAMP LEJEUNE on 01 Dec 1981

Encl: (1) J. E. Sirrine Company History Report No. 5 of 30 Sep 1981  
(2) J. E. Sirrine Company ltr of 27 Oct 1981  
(3) LANTNAVFACENGCOM ltr 1111:JDT 11300 of 20 Nov 1981  
(4) J. E. Sirrine Company History Report No. 6 of 4 Dec 1981

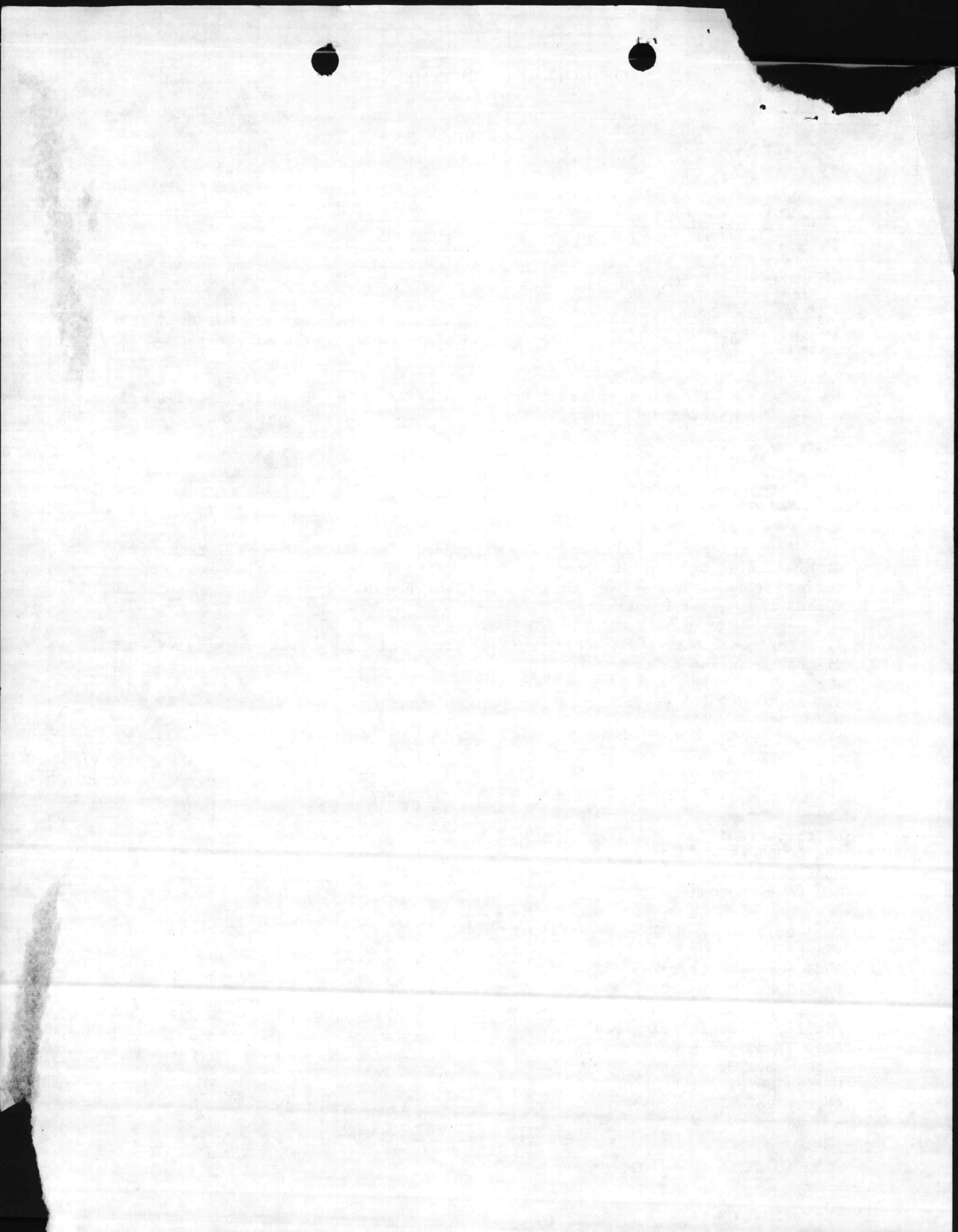
1. Per reference (a), and as discussed in enclosures (1) and (2), J. E. Sirrine Company accepted, at no additional cost to the Government, to perform the subject study at the MCAS (H) NEW RIVER and Camp Geiger site versus the Hadnot Point site.
2. Per enclosure (3), the revised scope of study was formalized and discussed during reference (b).
3. Enclosure (4) is forwarded for your information.

*A. J. Hansen*  
A. J. HANSEN  
By direction

Distribution:  
CMC (CODE LFF-2)  
MCAS CHERRY PT  
MCB CAMP LEJEUNE

Copy to:  
Vineta, Inc.  
3705 Sleepy Hollow Road  
Falls Church, VA 22041


Facilities Engineering Department  
Stop 7, Building 80  
Attn: Mr. Joe Reilly  
Marine Corps Air Station  
Cherry Point, NC 28533



Deputy, Facilities Maintenance Officer  
Facilities Maintenance Department  
Stop 5  
Marine Corps Air Station  
Cherry Point, NC 28533

Installation and Logistics Directorate  
Natural Resources and Environmental  
Affairs Division  
Marine Corps Air Station  
Cherry Point, NC 28533

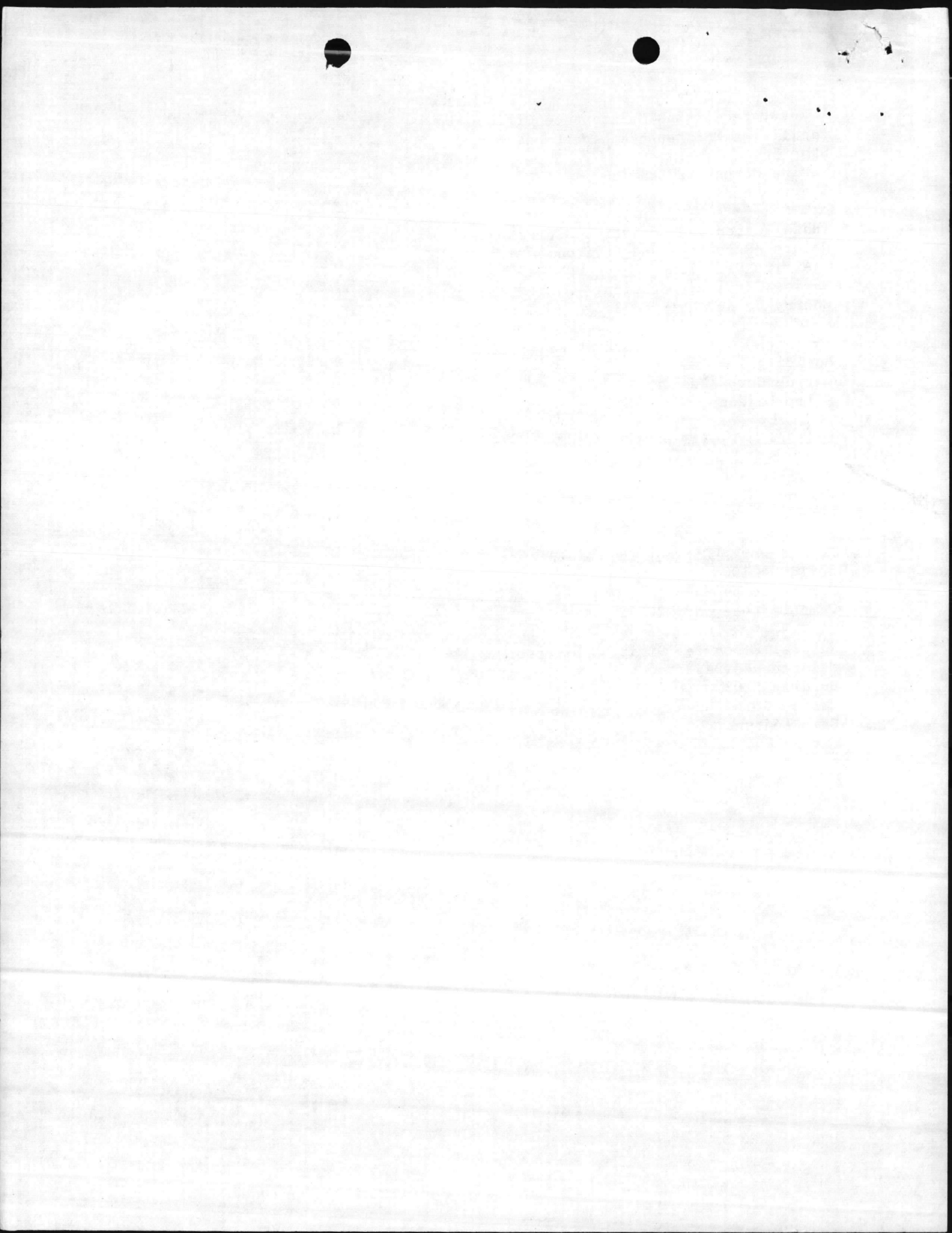
Assistant Chief of Staff of Facilities  
Building 1  
Marine Corps Base  
Camp Lejeune, NC 28542



Utilities Division Director  
Base Maintenance Department  
Building 1202  
Marine Corps Base  
Camp Lejeune, NC 28542

Public Works Officer  
Building 1005  
Marine Corps Base  
Camp Lejeune, NC 28542

Natural Resources Division Director  
Maintenance Department  
Building 1103  
Marine Corps Base  
Camp Lejeune, NC 28542



September 30, 1981

HISTORY NO. 5

Department of the Navy  
Atlantic Division  
Naval Facilities Engineering Command

Solid Waste Feasibility Study  
Marine Corps Base, Camp Lejeune  
Marine Corps Air Station, Cherry Point

Sirrine Job No. R-1628

Date: September 28, 1981

Place: Marine Corps Base, Camp Lejeune, N. C.

Present for: Department of the Navy  
Mr. Jim Torma  
Mr. Ed Johnson  
Mr. Colon Wetherington  
Mr. F. E. Cone  
Mr. Dolan Brown  
Mr. Thomas Hankins  
Mr. Joe Reilly  
Col. Mount  
Col. Millice

Vineta, Inc.  
Mr. Heinz Gorges

J. E. Sirrine Co.  
Mr. G. J. Freeman  
Mr. W. A. Koos  
Ms. Robin Spinks

Purpose of Meeting: To review proposed scope of work for Phase II of the Feasibility Study.

1. The scope of the project, as originally detailed, stated that Phase II was to take the most technically and economically feasible candidate systems from Phase I and perform life cycle costing and energy analysis.
2. Since none of the options from Phase I appeared to be of any economic advantage, a modified approach was proposed.





INSOF

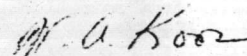
INSOF

HISTORY NO. 5

Department of the Navy  
Sirrinc Job No. R-1628  
September 30, 1981  
Page Two

3. As studied, the refuse/wood options were proposed to replace the 70% coal 30% oil fuel load at heating plant 1700. In order to make any proposed system economically attractive, a displacement of 100% oil and a replacement of an older existing boiler should be found. Such a situation exists at the Camp Geiger and Air Station complexes.
4. Since the use of wood in the proposed systems posed potential policy and operational difficulties, it was decided to remove wood from any further investigations. As an alternate, a proposed "battery limit" boiler of 30,000 to 40,000 lb/hr. steam load would be estimated and kept out of any further evaluations.
5. Phase II will be limited to life cycle cost and life cycle energy benefits of refuse burning options only. The plant will be located at Camp Geiger, the Air Station or at a location between the two.
6. The systems to be studied are the following:
  - A. Boilers for heating steam only.
  - B. Boilers operating at 600 psi 750<sup>0</sup>F with options of:
    - 1) Back pressure turbine generator
    - 2) Condensing turbine with feedwater heating extractions.
  - C. The interconnections to existing systems, either steam or electrical.
7. The advantages of trash disposal vs ash disposal will be investigated.
8. Each of the above systems will be detailed through equipment layout drawings, flow sheets and equipment lists.
9. Mr. Jim Torma will send the Camp Geiger/Air Station utility reports to Sirrinc.

J. E. SIRRINE COMPANY

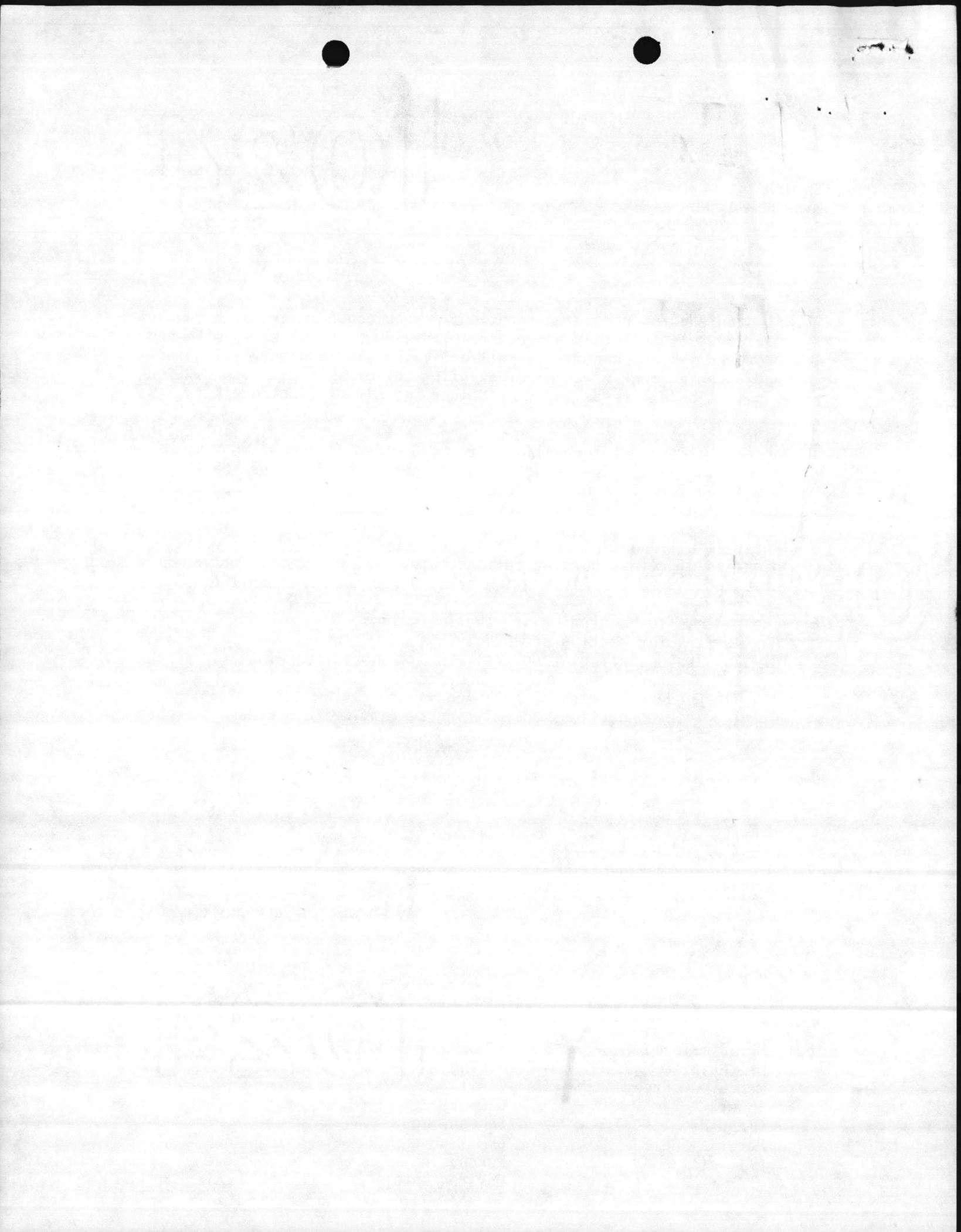


W. A. Koos

BK/jos

cc: Mr. Jim Torma  
Mr. Heinz Gorges  
Mr. G. J. Freeman  
Power  
Planning  
Material Hdl.  
E/I

Structural  
Piping  
Civil  
CEC  
Scheduling  
CPM  
Purchasing  
Environmental



ESTABLISHED 1902



POST OFFICE BOX 12748 RESEARCH TRIANGLE PARK, NORTH CAROLINA 27709 TELEPHONE (919) 541-2081

October 27, 1981

Department of the Navy  
Atlantic Division  
Naval Facilities Engineering Command  
Norfolk, Virginia 23511

Attention: Mr. J. D. Torma

Subject: Department of the Navy  
Solid Waste Feasibility  
Study  
MCB Camp Lejeune and  
MAS Cherry Point, N. C.  
Contract N62470-80-C-3801  
Sirrinc Job No. R-1628

Gentlemen:

As discussed in our meeting on September 28, 1981 at MCB Camp Lejeune, the scope of the Life Cycle Cost and Life Cycle Energy evaluations will be on a new power plant utilizing only solid waste fuel. The plant will serve the Camp Geiger and Air Station complexes.

The options to be evaluated will be:

- A. Generation of process or heating steam at 150 psi at saturated conditions.
- B. Generation of steam at 600 psi, 750<sup>0</sup>F with options of generating electricity with:
  - 1. Back pressure turbine generator.
  - 2. Condensing turbine with feedwater heating extractions.

Also, included in the study will be:

- A. Provisions for tie-ins to the existing steam/electrical systems.
- B. "Battery-limits" estimated cost for a wood burning boiler rated at 30-40,000 lbs/hour of steam at 150 psi saturated conditions. (This option not included in the Life Cycle Cost and Life Cycle Energy evaluations.)

The economic evaluations in the study will be based on replacing steam presently generated by plants utilizing No. 6 oil only as fuel.

ENCLOSURE [2]



11-11-11

11-11-11

11-11-11

Department of the Navy  
Sirrime Job No. R-1628  
October 27, 1981  
Page Two

The above scope is comparable to the scope of the Life Cycle Cost and Life Cycle Energy evaluations recommended in the Phase I interim report; therefore, the contract amount of \$62,340 for the Phase II study remains unchanged.

The Phase II study schedule is attached for your information.

Yours very truly,

J. E. SIRRINE COMPANY

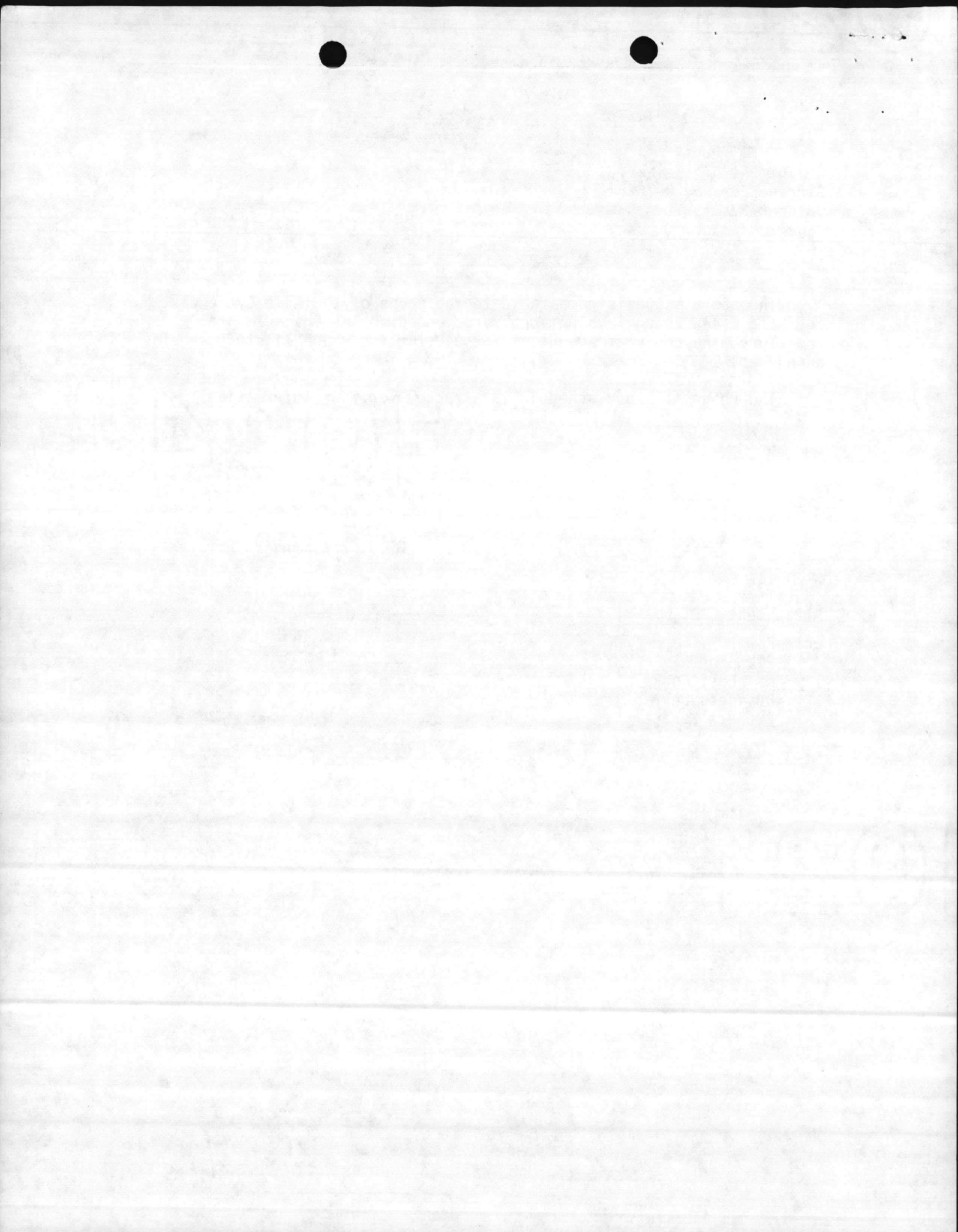
*GJ Freeman*

G. J. Freeman, P. E.

GJF/jos

Attachment

cc: Power  
Planning  
Ms. Lori Cooke  
Business Dev.  
Project Manager









1050

1111:JDT  
11300

2 0 NOV 1981

J.B. Sirtine Company  
Architects, Engineers, Planners  
P.O. Box 12748  
Research Triangle Park, NC 27709

Attention Mr. R. G. Mitchell

Re: Solid and Wood Waste Burning and Cogeneration Study Contract  
N62470-80-B-3861, Marine Corps Base, Camp Lejeune, and Marine Corps  
Air Station, Cherry Point (JE300 Job Order A-1528)

Gentlemen:

In reference to the 13 November 1981 telephone conversation between our Mr. J. D. Torma and your Mr. G. J. Pressan, the attached revised Scope of Work (SOW), as agreed upon at the 28 September 1981 progress meeting, is forwarded for clarity.

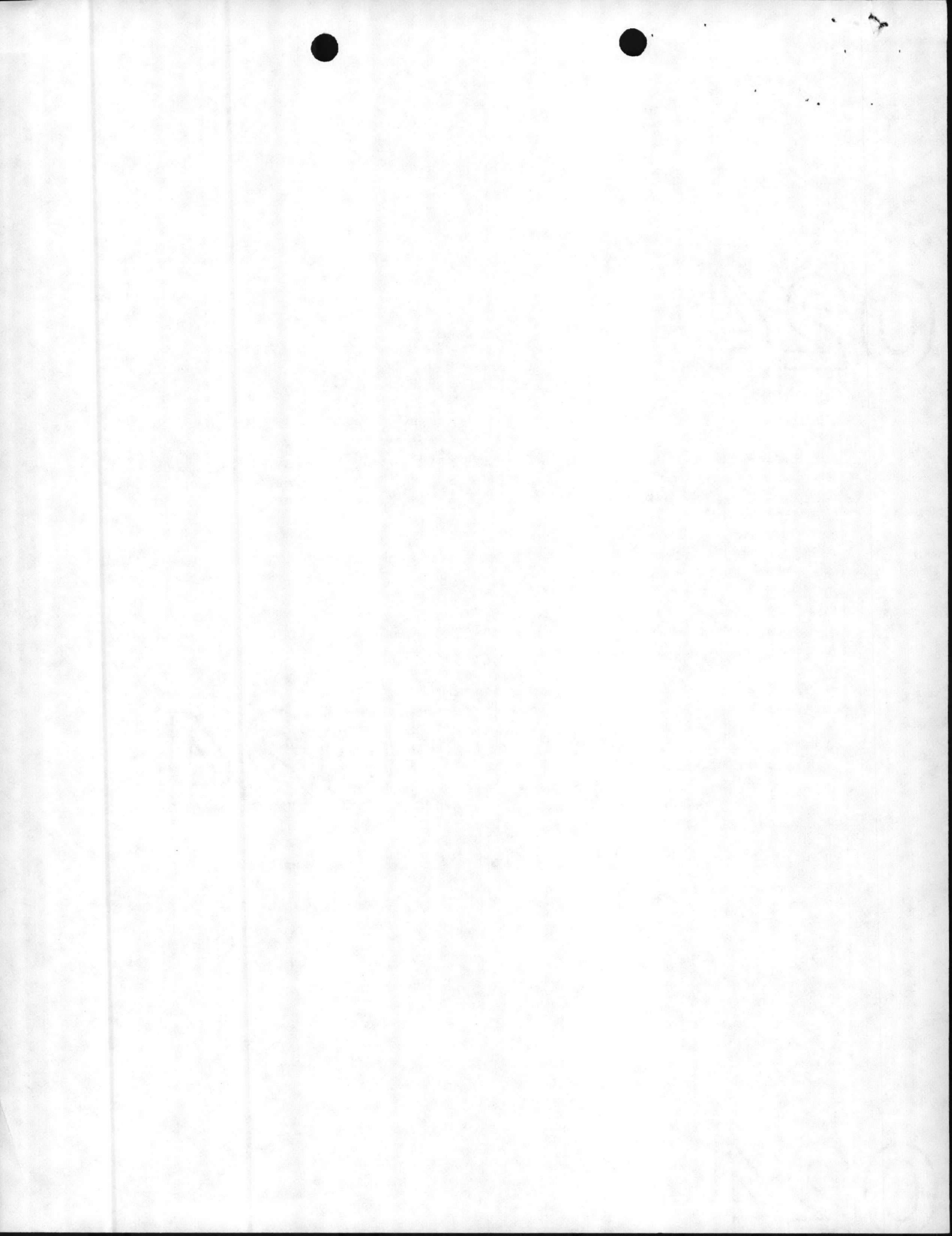
It is hereby stated that it was agreed that the Phase I Study has resulted in the following:

- a. Reducing the primary fuel option selection to refuse with secondary fuel consideration given to wood (by considering the economics of wood burning boilers as a modular package system option).
- b. Determining that displacing 70 percent coal/30 percent oil at the Hadnot Point Heating Plant HP-1700 was not economically attractive.

The revised SOW is essentially the same as the Phase II portion of the original SOW except for the following:

- a. The Marine Corps Base Camp Geiger/Air Station complex site is to be considered rather than the HP-1700 site.
- b. The wood fuel option is to be limited (as mentioned above).
- c. The various option schemes are to be summarized in a rank ordering matrix.

TORMA  
Kwasny  
19 Nov 81  
nrs  
DOC#0592L



111:JDT  
11300

In order to discuss the revised SOV, review progress and visit the Camp Geiger/Air Station site, a meeting has been scheduled for 0900 on Tuesday, 1 December 1981 at Camp Lejeune. Dr. Heinz Gorges of Vineta, Inc. will attend the meeting.

Sincerely,

AHG

*for* A. J. HANSEN, P.E.  
Head, Energy and Utilities  
Engineering Branch  
Utilities, Energy and Environmental  
Division  
By direction of the Commander

Enclosure

Copy to:  
Vineta, Inc.  
3705 Sleepy Hollow Road  
Falls Church, VA 22041

Blind Copy to:  
09A2  
403  
114  
11  
111 ←  
118  
09BS



10

SOLID AND WOOD WASTE BURNING AND COGENERATION STUDY  
REVISED SCOPE OF WORK  
PHASE II TASK DEFINITION  
CONTRACT N62470-80-B-3801

The Phase II portion of the original Scope of Work is hereby redefined and revised as follows:

The purpose of the Phase II study is to provide for a number of refuse burning options for energy conversion and an LCC and LCE analysis for each of these options. These options shall be rank ordered in economic terms. For the most promising system or systems options, a conceptual design shall be provided with sufficient detail to arrive at reliable estimates of equipment costs and operating costs. Flow diagrams will be provided to indicate the interaction between the various system components and with the existing end user system.

The plant will be located in the Marine Corps Base, Camp Geiger/Air Station complex and will have the potential to displace some oil burning steam generators at the two existing central boiler plants in this area by either supplementing or replacing one or both of the plants or establishing a new plant. Consumption data for the existing boiler plants at Camp Geiger and at the Air Station were made available to the contractor.

Under the terms of the original Scope of Work (for instance, observing the provision of NAVFAC P-442 and ECIP) the contract shall develop a number of options with sufficient detail to rank order their performance in energy and economic terms. These plants shall convert the heat content of the available refuse into energy, replacing fuel oil and/or purchased electricity.

For a fixed amount of refuse available (for instance, in ton/hour) the contractor shall analyze a number of system options for the conversion to energy, specifically, the following:

- a. Supply steam only (Case H, displacing oil)
- b. Supply power only (Case P, displacing purchased electricity)
- c. Supply power and heat combined (Case P/H, displacing oil and electricity)

Continuation of the plant operation "as is" (burning oil and purchasing electricity) will serve as the base case in the analysis of the energy conversion system in energy and economic terms.

To ensure consistency in the analysis the proposed conversion systems will consist of three major subsystems as follows:



1900

1900

1900







*[Faint, illegible text visible through the paper, possibly bleed-through from the reverse side.]*

December 4, 1981

HISTORY NO. 6

Department of the Navy  
Atlantic Division  
Naval Facilities Engineering Command

Solid Waste Feasibility Study  
Marine Corps Base, Camp Lejeune  
Marine Corps Air Station, Cherry Point

Sirrine Job No. R-1628

Date: December 1, 1981

Place: Marine Corps Base, Camp Lejeune, N. C.

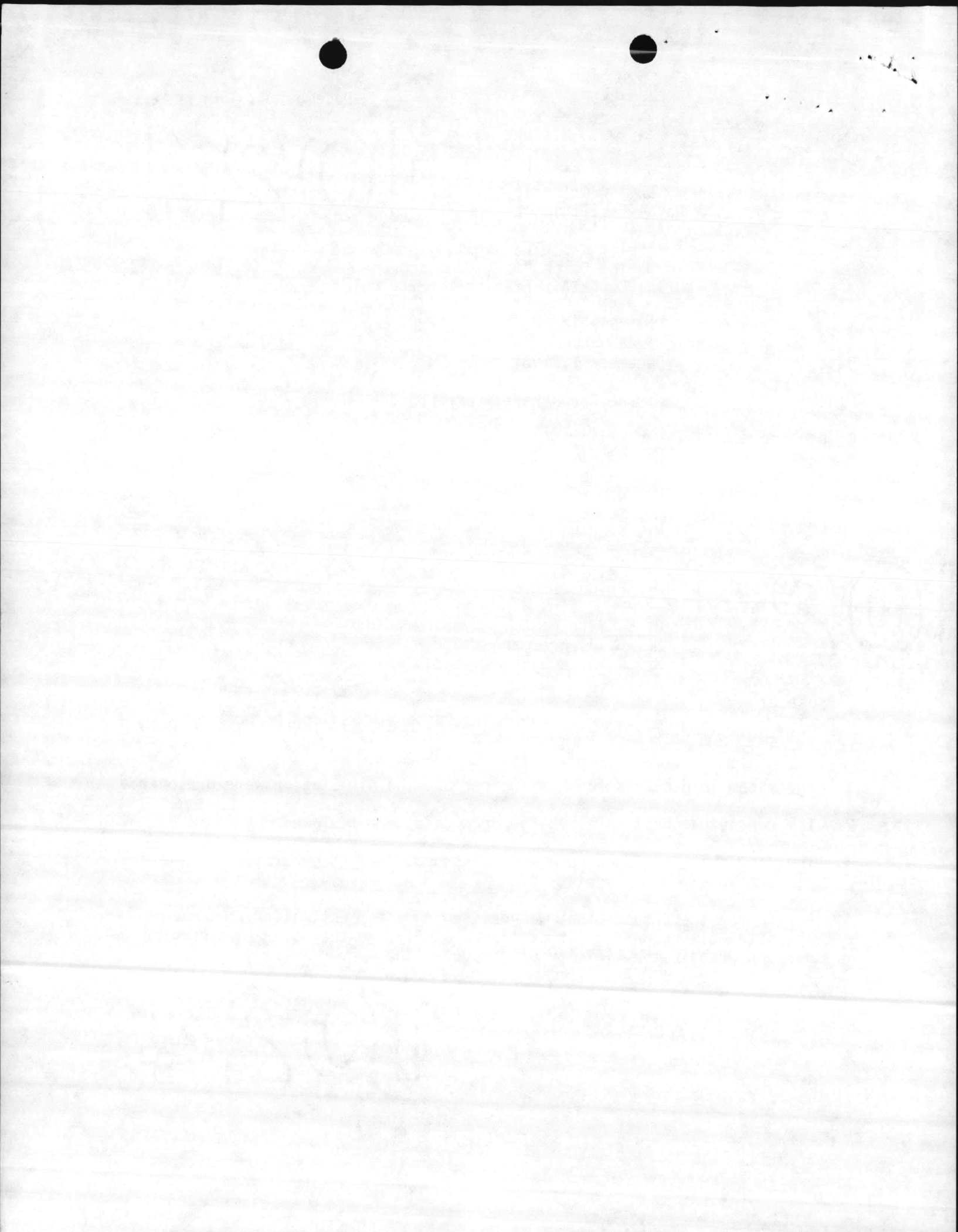
Present for: Department of the Navy  
Mr. Jim Torma  
← Mr. Ed Johnson  
Mr. Cocon Wetherington  
Mr. David Sutherland  
Mr. Fred Lamb

Vineta, Inc.  
Mr. Heinz Gorges

J. E. Sirrine Co.  
Mr. G. J. Freeman  
Mr. W. A. Koos

Purpose of Meeting: A review of the cases to be studied and proposed report format.

1. The steam load curves for Camp Geiger and the Air Station were presented.
2. The conceptual heat balances for each case were reviewed.
3. The flow sheet for each case and the proposed plant general arrangement was presented.
4. A site for the refuse plant was decided upon for estimating purposes. The site will be on the Air Station property, to the north of the housing area in the vicinity of the pole line.



HISTORY NO. 6

Department of the Navy  
Sirrinc Job No. R-1628  
December 4, 1981  
Page Two

5. A review meeting will be held in Norfolk to go over the life cycle costing and energy analysis method. This will be prior to the preparation of the preliminary report.
6. The project schedule is generally two weeks behind the schedule presented on October 27, 1981.

J. E. SIRRINE COMPANY

*W. A. Koos*  
W. A. Koos

WAK/jos

cc: Mr. Jim Torma  
Mr. Heinz Gorges  
Mr. G. J. Freeman  
Power  
Planning



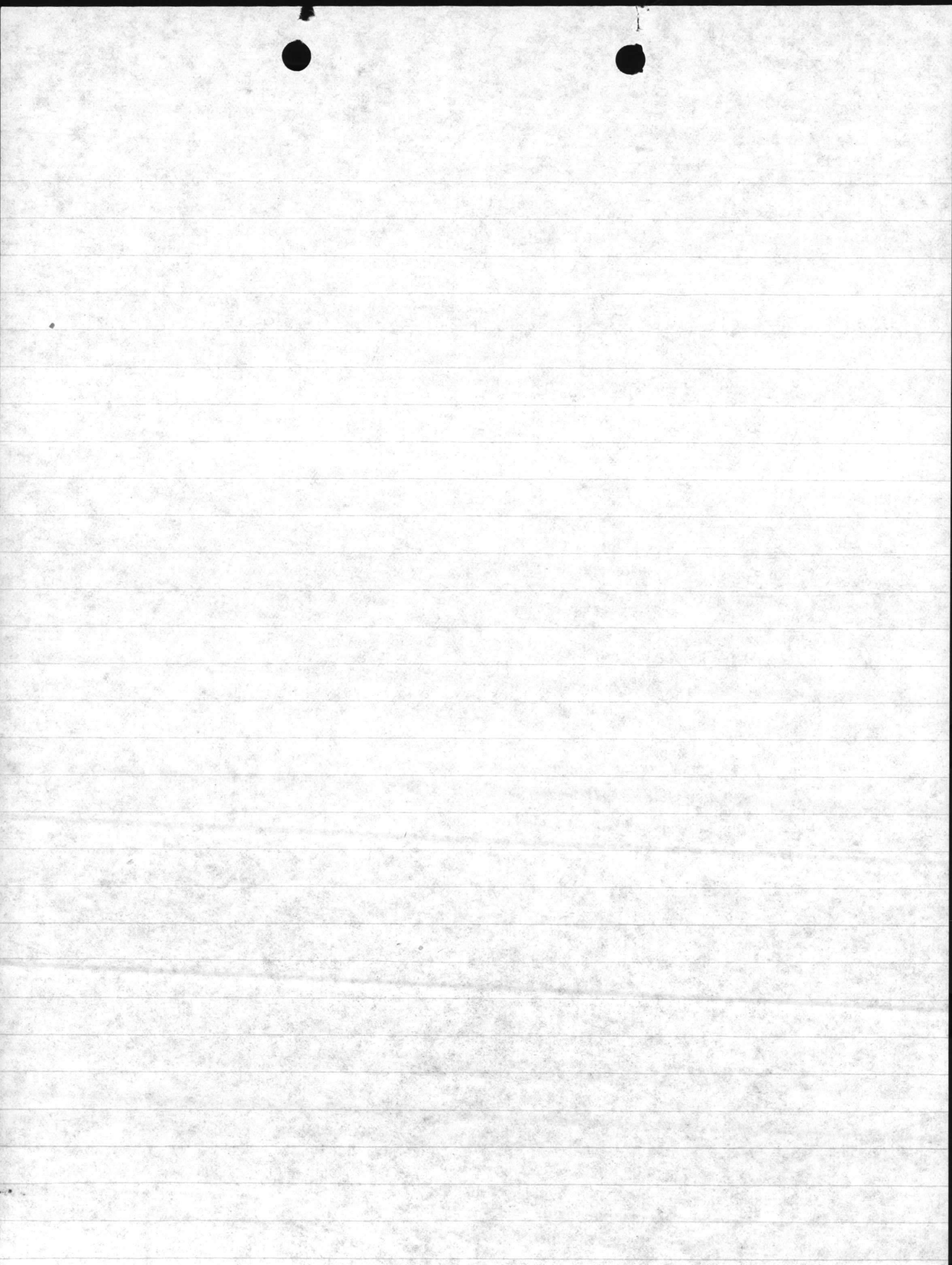
1) Process Steam Only

2a) Produce Extraction Power Cogeneration  
600 psd

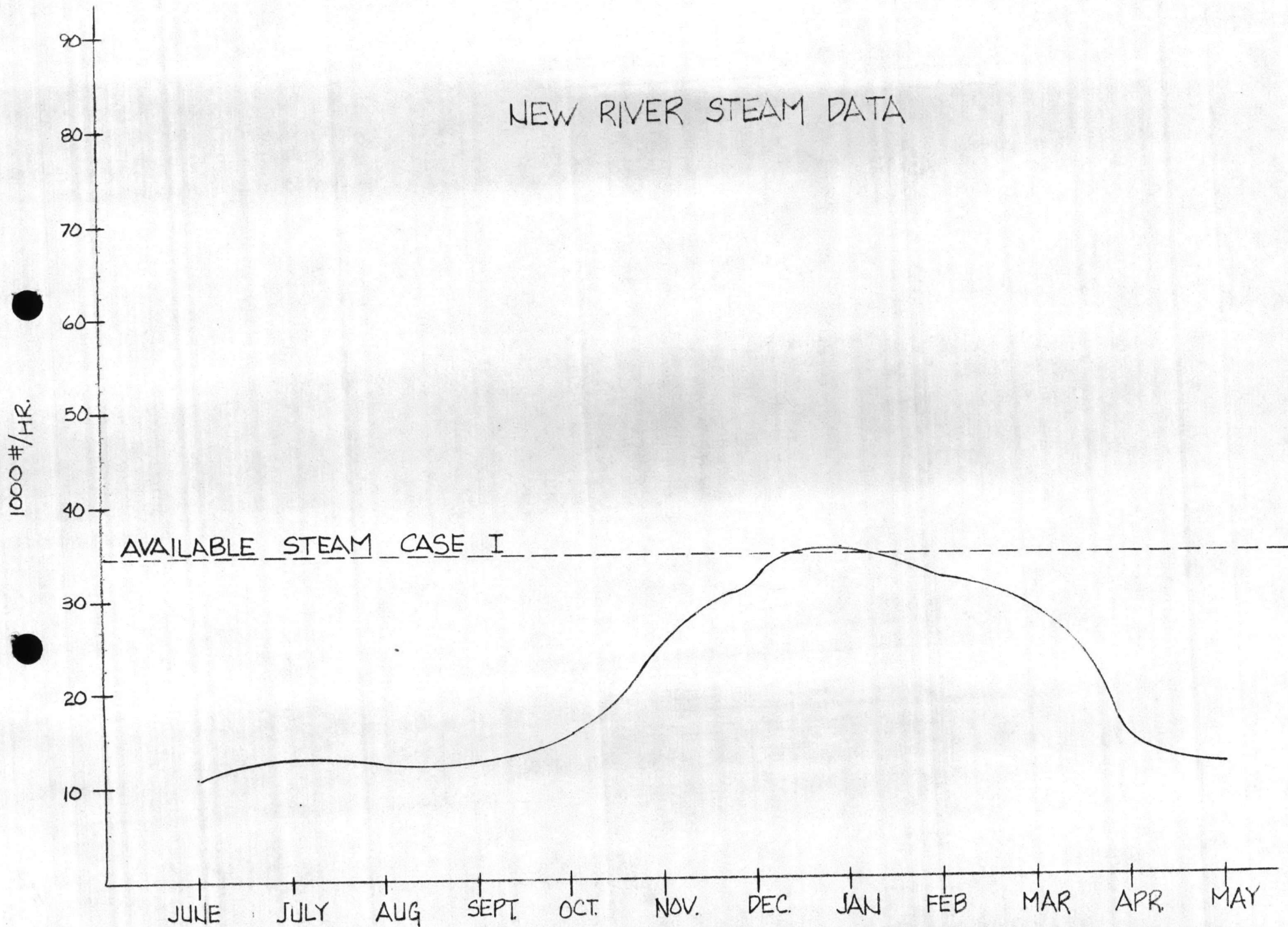
2b) Generating only Electricity  
(Power only) Anyways

