



DATA CAPTURE APPLICATIONS

**3076A APPLICATION
HP 1000**

**PETROLEUM INDUSTRY
LABOR & INVENTORY CONTROL**



SUMMARY

Joy Manufacturing is a major international company, supplying both the petroleum and mining industries with heavy equipment such as compressors and rockdrills; as well as producing aerospace products, electronic equipment and pollution control systems. It is an expanding company noted as an industrial leader in advanced technology, marketing, heavy equipment, and financial management.

Larkin Division (Texas) is part of Joy Manufacturing's Petroleum Equipment Group. This division employs some 175 people manufacturing drill-heads, fittings, cat-heads, and pulsation equipment. The equipment is manufactured in machine shops on a production line basis; the raw metal entering the shops is machined into the components parts, which are subsequently assembled into the equipment. These high-value items must spend the minimum amount of time in the workshops in order to minimize production costs.

THE PROBLEM

To maintain a high level of productivity and stock control, the company required real-time information on:

- time and attendance.
- labor cost accounting.
- labor performance.
- stock inventory.

The problem was to modernize the existing data collection system in order to make it interactive (for user convenience) and improve output and reliability, while simultaneously simplifying the programming and reducing the cabling costs and the number of cables. It was also essential that the new system be capable of controlling terminals up to 650 m (2,000 ft) away and be synchronized with a master clock (in the factory).

THE SOLUTION

Joy Manufacturing evaluated various systems, but finally chose a Data Capture system based on a HP 1000 mini-computer and eleven HP 3076A terminals mounted on a Data Link.

Hewlett-Packard equipment was chosen because of its price, software ease-of-use and hardware quality, and also because it provided the complete hardware solution in one system. The 3076A terminals were chosen because of their customizable prompting lights and special function keys, and badge/card readers. The Data Link was chosen because of its expansion capabilities and ease of installation.



