

PD WAA 699

Final Report

BLUE NILE GRID REHABILITATION PROGRAM



USAID CONTRACT NO.
650-K602-C-00-2003



Bechtel National, Inc.
San Francisco, CA

September, 1984

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National Electricity Corporation
Sudan

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TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
1	INTRODUCTION	1
2	PROGRAM ACHIEVEMENTS AND BENEFITS	11
3	PROBLEMS ENCOUNTERED DURING THE REHABILITATION PROGRAM	29
4	CONCLUSIONS AND RECOMMENDATIONS	36
5	BUDGET AND EXPENDITURES	37

APPENDICES A THROUGH C

Section 1

INTRODUCTION

This final report presents a summary of the activities, benefits and recommendations related to the Blue Nile Grid Rehabilitation Program from Contract, award July, 1982, through the completion of in-country activities, June, 1984, under USAID Contract 650-K602-C-00-2003. If greater detail is required on specific activities and problems encountered during the Program, the reader is referred to the monthly and quarterly reports on file both in the USAID Mission, Office, Khartoum and the Bechtel National Inc. Offices in San Francisco.

1.1 OVERALL PROGRAM GOALS

Since the Blue Nile Grid (BNG) of the National Electricity Corporation (NEC) supplies over 80 percent of the electrical energy demand in Sudan, improving the availability and reliability of generation, transmission, and distribution is of primary importance. Recognizing that the frequency of major outages by 1981 in the BNG transmission and subtransmission systems were having a seriously negative impact on both industry and commerce in Sudan, the NEC and the USAID Mission in Sudan entered into an agreement to rehabilitate sections of the systems. This program was dedicated to the following overall goals:

- Improve the reliability of the Blue Nile Grid by replacing faulty power system equipment and providing an adequate inventory of spare parts
- Reduce the duration of power system outages by improving the NEC

telecommunication system and replacing and augmenting mobile construction and maintenance equipment for lines and substations

As a first step to improving availability and reliability of the BNG transmission and subtransmission systems, approximately \$16.3 million of power system equipment, telecommunications and mobile construction and maintenance equipment was installed in 1983 and 1984.

1.2 SPECIFIC PROGRAM OBJECTIVES

Since the Blue Nile Grid was in immediate need of rehabilitation, the equipment which would provide the most significant and immediate improvement in reliability and availability was identified. The program supported by USAID was limited to transmission and subtransmission systems rehabilitation. The limits defined for the transmission and subtransmission systems extended from the high-voltage terminals of power station generator transformers to the 33 KV/11 KV subtransmission substations.

The power systems, telecommunications and mobile equipment selected were based on the following criteria:

- Replacement of failed equipment
- Restoration of inoperative equipment
- Correction of erratic operation
- Improvement in maintenance response time
- Improvement in preventative maintenance

The specific objectives set forth in the USAID Contract were that Bechtel provide:

- Engineering services,
- Procurement services,

- Delivery services, and
- Field installation services

to the National Electricity Corporation for all equipment to be installed under Rehabilitation Program. These services were to include: specification writing; preparation of lists of recommended vendors and suppliers; issuance of invitations for bid or requests for quotation; review and evaluation of bids or quotations; making contract or purchase order award recommendations to NEC; inspecting and expediting deliveries; coordinating transportation to Sudan; related engineering services; and assistance during installation. The detailed Statement of Work is provided in Appendix A.

1.3 PRIOR BECHTEL SERVICES

In response to the pressing need to improve the reliability of the Blue Nile Grid (BNG), USAID had requested in January, 1982 that Bechtel send a four-man Team to inspect the BNG and, with NEC management, to develop a priority commodity list including critically needed power system equipment, telecommunications equipment and mobile maintenance and construction equipment. Following the field trip, the equipment, together with technical services required, including specifications, design, procurement, inspection and installation, were defined and preliminary estimates of cost and schedule, were made.

This earlier work was supported by USAID Contract No. DAN-5724-C-00-1035-00. Specifications were completed, were reviewed and final approval given by the USAID/Khartoum Mission and NEC management in May, 1982. Following the completion of this work, the USAID Mission, with the assent of the NEC, entered into the present contract for the services described in Appendix A.

1.4 PROGRAM CHRONOLOGY

The Program commenced in Khartoum on July 5, 1982 with the signing of a Procurement Advisory Services Contract by Bechtel National Inc. (BNI) and the USAID Mission (USAID). Listed below is an event chronology:

<u>MONTH</u>	<u>EVENT</u>
July, 1982	The Resident Manager, D.E. Hart, established final commodity lists for NEC power systems, telecommunications and mobile equipment.
August, 1982	Resident Manager returned to Bechtel Power Division offices in Los Angeles to assist in final preparation of Request for Bids and to arrange for Bid Evaluation and Award procedures between BNI and NEC.
September, 1982	Resident Manager returned to Khartoum and established BNG REHAB office in NEC headquarters next to Director General's office. Letter of Commitment for \$18,700,000 issued to Manufacturers Hanover Trust Bank, New York. Director General, NEC, requested BNI assist in securing two, 220 KV, SF6 Circuit Breakers for Damazine on an emergency waiver.
October, 1982	BNI developed Letter of Credit (L/CR) request and approved routines for NEC and Bank of Sudan. Requests for Bids for mobile equipment and telecommunications commodities were issued by end of month.
November, 1982	NEC Review Board stationed at Bechtel Power Division, Los Angeles, for bid evaluation, supplier consultations, and contract awards. 28 bids of 47 commodity groups were received by end of month. Received purchase contracts from Los Angeles Power Division for two, SF6 Breakers for Damazine.
December, 1982	Received bids for all of commodities except 11 out of the 47 commodity groups.

Fifteen purchase contract awards were made by NEC by month end.

January, 1983

NEC signed contract for the 220 KV, SF6 Breakers for Damazine,. The L/CR was issued on January 11, 1983, the first for the Program.

Resident Manager and Project Director J.F. Houle reviewed status of the procurement program with the NEC review Board at Bechtel Power, Los Angeles, to expedite Review Board work.

February, 1983

Bechtel Field Installation Engineer, G.I. Israelson took up permanent assignment in Khartoum. Initial efforts included supervision of SF6 Breaker installation and inspection of receiving and storage facilities at Port Sudan.

March, 1983

NEC Director General and Resident Manager met with Deputy USAID Mission Director, Keith Sherper, to discuss the increase in BNG REHAB commodities since the initial commodity request was actually \$2,860,000 less than the approved Letter of Commitment.

April, 1983

BNI Project Director in Khartoum to discuss Program progress and Budget revisions for increased Program scope.

Trip to Damazine to inspect SF6 Breaker foundations. NEC Director General accompanied Resident Manager.

Letter sent by NEC to State Minister of Energy requesting that balance of \$2.86 million in the USAID CIP be used for additional commodities.

May, 1983

All L/CR with the exception of 5 were issued by May.

General Electric field installation engineer (first of supplier engineers to arrive in the field) arrived for SF6 Circuit Breaker installation.

Met with Jay Carter, newly arrived USAID Mission Energy Officer, for first briefing session on BNG REHAB Program.

June, 1983

First SF6 Circuit Breaker operating at Damazine on June 9th. Second breaker will be installed after Ramadan.

Four additional commodities had arrived in Port Sudan by end of month.

The original LOCOM was amended downward to \$15,420,000 in May by USAID, Khartoum. BNI subsequently recommended provision of an additional \$1,000,000 to cover field service engineers, increase in freight cost, spare parts and some additional equipment. The Bechtel Telecommunications Engineer, Kenneth Gordon, began his assignment on June 16, in Khartoum.

July, 1983

A total of 17 commodity groups and 75 pieces of equipment had arrived in Port Sudan by month end.

USAID Mission Energy Officer requested letter from NEC Director General indicating concurrence in Option A Amendment to Contract Scope of Work agreed upon in meeting with BNI Program Director on April 7, 1983. Letter was requested prior to amending dollar amount in Contract.

Discussed receiving, storage, inspection and preparation of over-the-road shipment of vehicles at Port Sudan with NEC Directors of Supplies, Engineering and Operations.

August, 1983

HF Radio system equipment arrived in Khartoum and stored for later installation.

Amendment A to the Contract was signed by USAID and BNI, August 30, 1983. The amendment provides for increases in both the dollar and Sudanese pound budgets as well as a contract completion date of August 31, 1984. The increase in funds and extension of schedule are related to scope changes.

September, 1983

The first of the mobile equipment - augers, derricks, tankers and cable reel equipment - arrived in Khartoum in mid-September.

HF radio towers arrived and instructions given for installation at 11 sites in the BNG Systems.

BNI Resident Manager and Field Installation Engineer met with NEC management to discuss training and qualifying of NEC mobile equipment operators and mechanics.

October, 1983

NEC held a reception exhibiting recently arrived mobile equipment. Representatives from the U.S. Embassy and the USAID Mission attended.

The first of the NEC HF radio system equipment was installed for Port Sudan and Khartoum providing NEC with its first dedicated communication link to Port Sudan. By month end links were completed to Wad Medani and Damazine.

Inspected El Bagier Substation site with Westinghouse, NEC and BNI engineers. Discussed substation design.

All mobile equipment had arrived in Sudan by end of the the month. About one-third of the equipment was in operation.

November, 1983

Second SF6 Circuit Breaker installed at Damazine Substation.

Issued letter to NEC Director of Administrative Affairs requesting that he implement USAID ADM-12, "Property Accountability for AID-financed Commodities". Instructions for the implementation of USAID ADM-12 were provided by the BNI Resident Manager.

December, 1983

Established NEC Task Force to implement USAID ADM-12 letter. Task Force also addressed the problems of equipment maintenance and records and the new Vehicle Maintenance Center.

BNI notified NEC Senior Management of serious slippage in the El Bagier construction schedule arising from NEC's delay in starting civil works construction.

January, 1984

Bechtel Telecommunications Engineer, A.T. Anagnostou, began a six-month assignment directing installation of telecommunications equipment and training.

The last of the Telecommunications commodities arrived in Khartoum and all mobile equipment, except Burri Crane, had arrived including new fabricated buildings. Eight of the twenty power systems commodities had arrived by the end of the month.

February, 1984

Delivered to USAID Mission Procurement Officer documentation of Letter of Credit procedures used in the BNG REHAB program. This is one of the most complete procedural documents of any of the CIP Programs active in Sudan.

NEC/Bechtel Task Force on Vehicle and Mobile Equipment Maintenance and Records met with Supplier Field Engineers to discuss serious maintenance problems.

At end of month all mobile equipment was in service except the 125 foot aerial basket.

March, 1984

Requested LOCOM 60306 be extended to November 30, 1984. Granted by USAID Mission and USAID/Washington.

Submitted construction activity schedule for El Bagier Substation to NEC and USAID Mission Energy Officer showing mid-November completion.

Requested NEC Director of Supplies to complete delinquent USAID ADM-12 Audit forms for CIP Commodities.

Twelve out of twenty power systems commodities were in Sudan at month end. Burri Bridge Crane arrived at Port Sudan.

April, 1984

Completed R.O. Corp. field training of mobile equipment operators and mechanics. A total of 80 days were devoted to training.

BNI Resident Manager submitted to NEC the installation schedule for power systems equipment other than at El Bagier Substation.

Submitted Bechtel Services Contract to NEC for services to be rendered under New LOCOM-60409.

May, 1984

SRC Field Installation Engineer in Khartoum to train HF radio technicians. Rural Telephone System links (microwave) completed under supervision of S.R. Telcom field installation engineer.

Request for tenders for El Bagier Substation civil works released to local contractors.

BNI Project Director requested Dollar Budget be amended for additional funds to carry field program through September, 1984.

Reported to USAID Mission the extensive "hands on" training being given to NEC telecom technicians.

June, 1984

BNI Resident Manager met with USAID Deputy Procurement Officer to arrange for terms and conditions permitting use of LOCOM-2 funds for equipment and services contracted for under LOCOM-1.

Held Program Review with Director General, Senior Directors and USAID Energy Program Officer to discuss Program progress.

USAID Mission Director limited increase in dollar Budget requesting job shut down in field by June 30, 1984.

Documented Purchase Order/Contract and Letter of Credit procedures for NEC AND USAID.

Submitted to NEC and USAID Letter of Credit and Purchase Order/Contract Status Report. Held several conferences with USAID and NEC personnel to discuss procedures and status.

July, 1984

Held conference with USAID Mission Procurement Officer giving final status of remaining procurement activities and reviewing interfacing with NEC and the Bank of Sudan.

BNI Resident Manager, at USAID request, held several conferences with Mr. John Sheehy, Harza Co., describing NEC organization, activities of other consulting firms working with NEC and interfacing with USAID for the management services program.

Held job completion conference with Mission Director W.R. Brown reporting on program accomplishments.

Held final conference with Director General Mohamed Nasr Abu Bakr, reviewing program accomplishments and work yet to be completed.

Closed BNI Khartoum Office on July 14, 1984.

The Overall Program Schedule is shown in Figure 1.1 and the Schedule of Technical Assistance Personnel in Khartoum is shown in Figure 1.2.

A more detailed Program Chronology is given in Appendix B.

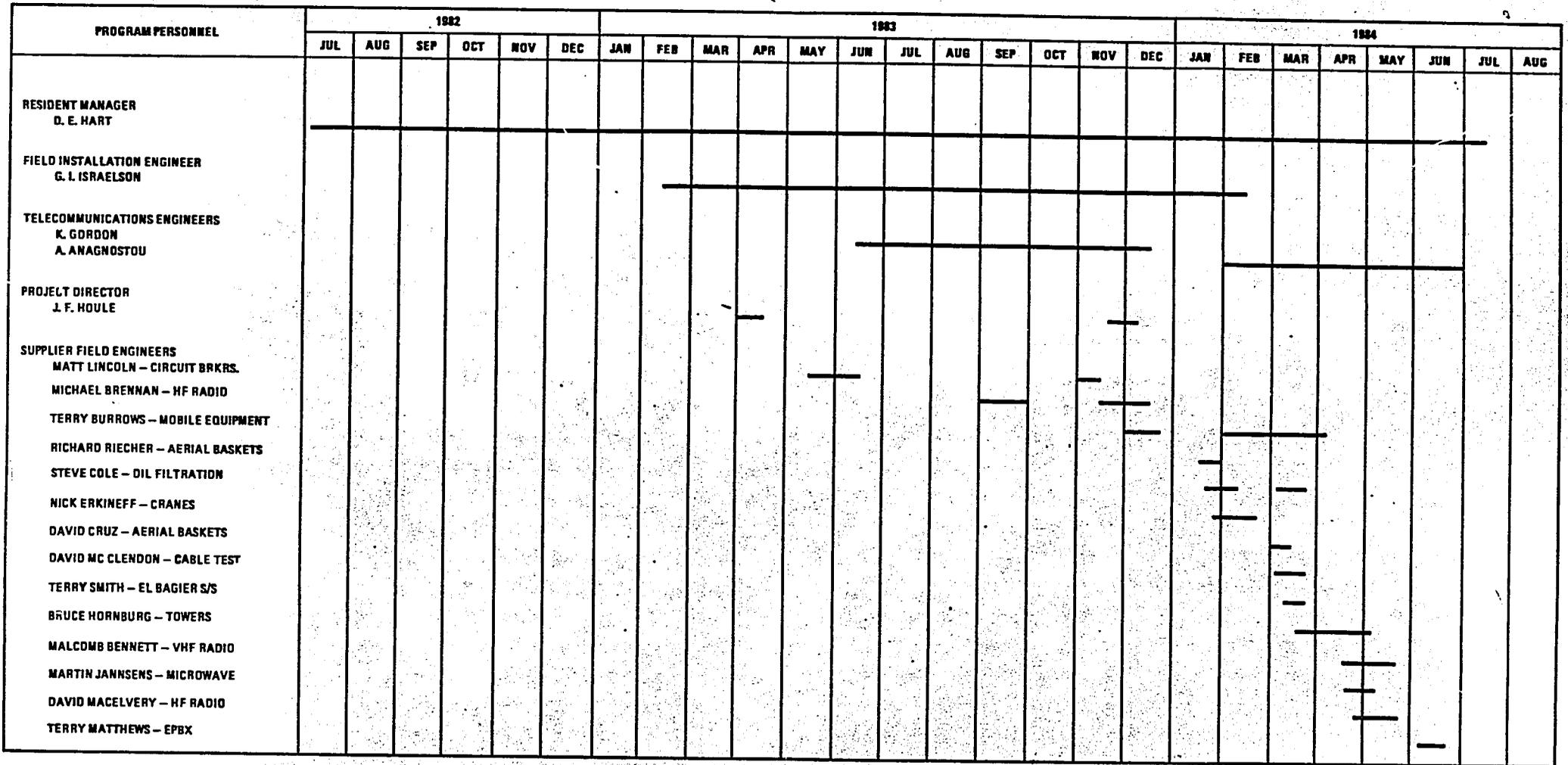


Figure 1-2 SCHEDULE OF TECHNICAL ASSISTANCE PERSONNEL IN KHARTOUM

15

Section 2

PROGRAM ACHIEVEMENTS AND BENEFITS

As stated in Section 1, the overall objectives of the BNG Rehabilitation Program were to:

- Improve the reliability of the BNG transmission and distribution systems
- Reduce the duration of power system outages

The benefits expected from the rehabilitation program were:

- Improved level of system reliability
- Improved level of power system equipment availability
- Improved preventative maintenance program reducing the frequency of power system equipment outages
- Increased revenue to NEC due to greatly foreshortened duration of power system outages.

Both the achievements in improved power system operations and the benefits realized from the installation of equipment provided by the Commodity Import Program (CIP) for the BNG Rehabilitation will be discussed in this Section.

2.1 POWER SYSTEM OPERATION IMPROVEMENT

The inspection of the 220 KV, 110 KV and 33 KV stations and lines in the Blue Nile Grid by a Bechtel Inspection Team under an earlier contract (USAID DAN-5724-C-00-1085-00) indicated that extensive replacement of faulty circuit breakers was required; surge arrestors were needed; multi-ratio Bushing Current Transformers were required; a larger 110/11KV substation transformer for load growth was needed; a new substation, El Bagier, was required in a growing industrial area; and, several air compressors used by air-blast circuit breakers were to be replaced. Cable test equipment, relay test sets and transformer oil filtration equipment were also seriously needed.

The 11 KV distribution system is in the poorest condition of all the components of the Blue Nile Grid. This is caused principally by improperly sized cables and conductors, over-extended feeders and very poor power factor correction. Therefore, approximately 64,000 KVAC of capacitors are needed as an initial step to power factor correction in the Khartoum distribution system.

2.1.1 Improvement Achievements

Early in the program, May 1983, a large 220 KV air-blast circuit breaker, was replaced at Damazine Power Station. At the time, the 220 KV line circuit breakers were by-passed at the Damazine Substation, with only the generator transformer circuit breakers protecting the south end of a 250 Km double circuit transmission line. The line therefore was placed at great hazard as were the power station generators. Through the expediting of procurement on Bechtel's part, two, 220 KV SF6 circuit breakers were found in the United States and shipped to Sudan within three months - 12 months ahead of program schedule. The second breaker could have been installed at Damazine immediately had not Ramadan interfered with its installation.

Reactor switching breakers (15 KV, vacuum type) were in Khartoum in January, 1984 for installation at the Kilo X, Meringan and Sennar Junction Substations. Foundation modifications were underway in late July and it was expected that all breakers would be operating by the end of September, 1984. Bechtel's field services were concluded July 15, but Westinghouse Field Engineers and NEC installation crews were to complete the work. Bechtel provided all of the foundation modification drawings in a timely manner coinciding with the arrival of the breakers in Khartoum.

All of the power system SF6 circuit breakers and surge arrestors for 220 KV, 110 KV and 33 KV substation applications arrived in Sudan between April and July, 1984. It is expected that these circuit breakers will be installed at the Damazine, Sennar Junction, Meringan, Hasha Heisa and Kuku substations in the period September through November, 1984. Westinghouse Field Engineers will supervise installation and NEC will provide the installation crews.

The new 15 MVA, 110/33/11 KV station transformer arrived in April, 1984. Bechtel provided foundation modification drawings for installation at the Gadarif Substation in April. NEC should begin installation at Gadarif in September, 1984, under Westinghouse Field Engineer supervision.

All of the equipment for the New El Bagier Substation (40 Km south of Khartoum) arrived in Sudan between April and July, 1984. The substation civil works drawings were supplied by Westinghouse in April, and NEC let the contract for civil works construction in August, after considerable delay resulting from NEC management indecision. It is expected that civil works construction will begin in late August, with Westinghouse Field Engineers beginning their work in late September. The substation should be operating in February, 1985.

Relay test sets, cable test equipment and transformer oil filtration

equipment were placed in operation between February and April, 1984. This equipment was then assigned to locations throughout the BNG.

The 11 KV Distribution Capacitor units and switching controls arrived in Khartoum in May, 1984. NEC began installing the pole-mounted capacitors and switches in June in selected sections of the Khartoum District 11 KV distribution network. The capacitors should be installed over a period of six months.

2.1.2 Benefits to System Operations

The early installation of circuit breakers at the 220 KV Damazine Substation resulted in a number of benefits to transmission line operation and protection. First, it was possible to take either of the two circuits down for maintenance without interrupting service on the Damazine to Meringan segment of the 220 KV line. Secondly, reclosing problems of the replaced air-blast circuit breaker were completely eliminated. Thirdly, the faulty air compressor and drying systems were retired since they were no longer required. Fourthly, the very hazardous "hard-wired" by-pass around the former inoperative circuit breakers was eliminated and generating equipment and lines were removed from the possibility of damage from a very serious and destructive fault.

Since NEC had no relay test, applications and repair facility, the utilization of the two semi-portable relay equipment test sets will result in proper relay settings so as to correct relay and supervisory circuit faults quickly. Relay setting and maintenance should now proceed on a regularly scheduled basis with adequate spare parts to properly maintain the equipment. The immediate benefit of proper relay setting and maintenance will be the rapid clearance of system faults, circuit reclosing and the prevention of damage to equipment from prolonged faults. These conditions have plagued BNG operation for years.

The 15 KV vacuum breakers used for reactor switching at the Kilo X,

Meringan and Sennar Junction Substations will greatly improve the load carrying capacity of the 220 KV transmission line, possibly by as much as 35 MW at peak load time. This is as much as 30 % of the peak load in the Khartoum area.

The 110 KV and 33 KV SF6 circuit breakers installed in the BNG from Kilo X to Sennar Junction substations will greatly improve fault clearance and equipment protection. System down time currently caused by extended faults and damaged equipment will be greatly reduced by these breaker applications.

The installation of the 15 MVA transformer at Gadarif will permit a doubling in served load from 6 MW to 12 MW with a doubling in revenue from this segment of the Gadarif system.

The El Bagier substation will permit the opening up of a long-needed industrial park between Kilo X and Wad Medani substations. An additional load of 14 MW can be served with significant voltage improvement in the 33 KV subtransmission and 11 KV distribution systems in the area. The revenue increase to NEC will be sizeable.

The Khartoum District has already experienced improvement in voltage and line carrying capacity of the 11 KV distribution lines due to the early installation of switched and unswitched, pole-mounted 11 KV capacitors. The improvement in voltage has led to much improved quality of service to small commercial and residential customers with a simultaneous increase in revenue from increased energy consumption.

2.2 MOBILE EQUIPMENT ENHANCEMENT

Inspection of mobile equipment and repair centers under the earlier contract underscored the fact that the mobile equipment available and in use, by NEC forces for construction and maintenance was inadequate both in quantity and state of repair. This situation has been a major

contributor to the poor availability of the power system. Particularly, when outages occur, they are greatly protracted in time because of the limited mobile equipment which must be moved great distances.

Furthermore, the workshops and repair centers at KLDC, area centers and power plants are under-equipped, and existing equipment is in a serious state of disrepair. Vehicles urgently required were; cranes and loaders trucks with cranes, augers, trailers and tanks; and aerial baskets.

Miscellaneous vehicles included crew cabs, communications vehicles, vans buses, pick-up trucks and jeeps. Miscellaneous equipment consisted of air compressors, excavators, cable reel carriers and tensioners and line conductor pullers. An array of vehicle maintenance center and general workshop equipment ranging from drilling machines and welding machines to a gear shaping machine and an engine dynamometer was also required. Pre-fabricated buildings were also included for a vehicle maintenance center general workshop and combination warehouse and repair shops at area centers.

2.2.1 Mobile Equipment Enhancement Achievements

Mobile equipment in the truck classification, among the first of the CIP commodities to arrive in Khartoum, was the 14 trucks with augers and derricks. These trucks were immediately pressed into service in late September, 1983 to meet a pent-up need for distribution pole setting and pole-mounted transformer installations in the Khartoum District. Within a matter of days every truck was in operation, and within a few months the backlog for pole setting had been greatly reduced. The trucks with tankers and aerial baskets were placed in service in October, 1983. The tankers immediately began to alleviate gasoline and diesel fuel hauling problems within the BNG. The aerial baskets were used to increase the efficiency of street lighting maintenance and 11 KV distribution hot-line work.

The 15, 30 and 50 ton cranes were operating by January, 1984, being used for circuit breaker and transformer setting, communications tower

erection and Central Stores heavy yard lifting. Up until January, NEC had to make all lifts in excess of 30 tons by means of cranes rented from the Armed Forces. This meant days and sometimes weeks of delay for heavy lifts.

