

# Forsite, a Multiple-Project Management System:

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## Production of Critical-Path Development Schedules for Geothermal Electric- Power-Generation Projects

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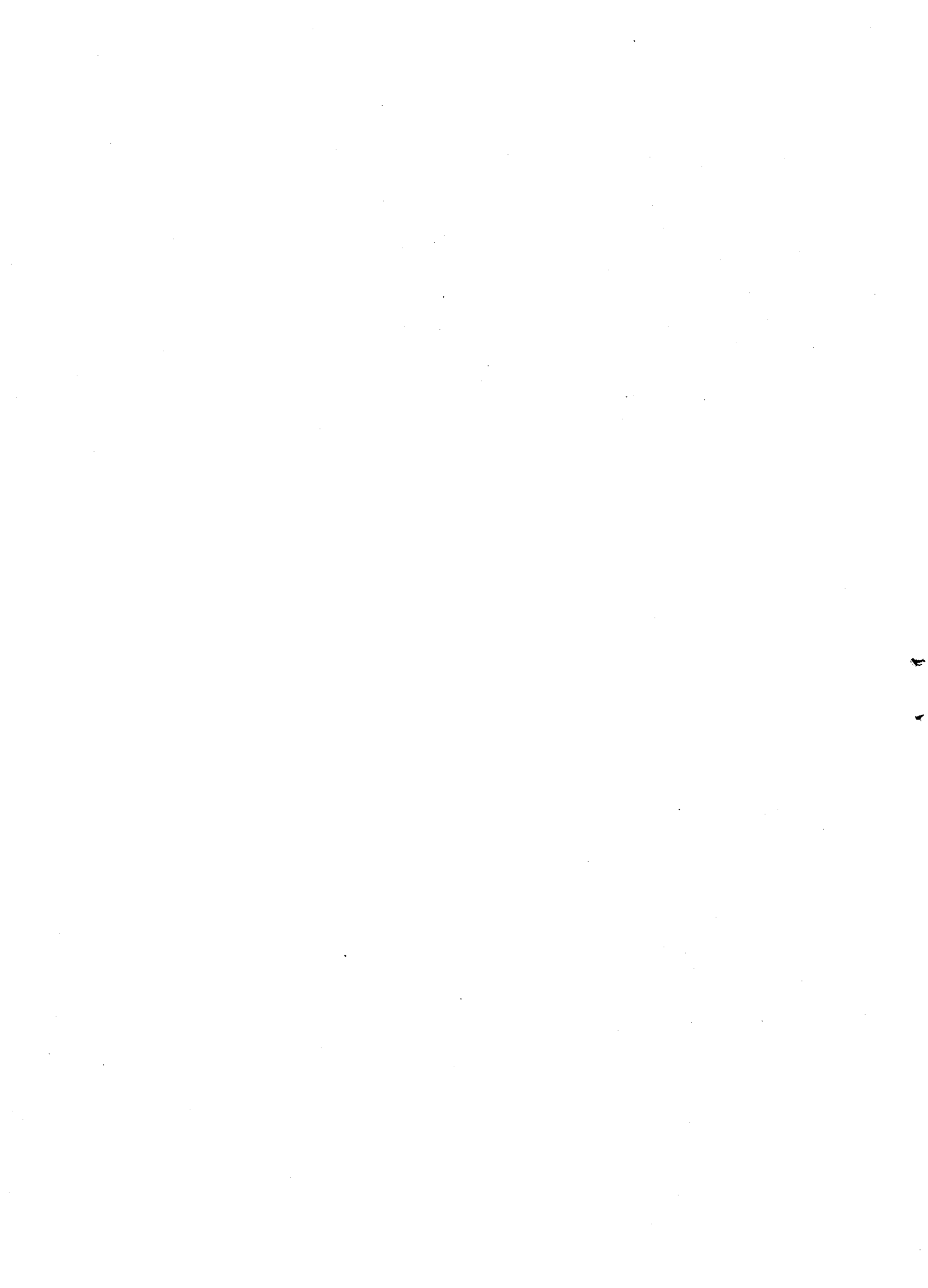
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## ABSTRACT

FORSITE is an advanced project monitoring software system that is designed to track and forecast the development of multiple projects. This paper describes the organization and operation of the FORSITE system including its overall structure and the functional relationships between its files and data bases. The paper also illustrates the operation of the system with an example of a generic critical-path management schedule produced by FORSITE. A program listing and schedule summaries are included as appendices.



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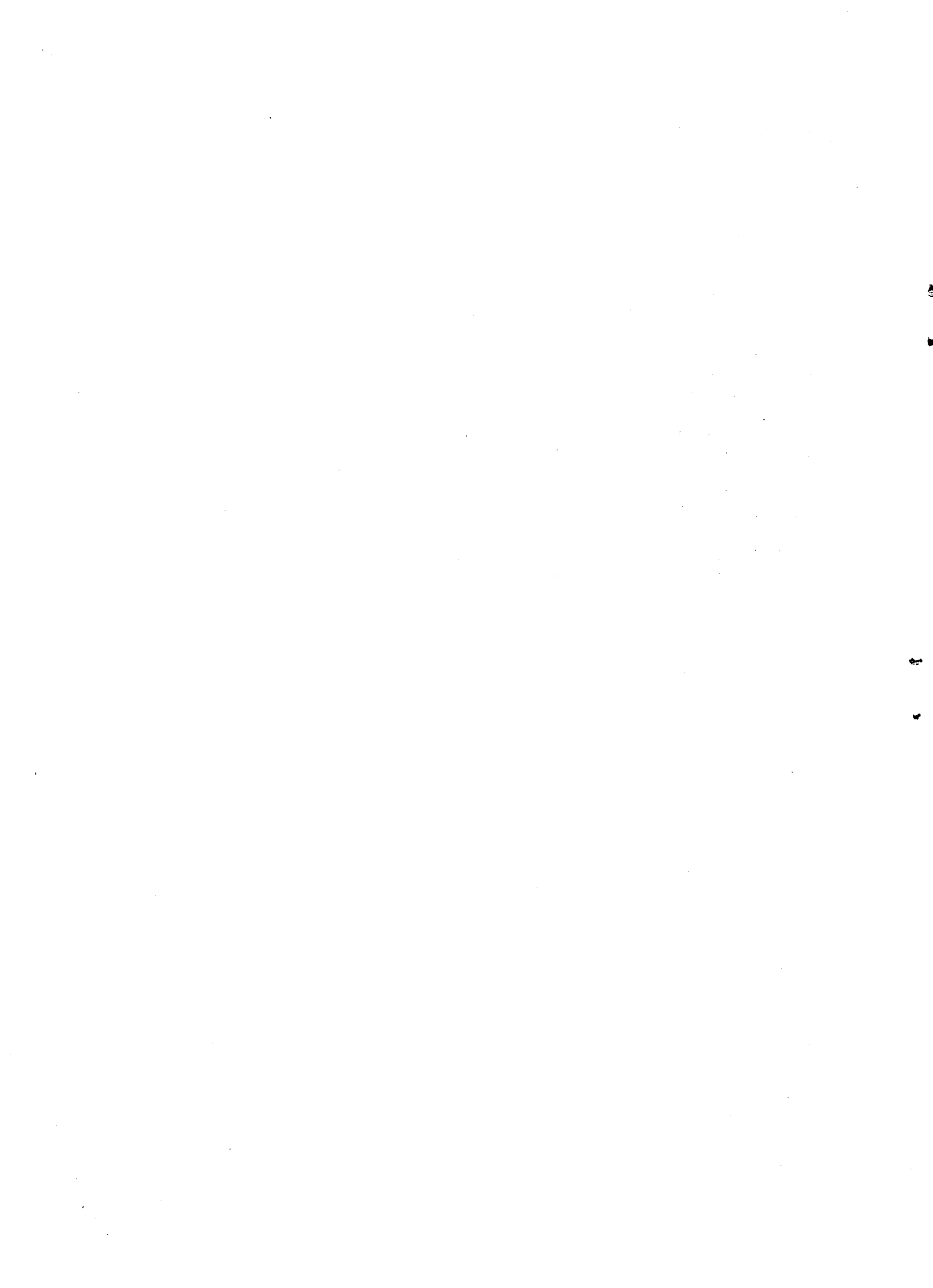
## 1.0 INTRODUCTION

FORSITE is The MITRE Corporation's name for an advanced project-monitoring software system that is designed to track and forecast the development of multiple projects for which the user has only sparse activity data and usually relatively little management control. It consists of a number of data bases and software routines, most of which can be applied to a wide variety of project types.

An overview of the FORSITE system is given in MITRE Technical Report MTR-82W79,<sup>(1)</sup> and the main processor is described in MITRE Working Paper WP-82W360.<sup>(2)</sup> This paper describes the actual operation of the system through the production of critical-path development schedules for electric power generation projects.

The remaining three sections of this report describe the organization and function of the FORSITE system. Section 2.0 defines its overall structure and control mechanisms. The contents and functional relationships of the FORSITE file and data bases are detailed in Section 3.0. Finally, Section 4.0 illustrates the operation of the FORSITE system. The listing of the computer program used to generate the 20 generic critical-path management schedules and the schedule summaries are included as appendices at the end of this report.





## 2.0 FORSITE CONTROL MECHANISMS

The FORSITE system is composed of control and data blocks linked together by information paths. The major system blocks are described in Section 2.1 and the information flow is described in Section 2.2.

### 2.1 System Blocks

FORSITE is comprised of six major blocks. These may contain either processing control information or raw data on which FORSITE operates. The following list identifies the major blocks used by FORSITE:

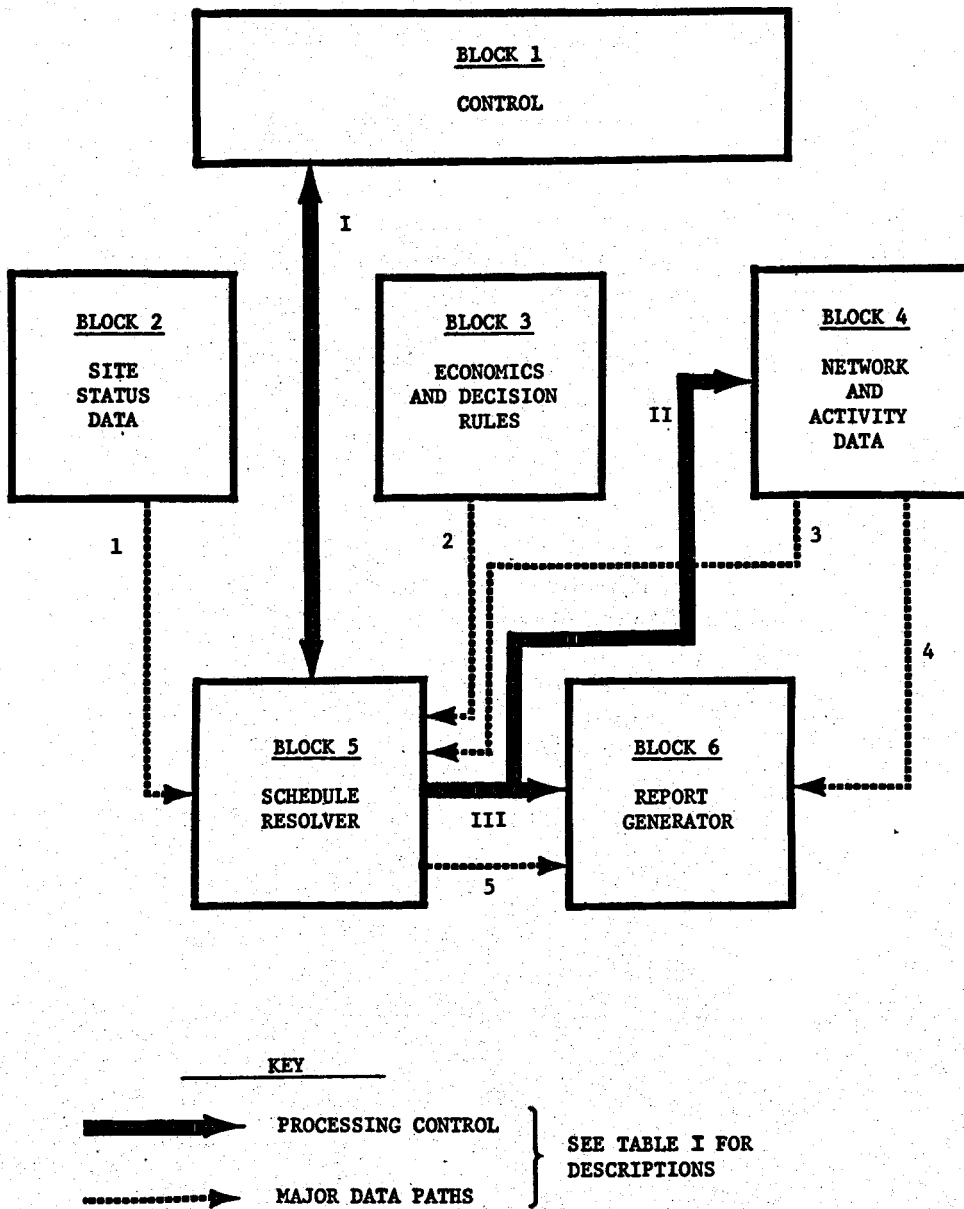
- o Block 1 is designated as the control block, and as such, it controls the overall processing sequence in the FORSITE system.
- o Block 2 contains the site status data, as well as the site and prospect definitions.
- o Block 3 provides Block 5 with estimated dates of project starts and site-to-site lag times. For identification purposes, it is labeled as the "Economics and Decision Rules Block."
- o Block 4 provides Network and Activity data to Block 5. It also includes resource requirement descriptions and definitions of federal, state, and private agencies involved in geothermal energy development.
- o Block 5 is the Schedule Resolver, which creates the "dated" schedule from the network and activity data (Block 4) and the site-specific status data (Block 2).
- o Block 6 is the Report Generator which produces output reports.

Several unique processing modules and data bases are associated with these blocks. These are described in detail in Section 3.0 of this report.

### 2.2 Information Flow

The FORSITE system blocks are linked together by two types of information paths. Processing control occurs between Blocks 1 and 5. Block 5 in turn controls both Block 4 and Block 6. Data are transferred from Blocks 2, 3, and 4 into Block 5, and then into Block 6. There is also a direct data path from Block 4 to Block 6.

Figure 1 is a schematic representation of the FORSITE information and control blocks and the linkages between them. Table I provides explanatory notes for the information links shown in the figure.



**FIGURE 1**  
**FORSITE INFORMATION AND CONTROL BLOCKS**

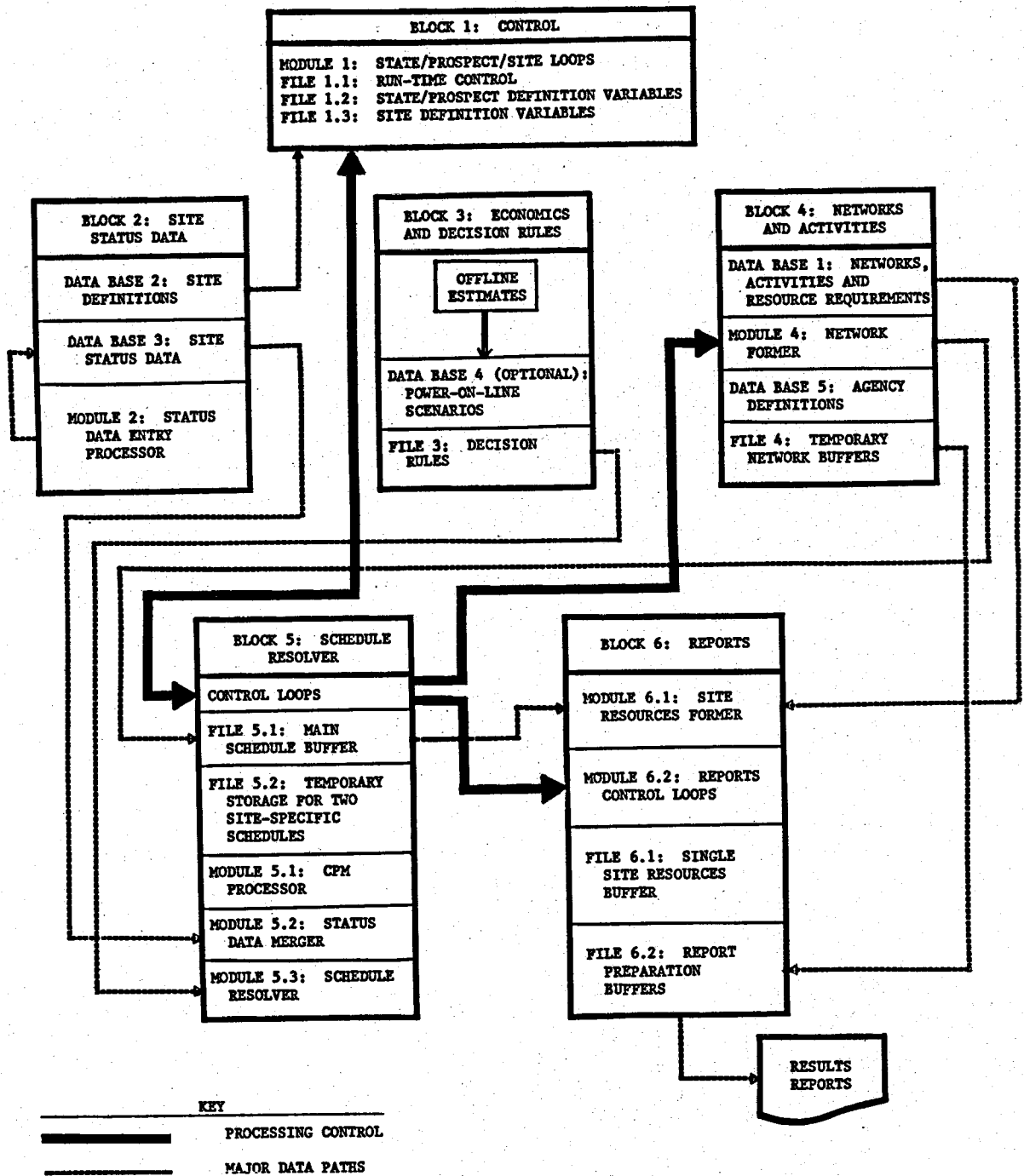
**TABLE I**  
**DESCRIPTIONS OF**  
**INFORMATION FLOWS DISPLAYED IN FIGURE 1**

<u>PATH NUMBER</u>	<u>DESCRIPTION</u>
<b><u>Processing Control:</u></b>	
I	Designation of prospect and site to be processed
II	Requests for formation of or access to appropriate network or schedule
III	Control of report preparation buffers
<b><u>Major Data Path:</u></b>	
1	Status data for specific site; physical characteristics of prospects and sites
2	Estimate of first competitive year for first plant at prospect and timing rules for subsequent plants
3	Data defining activities in a network
4	Resources requirement data for each activity
5	Resolved, calendar-dated schedule for a single site

### 3.0 FORSITE FILES AND DATA BASES

FORSITE is a complex, project-monitoring software system. Section 2.0 provided a general overview of the system's architecture. This section describes the detailed structure of FORSITE (Figure 2). Each major block consists of several files and/or data bases. The purpose and content of each of the blocks is summarized in Table II. The following list is a catalog of FORSITE's files and data bases.

- o File 1.1 - Run-time Control: This file contains switches and parameters that direct the execution of each run. It is controlled by the Master Control Block (Block 1) and used by all modules. The data analyst loads this file manually through the text edit facility of the interactive computer terminal.
- o File 1.2 - State and Prospect Definition Variables: This file defines the status and physical parameters of the states and prospects that are being processed. It is controlled by Processor 1 contained within Control Block 1. The contents of this file are used to control Blocks 5, 6, and (optionally) 3, with the processor obtaining the data from Data Base 2.
- o File 1.3 - Site Definition Variables: This file is a site-specific adjunct to File 1.2. As such, its control, use, and loading protocols are identical to those for File 1.2.
- o Data Base 1 - Networks, Activities, Resource Requirements: Although this is considered to be one data base, it is actually a combination of three related elements. The first element defines the networks (i.e., the development schedules) in terms of hammocks. The next element defines the hammocks in terms of activities and their precedent relationships. The third element of Data Base 1 defines the activities in terms of their duration in calendar time and their resource requirements (i.e., manpower or capital). Much of this data base is controlled by external operations defined by the data analyst. There is, however, some control exercised by Block 4, which is also the principal user of these data. Loading is accomplished by manual file editing through the computer terminal.
- o Data Base 2 - Site Definitions: The function of this data base is to define the prospects in a state and the sites in the prospects. Block 2 controls this data base, although there is some additional input from processing that occurs in Block 5. The data are manually loaded for use by Block 1.



