

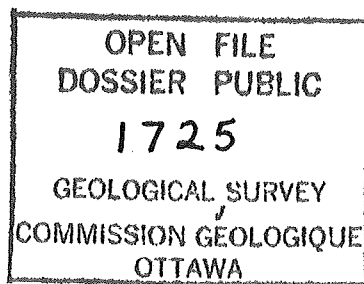
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A MICRO-COMPUTER DATABASE FOR ORGANIZING

E.P.G.S. COAL LAB SAMPLE INFORMATION



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A MICRO-COMPUTER DATABASE FOR ORGANIZING E.P.G.S.
COAL LAB SAMPLE INFORMATION

General Concept

A sample information database has been developed for the E.P.G.S. Coal Lab using the 'dBase III Plus' database management system. It consists of four separate database files which can be grouped into two indices, a kerogen index and a coal index. Each index is comprised of a well information file and a sample information file.

The main database files reside on the 'DBASE' subdirectory and their names ('PC-DOS' format) are:

KERWELL.DBF	COALWELL.DBF
KERLABEL.DBF	COALABEL.DBF

Kerwell contains the basic well information for all the wells for which the lab has received kerogen material.

Kerlabel contains the basic sample information on all the kerogen samples.

Coalwell and Coalabel are similar in structure but contain information on coal samples studied in the lab (incomplete list at present).

A summary of the information contained in each file is presented in Table I.

The kerogen index is considerably larger than the coal index. Presently kerwell contains 139 well records and kerlabel contains 4816 sample records. Coalwell and coalabel files are still in a developmental stage and therefore contain only 6 and 36 entries respectively.

DATA SOURCES

The data contained in the database were obtained from two main sources. The basic well information, (eg. well name, area, etc.) was taken from WELLSYS¹. Kerogen sample data were taken from transmittal receipts of samples obtained from the Palynology Laboratory of E.P.G.S. After the data were entered a print out for each well was made and the information validated against the original sources.

¹ A well information database maintained on the Cyber mainframe computer by Paul Lake, EPG.

Table I: Summary of information available ²

Database File	Field	Description	Example
Kerwell.dbf	LOC_NUMBER WELL_NAME UNITS AREA TD EPG_REPORT OTHER_RPTS	Locality number Well name Units of depth measurement Area in which well is located Total depth of well E.P.G.S. report number Any other reports, T/F	D31 MURRE G-67 FEET GRAND BANKS 10949.00 30-84PHH TRUE
Kerlabel.dbf	PAL_NUMBER UP_DEPTH LOW_DEPTH SAMP_LABEL LOC_NUMBER RO_RUN	Palynology number Upper depth of sample Lower depth of sample Sample label Locality number Ro reading taken, T/F	7507 7270.00 7300.00 K0106B D94 FALSE
Coalwell.dbf	LOC_NUMBER WELL_NAME UNITS AREA COMMENTS	Locality number Name of outcrop etc. Units of depth measurement Area of sample retrieval Anything unique about outcrop	L3 DDH# 84-1 METERS RAWDON HILLS
Coalabel.dbf	SAMP_LABEL UP_DEPTH LOW_DEPTH PAL_NUMBER LOC_NUMBER COMMENTS	Sample label Upper depth of sample Lower depth of sample Palynology number Locality Number Anything unique about the sample	C0008A 5950.00 5960.00 22305 D217

² See appendix I for field size restrictions

USAGE EXAMPLES

Because the database is implemented with the 'dBase' database management system it is quite easy to extract various types of information. To facilitate some of the more frequent requests a number of small 'dBase' language programs were written.

'CSTUB' is a quick reference program that allows the user to rapidly locate information available from either the kerogen or coal database (Figure 1). The data can be retrieved by one or all of the following: locality number, well name or sample label (Figure 2). Data retrieved from the database is displayed on the screen and the user has the option to select a printed hardcopy.

EXAMPLES

#1 Referencing kerogen sample information for a specific well ³

A request to find the extent of kerogen samples available for the CARTIER D-70 well could take the following steps:

Step 1) Run CSTUB.PRG. The program is loaded while in the DBASE subdirectory. When the dot (.) prompt appears enter the command DO CSTUB as follows:

. DO CSTUB

NOTE: CSTUB can be invoked directly through the main menu on the Coal lab PC 2000 microcomputer.

