



Working Together for a
Better Tomorrow. Today.

SPECIFICATION PACKAGE

for

TURBINE GENERATOR INSPECTION AND REPAIR

Bid Opening Date/Time

**WEDNESDAY, MARCH 7, 2012 @ 2:00 p.m. (Local Time)
CITY OF GRAND ISLAND, CITY HALL
100 East 1st Street, P.O. Box 1968
Grand Island, NE 68802-1968**

Contact

**City of Grand Island – Utilities Department
Platte Generating Station
308/385-5496**

Date issued: January 20, 2012

**ADVERTISEMENT TO BIDDERS
FOR
TURBINE GENERATOR INSPECTION AND REPAIR
FOR
CITY OF GRAND ISLAND, NEBRASKA**

Sealed bids will be received at the office of the City Clerk, 100 E. First Street, P.O. Box 1968, Grand Island, Nebraska 68802, until Wednesday, March 7, 2012 at 2:00 p.m. local time for Turbine Generator Inspection and Repair, FOB the City of Grand Island, freight prepaid. Bids will be publicly opened at this time in the Grand Island City Hall Council Conference Room #1 located on 1st floor of City Hall. Submit an original and three copies. Bid proposal package is also available on-line at www.grand-island.com under Business-Bid Calendars. Bids received after the specified time will be returned unopened to sender.

The successful bidder will be required to comply with fair labor standards as required by Nebraska R.R.S.73-102 and comply with Nebraska R.R.S. 48-657 pertaining to contributions to the Unemployment Compensation Fund of the State of Nebraska. Successful bidder shall maintain a drug free workplace policy. Every public contractor and his, her or its subcontractors who are awarded a contract by the City for the physical performance of services within the State of Nebraska shall register with and use a federal immigration verification system to determine the work eligibility status of new employees physically performing services within the State of Nebraska.

Each bidder shall submit with the bid a certified check, a cashiers check, or bid bond payable to the City Treasurer in an amount no less than five percent (5%) of the bid price which shall guarantee good faith on the part of the bidder and the entering into a contract within fourteen (14) days at the bid price if accepted by the City. **Your certified check, cashier's check or bid bond must be submitted in a separate envelope attached to the outside of the envelope containing the bid.** Each envelope must be clearly marked indicating its contents. **Failure to submit the necessary qualifying information in clearly marked and separate envelopes will result in your bid not being opened or considered.** Surety companies authorized to do business in the State of Nebraska must issue bid bonds.

Bids will be evaluated by the Purchaser based on price, schedule, quality, adherence to schedule, plan and specifications, economy and efficiency of operation, experience and reputation of the bidder, ability, capacity, and skill of the bidder to perform contract required and adaptability of the particular items to the specific use intended.

The Purchaser reserves the right to reject any or all bids, to waive irregularities therein, and to accept whichever bid that may be in the best interest of the City, at its sole discretion.

No bidder may withdraw his bid for a period of thirty (30) days after date of bid opening.

RaNae Edwards, City Clerk

**Advertised
Grand Island Independent**

(All bids must be submitted on this form)

TURBINE GENERATOR INSPECTION AND REPAIR
BID DATA FORM

CITY OF GRAND ISLAND
GRAND ISLAND, NE

The undersigned bidder, having examined all specifications and other bidding documents, and all addenda thereto, and being acquainted with and fully understanding all conditions relative to the specified materials and equipment, hereby proposes to provide such equipment FOB the City of Grand Island, freight prepaid, at the following price:

<u>ITEM DESCRIPTION</u>	<u>EXTENDED COST</u>
Base Bid:	
Material	\$ _____
Labor	\$ _____
Applicable Sales tax*	\$ _____
Total Base Bid	\$ _____

*** If bidder fails to include sales tax in their bid price or takes exception to including sales tax in their bid price, the City will add a 7.0% figure to the bid price for evaluation purposes; however, the City will only pay actual sales tax due.**

- By checking this box, Bidder acknowledges that Addenda Number(s) _____ were received and considered in Bid preparation.
- By checking this box, Bidder acknowledges the specified completion date of the project is **November 8, 2012**.

According to Nebraska Sales and Use Tax Requirements, Section 1-017, Contractors, check which option you have selected to file with the Nebraska Department of Revenue:

Nebraska law provides a sales and use tax exemption on contractor labor charges for the construction, repair, or annexation of any structure used for the generation, transmission, or distribution of electricity. Separately stated contractor labor would be exempt, all materials are taxable according to the contractor's option.

Option 1 (Section 1-017.05)_____ Option 2 (Section 1-017.06)_____ Option 3 (Section 1-017.07)_____

If the Nebraska sales and use tax election is not filed or noted above, the contractor will be treated as a retailer under Option 1 for sales and use tax purposes.

Bidder Company Name Date

Company Address City State Zip

Print Name of Person Completing Bid Signature

Telephone No. _____ Fax No. _____

By checking this box, Bidder acknowledges there are Exceptions noted to the bid.
NOTE: Any exceptions to specifications must be fully explained on a separate sheet attached to bid.

CHECKLIST FOR BID SUBMISSION

FOR

TURBINE GENERATOR INSPECTION AND REPAIR

Bids must be received by the City Clerk before 2:00 p.m. on WEDNESDAY, March 7, 2012.

The following items must be completed for your bid to be considered.

- A signed original and three copies of the bidding documents.
- A reference list of at least three projects of similar scope and complexity, including a description, name and phone contact.
- A reference list and summary of the experience of the Subcontractor's proposed for this project, including name and phone contact.
- A summary of the experience of the Superintendent proposed for this project.
- Firm lump sum pricing; firm unit pricing in case adjustments are necessary, and breakout of sales tax pricing. Firm lump sum pricing for diaphragm and blade repair. Firm unit pricing for other changes.
- A description of the system proposed, including a description of the diaphragm and blading repair techniques and reference list. The Contractor shall submit with the bid a description of repair techniques that may be used, along with a reference list of recent repairs similar in scope and complexity.
- Selection of Nebraska Sales Tax Option.
- Acknowledgment of Addenda Number(s) _____.
- Bidders must complete and sign the Bid Data Form provided in these Documents. All blank spaces must be filled in. Bidders shall acknowledge receipt of any Addenda information on the Bid Data Form.
- A certified check, cashiers check or bid bond in a separate envelope attached to the **outside of the envelope containing the bid**. Each envelope must be clearly marked indicating its contents. Failure to submit the necessary qualifying information in clearly marked and separate envelopes will result in your bid not being opened.

Please check off each item as completed.

Company

Signature

Telephone No. _____

Fax No. _____

INSTRUCTIONS TO BIDDERS

1. GENERAL INFORMATION.

The following instructions outline the procedure for preparing and submitting Bids. Bidders must fulfill all requirements as specified in these Documents.

2. TYPE OF BID.

Bidders shall be required to submit prices for all items listed in the Bid Data Form.

3. PREPARATION OF BIDS.

Bidders shall use only the Bid Data Form provided in these Documents. All blank spaces in the Bid Data Form, must be filled in, preferably in BLACK ink, in both words and figures where required. No changes to the wording or content of the forms is permitted. Written amounts shall govern in case of discrepancy between the amounts stated in writing and the amounts stated in figures.

Prices stated shall be f.o.b. with freight and full insurance paid by Bidder, to the job site located in Grand Island.

The Bidder shall acknowledge receipt of all addenda in the Bid Data Form. Bids received without acknowledgement or without the Addendum enclosed will be considered informal.

4. SUBMISSION OF BIDS.

All Bids must be submitted intact not later than the time prescribed, at the place, and in the manner set forth in the ADVERTISEMENT FOR BIDS. Bids must be made on the Bid Data Form provided here in. Each Bid must be submitted intact in a sealed envelope, so marked as to indicate its contents without being opened, and delivered in person or addressed and mailed in conformance with the instructions in the ADVERTISEMENT FOR BIDS.

5. BID SECURITY.

Bids must be accompanied by cash, a certified check, or cashier's check drawn on a bank which is insured by the Federal Deposit Insurance Corporation, or a bid bond issued by a Surety authorized to issue such bonds in the state where the Work is located, in the amount of 5 percent of the bid amount payable to OWNER. This bid security shall be given as a guarantee that the Bidder will not withdraw his Bid for a period of 30 days after bid opening, and that if awarded the Contract, the successful Bidder will execute the attached Contract and furnish a properly executed Performance Bond and Payment Bond each in the full amount of the Contract price within the time specified.

The Attorney-in-Fact that executes this bond in behalf of the Surety must attach a notarized copy of his power of attorney as evidence of his authority to bind the Surety on the date of execution of the bond. Where State Statute requires, certification by a resident agent shall also be provided.

6. RETURN OF BID SECURITY.

Within 15 days after the award of the Contract, the OWNER will return the bid securities to all Bidders whose Bids are not to be further considered in awarding the contract. All other retained bid securities will be held until the Contract has been finally executed, after which all bid securities, other than Bidders' bonds and guarantees which have been fortified, will be returned to the respective Bidders whose Bids they accompanied.