**FIGURE 2**  
**DETAILED STRUCTURE OF THE FORSITE SYSTEM**

TABLE II  
PURPOSE AND CONTENTS OF THE SIX MAJOR FORSITE CONTROL/DATA BLOCKS

BLOCK NUMBER	BLOCK NAME	PURPOSE	PROCESSOR(S)	DATA BASES
1	Control	Controls overall processing (operator selects options)	Module 1 - Maintains loops for states, prospects, and sites	File 1.1 - Run-time control File 1.2 - State/prospect definition File 1.3 - Current site definition
2	Site Status	Maintains definitions of sites and prospects  Provides data entry and maintenance facility for the development status of sites	Module 2 - Status data entry processor	Data Base 2 - Prospect and site definitions  Data Base 3 - Site status data
3	Economics and Decision Rules	Provides Block 5 with estimated project start dates and site-to-site lag times	None on line	File 3 - Decision rules  Data Base 4 - Power-on-line scenarios (optional)
4	Networks and Activities	Provides Block 5 with activities and precedents needed for the current site.  Stores network, activity, and resource requirements descriptions  Stores agency definitions	Module 4 - Creates the network needed for the current site	Data Base 1 - Networks, activities, and resource requirements  Data Base 2 - Agency Definitions  File 4 - Temporary network buffers
5	Schedule Resolver	Creates dated schedule (from Blocks 4 and 2)	Module 5.1 - Critical-path method (CPM) scheduler  Module 5.2 - Status data merger which inserts status data into schedule  Module 5.3 - Schedule resolver data conflicts and makes forecasts	File 5.1 - Main schedule buffer  File 5.2 - Temporary storage for two site-specific schedules
6	Report	Produces output report	Module 6.1 - Accumulates site resource requirements  Module 6.2 - Reports control loops	File 6.1 - Single site resources buffer  File 6.2 - Report preparation buffers



- o Data Base 3 - Site-specific Status Data: The planned and actual events for each site are defined in this data base. Module 2, resident in Block 2, both loads and controls the data which are used by Block 5.
- o File 3 - Decision Rules: This file contains estimates of the first competitive year for proposed power plants. It is controlled by Blocks 3 and 5 and used by Block 5. For the first runs of FORSITE, Block 3 is considered to be an option so that the competitive year estimates are given to Block 5 through a manual loading procedure.
- o File 4 - Temporary Network Buffers: This temporary file is established during the execution of a run. It contains generic schedules already processed by the critical-path method (CPM) and is maintained only in core storage. This file is controlled by Block 4 (Networks) and is used by Block 5 (Status). The central processing unit is responsible for loading the file.
- o Data Base 4 (Optional) - Power-on-line Scenarios: When used, this data base is a compilation of external estimates of geothermal electric power plant development scenarios. These offline estimates drive the decision rules of File 3 which in turn feeds into Block 5, the schedule resolver.
- o Data Base 5 - Agency Definitions: This data base provides the full title of the various review and regulatory agencies referenced in the resource requirements matrix of Data Base 1.
- o File 5.1 - Main Schedule Buffer: Most of the active schedule formation and resolution occurs in this file. Loading and control of this file are accomplished through Blocks 4 and 5, which also make use of its data content. Block 6 also uses the data in this file.
- o File 5.2 - Site Temporary Buffers: This file stores two schedules when needed for site work. Block 5 controls the loading of this file, which occurs in Block 4. Block 5 is also the principal user of this feature.
- o File 6.1 - Single Site Resources Buffer: This file is used to aggregate the resources required (manpower and/or capital) by the activities contained in the resolved schedule.

- o File 6.2 - Results Report Buffers: These buffers accumulate the results to be used in the output report.

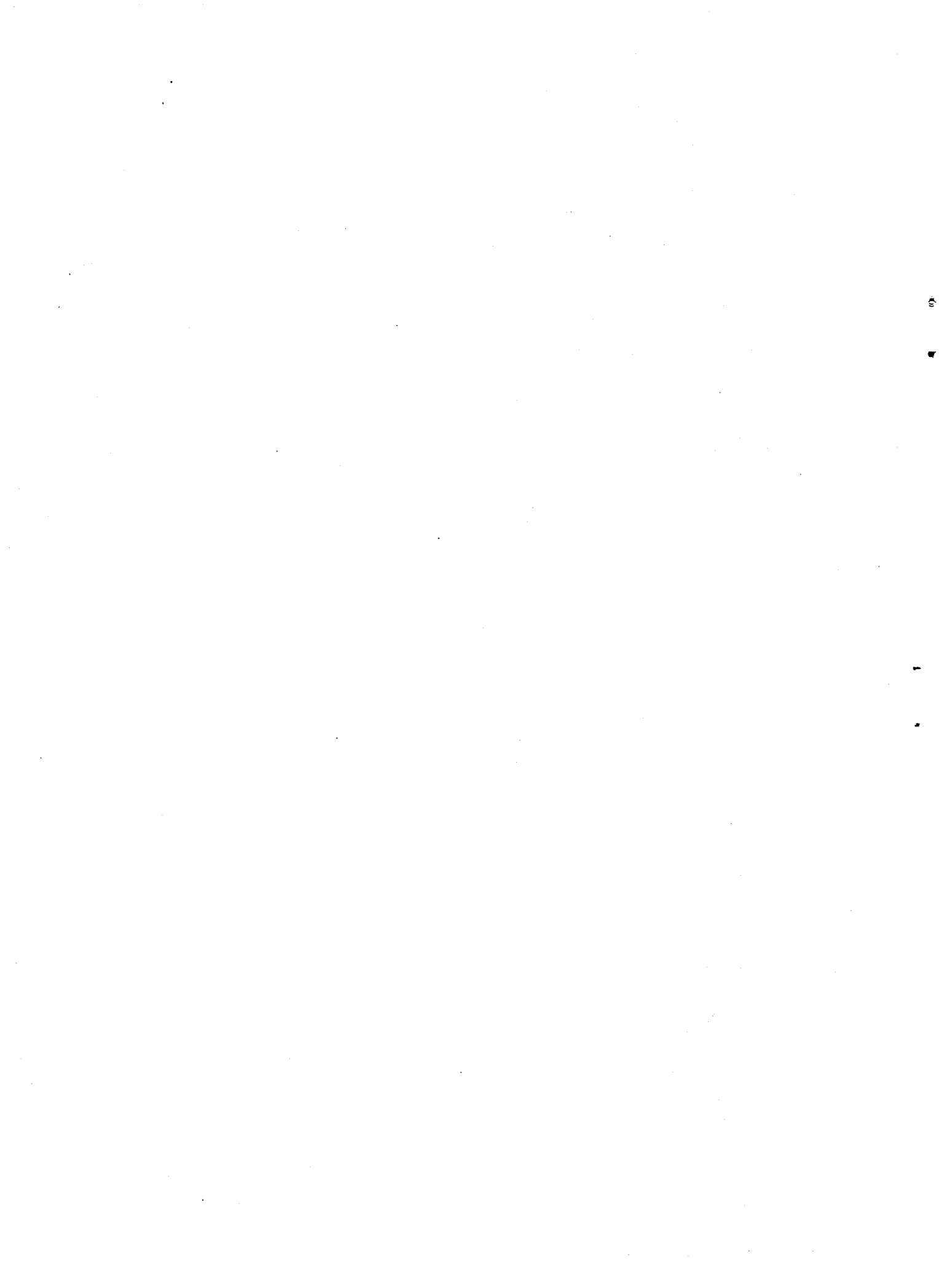
The descriptions of the FORSITE files and data bases and their functional relationships are summarized in Table III.

TABLE III  
DETAILED DESCRIPTION OF FORSITE DATA BASES AND FILES

DATA BASE/ FILE	TITLE	DESCRIPTION	CONTROLLED BY	USED BY	LOADED BY
File 1.1	Run-time control	File of switches and parameters that directs execution of each run	Block 1	All modules	Manual text edit
File 1.2	State and prospect definition variables	File that defines status and physical parameters of state and prospect that are being processed	Block 1, Processor 1	Block 5, Block 6, and Block 3	Processor 1, gets data from DB2
File 1.3	Site definition variables	Site-specific adjunct to File 1.2	Block 1, Processor 1	Block 5, Block 6	Processor 1, gets data from DB2
DB 1	Networks, activities and resource requirements	<u>DB 1.1:</u> Defines network in terms of hammocks <u>DB 1.2:</u> Defines hammocks in terms of activities and their precedence relationships <u>DB 1.3:</u> Defines activities in terms of duration and resource requirements	External Definition of Block 4	Block 4	Manual, batch mode plus file edit
DB 2	Prospects and sites	Definition of prospects in state, and sites in prospect	Block 2 Some (one-column) entry from Block 5 processing	Block 1	Manual
DB 3	Site-specific status data	Reports of events and plans for site-specific development	Block 2, Module 2	Block 5	Module
File 3	Decision rules	Estimates of first competitive year	Block 3 and Block 5	Block 5	Manual. May include some processing based on acreage and capacity data

TABLE III (concluded)

DATA BASE/ FILE	TITLE	DESCRIPTION	CONTROLLED BY	USED BY	LOADED BY
File 4	Temporary network buffers	Contain CPM'd generic networks. Maintained only in core storage.	Block 4	Block 5 (Module 5)	CPU, during execution
DB 4	Power-on-line scenarios	External estimates of power plant development scenarios.	Block 3	File 3.1	Manual
DB 5	Agency definitions	Identifies federal agencies with a review/regulatory role	Block 4	DB 1	Manual
File 5.1	Main schedule buffer	File where most of the active schedule formation and schedule resolution processing occurs	Block 5 (main) Block 4 (network loading)	Block 4 Block 5 Block 6	Block 4 (networks) Block 5 (status data and computation)
File 5.2	Site temporary storage	Stores two schedules, when needed for site work	Block 5	Block 5	Block 4, under control of Block 5
File 6.1	Single site resources buffer	Used to aggregate resources required per resolved schedule activities	Module 6.1	Module 6.1 Module 6.2	Module 6.1, from resolved schedule (in File 5) and activity definitions (DB 1.3)
File 6.2	Results reports buffers	Six buffers used to accumulate results reports, plus ancillary minor buffers for aggregating agency rows	Module 6.2	Module 6.2	Module 6.2



## 4.0 EXAMPLE OF FORSITE OPERATION

This section describes the use of the FORSITE system to produce critical-path management schedules for geothermal-electric power plant projects. The FORSITE phases and activities are explained in detail in Section 4.1. The FORSITE schedules and the output reports are described in Section 4.2.

### 4.1 FORSITE Phases and Activities

#### 4.1.1 Development Phases

The FORSITE system is structured in such a way that geothermal-electric power plant developments are assumed to pass through six phases to bring power on line. Each phase consists of groups of related activities and the boundaries between the phases indicate major milestones at which a decision to continue or abandon development is made.

The following list describes the six geothermal development phases modeled by FORSITE.

- o Phase 1 - Pre-leasing: This phase encompasses all the activities that occur up to and including the developer's decision to take a land position. Surface exploration, preliminary geophysical exploration, and land acquisition are the generic activity groups associated with Phase 1.
- o Phase 2 - Fluid Confirmation: During this phase, a second round of geophysical exploration occurs and deep exploratory wells are drilled. The aim of this first deep drilling program is to prove the existence of a supply of hot fluid.
- o Phase 3 - Reservoir Confirmation: If the previous phase is successful, a developer will proceed to define the limits of the reservoir. This will be accomplished by additional cycles of deep drilling and reservoir engineering studies.
- o Phase 4 - Financial Negotiation: Once the reservoir is confirmed and its approximate size defined, a series of activities occur away from the actual project site. These activities include the arrangement of financing, the development of a conceptual design, and the unitization of the geothermal prospect if two or more developers are involved.
- o Phase 5 - Design: This phase is reached after successful completion of the financing stage. During this phase, a

detailed engineering design is produced and the appropriate construction permits are obtained.

- o Phase 6 - Construction: This is the last phase modeled by FORSITE. It includes the actual construction and testing of the power plant and continued development of the geothermal field. Also, operational permits are obtained during this phase. The phase ends with the plant supplying power to the grid.

Figure 3 is a schematic diagram illustrating the geothermal development phases modeled by FORSITE.

#### 4.1.2 Activities within the FORSITE Phases

Each FORSITE phase is composed of several related activities. These activities were compiled from S. H. Ward's paper in the January 1981 issue of the Journal of the American Association of Petroleum Geologists.<sup>(3)</sup> This paper was supplemented by personal discussions between MITRE analysts and representatives of geothermal development companies, utilities, federal and state agencies, and other interested parties in the geothermal community.

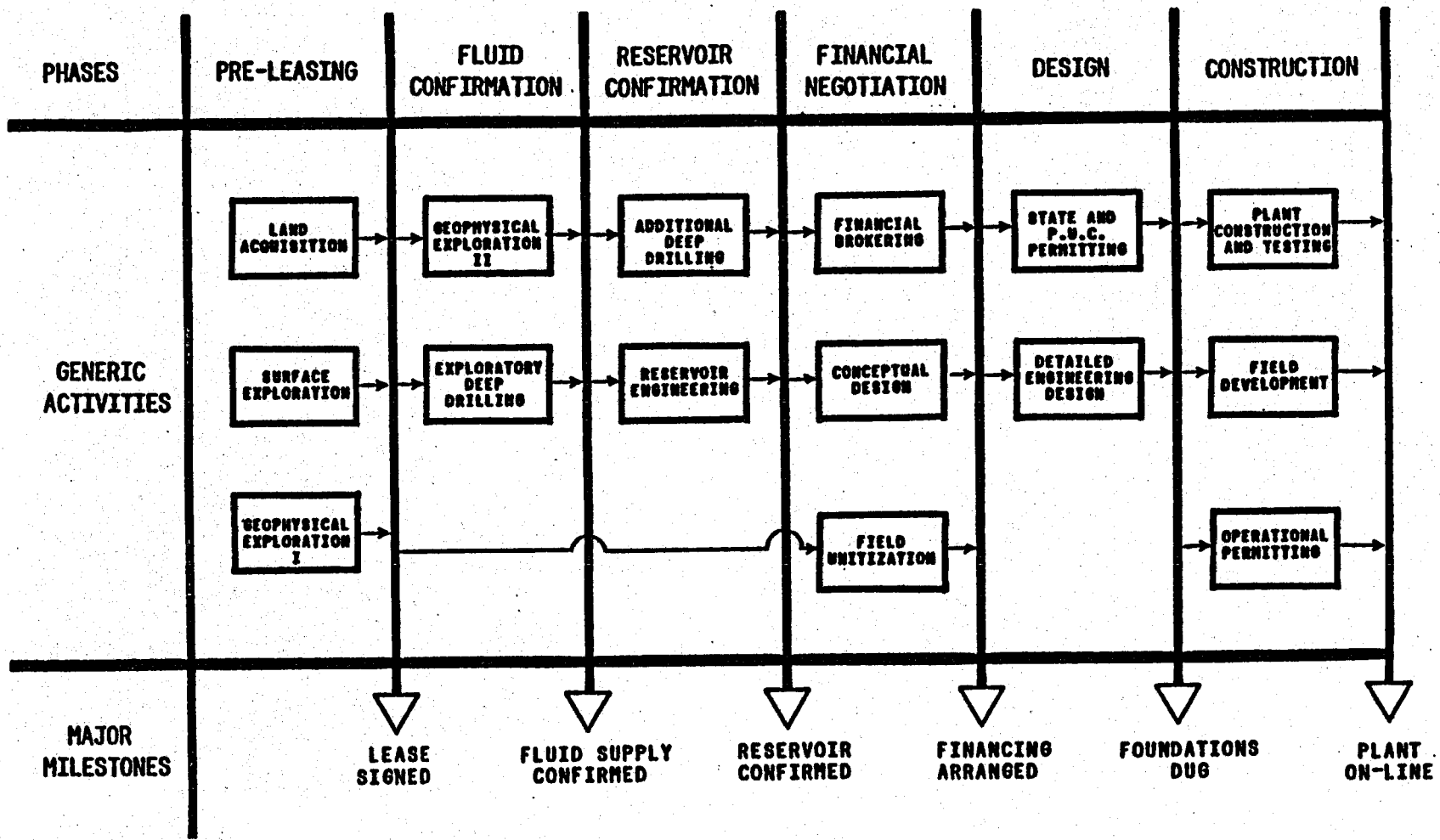
A five-digit number is used to label each activity. This number identifies the phase to which the activity is assigned, the party responsible for conducting the activity, the sequential placement of the activity within the schedule, and, for repetitive activities, the cycle of repetition. Table IV is a guide to the numbering system and Table V is an annotated list of the activities. This is the complete library of activities available to the FORSITE system, but not all of the activities appear in all the schedules.

#### 4.2 FORSITE Schedules

The FORSITE system models several different development schedules. The schedule options are described in Section 4.2.1. The time durations and resource requirements associated with each activity are explained in Section 4.2.2 and the FORSITE model output is explained in Section 4.2.3.

##### 4.2.1 FORSITE Schedule Options

The selection of a particular schedule depends upon the surface management agency responsible for the land and the conditions under which it is leased. The choice of schedule also depends on whether or not the plant being monitored is an initial development on a site



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**FIGURE 3  
GEOHERMAL DEVELOPMENT PHASES  
MODELED BY FORSITE**



TABLE IV

GUIDE TO NUMBERING OF FORSITE ACTIVITIES

EXAMPLE ACTIVITY NUMBER                    1 1 3 0 1  
 COLUMN                                        (a)(b)(c)(d)(e)

KEY	
COLUMN	DESCRIPTION
a	The number which identifies the phase to which the activity belongs; may range between 1 and 6.
b	The number which identifies the nature of the activity and the general entity responsible for carrying it out; e.g.: <ul style="list-style-type: none"> <li>1 - An industrial activity requiring a physical action by the developer or utility</li> <li>2 - An industrial activity which involves the submission of forms or permit applications to meet federal or state regulatory requirements</li> <li>3 - An activity of one of the governmental entities</li> <li>9 - A number used to indicate that the activity is a phase terminator</li> </ul>
c	A serial number indicating that this is the third activity in this phase with a one (1) in Column b.
d	A number used to indicate that the resource requirements for similar activities may differ from schedule to schedule according to the leasing procedure or the surface management agency responsible for the prospect. The exception to this is when an eight (8) or a nine (9) appears in this column. These numbers are used to signify a stop (8) or go (9) decision at the end of the phase.
e	This column is used to indicate that the activity is repetitive and the number indicates which cycle the schedule is in. the number nine (9) is used to show the last cycle of a particular activity.

TABLE V

ANNOTATED LIST OF ACTIVITIES IN FORSITE NETWORKS

PHASE I  
PRELIMINARY EXPLORATION

ACTIVITY NUMBER	ACTIVITY NAME	NOTES
10000	Start Phase I	This is the milestone which initiates the FORSITE system.
11100	Conduct Preliminary Field Evaluation	Includes: o literature review o field reconnaissance
11200	Negotiate Private Land	
11301 11302 11303 11309	Conduct Pre-lease Exploration	This activity represents three cycles of drilling shallow thermal gradient wells and a forth cycle for geophysical surveys.
12101 12102 12103 12109	File Pre-lease Notices of Intent (NOI)	Four NOIs are required for the prelease exploration activities.  Five thermal gradient wells are assumed per NOI.
12200	File Bid	
12300	File Noncompetitive Lease Application	
13100	Designate Known Geothermal Resource Area (KGRA)	13110 - Pre-1980 (old) procedure 13120 - Post-1980 (new) procedure

TABLE V (continued)

PHASE I (continued)

ACTIVITY NUMBER	ACTIVITY NAME	NOTES
13200	Environmental Assessment Report (EAR) Conduct Presale Evaluation	This EAR is in response to KGRA designation. For the new federal leasing procedure, this will be a relatively simple EAR with short duration.  13210 - BLM, old procedure 13220 - FS, old procedure 13220 - BLM, new procedure 13240 - FS, new procedure
13300	Publish Lease Sale Notice	13310 - old procedure 13320 - new procedure
13401 13402 13403 13409	Process Prelease NOI	13410 - old procedure 13420 - new procedure
13500	Conduct Lease Sale	13510 - old procedure 13520 - new procedure
13600	Process Non- competitive Lease Application	This activity includes the KGRA Clearlisting. The preparation of an EAR on the lease application is also included in this activity.  13610 - BLM, old procedure 13620 - FS, old procedure 13630 - BLM, new procedure 13640 - FS, new procedure

TABLE V (continued)

PHASE I (concluded)

ACTIVITY NUMBER	ACTIVITY NAME	NOTES
13700	Designate KGRA Based on Competitive Interest and Publish Lease Sale Notice	When this activity is reported the FORSITE Network type must be changed to a competitive schedule.  13710 - old procedure 13720 - new procedure
19989	Stop Phase I	FORSITE system documents and reports reasons for stopping the phase.
19999	Lease/Contract Signed	This is a milestone. When this activity is reported, the system assumes completion of all the activities in this phase.

TABLE V (continued)

PHASE II  
FLUID CONFIRMATION

ACTIVITY NUMBER	ACTIVITY NAME	NOTES
20000	Start Phase II Fluid Confirmation	This is a milestone indicating the beginning of this phase.
21101 21102 21109	Conduct Post-Lease Exploration	This activity is repeated three times, one of which is assigned for a second geophysical survey activity. The first geophysical survey is conducted in Phase I. The evaluation of exploration results is included in this activity. Three wells are assumed per NOI.
21201 21202 21209	Conduct Deep Well Exploration	Three deep wells are drilled for fluid confirmation, two of which are assumed to be successful wells.
22101 22102 22109	File Post-Lease Notice of Intent (NOI)	
22200	Submit Plan of Exploration (POE)	A Plan of Exploration (POE) is required for deep well drilling activities. This POE is for the three deep wells in this phase.
22301 22302 22309	File Application for Permit to Drill (APD)	An APD is required for each well drilled.

TABLE V (continued)

PHASE II (concluded)

ACTIVITY NUMBER	ACTIVITY NAME	NOTES
23101 23102 23109	Process Post-Lease NOI	
23200	Process POE for Fluid Confirmation	23210 - old procedure 23220 - new procedure
23301 23302 23309	Process APD	23310 - old procedure 23320 - new procedure
29989	Stop Phase II	
29999	Fluid Confirmed	This is a milestone which indicates the completion of Phase II.

TABLE V (continued)

PHASE III  
RESERVOIR CONFIRMATION

ACTIVITY NUMBER	ACTIVITY NAME	NOTES
30000	Start Phase III	This is a milestone.
31101 31102 31109	Conduct Deep Well Drilling	Additional three deep wells are drilled for reservoir confirmation; two of which are assumed to be successful.
31200	Conduct Reservoir Engineering	This activity includes: <ul style="list-style-type: none"> <li>o estimation of the size of reservoir</li> <li>o developer's feasibility study</li> </ul>
32100	Submit Plan of Exploration (POE) for Reservoir Confirmation	This activity must be completed before the developer can begin additional drilling for reservoir confirmation. Note that this activity could commence before the end of Phase II.
32201 32202 32209	File Application	
33100	Process POE for Reservoir Confirmation	
33201 33202 33209	Process APD	33210 - old procedure 33220 - new procedure

TABLE V (continued)

PHASE III (concluded)

ACTIVITY NUMBER	ACTIVITY NAME	NOTES
39989	Stop Phase III	
39999	Reservoir Confirmed	This is a milestone.



