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**Monthly Progress Report
for July 1992**

Presented by: Jim R Palmore

Contract No.: 263-0194-C-00-1035-00

Project No. : 263-0194

**Alexandria Electrical Network Modernization
Distribution System**

Black & Veatch International/Sabbour Associates

USAID/Cairo

18 August 1992

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I. Summary

The purpose of this report is to present project activities during July and project status through July. Project activities during the period includes Low Tension Overhead Networks rehabilitation, Service Box Rehabilitation, Medium Tension Cable design and construction monitoring, Capacitor Study Analysis, Preparation of Procurement Documents, and other tasks being implemented to help improve the distribution system operation.

The rate of progress during July was above the scheduled rate. Through July the project is 4.41 behind schedule. The project is behind schedule because work in progress is not complete to the stage where credit is given, procurement was delayed due to AEDC and USAID conflicts, computers not being available to commence training according to schedule, and design effort has been shifted to construction that was initiated ahead of the original project plan. Procurement is the most important phase to the overall project and emphasis is placed on getting all IFB's out for bid. While the project is behind schedule there are no items to the condition that will delay completion of the project work plan. There are not any obstacles holding up progress at the present.

Through June, the latest expenditure date available, the allocated professional manhour budget is 28.6 percent of the total budget. Through this period the manhour expended is 18.1 of the total budget. Through this same period the scheduled completion was 28.6 percent and the actual completion was 24.0 percent. We had completed 83.9 percent of the assigned effort while expending only 63.3 percent of the allocated budget. While the project is behind schedule, the expenditure is well below the budget amount.

II. Project Administration

1. The BVI staff did not change during this period. The current staff includes the following positions
 - Resident Project Manager
 - Resident Distribution Engineer
 - Resident Autocad Specialist
 - Resident Construction Specialist

2. The Sabbour Associates Staff remained unchanged during this period. The current staff includes the following positions
 - Project Coordinator (part time)
 - Assistant Resident Project Manager (Part time)
 - Two Distribution Engineers
 - Financial and Administration Director
 - Assistant Financial Director
 - Draftsman
 - Secretary
 - Secretary/ Receptionist
 - Executive Secretary (Part Time)
 - Executive Secretary

III. Project Activities

1. Low Tension Overhead Network Design for the Low Tension Overhead System continued progressing ahead of schedule. Design has been completed for ten of the thirteen districts. Through the end of July design work and release of construction documents is 34 percent ahead of schedule. Low Tension Overhead network construction was initiated during December 1991. The AEDC district construction crews are carrying out construction in their respective district. During July construction was completed in 13 Transformer Joints with construction in progress on 19 Transformer Points in 12 districts. Through July construction is 14.3 percent complete which is 2.5 percent behind schedule. This is not a problem to the overall construction program. Low Tension Overhead network construction is scheduled for all construction to be complete by December 1996. The districts that are falling behind schedule are the districts with a small number of Transformer Points to construct. These districts will be able to complete their construction well ahead of the program completion schedule, December 1996.
2. Low Tension Underground Network Rehabilitation of the Low Tension Underground System involves application of proper electrical connections and installation of new Service Boxes. The design effort includes identification of the Service Boxes for rehabilitation and preparation of work orders itemizing the material required to complete the work. Through the end of July design work is 86.7 percent complete which is 4.4 percent ahead of schedule.

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Construction for rehabilitation of Service Boxes is in progress utilizing surplus materials procured on the previous project. The AEDC district construction crews initiated construction in June 1991 with the monthly rate improving as construction was implemented in additional Districts. During January the districts conducted a detailed survey of the number of Service Boxes that require rehabilitation. During the survey the districts evaluated the rate they could carry out the construction. During January the construction schedule was updated to reflect the revised quantity of service boxes and the more realistic rate of construction. Through July construction is 44.6 percent complete which is 1.9 percent ahead of schedule.

3. Medium Tension (11kV) Cable effort this month includes design for new cable placement and monitoring cable placement being carried out by AEDC Contractor. AEDC issued work orders for 56.1 Km of construction during the 1991/1992 digging season, October 1991 through September 1992. Construction is complete on 45.6 km, with construction in progress on 8.3 km of 11kV cable.

All underground cable installed under this project will be local purchase of cable produced in Egypt. The project will develop a design guide for use in installation of cable under this project. This guide will be developed into a standard for AEDC use in their cable installation design. Meetings were held with the responsible AEDC departments to establish criteria for use in developing the design guide. Cable data was obtained from Egyptian cable manufacturers that provide physical data of the cable. Ampacity calculations were made with the results being similar to the manufacturer's data when using the same parameters. The computer program was utilized to create ampacity tables for cable Application operating under various conditions and configurations. A draft of the design guide standard was issued to AEDC for review during January.

4. Capacitor work and system analysis project activity related to the capacitor study included recording power factor and reactive power, and performing circuit analysis. During July recordings were completed for all transformers and circuits emanating from Gelim Substation. Recordings were also taken in four Distribution Points fed from Gelim Substation.

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The Capacitor study will identify the amount of reactive power to be compensated, determine where the capacitors will be located, and specify which locations will be fixed or switched. During July the computerized analysis was completed for analysis of feeders and circuits emanating from Central City and Gelim 66/11 kV Substations.

The economic analysis part of the capacitor Study was initiated during July. It is important to establish the criteria for use in the economic analysis, to prevent complete reworking after the study has been issued for review. A list of criteria was issued for AEDC and USAID review and input during July. A meeting will be held with AEDC in early August to finalize the criteria for use in the study .

The capacitor program is 48.1 percent complete which is 10.4 percent behind schedule. This task is behind schedule due to project computers not being available to perform the circuit analysis in a timely manner. This task will continue behind schedule until the study report is finalized during the first quarter of 1993. This will not have a negative impact on the overall completion of the project. The purpose of the capacitor study is to determine if capacitors are justified. And if so, where they should be located. The analysis work will be completed in ample time to issue an IFB for purchase of capacitor equipment to meet the installation schedule.

IV. Procurement

1. US Dollar Purchase

Activity relating to USAID purchased material involved the following items.

1.1 IFB#1

Bid documents for construction tools was issued for AEDC and USAID review on October 23. AEDC provided their comments on the technical section during December. This IFB was issued for final review in early February. After USAID issued a certificate for AEDC to administer a Host Country Contract, on 8 April, the announcement was sent for placement in the Commerce Business Daily. The announcement was published in CBD on April 17, 1992. Bid opening was held on June 22, 1992. Tender documents were

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sold to nine potential bidders. Bids were submitted by three bidders with each bidder quoting on all three line items. The bid evaluation was completed and forwarded by the bid evaluation committee on July 13.

1.2 IFB#2

This IFB will include 11kV and 380V Cable accessories, including splices, terminations, fault indicators, and other items not available from the local market. The IFB technical section was reviewed by AEDC during May. The document was updated to incorporate AEDC requirements, commercial section added, and issued for final AEDC and USAID review and approval on June 23. USAID approved the document and transmitted the Commerce Business Daily announcement on July 28, with a bid opening date of September 27.