7. BASIS OF AWARD.

The award will be made by the OWNER on the basis of the Bid from the lowest responsive, responsible Bidder which, in the OWNER's sole and absolute judgment will best serve the interest of the OWNER. All Bids will be considered on the following basis:

Conformance with the terms of the Bid Documents.

Bid price.
Cost of installation.

Suitability to project requirements.
Delivery time.

Responsibility and qualification of Bidder.

The OWNER reserves the right to reject all Bids, or any Bid not in conformance with the intent of the Bid Documents, and to waive any informalities and irregularities in said Bids.

8. EXECUTION OF CONTRACT.

The successful Bidder shall, within 15 days after receiving notice of award, sign and deliver to the OWNER the Contract hereto attached together with the acceptable bonds as required in these Bid Documents. Within 15 days after receiving the signed Contract with acceptable bond(s) from the successful Bidder, the OWNER's authorized agent will sign the Contract. Signature by both parties constitutes execution of the Contract.

9. PERFORMANCE AND PAYMENT BONDS.

The successful Bidder shall file with the OWNER Performance and Payment Bonds in the full amount (100 percent) of the Contract price, as security for the faithful performance of the Contract and the payment of all persons supplying labor and materials for the Work under this Contract, and to cover all guarantees against defective workmanship or materials, or both, for a period of 1 year after the date of final acceptance of the Work by the OWNER. The Surety furnishing these bonds shall have a record of service satisfactory to the OWNER, be authorized to do business in the State where the OWNER's project is located and shall be named on the current list of approved Surety Companies, acceptable on Federal bonds as published by the Audit Staff, Bureau of Accounts, U.S. Treasury Department.

The Attorney-in-Fact (Resident Agent) who executes these bonds on behalf of the Surety must attach a notarized copy of his power-of-attorney as evidence of his authority to bind the Surety on the date of execution of the bond.

10. TIME OF COMPLETION.

The time of completion of the Work to be performed under this Contract is the essence of the Contract. The time allowed for the completion of the Work is stated in the Bid Data Form.

11. GRATUITIES AND KICKBACKS.

City Code states that it is unethical for any person to offer, give, or agree to give any City employee or former City employee, or for any City employee or former City employee to solicit, demand, accept, or agree to accept from another person, a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, or preparation of any part of a program requirement or a purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a contract or subcontract, or to any solicitation or proposal therefor. It shall be unethical for any payment, gratuity, or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime contractor or higher tier subcontractor or any person associated therewith, as an inducement for the award of a subcontract or order.

12. FISCAL YEAR.

The City of Grand Island, Nebraska operates on a fiscal year beginning October 1st and ending on the following September 30th. It is understood and agreed that any portion of this agreement which will be performed in a future fiscal year is contingent upon the City Council adopting budget statements and appropriations sufficient to fund such performance.

CONTRACT AGREEMENT

THIS AGREEMENT made and entered into by and between **[SUCCESSFUL BIDDER]**, hereinafter called the Contractor, and the **CITY OF GRAND ISLAND, NEBRASKA**, hereinafter called the City.

WITNESSETH:

THAT, WHEREAS, in accordance with law, the City has caused contract documents to be prepared and an advertisement calling for bids to be published for *TURBINE GENERATOR INSPECTION AND REPAIR*; and

WHEREAS, the City, in the manner prescribed by law, has publicly opened, examined, and canvassed the bids submitted, and has determined the aforesaid Contractor to be the lowest responsive and responsible bidder, and has duly awarded to the said Contractor a contract therefore, for the sum or sums named in the Contractor's bid, a copy thereof being attached to and made a part of this contract;

NOW, THEREFORE, in consideration of the compensation to be paid to the Contractor and of the mutual agreements herein contained, the parties have agreed and hereby agree, the City for itself and its successors, and the Contractor for itself, himself, or themselves, and its, his, or their successors, as follows:

ARTICLE I. That the following documents shall comprise the Contract, and shall together be referred to as the "Agreement" or the "Contract Documents";

1. This Contract Agreement.
2. City of Grand Island's Specification for this project.
3. **[NAME OF SUCCESSFUL BIDDER]** bid signed and dated **[DATE OF BID]**.

In the event of any conflict between the terms of the Contract Documents, the provisions of the document first listed shall prevail.

ARTICLE II. That the contractor shall (a) furnish all tools, equipment, superintendence, transportation, and other construction materials, services and facilities; (b) furnish, as agent for the City, all materials, supplies and equipment specified and required to be incorporated in and form a permanent part of the completed work; (c) provide and perform all necessary labor; and (d) in a good substantial and workmanlike manner and in accordance with the requirements, stipulations, provisions, and conditions of the contract documents as listed in the attached General Specifications, said documents forming the contract and being as fully a part thereof as if repeated verbatim herein, perform, execute, construct and complete all work included in and covered by the City's official award of this contract to the said Contractor, such award being based on the acceptance by the City of the Contractor's bid.

ARTICLE III. That the City shall pay to the Contractor for the performance of the work embraced in this contract and the Contractor will accept as full compensation therefore the sum (subject to adjustment as provided by the contract) of **[DOLLAR AMOUNT] (\$00.00)** for all services, materials, and work covered by and included in the contract award and designated in the foregoing Article II; payments thereof to be made in cash or its equivalent in the manner provided in the General Specifications.

The total cost of the Contract includes:

Base Bid:	\$.00
Sales Tax on Materials/Equipment:	\$.00
Sales Tax on Labor:	\$ <u>.00</u>
Total	\$.00

The City of Grand Island, Nebraska operates on a fiscal year beginning October 1st and ending on the following September 30th. It is understood and agreed that any portion of this agreement which will be performed in a future fiscal year is contingent upon the City Council adopting budget statements and appropriations sufficient to fund such performance.

ARTICLE IV. The Contractor hereby agrees to act as agent for the City in purchasing materials and supplies for the City for this project. The City shall be obligated to the vendor of the materials and supplies for the purchase price, but the Contractor shall handle all payments hereunder on behalf of the City. The vendor shall make demand or claim for payment of the purchase price from the City by submitting an invoice to the Contractor. Title to all materials and supplies purchased hereunder shall vest in the City directly from the vendor. Regardless of the method of payment, title shall vest immediately in the City. The Contractor shall not acquire title to any materials and supplies incorporated into the project. All invoices shall bear the Contractor's name as agent for the City. This paragraph will apply only to these materials and supplies actually incorporated into and becoming a part of the finished product of the TURBINE GENERATOR INSPECTION AND REPAIR.

ARTICLE V. That the Contractor shall start work as soon as possible after the contract is signed and the required bonds and insurance are approved, and that the Contractor shall deliver the equipment, tools, supplies, and materials F.O.B. Platte Generating Station, and complete the work on or before **NOVEMBER 8, 2012.**

ARTICLE VI. The Contractor agrees to comply with all applicable State fair labor standards in the execution of this contract as required by Section 73-102, R.R.S. 1943. The Contractor further agrees to comply with the provisions of Section 48-657, R.R.S. 1943, pertaining to contributions to the Unemployment Compensation Fund of the State of Nebraska. During the performance of this contract, the Contractor and all subcontractors agree not to discriminate in hiring or any other employment practice on the basis, of race, color, religion, sex, national origin, age or disability. The Contractor agrees to comply with all applicable Local, State and Federal rules and regulations. The Contractor agrees to maintain a drug-free workplace policy and will provide a copy of the policy to the City upon request. Every public contractor and his, her or its subcontractors who are awarded a contract by the City for the physical performance of services within the State of Nebraska shall register with and use a federal immigration verification system to determine the work eligibility status of new employees physically performing services within the State of Nebraska.

GRATUITIES AND KICKBACKS

City Code states that it is unethical for any person to offer, give, or agree to give any City employee or former City employee, or for any City employee or former City employee to solicit, demand, accept, or agree to accept from another person, a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, or preparation of any part of a program requirement or a purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a contract or

DRAFT

subcontract, or to any solicitation or proposal therefor. It shall be unethical for any payment, gratuity, or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime contractor or higher tier subcontractor or any person associated therewith, as an inducement for the award of a subcontract or order.

[SUCCESSFUL BIDDER]

By _____ Date _____

Title _____

CITY OF GRAND ISLAND, NEBRASKA

By _____ Date _____
Mayor

Attest: _____
City Clerk

The contract is in due form according to law and hereby approved.

Attorney for the City Date _____

DRAFT



REQUEST FOR BIDS - GENERAL SPECIFICATIONS

The Bid shall be in accordance with the following and with all attached BID DATA and DETAILED SPECIFICATIONS.

All prices are to be furnished and installed FOB, Grand Island, Nebraska. **All prices shall be firm, and shall include all sales and use taxes as lawfully assessed under laws and regulations of the State of Nebraska.** * If bidder fails to include sales tax in their bid price or takes exception to including sales tax in their bid price, the City will add a 7.0% figure to the bid price for evaluation purposes; however, the City will only pay actual sales tax due.