TABLE V (continued)

PHASE IV  
FINANCIAL NEGOTIATION

ACTIVITY NUMBER	ACTIVITY NAME	NOTES
40000	Start Phase IV	This is a milestone.
41100	Unitize Field	This is a developer's activity and is required for initial plant only.  44110 - old procedure 44120 - new procedure
41200	Conduct Feasibility Study	This is a utility's activity.
41300	Conduct Financial Negotiations	
43100	Process Application for Loan Guarantee	
49989	Stop Phase IV	
49999	Steam/Fluid Contract Signed	This milestone is equivalent to utility's decision to build a power plant.

TABLE V (continued)

PHASE V  
DESIGN

ACTIVITY NUMBER	ACTIVITY NAME	NOTES
50000	Start Phase V	This is a milestone.
51100	Conduct Preliminary Design	This is a utility activity, and includes both the field and the plant design.
51200	Conduct Detailed Design	
52100	Submit Plan of Development (POD) and Plan of Injection (POI)	<p>The approval of the POD and POI is required before the developer can work on the development wells. This activity is equivalent to the selection of sites for development wells.</p> <p>Under the new federal leasing procedure, this activity serves as an application to remove non-development stipulation.</p>
52300	Submit Plan of Baseline Data Collections (POBDC)	This plan is required for the collection of environmental data for both the field and the plant, which will be submitted for approval with the Plan for Production (PFP) in the following phase.
52200	Submit Plan for Power Line Right-of-Way (PPLROW)	This plan is required by the surface management agencies responsible for the land within the transmission corridor. Required for the first plant only.

TABLE V (continued)

PHASE V (continued)

ACTIVITY NUMBER	ACTIVITY NAME	NOTES
52400	Submit Plan of Utilization (POU) and Apply for Utilization Permit	This is the federal counterpart of 52600. The BLM is the lead agency for the plan processing, while AGS is responsible for the processing of the permit application.
52500	Submit APD	This APD covers all the production and the injection wells.
52600	Apply for State Siting License	This is required for only a commercial power plant larger than 50 MW. For a commercial power plant of size between 20 and 49 MW a state siting license is not required.
52700	Apply for State Construction Permits	Includes permits required for transmission lines.
53100	Process POD and POI	A detailed Environmental Assessment (EA) will be done under the new procedure to remove non-development stipulation.
		53110 - BLM, old procedure 53120 - FS, old procedure 53130 - BLM, new procedure 53140 - FS, new procedure
53200	Process PPLROW	Required for the first plant only.
		53210 - BLM, first plant 53220 - FS, first plant

TABLE V (continued)

PHASE V (concluded)

ACTIVITY NUMBER	ACTIVITY NAME	NOTES
53300	Process POBDC	53310 - old procedure 53320 - new procedure
53400	Process POU and First Step Utilization Permit Application	53410 - BLM, old procedure 53420 - FS, old procedure 53430 - BLM, new procedure 53440 - FS, new procedure
53500	Process APD	53510 - old procedure 53520 - new procedure
54100	Process State Siting License	
54200	Process State Construction Permits	
59989	Stop Phase V	
59999	Design Completed	This is a milestone.

TABLE V (continued)

PHASE VI  
CONSTRUCTION

ACTIVITY NUMBER	ACTIVITY NAME	NOTES
60000	Start Phase VI	This is a milestone.
61101 61102 61103 61104 61105 61109	Drill Development Wells	This activity is repeated six times and includes the installation of downhole pumps and other related equipment.
61201 61202 61203 61209	Drill Injection Wells	Two injection wells are assumed for five production wells.
61300	Construct Power Plant	
61400	Construct Transmission Lines	
61500	Conduct Pre-startup Testing	
62100	Collect Environmental Baseline Data	
62200	Submit Plan for Production (PPF) and Apply for the Second Step Utilization Permit	

TABLE V (concluded)

PHASE VI (concluded)

ACTIVITY NUMBER	ACTIVITY NAME	NOTES
62300	Apply for State Operating Permits	Federal environmental permits are included here because they are administered by state authorities.
63100	Monitor and Certify Construction Activities (Federal)	63110 - old procedure 63120 - new procedure
63200	Process PFP and the Second Step Utilization Permit	The second step utilization permit is the federal operating permit. The PFP includes a report on the results of environmental baseline data collection.  63210 - BLM, old procedure 63220 - FS, old procedure 63230 - BLM, new procedure 63240 - FS, new procedure
64100	Monitor and Certify Construction Activities	This is the state counterpart of 63100
64200	Process State Operating Permits	
69989	Stop Phase VI	
69999	Power on Line (POL)	This is a milestone.

**TABLE VI**  
**OPTIONS USED TO GENERATE**  
**FORSITE SCHEDULES**

SCHEDULE CHARACTERISTIC	OPTION
Plant Type	First plant Subsequent plant
Leasing Procedure	Old - Federal lease prior to 1980 New - Federal lease after 1980
Type of Lease	Competitive Non-competitive Non-competitive converting to competitive
Surface Management Agency	Forest Service Bureau of Land Management

**Note:** The non-competitive to competitive option may only apply to first plant schedules because the subsequent plants are built on the existing sites.

or a project which has been staged subsequent to the initial development. The options modeled by FORSITE are listed in Table VI and Figure 4 illustrates the master matrix used to define the schedules.

#### 4.2.2 Time and Resource Requirements for the FORSITE Schedules

The FORSITE system produces time-phased critical-path project management schedules which estimate the federal manpower requirements at each stage of the schedule. Parallel to the federal requirements are the estimated capital requirements associated with the industrial activities. The first component of the schedules is the time duration of each of the activities. Table VII identifies the duration (in months) of each activity in each schedule. The complete assemblage of manpower and capital resource requirements is too extensive to include here, but Table VIII is an example of the resource requirement matrix for Schedule Number 1.

#### 4.3 FORSITE Output

FORSITE's main processor has been described in MITRE Working Paper WP-82W360. For this project, FORSITE has produced twenty time-phased, generic, critical-path management schedules for geothermal-electric power plants. The twenty schedules correspond to the options shown in Figure 4. Appendix I is the listing of the FORTRAN program "SKDULE" used to generate the schedules.

A sample schedule is reproduced as Table IX. In this generic schedule, time is displayed as decimal years, and each activity is bracketed by an earliest/latest start and finish date. Those activities that appear on the critical path are identified by an asterisk preceding the activity number. The complete critical-path listing appears at the end of the schedule. Each activity in the FORSITE schedules contains lines designated by a "P" and an "S." These serve as pointers to the related "precedent" and "subsequent" activities. A complete compilation of the twenty critical path summaries is provided in Appendix II.



PLANT TYPE	FIRST PLANT												SUBSEQUENT PLANT							
	FEDERAL - PRE 1980						FEDERAL - POST 1980						FEDERAL - PRE 1980				FEDERAL - POST 1980			
LEASING PROCEDURE	C		NC		NC TO C		C		NC		NC TO C		C		NC		C		NC	
TYPE OF LEASE	C		NC		NC TO C		C		NC		NC TO C		C		NC		C		NC	
SURFACE MANAGEMENT AGENCY	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS
SCHEDULE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

KEY: C - COMPETITIVE  
 NC - NON-COMPETITIVE  
 NC TO C - NON-COMPETITIVE SWITCHING TO COMPETITIVE  
 BLM - BUREAU OF LAND MANAGEMENT  
 FS - FOREST SERVICE

FIGURE 4  
 THE MATRIX OF OPTIONS USED TO  
 DEFINE THE FORSITE SCHEDULES

**TABLE VII**  
**DURATION, IN MONTHS, OF ACTIVITIES IN**  
**FORSITE SCHEDULES**

ACTIVITY NUMBER	FIRST PLANT												SUBSEQUENT PLANTS							
	FEDERAL OLD						FEDERAL NEW						FEDERAL OLD				FEDERAL NEW			
	C		NC		NC TO C		C		NC		NC TO C		C		NC		C		NC	
	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
1000	0	0	0	0	0	0	0	0	0	0	0									
1110	12	12	12	12	12	12	12	12	12	12	12									
1120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA									
1130	5	5	5	5	5	5	5	5	5	5	5									
1210	0	0	0	0	0	0	0	0	0	0	0									
1220	0	0	NA	NA	0	0	0	0	NA	NA	0									
1230	NA	NA	0	0	0	0	NA	NA	0	0	0									
1310	0	0	NA	NA	NA	NA	0	0	NA	NA	NA									
1320	20	50	NA	NA	NA	NA	4.5	4.5	NA	NA	NA									
1330	.75	.75	NA	NA	NA	NA	.75	.75	NA	NA	NA									
1340	1	1	1	1	1	1	1	1	1	1	1									
1350	3	3	NA	NA	3	3	3	3	NA	NA	3									
1360	NA	NA	20	50	20	NA	NA	4.5	4.5	4.5	4.5									
1370	NA	NA	NA	NA	.75	.75	NA	NA	NA	NA	.75									
1998	0	0	0	0	0	0	0	0	0	0	0									
1999	0	0	0	0	0	0	0	0	0	0	0									
2000	0	0	0	0	0	0	0	0	0	0	0									
2110	6	6	6	6	6	6	6	6	6	6	6	0	0	0	0	0	0	0	0	
2120	5	5	5	5	5	5	5	5	5	5	5	NA	NA	NA	NA	NA	NA	NA	NA	
2210	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	NA	NA	NA	NA	NA	NA	NA	NA	
2220	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
2230	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	
2310	1	1	1	1	1	1	1	1	1	1	1	NA	NA	NA	NA	NA	NA	NA	NA	
2320	6.25	6.25	6.25	6.25	6.25	6.25	4	4	4	4	4	6.25	6.25	6.25	6.25	4	4	4	4	
2330	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	
2998	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

NOT  
APPLICABLE

NOTE: The number at the top of each column denotes the number of the FORSITE schedule.

KEY: C - COMPETITIVE  
 NC - NON-COMPETITIVE  
 NC TO C - NON-COMPETITIVE SWITCHING TO COMPETITIVE  
 BLM - BUREAU OF LAND MANAGEMENT  
 FS - FOREST SERVICE  
 NA - NOT APPLICABLE

TABLE VII (continued)

ACTIVITY NUMBER	FIRST PLANT												SUBSEQUENT PLANTS							
	FEDERAL OLD						FEDERAL NEW						FEDERAL OLD				FEDERAL NEW			
	C		NC		NC TO C		C		NC		NC TO C		C		NC		C		NC	
	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
3000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3110	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
3120	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
3210	3	3	3	3	3	3	NA	NA	NA	NA	NA	3	3	3	3	NA	NA	NA	NA	
3220	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	
3310	6.25	6.25	6.25	6.25	6.25	6.25	NA	NA	NA	NA	NA	6.25	6.25	6.25	6.25	NA	NA	NA	NA	
3990	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4110	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
4120	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
4130	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
4210	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25	
4310	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	
4998	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5110	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
5120	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	
5210	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
5220	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
5230	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
5260	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5270	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5310	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	
5320	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
5330	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
5340	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	
5350	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
5410	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	
5420	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
5998	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6110	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
6120	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
6130	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	
6140	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
6150	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	

TABLE VII (concluded)

ACTIVITY NUMBER	FIRST PLANT												SUBSEQUENT PLANTS							
	FEDERAL OLD						FEDERAL NEW						FEDERAL OLD				FEDERAL NEW			
	C		NC		NC TO C		C		NC		NC TO C		C		NC		C		NC	
	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS	BLM	FS
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
6210	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
6220	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6310	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
6320	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
6410	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
6420	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
6998	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE VIII

EXAMPLE OF THE RESOURCE REQUIREMENT MATRIX  
 FOR FORSITE SCHEDULE NUMBER 1;  
 THE FIRST PLANT ON LAND LEASED BEFORE 1980  
 FROM THE BUREAU OF LAND MANAGEMENT  
 UNDER A COMPETITIVE BIDDING PROCEDURE

PHASE	ACTIVITY NUMBER	RESOURCES REQUIRED	
		AGENCY	UNITS
I	10000	NOT APPLICABLE	
	11100	PRIVATE - DEVELOPER	\$60,000
	11301	PRIVATE - DEVELOPER	\$35,000
	11302	PRIVATE - DEVELOPER	\$35,000
	11303	PRIVATE - DEVELOPER	\$35,000
	11309	PRIVATE - DEVELOPER	\$35,000
	12101	PRIVATE - DEVELOPER	INCLUDED IN 11301
	12102	PRIVATE - DEVELOPER	INCLUDED IN 11302
	12103	PRIVATE - DEVELOPER	INCLUDED IN 11303
	12109	PRIVATE - DEVELOPER	INCLUDED IN 11309
	12200	PRIVATE - DEVELOPER	\$9,000
	13110	FEDERAL - USGS-OAG	.004 MAN-YEARS
		USGS-AGS	.004 MAN-YEARS
	13210	FEDERAL - USGS-OAG	.062 MAN-YEARS
		USGS-AGS	.442 MAN-YEARS
		BLM-DO	2.000 MAN-YEARS
		BLM-SO	.042 MAN-YEARS
	FWS-AO	.021 MAN-YEARS	

KEY TO ABBREVIATIONS USED IN THIS TABLE:

USGS-OAG:	U.S. Geological Survey	- Office of the Area Geologists
USGS-AGS:	U.S. Geological Survey	- Area Geothermal Supervisor
BLM-DO:	Bureau of Land Management	- District Office
BLM-SO:	Bureau of Land Management	- State Office
FWS-AO:	Fish and Wildlife Service	- Area Office
USGS-DCMG:*	U.S. Geological Survey	- Deputy Conservation Manager Geothermal
DOE-DGHT:	Department of Energy	- Division of Geothermal and Hydropower Technologies

\*Now included in the Minerals Management Service (MMS)

TABLE VIII (continued)

PHASE	ACTIVITY NUMBER	RESOURCES REQUIRED	
		AGENCY	UNITS
	13310	FEDERAL - BLM-SO USGS-AGS FWS-AO	.060 MAN-YEARS .004 MAN-YEARS .004 MAN-YEARS
	13411	FEDERAL - BLM-DO	.013 MAN-YEARS
	13412	USGS-DCMG	.013 MAN-YEARS
	13413	FWS-AO	.013 MAN-YEARS
	13419		
	13510	FEDERAL - BLM-SO USGS-AGS	.063 MAN-YEARS .008 MAN-YEARS
	19989	NOT APPLICABLE	
	19999	NOT APPLICABLE	
II	20000	NOT APPLICABLE	
	21101	PRIVATE - DEVELOPER	3 @ \$200,00 each
	21102		
	21109		
	21201	PRIVATE - DEVELOPER	3 @ \$300,000 each
	21202		
	21209		
	22101	PRIVATE - DEVELOPER	INCLUDED IN 21101
	22102		INCLUDED IN 21102
	22109		INCLUDED IN 21109
	22200	PRIVATE - DEVELOPER	\$50,000
	22301	PRIVATE - DEVELOPER	INCLUDED IN 21201
	22302		INCLUDED IN 21202
	22309		INCLUDED IN 21209
	23111	FEDERAL - USGS-AGS	.004 MAN-YEARS
	23112	BLM-DO	.001 MAN-YEARS
	23119		
	23210	FEDERAL - USGS-AGS BLM-SO FWS-AO	.646 MAN-YEARS .058 MAN-YEARS .029 MAN-YEARS

TABLE VIII (concluded)

PHASE	ACTIVITY NUMBER	RESOURCES REQUIRED	
		AGENCY	UNITS
VI	60000	NOT APPLICABLE	
	61101	PRIVATE - DEVELOPER	\$300,000 each cycle
	61102		
	61103		
	61104		
	61105		
	61109		
	61201	PRIVATE - DEVELOPER	\$100,000 each cycle
	61202		
	61203		
	61209		
	61300	PRIVATE - UTILITY	\$60,000,000
	61400	PRIVATE - UTILITY	\$3,000,000
	61500	PRIVATE - UTILITY	
	62100	PRIVATE - UTILITY	
	62200	PRIVATE - UTILITY	
	62300	PRIVATE - UTILITY	
	63110	FEDERAL - USGS-AGS	.7089 MAN-YEARS
	63210	FEDERAL - USGS-AGS BLM-SO	.092 MAN-YEARS .092 MAN-YEARS
	64100	STATE - AGNC	1.000 MAN-YEARS
	64200	AGNC	.167 MAN-YEARS
	69989	NOT APPLICABLE	
	69999	NOT APPLICABLE	

TABLE VIII (continued)

PHASE	ACTIVITY NUMBER	RESOURCES REQUIRED	
		AGENCY	UNITS
	43100	FEDERAL - DOE-DGHT	.375 MAN-YEARS
	49989	NOT APPLICABLE	
	49999	NOT APPLICABLE	
V	50000	NOT APPLICABLE	
	51100	PRIVATE - UTILITY	\$450,000
	52100	PRIVATE - UTILITY	\$100,000
	52200	PRIVATE - UTILITY	\$20,000
	52300	PRIVATE - UTILITY	\$10,000
	52400	PRIVATE - UTILITY	\$1,000
	52500	PRIVATE - UTILITY	\$1,000
	52600	PRIVATE - UTILITY	\$1,000
	52700	PRIVATE - UTILITY	\$1,000
	53110	FEDERAL - USGS-AGS	1.583 MAN-YEARS
		BLM-SO	.0333 MAN-YEARS
		BLM-DO	.040 MAN-YEARS
		FWS-AO	.040 MAN-YEARS
	53210	FEDERAL - BLM-DO	1.000 MAN-YEARS
	53310	FEDERAL - USGS-AGS	.062 MAN-YEARS
	53410	FEDERAL - BLM-DO	2.000 MAN-YEARS
		USGS-AGS	.250 MAN-YEARS
		FWS-AO	.021 MAN-YEARS
	53510	FEDERAL - USGS-AGS	.021 MAN-YEARS
		USGS-OAG	.008 MAN-YEARS
	54100	STATE AGNC	1.542 MAN-YEARS
	54110	STATE	.167 MAN-YEARS
	59989	NOT APPLICABLE	
	59999	NOT APPLICABLE	



TABLE VIII (continued)

PHASE	ACTIVITY NUMBER	RESOURCES REQUIRED	
		AGENCY	UNITS
	23311	FEDERAL - USGS-AGS	.021 MAN-YEARS
	23312	USGS-OAG	.008 MAN-YEARS
	23319		
	29989	NOT APPLICABLE	
	29999	NOT APPLICABLE	
III	30000	NOT APPLICABLE	
	31101	PRIVATE - DEVELOPER	\$300,000
	31102		
	31109		
	31200	PRIVATE - DEVELOPER	\$75,000
	32100	PRIVATE - DEVELOPER	\$50,000
	32201	PRIVATE - DEVELOPER	INCLUDED IN 31101
	32202		INCLUDED IN 31102
	32209		INCLUDED IN 31109
	33100	FEDERAL - USGS-AGS	.646 MAN-YEARS
		BLM-SO	.058 MAN-YEARS
		FWS-AO	.029 MAN-YEARS
	33211	FEDERAL - USGS-AGS	.012 MAN-YEARS
	33212	USGS-OAG	.008 MAN-YEARS
	39989	NOT APPLICABLE	
	39999	NOT APPLICABLE	
IV	40000	NOT APPLICABLE	
	41110	FEDERAL - USGS-AGS	.042 MAN-YEARS
		USGS-OAG	.004 MAN-YEARS
		PRIVATE - DEVELOPER	\$50,000
	41200	PRIVATE - DEVELOPER	\$150,000
	41300	PRIVATE - DEVELOPER	\$100,000
	42100		

TABLE IX

SAMPLE FORSITE OUTPUT--A GENERIC CRITICAL-PATH MANAGEMENT SCHEDULE

PAGE 1 SCHEDULE 1 - BLM,COMPETITIVE,OLD PROCEDURE,FIRST PLANT

* 1000-0	START PHASE 1 PRELIMINARY EXPLORATION	EARLIEST START = 0	LATEST START = 0	EARLIEST FINISH = 0	LATEST FINISH = 0	DURATION = 0
1	P-> 0-0					
	S-> 1110-0 1311-0 1998-9					
* 1110-0	CONDUCT PRELIMINARY FIELD EVALUATION	EARLIEST START = 0	LATEST START = 0	EARLIEST FINISH = 1000	LATEST FINISH = 1000	DURATION = 1000
2	P-> 1000-0					
	S-> 1130-1 1210-1 1220-0					
* 1130-1	CONDUCT PRE LEASE EXPLORATION	EARLIEST START = 1087	LATEST START = 1087	EARLIEST FINISH = 1504	LATEST FINISH = 1504	DURATION = 417
5	P-> 1110-0 1210-1 1341-1					
	S-> 1130-2 1210-2 1341-2					
* 1130-2	CONDUCT PRE LEASE EXPLORATION	EARLIEST START = 1587	LATEST START = 1587	EARLIEST FINISH = 2004	LATEST FINISH = 2004	DURATION = 417
7	P-> 1130-1 1210-2 1341-2					
	S-> 1130-3 1210-3 1341-3					
* 1130-3	CONDUCT PRE LEASE EXPLORATION	EARLIEST START = 2087	LATEST START = 2087	EARLIEST FINISH = 2504	LATEST FINISH = 2504	DURATION = 417
9	P-> 1130-2 1210-3 1341-3					
	S-> 1130-9 1210-9 1341-9					
* 1130-9	CONDUCT PRE LEASE EXPLORATION	EARLIEST START = 2587	LATEST START = 2587	EARLIEST FINISH = 3004	LATEST FINISH = 3004	DURATION = 417
11	P-> 1130-3 1210-9 1341-9					
	S-> 1999-9					
* 1210-1	FILE PRE LEASE NOTICE OF INTENT(NOI)	EARLIEST START = 1000	LATEST START = 1000	EARLIEST FINISH = 1004	LATEST FINISH = 1004	DURATION = 4
3	P-> 1110-0					
	S-> 1130-1 1341-1					
1210-2	FILE PRE LEASE NOTICE OF INTENT(NOI)	EARLIEST START = 1504	LATEST START = 1583	EARLIEST FINISH = 1508	LATEST FINISH = 1587	DURATION = 4
6	P-> 1130-1					
	S-> 1130-2					
1210-3	FILE PRE LEASE NOTICE OF INTENT(NOI)	EARLIEST START = 2004	LATEST START = 2083	EARLIEST FINISH = 2008	LATEST FINISH = 2087	DURATION = 4
8	P-> 1130-2					
	S-> 1130-3					
1210-9	FILE PRE LEASE NOTICE OF INTENT(NOI)	EARLIEST START = 2504	LATEST START = 2583	EARLIEST FINISH = 2508	LATEST FINISH = 2587	DURATION = 4
10	P-> 1130-3					
	S-> 1130-9					
1220-0	FILE BID ON COMPETITIVE LEASE SALE	EARLIEST START = 1751	LATEST START = 2750	EARLIEST FINISH = 1755	LATEST FINISH = 2754	DURATION = 4
5	P-> 1110-0 1331-0					
	S-> 1351-0					