1.3 IFB#3

Bid documents have been completed for construction vehicles, including bucket trucks, crane trucks, and fork lift trucks. This IFB was issued for AEDC technical specifications review on March 26. A technical review was held with AEDC on 3 May. AEDC requirements, including quantities, were incorporated and the document was issued for final review by AEDC and USAID on July 14.

1.4 IFB#4

Technical specifications for 42 items of test equipment have been prepared, the test equipment include equipment for testing all types of power apparatus. The specification include a van equipped for testing and location of faults in underground cable. The technical specifications have been reviewed by AEDC and updated to incorporate their comments. The complete IFB will be issued for AEDC and USAID final review during August.

1.5 IFB#5

This IFB is for purchase of overhead material and miscellaneous material and equipment. The technical specifications have been prepared and will be issued for AEDC technical review during August.

1.6 Commercial Section

The Commercial Sections were updated and reviewed by AEDC and USAID prior to issue with IFB #1. The review comments were incorporated into the IFB before issuing for final review. The Commercial Sections are being issued unchange, except for IFB specific section, in all IFB's. This is reducing the length of time required for USAID review.

2.0 Local Purchase

AEDC will procure a major part of material and equipment from local sources, with payment in Egyptian Pounds. Material for local purchase will include LTOH cable, underground cable, transformers, switchgear, and miscellaneous hardware.

BVI/SA will prepare the technical specifications and bill of material for these purchases. AEDC will receive bids and issue purchase orders according to their standard purchase procedures. Items of material included in the Work Plan for USAID financing that will be procured from local manufacturer's must be inspected and tested to assure they are produced to acceptable quality standards. BVI/SA will assist AEDC in establishing test requirements and witnessing the tests.

BVI/SA accompanied AEDC on an inspection trip to witness production and testing of low tension overhead cable being manufactured by Electro-Cable. Based on observations during the trip BVI/SA provided AEDC the acceptance test requirements that are required to verify the cable quality. Electro-cable is issuing factory production test and the cable is being checked as it is received by AEDC.

3.0 Status

Project procurement is 18.9 percent complete through July which is 9.8 percent behind schedule. There are several reasons procurement got behind schedule. AEDC insisted on a Bank guarantee, while USAID demanded the security be in the form of a Security Bond. This item required a considerable amount of time and effort to resolve. When we were ready to start issuing IFB's they could not be issued due to AEDC not being authorized to administer a Host Country Contract. Now that purchase

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documents are being processed the review and approval process is requiring more time and effort than was allowed in the original plan and schedule. This increase in time and effort is beyond our control. While the procurement has dropped three months behind schedule the current rate of progress is according to schedule, which means, while not dropping farther behind, we are also not catching up to the original schedule.

V. Training

Training AEDC personnel in proper operation and maintenance procedures is a vital part of this project. The major portion of training will be conducted by AEDC personnel actually performing the work assignments with the guidance of FVI/SA personnel. At the end of July AEDC has 14 employees assigned to the project. The following is a listing of titles for the personnel.

| <u>Number</u> | <u>Title</u> |
|---------------|-----------------------------------|
| 1 | Manager |
| 2 | Distribution Engineer |
| 2 | Distribution Engineer (Part time) |
| 1 | 11kV Cable Engineer |
| 4 | Capacitor Engineer |
| 3 | Capacitor Technician |
| 1 | Warehouse Inventory |

The project Work Plan requires autocad training to commence the first of October. The AEDC Provided Computers required for Autocad training were delivered on December 24 and the network was installed during January. Autocad training was implemented the first of February. Two engineers and three technicians have been assigned to the first group to receive autocad training. The trainees that did not have previous computer experience were enrolled in a short course to learn the basic computer operations. During July the trainees continued production training by working on single line diagrams and digitizing city maps. A second group of trainees, consisting of two engineers and two technicians, commenced training on the first of May.

VI Design

Project design through this period involves design of Low Tension Network and 11kV cable design. Low Tension Overhead Design includes rehabilitation of 563 Transformer Points. Low Tension Underground design includes rehabilitation of 9,070 Service Boxes. Medium tension (11 kV) design involves preparation of maps and Work Orders for placement of 347 Km of underground cable.

The composite design for all project design requirements is 39.0 percent complete through July, which is 2.8 percent behind schedule. Project design is behind schedule due to greater effort being placed on procurement and construction activities. While design is behind schedule it is not creating any delay to the overall project. The design is well ahead in issuing document for construction.

VII Schedule

Project planned and actual schedules are presented in earlier sections under their respective categories. The overall schedule for the entire project is 25.74 percent complete through July, which is 4.41 percent behind schedule.

The overall project is 4.41 percent behind schedule compared with 4.54 percent in June. While the progress is still behind schedule there is an improvement over the previous month. Thus, the rate for July was ahead of the schedule rate. It is anticipated the rate will continue to improve over the next several months. There are several factors that have contributed to the project being behind schedule. The project has been broken down into multiple tasks with each task assigned a budget. When an identifiable node within the tasks is reached a predetermined budget amount is shown as complete. There is ongoing work on several tasks for which no identifiable nodes have been reached. Thus no completion credit has been given. The project budget, used for development of the project schedule, included the autocad specialist to commence training in July 1991. Since the Autocad Specialist was not assigned until February 1992, there is limited credit for autocad training. During the period while the conflict over conditions in the Commercial Section of the IFB was being resolved and AEDC was not authorized to administer a Host Country Contract no IFP'S were issued. AEDC has insisted that key positions, identified to be filled by BVI/ Sabbour personnel, be filled by AEDC personnel. Not having experienced personnel in these positions requires extra effort on the part of BVI/SA personnel. Assignment of AEDC

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personnel to key positions early in the project can have a positive impact on the benefit of the overall project. However, it is a detriment to maintaining the project schedule that was based on having experienced personnel.

All issues have been resolved, certification approved, and IFB's are being issued. With IFB's in various stages of implementation the rate of procurement progress will improve during the coming months. With autocad and other computer training advancement to where project personnel are utilizing computers for production of project activities overall progress will improve.

VIII Attachments

To provide more in depth details of project activities and a graphical displays of progress for the various activities appendices A through M are attached.

File:28.0200
PC:PROGRESS
B.E.