Vans and buses became available for use in November 1983 and were used to alleviate the serious transportation problems for employees to and from work and on the job. Within a few days of arrival in Khartoum, all vans and buses had been assigned and were in use. Crew cabs, pick-up trucks and jeeps were the next to arrive in Khartoum and these were all assigned in November and December, 1983.

The fork lift trucks, cable trenchers and cable reel carriers arrived in Khartoum in September, 1983. The fork lift trucks and excavators were being used in the Khartoum system by October. A number of the cable reel carriers and cable pullers were damaged in shipment from Port Sudan to Khartoum as a result of mishandling at both Port Sudan and NEC Central Stores. As of June, 1984, about 50 percent of the cable reel, puller and tensioner equipment was not in operation due to the initial damage. Insurance claims had been made.

2.2.2 Benefits to System Operation

The use of the trucks with augers and derricks improved the distribution pole and pole-mounted equipment installation efficiency and schedule significantly. In the entire Khartoum province there were approximately five augers which were operable prior to the receipt of the augers and derricks under this program. In effect, the use of the new augers and derricks more than doubled the rate of installation of distribution system poles and hardware in the Khartoum District. These trucks, together with mobile radios installed about 9 months later, were also able to provide maintenance to damaged poles and equipment at a rate never before achieved in the Khartoum District. The impact made by the new augers and derricks was so significant that the Director General

requested 10 additional augers and derricks be purchased for other areas (Wad Medani, Sennar Junction, Damazine) under the LOCOM-2.

The nine, 50 ft. and 70 ft. aerial baskets are being used throughout the Khartoum District for street lighting maintenance, installation of pole-mounted hardware in the 11 KV distribution system. The aerial baskets have been most useful in 11 KV hot-line maintenance work and the clearance of line obstructions such as trees and other debris. Previously, this work was done by hand ladder and rather large labor crews which were costly and inefficient.

The cranes, 15, 30 and 50 tons (four in all), greatly reduced the "wait-times" for off-loading equipment at Central Stores, loading equipment for site delivery, off-loading at site, removal of failed equipment and setting of new equipment at site. Both the 30 and 50 ton cranes were used for erecting the 120, 140 and 160 ft. telecommunications towers at Burri, KLDC and Khartoum North sites in March and April, 1984. Without these cranes NEC would have been required to rent a crane from one of the expatriate contractors in Khartoum which would have been both costly and schedule delaying. On several occasions NEC was able to rent the 50 ton crane to the Armed Forces and the Ministry of Irrigation.

The jeeps, pick-up trucks, vans and buses, approximately 85 vehicles in all, have resulted in considerable savings in man-hours and in reduced employee travel time to and from job-sites. Prior to the availability of these vehicles, field engineers, supervisors and craftsmen were required to wait for transportation simply because there were so few operating vehicles. A number of the jeeps, pick-up trucks and vans are now equipped with mobile radios which results in great time savings in dispatching and maintenance instruction in the field at the location of repair work.

The two excavator/cable trenchers are used continuously and have greatly

reduced the time required to complete new, distribution cable extensions. Except for down time for regular maintenance these machines have been used continuously. The 5 forklift trucks have greatly facilitated the movement of materials at the Central Stores warehouse and yard. One of the effective uses was the relocating of materials in the warehouse yard to provide a more rational marshalling of similar materials. This was done upon Bechtel recommendation. Many times materials were not properly located and stored simply because the operation had to be done by manual labor. Those cable reel carriers, tensioners and conductor pullers which were not damaged, about 15 in all, are being used in the 11 KV and 33 KV, distribution and subtransmission systems. Their use has expedited installation and protected cable and conductors from damage during installation. In times past there has been regular damage to conductors while being installed.

2.3 TELECOMMUNICATIONS EXPANSION

The Bechtel Inspection Team, under the earlier contract, determined that the existing Power Line Carrier (PLC) Network was reliable but was subject to frequent interruptions due to the repeated transmission line outages. It was, therefore, considered obligatory that a parallel communications route, totally independent of the transmission line, be installed. It was recommended that this be accomplished by installing a HF-radio network with the command control center located at KLDC.

In conjunction with the HF system, it was recommended that a VHF system be installed at key operating centers throughout the Blue Nile Grid. The HF system would be used to communicate with these operating centers and the VHF system would provide the mobile communications to dispatch and control maintenance crews working out of these operating centers.

The existing 24 VDC power supply system, serving the PLC system, was in very poor operating condition. It was recommended that higher rated rectifiers be installed and lead-antimony batteries, designed to carry

operating center communications during a power outage for as long as eight hours, replace the lead-acid batteries.

The voice frequency cable which provided communications between KLDC and Burri Power Plant was in very poor condition and subject to frequent interruptions. A Subscriber Radio System (using a microwave link instead of cable) was recommended to replace the existing cable. It was also designed to handle the HF radio transceiver equipment at the Khartoum North Power Plant site.

Burri Power Plant was operating without internal communications. It was recommended that an electronic (32 line) Private Branch Exchange (EPBX) be installed together with all internal wiring and new telephone sets and communications. The internal telephone system at the Khartoum Headquarters office was virtually non-existent. It was recommended that a 104 line EPBX be installed in the headquarters building together with wiring and telephone sets. This system will permit direct calls to be made to the Burri Power Plant.

2.3.1 Telecommunications Systems Achievements

The HF System was completely installed and operating by the end of June, 1984, with the exception of the Atbara site and the Khartoum North remote control system. However, the 1 KW amplifiers and couplers were tested in the Headquarters shop for all locations. The remote control system for Khartoum North was also tested by means of a back-to-back R.F. test configuration at KLDC. NEC telecommunications technicians are completely familiar with the installation of this equipment which should be completed by the end of July, 1984. As early as October, 1983, Bechtel had provided temporary HF radio links to Wad Medani, Damazine and Port Sudan. This was a service which was not required by contract.

The VHF system installation is dependent upon the construction of 80 ft. towers throughout the BNG system. The towers at Omduruan, Khartoum North

and Khartoum were erected by the end of April and the balance of the towers (18 in all) were to be erected by a thoroughly trained contract team by the end of July, 1984. VHF base stations were operating at KLDC, Khartoum Maintenance, Omduruan Maintenance, Khartoum North Maintenance and Burri Power Plant by Mid-June, 1984. Two qualified NEC teams were formed for the continued commissioning of mobile and fixed station radios. The VHF field engineer was scheduled to return to Khartoum for the microprocessor/VHF radio/EPBX audio interconnect by the end of July, 1984. All VHF base stations throughout the BNG should be operating by the end of August.

The Subscriber Telephone links (microwave) between KLDC and the Burri Power Plant were commissioned in May, 1984 and end-to-end checks were made. A formal seven-day course with hands-on training was given to NEC telecommunications engineers.

DC plant installations were completed at the Burri Power Plant and KLDC sites. Hands-on training courses were given covering all procedures from battery filling to charging methods. DC plants were in the process of being installed at nine other sites by mid-July. It is expected that all DC plants will be operating by the end of August, 1984.

The EPBX systems at both KLDC and Burri Power Plant were installed and operating by mid-June, 1984. Regular telephone communications within KLDC and Burri and between the two locations are now possible. The EPBX/VHF microprocessor/Paging audio interconnect were to be verified in late July, 1984, with the return of the VHF and EPBX field engineers.

2.3.2 Operating Benefits Attributable to Telecommunications Installations

The HF System now provides a reliable, dedicated communications link within the Blue Nile Grid completely independent of the PLC system and public telephone. Operating orders can now be given from KLDC to every operating center in the BNG, Port Sudan Stores, Atbara, and Kashim El

Girba operations. None of these communications links were available nine months ago. Critical field maintenance instructions may now be given to BNG operating centers which in turn can communicate with field crews through VHF base stations at the operating centers. On major power line outages the down time has become one-fourth of what was typical before the telecommunication systems were installed. The telecommunication systems together with mobile equipment have improved maintenance mobilization and performance immeasurably. The impact is now seen in the great decrease in protracted power outages.

The VHF radio system with mobile radios assigned to maintenance vehicles, field maintenance supervisors, operations managers, and senior operating officers has resulted in revolutionary changes in operations and maintenance. It is now possible for senior operating managers to communicate with one another and their field supervisors 24 hours a day. Continuous communications are now possible with Central Stores and Area Stores which have greatly improved logistics in mobilizing equipment both for emergency and planned weekly maintenance. Prior to these radio communications it was actually necessary for field people to return to an operating center phone to communicate with KLDC or Stores (and many times the phone was out of order requiring a 10 to 15 Km trip to Headquarters or Stores). After regular hours it was impossible to communicate with the field, or manager to manager, except by messenger. The mobile radio has proved to be invaluable for on-the-spot emergency repair operations when additional material or crews are required.

The EPBX installations at both Headquarters and Burri Power Plant, together with the Subscriber Radio Link (microwave), have proved invaluable to interoffice and site communications. Supervisors who have never had a phone before are now able to call over a hundred stations within Headquarters. This has saved an untold number of hours. Burri Power Plant supervisors with phones located at important operating stations throughout the plant and the site, are now able to quickly

remedy operating problems and give rapid maintenance instructions throughout the plant. Communications between the Plant Superintendent and the Senior Director of Operations at KLDC is now immediate, whereas before only the public telephone system was available and this only 50 percent of the time.

2.4 OPERATIONS AND MANAGEMENT SKILLS TRANSFER

The BNG Rehabilitation Contract required that Bechtel provide, "the scheduling of visits to Sudan by supplier field engineers when required for supervision of installation,, testing and starting of equipment and training services". (See Contract, Task 3).

Training services which were provided by supplier field engineers and supervised by Bechtel were:

- Power Systems Equipment
 - 220 KV, SF6 circuit breakers
 - Cable test vehicles
- Mobile Equipment and Vehicles
 - Augers and derricks
 - Aerial baskets
 - Cranes
- Telecommunications Equipment
 - HF radio
 - VHF radio
 - Subscriber Radio systems (microwave)
 - EPBX
 - Towers

Although outside of the contract scope, but absolutely essential to the rehabilitation program implementation, Bechtel found it necessary to offer training and skills transfer in the following areas:

- Engineering
 - Specification preparation
 - Bid evaluation
 - Supplier design and drawing reviews
- Procurement
 - Bid request preparation
 - Bid list selection
 - Bid evaluation
 - Contract/purchase order preparation
 - Letter of credit application (L/CR)
 - Contract amendments
 - Letter of credit amendments
- Shipping
 - Off-loading and yard storage
 - Equipment conditioning and shipment
 - In-land shipping
 - Central warehouse and site storage
- Construction/Installation
 - Soils test contracts
 - Construction contracts
 - Installation scheduling
- Records
 - USAID ADM-12 implementation
 - L/CR request and follow-up
 - Completion certificates
 - Warranty claims

At the time the contract was entered into with USAID in July, 1982, Bechtel had understood from NEC arrangement that NEC had established capability in the procurement, engineering, construction, installation, record keeping and training areas listed above. In the course of the work, however, each one of these areas required Bechtel skills transfer in on-the-job training.

2.4.1 Training Services Provided by Supplier and Supervised by Bechtel

The Bechtel Field Installation Engineer worked with the NEC Project Engineer to develop the construction and installation schedule for the 220 KV SF6 Circuit Breakers at Damazine. Also, the Bechtel Engineer, working with the Supplier Field Engineer, developed and applied "hands-on" installation and testing training for NEC engineers and installation crews. The net effect was that when the second breaker was installed the installation time was reduced from 15 to 6 days.

The Field Engineer from Hippotronics, Inc., was assisted by Bechtel in the development of a 10-day cable test equipment "hands-on" training program. This program trained about 8 engineers in the application of the test equipment, the analysis of results and recommended action. The engineers were qualified to use the equipment in the field following this course.

Supplier Field Engineers from R.O. Corp., Telelect Co. and Morgan Equipment Co. were assisted by Bechtel in operating and maintenance training programs for augers, aerial baskets and cranes, respectively. The field engineers for R.O. Corp. and Morgan Equipment were requested to extend their field time to provide additional training not only on their equipment but in areas of equipment maintenance practices both for vehicles and hydraulic equipment. Bechtel assisted the field engineers in the training course outline and technician selection. As a result of this training experience, Bechtel recommended to NEC and USAID that an expatriate training supervisor be retrained for at least one year.

Bechtel had resident in Khartoum for a period of one year telecommunications Engineers who supervised the installation of the HF, VHF, EPBX and Subscriber Radio (SR) systems and their interfaces. Bechtel provided training in telecommunications skills as well as assisting the Supplier Field Engineers who provided installation and maintenance training for their respective equipment. As a result of

these joint efforts, NEC now has small crews of technicians competent to maintain HF, VHF, EPBX and SR equipment.

2.4.1 Skills Transfer Provided by Bechtel

In the early engineering phase of the Program Bechtel devoted considerable time to familiarizing NEC Project Engineers and the NEC Bid Review Board with U.S. engineering standards, specification preparation and technical and commercial bid evaluation procedures. Instruction was also given in the procedures required for effective review of supplier equipment designs and drawings. This familiarization and instruction service was provided both to NEC in Khartoum and to the NEC Review Board when at the Bechtel Los Angeles Power Division offices. At the outset of the Program it was not anticipated that these skill transfer services would be required, since operating utilities normally have a project engineering group experienced in these skills.

NEC Engineers and Stores Department specialists required considerable assistance in the procurement function. Assistance was given in Khartoum in bid request preparation and bidder list preparation by the Bechtel Resident Manager. It was necessary to revise NEC procedures to conform to USAID and U.S. commercial practices which were completely strange to NEC. At the Bechtel Los Angeles Power Division offices extensive assistance was given to the NEC Review Board in technical and commercial bid evaluation techniques. NEC personnel on the Review Board and the Central Supplies Department in Khartoum were instructed in Purchase Contract/Order preparation which conformed to USAID and U.S. commercial practices. Letter of Credit (L/CR) procedures which met USAID, Bank of Sudan and Manufacturer's Hanover Trust Bank requirements were prepared by Bechtel, and NEC Stores and Financial Department personnel were trained in their use.

It had been assumed by both USAID and Bechtel that proper shipping and storage procedures were an established practice at NEC. This was not the

case, however, and significant advisory services were rendered to NEC related to the shipping function in Sudan. Outlining of the logistical requirements for equipment storage and conditioning of equipment for over-the-road transportation was provided and instruction sessions held with Project Engineers and Stores personnel in Port Sudan. Procedures for evaluating in-land shipping alternatives, proper preparation for shipment and careful off-loading of equipment were prepared and discussed with Stores Department supervisory personnel. By means of regular inspections by Bechtel and instruction in proper storage of equipment at Central Stores, improved marshalling and protection of CIP provided equipment was achieved.

The contract required that the Bechtel Field Installation Engineer provide advisory services during equipment installation and monitoring services during the receipt and transport of all commodities in Sudan. However, it was necessary to provide support in the placing of contracts for soils testing and civil works construction beyond that normally expected for an operating utility. The Bechtel Field Engineer provided extensive assistance in this area and helped to establish procedures for placing of requests for bids and contract award. In the case of all power systems equipment and telecommunications systems, Bechtel provided construction and installation schedules, logistical planning and schedule preparation techniques. Again this was another area in which it had been expected that NEC would have had a Projects Scheduling Group who would require only site arrival dates, foundation drawings and equipment weights and dimensions.

It was discovered early in the Program that NEC records related to equipment receipt, storage, issuance, installation, damage, maintenance and ultimate booking in Plant Account were either missing or in a very poor state of file maintenance. It was necessary for the Bechtel Resident Manager to provide a complete set of implementing procedures for audit requirements for equipment financed by the USAID CIP Program. The

procedures were normal to what an operating utility would already have in hand and functioning. These were completely missing at NEC. L/CR request routines and follow-up were established by the Resident Manager and a job completion certification procedure was established for NEC. The procedure whereby warranty claims are made was also new to NEC and were prepared and instruction given by the Resident Manager and the R.O. Corp. Field Engineer.

2.4.3 Expediting Report for Equipment Manufacture and Shipment

The final "Expediting Report for Equipment Manufacture and Shipment", prepared by Bechtel in June, 1984 is included in Appendix C. The report provides a summary descriptions of each commodity, supplier's name and address, comments and delivery dates. Also included is a tabulation showing numbers of pieces of equipment and spare parts.

Section 3

PROBLEMS ENCOUNTERED DURING THE REHABILITATION PROGRAM

Since this was the first of USAID Commodity Import Programs (CIP) undertaken by NEC, it was expected that there would be a number of problems in the engineering and procurement areas of the Program. These did in fact develop. However, there were many problems and obstacles which developed which were not related to CIP funding. These problems occurred in the functions of:

- Project Engineering
- Commodity Procurement
- Field Installation
- Craftsmen Training
- Commercial Practices.

3.1 PROJECT ENGINEERING

In its re-organization in 1983, NEC created a Project Engineering Department. This Department has the responsibility for engineering from equipment and services specification, through contract award to supplier design review and finally project coordination with engineering and

construction contractors. One of the first and major problems which developed in the Program was the inadequate and inexperienced staff in the Project Engineering Department. This led to serious delays in engineering approval of specifications, commodity contract awards and field installation and construction coordination.

NEC engineers had no background in U.S. standards and specifications for power systems, telecommunications and mobile equipment. At each stage where knowledge of standards and specifications was required, considerable delays were experienced due to the need for NEC familiarization with U.S. practices. Bechtel was required to relate U.S. standards to European standards for every commodity. Although this problem should be somewhat alleviated in the next phase of the Rehabilitation Program, it will be several years before NEC engineers are fully knowledgeable in U.S. practices.

Early in the Program the NEC Civil Engineering Department was very weak. In fact there was only one civil engineer and he was the Department Director. All of the civil work construction was done by the Ministries of Irrigation or Roads. In January, 1984, NEC re-organized its Civil Engineering Department increasing its staff to three engineers. These engineers have some experience in design, contracts and field work. However, the experience is very limited and at the conclusion of the Program in June, 1984, extensive delays were still experienced in the request for bid through contract award cycle. The engineers were spending no time in the field. The inexperience and lack of staff in the Civil Engineering Department delayed the electrical system replacement equipment and the commencement of the El Bagier Substation by three months.

3.2 COMMODITY PROCUREMENT

THE NEC Supplies (Procurement) Department had never been involved directly in a major commodity procurement program. Previously this work

was undertaken by consultants. Additionally, NEC had never purchased and received commodities under the USAID CIP. Therefore, there was neither staffing nor procedures prepared to handle the CIP commodities. The entire bidding and supplier contract award procedure had to be constructed and NEC staff trained. This resulted in several months delay following commodity identification and specification.

The Receiving function in the NEC Shipping Section was in disarray both at the Khartoum Airport and Port Sudan. Communications between Port Sudan and Khartoum Headquarters Central Stores was all but non-existent, relying completely on a poor public telephone system. At the time of the first receipt of equipment in June, 1983, at Port Sudan, due to the breakdown of cable and telephone communications, it was necessary to commute to Port Sudan by air and car. This procedure was used until October, 1983, at which time Bechtel installed a temporary HF radio link to Port Sudan.

NEC had not planned for a staging area outside of the Customs yard in Port Sudan to accommodate as many as 50 vehicles at one time. Nor had arrangements been made for equipment inspection and preparation for road readiness. Bechtel was able to make arrangements with the Taher Al Roubi Co. for the use of its staging area in Port Sudan and their mechanics for vehicle inspection. NEC used this arrangement to train both its shipping personnel and vehicle mechanics. The impact of poor communications and delayed equipment inspection resulted in a delay of over two months in shipments to Khartoum for the first of the commodities arriving from the U.S.

The Stores Section and the Central Stores Warehouse were not equipped initially to receive, store and document adequately the commodities received in Khartoum. Although three months prior to the receipt of the first commodities in Khartoum, Bechtel had discussed yard laydown and covered area requirements for the CIP commodities, nothing was done until

one month after the first commodities were received. As a result equipment was scattered about the yard, damaged when unloaded and improperly covered. Considerable time was required on the part of the Bechtel Resident Manager and Field Installation Engineer to improve storage arrangements. Although progress was made, all equipment still in storage as of June 30, 1984, was not arranged and covered as instructed by Bechtel.

Documentation of commodities received, stored and released for construction was entirely missing until January, 1984, even after earlier, repeated reminders by the Resident Manager and the issuance of a USAID memorandum in October, 1983, making such record keeping mandatory. It was not until Bechtel established an NEC Task Force and prepared the forms and procedures to be used that the Stores Section began to keep consistent records and the Vehicle Center under the Director of Administrative Affairs began to develop maintenance, service and vehicle assignment records. As of June 30, 1984, due to continued apathy upon the part of both the Stores Section and the Vehicle Maintenance Center, records were still not up to date and accurate.

3.3 FIELD INSTALLATION

NEC does not have a group identified as having sole authority for overseeing or conducting field installations. Engineers out of the operating departments serve as field installation engineers when available, but when so functioning their attention is divided between operating and installation. Furthermore, NEC engineers were not sensitive to the need for careful logistics planning before project construction began. As a result, the Bechtel Field Installation Engineer and the Resident Manager provided the basic logistics planning for all installations with NEC engineers responsible for follow-up. This led to delays of as much as one to two months in equipment installation.

NEC engineers were limited in their experience in commissioning equipment. They were not familiar with project completion documentation and the proper utilization of Supplier warranties. This required documentation and training which Bechtel had not expected to provide.

3.4 CRAFTSMEN TRAINING

There was no formalized program for craftsmen training and qualification when Bechtel first began its advisory duties in September, 1982. With the arrival of the first vehicle field engineer in early December, 1983 from R.O. Corp., Bechtel, working with the NEC Project Engineer, prepared a training course for operators and mechanics for augers and derricks. NEC took months to translate operating manuals into Arabic and the job was not finished by the conclusion of Bechtel services in June, 1984. NEC management was completely powerless to discipline its operators and mechanics. As a result, training sessions were poorly attended and proper qualification of operators and mechanics was impossible. NEC still does not have a formalized maintenance mechanic training program, even after Bechtel tried by bringing back an instructor for 60 additional days in February, 1984.

In every case of training NEC did not prepare a class enrollment record and enforce attendance. In some cases NEC permitted unlimited attendance which actually destroyed the training effort.

NEC did not have a training center, so that meeting places and demonstration locations were makeshift.

Although repeatedly encouraged by Bechtel, NEC never installed qualification tests for its operators, mechanics, and telecommunications technicians.

3.5 COMMERCIAL PRACTICES

One of the earliest problems confronting the BNG Rehabilitation Program was the lack of familiarity of NEC's administrative management with USAID CIP procurement requirements and an understanding of what constituted proper communications, written and oral, with the USAID Mission Procurement and Program Officers. During the entire two-year program, NEC never assigned the responsibility for formal USAID contact to a single manager, although encouraged repeatedly by Bechtel to do so. Consequently, the Bechtel Resident Manager and Field Installation Engineers were required to prompt and, in many instances, perform the communications function for NEC. In some cases this placed Bechtel in a very difficult position. This was particularly true when PIO/T amendments were required and when implementation of the USAID mandatory documentation for USAID - funded commodities was required.

The inter-departmental communications between the NEC Supplies Department and the Finance Department were very poor. This was evidenced at the time L/CR were requested and later each time an amendment was required. Over the two-year program these communications never improved and regularly Bechtel was required to produce the L/CR request and amendment inter-department correspondence. Neither department kept a current record of transactions which could be readily accessed. Repeated sessions were held to explain what was required in the way of an effective system.

Communications with the Bank of Sudan by NEC were poor and sometimes actually neglected. Bechtel finally took responsibility for written and verbal communication between NEC and the Bank of Sudan on all L/CR transactions. Furthermore the Bechtel Los Angeles Power Division became the contact between the Manufacturer's Hanover Trust Bank (MHT) and the Bechtel Resident Manager who resolved questions, and problems between the

Bank of Sudan and MHT. This service was provided from March, 1983, through June, 1984.

As has been noted by previous consultants, NEC does not have an adequate plant accounting system, whereby new commodities are properly booked and retired equipment written off against a depreciation reserve. No portion of the \$16.0 million in CIP financed commodities had been entered in books of account, even though approximately \$12.0 million in equipment was in operation by June, 1984. This problem of not maintaining an accurate plant account and depreciation reserve was addressed several times by Bechtel during the two-year program without NEC response. NEC was cautioned that improper, or non-existent, plant accounting would have a negative impact on future USAID CIP grant funds.

Some of the most enervating conditions related to work in Sudan are the complete inadequacy of the telephone system, lack of availability of reliable office equipment and scarcity of secretarial services in English. NEC was completely at a loss to correct any of these conditions. In the future, all office equipment and furniture should be imported and the senior secretary should be an expatriate.

Section 4

CONCLUSIONS AND RECOMMENDATIONS

4.1 ENGINEERING, PROCUREMENT AND INSTALLATION FUNCTIONS

A number of conclusions and recommendations flow out of the work done under this first BNG Rehabilitation effort. Since the Program included commodity engineering, procurement and installation, the listing of conclusions and recommendations will be presented according to these categories. Where administrative systems were required and found lacking, these will be addressed as well under the three categories of effort. The conclusions and recommendations offered are readily implementable should NEC wish to begin improving its operations immediately. The conclusions and recommendations are summarized in the following Table 4.1.