### Boilers

80 tons / day burning capsules  
15000 lbs - Keeler or Riley Stoker



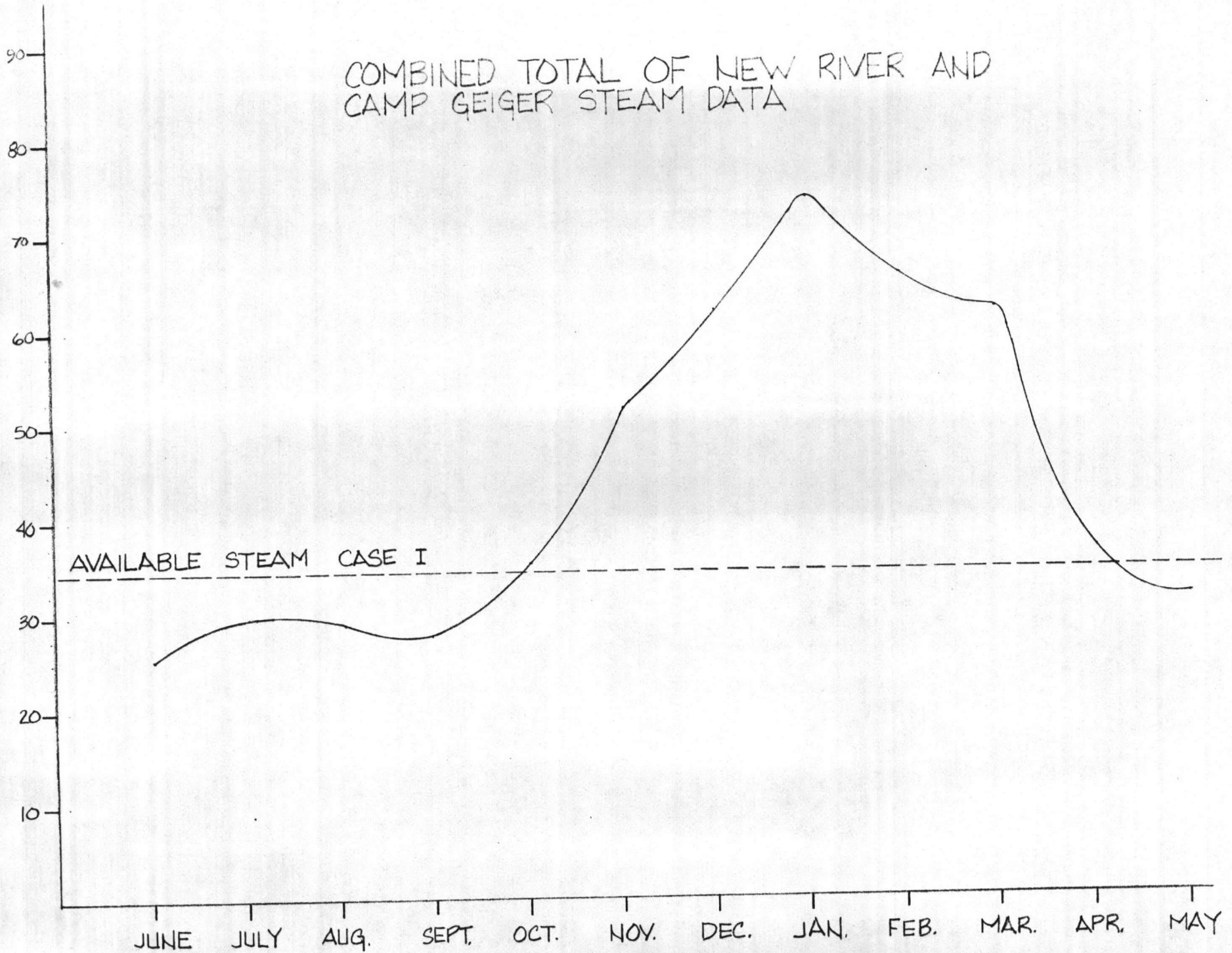
# NEW RIVER STEAM DATA

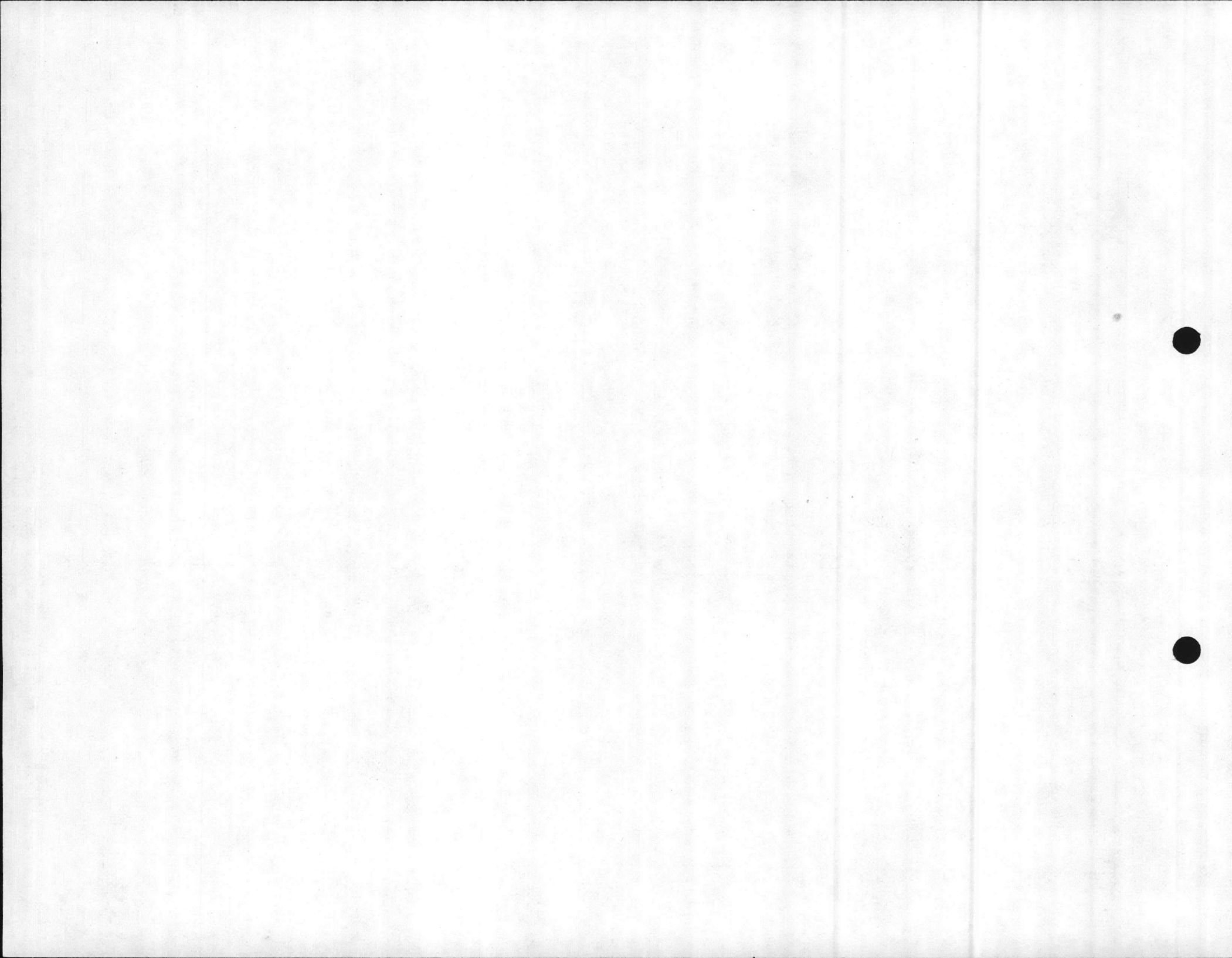




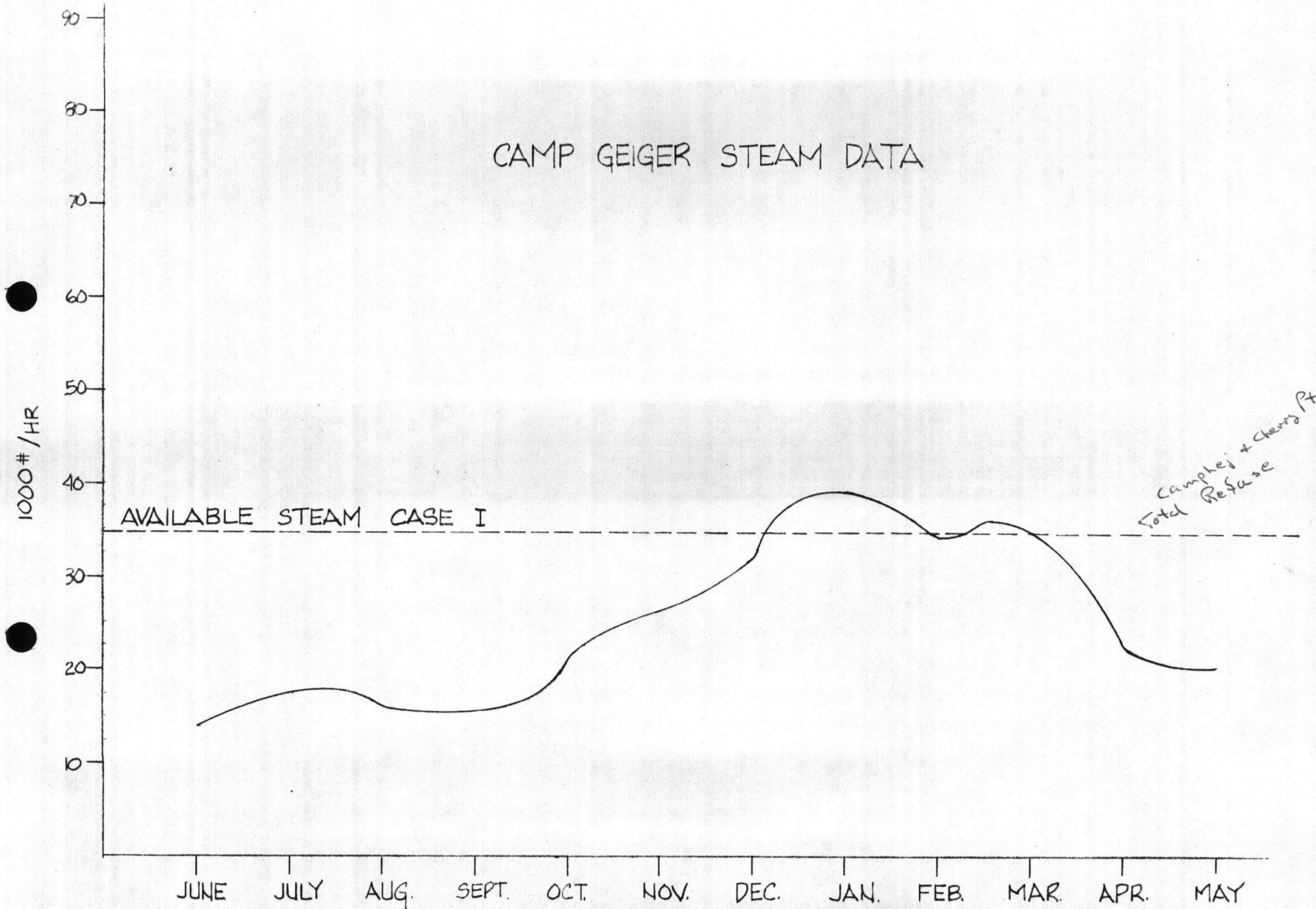


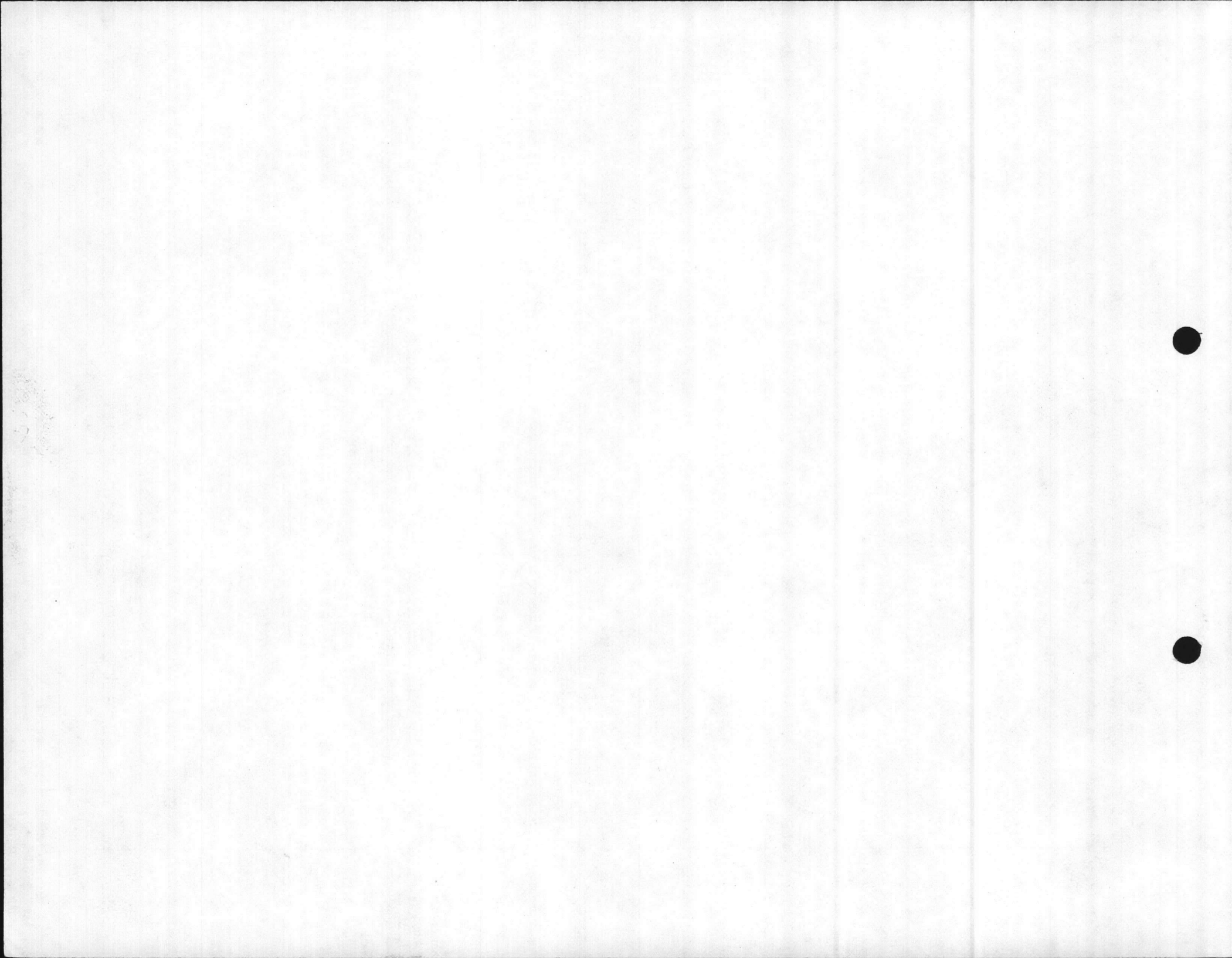
COMBINED TOTAL OF NEW RIVER AND  
CAMP GEIGER STEAM DATA

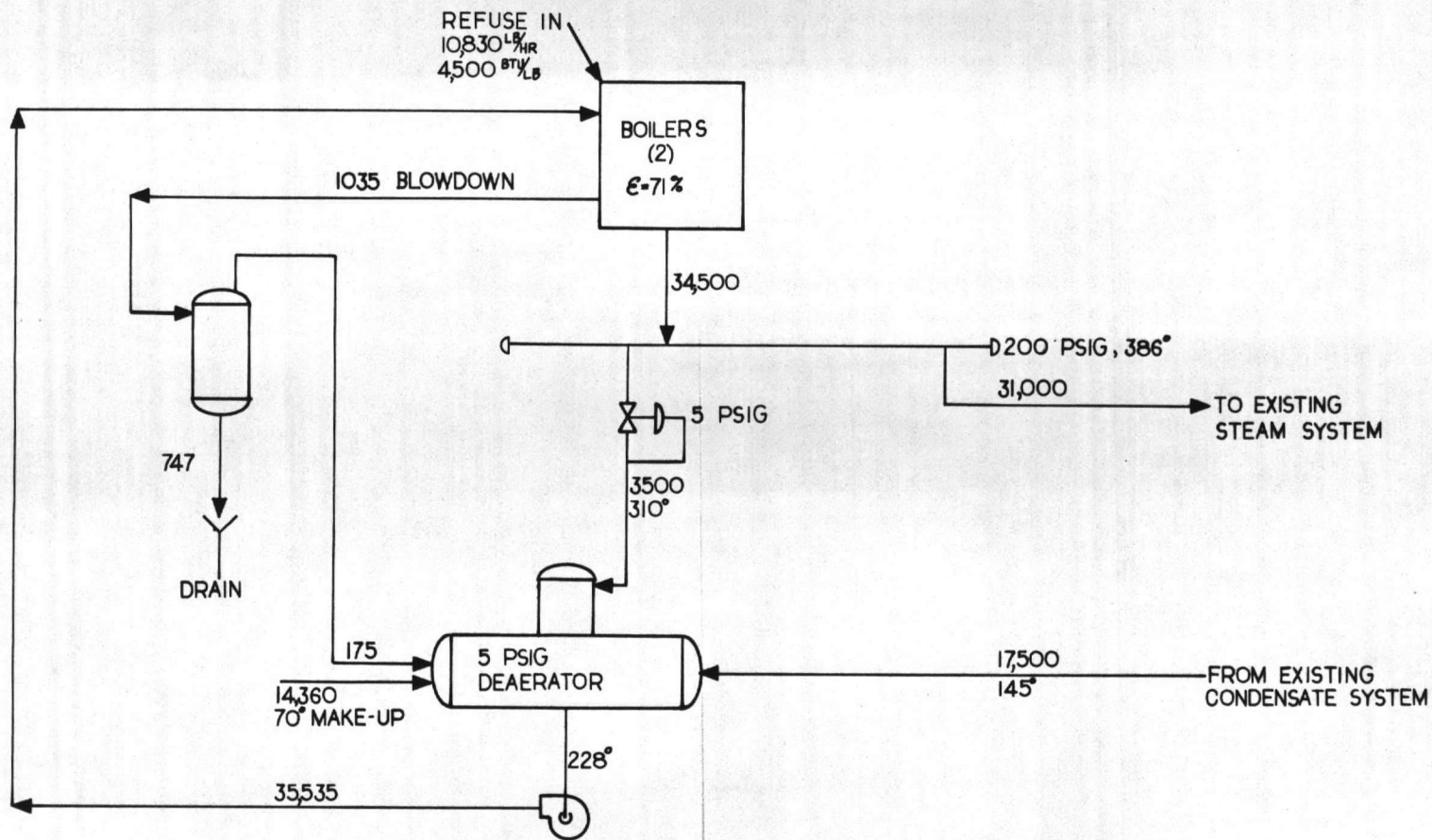




# CAMP GEIGER STEAM DATA







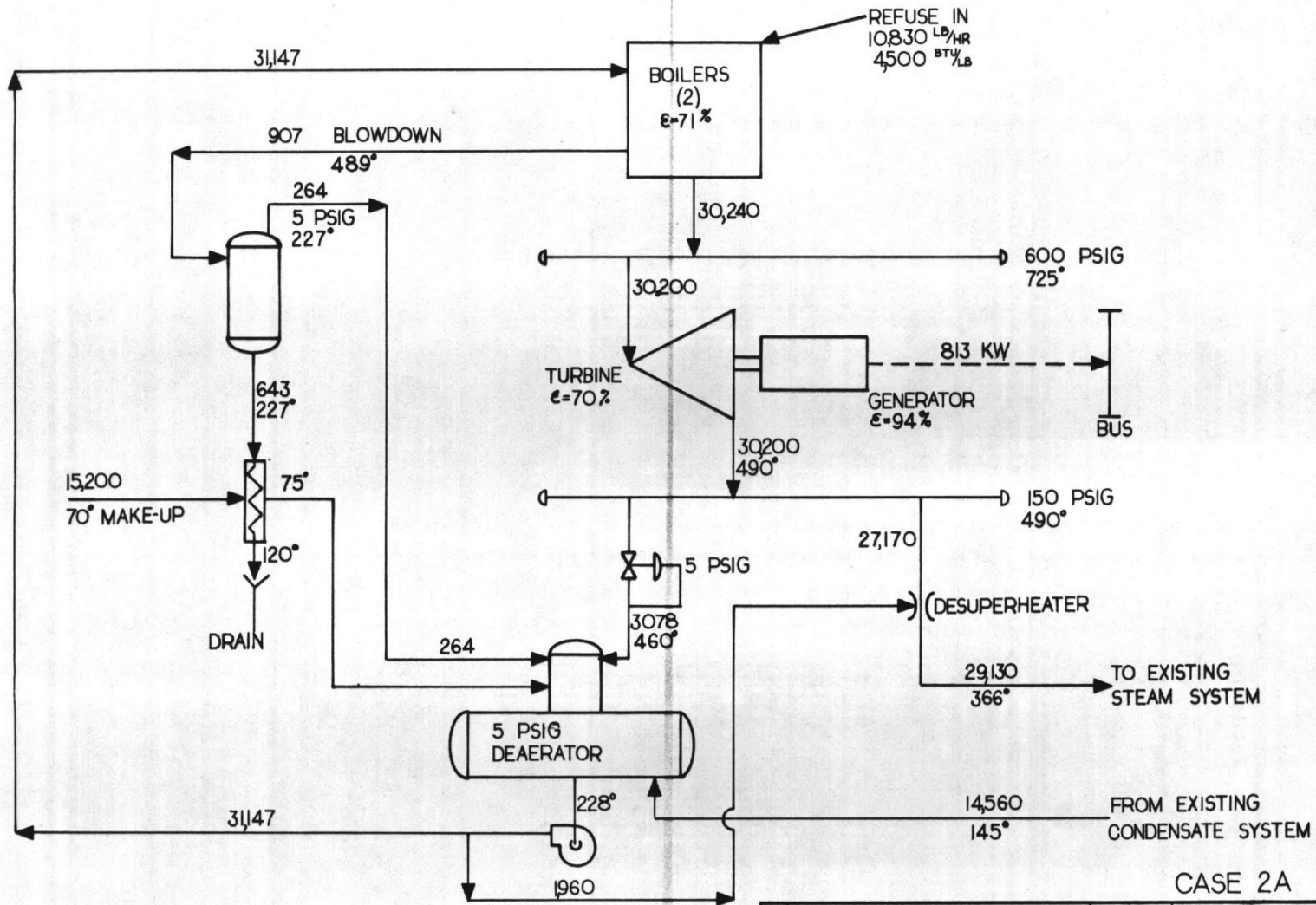
ALL FLOWS IN  $\text{LB}/\text{HR}$

CASE 1

HEAT BALANCE

			DR.	
			EN.	
			SCALE	
			DATE	
			FILE NO.	
		J E SIRRIE COMPANY		
		ARCHITECTS ENGINEERS PLANNERS		
		RALEIGH, NORTH CAROLINA		





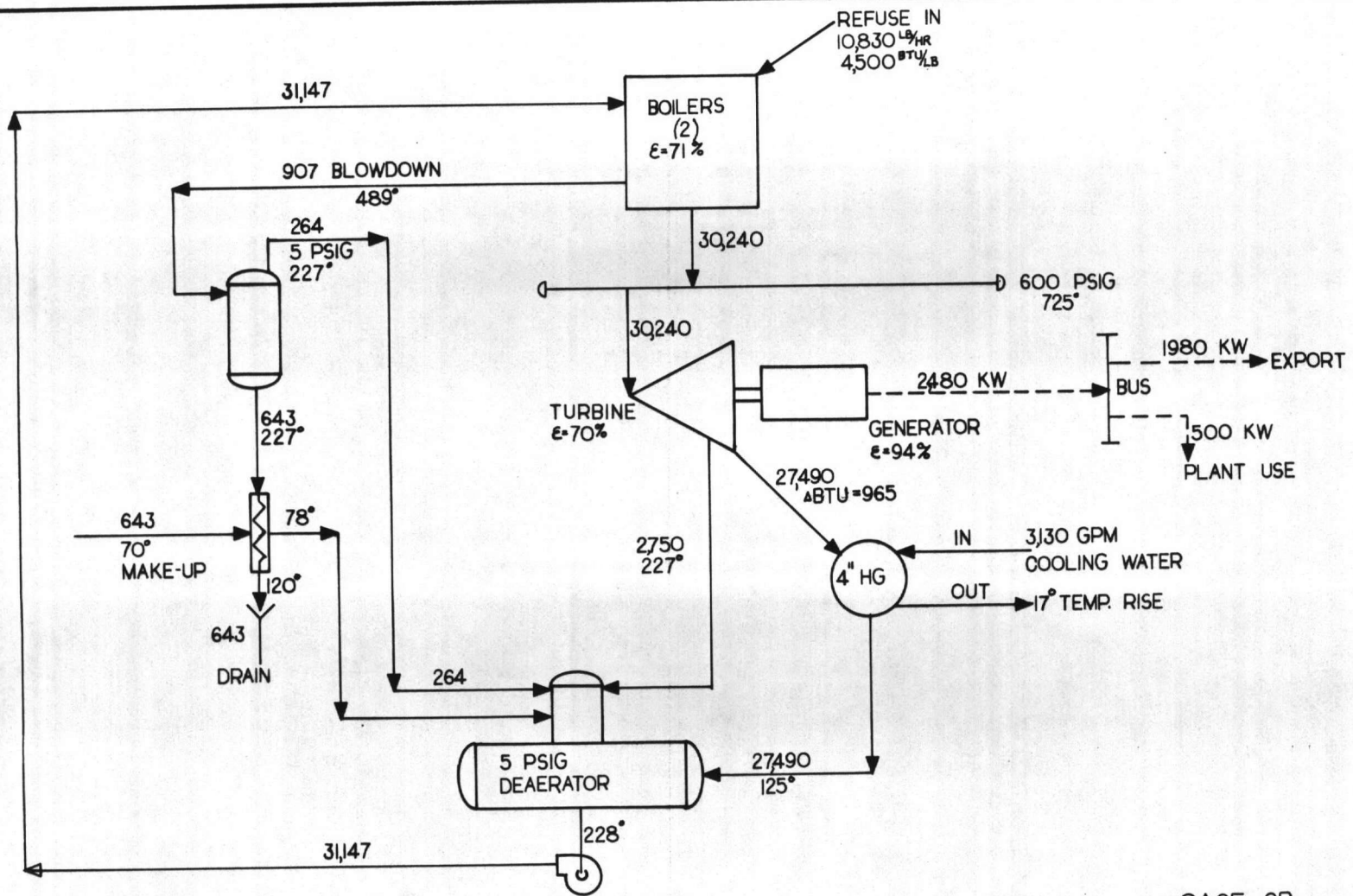
ALL FLOWS IN  $\frac{LB}{HR}$

CASE 2A

HEAT BALANCE		DR.
		CM.
		SCALE
I. E. SIBBING COMPANY		DATE
ARCHITECTS	ENGINEERS	PLANNERS
RALEIGH,	NORTH CAROLINA	FILE NO.







ALL FLOWS IN  $\frac{\text{LB}}{\text{HR}}$

CASE 2B

HEAT BALANCE

ARCHITECTS ENGINEERS PLANNERS  
 I. E. SIBBINE COMPANY  
 RALEIGH, NORTH CAROLINA

DR.	
CH.	
SCALE	
DATE	
FILE NO.	



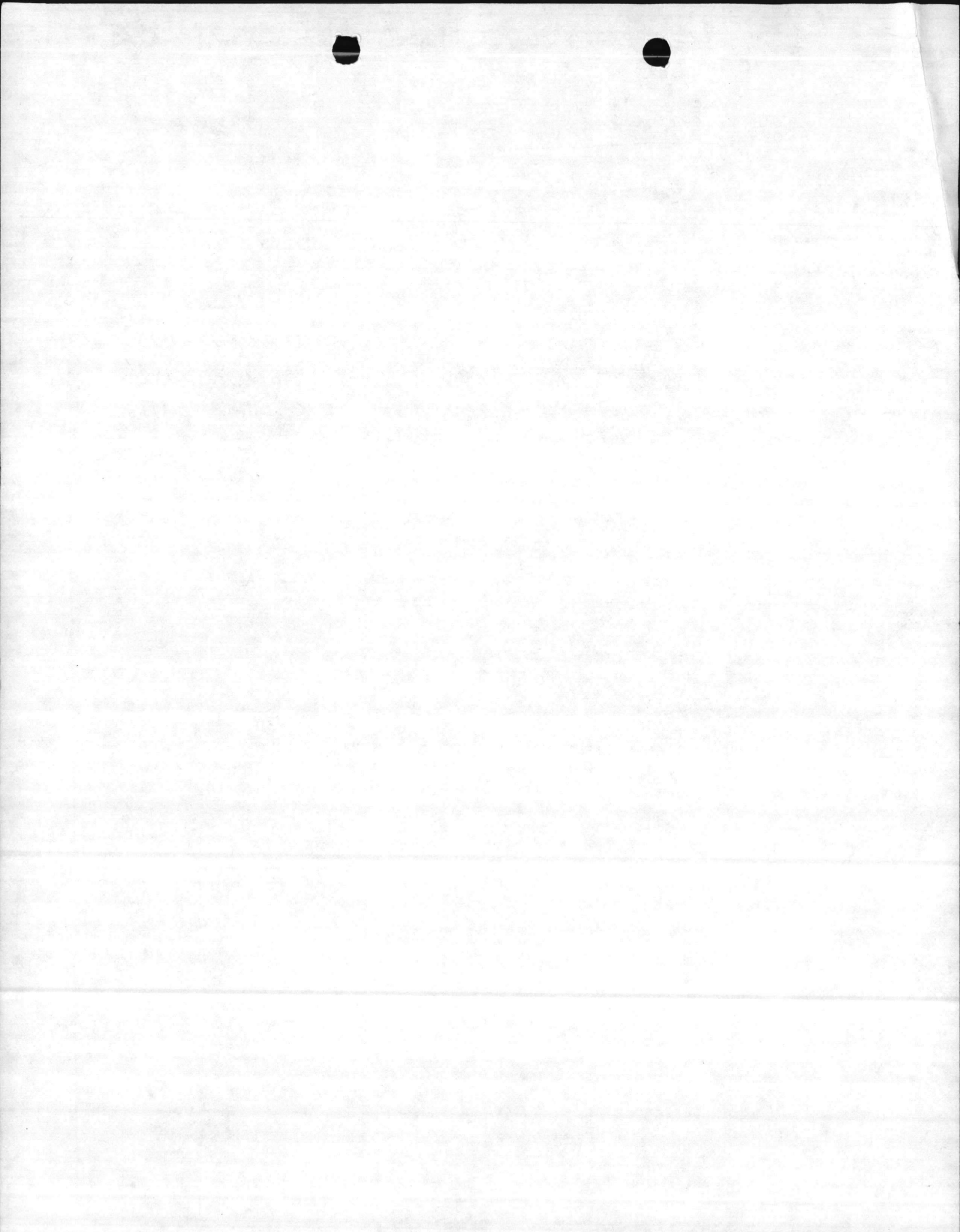
CAMP LE JEUNE, N. C.

CO-GENERATION Study

W. G. W.

9/28/81

Colon L. Wetherington	451-2297	Utilities	Camp Lejeune
DOLAN BROWN	451-5642	"	"
THOMAS H. HANKINS JR	451-3238	Public Works	"
F. E. Cone	451-5161	Utilities	"
Jim Torma	(804) 444-7877		LANTDIV
Ed Johnson	(804) 444-7897		LANTDIV
Heinz A. GORGES	(703) 941 7252		Consultant LantDiv
How C. Harrison	407 - 2195/2083		Camp Lejeune
JOHN CRESSMAN	451-2213		" "
Kenneth Shepard	451-2297		" "
<del>C. J. W.</del>			



ROUTING SLIP

SEP 24 1981

	ACTION	INFO	INITIAL
BMO		✓	NA
ABMO		✓	SW
ADMIN		✓	3
ENVIRON AFF			
F&A BRANCH			
MAINT NCO			
M&R			
OPNS			
PROP			
TELE			
UMACS			
UTIL		✓	YK
SECRETARY			

COMMENTS:

SEP 2 1981



HEADQUARTERS, MARINE CORPS BASE  
CAMP LEJEUNE, NORTH CAROLINA

Date 24 Sept 87

From: Assistant Chief of Staff Facilities

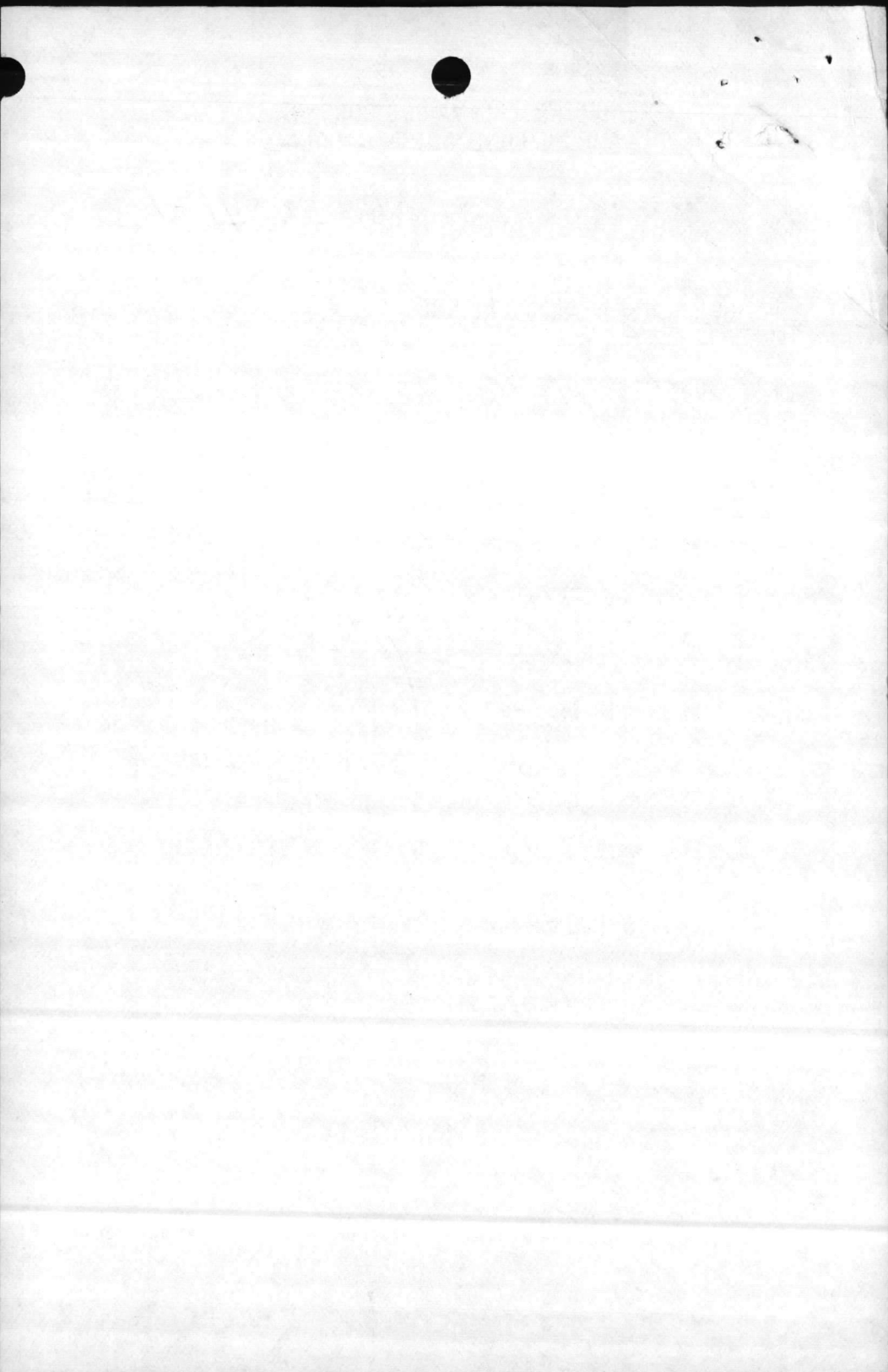
To: Bmo

Subj: Attached

1. Forwarded for your action.

v/r  
f.







DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

TELEPHONE NO.  
444-7877  
AUTOVON 690-7877  
IN REPLY REFER TO:  
1111:JDT  
11300

From: Commander, Atlantic Division, Naval Facilities Engineering Command  
To: Commanding General, Marine Corps Base, Camp Lejeune  
Commanding General, Marine Corps Air Station, Cherry Point

Subj: Solid and Wood Waste Burning and Co-generation Study, Contract  
No. 80-B-3801 at Marine Corps Base, Camp Lejeune, and Marine Corps  
Air Station, Cherry Point

Ref: (a) FONECON MCB CAMP LEJEUNE (Mr. Billy Elston)/LANTNAVFACENGCOM  
(Mr. J. D. Torma) of 9 Sep 1981  
(b) FONECON MCAS CHERRY POINT (Mr. Joe Reilly)/LANTNAVFACENGCOM  
(Mr. J. D. Torma) of 11 Sep 1981  
(c) FONECON J. E. Serrine Company (Mr. G. Freeman)/LANTNAVFACENGCOM  
(Mr. J. D. Torma) of 9 Sep 1981

Encl: (1) LANTNAVFACENGCOM ltr 111:JDT 11300 of 24 Jul 1981 (Interim Report  
Review Comment Summary Submittal to J. E. Serrine Company)

1. Per references (a) and (b), a meeting has been scheduled for 0900  
Monday, 28 September 1981, at MCB CAMP LEJEUNE to discuss enclosure (1) and  
to formulate Phase II development. Per reference (c), the J. E. Serrine  
Company will arrive at 1300.

2. Dr. Heinz Gorges of Veneta, Incorporated, a consulting firm under  
contract with the Navy, will accompany LANTNAVFACENGCOM. Dr. Heinz Gorges  
will assist in formulating Phase II development.

3. In addition to the above, it is requested that the morning discussion  
agenda include the LANTNAVFACENGCOM proposed Energy Engineering Program  
(EEP) Heating and Power Plant (HPPO) Study for the MCAS (H) NEW RIVER and  
CAMP GEIGER steam plants. The proposed HPPO study may correlate or be  
impacted by the subject study.

4. If there are any questions regarding the above, please contact Mr. J. D.  
Torma, AUTOVON 690-7877, FTS 954-7877 or 804-444-7877.

FAC ROUTING

	ACTION	INFO	INT
FACO			✓
4A			
4B			
4C			
4D			
4G			
4LC			✓

Copy to: (see next page)



Copy to: (continued)  
Veneta, Inc.  
3705 Sleepy Hollow Road  
Falls Church, VA 22041

Facilities Engineering Department  
Stop 7, Building 80  
Attn: Mr. Joe Reilly  
Marine Corps Air Station  
Cherry Point, NC 28533

Deputy, Facilities Maintenance Officer (w/o encl)  
Facilities Maintenance Department  
Stop 5  
Marine Corps Air Station  
Cherry Point, NC 28533

Installation and Logistics Directorate (w/o encl)  
Natural Resources and Environmental  
Affairs Division  
Marine Corps Air Station  
Cherry Point, NC 28533

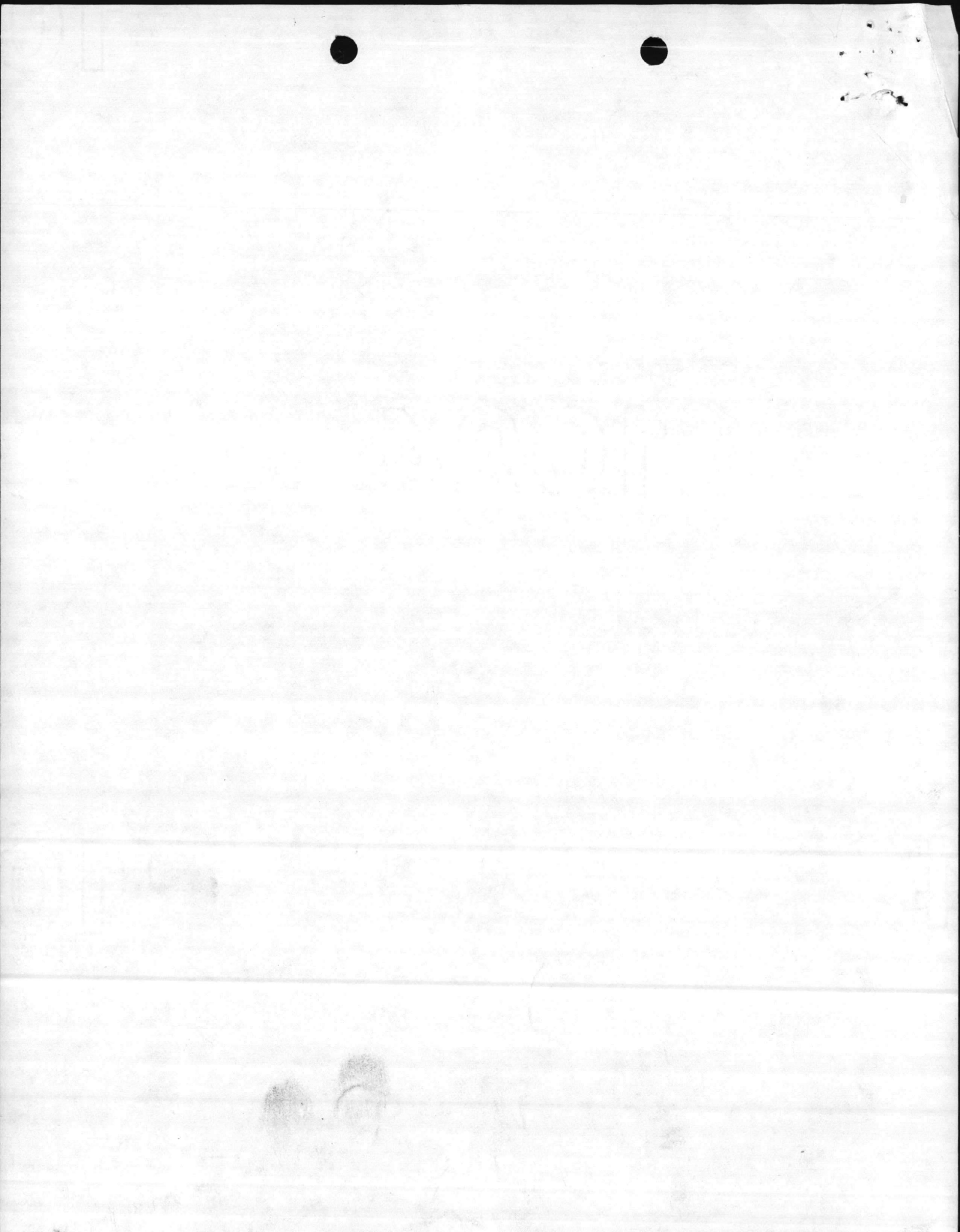
Assistant Chief of Staff of Facilities (w/o encl)  
Building 1  
Marine Corps Base  
Camp Lejeune, NC 28542

Utilities Division Director  
Base Maintenance Department  
Building 1202  
Marine Corps Base  
Camp Lejeune, NC 28542

Public Works Officer (w/o encl)  
Building 1005  
Marine Corps Base  
Camp Lejeune, NC 28542

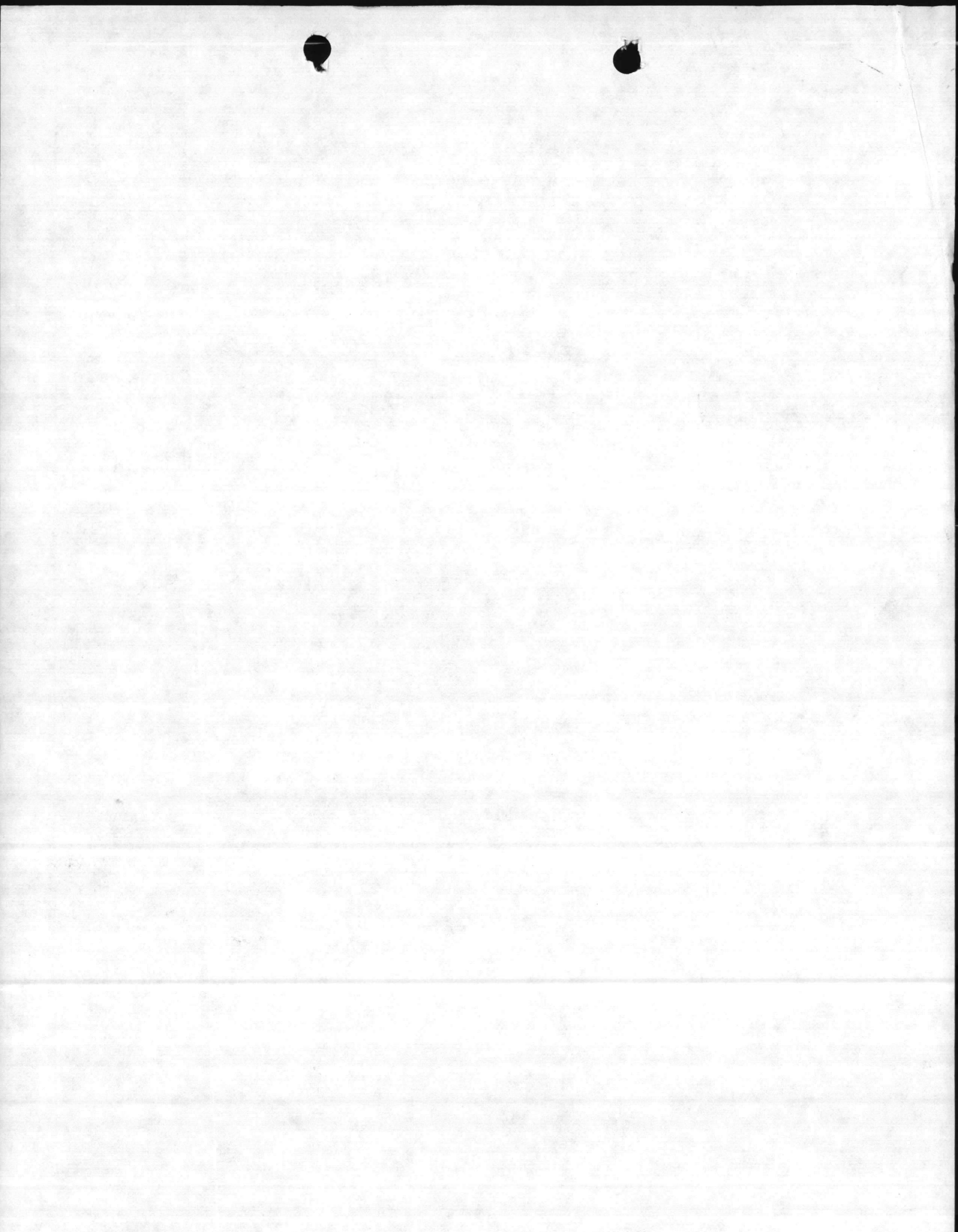
Natural Resources Division Director (w/o encl)  
Maintenance Department  
Building 1103  
Marine Corps Base  
Camp Lejeune, NC 28542

CMC (Code LFF2) (w/o encl)



9/20/81

Bill Koos	J.E. SIRRINE	
Colon McWhorter	Utilities	Camp Lejeune 4.C
F. R. Lane	"	" "
Dolan Brown	"	" "
Thomas H. NANKINS JR	PUBLIC WORKS	" "
Joe Reilly	I&L	Cherry Point
COL Mount	BASEMAINT	Camp Lejeune
COL Millice	ASST. Chief Staff	"
Robin Spinks	SIRRINE	
Jake Truman	"	
JIM TORMA	LANTDIV	NORFOLK, VA
ED JOHNSON	"	"





DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

File  
TELEPHONE NO.  
444-7877  
AUTOVON 690-7877  
IN REPLY REFER TO:  
1111:JDT  
11300

1 8 SEP 1981

From: Commander, Atlantic Division, Naval Facilities Engineering Command  
To: Commanding General, Marine Corps Base, Camp Lejeune  
Commanding General, Marine Corps Air Station, Cherry Point

Subj: Solid and Wood Waste Burning and Co-generation Study, Contract  
No. 80-B-3801 at Marine Corps Base, Camp Lejeune, and Marine Corps  
Air Station, Cherry Point

Ref: (a) FONECON MCB CAMP LEJEUNE (Mr. Billy Elston)/LANTNAVFACENGCOM  
(Mr. J. D. Torma) of 9 Sep 1981  
(b) FONECON MCAS CHERRY POINT (Mr. Joe Reilly)/LANTNAVFACENGCOM  
(Mr. J. D. Torma) of 11 Sep 1981  
(c) FONECON J. E. Serrine Company (Mr. G. Freeman)/LANTNAVFACENGCOM  
(Mr. J. D. Torma) of 9 Sep 1981

Encl: (1) LANTNAVFACENGCOM ltr 111:JDT 11300 of 24 Jul 1981 (Interim Report  
Review Comment Summary Submittal to J. E. Serrine Company)

1. Per references (a) and (b), a meeting has been scheduled for 0900  
Monday, 28 September 1981, at MCB CAMP LEJEUNE to discuss enclosure (1) and  
to formulate Phase II development. Per reference (c), the J. E. Serrine  
Company will arrive at 1300.

2. Dr. Heinz Gorges of Veneta, Incorporated, a consulting firm under  
contract with the Navy, will accompany LANTNAVFACENGCOM. Dr. Heinz Gorges  
will assist in formulating Phase II development.

3. In addition to the above, it is requested that the morning discussion  
agenda include the LANTNAVFACENGCOM proposed Energy Engineering Program  
(EEP) Heating and Power Plant (HPPO) Study for the MCAS (H) NEW RIVER and  
CAMP GEIGER steam plants. The proposed HPPO study may correlate or be  
impacted by the subject study.

4. If there are any questions regarding the above, please contact Mr. J. D.  
Torma, AUTOVON 690-7877, FTS 954-7877 or 804-444-7877.

R. D. CROWSON  
By direction

Copy to: (see next page)



1 8 SEP 1981

R. D. GROMSON  
Director

Copy to: (continued)  
Veneta, Inc.  
3705 Sleepy Hollow Road  
Falls Church, VA 22041

Facilities Engineering Department  
Stop 7, Building 80  
Attn: Mr. Joe Reilly  
Marine Corps Air Station  
Cherry Point, NC 28533

Deputy, Facilities Maintenance Officer (w/o encl)  
Facilities Maintenance Department  
Stop 5  
Marine Corps Air Station  
Cherry Point, NC 28533

Installation and Logistics Directorate (w/o encl)  
Natural Resources and Environmental  
Affairs Division  
Marine Corps Air Station  
Cherry Point, NC 28533

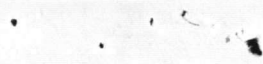
Assistant Chief of Staff of Facilities (w/o encl)  
Building 1  
Marine Corps Base  
Camp Lejeune, NC 28542

Utilities Division Director  
Base Maintenance Department  
Building 1202  
Marine Corps Base  
Camp Lejeune, NC 28542

Public Works Officer (w/o encl)  
Building 1005  
Marine Corps Base  
Camp Lejeune, NC 28542

Natural Resources Division Director (w/o encl)  
Maintenance Department  
Building 1103  
Marine Corps Base  
Camp Lejeune, NC 28542

CMC (Code LFF2) (w/o encl)



444-7877

111:JDF  
11300

24 JUL 1981

J. E. Serrine Company  
Architects, Engineers, Planners  
P.O. Box 12748  
Research Triangle Park, NC 27709  
Attention Mr. Jake Freeman

Re: Solid and Wood Waste Burning and Co-generation Study  
Contract N62470-80-B-3801, Marine Corps Base, Camp  
Lejeune, and Marine Corps Air Station, Cherry Point  
(J.E. Serrine Company Job Order No. R-1628)

Gentlemen:

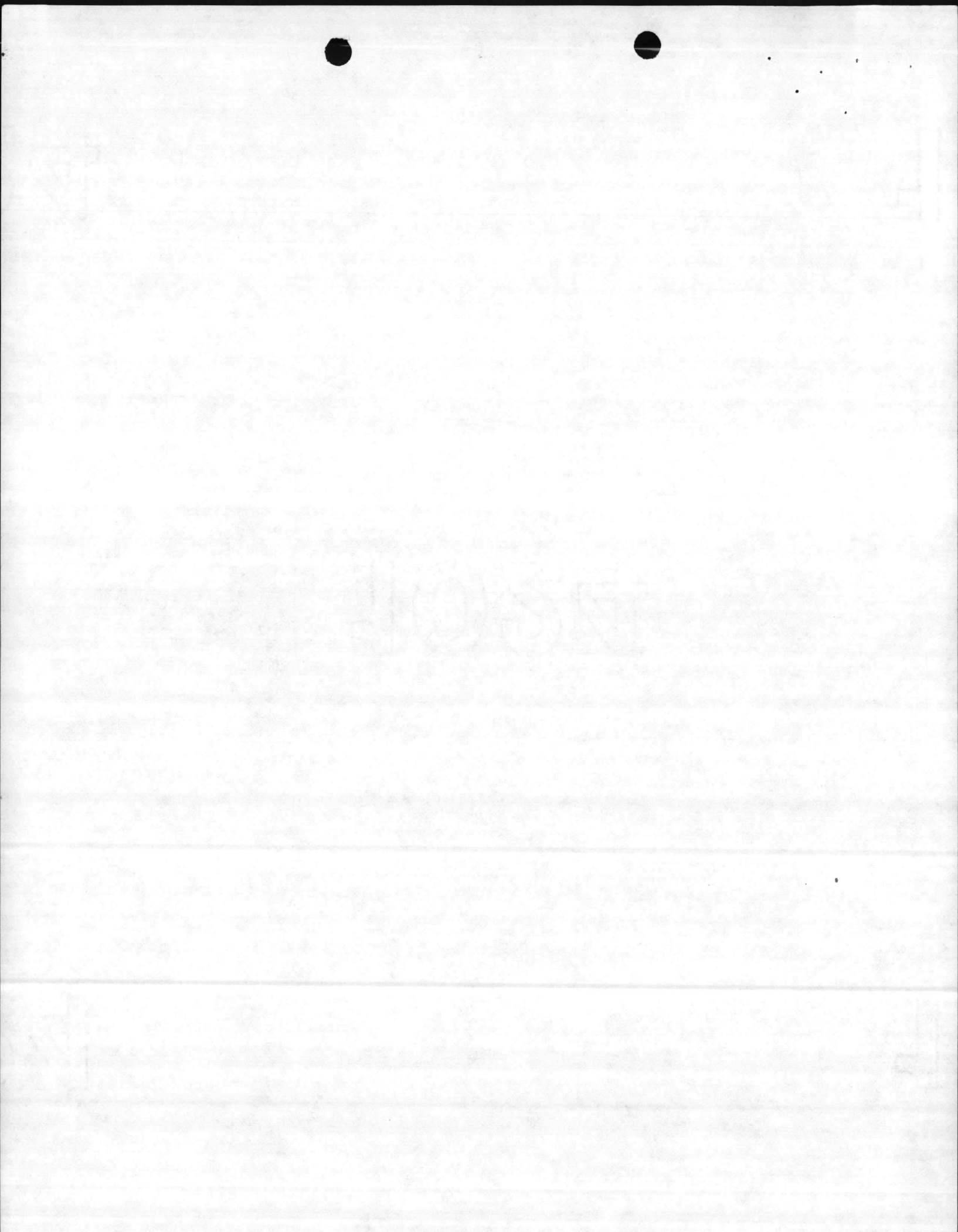
Enclosed are copies of review comments received to date regarding the subject interim report. In addition to the enclosure review comments, the following general review comments, questions, and discussion topics, noted by various Atlantic Division, Naval Facilities Engineering Command (LANAVFACENCOM) personnel, are forwarded for your consideration.

- a. In reference to "MBF", "M" in Navy circles means million and not thousand.
- b. Cost are too broad in general and are not substantially supported.
- c. Pages 19, 23, 27, 33, and similar other pages do not constitute flow diagrams as were expected.
- d. Reference page 20, alternative b, incineration, paragraph 1: Why is a wet scrubber included for pollution control? What kind and amount of pollutants would be emitted?
- e. Reference page 20, alternative b, incineration, paragraph 3: An additional benefit is that landfill for ash can be located at sites on the base that could not qualify as a sanitary landfill.
- f. Reference page 34, paragraph 1: Same comment as for comment d.
- g. Reference page 38, paragraph 2: What size boilers?

