BCS BOEING COMPUTER SERVICES COMPANY

A Division of The Boeing Company

MAINSTREAM®-EKS
Scout Access and Control Guide

Boeing Computer Services Company, is a division of The Boeing Company with product lines that include computer time, programming, consulting, training, and data base services. BCS offers these services from its many sales offices throughout the United States and in Canada and Great Britain. With staff and facilities developed through more than 25 years of broad business experience, BCS offers comprehensive support of many widely used computer applications, including general business and financial systems, automated manufacturing, inventory management, and scientific and engineering problem solving.

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MAINSTREAM-CTS (Conversational Terminal Services) is oriented toward program development, small data base applications, and interactive program execution.

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MAINSTREAM-EKS is oriented toward the scientific and engineering communities, and provides interactive timesharing, remote job entry, and over-the-counter batch capabilities.

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MAINSTREAM*-EKS

SCOUT
ACCESS AND CONTROL GUIDE

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RELATED MAINSTREAM-EKS PUBLICATIONS

MAINSTREAM-EKS Programmers Manual	10208-001
MAINSTREAM-EKS Reference Guide	10208-002
MAINSTREAM-EKS Instant KIT	10208-004
MAINSTREAM-EKS Interactive Timesharing(KIT) User's Manual	10208-005
MAINSTREAM-EKS Remote Job Entry User's Manual	10208-006

Because of continual enhancements to the system, the publications listed above carry various revision numbers. To obtain the latest revisions of these documents, contact a BCS Representative or the BCS office serving your area.

ADDITIONAL INFORMATION

MAINSTREAM-EKS User Memos document the information which is available online in the update bulletins. These update bulletins are available on the system by issuing an interactive MSG command or by using an MSG card with batch submittals.

Newstream is the MAINSTREAM newsletter which announces new products and enhancements to the MAINSTREAM product line. *Newstream* also announces revisions or corrections to the the system that do not appear elsewhere.

CONTENTS

FIGURES

TABLES

1.0 INTRODUCTION

1.1 OVERVIEW OF SCOUT

SCOUT is a versatile building design and energy analysis tool that uses ASHRAE state-of-the-art techniques for performing thermal load calculations and energy usage predictions. It is a highly sophisticated tool that is used to evaluate various combinations of building envelope, thermal systems equipment, and equipment operations that are the most economically applicable to a building site.

SCOUT uses descriptive data, developed or gathered by the user, which may include such elements as building and equipment characteristics, local weather profiles, fuel and electricity costs, interest rates, etc. The final results from the SCOUT processing are computer-generated reports that indicate:

- The amount of energy the site will consume for each alternative type of equipment used
- Effects of building envelope changes
- Effects of internal load changes
- Effects of scheduling thermostats
- Effects of undersizing equipment
- Effects of nighttime and seasonal temperature setback/setforward
- Effects of distribution system changes
- Economic expense variation between alternatives

To aid the user in analyzing problems, SCOUT comprises 10 main programs:

- Response Factor (RESFAC)
- Data Verification Program for Load Analysis Program (DVPLAP)
- Data Verification Program for Load Analysis Program with Shadows (DVPLAPS)
- Load Analysis Program (LAP)
- Load Analysis Program with Shadows (LAPS)
- Data Verification Program for Temperature Analysis Program (DVPTAP)
- Temperature Analysis Program (TAP)
- Data Verification Program for Systems Analysis Program (DVPSAP)
- Systems Analysis Program (SAP)
- Life-Cycle Cost Analysis Program(CAP)

1.2 SCOUT PROCESSING AT BCS

Boeing Computer Services Company (BCS) processes SCOUT on computers at the EKS data center in Renton, Washington. SCOUT users gain access to this system through the following methods:

- Delivering the job directly to the EKS data center in Renton. The results are either picked up by the user or delivered.

  The address for the EKS data center is:

  EKS Data Center
  10.80 Building, Door 5, 12R14, Mail Stop 70-M1
  Boeing/Renton Complex
  Renton, Washington 98055

- Using an existing RJE terminal in his office or at a BCS location, the SCOUT user can send his job to the EKS data center over telecommunications lines for processing and have the SCOUT output returned and printed via the terminal. In this method, the user acquires the benefits of shorter job turnaround inherent in remote batch processing.
- KRONOS Interactive Timesharing (KIT) on a low-speed terminal. The SCOUT user can build input data files, maintain input data files, submit jobs to the computer, and look at his output. Upon verification that printed output is desired, it can be routed to the EKS data center printers, or to another remote setup for printed output. If the output is printed at the EKS data center, it can be held for user pickup or arrangements can be made for shipment to the user's office.

1.3 HOW TO BECOME A SCOUT USER

Contact your local BCS sales office. Subject to your approval, a BCS sales representative will initiate a service agreement. BCS provides documentation and instructions for accessing the SCOUT programs on MAINSTREAM-EKS. (This is further described in the following section.) Arrange with the BCS sales representative for receipt of the documentation and any assistance you may need for accessing the SCOUT programs. In addition, GARD, Inc., also provides documentation on the use of SCOUT (section 1.4).

Although BCS and GARD, Inc., provide assistance and documentation on SCOUT, the user is responsible for applying SCOUT to his building design and energy analysis programs. Training is discussed in section 1.5.

1.4 USEFUL MANUALS

Instructions for accessing SCOUT programs on MAINSTREAM-EKS begin in section 2.0 of this access and control guide. A copy of this document is provided upon completion of the service agreement. Additional copies may be obtained from your BCS sales representative.