4.2 OPERATING AND ADMINISTRATIVE SKILLS

As stated in Subsection 2.4 of this report, training services required by contract were limited to those associated with field installation, testing and start-up. However, as discussed in Subsections 2.4, 3.4 and 3.5, additional services were required in the area of operating and administrative skills transfer. There are several conclusions and recommendations worthy of note in these skills areas and are listed in Table 4.2.

Table 4.1

CONCLUSIONS

RECOMMENDATIONS

Engineering

1. NEC engineers have very little background in U.S. equipment standards and specifications. There is no central technical library containing standards or specifications.
2. NEC Project Engineering Staff is very limited and inexperienced. There are no explicitly outlined responsibilities and authority for project engineering in relationship to planning, procurement, construction and operation functions within NEC.
3. The engineering/economic study procedures used to select commodities in the face of limited financial resources are not a welldefined in NEC.

Not sufficient effort has been applied to

1. NEC should assemble a complete library of U.S. electrical, mechanical, and civil standards. NEC should request that a consultant prepare pro forma specifications for all equipment used in their electric power system.
2. NEC should promote from within and seek to hire Sudanese Nationals who are in other African and Mid Eastern utilities. Formal courses should be offered in-house to NEC engineers by retained consultants.

NEC should define the function of the Project Engineering Department for each engineering position and develop position descriptions for each position in the Department. Interfaces and responsibilities with respect to other Departments should be defined. Retaining a consultant for this work would be helpful.
3. Commodity selection justification procedures should be developed in which cost/benefit assessments are made.

A program should be established which

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CONCLUSIONS (Cont'd)

standardization of equipment provided by multiple suppliers.

4. The Civil Engineering Department is not yet sufficiently staffed to provide either bid requests for civil works modification or to carry out small civil works construction design for new plant. Furthermore, there is not sufficient engineering personnel to inspect civil works construction in the field.
5. Within the present Projects Department there is not sufficient engineering staff experienced in supplier design and drawing review. This is true for all engineering disciplines.

Also, the number of engineers qualified to work with supplier contractors during construction and installation is very limited.

Procurement

1. Within the Supplies Department and the Projects Department there are not well defined procedures for the production and documentation of:
 - o Request for bids
 - o Purchase Orders/Contracts
 - o Letters of credit
2. Both commercial and technical bid evaluation procedures area not well defined, nor are

RECOMMENDATIONS (Cont'd)

documents standards for all existing equipment and endeavors to develop composite standards which can be met by most suppliers.

4. Qualified civil engineers must be added to the Civil Engineering Department and standard procedures developed for bid requests and bid evaluations.

Construction standards must be developed and documented for use by field civil engineers.

5. A staffing program should be developed which defines the engineering manpower needs and a recruitment program within Sudan and among Sudanese expatriates.

A development program which places junior engineers on project sites for a period of at least two years should be defined and implemented.

1. The Supplies and Project Departments together should develop procedures, documentation and signature authority for request for bids, purchase order contracts and letters of credit for commodities to be secured from international suppliers.
2. Both the Supplies and Project Departments should develop organizational mechanisms

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CONCLUSIONS (Cont'd)

evaluation criteria established.

3. Once a purchase contract/order has been signed, contact with international suppliers of equipment and service is irregular and inefficient.
4. In-country receiving and shipping is hampered by long customs delays, improper handling and uncoordinated shipping schedules. These conditions prevail at Port Sudan, Khartoum and Area Centers.
5. Equipment is not properly stored in warehouses and yards and is inadequately protected from the weather.
6. Handling of stored equipment both at the time of receiving and when shipped to site does not follow good commercial practice nor is the work properly supervised.

RECOMMENDATIONS (Cont'd)

whereby evaluation Task Groups with clear instructions in evaluation criteria and procedures are established.

3. Operating procedures for communications with international suppliers must be carefully defined and rigorously managed. Persons involved in these procedures must have written and verbal English language skills. Both international telephone and telex services must be improved.
4. Adequate trained receiving and shipping staff must be assigned to Port Sudan, Khartoum and Area Centers. Handling instructions and hands-on training must be initiated and regularly maintained. Efficient transport dispatching schedules must be established between Area Centers, Khartoum Central Stores and Port Sudan.
5. Yard layouts with established equipment grouping must be developed for each warehouse. Shelters must be built for storage of equipment which is not intended for outdoor installation.
6. All storekeepers and yard equipment operators must be given regular training and qualification tests in equipment handling. A yard supervisor must be assigned to each operating shift for each major equipment category.

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CONCLUSIONS (Cont'd)

Installation

1. Logistical planning for site installation of equipment is poorly done, or, in a number of cases, completely omitted.
2. There are few NEC engineers with field installation experience capable of monitoring supplier field engineers.
3. Established testing and commissioning standards and procedures for new installation do not exist.

RECOMMENDATIONS (Cont'd)

1. A group should be established within the Projects Department to develop the logistics of equipment movement to site, installation at site, testing and commissioning.
2. NEC should establish a field installation project group and a field training program for junior engineers. Expatriate engineers for each engineering discipline should be retained for two years to provide initial management and training.

Testing and commissioning standards, procedures and documentation should be prepared for all major equipment categories. A consultant should be retained to assist NEC in their efforts.

Table 4.2

ADDITIONAL OPERATING AND ADMINISTRATIVE SKILLS,
CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

1. Inadequate, and in some cases, destructive maintenance of mobile equipment by mechanics has led to the early failure, or violation of warranties, on some equipment.
2. Receipting, storing, inspecting and issuing records for USAID - funded commodities do not meet USAID audit requirements for CIP supplied commodities.
3. Letter of credit transactions with the Bank of Sudan must be standardized and communications channels formalized.
4. NEC Supplies and Finance Departments are not familiar with USAID CIP procurement requirements or communications with USAID Mission Procurement office.
5. Plant accounting system and depreciation reserve accounting is poorly maintained.

RECOMMENDATIONS

1. A program of operator and mechanic training and qualification must be installed and continued, initially using expatriate supervisory personnel.
2. The Directors of Supplies and Administrative Affairs should establish record systems which meet with USAID Procurement Office approval.
3. The Director of Finance must develop transaction and communication procedures with the Bank of Sudan.
4. The Director of Supplies and Finance should, by contacting USAID Mission, determine what is required under USAID CIP Procurement.
5. The Directors of Finance, Accounting and Projects should review the plant accounts and depreciation reserve, and with a NEC consultant develop rigorous, commercial accounting procedures.

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Section 5

BUDGET AND EXPENDITURES

The Blue Nile Grid Rehabilitation Program advisory services were supported by funds from the following contract:

Procurement Advisory Services: USAID with Bechtel National, Inc.

- Contract No. 650-K602-C-00-2003
- Budgeted Costs: \$1,836,805 (U.S. Dollars)
LS 346,000 (Sudanese Pounds)

Bechtel, in its role as Procurement Advisor to USAID and to NEC monitored the cost of commitments under the Commodity Import Program, but did not control these expenditures.

5.1 ACTUAL BECHTEL EXPENDITURES

Our estimated costs to complete the Program are \$1,852,974. This cost does not include the adjustments for 1983 and 1984 indirect costs. Table 5-1 provides a breakdown of these expenditures by budget category.

In addition to the U.S. dollar budget, 346,000 Sudanese Pounds were budgeted for local costs. As of July 14, 1984, total expenditures in Sudanese Pounds were 296,487. This amounts to 86 percent of the current LS Budget. No further Sudanese Pound expenditures are anticipated. The savings of 49,513 LS are equivalent to U.S. Dollars 38,080 at the current rate of exchange.

5.2 FINAL PROGRAM INVOICES

There is a U.S. dollar invoice outstanding for an amount of \$170,848 for expenditures through August 26, 1984. A final U.S. dollar invoice will be submitted the latter part of November, 1984.

On July 14, 1984 a final Sudanese Pound Invoice was submitted to the USAID Mission (Messrs Jay Carter and Mel VanDorn). Bechtel is to be reimbursed LS 5,107.30 and a request was made that the amount be deposited to the Bechtel Operating Account at Citibank, Khartoum.

Table 5-1

BECHTEL NATIONAL, INC.
 Job No. 15564
 Agency for International Development
 Contract No. 650-K602-C-00-2003

FISCAL REPORT - TOTAL EXPENDITURES

<u>Category</u>	<u>Contract Amount</u>	<u>Total Estimated U.S. Dollar Expenditures through Job Completion</u>
Salaries, Wages & Payroll Additives	\$ 883,000	\$ 904,539
Consultant Fees & Subcontracts	30,934	32,559
Travel & Subsistence	169,788	170,348
Other Direct Costs	132,426	126,332
Equipment & Facilities	14,428	14,494
Overhead General & Administrative	<u>424,602</u>	<u>423,076</u>
	\$1,655,178	\$1,671,347
Fixed Fee	<u>181,627</u>	<u>181,627</u>
	\$1,836,805	\$1,852,974
<u>Category</u>	<u>Contract Amount Sudanese Pounds</u>	<u>Total Sudanese Pound Expenditures through July 14, 1984</u>
Housing & Utilities	224,000	170,879
Subsistence	19,000	29,294
Office Equipment and Supplies	8,000	8,057
Transportation	50,000	49,401
Communications	17,000	15,606
Local Hires, Subcontracts, and Miscellaneous	<u>26,000</u>	<u>23,250</u>
Total Costs	346,000 LS	296,487 LS

Appendix A

STATEMENT OF WORK

The work scope encompasses those tasks essential to providing procurement and installation advisory services by BNI to NEC. The work consists of the six tasks discussed below.

Task 1: Request & Evaluate Bids

Review applicable USAID procurement procedures, prepare pro forma purchase order and contract documents, review the technical specifications with NEC for content and format, and recommend a list of bidders to NEC. NEC and USAID will approve the commodity specifications and recommended bidders list and BNI will prepare and issue requests for bids. All bids are received and opened by NEC at Bechtel's facility in Norwalk, California, USA. BNI evaluates the bids and makes recommendations to the NEC Review Board, residing in the United States for this purpose. The Review Board consisting of four senior officials, makes the final recommendations to NEC management in Khartoum, Sudan, regarding award of purchase orders and contracts.

Task 2: Award Purchase Orders & Contracts for Equipment and Materials

BNI prepares for signature by NEC Management the purchase orders and purchase contracts and submits these to the Review Board for signature. Certain commodity supply contracts may require the presence of the supplier in Khartoum. BNI and NEC make this determination prior to issuing Requests for Bids. Upon signature of purchase orders and purchase contracts, BNI's Procurement office in Norwalk notifies suppliers so that manufacture can be expedited. BNI then assists NEC in obtaining Letters of Credit to suppliers from the Manufacturers Hanover Trust (MHT) Bank in New York. MHT is the Bank of Sudan's correspondent Bank.

Task 3: Procure, Inspect & Expedite Manufacture & Shipment of Commodities

Upon award of purchase orders and purchase contracts by NEC, BNI will:

- Coordinate and track activities of all suppliers.
- Inspect the manufacturer's facilities, material and equipment as necessary to assure conformance to specifications, compliance with applicable codes and quality of manufacture.
- Witness tests of equipment when required.
- Expedite the manufacture of all equipment to assure that schedules are met and all arrangements made for prompt shipment. Schedule visits to Sudan by Suppliers where required for supervision of installation, testing and startup of equipment and training services.
- Evaluate the feasibility of air shipment for critical commodities and make recommendations to NEC. NEC will make the final selection as to mode of transport to Sudan. NEC will be responsible for the acceptance, clearance, and movement of all materials and equipment from the Sudan port of entry to the installation sites.

Task 4: Provide Engineering Design Services

In the case of certain commodities, engineering design services will be provided by BNI Technical Specialists in the United States for the modification of existing civil works, interconnection, etc.

These include:

- Power transformers
- Circuit breakers
- Surge arresters

Design drawings and sketches will be developed to guide NEC in the modification of existing foundations, mounting pads, etc. , for the installation of replacement equipment.

In several instances, engineering design services will be required in Sudan as well as in the United States. These may be necessary for the following facilities:

- Mobile equipment service facilities at ten locations
- 110/33/11 kV substation at El Bagier
- Telecommunications antennae at area centers

BNI will provide subsurface investigations and soils testing as well as design of foundations.

In all instances, the resulting design drawings and construction specifications will be delivered to NEC who will perform the construction.

Task 5: Supervise Field Installation

The BNI Field Installation Engineer will provide advisory services to NEC including:

- Monitor the activities of NEC's organization and advise in the receipt, inspection and transport of commodities to the jobsite.
- Assist in the supervision of NEC personnel in the construction of new, or the modification of existing, civil works and equipment connections.
- Provide advisory services to NEC during the erection and installation of the equipment.
- Liase with the supplier's on-site representative in the arrangements for testing and startup, where appropriate, and,
- Witness the taking over of the equipment by NEC and certify in writing that the requirement of the on-site services of the supplier's representative are fully met.

Submission of Reports and Program Completion

BNI will prepare brief monthly progress reports and more substantive Quarterly Reports.

The program will be considered complete when:

- (a) The BNI Field Installation Engineer has completed Task 5 for all the commodities procured under the Program and
- (b) A final invoice and program cost summary are submitted to USAID/Khartoum.

Appendix B

PROGRAM CHRONOLOGY

The Program began in Khartoum on July 5, 1982 with the signing of a Procurement Advisory Services Contract by Bechtel National Inc. (BNI) and the USAID Mission (USAID). Listed below is an event chronology:

<u>MONTH</u>	<u>EVENT</u>
July, 1982	<p>The Resident Manager, D.E. Hart, established final commodity lists for NEC power systems, telecommunications and mobile equipment.</p> <p>Request for Bid documentation with equipment specifications were prepared by BNI and approved by NEC. Bidder lists were prepared and approved.</p>
August, 1982	<p>Resident Manager returned to Bechtel Power Division offices in Los Angeles to assist in final preparation of Request for Bids and to arrange for Bid Evaluation and Award procedures between BNI and NEC.</p>
September, 1982	<p>Resident Manager returned to Khartoum and established BNG REHAB office in NEC headquarters next to Director General's office.</p> <p>Letter of Commitment for \$18,700,000 issued to Manufacturers Hanover Trust Bank, New York.</p> <p>Commodity procurement, delivery and installation schedule prepared for all commodities.</p> <p>Director General, NEC, requested BNI assist in securing two, 220 KV, SF6 Circuit Breakers for Damazine in an emergency waiver.</p> <p>Obtained NEC and USAID approval of a four-person NEC Bid Review Board to be assigned to Bechtel Power Division, Los Angeles, for bid evaluation and purchase contract awards.</p>
October, 1982	<p>Opened Program Dollar and Sudanese bank accounts at Citibank, Khartoum.</p>

BNI developed Letter of Credit (L/CR) request and approval routines for NEC and Bank of Sudan. At USAID and NEC request, Resident Manager wrote a scope of work for an NEC and Regional Companies Tariff Study.

Requests for Bids for mobile equipment and telecommunications commodities were issued by end of month.

November, 1982

NEC Review Board resident at Bechtel Power Division, Los Angeles, for bid evaluation, supplier consultations, and contract awards. 28 bids of 47 commodity groups were received by end of month.

Receiving, storing transportation arrangements for commodities made jointly by NEC and resident Manager.

Received purchase contracts from Los Angeles Power Division for two, SF6 Breakers for Damazine. Breakers can be shipped as soon as purchase contracts signed by NEC.

Open import license for BNG REHAB commodities approved by Ministry of Finance, Sudan.

Developed NEC manpower requirements for mobile equipment operation and maintenance.

December, 1982

Received bids for all of commodities except 11 out of the 47 commodity groups.

Civil works construction drawings for SF6 Breakers at Damazine were submitted by BNI to NEC.

Fifteen purchase contract awards were made by NEC by month end.

January, 1983

NEC signed contract for the 220 KV, SF6 Breakers for Damazine,. The L/CR was issued on January 11, 1983 the first for the Program.

Resident Manager and Project Director J.F. Houle reviewed status of the procurement program with the NEC Review Board at Bechtel Power, Los Angeles, to expedite Review Board work.

February, 1983 Bechtel Field Installation Engineer, G.I. Israelson took up permanent assignment in Khartoum. Initial efforts included supervision of SF6 Breaker installation and inspection of receiving and storage facilities at Port Sudan.

Director General requested that the Resident Manager prepare a study of the use of a light plane by NEC for manager travel throughout BNG system.

At month end 27 purchase contract/orders out of 46 commodities were placed.

March, 1983 SF6 Circuit Breakers for Damazine arrived in Port Sudan on March 13th.

NEC Director General and Resident Manager met with Deputy USAID Mission Director, Keith Sherper, to discuss the increase in BNG REHAB commodities since the initial commodity request was actually \$2,860,000 less than the approved Letter of Commitment. The USAID Deputy Director stated that the NEC Director General would need to obtain approval from the Ministry of Finance and the USAID Mission Director before the surplus funds could be used.

Inspected SF6 Breaker foundation construction at Damazine.

April, 1983 SF6 Breakers arrived at Damazine Power Plant.

BNI Project Director in Khartoum to discuss Program progress and Budget revisions for increased program scope.

Trip to Damazine to inspect SF6 Breaker foundations. NEC Director General accompanied Resident Manager.

Letter sent by NEC to State Minister of Energy requesting that balance of \$2.86 million in the USAID CIP be used for additional commodities.

May, 1983 All L/CR with the exception of 5 were issued in May.

Ministry of Finance approved the NEC request to use \$2.0 million of savings in CIP funds for additional commodities and services for the BNG REHAB.

General Electric field installation engineer (first of supplier engineers to arrive in the field) arrived for SF6 Circuit Breaker installation. Attempted installation of first breakers on May 27, but failure of NEC to provide equipment operators prevented installation.

Met with Jay Carter, newly arrived USAID Mission Energy Officer, for first briefing session on BNG REHAB Program, May 30th.

June, 1983

First SF6 Circuit Breaker operating at Damazine on June 9th. Second breaker will be installed after Ramadan.

Four additional commodities had arrived in Port Sudan by end of month.

Major changes were made to L/CR terms, and conditions at request of Manufacturers Hanover Trust Bank. These could have been avoided if MHT had been more explicit at the first wiring of L/CR terms.

The original LOCOM was amended downward to \$15,420,000 in May by USAID, Khartoum. Subsequently, at the recommendation of BNI, the Ministry of Finance approved the use of \$1.0 million in additional grant funds for the BNG REHAB program. The USAID Procurement Officer informed BNI Resident Manager that requirement for additional funds under present BNG REHAB must come from the \$1.0 million which will appear in a second LOCOM.

The Bechtel Telecommunications Engineer, Kenneth Gordon, began his assignment on June 16, in Khartoum.

July, 1983

A total of 17 commodity groups and 75 pieces of equipment had arrived in Port Sudan by month end.

USAID Mission Energy Officer requested letter from NEC Director General indicating concurrence in Option A Amendment to Contract Scope of Work agreed upon in meeting with BNI Program Director on April 7, 1983. Letter was requested prior to amending dollar amount in Contract.

Discussed receiving, storage, inspection and preparation of over-the-road shipment of vehicles at port Sudan with NEC Directors of Suppliers, Engineering and Operations. A contingent of 30 vehicles arrived on July 23rd.

August, 1983

NEC Director General signed letters supporting additional funding for Amendment A to the Contract and signed the required USAID P10/T.

Prepared and initialed Commodity Completion Certificate routine for first of installed commodities. Began telephone cable installation in NEC headquarters location.

HF Radio system equipment arrived in Khartoum and stored for later installation.

Amendment A to the Contract was signed by USAID and BNI by August 30, 1983. The amendment provides for increases in both the dollar and Sudanese pound budgets as well as a contract completion date of August 31, 1984. The increase in funds and schedule are related to scope changes.

September, 1983

The first of the mobile equipment - augers, derricks, tankers and cable reel equipment - arrived in Khartoum in mid-September.

HF radio towers arrived and instructions were given for installation at 11 sites in the BNG Systems.

BNI Resident Manager submitted a list of additional commodities, to be purchased under LOCOM-2, for approval by NEC management.

BNI Resident Manager and Field Installation Engineer met with NEC management to discuss training and qualifying of NEC mobile equipment operators and mechanics.

October, 1983

In October, NEC held a reception exhibiting recently arrived mobile equipment. Representatives from the U.S. Embassy and the USAID Mission attended.

The first of the NEC HF radio system equipment was installed at Port Sudan and Khartoum providing NEC with its first dedicated communication link to Port

Sudan. By month end links were completed to Wad Medani and Damazine.

Met with USAID Mission Director and Procurement and Program Officers to discuss waiver requests under BNG REHAB Program.

Inspected El Bagier Substation site with Westinghouse, NEC and BNI engineers. Discussed substation design.

Delivered first BNG REHAB Annual Report to USAID and NEC.

Approximately 75 per cent of the telecommunications system equipment had been delivered to Khartoum by the end of the month.

All mobile equipment had arrived in Sudan by end of the the month except Burri Bridge crane. About one-third of the equipment was in operation.

November, 1983

Second SF6 Circuit Breaker installed at Damazine Substation.

Requested NEC Stores Department to establish rigorous receiving, inspection, storage and issuing procedure for spare parts valued at \$625,000.

Issued memorandum of instruction to Director of Stores to establish orderly marshalling of CIP commodities at Central Stores Yard.

Issued letter to NEC Director of Administrative affairs requesting that he implement USAID ADM-12, "Property Accountability for AID-financed Commodities". Instructions for the implementation of USAID ADM-12 were provided by the BNI Resident Manager.

Field installation engineer for R.O. Corp. began training session for operators and mechanics responsible for augers.

December, 1983

Scientific Research Inc. Field Installation Engineer returned to Sudan to complete HF system.

Established NEC Task Force to implement USAID ADM-12 letter. Task Force also addressed the

problems of equipment maintenance and records and the new Vehicle Maintenance Center.

Bechtel Telecommunications Engineer, K. Gordon, completed six month assignment. A second Bechtel Telecommunications Engineer will take up duties in late January.

Held discussions with NEC Senior Management on BNI's December letter addressing the serious necessity for establishing an extensive maintenance training program.

BNI notified NEC Senior Management of serious slippage in the El Bagier construction schedule arising from NEC's delay in starting civil works construction.

January, 1984

BNI recommended that NEC request funding from USAID for a one-year maintenance training program for vehicle, mobile equipment and telecommunications technicians and mechanics.

Field installation engineers from Morgan Equipment (cranes) and Gulfgate Engineering (oil filtration) arrived to train NEC operators.

Bechtel Telecommunications Engineer, A.T. Amagnostou, began a six-month assignment directing installation of telecommunications equipment and training.

Assisted NEC in developing proper training enlistment procedures and trainee performance standards.

Requested Director of Stores to implement recommendations for Stores Division Staffing at Port Sudan. These recommendations had been made six months earlier by Mr. Johnny Mowatt, Bechtel Procurement Advisor.

The last of the Telecommunications commodities and all mobile equipment except Burri Crane had arrived including pre-fabricated buildings. Eight of the twenty power systems commodities had arrived by the end of the month.

February, 1984

Soils data for the new El Bagier Substation were submitted by NEC . This was two months behind original schedule.

R.O. Corp. Field Engineer returned for a two-month mobile equipment operator training program. This program had been strongly urged by BNI.

Delivered to USAID Mission Procurement Officer documentation of Letter of Credit procedures used in the BNG REHAB program. This is one of the most complete procedural documents of any of the CIP Programs active in Sudan.

NEC/Bechtel Task Force on Vehicle and Mobile Equipment Maintenance and Records met with Supplier Field Engineer to discuss serious maintenance problems. Director of Administrative Affairs was requested to correct these problems.

Re-emphasized the need for a one-year NEC maintenance training program to the USAID Mission Energy Officer.

As part of a BNI monthly field inspection program, stressed that Central Stores carefully cover and properly arrange CIP commodities in the storage yard.

Submitted to USAID Energy Officer at his request, a history of the development of the BNG RAHAB Program. Contained in the report are references to services performed by Bechtel beyond the defined scope of work.

At end of month all mobile equipment was in service except the 125 foot aerial basket.

March, 1984

Field Engineer from Telelect Corp. began inspection and training program for 50 foot and 75 foot aerial baskets.

Requested LOCOM 60306 be extended to November 30, 1984. Granted by USAID Mission and USAID/Washington.

Hippotronics Field Installation Engineer conducted training and testing program for cable test vehicles.

Poured bases for telecommunications towers at KLDC and Burri Plant.

Conferences with Westinghouse and NEC in Khartoum to discuss El Bagier substation construction and line tie-in.

Submitted construction activity schedule for El Bagier Substation to NEC and USAID Mission Energy Officer showing mid-November completion.

Rohn Tower Field Installation Engineer began tower erection at KLDC.

Requested NEC Director of Supplies complete delinquent USAID ADM-12 Audit forms for CIP Commodities.

Twelve out of twenty power systems commodities were in Sudan at month end. Burri Bridge Crane arrived at Port Sudan.

April, 1984

Burri Bridge Crane on Site at Burri power plant awaiting erection early in April.

Completed R.O. Corp. field training of mobile equipment operators and mechanics. A total of 80 days were devoted to training.

BNI Resident Manager submitted to NEC the installation schedule for power systems equipment other than at El Bagier Substation.

