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UNIDO

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

FINAL REPORT

PROJECT: DP/RER/87/036

INDUSTRIAL COMPUTERISED SYSTEM

Prepared by:

T C Hubbard: Managing Partner, Pierce Management Services.

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4.1

5 April 1989

REF: UNIDOEU2.REP

CONTENTS

1. SYNOPSIS

1.1. The project was carried out in accordance with the Author's Proposal P.88/65 dated 5 December 1988 and the corresponding Contract 88/136 dated 23 December 1988, with additions.

1.2. The project content was to consist of:

1.2.1. Supply of a licence to use two modules of the Works Information Management System (WIMS) computerised maintenance software at one National Focal Point Institution and one industrial node in each of seven participating countries.

1.2.2. Supply of updated software to the corporate licensed point (INORGA in Prague, Czechoslovakia) for onward distribution to the other project members.

1.2.3. Supply of 14 DataFlex version 2.3 packages to INORGA for distribution to each of the project members.

1.2.4. Supply of a five-day training course at NTCTC INORGA for members of the participating countries.

1.2.5. Two days attendance at UNIDO, Vienna, for briefing, including agreement of the training course programme.

1.2.6. Two days attendance at UNIDO, Vienna for de-briefing, including agreement of the format of the Final Report based on this Draft Final Report.

1.2.7. Supply of back-stopping support from the Author's Home Office.

2. INTRODUCTION

2.1. The project was carried out in accordance with the terms of the brief, with the following variations:

2.1.1. The original proposal was to supply each National Focal Point Institution with a DataFlex Full Development Package, version 2.3, and each node with a DataFlex Runtime Package, version 2.3, both in single-user format for MS-DOS based computers.

Subsequent to the proposal, instructions were given by UNIDO to supply all DataFlex packages as multi-user systems, enabling nodes to applicate in either single or multi-user mode, excluding certain proprietary networking systems.

2.1.2. A licence to use the WIMS applications software was issued to UNIDO on a maximum of 14 separate installations.

These installations were to have been at one National Focal Point Institution and one node in each of seven participating countries:

i Czechoslovakia

ii. Bulgaria

iii. Cyprus

iv. Hungary

v. Malta

vi. Poland

vii. Portugal

By request of UNIDO, the Maltese systems were replaced with Yugoslavian, and this change is noted in the corporate licence.

2.2. The Czechoslovakian National Focal Point Institution (INORGA) and the node (SNOP-POLDI, KLADNO) were already licensed to use the WIMS applications, this licence was cancelled and the two installations were included in the new corporate licence.

2.3. The training programme agreed during the briefing in Vienna was altered during its course, by common agreement with the participating country members and INORGA.

The original programme is attached as Appendix A and the revised actual programme is attached as Appendix B.

2.4. The WIMS applications programs require the host computers to have a printer on line, but due to only one printer being available, it was necessary for the Author's Expert to carry out emergency operations during breaks between sessions, as detailed in Section 3.

3. DETAILED REPORT OF PROJECT ACTIVITIES

3.1. A briefing visit was made on 9 and 10 January 1989 to UNIDO in Vienna, during which the following arrangements were agreed:

3.1.1. It was expected that the training course would involve 2 members from each participating country, making a total of 14, with a possibility of a further member, in an observing capacity, from USSR.

3.1.2. On the basis of the above, the Author's Expert suggested that a minimum of 7 computers would be appropriate, with ideally one printer to each computer.

3.1.3. The proposed course programme was presented and discussed and was agreed as incorporating all the requirements as detailed in the Proposal.

It was agreed that some variation to this programme might be necessary, depending on the course members' computer literacy and requirements.

3.1.4. The dates and venue were agreed, 6-10 February 1989 at NTCTC, INORGA, Prague.

3.1.5. The method of issue, and the implications to INORGA, of a single, corporate licence were explained, and accepted by UNIDO.

It was noted that the Director of INORGA would sign the licence on behalf of UNIDO.

3.1.6. The arrangement was understood, that INORGA, as the corporate licensee, would be responsible for:

a. Holding master copies of the WIMS programs.

b. Issuing copies to no more than 2 installations in each of the 7 participating countries.

c. Acting as a reference point for all users for the collection and reporting to the Authors of any statement errors in the programs, receiving and distributing corrections and maintaining a master working system with any corrections applicated.

d. Informing the Authors of issues made to the maxima detailed in each of the 7 countries.

3.1.7. It was also agreed that the DataFlex packages would be delivered to INORGA, for distribution to the National Focal Point Institutions during the training course.

3.2. It should be noted that each recipient of a DataFlex Package must complete the licence form included in the Package and return it to the suppliers as indicated on the form.

The user will then receive a Licence Agreement Number which will be entered into the system in order to prove ownership.

The Authors confirm their willingness to supply upgrades to individual users, or additional Packages, but the Licence Agreement Number must be quoted in any such requests.

3.3. The Authors have also indicated availability of additional WIMS licences for more than one node in each country, under the auspices of the UNIDO corporate licence for this project, at a cost of £1000 per installation, excluding the relevant DataFlex Package.

The cost of the DataFlex Packages will vary according to the number involved in each order, and discounts currently apply to more than 10 Packages supplied as one lot.

3.4. The five-day training programme was held from 6-10 February 1989 at NTCTC, INORGA, Prague.

3.4.1. The training facilities provided by INORGA were generally excellent, but the following points were noted as being slight hindrances to the smooth progress of the course:

a. The working areas, although adequate, could have been arranged better physically, but were not able to be altered due to location of power points.

b. Only one printer was available between the 7 computers. Certain parts of the WIMS routines need a printer on line, for example, running History Updating Routines, printing dockets and reports.

This shortcoming was overcome by the Tutors demonstrating these routines on the Tutor's computer with the aid of the attached LCD OHP display.

The resultant data files were taken from the Tutor's computer and copied to the members' computers during inter-session breaks.

c. Although the Authors were assured that no translators would be necessary, the course being presented in English, some course members found difficulty in communicating their questions to the Tutors.

However, all members assured the Tutors that they had understood the tuition as presented.

d. Due to other systems residing on the computers, lack of disc space occurred, which meant piecemeal loading of the course systems between sessions.

3.4.2. Reference to the originally agreed course programme indicated an assumption of computer literacy by all course members.

However, it transpired that tuition was needed for some members in program and system loading.

It was, therefore, decided to include supervised course-member loading of both the DataFlex and WIMS Packages, resulting in alterations to the session headings on day 1 and subsequent alterations in the later part of the course.

3.4.3. By agreement with INORGA, because members had expressed no anticipated use for the Purchase Ordering section of WIMS, the Stock Control and Purchase Orders module tuition was shortened and the two spare sessions were used to catch up with the two sessions on the Asset Management module lost earlier.

3.4.4. Certain of the DataFlex routines had been covered in the opening sessions, including the DataFlex overview, so that the DataFlex utilities on days 4 and 5 were shortened accordingly.

3.4.5. The original programme is shown in Appendix A and the actual programme in Appendix B.

3.4.6. The course membership consisted of:

2 from Portugal
3 from Yugoslavia
2 from Poland
2 from Czechoslovakia (INORGA)
2 from Bulgaria
2 from Cyprus
2 from Hungary
1 from USSR

16 in total, of mixed disciplines, e.g. Production, Maintenance, Computer Services and Academic.

3.4.7. The provision of 7 computers gave a distribution of 2 or 3 members per computer, and gave all a maximisation of "hands-on" practice.

Attendance was almost 100% by all members for all sessions, only 2 or 3 members were called away from occasional sessions by other business.

The provision of an LCD transparent screen as an attachment to the OHP was very much welcomed, enabling members to follow the Tutors' key patterns on a large projection screen.

Thanks are in order to the INORGA staff for their help in the keying exercises.

3.4.8. The following details the content of the programme sessions:

Day 1: Session 1

Broad overview of the WIMS philosophy assisted by flow charts showing the dataflow, objectives and methods of achieving them.

Day 1: Session 2

Introduction to the DataFlex Relational Database System, loading the system, directory structures, configuration files, setting DOS paths.

Day 1: Session 3

Introduction to the WIMS system, loading the system, application of coding philosophies, with practical examples, use of Flexkeys.

Day 1: Session 4

Coding and entering Asset Header Blocks and Type of Equipment Codes in preparation for use of the Asset Management module.

Day 2: Session 1

Use of data gathering forms, provision of completed examples, use of the Asset Inventory and the various search parameters.

Day 2: Session 2

The philosophy and data content of Planned Preventive Maintenance Jobs (PM Jobs), Account Codes, use of PM Job Numbering system, relevant data gathering forms, provision of completed examples, analysis of PM Jobs using search criteria, entry of examples, labour commitment reports, tabulated and graphical analyses.

Day 2: Session 3

Defect Jobs, methods of recording, Status Codes, entry of data using prepared examples, analyses using search criteria.

Day 2: Session 4

Explanation of the Job Planning feature, searching the plan, tabulated and graphical reports, printing work dockets, customisation of dockets.

Day 3: Session 1

Feedback exercise, using PM and Defect Job dockets, Status Codes, work flow, operational organisation, History Updating, backlog work, Spares Identification facility.

Day 3: Session 2

Analysis of History (Technical and Financial), Plant History Sheet, Labour Performance, Reliability Statistics, tabulated and graphical reports, replanning backlog jobs, labour cost reporting relative to Account Codes.

Day 3: Session 3

Name and Address file, Asset Technical Details, replacement costs and dates reports.

Day 3: Session 4

Advice Notes, cross-referencing to PM and Defect Jobs, Check Lists, uses and various methods of application.

Reference to module objectives, questions and answers.

Day 4: Session 1

Overview of Stock Control and Purchase Orders system, flow chart of operation procedures, audit trails, creating Stock Inventory from prepared data gathering forms.

Day 4: Session 2

Analysis of Stock Inventory, transactions reports, stock evaluation, operational procedures, use of bar-coding techniques for stock transactions, description of the Author's "BARSYS" package, interface with Asset History files.

Day 4: Session 3

Requirements of a database management system, based on knowledge attained on the course.

Day 4: Session 4

Use of DataFlex utilities, DFFILE, FILELIST.

Day 5: Session 1

Creation of a database program, DFEDIT, compiling, DFCOMP, modifying menus, MENUDEF, password protection.

Day 5: Session 2

Application of modifications and corrections to DataFlex programs, language translation for local National purposes.

Day 5: Sessions 3/4

Creation of a DataFlex program, compiling, use of all previously taught utilities.

Closing forum, restatement of course objectives.

3.4.9. The course exercises had been pre-prepared and print-outs of all the documentation and reports were presented to each member in a bound hand-out.

This was achieved by preparing the data files in advance and allowing the course members to enter their own additional data in accordance with pre-prepared data gathering forms, and then to produce their own reports.

The final hand-out was a record of the data in a form which the members should have produced.

This hand-out will provide a useful reference for future real WIMS and DataFlex installations.

A copy is included as Appendix C.

3.5. The new corporate licence was signed by the Director of INORGA on behalf of UNIDO on 6 February 1989, and the revised DataFlex version 2.3 WIMS programs were handed over.

A copy of the licence is included as Appendix D.

Distribution of the WIMS programs and documentation was not immediately effected by INORGA, due to the large administrative effort involved.

It must be noted that the graphics version of WIMS will only run on computers with EGA graphics capabilities, and that computers which are not so equipped should have the standard version loaded.

3.6. The DataFlex Packages were delivered and handed to INORGA on 7 February 1989. These were distributed to the course members for safe keeping and ultimate use in their own countries before their departure from NTCTC.

The original DataFlex version 2.2 Packages which were initially issued to INORGA/SNOP were upgraded to version 2.3 with the Author's compliments.

The WIMS programs and data files have been copied and distributed by UNIDO to all the participating National Focal Point Institutions during March 1989.

3.7. Each course member completed a questionnaire form relating to the course content and quality, and although the Authors contributed to the format of this form, they were not shown the completed forms.

This report is considered to be not complete without at least a summary of the major points extracted from the completed forms, which have not been received from INORGA.

3.8. A report from INORGA dated 14 February 1989 is attached as Appendix E and relates to the initial training carried out at INORGA 6 - 10 February 1989.

4. CONCLUSIONS

4.1. A reminder is again considered to be in order relating to registration of the DataFlex Packages.

4.2. A further reminder is felt to be justified regarding the distribution and registration of the WIMS supplies to the member countries.

4.3. The training course was very well received, and it is understood that a further course will be required within one of the participating countries in September/October 1989, and the Authors look forward to receipt of draft course contents and invitations to present the course.

4.4. Indications from course members are that perhaps up to seven nodes will require WIMS installations in some of the countries, and this prompts a reminder that a World-wide licence for WIMS may well prove to be more cost effective in the long term than a one-off charge for each installation.

4.5. The Authors wish to express their willingness to continue participation in this and similar projects, but must stress that each individual National Focal Point Organisation and node can only attain cost-effective installations by utilisation of the Author's services and the Author is most anxious to further this concept with the individual users in each country.

4.6. The Authors acknowledge and thank officers of UNIDO and INORGA, and the course members for the attention to detail, absorption of the tuition, help and hospitality extended and look forward to assisting in the successful expansion of the project.

Finally, a recommendation is included that the Authors should be commissioned to make distributions of the WIMS programs to the users entitled under the corporate licence, in order to relieve INORGA of the large and complex administrative tasks involved.

T C Hubbard

Pierce Management Services 24 February 1989

APPENDIX A

ORIGINAL PROPOSED COURSE PROGRAMME

WORKS INFORMATION MANAGEMENT SYSTEM - (WIMS)©

DATAFLEX AND WIMS FAMILIARIZATION COURSE PROGRAMME

6 - 10 February 1989

VENUE: NTCTC, NARODNI STREET, PRAGUE, CZECHOSLOVAKIA

COURSE TUTORS: HAYDN EVANS AND TIM HUBBARD, PIERCE MANAGEMENT SERVICES, U.K.

DAY	0900 - 1030	1045 - 1230	1315 - 1500	1515 - 1700
1	RECEPTION. ASSEMBLY. INTRODUCTIONS.	THE ASSET Step by Step Guidance Through The Various Stages Of "Hands-on" Practice	MANAGEMENT	MODULE. With Maximisation
2	THE Step by Step	ASSET Guidance Through of "Hands-on"	MANAGEMENT The Various Stages Practice.	MODULE. With Maximisation
3	THE STOCK Step by Step	CONTROL AND Guidance Through of "Hands-on"	PURCHASE ORDERS The Various Stages Practice.	MODULE. With Maximisation
4	INTRODUCTION TO DATAFLEX	RELATIONSHIP BETWEEN DATAFLEX FILES (FILEDEF)	AD-HOC REPORTS USING "QUERY"	CREATING APPLICATIONS (AUTODEF)
5	MODIFYING MENUS (MENUDEF)	MODIFYING PROGRAMS (COMPILE)	MODIFYING PROGRAMS (COMPILE)	MODIFYING PROGRAMS (COMPILE). CLOSING FORUM. DISPERSAL.

REF: UINFICDF.PRG

APPENDIX B

ACTUAL COURSE PROGRAMME AS PRESENTED

WORKS INFORMATION MANAGEMENT SYSTEM - (WIMS)[C]

REVISED DATAFLEX AND WIMS FAMILIARIZATION COURSE PROGRAMME

6 - 10 February 1989

VENUE: NTCTC, NARODNI STREET, PRAGUE, CZECHOSLOVAKIA

COURSE TUTORS: HAYDN EVANS AND TIM HUBBARD, PIERCE MANAGEMENT SERVICES, U.K.

DAY	0900 - 1030	1045 - 1230	1315 - 1500	1515 - 1700
1	RECEPTION. ASSEMBLY. INTRODUCTIONS.	INTRODUCTION TO DATAFLEX INCLUDING LOADING AND DFSETUP	INTRODUCTION TO WIMS INCLUDING LOADING AND SETTING-UP	THE WIMS ASSET MANAGEMENT MODULE ASSET HEADER BLOCKS
2	THE Step by Step	ASSET Guidance Through of "Hands-on"	MANAGEMENT The Various Stages Practice.	MODULE. With Maximisation
3	THE Step by Step	ASSET Guidance Through of "Hands-on"	MANAGEMENT The Various Stages Practice.	MODULE. With Maximisation
4	THE STOCK CONTROL ORDERS	AND PURCHASE MODULE	REQUIREMENTS OF A DATABASE MANAGEMENT SYSTEM	USE OF DATAFLEX UTILITIES
5	MODIFYING MENUS PASSWORD PROTECTION COMPILING	MODIFYING PROGRAMS LANGUAGE TRANSLATION	CREATION OF A SAMPLE USING ALL PREVIOUSLY	DATAFLEX PROGRAM TAUGHT UTILITIES CLOSING FORUM. DISPERSAL.

REF: UINFICD1.PRG

APPENDIX C

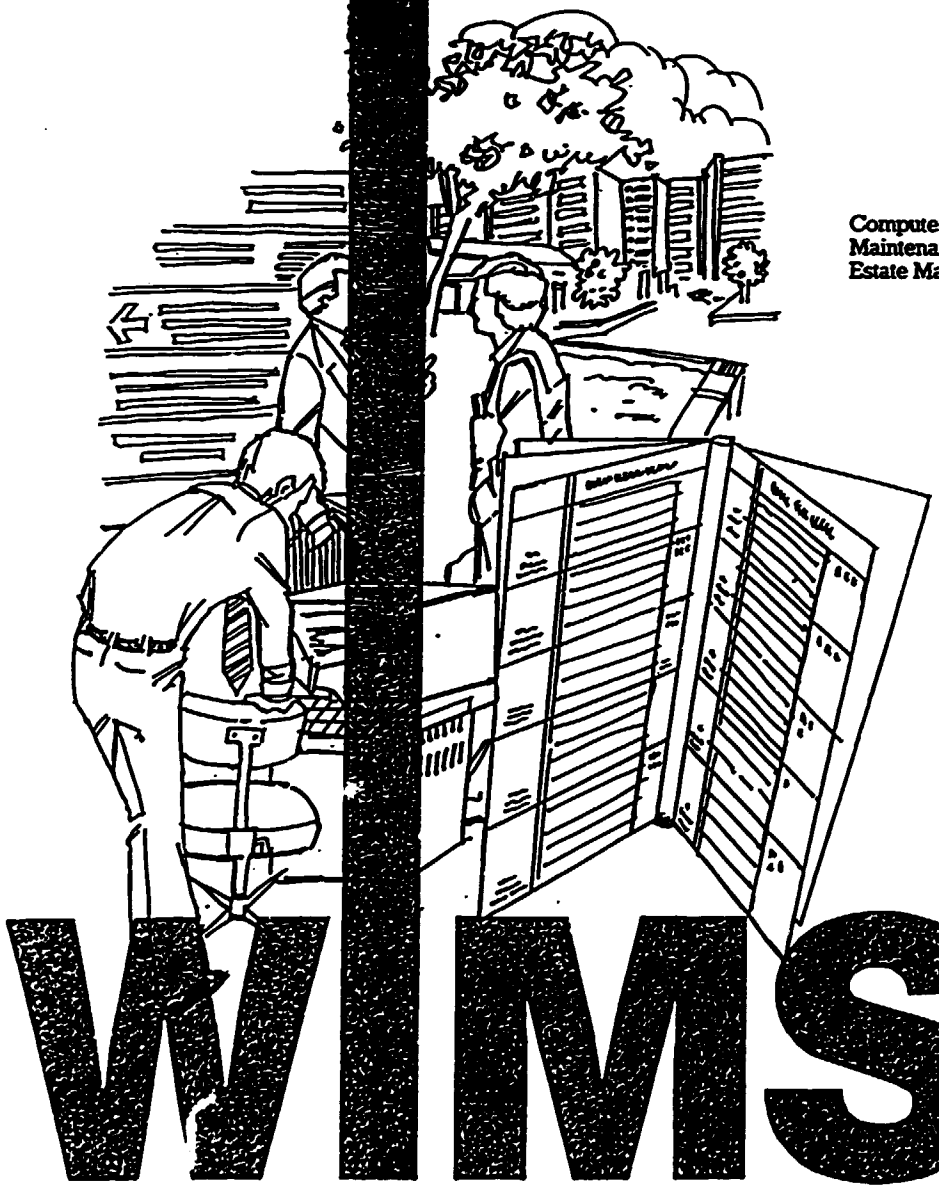
COURSE HANDOUT

UNITED NATIONS NATIONS UNIES

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

INORGA - Institute for Automation and Industrial Management
CZECHOSLOVAK UNDP/UNIDO PROJECT
NATIONAL TECHNICAL CONSULTANCY AND TRAINING CENTRE

Computerised Works Information & Management System©



Computer aid for Maintenance and Estate Management.