Greater versatility in accessing SCOUT can be achieved by increased familiarity with MAINSTREAM-EKS. The following EKS reference manuals are especially useful for this purpose:

- "MAINSTREAM-EKS Programmer's Manual," BCS 10208-001
- "MAINSTREAM-EKS Interactive Timesharing (KIT) User's Manual," BCS 10208-005

The use of SCOUT for building design and energy analysis problems is described in the following GARD, Inc., documents:

- "SCOUT Overview Manual"
- "SCOUT Users Manual"
- "SCOUT Input Forms Manual"
- "SCOUT Sample Problem Manual"

A copy of each of these four documents is provided to the user by GARD, Inc., upon completion of the service agreement with BCS. Additional copies may be obtained from GARD for a nominal charge.

1.5 SCOUT TRAINING

To assist the customer in learning how to use SCOUT, selected BCS branch offices may offer SCOUT training seminars conducted by technical personnel from GARD, Inc. The BCS sales office will provide information on location, schedule, and charges.

If there is a special training requirement that cannot await a scheduled seminar, the customer may directly contact GARD, Inc.

2.0 USING SCOUT AT BCS

2.1 SCOUT PROCESSING STEPS

The relationships that exist between the 10 primary SCOUT programs for the design load analysis sequence and the energy analysis sequence are illustrated in figures 1 and 2. More specifically, they indicate the program input data requirements and output results.

2.2 INPUT CARDS FOR USING SCOUT AT BCS

The general job deck consists of one or more logical records. The first logical record contains control statements that specify how the job is to be processed. The first two statements in this record must be the job statement and the user statement. Other logical records of theSCOUT job deck contain data. Figure 3 illustrates the general arrangement of the various elements of the job deck for jobs processed under MAINSTREAM-EKS.

When a SCOUT user is employing the SCOUT programs at BCS, the following standard EKS job control cards are required:

- Job card
- User card
- Get card
- Procedure execute cards

The set of job control cards is followed by an end-of-record (EOR) card, sets of input data cards, and an end-of-information (EOI) card. The sets of input data cards just mentioned are separated from each other by end-of-record cards. A set of input data cards is required for each procedure execute card.

When referring to card format throughout this document, capital letters will be used for unchanging characters and small letters will be used for varying input.

2.2.1 Job Card

The job card is submitted as the first card of the customer's SCOUT input stream. The job card identifies the job and provides the important job parameters of maximum field length, maximum execution time, and job priority.