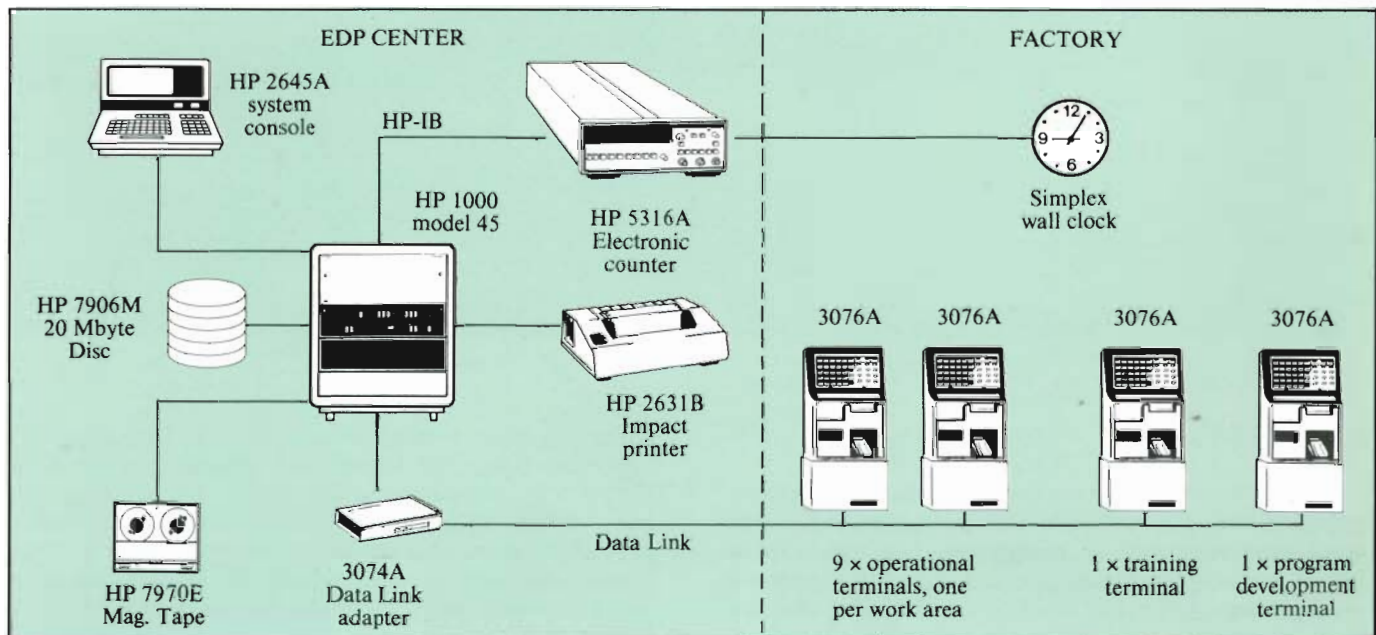
Terminal Area

THE CONFIGURATION

11 × HP 3076A wall-mounted Data Capture Terminals equipped with alphanumeric display, alphanumeric keyboard, multifunction reader and type V badge reader are installed on a 325 m (1000 ft) long Data Link. Nine of the terminals are used in the manufacturing work areas, one of the remaining two terminals is used for operator training and the other to test programs – these two terminals are also used as spare units.

The system configuration is:

- HP 1000 F-series model 45 (2177D) with 512 Kbytes of main memory plus an auxiliary 20 Mbyte disc and tape deck.
- RTE IV-B software (92068A) to control the system.
- Multipoint software (91730A) to control the Data Link.
- DATACAP/1000-II software (92080A) to configure/ manage the 3076A terminals.
- IMAGE/1000 software (92069A) to manage the data base.
- HP 2631B impact printer for reports.
- HP 2645A terminal, used as the system console.



The Data Capture Installation

HP Computer Museum
www.hpmuseum.net

For research and education purposes only.



Joy Manufacturing's Employee Handbook

SYSTEM OPERATION

Joy Manufacturing took advantage of the new Data Capture system to enhance management-employee relations by getting employees involved with the system. Some of the ways they did this were letting the employees design the terminal area (location, color scheme, lighting and card placement), issuing each employee with a handbook explaining the reason for the Data Capture system and how to use it, and giving the employees two hours of training (on a one-to-one basis by their foreman) to explain each of eight possible transactions.

The employees are supplied with a type III identity badge and several punched "labor" (job) cards – separate cards being used for different jobs, such as:

- "Direct labor" card – one card for each job specifying the operation, lot and part number.
- "Indirect labor" card – one for each overhead activity (such as union or safety committee business).
- "Short duration" card – one for each short duration job (less than 1/2 hour).
- "Delay" card – one for each delay (such as tooling error or machine breakdown).

These labor cards are generated automatically by the mainframe computer.

When the employees start a job, they enter their badge followed by the appropriate labor card into the 3076A. The system then asks (via display messages and prompting lights) for specific information about the job; such as run type and the number of parts completed. This data informs the system which employee is performing which job, the time from the factory wall clock dating the transaction.

The system formats this information. Then at the end of the working day, the formatted data is dumped onto magnetic tape which is subsequently loaded onto the site's mainframe computer for processing.

The employees are delighted with the terminals, which they find easy to use, compact and very interactive. Management is very pleased with the system, as information on a component's manufacturing state can be readily obtained, and job priorities can be easily changed in response to changing economic demands.

System information:

System conversion time – two months.

System loading – 500 to 800 transactions per shift (eight hours), with 150 to 200 transactions during a three minute period at the maximum work-load.

System response time – instantaneous (as perceived by the employees).

THE BENEFITS

Improved productivity:

Productivity has increased by nearly 40% (i.e. if the previous system has been retained, an extra 15 people would have been required). The system also provides management with immediate feedback on parts and material movements, allowing then to readily spot and correct any errors.

Ease of use:

The employees find the terminals friendly, their interactivity being a considerable asset as it guides them through a transaction simply – without having to follow a set of written instructions.

Reduced costs:

Real-time Data Capture has simplified labor inventory reporting, improved management control and reduced administrative costs.

Improved system uptime:

Hewlett-Packard equipment has proved to be very reliable, with a greatly improved uptime over the previous system.

FUTURE DEVELOPMENTS

Joy manufacturing plan to:

- Extend the Data Link to 650 m (2,000 ft).
- Track machine down-time.

For further details on the 307X range of Data Capture Terminals, see your local HP sales office. A list of the major offices is included on the back page of this note.



Well-head Equipment

Contact Hewlett-Packard We'll introduce you to our whole family of data terminals.