WIMS

ASSET MANAGEMENT MODULE EXERCISE

WIMS TRAINING FOR PARTICIPANTS OF UNDP/UNIDO REGIONAL PROJECT NO. DP/RER/87/036 COMPUTERISED INDUSTRIAL MANAGEMENT SYSTEM.

WIMS TRAINING PROVIDED FOR PARTICIPANTS OF UNDP/UNIDO REGIONAL PROJECT NO. DP/RER/87/036, COMPUTERISED MANAGEMENT SYSTEM

PIERCE MANAGEMENT SERVICES
DICKENSON HOUSE
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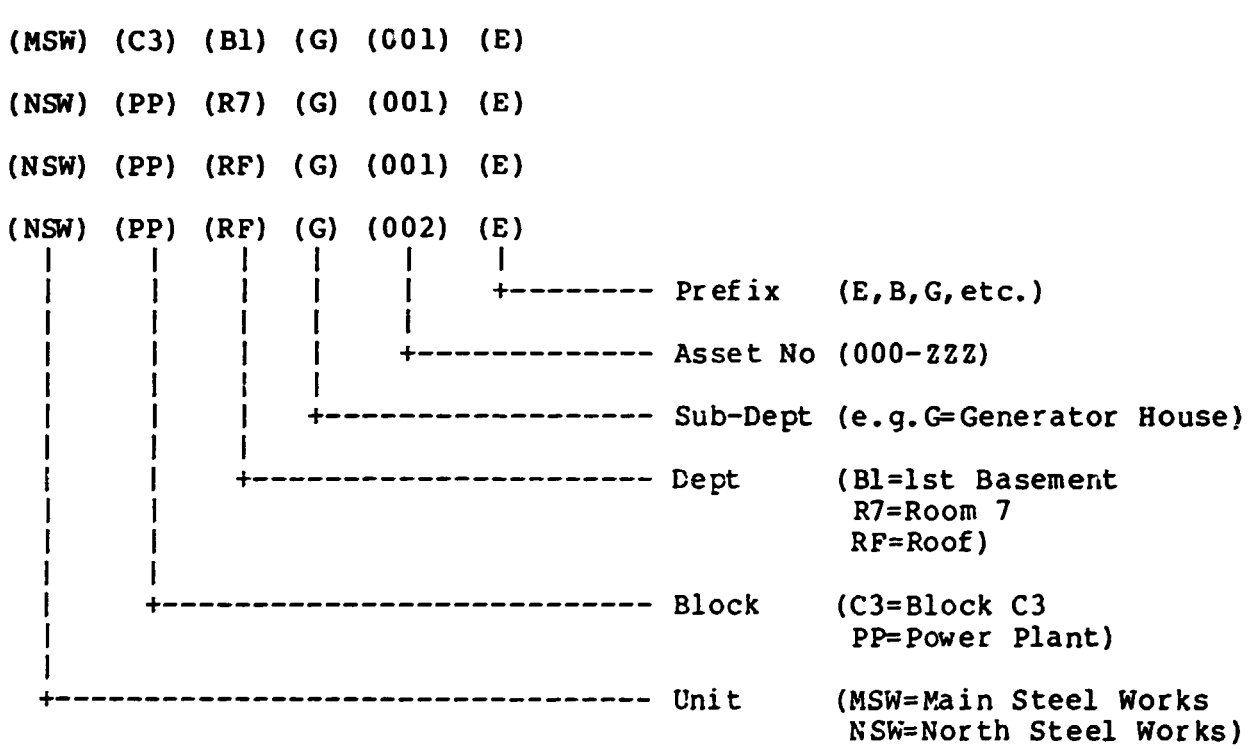
UNITED KINGDOM

TEL: +44-608-41901
TLX: 83448 PMS G
FAX: +44-608-41881

WIMS "STANDARD" ASSET CODING STRUCTURE



1.	Advice Note File Present	Y
2.	Check List File Present	Y
3.	Job Files Present	N
4.	Last Docket Number	0
5.	Account Code File Present	Y
6.	Unused	N
7.	Unused	N
8.	Unused	N
9.	Spares Identification File Present	Y
10.	Last Purchase Serial Number	0
11.	Last Stock Transaction Number	0
12.	Last Month Updated in Budget DDMMYY	
13.	Reliability Statistics Updated to DDMMYY	
14.	Last Bonus Reconciliation Week DDMMYY	
15.	Bonus Reconcil Module Present	Y

ooo END OF REPORT ooo

ITEM CODE	MEANING
AA	**********
AA00	ALARM SYSTEMS
AA01	Burglar Alarm System
AA02	Burglar Alarm Actuator
AA04	Burglar Alarm Indicator
AA05	Auto Smoke Detector
AA06	Fire Alarm Indicator
AA08	Fire Alarm Brk-Gls.Push
AA10	Fire Alarm Indicator Brd
AA12	Fusible Link
AA16	Smoke/Heat Detector
AA18	Auto Smoke Detector
AA20	Fire Alarm
AA21	Pharmacy Alarm
AB	**********
AB00	ANAES/BREATHG/RESUS EQPT
AB02	Anaes'c Mobile Apparatus
AB04	Anaes'c Dental Apparatus
AB06	Analgesic Apparatus
AB08	Boyles Machine
AB10	Hyperbaric Chamber
AB12	Incubator
AB14	Iron Lung
AB16	Oxygen Tent
AB18	Vitalograph
AB20	Resuscitator/Respirator
AB22	Respirator/Ventilator
AC	**********
AC00	ANTI-STATIC FLOORS/EQPT
AC02	Clothing
AC04	Floor: PVC
AC06	Floor: Terrazzo
AC08	Anti-static Equipment
BA	**********
BA00	BATTERIES & CHARGERS
BA02	Batteries: Truck/Tug
BA03	Batteries: Emerg Lights
BA04	Batteries: Op Theatre
BA06	Batteries: Generators
BA08	Batteries: Fire Alarms
BA10	Batteries: Master Clocks
BA12	Batteries: Mobile X-Ray
BA14	Batteries: Telephone
BA16	Batteries: Staff Loc'n
BA18	Batteries: Vehicles
BB	**********
BB00	BOILER PLT,CONTLS,INSTRS
BB02	Automatic Control System
BB04	Blowdown Pit
BB06	Solid Fuel Bunker
BB08	Central Blr: Solid Fuel
BB10	Central Blr: Gas
BB12	Central Blr: LPG
BB14	Central Blr: Oil
BB16	Hotwell

ITEM CODE	MEANING
BB18	Instrumentation
BB20	Makeup Tank
BB22	Storage Tank: LPG
BB24	Storage Tank: Oil
BB25	Oil Pump Circulator
BB26	Feed Pump
BB27	Feed Water Del/Suct Line
BB28	Chemical Feed Equipment
BB29	Pressure Reducing Valve
BB30	Steam Line:Pipe/Valve
BB31	Steam Trap
BB32	Steam Separator
BB36	Burner
BB40	Sump Pump
BB42	Pump Dosing Equipment
BC	**********
BC00	BLIND/CURTAIN FITTINGS
BC01	Curtain Fitting
BC02	Venetian or Roller Blind
BC03	Other Blind
CA	**********
CA00	CLOCKS
CA02	Clock:Battery
CA04	Clock:Master Impulse
CA06	Clock:Programme Control
CA08	Clock:Slave
CA10	Clock:Sweep Second
CA12	Clock:Synchronous Mains
CA14	Clock:Time Switch
CA16	Clock:Time-elapsed
CB	**********
CB00	BOREHOLE PUMPING INST'N
CB02	Borehole
CB03	Submersible Pump
CB04	Break-tank or Cistern
CB05	Centrifugal Pump
CB06	Pipes & Draw-off Points
CB08	Circulating Pump
CB10	Storage Tank
CB12	Well
CB14	Mains:PR Valve
CB16	Mains:Valve
CB18	Mains:Metering Unit
CC	**********
CC00	PERSONAL CALL SYSTEM
CC02	Call Bell,Buzzer or Push
CC04	Ward Control Unit
CC06	Intercom System
CC08	Radio Aerial
CC10	Call Light System
CC12	Automatic Telephone Eq't
CC14	Manual Telephone Eq't
CD	**********
CD00	CONVEYORS & ELEVATORS
CE	**********

ITEM CODE	MEANING
CE00	CEILINGS
CE01	Plastered Soffits
CE02	Suspended Plastered
CE03	Suspended Tiled
CE04	Wood
CE05	Fair-faced Concrete
DA	**********
DA00	DOMESTIC PORTABLE EQUIPT
DA02	Electric Cooker
DA04	Gas Cooker
DA06	Electric Iron
DA07	Electric Steam Iron
DA08	Electric Kettle
DA10	Electic Toaster
DA11	Floor Cleaning Equip't
DA12	Floor Polisher
DA14	Floor Scrubber
DA16	Electric Hot Plate
DA18	Sewing Machine
DA20	Spin Drier
DA22	Vacuum Cleaner
DA24	Washing Machine
DA26	Wet Suction Machine
DB	**********
DB00	EXTERNAL DRAINAGE
DB01	Surface Water:System
DB02	Surface Water:Pipe Run
DB03	Surface Water:Manhole
DB04	Surface Water:Gutter
DB05	Foul Drain:System
DB06	Foul Drain:Pipe Run
DB07	Foul Drain:Manhole
DB08	Foul Drain:Grease Trap
DC	**********
DC00	INTERNAL DRAINAGE
DC01	Surface Water:System
DC02	Surface Water:Pipe Run
DC03	Surface Water:Manhole
DC04	Surface Water:Gutter
DC05	Foul Drain:System
DC06	Foul Drain:Pipe Run
DC07	Foul Drain:Manhole
DC08	Foul Drain:Grease Trap
DR	**********
DR00	DOORS
DR01	Door:Automatic
DR02	Door:Painted Metal-Ext
DR03	Door:Painted Wood-Ext
DR04	Door:Polished Wood-Ext
DR05	Door:Painted Metal-Int
DR06	Door:Painted Wood-Int
DR07	Door:Polished Wood-Int
DR08	Door:Aluminium
DR09	Door:Fully Glazed
DR10	Door:Roller Shutter

ITEM CODE	MEANING
EA	**********
EA00	ELECTRO-MEDICAL EQUIP'T
EA02	Auriscope
EA03	Haemodialysis Blood Pump
EA04	Bronchoscope
EA06	Cautery Unit
EA07	Cyropencil
EA08	Cystoscope
EA09	Dental Unit
EA10	Endoscope
EA12	Heparin Pump
EA14	Laryngoscope
EA16	Protoscope
EA18	Dental Pulsation Welder
EA20	Retroscope
EA22	Ripple Mattress
EA24	Sigmoidoscope
EA26	Suction Unit
EA28	Heated Water Bath
EA30	Microscope
EA32	Genito Uninary
EB	**********
EB00	ELECTRICAL INSTALLATION
EB01	Circuit,Dist Board,Fuses
EB02	Main Switchgear
EB04	Emergency Circuit
EB06	Indicating Instruments
EB10	Lighting Protection Syst
EB12	O'head Power Dist'n Line
EB14	L & MV Power Outlets
EB15	Rotary Convertor
EB16	Standby Generator
EB18	Main Supply Transformer
EB19	Fixed Elec'l Equipment
EW	**********
EW00	EXTERNAL WORKS
EW01	Road & Car Park
EW02	Path:Tarmac & Asphalt
EW03	Path:Concrete & Paved
EW04	Fencing
EW05	Wall:Brick & Stone
EW06	Service Duct
EW07	Ancilliary Building
EW08	Fuel Store
EW09	Garage & Car Port
EW10	Greenhouse
FA	**********
FA00	FIRE-FIGHTING EQUIPMENT
FA02	Extinguisher
FA04	Hose Reel
FA06	Pipe,Hydrant & Drawoff
FA08	Mobile Pump
FA10	Sprinkler System
FB	**********
FB00	FLOOR COVERINGS

W I M S : A S S E T I N P U T F O R M

ASSET HEADER BLOCK DETAILS (File F10 via PR05)

UNIT	MAIN STEEL WORKS	ASSET NO.	MSWC3B1G017E	SUB-ASSET NO.	000
NAME	STANDBY GENERATOR NO 17	LOCATION	BLOCK C3-BASEMENT		
ITEM CODE	EB16	RELIABILITY STATISTICS-Y or N	N	If Y see Reliability Statistics Input Form (Data held in File F12)	

ASSET TECHNICAL DETAILS (File F11 via PR27)

MANUFACTURERS REF.NO.	GG01	SUPPLIERS REF.NO.	KPG01	ORDER/INVOICE NO.	WKS0967R
ACCEPTANCE DATE DDMMYY	020288	WARRANTY EXPIRES MMYY	1989	PRICE	28000
SERIAL NO.	3456Y78				
MODEL	474.100B	REPLACEMENT DATE YYYY	1999	REPLACEMENT COST	62000

ADDITIONAL INFORMATION (The available 57 characters may be entered as a continuous phrase)

TECHNICAL REP: IAN ROWE - 02.89653

ASSET HEADER BLOCK DETAILS (File F10 via PR05)

UNIT	MAIN STEEL WORKS	ASSET NO.	MSWC3B1G017E	SUB-ASSET NO.	001
NAME	BATTERIES - 12V-HD	LOCATION	BLOCK C3-BASEMENT		
ITEM CODE	BA06	RELIABILITY STATISTICS-Y or N	N	If Y see Reliability Statistics Input Form (Data held in File F12)	

ASSET TECHNICAL DETAILS (File F11 via PR27)

MANUFACTURERS REF.NO.	CB01	SUPPLIERS REF.NO.	KPG01	ORDER/INVOICE NO.	
ACCEPTANCE DATE DDMMYY	020288	WARRANTY EXPIRES MMYY	1989	PRICE	
SERIAL NO.					
MODEL	12V/190.30	REPLACEMENT DATE YYYY	1992	REPLACEMENT COST	400

ADDITIONAL INFORMATION (The available 57 characters may be entered as a continuous phrase)

TECHNICAL REP: JOHN SMITH - 02.729600

ASSET HEADER BLOCK DETAILS (File F10 via PR05)

UNIT	MAIN STEEL WORKS	ASSET NO.	MSWC3B1G017E	SUB-ASSET NO.	002
NAME	BATTERY CHARGING EQUIPT.	LOCATION	BLOCK C3.BASEMENT		
ITEM CODE	BA19	RELIABILITY STATISTICS-Y or N	N	If Y see Reliability Statistics Input Form (Data held in File F12)	

ASSET TECHNICAL DETAILS (File F11 via PR27)

MANUFACTURERS REF.NO.		SUPPLIERS REF.NO.		ORDER/INVOICE NO.	
ACCEPTANCE DATE DDMMYY		WARRANTY EXPIRES MMYY		PRICE	
SERIAL NO.					
MODEL		REPLACEMENT DATE YYYY		REPLACEMENT COST	

ADDITIONAL INFORMATION (The available 57 characters may be entered as a continuous phrase)

Make sure you differentiate between: O and 0;Z and 2;I and 1;S and 5,etc.

Prepared by: W. J. Evans

Date: 31/01/89

PIERCE MANAGEMENT SERVICES
DICKENSON HOUSE · ALBION STREET · CHIPPING NORTON
OXFORDSHIRE OX7 5BJ TELEPHONE [illegible]

SHEET 1 OF 3

WIMS: ASSET INPUT FORM

ASSET HEADER BLOCK DETAILS (File F10 via PR05)

Field	Entry
UNIT	MAIN STEEL WORKS
ASSET NO.	MSWC3B1GØ17E
SUB-ASSET NO.	ØØ3
NAME	BATTERY STANDS & TRAYS
LOCATION	BLOCK C3-BASEMENT
ITEM CODE	BAØØ
RELIABILITY STATISTICS-Y or N	N

If Y see Reliability Statistics Input Form (Data held in File F12)

ASSET TECHNICAL DETAILS (File F11 via PR27)

Field	Entry
MANUFACTURERS REF.NO.	
SUPPLIERS REF.NO.	
ORDER/INVOICE NO.	
ACCEPTANCE DATE DDMMYY	
WARRANTY EXPIRES MMYY	
PRICE	
SERIAL NO.	
MODEL	
REPLACEMENT DATE YYYY	
REPLACEMENT COST	

ADDITIONAL INFORMATION (The available 57 characters may be entered as a continuous phrase)

ASSET HEADER BLOCK DETAILS (File F10 via PR05)

Field	Entry
UNIT	NORTH STEEL WORKS
ASSET NO.	NSWPPR7GØØ1E
SUB-ASSET NO.	ØØØ
NAME	STANDBY GENERATOR NO 1
LOCATION	POWER PLANT.ROOM 7
ITEM CODE	EB16
RELIABILITY STATISTICS-Y or N	N

If Y see Reliability Statistics Input Form (Data held in File F12)

ASSET TECHNICAL DETAILS (File F11 via PR27)

Field	Entry
MANUFACTURERS REF.NO.	GGØ1
SUPPLIERS REF.NO.	KPGØ1
ORDER/INVOICE NO.	WKS8594Ø
ACCEPTANCE DATE DDMMYY	Ø1Ø184
WARRANTY EXPIRES MMYY	1985
PRICE	3ØØØØ
SERIAL NO.	2435T61789
MODEL	747.1ØØB
REPLACEMENT DATE YYYY	1994
REPLACEMENT COST	75ØØØ

ADDITIONAL INFORMATION (The available 57 characters may be entered as a continuous phrase)

TECHNICAL REP: IAN ROWE - Ø2.89653

ASSET HEADER BLOCK DETAILS (File F10 via PR05)

Field	Entry
UNIT	NORTH STEEL WORKS
ASSET NO.	NSWPPRFGØØ1E
SUB-ASSET NO.	ØØØ
NAME	STANDBY GENERATOR NO 1
LOCATION	POWER PLANT.ROOF
ITEM CODE	EB16
RELIABILITY STATISTICS-Y or N	N

If Y see Reliability Statistics Input Form (Data held in File F12)

ASSET TECHNICAL DETAILS (File F11 via PR27)

Field	Entry
MANUFACTURERS REF.NO.	GGØ1
SUPPLIERS REF.NO.	KPGØ1
ORDER/INVOICE NO.	WKS39373
ACCEPTANCE DATE DDMMYY	12Ø184
WARRANTY EXPIRES MMYY	1984
PRICE	3ØØØØ
SERIAL NO.	GG45676
MODEL	747.1ØØB
REPLACEMENT DATE YYYY	1994
REPLACEMENT COST	75ØØØ

ADDITIONAL INFORMATION (The available 57 characters may be entered as a continuous phrase)

TECHNICAL REP: IAN ROWE - Ø2.89653

Make sure you differentiate between: O and Ø; Z and 2; I and 1; S and 5, etc.