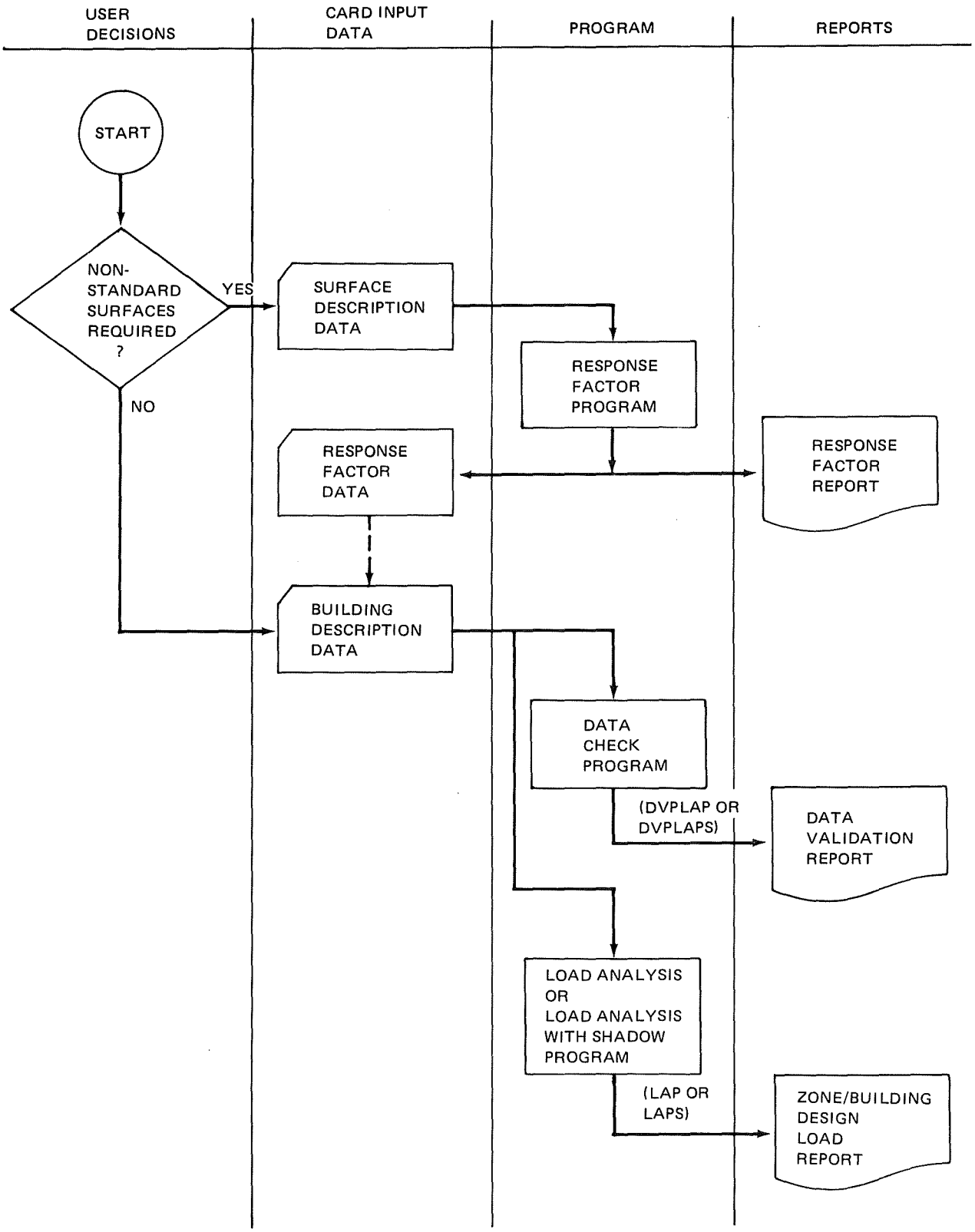

Figure 1. Design load analysis sequence.

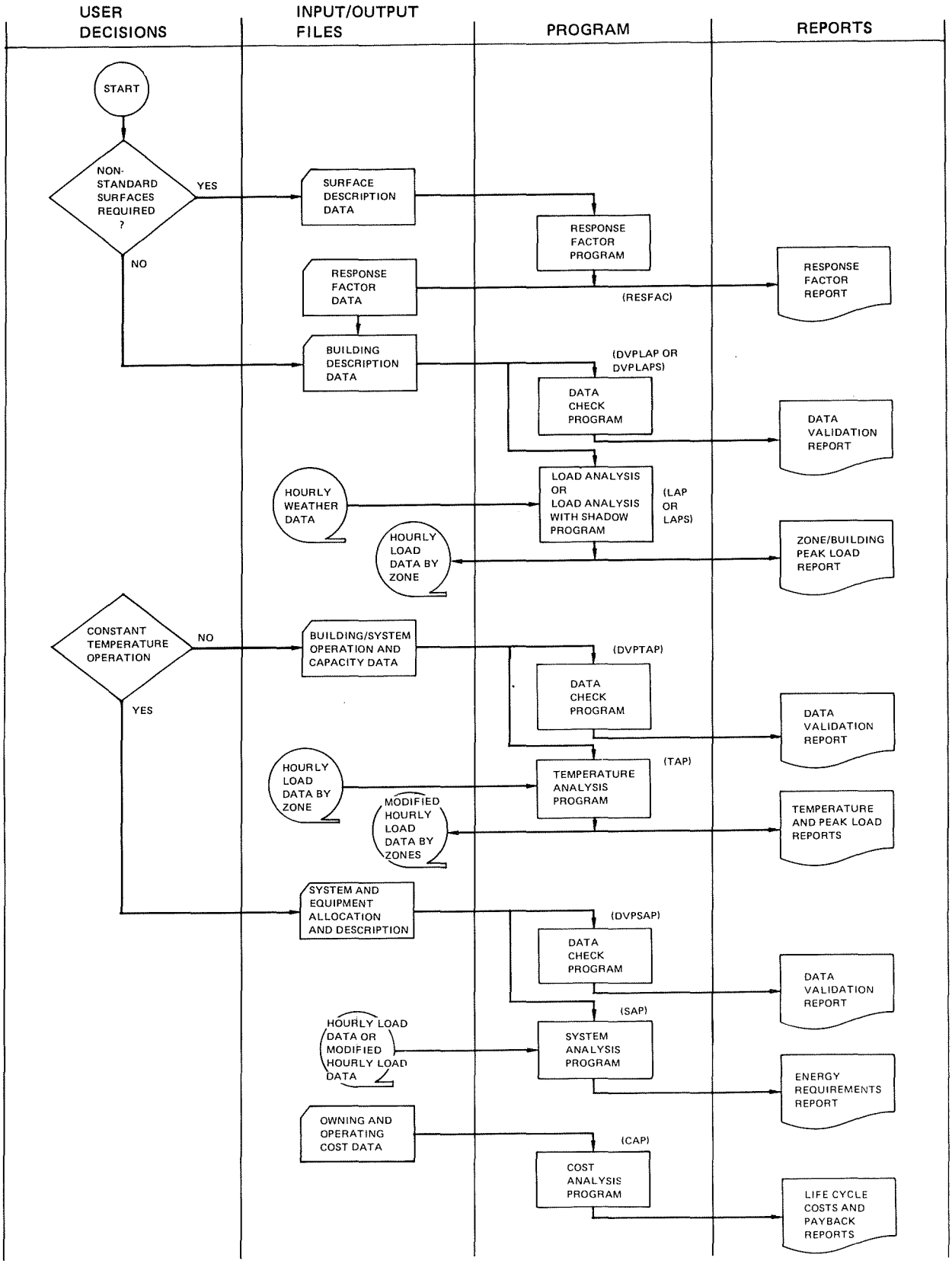

Figure 2. Energy analysis sequence.