TABLE IX (continued)

PAGE 2 SCHEDULE 1 - RLM,COMPETITIVE,OLD PROCEDURE,FIRST PLANT

1311-0	DESIGNATE KGRA OLD PROCEDURE								
2	P-> 1000-0 S-> 1321-0	EARLIEST START = 0	LATEST START = 999	EARLIEST FINISH = 21	LATEST FINISH = 1020	DURATION = 21			
1321-0	PREPARE EAR AND CONDUCT PRE SALE EVALUATION DLM,OLD CASE								
3	P-> 1311-0 S-> 1331-0	EARLIEST START = 21	LATEST START = 1020	EARLIEST FINISH = 1688	LATEST FINISH = 2687	DURATION = 1667			
1331-0	PUBLISH LEASE SALE NOTICE OLD PROCEDURE								
4	P-> 1321-0 S-> 1220-0	EARLIEST START = 1688	LATEST START = 2687	EARLIEST FINISH = 1751	LATEST FINISH = 2750	DURATION = 63			
* 1341-1	PROCESS PRE LEASE NOTICE OF INTENT(NOI) OLD PROCEDURE								
4	P-> 1210-1 S-> 1130-1	EARLIEST START = 1004	LATEST START = 1004	EARLIEST FINISH = 1087	LATEST FINISH = 1087	DURATION = 83			
* 1341-2	PROCESS PRE LEASE NOTICE OF INTENT(NOI) OLD PROCEDURE								
6	P-> 1130-1 S-> 1130-2	EARLIEST START = 1504	LATEST START = 1504	EARLIEST FINISH = 1587	LATEST FINISH = 1587	DURATION = 83			
* 1341-3	PROCESS PRE LEASE NOTICE OF INTENT(NOI) OLD PROCEDURE								
8	P-> 1130-2 S-> 1130-3	EARLIEST START = 2004	LATEST START = 2004	EARLIEST FINISH = 2087	LATEST FINISH = 2087	DURATION = 83			
* 1341-9	PROCESS PRE LEASE NOTICE OF INTENT(NOI) OLD PROCEDURE								
10	P-> 1130-3 S-> 1130-9	EARLIEST START = 2504	LATEST START = 2504	EARLIEST FINISH = 2587	LATEST FINISH = 2587	DURATION = 83			
1351-0	CONDUCT LEASE SALE OLD PROCEDURE								
6	P-> 1220-0 S-> 1999-9	EARLIEST START = 1755	LATEST START = 2754	EARLIEST FINISH = 2005	LATEST FINISH = 3004	DURATION = 250			
1998-9	STOP PHASE 1								
2	P-> 1000-0 S-> 1999-9	EARLIEST START = 0	LATEST START = 3004	EARLIEST FINISH = 0	LATEST FINISH = 3004	DURATION = 0			
* 1999-9	LEASE/CONTRACT SIGNED								
12	P-> 1130-9 1351-0 1998-9 S-> 0-0	EARLIEST START = 3004	LATEST START = 3004	EARLIEST FINISH = 3004	LATEST FINISH = 3004	DURATION = 0			
* 2000-0	START PHASE 2 FLUID CONFIRMATION								
1	P-> 0-0 S-> 2110-1 2210-1 2220-0 2998-9	EARLIEST START = 3004	LATEST START = 3004	EARLIEST FINISH = 3004	LATEST FINISH = 3004	DURATION = 0			

TABLE IX (continued)

PAGE 3 SCHEDULE 1 - BLN,COMPETITIVE,OLD PROCEDURE,FIRST PLANT

• 2110-1	CONDUCT POST LEASE EXPLORATION	EARLIEST START = 3108	LATEST START = 3108	EARLIEST FINISH = 3608	LATEST FINISH = 3608	DURATION = 500
4	P-> 2000-0 2210-1 2311-1 S-> 2110-2 2210-2					
• 2110-2	CONDUCT POST LEASE EXPLORATION	EARLIEST START = 3712	LATEST START = 3712	EARLIEST FINISH = 4212	LATEST FINISH = 4212	DURATION = 500
7	P-> 2110-1 2210-2 2311-2 S-> 2110-9 2210-9					
• 2110-9	CONDUCT POST LEASE EXPLORATION	EARLIEST START = 4316	LATEST START = 4316	EARLIEST FINISH = 4816	LATEST FINISH = 4816	DURATION = 500
10	P-> 2110-2 2210-9 2311-9 S-> 2120-1 2230-1					
• 2120-1	CONDUCT DEEP WELL EXPLORATION FOR FLUID CONFIRMATION	EARLIEST START = 4879	LATEST START = 4879	EARLIEST FINISH = 5296	LATEST FINISH = 5296	DURATION = 417
13	P-> 2110-9 2230-1 2331-1 S-> 2120-2 2230-2					
• 2120-2	CONDUCT DEEP WELL EXPLORATION FOR FLUID CONFIRMATION	EARLIEST START = 5359	LATEST START = 5359	EARLIEST FINISH = 5776	LATEST FINISH = 5776	DURATION = 417
16	P-> 2120-1 2230-2 2331-2 S-> 2120-9 2230-9					
• 2120-9	CONDUCT DEEP WELL EXPLORATION FOR FLUID CONFIRMATION	EARLIEST START = 5839	LATEST START = 5839	EARLIEST FINISH = 6256	LATEST FINISH = 6256	DURATION = 417
19	P-> 2120-2 2230-9 2331-9 S-> 2999-9					
• 2210-1	FILE POST LEASE NOTICE OF INTENT(NOI)	EARLIEST START = 3004	LATEST START = 3004	EARLIEST FINISH = 3025	LATEST FINISH = 3025	DURATION = 21
2	P-> 2000-0 S-> 2110-1 2311-1					
• 2210-2	FILE POST LEASE NOTICE OF INTENT(NOI)	EARLIEST START = 3608	LATEST START = 3608	EARLIEST FINISH = 3629	LATEST FINISH = 3629	DURATION = 21
5	P-> 2110-1 S-> 2110-2 2311-2					
• 2210-9	FILE POST LEASE NOTICE OF INTENT(NOI)	EARLIEST START = 4212	LATEST START = 4212	EARLIEST FINISH = 4233	LATEST FINISH = 4233	DURATION = 21
8	P-> 2110-2 S-> 2110-9 2311-9					
2220-0	SUBMIT PLAN OF EXPLORATION(POE)	EARLIEST START = 3004	LATEST START = 4045	EARLIEST FINISH = 3254	LATEST FINISH = 4295	DURATION = 250
2	P-> 2000-0 S-> 2321-0					
• 2230-1	FILE APPLICATION FOR PERMIT TO DRILL(APD)	EARLIEST START = 4816	LATEST START = 4816	EARLIEST FINISH = 4837	LATEST FINISH = 4837	DURATION = 21
11	P-> 2110-9 2321-0 S-> 2120-1 2331-1					

TABLE IX (continued)

PAGE 4 SCHEDULE 1 - RLM,COMPETITIVE,OLD PROCEDURE,FIRST PLANT

♦	2230-2	FILE APPLICATION FOR PERMIT TO DRILL(APD) EARLIEST START = 5296 LATEST START = 5296 EARLIEST FINISH = 5317 LATEST FINISH = 5317 DURATION = 21
	14	P-> 2120-1 S-> 2120-2 2331-2
♦	2230-9	FILE APPLICATION FOR PERMIT TO DRILL(APD) EARLIEST START = 5776 LATEST START = 5776 EARLIEST FINISH = 5797 LATEST FINISH = 5797 DURATION = 21
	17	P-> 2120-2 S-> 2120-9 2331-9
♦	2311-1	PROCESS POST LEASE NOI EARLIEST START = 3025 LATEST START = 3025 EARLIEST FINISH = 3108 LATEST FINISH = 3108 DURATION = 83
	3	P-> 2210-1 S-> 2110-1
♦	2311-2	PROCESS POST LEASE NOI EARLIEST START = 3629 LATEST START = 3629 EARLIEST FINISH = 3712 LATEST FINISH = 3712 DURATION = 83
	6	P-> 2210-2 S-> 2110-2
♦	2311-9	PROCESS POST LEASE NOI EARLIEST START = 4233 LATEST START = 4233 EARLIEST FINISH = 4316 LATEST FINISH = 4316 DURATION = 83
	9	P-> 2210-9 S-> 2110-9
	2321-0	PROCESS PLAN OF EXPLORATION FOR FLUID CONFIRMATION EARLIEST START = 3254 LATEST START = 4295 EARLIEST FINISH = 3775 LATEST FINISH = 4816 DURATION = 521
	3	P-> 2220-0 S-> 2230-1
♦	2331-1	PROCESS APD OLD PROCEDURE EARLIEST START = 4837 LATEST START = 4837 EARLIEST FINISH = 4879 LATEST FINISH = 4879 DURATION = 42
	12	P-> 2230-1 S-> 2120-1
♦	2331-2	PROCESS APD OLD PROCEDURE EARLIEST START = 5317 LATEST START = 5317 EARLIEST FINISH = 5359 LATEST FINISH = 5359 DURATION = 42
	15	P-> 2230-2 S-> 2120-2
♦	2331-9	PROCESS APD OLD PROCEDURE EARLIEST START = 5797 LATEST START = 5797 EARLIEST FINISH = 5839 LATEST FINISH = 5839 DURATION = 42
	18	P-> 2230-9 S-> 2120-9
	2998-9	STOP PHASE 2 EARLIEST START = 3004 LATEST START = 6256 EARLIEST FINISH = 3004 LATEST FINISH = 6256 DURATION = 0
	2	P-> 2000-0 S-> 2999-9
♦	2999-9	FLUID CONFIRMED EARLIEST START = 6256 LATEST START = 6256 EARLIEST FINISH = 6256 LATEST FINISH = 6256 DURATION = 0
	20	P-> 2999-9 2120-9 S-> 0-0

TABLE IX (continued)

PAGE 5 SCHEDULE 1 - BLM,COMPETITIVE,OLD PROCEDURF,FIRST PLANT

•	3000-0	START PHASE 3 RESERVOIR CONFIRMATION EARLIEST START = 6256 LATEST START = 6256 EARLIEST FINISH = 6256 LATEST FINISH = 6256 DURATION = 0
	1	P-> 0-0 S-> 3110-1 3210-0 3220-1 3998-9
•	3110-1	CONDUCT DEEP WELL DRILLING FOR RESERVOIR CONFIRMATION EARLIEST START = 7090 LATEST START = 7090 EARLIEST FINISH = 7507 LATEST FINISH = 7507 DURATION = 417
	6	P-> 3220-1 3321-1 3000-0 S-> 3110-2 3220-2
•	3110-2	CONDUCT DEEP WELL DRILLING FOR RESERVOIR CONFIRMATION EARLIEST START = 7570 LATEST START = 7570 EARLIEST FINISH = 7987 LATEST FINISH = 7987 DURATION = 417
	9	P-> 3220-2 3321-2 3110-1 S-> 3110-9 3220-9
•	3110-9	CONDUCT DEEP WELL DRILLING FOR RESERVOIR CONFIRMATION EARLIEST START = 8050 LATEST START = 8050 EARLIEST FINISH = 8467 LATEST FINISH = 8467 DURATION = 417
	12	P-> 3220-9 3321-9 3110-2 S-> 3120-0
•	3120-0	CONDUCT RESERVOIR ENGINEERING EARLIEST START = 8467 LATEST START = 8467 EARLIEST FINISH = 8967 LATEST FINISH = 8967 DURATION = 500
	13	P-> 3110-9 S-> 3999-9
•	3210-0	SUMMIT PLAN OF EXPLORATION(POE) FOR RESERVOIR CONFIRMATION EARLIEST START = 6256 LATEST START = 6256 EARLIEST FINISH = 6506 LATEST FINISH = 6506 DURATION = 250
	2	P-> 3000-0 S-> 3310-0
•	3220-1	FILE APPLICATION FOR PERMIT TO DRILL(APD) EARLIEST START = 7027 LATEST START = 7027 EARLIEST FINISH = 7048 LATEST FINISH = 7048 DURATION = 21
	4	P-> 3000-0 3110-0 S-> 3110-1 3321-1
•	3220-2	FILE APPLICATION FOR PERMIT TO DRILL(APD) EARLIEST START = 7507 LATEST START = 7507 EARLIEST FINISH = 7528 LATEST FINISH = 7528 DURATION = 21
	7	P-> 3110-1 S-> 3110-2 3321-2
•	3220-9	FILE APPLICATION FOR PERMIT TO DRILL(APD) EARLIEST START = 7987 LATEST START = 7987 EARLIEST FINISH = 8008 LATEST FINISH = 8008 DURATION = 21
	10	P-> 3110-2 S-> 3110-9 3321-9
•	3310-0	PROCESS POE FOR RESERVOIR CONFIRMATION EARLIEST START = 6506 LATEST START = 6506 EARLIEST FINISH = 7027 LATEST FINISH = 7027 DURATION = 521
	3	P-> 3210-0 S-> 3220-1
•	3321-1	PROCESS APD OLD PROCEDURF EARLIEST START = 7048 LATEST START = 7048 EARLIEST FINISH = 7090 LATEST FINISH = 7090 DURATION = 42
	5	P-> 3220-1 S-> 3110-1

TABLE IX (continued)

PAGE 6 SCHEDULE 1 - BLM, COMPETITIVE, OLD PROCEDURE, FIRST PLANT

•	3321-2	PROCESS APD OLD PROCEDURE EARLIEST START = 7528 LATEST START = 7528 EARLIEST FINISH = 7570 LATEST FINISH = 7570 DURATION = 42
	8	P-> 3220-2 S-> 3110-2
•	3321-9	PROCESS APD OLD PROCEDURE EARLIEST START = 8008 LATEST START = 8008 EARLIEST FINISH = 8050 LATEST FINISH = 8050 DURATION = 42
	11	P-> 3220-9 S-> 3110-9
	3998-9	STOP PHASE 3 EARLIEST START = 6256 LATEST START = 8967 EARLIEST FINISH = 6256 LATEST FINISH = 8967 DURATION = 0
	2	P-> 3000-0 S-> 3999-9
•	3999-9	RESERVOIR CONFIRMED EARLIEST START = 8967 LATEST START = 8967 EARLIEST FINISH = 8967 LATEST FINISH = 8967 DURATION = 0
	14	P-> 3998-9 3120-0 S-> 0-0
•	4000-0	START PHASE 4 FINANCIAL NEGOTIATIONS EARLIEST START = 8967 LATEST START = 8967 EARLIEST FINISH = 8967 LATEST FINISH = 8967 DURATION = 0
	1	P-> 0-0 S-> 4111-0 4120-0 4210-0 4998-9
	4111-0	UNITIZE FIELD OLD PROCEDURE EARLIEST START = 8967 LATEST START = 9217 EARLIEST FINISH = 9967 LATEST FINISH = 10217 DURATION = 1000
	2	P-> 4000-0 S-> 4999-9
•	4120-0	CONDUCT FEASIBILITY STUDY EARLIEST START = 8967 LATEST START = 8967 EARLIEST FINISH = 9384 LATEST FINISH = 9384 DURATION = 417
	2	P-> 4000-0 S-> 4130-0
•	4130-0	CONDUCT FINANCIAL NEGOTIATIONS EARLIEST START = 9384 LATEST START = 9384 EARLIEST FINISH = 10217 LATEST FINISH = 10217 DURATION = 833
	3	P-> 4120-0 S-> 4999-9
	4210-0	APPLY FOR FEDERAL LOAN GUARANTEE EARLIEST START = 8967 LATEST START = 9446 EARLIEST FINISH = 8988 LATEST FINISH = 9467 DURATION = 21
	2	P-> 4000-0 S-> 4310-0
	4310-0	PROCESS APPLICATION FOR LOAN GUARANTEE EARLIEST START = 8988 LATEST START = 9467 EARLIEST FINISH = 9738 LATEST FINISH = 10217 DURATION = 750
	3	P-> 4210-0 S-> 4999-9
	4998-9	STOP PHASE 4 EARLIEST START = 8967 LATEST START = 10217 EARLIEST FINISH = 8967 LATEST FINISH = 10217 DURATION = 0
	2	P-> 4000-0 S-> 4999-9

TABLE IX (continued)

PAGE 7 SCHEDULE I - RLM,COMPETITIVE,OLD PROCEDURE,FIRST PLANT

* 4999-9	STEAM/FLUID CONTRACT SIGNED EARLIEST START = 10217 LATEST START = 10217 EARLIEST FINISH = 10217 LATEST FINISH = 10217 DURATION = 0
4	P-> 4111-0 4310-0 4998-9 4130-0 S-> 0-0
* 5000-0	START PHASE 5 DESIGN EARLIEST START = 10217 LATEST START = 10217 EARLIEST FINISH = 10217 LATEST FINISH = 10217 DURATION = 0
1	P-> 0-0 S-> 5110-0 5210-0 5220-0 5230-0 5998-9
5110-0	CONDUCT PRELIMINARY DESIGN EARLIEST START = 10217 LATEST START = 11509 EARLIEST FINISH = 10717 LATEST FINISH = 12009 DURATION = 500
2	P-> 5000-0 S-> 5120-0
* 5120-0	CONDUCT DETAILED DESIGN EARLIEST START = 12009 LATEST START = 12009 EARLIEST FINISH = 13176 LATEST FINISH = 13176 DURATION = 1167
4	P-> 5110-0 5311-0 5321-0 5331-0 S-> 5240-0 5250-0 5260-0 5270-0 5999-9
* 5210-0	SUBMIT PLAN OF DEVELOPMENT(POD) AND PLAN OF INJECTION(POI) EARLIEST START = 10217 LATEST START = 10217 EARLIEST FINISH = 11217 LATEST FINISH = 11217 DURATION = 1000
2	P-> 5000-0 S-> 5311-0
5220-0	SUBMIT PLAN FOR POWER LINE RIGHT OF WAY(PPLROW) EARLIEST START = 10217 LATEST START = 11259 EARLIEST FINISH = 10467 LATEST FINISH = 11509 DURATION = 250
2	P-> 5000-0 S-> 5321-0
5230-0	SUBMIT PLAN OF BASELINE DATA COLLECTION(POBDC) EARLIEST START = 10217 LATEST START = 11634 EARLIEST FINISH = 10467 LATEST FINISH = 11884 DURATION = 250
2	P-> 5000-0 S-> 5331-0
* 5240-0	SUBMIT PLAN OF UTILIZATION(POU) AND APPLY FOR UTILIZA.PERMIT EARLIEST START = 13176 LATEST START = 13176 EARLIEST FINISH = 13201 LATEST FINISH = 13201 DURATION = 25
5	P-> 5120-0 S-> 5341-0
5250-0	SUBMIT APD EARLIEST START = 13176 LATEST START = 14618 EARLIEST FINISH = 13218 LATEST FINISH = 14660 DURATION = 42
5	P-> 5120-0 S-> 5351-0
* 5260-0	APPLY FOR STATE SITING LICENSE EARLIEST START = 13176 LATEST START = 13176 EARLIEST FINISH = 13201 LATEST FINISH = 13201 DURATION = 25
5	P-> 5120-0 S-> 5410-0
5270-0	APPLY FOR STATE CONSTRUCTION PERMITS EARLIEST START = 13176 LATEST START = 14218 EARLIEST FINISH = 13201 LATEST FINISH = 14243 DURATION = 25
5	P-> 5120-0 S-> 5420-0



TABLE IX (continued)

PAGE #	SCHEDULE	1 - BLM,COMPETITIVE,OLD PROCEDURE,FIRST PLANT
* 5311-0	PROCESS POD AND POI BLM,OLD PROCEDURE	EARLIEST START = 11217 LATEST START = 11217 EARLIEST FINISH = 12009 LATEST FINISH = 12009 DURATION = 792
3	P-> 5210-0 S-> 5120-0	
5321-0	PROCESS PPLROW BLM LEASE	EARLIEST START = 10467 LATEST START = 11509 EARLIEST FINISH = 10967 LATEST FINISH = 12009 DURATION = 900
3	P-> 5220-0 S-> 5120-0	
5331-0	PROCESS POBDC OLD PROCEDURE	EARLIEST START = 10467 LATEST START = 11884 EARLIEST FINISH = 10592 LATEST FINISH = 12009 DURATION = 125
3	P-> 5230-0 S-> 5120-0	
* 5341-0	PROCESS POU AND 1ST STEP UTILIZATION PERMIT APP. BLM,OLD	EARLIEST START = 13201 LATEST START = 13201 EARLIEST FINISH = 14743 LATEST FINISH = 14743 DURATION = 1542
6	P-> 5240-0 S-> 5999-9	
5351-0	PROCESS APD OLD PROCEDURE	EARLIEST START = 13218 LATEST START = 14660 EARLIEST FINISH = 13301 LATEST FINISH = 14743 DURATION = 83
6	P-> 5250-0 S-> 5999-9	
* 5410-0	PROCESS STATE SITING LICENSE	EARLIEST START = 13201 LATEST START = 13201 EARLIEST FINISH = 14743 LATEST FINISH = 14743 DURATION = 1542
6	P-> 5260-0 S-> 5999-9	
5420-0	PROCESS STATE CONSTRUCTION PERMITS	EARLIEST START = 13201 LATEST START = 14243 EARLIEST FINISH = 13701 LATEST FINISH = 14743 DURATION = 500
6	P-> 5270-0 S-> 5999-9	
5998-9	STOP PHASE 5	EARLIEST START = 10217 LATEST START = 14743 EARLIEST FINISH = 10217 LATEST FINISH = 14743 DURATION = 0
2	P-> 5000-0 S-> 5999-9	
* 5999-9	DESIGN COMPLETED AND PERMITS FOR CONSTRUCTION OBTAINED	EARLIEST START = 14743 LATEST START = 14743 EARLIEST FINISH = 14743 LATEST FINISH = 14743 DURATION = 0
7	P-> 5341-0 5351-0 5410-0 5420-0 5998-9 5120-0 S-> 0-0	
* 6000-0	START PHASE 6 CONSTRUCTION	EARLIEST START = 14743 LATEST START = 14743 EARLIEST FINISH = 14743 LATEST FINISH = 14743 DURATION = 0
1	P-> 0-0 S-> 6110-1 6120-1 6130-0 6140-0 6210-0 6311-0 6410-0 6998-9	
6110-1	DRILL DEVELOPMENT WELLS	EARLIEST START = 14743 LATEST START = 15723 EARLIEST FINISH = 14913 LATEST FINISH = 15893 DURATION = 170
2	P-> 6000-0 S-> 6110-2	