United States

ALABAMA
Huntsville
Tel: (205) 881-4591

ARIZONA
Phoenix
Tel: (602) 273-8000

CALIFORNIA
Caroga Park
Tel: (213) 702-8300

Fullerton
Tel: (714) 870-1000

Los Angeles
Tel: (213) 970-7500

North Hollywood
Tel: (213) 877-1282

Palo Alto
Tel: (415) 857-8000

Sacramento
Tel: (916) 929-7222

San Diego
Tel: (714) 279-3200

Santa Clara
Tel: (408) 988-7000

COLORADO
Englewood
Tel: (303) 771-3455

CONNECTICUT
Wallingford
Tel: (203) 265-7801

FLORIDA
Ft. Lauderdale
Tel: (305) 973-2600

Orlando
Tel: (305) 859-2900

GEORGIA
Atlanta
Tel: (404) 955-1500

HAWAII
Honolulu
Tel: (808) 526-1555

ILLINOIS
Rolling Meadows
Tel: (312) 255-9800

INDIANA
Indianapolis
Tel: (317) 842-1000

IOWA
Iowa City
Tel: (319) 351-1020

KENTUCKY
Louisville
Tel: (502) 426-0100

LOUISIANA
Kenner, Destahan
Tel: (504) 467-4100

MARYLAND
Hanover
Tel: (301) 796-7700

Rockville
Tel: (301) 948-6370

MASSACHUSETTS
Lexington
Tel: (617) 861-8960

MICHIGAN
Farmington Hills
Tel: (313) 476-6400

MINNESOTA
St. Paul
Tel: (612) 644-1100

MISSOURI
Kansas City
Tel: (816) 763-8000

St. Louis
Tel: (314) 878-0200

NEW JERSEY
Paramus
Tel: (201) 265-5000

Piscataway
Tel: (201) 981-1199

NEW MEXICO
Albuquerque
Tel: (505) 292-1330

NEW YORK
Albany
Tel: (518) 458-1550

Fairport
Tel: (716) 223-9950

New York City
Tel: (212) 971-0800

NORTH CAROLINA
Greensboro
Tel: (919) 852-1800

OHIO
Cleveland
Tel: (216) 243-7300

Dayton
Tel: (513) 859-8202

OKLAHOMA
Oklahoma City
Tel: (405) 946-9499

Tulsa
Tel: (918) 665-3300

OREGON
Wilsonville
Tel: (503) 682-8000

PENNSYLVANIA
King of Prussia
Tel: (215) 265-7000

Pittsburgh
Tel: (412) 782-0400

SOUTH CAROLINA
Columbia
Tel: (803) 732-0400

TEXAS
Houston
Tel: (713) 776-6400

Richardson
Tel: (214) 231-6101

San Antonio
Tel: (512) 494-9336

UTAH
Salt Lake City
Tel: (801) 974-1700

VIRGINIA
Richmond
Tel: (804) 285-3431

WASHINGTON
Bellevue
Tel: (206) 643-4000

WISCONSIN
Brookfield
Tel: (414) 784-8800

Canada

ALBERTA
Calgary
Tel: (403) 253-2713

BRITISH COLUMBIA
Richmond
Tel: (604) 270-2277

NOVA SCOTIA
Dartmouth
Tel: (902) 469-7820

ONTARIO
Mississauga
Tel: (416) 678-9430

Ottawa
Tel: (613) 820-6483

QUEBEC
Kingland
Tel: (514) 697-4232

Central and South America

ARGENTINA
Buenos Aires
Tel: 792-1293

BRAZIL
06400 Alphaville
Tel: 421-1311

22471 Rio de Janeiro-RJ
Tel: 286-0237

EL SALVADOR
San Salvador
Tel: 252787, 259621

GUATEMALA
Guatemala City
Tel: 316627, 314786

MEXICO
Mexico 23, D.F.
Tel: (905) 676-4600

PERU
Lima 1
Tel: 41-4325, 41-3703

VENEZUELA
Caracas 1071
Tel: 239-4133

Europe, Northern Africa, Middle East

AUSTRIA
A-1205 Vienna
Tel: (222) 35-16-210

BELGIUM
B-1200 Brussels
Tel: (02) 762-32-00

DENMARK
DK-3460 Birkerød
Tel: (02) 81-66-40

FINLAND
SF-02100 Espoo 10
Tel: (90) 455-0211

FRANCE
F-69130 Ecully
Tel: (78) 33-81-25

F-93153 Le Blanc Mesnil
Tel: (01) 865-44-52

F-91947 Orsay
Tel: (1) 907-78-25

F-31081 Toulouse
Tel: (61) 40-11-12