BVI/Sabbour
Month: July 1992

Low Tension Overhead Network Design

| District | Estimated Number of T.P.'s | Completed This Month | | | | Completed To Date | | | |
|---------------------|----------------------------------|-----------------------------|------------------------------|--------------------|---------------------------|-----------------------------|------------------------------|--------------------|---------------------------|
| | | Working Maps Prepared | Field Surveys Complete | Design Complete | Work Order Complete | Working Maps Prepared | Field Surveys Complete | Design Complete | Work Order Complete |
| East/Central Zone | | | | | | | | | |
| Abukir * | 7 | - | - | - | - | 7 | 7 | 8 | 8 * |
| Sidi Blehr | 150 | - | - | 10 | 10 | 144 | 144 | 169 | 169 * |
| Slouf * | 97 | - | - | - | - | 97 | 97 | 118 | 118 * |
| Saba Pasha * | 50 | - | - | - | - | 50 | 50 | 55 | 55 * |
| Semouha | 32 | - | - | 2 | 2 | 32 | 32 | 33 | 33 |
| TOTAL | 336 | 0 | 0 | 12 | 12 | 330 | 330 | 383 | 383 |
| Central/West Zone | | | | | | | | | |
| Ibrahimia * | 45 | - | - | - | - | 45 | 45 | 49 | 49 * |
| Moharem Bey * | 44 | - | - | - | - | 44 | 44 | 50 | 50 * |
| Gomrok * | 76 | - | - | - | - | 76 | 76 | 86 | 86 * |
| Kabbary * | 9 | - | - | - | - | 9 | 9 | 9 | 9 * |
| Dekhela * | 12 | - | - | - | - | 12 | 12 | 14 | 14 * |
| Amria | 13 | 2 | 2 | 2 | - | 11 | 11 | 11 | 9 |
| Agami * | 8 | - | - | - | 1 | 8 | 8 | 8 | 9 * |
| NW Coast | 19 | - | - | - | - | 0 | 0 | 0 | 0 |
| Total | 226 | 2 | 2 | 2 | 1 | 205 | 205 | 227 | 226 |
| Grand Total | 562 | 2 | 2 | 14 | 13 | 535 | 535 | 610 | 609 |
| Percent Complete | 99.8 | 0.4 | 0.4 | 2.5 | 2.3 | 95 | 95 | 108.3 | 108.2 |

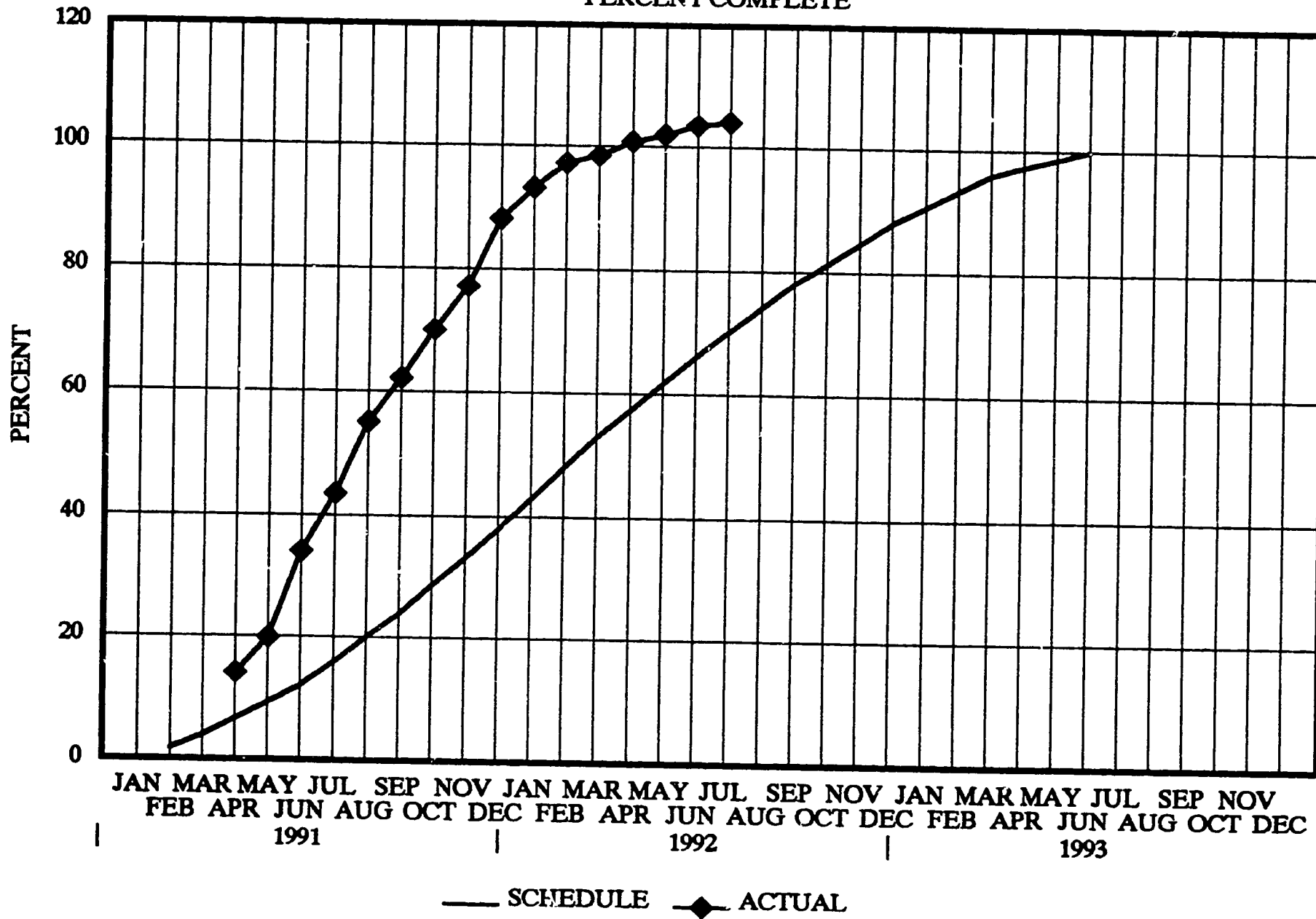
* Design completed

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LOW TENSION OVERHEAD NETWORK DESIGN PERCENT COMPLETE

Appendix B



Low Tension Overhead Network Construction

| District | Number of T.P.'s | Status This Month | | | Status To Date | | |
|---------------------|---------------------|--------------------|-----------------------|--------------------------|-------------------------|--------------------------|-------------|
| | | Transformer Points | | | Transformer Points | | |
| | | Monthly Rate | Under Construction | Construction Complete | Scheduled Completion | Construction Complete | Status * |
| East/Central Zone | | | | | | | |
| Abukir | 8 | 1 | 2 | — | 5 | 3 | Bh.S. |
| Sidi Bishr | 169 | 2 ** | 3 | 2 | 12 | 12 | A.S. |
| Siouf | 118 | 2 | 2 | 2 | 12 | 9 | Bh.S. |
| Saba Pasha | 55 | 1 | 1 | 2 | 6 | 7 | Ah.S |
| Semouha | 35 | 1 | 3 | — | 6 | 4 | Bh.S. |
| TOTAL | 385 | 7 | 11 | 6 | 41 | 35 | |
| Central/West Zone | | | | | | | |
| Ibrahimia | 49 | 1.5 | 2 | 2 | 9 | 4 | Bh.S. |
| Moharem Bey | 50 | 2 | 1 | 3 | 12 | 12 | A.S. |
| Gomrok | 86 | 1 *** | 1 | 1 | 11 | 11 | A.S. |
| Kabbary | 9 | 1 | 1 | 1 | 6 | 6 | A.S. |
| Dekhela | 14 | 0.66 | 1 | 0.7 | 3.3 | 3.3 | A.S. |
| Amria | 13 | 0.66 | 1 | 0.44 | 2.64 | 1.44 | Bh.S. |
| Agami | 8 | 1 | 1 | — | 4 | 1 | Bh.S. |
| NW Coast | 19 | | — | — | | — | |
| Total | 248 | 7.92 | 8 | 7.14 | 47.94 | 38.74 | |
| Grand Total | 633 | 14.82 | 19 | 13.14 | 88.94 | 73.74 | |
| Percent Complete | 100.6 | | 3 | 2.1 | 14.1 | 11.7 | |