TABLE IX (continued)

PAGE 9 SCHEDULE 1 - BLM, COMPETITIVE, OLD PROCEDURE, FIRST PLANT

6110-2	DRILL DEVELOPMENT WELLS	EARLIEST START = 14913	LATEST START = 15093	EARLIEST FINISH = 15083	LATEST FINISH = 16063	DURATION = 170
3	P-> 6110-1					
	S-> 6110-3					
6110-3	DRILL DEVELOPMENT WELLS	EARLIEST START = 15083	LATEST START = 16063	EARLIEST FINISH = 15253	LATEST FINISH = 16233	DURATION = 170
4	P-> 6110-2					
	S-> 6110-4					
6110-4	DRILL DEVELOPMENT WELLS	EARLIEST START = 15253	LATEST START = 16233	EARLIEST FINISH = 15423	LATEST FINISH = 16403	DURATION = 170
5	P-> 6110-3					
	S-> 6110-5					
6110-5	DRILL DEVELOPMENT WELLS	EARLIEST START = 15423	LATEST START = 16403	EARLIEST FINISH = 15593	LATEST FINISH = 16573	DURATION = 170
6	P-> 6110-4					
	S-> 6110-9					
6110-9	DRILL DEVELOPMENT WELLS	EARLIEST START = 15593	LATEST START = 16573	EARLIEST FINISH = 15763	LATEST FINISH = 16743	DURATION = 170
7	P-> 6110-5					
	S-> 6150-0					
6120-1	DRILL INJECTION WELLS	EARLIEST START = 14743	LATEST START = 16063	EARLIEST FINISH = 14913	LATEST FINISH = 16233	DURATION = 170
2	P-> 6000-0					
	S-> 6120-2					
6120-2	DRILL INJECTION WELLS	EARLIEST START = 14913	LATEST START = 16233	EARLIEST FINISH = 15083	LATEST FINISH = 16403	DURATION = 170
3	P-> 6120-1					
	S-> 6120-3					
6120-3	DRILL INJECTION WELLS	EARLIEST START = 15083	LATEST START = 16403	EARLIEST FINISH = 15253	LATEST FINISH = 16573	DURATION = 170
4	P-> 6120-2					
	S-> 6120-9					
6120-9	DRILL INJECTION WELLS	EARLIEST START = 15253	LATEST START = 16573	EARLIEST FINISH = 15423	LATEST FINISH = 16743	DURATION = 170
5	P-> 6120-3					
	S-> 6150-0					
6130-0	CONSTRUCT POWER PLANT	EARLIEST START = 14743	LATEST START = 14743	EARLIEST FINISH = 16743	LATEST FINISH = 16743	DURATION = 2000
2	P-> 6000-0					
	S-> 6150-0					
6140-0	CONSTRUCT TRANSMISSION LINES	EARLIEST START = 14743	LATEST START = 15743	EARLIEST FINISH = 15743	LATEST FINISH = 16743	DURATION = 1000
2	P-> 6000-0					
	S-> 6150-0					

TABLE IX (continued)

PAGE 10 SCHEDULE 1 - RLM,COMPETITIVE,OLD PROCEDURE,FIRST PLANT

* 6150-0	CONDUCT PRE STARTUP TESTING	EARLIEST START = 16743	LATEST START = 16743	EARLIEST FINISH = 17243	LATEST FINISH = 17243	DURATION = 500
8	P-> 6110-9 6120-9 6130-0 6140-0 6311-0 6410-0					
	S-> 6220-0 6230-0 6999-9					
6210-0	COLLECT ENVIRONMENTAL BASELINE DATA	EARLIEST START = 14743	LATEST START = 16243	EARLIEST FINISH = 15743	LATEST FINISH = 17243	DURATION = 1000
2	P-> 6000-0					
	S-> 6220-0 6230-0					
6220-0	SUBMIT PLAN FOR PRODUCTION(PFP)AND APP.FOR 2ND STEP UT.PERMIT	EARLIEST START = 17243	LATEST START = 17618	EARLIEST FINISH = 17264	LATEST FINISH = 17639	DURATION = 21
9	P-> 6150-0 6210-0					
	S-> 6321-0					
* 6230-0	APPLY FOR STATE OPERATING PERMITS	EARLIEST START = 17243	LATEST START = 17243	EARLIEST FINISH = 17264	LATEST FINISH = 17264	DURATION = 21
9	P-> 6150-0 6210-0					
	S-> 6420-0					
* 6311-0	MONITOR AND CERTIFY CONSTRUCTION ACTIVITIES OLD PROCEDURE	EARLIEST START = 14743	LATEST START = 14743	EARLIEST FINISH = 16743	LATEST FINISH = 16743	DURATION = 2000
2	P-> 6000-0					
	S-> 6150-0					
6321-0	PROCESS PFP AND 2ND STEP UT.PERMIT BLM,OLD CASE	EARLIEST START = 17264	LATEST START = 17639	EARLIEST FINISH = 17389	LATEST FINISH = 17764	DURATION = 125
10	P-> 6220-0					
	S-> 6999-9					
* 6410-0	MONITOR AND CERTIFY CONSTRUCTION ACTIVITIES(STATE)	EARLIEST START = 14743	LATEST START = 14743	EARLIEST FINISH = 16743	LATEST FINISH = 16743	DURATION = 2000
2	P-> 6000-0					
	S-> 6150-0					
* 6420-0	PROCESS STATE OPERATING PERMITS	EARLIEST START = 17264	LATEST START = 17264	EARLIEST FINISH = 17764	LATEST FINISH = 17764	DURATION = 500
10	P-> 6230-0					
	S-> 6999-9					
6998-9	STOP PHASE 6	EARLIEST START = 14743	LATEST START = 17764	EARLIEST FINISH = 14743	LATEST FINISH = 17764	DURATION = 0
2	P-> 6000-0					
	S-> 6999-9					
* 6999-9	POWER ON LINE(POL)	EARLIEST START = 17764	LATEST START = 17764	EARLIEST FINISH = 17764	LATEST FINISH = 17764	DURATION = 0
11	P-> 6321-0 6420-0 6998-9 6150-0					
	S-> 0-0					

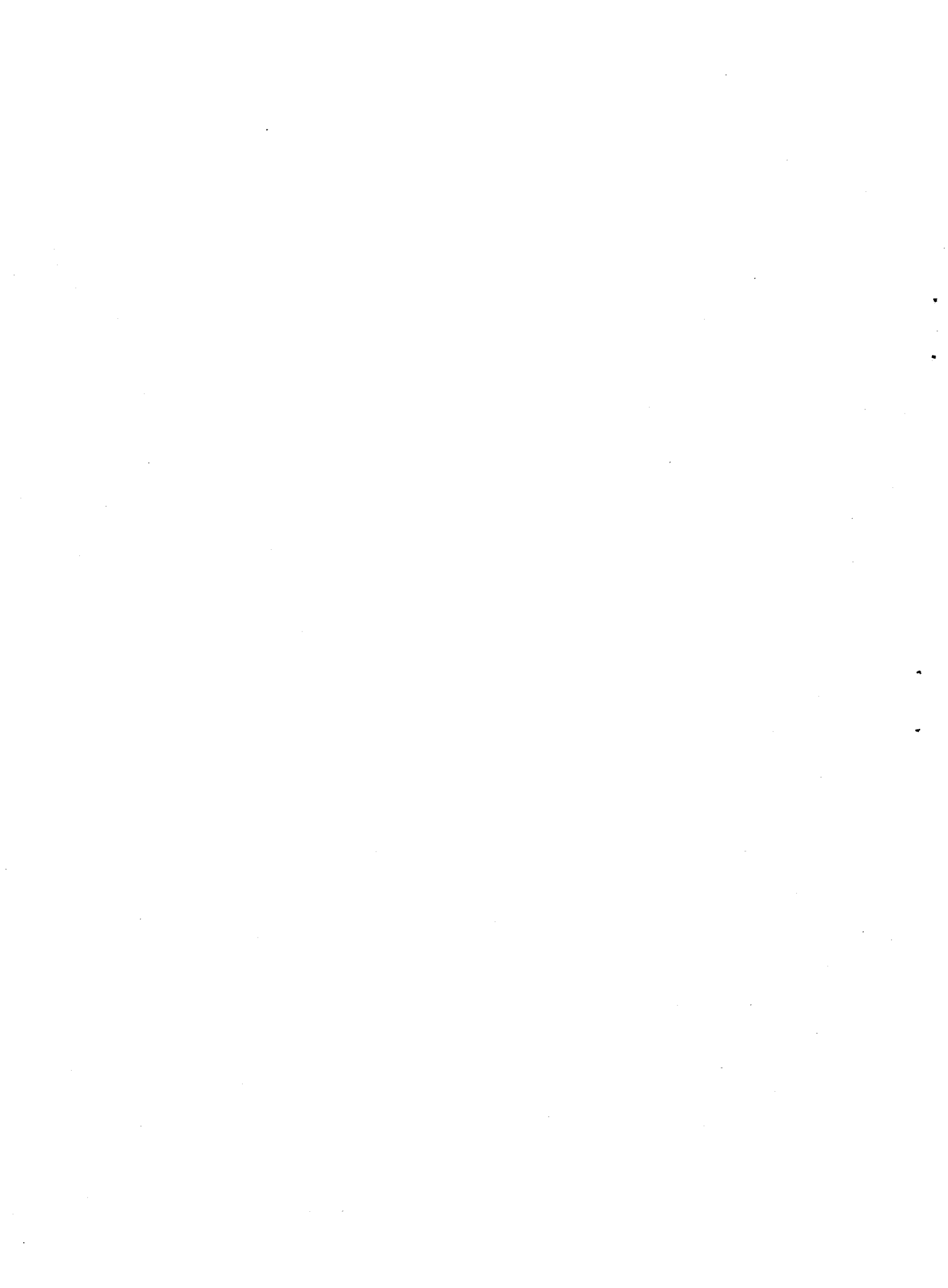
TABLE IX (concluded)

PAGE 11 SCHEDULE 1 - ALM, COMPETITIVE, OLD PROCEDURE, FIRST PLANT

CRITICAL PATH

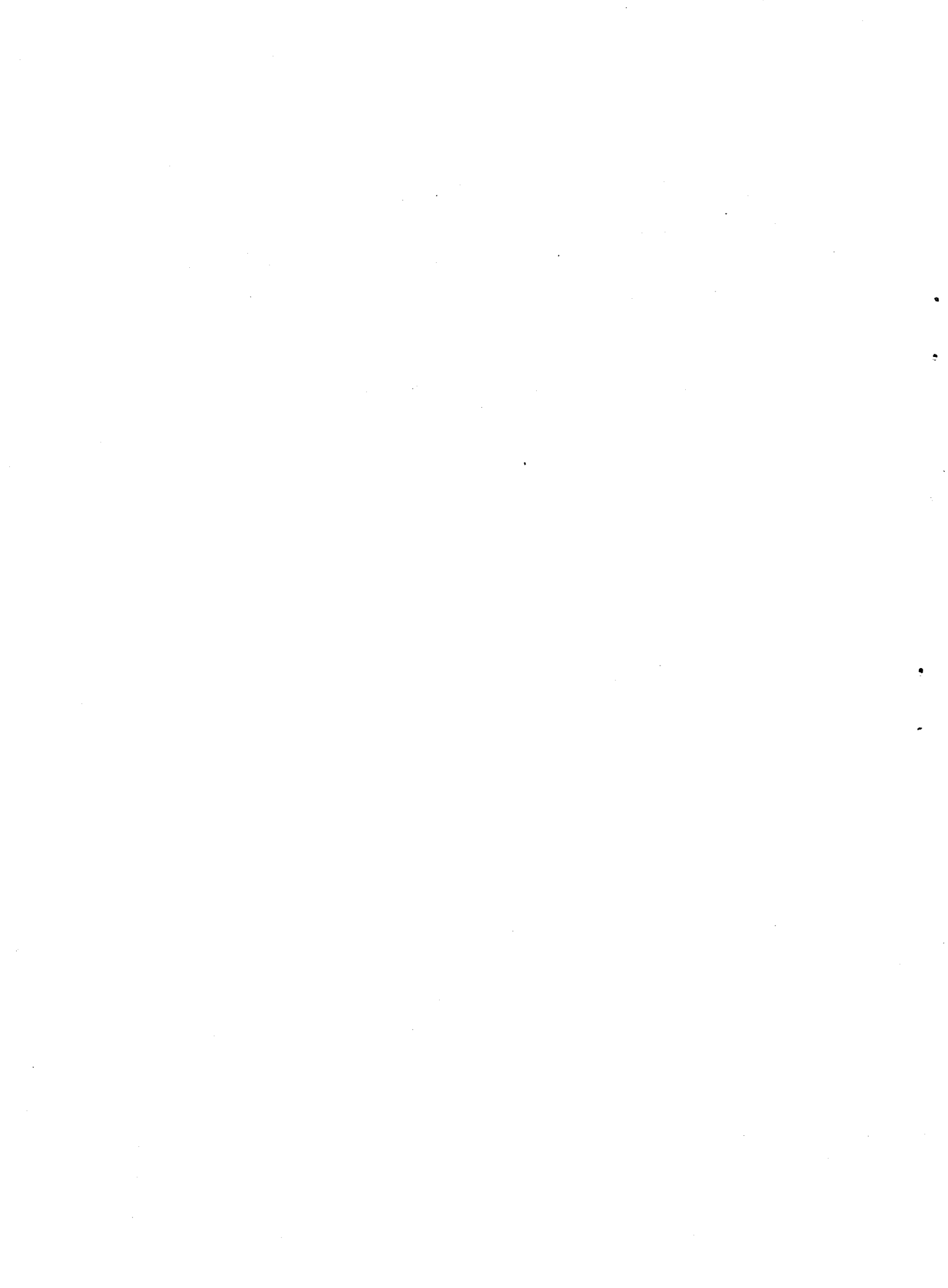
ACTVTY	START	ACTVTY	START	ACTVTY	START
1000-0	0	2230-2	5296	5000-0	10217
1110-0	0	2331-2	5317	5210-0	10217
1210-1	1000	2120-2	5359	5311-0	11217
1341-1	1004	2230-9	5776	5170-0	12009
1130-1	1087	2331-9	5797	5240-0	13176
1341-2	1504	2120-9	5839	5260-0	13176
1130-2	1587	2999-9	6256	5341-0	13201
1341-3	2004	3000-0	6256	5410-0	13201
1130-3	2087	3210-0	6256	5999-9	14743
1341-9	2504	3310-0	6506	6000-0	14743
1130-9	2587	3220-1	7027	6130-0	14743
1999-9	3004	3321-1	7048	6311-0	14743
2000-0	3004	3110-1	7090	6410-0	14743
2210-1	3004	3220-2	7507	6150-0	16743
2311-1	3025	3321-2	7528	6230-0	17243
2110-1	3108	3110-2	7570	6420-0	17264
2210-2	3608	3220-9	7987	6999-9	17764
2311-2	3629	3321-9	8008		
2110-2	3712	3110-9	8050		
2210-9	4212	3120-0	8467		
2311-9	4233	3999-9	8967		
2110-9	4316	4000-0	8967		
2230-1	4816	4120-0	8967		
2331-1	4837	4130-0	9384		
2120-1	4879	4999-9	10217		

53/54



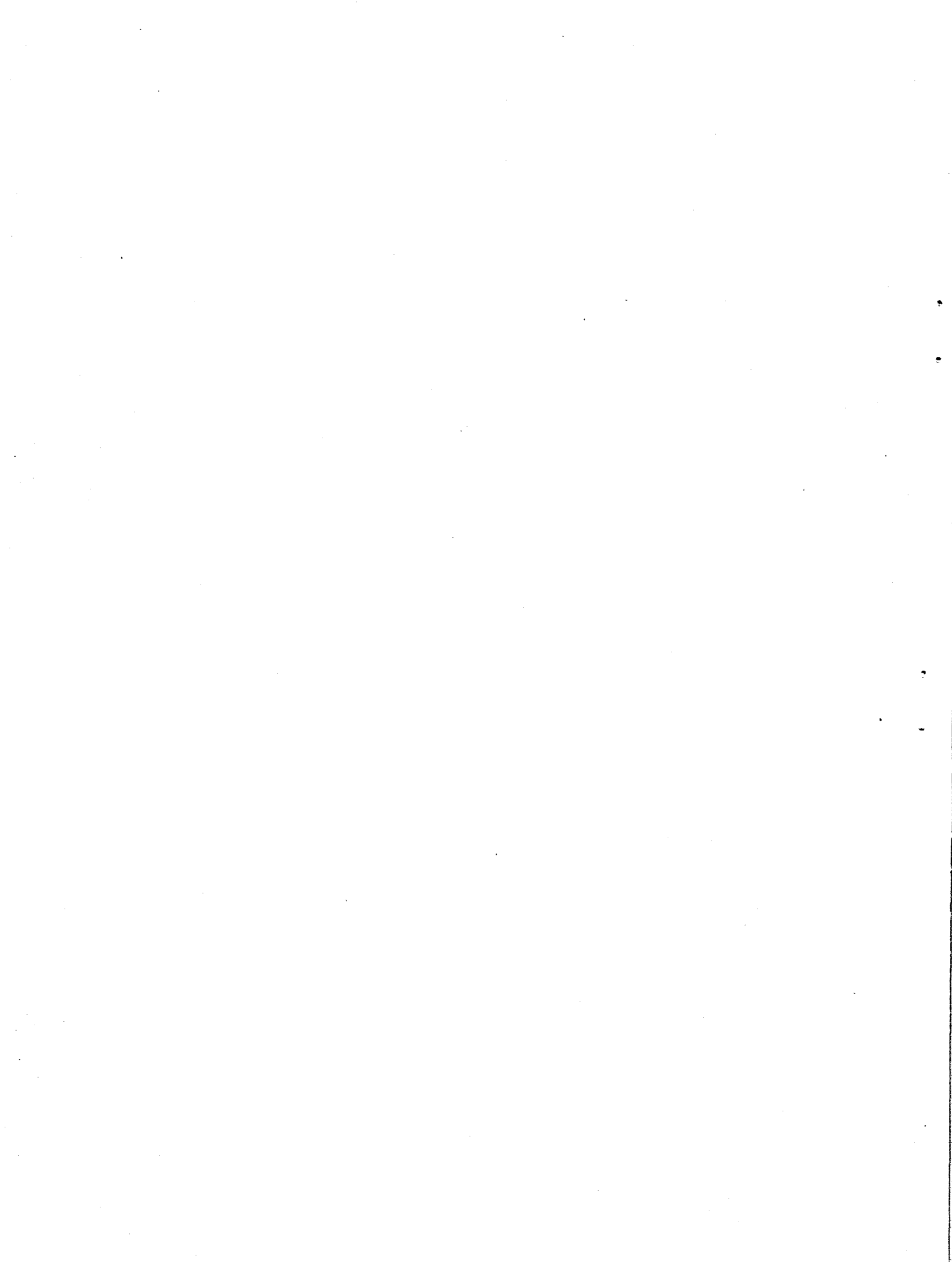
## REFERENCES

1. Entingh, D. J., et al., FORSITE, A Multiple-project Management System: Overview and General Description, MTR-82W79, The MITRE Corporation, McLean, VA, June 1982.
2. Entingh, D. J., FORSITE, A Multiple-project Monitoring System: Documentation of Main Processor for Geothermal Development, WP-82W360, The MITRE Corporation, McLean, VA, March 1982.
3. Ward, S. H., H. P. Ross, and D. L. Nielson, "Exploration Strategy of High-temperature Hydrothermal System in Basin and Range Province," Journal of the American Association of Petroleum Geologists, Vol. 65-1, pp. 86-102, January 1981.