Torma  
Connors  
7/24/81  
nrs



- h. Reference page 38, paragraph 3: The discussion here should go into the projected error emissions and controls. Why assume the electrostatic precipitators as the pollution control device for air emissions? Are emissions from burning solid waste hard to control? What will burning wood with trash do to the difficulty of controlling the emissions? These items should be addressed in at least general terms.
- i. Reference page 39: Pollution control costs appear very low. The cost would be closer to two million dollars.
- j. Reference page 47, paragraph 2: Same comment as for comment g.
- k. Reference page 47: Same as for comment i.
- l. Reference page 3: The commitment of available force resources has not been addressed.
- m. Reference page 11: The 5.5 percent profit margin appears too low.
- n. Reference page 11: Cherry Point allowable cut is identified as 347 million board feet saw timber. Is there no pulpwood that can be harvested?
- o. Reference page 20: Available landfill for inert ash material may be satisfactory located on the base without causing bird attraction problems for aircraft. State personnel and base personnel should be checked with.
- p. Reference page 24: Where is intended ash disposal point for this option? Similar to the previous comment, disposal of ash may be possible on base.
- q. Reference page 34: Because landfill capacity is available for backup, the redundancy of three 50-tons per day waste-heat boilers to handle a total of 89-tons per day may be a luxury. What would be the operational/maintenance schedule if three boilers were included versus two boilers?
- r. Reference page 44: The same comment for paragraph q applies.
- s. Reference page 47: The inferences are made that Cherry Point could build a new sanitary landfill. This is inconsistent with previous text.
- t. Reference page 49: Does the 71-tons per day represent only bottom and fly ashes, or does it include the non-burnables identified on page 6? What about cost of transport and disposal of non-burnables other than ash/residual materials?
- u. Reference page 56, paragraph 2: Take note that the Cherry Point landfill is approaching capacity but is not yet overstuffed and out of business. A plan is underway to add additional capacity via the use of cells.



v. Reference page 57: Inference is made that the Camp Lejeune landfill closure is eminent. This is not the case.

w. Reference pages 59 and 60: Increased forest activity would increase cost. This was not considered in the economic analysis here.

x. Reference page 28: Transport cost of \$15 per ton of trash appears too high. This cost is more than double the transfer cost of wood chips as noted on page 12. Please clarify.

y. Reference page 57: It is stated that steam demand is probably diurnal or very cyclical but those assumptions were based on monthly averages. However, hourly historic steam loads were made available.

Additional comments and notes will be forwarded as received. As discussed earlier, upon your review of the forwarded information, a meeting will be held at the Marine Corps Base Camp Lejeune to select the Phase II study options or option. If there are any other questions, please do not hesitate to call this Office.

Sincerely yours,

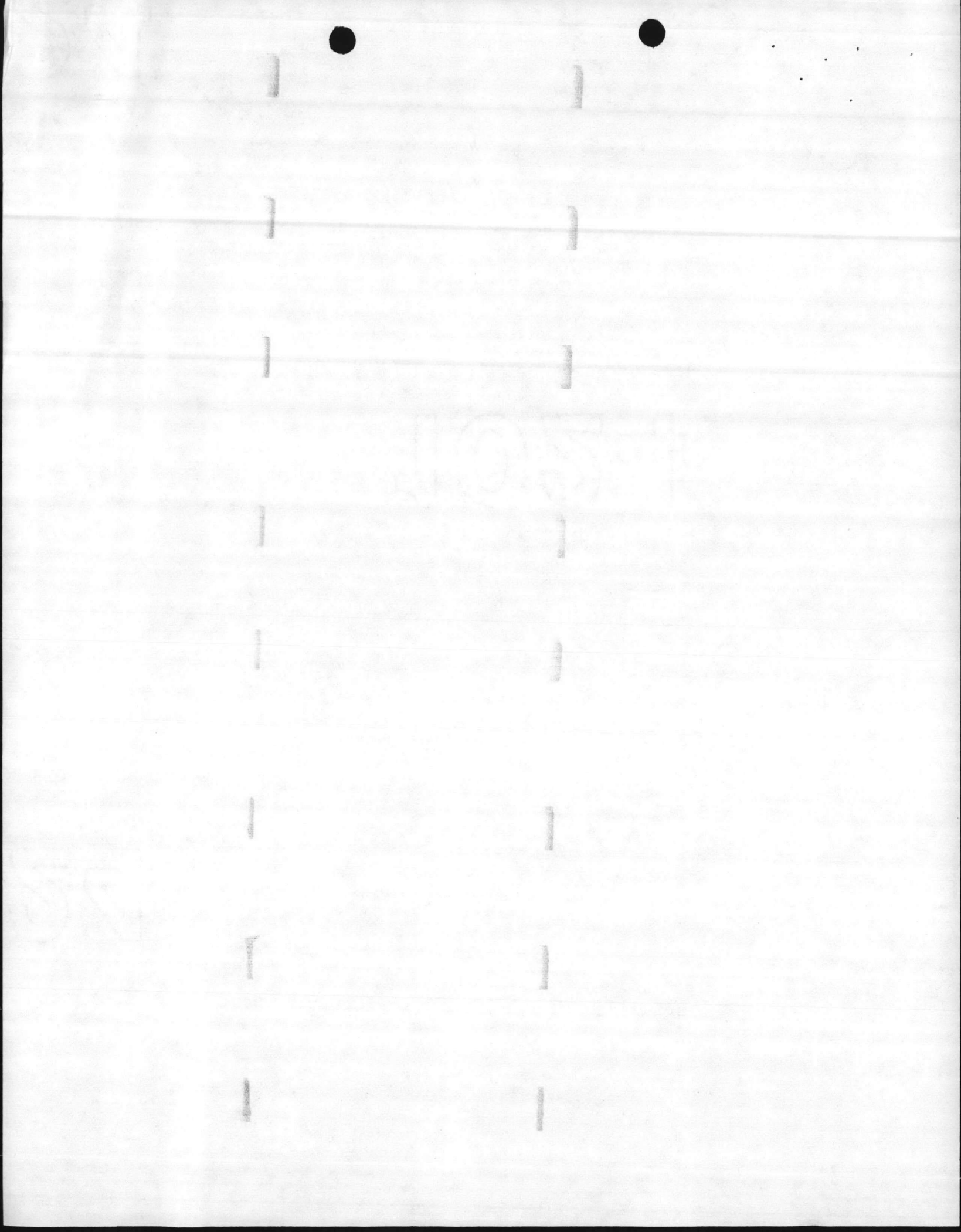
Enclosure

Copy to:  
Mr. Heinz A. Gorges  
Vineta, Inc.  
3705 Sleepy Hollow Road  
Falls Church, VA 22041

E.A. BARCO, P.E.  
Director, Utilities, Energy  
and Environmental Division  
By direction of the Commander

Blind copy to:  
111  
11  
11S  
098S







UNITED STATES MARINE CORPS  
MARINE CORPS BASE  
CAMP LEJEUNE, NORTH CAROLINA 28542

IN REPLY REFER TO  
FAC/JOH/joh  
6280  
15 Jul 1981

From: Commanding General  
To: Commander, Atlantic Division, Naval Facilities Engineering Command,  
Norfolk, Virginia 23511  
Subj: Contract N62470-80-B-3801, Solid and Wood Waste Burning and Cogeneration  
Study for Marine Corps Base, Camp Lejeune and Marine Corps Air Station,  
Cherry Point  
Ref: (a) Cmdr, LantDiv, NavFacEngCom ltr 111:JDT 4101 of 18 Jun 1981

1. Reference (a) forwarded a letter and interim report from the J. E. SIRRINE Company on the subject study, as enclosures (1) and (2), respectively. Reference (a) also requested that comments be provided on enclosure (2), attached thereto. Accordingly, the following comments are provided:

a. In reviewing enclosure (2) of reference (a), minor inconsistencies were found. These included the inclusion of tonnage of recycled paper in tables for one location but not the other or looking at ash disposal costs at one location but not the other. In order to develop a believable analysis, all factors for both locations must be considered.

b. The study does not address the effect of proposed expansion of the French Creek area in the vicinity of the proposed waste burning plant site. Twenty-one buildings are proposed for construction in this area under the MCON five-year construction program and three buildings are presently under construction. An additional steam demand in excess of 40,000 pounds/hour can be expected if all buildings are constructed.

c. The use of first year costs for electricity, fuel oil, and coal is questionable since the cost of these forms of energy can be expected to rise at a higher rate in comparison to operation and maintenance costs during subsequent years.

d. The use of steam absorption air conditioning should be considered in the study. Although not presently feasible at Camp Lejeune because of the lack of waste steam, the construction of the subject facility and the resulting excess steam availability should make steam absorption air conditioning feasible.

e. The assumption that the proposed dual water wall boilers will not be available for two and a half months per year for steam and electricity production is considered to be excessive.

f. Not considered in this study is the High Temperature Slagging Pyrolysis System (Andco-Torrax). This differs from the normal combustion processes in that it utilizes much higher temperatures and the only solid by-product of the process is a black, glassy slag aggregate which occupies 3-5% of the volume and 15-20% of the weight of the original refuse and is suitable for use in sand-blasting, road construction, etc. Also to be considered is that by using a high temperature system, disposal of PCBs, DDT, sludges and other hazardous materials may be possible.



1054

FAC/JOH/joh  
6280  
15 Jul 1981

Subj: Contract N62470-80-B-3801, Solid and Wood Waste Burning and Cogeneration Study for Marine Corps Base, Camp Lejeune and Marine Corps Air Station, Cherry Point

g. The use of refuse derived fuel/municipal waste (RDF/MW) as an alternative energy source has received much attention in the area of energy conservation. The experiences of the Navy at Sewell Point however, have cast doubt on RDF/MW as a viable energy source. The High Temperature Slagging Pyrolysis System is currently being constructed for the Reedy Creek Utilities Company (Walt Disney World) in Florida with operations scheduled to begin in November 1981. As this facility is located in a highly visible, tourist-oriented area with stringent environmental controls, it would indicate that this process may result in the use of RDF/MW as an effective alternate energy source.

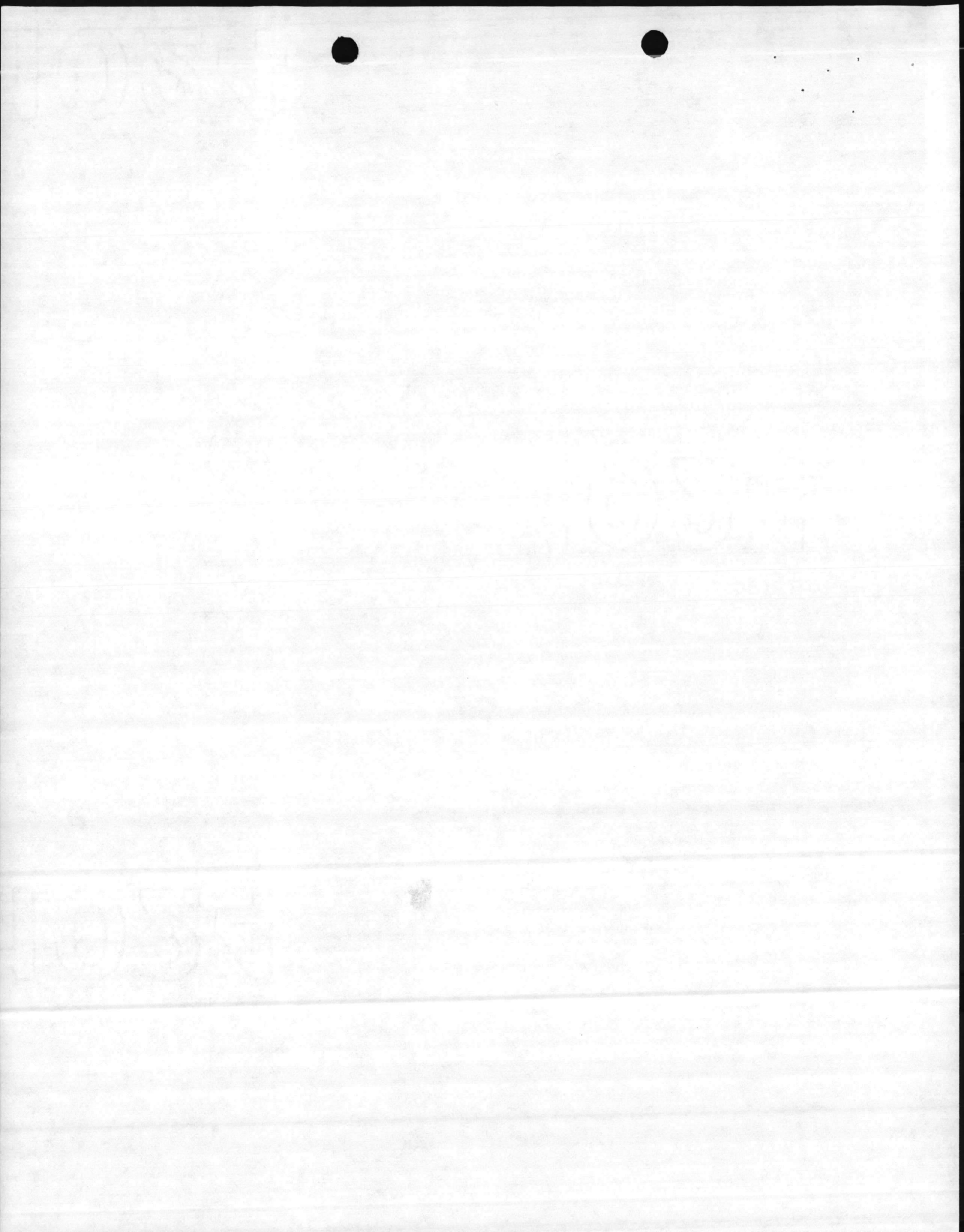
h. The assertion in the report that a detailed evaluation was conducted of the wood fuel potential at Camp Lejeune is not correct. On many occasions, the A&E, J. E. Sirrine Company, was told that the wood product data they were using was out of date and would have limited value unless an up-to-date inventory was made. For example, the 1965-1975 management plan showed an annual allowable cut of 4400 MBF of saw timber and 17,536 cords of pulpwood. The 1975-1985 management plan used in the subject report shows an annual allowable cut of 8200 MBF of saw timber and 20,300 cords of pulpwood, an increase of approximately 85% for saw timber and 16% for pulpwood. This example indicates that for the wood fuel potential to have any validity, a new inventory to determine growing stock and to compute new annual growth rate with allowable annual cuts would be required.

i. Initiation of Phase II of the study is not recommended until a more detailed study of the wood source/supply, and of the other concerns addressed in this letter has been made.

2. For further information on this matter, please contact Colonel F. H. MOUNT, Base Maintenance Officer, Marine Corps Base, at extension AUV 484-2511.

*K. P. Millice, Jr.*  
K. P. MILLICE, Jr.  
By direction

Copy to:  
CMC (Code LFF-2)





DEPARTMENT OF THE NAVY  
HEADQUARTERS UNITED STATES MARINE CORPS  
WASHINGTON, D.C. 20380

IN REPLY REFER TO

LFF-2:EGB:yum

8 JUL 1981

From: Commandant of the Marine Corps  
To: Commander, Atlantic Division, Naval Facilities Engineering  
Command, Norfolk, VA 23511

Subj: Solid and Wood Waste Burning and Cogeneration Study,  
Contract N62470-80-B-3801 at Marine Corps Base, Camp  
Lejeune and Marine Corps Air Station, Cherry Point

Ref: (a) LANTNAVFACENCOM ltr 111:JDT over 4101 of 18 Jun 81  
w/enclosure  
(b) LANTNAVFACENCOM ltr 111:JDT over 11010 of 18 Mar 80  
w/enclosure

1. This Headquarters has reviewed the interim report forwarded by reference (a) in relation to the scope of work outlined by reference (b). The following comments are provided:

a. The report does not address the availability of brush and residue from precommercial thinning operations. Procedures for harvesting brush and young trees have been established by the U.S. Forest Service, Southern Forest Experiment Station in Pineville, Louisiana and the Georgia-Pacific Corporation in Hattiesburg, Mississippi. These procedures should be evaluated within the scope of the study.

b. The report does not address the problems of moisture content, storage and transportation of wood chips which are produced from green stems or cord wood.

c. The report does not address the heat content and moisture content of available wood waste, recycled paper and solid waste; method of removing non-burnables; or provide sufficient details on the options considered.

2. It is requested that the above comments be considered and resolved prior to the final report preparation.

Frank E. PETERSEN  
By direction

Copy to:  
CG, MCAS Cherry Point NC  
CG, MCB Camp Lejeune NC





DEPARTMENT OF THE NAVY  
HEADQUARTERS UNITED STATES MARINE CORPS  
WASHINGTON, D.C. 20380

IN REPLY REFER TO

LFF-2:EGB:yum

8 JUL 1981

From: Commandant of the Marine Corps  
To: Commander, Atlantic Division, Naval Facilities Engineering  
Command, Norfolk, VA 23511

Subj: Solid and Wood Waste Burning and Cogeneration Study,  
Contract N62470-80-B-3801 at Marine Corps Base, Camp  
Lejeune and Marine Corps Air Station, Cherry Point

Ref: (a) LANTNAVFACENCOM ltr 111:JDT over 4101 of 18 Jun 81  
w/enclosure  
(b) LANTNAVFACENCOM ltr 111:JDT over 11010 of 18 Mar 80  
w/enclosure

1. This Headquarters has reviewed the interim report forwarded by reference (a) in relation to the scope of work outlined by reference (b). The following comments are provided:

a. The report does not address the availability of brush and residue from precommercial thinning operations. Procedures for harvesting brush and young trees have been established by the U.S. Forest Service, Southern Forest Experiment Station in Pineville, Louisiana and the Georgia-Pacific Corporation in Hattiesburg, Mississippi. These procedures should be evaluated within the scope of the study.

b. The report does not address the problems of moisture content, storage and transportation of wood chips which are produced from green stems or cord wood.

c. The report does not address the heat content and moisture content of available wood waste, recycled paper and solid waste; method of removing non-burnables; or provide sufficient details on the options considered.

2. It is requested that the above comments be considered and resolved prior to the final report preparation.

Frank E. PETERSEN  
By direction

Copy to:  
CG, MCAS Cherry Point NC  
CG, MCB Camp Lejeune NC





10/21/21

10/21/21

10/21/21



UNITED STATES MARINE CORPS  
MARINE CORPS AIR STATION  
CHERRY POINT, NORTH CAROLINA 28533

LFM-cm/JER  
11000

14 JUL 1981

From: Commanding General  
To: Commander, Atlantic Division, Naval Facilities Engineering Command,  
Norfolk, Virginia 23511

Subj: Solid and Wood Waste Burning and Cogeneration Study, Contract N62470-80-B-  
3801 at Marine Corps Base, Camp Lejeune and Marine Corps Air Station,  
Cherry Point, North Carolina

Ref: (a) LANTNAVFACENGCOM ltr 111:JDT over 4101 of 18 June 1981 with enclosure  
(b) LANTNAVFACENGCOM ltr 111:JDT over 11010 of 18 March 1980 with  
enclosure

1. This Command has reviewed the interim report forwarded by reference (a) in relation to the scope of work outlined by reference (b). The following comments are provided:

a. The scope of the study does not appear to be adequate in that no consideration is given to possible use of waste from adjacent municipalities. Due to problems currently being experienced with landfill operations in neighboring counties, it would seem to be feasible to consider energy recovery options including the use of waste from local cities and counties. Recommend that this option be considered in this study.

b. Continued operation of landfills should be retained on an option to be evaluated in detail in phase II of the study. Preliminary cost study information for Cherry Point indicates that annual costs of landfill operation and transfer to Camp Lejeune are approximately the same. When consideration is given to projected fuel/transportation cost increases and construction of a transfer station, the landfill option may prove feasible. Further, it will be necessary to operate a landfill at some location for the foreseeable future to dispose of ashes and other inerts from the Central Heating Plant. When consideration is given to the capital costs necessary to develop this landfill, it may significantly affect the annual cost used in the study for landfill operation.

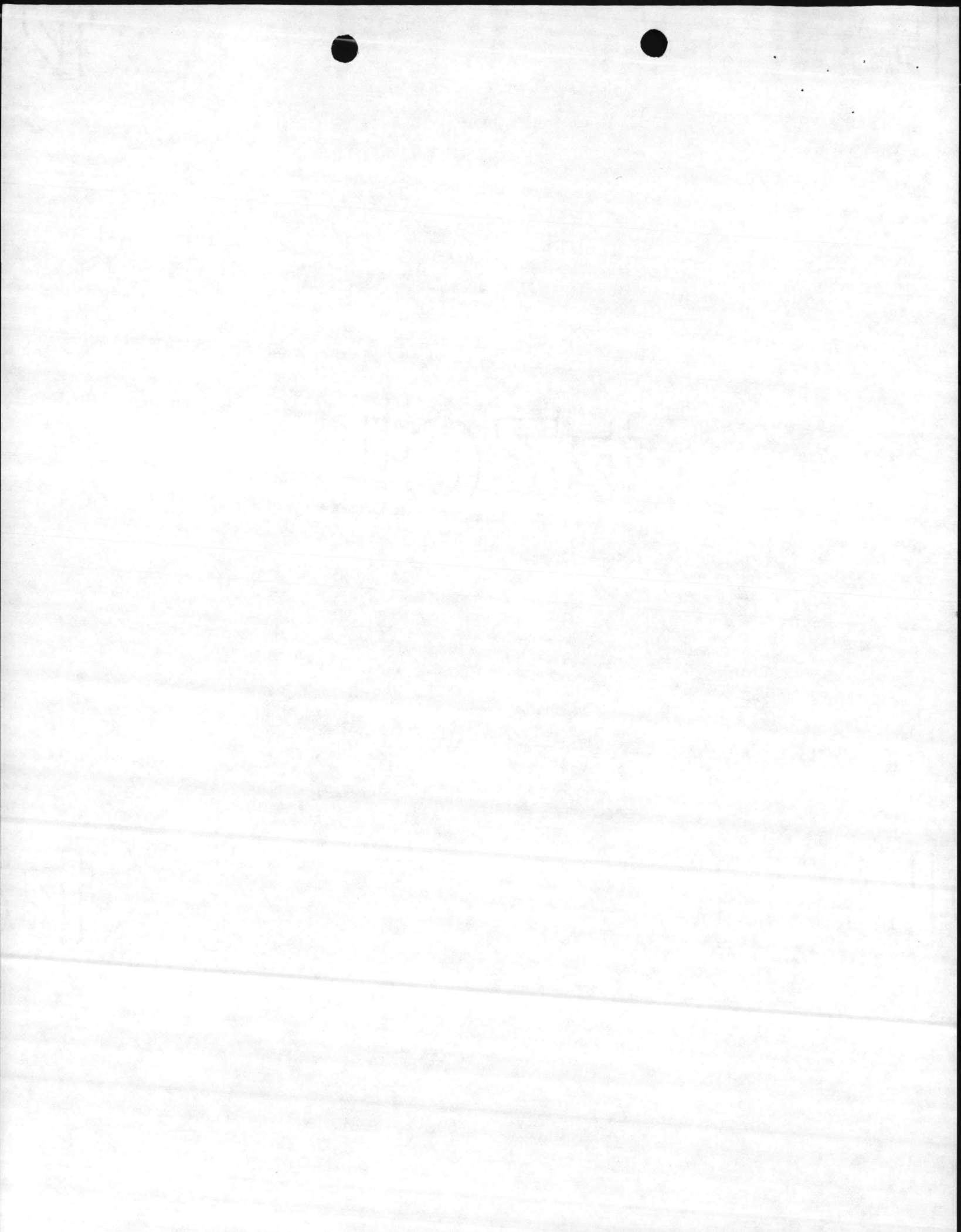
c. Heat value and moisture content of wood residuals, refuse, and solid wastes should be annotated. Address of separation, handling, and recovery of inorganic and organic materials should be given. Costs associated with this process can be quite extensive and energy consumable.

d. Page 6, Table III-1, MCA $\dot{S}$ , CPNC tons/week burnable should read 289.

2. It is requested that the above comments be considered and resolved prior to a final report preparation.

  
H. A. ZANDER  
By Direction

Copy to:  
CMC (LFF-2)  
CG MCB Camp Lejeune





DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

1111  
C  
TELEPHONE NO.

444-7411

IN REPLY REFER TO:

24C:GNL

11015/1F

6 Jul 1981

MEMORANDUM FOR CODE 111

Subj: Solid and Wood Waste Burning and Co-generation Study, Contract N62470-80-B-3801, MCB, Camp Lejeune, and MCAS, Cherry Point.

Ref: (a) LANTDIV ltr 111:JDT 4101 of 18 Jun 1981

1. Reference (a) enclosed subject feasibility study and requested a review and comments. Here are my comments, suggestions and questions pertaining to that study.

a. Page 6 - There is a subtraction error in the Cherry Point data. Change total from 257 to 289 to correct it. Also make this change on the preceding page, page 5. This new, higher total may affect other data within the study.

b. Page 6 - Change Camp Lejeune's total from 550 tons per week burnable to 549. Also make the correction back over on page 5.

c. Page 6 - After making the changes in (1.a.) and (1.b.) above, the correct total tons per week for Cherry Point and Camp Lejeune is 838. This new total should now be used throughout the study.

d. Page 7 - The second paragraph covers whole-tree utilization where small limbs, needles, bark, cones - everything - is chipped and carried out of the forest. Nothing is left to return to the soil as is the practice today. Such utilization would significantly affect nutrient cycling. If whole-tree utilization is considered any further, the problem of nutrient depletion should be addressed.

e. Page 7 - Use of all of the allowable annual cut for wood fuel at Cherry Point and Camp Lejeune is discussed. This would create a negative impact on sawmills, pulpwood mills, communities, forest industries, forest workers, etc., in the areas. These people and businesses have become dependent on all of the wood leaving the activities and affecting the local economy. The impact of retaining wood for government use and not allowing it to go to outside sources is not mentioned in the report.

f. Page 7 - The Contractor has recognized that selling the wood for lumber is far more lucrative than selling it for fuel on the Croatan. This is also true at Cherry Point, Camp Lejeune, and probably, other places. This fact should have been stated for these two prime study areas as well.



© 1971

1971

g. Page 11 - Although stumpage fee costs are costs to the logger or timber sale buyer, they are looked upon as timber sale receipts in the Navy forestry program. It is important to state here or somewhere in the study that timber sale receipts are vital to the Navy's forestry program as they finance the program. The fair market value must be received for all trees cut if the Navy forestry program is to function properly.

h. Page 12 - There is a railroad between Cherry Point and Camp Lejeune. Was it considered for transporting chips (or, possibly, sticks of wood) and solid waste? How would rail costs compare to trucking costs?

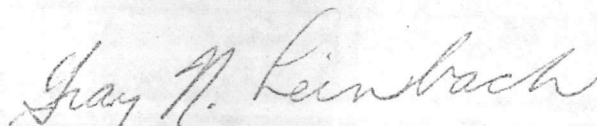
i. Page 13 - Two and one-half tons per day is logging 365 days per year. This is not practical. About the maximum amount of logging days is 265 which gives an average of 3.5 tons per day.

j. Page 26 - There are some math errors on this page. Total should be \$553,250 instead of \$552,000. Also make same correction on page 58.

k. Page 54 - Total cost per year should be corrected to \$603,250. Also make same correction on page 58.

l. Page 60 - The problem at Camp Lejeune is not due to lack of revenue to pay additional forestry personnel, but the personnel ceiling limit. Recently, the limit has been lifted, somewhat, and Camp Lejeune is currently in the process of hiring 4 timber markers which will, ultimately, increase wood availability and timber sale income. Camp Lejeune will now be able to obtain most of their allowable annual cut.

2. Thanks for forwarding a copy of the feasibility study to us and giving us an opportunity to comment on it.



GRAY N. LEINBACH  
Staff Forester  
Real Estate Division



10-5-1954



DEPARTMENT OF THE ARMY  
HEADQUARTERS, US ARMY FACILITIES ENGINEERING SUPPORT AGENCY  
FORT BELVOIR, VIRGINIA 22060

FESA-T

8 JUL 1981

SUBJECT: Solid and Wood Waste Burning and Cogeneration Study,  
Contract N62470-80-B-3801 at Marine Base, Camp Lejeune  
and Marine Corps Air Station, Cherry Point

Commander  
Atlantic Division  
Naval Facilities Engineering Command  
ATTN: 111: JDT/4101  
Norfolk, VA 23511

1. Reference letter, LANTNAVFACENGOM, 18 June 1981, subject as above, with inclosure (J. E. Serrine Company Interim Report).
2. As requested, the referenced report has been reviewed by USAFESA. Our comments are listed below:

a. Section III.C of the report states that whole tree chips can only be obtained from Marine Corps land. Procurement of both whole tree chips and sawmill residue from the local economy should be listed as an option for obtaining the wood fuel. Typically, sawmill residues can be obtained at prices below the projected cost of whole tree chips harvested on the military installations. For the reason stated below, it may be difficult to burn chips harvested on military installations unless these chips are purchased on the "open market."

b. In May 1980, the Office of the Chief of Engineers obtained a legal opinion regarding the harvesting of wood from military installations for use as a fuel at the installations. The question and answer are as follows:

QUESTION: Can the Army harvest and burn its timber and pulpwood in Army power plants?

ANSWER: Yes. But then the intent underlying the continuing appropriation created by Congress would either be entirely frustrated or at the very least severely inhibited. Thus, while a literal prohibition does not exist, nevertheless, the use of timber and pulpwood in such a manner would appear to be a practical impossibility.





Handwritten text, possibly a signature or name, located in the upper middle section of the page.

Handwritten text, possibly initials or a date, located in the lower left section of the page.

FESA-T

8 JUL 1981

SUBJECT: Solid and Wood Waste Burning and Cogeneration Study,  
Contract N62470-80-B-3801 at Marine Base, Camp Lejeune  
and Marine Corps Air Station, Cherry Point

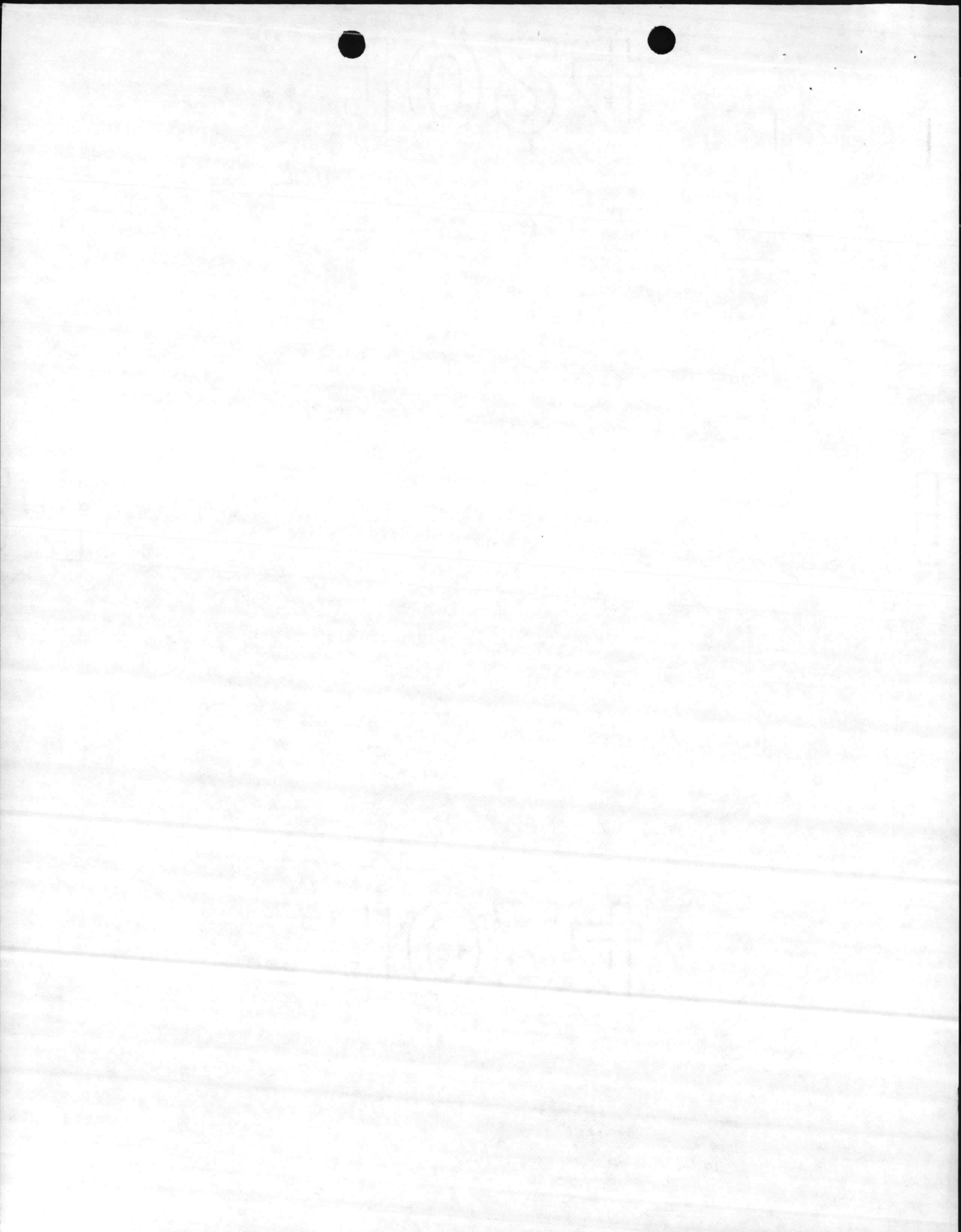
This opinion, based on an interpretation of 10 U.S.C. 2665(d), is not sufficiently definitive; therefore, it appears that additional effort is required before DOD can presume that indigenous timber resources (including residues) are available for use as fuel. The Navy's position in this matter is of interest to USAFESA.

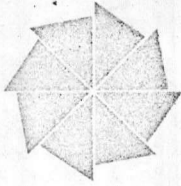
3. Should you have questions regarding these comments, or if USAFESA can be of further assistance, please contact Mr. Steven A. Helms on AUTOVON 354-5732/5967. USAFESA has a continuing interest in this study effort. Please keep us advised of your progress.

*H. T. Steenson, LTC, CE*  
for  
EDGAR J. MIXAN

Colonel, CE

Commander and Director





North Carolina Department of Natural  
Resources & Community Development

James B. Hunt, Jr., Governor

Howard N. Lee, Secretary

DIVISION OF  
FOREST RESOURCES

H. J. "Boe" Green, Director

Box 27687, Raleigh 27611  
Telephone 919 733-2162

June 29, 1981

Mr. J. D. Torma  
Department of the Navy  
Atlantic Division  
Naval Facilities Engineering Command  
Norfolk, VA. 23511

Dear Mr. Torma:

We have reviewed the interim report of J. E. Serrine on "Solid Waste and Wood Waste Burning and Cogeneration Options" at Camp Lejeune and Cherry Point. We are pleased to note that one of the options recommended for further study is that of burning wastes and wood with a water wall boiler. This scheme would require about 82,000 tons of green wood annually.

As you know, our state is promoting the use of low quality wood fiber for energy, in order to provide markets for otherwise unmerchantable wood which is hampering forest productivity. I am not clear as to why the amount of wood from your bases seems to dictate the size of your proposed combustion system. On a statewide basis, we are trying to find markets for 31 million green tons annually in addition to what is currently being used. In the area surrounding the bases in question, there are very limited markets for low grade hardwood fiber.

The enclosed report, "Impact and Feasibility of Wood or Peat Fired Electric Generating Plants in the Coastal Zone of North Carolina" finds that a consumption of 292,000 tons per year of wood around Verona is feasible. Several suppliers operating in that area have expressed an interest in furnishing large quantities of whole tree chips. Three of these are:

Canal Wood Corp. of Lumberton  
P. O. Box 1030  
308 East Fifth St.  
Lumberton, NC 28358  
Attn: Mr. Don Smith  
(919) 739-2885  
(See enclosed letter of interest)

International Paper Co.  
Georgetown, S. C. 29440  
Attn: Mr. Harry S. Archer  
(803) 546-2573

Squires Timber Co.  
P. O. Box 548

Attn: Mr. Ben R. Harley  
(919) 862-3533



Mr. J. D. Torma  
Page 2

I would be happy to provide further information or meet with project personnel.

Very truly yours,

*Lawrence B. McGee*  
Lawrence B. McGee  
Wood Energy Project Coordinator

LBM:bc

cc: H. J. Green  
G. J. Freeman, P.E.



1057

1057

WHOLE TREE CHIPPLERS - WOOD FUEL SUPPLIERS



## Canal Wood Corporation Of Lumberton

DBA CAPE FEAR WOOD COMPANY AND OR AS ME WOOD COMPANY  
DEALERS IN FOREST PRODUCTS

December 23, 1980

Mr. Larry G. Jahn  
Extension Forest Resources Specialist  
Wood Products Marketing  
School of Forest Resources  
North Carolina State University  
Raleigh, North Carolina 27611

Dear Larry:

Canal Wood Corporation is interested in expanding our whole tree chipping operations for the production of fuel chips anywhere in North Carolina and Virginia, and especially in the Piedmont or Northern Coastal Plains Regions. Canal Wood is the largest dealer in forest products in the southeast. We produce approximately five million tons of wood a year in the form of chips, roundwood, logs, and whole tree chips in the southern states. Canal produces approximately two million tons of wood annually in North Carolina alone. Our operations are currently hampered by a lack of markets for hardwood trees that are unmerchantable for solid wood products, but quite suitable for total tree chipping. In addition, there are millions of acres of low grade hardwood trees throughout the Piedmont and Northern Coastal Plain areas of North Carolina that could be purchased at very reasonable stumpage prices. There is currently very little market for this type of stand and a sizeable production expansion in total tree chipping is quite feasible.

Canal Wood Corporation is prepared to supply hardwood chip volumes of 200 tons to 1000 tons per day to any single point of consumption within the North Carolina, Virginia, or Northern South Carolina Region. We would prefer that the supply arrangement be in the form of a three to five year contract. Our company would be responsible for purchasing stumpage, supervising and financing loggers, and insuring the delivery of contract volumes of wood. This is our standard business procedure as a wood dealer.

We currently have total tree chip contracts at \$18 per ton delivered from within a fifty mile radius of a mill. All price increases are negotiated according to the unique factors affecting our business. Our price increases have historically been less than the CPI, and generally reflect price increases in oil, steel products, and ordinary labor. Although oil prices have escalated rapidly, oil is only one factor of production, and overall price increases on delivered wood have been modest compared to the CPI.





100

100

100

100

100

100

100

100

100

100

100

Mr. Larry B. Jain  
December 23, 1980  
Page 2

Canal Wood is a stable, well established corporation with great experience in the forest products area. Our field representatives are highly knowledgeable of the areas in which they reside and have a demonstrated capability in acquiring stumpage from private landowners. The strength and experience of our organization, as well as our proven performance in consistent wood delivery to scores of satisfied customers is evidence of our ability to fulfill any contracts in which we might become a party.

Sincerely,



H. Don Smith  
Operations Manager  
Canal Wood Corporation of Lumberton

HDS:ss



105

NOTICE

This report does not directly state or reflect the Coastal Resources Commission's position on coastal peat mining and power plant siting. CEIP-funded empirical research projects on impacts to hydrology, fisheries, air quality, water quality, Lake Phelps, and transportation facilities are now underway or pending. Quantification of peat-related environmental impacts must await at least the preliminary results of these efforts. For further information contact the Office of Coastal Management, P. O. Box 27687, Raleigh, N. C. 27611, (919) 733-2293.

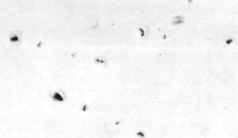
# Impact and Feasibility of Wood - or Peat - Fired Electric Generating Plants in the Coastal Zone of North Carolina

April 1980

Summary of Report Prepared for  
North Carolina Department of Natural Resources  
and Community Development  
Division of Forest Resources

by  
The Research Triangle Institute





1054

1054

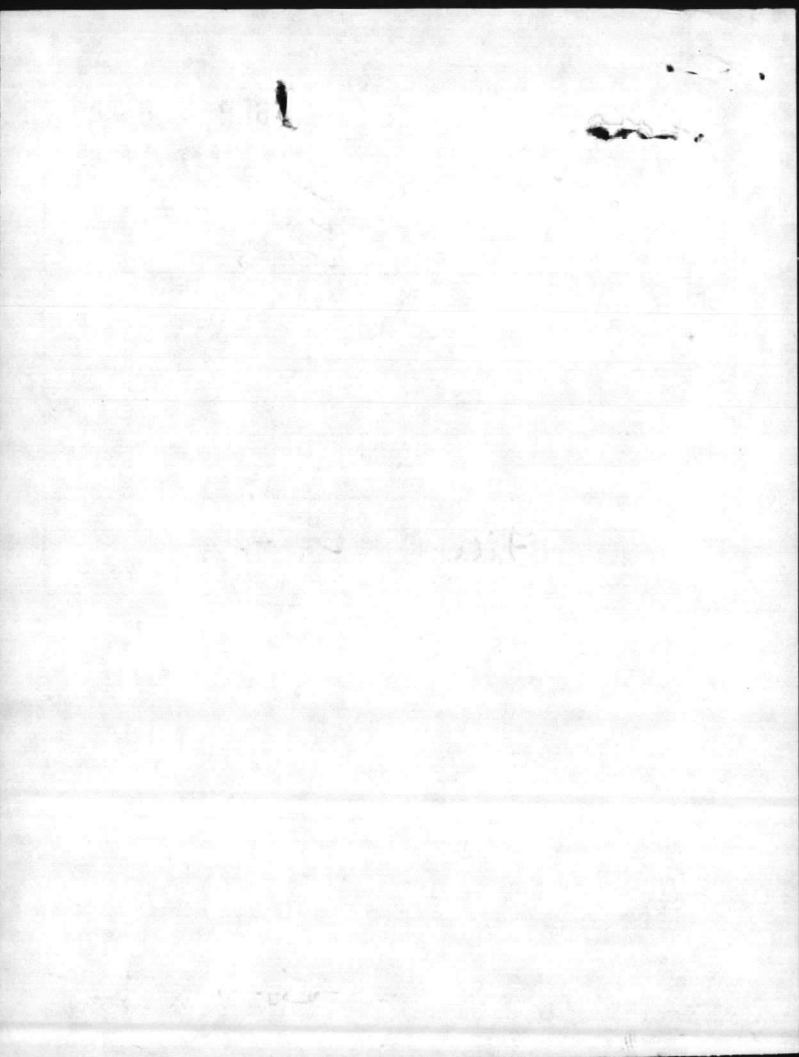
## ROUTING SLIP

SEP 28 1981

ACTION INFO INITIAL

	ACTION	INFO	INITIAL
BMO		✓	
ABMO		✓	
ADMIN		✓	J
ENVIRON AFF			
F&A BRANCH			
MAINT NCO			
M&R			
OPNS			
PROP			
TELE			
UMACS			
UTIL	File	✓	Ju
SECRETARY			

COMMENTS:





# 26

**DEPARTMENT OF THE NAVY**  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

TELEPHONE NO.  
444-7877  
AUTOVON 690-7877  
IN REPLY REFER TO:  
1111:JDT  
11300

**1 8 SEP 1981**

From: Commander, Atlantic Division, Naval Facilities Engineering Command  
To: Commanding General, Marine Corps Base, Camp Lejeune  
Commanding General, Marine Corps Air Station, Cherry Point

Subj: Solid and Wood Waste Burning and Co-generation Study, Contract  
No. 80-B-3801 at Marine Corps Base, Camp Lejeune, and Marine Corps  
Air Station, Cherry Point

Ref: (a) FONECON MCB CAMP LEJEUNE (Mr. Billy Elston)/LANTNAVFACENGCOM  
(Mr. J. D. Torma) of 9 Sep 1981  
(b) FONECON MCAS CHERRY POINT (Mr. Joe Reilly)/LANTNAVFACENGCOM  
(Mr. J. D. Torma) of 11 Sep 1981  
(c) FONECON J. E. Serrine Company (Mr. G. Freeman)/LANTNAVFACENGCOM  
(Mr. J. D. Torma) of 9 Sep 1981

Encl: (1) LANTNAVFACENGCOM ltr 111:JDT 11300 of 24 Jul 1981 (Interim Report  
Review Comment Summary Submittal to J. E. Serrine Company)

1. Per references (a) and (b), a meeting has been scheduled for 0900  
Monday, 28 September 1981, at MCB CAMP LEJEUNE to discuss enclosure (1) and  
to formulate Phase II development. Per reference (c), the J. E. Serrine  
Company will arrive at 1300.

2. Dr. Heinz Gorges of Veneta, Incorporated, a consulting firm under  
contract with the Navy, will accompany LANTNAVFACENGCOM. Dr. Heinz Gorges  
will assist in formulating Phase II development.

3. In addition to the above, it is requested that the morning discussion  
agenda include the LANTNAVFACENGCOM proposed Energy Engineering Program  
(EEP) Heating and Power Plant (HPPO) Study for the MCAS (H) NEW RIVER and  
CAMP GEIGER steam plants. The proposed HPPO study may correlate or be  
impacted by the subject study.

4. If there are any questions regarding the above, please contact Mr. J. D.  
Torma, AUTOVON 690-7877, FTS 954-7877 or 804-444-7877.

*R. D. Crowson*

Copy to: (see next page)

R. D. CROWSON  
By direction

CERTIFICATE BOND  
25% COTTON FIBER



444-7877  
AUTUMN 290-7877  
1111:501  
11300

DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING COMMAND  
NAVAL FACILITIES DIVISION  
BUREAU OF NAVAL FACILITIES

1 8 SEP 1981

From: Commanding General, Marine Corps Air Station, Cherry Point  
To: Commanding General, Marine Corps Air Station, Cherry Point  
Subject: 3011 and 3012 Wood Water Pumping and Distribution System, Contract  
No. 60-2-801 at Marine Corps Base, Cherry Point, and Marine Corps  
Air Station, Cherry Point  
Re: (a) WONGSON MOB CAMP (LAWSON) (LAWSON) (LAWSON)  
(b) WONGSON MOB CAMP (LAWSON) (LAWSON) (LAWSON)  
(c) WONGSON MOB CAMP (LAWSON) (LAWSON) (LAWSON)  
(d) WONGSON MOB CAMP (LAWSON) (LAWSON) (LAWSON)  
Enc: (1) LAWSON MOB CAMP (LAWSON) (LAWSON) (LAWSON)  
Review Comment Summary Submitted to J. E. Sixtine (Company)

1. Per references (a) and (b), a meeting has been scheduled for 0900  
Monday, 28 September 1981, at MOB CAMP (LAWSON) to discuss enclosure (1) and  
to formulate Phase II development. Per reference (c), the J. E. Sixtine  
Company will arrive at 1300.  
2. Mr. Heinz Gorges of Vantage, Incorporated, a consulting firm under  
contract with the Navy, will accompany LAWSON (LAWSON) to MOB CAMP (LAWSON)  
will assist in formulating Phase II development.  
3. In addition to the above, it is requested that the morning discussion  
agenda include the LAWSON (LAWSON) Energy Engineering Program  
(EPP) (EPP) and Power Plant (EPP) Study for the MOAB (EPP) (EPP) and  
CAMP (LAWSON) (LAWSON) (LAWSON). The proposed EPP study may correlate or be  
requested by the subject study.  
4. If there are any questions regarding the above, please contact Mr. J. E.  
Sixtine, AUTUMN 290-7877, TTS 024-7877 or 804-444-7877.

Copy to (see next page)  
CERTIFICATE BIND  
SECTION FOR FIBER

Copy to: (continued)  
Veneta, Inc.  
3705 Sleepy Hollow Road  
Falls Church, VA 22041

Facilities Engineering Department  
Stop 7, Building 80  
Attn: Mr. Joe Reilly  
Marine Corps Air Station  
Cherry Point, NC 28533

Deputy, Facilities Maintenance Officer (w/o encl)  
Facilities Maintenance Department  
Stop 5  
Marine Corps Air Station  
Cherry Point, NC 28533

Installation and Logistics Directorate (w/o encl)  
Natural Resources and Environmental  
Affairs Division  
Marine Corps Air Station  
Cherry Point, NC 28533

Assistant Chief of Staff of Facilities (w/o encl)  
Building 1  
Marine Corps Base  
Camp Lejeune, NC 28542

Utilities Division Director  
Base Maintenance Department  
Building 1202  
Marine Corps Base  
Camp Lejeune, NC 28542

Public Works Officer (w/o encl)  
Building 1005  
Marine Corps Base  
Camp Lejeune, NC 28542

Natural Resources Division Director (w/o encl)  
Maintenance Department  
Building 1103  
Marine Corps Base  
Camp Lejeune, NC 28542

CMC (Code LFF2) (w/o encl)

1111301  
11300

Copy to: (continued)

Vaner, Inc.  
3105 Sheep Station Road  
Falls Church, VA 22041

Facilities Engineering Department  
Stop 7, Building 80  
Attn: Mr. Joe Bell  
Marine Corps Air Station  
Cherry Point, NC 28533

Deputy Facilities Maintenance Officer (w/o encl)  
Facilities Maintenance Department  
Stop 7  
Marine Corps Air Station  
Cherry Point, NC 28533

Installation and Logistics Directorate (w/o encl)  
Natural Resources and Environment  
Affairs Division  
Marine Corps Air Station  
Cherry Point, NC 28533

Assistant Chief of Staff of Facilities (w/o encl)  
Building 1  
Marine Corps Base  
Camp Lejeune, NC 28542

Utilities Division Director  
Base Maintenance Department  
Building 103  
Marine Corps Base  
Camp Lejeune, NC 28542

Public Works Officer (w/o encl)  
Building 1005  
Marine Corps Base  
Camp Lejeune, NC 28542

Natural Resources Division Director (w/o encl)  
Maintenance Department  
Building 103  
Marine Corps Base  
Camp Lejeune, NC 28542

CDC (Code 177) (w/o encl)

09165

444-7877  
AUTOVON 690-7877

1111:JDT  
11300

From: Commander, Atlantic Division, Naval Facilities Engineering Command  
To: Commanding General, Marine Corps Base, Camp Lejeune  
Commanding General, Marine Corps Air Station, Cherry Point

Subj: Solid and Wood Waste Burning and Co-generation Study, Contract  
No. 80-B-3801 at Marine Corps Base, Camp Lejeune, and Marine Corps  
Air Station, Cherry Point

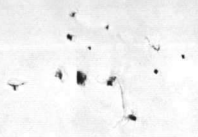
Ref: (a) FONECON MCB CAMP LEJEUNE (Mr. Billy Elston)/LANTNAVFACENGCOM  
(Mr. J. D. Torma) of 9 Sep 1981  
(b) FONECON MCAS CHERRY POINT (Mr. Joe Reilly)/LANTNAVFACENGCOM  
(Mr. J. D. Torma) of 11 Sep 1981  
(c) FONECON J. E. Serrine Company (Mr. G. Freeman)/LANTNAVFACENGCOM  
(Mr. J. D. Torma) of 9 Sep 1981

Encl: (1) LANTNAVFACENGCOM ltr 111:JDT 11300 of 24 Jul 1981 (Interim Report  
Review Comment Summary Submittal to J. E. Serrine Company)

1. Per references (a) and (b), a meeting has been scheduled for 0900 Monday, 28 September 1981, at MCB CAMP LEJEUNE to discuss enclosure (1) and to formulate Phase II development. Per reference (c), the J. E. Serrine Company will arrive at 1300.
2. Dr. Heinz Gorges of Veneta, Incorporated, a consulting firm under contract with the Navy, will accompany LANTNAVFACENGCOM. Dr. Heinz Gorges will assist in formulating Phase II development.
3. In addition to the above, it is requested that the morning discussion agenda include the LANTNAVFACENGCOM proposed Energy Engineering Program (EEP) Heating and Power Plant (HPP) Study for the MCAS (H) NEW RIVER and CAMP GEIGER steam plants. The proposed HPP study may correlate or be impacted by the subject study.
4. If there are any questions regarding the above, please contact Mr. J. D. Torma, AUTOVON 690-7877, FTS 954-7877 or 804-444-7877.