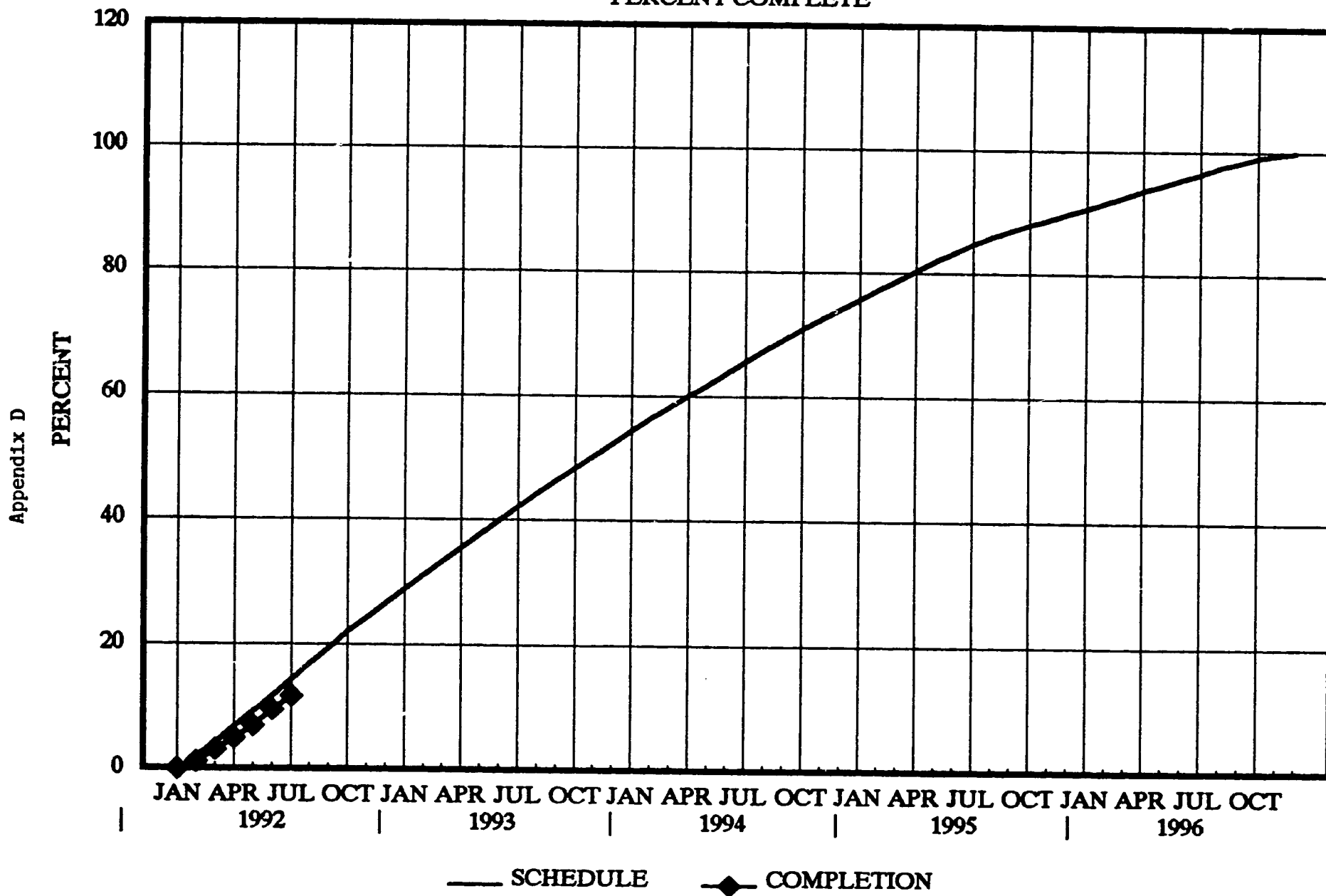
* A.S. : According to schedule; Ah.S. : Ahead of schedule;
Bh.S.: Behind schedule.

