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AUTHOR Ikeda, Masumi
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ABSTRACT

The preliminary system design of the computer-based Southwest Regional Laboratory's (SWRL) Financial System is outlined. The system is designed to produce various management and accounting reports needed to maintain control of SWRL operational and financial activities. Included in the document are descriptions of the various types of system inputs; a definition of their data elements; the kinds of management and accounting reports generated; and an overall system flow diagram. The computer programs are to be written in COBOL for use on an IBM System 360/91. (Author/DGC)

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SWRL SOUTHWEST REGIONAL LABORATORY
TECHNICAL NOTE

DATE: March 24, 1972

NO: TN 5-72-16

TITLE: PRELIMINARY SYSTEM DESIGN OF THE SWRL FINANCIAL SYSTEM

AUTHOR: Masumi Ikeda

ABSTRACT

The preliminary system design of the computer based SWRL Financial System is outlined. Included are descriptions of the various types of system inputs; a definition of their data elements; the kinds of management and accounting reports generated; and an overall system flow diagram.

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TM002133

PRELIMINARY SYSTEM DESIGN OF THE SWRL FINANCIAL SYSTEM

MANAGEMENT REPORTING & ACCOUNTING SYSTEM

SYSTEM DESCRIPTION

The system is designed to produce various management and accounting reports in order to maintain control of SWRL operational and financial activities. Two master files will be maintained to keep abreast of periodic changes in SWRL activities.

The system will process various types of input data which are divided in the following two categories:

Data Inputs

1. Special Input

   Special Input records are primarily those which will change relatively fixed data contained in the Master File or adding new information.

   Examples of such changes are:

   Change in report number; change in report name; change in general ledger data; adding a new cost center.

   The following are the various types of Special Input:

   a. SWRL Header = During each processing period a SWRL Header must be inputted. This record must be submitted during each cycle since it identifies the following:

      1) The processing period date.

      2) The year and contract pertaining to the input detail record that are to be processed. Should there be any input data which applies to prior Year and Contract

processing, a SWRL Header record must be submitted for each Year and Contract record to be processed. The Financial Master File is maintained in Year and Contract sequence, therefore it is essential that a SWRL Header record be inserted for any updating applicable to these periods.

b. General Ledger Change = This record is used to add, delete or change data (other than monetary) in the General Ledger portion of the Financial Master File. This could be a change in account title, deleting a general ledger account, and adding a new account to the Master File.

c. Division Header = In the Financial Master File, there will be a Division Header record applicable to the cost centers associated to that Division. This record can be used to change a division report number or the division name.

d. Cost Center Header = Each Cost Center in the Financial Master File will precede the detail cost records identified to it. The Cost Center Header record is used to change the cost center report number, the cost center name, and to add a new cost center to the Master File.

e. Cost Center Change = This record is used to change the budgetary data contained in each of the detail cost center record.

f. Vendor Record 1 = This record contains vendor information and can be used to add, change or delete vendor information from the Vendor Master File. Information contained in this record are: (1) Vendor Name 1, (2) Vendor Name 2.

g. Vendor Record 2 = This record contains additional vendor information. These are: (1) Vendor Address, (2) Vendor City, (3) Vendor State, (4) Vendor Zip Code.

2. Transaction Input

These are standard inputs processed on a periodic basis.

a. Cash Receipts = These records identify all cash receipts for the period.

b. Cash Disbursement = These records identify all cash payments during the period.

c. Sales or Source of Revenue = These records identify all sales or source of revenue during the period.

d. Payroll Distribution = These records identify the payroll distribution to the various cost centers.

e. Journal Entries = These records identify various financial transactions not associated with the other input transactions.

f. Adjusting Journal Entries = These records identify all adjustments and corrections required to present fairly the financial condition of SWRL during the reporting period.

g. Reproduction Services Allocation = This information is obtained from an existing system and is used to reallocate cost data which are collected in this operation.

h. Check Input = These records identify payment of all obligations during the reporting period.

i. Obligations and Encumbrances = These records identify all obligations and encumbrances incurred during the period.

Master Files

The two Master Files used by the System are as follows:

1. Vendor Master File = The records are in sequence by Vendor Number and contains all vendors used by SWRL. Each vendor record contains the Vendor Number, Vendor Name 1, Vendor Name 2 (optional), Vendor Address, Vendor City, Vendor State, and Vendor Zip Code.

2. Financial Master File = This file contains three sets of records.

   a. General Ledger Record = These records are in account number sequence and are updated when the Report '02' records are processed.

   b. Management Records = These records are in sequence by Year, Contract, Fund, Cost Center and Labor Category/Expense Account. This portion of the Master File is updated when the Report '04' records are processed.

   c. Open Y-T-D Commitment = This file is in sequence by Year, Contract, and P.O. Number/Encumbrance Number. These records are updated when the Report '09' records are processed. Each T09 record inputted during the period is added to the file, while each T08 record either deletes or changes the monetary value of the open Y-T-D obligation.

Types of Reports

The management reports to be produced by the system are as follows:

1. Division Activity Cost Detail Report = Provides detailed cost data of each activity.
2. Division Cost Summary Report = Provides cost data summarized by Division.
3. Cost Summary by Division Activity = Provides summarized data of all activities within a Division.
4. Allocated Direct Cost = Provides information for charges to overhead.
5. General and Administrative Cost Detail Report = Provides detailed data for General and Administrative Cost Pool.
6. Contract Cost Report = Provides complete cost information for a particular contract.
7. Laboratory Cost Summary Report = Provides cost summary of all SWRL Activities.

The accounting reports to be produced by the system are as follows:

1. Payables Input = Provides a list of all invoices to be paid during the reporting period.
2. Payable Cost Distribution Report = Provides the distribution charges for invoices paid during the reporting period.
3. Payables Payment Register = Provides a record of all checks written (non-labor) for invoices payments and is in check number sequence.

4. Payable Account Distribution Report = Provides a list of payment issued during the period in account number sequence.

5. Y-T-D Open Commitment Report = Provides a list of all outstanding obligations.

6. Revised General Ledger = Provides a list of all SWRL Chart of Accounts and the changes that occurred during the reporting period.

7. General Ledger Transactions = Provides a list of each transaction in account number sequence.

The various data elements required from each source input are as follows:

1. Cash Receipts
   a. Type of Input
   b. Account Class
   c. Account Number
   d. Amount

2. Cash Disbursements
   a. Type of Input
   b. Account Class or Cost Center
   c. Account Number
   d. Amount

3. Check Input
   a. Type of Input
   b. Account Class or Cost Center
   c. Account Number

d. Check Amount

e. Vendor Number

f. Invoice Number

g. Invoice Date

h. P.O. Number/Encumbrance Number

i. Check Number

j. Check Date

4. Payroll Distribution

a. Type of Input

b. Cost Center

c. Account Number

d. Amount

e. Labor Classification

f. Labor Hours

5. Sales or Source of Revenue

a. Type of Input

b. Account Class

c. Account Number

d. Amount

6. Journal Entries

a. Type of Input

b. Account Class or Cost Center

c. Account Number

d. Amount

7. Adjusting Journal Entries

   a. Type of Input

   b. Account Class or Cost Center

   c. Account Number

   d. Amount

8. Obligations and Encumbrances

   a. Type of Input

   b. P.O. Number/Encumbrance Number

   c. P.O. Date/Encumbrance Date

   d. Vendor Number

   e. Amount

   f. Cost Center

   g. Account Number

9. Reproduction Services Allocation = (from system currently being implemented)

   a. Type of Input

   b. Cost Center

   c. Account Number

   d. Amount

NOTE: IF IT IS REQUIRED TO CONTROL ALL COSTS BY YEAR, CONTRACT, AND FUND, THIS INFORMATION MUST ALSO BE INCLUDED AS PART OF THE INPUT DATA. THIS ALSO APPLIES TO SPECIAL INPUT RECORDS LISTED BELOW.

