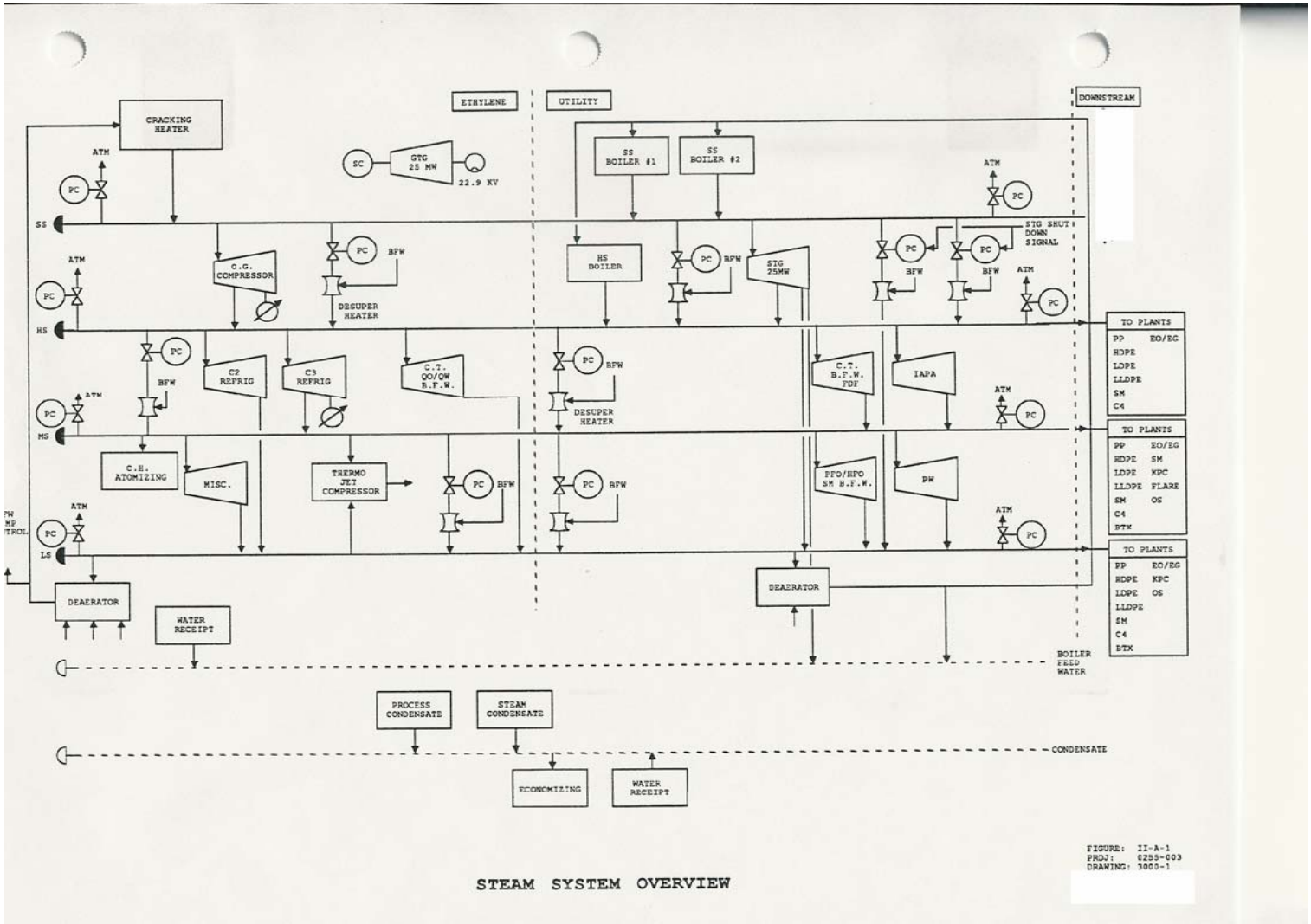
Client-XX Energy Management Project Summary