** Construction plan is based on 3 TPs per month from Oct. '92 - Oct. '96

*** Monthly Rate for incoming 3 months in Gomrok District

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LOW TENSION OVERHEAD CONSTRUCTION PERCENT COMPLETE



BV/Sabbour
Month: July 1992

Appendix E

Service Box Rehabilitation

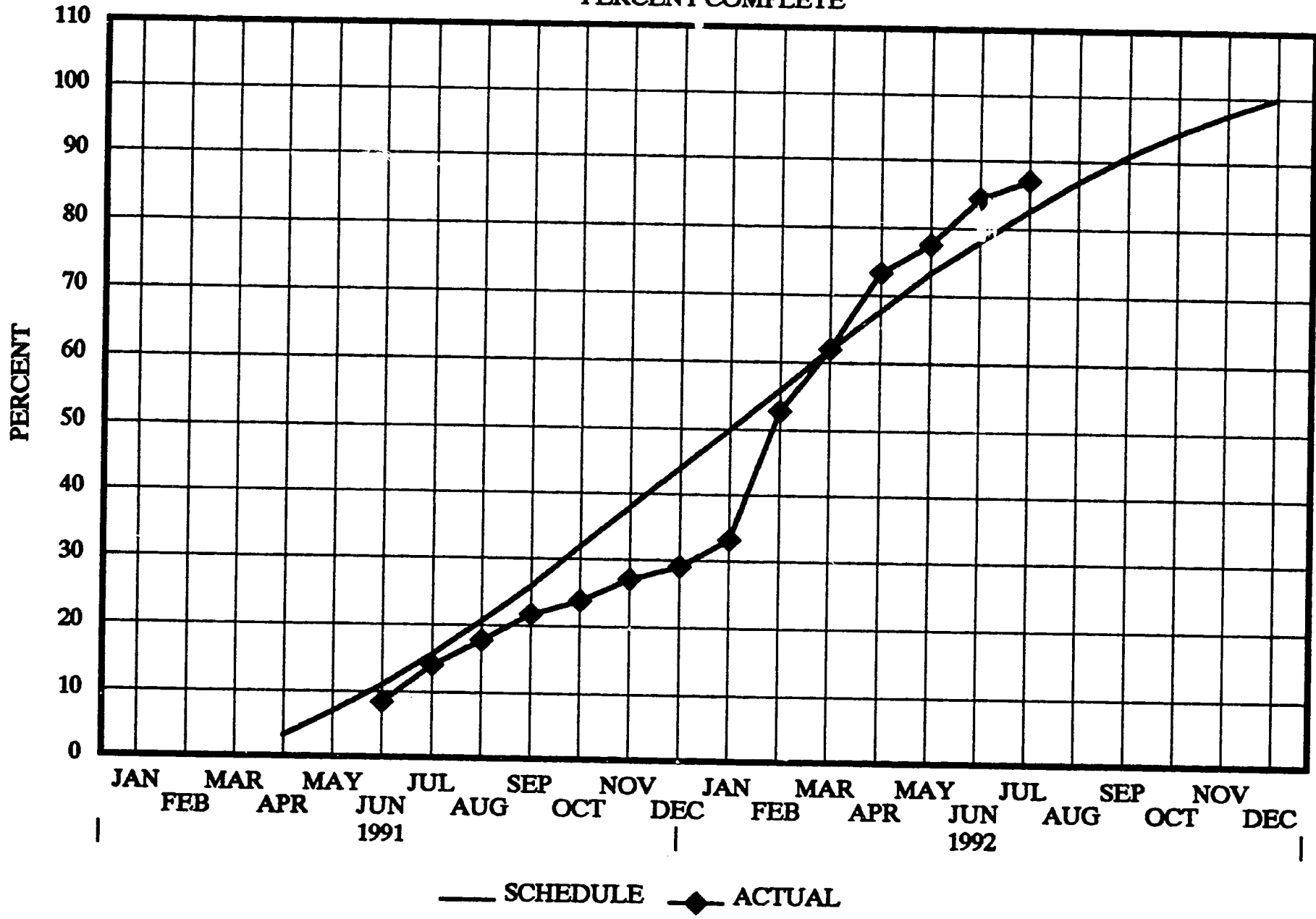
| District | S.B.'s To Rehab. | Completed This Month | | | | Completed To Date | | | |
|------------------------|------------------------|----------------------|------------------|-----------------|--------------------|-------------------|-------------------------|--------------------|--------------|
| | | Work Orders | | Construction | | Design | Construction | | Status ** |
| | | No. Issued | No. of S.B.'s | Monthly Rate | S.B.'s Complete | No. of S.B.'s | Scheduled Completion | S.B.'s Complete | |
| East/Central | | | | | | | | | |
| Abukir | 107 | - | - | - | - | 95 | 107 | 107 | C.C. |
| Sidi Bishr | 350 | 1 | 37 | 20 | - | 355 | 338 | 320 | C.C. |
| Siout | 696 | 2 | 40 | 30 | 43 | 717 | 336 | 365 | Ah.S. |
| Saba Pasha | 1,454 | 4 | 82 | 40 | 85 | 1,295 | 444 | 498 | Ah.S. |
| Semouha/ Sidi Gaber | 432 | 3 | 42 | 20 | 23 | 446 | 252 | 255 | Ah.S. |
| Total | 3,039 | 10 | 201 | 110 | 151 | 2,908 | 1,477 | 1,545 | |
| Central/West | | | | | | | | | |
| Ibrahimia | 277 | 1 | 40 | 20 | 21 | 263 | 157 | 150 | Bh.S. |
| Moharem Bey | 255 | - | - | 20 | 27 | 115 | 125 | 142 | Ah.S. |
| Gomrok | 190 | - | - | 20 | 28 | 278 | 135 | 203 | Ah.S. |
| Kabbary | 163 | 1 | 5 | 20 | 28 | 201 | 175 | 179 | Ah.S. |
| Dekhella | - | - | - | - | - | 0 | | 0 | |
| Agamy | 2,782 | - | - | 80 | 80 * | 2,602 | 1,312 | 1,354 | Ah.S. |
| Amria | 2,359 | - | - | 60 | 60 * | 1,489 | 519 | 469 | Bh.S. |
| North West Villages | - | - | - | - | - | 0 | | 0 | |
| Total | 6,026 | 2 | 45 | 220 | 244 | 4,948 | 2,423 | 2,497 | |
| Grand Total | 9,065 | 12 | 246 | 330 | 395 | 7,856 | 3,900 | 4,042 | |
| Percent Complete | 100 | - | 2.7 | - | 4.4 | 86.7 | 43.0 | 44.6 | |

* All service boxes have not been installed

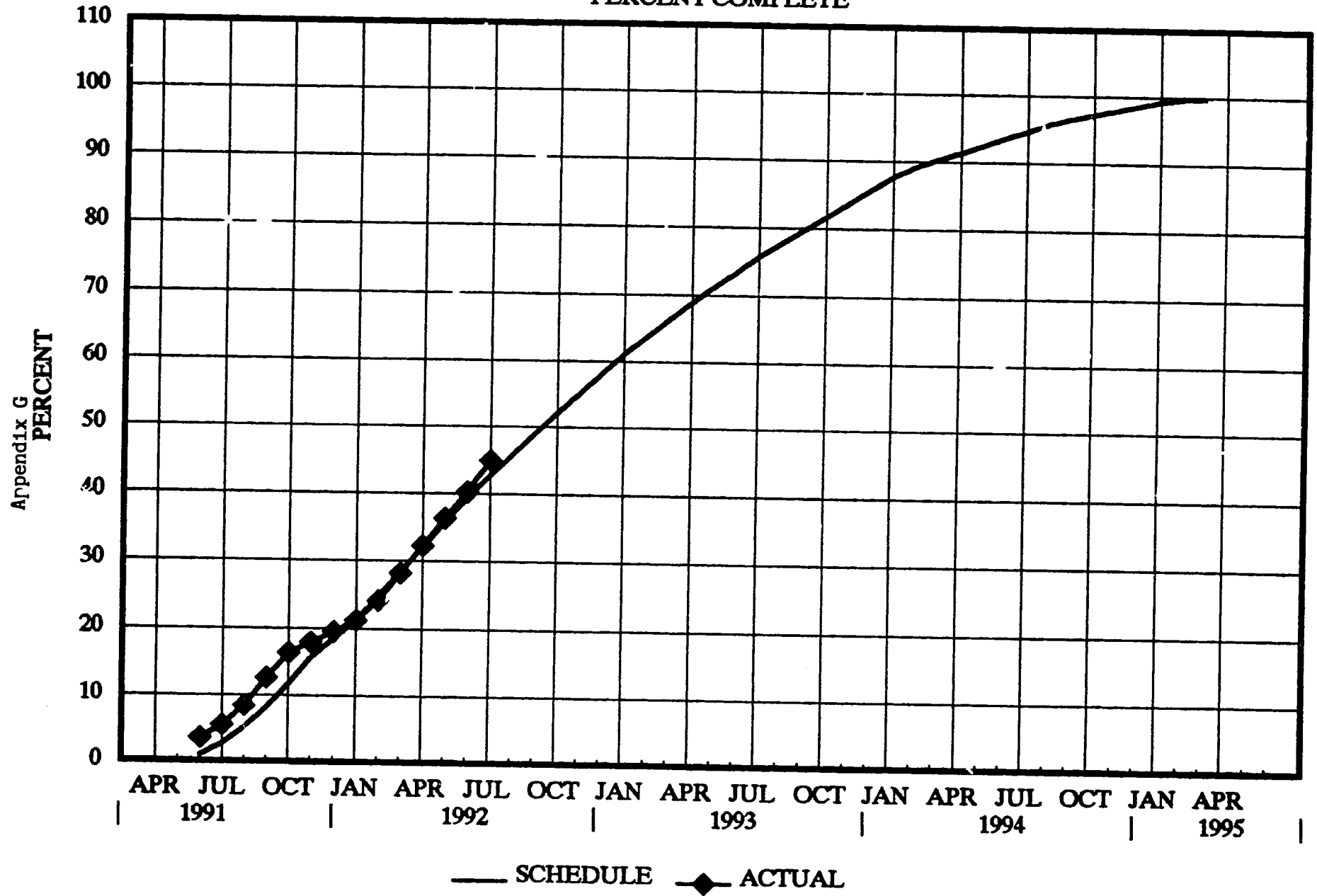
** A.S. According to schedule; Ah.S. Ahead of schedule;
Bh.S. Behind schedule; C.C. Construction completed.