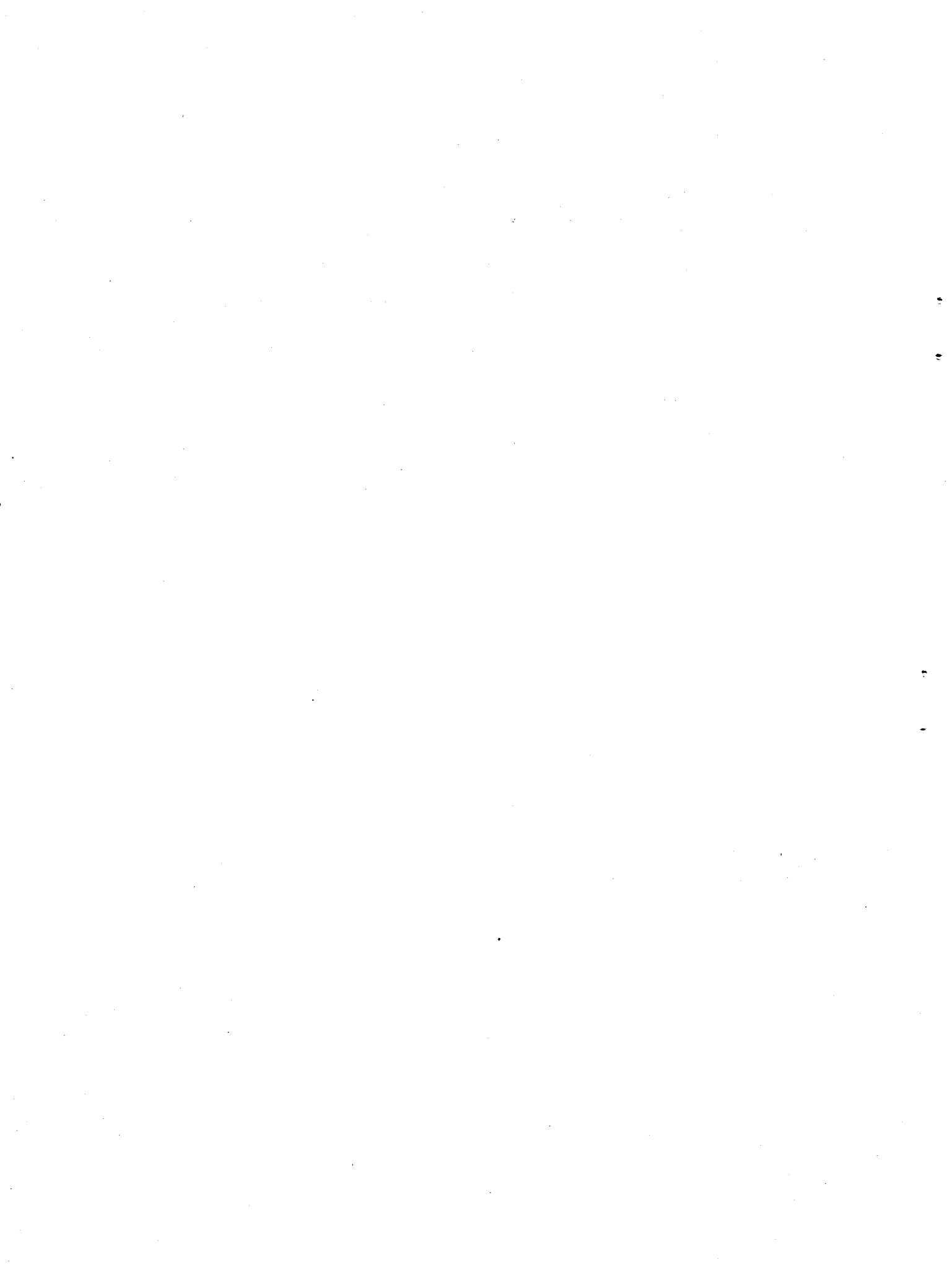
**APPENDICES**





APPENDIX I  
PROGRAM LISTING

This appendix is the computer code for the FORTRAN program "SKDULE." FORSITE uses this program to generate complete schedule and critical-path data.



REQUESTED OPTIONS (EXECUTE): XREF GOSTMT

OPTIONS IN EFFECT: NOLIST MAP XREF GOSTMT NODECK SOURCE TERM OBJECT FIXED  
OPTIMIZE(0) LANGLVL(77) NOFIPS FLAG(1) NAME(MAIN) LINECOUNT(60)

\*.....\*.....1.....2.....3.....4.....5.....6.....7.....\*.....8

ISN	1	PROGRAM SKDULE	SCH00010
	C		SCH00020
	C	VS 2.2 82/02/24 AUREY BERNSTEIN	SCH00030
	C		SCH00040
	C	THIS PROGRAM IS A *SEPARATE* UTILITY PROGRAM FOR THE FORSITE	SCH00050
	C	MODEL. IT WRITES OUT COMPLETE SCHEDULE AND CRITICAL PATH DATA.	SCH00060
	C		SCH00070
	C	INPUT: SCHDULE CONTROL FILE: FORMAT (14): NETWORK NUMBERS	SCH00080
	C		SCH00090
	C	(EFFICIENCY WILL BE INCREASED IF IN THE INPUT FILE, ALL GENERIC	SCH00100
	C	NETWORKS ARE PLACED BEFORE ALL STATE NETWORKS, OR VICE VERSA)	SCH00110
	C		SCH00120
	C	LIMITS:	SCH00130
	C	A MAXIMUM OF 16 PRECEDENTS AND 16 SUBSEQUENTS CAN BE *PRINTED* FOR	SCH00140
	C	ANY ACTIVITY. TO INCREASE THIS LIMIT, THE PAGING ROUTINE WILL	SCH00150
	C	REQUIRE CHANGES. FOR THE FORSITE PROJECT, THIS LIMIT IS	SCH00160
	C	SUFFICIENT.	SCH00170
	C		SCH00180
ISN	2	IMPLICIT INTEGER (A-Z)	SCH00190
ISN	3	PARAMETER (CONSOL=6)	SCH00200
ISN	4	INCLUDE (COMMONB)	SCH00210
	C	***** COMMONB DEFINES ARRAYS FOR DATA BASE 1 *****	COM00010
	C	DATA BASE 1	COM00020
	C	PARAMETERS CHANGED 82/01/08	COM00030
	C	SIZE OF DATA BASE FILES	COM00040
ISN	5	PARAMETER (MXDB10=254, MXDB11=500, MXDB12=365)	COM00050
	C	POINTERS TO COLUMNS OF DB12	COM00060
ISN	6	PARAMETER (POFLOW=2, ACTCOD=3, MAGNCY=4, DRASHN=5, CMPSN=6)	COM00070
	C	LOGICAL UNIT NUMBR PARAMETERS	COM00080
ISN	7	PARAMETER (UDB10=8, UDB11=9, UDB12=10)	COM00090
	C		COM00100
ISN	8	INTGFR*2 DB112(36, MXDB11), DB122(10, MXDB12), NODAT(10, MXDB12)	COM00110
ISN	9	INTEGER*2 NETDAT(36, MXDB11)	COM00120
ISN	10	INTEGER*4 DB114(14, MXDB11), DB124( 5, MXDB12), DBIDIR(3, MXDB10)	COM00130
ISN	11	INTEGER*4 HANDAT(14, MXDB11), PODAT(5, MXDB12)	COM00140
	C		COM00150
ISN	12	EQUIVALENCE (DB112, DB114, HANDAT, NETDAT),	COM00160
	*	(DB122, DB124, PODAT, NODAT)	COM00170
	C		COM00180
ISN	13	COMMON /DB1/ DBIDIR, DB112, DB122	COM00190
	C	----- END OF COMMONB -----	COM00200
	C		COM00210
ISN	14	INCLUDE (COMMOND)	SCH00220
ISN	15	COMMON/FRR/BADATA, FXDATA, MODULE, ERPLG	COM00010
ISN	16	CHARACTER*2 MODULE	COM00020
ISN	17	CHARACTER*6 SUBRTN	COM00030
ISN	18	CHARACTER*4 ERRLOG	COM00040
ISN	19	CHARACTER*100 BADATA	COM00050
ISN	20	CHARACTER*100 FXDATA	COM00060
	C	----- END OF COMMON D -----	COM00070
ISN	21	INCLUDE (COMMONE)	SCH00230

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*....*...1.....2.....3.....4.....5.....6.....7*.....8
C --- COMMON E --- ARRAYS USED FOR SCHEDULING COM00010
C CHANGED 82/01/13 COM00020
C PARAMETERS DEFINING ARRAY ROW DIMENSIONS COM00030
ISN 22 PARAMETER (MAXGEN=256,MAXGCH=3072,MAXRANK=64) COM00040
ISN 23 PARAMETER (DR61RW=128,MAXDR61=50,MAXNET=50) COM00050
ISN 24 PARAMETER (MAXPHAS=7) COM00060
C PARAMETERS DEFINING THE COLUMNS OF GENSKD AND STASKD. COM00070
ISN 25 PARAMETER (IACT=1,IGP= 2,IGPP= 3,IGPD= 4,IGS= 5,IGSP= 6,IGSO=7, COM00080
* IGMAX=7) COM00090
C PARAMETERS DEFINING THE COLUMNS OF TIME,SCHDUL, AND ACTVRM COM00100
ISN 26 PARAMETER (ESTART=1,LSTART=2,EFINIS=3,LFINIS=4,DURSHN=5,COMPRS=6, COM00110
* ACTPTR=7,TMAX=7) COM00120
C LOGICAL UNIT NUMBER PARAMETERS COM00130
ISN 27 PARAMETER (UDB61=11,UDB62=12,UDB71=13,UDB72=14) COM00140
C ARRAY DECLARATIONS COM00150
ISN 28 INTEGER*4 TIME(TMAX,MAXGEN),ACTVPT(TMAX,MAXGEN) COM00160
ISN 29 REAL SCHDUL(TMAX,MAXGEN) COM00170
ISN 30 INTEGER*4 DB6DIR(2,52),NETDIR(2,MAXNET) COM00180
C COM00190
ISN 31 EQUIVALENCE (DB6DIR(1,3),NETDIR), (PDB61,DB6DIR(1,1)), COM00200
* (PDB62,GCFREE,DB6DIR(1,2)), (NDR62,GCUSED,DB6DIR(2,2)) COM00210
ISN 32 EQUIVALENCE (TIME,SCHDUL,ACTVPT) COM00220
C COM00230
ISN 33 COMMON /SKD/ LSTGFN,INDEX(MAXPHAS),GENSKD(IGMAX,MAXGEN), COM00240
* GCHAIN(2,MAXGCH),OLDSKD(IGMAX,DB61RW),DB6DIR,TIME COM00250
C ----- END OF COMMON E ----- COM00260
C COM00270
ISN 34 PARAMETER (CONTRL=1,OUTPUT=2) SCH00240
ISN 35 CHARACTER MARK, HEADER*133, WARN*64 SCH00250
ISN 36 DIMENSION CPATH(2,MAXGEN),LINE(2,0:6),PREREP(16),PRERNK(MAXGEN) SCH00260
ISN 37 DIMENSION STADIR(2,50),SURREP(16),TITLE(16) SCH00270
ISN 38 INTEGER*2 ACT(2),PRE(2,16),SUB(2,16) SCH00280
ISN 39 LOGICAL TIME1 SCH00290
ISN 40 EQUIVALENCE (ACTREP,ACT),(PREREP,PRE),(SUBREP,SUB) SCH00300
ISN 41 EQUIVALENCE (DB1DIR(2,3),LSTHAM),(DB1DIR(3,3),NDB10) SCH00310
C SPACE SAVING SCH00320
ISN 42 EQUIVALENCE (LINE,PREREP,SUBREP),(NPREC,NSUB) SCH00330
ISN 43 DATA OLDNET /0/ SCH00340
C SCH00350
C DATA INITIALIZATION SCH00360
C SCH00370
ISN 44 OPEN (UDB10,FORM='UNFORMATTED') SCH00380
ISN 45 OPEN (UDB11,FORM='UNFORMATTED') SCH00390
ISN 46 OPEN (UDB12,FORM='UNFORMATTED') SCH00400
ISN 47 OPEN (UDB61,FORM='UNFORMATTED',ACCESS='DIRECT',RECL=3588) SCH00410
ISN 48 OPEN (UDB62,FORM='UNFORMATTED') SCH00420
ISN 49 OPEN (UDB71,FORM='UNFORMATTED',ACCESS='DIRECT',RECL=3588) SCH00430
ISN 50 OPEN (UDB72,FORM='UNFORMATTED') SCH00440
ISN 51 READ (UDB10) DB1DIR SCH00450
ISN 52 READ (UDB11) DB114 SCH00460
ISN 53 READ (UDB12) DB124 SCH00470
ISN 54 READ (UDB61,REC=1) DB6DIR SCH00480
ISN 55 READ (UDB71,REC=1) I,I,I,I,STADIR SCH00490
C SCH00500
ISN 56 FSTNET = LSTHAM + 1 SCH00510
ISN 57 WARN = '*** WARNING - THIS NETWORK IS NOT REFERENCED IN DB1 ***' SCH00520

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*.....1.....2.....3.....4.....5.....6.....7..8.....
C
C   DN 2500 UNITL IOS < 9
C   READ SCHFOULE TO BE PROCESSED FROM THE CONTROL FILE
C   READ (CONTRL,20,IOSTAT=IOS) NETNUM
ISN   58 100
ISN   59
ISN   61
C   IF (IOS.LT.0) STOP
C   IF (NETNUM.LT.100) THEN
C   GENERIC NETWORK
ISN   62
ISN   63
ISN   64
ISN   65
ISN   66
ISN   67
ISN   68
ISN   69
C   IF (NETNUM.LT.1 .OR. NETNUM.GT.50) THEN
C   WRITE (BADATA,10) 'NETWORK',NETNUM
C   FXDATA = 'PROCESS NEXT SCHEDULE IN CONTROL FILE'
C   CALL SERRR ('FIX ',23,'SKDULE',100,*100)
C   ENDF
C   LUNIT = UDR61
C   POINTR = NETDIR(7,NETNUM)
C   ELSE
C   STATE NETWORK
ISN   70
ISN   71
ISN   72
ISN   73
ISN   74
ISN   75
ISN   76
ISN   77
ISN   78
C   MOD = NETNUM - (NETNUM/100)*100
C   IF (MOD.LT.1 .OR. MOD.GT.90 .OR. NETNUM.NE.STADIR(1,MOD)) THEN
C   WRITE (BADATA,10) 'NETWORK',NETNUM
C   FXDATA = 'PROCESS NEXT SCHEDULE IN CONTROL FILE'
C   CALL SERRR ('FIX ',23,'SKDULE',100,*100)
C   ENDF
C   LUNIT = UDR71
C   POINTR = STADIR(2,MOD)
C   ENDF
C   FIND LONG TITLE OF NETWORK FROM DB1
C   DIR0W1 = IRCSCH (NETNUM,1,DRIDIR,3,MXDB10,FSTNET,NDB10)
ISN   79
ISN   80
ISN   81
ISN   82
ISN   83
ISN   84
ISN   85
ISN   86
ISN   87
ISN   88
ISN   89
C   IF (DIR0W1.GT.0) THEN
C   I = DR124 (1, DRIDIR (7,DIR0W1))
C   DO 200 J = 1,16
C   TITLE(J) = DR114(J*2,11)
C   ELSE
C   WRITE (BADATA,10) 'NETWORK',NETNUM
C   FXDATA = 'WARNING TITLE INSERTED'
C   CALL SERRR ('FIX ',24,'SKDULE',200,*300)
C   READ (WARN,25) TITLE
C   ENDF
C   READ NETWORK FROM DB61/71
C   FIRST = 1
ISN   90
ISN   91
C   LAST = 128
C   DO 500 WHILE POINTR /= 0
ISN   92 400
C   READ (LUNIT,REC=POINTR) POINTR,
C   ((GENSKD(J,1),J=1,7),I=FIRST,LAST)
ISN   93
ISN   94
ISN   95
ISN   96
ISN   97
ISN   98
ISN   99
C   IF (POINTR.NE.0) THEN
C   FIRST = 129
C   LAST = 256
C   GOTO 400
C   ENDF
C   CONTINUE
C
C   SCH00530
C   SCH00540
C   SCH00550
C   SCH00560
C   SCH00570
C   SCH00580
C   SCH00590
C   SCH00600
C   SCH00610
C   SCH00620
C   SCH00630
C   SCH00640
C   SCH00650
C   SCH00660
C   SCH00670
C   SCH00680
C   SCH00690
C   SCH00700
C   SCH00710
C   SCH00720
C   SCH00730
C   SCH00740
C   SCH00750
C   SCH00760
C   SCH00770
C   SCH00780
C   SCH00790
C   SCH00800
C   SCH00810
C   SCH00820
C   SCH00830
C   SCH00840
C   SCH00850
C   SCH00860
C   SCH00870
C   SCH00880
C   SCH00890
C   SCH00900
C   SCH00910
C   SCH00920
C   SCH00930
C   SCH00940
C   SCH00950
C   SCH00960
C   SCH00970
C   SCH00980
C   SCH00990
C   SCH01000
C   SCH01010
C   SCH01020
C   SCH01030
C   SCH01040
C   SCH01050
C   SCH01060
C   SCH01070
C   SCH01080

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*.....1.....2.....3.....4.....5.....6.....7.....8
C      RFAD PRECEDENT & SUBSEQUENT CHAIN FROM DB42/72          SCH01090
C      (ONLY IF THE CURRENT NETWORK AND THE PREVIOUS NETWORK ARE NOT SCH01100
C      BOTH STATE OR NOT BOTH GENERIC)                          SCH01110
C                                                                SCH01120
ISN    99      OFFSET = NETNUM - 100                            SCH01130
ISN    100     IF (OFFSET*OLDNET.LE.0) THEN                     SCH01140
ISN    101     IF (OFFSET.LT.0) THEN                            SCH01150
ISN    102     LUNIT = UDR62 '                                  SCH01160
ISN    103     ELSE                                             SCH01170
ISN    104     LUNIT = UDR72                                    SCH01180
ISN    105     ENDIF                                            SCH01190
ISN    106     REMIND (LUNIT)                                    SCH01200
ISN    107     READ (LUNIT) GCHAIN                              SCH01210
ISN    108     ENDIF                                            SCH01220
ISN    109     OLDNET = OFFSET                                  SCH01230
C                                                                SCH01240
ISN    110     CALL CPM                                         SCH01250
C                                                                SCH01260
C      CALCULATE PRECEDENT STRONG RANK ( FOR GRAPHICAL PURPOSES ) SCH01270
C      & CALCULATE THE LAST NON-ZERO ROW OF THE GENSKD ARRAY  SCH01280
C                                                                SCH01290
ISN    111     LAST = 0                                         SCH01300
C                                                                SCH01310
C      DO 900 WHILE LAST < MAXGEN & GENSKD(IACT,FIRST) .NE. 0 SCH01320
C                                                                SCH01330
C      (DO A PHASE AT A TIME, WHERE 'FIRST' AND 'LAST' ARE THE FIRST SCH01340
C      AND LAST 'ORDINAL' ACTIVITIES OF THE PHASE)             SCH01350
C                                                                SCH01360
ISN    112     600 IF (LAST.LT.MAXGEN) THEN                     SCH01370
ISN    113     FIRST = LAST + 1                                  SCH01380
ISN    114     IF (GENSKD(IACT,FIRST).NE.0) THEN               SCH01390
ISN    115     LAST = GENSKD(IGSO,FIRST)                       SCH01400
ISN    116     SFCND = FIRST + 1                               SCH01410
ISN    117     PRFRNK(FIRST) = 1                               SCH01420
C                                                                SCH01430
C      LOOP THROUGH ACTIVITIES IN (THE GENSKD) PRECEDENT ORDER SCH01440
ISN    118     DO 800 ORDER = SECOND, LAST                      SCH01450
ISN    119     ACTVTY = GENSKD(IGPO,ORDER)                     SCH01460
ISN    120     PRCNT = GENSKD(IGP,ACTVTY)                      SCH01470
ISN    121     POINTR = GENSKD(IGPP,ACTVTY)                   SCH01480
ISN    122     STRONG = 0                                       SCH01490
ISN    123     700 STRONG = MAX( PRFRNK(PRCNT), STRONG )      SCH01500
ISN    124     IF (POINTR.NE.0) THEN                            SCH01510
C                                                                SCH01520
C      UNCHAIN PRECEDENTS                                       SCH01530
ISN    125     PRCNT = GCHAIN(2,POINTR)                         SCH01540
ISN    126     POINTR = GCHAIN(1,POINTR)                       SCH01550
ISN    127     GOTO 700                                         SCH01560
ISN    128     ENDIF                                            SCH01570
C                                                                SCH01580
C      ALL PRECEDENTS HAVE BEEN UNCHAINED                       SCH01590
ISN    129     PRFRNK(ACTVTY) = STRONG + 1                     SCH01600
ISN    130     800 CONTINUE                                     SCH01610
C                                                                SCH01620
C      GO TO NEXT PHASE                                         SCH01630
ISN    131     GOTO 600                                         SCH01640
ISN    132     FNDIF
ISN    133     900 FNDIF
C                                                                SCH01650
ISN    134     PAGE = 0

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*.....1.....2.....3.....4.....5.....6.....7*.....8
ISN 135          DIROW1 = 4          SCH01650
ISN 136          DO 1700 ACTVY = 1, LAST SCH01660
C              PAGING ALGORITHM    SCH01670
C              MOD = ACTVY - (ACTVY/11)*11 SCH01680
C              IF (MOD.EQ.1) THEN    SCH01690
ISN 137          PAGE = PAGE + 1    SCH01700
ISN 138          WRITE (OUTPUT,30) PAGE,NETNUM,TITLE SCH01710
ISN 139          ENDIF              SCH01720
ISN 140          TEST IF ACTIVITY IS ON CRITICAL PATH SCH01730
ISN 141          IF (TIME(ESTART,ACTVY).EQ.TIME(LSTART,ACTVY)) THEN SCH01740
C              MARK = '*'          SCH01750
C              *BUBBLE INSERT* ACTIVITY INTO THE CRITICAL PATH ARRAY SCH01760
C              IF (ACTVY.GT.1) THEN SCH01770
ISN 142          NPATH = NPATH + 1  SCH01780
ISN 143          I = NPATH          SCH01790
ISN 144          J = I - 1          SCH01800
ISN 145          IF (TIME(ESTART,ACTVY).LT.CPATH(2,J)) THEN SCH01810
ISN 146          CPATH(1,I) = CPATH(1,J) SCH01820
ISN 147          CPATH(2,I) = CPATH(2,J) SCH01830
ISN 148          I = J             SCH01840
ISN 149          GOTO 1000         SCH01850
ISN 150          ELSE             SCH01860
ISN 151          CPATH(1,I) = GENSKD(I,ACT,ACTVY) SCH01870
ISN 152          CPATH(2,I) = TIME(ESTART,ACTVY) SCH01880
ISN 153          ENDIF            SCH01890
ISN 154          NPATH = 1        SCH01900
ISN 155          CPATH(1,1) = GENSKD(I,ACT,ACTVY) SCH01910
ISN 156          CPATH(2,1) = 0   SCH01920
ISN 157          ENDIF            SCH01930
ISN 158          ELSE             SCH01940
ISN 159          NPATH = 1        SCH01950
ISN 160          CPATH(1,1) = GENSKD(I,ACT,ACTVY) SCH01960
ISN 161          CPATH(2,1) = 0   SCH01970
ISN 162          ENDIF            SCH01980
ISN 163          MARK = '*'      SCH01990
ISN 164          ENDIF            SCH02000
C              FIND ACTIVITY TITLE FROM DB1 (NOTE THE PROCESS REQUIRES THE SCH02010
C              ACTIVITIES TO BE IN ASCENDING ORDER BY IOCODE) SCH02020
C              ACTREP = GENSKD(I,ACT,ACTVY) SCH02030
C              DO 1200 WHILE ACT(I) > DB1DIR(1,DIROW1) SCH02040
ISN 165          IF (ACT(I).GT.DB1DIR(1,DIROW1)) THEN SCH02050
ISN 166          DIROW1 = DIROW1 + 1 SCH02060
ISN 167          GOTO 1100         SCH02070
ISN 168          ENDIF            SCH02080
ISN 169          WRITE CPATH MARKER, ACTIVITY IOCODE, AND ACTIVITY TITLE SCH02090
C              IF (ACT(I).EQ.DB1DIR(1,DIROW1)) THEN SCH02100
ISN 170          POINTR = DB124(1,DB1DIR(3,DIROW1)) SCH02110
ISN 171          WRITE (OUTPUT,40) MARK,ACT,(05114(J,POINTR),J=3,18) SCH02120
ISN 172          ELSE             SCH02130
ISN 173          WRITE (OUTPUT,50) MARK,ACT SCH02140
ISN 174          ENDIF            SCH02150
ISN 175          ENDIF            SCH02160

```