Step 2) Select K from first menu (Fig. 1) and b from the second menu (Fig. 2).

Step 3) Enter well name and select printer option when prompted (Fig. 3).

Step 4) Well data is output to the printer (Fig. 4).

³ See Appendix III for list of wells available from the database.

```
*****
**                                     **
**          EPG COAL LAB SAMPLE DATABASE          **
**                                                   **
**                                     **
**                                     **
*****

      WHICH DATABASE DO YOU REQUIRE ?

      K - KEROGEN

      C - COAL

      ENTER 'Q' TO QUIT TO DBASE
```

Fig. 1 Opening menu in the CSTUB program

```
*****
**
**          KEROGEN SAMPLE INDEX          **
**                                        **
**
**      Well sample summary for a given well:  **
**      a) by Locality Number                 **
**      b) by Well Name                       **
**
**      Sample label information:              **
**      c) Display detail                     **
**      d) Quit                               **
**
*****

ENTER SELECTION: b
```

Fig. 2 Kerogen index menu screen

```
***** ENTER QUIT TO EXIT *****

Full well name ? CARTIER D-70

Send information to the printer (y/n) ? y
```

Fig. 3 Well name input

KEROGEN SAMPLE INDEX			DATE: 08/24/87	
WELL: CARTIER D-70			LOCATION NUMBER: D157	
AREA: LABRADOR SHELF			UNITS: FEET	
			EPGS REPORT : 5-87MPA	
SAMPLE LABEL	UPPER DEPTH	LOWER DEPTH		
K0293B	3360.00	3390.00		
K0250A	3460.00	3490.00		
K0250B	3870.00	3900.00		
K0250C	4270.00	4300.00		
K0251A	4750.00	4780.00		
K0251B	5060.00	5090.00		
K0251C	5350.00	5380.00		
K0252A	5670.00	5700.00		
K0252B	5850.00	5880.00		

Fig. 4 Screen listing of requested information

#2 Retrieving sample information for a specific area ⁴

For a request to determine the extent of kerogen samples available for vitrinite reflectance analysis for a specific area (eg. Gulf of St. Lawrence) the following steps could be used:

Step 1) Select the Kerwell database by entering the following command at the dot (.) prompt

```
. USE KERWELL
```

Step 2) Get a list of all wells in the Gulf of St. Lawrence area that have kerogen samples. The command to obtain such a list is shown below.

```
. LIST OFF LOC_NUMBER, WELL_NAME FOR AREA = 'G. OF ST. LAW'
```

The list produced by Kerwell

```
D37      BRION ISLAND #1
D110     BRADELLE L-49
D14      EAST POINT E-49
```

⁴ See appendix II for a list of all areas available from the database.

Step 3) Run CSTUB.PRG with the following command and repeat steps 2 - 4 in example #1 for each well in the area. The well information results from such a query are shown for BRION ISLAND #1, BRADELLE L-49 and EAST POINT E-49 in Figures 5, 6, 7 respectively.

. DO CSTUB

KEROGEN SAMPLE INDEX			DATE: 08/25/87	
WELL: BRION ISLAND #1			LOCATION NUMBER: D37	
AREA: G. OF ST. LAWR.			UNITS: FEET	
EPGS REPORT:				
SAMPLE LABEL	UPPER DEPTH	LOWER DEPTH		
K0513A	2970.00	3000.00		
K0513B	3480.00	3510.00		
K0513C	4000.00	4030.00		
K0514A	4550.00	4580.00		
K0514B	4970.00	5000.00		
K0514C	5530.00	5560.00		

Fig. 5 Listing for Brion Island #1 well

KEROGEN SAMPLE INDEX			DATE: 08/25/87		
NAME: BRADELLE L-49			LOCATION NUMBER: D110		
AREA: G. OF ST. LAWR.			UNITS: FEET		
EPGS REPORT: 9-86AMV					
SAMPLE LABEL	UPPER DEPTH	LOWER DEPTH			
K0510A	4000.00	4030.00			
K0510B	5000.00	5030.00			
K0510C	5500.00	5530.00			
K0511A	5800.00	5830.00			
K0511B	6200.00	6230.00			
K0511C	6600.00	6630.00			
K0512A	8300.00	8330.00			
K0512B	8800.00	8830.00			
K0512B	8930.00	8960.00			
K0512C	9100.00	9130.00			