Copy to: (see next page)

Torma  
Conners  
9/18/81  
nrs



09135

1111:JDT  
11300

Copy to: (continued)  
Veneta, Inc.  
3705 Sleepy Hollow Road  
Falls Church, VA 22041

Facilities Engineering Department  
Stop 7, Building 80  
Attn: Mr. Joe Reilly  
Marine Corps Air Station  
Cherry Point, NC 28533

Deputy, Facilities Maintenance Officer (w/o encl)  
Facilities Maintenance Department  
Stop 5  
Marine Corps Air Station  
Cherry Point, NC 28533

Installation and Logistics Directorate (w/o encl)  
Natural Resources and Environmental  
Affairs Division  
Marine Corps Air Station  
Cherry Point, NC 28533

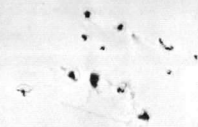
Assistant Chief of Staff of Facilities (w/o encl)  
Building 1  
Marine Corps Base  
Camp Lejeune, NC 28542

Utilities Division Director  
Base Maintenance Department  
Building 1202  
Marine Corps Base  
Camp Lejeune, NC 28542

Public Works Officer (w/o encl)  
Building 1005  
Marine Corps Base  
Camp Lejeune, NC 28542

Natural Resources Division Director (w/o encl)  
Maintenance Department  
Building 1103  
Marine Corps Base  
Camp Lejeune, NC 28542

CMC (Code LFF2) (w/o encl)



NSO

NSO

NSO

444-7877

111:JDT  
11300

24 JUL 1981

J. E. Serrine Company  
Architects, Engineers, Planners  
P.O. Box 12748  
Research Triangle Park, NC 27709  
Attention Mr. Jake Freeman

Re: Solid and Wood Waste Burning and Co-generation Study  
Contract N62470-80-B-3801, Marine Corps Base, Camp  
Lejeune, and Marine Corps Air Station, Cherry Point  
(J.E. Serrine Company Job Order No. R-1628)

Gentlemen:

Enclosed are copies of review comments received to date regarding the subject interim report. In addition to the enclosure review comments, the following general review comments, questions, and discussion topics, noted by various Atlantic Division, Naval Facilities Engineering Command (LANTNAVFACENGCOM) personnel, are forwarded for your consideration.

a. In reference to "MBF", "M" in Navy circles means million and not thousand.

b. Cost are too broad in general and are not substantially supported.

c. Pages 19, 23, 27, 33, and similar other pages do not constitute flow diagrams as were expected.

d. Reference page 20, alternative b, incineration, paragraph 1: Why is a wet scrubber included for pollution control? What kind and amount of pollutants would be emitted?

e. Reference page 20, alternative b, incineration, paragraph 3: An additional benefit is that landfill for ash can be located at sites on the base that could not qualify as a sanitary landfill.

f. Reference page 34, paragraph 1: Same comment as for comment d.

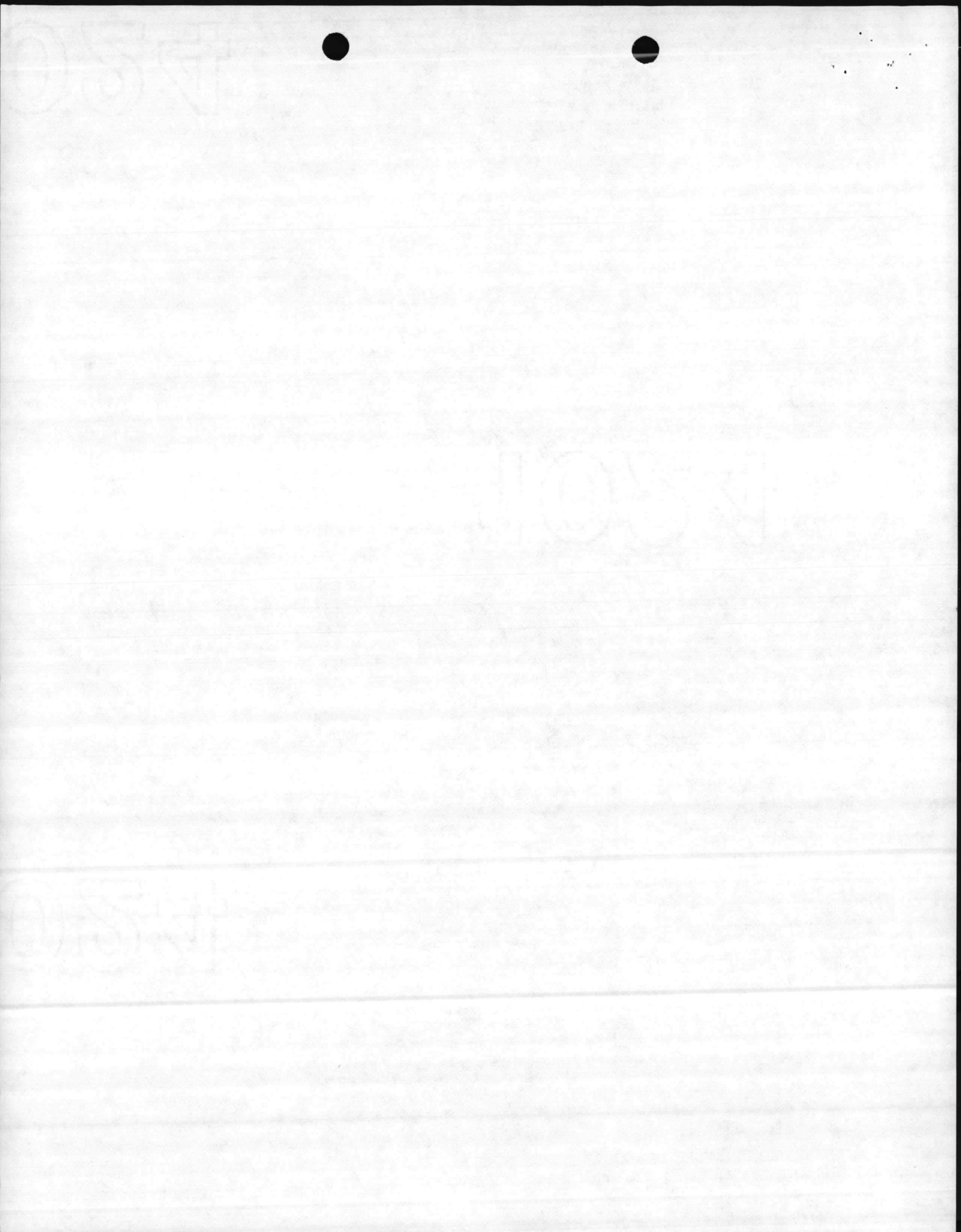
g. Reference page 38, paragraph 2: What size boilers?

Torma  
Connors  
7/24/81  
nrs





- h. Reference page 38, paragraph 3: The discussion here should go into the projected error emissions and controls. Why assume the electrostatic precipitators as the pollution control device for air emissions? Are emissions from burning solid waste hard to control? What will burning wood with trash do to the difficulty of controlling the emissions? These items should be addressed in at least general terms.
- i. Reference page 39: Pollution control costs appear very low. The cost would be closer to two million dollars.
- j. Reference page 47, paragraph 2: Same comment as for comment g.
- k. Reference page 47: Same as for comment i.
- l. Reference page 3: The commitment of available force resources has not been addressed.
- m. Reference page 11: The 5.5 percent profit margin appears too low.
- n. Reference page 11: Cherry Point allowable cut is identified as 347 million board feet saw timber. Is there no pulpwood that can be harvested?
- o. Reference page 20: Available landfill for inert ash material may be satisfactory located on the base without causing bird attraction problems for aircraft. State personnel and base personnel should be checked with.
- p. Reference page 24: Where is intended ash disposal point for this option? Similar to the previous comment, disposal of ash may be possible on base.
- q. Reference page 34: Because landfill capacity is available for backup, the redundancy of three 50-tons per day waste-heat boilers to handle a total of 89-tons per day may be a luxury. What would be the operational/maintenance schedule if three boilers were included versus two boilers?
- r. Reference page 44: The same comment for paragraph q applies.
- s. Reference page 47: The inferences are made that Cherry Point could build a new sanitary landfill. This is inconsistent with previous text.
- t. Reference page 49: Does the 71-tons per day represent only bottom and fly ashes, or does it include the non-burnables identified on page 6? What about cost of transport and disposal of non-burnables other than ash/residual materials?
- u. Reference page 56, paragraph 2: Take note that the Cherry Point landfill is approaching capacity but is not yet overstuffed and out of business. A plan is underway to add additional capacity via the use of cells.



v. Reference page 57: Inference is made that the Camp Lejeune landfill closure is eminent. This is not the case.

w. Reference pages 59 and 60: Increased forest activity would increase cost. This was not considered in the economic analysis here.

x. Reference page 28: Transport cost of \$15 per ton of trash appears too high. This cost is more than double the transfer cost of wood chips as noted on page 12. Please clarify.

y. Reference page 57: It is stated that steam demand is probably diurnal or very cyclical but those assumptions were based on monthly averages. However, hourly historic steam loads were made available.

Additional comments and notes will be forwarded as received. As discussed earlier, upon your review of the forwarded information, a meeting will be held at the Marine Corps Base Camp Lejeune to select the Phase II study options or option. If there are any other questions, please do not hesitate to call this Office.

Sincerely yours,

Enclosure

Copy to:  
Mr. Heinz A. Gorges  
Vinets, Inc.  
3705 Sleepy Hollow Road  
Falls Church, VA 22041

E.A. BARCO, P. E.  
Director, Utilities, Energy  
and Environmental Division  
By direction of the Commander

Blind copy to:  
111  
11  
11S  
09BS



Small, faint handwritten marks or characters in the top right corner.

022

1000

022



UNITED STATES MARINE CORPS  
MARINE CORPS BASE  
CAMP LEJEUNE, NORTH CAROLINA 28542

IN REPLY REFER TO  
FAC/JOH/joh  
6280  
15 Jul 1981

From: Commanding General  
To: Commander, Atlantic Division, Naval Facilities Engineering Command,  
Norfolk, Virginia 23511  
Subj: Contract N62470-80-B-3801, Solid and Wood Waste Burning and Cogeneration  
Study for Marine Corps Base, Camp Lejeune and Marine Corps Air Station,  
Cherry Point  
Ref: (a) Cmdr, LantDiv, NavFacEngCom ltr 111:JDT 4101 of 18 Jun 1981

1. Reference (a) forwarded a letter and interim report from the J. E. SIRRINE Company on the subject study, as enclosures (1) and (2), respectively. Reference (a) also requested that comments be provided on enclosure (2), attached thereto. Accordingly, the following comments are provided:

a. In reviewing enclosure (2) of reference (a), minor inconsistencies were found. These included the inclusion of tonnage of recycled paper in tables for one location but not the other or looking at ash disposal costs at one location but not the other. In order to develop a believable analysis, all factors for both locations must be considered.

b. The study does not address the effect of proposed expansion of the French Creek area in the vicinity of the proposed waste burning plant site. Twenty-one buildings are proposed for construction in this area under the MCON five-year construction program and three buildings are presently under construction. An additional steam demand in excess of 40,000 pounds/hour can be expected if all buildings are constructed.

c. The use of first year costs for electricity, fuel oil, and coal is questionable since the cost of these forms of energy can be expected to rise at a higher rate in comparison to operation and maintenance costs during subsequent years.

d. The use of steam absorption air conditioning should be considered in the study. Although not presently feasible at Camp Lejeune because of the lack of waste steam, the construction of the subject facility and the resulting excess steam availability should make steam absorption air conditioning feasible.

e. The assumption that the proposed dual water wall boilers will not be available for two and a half months per year for steam and electricity production is considered to be excessive.

f. Not considered in this study is the High Temperature Slagging Pyrolysis System (Andco-Torrax). This differs from the normal combustion processes in that it utilizes much higher temperatures and the only solid by-product of the process is a black, glassy slag aggregate which occupies 3-5% of the volume and 15-20% of the weight of the original refuse and is suitable for use in sand-blasting, road construction, etc. Also to be considered is that by using a high temperature system, disposal of PCBs, DDT, sludges and other hazardous materials may be possible.



1057

1057

1057

FAC/JOH/joh  
6280  
15 Jul 1981

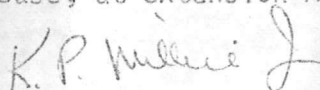
Subj: Contract N62470-80-B-3801, Solid and Wood Waste Burning and Cogeneration Study for Marine Corps Base, Camp Lejeune and Marine Corps Air Station, Cherry Point

g. The use of refuse derived fuel/municipal waste (RDF/MW) as an alternative energy source has received much attention in the area of energy conservation. The experiences of the Navy at Sewell Point however, have cast doubt on RDF/MW as a viable energy source. The High Temperature Slagging Pyrolysis System is currently being constructed for the Reedy Creek Utilities Company (Walt Disney World) in Florida with operations scheduled to begin in November 1981. As this facility is located in a highly visible, tourist-oriented area with stringent environmental controls, it would indicate that this process may result in the use of RDF/MW as an effective alternate energy source.

h. The assertion in the report that a detailed evaluation was conducted of the wood fuel potential at Camp Lejeune is not correct. On many occasions, the A&E, J. E. Sirrine Company, was told that the wood product data they were using was out of date and would have limited value unless an up-to-date inventory was made. For example, the 1965-1975 management plan showed an annual allowable cut of 4400 MBF of saw timber and 17,536 cords of pulpwood. The 1975-1985 management plan used in the subject report shows an annual allowable cut of 8200 MBF of saw timber and 20,300 cords of pulpwood, an increase of approximately 85% for saw timber and 16% for pulpwood. This example indicates that for the wood fuel potential to have any validity, a new inventory to determine growing stock and to compute new annual growth rate with allowable annual cuts would be required.

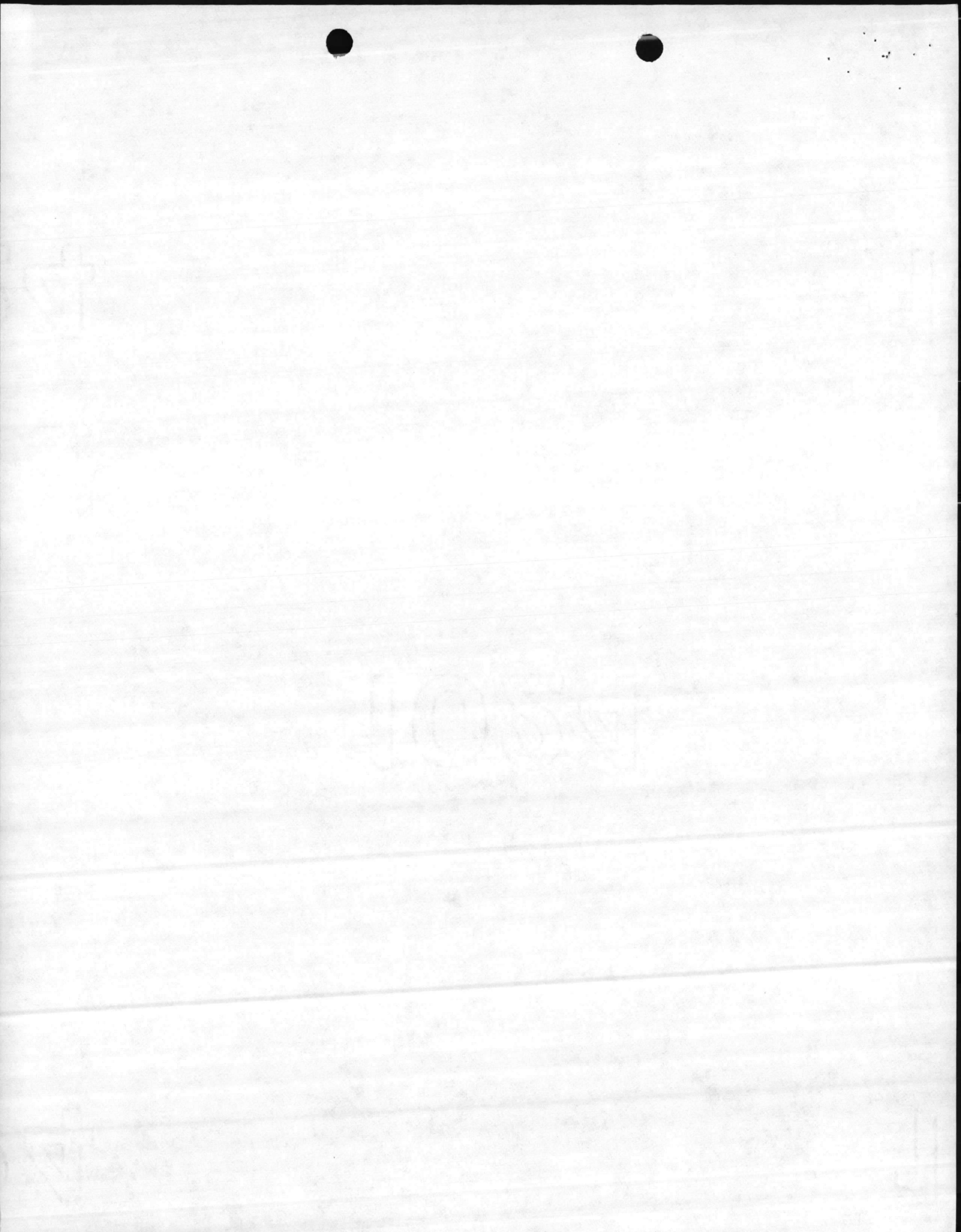
i. Initiation of Phase II of the study is not recommended until a more detailed study of the wood source/supply, and of the other concerns addressed in this letter has been made.

2. For further information on this matter, please contact Colonel F. H. MOUNT, Base Maintenance Officer, Marine Corps Base, at extension AUV 484-2511.

  
K. P. MILLICE, Jr.  
By direction

Copy to:  
CMC (Code LFF-2)







DEPARTMENT OF THE NAVY  
HEADQUARTERS UNITED STATES MARINE CORPS  
WASHINGTON, D.C. 20380

IN REPLY REFER TO

LFF-2:EGB:yum  
8 JUL 1981

From: Commandant of the Marine Corps  
To: Commander, Atlantic Division, Naval Facilities Engineering  
Command, Norfolk, VA 23511

Subj: Solid and Wood Waste Burning and Cogeneration Study,  
Contract N62470-80-B-3801 at Marine Corps Base, Camp  
Lejeune and Marine Corps Air Station, Cherry Point

Ref: (a) LANTNAVFACENCOM ltr 111:JDT over 4101 of 18 Jun 81  
w/enclosure  
(b) LANTNAVFACENCOM ltr 111:JDT over 11010 of 18 Mar 80  
w/enclosure

1. This Headquarters has reviewed the interim report forwarded by reference (a) in relation to the scope of work outlined by reference (b). The following comments are provided:

a. The report does not address the availability of brush and residue from precommercial thinning operations. Procedures for harvesting brush and young trees have been established by the U.S. Forest Service, Southern Forest Experiment Station in Pineville, Louisiana and the Georgia-Pacific Corporation in Hattiesburg, Mississippi. These procedures should be evaluated within the scope of the study.

b. The report does not address the problems of moisture content, storage and transportation of wood chips which are produced from green stems or cord wood.

c. The report does not address the heat content and moisture content of available wood waste, recycled paper and solid waste; method of removing non-burnables; or provide sufficient details on the options considered.

2. It is requested that the above comments be considered and resolved prior to the final report preparation.

Frank E. PETERSEN  
By direction

Copy to:  
CG, MCAS Cherry Point NC  
CG, MCB Camp Lejeune NC



1055

1055



DEPARTMENT OF THE NAVY  
HEADQUARTERS UNITED STATES MARINE CORPS  
WASHINGTON, D.C. 20380

IN REPLY REFER TO  
LFF-2:EGB:yum

8 JUL 1981

From: Commandant of the Marine Corps  
To: Commander, Atlantic Division, Naval Facilities Engineering  
Command, Norfolk, VA 23511

Subj: Solid and Wood Waste Burning and Cogeneration Study,  
Contract N62470-80-B-3801 at Marine Corps Base, Camp  
Lejeune and Marine Corps Air Station, Cherry Point

Ref: (a) LANTNAVFACENCOM ltr 111:JDT over 4101 of 18 Jun 81  
w/enclosure  
(b) LANTNAVFACENCOM ltr 111:JDT over 11010 of 18 Mar 80  
w/enclosure

1. This Headquarters has reviewed the interim report forwarded by reference (a) in relation to the scope of work outlined by reference (b). The following comments are provided:

a. The report does not address the availability of brush and residue from precommercial thinning operations. Procedures for harvesting brush and young trees have been established by the U.S. Forest Service, Southern Forest Experiment Station in Pineville, Louisiana and the Georgia-Pacific Corporation in Hattiesburg, Mississippi. These procedures should be evaluated within the scope of the study.

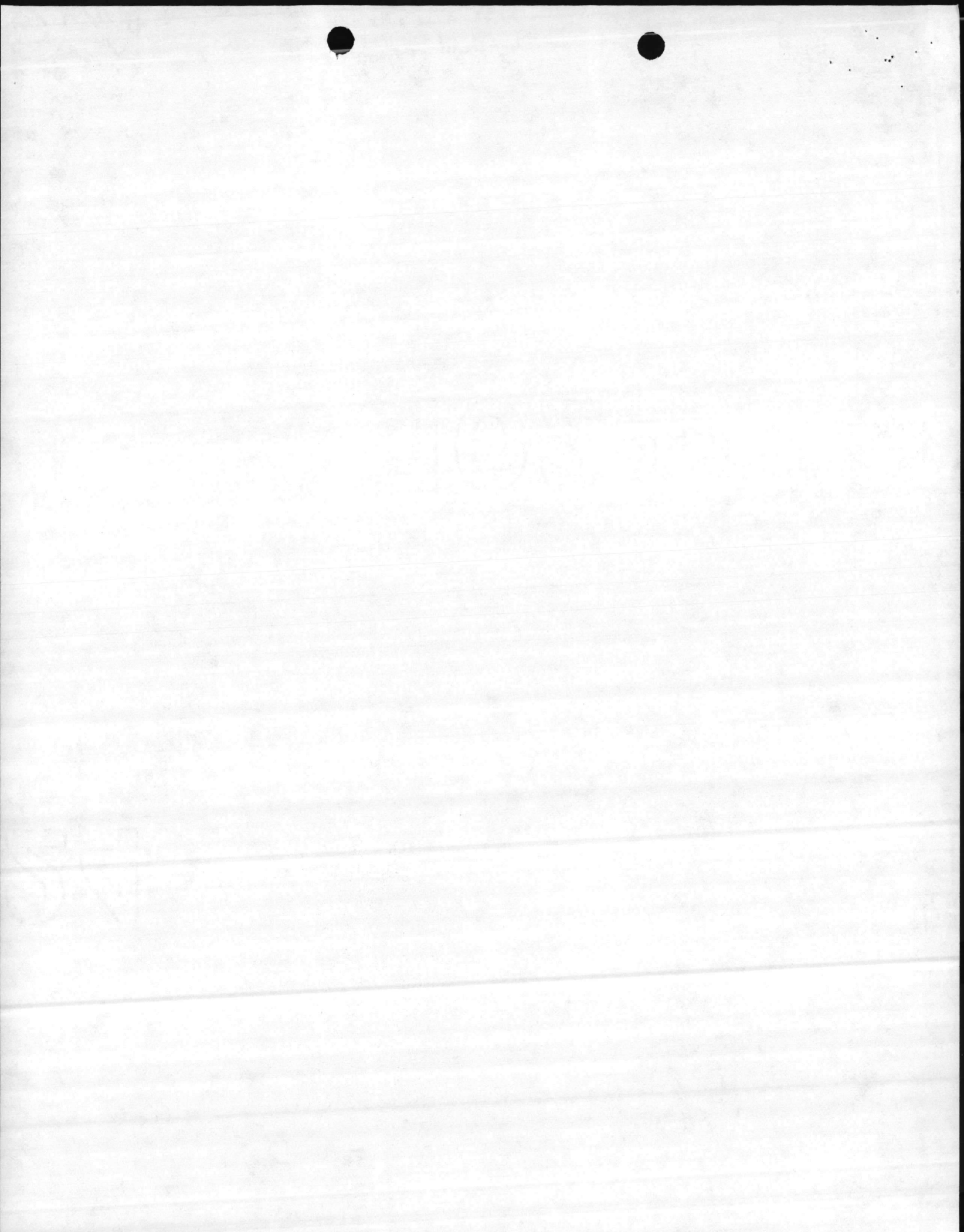
b. The report does not address the problems of moisture content, storage and transportation of wood chips which are produced from green stems or cord wood.

c. The report does not address the heat content and moisture content of available wood waste, recycled paper and solid waste; method of removing non-burnables; or provide sufficient details on the options considered.

2. It is requested that the above comments be considered and resolved prior to the final report preparation.

Frank E. PETERSEN  
By direction

Copy to:  
CG, MCAS Cherry Point NC  
CG, MCB Camp Lejeune NC





UNITED STATES MARINE CORPS  
MARINE CORPS AIR STATION  
CHERRY POINT, NORTH CAROLINA 28533

LFM-cm/JER  
11000

14 JUL 1981

From: Commanding General  
To: Commander, Atlantic Division, Naval Facilities Engineering Command,  
Norfolk, Virginia 23511

Subj: Solid and Wood Waste Burning and Cogeneration Study, Contract N62470-80-B-3801 at Marine Corps Base, Camp Lejeune and Marine Corps Air Station, Cherry Point, North Carolina

Ref: (a) LANTNAVFACENCOM ltr 111:JDT over 4101 of 18 June 1981 with enclosure  
(b) LANTNAVFACENCOM ltr 111:JDT over 11010 of 18 March 1980 with enclosure

1. This Command has reviewed the interim report forwarded by reference (a) in relation to the scope of work outlined by reference (b). The following comments are provided:

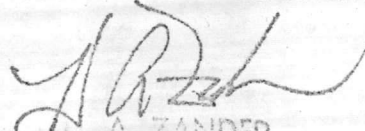
a. The scope of the study does not appear to be adequate in that no consideration is given to possible use of waste from adjacent municipalities. Due to problems currently being experienced with landfill operations in neighboring counties, it would seem to be feasible to consider energy recovery options including the use of waste from local cities and counties. Recommend that this option be considered in this study.

b. Continued operation of landfills should be retained on an option to be evaluated in detail in phase II of the study. Preliminary cost study information for Cherry Point indicates that annual costs of landfill operation and transfer to Camp Lejeune are approximately the same. When consideration is given to projected fuel/transportation cost increases and construction of a transfer station, the landfill option may prove feasible. Further, it will be necessary to operate a landfill at some location for the foreseeable future to dispose of ashes and other inerts from the Central Heating Plant. When consideration is given to the capital costs necessary to develop this landfill, it may significantly affect the annual cost used in the study for landfill operation.

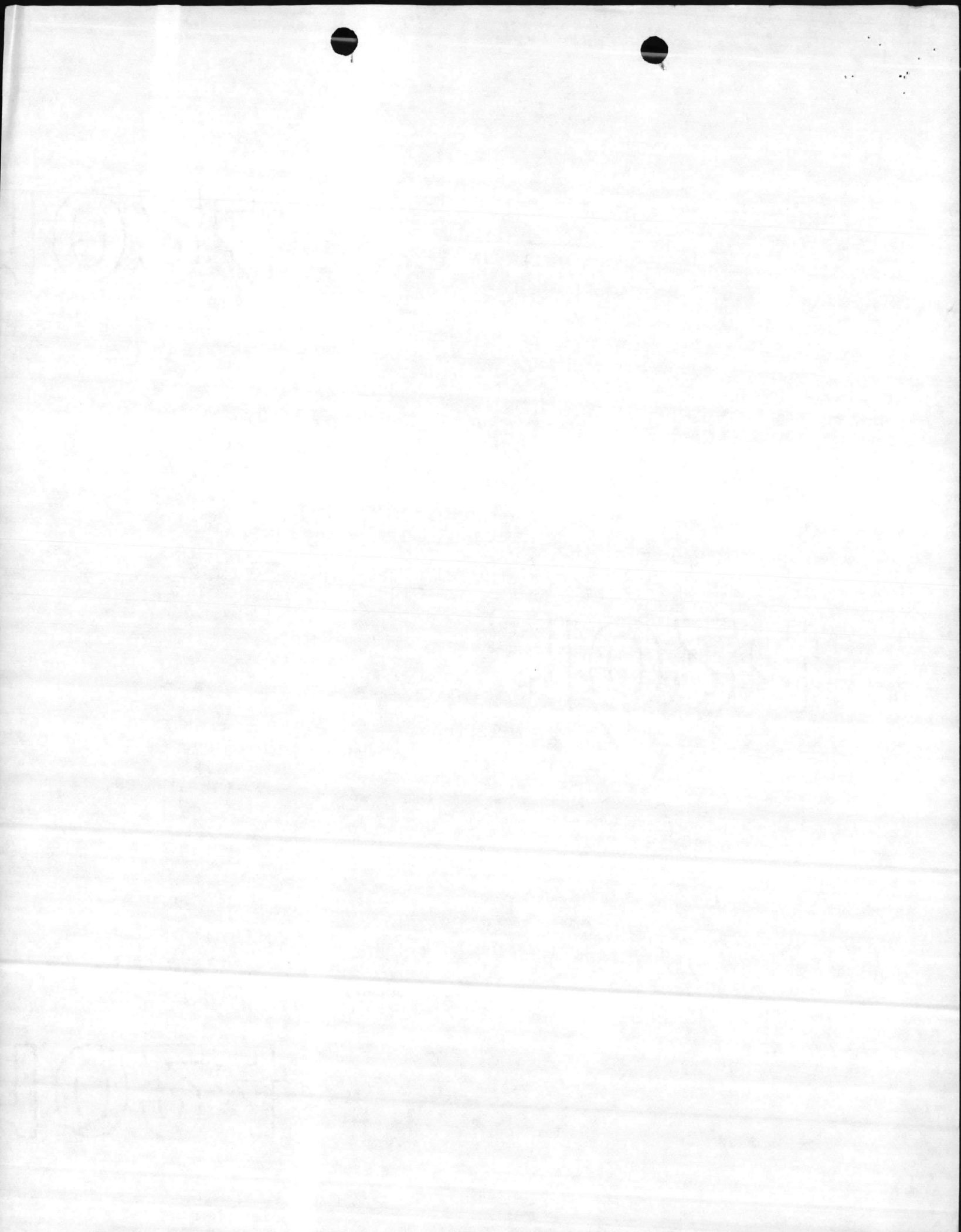
c. Heat value and moisture content of wood residuals, refuse, and solid wastes should be annotated. Address of separation, handling, and recovery of inorganic and organic materials should be given. Costs associated with this process can be quite extensive and energy consumable.

d. Page 6, Table III-1, MCA $\dot{S}$ , CPNC tons/week burnable should read 289.

2. It is requested that the above comments be considered and resolved prior to a final report preparation.

  
T. A. ZANDER  
By Direction

Copy to:  
CMC (LFF-2)  
CG MCB Camp Lejeune





DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

TELEPHONE NO.

444-7411

IN REPLY REFER TO:

24C:GNL

11015/1F

6 Jul 1981

MEMORANDUM FOR CODE 111

Subj: Solid and Wood Waste Burning and Co-generation Study, Contract  
N62470-80-B-3801, MCB, Camp Lejeune, and MCAS, Cherry Point

Ref: (a) LANTDIV ltr 111:JDT 4101 of 18 Jun 1981

1. Reference (a) enclosed subject feasibility study and requested a review and comments. Here are my comments, suggestions and questions pertaining to that study.

a. Page 6 - There is a subtraction error in the Cherry Point data. Change total from 257 to 289 to correct it. Also make this change on the preceding page, page 5. This new, higher total may affect other data within the study.

b. Page 6 - Change Camp Lejeune's total from 550 tons per week burnable to 549. Also make the correction back over on page 5.

c. Page 6 - After making the changes in (1.a.) and (1.b.) above, the correct total tons per week for Cherry Point and Camp Lejeune is 838. This new total should now be used throughout the study.

d. Page 7 - The second paragraph covers whole-tree utilization where small limbs, needles, bark, cones - everything - is chipped and carried out of the forest. Nothing is left to return to the soil as is the practice today. Such utilization would significantly affect nutrient cycling. If whole-tree utilization is considered any further, the problem of nutrient depletion should be addressed.

e. Page 7 - Use of all of the allowable annual cut for wood fuel at Cherry Point and Camp Lejeune is discussed. This would create a negative impact on sawmills, pulpwood mills, communities, forest industries, forest workers, etc., in the areas. These people and businesses have become dependent on all of the wood leaving the activities and affecting the local economy. The impact of retaining wood for government use and not allowing it to go to outside sources is not mentioned in the report.

f. Page 7 - The Contractor has recognized that selling the wood for lumber is far more lucrative than selling it for fuel on the Croatan. This is also true at Cherry Point, Camp Lejeune, and probably, other places. This fact should have been stated for these two prime study areas as well.





1054

1054

g. Page 11 - Although stumpage fee costs are costs to the logger or timber sale buyer, they are looked upon as timber sale receipts in the Navy forestry program. It is important to state here or somewhere in the study that timber sale receipts are vital to the Navy's forestry program as they finance the program. The fair market value must be received for all trees cut if the Navy forestry program is to function properly.

h. Page 12 - There is a railroad between Cherry Point and Camp Lejeune. Was it considered for transporting chips (or, possibly, sticks of wood) and solid waste? How would rail costs compare to trucking costs?

i. Page 13 - Two and one-half tons per day is logging 365 days per year. This is not practical. About the maximum amount of logging days is 265 which gives an average of 3.5 tons per day.

j. Page 26 - There are some math errors on this page. Total should be \$553,250 instead of \$552,000. Also make same correction on page 58.

k. Page 54 - Total cost per year should be corrected to \$603,250. Also make same correction on page 58.

l. Page 60 - The problem at Camp Lejeune is not due to lack of revenue to pay additional forestry personnel, but the personnel ceiling limit. Recently, the limit has been lifted, somewhat, and Camp Lejeune is currently in the process of hiring 4 timber markers which will, ultimately, increase wood availability and timber sale income. Camp Lejeune will now be able to obtain most of their allowable annual cut.

2. Thanks for forwarding a copy of the feasibility study to us and giving us an opportunity to comment on it.

*Gray N. Leinbach*  
GRAY N. LEINBACH  
Staff Forester  
Real Estate Division

10357

10357



DEPARTMENT OF THE ARMY  
HEADQUARTERS, US ARMY FACILITIES ENGINEERING SUPPORT AGENCY  
FORT BELVOIR, VIRGINIA 22060

FESA-T

8 JUL 1981

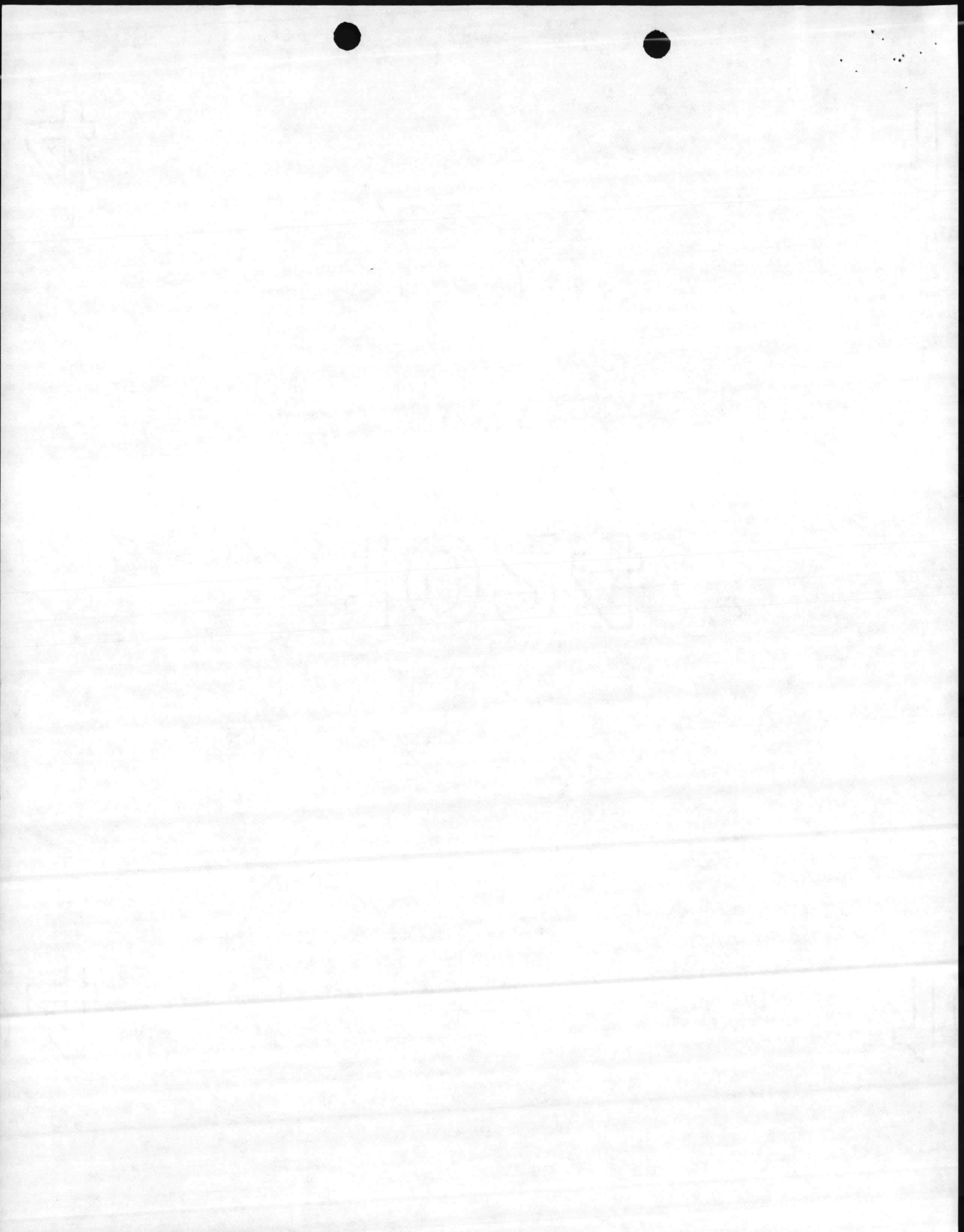
SUBJECT: Solid and Wood Waste Burning and Cogeneration Study,  
Contract N62470-80-B-3801 at Marine Base, Camp Lejeune  
and Marine Corps Air Station, Cherry Point

Commander  
Atlantic Division  
Naval Facilities Engineering Command  
ATTN: 111: JDT/4101  
Norfolk, VA 23511

1. Reference letter, LANTNAVFACENGOM, 18 June 1981, subject as above, with inclosure (J. E. Serrine Company Interim Report).
2. As requested, the referenced report has been reviewed by USAFESA. Our comments are listed below:
  - a. Section III.C of the report states that whole tree chips can only be obtained from Marine Corps land. Procurement of both whole tree chips and sawmill residue from the local economy should be listed as an option for obtaining the wood fuel. Typically, sawmill residues can be obtained at prices below the projected cost of whole tree chips harvested on the military installations. For the reason stated below, it may be difficult to burn chips harvested on military installations unless these chips are purchased on the "open market."
  - b. In May 1980, the Office of the Chief of Engineers obtained a legal opinion regarding the harvesting of wood from military installations for use as a fuel at the installations. The question and answer are as follows:

QUESTION: Can the Army harvest and burn its timber and pulpwood in Army power plants?

ANSWER: Yes. But then the intent underlying the continuing appropriation created by Congress would either be entirely frustrated or at the very least severely inhibited. Thus, while a literal prohibition does not exist, nevertheless, the use of timber and pulpwood in such a manner would appear to be a practical impossibility.



FESA-T

8 JUL 1981

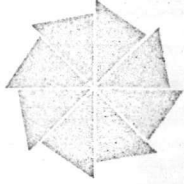
SUBJECT: Solid and Wood Waste Burning and Cogeneration Study,  
Contract N62470-80-B-3801 at Marine Base, Camp Lejeune  
and Marine Corps Air Station, Cherry Point

This opinion, based on an interpretation of 10 U.S.C. 2665(d), is not sufficiently definitive; therefore, it appears that additional effort is required before DOD can presume that indigenous timber resources (including residues) are available for use as fuel. The Navy's position in this matter is of interest to USAFESA.

3. Should you have questions regarding these comments, or if USAFESA can be of further assistance, please contact Mr. Steven A. Helms on AUTOVON 354-5732/5967. USAFESA has a continuing interest in this study effort. Please keep us advised of your progress.

*H. J. Stevenson, LT, CE*  
for EDGAR J. MIXAN  
Colonel, CE  
Commander and Director





# North Carolina Department of Natural Resources & Community Development

James B. Hunt, Jr., Governor

Howard N. Lee, Secretary

DIVISION OF  
FOREST RESOURCES

H. J. "Boe" Green, Director

Box 27687, Raleigh 27611  
Telephone 919 733-2162

June 29, 1981

Mr. J. D. Torma  
Department of the Navy  
Atlantic Division  
Naval Facilities Engineering Command  
Norfolk, VA. 23511

Dear Mr. Torma:

We have reviewed the interim report of J. E. Serrine on "Solid Waste and Wood Waste Burning and Cogeneration Options" at Camp Lejeune and Cherry Point. We are pleased to note that one of the options recommended for further study is that of burning wastes and wood with a water wall boiler. This scheme would require about 82,000 tons of green wood annually.

As you know, our state is promoting the use of low quality wood fiber for energy, in order to provide markets for otherwise unmerchantable wood which is hampering forest productivity. I am not clear as to why the amount of wood from your bases seems to dictate the size of your proposed combustion system. On a statewide basis, we are trying to find markets for 31 million green tons annually in addition to what is currently being used. In the area surrounding the bases in question, there are very limited markets for low grade hardwood fiber.

The enclosed report, "Impact and Feasibility of Wood or Peat Fired Electric Generating Plants in the Coastal Zone of North Carolina" finds that a consumption of 292,000 tons per year of wood around Verona is feasible. Several suppliers operating in that area have expressed an interest in furnishing large quantities of whole tree chips. Three of these are:

Canal Wood Corp. of Lumberton  
P. O. Box 1030  
308 East Fifth St.  
Lumberton, NC 28358  
Attn: Mr. Don Smith  
(919) 739-2885  
(See enclosed letter of interest)

International Paper Co.  
Georgetown, S. C. 29440  
Attn: Mr. Harry S. Archer  
(803) 546-2573

Squires Timber Co.  
P. O. Box 548

Attn: Mr. Ben R. Harley  
(919) 862-3533





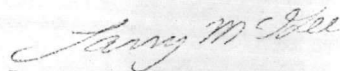
105

105

Mr. J. D. Torma  
Page 2

I would be happy to provide further information or meet with project personnel.

Very truly yours,



Lawrence B. McGee  
Wood Energy Project Coordinator

LBM:bc

cc: H. J. Green  
G. J. Freeman, P.E.



Small handwritten marks or characters in the top right corner.

10/15/11

10/15/11

10/15/11

WHOLE TREE CHIPPERS - WOOD FUEL SUPPLIERS



## Canal Wood Corporation Of Lumberton

DBA CAPE FEAR WOOD COMPANY AND ORACME WOOD COMPANY  
DEALERS IN FOREST PRODUCTS

December 23, 1980

Mr. Larry G. Jahn  
Extension Forest Resources Specialist  
Wood Products Marketing  
School of Forest Resources  
North Carolina State University  
Raleigh, North Carolina 27611

Dear Larry:

Canal Wood Corporation is interested in expanding our whole tree chipping operations for the production of fuel chips anywhere in North Carolina and Virginia, and especially in the Piedmont or Northern Coastal Plains Regions. Canal Wood is the largest dealer in forest products in the southeast. We produce approximately five million tons of wood a year in the form of chips, roundwood, logs, and whole tree chips in the southern states. Canal produces approximately two million tons of wood annually in North Carolina alone. Our operations are currently hampered by a lack of markets for hardwood trees that are unmerchantable for solid wood products, but quite suitable for total tree chipping. In addition, there are millions of acres of low grade hardwood trees throughout the Piedmont and Northern Coastal Plain areas of North Carolina that could be purchased at very reasonable stumpage prices. There is currently very little market for this type of stand and a sizeable production expansion in total tree chipping is quite feasible.

Canal Wood Corporation is prepared to supply hardwood chip volumes of 200 tons to 1000 tons per day to any single point of consumption within the North Carolina, Virginia, or Northern South Carolina Region. We would prefer that the supply arrangement be in the form of a three to five year contract. Our company would be responsible for purchasing stumpage, supervising and financing loggers, and insuring the delivery of contract volumes of wood. This is our standard business procedure as a wood dealer.

We currently have total tree chip contracts for \$18 per ton delivered from within a fifty mile radius of a mill. All price increases are negotiated according to the unique factors affecting our business. Our price increases have historically been less than the CPI, and generally reflect price increases in oil, steel products, and ordinary labor. Although oil prices have escalated rapidly, oil is only one factor of production, and overall price increases on delivered wood have been modest compared to the CPI.



1955

1955

Dr. Larry W. John  
December 23, 1980  
Page 2

Canal Wood is a stable, well established corporation with great experience in the forest products area. Our field representatives are highly knowledgeable of the areas in which they reside and have a demonstrated capability in acquiring stumpage from private landowners. The strength and experience of our organization, as well as our proven performance in consistent wood delivery to scores of satisfied customers is evidence of our ability to fulfill any contracts in which we might become a party.

Sincerely,



H. Don Smith  
Operations Manager  
Canal Wood Corporation of Lumberton

HDS:ss



05/11

10/5/11

05/11

NOTICE

This report does not directly state or reflect the Coastal Resources Commission's position on coastal peat mining and power plant siting. CEIP-funded empirical research projects on impacts to hydrology, fisheries, air quality, water quality, Lake Phelps, and transportation facilities are now underway or pending. Quantification of peat-related environmental impacts must await at least the preliminary results of these efforts. For further information contact the Office of Coastal Management, P. O. Box 27687, Raleigh, N. C. 27611, (919) 733-2293.

# Impact and Feasibility of Wood - or Peat - Fired Electric Generating Plants in the Coastal Zone of North Carolina

April 1980

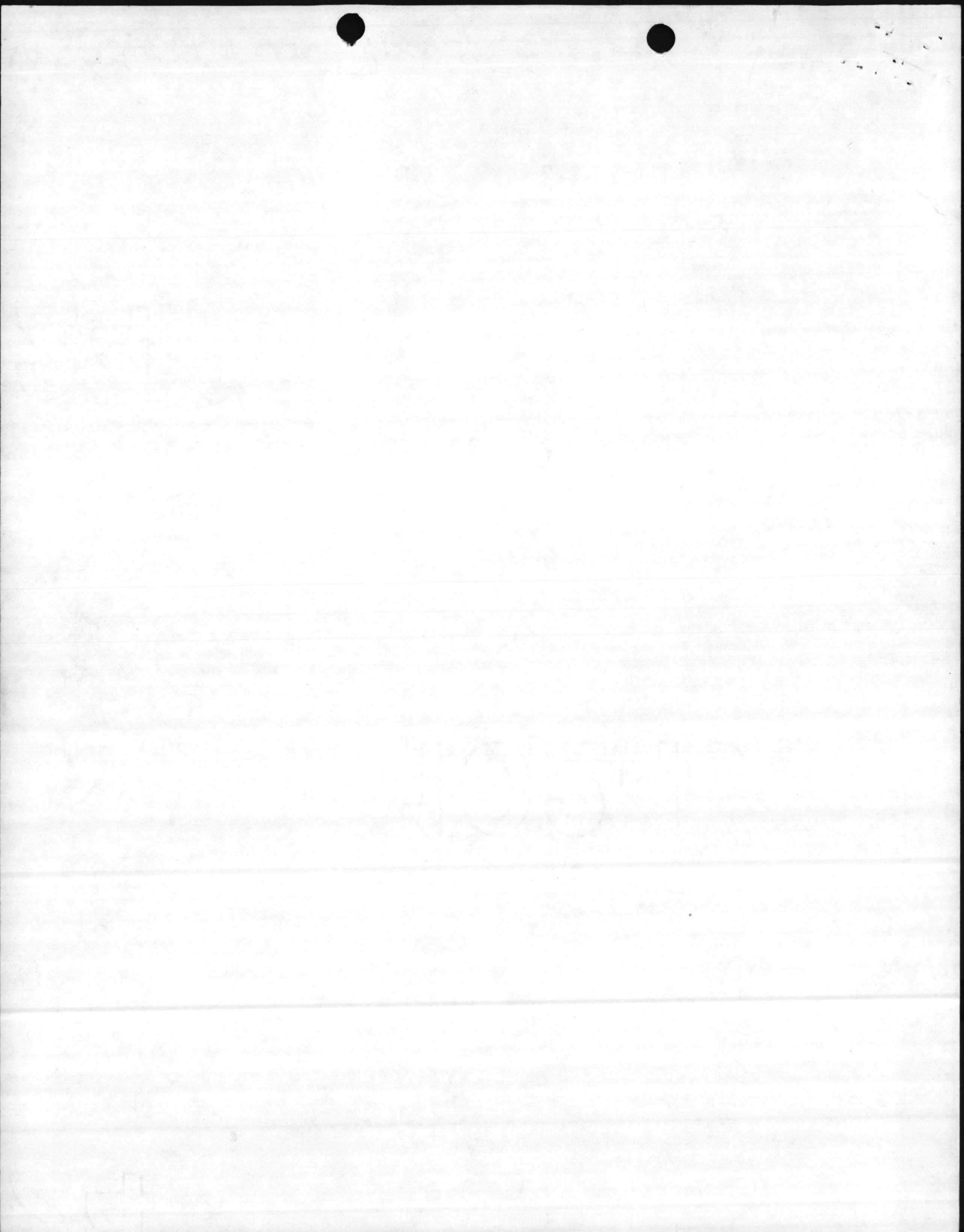
Summary of Report Prepared for

North Carolina Department of Natural Resources  
and Community Development  
Division of Forest Resources

by  
The Research Triangle Institute









DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

TELEPHONE NO.  
444-7877  
AUTOVON 690-7877  
IN REPLY REFER TO:  
1111:JDT  
11300

1 8 SEP 1981

J. E. Sirrine Company  
Architects, Engineers, Planners  
P.O. Box 12748  
Research Triangle Park, NC 27709

Attention Mr. Jake Freeman

Re: Solid and Wood Waste Burning and Cogeneration Study Contract  
N62470-80-B-3801, Marine Corps Base, Camp Lejeune, and Marine  
Corps Air Station, Cherry Point (J. E. Sirrine Company Job  
Order Number R-1628)

Gentlemen:

In reference to recent telephone conversations, the Interim Report Review and Phase II Development meeting has been confirmed with the Marine Corps Air Station, Cherry point and the Marine Corps Base, Camp Lejeune. The meeting has been scheduled for 1300, Monday, 28 September 1981 at the Base Maintenance Department, Building 1202, Marine Corps Base, Camp Lejeune. Dr. Heinz A. Gorges of Veneta, Incorporated, Falls Church, Virginia, will be present.