USAID Mission requested by Bechtel Resident Manager to respond to Bechtel Program Director request to revise U.S. Dollar Budget to permit program operation through September, 1984, in the field.

Submitted Bechtel Services Contract to NEC for services to be rendered under new LOCOM-060409.

May, 1984

SRC Field Installation Engineer in Khartoum to train HF radio technicians.

All telecommunications towers in Khartoum were erected.

Rural Telephone System links (microwave) completed under supervision of S.R. Telcom field installation engineer.

Request for tenders for El Bagier Substation civil works released to local contractors.

NEC and USAID Mission made decision to cancel engineering computer (Commodity PS-15).

BNI Project Director requested Dollar Budget be amended for additional funds to carry field program through September, 1984.

Reported to USAID Mission the extensive "hands on" training being given to NEC telecom technicians.

June, 1984

BNI Resident Manager met with USAID Deputy Procurement Officer to arrange for terms and conditions permitting use of LOCOM-2 funds for equipment and services contracted for under LOCOM-1.

Held Program Review with Director General, Senior Director and USAID Energy Program Officer to discuss program progress.

USAID Mission Director limited increase in dollar Budget and requested job shut down in field June 30, 1984.

Documented Purchase Order/Contract and Letter of Credit procedures for NEC and USAID.

Submitted to NEC and USAID Letter of Credit and Purchase Order/Contract Status Report. Held several conferences with USAID and NEC personnel to discuss procedures and status.

July, 1984

Held conference with USAID Mission Procurement Officer giving final status of remaining procurement activities and reviewed interfacing with NEC and the Bank of Sudan.

BNI Resident Manager, at USAID request, held several conferences with Mr. John Sheehy, Harza Co., describing NEC organization, activities of other consulting firms working with NEC and interfacing with USAID for the management services program.

Held exit job completion conference with Mission Director W.R. Brown reporting on program accomplishments and recommending future work.

Held final conference with Director General,
Mohamed Nasr Abu Bakr, reviewing program
accomplishments and work yet to be completed.

Closed BNI Khartoum Office on July 14, 1984.

104

Appendix C

EXPEDITING REPORT FOR EQUIPMENT MANUFACTURE
AND SHIPMENT

June, 1984

Pages 1 through 60

.DATE 09:48:53 RID 96 04 JUN 84 713074-325
 * * * * * SUDAN BNG P.O. CM-1A/B/C * * * * *

DESCRIPTION: MOBILE CRANES

EXPEDITER: CONNOLLY
 AREA EXPEDITOR: N CRITICAL:
 AWARD DATE: 830218
 REV NUMBER:
 REV DATE:
 SUPPLIER: MORGAN EQUIPMENT CO.
 SHIPPING POINT: CEDAR RAPIDS, IA
 PORT OF EXPORT: HOUSTON, TX
 FAB START DATE:
 SUPPLIER QUALITY: N

COMMENTS:
 SITE SERVICE REP REQUIRED: COMPLETE
 EXTENSION OF CONTRACT 16 DAYS. TLX REC'D 840321
 REQUESTING CONTRACT CHANGE.
 SERV: REP DUTIES COMPLETE.
 NEC HAS AUTHORIZED PARTIAL 840418, EXPECT FULL
 AUTHORIZATION BY 840427.
 CONTACT: KIMM BRAND
 P.O. BOX 368
 14480 ALONDRA BLVD.
 LA MIRADA, CA 90638
 (213) 868-4754
 TLX 68-5509 MORGAN LMDA
 ENGRG: MANUALS SENT TO SUDAN 830812, REC'D 830817.
 MATERIAL: COMPLETE.
 FAB: COMPLETE.
 DELIVERY: SHIPPED ROBERT E. LEE ETD 830827, ETA 831001, CONFIRMED
 TLX 831001.

.ITEM DETAIL P.O.		E2730									
* P.O.	.ITEM	QUANTY	UNT.	DESCRIPTION		SHOP	PROM	REQD	CURR	.E.	
* NUMBER	.UN	.NO	.ORDERD	.MEA	TAG NUMBER	ORDER NO	DATE	DATE	DATE	.A.	FLOAT
CM-1A/B/C	1	2	EA		MOBILE CRANE, 15 TON			830926	831001	A	+ 0
CM-1A/B/C	2	1	EA		MOBILE CRANE, 30 TON			830926	831001	A	+ 0
CM-1A/B/C	3	1	EA		MOBILE CRANE, 50 TON			830926	831001	A	+ 0
CM-1A/B/C	5	1	LOT		SPARE PARTS FOR ITEM ONE (CRANE ONLY)			830926	831001	A	+ 0
*CM-1A/B/C	-196										
CM-1A/B/C	197	1	LOT		SPARE PARTS FOR ITEM TWO (CRANE ONLY)			830926	831001	A	+ 0
*CM-1A/B/C	-439										
CM-1A/B/C	440	1	LOT		SPARE PARTS FOR ITEM THREE (CRANE ONLY)			830926	831001	A	+ 0
*CM-1A/B/C	-655										
CM-1A/B/C	656	1	LOT		SPARES FOR CUMMINS ENGINE (ITEM ONE)			830926	831001	A	+ 0
CM-1A/B/C	-710										
CM-1A/B/C	711	1	LOT		SPARES FOR CUMMINS ENGINE (ITEM TWO)			830926	831001	A	+ 0
CM-1A/B/C	-761										
CM-1A/B/C	762	1	LOT		SPARES FOR CATERPELLAR ENG (ITEM THREE)			830926	831001	A	+ 0
CM-1A/B/C	-899										
CM-1A/B/C	901	2	SET		OPERATION/MAINT./SPARE PARTS MANUALS			830817	830812	A	+ 1

MM

***** SUDAN BNG P.O. CM-1D *****

DESCRIPTION: FORKLIFT TRUCKS

EXPEDITER: COMPLETE
 AREA EXPEDITOR: N
 AWARD DATE: 830128
 REV NUMBER: 1
 REV DATE:
 SUPPLIER: CLARK EQUIPMENT
 SHIPPING POINT: BATTLECREEK, MI
 PORT OF EXPORT: EAST COAST PORT
 FAB START DATE:
 SUPPLIER QUALITY: N

CRITICAL:

COMMENTS:

P.O. NUMBER: NEC/BNG/FP/K/1524,1525
 CONTACT: KATHY PONSCHECK/BOB NEWSTEAD
 525 N. 24TH STEEET
 BATTLE CREEK, MI 94016
 (616) 966-4000
 TLX 432-0114 CLARK BCAN

ENGRG: MAINT. MANS SENT TO SUDAN 830930, REC'D 831011.
 MATERIAL: COMPLETE.
 FAB: COMPLETE.
 DELIVERY: BOOKED ON ROBERT E. LEE V/33, ETD 830901 ETA 831001.
 BL 119.. CONFIRMED TLX 831019. SPARES VIA BRITISH
 AIRWAYS FLIGHT 153, ETA 831218. CERT OF COMPLETION
 OVERDUE, D. HART TD BE CONTACTED 840423.
 NOTE: AMEND TO LOC TO CORRECT SCHED 'B' NUMBERS REC'D
 830822.
 90 DAY CERT DF COMPLETION DUE 840318 FOR SPARES.

.ITEM DETAIL P.O.

* P.O. NUMBER	UN	NO	ORDERD	MEAS	TAG NUMBER	DESCRIPTION	SHOP ORDER NO	PROM DATE	REQD DATE	CURR DATE	E.A.	+	0	0	0	0	0
CM-1D		1		2	EA	FORKLIFT, DIESEL											
CM-1D		2		3	EA	FORKLIFT	SR278072	830927	831001	831001	A	+	0				
CM-1D		3-54		1	LDT	SPARE PARTS	SR72732	830927	831001	831001	A	+	0				
CM-1D		3-54		1	LOT	SPARE PARTS		830927	831001	831001	A	+	0				
CM-10		55		10	EA	PARTS/MAINTENANCE MANUALS		830927	831214	831001	S	+	0				

69

* * * * * SUDAN BNG P.O. CM-2A/B * * * * *

DESCRIPTION: UTILITY TRUCKS W/DERRICK
CRANES/AUGERS

EXPEDITER: CONNOLLY
AREA EXPEDITOR: N
AWARO DATE: 830127
REV NUMBER: 2
REV DATE: 830609
SUPPLIER: R.O. CORPORATION

CRITICAL:

SHIPPING POINT: OLATHE, KS
PORT OF EXPORT: NEW ORLEANS
FAB START DATE:
SUPPLIER QUALITY: N

COMMENTS:

SITE SERVICE REP REQUIRED: COMPLETE.
CONTRACT AMENDMENT FOR INCREASED SERV. REP TIME
POUCHED TO SUDAN FOR SIGN. 840404.
TIME CARD SIGNED BY REP PUCHED TO SUDAN 840518.
P.O. NUMBER: NEC/BNG/FP/K/1526, 1527
CONTACT: RAYMOND PITMAN/JOHN MAKIN
550 EAST HIGHWAY 56
OLATHE, KS 66061
(913) 782-1200
TLX 437188 RO CORP OLAT

ENGRG: MAINT. MANUALS REC'D AT BECHTEL 830705, FORWARDED TO
SUDAN 830712, REC'D 830721.

FAB: COMPLETE.

DELIVERY: ALL EQUIP. EXCEPT SPARES BOOKED WM HOOPER V12 830621.
ETA 830713, ARRIVAL CONFIRMED KLAT-244. SPARES SHIPPED
SAM HOUSTON ETD 830715, ETA 830808 CONFIRMED ON
KLAT/PA-26.

. ITEM DETAIL P.O.

* P.O.	ITEM	QUANTY	UNT.	E2730	SHOP	PROM	REQD	CURR	E.	FLOAT	
* NUMBER	UN	NO	ORDERD	MEAS	TAG NUMBER	DESCRIPTION	ORDER NO	DATE	DATE	DATE	A.
CM-2A/B	1	4	EA			UTILITY TRUCK W/DERRICK - CRANE					
CM-2A/B	2	10	EA			UTILITY TRUCK W/DERRICK - AUGER				830721	A + 0
CM-2A/B	3	1	LOT			SPARE PARTS FOR ITEM ONE (CRANE ONLY)				830721	A + 0
*CM-2A/B	-95									830820	A + 0
CM-2A/B	96	1	LOT			SPARE PARTS FOR ITEM TWO (AUGER ONLY)				830820	A + 0
*CM-2A/B	-226										
CM-2A/B	227	1	LOT			SPARE PARTS FOR ALL CHASSIS				830820	A + 0
*CM-2A/B	-261										
CM-2A/B		1	LOT			ADDITIONAL SPARE PARTS				840321	A + 0

88

***** SUDAN BNG P.O. CM-2C5/7 *****

DESCRIPTION: UTILITY TRUCK W/AERIAL BASKET

EXPEDITER: COMPLETE
 AREA EXPEDITOR: N
 AWARD DATE: 830126
 REV NUMBER: 1
 REV DATE:
 SUPPLIER: TELELECT

CRITICAL:

SHIPPING POINT: WATERTOWN, SD
 PORT OF EXPORT: NEW YORK, NY
 FAB START DATE: 830404
 SUPPLIER QUALITY: N

COMMENTS:

SITE SERVICE REP REQUIRED: COMPLETE.
 P.O. NUMBER: NEC/BNG/FP/K/1528, 1529
 CONTACT: JOHN CROWSON/D. CRUZ
 600 OAKWOOD ROAD
 WATERTOWN, SD 57201
 (605) 882-4000

ENGR: INST MAN. SENT TO SUDAN 830805, REC'D 830810.
 FAB: COMPLETE.

DELIVERY: 16 WKS ALOC. FOUR EACH OF ITEM ONE BOOKED WILLIAM HOOPER V12 ETD 830624, ETA 830713.
 3 EA. ITEM 1, ITEM 2 COMPLETE & SPARES BOOKED SAM HOUSTON V34, ETD 830721, ETA 830811.

NOTE: AMEND TO LOC REC'D 830830 CORRECTING NAME.
 AMEND TO LOC REQUIRED FOR INCREASED FREIGHT. REC'D 831026.

.ITEM DETAIL P.O.

* P.O. NUMBER	.UN	.NO	.ORDERD	.MEA	TAG NUMBER	DESCRIPTION	SHOP ORDER NO	PROF DATE	REQD DATE	CURR DATE	.E.	.A.*	.FLOAT
CM-2C5/7		1		4	EA	UTILITY TRUCK W/AERIAL BASKET, 50 FT	77047,77048			830721	A	+	0
*CM-2C5/7		1		3	EA	UTILITY TRUCK W/AERIAL BASKET, 50 FT	77049,77050		830808	830811	A	+	0
CM-2C5/7		2		2	EA	UTILITY TRUCK W/AERIAL BASKET, 70 FT	77053						
CM-2C5/7		3		1	LOT	SPARE PARTS FOR AERIAL DEVICES	77045,77046		830808	830811	A	+	0
*CM-2C5/7		-23							830808	830811	A	+	0
CM-2C5/7		24		1	LOT	SPARE PARTS FOR CHASSIS			830808	830811	A	+	0
*CM-2C5/7		-109											

69

* * * * * SUDAN BNG P.O. CM-2C12 * * * * *

DESCRIPTION: UTILITY TRUCK W/AERIAL BASKET

EXPEDITER: CONNOLLY
 AREA EXPEDITOR: N
 AWARD DATE: 830128
 REV NUMBER:
 REV DATE:
 SUPPLIER: MERICAN-CURTIS, INC.

CRITICAL:

SHIPPING POINT: DULUTH, MN
 PORT OF EXPORT: BALTIMORE, MD
 FAB START DATE: 830501
 SUPPLIER QUALITY: N

COMMENTS:

SITE SERVICE REP REQUIRED: MUST RESCHED. AWAITING AMENDMENT TO LC. NO FORECAST DATE AVAILABLE.

P.O. NUMBER: NEC/BNG/522
 CONTACT: DIANE KENNEDY
 7815 AIRPORT HIGHWAY
 PENNSAUKEN, NJ 08109
 (609) 665-8484

FACTORY: REACH-ALL MFG.
 436 CALVARY ROAD
 DULUTH, MN 55803

ENGRG: DWGS TO SUDAN 830902, REC'D 830910.

MATERIAL: COMPLETE.

FAB: COMPLETE.

DELIVERY: UNITS SHP'D 830928 BOOKED ON WM. HOOPER. ARRIVED PORT SUDAN 831101 PER KLAT-360. TEST METER REQUIRED FOR SERVICE REP. SCHED. AIR FREIGHT W/O 840109.

SPARES ON HOLD AWAITING RECEIPT OF LC AMENDMENT.

NOTE 1: AMEND TO LOC REC'D 830808 FOR SIZE OF BASKET, SPARES AMEND REC'D 830824.

CERT DF COMPLETION REC'D FROM SUDAN 840111.

. ITEM DETAIL P.O.				E2730									
* P.O.	. ITEM	QUANTY	UNT.			SHOP	PROM	REQD	CURR	E.			
* NUMBER	. UN	. NO	. ORDER	MEA.	TAG NUMBER	DESCRIPTION	ORDER NO	DATE	DATE	DATE	.A.	.+	FLOAT.
CM-2C12		1				UTILITY TRUCK W/ AERIAL BASKET, 125 FT	21026A4/T		831030	831101	A	+	0
CM-2C12		2				MAINTENANCE MANUAL FOR CHASSIS			831030	831101	A	+	0
CM-2C12		3				PARTS MANUAL FOR CHASSIS			831030	831101	A	+	0
CM-2C12		4				MAINTENANCE/PARTS MANUAL FOR AERIAL DEVICE			831030	831101	A	+	0
*CM-2C12		5				SPARE PARTS FOR AERIAL DEVICE			831030	831101	A	+	0
CM-2C12		-26				SPARE PARTS FOR CHASSIS			831030	831101	A	+	0
CM-2C12		27				ADDITIONAL SPARES						+	0
*CM-2C12		-165										+	0
CM-2C12		27										+	0
*CM-2C12		-165										+	0
												HOLD	* + 0

OL X

***** SUDAN BNG P.O. CM-2E *****

DESCRIPTION: TRANSPORT TRUCKS W/
TRAILER

EXPEDITER: COMPLETE
 AREA EXPEDITOR: N
 AWARD DATE: 830228
 REV NUMBER: 1
 REV DATE:
 SUPPLIER: INT'L HARVESTER CO.

CRITICAL:

SHIPPING POINT: SPRINGFIELD, OH
 PORT OF EXPORT: BALTIMORE, MD
 FAB START DATE:
 SUPPLIER QUALITY: N

COMMENTS:

P.O. NUMBER: NEC/BNG/FP/K/1532
 CONTACT: ROBERT J. OLSON
 4501 S. ALAMEDA STREET
 LOS ANGELES, CA 90058
 (213) 235-5813
 MAILGRAM

ENGRG: INST. MANUALS REC'D AT BECHTEL 830707. FORWARDED TO
 SUDAN 830805, REC'D 830810.
 MATERIAL: PARTS CRATED. TRAILERS COMPLETE. TRUCKS COMPLETE.
 DELIVERY: 830928 SHIPMENT ON WM. HOOPER, ETA 831030, AWAITING
 CONFIRMATION FROM SUDAN.
 NOTE: COMPETITION TELEX DUE NO LATER THAN 830201.

.ITEM DETAIL P.O.

E2730

* P.O. NUMBER	.UN	.NO	.ORDERD.	.MEA.	TAG NUMBER	DESCRIPTION	SHOP ORDER NO	PROM DATE	REQD DATE	CURR DATE	.E.	.A.	.FLOAT.
CM-2E		1				TRANSPORT TRUCKS W/TRAILERS							
CM-2E		2				SPARE PARTS FOR TRUCKS		831030	831101		A	+	0
*CM-2E		-72						831030	831101		A	+	0
CM-2E		73				MAINTENANCE/PARTS MANUALS				830810	A	+	0
*CM-2E		-76											
CM-2E		77				SPARE PARTS FOR TRAILERS							
*CM-2E		-97						831030	831101		A	+	0

66

* * * * * SUDAN BNG P.O. CM-2F * * * * *

DESCRIPTION: TRANSPORT TRUCK W/LO-BOY TRAILER

EXPEDITER: COMPLETE
 AREA EXPEDITOR: N CRITICAL:
 AWARD DATE: 830128
 REV NUNSER:
 REV DATE:
 SUPPLIER: INT'L HARVESTER CO.

SHIPPING POINT: FORT WAYNE, IN
 PORT OF EXPORT: BALTIMORE, MD
 FAB START DATE:
 SUPPLIER QUALITY: N

COMMENTS:

P.O. NUMBER: NEC/BNG/FP/K/1533
 CONTACT: ROBERT J. OLSON
 4501 S. ALAMEDA STREET
 LOS ANGELES, CA 90058
 (213) 235-5813
 MAILGRAM

ENGRG: MANUALS SENT TO NORWALK 830707. FORWARDED TO SUDAN 830805, REC'D 830810.

MATERIAL: COMPLETE.
 FAB: COMPLETE.

DELIVERY: BOOKED ON ROBERT E. LEE ETD 830901 ETA 831001, CONFIRMED TLX 831019. SPARES SHIP WM. HOOPER 830928 ETA 831030.

. ITEM DETAIL P.O.

* P.O. NUMBER	.UN	.NO	.ORDERD	.MEA	TAG NUMBER	DESCRIPTION	.SHOP ORDER NO	.PROM DATE	.REQD DATE	.CURR DATE	.E.A.	.FLOAT
CM-2F		1			1 EA	TRANSPORT TRUCK W/LO-BOY TRAILER						
CM-2F		2.1			1 LOT	SPARE PARTS FOR TRUCK		831010	831001	A	+	2
*CM-2F		2.39				(ITEMS 2.1 THRU 2.39)		831030	831101	A	+	0
CM-2F		2.40			1 LOT	SPARE PARTS FOR TRAILER						
*CM-2F		2.61				(ITEMS 2.40 THRU 2.61)		831030	831101	A	+	0

E2730

73

***** SUDAN BNG P.O. CM-3D/J *****

DESCRIPTION: COMMUNICATIONS TEST
VEHICLE & PERSONNEL VANS

EXPEDITER: CONNOLLY
AREA EXPEDITOR:
AWARD DATE: 830311
REV NUMBER:
REV DATE:
SUPPLIER: HEATH EQUIPMENT

CRITICAL:

SHIPPING POINT: LORDSTOWN, OH
PORT OF EXPORT: BALTIMORE, MD
FAB START DATE:
SUPPLIER QUALITY: N

COMMENTS:

P.O. NUMBER: NEC/BNG/FP/K/1537, 1543
CONTACT: NANCY SANDERS
P.O. BOX 6325
CONCORD, CA 94524
(415) 825-8400
TLX 330493 HEATH EQCO PACH

NOTE: AMENDMENT TO LC REQUIRED FOR FREIGHT. FORECAST DATE
FOR ISSUE NOT AVAILABLE.

ENGRG: MANUALS REC'D AT BECHTEL 831201, SENT VIA POUCH TO SUDAN
831202.

MATERIAL: COMPLETE.

FAB: TRANSPORT TO HOUSTON 10 DAYS.

EST. SHIP ON 1ST. AVAILABLE VESSAL IN MARCH.

DELIVERY: BOOKED ON SAM HOUSTON ETD 831005, ETA 831105.
831230 BOOKED ON WM. HOOPER ETD 831230, ETA 840131.
REMAINING VANS ON HOLD PENDING RECEIPT OF LC AMENDMENT
FOR INCREASED FREIGHT.

NOTE: AID WAIVER REQUIRED TO SHIP EQUIP. AID WASH TELECON
830828, WAIVER ACCEPTED, REC'D 830909.
PARTIAL CERT OF COMPLETION REC'D 840216.

. ITEM DETAIL P.O.

E2730

* P.O.	. ITEM	QUANTY	UNT.			SHOP	PROM	REQD	CURR	.E.		
* NUMBER	. UN	. NO	. ORDERD	. MEA.	TAG NUMBER	DESCRIPTION	. ORDER NO	. DATE	. DATE	. DATE	.A.	. FLOAT
CM-3D/J	1	2	EA			VANS, COMMUNICATION TEST VEHICLE		840131	HOLD		+	0
CM-3D/J	2	11	EA			VANS, PERSONNAL TRANSPORT		831105	831119	A	-	2
CM-3D/J	2	1	EA			VANS, PERSONNAL TRANSPORT		840131	840118	A	+	2
CM-3D/J	3	1	LOT			SPARE PARTS		831105	831119	A	-	2
CM-3D/J	-47											
CM-3D/J	48	3	EA			MAINTENANCE MANUAL					+	0
CM-3D/J	49	3	EA			PARTS MANUAL			831202	S	+	0
									831202	S	+	0

75

* * * * * SUDAN BNG P.O. CM-3E * * * * *

DESCRIPTION: CABLE TEST VANS

EXPEDITER: CONNOLLY
 AREA EXPEDITOR: N CRITICAL:
 AWARD DATE: 830128
 REV NUMBER:
 REV DATE:
 SUPPLIER: HIPOTRONICS INT'L

SHIPPING POINT: BREWSTER, NY
 PORT OF EXPORT: NEW YORK, NY
 FAB START DATE:
 SUPPLIER QUALITY: N

COMMENTS:

SITE SERVICE REP REQUIRED: COMPLETE.
 P.O. NUMBER: NEC/BNG/528
 CONTACT: JOE ROBERTSON/DAVE MCLENDON
 P.O. DRAWER A
 BREWSTER, NY 10509
 (914) 279-8091
 TLX 425476 HIPUI

NOTE: AMENDMENT REQUIRED FOR EXTENSION OF SERV. REP.
 AWAITING NEC APP'L FOR ADD'L MATERIALS.
 ENG: INSTRUCTION MANUALS SHIPPED W/VANS 831024.
 MATERIAL: COMPLETE. ADD'L MATERIAL LIST PUCHED TO SUDAN FOR
 NEC AUTH/APPROVAL.
 FAB: COMPLETE.
 DELIVERY: BOGKED ON SAM HOUSTON, ETD 831024, ETA APPROX. 831124.
 NOTE: AMENDMENT TO LOC ISSUED 830830.
 COMPLETION TELEX REC'D FOR VANS 840111.
 NOTE 2: QUOTATION FOR ADD'L MATERIALS REQUIRED FOR OPERATION
 OF VANS TO BE SENT W/O 840507.
 QUOTATION FOR INCREASED SERV. REP COSTS REC'D 840426.

ITEM DETAIL P.O.

* P.O. NUMBER	UN	NO	ORDERD.	MEAS.	TAG NUMBER	DESCRIPTION	SHOP ORDER NO	PROM DATE	REQD DATE	CURR DATE	E.A.	+	-.FLOAT.
CM-3E		1		3	EA	CABLE TEST VANS							
CM-3E		3		1	LOT	SPARE PARTS FOR TEST EQMT		831124	831119		A	+	1
CM-3E		-38						831124	831119		A	+	1
CM-3E		39		1	LOT	SPARE PARTS FOR CHASSIS							0
CM-3E		-64						831124	831119		A	+	1
CM-3E		65		3	EA	TOOL KITS							0
								831124	831119		A	+	1

AL

***** SUDAN BNG P.O. CM-3F/G *****

DESCRIPTION: UTILITY TRACTORS WITH TRAILER

EXPEDITER: COMPLETE
 AREA EXPEDITOR: N CRITICAL:
 AWARD DATE: 830218
 REV NUMBER:
 REV DATE:
 SUPPLIER: HEATH EQUIPMENT CO.