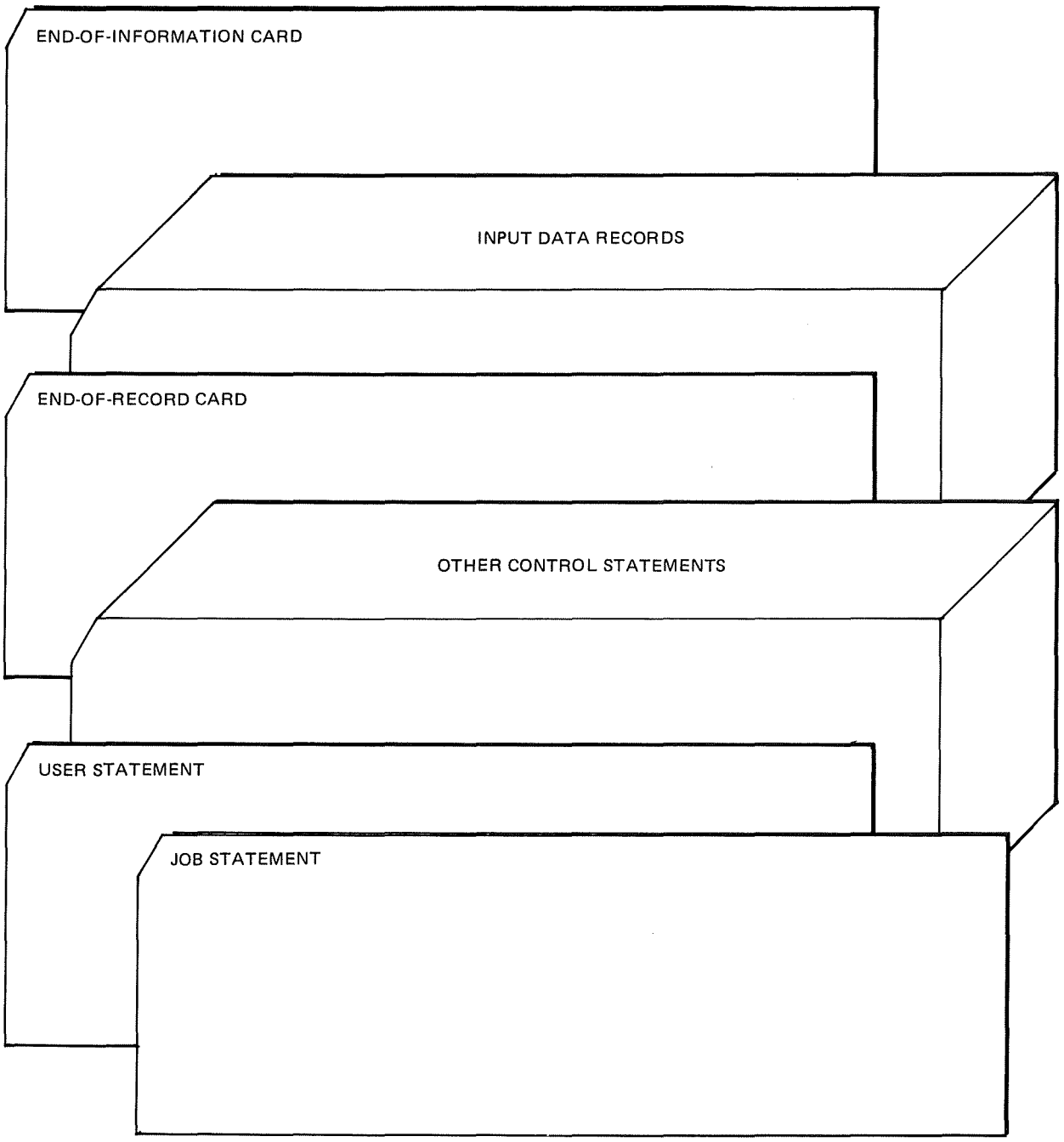

Figure 3. General arrangement of a job deck.

The job card should have the following format, starting in column 1:

jobname, CM ℓℓℓℓℓℓ,Tmm,Pnn.

jobname	A one- to seven-character name assigned to the job for identification purposes.
CM ℓℓℓℓℓℓ	The maximum field length for the job. (See appendix D.)
Tmm	Maximum CPU execution time in seconds (see appendix C for typical values). If this CPU time is exceeded, the job will be terminated.
Pnn	The priority for the job execution. Select a value of 00, 02, 04, 06, or 10. Consult your rate schedule for more details on these priorities and the corresponding charges. As a general rule, one should consider using low priority for the larger analysis runs and run them overnight to minimize costs. The data verification runs are not very costly, and a high priority on them will allow more time to check the data for the large overnight runs. When a job uses input and/or output tapes, the highest priorities may be negated by the delay in retrieving and mounting the tapes.

An example of a job card follows:

DHSCT,CM120000,T100,P02

2.2.2 User Card

The user card, which is the second card in the input stream, contains the customer's account number and his password, which are necessary to gain access to the computer. Following a blank or blanks, the user card contains the user's name, his telephone number, and his location.

The user card should have the following format, starting in column 1:

USER,acctno,passwrd.	username/phone/address
acctno	An alphanumeric name (up to seven characters) provided by the customer for accessing the computer.
passwrd	The password used to access the computer (up to seven characters).
username	The submitter's name (up to a recommended maximum of 20 characters).

phone	The submitter's phone number (up to a recommended maximum of 12 characters). Area code should be included for non-Seattle-area numbers.
address	The Boeing data station or mail stop number for Boeing users. Company identification can be supplied by others. A maximum of 16 characters is recommended.