Fig. 6 Listing for Bradelle L-49 well

KEROGEN SAMPLE INDEX			DATE: 08/25/87		
WELL: EAST POINT E-49			LOCATION NUMBER: D14		
AREA: G. OF ST. LAWR			UNITS: FEET		
EPGS REPORT:					
SAMPLE LABEL	UPPER DEPTH	LOWER DEPTH			
K0515A	5160.00	5190.00			
K0515B	7420.00	7450.00			
K0515C	7860.00	7890.00			
K0516A	8140.00	8170.00			
K0516B	9240.00	9270.00			
K0516C	9820.00	9850.00			

Fig. 7 Listing for East Point E-49 well

UTILITY PROGRAMS

Other procedure programs have been written to manipulate the database for common information requests (Table II).

Table II: List of procedure programs available and their functions

PROCEDURE PROGRAM	FUNCTION
CHECK.PRG	Produces a list of all well information for verification purposes
LISTER.PRG ⁵	Lists data in sequential file format to produce well plots using DISSPLA on the Cyber
LIST.PRG	Produces a list of all the wells in Kerwell.dbf along with a list of the corresponding label sample ranges
REPORT.PRG	Lists all the wells and their data from Kerwell file
WELL.PRG ⁶	Lists all the wells and their locality numbers
DEPTH.PRG	Inputs the upper depth values in Kerlabel given the the lower depth and the measurement units type ⁷

⁵ A particular advantage of having the sample information organized in such a database is the capability it provides to easily extract specific groups of data in a format which is readily transmitted to the Cyber mainframe computer. The 'dBase' program 'LISTER' is used to output sample data for a well in a listing (Fig. 8) that can be read by 'LOOK' (a Fortran program using the DISSPLA package on the Cyber). The plot produced using this file is a representation of the well itself referencing kerogen samples available, prepared polished kerogen samples and studied kerogen samples with respect to depth (Fig. 9). Once the database file has been received by the Cyber a plot may be produced with the following command:

-SAMPLE,,DISPLAY,D####, (where D#### indicates the name of the file sent to the Cyber, usually named for its locality number)(Fig. 8,9).

⁶ A list produced by WELL.PRG of well names and locality numbers is given in appendix III.

⁷ Assuming an offset of upper depth from lower depth to be 10 for metric and 30 for non-metric depths. This assumption was made for all wells which did not have the upper depth range of the samples recorded on the transmittal forms.

. DO LISTER

D/# ? D31

D31 MURRE G-67 F GRAND BANKS 10949.00 30-84PHH .T.

23659	1490.00	1500.00
23660	2000.00	2010.00
23661	2550.00	2560.00
23662	3240.00	3260.00
23663	3990.00	4010.00
23664	4490.00	4510.00
23665	4990.00	5010.00
23666	5490.00	5510.00
23667	5990.00	6010.00
3750	6470.00	6500.00
3751	6660.00	6690.00
3753	7070.00	7100.00
3755	7470.00	7500.00
3756	7670.00	7700.00
3759	8270.00	8300.00
23668	8740.00	8760.00
23669	9390.00	9410.00
23670	9740.00	9760.00
3767	9870.00	9900.00

Kerogen Received

K0524A	1490.00	1500.00
K0524B	2000.00	2010.00
K0524C	2550.00	2560.00
K0525A	3240.00	3260.00
K0525B	3990.00	4010.00
K0525C	4490.00	4510.00
K0526A	4990.00	5010.00
K0526B	5490.00	5510.00
K0526C	5990.00	6010.00
K0124A	6470.00	6500.00
K0124B	6660.00	6690.00
K0124C	7070.00	7100.00
K0125A	7470.00	7500.00
K0125B	8270.00	8300.00
K0527A	8740.00	8760.00
K0527B	9390.00	9410.00
K0527C	9740.00	9760.00
K0125C	9870.00	9900.00