Sincerely yours,

J. D. TORMA  
Head, Energy Programs Section

Copy to:  
Veneta, Inc.  
3705 Sleepy Hollow Road  
Falls Church, VA 22041

Facilities Engineering Department  
Stop 7, Building 80  
Attn: Mr. Joe Reilly  
Marine Corps Air Station  
Cherry Point, NC 28533



1881

1881

1881

Copy to: (continued)  
Installation and Logistics Directorate  
Natural Resources and Environmental  
Affairs Division  
Marine Corps Air Station  
Cherry Point, NC 28533

Assistant Chief of Staff of Facilities  
Building 1  
Marine Corps Base  
Camp Lejeune, NC 28542

Utilities Division Director  
Base Maintenance Department  
Building 1202  
Marine Corps Base  
Camp Lejeune, NC 28542

Public Works Officer  
Building 1005  
Marine Corps Base  
Camp Lejeune, NC 28542

Natural Resources Division Director  
Maintenance Department  
Building 1103  
Marine Corps Base  
Camp Lejeune, NC 28542



1904

1904

1904

## ROUTING SLIP

JUL 20 1981

ACTION

INFO

INITIAL

BMO			✓ M
ABMO			✓ EWE
ADMIN			✓ S
ENVIRON AFF			
F&A BRANCH			
MAINT NCO			
M&R			
OPNS			
PROP			
TELE			
UMACS			
UTIL			✓ 7A 820
SECRETARY			

COMMENTS;

File

1897 D. C. JUN



The page contains several lines of extremely faint, illegible handwriting, likely bleed-through from the reverse side of the paper.



UNITED STATES MARINE CORPS  
MARINE CORPS BASE  
CAMP LEJEUNE, NORTH CAROLINA 28542

IN REPLY REFER TO

FAC/JOH/joh  
6280  
15 Jul 1981

From: Commanding General  
To: Commander, Atlantic Division, Naval Facilities Engineering Command,  
Norfolk, Virginia 23511

Subj: Contract N62470-80-B-3801, Solid and Wood Waste Burning and Cogeneration  
Study for Marine Corps Base, Camp Lejeune and Marine Corps Air Station,  
Cherry Point

Ref: (a) Cmdr, LantDiv, NavFacEngCom ltr 111:JDT 4101 of 18 Jun 1981

1. Reference (a) forwarded a letter and interim report from the J. E. STIRNINE Company on the subject study, as enclosures (1) and (2), respectively. Reference (a) also requested that comments be provided on enclosure (2), attached thereto. Accordingly, the following comments are provided:

a. In reviewing enclosure (2) of reference (a), minor inconsistencies were found. These included the inclusion of tonnage of recycled paper in tables for one location but not the other or looking at ash disposal costs at one location but not the other. In order to develop a believable analysis, all factors for both locations must be considered.

b. The study does not address the effect of proposed expansion of the French Creek area in the vicinity of the proposed waste burning plant site. Twenty-one buildings are proposed for construction in this area under the MCON five-year construction program and three buildings are presently under construction. An additional steam demand in excess of 40,000 pounds/hour can be expected if all buildings are constructed.

c. The use of first year costs for electricity, fuel oil, and coal is questionable since the cost of these forms of energy can be expected to rise at a higher rate in comparison to operation and maintenance costs during subsequent years.

d. The use of steam absorption air conditioning should be considered in the study. Although not presently feasible at Camp Lejeune because of the lack of waste steam, the construction of the subject facility and the resulting excess steam availability should make steam absorption air conditioning feasible.

e. The assumption that the proposed dual water wall boilers will not be available for two and a half months per year for steam and electricity production is considered to be excessive.

f. Not considered in this study is the High Temperature Slagging Pyrolysis System (Andco-Torrax). This differs from the normal combustion processes in that it utilizes much higher temperatures and the only solid by-product of the process is a black, glassy slag aggregate which occupies 3-5% of the volume and 15-20% of the weight of the original refuse and is suitable for use in sand-blasting, road construction, etc. Also to be considered is that by using a high temperature system, disposal of PCBs, DDT, sludges and other hazardous materials may be possible.





10 JUL 1971

TO: Commanding General, 1st Marine Division, Camp Lejeune, North Carolina 28542  
FROM: Major General, 1st Marine Division, Camp Lejeune, North Carolina 28542  
SUBJECT: [Illegible]

1. Reference is made to the letterhead memorandum (LHM) dated 10 July 1971, captioned "Action Plan for the 1st Marine Division, Camp Lejeune, North Carolina 28542".

2. The LHM does not address the effect of proposed expansion of the 1st Marine Division in the vicinity of Camp Lejeune, North Carolina 28542. The proposed expansion is a result of the 1st Marine Division's requirement for additional living quarters and other facilities. The proposed expansion is a result of the 1st Marine Division's requirement for additional living quarters and other facilities.

3. The proposed expansion of the 1st Marine Division in the vicinity of Camp Lejeune, North Carolina 28542, is a result of the 1st Marine Division's requirement for additional living quarters and other facilities. The proposed expansion is a result of the 1st Marine Division's requirement for additional living quarters and other facilities.

4. The proposed expansion of the 1st Marine Division in the vicinity of Camp Lejeune, North Carolina 28542, is a result of the 1st Marine Division's requirement for additional living quarters and other facilities. The proposed expansion is a result of the 1st Marine Division's requirement for additional living quarters and other facilities.

5. The proposed expansion of the 1st Marine Division in the vicinity of Camp Lejeune, North Carolina 28542, is a result of the 1st Marine Division's requirement for additional living quarters and other facilities. The proposed expansion is a result of the 1st Marine Division's requirement for additional living quarters and other facilities.

6. The proposed expansion of the 1st Marine Division in the vicinity of Camp Lejeune, North Carolina 28542, is a result of the 1st Marine Division's requirement for additional living quarters and other facilities. The proposed expansion is a result of the 1st Marine Division's requirement for additional living quarters and other facilities.

FAC/JOH/joh  
6280  
15 Jul 1981

Subj: Contract N62470-80-B-3801, Solid and Wood Waste Burning and Cogeneration Study for Marine Corps Base, Camp Lejeune and Marine Corps Air Station, Cherry Point

g. The use of refuse derived fuel/municipal waste (RDF/MW) as an alternative energy source has received much attention in the area of energy conservation. The experiences of the Navy at Sewell Point however, have cast doubt on RDF/MW as a viable energy source. The High Temperature Slagging Pyrolysis System is currently being constructed for the Reddy Creek Utilities Company (Walt Disney World) in Florida with operations scheduled to begin in November 1981. As this facility is located in a highly visible, tourist-oriented area with stringent environmental controls, it would indicate that this process may result in the use of RDF/MW as an effective alternate energy source.

h. The assertion in the report that a detailed evaluation was conducted of the wood fuel potential at Camp Lejeune is not correct. On many occasions, the A&E, J. E. Serrine Company, was told that the wood product data they were using was out of date and would have limited value unless an up-to-date inventory was made. For example, the 1965-1975 management plan showed an annual allowable cut of 4400 MBF of saw timber and 17,536 cords of pulpwood. The 1975-1985 management plan used in the subject report shows an annual allowable cut of 8200 MBF of saw timber and 28,300 cords of pulpwood, an increase of approximately 85% for saw timber and 16% for pulpwood. This example indicates that for the wood fuel potential to have any validity, a new inventory to determine growing stock and to compute new annual growth rate with allowable annual cuts would be required.

i. Initiation of Phase II of the study is not recommended until a more detailed study of the wood source/supply, and of the other concerns addressed in this letter has been made.

2. For further information on this matter, please contact Colonel F. H. MOUNT, Base Maintenance Officer, Marine Corps Base, at extension AUV 484-2511.

K. P. MILLICE, Jr.  
By direction

Copy to:  
CMC (Code LFF-2)  
Blind Copy to:  
BMO  
PWO

1944  
The use of this form is optional and is not required for the purpose of this report.

The use of this form is optional and is not required for the purpose of this report. The use of this form is optional and is not required for the purpose of this report.

The use of this form is optional and is not required for the purpose of this report. The use of this form is optional and is not required for the purpose of this report.

The use of this form is optional and is not required for the purpose of this report. The use of this form is optional and is not required for the purpose of this report.

The use of this form is optional and is not required for the purpose of this report. The use of this form is optional and is not required for the purpose of this report.

Copy to:  
MMC (Code LFF-2)  
Blind Copy to:  
BMO  
PWO

MAIN/TH/rn  
6280

JUL 1 3 1981

From: Base Maintenance Officer  
To: Assistant Chief of Staff, Facilities

Subj: Contract N62470-80-B-3801, Solid and Wood Waste Burning and Cogeneration Study for MCB, Camp Lejeune, and MCAS, Cherry Point.

Ref: (a) AC/S, Fac ltr FAC/RCP/joh 6280 of 23 Jun 1981  
(b) Solid Waste and Wood Waste Burning and Cogeneration Options, Interim Report *(Jerry has this)*

1. As requested in reference (a), reference (b) has been reviewed by both the Base Maintenance Department and the Public Works Department, and the following comments are provided:

a. In reviewing reference (b), minor inconsistencies were found. These included the inclusion of tonnage of recycled paper in tables for one location but not the other or looking at ash disposal costs at one location but not the other. In order to develop a believable analysis all factors for both locations must be considered.

b. The study does not address the effect of proposed expansion of the French Creek area in the vicinity of the proposed waste burning plant site. Twenty-one buildings are proposed for construction in this area under the MCON five-year construction program and three buildings are presently under construction. An additional steam demand in excess of 40,000 pounds/hour can be expected if all buildings are constructed.

c. The use of first year costs for electricity, fuel oil, and coal is questionable since the cost of these forms of energy can be expected to rise at a higher rate in comparison to operation and maintenance costs during subsequent years.

d. The use of steam absorption air conditioning should be considered in the study. Although not presently feasible at Camp Lejeune because of the lack of waste steam, the construction of the subject facility and the resulting excess steam availability should make steam absorption air conditioning feasible.

e. The assumption that the proposed dual water wall boilers will not be available for two and a half months per year for steam and electricity production is considered to be excessive.

f. Not considered in this study is the High Temperature Slagging Pyrolysis System (Andco-Torrax). This differs from the normal combustion processes in that it utilizes much higher temperatures and the only solid by-product of the process is a black, glassy slag aggregate which occupies 3-5% of the volume and 15-20% of the weight of the original refuse and is suitable for use in sand-blasting, road construction, etc. Also to be considered is that by using a high temperature system, disposal of PCBs, DDT, sludges and other hazardous materials may be possible.

*2H*  
*WUE*

JUL 1 3 1981

(John Doe)

Handwritten mark

Faint, mostly illegible text covering the majority of the page, possibly representing a letter or document content.

Subj: Contract N62470-80-B-3801, Solid and Wood Waste Burning and Cogeneration Study for MCB, Camp Lejeune, and MCAS, Cherry Point

g. The use of refuse derived fuel/municipal waste (RDF/MW) as an alternate energy source has received much attention in the area of energy conservation. The experiences of the Navy at Sewell Point however, have cast doubt on RDF/MW as a viable energy source. The High Temperature Slagging Pyrolysis System is currently being constructed for the Reedy Creek Utilities Company (Walt Disney World) in Florida with operations scheduled to begin in November 1981. As this facility is located in a highly visible, tourist-oriented area with stringent environmental controls, it would indicate that this process may result in the use of RDF/MW as an effective alternate energy source.

h. The assertion in the report that a detailed evaluation was conducted of the wood fuel potential at Camp Lejeune is not correct. On many occasions, the A&E, J. E. Sirrine Company, was told that the wood product data they were using was out of date and would have limited value unless an up-to-date inventory was made. For example, the 1965-1975 management plan showed an annual allowable cut of 4400 MBF of saw timber and 17,536 cords of pulpwood. The 1975-1985 management plan used in the subject report shows an annual allowable cut of 8200 MBF of saw timber and 20,300 cords of pulpwood, an increase of approximately 85% for saw timber and 16% for pulpwood. This example indicates that for the wood fuel potential to have any validity, a new inventory to determine growing stock and to compute new annual growth rate with allowable annual cuts would be required.

i. Initiation of Phase II of the study is not recommended until a more detailed study of the wood source/supply, and of the other concerns addressed in this letter has been made.

F. H. MOUNT

UNITED STATES DEPARTMENT OF JUSTICE  
FEDERAL BUREAU OF INVESTIGATION

MEMORANDUM FOR THE DIRECTOR  
SUBJECT: [Illegible]

[Illegible text block]

[Illegible text block]

[Illegible text]

## ROUTING SLIP

JUL 2 1 1981

ACTION INFO INITIAL

ACTION	INFO	INITIAL
BMO		✓ M
ABMO		✓
ADMIN		✓
ENVIRON AFF		S
F&A BRANCH		
MAINT NCO		
M&R		
OPNS		
PROP		
TELE		
UMACS		
UTIL		✓ T-0420
SECRETARY		

COMMENTS:





JUL 18 1964

*Mount*



DEPARTMENT OF THE NAVY  
HEADQUARTERS UNITED STATES MARINE CORPS  
WASHINGTON, D.C. 20380

IN REPLY REFER TO  
LFF-2:EGB:yum  
8 JUL 1981

From: Commandant of the Marine Corps  
To: Commander, Atlantic Division, Naval Facilities Engineering  
Command, Norfolk, VA 23511

Subj: Solid and Wood Waste Burning and Cogeneration Study,  
Contract N62470-80-B-3801 at Marine Corps Base, Camp  
Lejeune and Marine Corps Air Station, Cherry Point

Ref: (a) LANTNAVFACENCOM ltr 111:JDT over 4101 of 18 Jun 81  
w/enclosure  
(b) LANTNAVFACENCOM ltr 111:JDT over 11010 of 18 Mar 80  
w/enclosure

1. This Headquarters has reviewed the interim report forwarded by reference (a) in relation to the scope of work outlined by reference (b). The following comments are provided:

a. The report does not address the availability of brush and residue from precommercial thinning operations. Procedures for harvesting brush and young trees have been established by the U.S. Forest Service, Southern Forest Experiment Station in Pineville, Louisiana and the Georgia-Pacific Corporation in Hattiesburg, Mississippi. These procedures should be evaluated within the scope of the study.

b. The report does not address the problems of moisture content, storage and transportation of wood chips which are produced from green stems or cord wood.

c. The report does not address the heat content and moisture content of available wood waste, recycled paper and solid waste; method of removing non-burnables; or provide sufficient details on the options considered.

2. It is requested that the above comments be considered and resolved prior to the final report preparation.

Frank E. PETERSEN  
By direction

Copy to:  
CG, MCAS Cherry Point NC  
CG, MCB Camp Lejeune NC

*[Faint handwritten text]*

*[Small handwritten mark]*

**PUBLIC WORKS DEPARTMENT**  
**Marine Corps Base**  
**Camp Lejeune, North Carolina 28542**

Date 9 July 1981

**MEMORANDUM**

**From:** Design Division Director

**To:** T. Hatcher, Utilities Director

**Subj:** Solid & Wood Waste Burning & Cogeneration Study

1. Forwarded per phonecon.

*JHPC*  
JOHN H. P. CRESSMAN



PUBLIC WORKS DEPARTMENT  
BUILDING 1005, MARINE CORPS BASE  
CAMP LEJEUNE, NORTH CAROLINA 28542

In reply refer to

PWO:04:JHPC:hf  
11000  
25 June 1981

MEMORANDUM

From: Public Works Officer  
To: Base Maintenance Officer

Subj: Contract N62470-80-B-3801, Solid and Wood Waste Burning and Cogeneration Study for MCB, Camp Lejeune, and MCAS, Cherry Point

Ref: (a) COMLANTNAVFACENGCOM ltr 111:JDT 4101 of 18 Jun 81  
(b) Feasibility Study, Solid Waste and Wood Burning and Cogeneration Options  
(c) AC/S, Fac ltr FAC/RCP/joh 6280 of 23 Jun 81

1. Reference (a) forwarded reference (b) for review and comments. These comments are provided in accordance with reference (c).

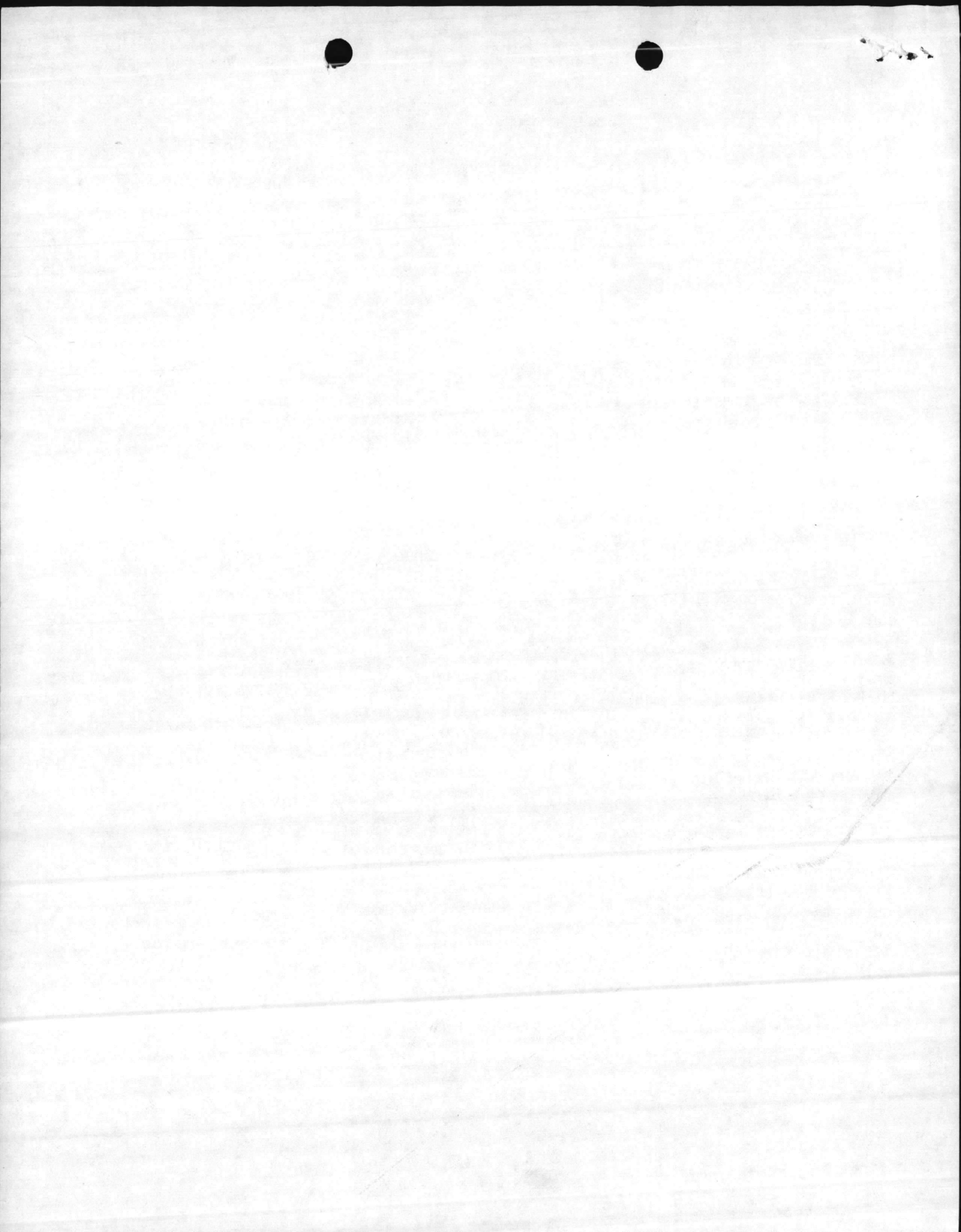
2. In reviewing reference (b), minor inconsistencies were found. These included the inclusion of tonnage of recycled paper in tables for one location but not the other or looking at ash disposal costs at one location but not the other. In order to develop a believable analysis all factors for both locations must be considered.

3. Not considered in this study is the High Temperature Slagging Pyrolysis System (Andco-Torrax). This differs from the normal combustion processes in that it utilizes much higher temperatures and the only solid by-product of the process is a black, glassy slag aggregate which occupies 3-5% of the volume and 15-20% of the weight of the original refuse and is suitable for use in sand-blasting, road construction, etc. Also to be considered is that by using a high temperature system, disposal of PCBs, DDT, sludges and other hazardous materials may be possible.

4. The use of refuse derived fuel/municipal waste (RDF/MW) as an alternate energy source has received much attention in the area of energy conservation. The experiences of the Navy at Sewell Point however, have cast doubt on RDF/MW as a viable energy source. The High Temperature Slagging Pyrolysis System is currently being constructed for the Reedy Creek Utilities Co. (Walt Disney World) in Florida with operations scheduled to begin in November 1981. As this facility is located in a highly visible, tourist-oriented area with stringent environmental controls, it would indicate that this process may result in the use of RDF/MW as an effective alternate energy source.

JOHN H. P. CRESSMAN  
By direction

Copy to:  
AC/S, Fac



UNITED STATES MARINE CORPS  
Marine Corps Base  
Camp Lejeune, North Carolina 28542

FAC/RCP/joh  
6280  
23 June 1981

From: Assistant Chief of Staff, Facilities  
To: Base Maintenance Officer

Subj: Solid and Wood Waste Burning and Cogeneration Study at MCB, Camp  
Lejeune and MCAS, Cherry Point

Ref: (a) J. E. Serrine Co. Interim Rpt on subj study  
(b) LANTNAVFACENCOM ltr 111:JDT 4101 of 18 Jun 81 to CG, MCB, CLNC  
and CG, MCAS, CPNC, same subj

1. Reference (a) was forwarded to this Base as an enclosure to reference (b), which lists the Directors of your Utilities Division and Natural Resources Division to receive a copy.
2. It is requested in reference (b) that reference (a) be reviewed and that review comments be forwarded to LANTNAVFACENCOM no later than 22 July 1981.
3. Accordingly, it is requested that you coordinate with the Public Works Officer as appropriate, and that you take the lead action in submitting the review comments as requested in reference (b) *x to this office.*

*K. P. Millice*  
K. P. MILLICE, Jr.

Copy to:  
PWO



UNITED STATES MARINE CORPS  
Marine Corps Base  
Camp Lejeune, North Carolina 28542

FACTS/Job  
7200  
23 June 1981

From: Assistant Chief of Staff, Facilities  
To: Base Maintenance Officer

Subject: Solid and Liquid Waste Burning and Generation Study at MCB, Camp  
Lejeune and MCB, Cherry Point

Let: (a) G. E. Servino Co. Interim Rpt on subj study  
(b) LANTHAFACEDCOM JET III:ET 4101 of 10 Jun 81 to CG, HQT, CLIC  
and CG, MCB, CP, same subj

1. Reference (a) was forwarded to this Base as an enclosure to reference (b), which lists the Director of your Utilities Division and Natural Resources Division to receive a copy.

2. If its requested in reference (b) that reference (a) be reviewed and that review comments be forwarded to LANTHAFACEDCOM no later than 22 July 1981.

3. Accordingly, it is requested that you coordinate with the Public Works Officer as appropriate, and that you take the lead action in submitting the review comments as requested in reference (b).

*K. P. Millice*  
K. P. MILLICE, JR.

Copy to:  
PIO



DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

TELEPHONE NO.

AUTOVON 690-7877

IN REPLY REFER TO:

111:JDT

4101

1 8 JUN 1981

From: Commander, Atlantic Division, Naval Facilities Engineering Command  
To: Commanding General, Marine Corps Base, Camp Lejeune  
Commanding General, Marine Corps Air Station, Cherry Point

Subj: Solid and wood waste burning and cogeneration study, contract  
N62470-80-B-3801 at Marine Base, Camp Lejeune and Marine Corps Air  
Station, Cherry Point

Encl: (1) J.E. Serrine Company ltr of 9 Jun 1981  
(2) J.E. Serrine Company Interim Report

1. Enclosure (1) is forwarded for your information.
2. Enclosure (2) is forwarded for your review and comments. Review comments regarding enclosure (2) should be forwarded to LANTNAVFACENGCOM no later than 10 July 1981. LANTNAVFACENGCOM points of contact are Mr. J.D. Torma, (804) 444-7877, AUTOVON 690-7877, or FTS 954-7877 or Mr. P.D. Meligonis, (804) 444-4808, AUTOVON 690-4808 or FTS 954-4808.
3. Please note that enclosure (2) expresses the views and opinions of the contractor and transmittal of enclosure (2) is not indicative of acceptance or approval of enclosure (2) by LANTNAVFACENGCOM.

R. D. CROWSON  
By direction

Copy to:  
Veneta, Inc. (advance copy of encl 2 forwarded)  
3705 Sleepy Hollow Road  
Falls Church, VA 22041

Facilities Engineering Department  
Stop 7, Building 80  
Attn: Mr. Joe Reilly  
Marine Corps Air Station  
Cherry Point, NC 28533

Deputy, Facilities Maintenance Officer  
Facilities Maintenance Department  
Stop 5  
Marine Corps Air Station  
Cherry Point, NC 28533

(Continued on page 2)

JUN 8 1981

R. D. CROMBIE  
BY DIRECTOR

Copy to: (continued)  
Installation and Logistics Directorate  
Natural Resources and Environmental  
Affairs Division  
Marine Corps Air Station  
Cherry Point, NC 28533

Assistant Chief of Staff of Facilities  
Building 1  
Marine Corps Base  
Camp Lejeune, NC 28542

Utilities Division Director  
Base Maintenance Department  
Building 1202  
Marine Corps Base  
Camp Lejeune, NC 28542

Public Works Officer  
Building 1005  
Marine Corps Base  
Camp Lejeune, NC 28542

Natural Resource Division Director  
Maintenance Department  
Building 1103  
Marine Corps Base  
Camp Lejeune, NC 28542

Department of the Army  
U.S. Army Facilities Engineering Support Agency  
FESA-TS  
Fort Belvoir, VA 22060

Director  
Southeastern Forest Experimental Station  
U.S. Forrest Service  
P. O. Box 2570  
Asheville, NC 28802

North Carolina State  
Division of Forest Resources  
Department of Natural & Economic Resources  
P. O. Box 27687  
Raleigh, NC 27611

ATTN: L.B. McGee/H.J. Green

(continued on page 3)

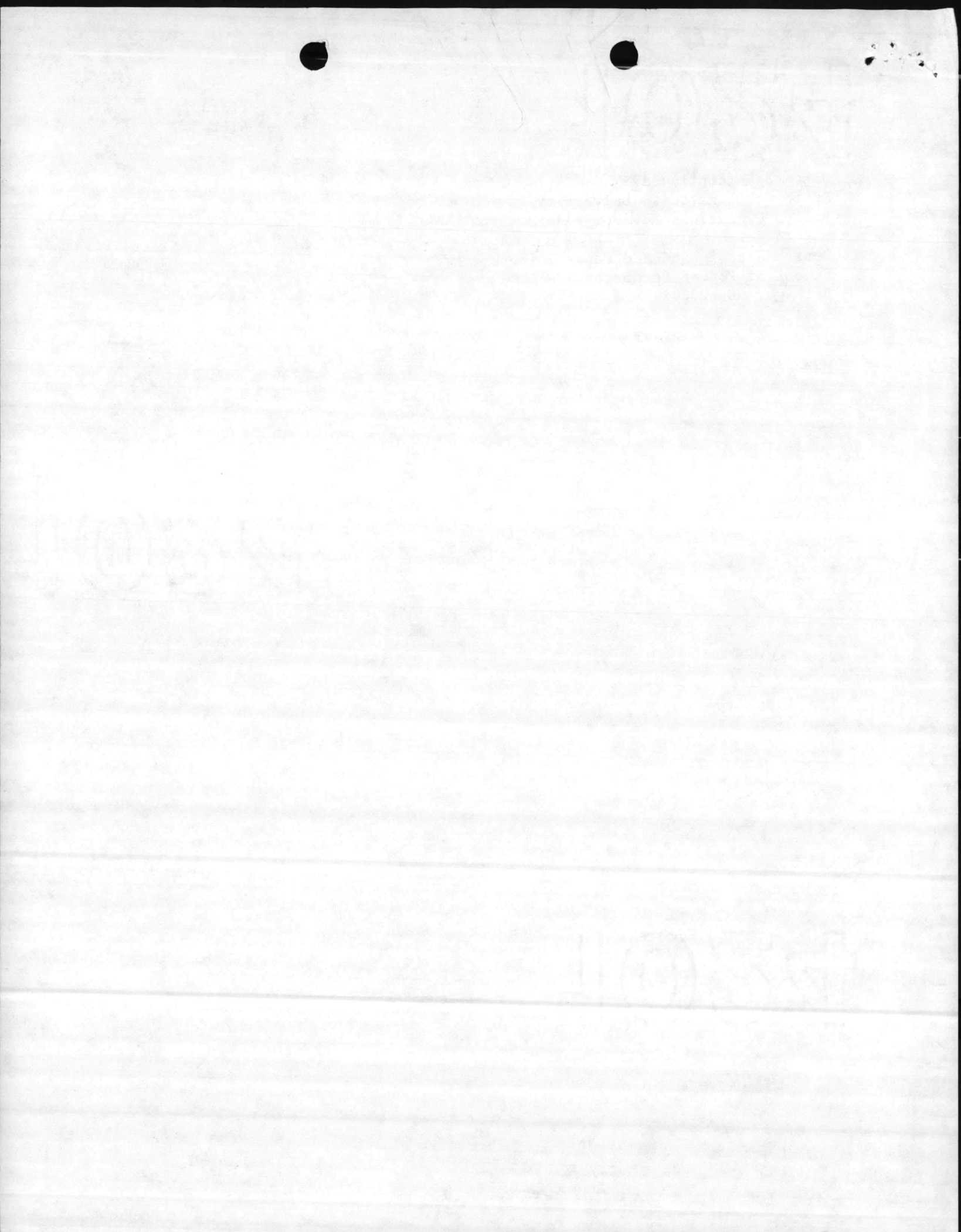


111:JDT  
4101

Copy to: (continued)  
North Carolina State University  
Boiler Operations Advisor and Research  
Technician  
Department of Wood and Paper Science  
School of Forest Resources  
Raleigh, NC 27607

ATTN: Mr. J. O'Grady

QMC (Code LFF2)



ESTABLISHED 1902



POST OFFICE BOX 12748 RESEARCH TRIANGLE PARK NORTH CAROLINA 27709 TELEPHONE (919) 541-2081

June 9, 1981

Department of the Navy  
Commander, Atlantic Division  
Naval Facilities Engineering Command  
Norfolk, Virginia 23511

Attention: Mr. Jim Torma

Subject: Department of the Navy  
Feasibility Study for Solid  
Waste and Wastewood Burning  
and Cogeneration Options  
MARCORB Camp Lejeune and  
MCAS Cherry Point, N. C.  
Contract No. N-6240-80-B-3801  
Sirrine Job No. R-1628

Gentlemen:

Enclosed are ten (10) copies of the Interim Report - Feasibility Study for Solid Waste and Wastewood Burning and Cogeneration Options - MARCORB Camp Lejeune and Cherry Point, N. C.

The enclosed Interim Report fulfils the requirements of Phase I of Contract No. N-6240-80-B-3801.

We recommend that a meeting be scheduled after the Department of the Navy personnel have had an opportunity to review the report. The purpose of the meeting will be to discuss the findings and recommendations contained in the report and to formulate direction for proceeding in Phase II of the contract.

Very truly yours,

J. E. SIRRINE COMPANY

A handwritten signature in cursive script that reads "G. J. Freeman".

G. J. Freeman, P. E.

GJF/jos

Enclosures

cc: Project File

Enclosure /







DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

TELEPHONE NO.  
AUTOVON 690-7877  
IN REPLY REFER TO:

111:JDT  
11010

16 APR 1981

From: Commander, Atlantic Division, Naval Facilities Engineering Command  
To: Commanding General, Marine Corps Base, Camp Lejeune  
Commanding General, Marine Corps Air Station, Cherry Point

Subj: Solid and Wood Waste Burning and Cogeneration Study, Contract  
N62470-80-B-3801 at Marine Corps Base, Camp Lejeune, and Marine  
Corps Air Station, Cherry Point

Encl: (1) J. E. Surrine Company History Report (No. 4) of 6 April 1981  
of the 2 April 1981 Draft Interim Report Meeting held at  
LANTNAVFACENCOM

1. Enclosure (1) is forwarded for your information. Per enclosure (1),  
the interim report will be completed by the J. E. Surrine Company the last  
week in April. The interim report will be widely distributed for review  
comments.

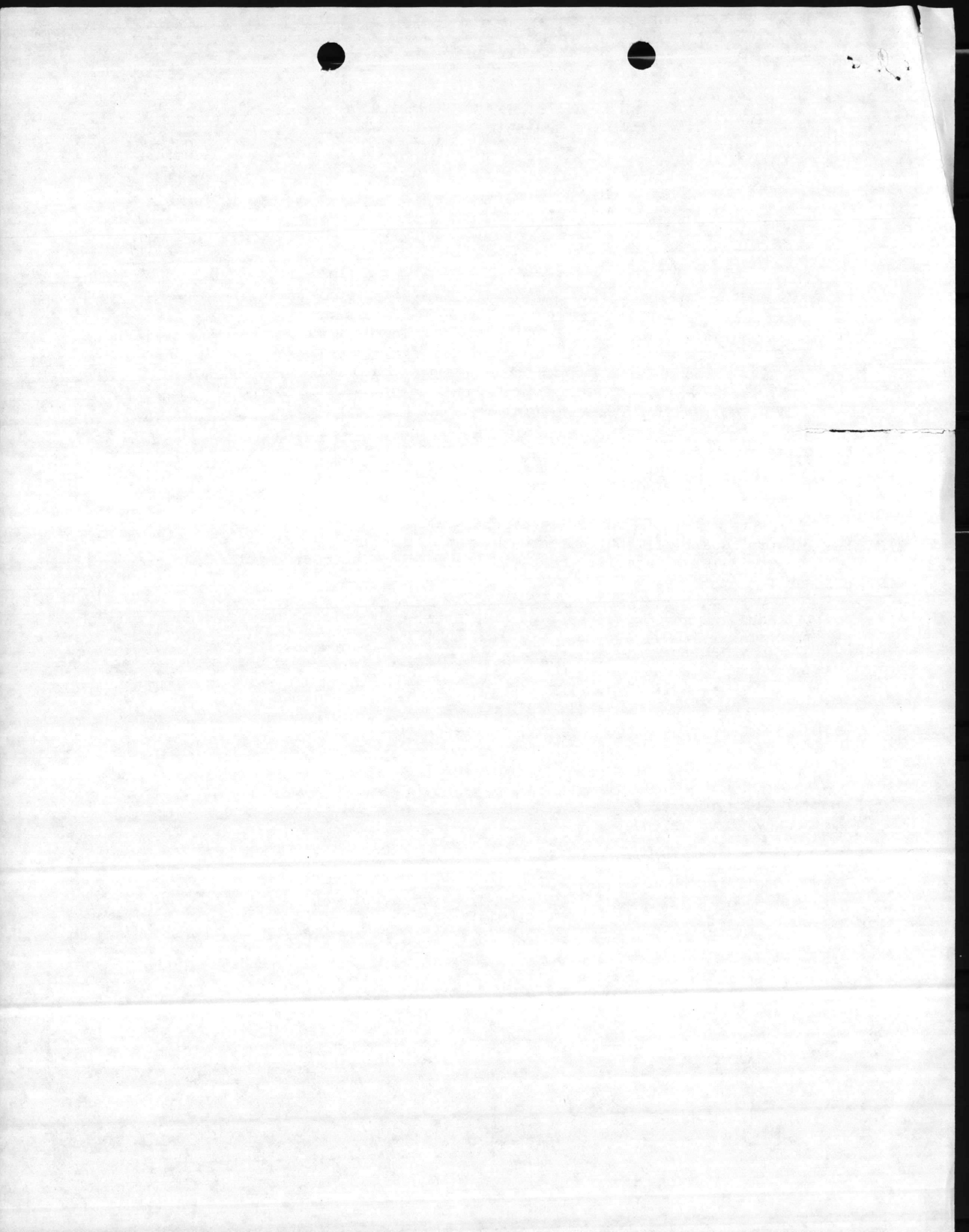
2. If there are any questions regarding this study, please contact  
Mr. J. D. Torma, (804) 444-7877, AUTOVON 690-7877 or FTS 954-7877.

R. D. CROWSON  
By direction

Copy to:  
Vineta, Inc.  
3705 Sleepy Hollow Road  
Falls Church, VA 22041

Facilities Engineering Dept.  
Stop 7, Building 80  
Attn: Mr. Joe Reilly  
Marine Corps Air Station  
Cherry Point, NC 28533

Deputy, Facilities Maintenance Officer  
Facilities Maintenance Department  
Stop 5  
Marine Corps Air Station  
Cherry Point, NC 28533



111:JDT  
11010

Copy to: (con't)  
Installation and Logistics Directorate  
Natural Resources and Environmental  
Affairs Division  
Marine Corps Air Station  
Cherry Point, NC 28533

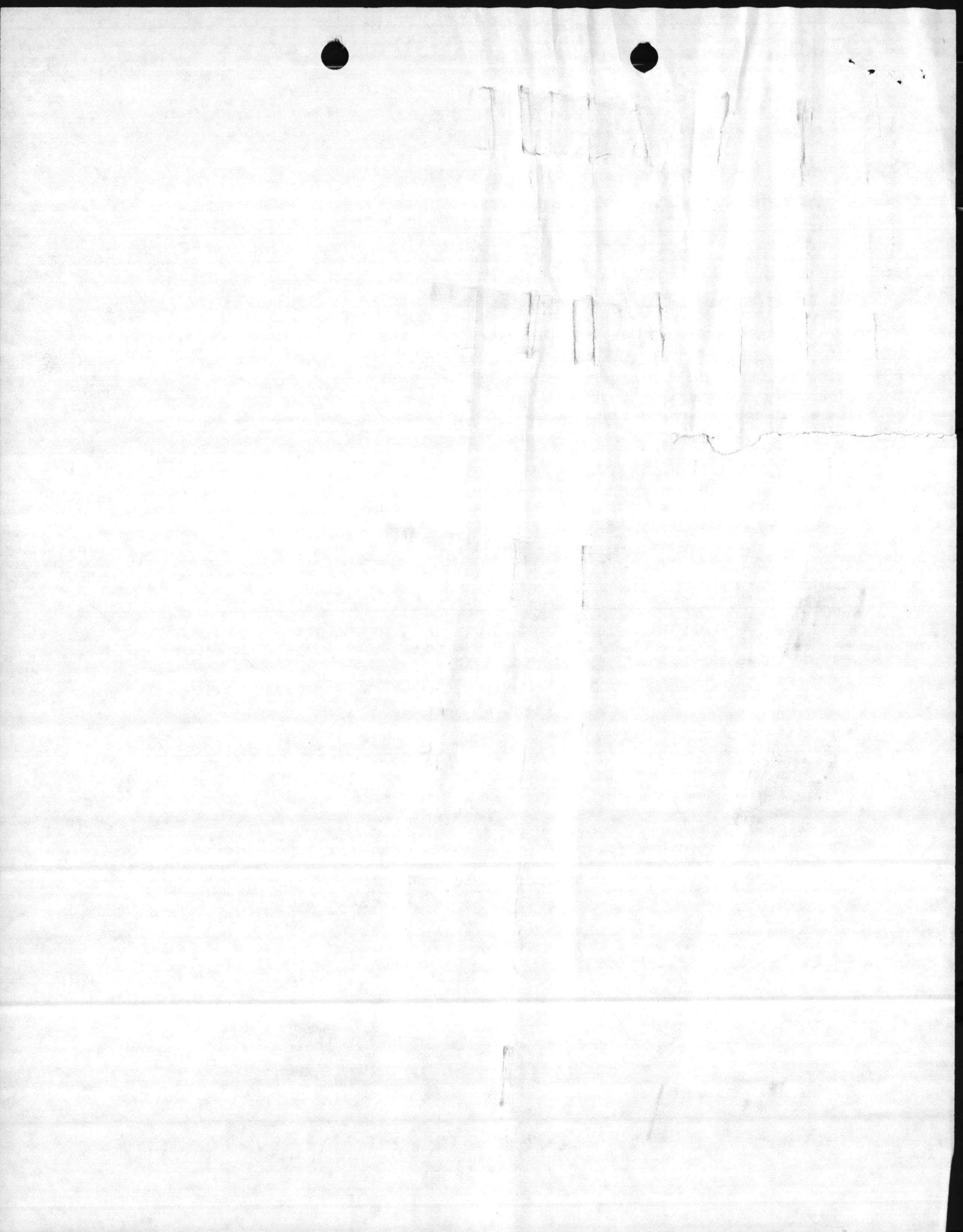
Assistant Chief of Staff of Facilities  
Building 1  
Marine Corps Base  
Camp Lejeune, NC 28542

Utilities Division Director  
Base Maintenance Department  
Building 1202  
Marine Corps Base  
Camp Lejeune, NC 28542

Public Works Officer  
Building 1005  
Marine Corps Base  
Camp Lejeune, NC 28542

Natural Resource Division Director  
Maintenance Department  
Building 1103  
Marine Corps Base  
Camp Lejeune, NC 28542

CMC (Code LFF2)  
COMNAVFACENGCOM (Code 111B) (Two Copies)



April 6, 1981

HISTORY NO. 4

Department of the Navy  
 Atlantic Division  
 Naval Facilities Engineering Command  
 Feasibility Study for Solid Waste and  
 Wood Waste Burning and Cogeneration Options  
 Marine Corps Base, Camp Lejeune  
 Marine Corps Air Station, Cherry Point  
 Contract N62470-80-B-3801

Sirrinc Job No. R-1628

Date: April 2, 1981

Place: NAVFAC Headquarters, Norfolk, Virginia

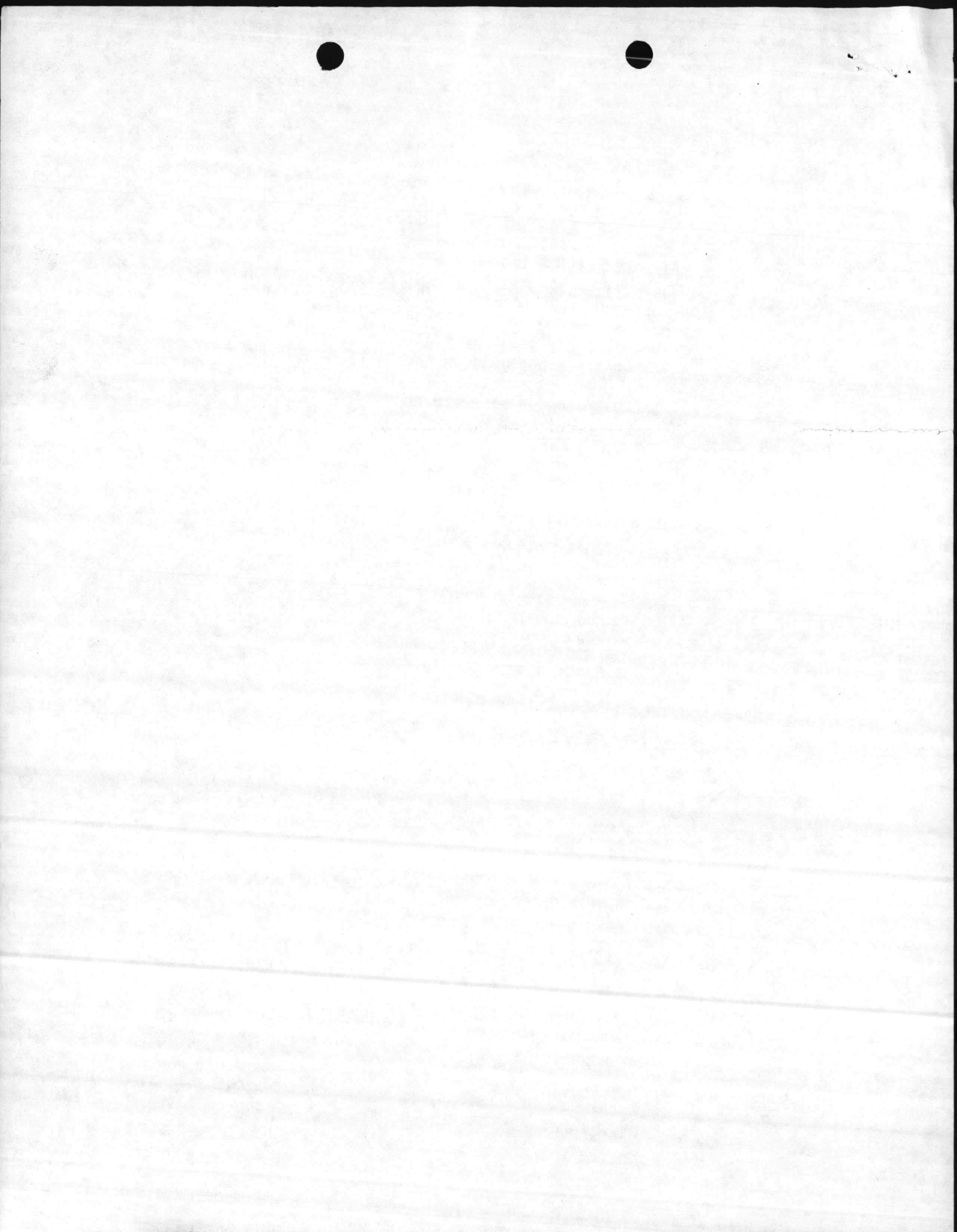
Present for: Department of the Navy  
 Mr. Dennis Meligonis  
 Mr. Charles Thompson (part-time)  
 Mr. Jim Torma  
 Mr. Jerry Wallmeyer  
 Mr. Joe Watson

Vineta, Inc. (Consultant to NAVFAC)  
 Mr. Heinz Gorges

J. E. Sirrine Co.  
 Mr. Jake Freeman  
 Mr. W. A. Koos  
 Ms. Robin Spinks

Purpose of Meeting: To discuss the rough draft of the Phase I Interim Report.

1. The availability factor for the boilers should be 80-85% making the yearly hours of operation approximately 7000 hours as opposed to 8450 hours proposed.
2. The proposed installations should utilize multiple units to reduce the problem of refuse build-up during a maintenance outage.
3. State in the Interim Report that front end classification is not included in the proposed installations.
4. All labor costs used should include overhead in addition to salary.
5. The present CP&L rate schedule should be used to evaluate any co-generation option.



HISTORY NO. 4

Department of the Navy  
Sirrinc Job No. R-1628  
April 6, 1981  
Page Two

6. The displaced fuel mixture for Cherry Point should be 60% coal and 40% oil. Camp Lejeune will be 75% coal and 25% oil.
7. The proposed installations for utilizing wood show an excess capacity for steam at Camp Lejeune in the summer months. The future growth of the Hadnot Point area will be evaluated and the increased use of absorption chillers studied. The Report will assume that the gap between proposed steam production and present usage will be filled.
8. The personnel required to conduct the wood utilization should be included in the operating costs.
9. Precipitators will be utilized for any proposed boiler and wet scrubbers will be utilized on the proposed dual chamber incinerator.
10. A single page summary sheet for all the options should be included.
11. The Interim Phase I Report will be complete the last week in April.

J. E. SIRRINE COMPANY

*G. J. Freeman*  
G. J. Freeman, P. E.

GJF/jos

cc: Mr. Jim Torma (6)  
Power Dept.  
Planning  
Project Manager





4 2 4



DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

*File*  
724  
2001  
TELEPHONE NO.  
AUTOVON 690-7877  
IN REPLY REFER TO:

111:JDT  
11300

30 MAR 1981

From: Commander, Atlantic Division, Naval Facilities Engineering Command  
To: Commanding General, Marine Corps Base, Camp Lejeune  
Commanding General, Marine Corps Air Station, Cherry Point

✓ Subj: Solid and Wood Waste Burning and Co-generation Study, Contract No. 80-B-3801 at Marine Corps Base, Camp Lejeune, and Marine Corps Air Station, Cherry Point

Encl: (1) J. E. Sirrine Company Progress Report No. 5 of 20 Mar 1981

1. Enclosure (1) is forwarded for your information.
2. If there are any questions regarding this study, please contact Mr. J. E. Torma, (804) 444-7877, AUTOVON 690-7877, or FTS 954-7877.