For example:

USER,EAGER1,BEAVER. SCHWARTZ,P/206-576-5300/MAIL

Following the user card, comment cards should be inserted, if needed, to give mailing instructions. The following is an example, starting in column 1:

```
* MAIL TO
* P.SCHWARTZ
* JOHNSON AND TOWNE
* 7420 N. MAIN
* SEATTLE, WA 98140
```

2.2.3 Get Cards

To access the procedure files required for SCOUT, the following control card is necessary (it starts in column 1):

```
GET,SCOUT/UN=EKSAPP.
```

To get an indirect permanent file that is used for input data in place of input data cards, a control card of the following form is necessary (starting in column 1):

```
GET,datafil.
```

datafil	The name of the input data file.

2.2.4 Procedure Execute Cards

Following the get card, the user inserts one or more procedure execute cards (also known as CALL cards). These cards cause the execution of a SCOUT program.

There is a procedure for execution of each SCOUT program. Parameters are specified in many cases on the procedure execute cards, which have one of the following formats:

```
CALL,SCOUT,procnam.
CALL,SCOUT,procnam(param1=val1).
CALL,SCOUT,procnam(param1=val1, . . . ,paramn=valn).
```

procnam	Procedure to be executed
param1	Parameter 1
paramn	Parameter n
val 1	Value for parameter 1
val n	Value for parameter n

For example, if a user does not wish to save a tape of intermediate results for later runs, it is indicated by the supplied parameter, BTAPE=NOSAVE. Section 3.0 covers each program execution procedure in detail. Table 1 has a list of these procedures.

Table 1. Available SCOUT procedures on the SCOUT file.

Procedure Name	SCOUT Program
RESFAC	Response Factor Program
DVPLAP	Data Verification Program for Load Analysis Program
DVPLAPS	Data Verification Program for Load Analysis Program with Shadows
LAP	Load Analysis Program
LAPS	Loan Analysis Program with Shadows
DVPTAP	Data Verification Program for Temperature Analysis Program
TAP	Temperature Analysis Program
DVPSAP	Data Verification Program for System Analysis Program
SAP	System Analysis Program
CAP	Life Cycle Cost Analysis Program

2.2.5 EOR and EOI Cards

In section 2.2, it is pointed out that the job control cards are separated from the input data cards by an end-of-record (EOR) card. Also, the different sets of input data cards are similarly separated. The deck is ended by an EOI card. The actual nature of EOR and EOI cards varies according to the nature of accessing the computer—batch, RJE, or low-speed terminal. The BCS representative or the RJE operator (non-BCS RJEs) can determine what constitutes EOR and EOI cards.

If a file is produced on CMEDIT for input via a low-speed terminal, the EOR is provided by a *WEOR (refer to section 3.7 in the MAINSTREAM-KIT manual). An EOI is not required in a run submitted from a low-speed terminal.

2.3 USE OF EXISTING WEATHER TAPES

The SCOUT user obtains the weather input data for the load analysis programs by specifying the city he desires as a parameter on the procedure execute card (see sections 3.4 and 3.5). Appendix A lists the currently available cities and the related parameter value to be specified. Appendix B shows a map and lists cities for the various California climate zones.

2.4 ACQUISITION OF ADDITIONAL SCOUT WEATHER DATA

A SCOUT weather tape can be produced for a city not listed among the currently available SCOUT weather tapes shown in appendix A. (Check with your BCS technical representative for the latest revisions to the list.) Two steps are necessary in producing a weather tape.

1. A weather tape for the desired city is purchased by the user from the National Climatic Center (NCC) in Asheville, North Carolina.
2. The NCC tape is processed by the SCOUT program to produce a SCOUT weather tape. The processing is a necessary step because the Weather Bureau code must be converted into a usable SCOUT format.

Since there are various weather tapes available, the user should contact his technical representative to learn which tapes can be converted for SCOUT use and to obtain the conversion procedure.

2.5 SAVING INPUT AND OUTPUT FILES

Any card input may be saved on permanent file by adding the parameter "INSAVE=filnam" to the procedure execute card, and including the following card after the procedure execute card.

SAVE,filnam.

filnam	A name assigned by the user for an indirect file that is to be saved

Output files of intermediate data required by subsequent SCOUT programs are created by LAP, LAPS, and TAP. These files are automatically saved on magnetic tape unless a supplied parameter, BTAPE=NOSAVE, is added to the procedure execute card.

The name of the saved magnetic tape will appear on the dayfile for the run. It should be recorded by the user so that later he will know what it is. These tapes are saved for the user until he directs their release.

2.6 RESOLUTION OF PROBLEMS IN USING SCOUT

If the SCOUT user encounters problems with the SCOUT programs on MAINSTREAM-EKS, he should first determine the nature of the problem. If it is a problem in accessing or

processing the program that cannot be resolved by using the procedures in this document, the user should contact the BCS technical representative. If the problem is not one of access to, or execution of, the SCOUT programs but concerns the output obtained from the program, the user should refer to the SCOUT manuals that have been provided by GARD, Inc. If the documentation does not provide the necessary answers, the user may telephone the SCOUT Support Team at GARD, Inc., (312) 647-9000, which is available for brief consultations. GARD may charge a fee, as agreed to by GARD and the SCOUT user, for extended engineering consultations. In all cases of a problem, the SCOUT output should be retained and made available, if necessary, to the BCS or GARD technical representative.

3.0 SAMPLE SCOUT JOBS

Examples of runs of each SCOUT program are provided in this section. In addition, two examples of runs that execute several SCOUT programs are included. All control cards start in column 1.

Supplied parameters are included in various procedure execute cards and all possible ones for that section will be discussed separately in the individual job section.