SHIPPING POINT: SEE COMMENTS
 PORT OF EXPORT GALVESTON, TX
 FAB START DATE:
 SUPPLIER QUALITY: N

COMMENTS:

P.O. NUMBER: NEC/BNG/FP/K/1539, 1540
 SHIPPING POINT: TROY, MI (TRACTOR)
 WOODLAND, CA (TRAILER)
 CONTACT: NANCY SANDERS
 P.O. BOX 6325
 CONCORD, CA 94524
 (415) 825-8400
 TLX 330493 HEATH EQCO PACH

ENGRG: MAINT MANUALS REC'D AT BECHTEL 830824, POUCHED TO SUDAN 830902, REC'D 830911.

DELIVERY: ALL GOODS BOOKED COMPLETE WILLIAM HOOPER V12 ETD 830616, ETA 830713, ACTUAL ARRIVAL 830721. B/L.NO. 1.

.ITEM DETAIL P.O.

E2730

* P.O.	ITEM	QUANTY	UNT.			SHOP	PROM	REQD	CURR	E.		
* NUMBER	UN	NO	ORDERD	MEA	TAG NUMBER	DESCRIPTION	ORDER NO	DATE	DATE	DATE	A.	FLOAT
CM-3F/G		1		4	EA	UTILITY TRACTOR W/TRAILER, 2 WD				830721	A	+ 0
CM-3F/G		2		4	EA	UTILITY TRACTOR W/TRAILER, 4 WD				830721	A	+ 0
CM-3F/G		4		1	LOT	SPARE PARTS				830721	A	+ 0
CM-3F/G		-84										
CM-3F/G		85		2	EA	MAINTENANCE MANUAL				830824	A	+ 0
CM-3F/G		86		2	EA	PARTS MANUAL				830824	A	+ 0

77

***** SUDAN BNG P.O. CM-3H/I *****

DESCRIPTION: BUSES

EXPEDITER: COMPLETE
 AREA EXPEDITOR: N CRITICAL:
 AWARD DATE: 830126
 REV NUMBER:
 REV DATE:
 SUPPLIER: INT'L HARVESTER CO.
 SHIPPING POINT: SPRINGFIELD, OH
 PORT OF EXPORT: BALTIMORE, MD
 FAB START DATE:
 SUPPLIER QUALITY: N

COMMENTS:

P.O. NUMBER: NEC/BNG/FP/K/1541, 1542
 CONTACT: ROBERT J. OLSON
 4501 S. ALAMEDA STREET
 LOS ANGELES, CA 90058
 (213) 235-5813
 MAILGRAM

ENGRG: MANUALS SENT TO SUDAN 830805, REC'D 830810.
 MATERIAL: COMPLETE.
 FAB: COMPLETE.
 DELIVERY: BOOKED ON ROBERT E. LEE ETD 830901 ETA 831001, CONFIRMED
 831019 TLX. SPARES SHIPPED WM. HOOPER ETD 830928, ETA
 831030.

.ITEM DETAIL P.O.

* P.O.	ITEM	QUANTY	UNT.		E2730		SHOP	PROM	REQD	CURR	E.	
* NUMBER	UN	NO	ORDERD	MEA	TAG NUMBER	DESCRIPTION	ORDER NO	DATE	DATE	DATE	A.	FLOAT
CM-3H/I	1	6	EA			BUSES, 25-PASSENGER						
CM-3H/I	2	3	EA			BUSES, 50-PASSENGER		831010	831001	A	+	2
CM-3H/I	3	1	LOT			SPARE PARTS		831010	831001	A	+	2
								831030	831101	A	+	0

86

***** SUDAN BNG P.O. CM-3K *****

DESCRIPTION: UTILITY VEHICLE,
RUNABOUT TYPE

EXPEDITER: COMPLETE
 AREA EXPEDITOR: N
 AWARD DATE: 830303
 REV NUMBER:
 REV DATE:
 SUPPLIER: AMERICAN MOTORS CORP.

CRITICAL:

SHIPPING POINT: TOLEDO, OH
 PORT OF EXPORT: BALTIMORE, MD
 FAB START DATE:
 SUPPLIER QUALITY: N

COMMENTS:

P.O. NUMBER: NEC/BNG/FP/K/1544
 CONTACT: DOUG SCHURIG
 INT'L. OPERATION FLEET SALES
 27777 FRANKLIN ROAD
 SOUTHFIELD, MI 48034
 (313) 827-3803
 TLX 023-1225 AMER CTRA SOFD

FACTORY LOCATION: JEEP CORPORATION
 940 N. COVE BLVD.
 TOLEDO, OHIO 43657

ENGRG: INST. MANS REC'D 831005, TO SUDAN 831007, REC'D 831016.
 FAB: 50 VEHICLES COMPLETE.
 DELIVERY: 45 VEHICLES SHIPPED ON STONEWALL JACKSON ETD 830816,
 ETA 830912. REMAINING 5 SHIPPED ROBT. E. LEE ETD
 830901, ETA 831001, CONFIRMED TLX 831019.

.ITEM DETAIL P.O.

E2730

* P.O.	ITEM	QUANTY	UNT.															
* NUMBER	UN	NO	ORDERD	MEA	TAG NUMBER	DESCRIPTION	SHOP	PROM	REQD	CURR	E.							
							ORDER NO	DATE	DATE	DATE	A.							FLOAT.
CM-3K		1	45	EA	E9278-10 THRU 45	JEEPS CJ-7												
CM-3K		1	5	EA	E9278-46 THRU 50	JEEPS CJ-7			830912	830929	A	-						2
CM-3K		2		LOT		SPARE PARTS			831003	831001	A	+						1
*CM-3K		-201							830912	830929	A	-						2
CM-3K		202	5	EA		TECH SERVICES MANUAL												
CM-3K		203	5	EA		PARTS MANUAL			830912	830929	A	-						2
CM-3K		204	5	EA		DIESEL WORKSHOP MANUAL			830912	830929	A	-						2

ld

* * * * * SUDAN BNG P.O. CM-4A * * * * *

DESCRIPTION: CABLE TRENCHER

EXPEDITER: COMPLETE
 AREA EXPEDITOR: N
 AWARD DATE: 830127
 REV NUMBER:
 REV DATE:
 SUPPLIER: VERMEER

CRITICAL:

SHIPPING POINT: PELLA, IA
 PORT OF EXPORT: BALTIMORE, MD
 FAB START DATE:
 SUPPLIER QUALITY: N

COMMENTS:

P.D. NUMBER: NEC/BNG/FP/K/1545
 CONTACT: HAROLD MIENDERS
 P.O. BOX 200
 PELLA, IA
 (515) 628-3141
 TLX 478-309

MATERIAL: COMPLETE.
 DELIVERY: SHIPPED COMPLETE 830420 USS BUTTON GWINNETT VIO. ETA
 PORT SUDAN 830601.
 NOTE: TELEX OF COMPLETION REC'D 830830.

E2730

. ITEM DETAIL P.O.												
* P.O.	. ITEM	QUANTY	UNT.									
* NUMBER	UN	NO	ORDERD.	MEA.	TAG NUMBER	DESCRIPTION	SHOP	PROM	REQD	CURR	E.	
*****						ORDER NO	DATE	DATE	DATE	A.	FLOAT	
CM-4A		1		2	EA	EXCAVATOR/CABLE TRENCHER				830601	A	+ 0
CM-4A		2-1		1	LOT	SPARE PARTS FOR TRENCHER				830601	A	+ 0
*CM-4A		-				(ITEMS 2-1 THRU 2-125)						
CM-4A		2-		1	LOT	SPARE PARTS FOR TRAILER				830601	A	+ 0
*CM-4A		126				(ITEMS 2-126 THRU 2-146)						
CM-4A		2-		2	EA	OPERATION MANUAL				830601	A	+ 0
*CM-4A		147										
CM-4A		2-		2	EA	PARTS BOOK				830601	A	+ 0
*CM-4A		148										

22

***** SUDAN BNG P.O. CM-4BC/5I *****

DESCRIPTION: AIR COMPRESSORS,
PORTABLE

EXPEDITER: COMPLETE
 AREA EXPEDITOR: N
 AWARD DATE: 830128
 REV NUMBER: 2
 REV DATE: 830726
 SUPPLIER: MORGAN EQUIPMENT CO.

CRITICAL:

SHIPPING POINT: SEE COMMENTS
 PORT OF EXPORT HOUSTON, TX
 FAB START DATE:
 SUPPLIER QUALITY: N

COMMENTS:

P.O. NUMBER: NEC/BNG/FP/K/1546, 1547, 1564
 SHIPPING POINT: SAN LEANDRO, CA (ITEMS 1 AND 3)
 MICHIGAN CITY, IN (ITEM 2)

CONTACT: KIMM BRAND
 P.O. BOX 368
 14480 ALONDRA BLVD.
 LA MIRADA, CA 90638
 (213) 868-4754
 TLX 68-5509 MOPGAN LMDA

ENGRG: TRANSMITTAL OF IOM 830719, WITH FIRST SHIPMENT.
 DELIVERY: 4 WKS ALOC. ITEMS 1-3 BOOKED WILLIAM HOOPER V12
 ETD 830617, ETA 830713. SPARE PARTS ITEM 4 SCHEDULED
 FOR PARTIAL SHIPMENTS. BOOKED ON SAM HOUSTON, ETD
 831020 ETA 831121.

NOTE: AMEND TO LOC ADDING SPARE PARTS REC'D MHT 830830, TO
 MORGAN 830901.
 AMEND TO LOC FOR INCREASED FREIGHT TO BE INITIATED
 IN SUDAN.

ITEM DETAIL P.O.

* P.O. NUMBER	UN	ITEM NO	QUANTY	UNT.	ORDERD.	MEA.	TAG NUMBER	DESCRIPTION	SHOP ORDER NO	PROM DATE	REQD DATE	CURR DATE	E. A.	FLOAT
CM-4BC/5I		1	3	EA				AIR COMPRESSOR, ELECTRIC, CART MOUNTED (SULLY)	004-83730			830721	A	+ 0
CM-4BC/5I		2	2	EA				AIR COMPRESSOR, DIESEL, TRAILER MOUNTED (SULLAIR)	S-5371			830721	A	+ 0
CM-4BC/5I		3	2	EA				AIR COMPRESSOR, ELECTRIC, TANK MOUNTED (SULLY)	004-83731			830721	A	+ 0
CM-4BC/5I		4	1	LOT				SPARE PARTS				831020	S	+ 0
CM-4BC/5I		4	1	LOT				SPARE PARTS				831020	S	+ 0

19

***** SUDAN BNG P.O. CM-5A/H *****

DESCRIPTION: MACHINE SHOP EQUIPMENT

EXPEDITER: CONNOLLY
 AREA EXPEDITOR: N
 AWARD DATE: 830510
 REV NUMBER: 1
 REV DATE: 830603
 SUPPLIER: DEON EQUIPMENT

CRITICAL:

SHIPPING POINT: FARMINGDALE, NY
 PORT OF EXPORT: NEW YORK, NY
 FAB START DATE:
 SUPPLIER QUALITY:

COMMENTS:

P.O. NUMBER: NEC/BNG/FP/K/1556-1563
 CONTACT: MITCH BREECE
 ONE KAISER PLAZA, SUITE 1101
 OAKLAND, CA 94612
 (415) 763-7123
 TLX 470068 EQUIS UI (ITT)

VERONICA HUGHEY
 141 CENTRAL AVE.
 FARMINGDALE, NY 11735
 (516) 420-0810
 TLX 685-2079 DEON FALE

ENGRG: INSTRUCTION MANUALS SENT WITH SHIPMENT.
 MATERIAL: ALL P.O.'S PLACED.
 DELIVERY: 830808 SHIPMENT BOOKED ON THE BUTTON GWINETTE ETD 830808, ETA 830904, CONFIRMED TLX 831019. 830823 SHIPMENT BOOKED ON STONEWALL JACKSON ETD 830823, ETA 830916. 830909 SHIPMENT BOOKED ON ROBERT E. LEE, ETA 831010, CONFIRMED TLX 831019. 831004 SHIPMENT BOOKED ON WM. HOOPER ETD 831004, ETA 831104. 831026 SHIPMENT BOOKED ON SAM HOUSTON ETD 831026, ETA 831127. 831116 SHIPMENT BOOKED ON STONEWALL JACKSON ETD 831116, ETA 831217. PREVIOUSLY REPORTED 840109 SAILING DID NOT OCCUR. ORDER TO COMPLETE. 840229 VIA STONEWALL JACKSON ETA 840330. 840606 SHIPMENT BOOKED ON STONEWALL JACKSON ETA 840707. ORDER TO COMPLETE ON VESSAL SAILING NY 840703.

ITEM DETAIL P.O.

E2730

* P.O. NUMBER	UN	NO	ORDER	MEAS	TAG NUMBER	DESCRIPTION	SHOP ORDER NO	PROM DATE	REQD DATE	CURR DATE	E.A.	Float
CM-5A/H	1			EA		HORZ. MILLING MACH.			830916	830929	A	- 1
CM-5A/H	2			EA		PL. BENDING MACH.				840606	E * +	0
CM-5A/H	3			EA		POWER HACKSAW MACH.				830904	A +	0
CM-5A/H	4			EA		METAL TURNING LATHE			831217	831116	S +	5
CM-5A/H	5			EA		METAL THREADING MACH				830904	A * +	0
CM-5A/H	6			EA		SPGT WELDING MACH				831001	A +	0
CM-5A/H	7			EA		GEAR SHAPING MACH			830916	830929	A -	1
CM-5A/H	8			EA		DRILL PRESS			831127	831119	A +	2
CM-5A/H	10			LOT		SPARE PTS FOR ITEM 1			830916	830929	A -	1
*CM-5A/H	-28											
CM-5A/H	29			LOT		SPARE PTS FOR ITEM 2				830606	E * +	0
*CM-5A/H	-32											
CM-5A/H	33			LOT		SPARE PTS FOR ITEM 3				830904	A +	0
*CM-5A/H	-37											
CM-5A/H	38			LOT		SPARE PTS FOR ITEM 4			831217	831116	S +	5
*CM-5A/H	-44											
CM-5A/H	45			LOT		SPARE PTS FOR ITEM 5				840904	A * +	0

82

*CM-5A/H	-49		
CM-5A/H	50	1 LOT	SPARE PTS FOR ITEM 6
*CM-5A/H	-52		
CM-5A/H	53	1 LOT	SPARE PTS FOR ITEM 7
*CM-5A/H	-72		
CM-5A/H	73	1 LOT	SPARE PTS FOR ITEM 8
*CM-5A/H	-78		

830929	A	+	0	
831127	831026	S	+	5
830916	830606	*	+	15

118

* * * * * SUDAN BNG P.O. CM-5J * * * * *

DESCRIPTION: VEHICLE MAINTENANCE
CENTER EQUIPMENT

EXPEDITER: CONNOLLY CRITICAL
AREA EXPEDITOR: N
AWARD DATE: 830524
REV NUMBER:
REV DATE:
SUPPLIER: DEON EQUIPMENT

SHIPPING POINT: FARMINGDALE, NY
PORT OF EXPRT NEW YORK, NY
FAB START DATE:
SUPPLIER QUALITY:

COMMENTS:

P.O. NUMBER: NEC/BNG/FP/K/61565 THRU 1583
CONTACT: MITCH BREECE VERONICA HUGHEY
ONE KAISER PLAZA, SUITE 1101 141 CENTRAL AVE.
OAKLAND, CA 94612 FARMINGDALE, NY 11735
(415) 763-7123 (516) 420-0810
TLX 470068 EQUIS UI (ITT) TLX 685-2079 DEON FAL

ENGRG: INSTRUCTION MANUALS SENT WITH SHIPMENT.
MATERIAL: ALL LONG LEADS PLACED.
DELIVERY: 830823 SHIPMENT BOOKED ON STONEWALL JACKSON ETD 830823,
ETA 830916.
830909 SHIPMENT BOOKED ON ROBT. E. LEE,
ETA 831001 CONFIRMED TLX 831019. 831004 SHIPMENT BOOKE
ON WM. HOOPER, ETA 831105. 831026 SHIPMENT BOOKED ON
SAM HOUSTON, ETD 831026, ETA 831127. 831116 SHIPMENT
BOOKED ON STONEWALL JACKSON ETD 831116, ETA 831217.
PREVIOUSLY REPORTED SHIPMENT ON 840109 DID NOT OCCURR.
ITEMS NOW BOOKED ON STONEWALL JACKSON, ETD 840229, ETA
APPROX 830330.
840606 SHIPMENT ON STONEWALL JACKSON ETA 840606 ETD
840707 ORDER TO COMPLETE 840703.

. ITEM DETAIL P.O.

* P.O.	ITEM	QUANTY	UNT.		E2730																
* NUMBER	UN	NO	ORDERD	MEA	TAG NUMBER	DESCRIPTION	SHOP	PROM	REQD	CURR	E.										
							ORDER NO	DATE	DATE	DATE	.A.*	FLOAT									
CM-5J	1	3	EA			VEHICLE LIFT															
CM-5J	2	1	FA			VEHICLE LIFT WITH WHEEL FREE ACCESSORY			830902	830828	A	+	1								
CM-5J	3	1	EA			SERVICE LIFT			830902	830828	A	+	1								
CM-5J	4	1	SET			DUAL COMPRESSORS			830902	830828	A	+	1								
CM-5J	4	1	SET			DUAL COMPRESSORS			831010	830909	P	+	5								
CM-5J	5	1	LOT			MAT'L HANDLING EQUIP.			831127	831026	S	+	5								
CM-5J	6	4	EA			AIRLINE FILTER, 1/2''			830916	830929	A	-	1								
CM-5J	7	4	EA			AIRLINE FILTER, 3/4''			831010	831001	A	+	2								
CM-5J	8	1	SET			ASSORTED HOSES			831010	831001	A	+	2								
CM-5J	9	1	EA			AIR IMPACT HAMMER			831010	831001	A	+	2								
CM-5J	10	4	EA			AIR IMPACT WRENCH, 3/4''			831010	831001	A	+	2								
CM-5J	11	6	EA			AIR IMPACT WRENCH, 1/2''				840703		+	0								
CM-5J	12	1	EA			PULLER SET			831010	831001	A	+	2								
CM-5J	13	1	EA			PULLER SET, WIDE			830916	830929	A	-	1								
CM-5J	14	1	EA			PULLER SET, 10-TON			830916	830929	A	-	1								
CM-5J	15	1	EA			PULLER ACCESS. SET			830916	830929	A	-	1								
CM-5J	16	5	EA			MECHANIC'S TOOL SET			830916	830929	A	-	1								

52

CM-5J	16A	5 EA	MECHANIC'S TOOL SET	830916	830929	A	-	1
CM-5J	17	2 EA	MECHANIC'S LARGE TOOL SET	830916	830929	A	-	1
CM-5J	17A	2 EA	MECHANIC'S LARGE TOOL SET	830916	830929	A	-	1
CM-5J	18	3 SET	DIESEL EQUIP.	830916	830929	A	-	1
CM-5J	18A	3 EA	DIESEL EQUIP.	830916	830929	A	-	1
CM-5J	19	1 SET	BODY REPAIR TOOLS	830916	830929	A	-	1
CM-5J	20	1 SET	TORQUE WRENCH SET	830916	830929	A	-	1
CM-5J	21	2 EA	ADJUSTABLE GANTRY	830902	830828	A	+	1
CM-5J	22	2 EA	DIESEL NOZZLE TESTER	831010	831001	A	+	2
CM-5J	23	1 EA	CALIBRATION STAND	831010	831001	A	+	2
CM-5J	24	2 EA	VACUUM TEST SET	831010	831001	A	+	2
CM-5J	25	1 EA	TIRE CHANGER	831104	831101	A	+	1
CM-5J	26	1 EA	AIR BALANCER	831104	831101	A	+	1
CM-5J	27	1 EA	BEAD EXPANDER	831104	831101	A	+	1
CM-5J	28	1 EA	WHEEL BALANCER	831104	831101	A	+	1
CM-5J	29	1 EA	TIRE SPREADER	831104	831101	A	+	1
CM-5J	30	1 EA	TIRE TESTER	831104	831101	A	+	1
CM-5J	31	1 EA	TIRE SPREADER	831104	831101	A	+	1
CM-5J	32	1 LOT	TIRE TOOLS	831104	831101	A	+	1
CM-5J	32	1 LOT	TIRE TOOLS	830916	830929	P	-	1
CM-5J	33	1 LOT	MISC. TOOLS		840703		* +	0
CM-5J	34	1 EA	ALIGNMENT RACK		840703		* +	0
CM-5J	35	1 EA	ALIGNMENT SYSTEM	830916	830929	A	-	1
CM-5J	36	2 SET	ALIGNMENT TOOLS	830916	830929	A	-	1
CM-5J	37	1 EA	RADIATOR FLOW TESTER	830916	830929	A	-	1
CM-5J	38	1 EA	HOT CLEANING VAT	831010	831001	A	+	2
CM-5J	39	1 EA	SPRAY BOOTH	831010	831001	A	+	2
CM-5J	40	1 EA	DRYER	831010	831001	A	+	2
CM-5J	41	1 EA	RADIATOR TEST/REPAIR BENCH	831010	831001	A	+	2
CM-5J	42	1 EA	GLASS BEAD BLASTING SYSTEM	831010	831001	A	+	2
CM-5J	43	1 LOT	RADIATOR SHOP SUPPLIERS	831010	831001	A	+	2
CM-5J	44	1 EA	SURFACE GRINDER		840703		* +	0
CM-5J	45	1 EA	VALVE GUIDE & SETS MACHINE	830916	830929	A	-	1
CM-5J	46	1 EA	STORAGE SECTION	830916	830929	A	-	1
CM-5J	47	1 EA	WET SEAT GRINDER	830916	830929	A	-	1
CM-5J	48	1 EA	VALVE REFACER	830916	830929	A	-	1
CM-5J	49	1 EA	DRILL PRESS	830916	830929	A	-	1
CM-5J	50	1 EA	HYDRAULIC PRESS	831127	831026	S	+	5
CM-5J	51	1 EA	PEDESTAL GRINDER	830916	830929	A	-	1
CM-5J	52	1 LOT	BRAKE DRUM LATHE	831104	831101	A	+	1
CM-5J	53	1 EA	ASSEMBLY BENCH	830916	830929	A	-	1
CM-5J	54	1 EA	DISASSEMBLY BENCH	830916	830929	A	-	1
CM-5J	55	1 EA	DIESEL ENGINE STEAM CLEANER	830916	830929	A	-	1
CM-5J	56	1 LOT	SHELVING		840703		* +	0
CM-5J	57	2 EA	WORK BENCHES	830916	830929	A	-	1
CM-5J	58	1 EA	WALL SHELF	830916	830929	A	-	1
CM-5J	59	1 EA	STORAGE UNIT	830916	830929	A	-	1
CM-5J	60	1 EA	PALLET RACK	830916	830929	A	-	1
CM-5J	61	1 EA	INSPECTION MACHINE	830916	830929	A	-	1
CM-5J	62	1 EA	TRANSMISSION STAND	831217	831116	S	+	5
CM-5J	63	1 EA	TRANSMISSION STAND	831217	831116	S	+	5
CM-5J	64	2 EA	ENGINE STANDS	831217	831116	S	+	5
CM-5J	65	1 EA	JIB CRANE	831217	831116	S	+	5
CM-5J	66	1 EA	TUNE-UP CENTER	830916	830929	A	-	1
CM-5J	67	1 SET	TUNE-UP METERS		840703		* +	0
CM-5J	68	1 EA	TIMING LIGHT		840703		* +	0
CM-5J	69	1 EA	AVR TESTER		840703		* +	0
CM-5J	70	1 EA	DIESEL ENGINE TEST STAND		840703		* +	0
CM-5J	71	1 LOT	BATTERY TOOLS		840703		* +	0
CM-5J	72	1 LOT	BRAKE EQUIP.		840703		* +	0
				831127	831026	P	+	5