J. R. BAILEY  
By direction

Copy to:  
Vineta, Inc.  
3705 Sleepy Hollow  
Falls Church, VA 22041

Facilities Engineering Dept.  
Stop 7, Building 80  
Attn: Mr. Joe Reilly  
Marine Corps Air Station  
Cherry Point, NC 28533

Deputy, Facilities Maintenance Officer  
Facilities Maintenance Department  
Stop 5  
Marine Corps Air Station  
Cherry Point, NC 28533

Installation and Logistics Directorate  
Natural Resources and Environmental  
Affairs Division  
Marine Corps Air Station  
Cherry Point, NC 28533

30 MAR 1988

(Copy to continued)

Assistant Chief of Staff of Facilities  
Building 1  
Marine Corps Base  
Camp Lejeune, NC 28542

Utilities Division Director  
Base Maintenance Department  
Building 1202  
Marine Corps Base  
Camp Lejeune, NC 28542



Public Works Officer  
Building 1005  
Marine Corps Base  
Camp Lejeune, NC 28542

Natural Resource Division Director  
Base Maintenance Department  
Building 1103  
Marine Corps Base  
Camp Lejeune, NC 28542

CMC (Code LFF2)  
COMNAVFACENGCOM (Code 111B) (two copies)



ESTABLISHED 1902



J. E. SIRRINE COMPANY

ARCHITECTS

ENGINEERS

PLANNERS

POST OFFICE BOX 12748 RESEARCH TRIANGLE PARK, NORTH CAROLINA 27709 TELEPHONE (919) 541-2081

March 20, 1981

Department of the Navy  
Commander, Atlantic Division  
Naval Facilities Engineering Command  
Norfolk, Virginia 23511

Attention: Mr. Jim Torma

Subject: Department of the Navy  
Cogeneration Study  
MCB Camp Lejeune and  
MCAS Cherry Point, N. C.  
Contract N62470-80-B-3801  
Sirrinc Job No. R-1628  
Progress Report No. 5

Gentlemen:

The following summarizes the status of the project as of March 19, 1981:

- A. Engineering Status  
The "draft" of the interim report will be mailed to Naval Engineering Facilities Command on March 20, 1981 for review.
- B. Meetings Held  
None
- C. Meetings Scheduled  
Review meeting on interim report "draft" with Naval Engineering Facilities Command on April 1, 1981.
- D. Information Needed  
None
- E. Major Activities in March and April
  1. Completion of interim report incorporating Naval Engineering Facilities Command comments on "draft" copy.
  2. Submittal of interim report for distribution to all concerned.
  3. Initiation of Phase II of the study after selection of alternative(s) by the Department of the Navy.
- F. General  
It is estimated that Phase I - Interim Report - of the project is 90% complete.



Department of the Navy  
Sirrinc Job No. R-1628  
March 20, 1981  
Page Two

Very truly yours,

J. E. SIRRINE COMPANY

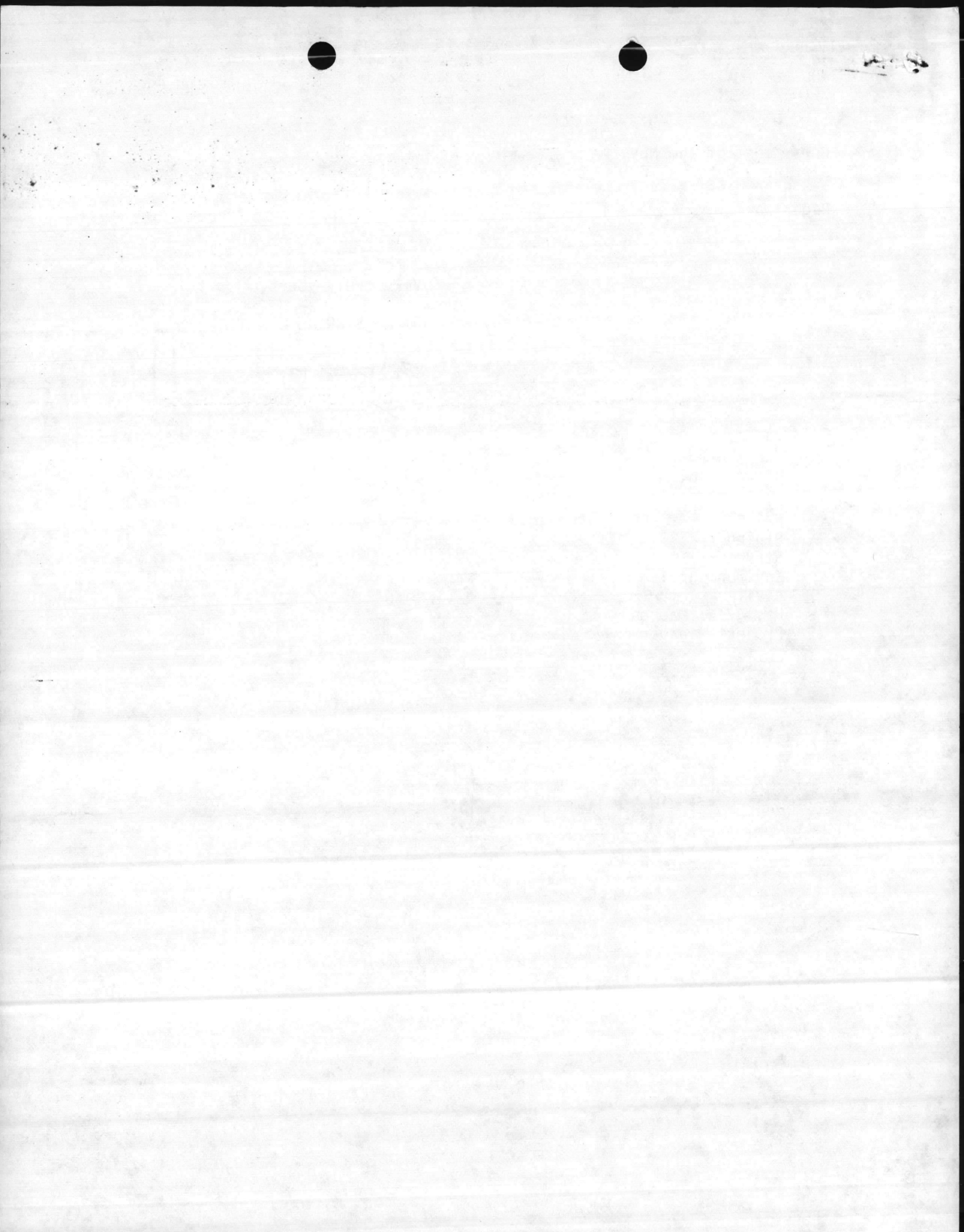
*G. J. Freeman*

G. J. Freeman, P. E.

GJF/jos

cc: Power  
Material Handling  
Planning  
E/I  
Piping  
Structural  
Environmental  
Civil  
Mr. J. H. Machen  
Project Manager







DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

7H  
TELEPHONE NO. F-6  
AUTOVON 690-7877  
IN REPLY REFER TO: 8200  
111:JDT  
11300

23 FEB 1981

From: Commander, Atlantic Division, Naval Facilities Engineering Command  
To: Commanding General, Marine Corps Base, Camp Lejeune  
Commanding General, Marine Corps Air Station, Cherry Point

Subj: Solid and Wood Waste Burning and Co-generation Study, Contract  
No. 80-B-3801 at Marine Corps Base, Camp Lejeune, and Marine  
Corps Air Station, Cherry Point

Ref: (a) FONECON MCAS CHERRY POINT (Mr. F. Bowling)/LANTNAVFACENGCOM  
(Mr. J. Torma) of 17 Feb 1981  
(b) FONECON J.E. Serrine Company (Mr. G. Freeman)/LANTNAVFACENGCOM  
(Mr. J. Torma) of 20 Feb 1981

Encl: (1) J.E. Serrine Company Progress Report No. 4 of 11 Feb 1981

1. Enclosure (1) is forwarded for your information.
2. Per references (a) and (b), No. 6 fuel oil costs and coal/oil mix for Marine Corps Air Station, Cherry Point, have been updated for the study to \$.87/gal and 60/40, respectively.
3. If there are any questions regarding this study, please contact Mr. J.D. Torma, (804) 444-7877, AUTOVON 690-7877, or FTS 954-7877.

R. D. CROWSON  
By direction

Copy to:  
Vineta, Inc.  
3705 Sleepy Hollow Road  
Falls Church, VA 22041

Director  
Facilities Engineering Department  
Stop 7, Building 80  
Marine Corps Air Station  
Cherry Point, NC 28533  
Attention: Mr. Joe Reilly

(Copy to: See page two)

1881

(Copy to: Continued)

Deputy, Facilities Maintenance Officer  
Facilities Maintenance Department  
Stop 5  
Marine Corps Air Station  
Cherry Point, NC 28533

Installation and Logistics Directorate  
Natural Resources and Environmental  
Affairs Division  
Marine Corps Air Station  
Cherry Point, NC 28533

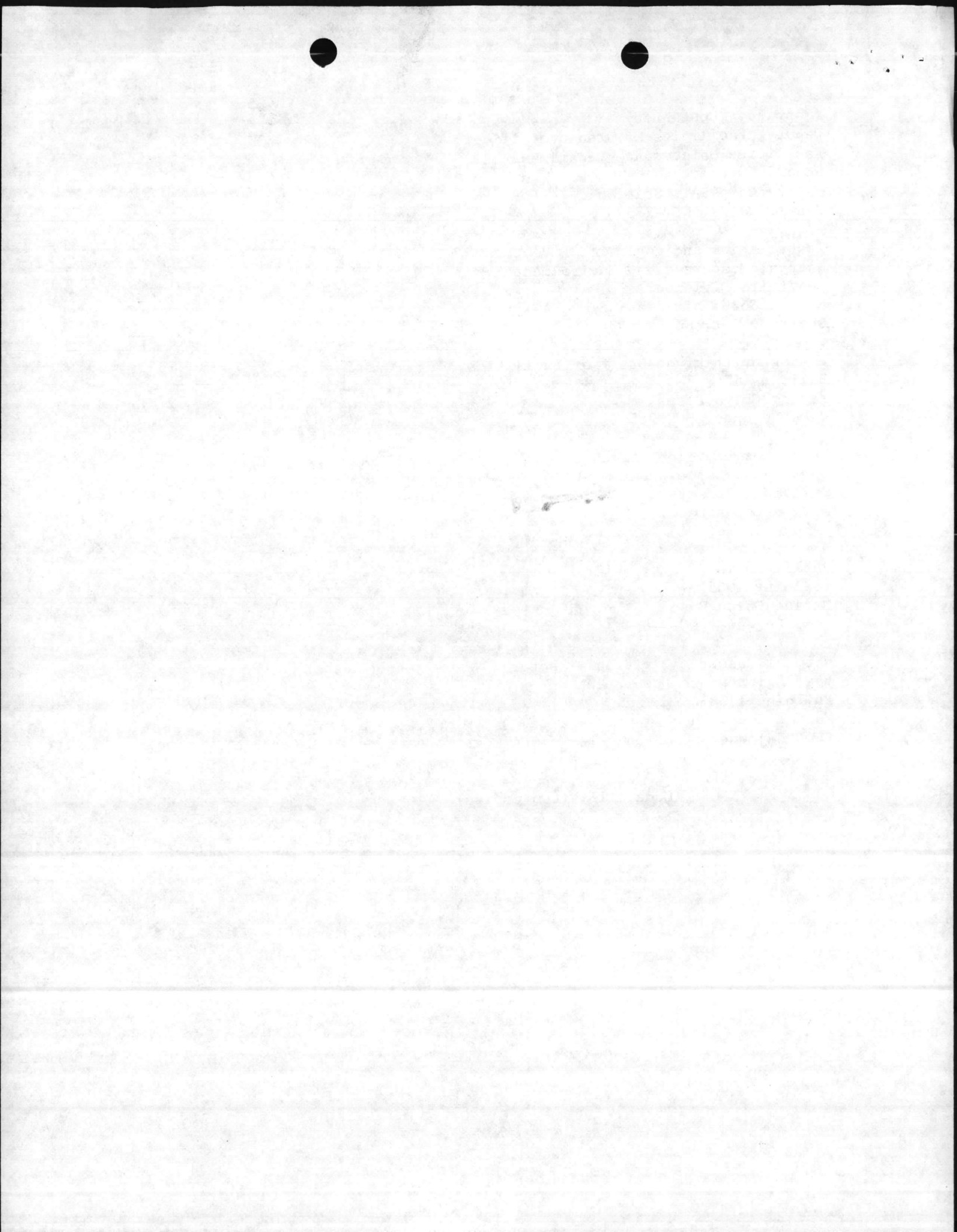
Assistant Chief of Staff of Facilities  
Building 1  
Marine Corps Base  
Camp Lejeune, NC 28542

Utilities Division Director  
Base Maintenance Department  
Building 1202  
Marine Corps Base  
Camp Lejeune, NC 28542

Public Works Officer  
Building 1005  
Marine Corps Base  
Camp Lejeune, NC 28542

Natural Resource Division Director  
Base Maintenance Department  
Building 1103  
Marine Corps Base  
Camp Lejeune, NC 28542

CMC (Code LFF2)  
COMNAVFACENGCOM (Code 111B) (two copies)



REC'D 2/17/81  
1111

ESTABLISHED 1902



POST OFFICE BOX 12748 RESEARCH TRIANGLE PARK, NORTH CAROLINA 27709 TELEPHONE (919) 541-2081

February 11, 1981

Department of the Navy  
Atlantic Division  
Naval Facilities Engineering Command  
Norfolk, Virginia 23511

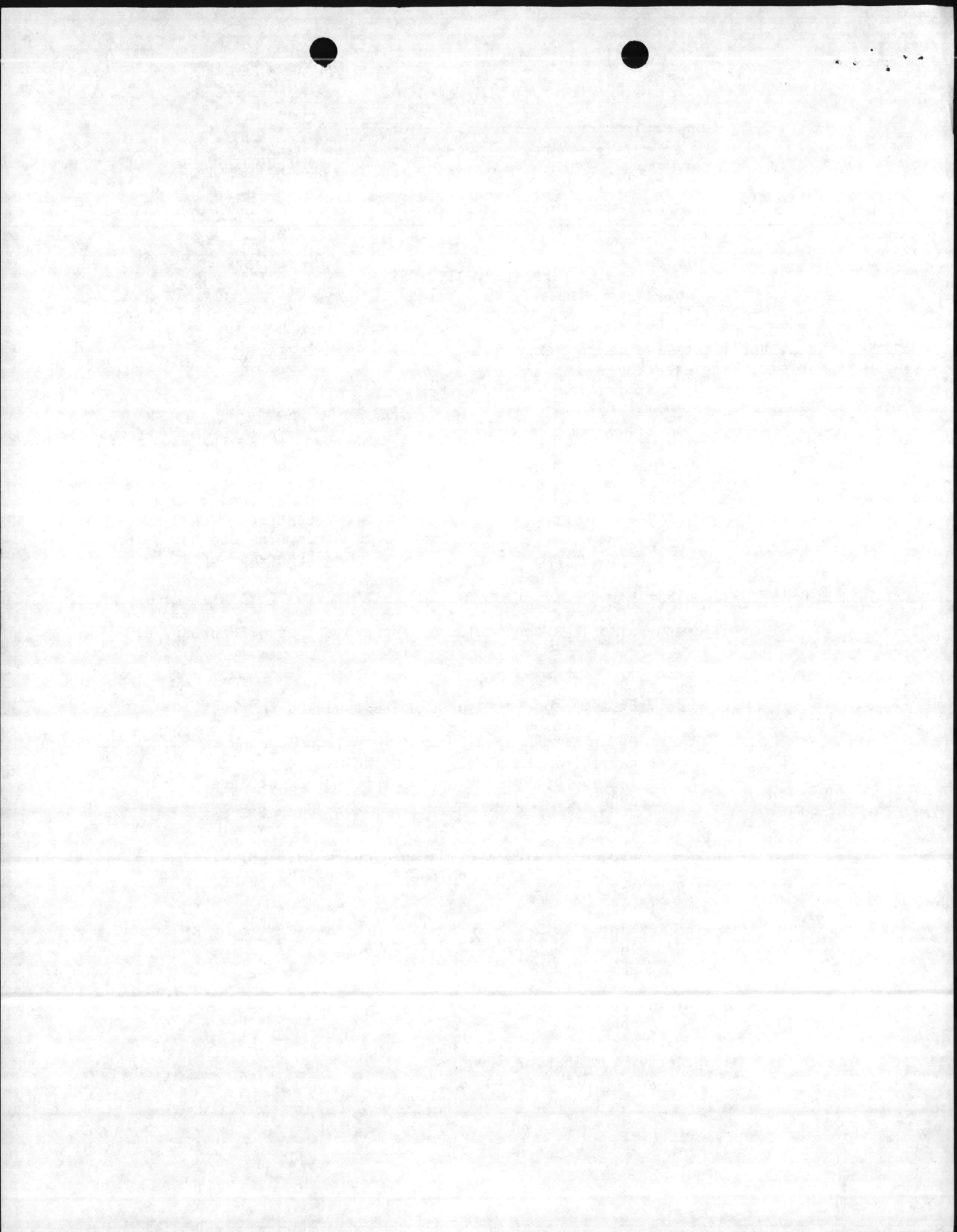
Attention: Mr. Jim Torma

Subject: Dept. of the Navy  
Cogeneration Study  
MCB Camp Lejeune and MCA3  
Cherry Point, N. C.  
Contract N62470-80-B-3801  
Sirrinc Job No. R-1628  
Progress Report No. 4

Gentlemen:

The following summarizes the status of the project as of February 6, 1981:

- A. Engineering Status  
Systems concepts for Camp Lejeune and Cherry Point are being finalized.  
Order of magnitude cost for fuel supply and capital improvements are being made.  
Initial activities on the interim report have begun.
- B. Meetings Held  
Project review meeting on January 13, 1981 at Naval Facilities Engineering, Norfolk, Va. (See History No. 3).
- C. Meetings Scheduled  
Interim report review in late February or early March.
- D. Information Needed  
None.
- E. Major Activities in February  
Complete Interim Report.



Department of the Navy  
Sirriner Job No. R-1628  
February 11, 1981  
Page Two

F. General

The scheduled completion date for the Interim Report is late February, 1981. It is estimated that the project is 60% complete for Phase I.

Yours very truly,

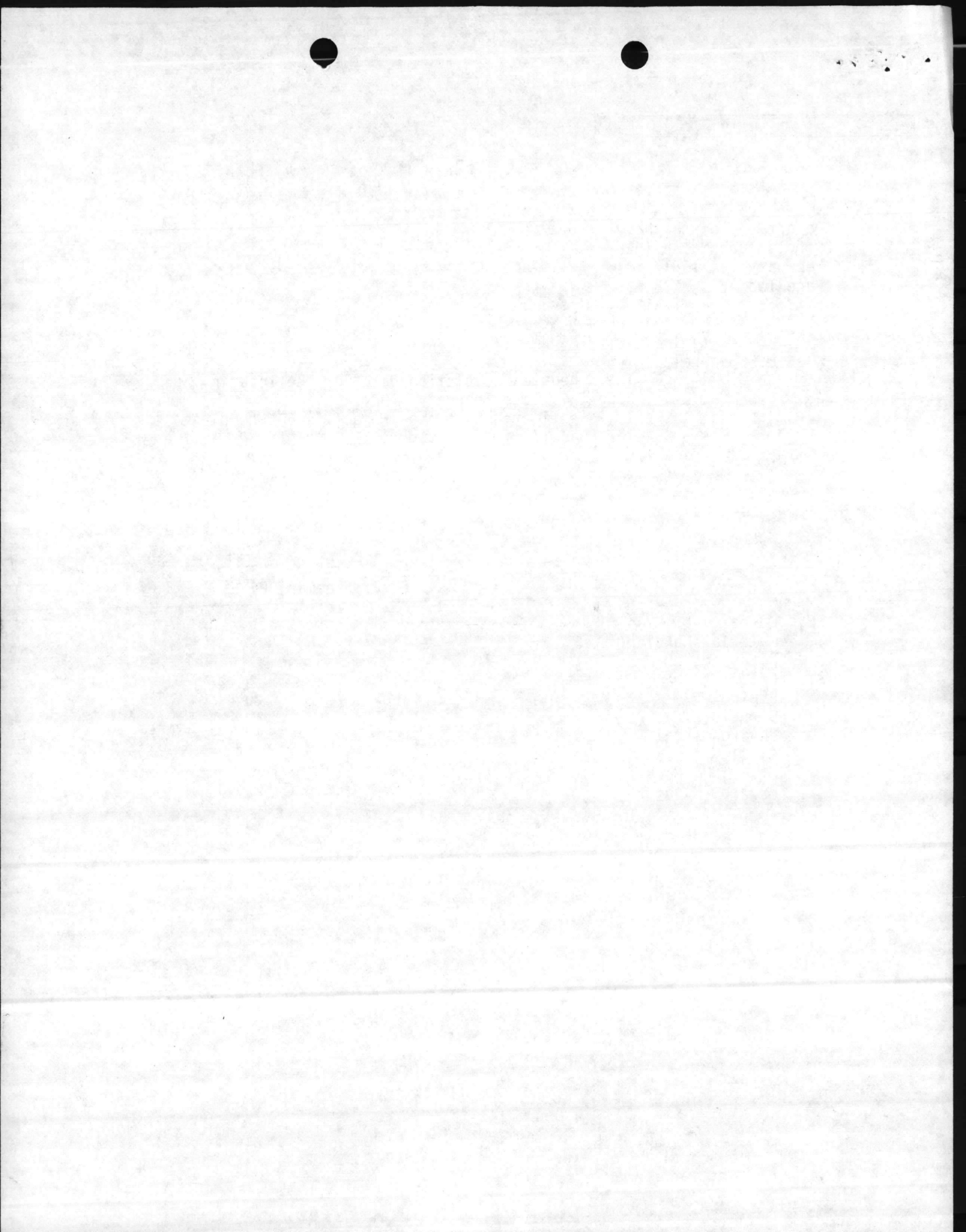
J. E. SIRRINE COMPANY

*G. J. Freeman*

G. J. Freeman, P. E.

cc: Power  
Material Handling  
Planning  
E/I  
Piping  
Structural  
Environmental  
Civil  
Mr. J. H. Machen  
Project Manager





FAC

	INFO	INT
46		so
4D		
4H		
4L9		

FAC "Copy" previously received.  
 Copies sent to BMO  
 and PWO.

---

col:

Recommend this be  
 forwarded to BMO for  
 review action. so





DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

TELEPHONE NO.  
444-7877  
AUTOVON 690-7877  
IN REPLY REFER TO:

111:JDT  
11300

27 JAN 1981

From: Commander, Atlantic Division, Naval Facilities Engineering Command  
To: Commanding General, Marine Corps Base, Camp Lejeune ←  
Commanding General, Marine Corps Air Station, Cherry Point

Subj: Solid and Wood Waste Burning and Co-generation Study, Contract  
No. 80-B-3801 at Marine Corps Base, Camp Lejeune, and Marine Corps  
Air Station, Cherry Point

Encl: (1) J. E. Serrine Company History Report (No. 3, 15 January 1981)  
of the 13 January 1981 Progress Review and Preliminary Findings  
Meeting Held at LANTNAVFACENCOM

1. Enclosure (1) is forwarded for your information and review. Per enclosure (1), the interim report will be submitted the end of February.
2. If there are any questions regarding this study, please contact Mr. J. D. Torma, (804) 444-7877, AUTOVON 690-7877 or FTS 954-7877.

*R. D. Crowson*  
R. D. CROWSON  
By direction

Copy to:  
Vineta, Inc.  
3705 Sleepy Hollow Road  
Falls Church, VA 22041

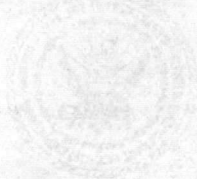
Director  
Facilities Engineering Department  
Stop 7, Building 80  
Marine Corps Air Station  
Cherry Point, NC 28533  
Attention Mr. Joe Reilly

Deputy, Facilities Maintenance Officer  
Facilities Maintenance Department  
Stop 5  
Marine Corps Air Station  
Cherry Point, NC 28533

(Copy to: See page two)

TELETYPE UNIT  
NAVY  
COMMUNICATIONS SECTION

DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL KATOLIC ENGINEERING COMMAND  
MONROE, VIRGINIA 22061



8 JUL 1981

From: Commanding General, Atlantic Division, Naval Air Station, Norfolk, Virginia  
To: Commanding General, Marine Corps Air Station, FPO San Francisco, California  
Subject: [Illegible]

[Illegible text]

[Illegible text]

[Illegible text]

[Illegible text]

[Illegible signature]

Copy for:  
[Illegible]

[Illegible text]

[Illegible text]

[Illegible text]

111:JDG  
11300

Installation and Logistics Directorate  
Natural Resources and Environmental  
Affairs Division  
Marine Corps Air Station  
Cherry Point, NC 28533

Assistant Chief of Staff of Facilities  
Building 1  
Marine Corps Base  
Camp Lejeune, NC 28542

Utilities Division Director  
Base Maintenance Department  
Building 1202  
Marine Corps Base  
Camp Lejeune, NC 28542

Public Works Officer  
Building 1005  
Marine Corps Base  
Camp Lejeune, NC 28542

Natural Resource Division Director  
Base Maintenance Department  
Building 1103  
Marine Corps Base  
Camp Lejeune, NC 28542

CMC (Code LFF2)  
COMNAVFACENGCOM (Code 111B) (two copies)

111:11  
11300

Installation and Logistics Directorate  
National Logistics and Distribution Division  
Logistics Division  
Logistics Support Office  
Camp Lejeune, NC 28542

Logistics Support Office  
Building 100  
Camp Lejeune, NC 28542

Logistics Support Office  
Logistics Support Office  
Building 100  
Camp Lejeune, NC 28542

Logistics Support Office  
Camp Lejeune, NC 28542

Logistics Support Office  
Logistics Support Office  
Building 100  
Camp Lejeune, NC 28542

COMNAVFORCEN (Code 111) (two copies)

January 15, 1981

HISTORY NO. 3

Department of the Navy  
Atlantic Division  
Naval Facilities Engineering Command

Solid Waste/Wood Waste Burning and  
Cogeneration Study

Marine Corps Base, Camp Lejeune  
Marine Corps Air Station, Cherry Point

Contract N62470-80-B-3801

Sirrine Job No. R-1628

Date: January 13, 1981

Place: Naval Facilities Engineering Offices  
Norfolk, Virginia

Present for: Department of the Navy  
- Dolan Brown (Camp Lejeune)  
- B. W. Elston (Camp Lejeune)  
H. A. Gorges (NAVFAC Consultant)  
Dennis Meligonis (LANT DIV)  
Joe Reilly (Cherry Pt)  
Charles Thompson (LANT DIV)  
Jim Torma (LANT DIV)  
J. H. Watson (LANT DIV)

J. E. Sirrine Co.  
G. J. Freeman  
G. B. Joyner  
W. A. Koos

Purpose of Meeting: To conduct a project review and discuss preliminary findings.

1. The following information was outlined for Cherry Point:
  - A. The available refuse for energy recovery is 41 tons per day. The wood available is 8 tons per day and is not enough to be considered a factor in energy recovery.
  - B. The systems considered for this installation are:
    - a. Direct incineration
    - b. Incinerator with heat recovery boiler
    - c. Water wall boiler
    - d. Ship waste to Camp Lejeune

ENCLOSURE (1)





Small, faint, illegible markings or artifacts in the top right corner of the page.

HISTORY NO. 3

Department of the Navy  
Sirrinc Job No. R-1628  
January 15, 1981  
Page Two

- C. Alternate "c" is the immediate solution to the declining landfill situation.
  - D. Alternate "b" would yield approximately 10,000 lb/hr. of 150 psig steam.
  - E. Alternate "c" is not a factor. The cutoff point for water wall boiler is generally accepted to be 100 tons per day of available refuse.
  - F. Alternate "d" will be considered in the economics of Camp Lejeune.
2. The following information was outlined for Camp Lejeune:
- A. The available refuse for energy recovery is 89 tons per day. The amount of wood available is 280 tons per day.
  - B. The systems considered for this installation are:
    - a) Direct incineration
    - b) Incinerator with heat recovery
    - c) Low pressure water wall boiler
    - d) High pressure water wall boiler with cogeneration
    - e) Joint plant with Cherry Point refuse
  - C. Alternate "a" would require multiple units since this type unit is generally 50 tons per day size limited.
  - D. Alternate "b" would yield approximately 20,000 lb/hr. of 150 psig steam.
  - E. Alternate "c" is not a factor because the available refuse is below 100 tons per day.
  - F. The addition of wood in alternate "d" allows for consideration of generating steam at 600 psig and 725<sup>0</sup>F. At these conditions, 84,000 lb/hr. will be produced, if a straight back pressure turbine generator exhausting to 150 psig was used, approximately 2,500 kw/hr. could be generated (Gross kw, does not allow for internal plant use).



HISTORY NO. 3

Department of the Navy  
Sirriner Job No. R-1628  
January 15, 1981  
Page Three

- G. Alternate "e" burning refuse alone from both sites, will generate 30,000 lb/hr. of 150 psig steam. If wood and refuse from both sites are combined, 418 tons per day of material would be available for burning. If steam is generated at 600 psig, 725<sup>o</sup>F and a back pressure turbine utilized, 3,000 kw/hr. could be generated (plant load not deducted).
3. Provision for connection of a cogeneration system to the utility grid is not a factor since all power can be consumed on site.
  4. Since the total of all refuse is only 130 tons per day, generation of steam is the only alternative.
  5. If wood is added, a careful economic evaluation must be made of the benefits prior to investigating any cogeneration options.
  6. The Interim Report will be submitted the end of February.

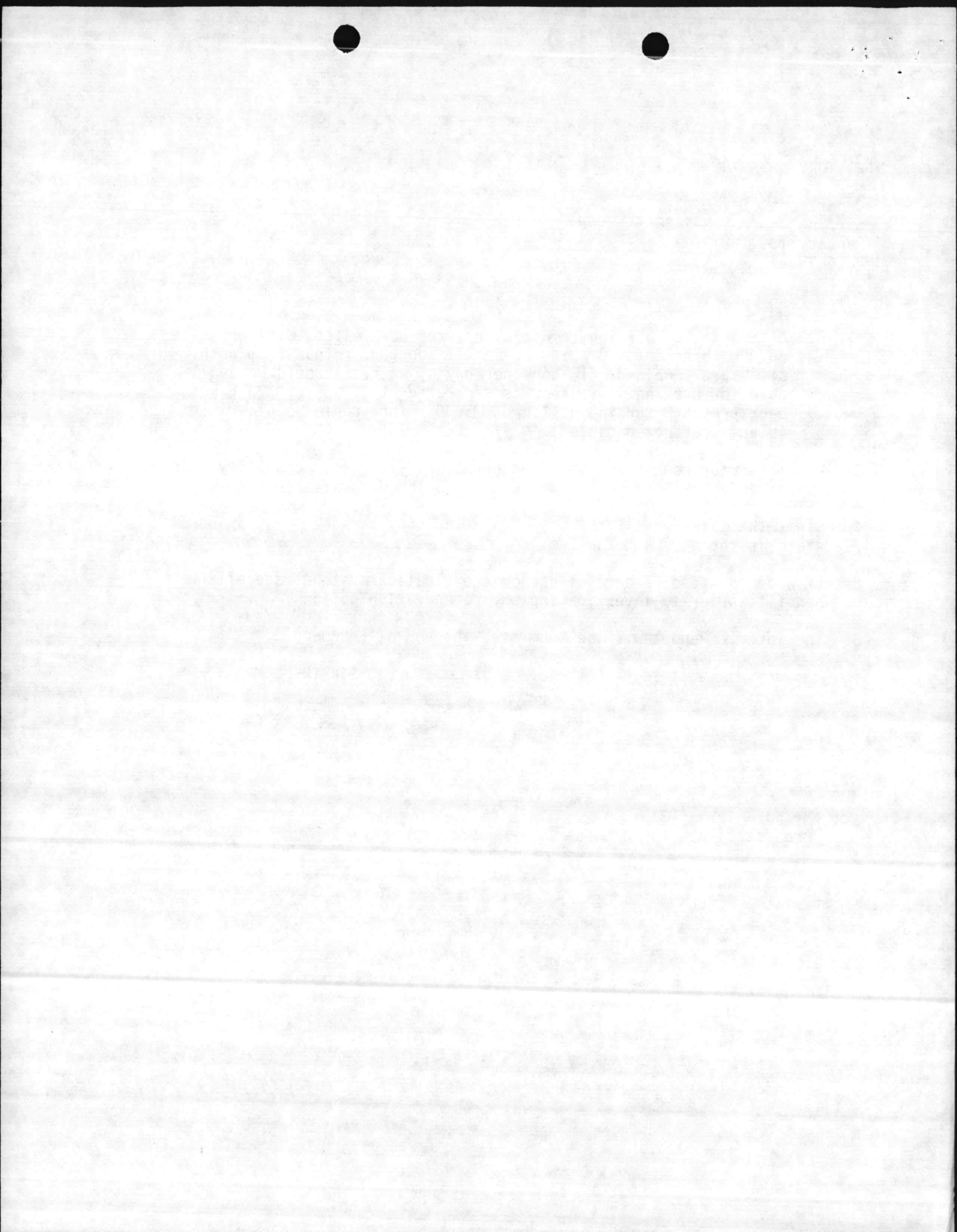
J. E. SIRRINE COMPANY

*W. A. Koos*  
W. A. Koos

WAK/jos

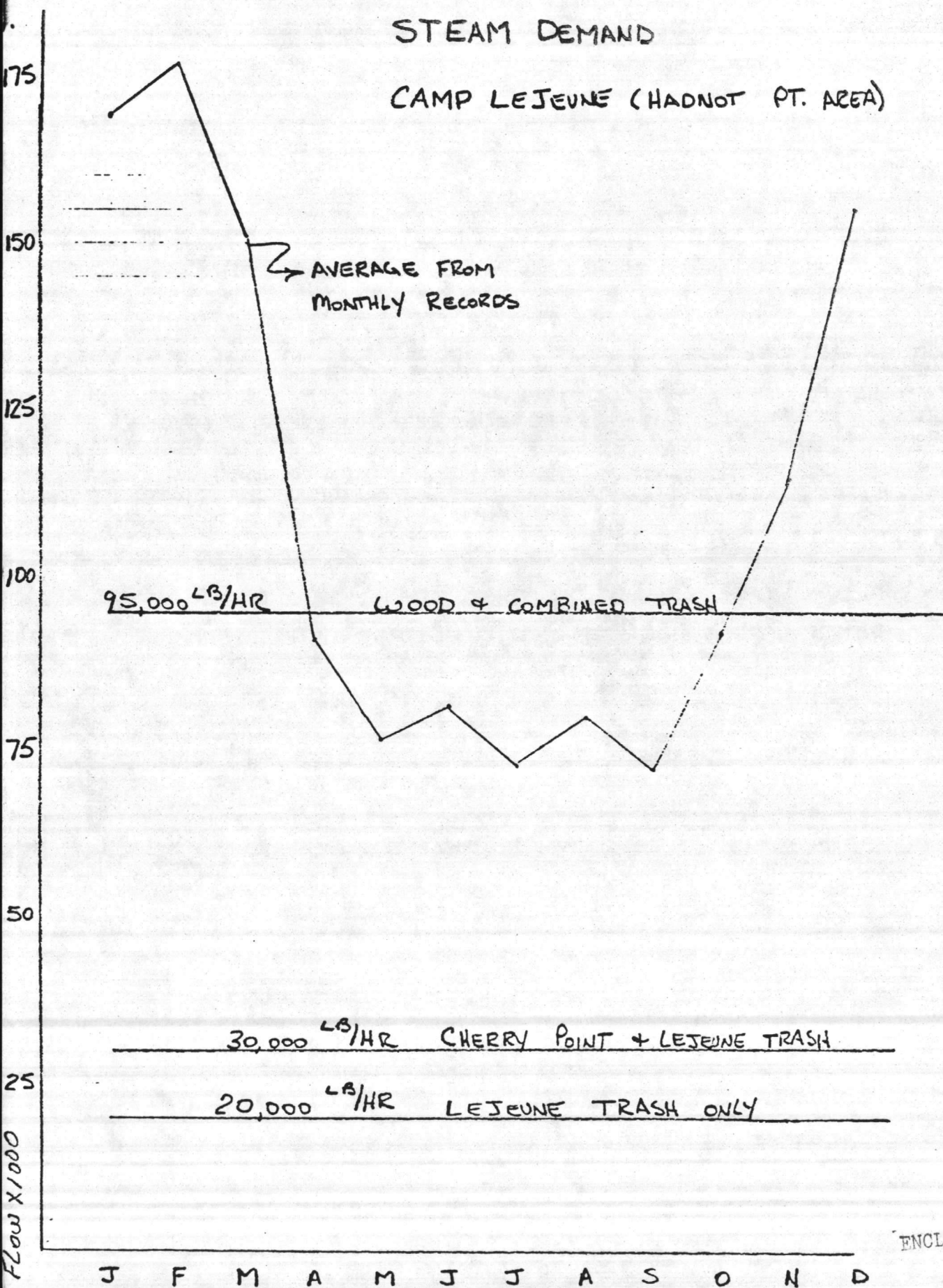
cc: Mr. Jim Torma (3)  
Project File

ENCLOSURE (1)



# STEAM DEMAND

## CAMP LEJEUNE (HADNOT PT. AREA)



ENCLOSURE (4)



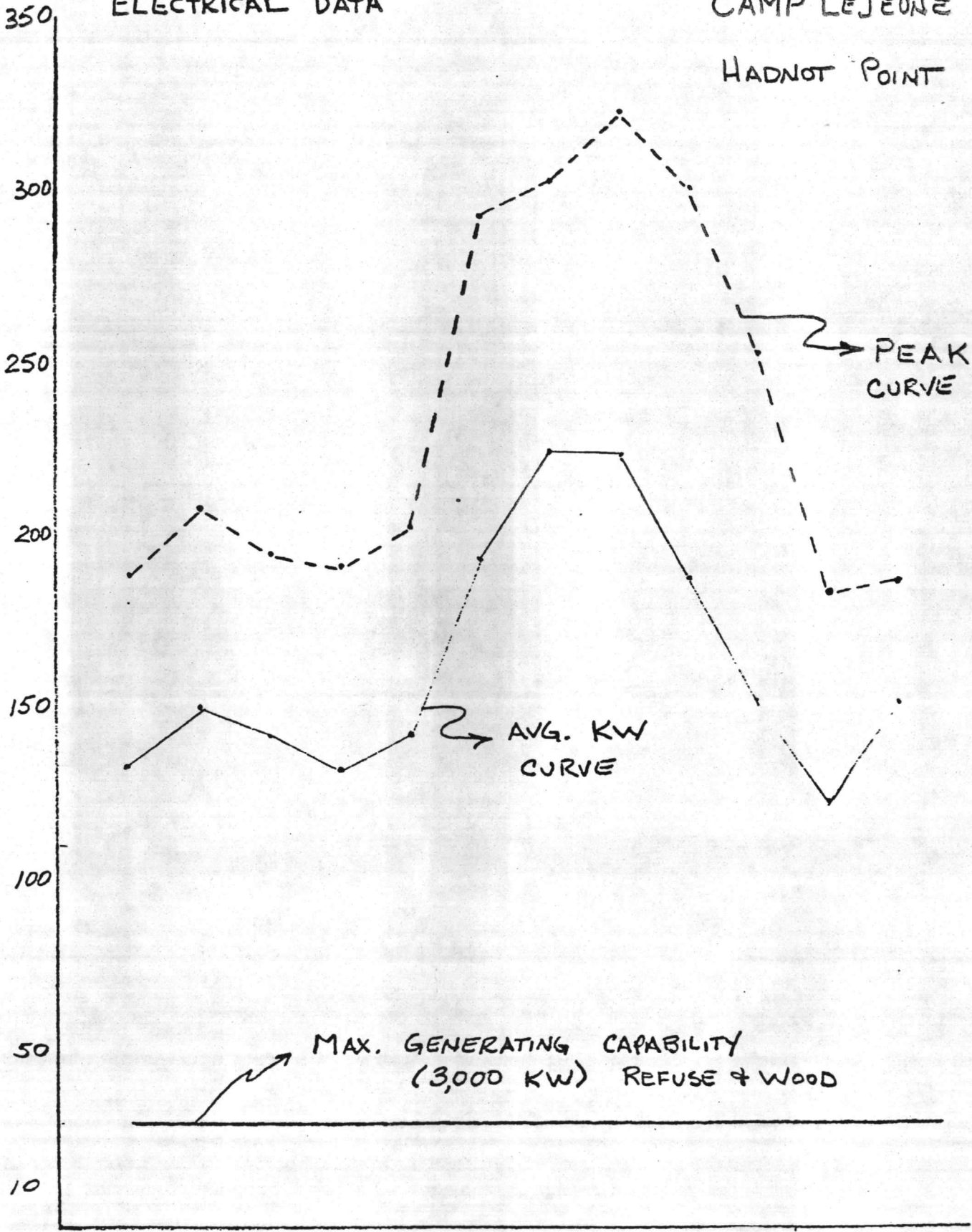
11

ELECTRICAL DATA

CAMP LEJEUNE

HADNOT POINT

KW/100 PER HOUR



PEAK CURVE

AVG. KW CURVE

MAX. GENERATING CAPABILITY (3,000 KW) REFUSE & WOOD

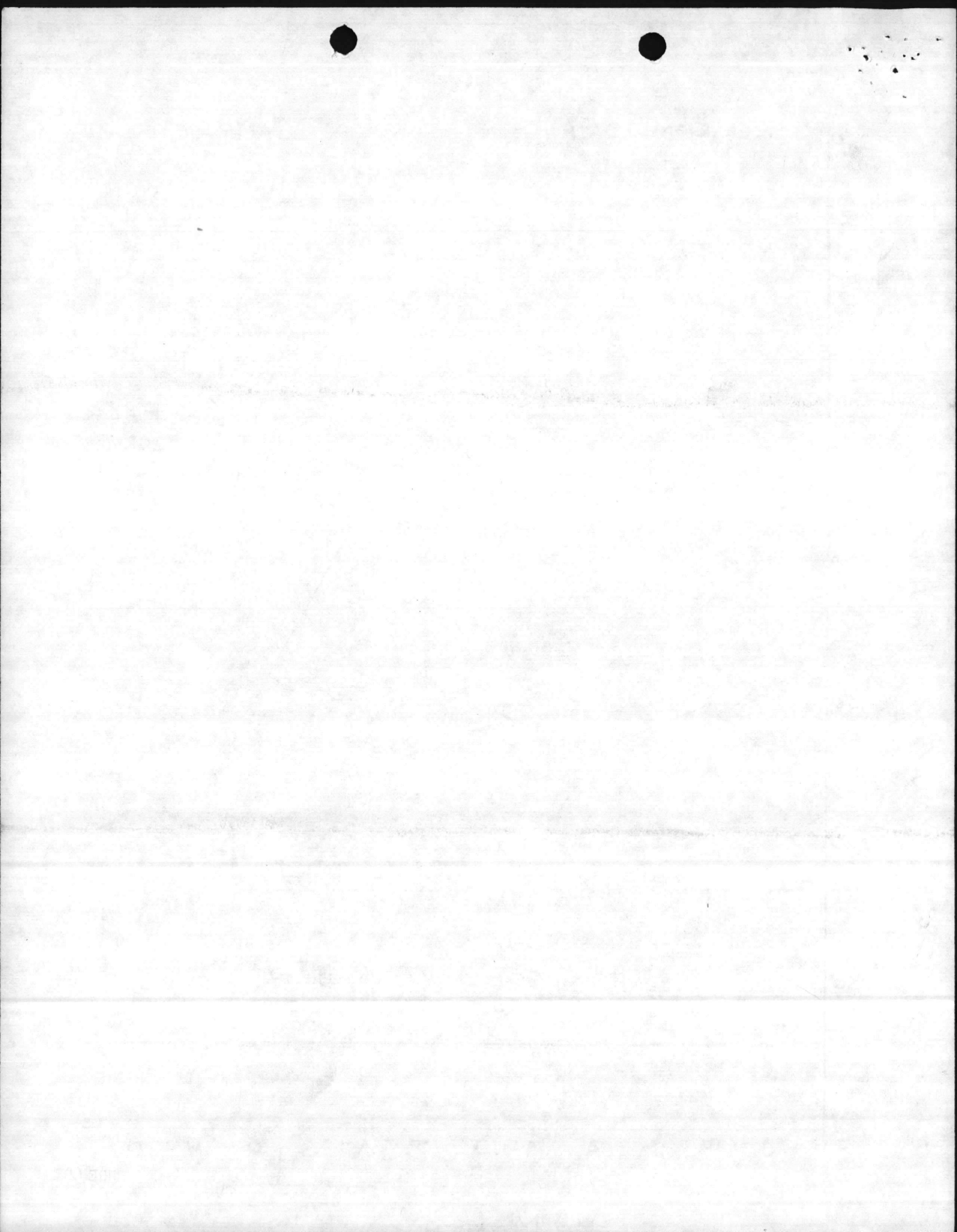
J F M A M J J A S O N D

MONTH

'80 ← | → '79

ENCLOSURE (1)







Util

DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

TELEPHONE NO.  
444-7877  
AUTOVON 690-7877  
IN REPLY REFER TO:  
111:JDT  
11010  
3 0 DEC 1980

From: Commander, Atlantic Division, Naval Facilities Engineering Command  
To: Commanding General, Marine Corps Base, Camp Lejeune  
Commanding General, Marine Corps Air Station, Cherry Point

Subj: Solid and Waste Wood Burning and Cogeneration Study Contract No.  
80-B-3801 at Marine Corps Base, Camp Lejeune, and Marine Corps Air  
Station, Cherry Point

Ref: (a) FONECON J. E. Serrine Company (Mr. G. J. Freeman)/LANTNAVFACENGCOM  
(Mr. J. D. Torma) of 19 Dec 1980  
(b) LANTNAVFACENGCOM ltr 111:JDT 11010 of 5 Dec 1980

Encl: (1) J. E. Serrine Company Progress Report No. 3 of 12 Dec 1980

1. Enclosure (1) is forwarded for your information. The steam demand information needed per enclosure (1) has been received by LANTNAVFACENGCOM and forwarded to the J. E. Serrine Company.

2. Per reference (a), (b) and enclosure (1), a meeting will be held on 13 January at LANTNAVFACENGCOM at 1300 in building N-23, room 113A. Representatives from your Command are invited to attend.

3. If there are any questions regarding the above, please contact Mr. J. D. Torma, telephone (804) 444-7877, AUTOVON 690-7877 or FTS 954-7877.

W. B. ELWANG, Jr.  
By direction

Copy to:

Director  
Facility Engineering Department  
Stop 7, Building 80  
Marine Corps Air Station  
Cherry Point, North Carolina 28533

Deputy  
Facility Maintenance Department  
Stop 5  
Marine Corps Air Station  
Cherry Point, North Carolina 28533

8 0 DEC 1990


W. B. EWING, Jr.  
By direction

Copy to: (continued)

Deputy  
Facility Maintenance Officer  
Facility Maintenance Department  
Stop 5  
Marine Corps Air Station  
Cherry Point, North Carolina 28533

Natural Resources and Environmental Affairs Division  
Installation and Logistics Directorate  
Marine Corps Air Station  
Cherry Point, North Carolina 28533

Assistant Chief of Staff of Facilities  
Building 1  
Marine Corps Base  
Camp Lejeune, North Carolina 28542

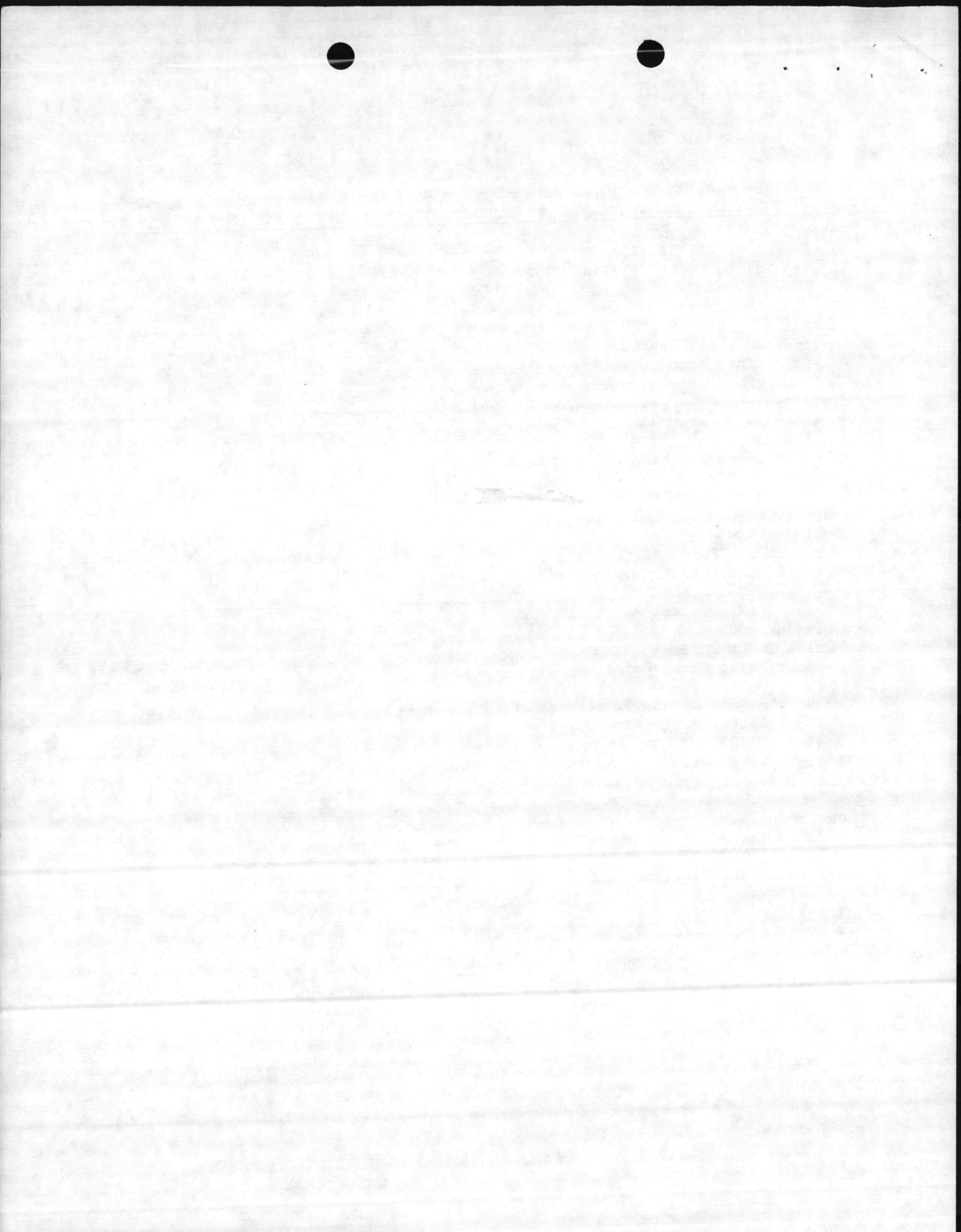
Base Maintenance Department   
Facilities Division Director  
Building 1202  
Marine Corps Base  
Camp Lejeune, North Carolina 28542

Public Works Officer  
Building 1005  
Marine Corps Base  
Camp Lejeune, North Carolina 28542

Base Maintenance Department  
Natural Resource Division Director  
Building 1103  
Marine Corps Base  
Camp Lejeune, North Carolina 28542

Mr. Heinz A. Gorges  
Vineta, Inc.  
3705 Sleepy Hollow Road  
Falls Church, Virginia 22041

CMC (Code LFF-2)  
COMNAVFACENGCOM (Code 111B) (2 copies)



ESTABLISHED 1902



ARCHITECTS

ENGINEERS

PLANNERS

POST OFFICE BOX 12748 RESEARCH TRIANGLE PARK, NORTH CAROLINA 27709 TELEPHONE (919) 541-2081

December 12, 1980

Department of the Navy  
Atlantic Division  
Naval Facilities Engineering Command  
Norfolk, Virginia 23511

Attention: Mr. Jim Torma

Subject: Department of the Navy  
Cogeneration Study  
MCB Camp Lejeune and MCAS  
Cherry Point, N. C.  
Contract N62470-80-B-3801  
Sirrine Job No. R-1628  
Progress Report No. 3

Gentlemen:

The following summarizes the status of the project as of December 5, 1980:

A. Engineering Status

Data on fuel availability and existing steam and electrical power demands have been received, except for the steam demand at Camp Lejeune.