LOW TENSION SERVICE BOX DESIGN PERCENT COMPLETE

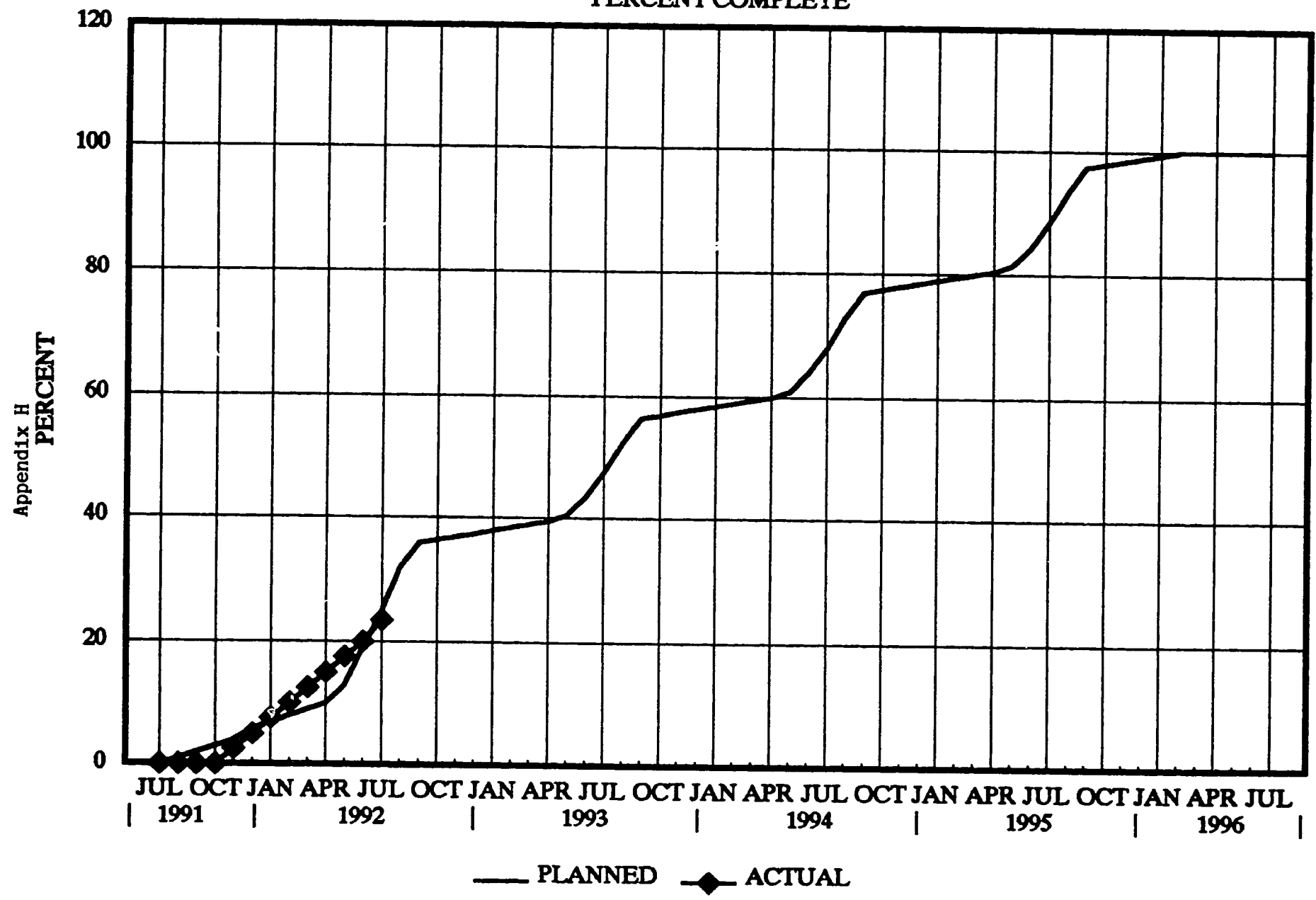
Appendix F



SERVICE BOX CONSTRUCTION PERCENT COMPLETE