CM-5J	72	1 LOT	BRAKE EQUIP.				
CM-5J	73	1 LOT	LUBRICATION EQUIP.	840703	* +	0	
CM-5J	74	1 LOT	TOOL SETS	840703	* +	0	
CM-5J	75	1 LOT	SERVICE TOOLS	840703	* +	0	
CM-5J	76	1 EA	WELDER	840703	* +	0	
CM-5J	77	1 SET	WELDING SET	831217 831116 S	* +	5	
CM-5J	78	1 EA	DIESEL ENGINE STEAM CLEANER	840703	* +	0	
CM-5J	79	1 EA	BODY JACK	840703	* +	0	
CM-5J	80	2 PR	VEHICLE STAND	831217 831116 S	+ +	5	
CM-5J	81	2 PR	VEHICLE STAND	831217 831116 S	+ +	5	
CM-5J	82	1 EA	END LIFT	831217 831116 S	+ +	5	
CM-5J	83	1 EA	MANUAL SERVICE JACK	831217 831116 S	+ +	5	
CM-5J	84	1 EA	HYDRAULIC SERVICE JACK	831217 831116 S	+ +	5	
CM-5J	85	1 EA	HYDRAULIC DOLLY	831217 831116 S	+ +	5	
CM-5J	86	6 EA	RATCHET WRENCH	831217 831116 S	+ +	5	
CM-5J	87	2 EA	SANDER	831010 831001 A	+ +	2	
CM-5J	88	2 EA	PNEUMATIC HAMMER	831010 831001 A	+ +	2	
CM-5J	90	1 EA	DIE GRINDER KIT	831010 831001 A	+ +	2	
CM-5J	91	4 EA	PNEUMATIC DRILL	831010 831001 A	+ +	2	
CM-5J	92	1 EA	PNEUMATIC ORBITAL	831010 831001 A	+ +	2	
CM-5J	93	4 EA	CREEPERS	831010 831001 A	+ +	2	
CM-5J	94	4 SET	HEAVY EQUIP. REPAIR SET	840703	* +	0	
CM-5J	95	10 SET	METRIC TDOL SET	830916 830929 A	-	1	
CM-5J	96	2 EA	LUB. SYSTEM	830916 830929 A	-	1	
CM-5J	97	2 EA	LUB. SYSTEM	831217 831116 S	+ +	5	
CM-5J	98	1 LOT	AIRLINE REEL	831217 831116 S	+ +	5	
CM-5J	99	1 EA	CYLINDR COMPRESSION GAUGE SET	831217 831116 S	+ +	5	
CM-5J	100	10 EA	TIRE GAUGE	840703	* +	0	
CM-5J	101	2 SET	IMPACT SOCKETS	840703	* +	0	
CM-5J	102	2 SET	IMPACT SOCKETS	830916 830929 A	-	1	
CM-5J	103	1 SET	IMPACT SOCKETS	830916 830929 A	-	1	
CM-5J	104	2 EA	BATTERY CHARGER W/ TRANSFORMER	830916 830929 A	-	1	
CM-5J	105	2 EA	PAINT SPRAY GUN	830916 830929 A	-	1	
CM-5J	106	1 EA	COMB. TEST BENCH	840703	* +	0	
CM-5J	107	2 EA	BATTERY CHARGER & TRANSFORMER	831127 831119 A	+ +	2	
CM-5J	108	1 EA	WATER DISTILLATION APP.	830916 830929 A	-	1	
CM-5J	109	1 EA	ENGINE TEST BENCH W/ TRANSFORMER	840703	* +	0	
CM-5J	110	1 LOT	TEST EQUIP. FOR HYDRAULIC SYS	831127 831119 A	+ +	2	
CM-5J	111	1 EA	CRANK SHAFT GRINDING MACHINE	840703	* +	0	
CM-5J	112	1 EA	CYLINDER BORING MACHINE	831104 831101 A	+ +	1	
CM-5J	112	1 EA	CYLINDER BORING MACHINE	831104 831101 P	+ +	1	
CM-5J	113	1 EA	CYLINDER BORING MACHINE	840703	* +	0	
CM-5J	114	1 EA	LINE BORING MACHINE	831104 831101 A	+ +	1	
CM-5J	115	1 LOT	SPARES	831127 831119 A	+ +	2	
CM-5J	THRU	1 LOT	SPARES	831127 831119 P	+ +	2	
CM-5J	184	1 LOT	SPARES	840606 E	* +	0	
				840703 E	* +	0	

28

***** SUDAN BNG P.O. CM-6A/B *****

DESCRIPTION: PREFAB BUILDINGS

EXPEDITER: CONNOLLY
 AREA EXPEDITOR: N
 AWARD DATE: 830517
 REV NUMBER:
 REV DATE:
 SUPPLIER: PASCOE

CRITICAL:

SHIPPING POINT: COLUMBIA, GA
 PORT OF EXPORT: SAVANNAH, GA
 FAB START DATE: 830801
 SUPPLIER QUALITY: N

COMMENTS:

SITE SERVICE REP REQUIRED: 840622 ESTIMATED
 P.O. NUMBER: NEC/BNG/512
 CONTACT: JOHN HINESMAN/BOB ZAPICO
 1724 NORVHSIDE INDUSTRIAL BLVD.
 COLUMBUS, GEORGIA 31904
 (404) 324-3562
 TWX 810-758-4308 (PASCOE CLM)

ENGRG: INST. MANS SENT 831005, REC'D 831015.
 MATERIAL: COMPLETE.
 FAB: COMPLETE.
 DELIVERY: BOOKED ON SAM HOUSTON ETD 831007, APPROX. ETA 831108.
 CERT. OF COMPLETION REC'D 840216.

. ITEM DETAIL P.O.

E2730

* P.O.	ITEM	QUANTY	UNT.														
* NUMBER	.UN	.NO	.ORDERD	.MEA.	TAG NUMBER	DESCRIPTION	SHOP	PROM	REQD	CURR	.E.						
							ORDER NO	DATE	DATE	DATE	.A.*	Float					
CM-6A/B		1		1	EA	PREFABRICATED METAL BLDG.	C05176		831108	831119	A	-	1				
CM-6A/B		2		9	EA	PREFABRICATED METAL BLDG.	C05176		831108	831119	A	-	1				
CM-6A/B		3		10	EA	ROOF PANELS	C05176		831108	831119	A	-	1				
CM-6A/B		4		10	EA	WALL PANELS	C05176		831108	831119	A	-	1				
CM-6A/B		5		2	EA	CORNER TRIM	C05176		831108	831119	A	-	1				
CM-6A/B		6		2	EA	RAKE TRIM	C05176		831108	831119	A	-	1				

89

***** SUDAN BNG P.O. PS-1 *****

DESCRIPTION: VACUUM BREAKERS 15KV

EXPEDITER: CONNOLLY CRITICAL:
 AREA EXPEDITOR:
 AWARD DATE: 830228
 REV NUMBER: 1
 REV DATE:
 SUPPLIER: WESTINGHOUSE ELEC. CD.
 SHIPPING POINT: BLOOMINGTON, IN
 PORT OF EXPORT: BALTIMORE. MD
 FAB START DATE:
 SUPPLIER QUALITY: N

COMMENTS:

SITE SERVICE REP REQUIRED: LATEST ESTIMATE 840624.
 P.O. NUMBER: NEC/BNG/500
 CONTACT: SHERRY RENDR KEN BLACKBURN/SUE MCCLOSKEY
 9095 TELSTAR AVE. 2040 ARDMORE BLVD.
 EL MONTE, CA 91734 PITTSBURGH, PA 15221
 (818) 579-8189 (412) 636-3317
 TLX 688428 WESTINGHSE ELM TLX 866155 WE
 ARDMORE PGH

ENGRG: DWGS FORWARDED TO SUDAN 830804, REC'D 830814. NO BECHTEL REVIEW. LETTER SENT TO WESTINGHOUSE 830613 DIRECTING THEM TO PROCEED. DWG LIST REC'D 830815.

MATERIAL: COMPLETE.
 FAB: COMPLETE.
 DELIVERY: BOOKED ON ROBERT E. LEE ETD 831215, ETA 840116.
 CERT OF COMPLETION REC'D 840418.

NOTE: 1. LOC REC'D 830722. REP PREPARATION.
 2. QUOTATION FOR ADD'L FREIGHT REQUIRED. NO FORECAST DATE AVAIL FROM W.

. ITEM DETAIL P.D.			E2730	SHOP	PROM	REQD	CURR	E.	
* P.O.	ITEM	QUANTY	UNT.	ORDER NO	DATE	DATE	DATE	.A.	FLOAT
* NUMBER	UN	NO	ORDERD	MEAS	TAG NUMBER	DESCRIPTION			
PS-1	A	1	1			OUTLINE DWGS	830729	A	+ 0
PS-1	B	1	4			WIRING DIAGRAMS	830729	A	+ 0
PS-1	C	4	0			INSTRUCTION MANUALS	831215	S	+ 0
PS-1	D	4	4			SITE STORAGE INSTRUCTIONS	831215	S	+ 0
PS-1	E	26	2			ELECTRICAL TEST PROCEDURE	831215	S	+ 0
PS-1	F					QVD REQUIREMENTS			
*PS-1									
*PS-1									
*PS-1									
*PS-1									
PS-1	1	3	EA			VACUUM BRAKERS	ZE 1A-10088	840116	831215 S + 5
PS-1	2	3	EA			TRIP COILS	ZE 1A-10088	840116	831215 S + 5
PS-1	3	3	EA			CLOSE COILS	ZE 1A-10089	840116	831215 S + 5
PS-1	4	3	EA			BUSHINGS	ZE 1A-10088	840116	831215 S + 5
PS-1	5	1	EA			INTERRUPTER UNITS	ZE 1A-10088	840116	831215 S + 5
PS-1	6	3	EA			CT 1000/1 C100	ZE 1A-10088	840116	831215 S + 5
PS-1	7	3	EA			LATCH CHECK SWITCH	ZE 1A-10088	840116	831215 S + 5
PS-1	8	1	EA			SPRING CHARGED ENERGY STORAGE MECHANISM	ZE 1A-10088	840116	831215 S + 5

97

DESCRIPTION: DISTRIBUTION CAPACITORS & CONTROLS

EXPEDITER: CONNOLLY
 AREA EXPEDITER: N/C
 AWARD DATE: 830328
 REV NUMBER:
 REV DATE:
 SUPPLIER: MC GRAW-EDISON CO.

CRITICAL:

SHIPPING POINT: GREENWOOD, SC
 PORT OF EXPORT: EAST COAST PORT
 FAB START DATE: 830824
 SUPPLIER QUALITY: N

COMMENTS:

P.O. NUMBER: NEC/BNG/FP/K/1506, 1507
 CONTACT: KIM YUHAS

P.O. BOX 2850
 PITTSBURGH, PA 15230
 420 ROUSER RD.
 CORAOPOLIS, PA 15108
 (412) 777-3200
 (412) 777-3258

DALE SWANSON, JR.
 9550 FLAIR DR., SUITE 402
 EL MONTE, CA 91731
 (213) 575-7611

ENGRG: DWGS REC'D 830720, SENT TO SUDAN 830803. REC'D 830814.
 LETTER INSTRUCTING VENDDR TO PROCEED TO GO 830802.
 INST MANUALS TO SUDAN 831026. REC'D 831103.

MATERIAL: COMPLETE.
 FAB: COMPLETE.

DELIVERY: 840121 SHIPMENT BOOKED ON SAM HOUSTON ETD CHARLSTON
 BOOKING NO. 1638/83, ETA 840222.
 840225 SHIPMENT BOOKED ON STONEWELL JACKSON LEAVING
 NORFOLK, VA, ETA PORT SUDAN 840326.

NOTE:
 1. LOC REC'D AND APP'D 830721.
 2. CERT OF COMPLETIONS DUE 840522 AND 840630.

ITEM DETAIL P.O.

* P.O. NUMBER	UN	ITEM. QUANTY	UNT. ORDERD.	MEAS.	TAG NUMBER	DESCRIPTION	SHOP ORDER NO	PROM DATE	REQD DATE	CURR DATE	E.A.	FL.	
PS-2/3		1.1	30	AA		OUTLINE DWGS							
PS-2/3		1.2	30	AA		ASSY DWGS	EXGW-20343			830720	A	+	
PS-2/3		1.4	30	AA		WIRING DWGS	EXGW-20343			830720	A	+	
PS-2/3		2.0	30	AA		PARTS LIST (P.O. ITEMS 3,4,5)	EXGW-20343			830720	A	+	
PS-2/3		4.0	30	AA		INSTRUCTION MAN (P.O. ITEMS 3,4,5)	EXGW-20343			840121	E	+	
PS-2/3		4.4	10	BS		SITE STORAGE (P.O. ITEMS 3,4,5)	EXGW-20343			840121	E	+	
PS-2/3		15.0	30	AA		CLEAN & COAT PROC. (P.O. ITEMS 3,4,5)	EXGW-20343			840121	E	+	
PS-2/3		25.0	30	BS		INSP. PROC. (P.O. ITEMS 3,4,5)	EXGW-20343			840121	E	+	
PS-2/3			10	BS		QVD REQ.	EXGW-20343			840121	E	+	
PS-2/3													
PS-2/3		1	20	EA		600 KVA SWITCHED CAPACITOR	EXGW-20343			840221	840121	S	+
PS-2/3		2	12	EA		1200 KVA SWITCHED CAPACITOR	EXGW-20343			840221	840121	S	+
PS-2/3		3	20	EA		600 KVA UNSWITCHED CAPACITOR	EXGW-20343			840330	840229	S	+
PS-2/3		4	12	EA		1200 KVA UNSWITCHED CAPACITOR	EXGW-20343			840330	840229	S	+

91

PS-2/3	5	5 EA	2400 KVA SWITCHED CAPACITOR	EXGW-20343	840221	840121	S	+	5
PS-2/3	6	21 EA	SWITCHING CONTROL (TIME)	EXGW-20343	840330	840229	S	+	5
PS-2/3	7	21 EA	SWITCHING CONTROL (TEMP)	EXGW-20343	840330	840229	S	+	5
PS-2/3	8	100 EA	200 KVA CAPACTORS		840330	840229	S	+	5
PS-2/3	9	320 EA	600 KVA CUT-OUT FUSES		840330	840229	S	+	5
PS-2/3	10	200 EA	1200 KVA CUT-OUT FUSES		840330	840229	S	+	5
PS-2/3	11	150 EA	1800 KVA CUT-OUT FUSES		840330	840229	S	+	5
PS-2/3	12	4 EA	SWITCH CONTROL, TIME BIAS		840330	840229	S	+	5
PS-2/3	13	4 EA	SWITCH CONTROL, TEMP BIAS		840330	840229	S	+	5
PS-2/3	14	10 EA	11 KV DIST. CLASS ARRESTOR		840330	840229	S	+	5
PS-2/3	15	50 EA	LOAD BREAK FUSED CUT-OUT		840330	840229	S	+	5
PS-2/3	16	5 EA	FUSED 11 KV-120 V CNT PWR TRANSFORMER		840330	840229	S	+	5
PS-2/3	17	1 EA	OIL SWITCH		840330	840229	S	+	5
PS-2/3	18	1 LOT	PARTS FOR OIL SWITCHES	EXGW-20343	840330	840229	S	+	5
*PS-2/3	-25								

***** SUDAN BNG P.D. PS-4 *****

DESCRIPTION: RELAY TEST SETS & VARIABLE FREQUENCY GENERATOR

EXPEDITER: COMPLETE
 AREA EXPEDITOR: CRITICAL:
 AWARD DATE: 830216
 REV NUMBER:
 REV DATE:
 SUPPLIER: MULTI-AMP CORP.
 SHIPPING POINT: DALLAS, TX
 PORT OF EXPORT: DALLAS, TX (AIR)
 FAB START DATE: 830216
 SUPPLIER QUALITY: N

COMMENTS:
 P.O. NUMBER: NEC/BNG/501
 CONTACT: KAREN RIYAL
 4271 BRONZEWAY
 DALLAS, TX 75237
 (214) 333-3201
 TWX 910-861-9052 MULTI-AMP DAL
 ENGRG: VENDOR REPORTS ALL DOCS INCLUDED IN MANUAL SENT WITH SHIPMENT.
 MATERIAL: COMP.
 FAB: FAB START 820216A.
 FAB COMPLETE 830301A.
 DELIVERY: SHIPPED COMPLETE 830504 STONEWALL JACKSON V33. ETA PORT SUDAN 830615.
 NOTE: TELEX OF COMPLETION REC'D 830830.

.ITEM DETAIL P.O.		E2730									
* P.O.	.ITEM	QUANTY	UNT.	DESCRIPTION		SHOP	PROM	REQD	CURR	E.	
* NUMBER	.UN	.NO	.ORDERD	MEAS	TAG NUMBER	ORDER NO	DATE	DATE	DATE	A.	FLOAT.
PS-4	1.1	30	AA		OUTLINE DWGS						
PS-4	1.2	30	AA		ASSEMBLY DWGS				830301	A	+ 0
PS-4	1.4	30	AA		WIRING DIAGRAMS				830301	A	+ 0
PS-4	2.0	30	AA		PARTS LIST				830504	S	+ 0
PS-4	4.0	30	AA		INSTRUCTION MANUAL				830504	S	+ 0
PS-4	4.4	30	BS		SITE STORAGE & HANDLING DETAI				830504	S	+ 0
PS-4	15.0	30	Aa		CLEANING & COATING PROCEDURE				830504	S	+ 0
PS-4	25.0	30	BS		INSPECTION PROCEDURE				830504	S	+ 0
PS-4	29.0	30	BS		SHIPPING PREP PROCEDURE				830504	S	+ 0
*PS-4					QVD REQ.				830504	S	+ 0
*PS-4									830504	S	+ 0
*PS-4											
*PS-4											
PS-4	1	2	EA		RELAY TEST SETS	31264-68	KR		830615	A	+ 0
PS-4	2	1	EA		VARIABLE FREQUENCY GENERATOR				830615	A	+ 0
PS-4	3	1	LOT		SPARE PARTS FOR ITEM ONE				830615	A	+ 0
*PS-4	-17										
PS-4	18	1	LOT		SPARE PARTS FOR ITEM TWO				830615	A	+ 0
*PS-4	-25										

Handwritten mark

DATE 060484

PAGE 30

PS-5/1011	3B	4 EA
PS-5/1011	4-13	1 LOT
PS-5/1011	14	1 LOT
*PS-5/1011	-26	
PS-5/1011	27	1 LOT
*PS-5/1011	-40	

SF6 CIRCUIT BREAKERS, 34.5 KV
SPARES FOR ITEM 1
SPARES FOR ITEM 2
SPARES FOR ITEM 3

840621	E	*	+	0
840721	E	*	+	0
UNAVL		*	+	0

840621	E	*	+	0
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56

***** SUDAN BNG P.O. PS-6 *****

DESCRIPTION: SURGE ARRESTORS

EXPEDITER: CONNOLLY
 AREA EXPEDITOR: N
 AWARD DATE: 830405
 REV NUMBER:
 REV DATE:
 SUPPLIER: MC GRAW-EDISON

CRITICAL:

SHIPPING POINT: OLEAN, NY
 PORT OF EXPORT: NEW YORK, NY
 FAB START DATE:
 SUPPLIER QUALITY:

COMMENTS:

P.O. NUMBER NEC/BNG/FP/K/1508
 CONTACT: KIM YUHAS P.O. BOX 2850
 PITTSBURGH, PA 15230
 420 ROUSE RD.
 CORAOPOLIS, PA 15108
 (412) 777-3200
 (412) 777-3258
 TWX 710-793-3610 MCGRAW CORAA

DALE SWANSON, JR.
 9550 FLAIR DR., SUITE 402
 EL MONTE, CA 91731
 (213) 575-7611

ENGRG: DWGS REC'D 830920, TO SUDAN 830921, REC'D 830928.
 MATERIAL: COMPLETE.
 FAB: COMPLETE.
 DELIVERY: 14 WEEKS AFTER RECEIPT OF LETTER OF CREDIT.
 ALL ARRESTORS SHIPPED 840331 VIA ROBT. E. LEE,
 ETA 840501.

NOTES: LOC REC'D 830729. ORDER ENTRY 830801.
 FREIGHT INCREASE TO GO TO MHT 840402.

.ITEM DETAIL P.O.

E2730

* P.O. NUMBER	UN	NO	ORDERD	MEAS	TAG NUMBER	DESCRIPTION	SHOP ORDER NO	PROM DATE	REQD DATE	CURR DATE	E.A.	FLA.	
PS-6		1.1	30	AA		OUTLINE DWGS				830928	A	+	0
PS-6		2.0	30	AA		PARTS LIST				840328	S	+	0
PS-6		4.0	30	AA		INST. MAN				840328	S	+	0
PS-6		4.4	10	BS		SITE STOR HAND'L MANS				840328	S	+	0
PS-6			10	BS		QVD REC							
*PS-6													
*PS-6													
*PS-6													
PS-6		1	24	EA		SURGE ARRESTORS	EXOL-20602		840501	840331	S	+	5
PS-6		2	18	EA		MOUNTING PEDESTALS	EXPP-20603		840501	840331	S	+	5
PS-6		3	1	LOT		SPARES			840501	840331	S	+	5
*PS-6		-5											

Ab

DESCRIPTION: MULTI-RATIO BUSHING CT
220KV

EXPEDITER: COMPLETE
AREA EXPEDITOR: 830224
AWARD DATE: 830224
REV NUMBER:
REV DATE:
SUPPLIER: SQUARE-D COMPANY

CRITICAL:

SHIPPING PDINT: CLEARWATER, FL
PORT OF EXPORT NEW ORLEANS, LA
FAB START DATE: 830524
SUPPLIER QUALITY:

COMMENTS:

P.O. NUMBER: NEC/BNG/FP/K/1509
CONTACT: MIKE ALBERS
P.O. BOX 6440
CLEARWATER, FL 33518
(813) 447-2511

ENGRG: DWGS REC'D 830620. LETTER SENT 830622 NOTIFYING SQUARE
'D' TO PROCEED. REC'D SUDAN 830827.
COMPLETE.

FAB: BOOKED ON ROBT. E. LEE ETD 831222 ETA 840116.
DELIVERY: CERT OF COMPLETION REC'D 840409.
NOTE:

ITEM DETAIL P.O.		P.O.		ITEM QUANTY. UNT.		E2730		DESCRIPTION		SHOP	PROM	REQD	CURR	E.	.A. .FLOAT.		
* NUMBER	.UN	.NO	.ORDERD.	.MEA.	TAG NUMBER					ORDER NO	DATE	DATE	DATE	A.	+	0	
PS-7	1.1	30	AA										830620	A	+	0	
PS-7	2.0	30	AA					OUTLINE DWGS					840121	A	+	0	
PS-7	4.0	30	AA					PARTS LIST					840121	A	+	0	
PS-7	4.4	30	BS					INSTRUCTION MANUAL					840121	A	+	0	
PS-7		10	BS					SITE STORAGE & HANDLING DETAILS					840121	A	+	0	
*PS-7								OVD:									
*PS-7																	
*PS-7																	
PS-7	1	6	EA					MULTI-RATIO BUSHING CT		EX40262-			840116	840121	A	+	0
*PS-7										F0831484							
PS-7	2	1	EA					SPARE CT					840116	840121	A	+	0

67

* * * * * SUDAN BNG P.O. PS-8/12 * * * * *

DESCRIPTION: SUBSTATION TRANSFORMERS

EXPEDITER: CONNOLLY
 AREA EXPEDITOR: N
 AWARD DATE: 830425
 REV NUMBER:
 REV DATE:
 SUPPLIER: WESTINGHOUSE

CRITICAL:

SHIPPING POINT: SHARON, PA
 PORT OF EXPORT: BALTIMORE, MD
 FAB START DATE:
 SUPPLIER QUALITY:

COMMENTS:

SITE SERVICE REP REQUIRED: JULY 1984.
 P.O. NUMBER: NEC/BNG/503/507
 CONTACT: SHERRY RENDER KEN BLACKBURN
 9095 TELSTAR AVE. 2040 ARDMORE BLVD.
 EL MONTE, CA 91734 PITTSBURGH, PA 15221
 (818) 579-8189 (412) 636-3331
 TLX 688428 WESTINGHSE ELM TLX 866155
 WE ARDMORE PGH

ENGRG: DWGS REC'D 830729, 830801, 830803, FORWARDED TO SUDAN
 830805. DWG. REVIEW NOT AUTH. BY CLIENT, LETTER SENT
 830804 INSTRUCTING WESTINGHOUSE TO PROCEED PER SPEC.
 MATERIAL: COMPLETE. SPARES ON ORDER. DUE DATE FOR ALL 840515,
 PROTESTED TO WESTINGHOUSE THEY REPORT MGMT EXPEDITING.
 FAB: COMPLETE.

DELIVERY: 32 WKS AFTER RECEIPT OF LETTER OF CREDIT.
 840131 ON SAM HOUSTON, ETA 830301.
 SPARES TO SHIP 840530.

NOTE: 1. LOC REQUEST TO SUDAN 830729.
 LOC REC'D 831026, FORWARDED TO PITTS. OFFICE 831026.
 2. CERT. OF COMPLETION FOR FIRST SHIPMENT RECEIVED
 840529.

ITEM DETAIL P.O.