3.1 RESFAC (RESPONSE FACTOR)

The RESFAC job below has punched output. Comment cards are included to provide mailing instructions for this punched output.

```
job card
user card
GET,SCOUT/UN=EKSAPP.
*  PUNCH EST. = 50 CARDS
*  PLEASE SEND OUTPUT TO -
*     username
*     address
CALL,SCOUT,RESFAC(PTAPE=PUNCH)
EOR
response factor data
EOI
```

Note: If the user terminal does not have the capability to accept the RESFAC punched card output, special arrangements will have to be made with BCS to have cards punched locally and mailed to the user.

Supplied parameters:

INPUT=filenam	Uses an indirect permanent file for input rather than the input data cards.
INSAVE=filenam	Places the input onto the given filenam, which can then be

saved by the user. The user must provide a "SAVE,filenam" card (refer to section 2.5).

PTAPE=PUNCH — When included, punched output of response factor cards is obtained.

3.2 DVPLAP (DATA VERIFICATION PROGRAM FOR LOAD ANALYSIS PROGRAM)

job card

user card

GET,SCOUT/UN=EKSAPP.

CALL,SCOUT,DVPLAP.

EOR

building description data for LAP

EOI

Supplied parameters:

INPUT=filenam — Uses an indirect permanent file for input rather than the input data cards.

INSAVE=filenam — Places the input onto the given filenam, which can then be saved by the user. The user must provide a "SAVE,filenam" card (refer to section 2.5).

3.3 DVPLAPS (DATA VERIFICATION PROGRAM FOR LOAD ANALYSIS PROGRAM WITH SHADOWS)

job card

user card

GET, SCOUT/UN=EKSAPP.

CALL,SCOUT,DVPLAPS.

EOR

building description data for LAPS

EOI

Supplied parameters:

INPUT=filenam — Uses an indirect permanent file for input rather than the input data cards.

INSAVE=filenam — Places the input onto the given filenam, which can then be saved by the user. The user must provide a "SAVE.filenam" card (refer to section 2.5).

3.4 LAP (LOAD ANALYSIS PROGRAM)

This LAP job uses the Chicago weather tape listed in appendix A and the small LAP program. The maximum field length required for this job is 105,000 (see appendix C), which is placed on the job card. The intermediate load data is saved on magnetic tape since BTAPE=NOSAVE was not supplied.

```
job card
user card
GET,SCOUT/UN=EKSAPP.
CALL,SCOUT,LAP(SIZE=1, CITY=CHI).
EOR
building description data for LAP
EOI
```

For a design load analysis, use CITY=NONE.

Supplied parameters:

Required parameters are underlined.

BTAPE=NOSAVE	Means the intermediate output is not saved.
CITY=name	A required parameter. City abbreviations from appendix A are used to select the proper weather tape. If the tape is a user-supplied weather tape, use CITY=OTHER. For a run for design loads only, CITY=NONE is used.
INPUT=filenam	Uses an indirect permanent file for input rather than the input data cards.
INSAVE=filenam	Places the input onto the given filenam, which can then be saved by the user. The user must provide a "SAVE,filenam" card (refer to section 2.5).
SIZE=n	A required parameter. The size of the LAP program that will be used is determined by this parameter: n=1 for the small program, n=2 for the medium program, and n=3 for the large program. Default is n=2. The output listing from the data verification program (DVPLAP) indicates which of the three is to be used.
WTAPE=tapenam	A required parameter when CITY=OTHER is supplied as a parameter. It is the tape name for the user-supplied tape.

3.5 LAPS (LOAD ANALYSIS PROGRAM WITH SHADOWS)

This LAPS job uses a weather tape supplied by the user and the large LAPS program. The maximum field length required for this job is 320,000 (see appendix C), which is placed on the job card. The intermediate load data will be saved on magnetic tape since BTAPE=NOSAVE was not supplied.

```
job card
user card
GET,SCOUT/UN=EKSAPP.
CALL,SCOUT,LAPS(SIZE=3,CITY=OTHER,WTAPE=tapenam).
EOR
building description data for LAPS
EOI
```

For design load analysis, use CITY=NONE.

Supplied parameters:

Required parameters are underlined.

BTAPE=NOSAVE	The intermediate output is not saved.
CITY=name	A required parameter. City abbreviations from appendix A are used to select the proper weather tape. If the tape is a user-supplied weather tape, use CITY=OTHER. For a run for design only, CITY=NONE is used.
INPUT=filenam	Uses an indirect permanent file for input rather than the input data cards.
INSAVE=filenam	Places the input onto the given filenam, which can then be saved by the user. The user must provide a "SAVE,filenam" card (refer to section 2.5).
SIZE=n	A required parameter. The size of the LAP program that will be used is determined by this parameter: n=1 for the small program, n=2 for the medium program, and n=3 for the large program. Default is n=2. The output listing from the data verification program (DVPLAPS) indicates which of the three is to be used.
WTAPE=tapenum	A required parameter when CITY=OTHER is supplied as a parameter. It is the tape name for the user-supplied tape.

3.6 DVPTAP (DATA VERIFICATION PROGRAM FOR THE TEMPERATURE ANALYSIS PROGRAM)

job card

user card

GET,SCOUT/UN=EKSAPP.

CALL,SCOUT,DVPTAP.

EOR

building system operation and capacity data for TAP

EOI

Supplied parameters:

INPUT=filenam	Uses an indirect permanent file for input rather than the input data cards.
INSAVE=filenam	Places the input onto the given filenam, which can then be saved by the user. The user must provide a "SAVE,filenam" card (refer to section 2.5).