Preliminary calculations on quantities of steam and power that can be generated from the available fuel are being made.

B. Meetings Held

None

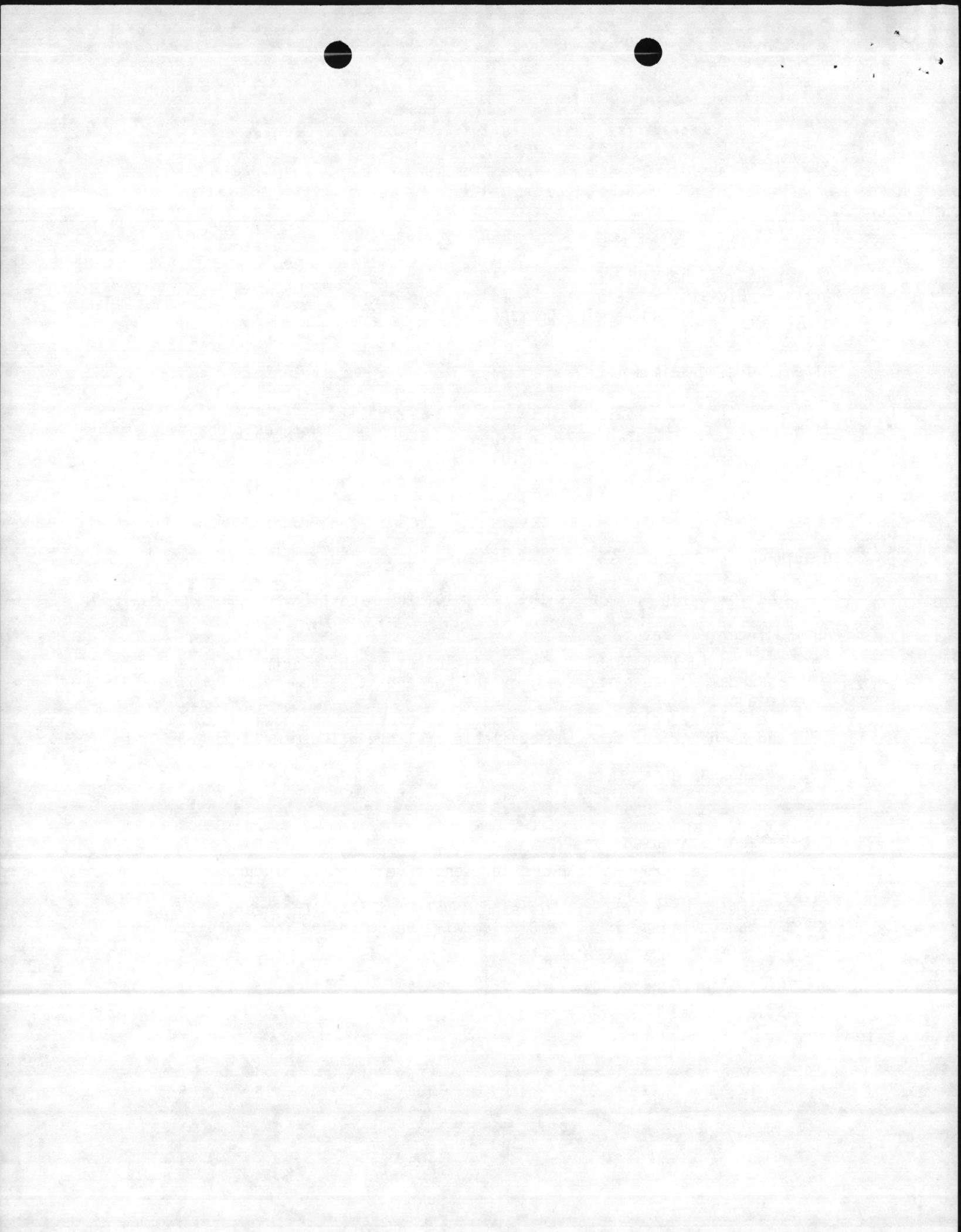
C. Meetings Scheduled

See revised project schedule for tentative times for future meetings.

A meeting with Atlantic Division Naval Facilities Engineering Command, Vineta, Inc. and Sirrine will be scheduled for early January 1981.

D. Information Needed

Steam demand at Camp Lejeune



Department of the Navy  
Sirrime Job No. R-1628  
December 12, 1980  
Page Two

E. Major Activities in December

Continue developing unit size criteria and order of magnitude cost.  
Develop preliminary concepts for possible plant locations and unit operations.

F. General

The updated schedule is enclosed for information. Note the slippage due to late receipt of the existing data.  
It is estimated that the project is approximately 30% complete.

Yours very truly,

J. E. SIRRINE COMPANY

*G. J. Freeman*

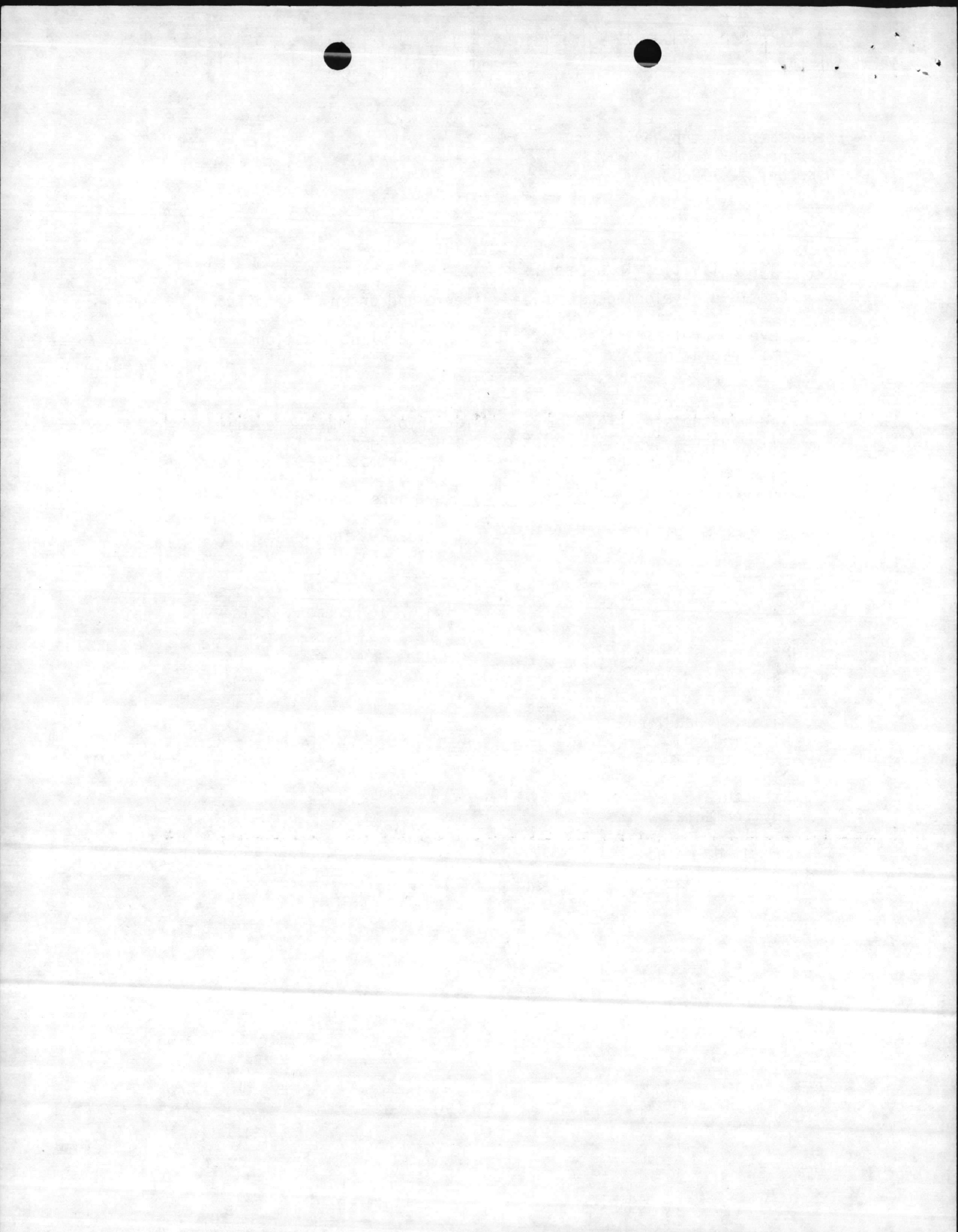
G. J. Freeman, P. E.

GJF/jos

Enclosure

cc: Power  
Material Handling  
Planning  
E/I  
Piping  
Structural  
Environmental  
Civil  
Mr. J. H. Machen





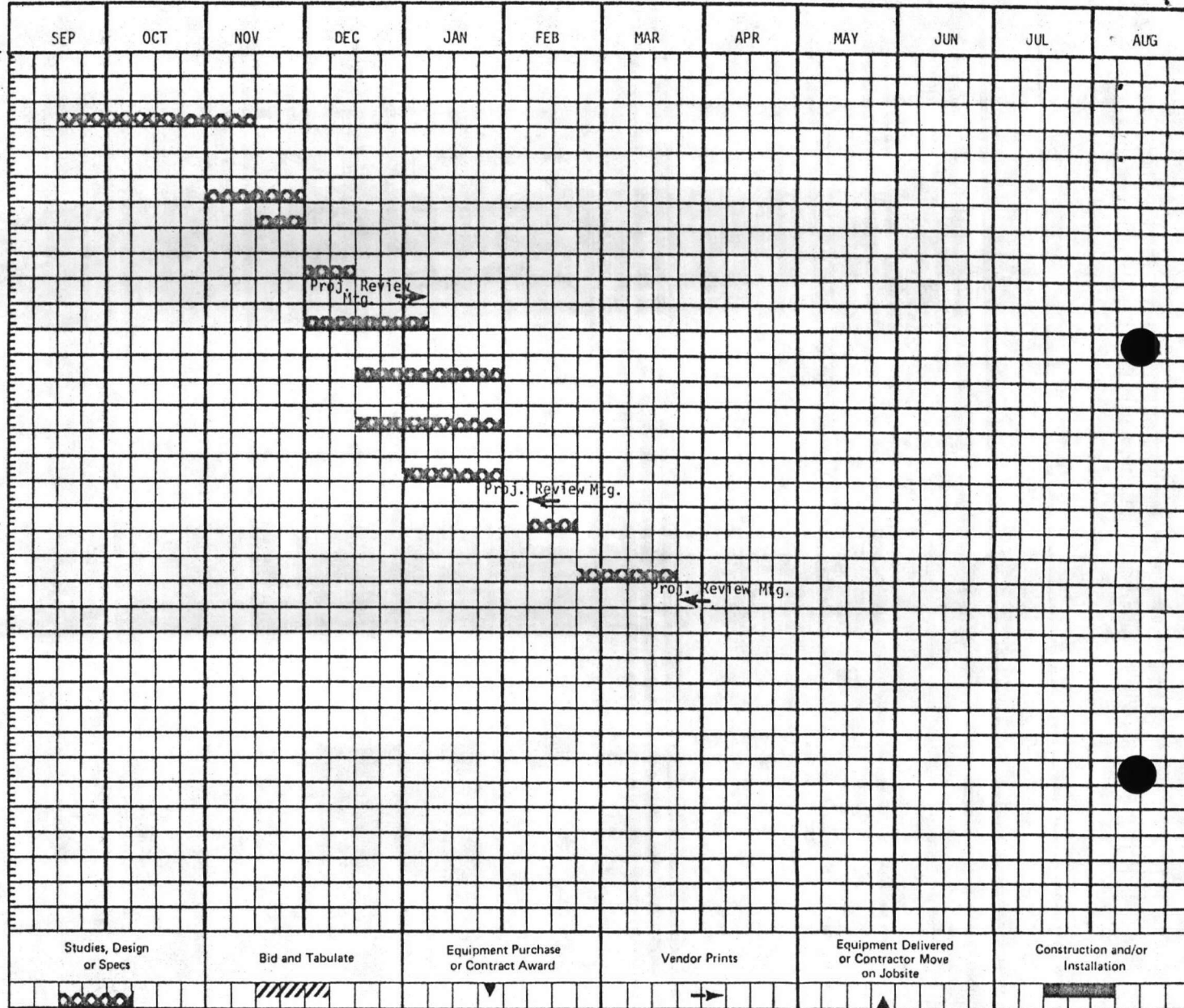


Job No. R-1628 Date: 10-13-80 By: GJF/JEH

A - Phase I

1. Obtain Existing Data
2. Determine Fuel Availability
  - a) Waste Wood
  - b) Solid Waste
3. Preliminary Unit Size
4. Develop Feasible Systems
5. System Flow Diagrams
6. System Layouts
7. System Descriptions
8. Assemble Interim Report
9. Select System(s) for Phase II

B - Phase II  
(Breakdown Later)



Key to Symbols:

Studies, Design or Specs

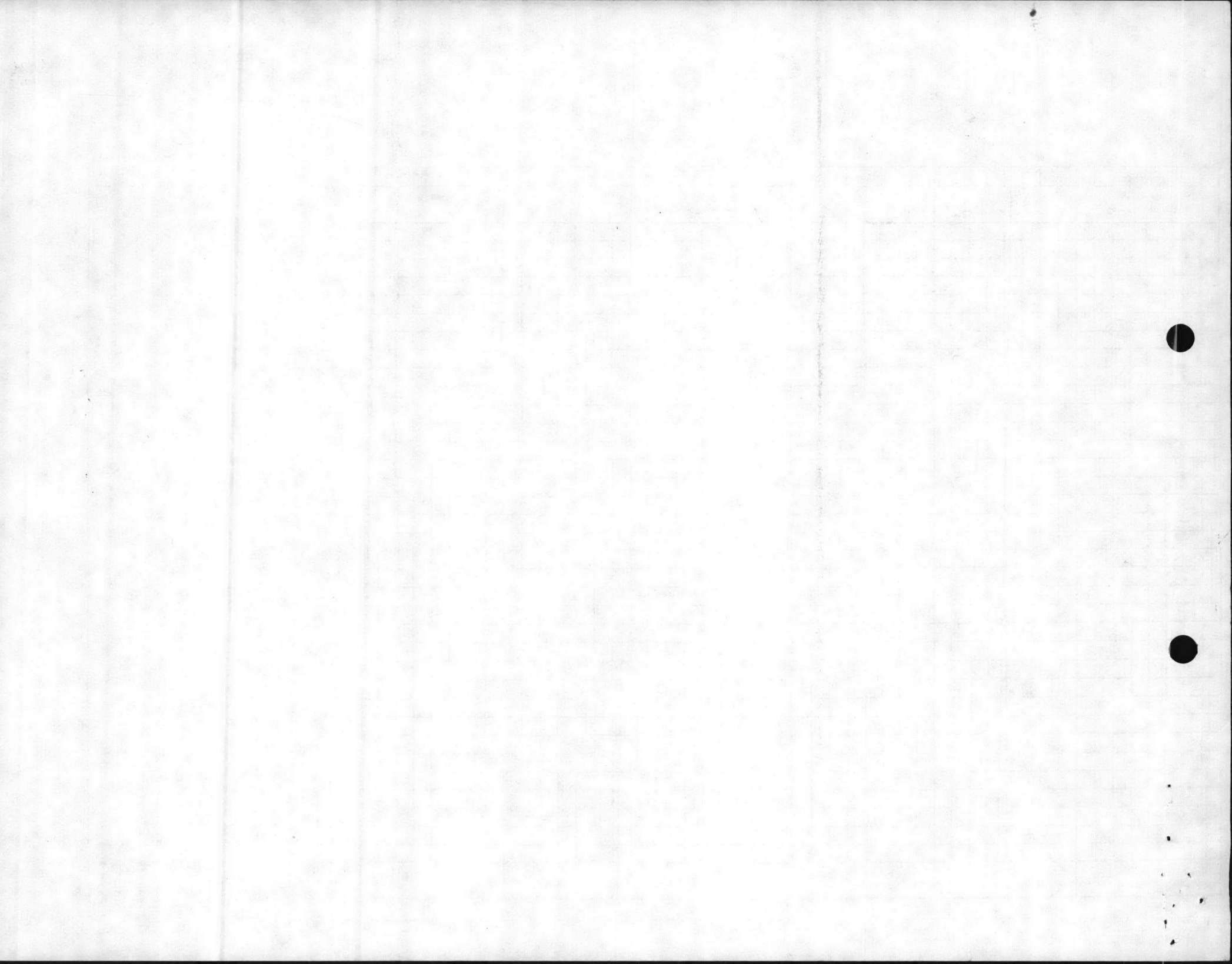
Bid and Tabulate

Equipment Purchase or Contract Award

Vendor Prints

Equipment Delivered or Contractor Move on Jobsite

Construction and/or Installation



T-1137d

MAIN/TH/spk  
11010

DEC 1 9 1980

From: Commanding General  
To: Commander, Atlantic Division, Naval Facilities Engineering Command,  
Norfolk, Va., 23511 (Attn: J. Torma, Code 111)

Subj: Solid and Wood Waste Burning and Cogeneration Study, Contract No.  
80-B-3801 at Marine Corps Base, Camp Lejeune, and Marine Corps Air  
Station, Cherry Point

Ref: (a) CDR, LANTDIVNAVFACENCOM ltr 111:JDT 11010 of 22 Oct 1980

- Encl: (1) Forestry Information
- (2) Power Information
- (3) Timber Sales Contracts
- (4) Operation Report/1700
- (5) Hadnot Point Electricity Usage

S  
2A  
BUE

1. As requested in reference (a), information on forestry activities and power plant operation is provided in enclosures (1) through (5) respectively. Power plant information is provided based on the assumption that siting of the proposed plant will be in the Hadnot Point area of the base, and that the Central Heating Plant for the Hadnot Point area is the only plant that will be affected by the construction of a new plant.

2. Information on a coal/oil mix ratio and an overall plant efficiency percentage for the Central Steam Plant has been previously provided to Mr. J. Torma of your organization.

3. If there are further questions on this subject, please contact Terry Hatcher, Director of the Utilities Division, at AUTOVON 484-5161.

F. H. MOUNT  
By direction

DEC 1 9 1980

2

[Faint, mostly illegible text, possibly bleed-through from the reverse side of the page]

FORESTRY INFORMATION

Item 1: Map previously provided.

Item 2: Maximum allowable cut data has been previously provided.

Items 3, 4, 5, 7: Provided in enclosure (3).

Item 6: Estimated amount of wood cut in firewood program annually is  
150 cords.

PHYSICAL INFORMATION

1. The following information is being furnished to you for your information only. It is not intended to constitute an offer of insurance or any other financial product. The information is provided for your information only and should not be relied upon as a basis for any investment decision. The information is provided for your information only and should not be relied upon as a basis for any investment decision.

## POWER INFORMATION

- Item 1: Monthly steam usage reports for the Hadnot Point area as represented by steam production at Bldg. 1700 is provided in enclosure (4).
- Item 2: Electrical usage report for Hadnot Point area is provided as enclosure (5).
- Item 3: Source of water for the Hadnot Point area is the Hadnot Point Water Treatment Plant, Bldg. 20. Cost of water is \$0.64 per thousand gallons.
- Item 4: Fuel Cost - \$0.87 per gal. #6 oil  
\$56.21 per ton coal
- Item 5: Steam is delivered to user at 150 psi. Steam is used for heating, hotwater heating, cooking, commercial laundries, steam cleaning.
- Item 6: To be provided by LANDIV.



PROCEEDINGS

... ..

... ..

... ..

... ..

... ..

... ..

ROUTING SLIP

DEC 1 0 1980

	ACTION	INFO	INITIAL
BMO		✓	
ABMO		✓	BWR
ADMIN		✓	S
ENVIRON AFF	✓		
F&A BRANCH			
MAINT NCO			
M&R			
OPNS			
PROP			
TELE			
UMACS			
UTIL		✓	7/A
SECRETARY			

COMMENTS:

Copy sent to  
Utilities

Util:  
What add'l info are  
they talking about?  
BWR

DEC 10 1950



*[Faint handwritten scribble]*

*[Faint handwritten scribbles]*

*[Faint handwritten text, possibly a signature or name]*



DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

T-113701  
Bew  
TELEPHONE NO.  
444-7877  
AUTOVON 690-7877  
IN REPLY REFER TO:  
111:JDT  
11010

05 DEC 1980

From: Commander, Atlantic Division, Naval Facilities Engineering Command  
To: Commanding General, Marine Corps Base, Camp Lejeune

Subj: Solid and Waste Wood Burning and Cogeneration Study Contract No.  
80-B-3801 at Marine Corps Base, Camp Lejeune, and Marine Corps Air  
Station, Cherry Point

Ref: (a) LANTNAVFACENCOM ltr 111:JDT 11010 of 22 Oct 1980  
(b) FONECON J. E. Serrine Company (Mr. G. J. Freeman)/LANTNAVFACENCOM  
(Mr. J. D. Torma) of 3 Dec 1980

Encl: (1) J. E. Serrine Company Progress Report No. 2 of 11 Nov 1980

1. Enclosure (1) is forwarded for your information. Critical portions of the data and information referred to in enclosure (1) and requested per reference (a) have been informally forwarded to the J. E. Serrine Company. It is requested that the balance of information and data be submitted to LANTNAVFACENCOM as soon as possible.

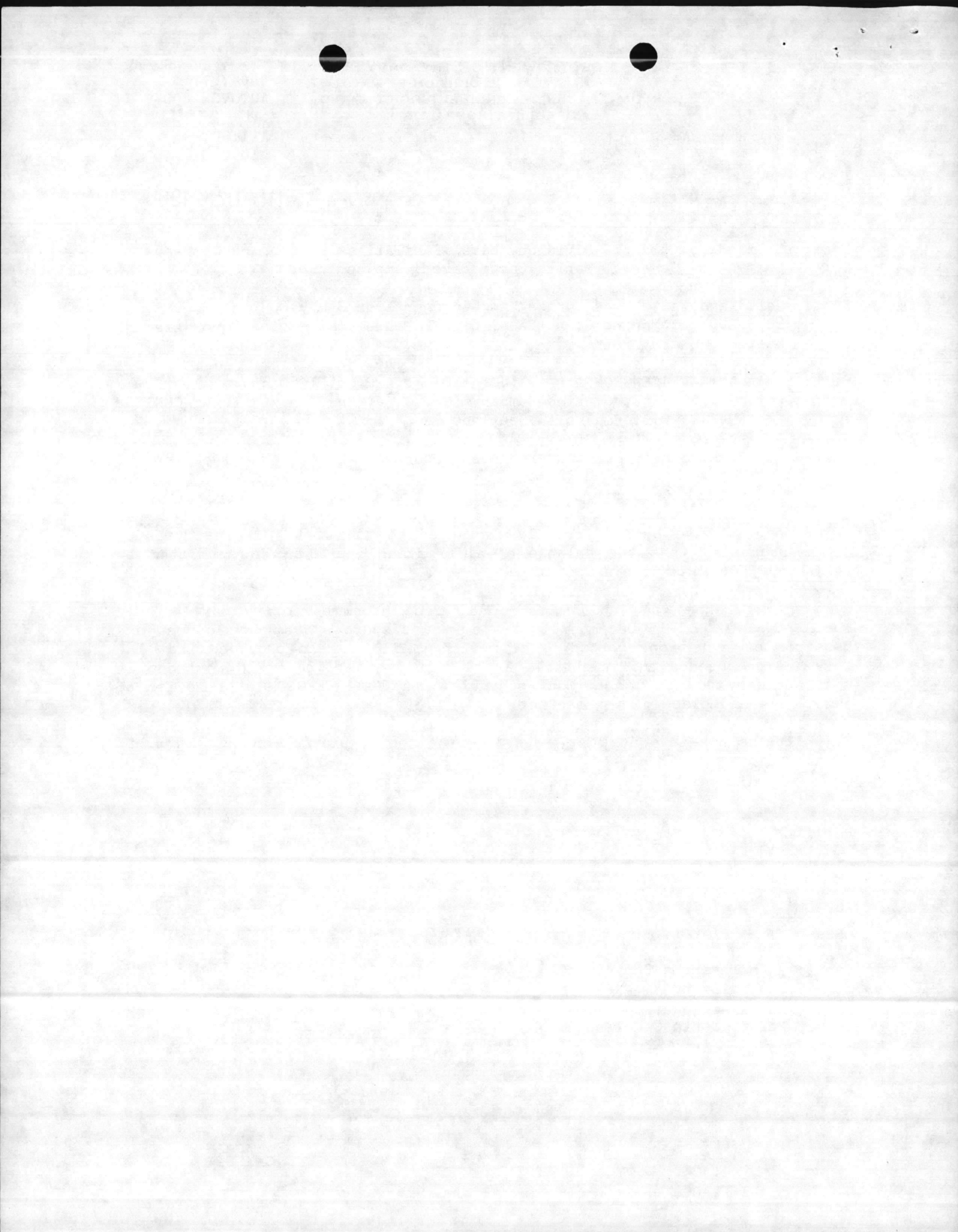
2. Per reference (b) and enclosure (1), an informal meeting may be held during the week of 15 December to review and discuss system development and possible cogeneration aspects. The meeting will be held provided that the work has progressed sufficiently. A delay in the meeting would postpone it until January due to the holiday schedule. LANTNAVFACENCOM will advise of exact time and place of the meeting.

3. If there are any questions regarding the above, please contact Mr. J. D. Torma, telephone (804) 444-7877, AUTOVON 690-7877 or FTS 954-7877.

E. A. BARCO  
By direction

Copy to:

Director  
Facility Engineering Department  
Stop 7, Building 80  
Marine Corps Air Station  
Cherry Point, North Carolina 28533




Copy to: (continued)

Deputy  
Facility Maintenance Officer  
Facility Maintenance Department  
Stop 5  
Marine Corps Air Station  
Cherry Point, North Carolina 28533

Natural Resources and Environmental Affairs Division  
Installation and Logistics Directorate  
Marine Corps Air Station  
Cherry Point, North Carolina 28533

Assistant Chief of Staff of Facilities  
Building 1  
Marine Corps Base  
Camp Lejeune, North Carolina 28542



Base Maintenance Department  
Facilities Division Director  
Building 1202  
Marine Corps Base  
Camp Lejeune, North Carolina 28542

Public Works Officer  
Building 1005  
Marine Corps Base  
Camp Lejeune, North Carolina 28542

Base Maintenance Department  
Natural Resource Division Director  
Building 1103  
Marine Corps Base  
Camp Lejeune, North Carolina 28542

Mr. Heinz A. Gorges  
Vineta, Inc.  
3705 Sleepy Hollow Road  
Falls Church, Virginia 22041

CMC (Code LFF-2)  
COMNAVFACENGCOM (Code 111B) (2 copies)





POST OFFICE BOX 12748 RESEARCH TRIANGLE PARK NORTH CAROLINA 27709 TELEPHONE (919) 541-2081

November 11, 1980

Department of the Navy  
Atlantic Division  
Naval Facilities Engineering Command  
Norfolk, Virginia 23511

Attention: Mr. Jim Torma

Subject: Department of the Navy  
Cogeneration Study  
Camp Lejeune and Cherry  
Point, N. C.  
Contract N62470-80-B-3801  
Sirrine Job No. R-1628  
Progress Report No. 2

Gentlemen:

The following summarizes the status of the subject project as of November 7, 1980:

A. Engineering Status

The initial activity on the project is to determine the quantity and condition of fuel available from solid waste and waste wood. Progress on the waste wood fuel availability is being delayed pending receipt of data from the Department of the Navy. Steps have been taken to obtain preliminary data by telephone the week of November 10, 1980. Data has been received from the Croatan National Forest and is being analyzed. Data on solid waste contained in the report "Solid Waste Management Master Plans - MCAS - Cherry Point, MCB - Camp Lejeune" is being analyzed.

B. Meetings Held

None

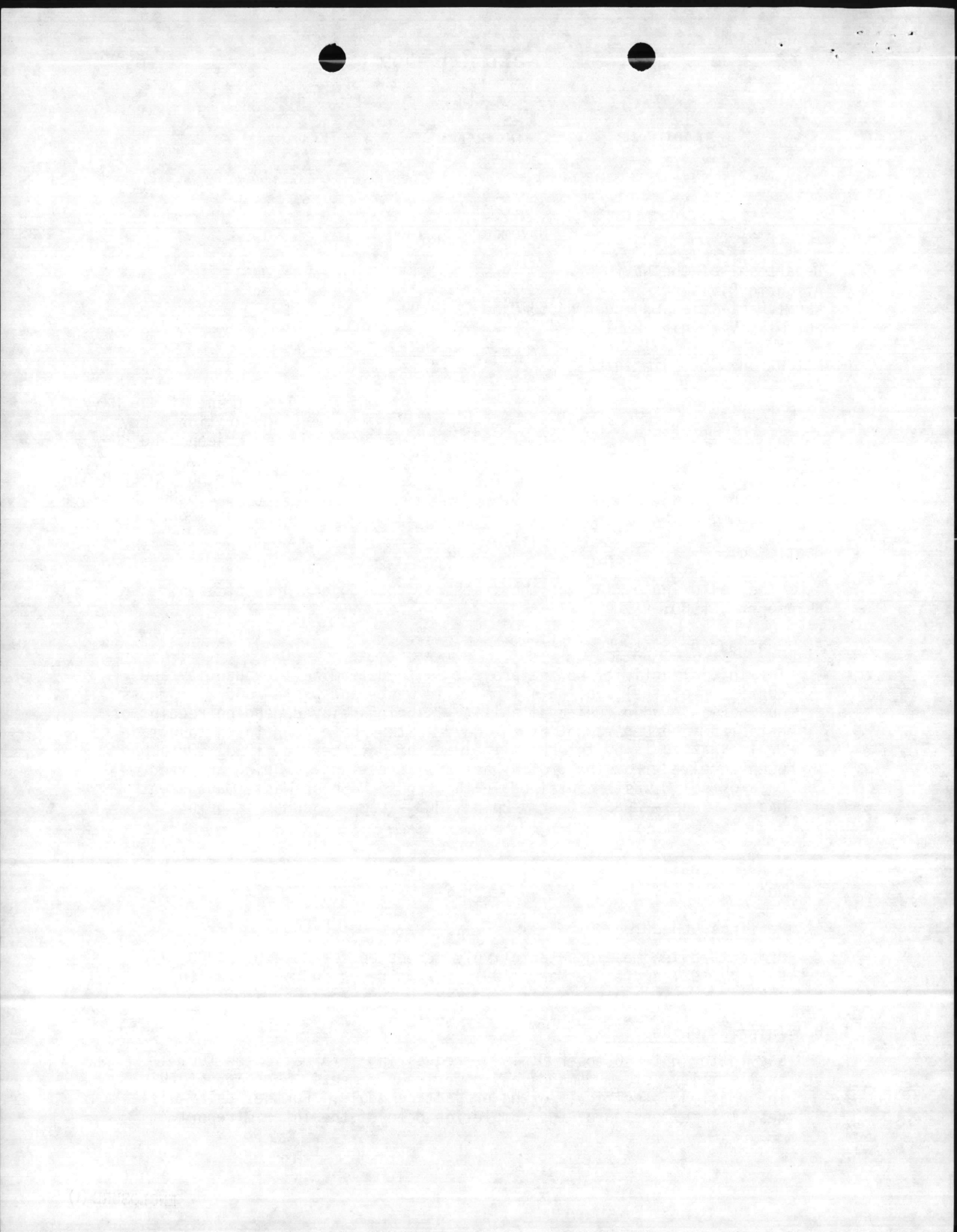
C. Meetings Scheduled

Project review meetings tentatively scheduled for December 1980, mid-January 1981 and early March 1981. Exact dates and locations to be set later.

D. Information Needed

See letter dated October 8, 1980, requesting information on fuel availability, steam demands and power requirements. Receipt of this information is critical to the project schedule. Further delay will result in extension of the completion date of the interim report.





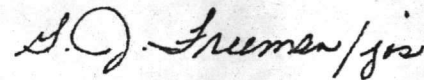
Department of the Navy  
Sirrime Job No. R-1628  
November 11, 1980  
Page Two

E. Major Activities in November

Continued review and analysis of data on fuel availability, steam demands and power requirements.  
Determine preliminary unit sizing criteria.  
Begin developing possible system concepts.

Yours very truly,

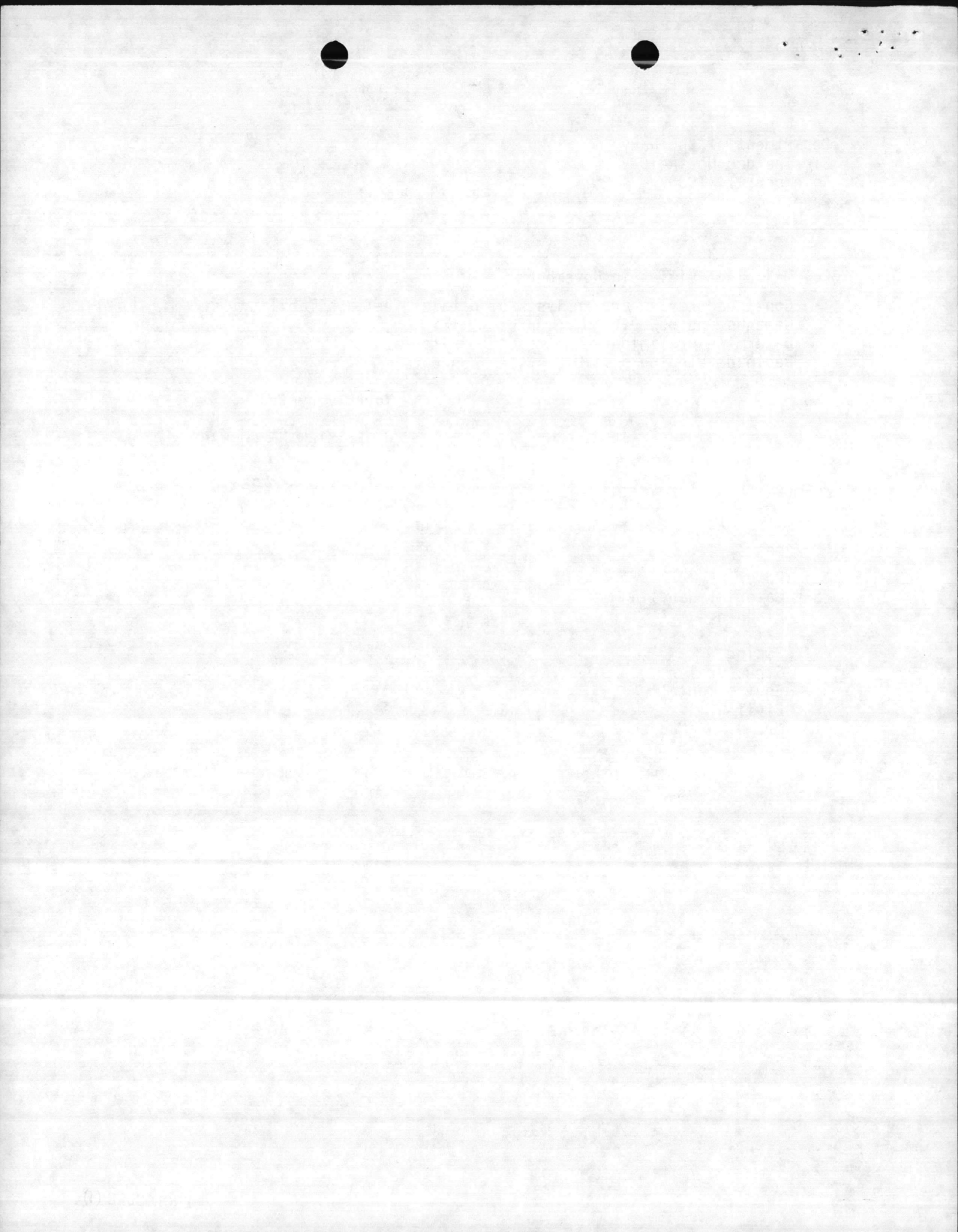
J. E. SIRRINE COMPANY



G. J. Freeman, P. E.

GJF/jos

cc: Power  
Material Handling  
Planning  
E/I  
Piping  
Structural  
Environmental  
Civil  
Mr. J. H. Machen





DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

TELEPHONE NO.  
444-7877  
AUTOVON 690-7877  
IN REPLY REFER TO:  
111:JDT  
11010

05 DEC 1980

From: Commander, Atlantic Division, Naval Facilities Engineering Command  
To: Commanding General, Marine Corps Air Station, Cherry Point

Subj: Solid and Waste Wood Burning and Cogeneration Study Contract No.  
80-B-3801 at Marine Corps Base, Camp Lejeune, and Marine Corps Air  
Station, Cherry Point

Ref: (a) FONECON J. E. Sirrine Company (Mr. G. J. Freeman)/LANTNAVFACENGCOM  
(Mr. J. D. Torma) of 3 Dec 1980

Encl: (1) J. E. Sirrine Company Progress Report No. 2 of 11 Nov 1980

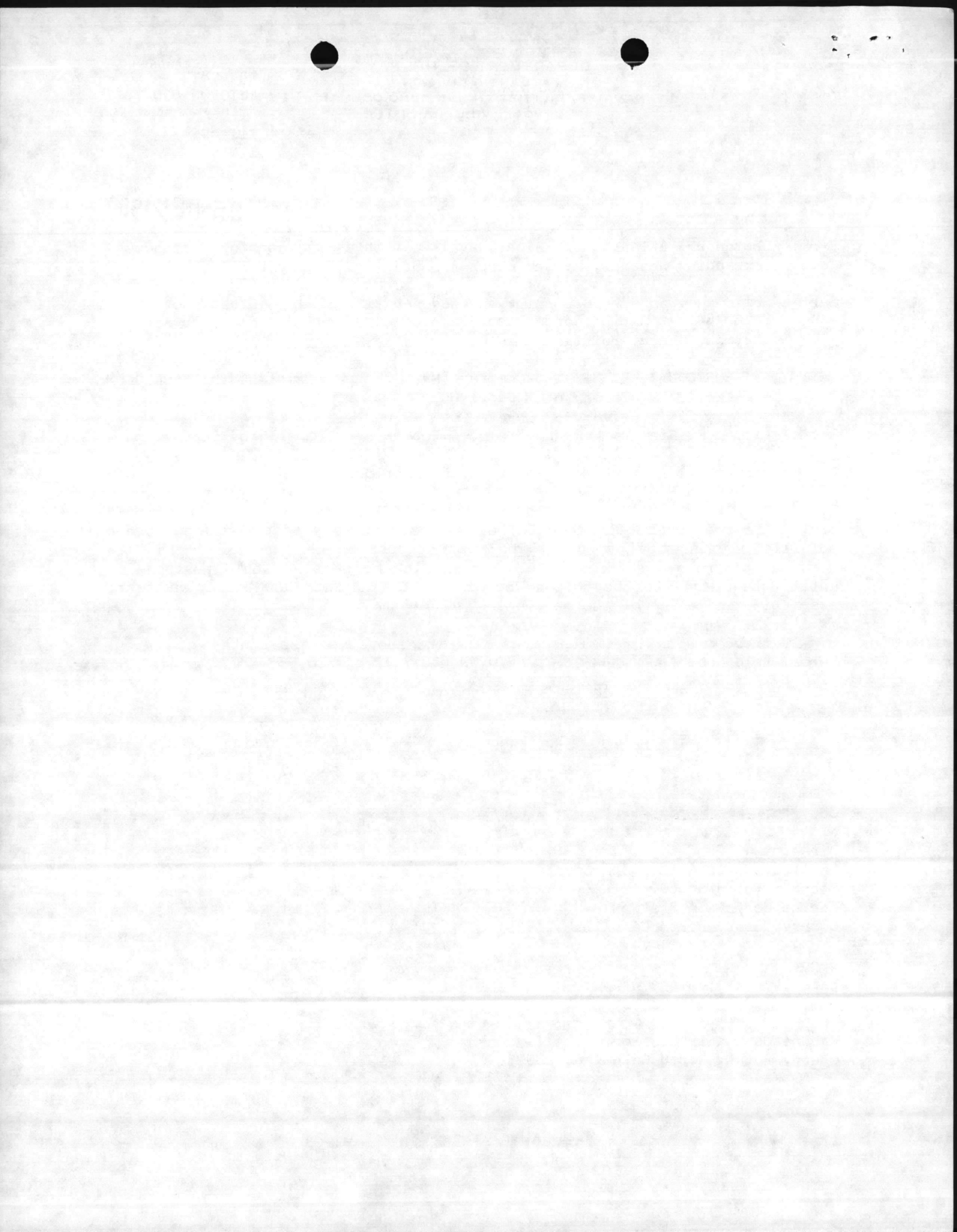
1. Enclosure (1) is forwarded for your information.
2. Per reference (a) and enclosure (1), an informal meeting may be held during the week of 15 December to review and discuss system development and possible cogeneration aspects. The meeting will be held provided that the work has progressed sufficiently. A delay in the meeting would postpone it until January due to the holiday schedule. LANTNAVFACENGCOM will advise of exact time and place of the meeting.
3. If there are any questions regarding the above, please contact Mr. J. D. Torma, telephone (804) 444-7877, AUTOVON 690-7877 or FTS 954-7877.

E. T. BARCO  
By direction

Copy to:

Director  
Facility Engineering Department  
Stop 7, Building 80  
Marine Corps Air Station  
Cherry Point, North Carolina 28533

Deputy  
Facility Maintenance Officer  
Facility Maintenance Department  
Stop 5  
Marine Corps Air Station  
Cherry Point, North Carolina 28533



Copy to: (continued)

Natural Resources and Environmental Affairs Division  
Installation and Logistics Directorate  
Marine Corps Air Station  
Cherry Point, North Carolina 28533

Assistant Chief of Staff of Facilities  
Building 1  
Marine Corps Base  
Camp Lejeune, North Carolina 28542

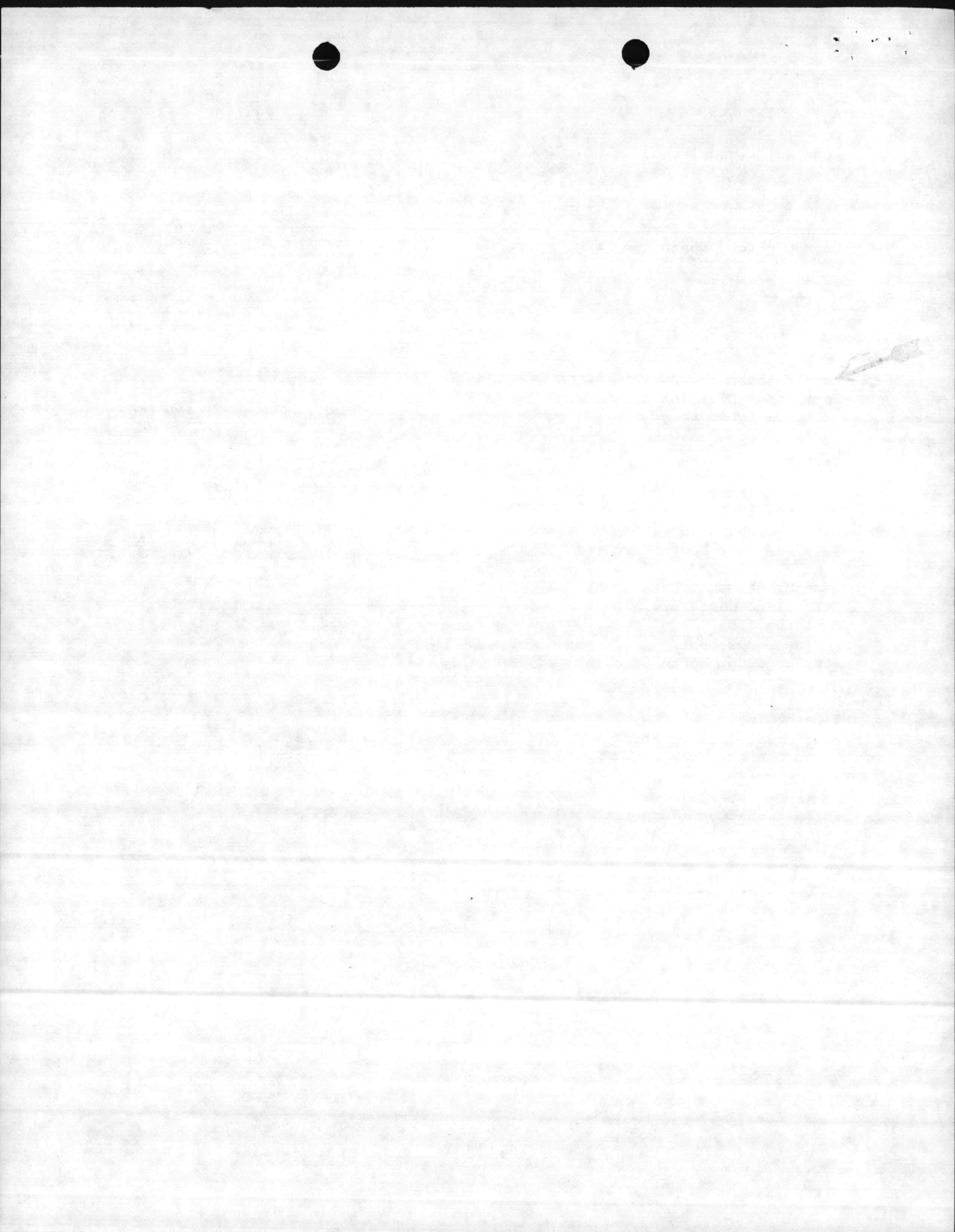
Base Maintenance Department  
Facilities Division Director  
Building 1202  
Marine Corps Base  
Camp Lejeune, North Carolina 28542

Public Works Officer  
Building 1005  
Marine Corps Base  
Camp Lejeune, North Carolina 28542

Base Maintenance Department  
Natural Resource Division Director  
Building 1103  
Marine Corps Base  
Camp Lejeune, North Carolina 28542

Mr. Heinz A. Gorges  
Vineta, Inc.  
3705 Sleepy Hollow Road  
Falls Church, Virginia 22041

CMC (Code LFF-2)  
COMNAVFACENGCOM (Code 111B) (2 copies)



ESTABLISHED 1902



POST OFFICE BOX 12748 RESEARCH TRIANGLE PARK, NORTH CAROLINA 27709 TELEPHONE (919) 541-2081

November 11, 1980

Department of the Navy  
Atlantic Division  
Naval Facilities Engineering Command  
Norfolk, Virginia 23511

Attention: Mr. Jim Torma

Subject: Department of the Navy  
Cogeneration Study  
Camp Lejeune and Cherry  
Point, N. C.  
Contract N62470-80-B-3801  
Sirrine Job No. R-1628  
Progress Report No. 2

Gentlemen:

The following summarizes the status of the subject project as of November 7, 1980:

A. Engineering Status

The initial activity on the project is to determine the quantity and condition of fuel available from solid waste and waste wood. Progress on the waste wood fuel availability is being delayed pending receipt of data from the Department of the Navy. Steps have been taken to obtain preliminary data by telephone the week of November 10, 1980. Data has been received from the Croatan National Forest and is being analyzed. Data on solid waste contained in the report "Solid Waste Management Master Plans - MCAS - Cherry Point, MCB - Camp Lejeune" is being analyzed.

B. Meetings Held

None

C. Meetings Scheduled

Project review meetings tentatively scheduled for December 1980, mid-January 1981 and early March 1981. Exact dates and locations to be set later.

D. Information Needed

See letter dated October 8, 1980, requesting information on fuel availability, steam demands and power requirements. Receipt of this information is critical to the project schedule. Further delay will result in extension of the completion date of the interim report.