Polished Samples

K0524A	1490.00	1500.00
K0524B	2000.00	2010.00
K0524C	2550.00	2560.00
K0525A	3240.00	3260.00
K0525B	3990.00	4010.00
K0525C	4490.00	4510.00
K0526A	4990.00	5010.00
K0526B	5490.00	5510.00
K0526C	5990.00	6010.00
K0125B	8270.00	8300.00
K0527A	8740.00	8760.00
K0527B	9390.00	9410.00
K0527C	9740.00	9760.00
K0125C	9870.00	9900.00

Studied Samples

Fig. 8: An example of a LISTER.PRG output file for MURRE G-67 to be used to produce a well plot

GRAND BANKS

MURRE G-67

D31

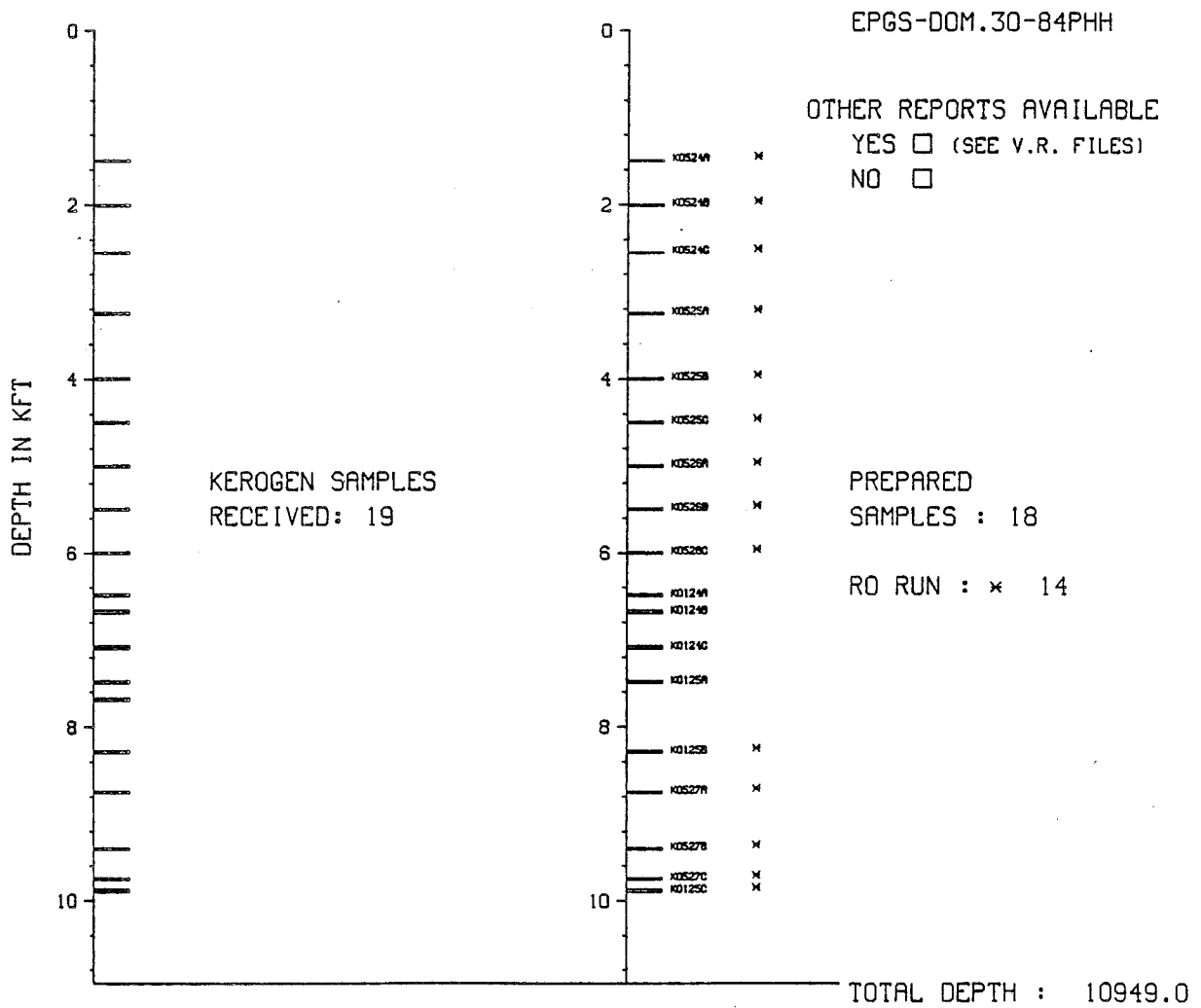


Fig. 9: Sample well plot for Murre G-67 produced from LISTER output file.