E2730

* P.O.	ITEM	QUANTY	UNT.			SHOP	PROM	REOD	CURR	E		
* NUMBER	UN	NO	ORDERD	MEA	TAG NUMBER	DESCRIPTION	ORDER NO	DATE	DATE	DATE	A	*.FLOAT
PS-8/12		1.1	60	AA		OUTLINE DWG						
PS-8/12		1.1	60	AA		OUTLINE DWG				830729	A	+ 0
PS-8/12		1.1	60	AA		OUTLINE DWG				830801	A	+ 0
PS-8/12		1.2	120	AA		ASSY DWG		830821		830812	A	+ 2
PS-8/12		1.3	120	AA		SHOP DET'L DWG				830812	A	+ 0
PS-8/12		1.4	70	AA		WIRING DIAG.				830812	A	+ 0
PS-8/12		1.4	70	AA		SCHEM. DWG				830803	A	+ 0
PS-8/12		4.0	90	AA		INST. MANS.				830803	A	+ 0
PS-8/12		9.0	120	BS		ACQUS. DATA REPT				840131	S	+ 0
PS-8/12			10	BS		QVO REQ.				840131	S	+ 0
*PS-8/12										840131	S	+ 0
*PS-8/12												
*PS-8/12												
*PS-8/12												
PS-8/12		1	1	EA		TRANSFORMER, 110-11 KV	ZE 1A-10090	840610	840301	840131	S	+ 5
PS-8/12		2	2	EA		TRANSFORMER, 110-33-11 KV		840610	840301	840131	S	+ 5

9/5

DATE 060484

PAGE 34

PS-8/12
+PS-8/12
PS-8/12

3
-25

1 EA
3520 GAL

SPARES
OIL

8406iO

840730 E * + 0

840301 840131 S + 5

69

* * * * * SUDAN BNG P.O. PS-9 * * * * *

DESCRIPTION: EL BAGER SUBSTATION

EXPEDITER: CONNOLLY
 AREA EXPEDITOR: N CRITICAL:
 AWARD DATE: 830512
 REV NUMBER:
 REV DATE:
 SUPPLIER: WESTINGHOUSE

SHIPPING POINT: USA - VARIOUS
 PORT OF EXPORT: USA - VARIOUS
 FAB START DATE:
 SUPPLIER QUALITY:

COMMENTS:

SITE SERVICE REP REQUIRED: 840515-VISA APPLICATION IN PROCESS.
 P.O. NUMBER: NEC/BNG/504
 CONTACT: SHERRY RENOER KEN BLACKBURN
 9095 TELSTAR AVE 2040 ARDMORE BLVD.
 EL MONTE, CA 91734 PITTSBURGH, PA 15221
 (213) 579-8189 (412) 636-3331
 TLX 688428 WESTINGHSE ELM TLX 866155
 WE ARDMORE PGH

SPECIAL NOTE: INCREASE FOR SERV. REP AND ADD'L MAT'L
 IN-HOUSE FOR REVIEW.

ENGRG: DWGS FOR TOWER TIE-DOWN FED EXPRESSED 840229.
 REQUIRE NEC RESPONSE. SOIL DATA REPORT INCOMPLETE.
 WESTINGHOUSE HAS REQUESTED NEC CONFIRM ACCURACY OF
 THEIR ASSUMPTIONS.
 PRELIMINARY FOUNDATION DWGS FED EXP 840328.
 MATERIAL: ALL PROCUREMENT COMPLETE.
 FAB: PROGRESS REPORT IN TYPING AT WESTINGHOUSE, TO BE MAILED
 840504.

1. 110 KV TRANS TIE-IN-RELEASE TO MAN 840406. SCHED
 INCOMPLETE. ESTIMATE SHIPMENT 840801.
2. 110 KV & 33KV STEEL STRUCTURES AND SWITCHES -
 RELEASE TO MANUFACTURER 840203, PARTIAL SHIPMENT
 840508.
3. CCVT - SCHED TO SHIP 840420, 3 WEEK SLIP.
4. PT, LINE TRAPS - LINE TRAPS SHIPPED 840508.
 3 WK SLIP FROM 840224, 7 WK SLIP FROM ORIGINAL
 REPORT.
5. 15 KV CABLE, IN FAB, SCHED TO SHIP TO EXPORT
 PACKER 840406, TO SHIP 840609.
6. 600 KV CABLE & CONNECTORS - RELEASE TO MAN 840518,
 SHIP 840801.
7. BATTERY CHARGER, GENERATOR - IN FAB TO COMPLETE
 840504. SHIP 840601, 6 WK SLIP FROM PREVIOUS
 REPORT.
8. RELAY PANELS - RELEASE TO MANUFACTURER ON 840224,
 MANUFACTURE AND PKG. TO COMPLETE 841001, 3 MONTH
 SLIP FROM PREVIOUS REPORT.
9. CONTROL HOUSE-CONST. ITEMS - SCHED TO SHIP 840801,
 FROM 840413 PREVIOUS REPORT.
10. HVAC, LIGHT AC & DC PANELS - SCHED TO SHIP 840801,
 SLIP FROM 840413 PREVIOUS REPORT.

107

***** SUDAN BNG P.O. PS-13 *****

DESCRIPTION: METAL-CLAD SWITCHGEAR

EXPEDITER: CONNOLLY CRITICAL:
 AREA EXPEDITOR:
 AWARD DATE: 830425
 REV NUMBER:
 REV DATE:
 SUPPLIER: AMI SYSTEMS
 SHIPPING POINT: AUSTIN, TX
 PORT OF EXPORT: HOUSTON, TX
 FAB START DATE: 830823
 SUPPLIER QUALITY:

COMMENTS:
 SERVICE REP. REQUIRED ON SITE; MID-NOVEMBER 1984.
 P.O. NUMBER: NEC/BNG/509
 CONTACT: DEEPAK MAZUMDAR
 2300 RUTLAND DRIVE
 AUSTIN, TX 78766
 (512) 836-1700
 TLX 910-874-1300 AMI AUS

NOTE: REQUEST FOR QUOTE FOR 2 EA VOLT METERS TO AMI 840427.
 AUTHORIZED BY NEC FORECAST FOR ISSUE OF AMENDMENT 840630.
 ENGRG: DWGS REC'D 830606. FURTHUR SUBMITTAL MAILED 830826.
 REC'D 830915, TO SUDAN 830916, REC'D 830925.
 DESIGN MODIFICATION REQUESTED BY NEC. 840309 TELEX
 TO AMI REQUESTED THEIR RESPONSE TO REQUEST. TELEX
 RESPONSE EXPECTED 840329.
 MATERIAL: COMPLETE. VOLTMETERS TO BE HAND CARRIED BY SERVICE
 REP.
 FAB: COMPLETE.
 DELIVERY: BOOKED ON VESSAL ROBERT E. LEE, ETD 831209, APPROX.
 ETA 840110.

. ITEM DETAIL P.O.		E2730									
* P.O.	. ITEM	QUANTY	. UNT.			. SHOP	. PROM	. REQD	. CURR	. E.	
* NUMBER	. UN	. NO	. ORDERD	. MEA	. TAG NUMBER	. DESCRIPTION	. ORDER NO	. DATE	. DATE	. DATE	. A.*. FLOAT.
PS-13	A	1	LOT			OUTLINE DWGS			830606	A	+ 0
PS-13	B					ASSEMBLY DWGS			831028		+ 0
PS-13	C					SHOP DETAIL DWGS			831028		+ 0
PS-13	D					ONE LINE DWGS			831028		+ 0
PS-13	E					ELEMNTARY DWGS			830925	A	+ 0
PS-13	F					WIRING DIAGRAMS			830925	A	+ 0
PS-13	G					FOUNDATION DETAILS			831028		+ 0
PS-13	H					ELECTRICAL TEST PROCEDURES			831122		+ 0
PS-13	I					SPARE PARTS LIST			831122		+ 0
PS-13	J										+ 0
PS-13	K					INSTRUCTION MANUALS			831122		+ 0
PS-13	L					SITE STORAGE DETAILS			831122		+ 0
PS-13	M					SHIPPING PREPARATION PROCEDURE			831122		+ 0
PS-13						QVD REQUIREMENTS:					+ 0
PS-13	N					ELECTRICAL TEST REPORTS			831122		+ 0
PS-13	O					CT TEST REPORTS			831122		+ 0
*PS-13	P					SHOP AND QUALITY TEST REPORTS			831122		+ 0

102

*PS-13
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1
 2
 3
 4
 5
 6
 7
 10
 -37
 38
 -42

1 EA
 1 EA
 2 SET
 1 SET
 1 LOT
 1 EA
 1 EA
 1 LOT
 1 LOT

SWITCHGEAR
 TEST CABINET
 TEST PLUGS
 TEST JUMPERS
 GROUND AND TEST DEVICE
 CIRCUIT BREAKER
 CIRCUIT BREAKER WITH CUBICLE
 SPARE PARTS
 SPECIAL TOOLS

24811

840110 831209 S + 5
 840110 831209 S + 5

103

***** SUDAN BNG P.O. PS-14 *****

DESCRIPTION: GROUNDING ZIGZAG TRANSFORMERS

EXPEDITER: CONNOLLY
 AREA EXPEDITOR: N
 AWARD DATE: 830405
 REV NUMBER:
 REV DATE:
 SUPPLIER: WESTINGHOUSE

CRITICAL:

SHIPPING POINT: SHARON, PA
 PORT OF EXPORT: BALTIMORE, MD
 FAB START DATE:
 SUPPLIER QUALITY:

COMMENTS:

SITE SERVICE REP REQUIRED: 840515. REQUEST FOR CONFIRMATION OF THIS DATE SENT TO SUDAN 840330.
 P.O. NUMBER: NEC/BNG/FP/K/1511
 CONTACT: SHERRY RENDER 9095 TELSTAR AVE. EL MONTE, CA 91734 (818) 579-8199 TLX 688428 WESTINGHSE ELM
 KEN BLACKBURN 2040 ARDMORE BLVD. PITTSBURGH, PA 15221 (412) 636-3331 TLX-866155 WE ARDMORE PGH

ENGRG: OUTLINE DWGS REC'D 830716 & 830801. FORWARDED TO SUDAN 830805, RECEIVED 830814. DWG REVIEW NOT AUTH. BY CLIENT, LETTER TO WESTINGHOUSE SENT 830808 REQUESTING THEY PROCEED.

MATERIAL: DWG LIST RECEIVED 830815. ARRESTORS, RELAYS DUE RECEIVED 831129, ARRESTORS INCORRECT REORDERED TENTATIVE DATE FOR RECEIPT 840113. MGMT AT WESTINGHOUSE ATTEMPTING TO IMPROVE.

FAB: COMPLETE. AWAITING ARRESTORS.

DELIVERY: PARTIAL SHIPMENT BOOKED ON ROBERT E. LEE ETD 831215, ETA 840116. 840131 SHIPMENT BOOKED SAM HOUSTON, ETA 840301.

NOTE: 1. LOC REC'D 830805.
 2. CERT OF COMPLETION REC'D 840409.

ITEM DETAIL P.O.

E2730

* P.O. NUMBER	UN	ITEM. QUANTITY	UNT. ORDERD. MEA.	TAG NUMBER	DESCRIPTION	SHOP ORDER NO	PROM DATE	REQD DATE	CURR DATE	E.A.	FLOAT
PS-14		1.1	60 AA		OUTLINE DWGS				830716	A	+ 0
PS-14		1.1	60 AA		OUTLINE DWGS				830801	A	+ 0
PS-14		4.0	60 AA		INSTRUCTIONS						+ 0
PS-14					QVD REQ.						+ 0
*PS-14					WIRING DIAG.				830801		+ 0
*PS-14											
*PS-14											
*PS-14											
PS-14		1	2 EA		GROUNDING TRANSFORMER	ZE 1A-10091			840115 831215	S	+ 5
PS-14		1	1 LOT		ARRESTORS				840301 840131	S	+ 5
PS-14		2	1 LOT		SPARES				840115 831215	S	+ 5
*PS-14		-5									

104

***** SUDAN BNG P.O. PS-15 *****

DESCRIPTION: COMPUTER HARDWARE

EXPEDITER: CONNOLLY
 AREA EXPEDITOR: N/A
 AWARD DATE: 830525
 REV NUMBER:
 REV DATE:
 SUPPLIER: PRIME COMPUTER

CRITICAL:

SHIPPING POINT: NEUTON, MA
 PORT OF EXPORT
 FAB START DATE:
 SUPPLIER QUALITY:

COMMENTS:

SITE SERVICE REP REQUIRED:
 PURCHASE ORDER NO: NEC/BNG/508
 CONTACT: JOHN KNECHT/BILL STALEY
 2102 BUSINESS CENTER DRIVE, SUITE 115
 IRVINE, CA 92715
 (714) 975-0262
 TLX: 910-595-2580 PRMIRV

NOTE: 840529 TELEX RECEIVED FROM SUDAN TO CANCEL PURSUIT OF CDNTRACT WITH PRIME.

. ITEM DETAIL P.O.

* P.O.	ITEM	QUANTY	UNT.	E2730	DESCRIPTION	SHOP	PROM	REQD	CURR	E.	..
* NUMBER	.UN	.NO	.ORDERD	.MEA	TAG NUMBER	ORDER NO	DATE	DATE	DATE	.A.	.FLOAT.
PS-15		1.1									
PS-15		1.2			OUTLINE DRAWING				HOLD	+	0
PS-15		1.4			ASSY DWGS				HOLD	+	0
PS-15		1.5			WIRING DIAGS				HOLD	+	0
PS-15		2.0			LOGIC DIAGS				HOLD	+	0
PS-15		3.0			SPARE PARTS LIST				HOLD	+	0
PS-15		4.0			COMP DATA SHEET				HOLD	+	0
PS-15		26.0			INSTRUCTIONS				HOLD	+	0
PS-15		29.0			PERF. TEST PROC.				HOLD	+	0
*PS-15					SHIPPING & PREP PROC.				HOLD	+	0
*PS-15									HOLD	+	0
*PS-15											
*PS-15											
PS-15		1	1	EA	MEMORY USING BOARDS						
PS-15		2	1	EA	158 MB DISK DRIVE				HOLD	+	0
PS-15		3	1	EA	TERMINAL MULTIPLEXOR				HOLD	+	0
PS-15		4	3	EA	15'' TERMINAL				HOLD	+	0
PS-15		5	2	EA	10 METERS DIRECT CONNECT CABLE				HOLD	+	0
PS-15		6	2	EA	15 METERS DIRECT CONNECT CABLE				HOLD	+	0
PS-15		7	2	EA	25 METERS DIRECT CONNECT CABLE				HOLD	+	0
PS-15		8	2	EA	100 METERS DIRECT CONNECT CABLE				HOLD	+	0
PS-15		9	1	EA	FORTRAN				HOLD	+	0
PS-15		10	10	EA	MAG TAPE CARTRIDGE				HOLD	+	0
PS-15		11	3	EA	PRINTER				HOLD	+	0
PS-15		12			CARTRIDGES				HOLD	+	0
PS-15		13	2	EA	TERMINAL				HOLD	+	0
PS-15		14	1	EA	HARD COPY UNIT				HOLD	+	0
PS-15		15	1	EA	DIGITAL PLOTTER				HOLD	+	0

105

PS-15	16	2 EA	PRINTER
PS-15	17	2 EA	PEDESTAL FOR PRINTER
PS-15	18	3 EA	4631 CABLE
PS-15	19	2 EA	POWER CORD
PS-15	20	2 EA	DISPLAY POWER CORD
PS-15	21	2 EA	HOST CABLE
PS-15	22	5 EA	PAPER (4 ROLLS)
PS-15	23	30 EA	COLOR PER SET
PS-15	24	120 EA	PAPER
PS-15	25	1 EA	POWER CORD
PS-15	26	2 EA	DUST COVER
PS-15	27	100 EA	RIBBON CASSETLE
PS-15	28		DOCUMENTATION
PS-15	-61		

HOLD	+	0

* * * * * SUDAN BNG P.O. PS-19 * * * * *

DESCRIPTION: OIL FILTRATION EQUIPMENT

EXPEDITER: CONNOLLY

CRITICAL:

AREA EXPEDITOR:

AWARD DATE: 830218

REV NUMBER:

REV DATE:

SUPPLIER: GULFGATE ENGRG.

SHIPPING POINT: HOUSTON, TX

PORT OF EXPORT: HOUSTON, TX

FAB START DATE:

SUPPLIER QUALITY: N

COMMENTS:

SITE SERVICE REP REQUIRED: 840307 TO 840314.
SERV. REP VISIT EXTENDED, 12 DAYS. AWAITING
SIGNATURE ON AMENDMENT FROM GULFGATE FOR ADD'L DAYS.
NO FURTHER VISITS REQUIRED.

P.O. NUMBER: NEC/BNG/511

CONTACT: JERRY CRUM/S. COLE

P.O. BOX 12524

HOUSTON, TX 77017

(713) 644-5558

TLX 76-2023 GULFGATENG HOU

ENGRG: DWGS SENT APRIL. MANUALS TO BE SENT AT TIME OF SHIPMENT.

MATERIAL: COMPLETE.

FAB: COMPLETE.

DELIVERY: SHIPPED ON WM HOOPER V13, ETD 830921, ETA 831101.

CONFIRMED BY TLX FROM SUDAN REC'D 831121.
COMPLETION TELEX REC'D 840209, DUE 840201.

NOTE:

.ITEM DETAIL P.O.

* P.O.	.ITEM	QUANTY	UNT.											
* NUMBER	UN	NO	ORDERD	MEA	TAG NUMBER	DESCRIPTION	SHOP	PROM	REQD	CURR	E.			
							ORDER NO	DATE	DATE	DATE	A.		FL	AT
PS-19	A					OUTLINE DWGS								
PS-19	B					INSTRUCTION MANUAL				831101	A	+	0	
PS-19	C					SITE STORAGE AND HANDLING				831101	A	+	0	
*PS-19	D					PERFORMANCE TEST REPORTS				831101	A	+	0	
*PS-19										831101	A	+	0	
*PS-19														
*PS-19														
PS-19	1	3	EA			OIL FILTRATION EQMT, TRAILER MOUNTED				831017	831101	A	-	2
PS-19	2	108	EA			ELEMENTS				831017	831101	A	-	2
PS-19	3	9	EA			GASKETS				831017	831101	A	-	2
PS-19	4	3	EA			TRANSFORMERS				831017	831101	A	-	2
PS-19	5	1	EA			INLET PUMP W/MOTOR				831017	831101	A	-	2
PS-19	6	1	EA			OIL DISCHG PUMP W/MOTOR				831017	831101	A	-	2
PS-19	7	1	EA			VACUUM PUMP				831017	831101	A	-	2

109

***** SUDAN BNG P.O. PS-20 *****

DESCRIPTION: COMPUTER PARTS

EXPEDITER: COMPLETE
 AREA EXPEDITOR: N/A
 AWARD DATE: 830329
 REV NUMBER:
 REV DATE:
 SUPPLIER: NCR CDRP.

CRITICAL:

SHIPPING POINT: DAYTON, OH
 PORT OF EXPORT: NEW YORK, NY (AIR)
 FAB START DATE:
 SUPPLIER QUALITY: N

COMMENTS:

P.O. NUMBER: NEC/BNG/FP/K/1516
 CONTACT: AL SURANO
 1700 PATTERSON AVE.
 DAYTON, OHIO 45479
 (513) 445-4169

ENGRG: NONE REQUIRED.
 MATERIAL: READY TO SHIP.
 DELIVERY: SHIPPED VIA TRANS MEDITERRANEAN AIRLINES AWB NO. 270-177-86016, ETA 831227.

NOTE: LOC REC'D 830729. AMEND EXTENDING SHIP DATES AND CHANGING ADDRESS SENT TO MHT 831113. MHT PROCESSING AS OF 831117. COMPLETION TELEX SENT 840124.

.ITEM DETAIL P.D.				E2730							
* P.O.	ITEM	QUANTY	UNT.	DESCRIPTION		SHOP	PROM	REQD	CURR	E.	
* NUMBER	UN	NO	ORDERD	MEA.	TAG NUMBER	ORDER NO	DATE	DATE	DATE	A.*	FLOAT.
PS-20	1	2	EA		DISK DRIVES			831227	831220	S	+ 1
PS-20	2	12	EA		DISK PACKS			831227	831220	S	+ 1
PS-20	3	1	EA		LOW SPEED TRUNK			831227	831220	S	+ 1
PS-20	4	2	EA		CABLE			831227	831220	S	+ 1
PS-20	5	2	EA		CABLE			831227	831220	S	+ 1

111

DESCRIPTION: AIR CONDITIONERS

EXPEDITER: CONNOLLY
 AREA EXPEDITOR: N
 AWARD DATE: 830512
 REV NUMBER:
 REV DATE:
 SUPPLIER: HEATH EQUIPMENT

CRITICAL:

SHIPPING POINT: LOS ANGELES, CA
 PORT OF EXPORT: LOS ANGELES, CA
 FAB START DATE:
 SUPPLIER QUALITY: N

COMMENTS:

P.O. NUMBER: NEC/BNG/FP/K/1517
 CONTACT: NANCY SANDERS
 P.O. BOX 6325
 CONCORD, CA 94524
 (415) 825-8400

TLX: 330493 HEATH EQCO PACH

NOTE: AMENDMENT FOR ADDITIONAL FREIGHT TO MHT 840519.
 ENGRG: INST TO GO WITH SHIPMENT.
 DELIVERY: 1 MONTH AFTER RECEIPT OF LOC.

831230 BOOKED ON WM. HOOPER ETA 840131. SPARES AT EXPORT
 PACKER. HEATH VERIFYING QUANTITIES AND PART NUMBERS WITH
 CARRIER. TO CONFIRM ACCURACY OF SHIPMENT BY 840215.
 PARTS TO SHIP UPON RECEIPT OF LC AMENDMENT. CONTRACT
 AMENDMENT FOR FREIGHT TO SUDAN 840330, REC'D 840408.
 NO AMENDMENT AT MHT AS OF 840418.

.ITEM DETAIL P.O.

* P.O. NUMBER	.UN	.ITEM.QUANTY	.UNT.	.ORDERD.MEA.	TAG NUMBER	DESCRIPTION	.SHOP ORDER NO	.PROM DATE	.REQD DATE	.CURR DATE	.E.A.	.FLOAT
PS-21A	1	6	EA			AIR CONDITIONER, CARRIER						
PS-21A	3	12	EA			FILTER GRILLS						
PS-21A	4	24	EA			FILTERS						
PS-21A	5	1	LOT			SPARES						
*PS-21A	-10											

840131 831230 S + 5
 840131 831230 S + 5
 840131 831230 S + 5
 840315 E + 0

***** SUDAN BNG P.O. PS-22 *****

DESCRIPTION: DESK-TOP COMPUTER

EXPEDITER: CONNOLLY
 AREA EXPEDITOR: N
 AWARD DATE: 830524
 REV NUMBER:
 REV DATE:
 SUPPLIER: NCR CORP.

CRITICAL:

SHIPPING POINT: DAYTON, OH
 PORT OF EXPORT: DAYTON AIRPORT
 FAB START DATE:
 SUPPLIER QUALITY: N

COMMENTS:

P.O. NO: NEC/BHG, FP/K/1518
 CONTACT: AL SURANO/BILL LA MASTER
 1700 PATTERSON AVE.
 DAYTON, OHIO 45479
 (513) 445-4169

ENGRG: NON REQUIRED.
 MATERIAL: COMPLETE.
 DELIVERY: REQUIRED DOCUMENTS FROM AID EXPECTED RETURNED TO NCR
 BY 840605. COMPUTER READY TO SHIP UPON RECEIPT,
 FORECAST 840608.

NOTE: AMEND EXTENDING SHIP DATE AND CHANGING ADDRESS REC'D
 831215.

ITEM DETAIL P.O.				E2730	SHOP	PROM	REQD	CURR	E	..
* P.O.	ITEM	QUANT	UNT	DESCRIPTION	ORDER NO	DATE	DATE	DATE	A	FLOAT
* NUMBER	UN	NO	ORDERD	MEAS	TAG NUMBER					
PS-22				NCR COMPUTER SYSTEM TO INCLUDE:						+ 0
PS-22	1			10 MEGABYTE WINCHESTER DISK				840608	E * +	0
PS-22	2			MEMORY				840608	E * +	0
PS-22	3			FLEX DISK				840608	E * +	0
PS-22	4			MEMORY UPGRADE				840608	E * +	0
PS-22	5			MEMORY UPGRADE				840608	E * +	0
PS-22	6			PRINTER W/PARALLEL INTERFACE				840608	E * +	0
PS-22	7			PLOTTER				840608	E * +	0
PS-22	8			OPERATING SYSTEM				840608	E * +	0
PS-22	9			ZK BUFFER FOR PRINTER				840608	E * +	0
PS-22	10			RS232 INTERFACE				840608	E * +	0
PS-22	11			PARALLEL INTERFACE W/CABLE				840608	E * +	0
PS-22	12			PRINTER CABLE				840608	E * +	0
PS-22	13			REPLACEMENT PRINTER HEAD				840608	E * +	0

112

DESCRIPTION: HF RADIO

EXPEDITER: CONNOLLY
 AREA EXPEDITOR: N
 AWARD DATE: 830328
 REV NUMBER:
 REV DATE:
 SUPPLIER: SCIENTIFIC RADIO
 SHIPPING POINT: ROCHESTER, NY
 PORT OF EXPORT: NEW YORK, NY
 FAB START DATE:
 SUPPLIER QUALITY: N

CRITICAL

COMMENTS:

SITE SERVICE REP REQUIRED: 840428 THRU 840524 -
 MAY RETURN AUGST.
 P.O. NUMBER: NEC/BNG/512
 CONTACT: DALE REMMINGTON (FOR SERV. REP.)
 367 ORCHARD STREET
 ROCHESTER, NY 14606
 (716) 458-3733
 TLX 978368 SIRAD

ENGRG: DWGS INCLUDED IN IOM WITH SHIPMENT.
 MOUNTING DETAILS REC'D 830804 POUCHED TO SUDAN 830805.
 ALSO INCLUDED IN MANUAL.
 MATERIAL: COMPLETE.

DELIVERY: ALL MATERIAL EXCEPT TEST EQUIPMENT SHIPPED. ZAS AIRLINE
 FLIGHT NO. 1, AWB 023-8956-1516 ETD 830807, ETA 830808.
 CONFIRMED REC'D 830818 TELECON 830824 W/SUDAN.
 LAST SHIPMENT BOOKED AIR FRANCE, FLIGHT 481 AWB 023-
 89571646 ETA 830825.