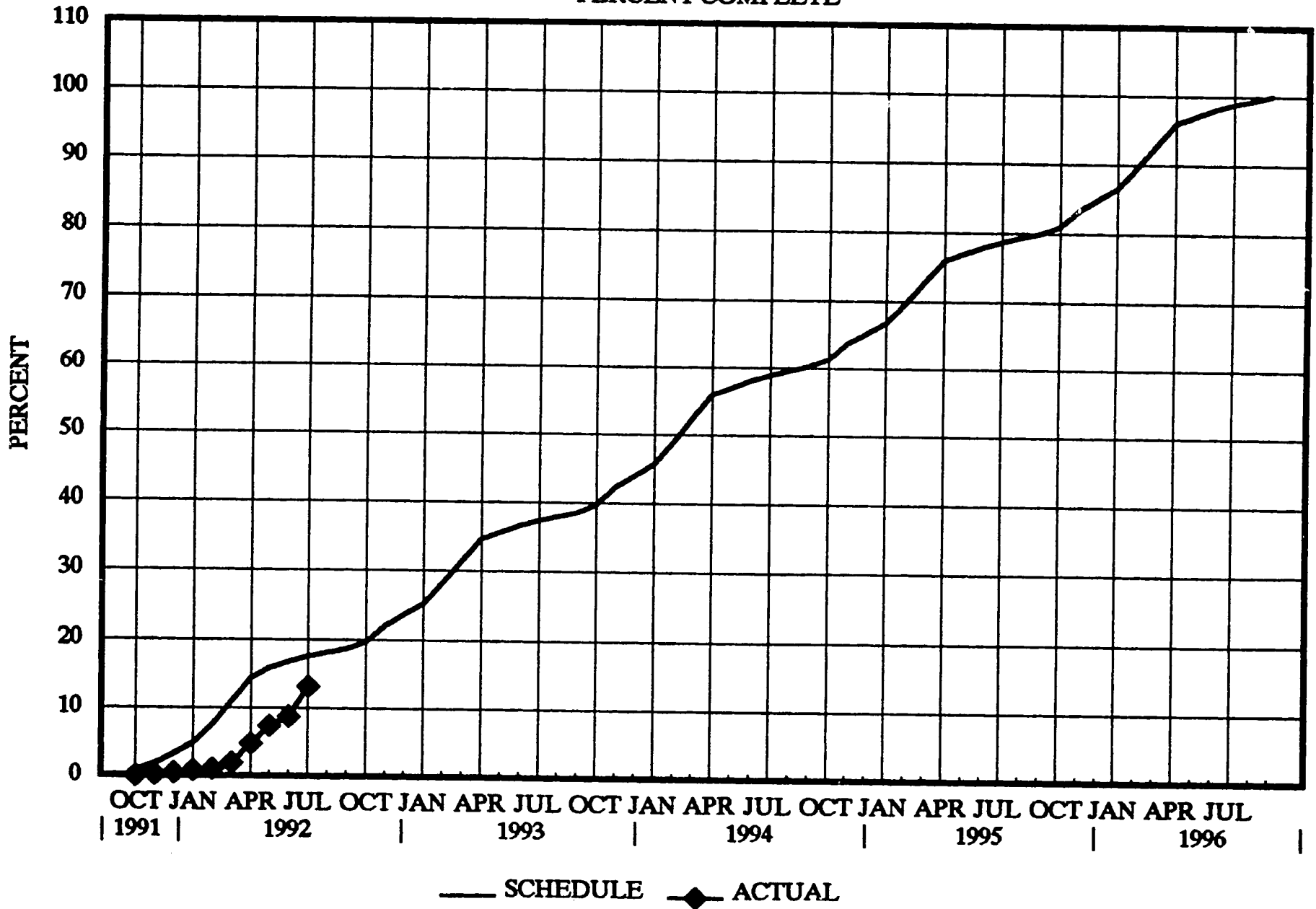


11KV CABLE DESIGN PERCENT COMPLETE



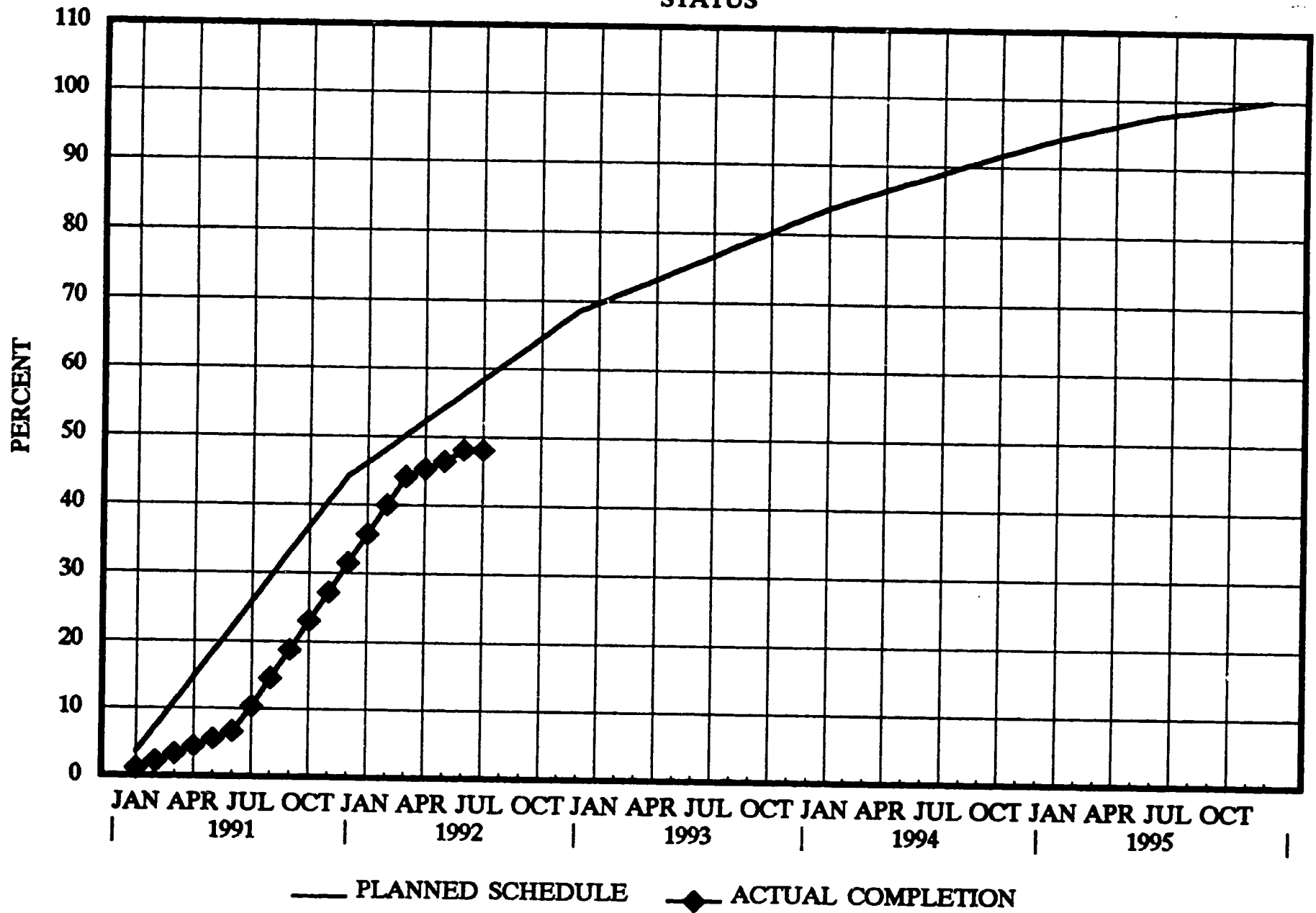
11KV CABLE CONSTRUCTION PERCENT COMPLETE