The special input records would require the following data elements:

1. SWRL Header

   a. Type of Input

b. Processing Period

c. Report Options

2. General Ledger Change

a. Type of Input

b. Transaction Code

c. Account Number

d. Description

3. Division Header

a. Type of Input

b. Transaction Code

c. Report Number

d. Division Name

4. Cost Center Header

a. Type of Input

b. Transaction Code

c. Report Number

d. Cost Center Name

5. Cost Center Change

a. Type of Input

b. Transaction Code

c. Account Number

d. Account Title or Description

6. Vendor Information Card 1

a. Type of Input

b. Vendor Number

c. Transaction Code

d. Vendor Name

7. Vendor Information Card 2

a. Type of Input

b. Vendor Number

c. Transaction Code

d. Vendor Address, City, State, and Zip Code

The system flowchart is shown in Exhibit A.

The source documents for recording the input data are shown in Exhibits B and C. The check input document must either be redesigned to include additional data for control and reporting purposes or transcribed to the source document form.

To initialize the system, a master file must be created via independent means. This will require information from the SWRL accounting department and would be executed only once.

The formats of the various reports to be generated by the system are shown in the following exhibits:

EXHIBIT D - FORMAT FOR (1) DIVISION ACTIVITY COST DETAIL REPORT (2) DIVISION COST SUMMARY REPORT (3) ALLOCATED DIRECT COST REPORT (4) GENERAL AND ADMINISTRATIVE COST REPORT (5) CONTRACT COST REPORT

EXHIBIT E - COST SUMMARY BY DIVISION ACTIVITY

EXHIBIT F - PAYABLES INPUT BY VENDOR NUMBER

EXHIBIT G - PAYABLES COST DISTRIBUTION REPORT

EXHIBIT H - PAYABLES PAYMENT REGISTER

EXHIBIT I - PAYABLES ACCOUNT DISTRIBUTION REPORT

EXHIBIT J - Y-T-D OPEN COMMITMENT REPORT

EXHIBIT K - FORMAT FOR (1) GENERAL LEDGER TRANSACTIONS

(2) GENERAL LEDGER LIST

EXHIBIT L - INPUT DATA REPORT

EXHIBIT M - ERROR REPORT

The master file record formats are shown in Exhibit O, P, and Q.

The records contained in the master file are as follows:

1. General Ledger
2. Division Header
3. Cost Center Header
4. Cost Center Detail
5. Y-T-D Open Commitment
6. Vendor Master

The following items are specific requirements for the system:

1. The following reports are to be controlled on a Year and Contract basis:
   a. Division Activity Cost Detail Report
   b. Division Cost Summary Report
   c. Cost Summary by Division Activity
   d. Allocated Direct Cost
   e. General and Administrative
   f. Contract Cost Report

2. The Laboratory Cost Summary Report is to be reported in the same format as the Contract Cost Report. All costs as shown in this report will be the total of all contract for a particular year.

3. The Overhead Expense Report is renamed as the Allocated Direct Cost Report. Allocation of these charges will be on the basis of labor (cost center labor/total labor).

4. The General and Administrative cost will be applied on a percentage basis provided by the Business Department.

5. The Payable Input Report will be in Vendor Number sequence.

6. The Payable Cost Distribution Report will be in Year and Contract sequence.

7. The Payable Payment Register will be in Check Number sequence.

8. The Payable Account Distribution Report will be in Account Number sequence (Major) and Year, Contract, Activity (Minor).

9. The Y-T-D Open Commitment Report will be in P.O./Encumbrance Number sequence.

10. The Gene l Ledger Transaction and Revised General Ledger will be in Year-Account Number sequence.

11. All special input and accounting transactions will contain year and Contract Number.

12. Any check input that does not contain an invoice number is assumed to have no affect on the encumbrances and obligations (Y-T-D Open Commitment).

13. The payroll total is to be identified in such a manner that it can be used by the program to compare this to the accumulated total of each payroll transaction to be processed.

14. A separate contract number will be maintained to control unallowable cost. These costs will be reported in the same format as the Cost Center Reports, except no allocated direct or G & A cost is to be applied. In the General Ledger, these costs will accumulate on the basis of each account number specified.

15. Labor hours will be shown by classification, e.g., Management and Administration, MPS, Secy., etc. However, labor dollars will only be shown in total and not by individual classification.

16. Allocated Direct Costs will be shown as a single line item on all management reports except for the Contract Cost Report. In the latter report, it will be "exploded" into its individual accounts.

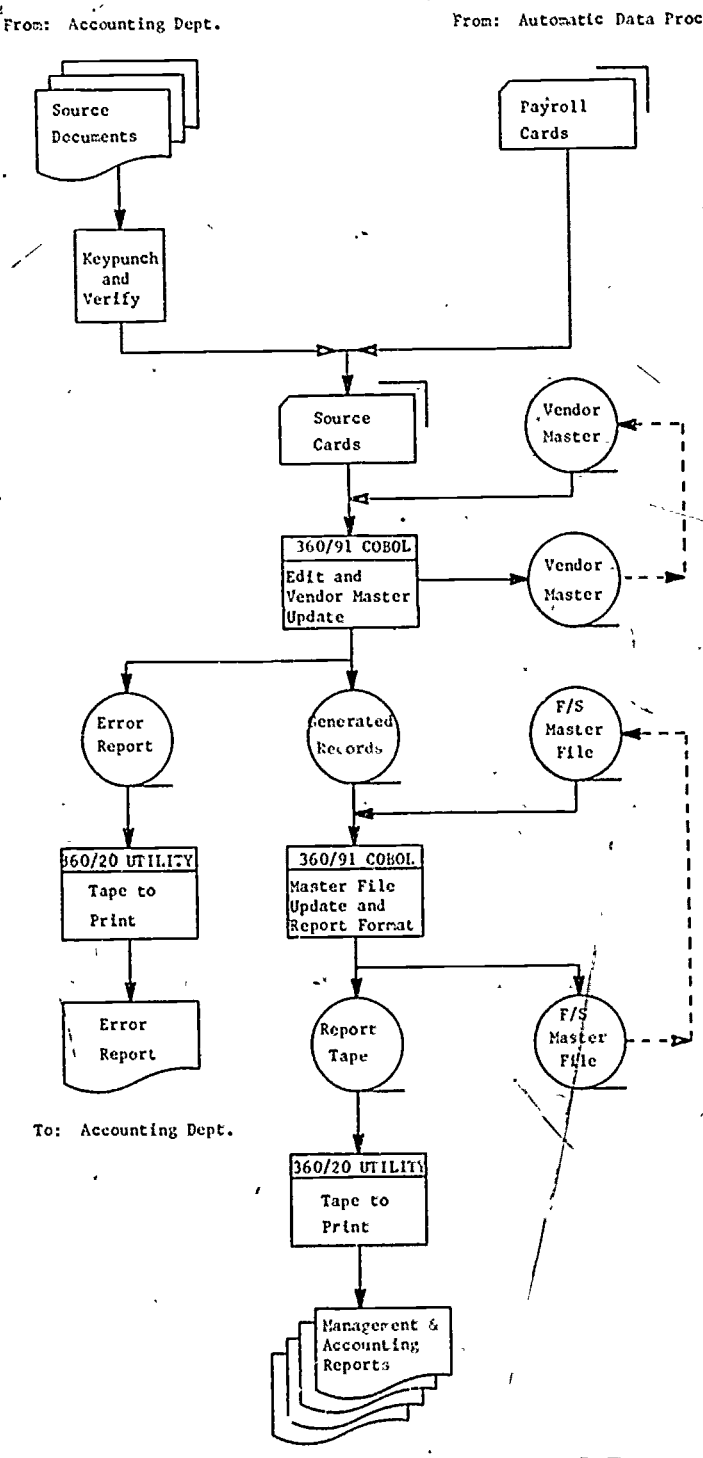
17. A G & A rate will be supplied for each contract.