SHEET 2 OF 3

Prepared by: H.J. [signature]
Date: 31/01/89

PIERCE MANAGEMENT SERVICES
DICKENSON HOUSE · ALBION STREET · CHIPPING NORTON · OXFORDSHIRE · TELEPHONE

W I M S : A S S E T I N P U T F O R M

ASSET HEADER BLOCK DETAILS (File F10 via PR05)

UNIT	NORTH STEEL WORKS	ASSET NO.	NSWPPRFGØØ2E
SUB-ASSET NO.	ØØØ		
NAME	STANDBY GENERATOR NO 2	LOCATION	POWER PLANT.ROOF
ITEM CODE	EB16	RELIABILITY STATISTICS-Y or N	N

If Y see Reliability Statistics Input Form (Data held in File F12)

ASSET TECHNICAL DETAILS (File F11 via PR27)

MANUFACTURERS REF.NO.	GGØ1	SUPPLIERS REF.NO.	KPGØ1
ORDER/INVOICE NO.	WKS85941		
ACCEPTANCE DATE DDMMYY	12Ø183	WARRANTY EXPIRES MMYY	1984
PRICE	3ØØØØ	SERIAL NO.	GG457ØØ
MODEL	747.1ØØB	REPLACEMENT DATE YYYY	1994
REPLACEMENT COST	75ØØØ		

ADDITIONAL INFORMATION (The available 57 characters may be entered as a continuous phrase)

TECHNICAL REP: IAN ROWE - Ø2.89653

ASSET HEADER BLOCK DETAILS (File F10 via PR05)

UNIT		ASSET NO.	
SUB-ASSET NO.			
NAME		LOCATION	
ITEM CODE		RELIABILITY STATISTICS-Y or N	

If Y see Reliability Statistics Input Form (Data held in File F12)

ASSET TECHNICAL DETAILS (File F11 via PR27)

MANUFACTURERS REF.NO.		SUPPLIERS REF.NO.	
ORDER/INVOICE NO.			
ACCEPTANCE DATE DDMMYY		WARRANTY EXPIRES MMYY	
PRICE		SERIAL NO.	
MODEL		REPLACEMENT DATE YYYY	
REPLACEMENT COST			

ADDITIONAL INFORMATION (The available 57 characters may be entered as a continuous phrase)

ASSET HEADER BLOCK DETAILS (File F10 via PR05)

UNIT		ASSET NO.	
SUB-ASSET NO.			
NAME		LOCATION	
ITEM CODE		RELIABILITY STATISTICS-Y or N	

If Y see Reliability Statistics Input Form (Data held in File F12)

ASSET TECHNICAL DETAILS (File F11 via PR27)

MANUFACTURERS REF.NO.		SUPPLIERS REF.NO.	
ORDER/INVOICE NO.			
ACCEPTANCE DATE DDMMYY		WARRANTY EXPIRES MMYY	
PRICE		SERIAL NO.	
MODEL		REPLACEMENT DATE YYYY	
REPLACEMENT COST			

ADDITIONAL INFORMATION (The available 57 characters may be entered as a continuous phrase)

Make sure you differentiate between: O and Ø; Z and 2; I and 1; S and 5, etc.

SHEET 3 OF 3

Prepared by: A.J.EVANS
Date: 31/01/84

PIERCE MANAGEMENT SERVICES
DICKENSON HOUSE · ALBION STREET · CHIPPING NORTON
OXFORDSHIRE OX7 5BJ · TELEPHONE 0608-41801

WIMS: RELIABILITY STATISTICS INPUT FORM

UNIT				ASSET, EQUIPMENT or VEHICLE NO.				SUB-ASSET, SUB-UNIT or SUB-SYSTEM NO.	
NAME						LOCATION			
HOURS RUN/DAY		DAYS RUN TO DATE		NO. OF FAILURES TO DATE			DOWN TIME TO DATE		
REPAIR TIME/DATE		FAIL. RATE		MFDT		MTBF		MTTR	
UNIT				ASSET, EQUIPMENT or VEHICLE NO.				SUB-ASSET, SUB-UNIT or SUB-SYSTEM NO.	
NAME						LOCATION			
HOURS RUN/DAY		DAYS RUN TO DATE		NO. OF FAILURES TO DATE			DOWN TIME TO DATE		
REPAIR TIME/DATE		FAIL. RATE		MFDT		MTBF		MTTR	
UNIT				ASSET, EQUIPMENT or VEHICLE NO.				SUB-ASSET, SUB-UNIT or SUB-SYSTEM NO.	
NAME						LOCATION			
HOURS RUN/DAY		DAYS RUN TO DATE		NO. OF FAILURES TO DATE			DOWN TIME TO DATE		
REPAIR TIME/DATE		FAIL. RATE		MFDT		MTBF		MTTR	
UNIT				ASSET, EQUIPMENT or VEHICLE NO.				SUB-ASSET, SUB-UNIT or SUB-SYSTEM NO.	
NAME						LOCATION			
HOURS RUN/DAY		DAYS RUN TO DATE		NO. OF FAILURES TO DATE			DOWN TIME TO DATE		
REPAIR TIME/DATE		FAIL. RATE		MFDT		MTBF		MTTR	

NOTES:
1. The Asset, Equipment or Vehicle No. must exist in F10, E10 or V10 respectively.
2. The Indicator (Rel.Stats. Y or N,?) must be set to Y in F10, E10 or V10 either when creating Headers or by Amending.
3. FAILURE RATE = Failures per million hours of use (e.g. 12.235).
4. MFDT = Mean Fractional Dead Time (e.g. 0.125 (= 12.5%)).
5. MTBF = Mean Time Between Failures (e.g. 1234 (hours)).
6. MTTR = Mean Time To Repair (e.g. 11.75 (hours)).
7. Make sure you differentiate between O & Ø; Z & 2; I & 1; S & 5; etc.

Prepared by: Date:		PIERCE MANAGEMENT SERVICES

Asset Number	Sub-Asset	Name	Unit	Location	Item Code	RS?
MSWC3B1G017E	000	STANDBY GENERATOR NO 17	MAIN STEEL WORKS	BLOCK C3-BASEMENT	EB16	N
MSWC3B1G017E	001	BATTERIES - 12V-HD	MAIN STEEL WORKS	BLOCK C3-BASEMENT	BA06	N
MSWC3B1G017E	002	BATTERY CHARGING EQUIPT.	MAIN STEEL WORKS	BLOCK C3-BASEMENT	BA00	N
MSWC3B1G017E	003	BATTERY STANDS & TRAYS	MAIN STEEL WORKS	BLOCK C3-BASEMENT	BA00	N
NSWPPR7G001E	000	STANDBY GENERATOR NO 1	NORTH STEEL WORKS	POWER PLANT.ROOM 7	EB16	N
NSWPPRFG001E	000	STANDBY GENERATOR NO 1	NORTH STEEL WORKS	POWER PLANT.ROOF	EB16	N
NSWPPRFG002E	000	STANDBY GENERATOR NO 2	NORTH STEEL WORKS	POWER PLANT.ROOF	EB16	N

ooo END OF REPORT ooo

ASSET/TYPE OF EQUIPMENT SEARCH Dated 31/01/89 Page 1

Asset: [ ] [ ] [ ] [ ] [ ] [ ] Item Codes: BA06 To BA06

Asset Number	Sub-Asset	Name	Location	Item
MSWC3B1G017E	001	BATTERIES - 12V-HD	BLOCK C3-BASEMENT	BA06

ooo END OF REPORT ooo

ASSET/TYPE OF EQUIPMENT SEARCH Dated 31/01/89 Page 1

Asset: [ ] [PP] [ ] [ ] [ ] [ ] Item Codes: To ZZZZZZ

Asset Number	Sub-Asset	Name	Location	Item
NSWPPR7G001E	000	STANDBY GENERATOR NO 1	POWER PLANT.ROOM 7	EB16
NSWPPRFG001E	000	STANDBY GENERATOR NO 1	POWER PLANT.ROOF	EB16
NSWPPRFG002E	000	STANDBY GENERATOR NO 2	POWER PLANT.ROOF	EB16

ooo END OF REPORT ooo

Asset Number	Sub-Asset	Name	Unit	Location	Item Code	RS?
MSWC3B1G017E	000	STANDBY GENERATOR NO 17	MAIN STEEL WORKS	BLOCK C3-BASEMENT	EB16	Y
MSWC3B1G017E	001	BATTERIES - 12V-HD	MAIN STEEL WORKS	BLOCK C3-BASEMENT	BA06	N
MSWC3B1G017E	002	BATTERY CHARGING EQUIPT.	MAIN STEEL WORKS	BLOCK C3-BASEMENT	BA00	N
MSWC3B1G017E	003	BATTERY STANDS & TRAYS	MAIN STEEL WORKS	BLOCK C3-BASEMENT	BA00	N

ooo END OF REPORT ooo

ASSET FILE SUMMARY Dated 31/01/89 Page 1

Asset Number	Sub-Asset	Name	Unit	Location	Item Code	RS?
NSWPPR7G001E	000	STANDBY GENERATOR NO 1	NORTH STEEL WORKS	POWER PLANT.ROOM 7	EB16	N
NSWPPRFG001E	000	STANDBY GENERATOR NO 1	NORTH STEEL WORKS	POWER PLANT.ROOF	EB16	N
NSWPPRFG002E	000	STANDBY GENERATOR NO 2	NORTH STEEL WORKS	POWER PLANT.ROOF	EB16	N

ooo END OF REPORT ooo

ASSET/TYPE OF EQUIPMENT SEARCH Dated 31/01/89 Page 1

Asset: [ ] [ ] [ ] [G] [ ] [ ] Item Codes: BA00 To EB16

Asset Number	Sub-Asset	Name	Location	Item
MSWC3B1G017E	000	STANDBY GENERATOR NO 17	BLOCK C3-BASEMENT	EB16
MSWC3B1G017E	001	BATTERIES - 12V-HD	BLOCK C3-BASEMENT	BA06
MSWC3B1G017E	002	BATTERY CHARGING EQUIPT.	BLOCK C3-BASEMENT	BA00
MSWC3B1G017E	003	BATTERY STANDS & TRAYS	BLOCK C3-BASEMENT	BA00
NSWPPR7G001E	000	STANDBY GENERATOR NO 1	POWER PLANT.ROOM 7	EB16
NSWPPRFG001E	000	STANDBY GENERATOR NO 1	POWER PLANT.ROOF	EB16
NSWPPRFG002E	000	STANDBY GENERATOR NO 2	POWER PLANT.ROOF	EB16

ooo END OF REPORT ooo

Week No.	W/E Date	Week
1	04/01/87	0187
2	11/01/87	0287
3	18/01/87	0387
4	25/01/87	0487
5	01/02/87	0587
6	08/02/87	0687
7	15/02/87	0787
8	22/02/87	0887
9	01/03/87	0987
10	08/03/87	1087
11	15/03/87	1187
12	22/03/87	1287
13	05/04/87	1487
14	12/04/87	1587
15	19/04/87	1687
16	26/04/87	1787
17	03/05/87	1887
18	10/05/87	1987
19	17/05/87	2087
20	24/05/87	2187
21	31/05/87	2287
22	07/06/87	2387
23	14/06/87	2487
24	21/06/87	2587
25	05/07/87	2787
26	12/07/87	2887
27	19/07/87	2987
28	26/07/87	3087
29	02/08/87	3187
30	09/08/87	3287
31	16/08/87	3387
32	23/08/87	3487
33	30/08/87	3587
34	06/09/87	3687
35	13/09/87	3787
36	20/09/87	3887
37	04/10/87	4087
38	11/10/87	4187
39	18/10/87	4287
40	25/10/87	4387
41	01/11/87	4487
42	08/11/87	4587
43	15/11/87	4687
44	22/11/87	4787
45	29/11/87	4887
46	06/12/87	4987
47	13/12/87	5087
48	20/12/87	5187
49	03/01/88	0188
50	10/01/88	0288
51	17/01/88	0388
52	24/01/88	0488
53	31/01/88	0588
54	07/02/88	0688
55	14/02/88	0788
56	21/02/88	0888
57	28/02/88	0988
58	06/03/88	1088
59	13/03/88	1188

Week No.	W/E Date	Week
60	20/03/88	1288
61	03/04/88	1488
62	10/04/88	1588
63	17/04/88	1688
64	24/04/88	1788
65	01/05/88	1888
66	08/05/88	1988
67	15/05/88	2088
68	22/05/88	2188
69	29/05/88	2288
70	05/06/88	2388
71	12/06/88	2488
72	19/06/88	2588
73	03/07/88	2788
74	10/07/88	2888
75	17/07/88	2988
76	24/07/88	3088
77	31/07/88	3188
78	07/08/88	3288
79	14/08/88	3388
80	21/08/88	3488
81	28/08/88	3588
82	04/09/88	3688
83	11/09/88	3788
84	18/09/88	3888
85	02/10/88	4088
86	09/10/88	4188
87	16/10/88	4288
88	23/10/88	4388
89	30/10/88	4488
90	06/11/88	4588
91	13/11/88	4688
92	20/11/88	4788
93	27/11/88	4888
94	04/12/88	4988
95	11/12/88	5088
96	18/12/88	5188
97	01/01/89	0189
98	08/01/89	0289
99	15/01/89	0389
100	22/01/89	0489
101	29/01/89	0589
102	05/02/89	0689
103	12/02/89	0789
104	19/02/89	0889
105	26/02/89	0989
106	05/03/89	1089
107	12/03/89	1189
108	19/03/89	1289
109	02/04/89	1489
110	09/04/89	1589
111	16/04/89	1689
112	23/04/89	1789
113	30/04/89	1889
114	07/05/89	1989
115	14/05/89	2089
116	21/05/89	2189
117	28/05/89	2289
118	04/06/89	2389

Week No.	W/E Date	Week
119	11/06/89	2489
120	18/06/89	2589
121	02/07/89	2789
122	09/07/89	2889
123	16/07/89	2989
124	23/07/89	3089
125	30/07/89	3189
126	06/08/89	3289
127	13/08/89	3389
128	20/08/89	3489
129	27/08/89	3589
130	03/09/89	3689
131	10/09/89	3789
132	17/09/89	3889
133	01/10/89	4089
134	08/10/89	4189
135	15/10/89	4289
136	22/10/89	4389
137	29/10/89	4489
138	05/11/89	4589
139	12/11/89	4689
140	19/11/89	4789
141	26/11/89	4889
142	03/12/89	4989
143	10/12/89	5089
144	17/12/89	5189
145	31/12/89	0190
146	07/01/90	0290
147	14/01/90	0390
148	21/01/90	0490
149	28/01/90	0590
150	04/02/90	0690
151	11/02/90	0790
152	18/02/90	0890
153	25/02/90	0990
154	04/03/90	1090
155	11/03/90	1190
156	18/03/90	1290
157	01/04/90	1490
158	08/04/90	1590
159	15/04/90	1690
160	22/04/90	1790

ooo END OF REPORT ooo

TRADE	MEANING
A	Maintenance Assistant
B	Bricklayer
C	Building Contractor
D	Painter
E	Maintenance Electrician
F	Maintenance Fitter
H	Contract Plumber
I	Contract Joiner
J	Joiner/Carpenter
K	Contract Painter
M	Maintenance Manager
N	Supervisory Management
P	Maintenance Plumber

ooo END OF REPORT ooo

CODE	MEANING
BLT	DRIVE BELT
BRG	BEARING
CAL	CALIBRATION
CON	CONTROL
CPT	COMPONENT FAILURE
DRT	[illegible]RT
DSC	[illegible]ONNECTION
EAR	[illegible]CHING FAILURE
FUE	FUEL SUPPLY FAILURE
FUS	FUSE FAILURE
IMT	IMPACT DAMAGE
ISN	INSULATION BREAKDOWN
LAP	LAMP FAILURE
LKS	LEAK/FAULTY SEAL
LOS	LOOSE FASTENINGS
LUB	LUBRICATION
MOD	MODIFICATION
MTR	METER READING ERROR
NFF	NO FAULT FOUND
OPC	OPEN CIRCUIT
PBE	PROBE FAILURE
PNE	PNEUMATIC FAILURE
POW	POWER SUPPLY FAILURE
SCT	SHORT CIRCUIT
SHL	SHELL FAILURE
SHT	SHAFT
STG	SEATING
TSN	TENSION SPRING
USM	USER MISUSE
VAN	VANDALISM
WLD	WELD
WTH	WEATHER DAMAGE

ooo END OF REPORT ooo

PRINT GRADE CODES Dated 31/01/89 Page 1

GRADE	MEANING	HOURLY RATE
01	Grade 1 (Labourer)	3.50
02	Grade 2 (Semi-skilled)	4.00
03	Grade 3	4.50
04	Grade 4	5.00
05	Grade 5 Specialist	5.00
06	Chargehand	5.25
07	Foreman	5.50
08	Plant Attendant/Stoker	3.50
09	Apprentice	3.25
10	Buiding Labourer	3.50
11	Building Craftsman	5.00

ooo END OF REPORT ooo

JOB TYPE	MEANING
A0	PLANNED MAINTENANCE
A1	INSURANCE INSPECTION
A2	STATUTORY INSPECTION
B0	CORRECTIVE MAINTENANCE
B1	MAJOR OVERHAUL
C0	CAPITAL WORK
D0	UPGRADING WORK

ooo END OF REPORT ooo

PRINT PRIORITY CODES Dated 31/01/89 Page 1

PRIORITY	MEANING
1	NOT OMISSIBLE/IMMEDIATE
2	OMIT ONLY ONCE/8 HOURS
3	OMIT TWICE/24 HOURS
4	OMIT 3 TIMES/1 WEEK
5	OMIT 4 TIMES/NON-URGENT

ooo END OF REPORT ooo

PRINT STATUS CODES Dated 31/01/89 Page 1

STATUS	MEANING
1	Reported
2	Planned
3	Work In Progress
4	In Progress-on Hold
8	Completed
9	Cancelled

ooo END OF REPORT ooo

WIMS:

PM JOB INPUT FORM

ASSET NUMBER: MSWC3B1GØ17E | SUB-ASSET NUMBER: ØØØ | ASSET NAME: STANDBY GENERATOR NO 17

UNIT: MAIN STEEL WORKS | LOCATION: BLOCK C3-BASEMENT

JOB NUMBER	START DATE	FREQ	TR	C	GR	Q	GR	Q	GR	Q	OM	JOB TYPE	CHECK LIST NO	ADVICE NOTE NO	ESTIMATED TIME	PRIORITY	ACCOUNT CODE NO	ADDITIONAL INFORMATION
1	Ø189	1	E	R	Ø4	1	Ø2	1				AØ	EØ8Ø1	EØ8Ø1	2.ØØ	3	333333	11ØØ-15ØØ HRS. OIL
3	Ø189	6	E	R	Ø4	1	Ø2	1				AØ	EØ8Ø1	EØ8Ø1	4.ØØ	1	333333	AFTER 17ØØ HKS
4	Ø189	12	E	R	Ø5	1	Ø4	1	Ø2	1		AØ	EØ8Ø1	EØ8Ø1	14.ØØ	1	333333	AFTER 17ØØ HKS
6	Ø189	48	E	R	Ø5	1	Ø4	1	Ø2	1		AØ	EØ8Ø1	EØ8Ø1	16.ØØ	1	333333	AFTER 17ØØ HKS
11	Ø189	1	F	S	Ø4	1						AØ	M1ØØ1	M1ØØ1	.5Ø	2	444444	BEFORE JOB 1
14	Ø189	12	F	S	Ø4	1						AØ	M1ØØ1	M1ØØ1	1.ØØ	1	444444	BEFORE JOB 3
15	Ø189	24	F	R	Ø4	1	Ø2	1				AØ	M1ØØ1	M1ØØ1	6.ØØ	1	444444	11ØØ-15ØØ HRS. ONL

13

COMPILED BY: [signature]

DATE: 31/01/89

INPUT BY:

DATE:

NOTES: 1. MAKE SURE YOU DIFFERENTIATE BETWEEN Ø AND O; 1 AND I; 2 AND Z; 5 AND S; ETC.