```

*....*...1.....2.....3.....4.....5.....6.....7.*.....8
C
C      WRITE THE SCHEDULED TIMES FOR THE ACTIVITY                                SCH02210
C      WRITE (OUTPUT,60) (TIME(I,ACTVTV),I=1,5)                                SCH02220
ISN    176      C      WRITE (OUTPUT,60) (TIME(I,ACTVTV),I=1,5)                                SCH02230
C      FIND AND WRITE PRECEDENTS & PRECEDENT ORDER                            SCH02240
C      FIND AND WRITE PRECEDENTS & PRECEDENT ORDER                            SCH02250
C      FIND AND WRITE PRECEDENTS & PRECEDENT ORDER                            SCH02260
ISN    177      C      IF (GENSKD(IGP,ACTVTV).EQ.0) THEN                                SCH02270
ISN    178      C      PRFREP(1) = 0                                                SCH02280
ISN    179      C      ELSE                                                        SCH02290
ISN    180      C      PREREP(1) = GENSKD(I,ACT,GENSKD(IGP,ACTVTV))                SCH02300
ISN    181      C      ENDIF                                                       SCH02310
ISN    182      C      NPREC = 1                                                    SCH02320
ISN    183      C      POINTR = GENSKD(IGPP,ACTVTV)                                SCH02330
C      DO 1400 UNTIL POINTR = 0 OR NPREC = 16                                  SCH02340
ISN    184      C      1300 IF (POINTR.NE.0) THEN                                  SCH02350
ISN    185      C      NPREC = NPREC + 1                                           SCH02360
ISN    186      C      PREREP(NPREC) = GENSKD(I,ACT,GCHAIN(2,POINTR))            SCH02370
ISN    187      C      POINTR = GCHAIN(1,POINTR)                                   SCH02380
ISN    188      C      IF (NPREC.LT.16) GOTO 1300                                  SCH02390
ISN    189      C      1400 ENDIF                                                  SCH02400
ISN    190      C      WRITE (OUTPUT,70) PRERNK(ACTVTV),(PRE(1,I),PRE(2,I),      SCH02410
C      I=1,NPREC)                                                                SCH02420
ISN    191      C      IF (POINTR.NE.0) WRITE(OUTPUT,90)                            SCH02430
C      FIND AND WRITE SUBSEQUENTS                                              SCH02440
C      FIND AND WRITE SUBSEQUENTS                                              SCH02450
C      FIND AND WRITE SUBSEQUENTS                                              SCH02460
C      FIND AND WRITE SUBSEQUENTS                                              SCH02470
ISN    193      C      IF (GENSKD(IGS,ACTVTV).EQ.0) THEN                            SCH02480
ISN    194      C      SURREP(1) = 0                                                SCH02490
ISN    195      C      ELSE                                                        SCH02500
ISN    196      C      SUBREP(1) = GENSKD(I,ACT,GENSKD(IGS,ACTVTV))                SCH02510
ISN    197      C      ENDIF                                                       SCH02520
ISN    198      C      NSUB = 1                                                    SCH02530
ISN    199      C      POINTR = GENSKD(IGSP,ACTVTV)                                SCH02540
C      DO 1600 UNTIL POINTR = 0 OR NSUB = 16                                  SCH02550
ISN    200      C      1500 IF (POINTR.NE.0) THEN                                  SCH02560
ISN    201      C      NSUR = NSUB + 1                                              SCH02570
ISN    202      C      SURREP(NSUR) = GENSKD(I,ACT,GCHAIN(2,POINTR))              SCH02580
ISN    203      C      POINTR = GCHAIN(1,POINTR)                                   SCH02590
ISN    204      C      IF (NSUB.LT.16) GOTO 1500                                  SCH02600
ISN    205      C      1600 ENDIF                                                  SCH02610
ISN    206      C      WRITE (OUTPUT,80) (SUB(1,I),SUB(2,I),I=1,NSUB)            SCH02620
ISN    207      C      IF (POINTR.NE.0) WRITE (OUTPUT,90)                          SCH02630
C      CONTINUE                                                                  SCH02640
ISN    209      C      CONTINUE                                                    SCH02650
C      WRITE CRITICAL PATH ARRAY IN TABULAR FORMAT                            SCH02660
C      WRITE CRITICAL PATH ARRAY IN TABULAR FORMAT                            SCH02670
C      WRITE CRITICAL PATH ARRAY IN TABULAR FORMAT                            SCH02680
ISN    210      C      OFFSET = 0                                                  SCH02690
C      DO 2400 WHILE NPATH > OFFSET ( AND MAXCOL >=0 )                          SCH02700
ISN    211      C      1800 PAGE = PAGE + 1                                        SCH02710
ISN    212      C      WRITE (OUTPUT,30) PAGE,NETNUM,TITLE                        SCH02720
ISN    213      C      PTHOFF = NPATH - OFFSET                                    SCH02730
ISN    214      C      MAXCOL = MINO ( (PTHOFF - 1)/25 , 6 )                       SCH02740
ISN    215      C      DIFF = (MAXCOL+1)*25 - PTHOFF                               SCH02750
ISN    216      C      DO 1900 COLUMN = 0,MAXCOL                                  SCH02760

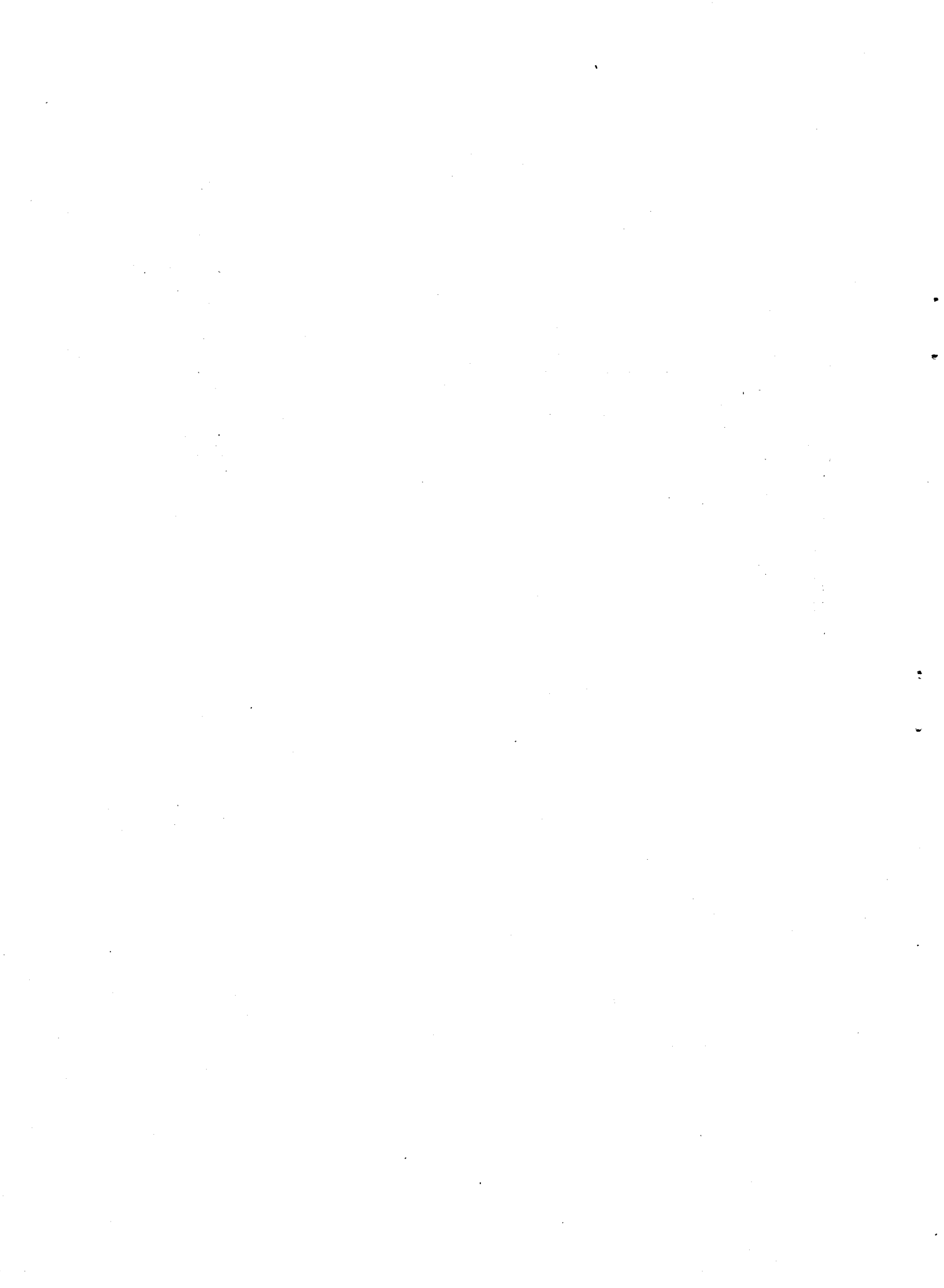
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\*.....1.....2.....3.....4.....5.....6.....7.....8

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ISN 217          I = 1 + COLUMN * 19          SCH02770
ISN 218 1900    HEADER(1:1+19) = '          ACTVTY START' SCH02780
ISN 219          IF (MAXCOL.LT.6) HFADER(1:19:133) = ' ' SCH02790
ISN 221          HFADER(1:1) = '0'          SCH02800
ISN 222          WRITE (OUTPUT,32) HEADER  SCH02810
ISN 223          FIRST = 1                  SCH02820
ISN 224          LAST = MINO ( 25 - DIFF , 25 ) SCH02830
C          DO 2300 WHILE LAST < 25        SCH02840
ISN 225 2000    DO 2200 ROW = FIRST, LAST  SCH02850
ISN 226          ROWOFF = ROW + OFFSET     SCH02860
ISN 227          DO 2100 COLUMN = 0, MAXCOL SCH02870
ISN 228          ACTRFP = CPATH(1, ROWOFF+ COLUMN*25) SCH02880
ISN 229          LINE(1, COLUMN) = ACT(1)  SCH02890
ISN 230          LINE(2, COLUMN) = ACT(2)  SCH02900
ISN 231 2100    CONTINUE                   SCH02910
ISN 232          WRITE (OUTPUT, 34) (LINE(1, COLUMN), LINE(2, COLUMN), SCH02920
X          CPATH(2, ROWOFF+ COLUMN*25), COLUMN=0, MAXCOL) SCH02930
ISN 233 2200    CONTINUE                   SCH02940
ISN 234          IF (LAST.LT.25) THEN     SCH02950
ISN 235          FIRST = LAST + 1        SCH02960
ISN 236          LAST = 25                SCH02970
ISN 237          MAXCOL = MAXCOL - 1     SCH02980
ISN 238          IF (MAXCOL.GT.0) GOTO 2000 SCH02990
C          GOTO 100                       SCH03000
ISN 239          C                         SCH03010
C          GOTO 100                       SCH03020
ISN 240 2300    ENDF                      SCH03030
ISN 241          OFFSET = OFFSET + 175   SCH03040
ISN 242          IF (NPATH.GT.OFFSET) GOTO 1800 SCH03050
ISN 243 2400    CONTINUE                   SCH03060
C          GOTO 100                       SCH03070
ISN 244          C                         SCH03080
ISN 245 2500    CONTINUE                   SCH03090
C          GOTO 100                       SCH03100
ISN 246          STOP                      SCH03110
ISN 247 10      FORMAT (1X,A,1X,15)       SCH03120
ISN 248 20      FORMAT (14)               SCH03130
ISN 249 25      FORMAT (16A4)             SCH03140
ISN 250 30      FORMAT ('1'/'0'/'0 PAGE',13,5X,'SCHEDULE',15,' - ',16A4/) SCH03150
ISN 251 32      FORMAT (14X,'CRITICAL PATH'/A) SCH03160
ISN 252 34      FORMAT ('0',5X,14,'-',11,2X,15,6(6X,14,'-',11,2X,15)) SCH03170
ISN 253 40      FORMAT ('0',A1,2X,14,'-',11,5X,16A4) SCH03180
ISN 254 50      FORMAT ('0',A1,2X,14,'-',11,5X,'??') SCH03190
ISN 255 60      FORMAT (15X,'EARLIEST START =',16,' LATEST START =',16, SCH03200
X          ' EARLIEST FINISH =',16,' LATEST FINISH =',16, SCH03210
X          ' DURATION =',16) SCH03220
ISN 256 70      FORMAT (5X,13,3X,'P->',16(1X,14,'-',11)) SCH03230
ISN 257 80      FORMAT (11X, 'S->',16(1X,14,'-',11)) SCH03240
ISN 258 90      FORMAT ('+',131X,'+') SCH03250
ISN 259          END                       SCH03260

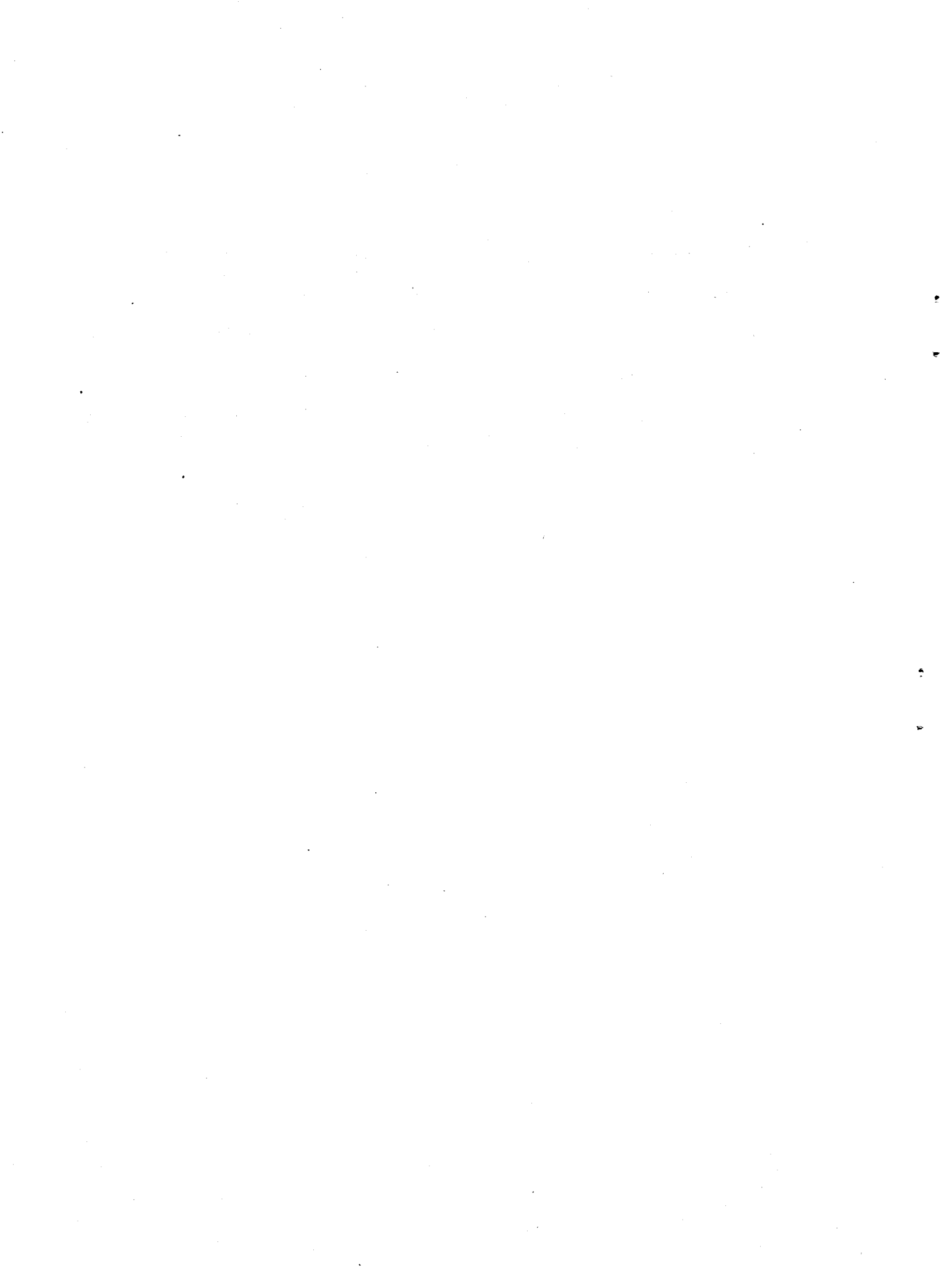
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## APPENDIX II

### CRITICAL PATH SUMMARIES

This appendix contains the twenty (20) generic critical-path management schedules produced by FORSITE. In the interest of space, only the critical-path summaries have been reproduced and the critical activities are identified by numerical code only. The number in the column labeled "start" is the cumulative time (in decimal years) from the beginning of the schedule.



SCHEDULE 1 - BLM, COMPETITIVE, OLD PROCEDURE, FIRST PLANT

CRITICAL PATH

ACTVTY	START	ACTVTY	START	ACTVTY	START
1000-0	0	2230-2	5296	5000-0	10217
1110-0	0	2331-2	5317	5210-0	10217
1210-1	1000	2120-2	5359	5311-0	11217
1341-1	1004	2230-9	5776	5120-0	12009
1130-1	1087	2331-9	5797	5240-0	13176
1341-2	1504	2120-9	5839	5260-0	13176
1130-2	1587	2999-9	6256	5341-0	13201
1341-3	2004	3000-0	6256	5410-0	13201
1130-3	2087	3210-0	6256	5999-9	14743
1341-9	2504	3310-0	6506	6000-0	14743
1130-9	2587	3220-1	7027	6130-0	14743
1999-9	3004	3321-1	7048	6311-0	14743
2000-0	3004	3110-1	7090	6410-0	14743
2210-1	3004	3220-2	7507	6150-0	16743
2311-1	3025	3321-2	7528	6230-0	17243
2110-1	3108	3110-2	7570	6420-0	17264
2210-2	3608	3220-9	7987	6999-9	17764
2311-2	3629	3321-9	8008		
2110-2	3712	3110-9	8050		
2210-9	4212	3120-0	8467		
2311-9	4233	3999-9	8967		
2110-9	4316	4000-0	8967		
2230-1	4816	4120-0	8967		
2331-1	4837	4130-0	9384		
2120-1	4879	4999-9	10217		

SCHEDULE 2 - FS, COMPETITIVE, OLD PROCEDURE, FIRST PLANT

CRITICAL PATH

ACTVTV	START	ACTVTV	START	ACTVTV	START
1000-0	0	2120-9	7340	5260-0	14677
1311-0	0	2999-9	7757	5342-0	14702
1322-0	21	3000-0	7757	5410-0	14702
1331-0	4188	3210-0	7757	5999-9	16244
1220-0	4251	3310-0	8007	6000-0	16244
1351-0	4255	3220-1	8528	6130-0	16244
1999-9	4505	3321-1	8549	6311-0	16244
2000-0	4505	3110-1	8591	6410-0	16244
2210-1	4505	3220-2	9008	6150-0	18244
2311-1	4526	3321-2	9029	6230-0	18744
2110-1	4609	3110-2	9071	6420-0	18765
2210-2	5109	3220-9	9488	6999-9	19265
2311-2	5130	3321-9	9509		
2110-2	5213	3110-9	9551		
2210-9	5713	3120-0	9968		
2311-9	5734	3999-9	10468		
2110-9	5817	4000-0	10468		
2230-1	6317	4120-0	10468		
2331-1	6338	4130-0	10885		
2120-1	6380	4999-9	11718		
2230-2	6797	5000-0	11718		
2331-2	6818	5210-0	11718		
2120-2	6860	5312-0	12718		
2230-9	7277	5120-0	13510		
2331-9	7298	5240-0	14677		

SCHEDULE 3 - BLM, NONCOMPETITIVE, OLD PROCEDURE, FIRST PLANT

CRITICAL PATH

ACTVTY	START	ACTVTY	START	ACTVTY	START
1000-0	0	2230-2	5296	5000-0	10217
1110-0	0	2331-2	5317	5210-0	10217
1210-1	1000	2120-2	5359	5311-0	11217
1341-1	1004	2230-9	5776	5120-0	12009
1130-1	1087	2331-9	5797	5240-0	13176
1341-2	1504	2120-9	5839	5260-0	13176
1130-2	1587	2999-9	6256	5341-0	13201
1341-3	2004	3000-0	6256	5410-0	13201
1130-3	2087	3210-0	6256	5999-9	14743
1341-9	2504	3310-0	6506	6000-0	14743
1130-9	2587	3220-1	7027	6130-0	14743
1999-9	3004	3321-1	7048	6311-0	14743
2000-0	3004	3110-1	7090	6410-0	14743
2210-1	3004	3220-2	7507	6150-0	16743
2311-1	3025	3321-2	7528	6230-0	17243
2110-1	3108	3110-2	7570	6420-0	17264
2210-2	3608	3220-9	7987	6999-9	17764
2311-2	3629	3321-9	8008		
2110-2	3712	3110-9	8050		
2210-9	4212	3120-0	8467		
2311-9	4233	3999-9	8967		
2110-9	4316	4000-0	8967		
2230-1	4816	4120-0	8967		
2331-1	4837	4130-0	9384		
2120-1	4879	4999-9	10217		