REMARKS

The database has made the organizing and retrieval of Coal Lab sample information more practical and efficient and this will become even more critical as the volume of samples increases. Because sample depths are only entered manually once and then verified, input errors in numerous plots and tables has been significantly reduced or eliminated.


Implementing the database in 'dBase III Plus' provides easy maintenance of the data because of the utilities built into the package for editing the existing data and appending new data. The package also provides its own programming language which enables the user to reduce repetitious retrievals of specific types of information to a menu selection.

An example of this easy selective type of data retrieval is the preparation of input files for various plotting programs. The first application was to produce the sample display plots. Sample coverage is a key factor in selecting wells which might yield a reliable vitrinite reflectance profile. Sample coverage plots were prepared for all 139 wells covered by the database and updates of these plots as well as addition of new wells is quite simple.

The most recent use of the database has been to prepare basic sample information (well name and depth range) files which are then read by the main vitrinite reflectance data acquisition program just before running a sample. Also when a well is completed a list of kerogen sample depth information can be readily produced. This is input for a program which will create a summary of the VR data which in turn is input for programs that prepare well maturation profile plots and histogram plots. Summarizing and reporting vitrinite reflectance maturation data for a well has thereby been notably improved.

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APPENDIX I

Data field sizes and restrictions

Structure for database: C:KERLABEL.dbf

Number of data records: 4816

Date of last update : 07/27/87

Field	Field Name	Type	Width	Dec
1	PAL NUMBER	Character	6	
2	UP DEPTH	Numeric	8	2
3	LOW DEPTH	Numeric	8	2
4	SAMP LABEL	Character	6	
5	LOC NUMBER	Character	5	
6	RO RUN	Logical	1	
** Total **			35	

Structure for database: C:KERWELL.dbf

Number of data records: 139

Date of last update : 08/19/87

Field	Field Name	Type	Width	Dec
1	LOC NUMBER	Character	5	
2	WELL NAME	Character	22	
3	UNITS	Character	1	
4	AREA	Character	15	
5	TD	Numeric	8	2
6	EPG REPORT	Character	8	
7	OTHER RPTS	Logical	1	
** Total **			61	

Structure for database: C:COALABEL.dbf

Number of data records: 36

Date of last update : 01/01/80

Field	Field Name	Type	Width	Dec
1	SAMP LABEL	Character	6	
2	UP DEPTH	Numeric	8	2
3	LOW DEPTH	Numeric	8	2
4	PAL NUMBER	Character	6	
5	LOC NUMBER	Character	5	
6	COMMENTS	Character	30	
** Total **			64	

Structure for database: C:COALWELL.dbf

Number of data records: 6

Date of last update : 01/01/80

Field	Field Name	Type	Width	Dec
1	LOC NUMBER	Character	5	
2	WELL NAME	Character	22	
3	UNITS	Character	1	
4	AREA	Character	15	
5	COMMENTS	Character	50	
** Total **			94	