2. INPUT INTO FILES F16 & F18 VIA PRØG.

PIERCE MANAGEMENT SERVICES

WIMS:

PM JOB INPUT FORM

ASSET NUMBER: MSWC3B1GØ17E | SUB-ASSET NUMBER: ØØ1 | ASSET NAME: BATTERIES - 12V-HD

UNIT: | LOCATION: BLOCK C3-BASEMEN

JOB NUMBER	START DATE	FREQ	TR	C	GR	Q	GR	Q	GR	Q	OM	JOB TYPE	CHECK LIST NO	ADVICE NOTE NO	ESTIMATED TIME	PRIORITY	ACCOUNT CODE NO	ADDITIONAL INFORMATION
22	Ø189	3	E	R	Ø2	1						AØ	EØ7Ø1	EØ7Ø1	1.ØØ	3	333333	PROTECTIVE CLOTH
24	Ø189	12	E	S	Ø2	1						AØ	EØ7Ø1	EØ7Ø1	1.5Ø	2	333333	PROTECTIVE CLOTH
26	Ø189	48	E	S	Ø4	1						AØ	EØ7Ø1	EØ7Ø1	2.5Ø	1	333333	PROTECTI CLOTH

COMPILED BY: [signature]

DATE: 31/01/89

INPUT BY:

DATE:

NOTES: 1. MAKE SURE YOU DIFFERENTIATE BETWEEN- Ø AND O;1 AND I;2 AND Z;5 AND S;ETC.

2. INPUT INTO FILES F16 & F18 VIA PRØG.

PIERCE MANAGEMENT SERVIC

WIMS:

PM JOB INPUT FORM

ASSET NUMBER MSWC3B1GØ17E SUB-ASSET NUMBER ØØ2 ASSET NAME BATTERY CHARGING EQUI[illegible]

UNIT

LOCATION BLOCK C3-BASEMEN[illegible]

JOB NUMBER	START DATE	FREQ	TR	C	GR	Q	GR	Q	GR	Q	OM	JOB TYPE	CHECK LIST NO	ADVICE NOTE NO	ESTIMATED TIME	PRIORITY	ACCOUNT CODE NO	ADDITIONAL INFORMATION
44	Ø189	12	E	S	Ø2	1						AØ	EØ7Ø2	EØ7Ø2	1.ØØ	2	333333	COMBINE WITH JOB
46	Ø189	48	E	S	Ø2	1	Ø4	1				AØ	EØ7Ø2	EØ7Ø2	3.ØØ	1	333333	COMBINE WITH JOB

COMPILED BY: [signature]

DATE: 31/01/89

INPUT BY:

DATE:

NOTES: 1. MAKE SURE YOU DIFFERENTIATE BETWEEN- Ø AND O; 1 AND I; 2 AND Z; 5 AND S; ETC.

2. INPUT INTO FILES F16 & F18 VIA PRØ6.

PIERCE MANAGEMENT SERVIC[illegible]

WIMS:

PM JOB INPUT FORM

ASSET NUMBER: MSWC3B1GØ17E | SUB-ASSET NUMBER: Ø3 | ASSET NAME: BATTERY STANDS & TRAYS
UNIT: | LOCATION: BLOCK C3 - BASEMEN

JOB NUMBER	START DATE	FREQ	TR	C	GR	Q	GR	Q	GR	Q	O M	JOB TYPE	CHECK LIST NO	ADVICE NOTE NO	ESTIMATED TIME	PRIORITY	ACCOUNT CODE NO	ADDITIONAL INFORMATION
66	Ø189	48	E	S	Ø2	2						A	ØEØ7Ø3	EØ7Ø3	2.ØØ	2	333333	COMBINE WITH JOB

COMPILED BY:
DATE:

INPUT BY:
DATE:

NOTES: 1. MAKE SURE YOU DIFFERENTIATE BETWEEN-
Ø AND O; 1 AND I; 2 AND Z; 5 AND S; ETC.
2. INPUT INTO FILES F16 & F18 VIA PRØ6.

PIERCE MANAGEMENT SERVICE

Unit: Allocation:	PM JOB NUMBER RECORD SHEET								Sheet No. 1.		
Asset Number	Sub Asset No	Trade	Frequencies (Number of Weeks)									
			1	3	6	12	24	48	96	144		
MSWC3B1GØ17E	ØØØ	E	(01)	02	(03)	(04)	05	06	07	08	09	10
MSWC3B1GØ17E	ØØØ	F	(11)	12	13	(14)	(15)	16	17	18	19	20
MSWC3B1GØ17E	ØØ1	E	21	(22)	23	(24)	25	(26)	27	28	29	30
			31	32	33	34	35	36	37	38	39	40
MSWC3B1GØ17E	ØØ2	E	41	42	43	(44)	45	(46)	47	48	49	50
			51	52	53	54	55	56	57	58	59	60
MSWC3B1GØ17E	ØØ3	E	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	00
			01	02	03	04	05	06	07	08	09	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	00
			01	02	03	04	05	06	07	08	09	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	00

Job Number : 1
Asset Number : MSWC3B1G017E Sub-Ass No : 000
Unit : MAIN STEEL WORKS Name : STANDBY GENERATOR NO 17
Location : BLOCK C3-BASEMENT Item Code : EB16
Frequency Wks : 1
Start Date : 0189
Trade : E Maintenance Electrician
Category : R
Grade : 04 Grade 4 Qty : 1
Grade : 02 Grade 2 (Semi-skilled) Qty : 1
Grade : Qty : 0
No of Omissions: 0
Job Type : A0 Planned Maintenance
Advice Note No : E0801 Check List No : E0801
Est Time (Hrs) : 2.00
Priority : 3 Omit Twice/24 Hours
Account Code : 333333 ELECTRICAL MAINTENANCE
Addn Info : 1100-1500 HRS ONLY

Job Number : 3
Asset Number : MSWC3B1G017E Sub-Ass No : 000
Unit : MAIN STEEL WORKS Name : STANDBY GENERATOR NO 17
Location : BLOCK C3-BASEMENT Item Code : EB16
Frequency Wks : 6
Start Date : 0189
Trade : E Maintenance Electrician
Category : R
Grade : 04 Grade 4 Qty : 1
Grade : 02 Grade 2 (Semi-skilled) Qty : 1
Grade : Qty : 0
No of Omissions: 0
Job Type : A0 Planned Maintenance
Advice Note No : E0801 Check List No : E0801
Est Time (Hrs) : 4.00
Priority : 1 Not Omissible/Immediate
Account Code : 333333 ELECTRICAL MAINTENANCE
Addn Info : AFTER 1700 HRS

Job Number : 4
Asset Number : MSWC3B1G017E Sub-Ass No : 000
Unit : MAIN STEEL WORKS Name : STANDBY GENERATOR NO 17
Location : BLOCK C3-BASEMENT Item Code : EB16
Frequency Wks : 12
Start Date : 0189
Trade : E Maintenance Electrician
Category : R
Grade : 05 Grade 5 Specialist Qty : 1
Grade : 04 Grade 4 Qty : 1
Grade : 02 Grade 2 (Semi-skilled) Qty : 1
No of Omissions: 0
Job Type : A0 Planned Maintenance
Advice Note No : E0601 Check List No : E0801
Est Time (Hrs) : 14.00
Priority : 1 Not Omissible/Immediate
Account Code : 333333 ELECTRICAL MAINTENANCE
Addn Info : AFTER 1700 HRS

Job Number : 6
Asset Number : MSWC3B1G017E Sub-Ass No : 000
Unit : MAIN STEEL WORKS Name : STANDBY GENERATOR NO 17
Location : BLOCK C3-BASEMENT Item Code : EB16
Frequency Wks : 48
Start Date : 0189
Trade : E Maintenance Electrician
Category : R
Grade : 05 Grade 5 Specialist Qty : 1
Grade : 04 Grade 4 Qty : 1
Grade : 02 Grade 2 (Semi-skilled) Qty : 1
No of Omissions: 0
Job Type : A0 Planned Maintenance
Advice Note No : E0801 Check List No : E0801
Est Time (Hrs) : 16.00
Priority : 1 Not Omissible/Immediate
Account Code : 333333 ELECTRICAL MAINTENANCE
Addn Info : AFTER 1700 HRS

Job Number : 11
Asset Number : MSWC3B1G017E Sub-Ass No : 000
Unit : MAIN STEEL WORKS Name : STANDBY GENERATOR NO 17
Location : BLOCK C3-BASEMENT Item Code : EB16
Frequency Wks : 1
Start Date : 0189
Trade : F Maintenance Fitter
Category : S
Grade : 04 Grade 4 Qty : 1
Grade : Qty : 0
Grade : Qty : 0
No of Omissions: 0
Job Type : A0 Planned Maintenance
Advice Note No : M1001 Check List No : M1001
Est Time (Hrs) : 0.50
Priority : 2 Omit Only Once/8 Hours
Account Code : 444444 MECHANICAL MAINTENANCE
Addn Info : BEFORE JOB 1

Job Number : 14
Asset Number : MSWC3B1G017E Sub-Ass No : 000
Unit : MAIN STEEL WORKS Name : STANDBY GENERATOR NO 17
Location : BLOCK C3-BASEMENT Item Code : EB16
Frequency Wks : 12
Start Date : 0189
Trade : F Maintenance Fitter
Category : S
Grade : 04 Grade 4 Qty : 1
Grade : Qty : 0
Grade : Qty : 0
No of Omissions: 0
Job Type : A0 Planned Maintenance
Advice Note No : M1001 Check List No : M1001
Est Time (Hrs) : 1.00
Priority : 1 Not Omissible/Immediate
Account Code : 444444 MECHANICAL MAINTENANCE
Addn Info : BEFORE JOB 3

Job Number : 15
Asset Number : MSWC3B1G017E Sub-Ass No : 000
Unit : MAIN STEEL WORKS Name : STANDBY GENERATOR NO 17
Location : BLOCK C3-BASEMENT Item Code : EB16
Frequency Wks : 24
Start Date : 0189
Trade : F Maintenance Fitter
Category : R
Grade : 04 Grade 4 Qty : 1
Grade : 02 Grade 2 (Semi-skilled) Qty : 1
Grade : Qty : 0
No of Omissions: 0
Job Type : A0 Planned Maintenance
Advice Note No : M1001 Check List No : M1001
Est Time (Hrs) : 6.00
Priority : 1 Not Omissible/Immediate
Account Code : 444444 MECHANICAL MAINTENANCE
Addn Info : 1100-1500 HRS.ONLY

Job Number : 22
Asset Number : MSWC3B1G017E Sub-Ass No : 001
Unit : MAIN STEEL WORKS Name : BATTERIES - 12V-HD
Location : BLOCK C3-BASEMENT Item Code : BA06
Frequency Wks : 3
Start Date : 0189
Trade : E Maintenance Electrician
Category : R
Grade : 02 Grade 2 (Semi-skilled) Qty : 1
Grade : Qty : 0
Grade : Qty : 0
No of Omissions: 0
Job Type : A0 Planned Maintenance
Advice Note No : E0701 Check List No : E0701
Est Time (Hrs) : 1.00
Priority : 3 Omit Twice/24 Hours
Account Code : 333333 ELECTRICAL MAINTENANCE
Addn Info : PROTECTIVE CLOTHES

Job Number : 24
Asset Number : MSWC3B1G017E Sub-Ass No : 001
Unit : MAIN STEEL WORKS Name : BATTERIES - 12V-HD
Location : BLOCK C3-BASEMENT Item Code : BA06
Frequency Wks : 12
Start Date : 0189
Trade : E Maintenance Electrician
Category : S
Grade : 02 Grade 2 (Semi-skilled) Qty : 1
Grade : Qty : 0
Grade : Qty : 0
No of Omissions: 0
Job Type : A0 Planned Maintenance
Advice Note No : E0701 Check List No : E0701
Est Time (Hrs) : 1.50
Priority : 2 Omit Only Once/8 Hours
Account Code : 333333 ELECTRICAL MAINTENANCE
Addn Info : PROTECTIVE CLOTHES

Job Number : 26
Asset Number : MSWC3B1G017E Sub-Ass No : 001
Unit : MAIN STEEL WORKS Name : BATTERIES - 12V-HD
Location : BLOCK C3-BASEMENT Item Code : BA06
Frequency Wks : 48
Start Date : 0189
Trade : E Maintenance Electrician
Category : S
Grade : 04 Grade 4 Qty : 1
Grade : Qty : 0
Grade : Qty : 0
No of Omissions: 0
Job Type : A0 Planned Maintenance
Advice Note No : E0701 Check List No : E0701
Est Time (Hrs) : 2.50
Priority : 1 Not Omissible/Immediate
Account Code : 333333 ELECTRICAL MAINTENANCE
Addn Info : PROTECTIVE CLOTHES

Job Number : 44
Asset Number : MSWC3B1G017E Sub-Ass No : 002
Unit : MAIN STEEL WORKS Name : BATTERY CHARGING EQUIPT.
Location : BLOCK C3-BASEMENT Item Code : BA00
Frequency Wks : 12
Start Date : 0189
Trade : E Maintenance Electrician
Category : S
Grade : 02 Grade 2 (Semi-skilled) Qty : 1
Grade : Qty : 0
Grade : Qty : 0
No of Omissions: 0
Job Type : A0 Planned Maintenance
Advice Note No : E0702 Check List No : E0702
Est Time (Hrs) : 1.00
Priority : 2 Omit Only Once/8 Hours
Account Code : 333333 ELECTRICAL MAINTENANCE
Addn Info : COMBINE WITH JOB24

Job Number : 46
Asset Number : MSWC3B1G017E Sub-Ass No : 002
Unit : MAIN STEEL WORKS Name : BATTERY CHARGING EQUIPT.
Location : BLOCK C3-BASEMENT Item Code : BA00
Frequency Wks : 48
Start Date : 0189
Trade : _ Maintenance Electrician
Category : S
Grade : 02 Grade 2 (Semi-skilled) Qty : 1
Grade : 04 Grade 4 Qty : 1
Grade : Qty : 0
No of Omissions: 0
Job Type : A0 Planned Maintenance
Advice Note No : E0702 Check List No : E0702
Est Time (Hrs) : 3.00
Priority : 1 Not Omissible/Immediate
Account Code : 333333 ELECTRICAL MAINTENANCE
Addn Info : COMBINE WITH JOB26

Job Number : 66
Asset Number : MSWC3B1G017E Sub-Ass No : 003
Unit : MAIN STEEL WORKS Name : BATTERY STANDS & TRAYS
Location : BLOCK C3-BASEMENT Item Code : BA00
Frequency Wks : 48
Start Date : 0189
Trade : E Maintenance Electrician
Category : S
Grade : 02 Grade 2 (Semi-skilled) Qty : 2
Grade : Qty : 0
Grade : Qty : 0
No of Omissions: 0
Job Type : A0 Planned Maintenance
Advice Note No : E0703 Check List No : E0703
Est Time (Hrs) : 2.00
Priority : 2 Omit Only Once/8 Hours
Account Code : 333333 ELECTRICAL MAINTENANCE
Addn Info : COMBINE WITH JOB26

ooo END OF REPORT ooo

PM JOB SEARCH Dated 31/01/89 Page 1

ALL NON OMMISSIBLE PM JOBS

Asset Number	Sub Ass	Trd Cat	Ty pe	Est Time	Pr ty	Manning Levels	No Omsn	Freq	St us	Job No	Strt Week
MSWC3B1G017E STANDBY GENERATOR NO 17	000	E	R	A0	4.00	1	1 04, 1 02, AFTER 1700 HRS	0	6	3	0189
MSWC3B1G017E STANDBY GENERATOR NO 17	000	E	R	A0	14.00	1	1 05, 1 04, 1 02 AFTER 1700 HRS	0	12	4	0189
MSWC3B1G017E STANDBY GENERATOR NO 17	000	E	R	A0	16.00	1	1 05, 1 04, 1 02 AFTER 1700 HRS	0	48	6	0189
MSWC3B1G017E STANDBY GENERATOR NO 17	000	F	S	A0	1.00	1	1 04, , BEFORE JOB 3	0	12	14	0189
MSWC3B1G017E STANDBY GENERATOR NO 17	000	F	R	A0	6.00	1	1 04, 1 02, 1100-1500 HRS.ONLY	0	24	15	0189
MSWC3B1G017E BATTERIES - 12V-HD	001	E	S	A0	2.50	1	1 04, , PROTECTIVE CLOTHES	0	48	26	0189
MSWC3B1G017E BATTERY CHARGING EQUIPT.	002	E	S	A0	3.00	1	1 02, 1 04, COMBINE WITH JOB26	0	48	46	0189

ooo END OF REPORT ooo

PM JOB SEARCH Dated 31/01/89 Page 1

NON OMMISSIBLE PM JOBS - (F)

Asset Number	Sub Ass	Trd Cat	Ty pe	Est Time	Pr ty	Manning Levels	No Omsn	Freq	St us	Job No	Strt Week
MSWC3B1G017E STANDBY GENERATOR NO 17	000	F	S	A0	1.00	1	1 04, , BEFORE JOB 3	0	12	14	0189
MSWC3B1G017E STANDBY GENERATOR NO 17	000	F	R	A0	6.00	1	1 04, 1 02, 1100-1500 HRS.ONLY	0	24	15	0189

ooo END OF REPORT ooo

ANNUAL PM COMMITMENT (Elect.)

Week	W/E Date	PM Jobs Planned	PM Hours Planned
0189	01/01/89	4	23.50
0289	08/01/89	1	2.00
0389	15/01/89	1	2.00
0489	22/01/89	2	3.00
0589	29/01/89	1	2.00
0689	05/02/89	1	2.00
0789	12/02/89	2	5.00
0889	19/02/89	1	2.00
0989	26/02/89	1	2.00
1089	05/03/89	2	3.00
1189	12/03/89	1	2.00
1289	19/03/89	1	2.00
1489	02/04/89	3	16.50
1589	09/04/89	1	2.00
1689	16/04/89	1	2.00
1789	23/04/89	2	3.00
1889	30/04/89	1	2.00
1989	07/05/89	1	2.00
2089	14/05/89	2	5.00
2189	21/05/89	1	2.00
2289	28/05/89	1	2.00
2389	04/06/89	2	3.00
2489	11/06/89	1	2.00
2589	18/06/89	1	2.00
2789	02/07/89	3	16.50
2889	09/07/89	1	2.00
2989	16/07/89	1	2.00
3089	23/07/89	2	3.00
3189	30/07/89	1	2.00
3289	06/08/89	1	2.00
3389	13/08/89	2	5.00
3489	20/08/89	1	2.00
3589	27/08/89	1	2.00
3689	03/09/89	2	3.00
3789	10/09/89	1	2.00
3889	17/09/89	1	2.00
4089	01/10/89	3	16.50
4189	08/10/89	1	2.00
4289	15/10/89	1	2.00
4389	22/10/89	2	3.00
4489	29/10/89	1	2.00
4589	05/11/89	1	2.00
4689	12/11/89	2	5.00
4789	19/11/89	1	2.00
4889	26/11/89	1	2.00
4989	03/12/89	2	3.00
5089	10/12/89	1	2.00
5189	17/12/89	1	2.00
TOTAL		69	181.00

Ave. Hours/ Week : 3.77

ooo END OF REPORT ooo

ANNUAL PM COMMITMENT (Mech.)