GERMAN FEDERAL REPUBLIC
D-1000 Berlin 30
Tel: (030) 24-90-86

D-7030 Boblingen
Tel: (07031) 667-1

D-4000 Düsseldorf 11
Tel: (0211) 5971-1

D-6000 Frankfurt 56
Tel: (0611) 50-04-1

D-2000 Hamburg 60
Tel: (040) 63804-1

D-3000 Hannover 91
Tel: (0511) 46-60-01

GREAT BRITAIN
Altrincham,
Cheshire, WA14 1NU
Tel: (061) 928-6422

Castleford,
Yorkshire, WF10 1AE
Tel: (0977) 550016

London Colney,
Hertfordshire, AL2 1HA
Tel: (0727) 24400

Shirley, Solihull
West Midlands, B90 3BJ
Tel: (021) 7458800

Winnersh, Wokingham
Berkshire, RG11 5AR
Tel: (0734) 784774

GREECE
Athens 133
Tel: 32-30-303, 32-37-371

IRELAND
Dublin 2
Tel: 680424, 680426

ITALY
I-20063 Cernusco Sul Naviglio
Tel: (2) 903691

I-35100 Padova
Tel: (49) 664888

I-00144 Roma
Tel: (06) 54831

I-10133 Torino
Tel: (011) 682245/659308

LUXEMBURG
B-1200 Brussels
Tel: (02) 762-32-00

NETHERLANDS
Amstelveen
Tel: (20) 47-20-21

NORWAY
N-1345 Østeraas
Tel: (02) 17-11-80

SCOTLAND
South Queensferry, 9GT
West Lothian, EH30 9TG
Tel: (031) 3311000

SPAIN
E-Barcelona 29
Tel: (3) 322-24-51, 321-73-54

Madrid 16
Tel: 458-2600

SWEDEN
S-16120 Bromma
Tel: (08) 730-0550

SWITZERLAND
CH-1219 Le Lignon-Geneva
Tel: (022) 96-03-22

CH-8967 Widen
Tel: (57) 50-111

USSR
Moscow 101000
Tel: 294-2024

Southern Africa, Asia, Australasia

AUSTRALIA
Blackburn, Victoria 3130
Tel: 89-6351

Fyshwick A.C.T. 2609
Tel: 80-4244

North Ryde, N.S.W. 2113
Tel: 887-1611

Parkside, S.A. 5063
Tel: 272-5911

Spring Hill, QLD, 4000
Tel: 229-1544

HONG KONG
Hong Kong
Tel: 5-8323211

INDIA
Bangalore 560 025
Tel: 55668

Prabhadevi, Bombay 400 025
Tel: 422-3101

New Delhi 110 024
Tel: 682547

NEW ZEALAND
Epsom, Auckland
Tel: 687-159

Kilbirnie, Wellington
Tel: 877-199

PHILIPPINES
Metro Manila
Tel: 85-35-81, 85-32-21

SINGAPORE
Singapore 0511
Tel: 631788

SOUTH AFRICA
Sandton, 2144
Tel: 802-5111, 802-5125

TAIWAN
Kaohsiung
Tel: 241-2318, 261-3253

Taipei
Tel: (02) 751-0404

NEW ZEALAND
Epsom, Auckland
Tel: 687-159

Kilbirnie, Wellington
Tel: 877-199

PHILIPPINES
Metro Manila
Tel: 85-35-81, 85-32-21

SINGAPORE
Singapore 0511
Tel: 631788

SOUTH AFRICA
Sandton, 2144
Tel: 802-5111, 802-5125

TAIWAN
Kaohsiung
Tel: 241-2318, 261-3253

Taipei
Tel: (02) 751-0404

For Countries and Areas Not Listed :

EASTERN USA
Rockville, Maryland
Tel: (301) 258-2000

MIDWESTERN USA
Rolling Meadows, Illinois
Tel: (312) 255-9800

SOUTHERN USA
Atlanta, Georgia
Tel: (404) 955-1500

WESTERN USA
Los Angeles, California
Tel: (213) 877-1282

CANADA
Mississauga, Ontario
Tel: (416) 678-9430

EAST EUROPEAN AREAS
Vienna, Austria
Tel: (222) 35-16-210

EUROPEAN AREAS
Meyrin 2, Switzerland
Tel: (022) 83-81-11

MEDITERRANEAN AND MIDDLE EAST AREAS
Paradise, Greece
Tel: 808-1741-4

ALL OTHER AREAS
Hewlett-Packard Intercontinental
3495 Deer Creek Road
Palo Alto, California 94304, USA
Tel: (415) 857-1501



Data subject to change

Printed in France (63) 06/83
5953-5926