Bids shall include the following on the **outside** of the mailing envelope: **“Turbine Generator Inspection and Repair”**. All sealed bids are due no later than **Wednesday, March 7, 2012 at 2:00 p.m. local time**. Submit **an original and three copies** of the bid to:

Mailing Address: City Clerk
City Hall
P. O. Box 1968
Grand Island, NE 68802

Street Address: City Clerk
City Hall
100 E. First Street
Grand Island, NE 68801

Bids will be opened at this time in the City Hall Council Conference Room #1 located on 1st floor of City Hall. Any bid received after the specified date will not be considered. No verbal bid will be considered.

Bids will be evaluated by the Purchaser based on price, schedule, quality, adherence to schedule, plan and specifications, economy and efficiency of operation, experience and reputation of the bidder, ability, capacity, and skill of the bidder to perform contract required and adaptability of the particular items to the specific use intended.

The successful bidder will be required to comply with fair labor standards as required by Nebraska R.R.S.73-102 and comply with Nebraska R.R.S. 48-657 pertaining to contributions to the Unemployment Compensation Fund of the State of Nebraska. Contractor shall maintain a drug free workplace policy. Every public contractor and his, her or its subcontractors who are awarded a contract by the City for the physical performance of services within the State of Nebraska shall register with and use a federal immigration verification system to determine the work eligibility status of new employees physically performing services within the State of Nebraska.

The equipment and materials must be new, the latest make or model, unless otherwise specified. Prior to approving the invoice for payment, the City reserves the right to thoroughly inspect and test the equipment to confirm compliance with specifications. Any equipment or material which does not meet the City's requirements will be returned at vendor's expense for correction. The invoice will be paid after approval at the next regularly scheduled Council meeting and occurring after departmental approval of invoice; the City Council typically meets the second and fourth Tuesday of each month. Invoices must be received well in advance of Council date to allow evaluation and processing time.

Each bidder shall submit with the bid a certified check, a cashiers check, or bid bond payable to the City Treasurer in an amount no less than five percent (5%) of the bid price which shall guarantee good faith on the part of the bidder and the entering into a contract within fourteen (14) days at the bid price if accepted by the City. **Your certified check, cashier's check or bid bond must be submitted in a separate envelope attached to the outside of the envelope containing the bid.** Each envelope must be clearly marked indicating its contents. **Failure to submit the necessary qualifying information in clearly marked and separate envelopes will result in your bid not being opened or considered.** Surety companies authorized to do business in the State of Nebraska must issue bid bonds.

Successful bidder shall comply with the City's insurance requirements; performance and payment bonds are required for this project as outlined in the Detailed Specifications and Instructions to Bidders.

All bids shall be valid for at least thirty (30) working days after the bid deadline for evaluation purposes.

All bids must be on the bid form and must be signed and dated to be accepted. Please contact Lynn Mayhew at 308-385-5495, for questions concerning this specification.

TURBINE GENERATOR INSPECTION AND REPAIR **DETAILED SPECIFICATIONS**

SCOPE: The Contractor shall supply all material, labor, equipment, supervision, and technical expertise to perform a complete turbine generator overhaul at the Platte Generating Station. This will include project management, field labor and supervision, disassembly, cleaning, non-destructive examination, inspection, repairs, generator testing, assembly, and start-up.

DESCRIPTION: The Platte Generating Station is located at 1035 W. Wildwood Drive, two miles south of Grand Island, Nebraska. The Unit 1 turbine generator is a 122,000 kva generator, tandem-compound double flow, single reheat condensing turbine operating at main steam conditions of 1800 psi and 1000 F, and an exhaust pressure of 2.5 in. Hga. The unit is manufactured by General Electric Company, Turbine No. 197789 and Generator No. 316X282.

Unit 1 has been in service since 1982 and a major inspection of the turbine generator is performed every five years. The most recent major inspection was conducted in 2007 and a turbine valve inspection and steam packing replacement was performed in 2010.

A serviceman will be furnished by the City to provide technical assistance. Also, under a separate contract, the City will be performing a Distortion Assessment and hire a separate Technical Advisor.

Under a separate contract Low NOx Burners will be installed by Babcock Power. Schedule for use of the turbine room crane and floor lay down space allocation shall be as determined by the City.

REQUIREMENTS: Attached is a document titled Turbine Generator Overhaul Minimum Requirements, which the Contractor shall perform.

The Contractor shall prepare the turbine rotor, turbine diaphragms, valve stems, valve seats, and turbine studs and specified components for inspection using compressed air grit blasting. The blasting grit used during the process shall be silica free. The Contractor shall provide all protective enclosures and evacuation systems required in order to avoid carryover of dust into other plant areas. All blasting shall be performed by trained personnel in accordance with the turbine manufacturer's recommendations. A compressed air supply will be available at the plant.

The Contractor shall remove all insulation blankets and place in an area of the turbine floor to prevent damage. The Contractor shall include replacing all blankets on completion of overhaul.

It is expected that all of the bearings may need to be rebabbitted. The Contractor shall measure the bearings as soon as possible and be prepared to provide them to plant personnel for shipping to a repair shop.

Following blast cleaning, the turbine rotor, turbine diaphragms, valve stems and seats, and turbine joint studs shall be inspected using the magnetic particle process by qualified Contractor personnel. If required, some components may be inspected by the dye penetrant or ultrasonic process. The Contractor shall review the results of all testing with the City and the City's technical direction representative and recommend needed repairs.

During this outage there will be major boiler tube replacements so the City will furnish fine screens for the valves. The Contractor shall install the fine screens.

The Contractor will repair damaged diaphragms and blading as required. Since the extent of the repairs cannot be estimated until the machine is inspected, the Contractor shall include 800 hours for these repairs. The repairs can be either on site or off site. The Contractor shall submit with the bid a description of repair techniques that may be used along with a reference list of recent repairs similar in scope and complexity. If these repairs are to be subcontracted the subcontractor's qualifications and references shall be submitted.

GENERATOR TESTING: The Contractor shall perform the following tests on the generator:

1. Stator megger
2. Stator winding resistance
3. Stator temperature detectors condition
4. DC leakage
5. Stator Hipot
6. Stator electromagnetic core imperfection detection (ELCID)
7. Field megger
8. Field winding resistance
9. Field AC impedance

The Contractor's generator specialist shall evaluate test results in the field and determine recommendations for any immediate, short-term repairs. Test results shall be discussed with the City and the City's technical direction representative as soon as results are known.

QUALIFICATIONS: The Contractor shall be a firm specializing in supervising the installation, inspection, and repair of steam turbine generator units used in the power generation industry. The Contractor shall be capable of providing direction during all stages of the turbine generator disassembly, non-destructive examination, inspection, testing, repair, assembly, control systems checkout, and start-up. A reference list of recent projects similar in unit size, scope, and complexity to this specification shall be provided with the bid.

SUPERVISION: The Contractor shall provide a qualified project Superintendent who shall be thoroughly familiar with General Electric equipment and had previous experience with projects of similar scope. The Contractor shall also provide qualified personnel who are trained and familiar with generator testing. A summary of the experience of the superintendent, supervisors, and testing personnel proposed for this project shall be provided with the bid.

MATERIALS, EQUIPMENT, AND SERVICES PROVIDED BY THE PLANT: The City shall provide the materials mentioned, electrical power, and a drinking water source.

MATERIALS, EQUIPMENT, AND SERVICES PROVIDED BY THE CONTRACTOR: The Contractor shall provide required hand tools, hoists, scaffolding, chain falls, cutting torches and gases, welding machines, welding leads and consumables, and all other equipment and materials necessary to completely perform the work. The City will only provide the materials, equipment, and services specifically stated in this specification.

The Contractor shall provide temporary, portable restroom facilities.

SCHEDULE: The unit is scheduled to be removed from service on the morning of September 27, 2012. Work shall be scheduled and completed so the unit can be on turning gear and released for start-up on the morning of November 8, 2012. These dates are not guaranteed, however the outage duration is firm.

The plant will be shut down for a short maintenance outage April 12-19, 2012 at that time and the plant equipment is available for inspection. All bidders are encouraged to schedule a time to perform an onsite inspection.

No later than sixty days prior to the scheduled start of the outage the Contractor shall furnish the City with a detailed CPM schedule showing the overhaul activities, job duration, job start and finish dates, and manpower loading. The Contractor shall update the CPM schedule and meet with the City's representative 2 times a week to review outage progress.

No later than sixty days before the outage there will be a meeting at the plant to review the schedule and discuss the outage, interface issues, floor lay down space, and power requirements.

There is no separate contractor entrance at the Platte Generating Station. There is one gate with a card access security system and the Contractor may request to use access cards to gain entry rather than request entry and exit each trip. There is a \$25.00 charge for each access card that is not returned.

CLEAN-UP: During the course of work, the Contractor shall daily clean up all debris, remove unnecessary scaffolding, equipment, and surplus material. Upon completion, the Contractor shall leave the premises in a neat and clean condition with respect to his own operation. Removal of all protective coverings erected by the Contractor is mandatory. The Contractor is responsible to collect and dispose of any abrasive blasting materials and properly dispose of material in landfill.