Week	W/E Date	PM Jobs Planned	PM Hours Planned
0189	01/01/89	1	6.00
0289	08/01/89	1	0.50
0389	15/01/89	1	0.50
0489	22/01/89	1	0.50
0589	29/01/89	1	0.50
0689	05/02/89	1	0.50
0789	12/02/89	1	0.50
0889	19/02/89	1	0.50
0989	26/02/89	1	0.50
1089	05/03/89	1	0.50
1189	12/03/89	1	0.50
1289	19/03/89	1	0.50
1489	02/04/89	1	1.00
1589	09/04/89	1	0.50
1689	16/04/89	1	0.50
1789	23/04/89	1	0.50
1889	30/04/89	1	0.50
1989	07/05/89	1	0.50
2089	14/05/89	1	0.50
2189	21/05/89	1	0.50
2289	28/05/89	1	0.50
2389	04/06/89	1	0.50
2489	11/06/89	1	0.50
2589	18/06/89	1	0.50
2789	02/07/89	1	6.00
2889	09/07/89	1	0.50
2989	16/07/89	1	0.50
3089	23/07/89	1	0.50
3189	30/07/89	1	0.50
3289	06/08/89	1	0.50
3389	13/08/89	1	0.50
3489	20/08/89	1	0.50
3589	27/08/89	1	0.50
3689	03/09/89	1	0.50
3789	10/09/89	1	0.50
3889	17/09/89	1	0.50
4089	01/10/89	1	1.00
4189	08/10/89	1	0.50
4289	15/10/89	1	0.50
4389	22/10/89	1	0.50
4489	29/10/89	1	0.50
4589	05/11/89	1	0.50
4689	12/11/89	1	0.50
4789	19/11/89	1	0.50
4889	26/11/89	1	0.50
4989	03/12/89	1	0.50
5089	10/12/89	1	0.50
5189	17/12/89	1	0.50
TOTAL		48	36.00

Ave. Hours/ Week : 0.75

ooo END OF REPORT ooo

PM JOB PLAN - WKS 0189 TO 0489

Asset Number	Sub Ass	Trd Cat	Ty pe	Est Time	Pr ty	Manning Levels	No Omsn	Req No /Freq	St us	Job No	Week Plnd
MSWC3B1G017E STANDBY GENERATOR NO 17	000	E	R A0	16.00	1	1 05 1 04 1 02 AFTER 1700 HRS	1	48		6	0189
MSWC3B1G017E STANDBY GENERATOR NO 17	000	F	R A0	6.00	1	1 04 1 02 1100-1500 HRS.ONLY	1	24		15	0189
MSWC3B1G017E BATTERIES - 12V-HD	001	E	S A0	2.50	1	1 04 PROTECTIVE CLOTHES	1	48		26	0189
MSWC3B1G017E BATTERY CHARGING EQUIPT.	002	E	S A0	3.00	1	1 02 1 04 COMBINE WITH JOB26	1	48		46	0189
MSWC3B1G017E BATTERY STANDS & TRAYS	003	E	S A0	2.00	2	2 02 COMBINE WITH JOB26	1	48		66	0189
MSWC3B1G017E STANDBY GENERATOR NO 17	000	E	R A0	2.00	3	1 04 1 02 1100-1500 HRS ONLY	1	1		1	0289
MSWC3B1G017E STANDBY GENERATOR NO 17	000	F	S A0	0.50	2	1 04 BEFORE JOB 1	1	1		11	0289
MSWC3B1G017E STANDBY GENERATOR NO 17	000	E	R A0	2.00	3	1 04 1 02 1100-1500 HRS ONLY	1	1		1	0389
MSWC3B1G017E STANDBY GENERATOR NO 17	000	F	S A0	0.50	2	1 04 BEFORE JOB 1	1	1		11	0389
MSWC3B1G017E STANDBY GENERATOR NO 17	000	E	R A0	2.00	3	1 04 1 02 1100-1500 HRS ONLY	1	1		1	0489
MSWC3B1G017E STANDBY GENERATOR NO 17	000	F	S A0	0.50	2	1 04 BEFORE JOB 1	1	1		11	0489
MSWC3B1G017E BATTERIES - 12V-HD	001	E	R A0	1.00	3	1 02 PROTECTIVE CLOTHES	1	3		22	0489

TOTAL JOBS: 12 TIME: 38.00

ooo END OF REPORT ooo

NO. OF PM JOB OMMISSIONS

Asset Number	Sub Ass	Job No	Trade	Job Type	Priority	Frequency	No of Consec Omissions
MSWC3B1G017E	000	1	E	AO	3	1	1
MSWC3B1G017E	000	3	E	AO	1	6	1
MSWC3B1G017E	000	4	E	AO	1	12	1
MSWC3B1G017E	000	6	E	AO	1	48	1
MSWC3B1G017E	000	11	F	AO	2	1	1
MSWC3B1G017E	000	14	F	AO	1	12	1
MSWC3B1G017E	000	15	F	AO	1	24	1
MSWC3B1G017E	001	22	E	AO	3	3	1
MSWC3B1G017E	001	24	E	AO	2	12	1
MSWC3B1G017E	001	26	E	AO	1	48	1
MSWC3B1G017E	002	44	E	AO	2	12	1
MSWC3B1G017E	002	46	E	AO	1	48	1
MSWC3B1G017E	003	66	E	AO	2	48	1

ooo END OF REPORT ooo

Job Number : 100000
Asset Number : MSWC3B1G017E or <ESC> Sub Asset : 000
Unit : MAIN STEEL WORKS Name : STANDBY GENERATOR NO 17
Location : BLOCK C3-BASEMENT Item Code : EB16

Date : 02/02/89
Description : OIL LAEKING
Trade : F Maintenance Fitter
Category : S
Grade : 04 Grade 4 Qty : 1
Grade : Qty : 0
Grade : Qty : 0
Job Type : B0 Corrective Maintenance
Advice Note No. : Est. Time (Hrs) : 0.50
Priority : 1 Not Omissible/Immediate
Account Code : 222222 Defect Maintenance
Requisition No. : PHONE
Status : 1 Reported Week Planned :

Job Number : 100001
Asset Number : NSWPPR7G001E or <ESC> Sub Asset : 000
Unit : NORTH STEEL WORKS Name : STANDBY GENERATOR NO 1
Location : POWER PLANT.ROOM 7 Item Code : EB16

Date : 02/02/89
Description : ENGINE FAILS TO START
Trade : F Maintenance Fitter
Category : S
Grade : 04 Grade 4 Qty : 1
Grade : Qty : 0
Grade : Qty : 0
Job Type : B0 Corrective Maintenance
Advice Note No. : Est. Time (Hrs) : 0.50
Priority : 1 Not Omissible/Immediate
Account Code : 222222 Defect Maintenance
Requisition No. : VERBAL
Status : 1 Reported Week Planned :

Job Number : 100002
Asset Number : NSWPPRFG002E or <ESC> Sub Asset : 000
Unit : NORTH STEEL WORKS Name : STANDBY GENERATOR NO 2
Location : POWER PLANT.ROOF Item Code : EB16

Date : 02/02/89
Description : GAS OIL FUMES NOTED
Trade : F Maintenance Fitter
Category : R
Grade : 02 Grade 2 (Semi-skilled) Qty : 1
Grade : Qty : 0
Grade : Qty : 0
Job Type : B0 Corrective Maintenance
Advice Note No. : Est. Time (Hrs) : 0.50
Priority : 1 Not Omissible/Immediate
Account Code : 222222 Defect Maintenance
Requisition No. : 123456
Status : 1 Reported Week Planned :

ooo END OF REPORT ooo

REPORTED DEFECT JOBS - 020289

Asset Number	Sub Ass	Trd Cat	Ty pe	Est Time	Pr ty	Manning Levels	Req No	St us	Job No	Week Plnd
MSWC3B1G017E STANDBY GENERATOR NO 17	000	F S	B0	0.50	1	1 04, , OIL LAEKING	PHONE	1	100000	
NSWPPR7G001E STANDBY GENERATOR NO 1	000	F S	B0	0.50	1	1 04, , ENGINE FAILS TO START	VERBAL	1	100001	
NSWPPRFG002E STANDBY GENERATOR NO 2	000	F R	B0	0.50	1	1 02, , GAS OIL FUMES NOTED	123456	1	100002	
TOTAL JOBS	3	TIME		1.50						

ooo END OF REPORT ooo

W.I.M.S. ASSET MANAGEMENT Date : 31/01/89

PLAN DEFECT JOBS CONFIRM SAVE (Y/N) ? Y

Job Number : 100001 or <ESC> for Menu
Asset Number : NSWPPR7G001E Sub Asset : 000
Unit : NORTH STEEL WORKS Name : STANDBY GENERATOR NO 1
Location : POWER PLANT.ROOM 7 Item Code : EB16

Description : ENGINE FAILS TO START
Status : 2 Planned
Week planned : 0589

ALL JOBS PLANNED WEEK 0589

Asset Number	Sub Ass	Trd Cat	Ty pe	Est Time	Pr ty	Manning Levels	No Omsn	Req No /Freq	St us	Job No	Week Plnd
MSWC3B1G017E	000	E R	A0	2.00	3	1 04 1 02	1	1		1	0589
STANDBY GENERATOR NO 17						1100-1500 HRS ONLY					
MSWC3B1G017E	000	F S	A0	0.50	2	1 04	1	1		11	0589
STANDBY GENERATOR NO 17						BEFORE JOB 1					
MSWC3B1G017E	000	F S	B0	0.50	1	1 04		PHONE	3	100000	0589
STANDBY GENERATOR NO 17						OIL LAEKING					
NSWPPR7G001E	000	F S	B0	0.50	1	1 C4		VERBAL	3	100001	0589
STANDBY GENERATOR NO 1						ENGINE FAILS TO START					

TOTAL JOBS: 4 TIME: 3.50

ooo END OF REPORT ooo

1100-1300 HRS ONLY

Asset No: MSWC3B1G017E | Sub Asset: 000 | No of Men: 2
Unit: MAIN STEEL WORKS | Date Req'd:
Asset Name: STANDBY GENERATOR NO 17

This job has not been carried out on the last 1 consecutive occasions

Location	Item Code	Week No	Advice Note	Check List	Priority	Frequency	Ref Stats
BLOCK C3-BASEMENT	EB16	0589	E0801	E0801	3	1	N

Trade	Grade(s)	No OM	Category	Est Time	Rev Est Time	Job Type	Account Code	Req'n No
E	04 02		R	2.00		A0	333333	

ACTUAL JOB DETAIL (CONDENSED TO 30 CHARACTERS)

TICK BOXES: 1 2 3 4 5 6 7 8 9 0

Fault Code | Trade | Grade | Time Taken | O/T Factor | SJFD | Failure? | Downtime

Rev SJFD | Interstate Travel

Contract Cost | Supervisors Signature & Date

Batched Hours | Total Actual Hours

Job completed | Extra work req'd | Extra work completed | No access | No time | Spares: Used | No stock | On order | Specified

Date Completed

WORKS DEPARTMENT — WORK ORDER DOCKET

Bonus Group | Meas. Cat. | Docket No: 2 | Job No: 11

Additional Information Job Description: BEFORE JOB 1

Asset No: MSWC3B1G017E | Sub-Asset: 000 | No of Men: 1
Unit: MAIN STEEL WORKS | Date Req'd:
Asset Name: STANDBY GENERATOR NO 17

This job has not been carried out on the last 1 consecutive occasions

Location	Item Code	Week No	Advice Note	Check List	Priority	Frequency	Ref Stats
BLOCK C3-BASEMENT	EB16	0589	M1001	M1001	2	1	N

Trade	Grade(s)	No OM	Category	Est Time	Rev Est Time	Job Type	Account Code	Req'n No
F	04		S	0.50		A0	444444	

ACTUAL JOB DETAIL (CONDENSED TO 30 CHARACTERS)

TICK BOXES: 1 2 3 4 5 6 7 8 9 0

Fault Code | Trade | Grade | Time Taken | O/T Factor | SJFD | Failure? | Downtime

Rev SJFD | Interstate Travel

Contract Cost | Supervisors Signature & Date

Batched Hours | Total Actual Hours

Job completed | Extra work req'd | Extra work completed | No access | No time | Spares: Used | No stock | On order | Specified

Date Completed

WORKS DEPARTMENT — WORK ORDER DOCKET

Bonus Group | Meas. Cat. | Docket No: 3 | Job No: 100000

Additional Information Job Description: OIL LAEKING

Asset No: MSWC3B1G017E | Sub-Asset: 000 | No of Men: 1
Unit: MAIN STEEL WORKS | Date Req'd: 02/02/89
Asset Name: STANDBY GENERATOR NO 17

Location	Item Code	Week No	Advice Note	Check List	Priority	Frequency	Ref Stats
BLOCK C3-BASEMENT	EB16	0589			1		N

Trade	Grade(s)	No OM	Category	Est Time	Rev Est Time	Job Type	Account Code	Req'n No
F	04		S	0.50		B0	222222	PHONE

ACTUAL JOB DETAIL (CONDENSED TO 30 CHARACTERS)

TICK BOXES: 1 2 3 4 5 6 7 8 9 0

Fault Code | Trade | Grade | Time Taken | O/T Factor | SJFD | Failure? | Downtime

Rev SJFD | Interstate Travel

Contract Cost | Supervisors Signature & Date

Batched Hours | Total Actual Hours

Job completed | Extra work req'd | Extra work completed | No access | No time | Spares: Used | No stock | On order | Specified

Date Completed

WORKS DEPARTMENT — WORK ORDER DOCKET

Bonus Group | Meas. Cat. | Docket No: 4 | Job No: 100001

Additional Information Job Description: ENGINE FAILS TO START

Asset No: NSWPPR7G001E | Sub Asset: 000 | No of Men: 1
Unit: NORTH STEEL WORKS | Date Req'd: 02/02/89
Asset Name: STANDBY GENERATOR NO 1

Location	Item Code	Week No	Advice Note	Check List	Priority	Frequency	Ref Stats
POWER PLANT ROOM 7	EB16	0589			1		N

Trade	Grade(s)	No OM	Category	Est Time	Rev Est Time	Job Type	Account Code	Req'n No
F	04		S	0.50		B0	222222	VERBAL

ACTUAL JOB DETAIL (CONDENSED TO 30 CHARACTERS)

TICK BOXES: 1 2 3 4 5 6 7 8 9 0

Fault Code | Trade | Grade | Time Taken | O/T Factor | SJFD | Failure? | Downtime

Rev SJFD | Interstate Travel

Contract Cost | Supervisors Signature & Date

Batched Hours | Total Actual Hours

Job completed | Extra work req'd | Extra work completed | No access | No time | Spares: Used | No stock | On order | Specified

NAME	No	HRS		DATE	TIME
A ATKINS (GRADE 4)	1Φ1	Φ 5Φ	OFF	Φ2	1Φ.3Φ
			ON	Φ3	1Φ.6Φ
			OFF		
			ON		
			OFF		
			ON		
			OFF		
			ON		
			OFF		
			ON		
			OFF		
			ON		
TOTAL TIME TAKEN (completed by sup'r. or p/e)		Φ 5Φ	Tradesman's signature A Atkins		

Changes to work/job detail

TOOK OUT FILTER - CLEANED IT - CHECKED GAS OIL COMING THROUGH. O.K - MUST BE A JOB FOR THE ELECTRICIANS

Tradesman also to complete TICK BOXES overleaf

NAME	No	HRS		DATE	TIME
C. COOKE (GRADE)	1Φ3	2.75	OFF	Φ2	12 45
			ON	Φ2	1Φ.Φ1
			OFF		
			ON		
			OFF		
			ON		
			OFF		
			ON		
			OFF		
			ON		
			OFF		
			ON		
TOTAL TIME TAKEN (completed by sup'r. or p/e)		2.75	Tradesman's signature C Cooke		

Changes to work/job detail

FITTED NEW GAS OIL TUBE

Tradesman also to complete TICK BOXES overleaf

NAME	No	HRS		DATE	TIME
A ATKINS (GRADE 4)	1Φ1	1.5Φ	OFF	Φ3	16 3Φ
			ON	Φ2	17 ΦΦ
B BAKER (GRADE 2)	1Φ2	1.5Φ	OFF	Φ3	18 3Φ
			ON	Φ2	17.ΦΦ
			OFF		
			ON		
			OFF		
			ON		
			OFF		
			ON		
			OFF		
			ON		
TOTAL TIME TAKEN (completed by sup'r. or p/e)		3.ΦΦ	Tradesman's signature A Atkins		

Changes to work/job detail

P.M. COMPLETED

WOULD NOT START! STARTER M/CIRC O.O.O.

HAND CRANKED GENERATOR.

Tradesman also to complete TICK BOXES overleaf

NAME	No	HRS		DATE
A. ATKINS (GRADE 4)	1Φ1	Φ.75	OFF	Φ2
			ON	Φ2
			OFF	
			ON	
			OFF	
			ON	
			OFF	
			ON	
			OFF	
			ON	
			OFF	
			ON	
TOTAL TIME TAKEN (completed by sup'r. or p/e)		Φ.75	Tradesman's sign	

Changes to work/job detail

P.M. COMPLETED

ALL O.K

Tradesman also to complete TICK BOXES overleaf

1100-1500 HRS ONLY

Asset No: MSWC3B1G017E | Sub-Asset: 000 | No. of Mem: 2
Unit: MAIN STEEL WORKS | Date Req'd:
Asset Name: STANDBY GENERATOR NO 17
Location: BLOCK C3-BASEMENT | Item Code: EB16 | Work No: 0589 | Advice Note: E0801 | Check List: E0801 | Priority: 3 | Frequency: 1 | Ref Stats: N
Trade: E | Grade(s): 04 02 | No OM | Category: R | Est Time: 2.00 | Rev Est Time: | Job Type: A0 | Account Code: 333333 | Req'n No:

This job has not been carried out on the last 1 consecutive occasions

ACTUAL JOB DETAIL (CONDENSED TO 30 CHARACTERS): PM COMPLETED - NO FAULTS FOUND
TICK BOXES: 1 2 3 4 5 6 7 8 9 0 | Spares | Job completed ✓ | Extra work req'd | Extra work completed | No access | No time | Used | No stock | On order | Spec-fied

Fault Code: - - - | Trade: F | Grade: 04 | Time Taken: 0.75 | OT Factor: 1.00 | SJFD | Failure? N ✓ | Downtime | Rev SJFD | Interstate Travel | Contract Cost | Batched Hours | Total Actual Hours: 0.75
Supervisors Signature & Date: J. Boggs 04/02/89

Date Completed: 03/02/89 | Bonus Group | Meas Cat | Docket No: 2 | Job No: 11
Additional Information Job Description: BEFORE JOB 1

Asset No: MSWC3B1G017E | Sub-Asset: 000 | No. of Mem: 1
Unit: MAIN STEEL WORKS | Date Req'd:
Asset Name: STANDBY GENERATOR NO 17
Location: BLOCK C3-BASEMENT | Item Code: EB16 | Work No: 0589 | Advice Note: M1001 | Check List: M1001 | Priority: 2 | Frequency: 1 | Ref Stats: N
Trade: F | Grade(s): 04 | No OM | Category: S | Est Time: 0.50 | Rev Est Time: | Job Type: A0 | Account Code: 444444 | Req'n No:

This job has not been carried out on the last 1 consecutive occasions

ACTUAL JOB DETAIL (CONDENSED TO 30 CHARACTERS): PM COMPLETED-NEW STARTER REQ'D
TICK BOXES: 1 2 3 4 5 6 7 8 9 0 | Spares | Job completed ✓ | Extra work req'd ✓ | Extra work completed | No access | No time | Used | No stock | On order | Spec-fied