ENCLOSURE (1)





100-100000

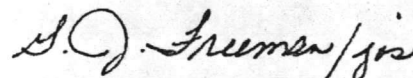
Department of the Navy  
Sirrinc Job No. R-1628  
November 11, 1980  
Page Two

E. Major Activities in November

Continued review and analysis of data on fuel availability, steam demands and power requirements.  
Determine preliminary unit sizing criteria.  
Begin developing possible system concepts.

Yours very truly,

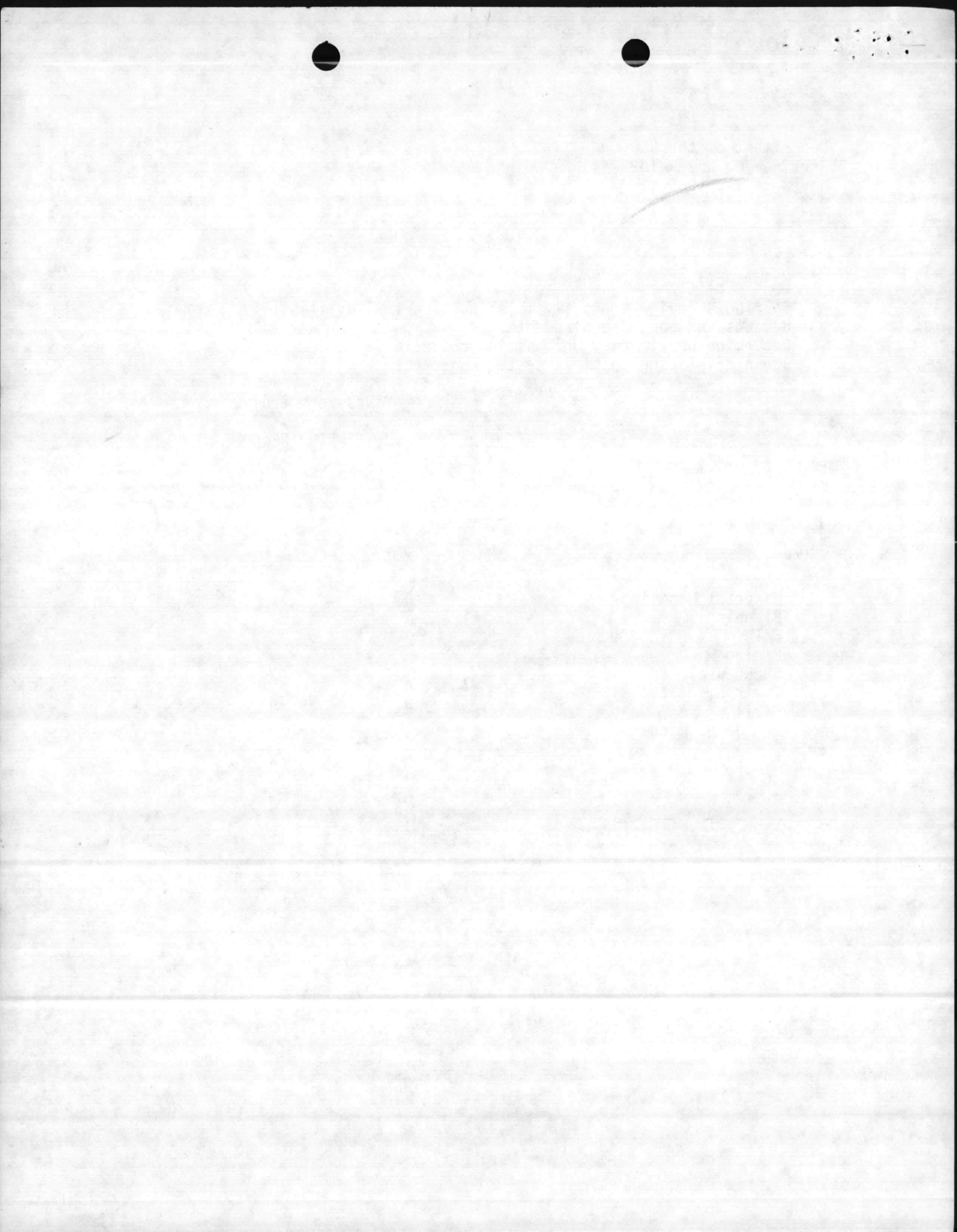
J. E. SIRRINE COMPANY



G. J. Freeman, P. E.

GJF/jos

cc: Power  
Material Handling  
Planning  
E/I  
Piping  
Structural  
Environmental  
Civil  
Mr. J. H. Machen





DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

TELEPHONE NO.  
444-7877

IN REPLY REFER TO:  
111:JDT  
11010

2 8 OCT 1980

From: Commander, Atlantic Division, Naval Facilities Engineering Command  
To: Commanding General, Marine Corps Base, Camp Lejeune  
Commanding General, Marine Corps Air Station, Cherry Point

Subj: Solid and Wastewood Burning and Cogeneration Study Contract No.  
80-B-3801 at Marine Corps Base, Camp Lejeune, and Marine Corps  
Air Station, Cherry Point

Encl: (1) J. E. Surrine Company Progress Report Number 1 of 14 Oct 1980  
(2) J. E. Surrine Company History Number 1 of 17 Oct 1980 regarding  
1 Oct 1980 meeting at MCB, Camp Lejeune  
(3) J. E. Surrine Company History Number 2 of 17 Oct 1980 regarding  
2 Oct 1980 meeting at MCAS, Cherry Point

1. Enclosures (1), (2), and (3) are forwarded for your information.

R. D. CROWSON  
By direction

Copy to:  
Director  
Facilities Engineering Department  
Stop 7, Building 80  
Marine Corps Air Station  
Cherry Point, NC 28533

Deputy  
Facilities Maintenance Officer  
Facility Maintenance Department  
Stop 5  
Marine Corps Air Station  
Cherry Point, NC 28533

Natural Resources and Environmental  
Affairs Division  
Installation and Logistics Directorate  
Marine Corps Air Station  
Cherry Point, NC 28533

Assistant Chief of Staff of Facilities  
Building 1  
Marine Corps Base  
Camp Lejeune, NC 28542

1980

1980

111:JDT  
11010

→ Copy to: (continued)

Base Maintenance Department  
Utilities Division Director  
Building 1202  
Marine Corps Base  
Camp Lejeune, NC 28542

Public Works Office  
Building 1005  
Marine Corps Base  
Camp Lejeune, NC 28542

Base Maintenance Department  
Natural Resource Division Director  
Building 1103  
Marine Corps Base  
Camp Lejeune, NC 28542

Mr. Heinz A. Gorges  
Vineta, Incorporated  
3705 Sleepy Hollow Road  
Falls Church, VA 22041

CMC (Code LFF)  
COMNAVFACENGCOM (Code 111B) (2 copies)



17 17



ESTABLISHED 1902



J. E. SIRRINE COMPANY

ARCHITECTS

ENGINEERS

PLANNERS

POST OFFICE BOX 12748 RESEARCH TRIANGLE PARK NORTH CAROLINA 27709 TELEPHONE (919) 541-2081

October 14, 1980

Department of the Navy  
Atlantic Division  
Naval Facilities Engineering Command  
Norfolk, Virginia 23511

Attention: Mr. Jim Torma

Subject: Dept. of the Navy  
Cogeneration Study  
Camp Lejeune and Cherry Point  
Contract N62470-80-B-3801  
Sirrine Job No. R-1628  
Progress Report No. 1

Gentlemen:

The following summarizes the status of the subject project as of October 3, 1980:

A. Engineering Status

Negotiations of the engineering contract were completed on September 4, 1980 and the contract received on October 1, 1980. Project "kick-off" meetings were scheduled for October 1, 1980 at Camp Lejeune and October 2, 1980 at Cherry Point. (Project History No. 1 and 2 to be issued later, will cover items discussed at the meetings.)

The objectives of the meetings were to determine what information on available fuel sources is available and to look at the sites for the possible location of the proposed facilities.

B. Meetings Held

1. Project "kick-off" meeting - Camp Lejeune - October 1, 1980.
2. Project "kick-off" meeting - Cherry Point - October 2, 1980.

C. Meetings Scheduled

1. Project review meetings tentatively scheduled for early December 1980, mid-January 1981, and early March 1981. Exact dates and location to be set later.

D. Information Needed

1. See letter dated October 8, 1980 requesting information on fuel availability, steam demands and power requirements.

ENCLOSURE (1)





Department of the Navy  
Contract N62470-80-B-3801  
Sirrine Job No. R-1628  
October 14, 1980  
Page Two

E. Major Activities in October 1980

1. Review and analysis data on fuel availability, steam demands and power requirements.
2. Determine preliminary unit sizing criteria.
3. Begin developing possible system concepts for the project.

F. General

1. A milestone bar chart schedule is attached indicating the major activities for Phase I of the project. After completion of Phase I, the Phase II and III activities will be listed.
2. The project is less than 5% complete with no apparent schedule problems.
3. Vineta, Inc., NAVFAC's consultant on cogeneration projects, will be included in all discussion of criteria for cogeneration facilities.
4. A copy of CEL Technical Report R-879 "Cogeneration Systems" was received at the meeting at Cherry Point.
5. It is requested that a copy of "Cogeneration at Navy Bases" by Bechtel, be forwarded for information.
6. The key people on Sirrine's Project team are:

Mr. G. J. Freeman, Project Manager  
Mr. W. A. Koos, Power Engineer  
Ms. Robin Spinks, Planner (Fuel Availability)  
Mr. G. B. Joyner, Materials Handling Engineer  
Mr. C. L. Andrews, Electrical Engineer

Other engineers will be assigned to the project when their particular engineering discipline is required.

7. Request for all significant data will be forwarded to Mr. Jim Torma, Project Engineer, LANTDIV, Norfolk, Virginia.

Yours very truly,

J. E. SIRRINE COMPANY

*G. J. Freeman*

G. J. Freeman, P. E.

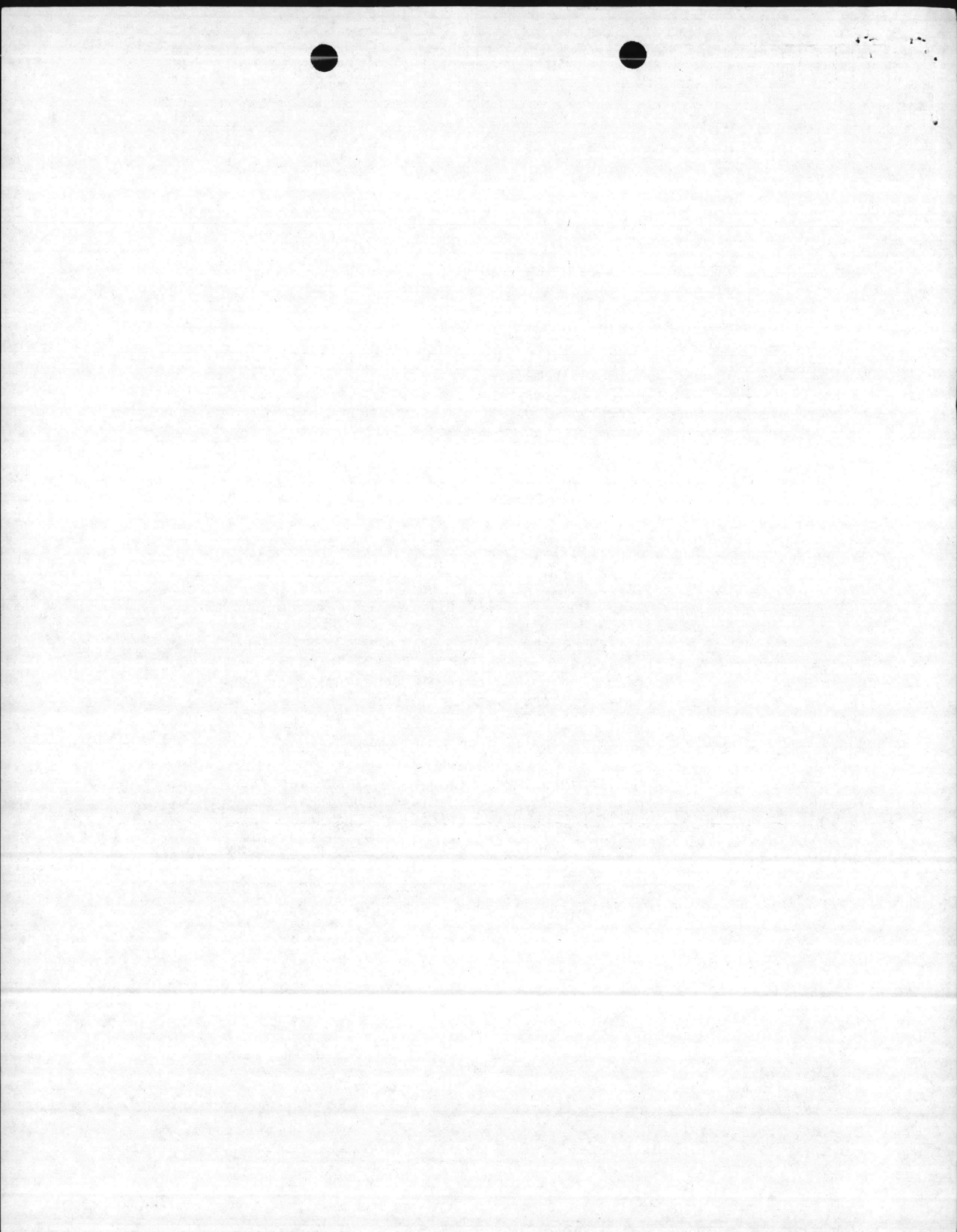
GJF/jos

Enclosure

cc: Power Dept.  
Materials Handling Dept.  
Planning  
E/I  
Piping

Structural  
Environmental  
Civil  
Mr. J. H. Machen

ENCLOSURE (1)



MILESTONE SCHEDULE FOR DEPARTMENT OF THE NAVY - COGENERATION STUDY - CA'IP LEJEUNE & CHERRY POINT

Revisions:

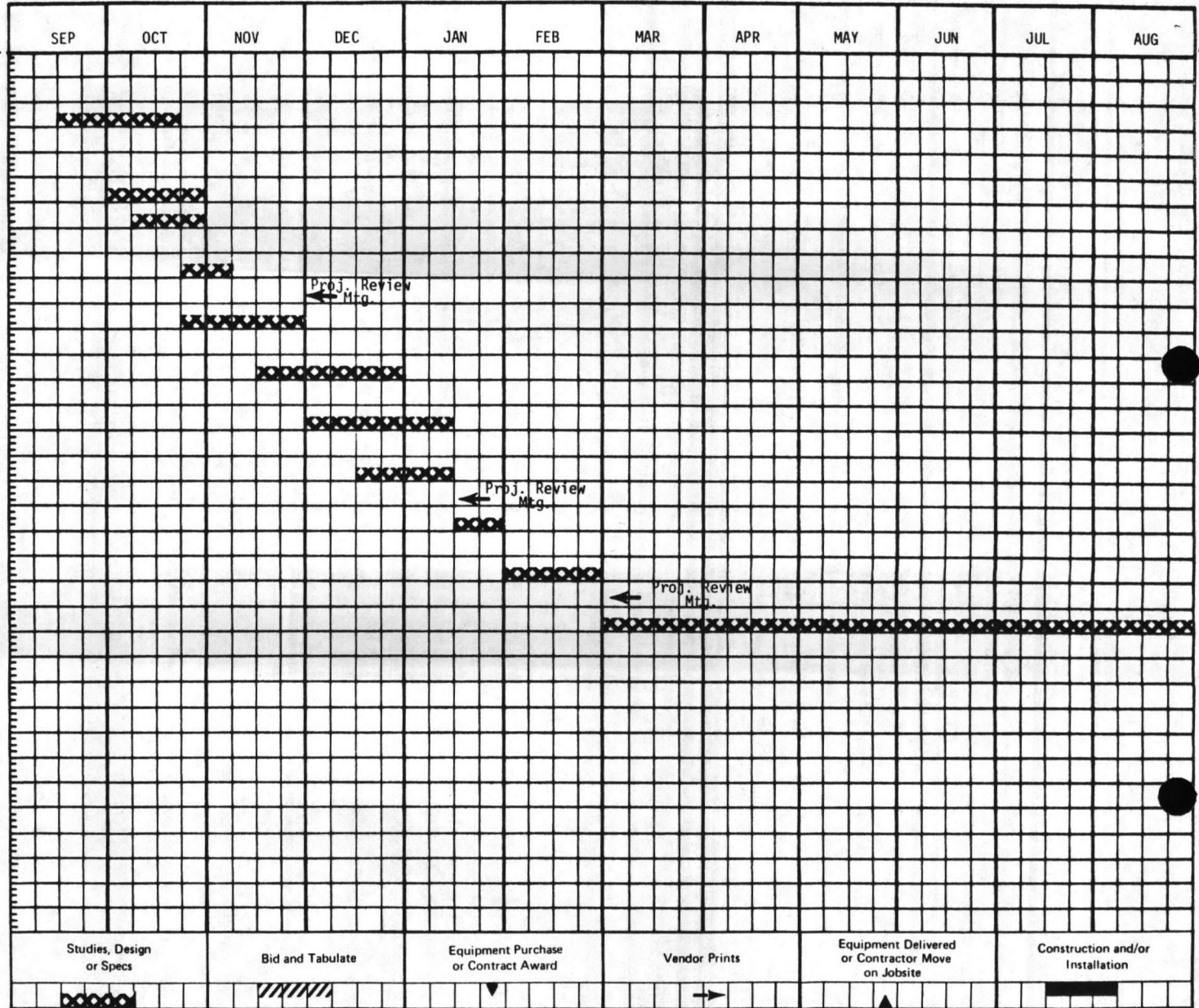
**J. E. SIRRINE COMPANY**  
 ARCHITECTS      ENGINEERS      PLANNERS

Job No. R-1628 Date: 10-13-80 By: GJF/JEH

A - Phase I

1. Obtain Existing Data
2. Determine Fuel Availability
  - a) Waste Wood
  - b) Solid Waste
3. Preliminary Unit Size
4. Develop Feasible Systems
5. System Flow Diagrams
6. System Layouts
7. System Descriptions
8. Assemble Interim Report
9. Select System(s) for Phase II

B - Phase II (Preliminary)  
(Breakdown Later)



Key to Symbols:

ENCLOSURE ( )

October 17, 1980

HISTORY NO. 1

DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND

COGENERATING STUDY  
MARINE CORPS BASE, CAMP LEJEUNE  
MARINE CORPS AIR STATION, CHERRY POINT  
CONTRACT N62470-80-B-3801

SIRRINE JOB NO. R-1628

DATE: October 1, 1980  
PLACE: Marine Corps Base, Camp Lejeune, North Carolina  
PRESENT FOR: DEPARTMENT OF THE NAVY

Mr. Jim Torma  
Mr. Terry Hatcher  
Mr. Colon Wellington  
Mr. David Southerland  
Mr. Kenneth Shepard  
Mr. Ken Harrison  
Mr. Julian Wooten

J. E. SIRRINE COMPANY  
Mr. Bill Koos  
Mr. Garland Joyner  
Mr. Henry Stikes  
Ms. Robin Spinks  
Mr. Jake Freeman

PURPOSE OF MEETING: To determine what information exists on available fuel sources and to visit possible sites for proposed facilities at Camp Lejeune.

Items discussed:

1. Form 1391 will not be required for the project.
2. Wood sales records for the past four years is available.
3. The base is sub-divided into 62 compartments for locating areas to be cut.



History No. 1  
Department of the Navy  
Camp Lejeune, North Carolina  
Sirrinc Job No. R-1628  
October 17, 1980  
Page Two

4. All timber cutting operations is by contract. Approximately 50% of allowable volume is presently being cut.
5. Present inventory is  $287 \times 10^6$  board-ft. with 4.95% annual growth.
6. All logging residue is left in place.
7. An individual firewood cutting program is in operation.
8. Classification of solid waste is voluntary.
9. The proposed site for the proposed facilities is within 2 miles of the existing landfill.
10. The existing steam distribution system pressure is 150 psig saturated.
11. SIRRINE will request in writing to Mr. Jim Torma what information is required for the study.

J. E. SIRRINE COMPANY

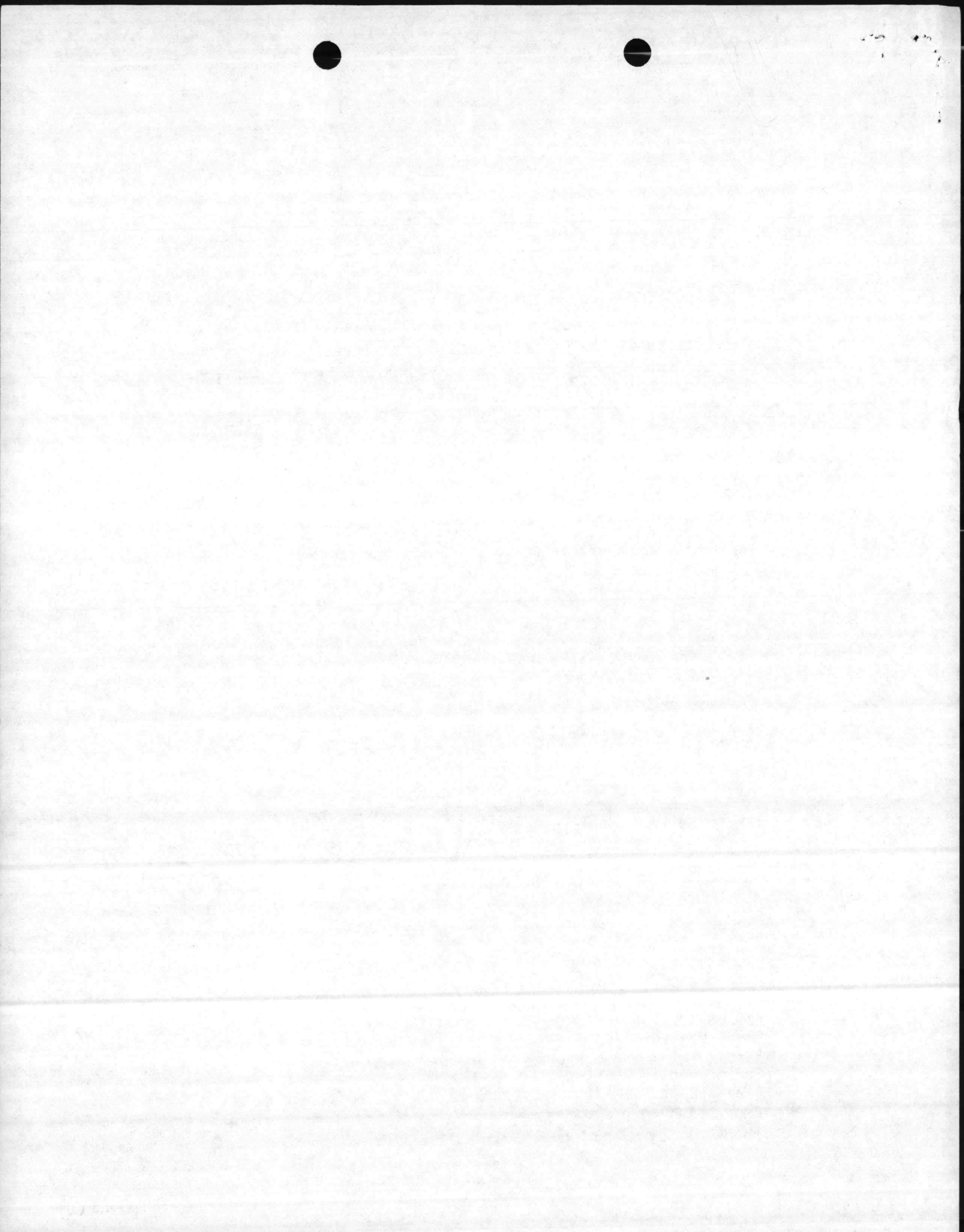
*GJ Freeman*

G. J. Freeman, P. E.

GJF/1a1

cc: Mr. Jim Torma (6)  
Power Dept.  
Mater. Handl. Dept.  
Planning Dept.  
E/I Dept.  
Civil Dept.  
Structural Dept.  
Environmental Dept.  
Piping Dept.  
Proj. Manager





October 17, 1980

HISTORY NO. 2

DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND

COGENERATING STUDY  
MARINE CORPS BASE, CAMP LEJEUNE  
MARINE CORPS AIR STATION, CHERRY POINT  
CONTRACT N62470-80-B-3801

SIRRINE JOB NO. R-1628

DATE: October 2, 1980  
PLACE: Marine Corps Air Station, Cherry Point, N.C.

PRESENT FOR: DEPARTMENT OF THE NAVY

Mr. Jim Torma  
Mr. Gene Bowling  
Mr. Skip Conklin  
Lt. Col. A. L. Amidon  
Mr. Lonnie Nelms  
Mr. Jackie Gaskins  
Mr. Philip Fisher  
Mr. Ken Spires

J. E. SIRRINE COMPANY

Mr. Henry Stikes  
Mr. Adrian Merrill  
Mr. Garland Joyner  
Mr. Bill Koos  
Ms. Robin Spinks  
Mr. Jake Freeman

PURPOSE OF MEETING: To determine what information exists on available fuel sources and to visit possible sites for proposed facilities at Cherry Point.

Items discussed:

1. Solid waste from "off-base" housing areas is picked up by private contractor and disposed of on the county landfill.
2. Large "appliance" type items are separated and taken to a "large items" landfill.
3. There is little or no classification of solid waste.



History No. 2  
Department of the Navy  
Cherry Point, North Carolina  
Sirrime Job No. R-1628  
October 17, 1980  
Page Two

October 17, 1980

4. Exact procedure for pick-up and disposal of mess hall waste not known.
5. Material recovery systems is not in the scope of this study.
6. The base timerlands is sub-divided into thirteen compartments for identification.
7. Logging waste only is available from cutting of hardwoods, pine, and poplar species.
8. Cutting operations conducted on 80 year rotation.
9. Firewood program for individuals is in operation.
10. Sirrime will request in writing from Mr. Jim Torma what information is required for the study.

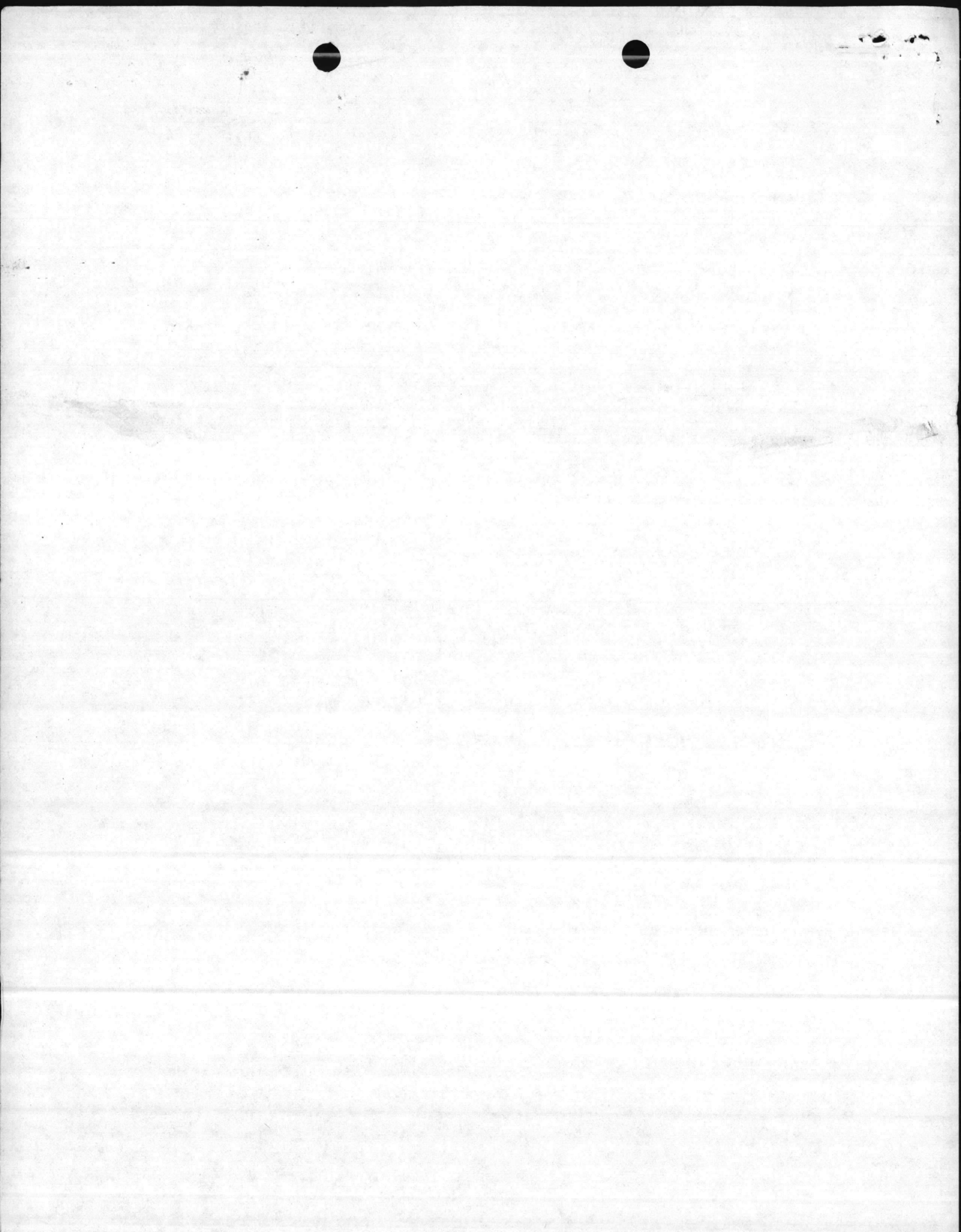
J. E. SIRRINE COMPANY

*G. J. Freeman*

G. J. Freeman, P. E.

GJF/1a1

cc: Mr. Jim Torma (6)  
Power Dept.  
Mater. Handl. Dept.  
Planning Dept.  
E/I Dept.  
Civil Dept.  
Structural Dept.  
Environmental Dept.  
Piping Dept.  
Proj. Manager



ASSISTANT CHIEF OF STAFF, FACILITIES  
HEADQUARTERS, MARINE CORPS BASE

DATE 10-27-80

TO:

[ BASE MAINT O ]

PUBLIC WORKS O

COMM-ELECT O

MOTOR TRANSPORT O

ATTN: \_\_\_\_\_

DIR, QUARTERS & HOUSING

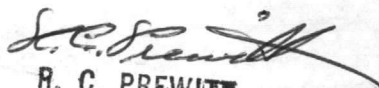
DIR, BOQ/BSQ

BASE FIRE CHIEF

1. Attached is forwarded for info/action.

2. Please initial, or comment, and return all papers to this office.

3. Your file copy

  
R. C. PREWITT  
By direction

“LET’S THINK OF A FEW REASONS  
WHY IT CAN BE DONE”



OCT 27 1980

ROUTING SLIP

	ACTION	INFO	INITIAL
BMO			J
ABMO			J
ADMIN			J
ENVIRON AFF	✓	✓	BUR S
F&A BRANCH			
MAINT NCO			
M&R			
OPNS			
PROP			
TELE			
UMACS			
UTIL	✓	✓	
SECRETARY			

COMMENTS:

Forwarded copy to NREA

Utilities prepare  
~~summary~~ response.  
BUR



1981



1981

*[Faint, illegible handwriting on lined paper]*

*[Faint, illegible handwriting on lined paper]*



DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

TELEPHONE NO.  
444-7877

IN REPLY REFER TO:  
111:JDT  
11010

22 OCT 1980

From: Commander, Atlantic Division, Naval Facilities Engineering Command  
To: Commanding General, Marine Corps Base, Camp Lejeune ←  
Commanding General, Marine Corps Air Station, Cherry Point

Subj: Solid and Wood Waste Burning and Cogeneration Study Contract No.  
80-B-3801 at Marine Corps Base, Camp Lejeune, and Marine Corps  
Air Station, Cherry Point; request for information concerning

Encl: (1) J. E. Serrine Company ltr of 8 Oct 1980

1. Enclosure (1) is forwarded for action. It is requested that the information provided be submitted to LANTNAVFACENGCOM, Energy Programs Section, Code 1111, Norfolk, Virginia 23511.

2. With regard to the power information requested, monthly steam and electrical usage should be for the time period FY-80. Fuel costs should be current for the central plant operation. In addition, a coal/oil mix ratio and an overall plant efficiency percentage needs to be provided to establish an overall dollar fuel cost per MBTU of exported plant steam. The electrical rate structures requested will be provided by LANTNAVFACENGCOM as new or modified structures are received from CP&L.

3. If there are any questions regarding the above, please do not hesitate to contact Mr. Jim Torma.

R. D. CROWSON  
By direction

Copy to:  
Director,  
Facilities Engineering Department  
Stop 7, Building 80  
Marine Corps Air Station  
Cherry Point, NC 28533  
Attention Mr. Skip Conklin

Deputy,  
Facilities Maintenance Officer  
Facility Maintenance Department  
Stop 5  
Marine Corps Air Station  
Cherry Point, NC 28533



1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65  
66  
67  
68  
69  
70  
71  
72  
73  
74  
75  
76  
77  
78  
79  
80  
81  
82  
83  
84  
85  
86  
87  
88  
89  
90  
91  
92  
93  
94  
95  
96  
97  
98  
99  
100

111:JDT  
11010

Copy to: (continued)

Natural Resources and Environmental Affairs Division  
Installation and Logistics Directorate  
Marine Corps Air Station  
Cherry Point, NC 28533

Base Maintenance Department  
Utilities Division Director  
Building 1202  
Marine Corps Base  
Camp Lejeune, NC 28542

Base Maintenance Department  
Natural Resource Division Director  
Building 1103  
Marine Corps Base  
Camp Lejeune, NC 28542

Veneta, Incorporated  
3705 Sleepy Hollow Road  
Falls Church, VA 22041



11

ESTABLISHED 1902



ARCHITECTS

ENGINEERS

PLANNERS

POST OFFICE BOX 12748 RESEARCH TRIANGLE PARK, NORTH CAROLINA 27709 TELEPHONE (919) 541-2081

October 8, 1980

Mr. Jim Torma  
Project Engineer/Technical Coordinator  
Atlantic Division  
Naval Facilities Engineering Command  
Norfolk, Virginia 23511

Dear Jim:

The following is a list of the information we need as discussed in our meetings last week at Camp Lejeune and Cherry Point. Will you please see that we get this.

Forestry Information

From Ken Spires at Cherry Point  
Ken Harrison at Camp Lejeune

1. Map of entire base area divided by forestry compartments.
2. Maximum allowable cut according to the forestry management practices and additional clear cutting.
3. Amount of wood cut by:
  - type of contractor (or for what purpose)
  - % hardwood vs. softwood (or by species, if available)
4. Revenues from wood sales.
5. Pricing policies, schedules or ranges.
6. Amount of wood cut in firewood program.
7. The statistics, if available, back to 1975.

ENCLOSURE (1)



100

October 8, 1980

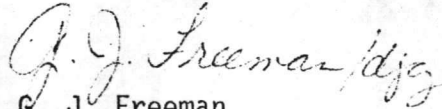
Power Information

From Cherry Point &amp; Camp Lejeune

1. Monthly steam usage reports to include condensate returns.
2. Electrical usage report.
3. Water source and cost.
4. Fuel cost - oil/coal.
5. Steam conditions required at the user.
6. Current electrical rate structure.

Sincerely,

J. E. SIRRINE COMPANY

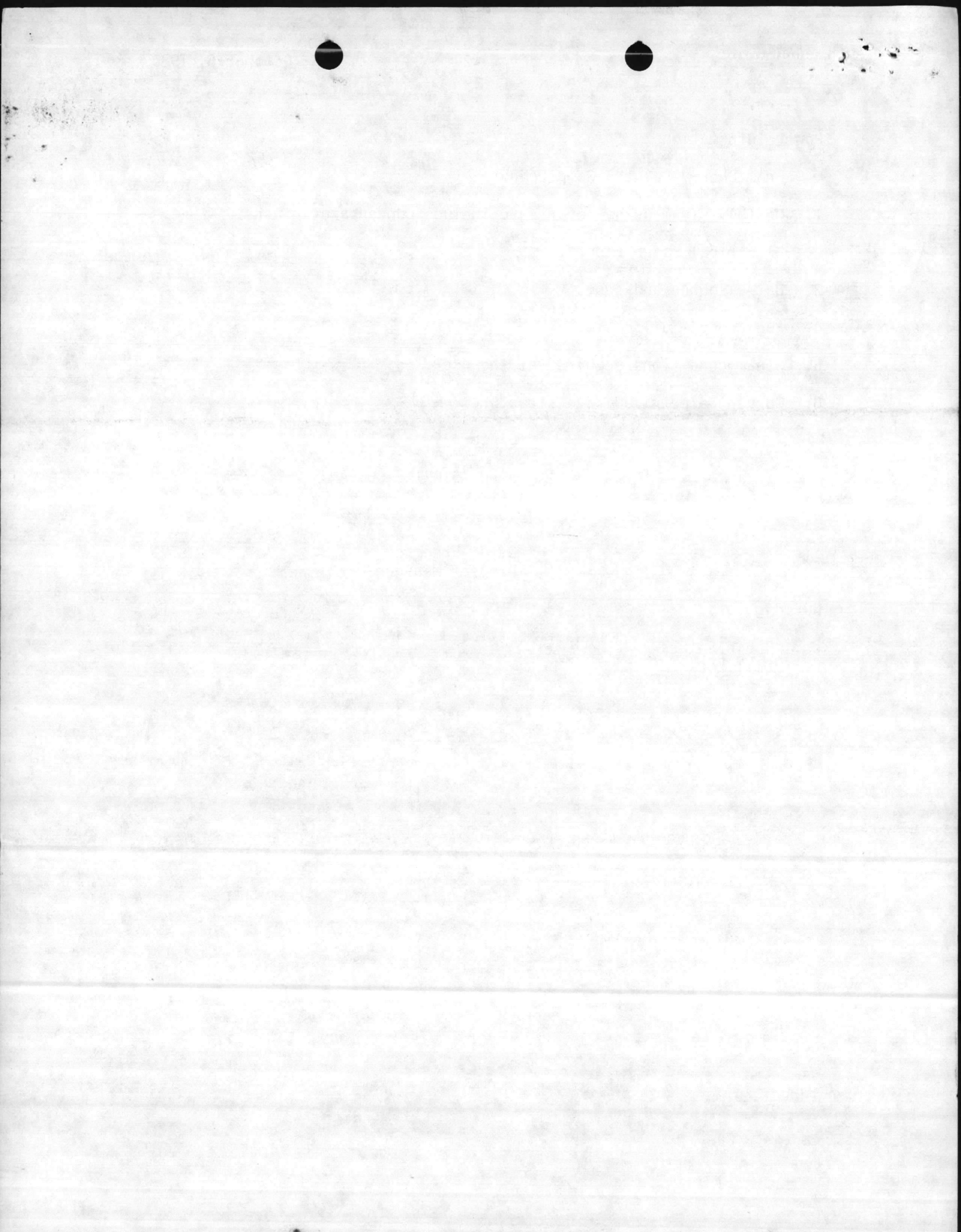
G. J. Freeman  
Project Manager

GJF:djg

cc: Robin Spinks  
Bill Koos

ENCLOSURE (1)







DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511

TELEPHONE NO.  
444-7877

IN REPLY REFER TO:  
111:JDT  
11010

22 OCT 1980

From: Commander, Atlantic Division, Naval Facilities Engineering Command  
To: Commanding General, Marine Corps Base, Camp Lejeune  
Commanding General, Marine Corps Air Station, Cherry Point

Subj: Solid and Wood Waste Burning and Cogeneration Study Contract No.  
80-B-3801 at Marine Corps Base, Camp Lejeune, and Marine Corps  
Air Station, Cherry Point; request for information concerning

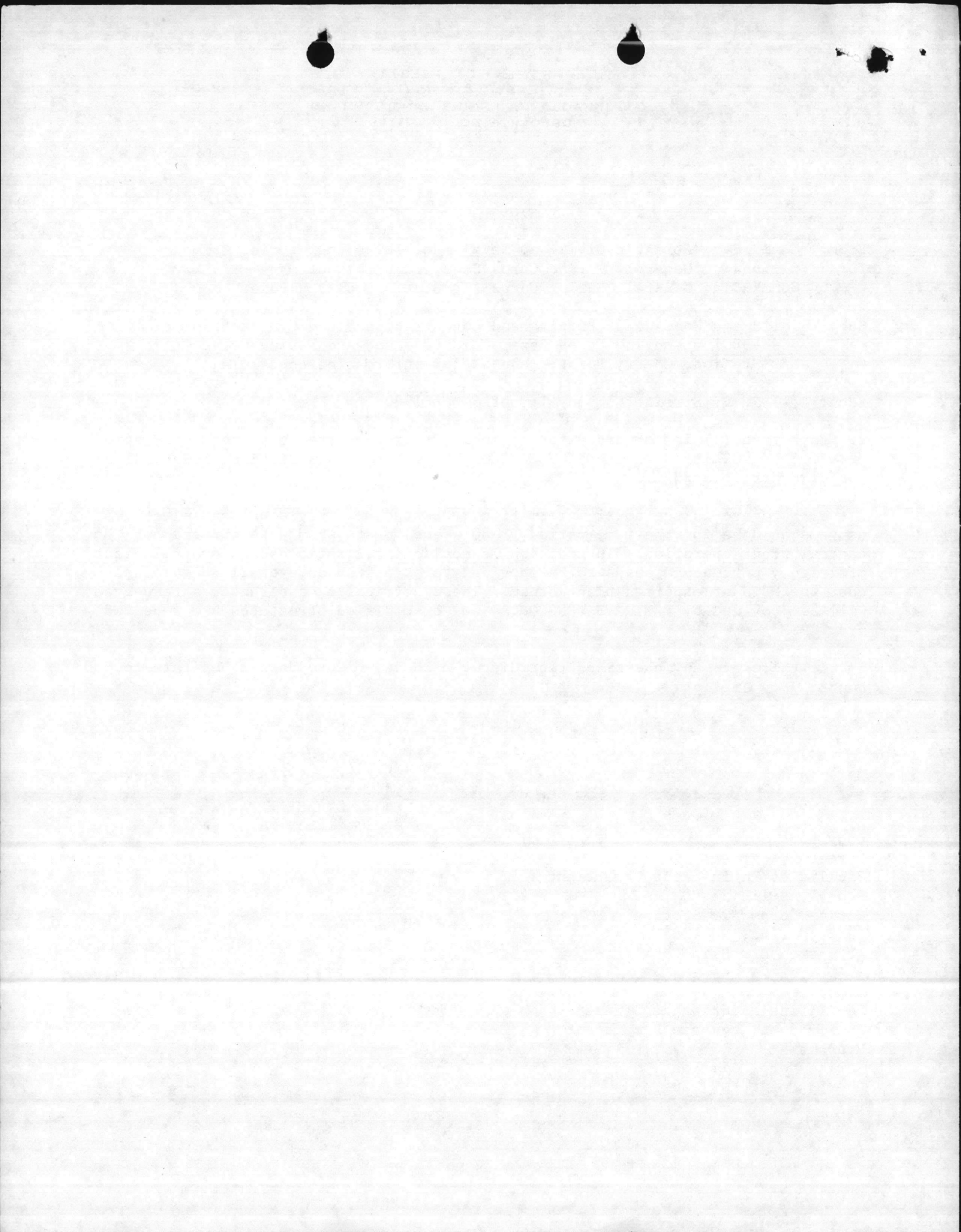
Encl: (1) J. E. Serrine Company ltr of 8 Oct 1980

1. Enclosure (1) is forwarded for action. It is requested that the information provided be submitted to LANTNAVFACENGCOM, Energy Programs Section, Code 1111, Norfolk, Virginia 23511.
2. With regard to the power information requested, monthly steam and electrical usage should be for the time period FY-80. Fuel costs should be current for the central plant operation. In addition, a coal/oil mix ratio and an overall plant efficiency percentage needs to be provided to establish an overall dollar fuel cost per MBTU of exported plant steam. The electrical rate structures requested will be provided by LANTNAVFACENGCOM as new or modified structures are received from CP&L.
3. If there are any questions regarding the above, please do not hesitate to contact Mr. Jim Torma.

R. D. CROWSON  
By direction

Copy to:  
Director,  
Facilities Engineering Department  
Stop 7, Building 80  
Marine Corps Air Station  
Cherry Point, NC 28533  
Attention Mr. Skip Conklin

Deputy,  
Facilities Maintenance Officer  
Facility Maintenance Department  
Stop 5  
Marine Corps Air Station  
Cherry Point, NC 28533



ESTABLISHED 1902



ARCHITECTS

ENGINEERS

PLANNERS

POST OFFICE BOX 12748 RESEARCH TRIANGLE PARK, NORTH CAROLINA 27709 TELEPHONE (919) 541-2081

October 8, 1980

Mr. Jim Torma  
Project Engineer/Technical Coordinator  
Atlantic Division  
Naval Facilities Engineering Command  
Norfolk, Virginia 23511

Dear Jim:

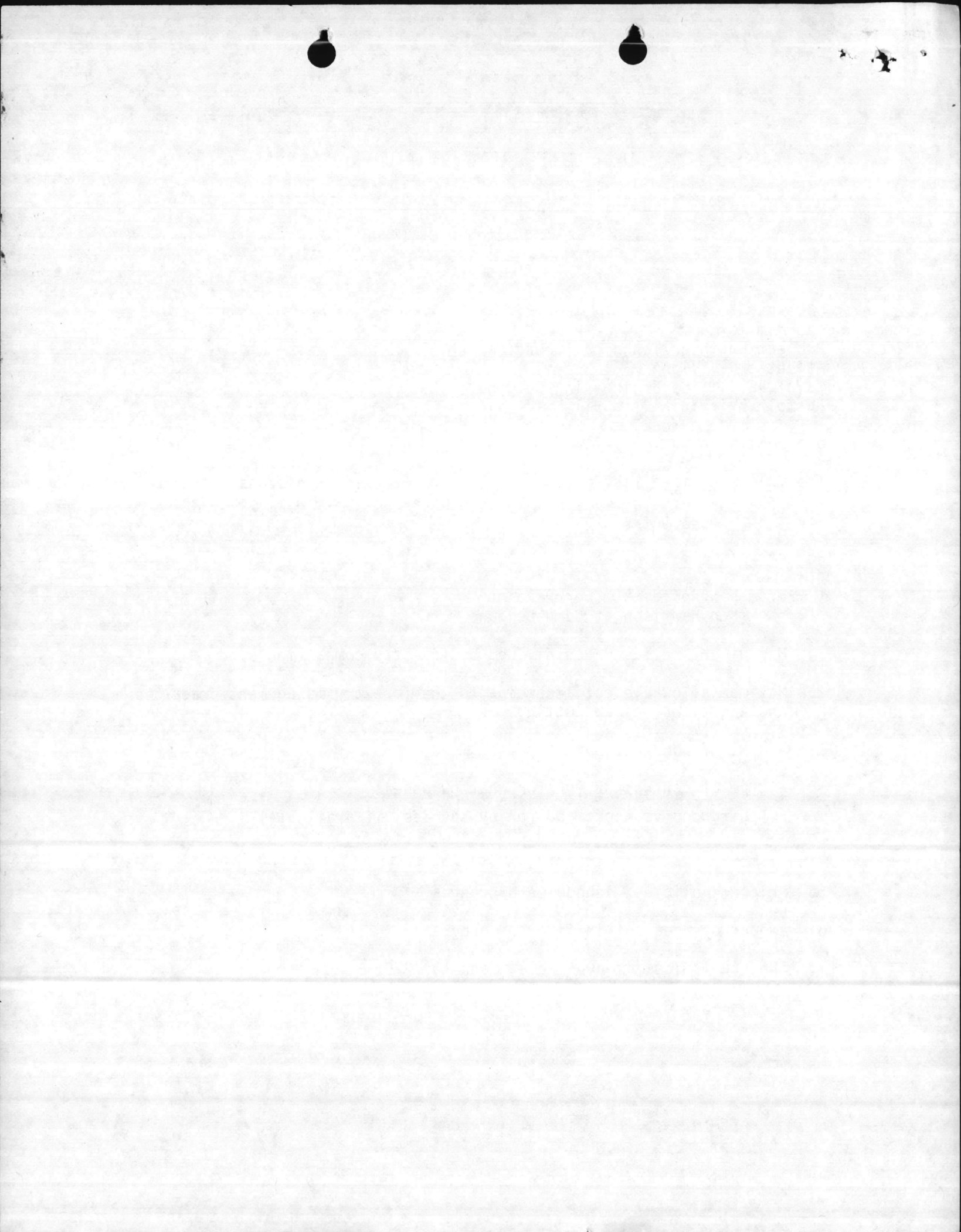
The following is a list of the information we need as discussed in our meetings last week at Camp Lejeune and Cherry Point. Will you please see that we get this.

Forestry Information

From Ken Spires at Cherry Point  
Ken Harrison at Camp Lejeune

- o.k. 1. Map of entire base area divided by forestry compartments.
- o.k. 2. Maximum allowable cut according to the forestry management practices and additional clear cutting.
3. Amount of wood cut by:
  - type of contractor (or for what purpose)
  - % hardwood vs. softwood (or by species, if available)
4. Revenues from wood sales.
5. Pricing policies, schedules or ranges.
6. Amount of wood cut in firewood program.
7. The statistics, if available, back to 1975.

ENCLOSURE (1)



October 8, 1980

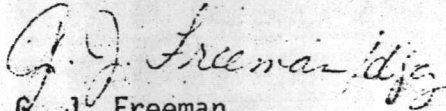
Power Information

From Cherry Point &amp; Camp Lejeune

1. Monthly steam usage reports to include condensate returns.
2. Electrical usage report.
3. Water source and cost.
4. Fuel cost - oil/coal.
5. Steam conditions required at the user.
6. Current electrical rate structure.

Sincerely,

J. E. SIRRINE COMPANY

G. J. Freeman  
Project Manager

GJF:djg

cc: Robin Spinks  
Bill Koos

ENCLOSURE (1)