SERVICE RATES: The Contractor shall include a firm lump sum price to perform a complete turnkey open/clean/inspect/close turbine and generator overhaul, including expenses, and all other standard terms and conditions which will be in effect during the project. Routine grit blasting, NDE, cleaning, inspection, and documentation normally associated with a turbine generator overhaul is to be included. All turbine, generator, and valve parts will be furnished by the City. The Contractor shall furnish all consumables. The Bid shall also include firm unit pricing for adjustments that may be required for work outside of the specified scope of services.

The Contractor shall include as part of the firm price 600 hours of diaphragm and blade repair and shall include unit prices for additions or deletions from the 600 hours. It is assumed that this 600 hour figure is a composite rate for on-site repairs. Only actually repair time should be billed. Any other non-routine repairs that are discovered will be covered by unit pricing.

The Platte Generating Station is NOT tax exempt and is subject to 7.0% sales tax. See the Nebraska Department of Revenue web site at www.revenue.state.ne.us for contractor's tax information.

SUBMITTALS REQUIRED:

1. Contractor shall submit the following documentation for review with the bid:
 - References for at least 3 projects of a similar scope and for a similar size unit, including a description, name, and phone contact.
 - Subcontractor's names and reference lists.
 - Superintendent's experience summary.
 - Description of diaphragm and blading repair techniques and reference list. The Contractor shall submit with the bid a description of repair techniques that may be used along with a reference list of recent repairs similar in scope and complexity.
 - Firm lump sum pricing.
 - Firm unit pricing for diaphragm and blade repair.
 - Firm unit pricing for other changes.
2. No later than 60 days before the start of the outage the Contractor shall submit the following:
 - Number of office and tool trailers and power requirements for the trailers.
 - Power and water requirements for any bolt removal equipment.
 - Power and air requirements for sandblasting and NDE contractors.
 - CPM schedule for all outage work.
3. Within thirty days after the outage completion the Contractor shall provide two (2) copies of a complete written report detailing the turbine inspection, all clearance readings, repairs, problems, and describing all short-term and long-term maintenance recommendations.
4. Within thirty days after the outage completion the Contractor shall provide two (2) copies of a complete written report detailing all generator testing and repairs.

CONTACT: Questions regarding this specification may be directed to Lynn Mayhew, Plant Superintendent at the Platte Generating Station, telephone (308) 385-5495.

ATTACHMENTS:

- Turbine Overhaul Minimum Requirements.
- Summary of Turbine design features.
- Estimated Generator data.
- Turbine Assembly drawing 2132150.
- Turbine Outline drawing 7581E32.

PERFORMANCE AND PAYMENT BONDS:

The successful Bidder shall file with the OWNER Performance and Payment Bonds in the full amount (100 percent) of the Contract price, as security for the faithful performance of the Contract and the payment of all persons supplying labor and materials for the Work under this Contract, and to cover all guarantees against defective workmanship or materials, or both, for a period of 1 year after the date of final acceptance of the Work by the OWNER. The Surety furnishing these bonds shall have a record of service satisfactory to the OWNER, be authorized to do business in the State where the OWNER's project is located and shall be named on the current list of approved Surety Companies, acceptable on Federal bonds as published by the Audit Staff, Bureau of Accounts, U.S. Treasury Department.

The Attorney-in-Fact (Resident Agent) who executes these bonds on behalf of the Surety must attach a notarized copy of his power-of-attorney as evidence of his authority to bind the Surety on the date of execution of the bond.

INSURANCE: The Contractor shall comply with the attached Insurance Requirements.

TURBINE GENERATOR OVERHAUL MINIMUM REQUIREMENTS

1. Alignment Checks:

Alignment checks will be made as listed below. If major misalignment is indicated as a result of these checks or because of major parts change out, the additional required realignment will be handled as an extra cost item. All alignment and clearance checks are to be made with the unit cold unless otherwise noted.

- a. Gib key clearance checks.
- b. Rub check on radial steam baffles.
- c. Check points of axial rubbing.
- d. Coupling alignment will be checked at disassembly.
- e. Check coupling alignment at assembly.
- f. Tops on/tops off laser alignment.

2. Rotor Position:

- a. Check and record wheel, diaphragm packing clearances, and rotor position at disassembly.
- b. Spot check wheel, diaphragm packing clearances, and rotor position at reassembly.

3. Bearings:

- a. Check and record the condition of babbitt, ball seat and journals.
- b. Record bearing contact area (journal and thrust bearings).
- c. Lightly clean bearing babbitt surfaces to remove any embedded foreign particles.
- d. Dye penetrant, inspect the bearings.
- e. Check and record journal clearances. If the bearings need to be sent off site for repair the City will handle packaging and shipping.
- f. Visually examine bearing ring to ball seat and bearing cap contact. Check and record pinch on each bearing.
- g. Measure and record diameters of bearings.
- h. Measure and record bearing twist and tilt as required.
- i. Measure and bump check thrust bearing clearance. Taper and flatness checks per GEK-46382C.
- j. Remove, disassemble, inspect, reassemble and align thrust bearing wear detector.
- k. Check all oil strainers.

4. Turbine rotors:

- a. Check and record rotor runout.
- b. Remove turbine rotors.
- c. Make visual inspection of rotors.
- d. Record size and physical condition of journal surfaces.
- e. Visually examine condition of coupling face, rabbet fit, and bolt holes. Measure and record coupling fits.
- f. Determine rub pattern and record.
- g. Visually examine notch block and bucket pins for evidence of movement.
- h. Examine balance weights, check for tightness, and record position of weights in all rings.

5. Diaphragms:

- a. Remove all diaphragms.
- b. Make visual inspection of partitions, steam joints, keys and bridges and recommend needed repairs.
- c. Record unusual erosion patterns.

6. Shells and Exhaust Hood (upper halves only to be removed):

- a. Visually examine upper and lower interior surfaces, ledges, struts, heat baffles, and companion fits for erosion, distortion and/or galling.
- b. Clean horizontal joints and examine for distortion.

- c. Examine drain holes for blockage and/or erosion.
- d. Visually inspect atmospheric relief diaphragms.
- e. Visually inspect all bolting and record bolt extensions.
- f. Reassemble using applicable high temperature joint compound and thread lubricant. Stress joint bolts as necessary and record stress valves.
- g. Replace Dog bone expansion joint. (New dog bone to be supplied by City of Grand Island)

7. Packing:

- a. Record condition of steam packing and springs.
- b. Record condition of diaphragm packing and springs.
- c. Sharpen teeth, as required, replace if needed.
- d. Clean, as required.

8. Oil Deflectors:

- a. Record condition.
- b. Clean, as required.
- c. Record clearances.

9. Valves:

Normal inspection work will consist of visual examination and re-establishing design stem-to-bushing clearance by cleaning.

9.1 Main Stop Valves (Steam side only):

- a. Disassemble steam side only for inspection.
- b. Check condition of discs and seats (visual) including contact check between seat and disc.
- c. Record clearances and check runout of stems (5 locations).
- d. Clean stems and bushing, as required per try bar test. Replace bushing if needed with new supplied by City of Grand Island.
- e. Visually examine steam strainers, Install fine mesh strainers, supplied by City of Grand Island.
- f. Record bolt extensions.
- g. Lap valve seats to restore contact.

9.2 Control Valves (Steam side only):

- a. Check condition of discs and seats (visual) including contact between seats and discs.
- b. Record clearances and check runout of stems (5 locations).
- c. Clean stems and bushings, as required by try bar tests.
- d. Inspect linkages, pins and bearings.
- e. Lap valve seats to restore contact.
- f. Replace 1U- inner guide bushing.
- g. Replace 3U- inner & outer guide bushing.
- h. Replace 5L- inner guide bushing.
- i. Replace 6L- outer guide bushing.
- j. A line bore will be performed on each valve prior to the installation of the new crosshead guide bushing. Replace the crosshead guide bushing.

9.3 Intercept Valves (Steam side only):

- a. Disassemble steam side only for inspection.
- b. Check condition of discs and seats (visual) including contact check between seat and disc.
- c. Record clearances and check runout of stems (5 locations).
- d. Clean stems and bushing, as required per try bar test.
- e. Install a new stem guide bushing in the pressure seal of each "reheat stop valve".
- f. Inspect linkages, pins and bearings.
- g. Visually examine steam strainer, install fine mesh strainer provided by City of Grand Island.
- h. Record bolt extensions.
- i. Lap valve seats to restore contact.

9.4 Air Dump Valve:

- a. Remove the dump valve, inspect, and reinstall.
- b. Any new parts required will be furnished by the City.

10. Turning Gear:

- a. Examine gears for contact pattern and condition.
- b. Check clearance between clash gear and bull gear.
- c. Check engaging mechanism.

11. Emergency Governor:

- a. Inspect for deposits and fretting.

12. Lubrication System:

12.1 Oil Tank:

- a. Visually inspect condition of oil tank, clean, if necessary, and check all unions and flanges for tightness.

12.2 Bearing & Seal Oil Pumps:

- a. Disassemble impeller casing and check seal ring clearances.
- b. Visually inspect impeller and casing.
- c. Clean and inspect screens.