Fault Code: - - - | Trade: | Grade: 04 02 | Time Taken: 1.50 1.50 | OT Factor: 1.50 1.50 | SJFD | Failure? N ✓ | Downtime | Rev SJFD | Interstate Travel | Contract Cost | Batched Hours | Total Actual Hours: 3.00
Supervisors Signature & Date: J. Boggs 04/02/89

Date Completed: 02/02/89 | Bonus Group | Meas Cat | Docket No: 3 | Job No: 100000
Additional Information Job Description: GIL LAEKING

Asset No: MSWC3B1G017E | Sub-Asset: 000 | No. of Mem: 1
Unit: MAIN STEEL WORKS | Date Req'd: 02/02/89
Asset Name: STANDBY GENERATOR NO 17
Location: BLOCK C3-BASEMENT | Item Code: EB16 | Work No: 0589 | Advice Note: | Check List: | Priority: 1 | Frequency: | Ref Stats: N
Trade: F | Grade(s): 04 | No OM | Category: S | Est Time: 0.50 | Rev Est Time: | Job Type: B0 | Account Code: 222222 | Req'n No: PHONE

ACTUAL JOB DETAIL (CONDENSED TO 30 CHARACTERS): FITTED NEW FUEL SUPPLY PIPE
TICK BOXES: 1 2 3 4 5 6 7 8 9 0 | Spares | Job completed | Extra work req'd | Extra work completed | No access | No time | Used ✓ | No stock | On order | Spec-fied

Fault Code: L K S E | Trade: | Grade: 02 | Time Taken: 2.75 | OT Factor: 1.00 | SJFD | Failure? N ✓ | Downtime | Rev SJFD | Interstate Travel | Contract Cost | Batched Hours | Total Actual Hours
Supervisors Signature & Date: J. Boggs 04/02/89

Date Completed: 02/02/89 | Bonus Group | Meas Cat | Docket No: 4 | Job No: 100001
Additional Information Job Description: ENGINE FAILS TO START

Asset No: NSWPPR7G001E | Sub-Asset: 000 | No. of Mem: 1
Unit: NORTH STEEL WORKS | Date Req'd: 02/02/89
Asset Name: STANDBY GENERATOR NO 1
Location: POWER PLANT.ROOM 7 | Item Code: EB16 | Work No: 0589 | Advice Note: | Check List: | Priority: 1 | Frequency: | Ref Stats: N
Trade: F | Grade(s): 04 | No OM | Category: S | Est Time: 0.50 | Rev Est Time: | Job Type: B0 | Account Code: 222222 | Req'n No: VERBAL

ACTUAL JOB DETAIL (CONDENSED TO 30 CHARACTERS): CLEANED FILTER-FUEL SUPPLY OK
TICK BOXES: 1 2 3 4 5 6 7 8 9 0 | Spares | Job completed | Extra work req'd | Extra work completed ✓ | No access | No time | Used | No stock | On order | Spec-fied

Fault Code: F U E | Trade: | Grade: 04 | Time Taken: 0.50 | OT Factor: 1.00 | SJFD | Failure? N ✓ | Downtime | Rev SJFD | Interstate Travel | Contract Cost | Batched Hours | Total Actual Hours: 0.50
Supervisors Signature & Date: J. Boggs 04/02/89

WEEKLY FEEDBACK PRINT Dated 31/01/89 Page 1

FEEDBACK FOR WEEK 0589

Asset Number	Sub Ass	Docket	Job No	Date	Tr de	C t	Est Time	Acc Code	Act Time	Req No	Item	Tick Boxes 1234567890	Flt	D/Time	Cost
MSWC3B1G017E	000	1	1	02/02/89	F	R	2.00	333333	0.75		EB16	/			3.75
MSWC3B1G017E	000	2	11	03/02/89	F	S	0.50	444444	3.00		EB16	//			20.25
MSWC3B1G017E	000	3	100000	02/02/89	E	S	0.50	222222	2.75	PHONE	EB16	/ /	LKS		11.00
MSWPPR7G001E	000	4	100001	02/02/89	F	S	0.50	222222	0.50	VERBAL	EB16	/	FUE		2.50

ooo END OF REPORT ooo

The following docket numbers have been used to update the
Main History File

1 2 3 4

ooo END OF REPORT ooo

HISTORY UPDATE REPORT Dated 31/01/89 Page 1

The following docket numbers have been used to update the
Labour Cost Summary

1 2 3 4

ooo END OF REPORT ooo

SPARES USED UPDATE REPORT Dated 31/01/89 Page 1

Docket	Part No	Docket	Part No	Docket	Part No
3	EMPPL002	3	EPPFT020		

File F47 Weekly Spares Cleared

ooo END OF REPORT ooo

SPARES USED UPDATE REPORT Dated 31/01/89 Page 2

Account	Date	Part No	Account	Date	Part No

File F48 Weekly Consumable Spares Cleared

ooo END OF REPORT ooo

HISTORY UPDATE REPORT Dated 31/01/89 Page 1

The following Dockets have been Cleared from the Weekly History File

1 2 3 4

ooo END OF REPORT ooo

LABOUR COST SUMMARY RANGE ' ' TO '999999' Dated 31/01/89 Page 1

Account Code	Account Name	Expenditure Week	Cum. Expenditure
000505	HEAVY PLANT MAINTENANCE	0.00	0.00
000555	GENERAL MAINTENANCE	0.00	0.00
007214	TRANSPORT MAINTENANCE	0.00	0.00
073293	TEST EQUIPMENT	0.00	0.00
101000	PRODUCTION LINE 1-A	0.00	0.00
111111	PLANNED MAINTENANCE	0.00	0.00
112152	P.M - 712	0.00	0.00
112252	P.M. - DGH	0.00	0.00
112330	REPAIR - 712	0.00	0.00
222222	DEFECT MAINTENANCE	13.50	13.50
327600	INDUSTRIAL CLEANING	0.00	0.00
333333	ELECTRICAL MAINTENANCE	3.75	3.75
404419	CONTROL CENTRE COSTS	0.00	0.00
444444	MECHANICAL MAINTENANCE	20.25	20.25
666666	BREAKDOWNS - 712	0.00	0.00
999999	SPECIAL PROJ'S - DGH	0.00	0.00
	TOTALS	37.50	37.50

ooo END OF REPORT ooo

TECHNICAL HISTORY FOR MSW

Asset Number : MSWC3B1G017E
Unit : MAIN STEEL WORKS
Location : BLOCK C3-BASEMENT

Sub Asset : 000
Name : STANDBY GENERATOR NO 17
Item Code : EB16

Docket	Job No	Tr de	Ty pe	Ct	Req No Date	Tick Boxes 1234567890	Flt	Job Detail
1	1	F	A0	R	02/02/89	/		PM COMPLETED - NO FAULT FOUND
2	11	F	A0	S	03/02/89	//		PM COMPLETED-NEW STARTER REQ'D
3	100000	E	B0	S	PHONE 02/02/89	/ /	LKS	FITTED NEW FUEL SUPPLY PIPE
								Part No: EMPPL002 Qty: 2
								Part No: EPPFT020 Qty: 4

ooo END OF REPORT ooo

TECHNICAL HISTORY ANALYSIS Dated 31/01/89 Page 1

TECHNICAL HISTORY NSW

Asset Number : NSWPPR7G001E
Unit : NORTH STEEL WORKS
Location : POWER PLANT.ROOM 7

Sub Asset : 000
Name : STANDBY GENERATOR NO 1
Item Code : EB16

Docket	Job No	Tr de	Ty pe	Ct	Req No Date	Tick Boxes 1234567890	Flt	Job Detail
4	100001	F	B0	S	VERBAL 02/02/89	/		FUE CLEANED FILTER-FUEL SUPPLY OK

ooo END OF REPORT ooo

FINANCIAL HISTORY FOR NSW

Asset No	Sub Ass	Docket	Date	Account	Labour Cost	Material Cost	Contract Cost
MSWC3B1G017E	000	1	02/02/89	333333	3.75		
MSWC3B1G017E	000	2	03/02/89	444444	20.25		
MSWC3B1G017E	000	3	02/02/89	222222	11.00	9.56	
				TOTALS :	35.00	9.56	

ooo END OF REPORT ooo

FINANCIAL HISTORY Dated 31/01/89 Page 1

FINANCIAL HISTORY FOR NSW

Asset No	Sub Ass	Docket	Date	Account	Labour Cost	Material Cost	Contract Cost
NSWPPR7G001E	000	4	02/02/89	222222	2.50		
				TOTALS :	2.50		

ooo END OF REPORT ooo

PLANT HISTORY SHEET Dated 31/01/89 Page 1

PLANT HISTORY FOR MSW

Asset No	Sub Ass	Date	Detail	Tr	Type	Flt	Sp	Cost
MSWC3B1G017E	000	02/02/89	PM COMPLETED - NO FAULT FOUND	F	A0		N	3.75
MSWC3B1G017E	000	03/02/89	PM COMPLETED-NEW STARTER REQ'	F	A0		N	20.25
MSWC3B1G017E	000	02/02/89	FITTED NEW FUEL SUPPLY PIPE	E	B0	LKS	Y	20.56
						TOTAL COST :		44.56

ooo END OF REPORT ooo

PLANT HISTORY SHEET Dated 31/01/89 Page 1

PLANT HISTORY FOR NSW

Asset No	Sub Ass	Date	Detail	Tr	Type	Flt	Sp	Cost
NSWPPR7G001E	000	02/02/89	CLEANED FILTER-FUEL SUPPLY OK	F	B0	FUE	N	2.50
						TOTAL COST :		2.50

ooo END OF REPORT ooo

EXTRA WORK REQ'D AT MSW

Asset Number : MSWC3B1G017E Sub Asset : 00C
Unit : MAIN STEEL WORKS Name : STANDBY GENERATOR NO 17
Location : BLOCK C3-BASEMENT Item Code : EB16

Docket	Job No	Tr de	Ty pe	Ct	Req No Date	Tick Boxes 1234567890	Flt	Job Detail
2	11	F	A0	S	03/02/89	//		PM COMPLETED-NEW STARTER REQ'D

ooo END OF REPORT ooo

TECHNICAL HISTORY ANALYSIS Dated 31/01/89 Page 1

EXTRA WORK REQ'D AT NORTH SW

Asset Number : NSWPPR7G001E Sub Asset : 000
Unit : NORTH STEEL WORKS Name : STANDBY GENERATOR NO 1
Location : POWER PLANT.ROOM 7 Item Code : EB16

Docket	Job No	Tr de	Ty pe	Ct	Req No Date	Tick Boxes 1234567890	Flt	Job Detail
4	100001	F	B0	S	VERBAL 02/02/89	/		FUE CLEANED FILTER-FUEL SUPPLY OK

ooo END OF REPORT ooo

WIMS: NAME AND ADDRESS INPUT FORM

File F33 via PP26(FOR ASSET MODULE);E33 via ER26(FOR EME MODULE);V33 via VR26(FOR VEHICLE MODULE)

REF.NO.	GGØ1			REF.NO.	
NAME	GREAT GENERATORS			NAME	
ADDRESS 1	1 YORK STREET			ADDRESS 1	
2	SYDNEY			2	
3	NSW 2341			3	
4	AUSTRALIA			4	
TEL.NO.	Ø2 236589	SUPPLIER TYPE	GEN	TEL.NO.	SUPPLIER TYPE
REF.NO.	KPGØ1			REF.NO.	
NAME	KILPATRICK GREEN			NAME	
ADDRESS 1	NORTH RYDE			ADDRESS 1	
2	NSW 2279			2	
3	AUSTRALIA			3	
4				4	
TEL.NO.	Ø2 82ØØØ6	SUPPLIER TYPE	GEN	TEL.NO.	SUPPLIER TYPE
REF.NO.	CBØ1			REF.NO.	
NAME	COMPTON BATTERIES			NAME	
ADDRESS 1	WESTERN AVENUE			ADDRESS 1	
2	SYDNEY			2	
3	NSW 2729			3	
4	AUSTRALIA			4	
TEL.NO.	Ø2 667Ø9Ø	SUPPLIER TYPE	BAT	TEL.NO.	SUPPLIER TYPE
REF.NO.				REF.NO.	
NAME				NAME	
ADDRESS 1				ADDRESS 1	
2				2	
3				3	
4				4	
TEL.NO.		SUPPLIER TYPE		TEL.NO.	SUPPLIER TYPE

Make sure you differentiate between: O and 0;Z and 2;I and 1;S and 5,etc.

Prepared by:

Date:

PIERCE MANAGEMENT SERVICES

Ref No: 0	: P.M.S.	Tel No: 0608 41901
	: DICKENSON HOUSE	
Type : COM	: ALBION STREET	
	: CHIPPING NORTON	
	: OXFORDSHIRE	
Ref No: CB01	: COMPTON BATTERIES LTD	Tel No: 02.667090
	: WESTERN AVENUE	
Type : BAT	: SYDNEY	
	: NSW 2729	
	: AUSTRALIA	
Ref No: GG01	: GREAT GENERATORS	Tel No: 02 236589
	: 1 YORK STREET	
Type : GEN	: SYDNEY	
	: NSW 2341	
	: AUSTRALIA	
Ref No: KPG01	: KILPATRICK GREEN	Tel No: 02 820006
	: NORTH RYDE	
Type : GEN	: NSW 2279	
	: AUSTRAILIA	
	:	

ooo END OF REPORT ooo

Asset No : MSWC3B1G017E Name : STANDBY GENERATOR NO 17 Sub-Ass No : 000

Manf Ref : GG01
GREAT GENERATORS
1 YORK STREET
SYDNEY
NSW 2341
AUSTRALIA
Tel No: 02 236589

Supp Ref : KPG01

Ord/Inv Number	: WKS0967R	Accept Date	: 02/02/88
Warranty Expires	: 1989	Price	: 28000.00
Serial Number	: 3456Y78	Model	: 474.100B
Replacement Date	: 1999	Replacement Cost:	62000.00

Additional Info : TECHNICAL REP: IAN ROWE - 02.89653

Asset No : MSWC3B1G017E Name : BATTERIES - 12V-HD Sub-Ass No : 001

Manf Ref : CB01
COMPTON BATTERIES LTD
WESTERN AVENUE
SYDNEY
NSW 2729
AUSTRALIA
Tel No: 02.667090

Supp Ref : KPG01

Ord/Inv Number	:	Accept Date	: 02/02/88
Warranty Expires	: 1988	Price	: 0.00
Serial Number	:	Model	: 12V/190.30
Replacement Date	: 1992	Replacement Cost:	400 00

Additional Info : TECHNICAL REP: JOHN SMITH - 02.729600

Asset No : NSWPPR7G001E Name : STANDBY GENERATOR NO 1 Sub-Ass No : 000

Manf Ref : GG01
GREAT GENERATORS
1 YORK STREET
SYDNEY
NSW 2341
AUSTRALIA
Tel No: 02 236589

Supp Ref : KPG01

Ord/Inv Number	: WKS85940	Accept Date	: 01/01/84
Warranty Expires	: 1985	Price	: 30000.00
Serial Number	: 2435T61789	Model	: 747.100B
Replacement Date	: 1994	Replacement Cost:	75000.00

Additional Info : TECHNICAL REP: IAN ROWE - 02.89653

Asset No : NSWPPRFG001E Name : STANDBY GENERATOR NO 1 Sub-Ass No : 000

Manf Ref : GG01

GREAT GENERATORS
1 YORK STREET
SYDNEY
NSW 2341
AUSTRALIA

Tel No: 02 236589

Supp Ref : KPG01

Ord/Inv Number	: WKS393773	Accept Date	: 12/01/84
Warranty Expires	: 1984	Price	: 30000.00
Serial Number	: GG45676	Model	: 747.100B
Replacement Date	: 1994	Replacement Cost	: 75000.00

Additional Info : TECHNICAL REP: IAN ROWE - 02.89653

Asset No : NSWPPRFG002E Name : STANDBY GENERATOR NO 2 Sub-Ass No : 000

Manf Ref : GG01

GREAT GENERATORS
1 YORK STREET
SYDNEY
NSW 2341
AUSTRALIA

Tel No: 02 236589

Supp Ref : KPG01

Ord/Inv Number	: WKS85941	Accept Date	: 12/01/88
Warranty Expires	: 1984	Price	: 30000.00
Serial Number	: GG54700	Model	: 747.100B
Replacement Date	: 1994	Replacement Cost	: 75000.00

Additional Info : TECHNICAL REP: IAN ROWE - 02.89653

ooo END OF REPORT ooo

REPLACEMENT COSTS FOR 1994

Asset Number	Sub Ass	Name/Unit/Location	Item Code	Replacement Date	Replacement Cost
NSWPPR7G001E	000	STANDBY GENERATOR NO 1 NORTH STEEL WORKS POWER PLANT.ROOM 7	EB16	1994	75000.00
NSWPPRFG001E	000	STANDBY GENERATOR NO 1 NORTH STEEL WORKS POWER PLANT.ROOF	EB16	1994	75000.00
NSWPPRFG002E	000	STANDBY GENERATOR NO 2 NORTH STEEL WORKS POWER PLANT.ROOF	EB16	1994	75000.00
				TOTAL REPLACEMENT COST	225000.00

ooo END OF REPORT ooo

REPLACEMENT DATE REPORT Dated 31/01/89 Page 1

REPLACEMENT COSTS FOR 1992

Asset Number	Sub Ass	Name/Unit/Location	Item Code	Replacement Date	Replacement Cost
MSWC3B1G017E	001	BATTERIES - 12V-HD MAIN STEEL WORKS BLOCK C3-BASEMENT	BA06	1992	400.00
				TOTAL REPLACEMENT COST	400.00

ooo END OF REPORT ooo

Advice Note No: E0301

STANDBY GENERATING PLANT: W, S, Q, Y. REF. NO:

Type of Equipment Code: Job File No:
Frequency: W, S, Q, Y.

SPECIAL INSTRUCTIONS
==========
Reference should be made to HTM No. 11(1974 edition) when this model Advice Note is used.
Battery plant (secondary cells) and charging equipment is dealt with under Advice Note E07.
Stationary engines are dealt with under Advice Note M10 and should be considered in conjunction with this Advice Note.
Provision of ear muffs should be made, for use during test runs.
Permit to Work and HSAW requirements should be added to this Note to meet local policies and needs.

WORK CONTENT
==========
WEEKLY: (Tools and equipment required:- log sheet)

SIMULATE; Mains failure to run up the alternator without interrupting the connected services.

OBSERVE; That the automatic starting operates without hesitation.

RUN; Generator on no-load for ( )hours and record the following observations:-

No-load voltage.
Frequency (speed regulation).
Water temperature - if fitter is not in attendance.
Oil pressure - if fitter is not in attendance.
Generator dynamo charging rate, if appropriate.

6 WEEKLY: (Tools and equipment required:- as for WEEKLY)

CARRY OUT; Work as detailed for WEEKLY and in addition:-

SIMULATE; Mains failure, ensure change-over contactors function and generator supplies load to connected services.

NOTE: Test duration to be at least one hour.

QUARTERLY: (Tools and equipment required:- as for 6 WEEKLY and in addition:- portable blower, specified lubricant, clip-on ammeter)

CARRY OUT; Work as detailed for 6 WEEKLY and in addition:-

During standby generator test run:-

CHECK; Phase voltages in each phase to neutral.

CHECK; Current in each phase.

CHECK; Water temperature if fitter is not in attendance.

CHECK; Oil pressure if fitter is not in attendance.

CHECK; Dynamo charging rate.

CHECK; Frequency/speed regulation.

EXAMINE; Alternator for excessive vibration. Check tightness of holding down bolts and fixtures.