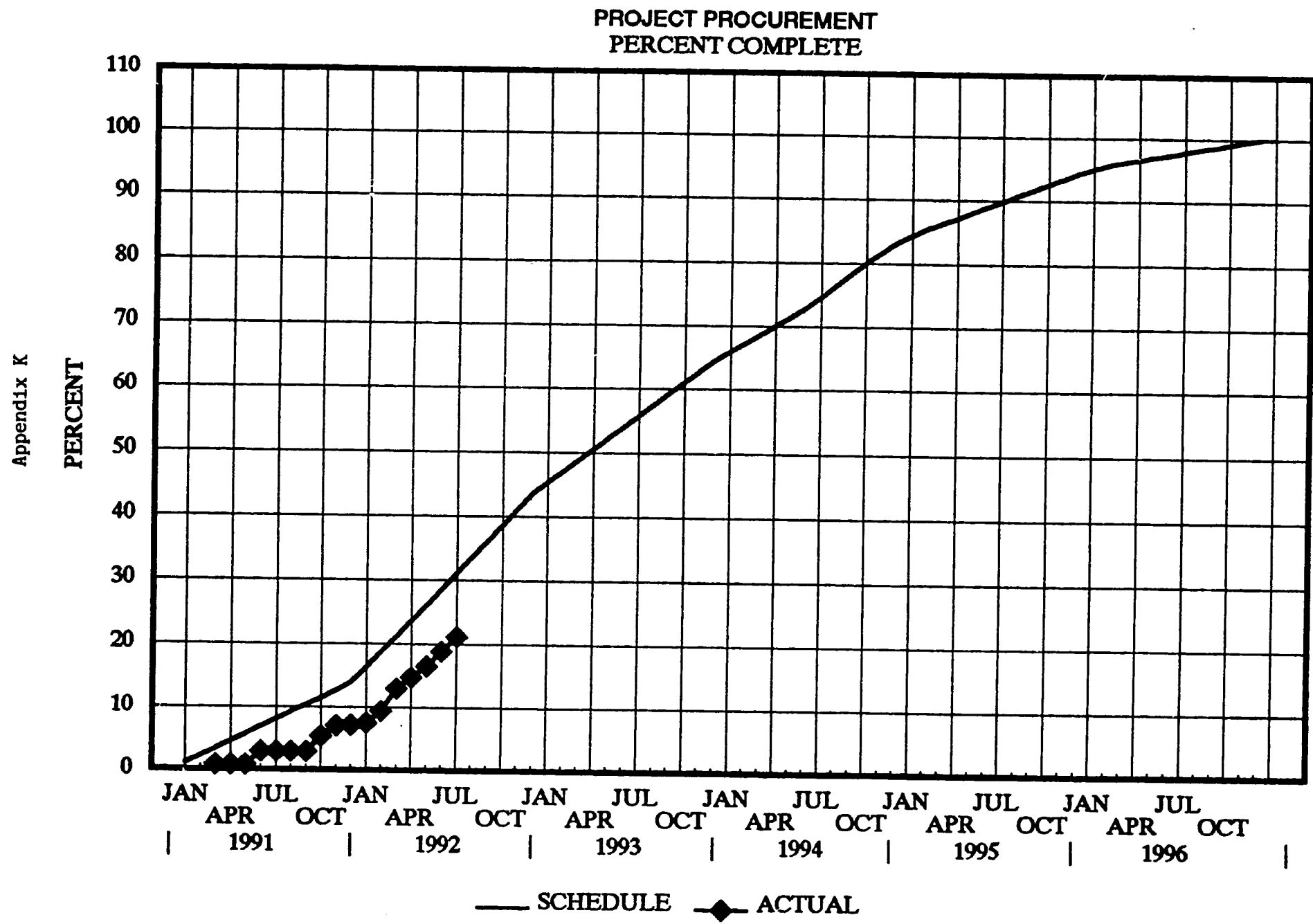
Appendix I

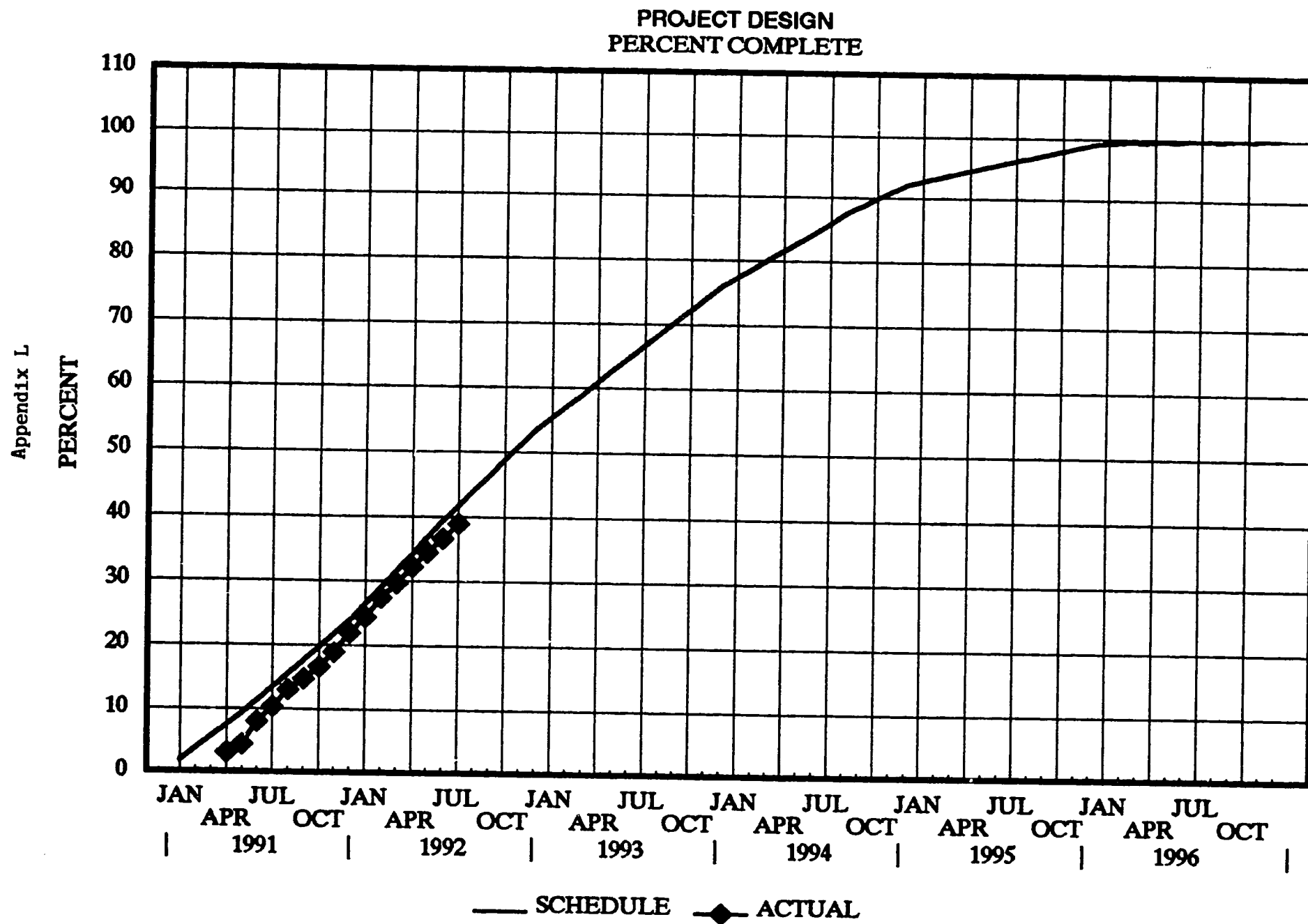


CAPACITOR PROGRAM STATUS

Appendix J







Appendix M