3.7 TAP (TEMPERATURE ANALYSIS PROGRAM)

In this TAP run the input tape name is supplied via the ATAPE parameter. This tape is the output from a previous LAP or LAPS run.

job card

user card

GET,SCOUT/UN=EKSAPP.

CALL,SCOUT,TAP(ATAPE=tapenam).

EOR

building/system operation and capacity data for TAP

EOI

Supplied parameters:

ATAPE=tapenam	Provides the tape input required by the TAP program. It can be omitted when a preceding program execution in the job produces the required output/input.
BTAPE=NOSAVE	Means that the intermediate output is not saved.
INPUT=filenam	Uses an indirect permanent file for input rather than the input data cards.

INSAVE=filenam	Places the input onto the given filenam, which can then be saved by the user. The user must provide a "SAVE,filenam" card (refer to section 2.5).

3.8 DVPSAP (DATA VERIFICATION PROGRAM FOR SYSTEMS ANALYSIS PROGRAM)

job card

user card

GET,SCOUT/UN=EKSAPP.

CALL,SCOUT,DVPSAP.

EOR

system and equipment description data

EOI

Supplied parameters:

INPUT=filenam	Uses an indirect permanent file for input rather than the input data cards.
INSAVE=filenam	Places the input onto the given filenam, which can then be saved by the user. The user must provide a "SAVE,filenam" card (refer to section 2.5).

3.9 SAP (SYSTEMS ANALYSIS PROGRAM)

With this SAP run, the input tape name is supplied via the ATAPE parameter. This tape is the output from a previous LAP, LAPS, or TAP run.

job card

user card

GET,SCOUT/UN=EKSAPP.

CALL,SCOUT,SAP(ATAPE=tapenam).

EOR

system and equipment description data

EOI

Supplied parameters:

ATAPE=tapenam	Provides the tape input required by the TAP and SAP programs. It can be omitted when a preceding program execution in the job produces the required output/input.

BTAPE=NOSAVE	Means that the intermediate output is not saved.
INPUT=filenam	Uses an indirect permanent file for input rather than the input data cards.
INSAVE=filenam	Places the input onto the given filenam, which can then be saved by the user. The user must provide a "SAVE,filenam" card (refer to section 2.5).

3.10 CAP (LIFE-CYCLE COST ANALYSIS PROGRAM)

job card

user card

GET,SCOUT/UN=EKSAPP.

CALL,SCOUT,CAP.

EOR

owning and operating cost data

EOI

Supplied parameters:

INPUT=filenam	Uses an indirect permanent file for input rather than the input data cards.
INSAVE=filenam	Places the input onto the given filenam, which can then be saved by the user. The user must provide a "SAVE,filenam" card (refer to section 2.5).

3.11 COMPOUND JOB

Examples of job and user cards are illustrated below. The weather tape is a user-supplied tape (66A100). The LAP run is a medium-sized run. TAP uses the output file from LAP; therefore, no ATAPE parameter needs to be specified. No output tape is being saved from the TAP run.

SAP uses the output file from TAP; therefore, no ATAPE parameter is specified on the SAP procedure execute card. The input data for the SAP run is being supplied as an indirect permanent file, INSAP, so the INPUT parameter is used.

A warning should be given on stacking of procedure execute cards. TAP execution uses the last LAP or LAPS output file if no input data tape is supplied as an ATAPE parameter. The SAP execution uses the last LAP, LAPS, or TAP output file if no input data tape is supplied as an ATAPE parameter.

COMP1,CM125000,T300,P02

USER,EAGER1,BEAVER. P.SCHWARTZ/206-576-5300/MAIL

```
* MAIL TO -
* P. SCHWARTZ
* JOHNSON AND TOWNE
* 7420 N. MAIN
* SEATTLE, WA 98140
CALL,SCOUT,LAP(SIZE=2,CITY.=OTHER,WTAPE=66A100).
CALL,SCOUT,TAP(BTAPE=NOSAVE).
CALL,SCOUT,SAP(INPUT=INSAP).
EOR
LAP data
EOR
TAP data
EOI
```

3.12 JOB USING A DATA INPUT FILE

This run is the same as that in section 3.7 except the data exists on an indirect file, INTAP, instead of data cards.

```
job card
user card
GET,INTAP.
GET,SCOUT/UN=EKSAPP.
CALL,SCOUT,TAP(ATAPE=tapenam,INPUT=INTAP).
EOI
```

4.0 EXAMPLE OF SCOUT PROCEDURES

To illustrate the use of the SCOUT procedures outlined in this document, the following sample problem has been outlined to demonstrate the series of program runs that are typically required.

Assume a building for which an evaluation of the following is required:

- Design load analysis of two alternative building envelope designs.
- Energy analysis of each building design using two different types of HVAC systems.
- Life-cycle cost analysis and comparison of all four building/system alternatives.

A summary of the computer runs required plus input requirements are illustrated in table 2.

Table 2. Processing requirements for example problem.