APPENDIX II

List of areas with sample coverage

COALWELL

AREAS

Scotian Shelf
Rawdon Hills

KERWELL

AREAS

SCOTIAN SHELF
GRAND BANKS
E NFLD SHELF
G. OF ST. LAWR
FLEMISH PASS
PEI
DAVIS STRAIT
LABRADOR SHELF

APPENDIX III

Names and locality numbers of wells in the database

D171	ACADIA K-62	D208	HEKJA D-72	D113	PELICAN J-49
D92	ADOLPHUS 2K-41	D130	HERCULES G-15	D165	PENOBSCOT L-30
D141	ADOLPHUS D-50	D166	HERJOLF M-92	D136	PHALAROPE P-62
D254	ARCHER K-19	D38	HERMINE E-94	D212	POTHURST P-19
D17	ARGO F-38	D82	HERON H-73	D86	PRIMROSE A-41
D207	BANQUEREAU C-21	D162	HESPER I-52	D95	PRIMROSE F-41
D187	BEN NEVIS I-45	D191	HIBERNIA B-08	D75	PRIMROSE N-50
D76	BITTERN M-62	D194	HIBERNIA G-55	D35	PUFFIN B-90
D181	BLUE H-28	D221	HIBERNIA I-46	D229	RANKIN M-36
D94	BLUENOSE G-47	D206	HIBERNIA J-34	D100	RAZORBILL F-54
D211	BONANZA M-71	D200	HIBERNIA K-18	D192	ROBERVAL C-02
D135	BONAVISTA C-99	D186	HIBERNIA O-35	D203	RUT H-11
D244	BONNET F-23	D180	HIBERNIA P-15	D101	SABLE ISLAND 4H-58
D120	BONNITION H-32	D153	INDIAN HARBOUR M-52	D1	SABLE ISLAND C-67
D110	BRADELLE L-49	D126	INTREPID L-80	D39	SABLE ISLAND E-48
D114	BRANT P-87	D131	JASON C-20	D69	SABLE ISLAND O-47
D37	BRION ISLAND #1	D156	KARLSEFNI A-13	D146	SACHEM D-76
D124	CAREY J-34	D79	KITTIWAKE P-11	D129	SAMBRO I-29
D157	CARTIER D-70	D32	LEIF E-38	D109	SANDPIPER 2J-77
D123	CITNALTA I-59	D107	LEIF M-48	D29	SAUK A-57
D96	COHASSET D-42	D240	LOUISBOURG J-47	D77	SHEARWATER J-20
D119	COOT K-56	D89	MALLARD M-45	D201	SHERIDAN J-87
D210	CORTE REAL P-85	D70	MARMORA C-34	D219	SHUBENACADIE H-100
D6	CREE E-35	D90	MERGANSER I-60	D173	SKOLP E-07
D149	CUMBERLAND B-55	D8	MIC MAC H-86	D152	SNORRI J-90
D27	DAUNTLESS D-35	D7	MIC MAC J-77	D243	SOUTH GRIFFIN J-13
D125	DEMASCOTA G-32	D170	MIGRANT N-20	D190	SOUTH LABRADOR N-79
D139	DOMINION O-23	D9	MISSISAUGA H-54	D247	SOUTH MARA C-13
D80	EAGLE D-21	D5	MOHAWK B-93	D199	SOUTH TEMPEST G-88
D14	EAST POINT E-49	D168	MOHEIDA P-15	D217	SOUTH VENTURE O-59
D108	EGRET K-36	D74	MOHICAN I-100	D111	SPOONBILL C-30
D127	EGRET N-46	D31	MURRE G-67	D102	TERN A-68
D28	EIDER M-75	D4	NASKAPI N-30	D236	TERRA NOVA K-08
D115	EMERILLION C-56	D204	NAUTILUS C-92	D85	THEBAUD P-84
D19	ERIE D-26	D155	NOEL #1	D238	TRAVE E-87
D13	ESPERANTO K-78	D214	NORTH BANQUEREAU I-13	D99	TUSCARORA C-61
D117	FLYING FOAM I-13	D197	NORTH BJARNI F-06	D122	TWILICK G-49
D148	FREYDIS B-87	D222	NORTH DANA I-43	D143	TYRONE #1
D179	GABRIEL C-60	D198	NORTH LEIF I-05	D228	UNIACKE G-72
D78	GANNET O-54	D163	NORTH SYDNEY F-24	D195	VENTURE B-13
D183	GILBERT F-53	D134	NORTH SYDNEY P-05	D202	VENTURE B-43
D209	GJOA G-37	D193	OGMUND E-73	D178	VENTURE D-23
D231	GLOOSCAP C-63	D213	OLYMPIA A-12	D164	WENONAH J-75
D133	GUDRID H-55	D3	ONEIDA O-25	D216	WEST ESPERANTO B-78
D36	GULL F-72	D2	ONONDAGA E-84	D205	WEST FLYING FOAM L-23
D185	HARE BAY E-21	D105	OSPREY H-84	D18	WYANDOT E-53
D196	HEBRON I-13				