12.3 Emergency Bearing & Seal Oil Pump:

- a. Disassemble pump and record bearing and seal ring clearances.
- b. Inspect condition of component parts.
- c. Clean and inspect screens.

12.4 Oil Flush:

The Contractor will perform a mini lube oil flush which consists of installing fine mesh screens, supplied by the City, and running the lube oil system for a period not to exceed 24 hours total operation. Additional oil flushing, if required, will be an extra to the contract.

13. Generator:

13.1 Field:

- a. Remove generator field for inspection.
- b. Check condition of slot wedges.
- c. Check condition of brushes, change and fit, as required.
- d. Check condition of brush rigging and reset, as required.
- e. Check alignment of brush holders.
- f. Replace collector rings and retaining rings as supplied by the City of Grand Island.

13.2 Stator:

- a. Visually inspect stator interior.
- b. Check core clamp and ring bolts for tightness.
- c. Remove upper half inner and outer end shields on both ends for inspection of stator end turns.
- d. Check hydrogen seal ring diameters and record clearances.

13.3 Seal Oil Skid:

- a. Disassemble and inspect the differential pressure regulator.

14. Hydrogen Coolers:

- a. Open, inspect, and clean the hydrogen coolers.
- b. The City will provide new gaskets.

MINIMUM INSURANCE REQUIREMENTS
CITY OF GRAND ISLAND, NEBRASKA

The successful bidder shall obtain insurance from companies authorized to do business in Nebraska of such types and in such amounts as may be necessary to protect the bidder and the interests of the City against hazards or risks of loss as hereinafter specified. This insurance shall cover all aspects of the Bidder's operations and completed operations. Failure to maintain adequate coverage shall not relieve bidder of any contractual responsibility or obligation. Minimum insurance coverage shall be the amounts stated herein or the amounts required by applicable law, whichever are greater.

1. WORKERS COMPENSATION AND EMPLOYER'S LIABILITY

This insurance shall protect the Bidder against all claims under applicable State workers compensation laws. This insurance shall provide coverage in every state in which work for this project might be conducted. The liability limits shall not be less than the following:

Workers Compensation	Statutory Limits
Employers Liability	\$100,000 each accident
	\$100,000 each employee
	\$500,000 policy limit

2. BUSINESS AUTOMOBILE LIABILITY

This insurance shall be written in comprehensive form and shall protect the Bidder, Bidder's employees, or subcontractors from claims due to the ownership, maintenance, or use of a motor vehicle. The liability limits shall be not less than the following:

Bodily Injury & Property Damage	\$ 500,000 Combined Single Limit
---------------------------------	----------------------------------

3. COMPREHENSIVE GENERAL LIABILITY

The comprehensive general liability coverage shall contain no exclusion relative to explosion, collapse, or underground property. The liability limits shall be not less than the following:

Bodily Injury & Property Damage	\$ 500,000 each occurrence
	\$1,000,000 aggregate

4. UMBRELLA LIABILITY INSURANCE

This insurance shall protect the Bidder against claims in excess of the limits provided under employer's liability, comprehensive automobile liability, and commercial general liability policies. The umbrella policy shall follow the form of the primary insurance, including the application of the primary limits. The liability limits shall not be less than the following:

Bodily Injury & Property Damage	\$1,000,000 each occurrence
	\$1,000,000 general aggregate

5. ADDITIONAL REQUIREMENTS

The City may require insurance covering a Bidder or subcontractor more or less than the standard requirements set forth herein depending upon the character and extent of the work to be performed by such Bidder or subcontractor.

Insurance as herein required shall be maintained in force until the City releases the Bidder of all obligations under the Contract.

The Bidder shall provide and carry any additional insurance as may be required by special provisions of these specifications.

6. CERTIFICATE OF INSURANCE

Satisfactory certificates of insurance shall be filed with the City prior to starting any work on this Contract. **The certificates shall show the City as an additional insured on all coverage except Workers Compensation. The certificate shall state that thirty (30) days written notice shall be given to the City before any policy is cancelled (strike the "endeavor to" wording often shown on certificate forms). If the bidder cannot have the "endeavor to" language stricken, the bidder may elect to provide a new certificate of insurance every 30 days during the contract. Bidder shall immediately notify the City if there is any reduction of coverage because of revised limits or claims paid which affect the aggregate of any policy.**

SUMMARY OF TURBINE DESIGN FEATURES

CUSTOMER: Platte Generating Station, Grand Island Utilities Dept

TURBINE NO. 197789

TURBINE TYPE: Reheat Double Flow

DRIVING: 122,000 KVA, 13,800 V, Hydrogen Cooled-Generator, 375 V Static Exciter

NOTE: The following summary lists the specific design features and components of this turbine.

Front standard type: 8.1 with sliding support

PERFORMANCE

Rating 100,000 kw

Steam conditions

Initial pressure 1800 psig

Initial temperature 1000/1000 FTT

Back pressure 2.5 Inches Hg Abs

Speed

Rated 3600 rpm

Pre-emergency 3850 rpm

Trip 4014 rpm

High-speed set point 3800 rpm

EXTRACTION

Number of uncontrolled extractions 4

THERMODYNAMIC DESIGN

Valve sizes

Packing dump 5 inches

Temperature alarm in exhaust set at 175 F

High-pressure minimum-flow alarm switch set at 125,000 lb/hr

MECHANICAL DESIGN

Active thrust bearing: Tapered
Orifice size 21/32 inch

Inactive thrust bearing: Tapered
Orifice size 21/32 inch

No. 1 bearing: Elliptical
Orifice size 1/4 inch
Minimum bearing clearance .010 inch

No. 2 bearing: Elliptical
Orifice size 7/16 inch
Minimum bearing clearance .017

No. 3 bearing: Elliptical
Orifice size 3/8 inch
Minimum bearing clearance .016 inch

No. 4 bearing: Elliptical
Orifice size 1/2 inch
Minimum bearing clearance .017 inch

No. 5 bearing: Elliptical
Orifice size 1/2 inch
Minimum bearing clearance .017 inch

Casing drain valve: Double

Turning gear on turbine exhaust bearing

Nameplate language: English

Thermometers: Degrees Fahrenheit

Gages: English units

Accessory panels
Control center

Provision for borescope inspection

- First stage
- Three stages in reheat casing
- L-3 stage in exhaust
- L-2 stage in exhaust
- L-1 stage in exhaust
- L stage thru manhole
- One in stop valve

Pressure tap for boiler control in stage valve shell

MECHANICAL DESIGN (CONT'D)

Controlled-start thermocouples

- First-stage shell inner surface
- First-stage shell outer surface
- Steam chest inner surface
- Steam chest outer surface
- Reheat bowl inner surface
- Reheat bowl outer surface

Relief diaphragm

Vacuum breaker: Motorized

Fog nozzles

Turning gear motor 460 vac

Turning gear panel

Sight flow for the oil from the

- No. 1 bearing is located on front standard
- No. 2 bearing is located on bearing bracket
- No. 3 bearing is located on bearing bracket
- No. 4 bearing is located on bearing cap
- No. 5 bearing is located on bearing cap

Lifting devices

- Rotor lifting beam
- Hydraulic jacks for initial opening of joint
- Casing lifting sling

TURBINE CONTROL SYSTEM

Electrohydraulic control

EMERGENCY TRIP SYSTEM

Stop valve (full arc)

Electrical trip device

Nonreturn valve trip relay

Blowdown valve

Air dump valve

Right-hand reheat stop and intercept valve

EMERGENCY TRIP SYSTEM (CONT'D)

Left-hand reheat stop and intercept valve

Low bearing pressure trip relay

Low vacuum trip switch

Thrust wear detector

Overspeed governor exerciser

Overspeed governor

Emergency trip

Manual trip signal switch

LUBRICATION AND HYDRAULIC SYSTEM

Oil cooler type: Gravity flow

Cooling water: Fresh

Oil tank size 6 x 12 x 5½ feet

Oil tank capacity 1750 gallons

Oil level gage: Alarm contact

Low bearing oil pressure alarm switch: Closes at 18 psig; opens at 22 psig

Bearing and seal oil pump 460 vac
Pump test solenoid valve

Emergency bearing and seal oil pump 125 vdc
Pump test solenoid valve

Bearing header transmitter

HYDRAULIC POWER UNIT

Pump motors(2) 460 vac, speed 1200 rpm

Pump test solenoid valve

Thermometer

Pressure gage

Pressure transmitter: Electric

HYDRAULIC POWER UNIT (CONT'D)

Fluid-level alarm

Low-hydraulic-pressure alarm switch

Nonreturn valve trip relay

SHAFT SEAL AND VENT SYSTEM

Steam seal regulator

Gland exhauster system: Surface condenser and motor-driven air blower
Motor 460 vac

AUXILIARY DEVICES

Zero speed device alarms at zero rpm

Active thrust wear detector alarm and trip: Closes at 21 psig; opens at 17 psig

Inactive thrust wear detector alarm and trip: Closes at 21 psig; opens at 17 psig