EXHIBIT A

FLOWCHART LAYOUT FORM

Programmer: Masumi Ikeda
System Id : SWRL Financial System
Date:
Page: 1 of 1

SYSTEM FLOWCHART



SPECIAL INPUT FORM

EXHIBIT B

SWRL

INPUT IDENTIFICATION CODE

01	SWRL Header	05	Cost Center Change
02	General Ledger Change	07	Vendor Record # 1
03	Division Header	08	Vendor Record # 2
04	Cost Center Header		

TRANSACTION CODE LEGEND

N - New
C - Change
D - Delete

CODED BY: _____

DATE _____ PAGE __ OF __

TYPE INPUT	INPUT IDENT	TRANS. CODE	CONTROL FIELD: YEAR	CONTRACT	FUND	ACCT. CLASS OR COST CENTER	ACCT. NUMBER	AMOUNT: SIGN	AMOUNT	PROCESS DATE / REPORT NO.	G&A PCT.	FILLER	DESCRIPTION: VENDOR NAME 1 OR VENDOR ADDRESS	VENDOR NAME 2	VENDOR CITY	STATE	ZIP CODE
			VENDOR NO.														
1	2 3	4	5 6	7 8 9 10	11 12 13	14 15 16 17 18 19		20	21 22 23 24 25 26 27 28 29 30	31 32 33 34 35 36	37 38 39	40 41 42 43 44 45 46 47 48 49 50	51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71	72 73 74 75	76 77 78 79 80		
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EXHIBIT 1

INPUT IDENTIFICATION CODE

01 CASH RECEIPTS
02 CASH DISBURSEMENTS
03 SALES OR SOURCE OF REVENUE
04 PAYROLL DISTRIBUTION
05 JOURNAL ENTRIES
06 ADJUSTING JE
07 REPROD. SERVICES ALLOC.
08 CHECK INPUT
09 OBLIGATIONS & ENCUMBRANCES

SWRI COMPUTER CENTER

PROGRAMMER'S NAME			
GROUP	ROOM	DATE	PAGE OF
MAN NO.	TEL.		

TYPE OF INPUT	INPUT IDENT	TRANS CODE	CONTROL FIELD: YEAR	CONTROL FIELD: CONTRACT	CONTROL FIELD: FUND	ACCT. CLASS OR COST CENTER	ACCT. NUMBER	AMOUNT	LABOR AMOUNT	VENDOR NO.	INVOICE DATE	INVOICE NUMBER	CHECK DATE OR PRECALCUM DATE	CHECK NUMBER	P.O. NUMBER AND ENCUM. NUMBER	LIABILITY ACCT
1	2 3	4	5 6	7 8 9 10	11 12 13	14 15 16	17 18 19	20	21 22 23 24 25 26 27 28 29 30	31 32 33 34 35 36	37 38 39 40 41 42	43 44 45 46 47 48 49 50 51 52	53 54 55 56 57 58	59 60 61 62 63 64	65 66 67 68 69 70	71 72 73 74 75 76 77 78 79 80

FORM 59 Rev 10—12—71

GPO 794515

Southwest Regional Laboratory
Computer Center

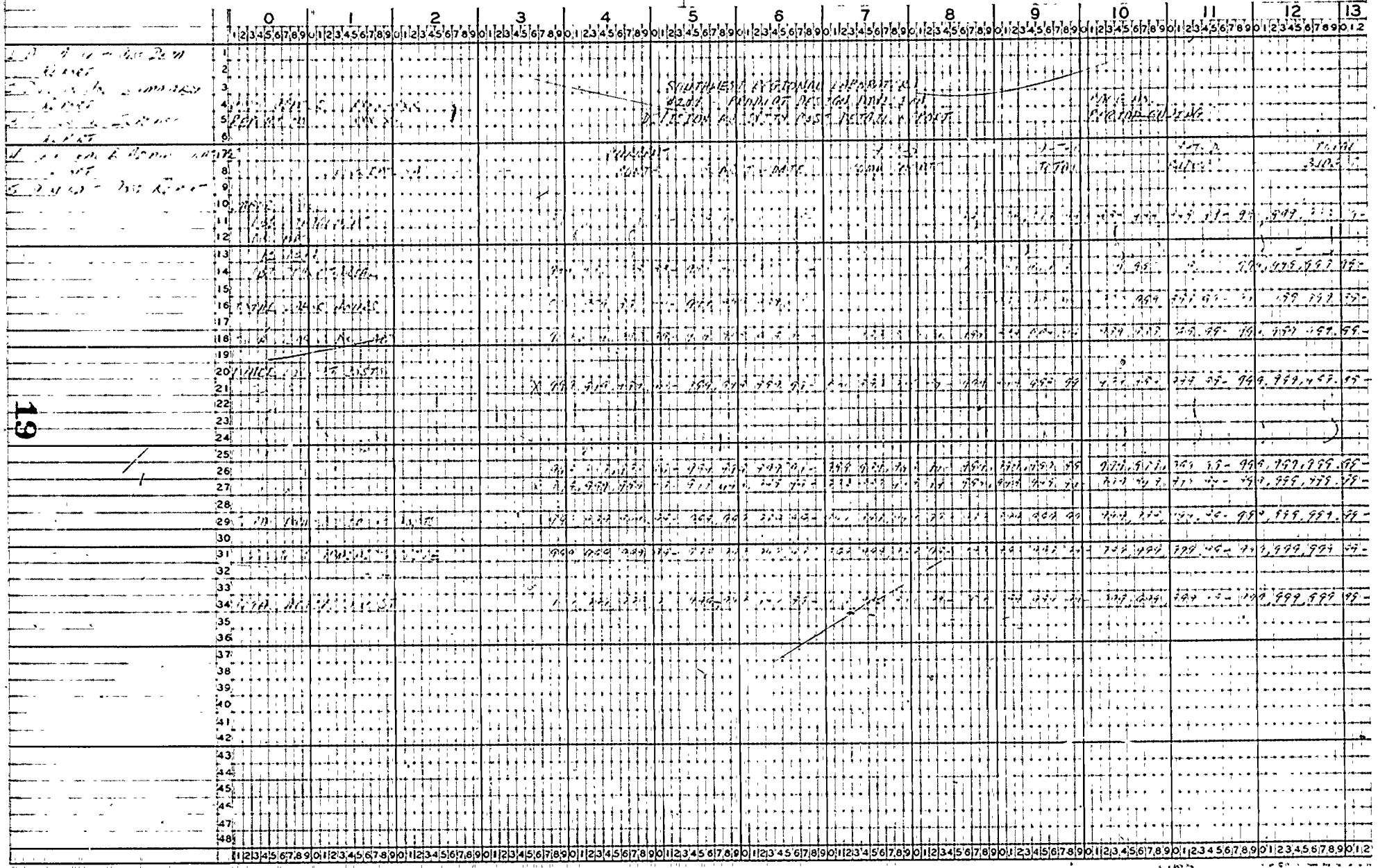
REPORT LAYOUT CHART

TITLE:

PREPARED BY:

DATE:

PROJECT ID:



FORM 61

ERIC

SWRL

Southwest Regional Laboratory
Computer Center

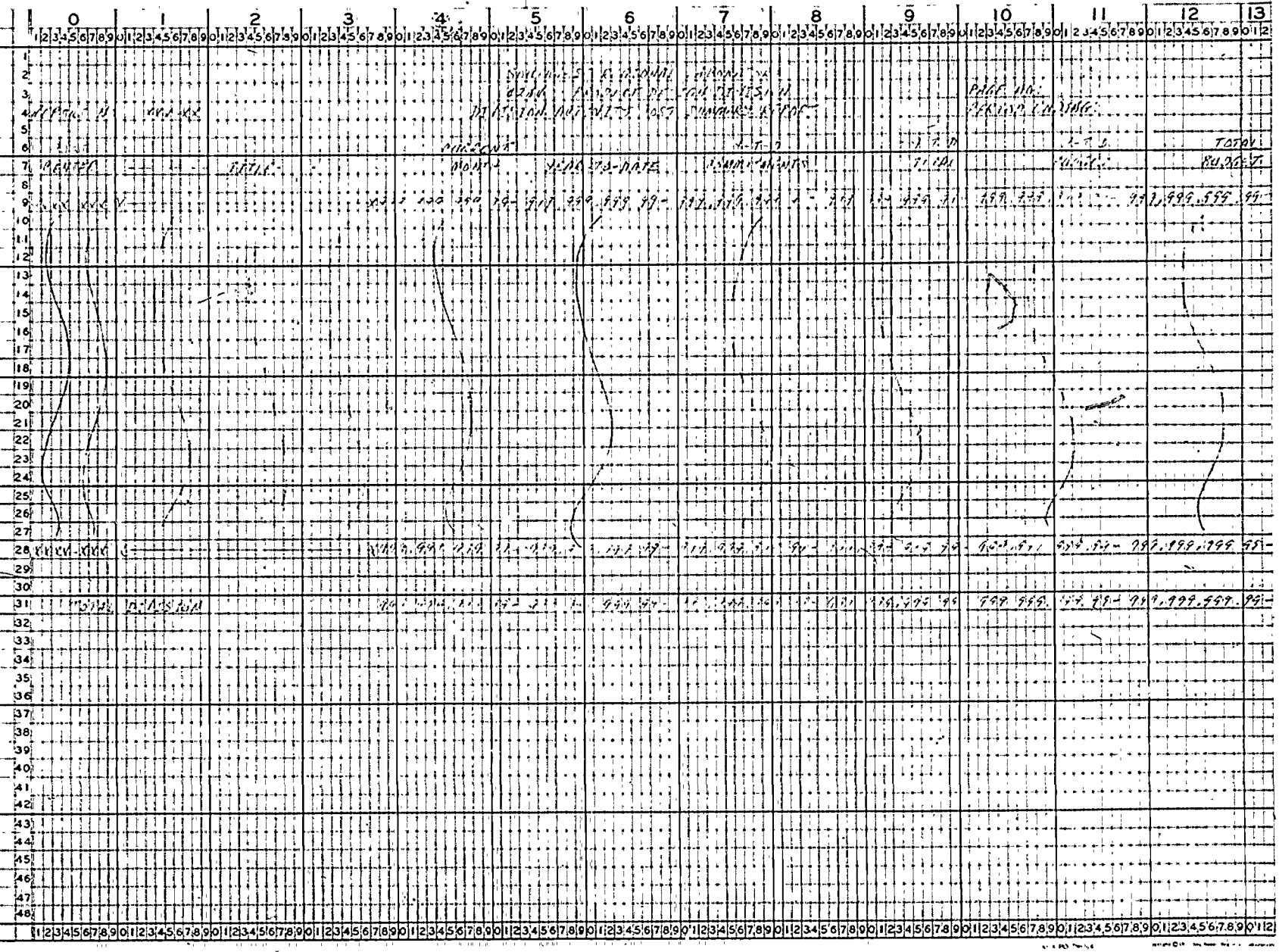
REPORT LAYOUT CHART

TITLE:

PREPARED BY:

DATE.

PROJECT ID:



FORM 61

Southwest Regional Laboratory
Computer Center

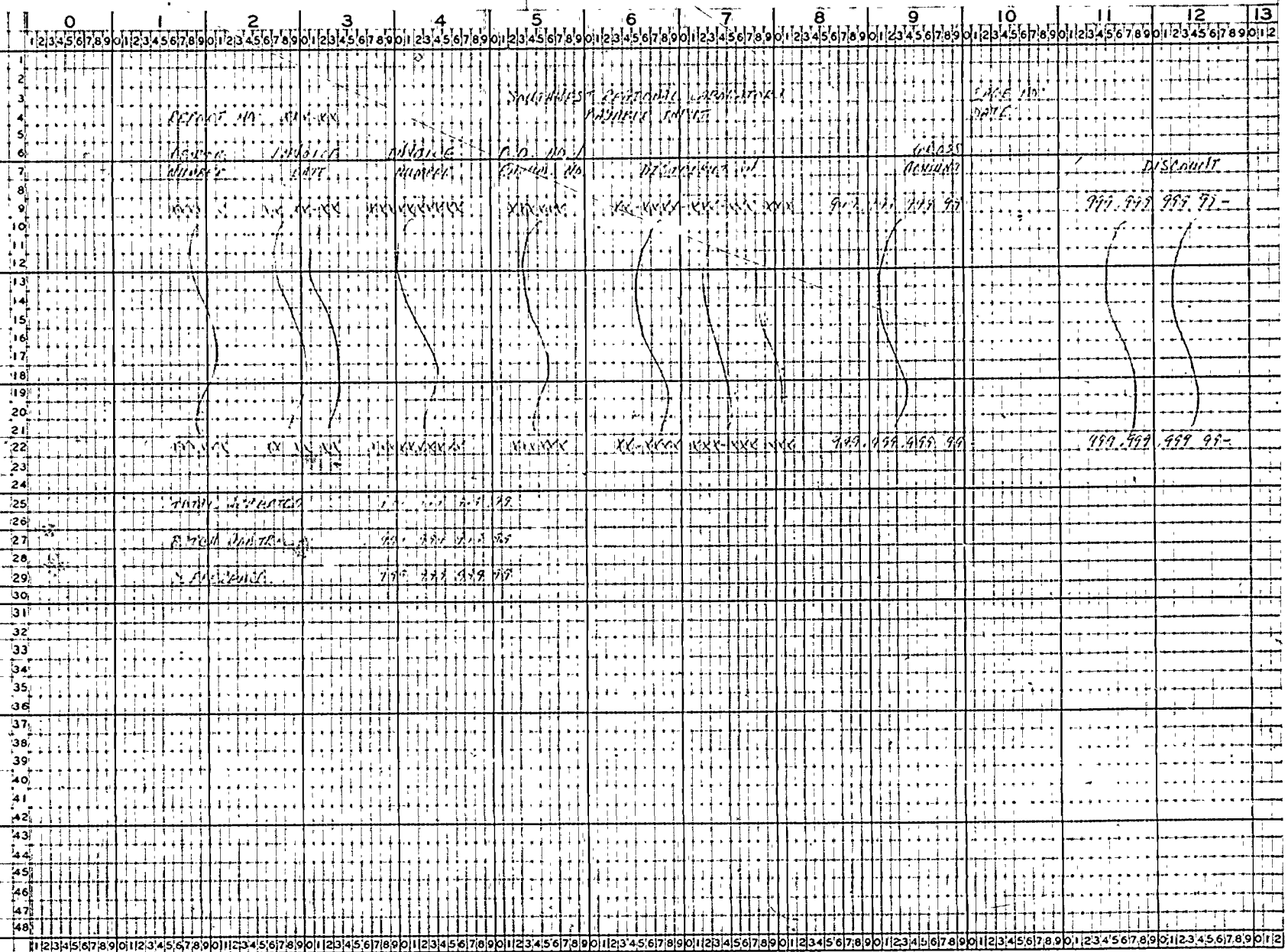
REPORT LAYOUT CHART

TITLE:

PREPARED BY:

DATE:

PROJECT ID:



FORM 61

Southwest Regional Laboratory
Computer Center

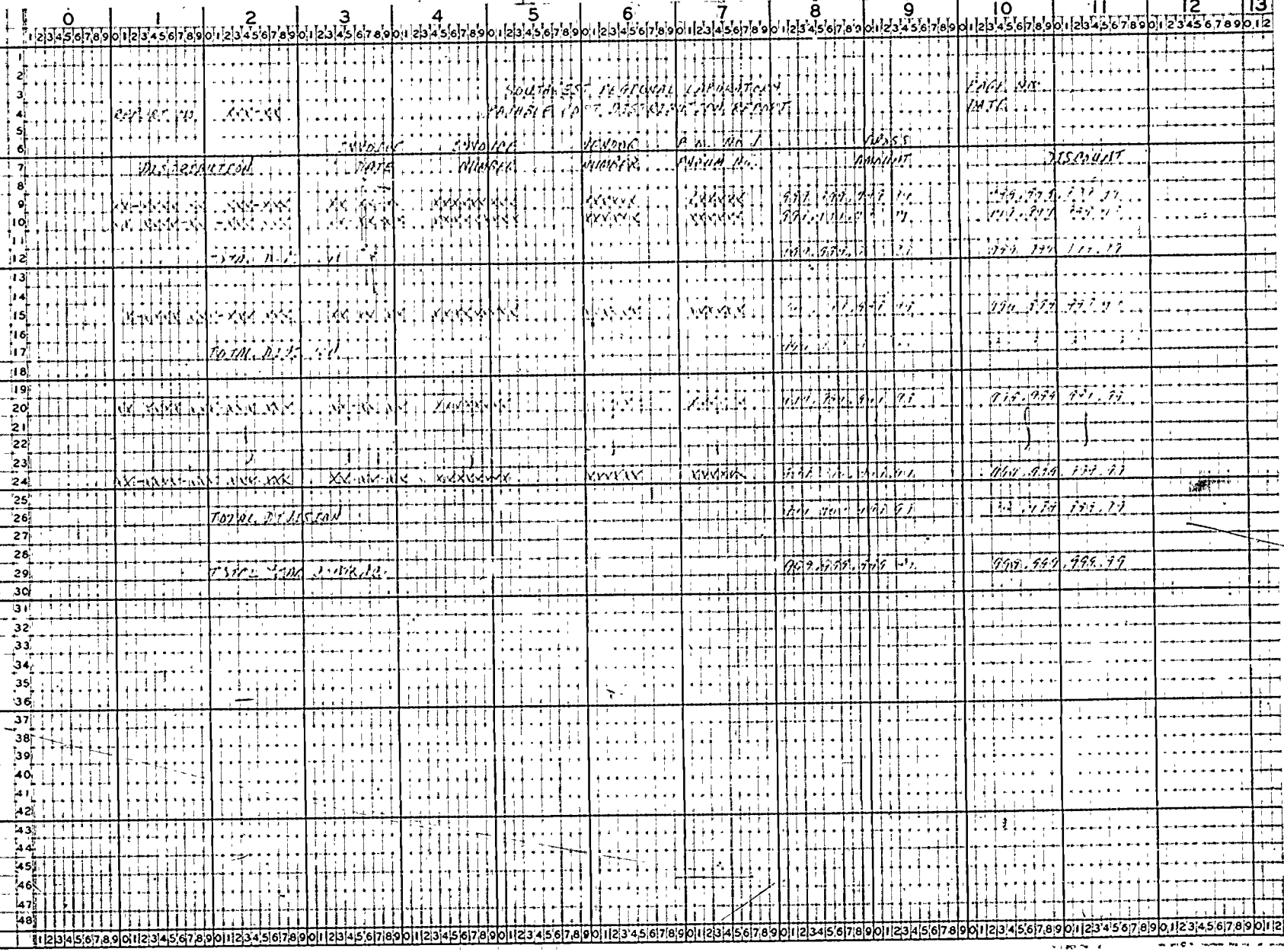
REPORT LAYOUT CHART

TITLE:

PROJECT ID:

PREPARED BY:

DATE.



FORM 61

Southwest Regional Laboratory
Computer Center

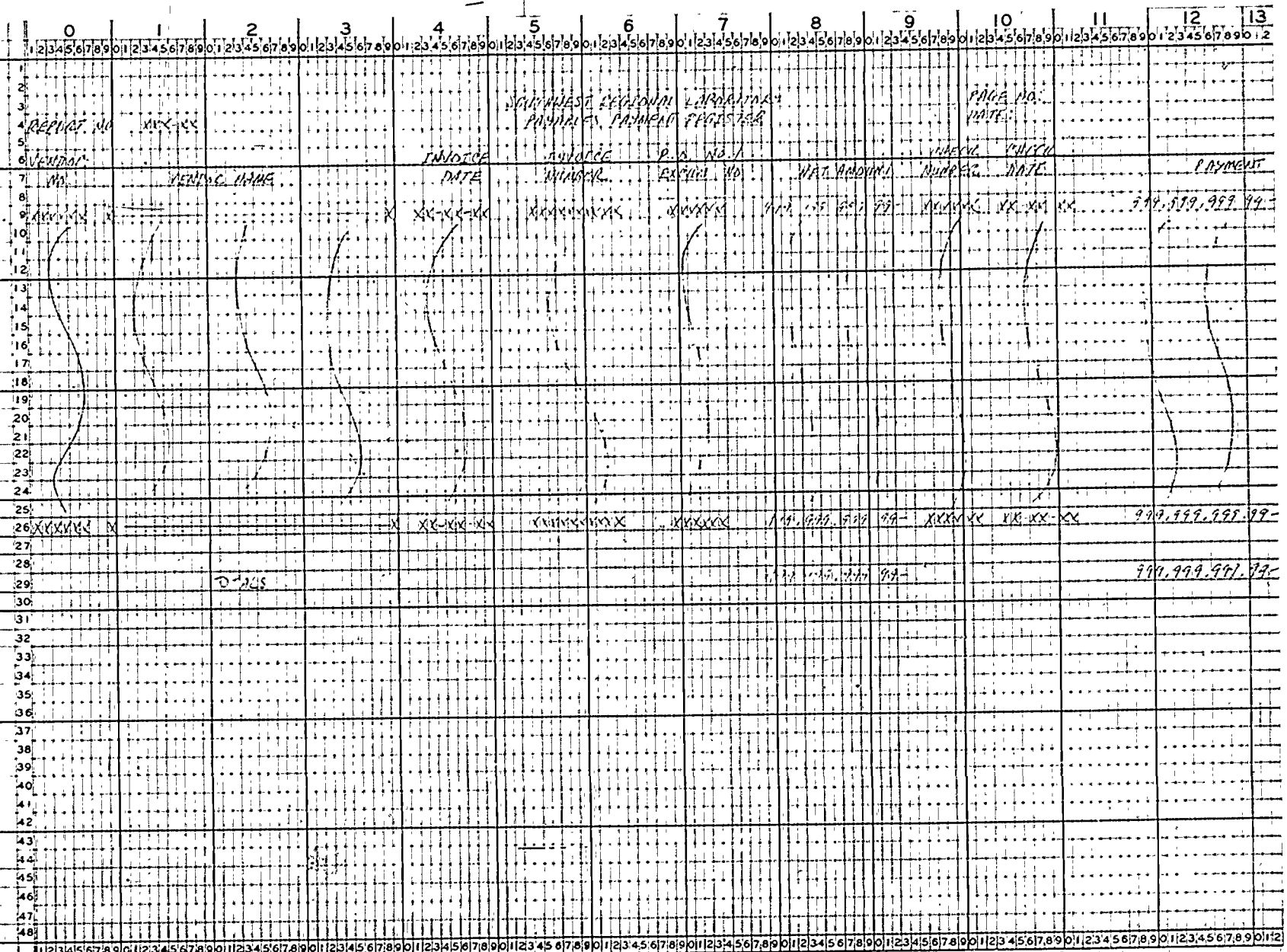
REPORT LAYOUT CHART

TITLE:

PREPARED BY:

DATE:

PROJECT ID:



Southwest Regional Laboratory
Computer Center

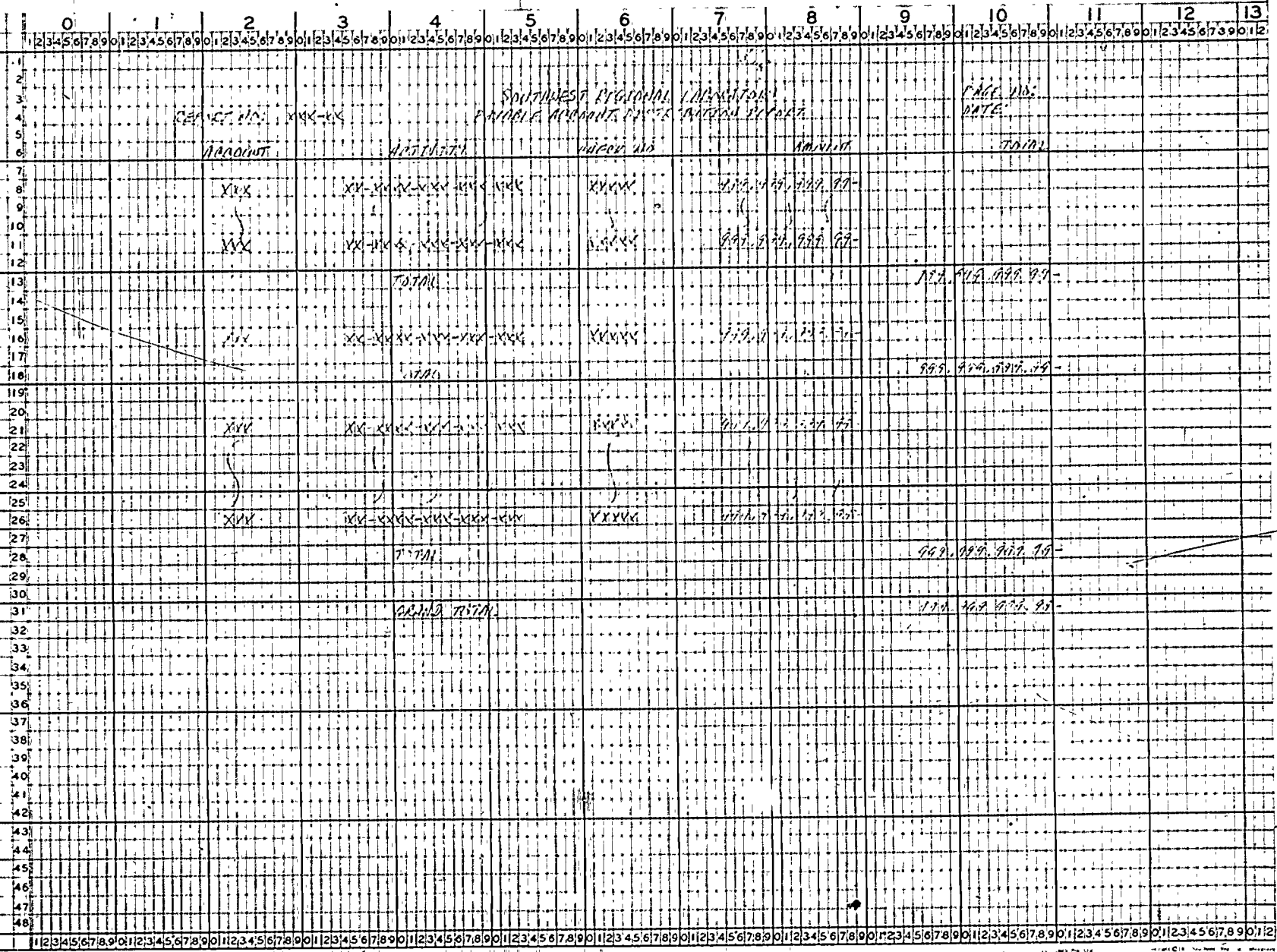
REPORT LAYOUT CHART

TITLE:

PROJECT ID:

PREPARED BY:

DATE:



FORM 61

EXHIBIT J

SWRL

Southwest Regional Laboratory
Computer Center

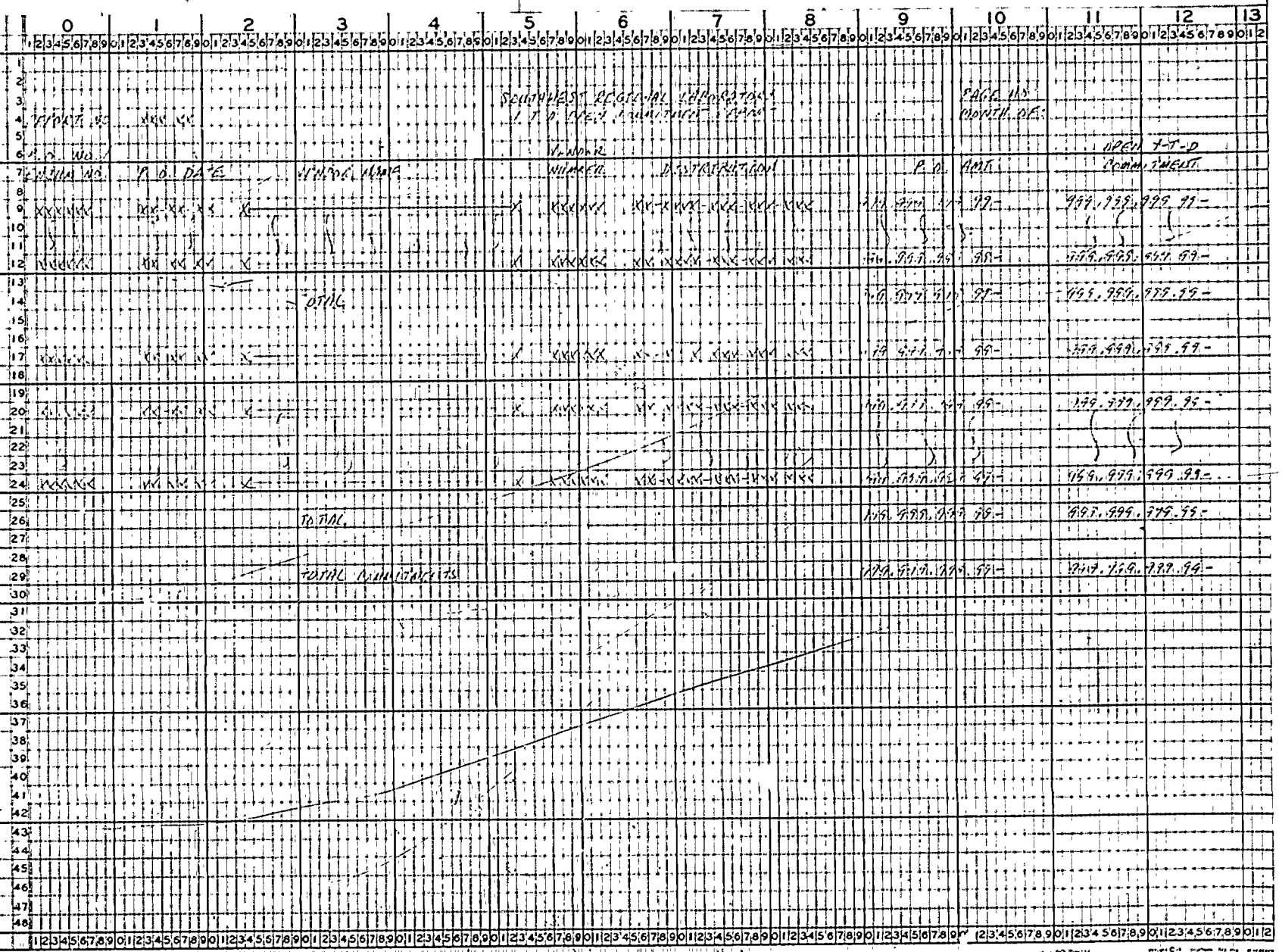
REPORT LAYOUT CHART

TITLE:

PREPARED BY:

DATE

PROJECT ID:



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FORM 61

Southwest Regional Laboratory
Computer Center

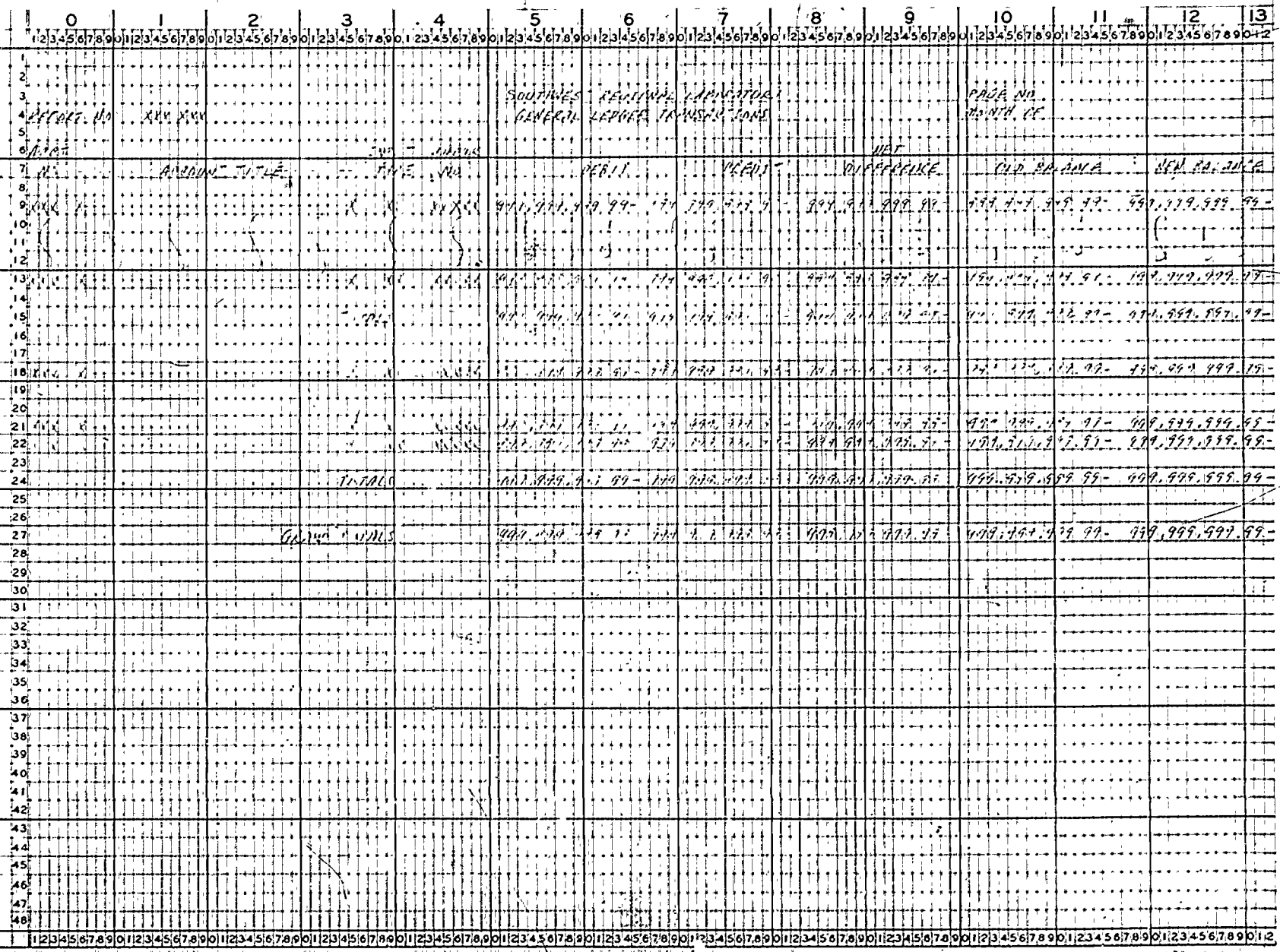
REPORT LAYOUT CHART

TITLE:

PREPARED BY:

DATE:

PROJECT ID:



FORM 61

Southwest Regional Laboratory
Computer Center

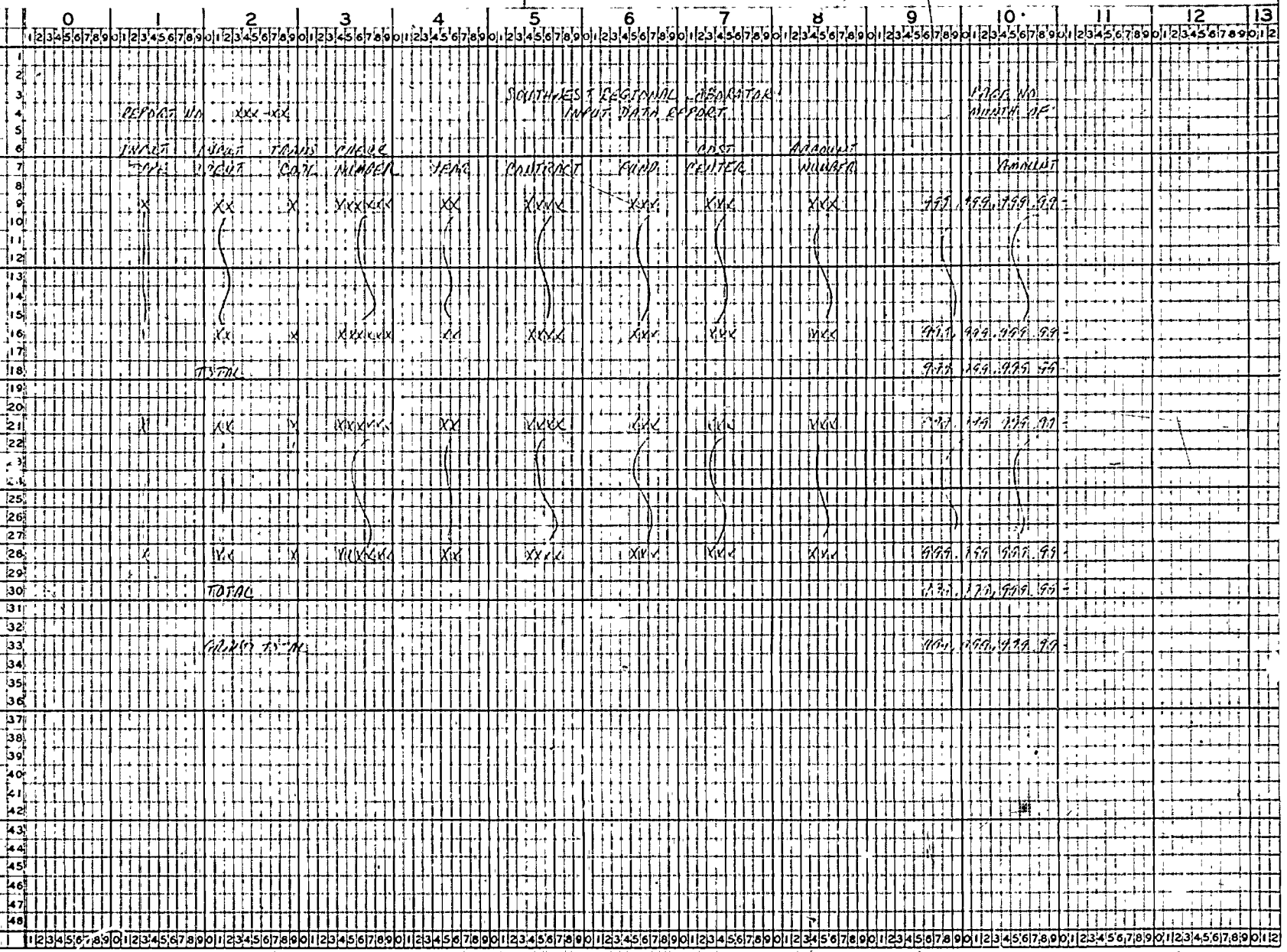
REPORT - LAYOUT CHART

TITLE:

PREPARED BY:

DATE:

PROJECT ID:



FORM 61

ERIC

EXHIBIT M

Southwest Regional Laboratory
Computer Center

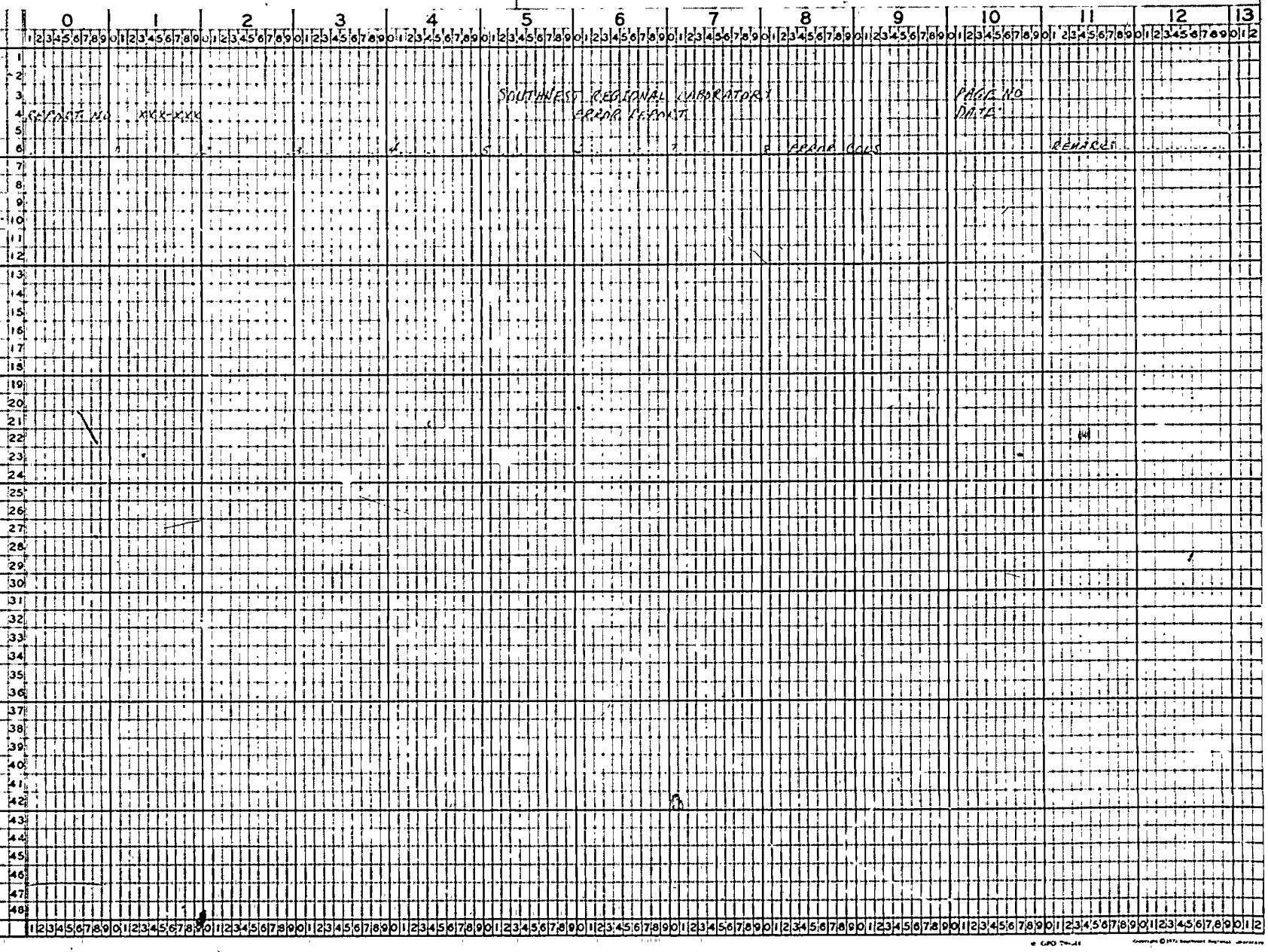
REPORT LAYOUT CHART

TITLE:

PREPARED BY:

DATE:

PROJECT ID:



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FORM 61

SWRL

COMPUTER SYSTEMS
FILE/RECORD LAYOUT

TITLE: Night Rept & Acctng Sys DATE:

FILE ID: Vendor Master File

PROGRAMMER:

RECORDING MODE:
FIXED ☑
LENGTH 130
VARIABLE ☐
MAX
MIN

BLOCKING FACTOR:
BLOCK CONTAINS
RECORDS

REMARKS: Exhibit II

CARD LAYOUT ☐

TAPE
RECORD LAYOUT ☐

FORMAT LEGEND:
△ = Blank
A = Alpha
N = Numeric
X = Alpha/Num.
P = Packed Dec.
O = Octal
H = Hexadecimal
B = Binary

RECORD I.D.
Vendor Master

FORMAT	Vendor Number	Filler	Vendor Name 1	Vendor Name 2	Vendor Address
POSITIONS	5	10	20	40	70

☐ CONTINUED

RECORD I.D.

FORMAT	Vendor City	Vendor State	Vendor Zip
POSITIONS	20	25	30

☐ CONTINUED

RECORD I.D.

FORMAT
POSITIONS 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

☐ CONTINUED

RECORD I.D.

FORMAT
POSITIONS 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

SWRI

COMPUTER SYSTEMS
FILE/RECORD LAYOUT

RECORDING MODE:
FIXED ☐
LENGTH
VARIABLE ☐
MAX
MIN

REMARKS: EXHIBIT O

TITLE: Mega-Log Interface DS DATE:

FILE ID: Financial Master File

PROGRAMMER:

BLOCKING FACTOR:
BLOCK CONTAINS
30 RECORDS

CARD LAYOUT ☐
TAPE
RECORD LAYOUT ☒

FORMAT LEGEND:
△ = Blank
A = Alpha
N = Numeric
X = Alpha/Num.
P = Packed Dec.
O = Octal
H = Hexadecimal
B = Binary

RECORD I.D.
General Ledger
(05)

FORMAT POSITIONS

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
|---|---|---

SWRL

COMPUTER SYSTEMS
FILE/RECORD LAYOUT

RECORDING MODE:
FIXED ☑
LENGTH
VARIABLE ☐
MAX
MIN

BLOCKING FACTOR:
BLOCK CONTAINS 30 RECORDS

REMARKS:

TITLE: [illegible] DATE:

FILE ID: [illegible] FILE

PROGRAMMER:

CARD LAYOUT ☐

TAPE RECORD LAYOUT ☒

FORMAT LEGEND:
△ = Blank
A = Alpha
N = Numeric
X = Alpha/Num.
P = Packed Dec.
O = Octal
H = Hexadecimal
B = Binary

RECORD I.D.
[illegible]
MASTER (20)

	Record Type	Control Field: Year	Contract	P.O. Encum No	Filler	Position Date: Month Day	Year	Vendor Number	Vendor Name	Control Field: Year	Contract	Field	Post Acct No	Position Date	Filler
FORMAT															
POSITIONS		5	10	15	20	25	30	35 40 45 50 55 60		65	70	75	80 85	90 95 100	

☐ CONTINUED/
RECORD I.D.

FORMAT
POSITIONS 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

☐ CONTINUED
RECORD I.D.

FORMAT
POSITIONS 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

☐ CONTINUED
RECORD I.D.

FORMAT
POSITIONS

31