- NOTE:
1. LOC AMEND REQUIRED ALLGWING TRANS SHIPMENT, REC'D 830908. COMPLETION TELEX REC'D 830920.
 2. CONTRACT CHANGE FOR EXTENDED SERV. REP TO NEC FOR SIGNATURE CLARIFICATION OF CHARGES TO NEC 840530.

.ITEM DETAIL P.O.

* P.O. NUMBER	.UN	.ITEM NO	.QUANTY	.UNT	.ORDERD	.MEA	TAG NUMBER	DESCRIPTION	SHOP ORDER NO	PRDM DATE	REQD DATE	CURR DATE	.E.	.A.	.FLOAT
T-1		A						MOUNTING DETAILS AND DIMENSIONS	S-9844			830804	A	+	0
T-1		B						ASSEMBLY DRAWINGS				830818	A	+	0
T-1		C						WIRING DIAGRAMS				830818	A	+	0
T-1		D						CONTROL LOGIC DIAGRAMS				830818	A	+	0
T-1		E						INSTALLATION DETAILS				830818	A	+	0
T-1		F						OPERATION/MAINTENANCE PROCEDURES				830818	A	+	0
T-1		G						SPARE PARTS LIST				830818	A	+	0
T-1		H						STORAGE HANDLING DETAILS				830818	A	+	0
T-1		I						QVD REQUIREMENTS:				830818	A	+	0
T-1		J						CODE COMPLIANCE				830818	A	+	0
*T-1								PERFORMANCE TEST REPORT						+	0
*T-1														+	0
*T-1														+	0
*T-1														+	0
T-1												830712	A	+	0

14 EA

BASE STATIONS

S-9844

830818 A + 0

T-1	2	4 EA	HF LINEAR POWER AMPLIFIER	S-9844	830818 A	+	0
T-1	3	1 EA	HF MONITOR RECEIVER	S-9844	830818 A	+	0
T-1	4	2 EA	DIGITAL REMOTE CONTROL SYSTEM	S-9844	830818 A	+	0
T-1	5	2 EA	LOCAL CONTROL UNITS	S-9844	830818 A	+	0
T-1	6	13 EA	TRANSMIT DIPOLE ANTENNA KIT	S-9844	830818 A	+	0
T-1	7	1 EA	RECEIVE DIPOLE ANTENNA KIT	S-9844	830818 A	+	0
T-1	8	1 EA	SCANNER	S-9844	830818 A	+	0
T-1	9	4000 FT	RF TRANSMISSION LINE	S-9844	830818 A	+	0
T-1	10	28 EA	TOWER, 30 FOOT	S-9844	830818 A	+	0
T-1	11A	4 EA	ANTENNA COUPLER 1 KW	S-9844	830818 A	+	0
T-1	11B	4000 FT	ANTENNA COUPLER 150 WATT	S-9844	830818 A	+	0
T-1	11C	1 EA	CONTROL CABLE	S-9844	830818 A	+	0
T-1	11D	1 EA	OSCILLOSCOPE	S-9844	830818 A	+	0
T-1	11E	2 EA	RF VOLTMETER	S-9844	830818 A	+	0
T-1	11F	2 EA	T-CONNECTOR	S-9844	830818 A	+	0
T-1	11G	2 EA	WATTMETER	S-9844	830818 A	+	0
T-1	11H	1 EA	AUDIO VOLTMETER	S-9844	830818 A	+	0
T-1	11I	2 EA	SIGNAL GENERATOR	S-9844	830818 A	+	0
T-1	11J	2 EA	FREQUENCY COUNTER	S-9844	830818 A	+	0
T-1	11K	1 LOT	1 KW DUMMY LOAD	S-9844	830818 A	+	0
T-1	11L	1 LOT	MISCELLANEOUS HARDWARE	S-9844	830818 A	+	0
T-1	11M	1 LOT	ADDITIONAL PROBES, FUSES,	S-9844	830818 A	+	0
*T-1			FUSES, TEST CORDS				
T-1	13	1 LOT	SPARE PARTS	S-9844	830818 A	+	0
*T-1	-23						
T-1			TEST EQUIP.	S-9844	830825 A	+	0

***** SUDAN BNG P.O. T-2 *****

DESCRIPTION: VHF RADIO SYSTEM

EXPEDITER: CONNOLLY
 AREA EXPEDITOR: N
 AWARD DATE: 830317
 REV NUMBER:
 REV DATE:
 SUPPLIER: MOTOROLA, INC.

CRITICAL:

SHIPPING POINT: SCHAUMBURG, IL
 PORT OF EXPORT: CHICAGO, IL
 FAB START DATE: COMP.
 SUPPLIER QUALITY:

COMMENTS:

SITE SERVICE REP REQUIRED: 840417 THRU 840527.
 TO BE RESCHEDULED. DATE NOT DETERMINED.
 P.O. NUMBER: NEC/BNG/513
 CONTACT: JIM CAROLIS/RAY LOESS
 1301 E. ALGONQUIN ROAD
 SCHAUMBURG, IL 60196
 (312) 576-5657
 TWX 910-693-1481 CORPCMN SHBU

NOTE: CONTRACT AMENDMENT REQUIRED FOR RESCHEDULE OF SERVICE REP.

ENGRG: DOCUMENTS INCLUDED IN INSTRUCTION MANUAL AND SENT WITH SHIPMENT. PRELIMINARY COPY SENT 830825 TO B. PARSONS PRIOR TO HIS WITNESS OF SYSTEM TEST. FOUND ACCEPTABLE.

MATERIAL: COMPLETE.

FAB: COMPLETE.

DELIVERY: SHIPPED NY 831016 AWB TMA 270-1750-9903 ETA KHARTOUM 831018 FLIGHT NO 219.

NOTE: LOC REQUIRES AMEND TO ALLOW TRANS SHIP FOR AIR. AMEND REC'D 830907.

ITEM DETAIL P.O.

* P.O. NUMBER	.UN	.ITEM NO	.QUANTY	.UNT	.ORDERD	.MEA	TAG NUMBER	DESCRIPTION	SHOP ORDER NO	PROM DATE	REQD DATE	CURR DATE	.E.	.A.	.FLOAT.	
			1	LOT	1.1			MOUNTING DETAILS AND DIMENSIONS								
T-2		A			1.2			ASSEMBLY DWGS				831018	A	+	0	
T-2		C			1.4			WIRING DIAGRAMS				831018	A	+	0	
T-2		D			1.5			CONTROL LOGIC DIAGRAMS				831018	A	+	0	
T-2		E			4.1			INSTALLATION DETAILS				831018	A	+	0	
T-2		F			4.2			OPERATION PROCEDURES				831018	A	+	0	
T-2		G			4.3			MAINTENANCE PROCEDURES				831018	A	+	0	
T-2		H			4.4			STORAGE AND HANDLING DETAILS				831018	A	+	0	
T-2		J			18.0			QVD:				831018	A	+	0	
T-2		K			26.2			CODE COMPLIANCE						+	0	
T-2		L			26.2			PERFORMANCE TEST SCHEDULE				831018	A	+	0	
*T-2								PERFORMANCE TEST REPORT				831018	A	+	0	
*T-2												831018	A	+	0	
*T-2																
*T-2																
T-2	1		4	EA				BASE STATIONS, FIXED				831021	831018	A	+	1

115

T-2	2	27 EA	BASE STATIONS, MOBILE	831021	831018	A	+	1
T-2	3A	4200 FT	TRANSMISSION CABLE, STD	831021	831018	A	+	1
T-2	3B	1800 FT	TRANSMISSION CABLE, FLEX	831021	831018	A	+	1
T-2	4	43 EA	VEHICULAR MOBILE UNITS	831021	831018	A	+	1
T-2	5A	38 EA	VEHICULAR CHARGER UNITS	831021	831018	A	+	1
T-2	5B	15 EA	ROOF-TOP ANTENNA	831021	831018	A	+	1
T-2	6A	62 EA	HAND-HELD PORTABLES	831021	831018	A	+	1
T-2	6B	26 EA	TOUCH-TONE PADS	831021	831018	A	+	1
T-2	6C	36 EA	SELECTABLE PL CODE	831021	831018	A	+	1
T-2	6D	15 EA	HELIFLEX ANTENNA	831021	831018	A	+	1
T-2	6E	3 EA	MULTIPLE CHARGER UNITS	831021	831018	A	+	1
T-2	7	3 EA	MONITOR RECEIVERS	831021	831018	A	+	1
T-2	8	30 EA	SPARE BATTERIES FOR HAND-HELD PORTABLES	831021	831018	A	+	1
T-2	9	1 EA	TELEPHONE-RADIO AUDIO INTERCONNECT SYS	831021	831018	A	+	1
T-2	10	74 EA	PERSONAL PORTABLE CHARGERS	831021	831018	A	+	1
T-2	11	1 EA	OPERATOR CONSOLE FOR KLDC	831021	831018	A	+	1
T-2	12	1 LOT	INSTALLATION HARDWARE	831021	831018	A	+	1
T-2	14	1 LOT	TEST EQUIPMENT	831021	831018	A	+	1
*T-2	-73							
T-2	74-	1 LOT	SPARE PARTS	831021	831018	A	+	1
*T-2	1141							
T-2	1142	1 LOT	SPECIAL TOOLS	831021	831018	A	+	1
*T-2	-							
*T-2	1177							

DESCRIPTION: RURAL RADIO TELEPHONE

EXPEDITER: CONNOLLY
 AREA EXPEDITOR:
 AWARD DATE: 830419
 REV NUMBER:
 REV DATE:
 SUPPLIER: SR TELECOM

CRITICAL:

SHIPPING POINT: ST. LAURENT, QUEBEC
 PORT OF EXPORT: NEW YORK, NY
 FAB START DATE:
 SUPPLIER QUALITY: N

COMMENTS:

SITE SERVICE REP REQUIRED: 840424 THRU 840511. COMPLETE.
 P.O. NUMBER: NEC/BNG/514
 CONTACT: RON ROWLAND/DEREK WILLS
 8150 TRANS-CANANDA HWY
 ST. LAURENT, P.O.
 CANADA H4S 1M5
 (514) 335-1210
 TLX 05-824919

NOTE: SERV. REP STILL OUT OF COUNTRY. QUESTIONS FROM SUDAN
 TRANSMITTED 840522 TO BE ANSWERED UPON REPS RETURN.
 ENRGR: ALL DWGS AND INSTRUCTION MANUALS REC'D AT BECHTEL 830712
 SENT TO SUDAN 830715, REC'D 830721.

MATERIAL: COMPLETE.
 FAB: COMPLETE.
 DELIVERY: SHIPPED FROM MONTREAL TO NEW YORK 831122, SHIP VIA
 BRITISH AIRWAY FLIGHT NO. 069 831129, ETA 831130.
 AWB NO. 007-8472-3302.

NOTE
 1. CONTR. AMEND NO. 1 TO SUDAN 830916. NC ITEM.
 2. COMPLETION TELEX REC'D 831222.

ITEM DETAIL P.O.

* P.O. NUMBER	UN	ITEM NO	QUANTITY	UNT	ORDER MEAS	TAG NUMBER	DESCRIPTION	SHOP ORDER NO	PROM DATE	REQD DATE	CURR DATE	E.A.	FLOAT
T-3	A		1	LOT			MOUNTING DETAILS AND DIMENSIONS						
T-3	B						ASSEMBLY DRAWINGS						
T-3	C						WIRING DIAGRAM				830712	A	+ 0
T-3	D						CONTROL LOGIC DIAGRAM				830712	A	+ 0
T-3	E						SPARE PARTS LIST				830712	A	+ 0
T-3	F						INSTALLATION DETAILS				830712	A	+ 0
T-3	G						MAINTENANCE PROCEDURES				830712	A	+ 0
T-3	H						STORAGE & HANDLING DETAILS				830712	A	+ 0
T-3	I						QVD REQUIREMENTS:				830712	A	+ 0
T-3	J						CODE COMPLIANCE				830712	A	+ 0
*T-3							PERFORMANCE TEST REPORT						
*T-3											830712	A	+ 0
*T-3											830712	A	+ 0
*T-3													
T-3		1					KLDC CENTROL STATION EQMT						
*T-3	-17		1	LOT									
T-3	18		1	LOT			RADIO EQMT FOR KLDC	83035			831130	A	+ 0
											831130	A	+ 0

117

*T-3	-22		BURRI SITE OUTSTATION EQMT	831130 A	+	0
T-3	23	1 LOT				
*T-3	-35		KHARTOWN NORTH OUTSTATION EQMT	831130 A	+	0
T-3	36	1 LDT				
*T-3	-47		DOCUMENTATION	831130 A	+	0
T-3	41	1 LOT				
*T-3	-54		CENTRAL STATION SPARE PARTS	831130 A	+	0
T-3	55	1 LDT				
*T-3	-63		OUTSTATION SPARE PARTS	831130 A	+	0
T-3	64	1 LDT				
*T-3	-73		OSCILLOSCOPE	831130 A	+	0
T-3	74	1 EA	TRANS AND NOISE MEASURING SET	831130 A	+	0
T-3	75	2 EA	TESTS CORDS	831130 A	+	0
T-3	75	4 EA	MULTIMETER	831130 A	+	0
T-3	77	1 EA	TEST HANDSETS	831130 A	+	0
T-3	78	2 EA				

DESCRIPTION: EPBX

EXPEDITER: CONNOLLY
 AREA EXPEDITOR:
 AWARD DATE: 830126
 REV NUMBER:
 REV DATE:
 SUPPLIER: HARRIS CORP.

CRITICAL:

SHIPPING PDINT: NOVATO, CA
 PORT OF EXPORT: SAN FRANCISCO, CA(AIR)
 FAB START DATE: COMP.
 SUPPLIER QUALITY:

COMMENTS:

SITE SERVICE REP REQUIRED: TENTATIVE 840608
 P.O. NUMBER: NEC/BNG/515
 CONTACT: L.C. BLACKBURN/T. MATHEWS
 P.O. BOX 1188
 ONE DIGITAL DRIVE
 NOVATO, CA 94948
 (415) 472-2500
 TLX 340172 DTS INTL NOVA

ENGRG: INST. MAN & DWGS SENT WITH SHIPMENT.
 DOCS REQ'D INCLUDED IN MANUAL.
 MATERIAL: COMPLETE.
 FAB: COMPLETE.

DELIVERY: SHIPPED VIA TWA 830923, TRANS TO BA FLIGHT NO. BA/60/04
 TO SUDAN AWB 026-0515-7423 ETA 831005.

NOTE: AMEND TO LOC REQUIRED TO ALLOW TRANS-SHIP, REC'D 830907.
 AMEND TO LOC FOR SERVICE REP. REC'D 830829.
 COMPETION TELEX SENT 831102.

. ITEM DETAIL P.O.

* P.O. NUMBER	* UN	* ITEM NO	* QUANTITY	* UNIT	* ORDER MEAS	* TAG NUMBER	* DESCRIPTION	* SHOP ORDER NO	* PROM DATE	* REQD DATE	* CURR DATE	* E.A.	* .	* FLOAT
T-4		A	1.1				MOUNTING DETAILS & DIMENSIONS							
T-4		B	1.2				ASSY DWGS							
T-4		C	1.4				WIRING DIAGRAMS	831005	831005	A			+	0
T-4		D	1.5				CONTROL LOGIC DIAGRAMS	831005	831005	A			+	0
T-4		E	2.0				PARTS LIST	831005	831005	A			+	0
T-4		F	4.1				INSTALLATION DETAILS	831005	831005	A			+	0
T-4		G	4.2				OPERATION PROCEDURES	831005	831005	A			+	0
T-4		H	4.3				MAINTENANCE PROCEDURES	831005	831005	A			+	0
T-4		I	4.5				STORAGE AND HANDLING DETAILS	831005	831005	A			+	0
T-4		J	31.0				FACTORY TRAINING SCHEDULE	831005	831005	A			+	0
T-4		K	18.0				QVD:	831005	831005	A			+	0
T-4		L	26.2				CODE COMPLIANCE	831005	831005	A			+	0
T-4		M	26.2				PERFORMANCE TEST SCHEDULE	831005	831005	A			+	0
*T-4							PERFORMANCE TEST REPORT	831005	831005	A			+	0
*T-4								831005	831005	A			+	0
*T-4								831005	831005	A			+	0
*T-4								831005	831005	A			+	0
T-4														
T-4														
T-4	1		1	EA			PBX, 104-LINE							
T-4	2		2	EA			PBX, 16-LINE							

27839

831005 A + 0
 831005 A + 0

119

3 1 LOT

SPARE PARTS

DATE 060484

PAGE 55
831005 A + 0

120

* * * * * SUDAN BNG P.O. T-5 * * * * *

DESCRIPTION: DC POWER PLANT

EXPEDITER: COMPLETE
 AREA EXPEDITOR: N
 AWARD DATE: 830126
 REV NUMBER:
 REV DATE:
 SUPPLIER: STORED ENERGY SYSTEM

CRITICAL:

SHIPPING POINT: MOUNTAIN VIEW, CA
 PORT OF EXPORT: HOUSTON, TX
 FAB START DATE: 830425
 SUPPLIER QUALITY: N

COMMENTS:

P.O. NUMBER NEC/BNG/FP/K/1520
 PORT OF EXPORT: HOUSTON, TX (AIR SHIPMENT)
 (BATTERIES - OCEAN SHIPMENT)
 CONTACT: HERB KAEWERT/G. GAETANI
 2520 WYANDOTTE AVE.
 MOUNTAIN VIEW, CA 94043
 (415) 961-7500
 MAILGRAM

MATERIAL: COMPLETE.
 FAB: COMPLETE.
 DELIVERY: BATTERIES BOOKED STONEWALL JACKSON 831108, ETA 831209.
 CONFIRMATION REQUESTED FROM SUDAN 831228.
 CHARGERS SHIPPED 831014 AND 831028 VIA AWB 125-7692-4864
 ETA 831015 AND 831029.

ITEM DETAIL P.O.

E2730

P.O. NUMBER	UN	ITEM NO	QUANTY	UNIT	ORDER MEAS	TAG NUMBER	DESCRIPTION	SHOP ORDER NO	PROM DATE	REQD DATE	CURR DATE	E.A.	.*	FLOAT		
T-5		A	1	LOT	1.1		MOUNTING DETAILS & DIMENSIONS					831015	A	+	0	
T-5		B			1.2		ASSEMBLY DWGS					831015	A	+	0	
T-5		C			1.4		WIRING DIAGRAMS					831015	A	+	0	
T-5		D			1.5		CONTROL LGGIC DIAGRAMS					831015	A	+	0	
T-5		E			2.0		PARTS LIST					831015	A	+	0	
T-5		F			4.1		INSTALLATION DETAILS					831015	A	+	0	
T-5		G			4.2		OPERATION PROCEDURES					831015	A	+	0	
T-5		H			4.3		MAINTENANCE PROCEDURES					831015	A	+	0	
T-5		I			4.4		STORAGE & HANDLING DETAILS					831015	A	+	0	
T-5		J			31.0		FACTORY TRAINING SCHEDULE					831015	A	+	0	
T-5							QVD:					831015	A	+	0	
T-5		K			18.0		CODE COMPLIANCE					831015	A	+	0	
T-5		L			26.2		PERFORMANCE TEST SCHEDULE					831015	A	+	0	
T-5		M			26.2		PERFORMANCE TEST REPORTS					831015	A	+	0	
*T-5												831015	A	+	0	
*T-5												831015	A	+	0	
*T-5												831015	A	+	0	
*T-5												831015	A	+	0	
T-5		1	11	EA			24 VDC POWER SYSTEM	A4175				831015	A	+	0	
T-5		2	1	EA			48 VDC POWER SYSTEM					831015	A	+	0	
T-5		4	1	LOT			SPARE PARTS FOR ITEM ONE					831029	A	+	0	
T-5		5	1	LOT			SPARE PARTS FOR ITEM TWO					831029	A	+	0	
T-5							BATTERIES					831209	831108	S	+	57

101

***** SUDAN BNG P.O. T-6 *****

DESCRIPTION: TELEPHONE SETS, CABLE

EXPEDITER: COMPLETE
 AREA EXPEDITOR: N
 AWARD DATE: 830222
 REV NUMBER:
 REV DATE:
 SUPPLIER: ANIXTER-OHM INT'L.

CRITICAL:

SHIPPING POINT: HAWTHORNE, NY
 PORT OF EXPORT: NEW YORK, NY (AIR)
 FAB START DATE:
 SUPPLIER QUALITY: N

COMMENTS:

P.O. NUMBER: NEC/BNG/FP/K/1521
 CONTACT: PAT MARSHALL/JOE MORRIS
 2200 S. POST OAK RD.
 SUITE 305
 HOUSTON, TX 77056
 (713) 871-1777
 TLX 775477 OHMEC HON

DELIVERY: ETD 831104 VIA NIGERIAN AIRLINES, FLT. 405, AWB
 280-00991874 ETA 831105, 11:45.

NOTE: CORRECTED LOC REC'D 830721, REQUIRES AMEND ALLOWING TRANS
 SHIPMENT. REC'D 830907.

. ITEM DETAIL P.O.

E2730

* P.O.	ITEM	QUANTY	UNT.			SHOP	PROM	REQD	CURR	E.		
* NUMBER	UN	NO	ORDERD	MEA	TAG NUMBER	DESCRIPTION	ORDER NO	DATE	DATE	DATE	A	Float
T-6		1		30	EA	TELEPHONE SETS, ROTARY			831105	831105	A	+ 0
T-6		2		130	EA	TELEPHONE SETS, TOUCH-TONE, DESK			831105	831105	A	+ 0
T-6		3		30	EA	TELEPHONE SETS, TOUCH-TONE, WALL			831105	831105	A	+ 0
T-6		4		60	EA	GROUND RODS			831105	831105	A	+ 0
T-6		5		2000	FT	CABLE			831105	831105	A	+ 0
T-6		6		1000	FT	DIST. FRAME WIRE, 22 AWG, 2-COND.			831105	831105	A	+ 0
T-6		7		4000	FT	INSIDE STATION-WIRE, 22 AWG 4-COND.			831105	831105	A	+ 0
T-6		8		3000	FT	INSIDE STATION-WIRE, 22 AWG 25-PAIR.			831105	831105	A	+ 0
T-6		9		2000	FT	INSIDE STATION-WIRE, 22 AWG 6-PAIR.			831105	831105	A	+ 0
T-6		10		2000	FT	WIRE, BARE COPPER, 6 AWG			831105	831105	A	+ 0
T-6		11		2000	FT	WIRE, PLASTIC INSUL., BLACK			831105	831105	A	+ 0
T-6		12		1500	FT	WIRE, PLASTIC INSUL., WHITE			831105	831105	A	+ 0
T-6		13		5	EA	SPARE TELEPHONES			831105	831105	A	+ 0
T-6		14		20	EA	CORD SETS			831105	831105	A	+ 0
T-6		15		10	EA	TELEPHONE JACKS			831105	831105	A	+ 0

221

DATE 060484

PAGE 59

T-7
T-7
T-7

10
11
12

1 LOT
1 LOT
1 EA

SPARE PAINT
INSTALLATION TOOLS
WINCH

831107	831119	A	-	1
831107	831119	A	-	1
831107	831119	A	-	1

124

***** SUDAN BNG P.O. T-9 *****

DESCRIPTION: MISCELLANEOUS TOOLS

EXPEDITER: CONNOLLY
 AREA EXPEDITOR: N
 AWARD DATE: 830224
 REV NUMBER:
 REV DATE:
 SUPPLIER: ANIXTER-OHM INT'L.

CRITICAL:

SHIPPING POINT: HAWTHORNE, NY
 PORT OF EXPORT: NEW YORK, NY (AIR)
 FAB START DATE:
 SUPPLIER QUALITY: N

COMMENTS:

P.O. NUMBER: NEC/BNG/FP/K/1522
 CONTACT: PAT MARSHALL
 2200 S. POST OAK RD.,
 SUITE 305
 HOUSTON, TX 77056
 (713) 871-1777
 TLX 775477 OHMEC HOU

ALICE SHEILDS -
 ANIXTER EXPORT
 8 SAWMILL RIVER ROAD
 HAWTHORNE, NY 10532
 (914) 592-6230

DELIVERY: ETD 831104 VIA NIGERIAN AIRLINES FLT. 405, AWB
 280-00991874, ETA 831105, 11:45.
 ESTIMATE AIR SHIP OF REPLACEMENT 840415.

NOTE:
 1. AMEND TO LOC ALLOWING TRANS SHIP REC'D 830907.
 2. GOOD REC'D, DAMAGED, SHORT AND INCORRECT.
 5 ITEMS TO BE REPLACED. ALL READY TO SHIP. WAITING
 FOR AUTHORIZATION TO SHIP FROM NEC. STILL NO WORD
 FROM NEC AS OF 840529.

ITEM DETAIL P.O.

* P.O.	ITEM	QUANTY	UNT.	E2730	DESCRIPTION	SHOP	PROM	REQD	CURR	E.	ORDER NO	DATE	DATE	DATE	A.	FLOAT	
T-9		1	1	LOT	HAND TOOLS/TEST EQUIPMENT												
*T-9		-117										831105	831105	A	+	0	
T-9			1	LOT	REPLACEMENT FOR DAMAGE/SHORT												

HOLD + 0

125