STEAM VALVE SWITCHES

Stop valve circuit breaker switch

Stop valve closed position switch

Stop valve test position switch

Stop valve open position switch

Reheat stop valve circuit breaker switch

Reheat stop valve open position switch

Reheat stop valve closed position switch

Intercept valve circuit breaker switch

Intercept valve open position switch

Intercept valve closed position switch

Intercept valve quick closing position switch

Blowdown valve switch

TEMPERATURE INDICATING DEVICES

Dial thermometers on turbine for oil drains from

- Active thrust
- Inactive thrust
- No. 1 bearing
- No. 2 bearing
- No. 3 bearing

Remote indications from oil drains

- Active thrust
- Inactive thrust
- No. 1 bearing
- No. 2 bearing
- No. 3 bearing
- No. 4 bearing
- No. 5 bearing

Temperature measuring devices for oil cooler

- Oil in
- Oil out

Thermocouples in bearings

- Upper half of active thrust bearing
- Upper half of inactive thrust bearing
- No. 1 bearing
- No. 2 bearing
- No. 3 bearing
- No. 4 bearing
- No. 5 bearing

Exhaust temperature switch alarms at 175 F and trips and alarms at 225 F

Oil cooler temperature switch alarms at 130 F

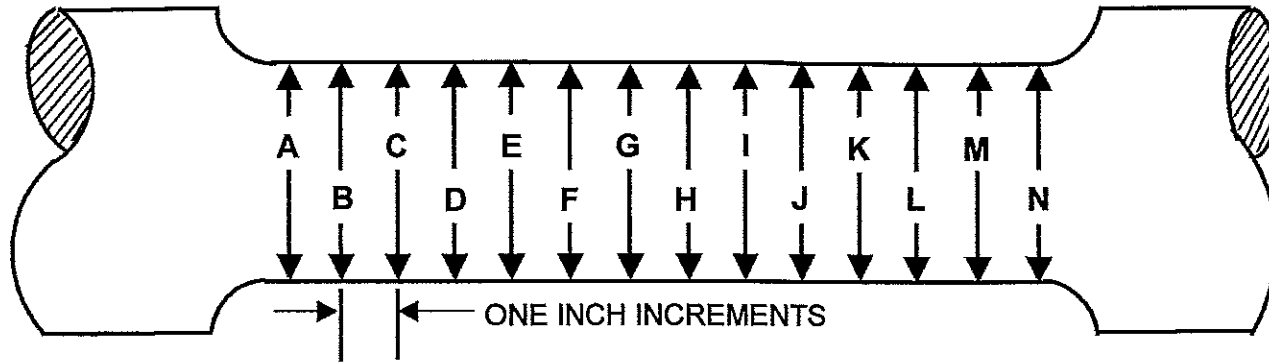
Journal Dimensions

Date: 10\5\02

Turbine No: 1

Prepared By: _____

Data: **AS FOUND** **AS LEFT**
(AS FOUND/AS LEFT)



BEARING NO: <u>4</u>			BEARING NO: <u>5</u>		
POSITION	DIMENSION		POSITION	DIMENSION	
	0°	90°		0°	90°
A	12.9980	12.9980	A	12.9985	12.9985
B	12.9980	12.9980	B	12.9985	12.9985
C	12.9980	12.9980	C	12.9985	12.9980
D	12.9980	12.9980	D	12.9985	12.9980
E	12.9980	12.9975	E	12.9985	12.9980
F	12.9980	12.9975	F	12.9980	12.9980
G	12.9980	12.9980	G	12.9980	12.9975
H	12.9980	12.9980	H	12.9980	12.9975
I	12.9980	12.9980	I	12.9980	12.9975
J	12.9975	12.9970	J	12.9980	12.9975
K	12.9970	12.9970	K	12.9980	12.9980
L	12.9975	12.9975	L	12.9980	12.9980
M	12.9975	12.9970	M	12.9980	12.9975
N	12.9975	12.9975	N	12.9980	12.9975

OB Hyd area

IB Hyd area

OB Hyd area

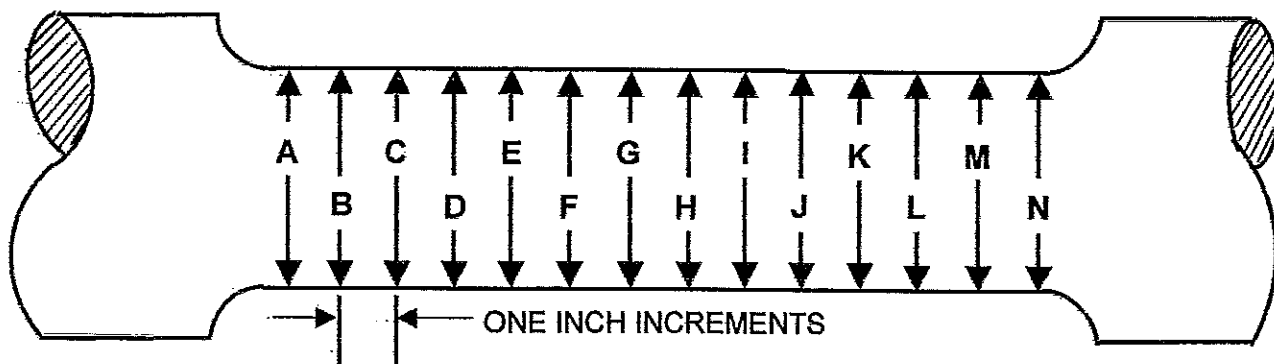
IB Hyd area

Journal Dimensions

Date: 10/2/02

Turbine No: 1 Prepared By: _____

Data: **AS FOUND** AS LEFT
(AS FOUND/AS LEFT)



BEARING NO: <u>3</u>			BEARING NO: _____		
POSITION	DIMENSION		POSITION	DIMENSION	
	0°	90°		0°	90°
A	12.0000	11.9990	A		
B	12.0000	11.9990	B		
C	12.0000	11.9990	C		
D	12.0000	11.9990	D		
E	12.0000	12.0000	E		
F	12.0000	11.9990	F		
G	12.0000	12.0000	G		
H	12.0000	11.9990	H		
I	12.0000	11.9990	I		
J	12.0000	12.0000	J		
K	12.0000	12.0000	K		
L			L		
M			M		
N			N		

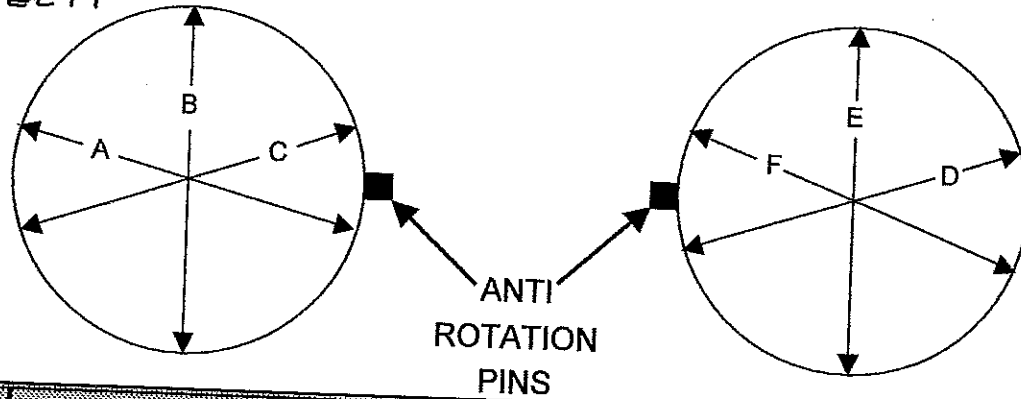
Bearing Dimensions

Date: 10/5/02

Turbine No: 1

Prepared By: _____

Data: **AS FOUND**
(AS FOUND/AS LEFT)
AS LEFT



Bearing Number	Governor End		Generator End		Average Shaft Diameter	Clearance
	Position	Dimension	Position	Dimension		
#1 AS FOUND	A	8.0180	D	8.0130	8.0000	0.0155
	B	8.0150	E	8.0150	8.0000	0.0150
	C	8.0130	F	8.0180	8.0000	0.0155
#2 AS FOUND	A	13.0260	D	13.0290	13.0000	0.0275
	B	13.0230	E	13.0200	13.0000	0.0215
	C	13.0260	F	13.0270	13.0000	0.0265
#3 AS FOUND	A	12.0250	D	12.0250	12.0000	0.0250
	B	12.0280	E	12.0250	12.0000	0.0265
	C	12.0200	F	12.0250	12.0000	0.0225
#4 AS FOUND	A		D			
	B		E			
	C		F			
#5 AS FOUND	A	13.0240	D	13.0240	12.9980	0.0260
	B	13.0190	E	13.0190	12.9980	0.0210
	C	13.0250	F	13.0260	12.9980	0.0275
#6 AS FOUND	A	13.0280	D	13.0240	12.9980	0.0280
	B	13.0230	E	13.0220	12.9980	0.0245
	C	13.0240	F	13.0240	12.9980	0.0260