SCHEDULE 4 - FS, NONCOMPETITIVE, OLD PROCEDURE, FIRST PLANT

CRITICAL PATH

ACTVTY	START	ACTVTY	START	ACTVTY	START
1000-0	0	3000-0	8423	5410-0	15368
1110-0	0	3210-0	8423	5999-9	16910
1230-0	1000	3310-0	8673	6000-0	16910
1362-0	1004	3220-1	9194	6130-0	16910
1999-9	5171	3321-1	9215	6311-0	16910
2000-0	5171	3110-1	9257	6410-0	16910
2210-1	5171	3220-2	9674	6150-0	18910
2311-1	5192	3321-2	9695	6230-0	19410
2110-1	5275	3110-2	9737	6420-0	19431
2210-2	5775	3220-9	10154	6999-9	19931
2311-2	5796	3321-9	10175		
2110-2	5879	3110-9	10217		
2210-9	6379	3120-0	10634		
2311-9	6400	3999-9	11134		
2110-9	6483	4000-0	11134		
2230-1	6983	4120-0	11134		
2331-1	7004	4130-0	11551		
2120-1	7046	4999-9	12384		
2230-2	7463	5000-0	12384		
2331-2	7484	5210-0	12384		
2120-2	7526	5312-0	13384		
2230-9	7943	5120-0	14176		
2331-9	7964	5240-0	15343		
2120-9	8006	5260-0	15343		
2999-9	8423	5342-0	15368		

SCHEDULE 5 - BLM, NONCOMPETITIVE TO COMPETITIVE, OLD PROCEDURE,  
FIRST PLANT

CRITICAL PATH

ACTVTY	START	ACTVTY	START	ACTVTY	START
1000-0	0	2230-2	5296	5000-0	10217
1110-0	0	2331-2	5317	5210-0	10217
1210-1	1000	2120-2	5359	5311-0	11217
1341-1	1004	2230-9	5776	5120-0	12009
1130-1	1087	2331-9	5797	5240-0	13176
1341-2	1504	2120-9	5839	5260-0	13176
1130-2	1587	2999-9	6256	5341-0	13201
1341-3	2004	3000-0	6256	5410-0	13201
1130-3	2087	3210-0	6256	5999-9	14743
1341-9	2504	3310-0	6506	6000-0	14743
1130-9	2587	3220-1	7027	6130-0	14743
1999-9	3004	3321-1	7048	6311-0	14743
2000-0	3004	3110-1	7090	6410-0	14743
2210-1	3004	3220-2	7507	6150-0	16743
2311-1	3025	3321-2	7528	6230-0	17243
2110-1	3108	3110-2	7570	6420-0	17264
2210-2	3608	3220-9	7987	6999-9	17764
2311-2	3629	3321-9	8008		
2110-2	3712	3110-9	8050		
2210-9	4212	3120-0	8467		
2311-9	4233	3999-9	8967		
2110-9	4316	4000-0	8967		
2230-1	4816	4120-0	8967		
2331-1	4837	4130-0	9384		
2120-1	4879	4999-9	10217		

SCHEDULE 6 - FS, NONCOMPETITIVE TO COMPETITIVE, OLD PROCEDURE,  
FIRST PLANT

CRITICAL PATH

ACTVTY	START	ACTVTY	START	ACTVTY	START
1000-0	0	2230-9	8260	5120-0	14493
1110-0	0	2331-9	8281	5240-0	15660
1230-0	1000	2120-9	8323	5260-0	15660
1362-0	1004	2999-9	8740	5342-0	15685
1372-0	5171	3000-0	8740	5410-0	15685
1220-0	5234	3210-0	8740	5999-9	17227
1351-0	5238	3310-0	8990	6000-0	17227
1352-0	5238	3220-1	9511	6130-0	17227
1999-9	5488	3321-1	9532	6311-0	17227
2000-0	5488	3110-1	9574	6410-0	17227
2210-1	5488	3220-2	9991	6150-0	19227
2311-1	5509	3321-2	10012	6230-0	19727
2110-1	5592	3110-2	10054	6420-0	19748
2210-2	6092	3220-9	10471	6999-9	20248
2311-2	6113	3321-9	10492		
2110-2	6196	3110-9	10534		
2210-9	6696	3120-0	10951		
2311-9	6717	3999-9	11451		
2110-9	6800	4000-0	11451		
2230-1	7300	4120-0	11451		
2331-1	7321	4130-0	11868		
2120-1	7363	4999-9	12701		
2230-2	7780	5000-0	12701		
2331-2	7801	5210-0	12701		
2120-2	7843	5312-0	13701		

SCHEDULE 7 - BLM, COMPETITIVE, NEW PROCEDURE, FIRST PLANT

CRITICAL PATH

ACTVTV	START	ACTVTV	START	ACTVTV	START
1000-0	0	2230-1	4829	4999-9	9458
1110-0	0	2332-1	4849	5000-0	9458
1210-1	1000	2120-1	4891	5210-0	9458
1342-1	1004	2230-2	5308	5313-0	10458
1130-1	1087	2332-2	5329	5120-0	11250
1210-2	1504	2120-2	5371	5240-0	12417
1342-2	1508	2230-9	5788	5260-0	12417
1130-2	1591	2332-9	5809	5343-0	12442
1210-3	2008	2120-9	5851	5410-0	12442
1342-3	2012	2999-9	6268	5999-9	13984
1130-3	2095	3000-0	6268	6000-0	13984
1210-9	2512	3220-1	6268	6130-0	13984
1342-9	2516	3322-1	6289	6312-0	13984
1130-9	2599	3110-1	6331	6410-0	13984
1999-9	3016	3220-2	6748	6150-0	15984
2000-0	3016	3322-2	6769	6230-0	16484
2210-1	3016	3110-2	6811	6420-0	16505
2312-1	3037	3220-9	7228	6999-9	17005
2110-1	3120	3322-9	7249		
2210-2	3620	3110-9	7291		
2312-2	3641	3120-0	7708		
2110-2	3724	3999-9	8208		
2210-9	4224	4000-0	8208		
2312-9	4245	4120-0	8208		
2110-9	4328	4130-0	8625		

SCHEDULE 8 - FS, COMPETITIVE, NEW PROCEDURE, FIRST PLANT

CRITICAL PATH

ACTVTY	START	ACTVTY	START	ACTVTY	START
1000-0	0	2230-1	4828	4120-0	8979
1110-0	0	2332-1	4849	4130-0	9396
1210-1	1000	2120-1	4891	4999-9	10229
1342-1	1004	2230-2	5308	5000-0	10229
1130-1	1087	2332-2	5329	5210-0	10229
1210-2	1504	2120-2	5371	5314-0	11229
1342-2	1508	2230-9	5788	5120-0	12021
1130-2	1591	2332-9	5809	5240-0	13188
1210-3	2008	2120-9	5851	5260-0	13188
1342-3	2012	2999-9	6268	5344-0	13213
1130-3	2095	3000-0	6268	5410-0	13213
1210-9	2512	3210-0	6268	5999-9	14755
1342-9	2516	3310-0	6518	6000-0	14755
1130-9	2599	3220-1	7039	6130-0	14755
1999-9	3016	3321-1	7060	6312-0	14755
2000-0	3016	3110-1	7102	6410-0	14755
2210-1	3016	3220-2	7519	6150-0	16755
2312-1	3037	3321-2	7540	6230-0	17255
2110-1	3120	3110-2	7582	6420-0	17276
2210-2	3620	3220-9	7999	6999-9	17776
2312-2	3641	3321-9	8020		
2110-2	3724	3110-9	8062		
2210-9	4224	3120-0	8479		
2312-9	4245	3999-9	8979		
2110-9	4328	4000-0	8979		

SCHEDULE 9 - BLM, NONCOMPETITIVE, NEW PROCEDURE, FIRST PLANT

CRITICAL PATH

ACTVTV	START	ACTVTV	START	ACTVTV	START
1000-0	0	2230-1	4828	4999-9	9458
1110-0	0	2332-1	4849	5000-0	9458
1210-1	1000	2120-1	4891	5210-0	9458
1342-1	1004	2230-2	5308	5313-0	10458
1130-1	1087	2332-2	5329	5120-0	11250
1210-2	1504	2120-2	5371	5240-0	12417
1342-2	1508	2230-9	5788	5260-0	12417
1130-2	1591	2332-9	5809	5343-0	12442
1210-3	2008	2120-9	5851	5410-0	12442
1342-3	2012	2999-9	6268	5999-9	13984
1130-3	2095	3000-0	6268	6000-0	13984
1210-9	2512	3220-1	6268	6130-0	13984
1342-9	2516	3322-1	6289	6312-0	13984
1130-9	2599	3110-1	6331	6410-0	13984
1999-9	3016	3220-2	6748	6150-0	15984
2000-0	3016	3322-2	6769	6230-0	16484
2210-1	3016	3110-2	6811	6420-0	16505
2312-1	3037	3220-9	7228	6999-9	17005
2110-1	3120	3322-9	7249		
2210-2	3620	3110-9	7291		
2312-2	3641	3120-0	7708		
2110-2	3724	3999-9	8208		
2210-9	4224	4000-0	8208		
2312-9	4245	4120-0	8208		
2110-9	4328	4130-0	8625		

SCHEDULE 10 - FS, NONCOMPETITIVE, NEW PROCEDURE, FIRST PLANT

CRITICAL PATH

ACTVTY	START	ACTVTY	START	ACTVTY	START
1000-0	0	2230-1	4828	4999-9	9458
1110-0	0	2332-1	4849	5000-0	9458
1210-1	1000	2120-1	4891	5210-0	9458
1342-1	1004	2230-2	5308	5314-0	10458
1130-1	1087	2332-2	5329	5120-0	11250
1210-2	1504	2120-2	5371	5240-0	12417
1342-2	1508	2230-9	5788	5260-0	12417
1130-2	1591	2332-9	5809	5344-0	12442
1210-3	2008	2120-9	5851	5410-0	12442
1342-3	2012	2999-9	6268	5999-9	13984
1130-3	2095	3000-0	6268	6000-0	13984
1210-9	2512	3220-1	6268	6130-0	13984
1342-9	2516	3322-1	6289	6312-0	13984
1130-9	2599	3110-1	6331	6410-0	13984
1999-9	3016	3220-2	6748	6150-0	15984
2000-0	3016	3322-2	6769	6230-0	16484
2210-1	3016	3110-2	6811	6420-0	16505
2312-1	3037	3220-9	7228	6999-9	17005
2110-1	3120	3322-9	7249		
2210-2	3620	3110-9	7291		
2312-2	3641	3120-0	7708		
2110-2	3724	3999-9	8208		
2210-9	4224	4000-0	8208		
2312-9	4245	4120-0	8208		
2110-9	4328	4130-0	8625		

SCHEDULE 11 - BLM, NONCOMPETITIVE TO COMPETITIVE, NEW PROCEDURE,  
FIRST PLANT

CRITICAL PATH					
ACTVTY	START	ACTVTY	START	ACTVTY	START
1000-0	0	2230-1	4928	4999-9	9458
1110-0	0	2332-1	4849	5000-0	9458
1210-1	1000	2120-1	4891	5210-0	9458
1342-1	1004	2230-2	5308	5313-0	10458
1130-1	1087	2332-2	5329	5120-0	11250
1210-2	1504	2120-2	5371	5240-0	12417
1342-2	1508	2230-9	5788	5260-0	12417
1130-2	1591	2332-9	5809	5343-0	12442
1210-3	2008	2120-9	5851	5410-0	12442
1342-3	2012	2999-9	6268	5999-9	13984
1130-3	2095	3000-0	6268	6000-0	13984
1210-9	2512	3220-1	6268	6130-0	13984
1342-9	2516	3322-1	6289	6312-0	13984
1130-9	2599	3110-1	6331	6410-0	13984
1999-9	3016	3220-2	6748	6150-0	15984
2000-0	3016	3322-2	6769	6230-0	16484
2210-1	3016	3110-2	6811	6420-0	16505
2312-1	3037	3220-9	7229	6999-9	17005
2110-1	3120	3322-9	7249		
2210-2	3620	3110-9	7291		
2312-2	3641	3120-0	7708		
2110-2	3724	3999-9	8208		
2210-9	4224	4000-0	8208		
2312-9	4245	4120-0	8208		
2110-9	4328	4130-0	8625		



**SCHEDULE 12 - FS, NONCOMPETITIVE TO COMPETITIVE, NEW PROCEDURE,  
FIRST PLANT**

**CRITICAL PATH**

<b>ACTVTY</b>	<b>START</b>	<b>ACTVTY</b>	<b>START</b>	<b>ACTVTY</b>	<b>START</b>
1000-0	0	2230-1	4828	4999-9	9458
1110-0	0	2332-1	4849	5000-0	9458
1210-1	1000	2120-1	4891	5210-0	9458
1342-1	1004	2230-2	5308	5314-0	10458
1130-1	1087	2332-2	5329	5120-0	11250
1210-2	1504	2120-2	5371	5240-0	12417
1342-2	1508	2230-9	5788	5260-0	12417
1130-2	1591	2332-9	5809	5344-0	12442
1210-3	2008	2120-9	5851	5410-0	12442
1342-3	2012	2999-9	6268	5999-9	13984
1130-3	2095	3000-0	6268	6000-0	13984
1210-9	2512	3220-1	6268	6130-0	13984
1342-9	2516	3322-1	6289	6312-0	13984
1130-9	2599	3110-1	6331	6410-0	13984
1999-9	3016	3220-2	6748	6150-0	15984
2000-0	3016	3322-2	6769	6230-0	16484
2210-1	3016	3110-2	6811	6420-0	16505
2312-1	3037	3220-9	7228	6999-9	17005
2110-1	3120	3322-9	7249		
2210-2	3620	3110-9	7291		
2312-2	3641	3120-0	7708		
2110-2	3724	3999-9	8208		
2210-9	4224	4000-0	8208		
2312-9	4245	4120-0	8208		
2110-9	4328	4130-0	8625		

SCHEDULE 13 - BLM, COMPETITIVE, OLD PROCEDURE, SUBSEQUENT PLANT

CRITICAL PATH

ACTVTV	START	ACTVTV	START
2000-0	0	3120-0	4422
2220-0	0	3999-9	4922
2321-0	250	4000-0	4922
2230-1	771	4120-0	4922
2331-1	792	4130-0	5339
2120-1	834	4999-9	6172
2230-2	1251	5000-0	6172
2331-2	1272	5210-0	6172
2120-2	1314	5311-0	7172
2230-9	1731	5120-0	7964
2331-9	1752	5240-0	9131
2120-9	1794	5260-0	9131
2999-9	2211	5341-0	9156
3000-0	2211	5410-0	9156
3210-0	2211	5999-9	10698
3310-0	2461	6000-0	10698
3220-1	2982	6130-0	10698
3321-1	3003	6311-0	10698
3110-1	3045	6410-0	10698
3220-2	3462	6150-0	12698
3321-2	3483	6230-0	13198
3110-2	3525	6420-0	13219
3220-9	3942	6999-9	13719

SCHEDULE 14 - FS, COMPETITIVE, OLD PROCEDURE, SUBSEQUENT PLANT

CRITICAL PATH

ACTVTY	START	ACTVTY	START
2000-0	0	3120-0	4422
2220-0	0	3999-9	4922
2321-0	250	4000-0	4922
2230-1	771	4120-0	4922
2331-1	792	4130-0	5339
2120-1	834	4999-9	6172
2230-2	1251	5000-0	6172
2331-2	1272	5210-0	6172
2120-2	1314	5312-0	7172
2230-9	1731	5120-0	7964
2331-9	1752	5240-0	9131
2120-9	1794	5260-0	9131
2999-9	2211	5342-0	9156
3000-0	2211	5410-0	9156
3210-0	2211	5999-9	10698
3310-0	2461	6000-0	10698
3220-1	2982	6130-0	10698
3321-1	3003	6311-0	10698
3110-1	3045	6410-0	10698
3220-2	3462	6150-0	12698
3321-2	3483	6230-0	13198
3110-2	3525	6420-0	13219
3220-9	3942	6999-9	13719

SCHEDULE 15 - BLM, NONCOMPETITIVE, OLD PROCEDURE, SUBSEQUENT PLANT

CRITICAL PATH

ACTVTY	START	ACTVTY	START
2000-0	0	3120-0	4422
2220-0	0	3999-9	4922
2321-0	250	4000-0	4922
2230-1	771	4120-0	4922
2331-1	792	4130-0	5339
2120-1	834	4999-9	6172
2230-2	1251	5000-0	6172
2331-2	1272	5210-0	6172
2120-2	1314	5311-0	7172
2230-9	1731	5120-0	7964
2331-9	1752	5240-0	9131
2120-9	1794	5260-0	9131
2999-9	2211	5341-0	9156
3000-0	2211	5410-0	9156
3210-0	2211	5999-9	10698
3310-0	2461	6000-0	10698
3220-1	2982	6130-0	10698
3321-1	3003	6311-0	10698
3110-1	3045	6410-0	10698
3220-2	3462	6150-0	12698
3321-2	3483	6230-0	13198
3110-2	3525	6420-0	13219
3220-9	3942	6999-9	13719

SCHEDULE 16 - FS, NONCOMPETITIVE, OLD PROCEDURE, SUBSEQUENT PLANT

CRITICAL PATH

ACTVTY	START	ACTVTY	START
2000-0	0	3120-0	4422
2220-0	0	3999-9	4922
2321-0	250	4000-0	4922
2230-1	771	4120-0	4922
2331-1	792	4130-0	5339
2120-1	834	4999-9	6172
2230-2	1251	5000-0	6172
2331-2	1272	5210-0	6172
2120-2	1314	5312-0	7172
2230-9	1731	5120-0	7964
2331-9	1752	5240-0	9131
2120-9	1794	5260-0	9131
2999-9	2211	5342-0	9156
3000-0	2211	5410-0	9156
3210-0	2211	5999-9	10698
3310-0	2461	6000-0	10698
3220-1	2982	6130-0	10698
3321-1	3003	6311-0	10698
3110-1	3045	6410-0	10698
3220-2	3462	6150-0	12698
3321-2	3483	6230-0	13198
3110-2	3525	6420-0	13219
3220-9	3942	6999-9	13719

SCHEDULE 17 - BLM, COMPETITIVE, NEW PROCEDURE, SUBSEQUENT PLANT

CRITICAL PATH

ACTVTY	START	ACTVTY	START
2000-0	0	4000-0	3963
2220-0	0	4120-0	3963
2322-0	250	4130-0	4380
2230-1	583	4999-9	5213
2332-1	604	5000-0	5213
2120-1	646	5210-0	5213
2230-2	1063	5313-0	6213
2332-2	1084	5120-0	7005
2120-2	1126	5240-0	8172
2230-9	1543	5260-0	8172
2332-9	1564	5343-0	8197
2120-9	1606	5410-0	8197
2999-9	2023	5999-9	9739
3000-0	2023	6000-0	9739
3220-1	2023	6130-0	9739
3322-1	2044	6312-0	9739
3110-1	2086	6410-0	9739
3220-2	2503	6150-0	11739
3322-2	2524	6230-0	12239
3110-2	2566	6420-0	12260
3220-9	2983	6999-9	12760

SCHEDULE 18 - FS, COMPETITIVE, NEW PROCEDURE, SUBSEQUENT PLANT

CRITICAL PATH

ACTVTY	START	ACTVTY	START
2000-0	0	4000-0	3963
2220-0	0	4120-0	3963
2322-0	250	4130-0	4380
2230-1	583	4999-9	5213
2332-1	604	5000-0	5213
2120-1	646	5210-0	5213
2230-2	1063	5314-0	6213
2332-2	1084	5120-0	7005
2120-2	1126	5240-0	8172
2230-9	1543	5260-0	8172
2332-9	1564	5344-0	8197
2120-9	1606	5410-0	8197
2999-9	2023	5999-9	9739
3000-0	2023	6000-0	9739
3220-1	2023	6130-0	9739
3322-1	2044	6312-0	9739
3110-1	2086	6410-0	9739
3220-2	2503	6150-0	11739
3322-2	2524	6230-0	12239
3110-2	2566	6420-0	12260
3220-9	2983	6999-9	12760

SCHEDULE 19 - BLM, NONCOMPETITIVE, NEW PROCEDURE, SUBSEQUENT PLANT

CRITICAL PATH


ACTVTY	START	ACTVTY	START
2000-0	0	4000-0	3963
2220-0	0	4120-0	3963
2322-0	250	4130-0	4380
2230-1	583	4999-9	5213
2332-1	604	5000-0	5213
2120-1	646	5210-0	5213
2230-2	1063	5313-0	6213
2332-2	1084	5120-0	7005
2120-2	1126	5240-0	8172
2230-9	1543	5260-0	8172
2332-9	1564	5343-0	8197
2120-9	1606	5410-0	8197
2999-9	2023	5999-9	9739
3000-0	2023	6000-0	9739
3220-1	2023	6130-0	9739
3322-1	2044	6312-0	9739
3110-1	2086	6410-0	9739
3220-2	2503	6150-0	11739
3322-2	2524	6230-0	12239
3110-2	2566	6420-0	12260
3220-9	2983	6999-9	12760



SCHEDULE 20 - FS, NONCOMPETITIVE, NEW PROCEDURE, SUBSEQUENT PLANT

CRITICAL PATH

ACTVTY	START	ACTVTY	START
2000-0	0	4000-0	3963
2220-0	0	4120-0	3963
2322-0	250	4130-0	4380
2230-1	583	4999-9	5213
2332-1	604	5000-0	5213
2120-1	646	5210-0	5213
2230-2	1063	5314-0	6213
2332-2	1084	5120-0	7005
2120-2	1126	5240-0	8172
2230-9	1543	5260-0	8172
2332-9	1564	5344-0	8197
2120-9	1606	5410-0	8197
2999-9	2023	5999-9	9739
3000-0	2023	6000-0	9739
3220-1	2023	6130-0	9739
3322-1	2044	6312-0	9739
3110-1	2086	6410-0	9739
3220-2	2503	6150-0	11739
3322-2	2524	6230-0	12239
3110-2	2566	6420-0	12260
3220-9	2983	6999-9	12760

Department Approval: 

MITRE Project Approval: Payal M. Medwala