CARRY OUT; Earth continuity tests between alternator motor, supply cables and distribution panels.

CARRY OUT; Insulation test on machine windings and supply cables. Ensure that no individual readings are less than ( )Megohms.

YEARLY: (Tools and equipment required:- as for QUARTERLY)

CARRY OUT; Work as detailed for QUARTERLY and in addition:-

EXAMINE; Condition of brushes and commutator on starter

motor.

CHECK; Starter solenoid relay and condition of the contacts.

CHECK; Condition of the pinion and pinion engagement device.

CHECK; Adjustment of fuel rack solenoid, ensure that the armature travel permits the contacts to open on the "pull in" winding.

EXAMINE; The auto-starting and sequencing panel, blow out and clean.

CHECK; Panel terminations for tightness.

CHECK; Plug in relays where these are used, to ensure they are secured to the base holder.

REMOVE; Moving contact assembly from alternator circuit breaker. Examine all contacts for wear, pitting and alignment. Replace as necessary.

CHECK; ( ) power wiring and terminations from the the circuit breaker to the alternator.

NOTE: Isolators and switchgear should be maintained in accordance with manual section E01.

EXTEND; Full load test to minimum four hour duration.

End of Report

Advice Note No: M1001

STATIONARY DIESEL ENGINES: W, Q, H. REF. NO:

Type of Equipment Code: Job File No:
Frequency: W, Q, H.

SPECIAL INSTRUCTIONS
==========
Reference should be made to HTM No. 11 (1974 Edition) when this model Advice Note is used.
Motors, Generators and Starter/Regulators are dealt with under Advice Note E08.

Permit to Work and HSAW requirements should be added to this Note to meet local policies and needs.
Provision of ear muffs should be made, for use during test runs.

WORK CONTENT
==========
WEEKLY: (Tools and equipment required:- Specified lubricant
------ anti-freeze mixture)

ENSURE; Ventilation louvres are free from obstruction.

EXAMINE; For oil, water and fuel leaks.

CHECK; Lubrication system, replenish as necessary.

TOP UP; Fuel oil service tanks. Examine coolant level and test anti-freeze concentration.

CHECK; Compressed air starting supply and equipment.

DRAIN; Moisture trap in exhaust system.

ENSURE; Guards are in position and secure.

If engine driving generator then:-

RUN; Generator on no-load for ( ) hours. in conjunction with electrician. NOTE HTM No. 11 recommends an ON LOAD test of 2 hours duration once every month.

QUARTERLY: (Tools and equipment requirements As for WEEKLY

--------- and in addition:- Cleaning materials)

CARRY OUT; Work as detailed for WEEKLY and in addition:-

CLEAN; Air filters and radiator fins.

EXAMINE; Fuel system and condition of oil in sump.

TIGHTEN; Nuts, bolts and fittings as necessary.

REMOVE; Guards and examine fan belts and other belt drives for damage and tension.

HALF YEARLY: (Tools and equipment required:- As for
---------- QUARTERLY and in addition:- Compression Tester, Pressure gauge for fuel injection system test)

CARRY OUT; Work as detailed for QUARTERLY and in addition:-

CHECK: Engine compression and report condition of each cylinder. Examine inlet manifold and exhaust systems.

EXAMINE; ( ) pipe conditions and fixings.

EXAMINE; Fuel tanks and vents and check coolant pressure relief valves and thermostats in coolant circuit.

EXAMINE; Instruments and indicators for damage, and check their operation on appropriate test run (See Note under WEEKLY maintenance), preferably when alternator is on load.

CHECK; Injector sprays. Adjust injector pressure setting as necessary.

End of Report

Advice Note	Title	
E0101	LAMP SHADES & FITTINGS: Q.	REF. NO:
E0102	ROAD LIGHTING CONT. GEAR & FEED. PLLRS: Q, Y.	REF. NO:
E0103	FITTINGS & ACCESSORIES: Y.	REF. NO:
E0104	DISTRIBUTION BOARDS: Y, 3Y.	REF. NO:
E0105	LIGHTNING CONDUCTORS: Y.	REF. NO:
E0601	FIRE ALARM ROUTINE TESTS: S, H.	REF. NO:
E0602	MAIN FIRE ALARM PANELS: H, Y.	REF. NO:
E0701	BATTERIES (SECONDARY CELLS): T, Q, Y.	REF. NO:
E0702	BATTERY CHARGING EQUIPMENT: Q, Y.	REF. NO:
E0703	BATTERY STANDS & TRAYS: Y.	REF. NO:
E0801	STANDBY GENERATING PLANT: W, S, Q, Y.	REF. NO:
E0802	DIRECT ON-LINE STARTERS: Q.	REF. NO:
E0803	AUTOMATIC STAR DELTA STARTERS: Q.	REF. NO:
E0804	AUTO TRANSFORMER STARTERS: Q.	REF. NO:
E0805	SINGLE PHASE INDUCTION MOTORS: Q, Y.	REF. NO:
E0806	THREE PHASE INDUCTION MOTORS: Q, Y.	REF. NO:
E1001	SUB-STATIONS & SWITCH ROOMS: H, Y.	REF. NO:
E1002	SW. GEAR CIRCUIT BREAKERS & ISOLATORS: H, Y.	REF. NO:
E1101	ESCALATORS: W, T, S, Q, H.	REF. NO:
E1102	LIFT SHAFT: T, S, Q.	REF. NO:
E1103	LIFT MOTOR ROOM: T, S, Q, H, Y.	REF. NO:
E1301	BURNER IGNITION SYSTEM: S.	REF. NO:
E1302	FIRE VALVES: S.	REF. NO:
E1303	GAS LEAK DETECTORS: S.	REF. NO:
E1304	WATER LEVEL CONTROLS/ALARMS: S.	REF. NO:
E1305	PLANT CONTROLS: S.	REF. NO:
E1306	CONTROL PANELS AND INSTRUMENTATION: Q.	REF. NO:
E1307	BURNER CONTROLS AND SAFETY INTERLOCKS: Q.	REF. NO:
E1308	FUEL OIL HEATING ELEMENTS: Y.	REF. NO:
E1501	ELECTRO-MEDICAL EQUIPMENT(GENERAL): S.	REF. NO:
E1502	ELECTRO-MEDICAL EQUIP. (SOCKET OUTLETS): S.	REF. NO:
E1701	DOMESTIC/CATERING REFRIGERATION PLANT: H.	REF. NO:
E1702	RECIPROCATING REFRIGERATION PLANT: T, H, Y.	REF. NO:
E1703	CENTRIFUGAL REFRIGERATION PLANT: T, H, Y.	REF. NO:
E1704	COOLING TOWERS(WATER): T, H, Y.	REF. NO:
E1801	ELECTRIC VEHICLES: W, T, H, Y.	REF. NO:
E1901	STERILIZERS & AUTOCLAVES: W, S, Q, H, Y.	REF. NO:
E2001	PIPED MED. GAS(AIR & VAC. PLT.): W, S, Q, H, 2Y.	REF. NO:
E2101	BEDPAN WASHERS: S, H, Y.	REF. NO:
E2201	FIXED INSTALLATION OP. THEATRES: W, T, Q, H.	REF. NO:
E2202	EMERGENCY LTG/POWER(OP. THEATRES): W, T.	REF. NO:
E2203	PORTABLE EQUIP. (OP. THEATRES): W. T. Q.	REF. NO:
E2204	ANTI-STATIC FLOORS: H.	REF. NO:
E2205	ANTI-STATIC TESTS(RUBBER, ETC.): H.	REF. NO:
E2206	ANTI-STATIC TESTS(FOOTWARE): H.	REF. NO:
M0101	BOILERS and ECONOMISERS: S	REF. NO:
M0102	BOILER VALVES and MOUNTINGS. S, Q, Y, 10Y.	REF. NO:
M0103	OIL FIRING EQUIPMENT: S, Q, Y.	REF. NO:
M0104	GAS FIRING EQUIPMENT: S, Q, Y.	REF. NO:
M0105	MECHANICAL STOKERS: S, Q, Y.	REF. NO:
M0106	PUMPS AND CIRCULATORS: Q, Y.	REF. NO:
M0107	FANS AND BLOWERS: Q, Y.	REF. NO:

Advice Note	Title	
M0103	CHIMNEYS AND FLUES: Q, 3Y.	REF. NO:
M0109	OIL STORAGE TANKS: Q, 3Y.	REF. NO:
M0201	CALORIFIERS & MOUNTINGS: Q, Y, 2Y.	REF. NO:
M0202	PUMPS & CIRCULATORS: Q, Y.	REF. NO:
M0203	DISTRIBUTION SYSTEMS: Q, Y.	REF. NO:
M0204	CONDENSATE RECEIVERS: Q.	REF. NO:
M0205	FAN CONVECTORS & UNIT HEATERS: Q, Y.	REF. NO:
M0207	RADIATORS & HEATING COILS: Q.	REF. NO:
M0208	FEED & EXPANSION TANKS: Q.	REF. NO:
M0301	CALORIFIERS and MOUNTINGS: Q, Y, 2Y.	REF. NO:
M0302	PUMPS AND CIRCULATORS: Q, Y.	REF. NO:
M0303	DISTRIBUTION SYSTEM: Q, Y.	REF. NO:
M0304	SHOWERS: Q, Y.	REF. NO:
M0305	WRIST ACTION NYLON TAPS: Q.	REF. NO:
M0306	NON-CONCUSSIVE TAPS: H.	REF. NO:
M0307	ELBOW MIXERS: Q, H.	REF. NO:
M0308	SCREW DOWN STOP-COCKS: Y, 5Y.	REF. NO:
M0309	COLD WATER STORAGE TANKS: Y.	REF. NO:
M0310	TOWEL RAILS etc: Y.	REF. NO:
M0311	URINAL/W.C. CISTERNS: Y.	REF. NO:
M0501	GAS FIRED INCINERATORS: Q, Y.	REF. NO:
M0502	GAS FIRED WATER HEATERS: Q.	REF. NO:
M0503	GAS HEATING APPLIANCES: Q.	REF. NO:
M0504	GAS LIGHTING FITTINGS: Y.	REF. NO:
M0505	GAS DISTRIBUTION PIPEWORK: Y.	REF. NO:
M0601	GREASE TRAPS: W, Q.	REF. NO:
M0602	FISH FRYERS: W, Q, H.	REF. NO:
M0603	OVENS, COOKERS & PASTRY OVENS: W, Q, H.	REF. NO:
M0604	WET STEAMING OVENS: W, Q, H, Y.	REF. NO:
M0605	BOILING PANS & TILTING KETTLES: W, Q, H, Y.	REF. NO:
M0606	TILTING FRYPANS: W, Q, H.	REF. NO:
M0607	CAFE SETS: W, Q, H, Y.	REF. NO:
M0608	EXTRACT HOODS: W, Q, H.	REF. NO:
M0609	POTATO PEELERS: W, Q, Y.	REF. NO:
M0610	DISHWASHERS: W, Q, H, Y.	REF. NO:
M0611	BAIN MARIE/HOT CUPBOARDS(GAS FIRED): Q, H.	REF. NO:
M0612	BAIN MARIE/HOT CUPBOARDS(STEAM): Q, H, 2Y.	REF. NO:
M0613	GAS HEATED WATER BOILERS: Q, Y.	REF. NO:
M0614	STEAM HEATED WATER BOILERS: Q, Y, 2Y.	REF. NO:
M0801	FIRE HOSE REELS: H.	REF. NO:
M0802	FIRE BLANKETS: H.	REF. NO:
M0803	WATER-GAS FIRE EXTINGUISHERS: Q, Y, 5Y.	REF. NO:
M0804	CO2 GAS FIRE EXTINGUISHERS: Q, Y.	REF. NO:
M0805	FOAM EXTINGUISHERS: Q, Y, 2Y.	REF. NO:
M1001	STATIONARY DIESEL ENGINES: W, Q, H.	REF. NO:
M1002	STATIONARY PETROL ENGINES: W, Q, H.	REF. NO:
M1101	DISPOSABLE PANEL, AIR FILTERS: W.	REF. NO:
M1102	WASHABLE AIR FILTERS: W.	REF. NO:
M1103	AUTO-ROLL AIR FILTERS: W.	REF. NO:
M1104	SELF-CLEANING AIR FILTERS: W.	REF. NO:
M1105	AIR HANDLING FANS AND MOTORS: W, Q, Y.	REF. NO:
M1106	PUMPS, STRAINERS AND PIPEWORK: W, Q.	REF. NO:

Advice Note	Title	
M1107	PNEUMATIC CONTROL VALVES & ACTUATORS: W, Q.	REF. NO:
M1108	ELECTRIC CONTROL VALVES: W, Q.	REF. NO:
M1109	HEATING/COOLING BATTERIES: Q, Y.	REF. NO:
M1110	AIR WASHERS AND HUMIDIFIERS: Q, Y.	REF. NO:
M1111	STEAM PAN HUMIDIFIER: Q.	REF. NO:
M1112	DUCTWORK AND INSULATION: Q, Y.	REF. NO:
M1113	AUTOMATIC DAMPERS: Q, Y.	REF. NO:
M1114	FRESH AIR INTAKES AND SCREENS: Q, Y.	REF. NO:
M1115	VENTILATION GRILLES AND DIFFUSERS: Q, Y.	REF. NO:
M1116	VARIABLE AIR VOLUME UNITS: Q.	REF. NO:
M1117	FAN COIL UNITS: Q, Y.	REF. NO:
M1118	WATER TREATMENT UNIT: Q.	REF. NO:
M1119	FEED AND EXPANSION TANKS: Q, Y.	REF. NO:
M1120	STEAM GENERATOR: 2Y.	REF. NO:
M1201	COMPRESSORS & VACUUM PUMPS: W, Q, Y.	REF. NO:
M1202	COMPRESSOR/VAC PUMP COOLING SYSTEMS: W.	REF. NO:
M1203	AIR DRYERS: Q.	REF. NO:
M1204	COMPRESSED AIR/VACUUM PIPEWORK: Y.	REF. NO:
M1205	AIR RECEIVERS & VACUUM VESSELS: Y, 2Y.	REF. NO:
M1601	STERILIZERS AND AUTOCLAVES: W, S, Q, H, Y, 2Y.	REF. NO:
M1701	LAUNDRY TUMBLE DRIERS: W, S, Q, H.	REF. NO:
M1702	AUTOMATIC FOLDING MACHINES: W, S, Q, Y.	REF. NO:
M1703	CONDITIONING MACHINES: W, S.	REF. NO:
M1704	GARMENT FINISHING MACHINES: W, S, Q.	REF. NO:
M1705	SHEET FEEDING MACHINES: W, S, H.	REF. NO:
M1706	GARMENT PRESSES: W, S, Q, H, Y, 2Y.	REF. NO:
M1707	WASHER EXTRACTOR MACHINES: W, S, Q, H, Y.	REF. NO:
M1708	SHEET SPREADERS: W, H, Y.	REF. NO:
M1709	MULTI ROLL IRONERS: W, S, Q, H, Y, 2Y.	REF. NO:
M1710	WATER RECOVERY SYSTEMS: S.	REF. NO:
M1711	SOAP & SODA PLANT: Q, H, Y.	REF. NO:
M1801	BASE EXCHANGE SOFTNER: W, S, Q, H, Y.	REF. NO:
M1802	BOOSTER EQUIPMENT: W, S, Q, H, Y, 2Y.	REF. NO:
M1803	BRINE TANK: W, S, Q, Y.	REF. NO:
M1804	SALT STORAGE TANK: S, Y.	REF. NO:
M1805	DRAIN SUMP: Q, H, Y.	REF. NO:
M1806	PUMPS AND MOTORS: S, Y.	REF. NO:
M1901	CENTRAL MEDICAL AIR PLANT: W, T, Q, Y, 2Y.	REF. NO:
M1902	CENTRAL MEDICAL VACUUM PLANT: W, T, Q, Y, 2Y.	REF. NO:
M1903	CENTRAL NITROUS OXIDE PLANT: W, T, Q, Y.	REF. NO:
M1904	CENTRAL ENTONOX PLANT: W, T, Q, Y.	REF. NO:
M1905	CENTRAL OXYGEN PLANT: W, T, Q, Y, 2Y.	REF. NO:
M1906	PIPED DISTRIBUTION: 2Y.	REF. NO:
M1907	TERMINAL UNITS: Q.	REF. NO:
M2001	OPERATING TABLES: Q, Y.	REF. NO:
M2002	MORTUARY TABLES: Q, Y.	REF. NO:
M2003	WARD MEDICAL FURNITURE: Q.	REF. NO:
M2004	WARD BEDS: Q.	REF. NO:
M2005	PERSONAL WEIGHING MACHINES: Q.	REF. NO:
M2006	RIPPLE BEDS: Q.	REF. NO:
M2007	TRACTION EQUIPMENT: Y.	REF. NO:
M2008	WHEEL CHAIRS: Y.	REF. NO:

Advice Note	Title	
M2101	BEDPAN WASHERS: S, H, Y.	REF. NO:
M2301	LIFTING ROPES, CHAINS & HOOKS: Q, H, Y.	REF. NO:
M2302	PATIENT HOISTS & SLINGS: Q, Y.	REF. NO:
M2303	AUTOMATIC HANDLING MONORAILS; Q.	REF. NO:
M2304	LIFTING BEAMS AND MOUNTINGS: Q.	REF. NO:

End of Report

Asset No : MSWC3B1G017E
Name : STANDBY GENERATOR NO
Unit : MAIN STEEL WORKS
Location : BLOCK C3-BASEMENT

Check List No : E0701

Equipment Code	
BATTERIES - 12V-HD	001
BATTERY CHARGING EQUIPT.	002
BATTERY STANDS & TRAYS	003

CHECK LIST REPORT Dated 31/01/89 Page i

Check List No : E0801

Equipment Code

Tick items as completed:

NO-LOAD VOLTAGE
FREQUENCY
WATER TEMPERATURE
CYLINDER TEMPERATURE
OIL TEMPERATURE
OIL PRESSURE
CHARGING RATE
INDICATING LAMPS

SIGNATURE :

CHECK LIST REPORT Dated 31/01/89 Page 1

Check List No : M1001

Equipment Code

Tick Items as completed:

OIL LEVEL
WATER LEVEL
BELT TENSION
BELT ALIGNMENT
VENTILATION GRILLS
ANTI FREEZE
MOUNTINGS & FIXINGS
PROTECTION & GUARDS
RESERVE FUEL LEVEL