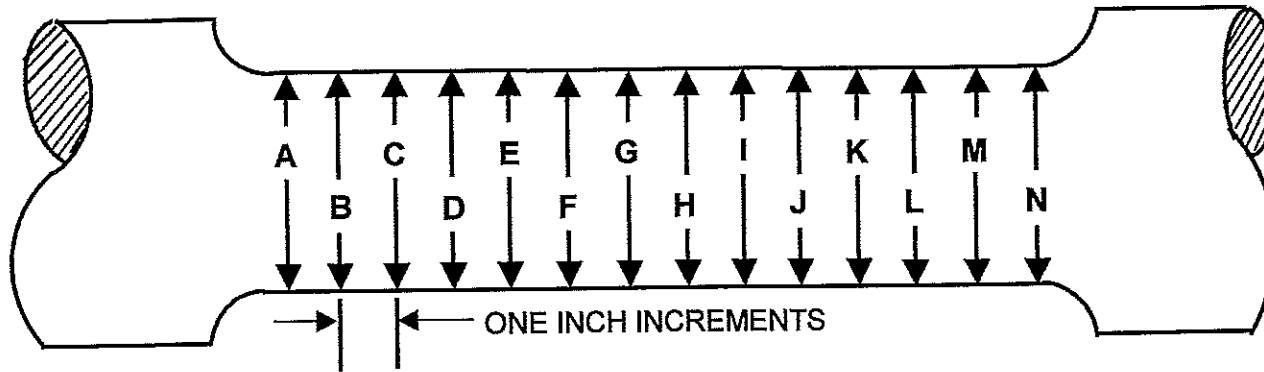
Journal Dimensions

Date: 10/2/02

Turbine No: 1

Prepared By: _____

Data: **AS FOUND** AS LEFT
(AS FOUND/AS LEFT)



BEARING NO: <u>1</u>			BEARING NO: <u>2</u>		
POSITION	DIMENSION		POSITION	DIMENSION	
	0°	90°		0°	90°
A	8.0010	8.0000	A	13.0010	13.0000
B	8.0010	8.0000	B	12.9990	12.9990
C	8.0000	8.0010	C	13.0000	13.0000
D	8.0000	8.0000	D	12.9950	12.9950
E	8.0000	8.0000	E	12.9960	12.9960
F	8.0010	8.0010	F	12.9980	12.9990
G	8.0000	8.0000	G	12.9990	12.9990
H	8.0010	8.0010	H	13.0000	13.0000
I			I	12.9990	12.9990
J			J	13.0000	13.0000
K			K	13.0000	12.9990
L			L	13.0000	13.0000
M			M		
N			N		

G-402-D

ESTIMATED GENERATOR DATA

GENERATOR NO. 316X282

NAMEPLATE DATA

2 Poles, 3 Phase, Wye Connected, 60 Hertz
 Total temperature at rating guaranteed not to exceed:
 100 C on armature by detector, 120 C on field by resistance
 Maximum cold gas temperature: 46 C
 Inlet water: 95 F

	Rating	Capability	Capability
Gas 98% Purity (PSIG)	30	15	0.5
KVA	122,000	112,240	85,400
Armature Amps	5104	4696	3573
Armature Volts	13,800	13,800	13,800
Field Amps	621	588	498
Excitation Volts	375	375	375
Power Factor	0.90	0.90	0.90

DESIGN DATA

Gas 98% Purity PSIG	Maximum KVA One Cooler Out of Service
30	97,600
15	89,792
0.5	68,320

No-Load Field Current	274 Amperes
Three Phase Armature Winding Capacitance	0.903 Microfarads
Armature Winding DC Resistance (per phase)	0.00193 Ohms at 100 C
Field Winding DC Resistance	0.520 Ohms at 125 C

COLLECTOR AND BRUSH DATA

Collector brushes: 28 per set	Recommended Grade: National Carbon 634
Collector minimum safe operating diameter: 12 inches	
Shaft grounding brushes: 2 per set	Recommended Grade: National Carbon 634
If brushes spark or chatter, refer to: GEK-35474	

GAS COOLER DATA

Inlet water temperature: 95 F	Water flow at rated load: 792 gpm
Head loss through cooler: 12.5 feet	Gas flow through generator: 63,000 cfm
Gas space in generator: 1640 cubic feet	

AIR FILTER

Type of Air Filter	Farr 44
Size of Air Filter	30 x 10 x 2
Number of Air Filters	2

REACTANCE DATA (PER UNIT)**DIRECT AXIS****QUADRATURE AXIS**

Saturated Synchronous	(Xdv) 1.667	(Xqv) 1.596
Unsaturated Synchronous	(Xdi) 1.667	(Xqi) 1.596
Saturated Transient	(X'dv) 0.175	(X'q) 0.430
Unsaturated Transient	(X'di) 0.236	
Saturated Subtransient	(X''dv) 0.122	(X''qv) 0.118
Unsaturated Subtransient	(X''di) 0.167	(X''qi) 0.166
Saturated Negative Sequence	(X2v) 0.115	
Unsaturated Negative Sequence	(X2i) 0.159	
Saturated Zero Sequence	(Xov) 0.057	
Unsaturated Zero Sequence	(Xoi) 0.073	
Leakage Reactance	(XLM,OEX) 0.136	
	(XLM,UEx) 0.136	

Field Time Constant Data (Sec. at 125 C)

Open Circuit	(T'do) 5.533	(T'qo) 0.380
Three Phase Short Circuit Transient	(T'd3) 0.580	(T'q) 0.380
Line to Line Short Circuit Transient	(T'd2) 0.901	
Line to Neutral Short Circuit Transient	(T'd1) 1.045	
Short Circuit Subtransient	(T''d) 0.023	(T''q) 0.023
Open Circuit Subtransient	(T''do) 0.033	(T''qo) 0.083

Armature DC Component Time Constant Data (Sec. at 100 C)

Three Phase Short Circuit	(Ta3) 0.248
Line to Line Short Circuit	(Ta2) 0.248
Line to Neutral Short Circuit	(Ta1) 0.206

Per Unit Armature Winding Sequence Resistance Data

Positive	(R1) 0.003
Negative	(R2) 0.014
Zero	(Ro) 0.005

Rotor Short-time Thermal Capacity (I_2) ² t	30
Turbine and Generator Combined Inertia Constant (H)	2.75 KW Sec./KVA

SYMBOL AND SIZE	MAIN CONNECTORS	MAX. LOAD TEMP.	MAX. LOAD PRESS.	MAX. WATERTIGHT LOAD	OUTSIDE DIA. B.C.	INSULATION	FRANSE FACE	COMPANION UNITS, BOLTS, SLEETS AND FLANGES TO BE	REVISIONS
A1 12.00	MAIN STEAM INLET SV	1000°F	1875 PSI	1000 PSI	12.75			SEE TCPL LINE NO. 006	1121
A2 12.4	EXHAUST	79°F	80 ABS	175°F				SEE TCPL LINE NO. 132	1122
HR1-HR11	HOT REHEAT CONV	947°F	523 PSI	1000°F	14.00			SEE TCPL LINE NO. 006	1123
CP1-CP2	COLD REHEAT CONV	726°F	602 PSI	1000°F	14.00			SEE TCPL LINE NO. 006	1124
E1A-E1B	UNCONTROLLED EXTR	243°F	15 ABS	271°F	16.00			SEE TCPL LINE NO. 006	1125
E2	UNCONTROLLED EXTR	459°F	37 PSI	467°F	12.75			SEE TCPL LINE NO. 006	1126
E3	UNCONTROLLED EXTR	519°F	40 PSI	605°F	11.075			SEE TCPL LINE NO. 006	1127
E4	UNCONTROLLED EXTR	782°F	12 PSI	789°F	8.62			SEE TCPL LINE NO. 006	1128

SYMBOL AND SIZE	DESCRIPTION	DATE	BY
1121	1121 LIFTING DATA TABLE ALL DIMS WERE LATER		
1122	1122 DIMS 8 FT 10.25 WAS 8 FT 7.75		
1123	1123 REVISE TURBINE TABLE OF WEIGHTS PERM MICROFILM FILED		