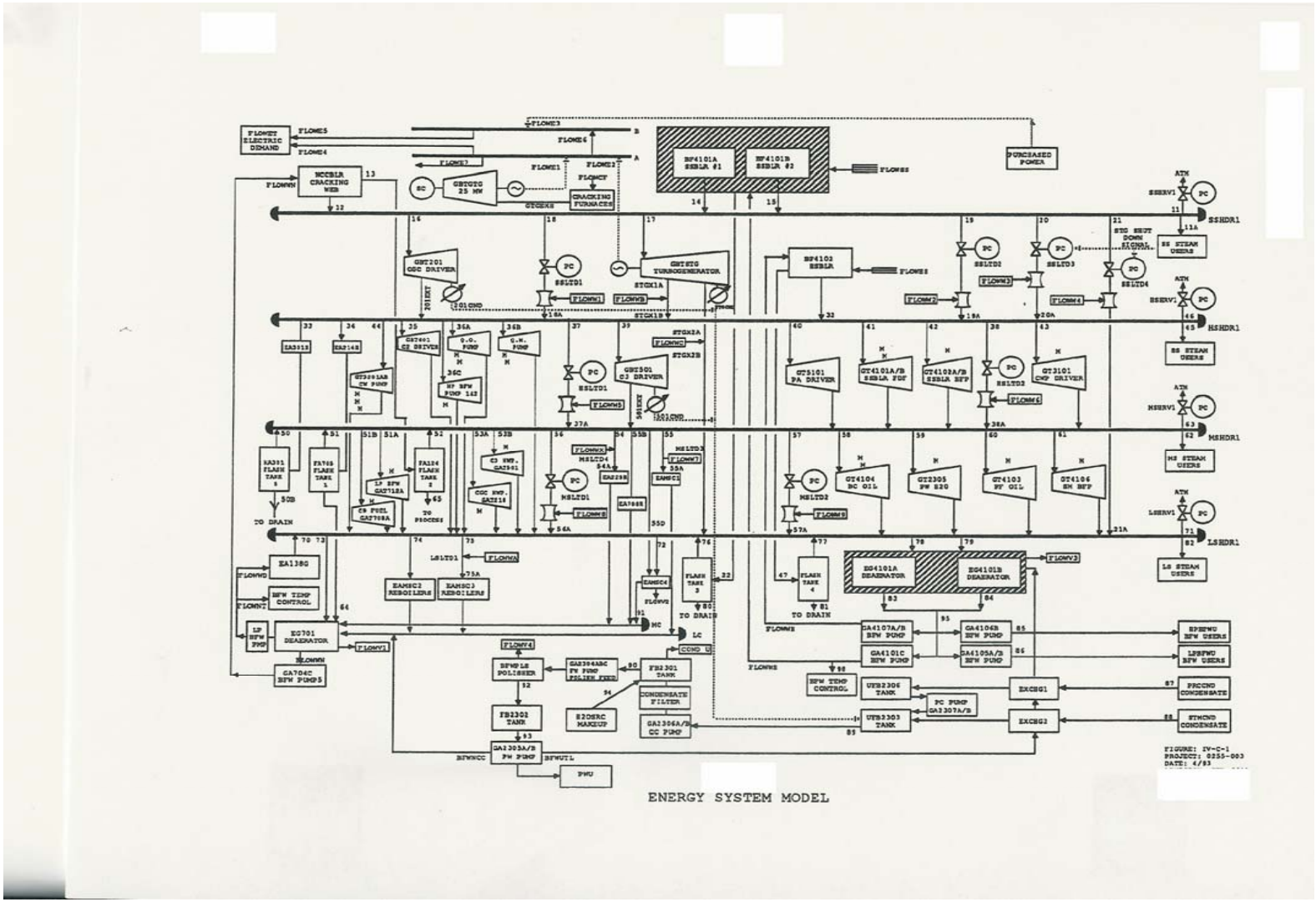
- This client had a petrochemical complex comprising of an ethylene and other downstream plants sharing a common utility system.

- The goal of the project was to develop and deploy computer applications that would significantly reduce the total expenditures for providing the utility needs of the complex.

Client-XX Energy Management System Overview



Client-XX Energy Management Optimization Model



Client-XX Energy Management Project Execution

The project was implemented in the following well defined phases, with each culminating in a formal document requiring customer acceptance before proceeding to next phase.

- Feasibility or functional design phase
- Detailed design
- Programming
- Factory Acceptance Testing
- Plant Integration
- Commissioning

Client-XX Energy Management Deployed Applications

- The application developed and deployed included individual unit performance improvement control applications and plant wide optimization.

- The specific applications that were deployed are shown in the following table of contents of the detailed design report.

DETAILED DESIGN REPORT

FOR

ENERGY MANAGEMENT

OF THE

CLIENT-XX GENERAL CHEMICALS DAESAN COMPLEX UTILITIES

CLIENT-XX GENERAL CHEMICALS CO., LTD.

DAESAN PETROCHEMICAL COMPLEX

DAESAN, KOREA

By:

AfriTek, Inc.
Dr. Alex C. Dunn

Revision 2.1
July, 1993

Document: A-40-0173
Project: 0255-006

TABLE OF CONTENTS

I. INTRODUCTION

A. GENERAL

This document is the Detailed Design Report for the Energy Management Advanced Controls Project at the CLIENT-XX GENERAL CHEMICALS complex in Daesan, Korea. It describes the utility area advanced process control and optimization functions to be configured in the Foxboro IA DCS system, the personal computer and the VAX computer platforms. The scope of this work was described in the final issue of the Functional Design Report dated March, 1993.

The purpose of this report is to provide documentation of the controls and calculations implemented in this project. This information is the basis for programming, integration and commissioning for the Advanced Control and Optimization Project. CLIENT-XX will complete programming and integration of the DCS controls based on the design as presented. AFRITEK will provide support for the programming and integration phases and will commission the controls.

This report is designed to satisfy the requirements of the project engineers, plant control engineers and the plant operations personnel. It provides the information necessary to understand the overall operation of the advanced control and optimization system. The sections give the operating and control objectives for the steam, electrical and optimization applications and drawings for each strategy. It also provides the engineering information necessary to program and configure, trouble-shoot and maintain all of the advanced control functions.

This document will be revised during software development and commissioning to reflect updates to the calculations or control functions. The document provides the basis for the operation and maintenance of the control system.