COMPUTER RUN	PROCEDURE USED	CARD INPUT DATA DESCRIBING
1	LAP	BUILDING DESIGN 1 + DESIGN WEATHER
2	LAP	BUILDING DESIGN 1 (WEATHER TAPE USED)
3	TAP	BUILDING OPERATION 1
4	SAP	SYSTEM 1 + EQUIPMENT
5	SAP	SYSTEM 2 + EQUIPMENT
6	LAP	BUILDING DESIGN 2 + DESIGN WEATHER
7	LAP	BUILDING DESIGN 2 (WEATHER TAPE USED)
8	TAP	BUILDING OPERATION 2
9	SAP	SYSTEM 1 + EQUIPMENT
10	SAP	SYSTEM 2 + EQUIPMENT
11	CAP	COST DATA FOR RESULTS FROM COMPUTER RUNS 4, 5, 9, AND 10

APPENDIX A: CURRENTLY AVAILABLE WEATHER DATA*

City	Years	Parameter Value for City
Atlanta, GA	1/49 - 12/58	ATL
Baltimore, MD	1/54 - 12/63	BALT
Chicago, IL	1/63 - 12/72	CHI
Denver, CO	1/49 - 12/58	DENV
Detroit, MI	1/49 - 12/58	DET
Evansville, IN	1/55 - 12/64	EVANS
Houston, TX	1/55 - 12/64	HOUST
Los Angeles, CA	1/49 - 12/58	LAX
Philadelphia, PA	1/49 - 12/58	PHIL
Sacramento, CA	1/49 - 12/58	SACR
St. Louis, MO	1/49 - 12/58	STL
San Francisco, CA	1/49 - 12/58	SFO

State of California Weather

For the State of California, there are sets of one-year data for 15 temperature zones. To obtain this data, use one of the parameter values CTZ01 through CTZ15 for the city parameter. Also in the input data, to the SCOUT LAP and LAPS programs, use 1977 as the year for these CTZ weather data.

*Please check with your BCS representative on cities not on the list since cities are being added as the need arises. Other cities are available per section 2.4.

APPENDIX B: CALIFORNIA CLIMATE ZONES

The following data shows the present division of the State of California into temperature zones for weather data. The map (figure 4) illustrates boundaries of each zone. SCOUT has access to this data; the cities included in each zone are summarized below.

Weather File Inventory

Zone	Representative Cities	Parameter Value for City
1. North Coast	Crescent City Eureka Fort Bragg Orleans Scotia	CTZ01
2. North Coast Valley	Healdsburg Napa Petaluma Santa Rosa St. Helena Ukiah	CTZ02
3. San Francisco Bay Area	Berkeley Hamilton AFB Oakland Redwood City San Mateo San Rafael San Francisco	CTZ03
4. Upper Coast Range Valley	Hollister King City Livermore Los Gatos Monterey Salinas San Jose Santa Clara Santa Cruz Watsonville	CTZ04

Figure 4. Map of California climate zones.

Zone	Representative Cities	Parameter Value for City
5. Lower Coast Range Valley	Lompoc Ojai Oxnard Paso Robles San Luis Obispo Santa Barbara Santa Paula Santa Maria	CTZ05
6. Los Angeles Beach	Culver City Laguna Beach Los Angeles Airport Newport Beach Santa Monica Torrance	CTZ06
7. San Diego	Chula Vista Escondido San Diego	CTZ07
8. Santa Ana	El Toro Long Beach Santa Ana Yorba Linda	CTZ08
9. Los Angeles City	Burbank Los Angeles Civic Center Pasadena San Fernando San Gabriel	CTZ09
10. San Bernardino	Beaumont Corona Redlands Riverside San Bernardino San Jacinto Upland	CTZ10

Zone	Representative Cities	Parameter Value for City
11. Northern Zone	Alturas Chico Colusa Marysville McCloud Oroville Orland Red Bluff Redding Susanville Willows Yreka	CTZ11
12. Central Zone	Antioch Auburn Davis Lodi Modesto Nevada City Placerville Sacramento Stockton Tahoe City Vacaville Woodland	CTZ12
13. San Joaquin Valley	Bakersfield Coalinga Fresno Los Banos Madera Maricopa Merced Porterville Visalia	CTZ13

Zone	Representative Cities	Parameter Value for City
14. High Desert	Barstow Bishop Daggett Lake Arrowhead Mt. Wilson Palmdale Sandberg Trona Twentynine Palms Victorville	CTZ14
15. Low Desert	Blythe Brawley Eagle Mtn. El Centro Imperial Indio Iron Mtn. Needles Palm Springs	CTZ15

APPENDIX C: VALUE FOR RECOMMENDED JOB CARD TIME PARAMETER

SCOUT PROGRAM	RUN TYPE	NUMBER OF ZONES			
		1 TO 5	6 TO 10	11 TO 15	16 TO 20
RESFAC		30	30	30	30
DVPLAP		10	10	10	10
DVPLAPS		10	10	10	10
LAP	DESIGN LOAD	30	60	90	120
LAP	HOURLY	60	120	180	240
LAPS	DESIGN LOAD	60	120	180	240
LAPS	HOURLY	90	180	240	350
DVPTAP		10	10	10	10
TAP		35	70	100	150
DVPSAP		10	10	10	10
SAP		35	70	100	150
CAP		10	10	10	10

APPENDIX D: REQUIRED FIELD LENGTHS FOR VARIOUS SCOUT PROGRAMS

SCOUT Program	Program Size	Field Length Required
RESFAC		47,000
DVPLAP		45,000
DVPLAPS		50,000
LAP	1-Small	110,000
	2-Medium	125,000
	3-Large	170,000
LAPS	1-Small	150,000
	2-Medium	215,000
	3-Large	325,000
DVPTAP		35,000
TAP		135,000
DVPSAP		47,000
SAP		125,000
CAP		45,000

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