SYMBOL AND SIZE	DESCRIPTION	DATE	BY
1124	1124 REVISE TURBINE TABLE OF WEIGHTS PERM MICROFILM FILED		

SYMBOL AND SIZE	DESCRIPTION	DATE	BY
1125	1125 REVISE TURBINE TABLE OF WEIGHTS PERM MICROFILM FILED		

SYMBOL AND SIZE	DESCRIPTION	DATE	BY
1126	1126 REVISE TURBINE TABLE OF WEIGHTS PERM MICROFILM FILED		

SYMBOL AND SIZE	DESCRIPTION	DATE	BY
1127	1127 REVISE TURBINE TABLE OF WEIGHTS PERM MICROFILM FILED		

SYMBOL AND SIZE	DESCRIPTION	DATE	BY
1128	1128 REVISE TURBINE TABLE OF WEIGHTS PERM MICROFILM FILED		

SYMBOL AND SIZE	DESCRIPTION	DATE	BY
1129	1129 REVISE TURBINE TABLE OF WEIGHTS PERM MICROFILM FILED		

SYMBOL AND SIZE	DESCRIPTION	DATE	BY
1130	1130 REVISE TURBINE TABLE OF WEIGHTS PERM MICROFILM FILED		

SYMBOL AND SIZE	DESCRIPTION	DATE	BY
1131	1131 REVISE TURBINE TABLE OF WEIGHTS PERM MICROFILM FILED		

SYMBOL AND SIZE	DESCRIPTION	DATE	BY
1132	1132 REVISE TURBINE TABLE OF WEIGHTS PERM MICROFILM FILED		

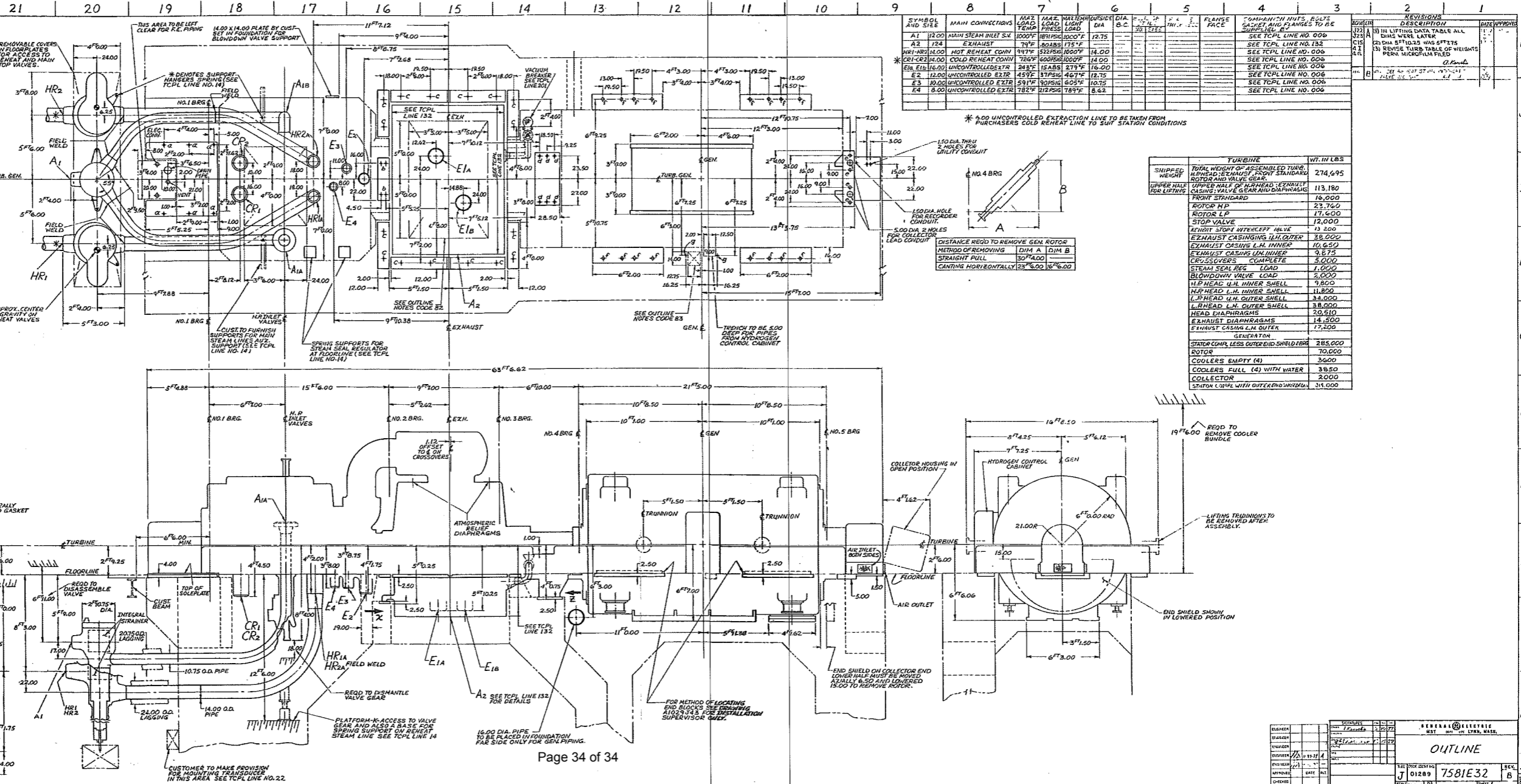
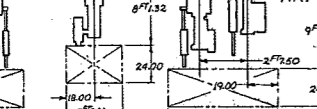
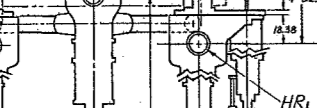
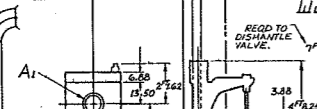
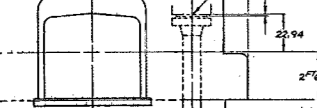
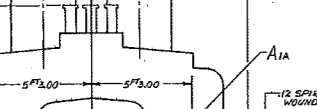
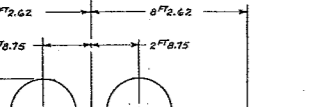
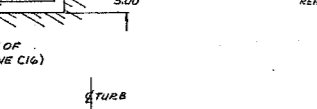
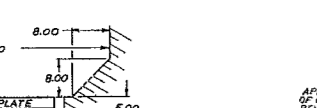
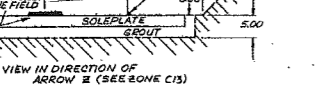
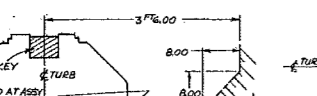
SYMBOL AND SIZE	DESCRIPTION	DATE	BY
1133	1133 REVISE TURBINE TABLE OF WEIGHTS PERM MICROFILM FILED		

SYMBOL AND SIZE	DESCRIPTION	DATE	BY
1134	1134 REVISE TURBINE TABLE OF WEIGHTS PERM MICROFILM FILED		

SYMBOL AND SIZE	DESCRIPTION	DATE	BY
1135	1135 REVISE TURBINE TABLE OF WEIGHTS PERM MICROFILM FILED		

SYMBOL AND SIZE	DESCRIPTION	DATE	BY
1136	1136 REVISE TURBINE TABLE OF WEIGHTS PERM MICROFILM FILED		

LIFTING DATA	
LOAD ON CRANE HOOK	A DIM TO CLEAR A DIM TO CLEAR
ROTOR HP	26 FT 10.00
ROTOR LP	23 FT 10.00
UPPER HALF CASINGS HP END	25 FT 1.00
UPPER HALF CASINGS LP END	21 FT 10.00
EXHAUST CASINGS HP END	24 FT 0.00
EXHAUST CASINGS LP END	23 FT 5.00



* 6.00 UNCONTROLLED EXTRACTION LINE TO BE TAKEN FROM PURCHASERS COLD REHEAT LINE TO SUIT STATION CONDITIONS



DISTANCE REQD TO REMOVE GEN ROTOR	
METHOD OF REMOVING	DIM A DIM B
STRAIGHT PULL	30 FT 0.00
CANTING HORIZONTALLY	23 FT 6.00 16 FT 6.00

SHIPPED WEIGHT	TURBINE	WT. IN LBS
113,180	TOTAL WEIGHT OF ASSEMBLED TURBINE HEAD, EXHAUST, FRONT STANDARD ROTOR AND VALVE GEAR	274,695
113,180	UPPER HALF OF HEAD: EXHAUST CASINGS, VALVE GEAR AND DIAPHRAGM	113,180
16,000	FROM STRAIGHT	16,000
23,760	ROTOR HP	23,760
17,600	ROTOR LP	17,600
12,000	STOP VALVE	12,000
13,800	WEIGHT STOP INTERCEPT VALVE	13,800
38,000	EXHAUST CASINGS I.M. OUTER	38,000
10,650	EXHAUST CASINGS I.M. INNER	10,650
9,875	EXHAUST CASINGS L.M. INNER	9,875
3,000	CROSSOVERS COMPLETE	3,000
1,000	STEAM SEAL REG. LOAD	1,000
2,000	BLOWDOWN VALVE LOAD	2,000
9,800	L.P. HEAD U.M. INNER SHELL	9,800
11,800	L.P. HEAD L.M. INNER SHELL	11,800
34,000	L.P. HEAD U.M. OUTER SHELL	34,000
38,000	L.P. HEAD L.M. OUTER SHELL	38,000
20,510	HEAD DIAPHRAGMS	20,510
14,500	EXHAUST DIAPHRAGMS	14,500
17,500	EXHAUST CASING L.M. OUTER	17,500
285,000	GENERATOR	285,000
285,000	STATOR COMP. LESS OUTER END SHIELDERS	285,000
70,000	ROTOR	70,000
3,000	COOLERS EMPTY (4)	3,000
39,500	COOLERS FULL (4) WITH WATER	39,500
2,000	COLLECTOR	2,000
314,000	STATOR COMP. WITH OUTER END SHIELDERS	314,000

GENERAL ELECTRIC
MKT. DIV. LYNN, MASS.

OUTLINE

J 01289 7581E32

REV. B

DATE

BY

1977