Asset Number : MSWC3B1G017E
Unit : MAIN STEEL WORKS
Location : BLOCK C3-BASEMENT

Sub Asset : 000
Name : STANDBY GENERATOR NO 17
Item Code : EB16

Line	Description	Manufacturers Ref	Part No	Bin Ref	Stk Bal
1	OIL FILTER - RM33	TR009-727/Q	BMDEC120	FG0012C	
2	FUEL FILTER - RZ77	TR188-661/S	BMDEC108	FG0074K	
3	FUEL OIL PI[illegible]	TR993-734/C	BMDEC026	FG0066A	
4	HOSE - RQ7	TR739-343/C	BMDEC041	FG0477N	
5	CIRCUIT BR[illegible]RS	FR255-771/F	BMLCK035	LA2991E	
6	FREQUENCY CONTROL UNIT	FR529-648/P	BMLCK004	LA5759T	
7	TIMER UNIT - TT39	FR039-119/T	BMLCK021	LA0036L	

ooo END OF REPORT ooo

SPARES IDENTIFICATION PRINT Dated 31/01/89 Page 1

Item Code : *BA06 Batteries: Generators

Line	Description	Manufacturers Ref	Part No	Bin Ref	Stk Bal
1	CONNECTOR LUGS - CL661	TA88501	EPTAP286	QV0057T	
2	VENTING SCREWS - CL298	TA45821/E	EPTAP261	QV9931Y	
3	CLEANSING FOAM - SC883	UQ35460/A	BMDEC004	AU00126S	

ooo END OF REPORT ooo

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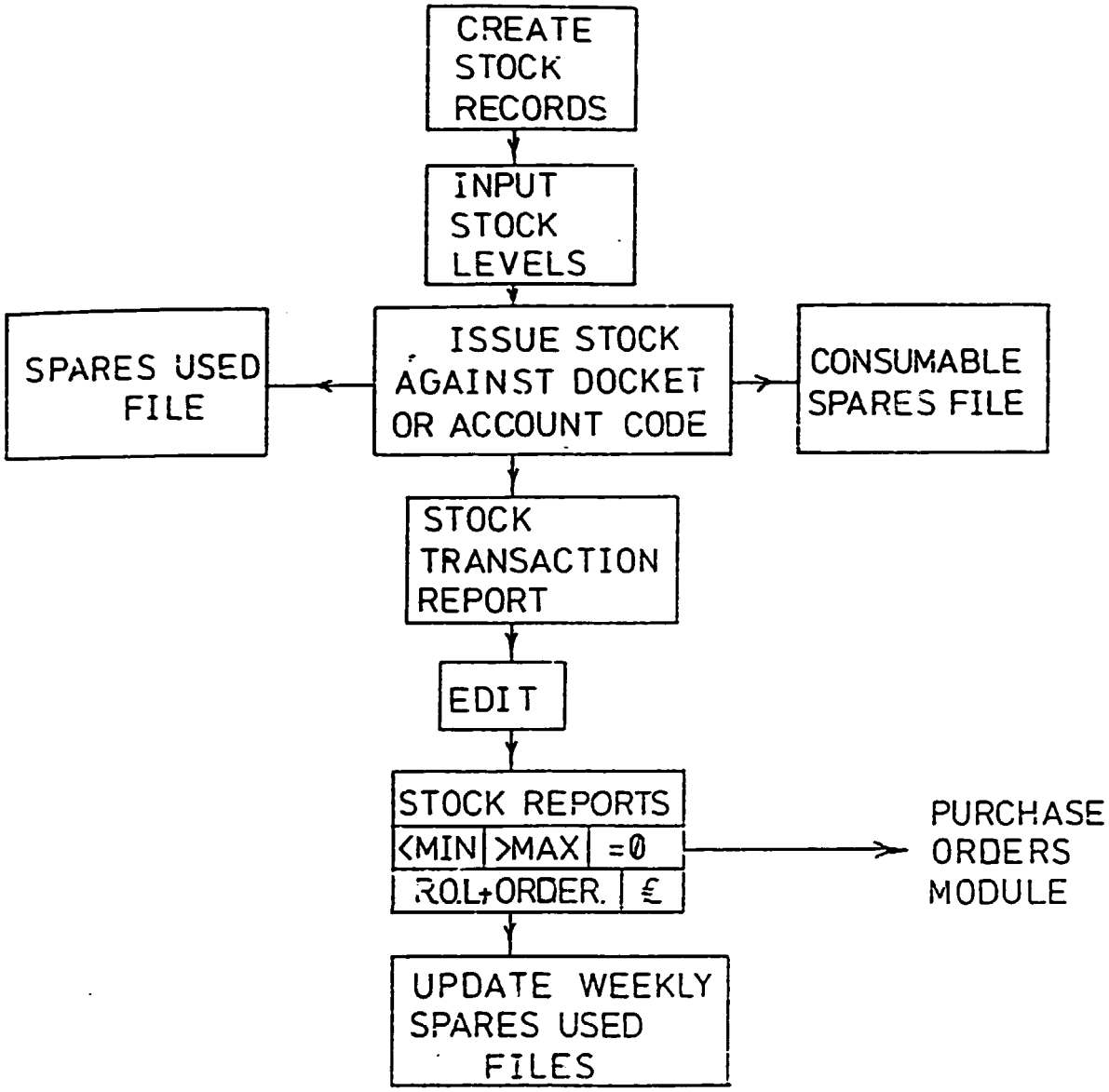
WIMS

STOCK CONTROL & PURCHASE ORDERS MODULE

EXERCISE

STOCK CONTROL



Part No	Bin Ref	Min	Max	ROL	Stock	On-Ord	Price	L/Used
E023	Equipment fuse 1A 1.25in					1		
	G172	20	50	30	0	0	0.20	091181
EFPT0001	Plug Top 13amp					SINGLE		
	A1C50001	25	50	30	45	0	0.75	
ESS00001	Switched Socket Outlet Twin					SINGLE		
	A1C60001	10	20	12	19	0	2.25	
ESS00002	Switched Socket Outlet Single					SINGLE		
	A1C70001	20	40	25	35	0	1.98	
M128	ECG HR Mk2 Stylus Assy					1		
	W478	3	10	5	0	0	23.50	070781
MHHSS001	SET SCREW HEXAGON HEAD - .25" Whit.					BOX144		
	B2D80001	5	15	7	14	0	3.75	
MHHSS002	SET SCREW HEXAGON HEAD - .50" Whit.					BOX144		
	B2D80002	5	15	7	14	0	4.50	
MHNS003	HEXAGON NUT - 0.25" Whit.					BOX144		
	B2D80003	5	10	7	9	0	1.50	
MHNS004	HEXAGON NUT - 0.50" Whit.					BOX144		
	B2D80004	5	10	7	9	0	2.15	

End of Report

Part No	Description	Date	Reference	Trans	Qty	Value
MHHSS001	SET SCREW HEXAGON HEAD - .25" Whit.	230186	SETUP	29	14	52.50
		230186	000148	33	2-	7.50-
			Balance	12		
MHHSS002	SET SCREW HEXAGON HEAD - .50" Whit.	230186	SETUP	30	14	53.00
		230186	000148	34	1-	4.50-
			Balance	13		
MHNS003	HEXAGON NUT - 0.25" Whit.	230186	SETUP	31	9	13.50
		230186	000148	35	2-	3.00-
			Balance	7		
MHNS004	HEXAGON NUT - 0.50" Whit.	230186	SETUP	32	9	19.35
		230186	000148	36	1-	2.15-
			Balance	8		

Transaction File Not Cleared

End of Report

STOCK BELOW MINIMUM LEVEL PAGE NO 1

Part No	Description	Unit	Stock	On-Ord	Min	Max	ROL
E023	Equipment fuse 1A 1.25in	1	0		20	50	30
M128	ECG HR Mk2 Stylus Assy	1	0		3	10	5

End of Report

STOCK BAL + ON-ORDER BAL BELOW ROL PAGE NO 1

Part No	Description	Unit	Stock	On-Ord	Min	Max	ROL
88888888	FUSES MAINS 13A		481		400	1000	500
E023	Equipment fuse 1A 1.25in	1	0		20	50	30
M128	ECG HR Mk2 Stylus Assy	1	0		3	10	5

End of Report

Bin Ref	Qty	Description	Unit	Price	Value
0101010!	12	OIL FILTER	1	3.50	42.00
010102	17	FUEL PUMP	1	20.45	347.65
010103	481	FUSES MAINS 13A		0.12	57.72
4	0	SCREW	12	0.00	0.00
A1C50001	45	Plug Top 13amp	SINGLE	0.75	33.75
A1C60001	19	Switched Socket Outlet Twin	SINGLE	2.25	42.75
A1C70001	34	Switched Socket Outlet Single	SINGLE	1.98	67.32
B2D80001	12	SET SCREW HEXAGON HEAD - .25" Whit.	BOX144	3.75	45.00
B2D80002	13	SET SCREW HEXAGON HEAD - .50" Whit.	BOX144	4.50	58.50
B2D80003	7	HEXAGON NUT - 0.25" Whit.	BOX144	1.50	10.50
B2D80004	8	HEXAGON NUT - 0.50" Whit.	BOX144	2.15	17.20
G172	0	Equipment fuse 1A 1.25in	1	0.20	0.00
W478	0	ECG HR Mk2 Stylus Assy	1	23.50	0.00
			Total Value		722.39

End of Report

SPARES USED UPDATE REPORT PAGE NO 1

Docket	Part No	Docket	Part No	Docket	Part No
000148	MHHSS001	000148	MHHSS002	000148	MHNS003
000148	MHNS004	000151	66666666		

Update Complete. File F47 Cleared.

CONSUMABLE SPARES USED UPDATE REPORT PAGE NO 2

Account	Date	Part No	Account	Date	Part No
666666	230186	* 38	666666	230186	ESS00002

Update Complete. File F48 Cleared.

End of Report

WHERE USED ANALYSIS PAGE NO 1
Part No: MHHSS001

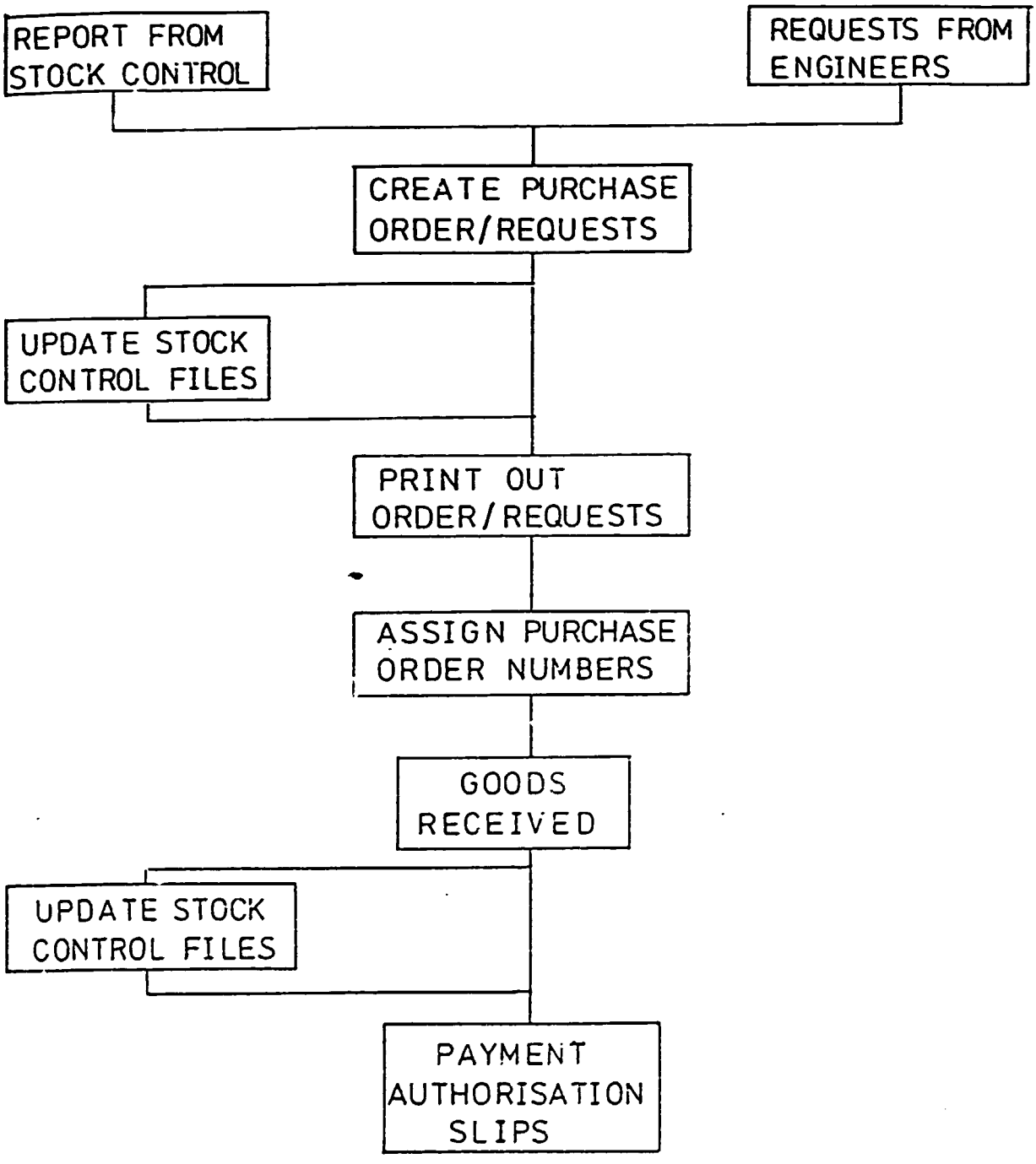
Docket	Date	Qty	Value
148	230186	2	7.50
	TOTALS	2	7.50

PAGE NO 1

Account	Date	Part No	Qty	Value
666666	230186	* 38	1	5.00
666666	230186	ESS00002	1	1.98
		TOTALS	2	6.98

End of Report

PURCHASE ORDERS MODULE



Ref No: [illegible]
Type : GEN

GREAT GENERATOR
1 YORK ST
SYDNEY
NSW 2341
AUST

Tel No: 02 [illegible]

Ref No: [illegible]
Type : GEN

KILPATRICK GREEN
NORTH RYDE
NSW 2345
AUST

Tel No: [illegible]

Ref No: GG01
Type : GE

GREAT GENERATORS
1 YORK STREET
SYDNEY
NSW2341
AUSTRALIA

Tel No: 02808040

Ref No: HEA001
Type : EM

Heart-Rite PLC
Unit 31
Industrial Estate
Watt Road
Newton YORKS

Tel No: 2212-51789

Ref No: KPG01
Type : GEN

KILPATRICK GREEN PTY
NORTH RYDE
NSW2345
AUSTRALIA

Tel No: 02036139

Ref No: SMT001
Type : COM

MR S SMITH
165 HIGH STREET
CHELTENHAM
GLOUCESTERSHIRE
GL54 2ED

Tel No: 0245.23a54

Ref No: VIC001
Type : EME

Vickers Medical Limited
Priestley Road
Basingstoke
HAMPSHIRE RG24 9NP

Tel No: 0256 [illegible]

End of Report

Supplier
Vickers Medical Limited
Priestley Road
Basingstoke
HAMPSHIRE RG24 9NP

Deliver To
Engineers Stores
City Hospital
Town Street
Chesterfield
Derbyshire

Special Instructions: Please Deliver only between 9 am and 5pm.
SERIAL NO: 6

Status: Awaiting P/O No

Item	Our Part No	Description	Qty Ordrd	Price
1	MHHSS001	SET SCREW HEXAGON HEAD - .25" Whit.	5	1.25
2	MHHSS002	SET SCREW HEXAGON HEAD - .50" Whit.	5	2.50
3	MHNS003	HEXAGON NUT - 0.25" Whit.	5	1.75
4	MHNS004	HEXAGON NUT - 0.50" Whit.	5	2.25
5		S/S SET SCREW 0.375" BSF - 2" LONG	5	8.75
6		S/S NUTS 0.375"	5	4.85
7		S/S WASHERS 0.375"	5	2.86

End of Report

Redland Roof Tiles Limited

Head Office
Redland House, Reigate
Surrey RH2 0SJ
Telephone: Reigate 42488 (STD Code 073 72)
Telex: 28626
Fax: 073 72 21938

Serial No: 23
Date: 7.9.84.

Order numbers must appear on all consignments, delivery notes and invoices.

The Quantity of materials ordered must not be increased without our prior written authorisation.

To:
Mr.R.Bedford,
The White House,
Meadow Lane,
Chorleywood,
Herts.

Please supply & deliver to:
Redland Roof Tiles Ltd
Vandyke Works
Mile Tree Road
Leighton Buzzard
Bedfordshire

Account Code: 000210 | Delivery Required By: 170984 Confirmation-Verbal

Originator: M.H.T. | Suppliers Quotation No: 1234567890

Item No.	Our Part Number	Description	Quant. Ord'd.	Unit Price £	Total Price £
1		L S I Computer	1	3525.00	3525.00
2		Printer	1	950.00	950.00
3		Screen	1	950.00	950.00

Please Invoice to delivery address | STATEMENTS to Head Office | Total Order Value £ 5425.00

For Redland Roof Tiles Limited.

NOTE: The above order is subject to the terms printed on the reverse hereof.

Registered Office: Redland House, Reigate, Surrey. Registration No. 407552 England

Serial	Item	P/Order No	O/Date	Part No	Qty Ord	Qty Recvd	Qty To Follow	Price	Comp
6	1	P00237	230186	MHHSS001	5	0	5	1.25	N
6	2	P00237	230186	MHHSS002	5	0	5	2.50	N
6	3	P00237	230186	MHNS003	5	0	5	1.75	N
6	4	P00237	230186	MHNS004	5	0	5	2.25	N
6	5	P00237	230186		5	0	5	8.75	N
6	6	P00237	230186		5	0	5	4.85	N
6	7	P00237	230186		5	0	5	2.86	N

End of Report

PAYMENT AUTHORISATION SLIPS

P/Order No	Supplier	Item	Part No	Description	Qty Ord	Qty Recvd	Del Note No	D Date
123456		1	88888888	SPARK PLUG NYP	50	50	1235	101081
123456		2	99999999	CONTACT PTS 125467	10	5	456	191181
123456		2	99999999	CONTACT PTS 125467	10	1	5678	150186
123456		3	66666666	OIL FILTER	10	3	5678	150186
P00237	Vickers Medical Limited	1	MHHSS001	SET SCREW HEXAGON HEAD - .25" Whit.	5	3	DN0237	230186
P00237	Vickers Medical Limited	2	MHHSS002	SET SCREW HEXAGON HEAD - .50" Whit.	5	1	DN0237	230186
P00237	Vickers Medical Limited	3	MHNS003	HEXAGON NUT - 0.25" Whit.	5	5	DN0237	230186
P00237	Vickers Medical Limited	4	MHNS004	HEXAGON NUT - 0.50" Whit.	5	5	DN0237	230186

Payment Authorisation Slips Not Deleted

End of Report

ALL ORDERS BETWESN 010186 AND 010286 PAGE NO 1

Serial	Item	P/Order No	O/Date	Part No	Qty Ord	Qty Recvd	Qty To Follow	Price	Comp
6	1	PO0237	230186	MHHSS001	5	3	2	1.25	N
6	2	PO0237	230186	MHHSS002	5	1	4	2.50	N
6	3	PO0237	230186	MHNS003	5	5	0	1.75	Y
6	4	PO0237	230186	MHNS004	5	5	0	2.25	Y
6	5	PO0237	230186		5	0	5	8.75	N
6	6	PO0237	230186		5	0	5	4.85	N
6	7	PO0237	230186		5	0	5	2.86	N

End of Report

DATAFLEX TRAINING GUIDE

INTRODUCTORY COURSE

PIERCE MANAGEMENT SERVICES
DICKENSON HOUSE
30 ALBION STREET
CHIPPING NORTON
OXFORDSHIRE
OX7 5BJ
TELEPHONE 0608 41901

8 or 16 bit - What does this mean

In an 8 bit computer, one bit is one eighth of a byte, each byte being a portion of the computer's memory. So a 32K machine has 32768 bytes of memory or 262,144 bits of memory. Lets take this a step further -

A computer can understand only two conditions - on or off. This can be further developed to mean yes or no or one or nought, or to use numbers it counts in binary.

i.e.	00	=	0
	01	=	1
	10	=	2
	11	=	3
	100	=	4
	101	=	5

To make things manageable, a computer usually deals with eight-bit numbers, each group of eight bits equalling one byte of computer memory.

i.e.	00000000	=	0
	00000100	=	4
	11111111	=	255

These eight bit numbers are dealt with in parallel by the computer. Instead of having to examine each nought and one in a sequential fashion they are sent around the computer in ranks of eight over what is known as a bus. The bus is simply like an eight lane motorway. Its job is to deliver the information to the various components in the computer.

The eight-bit numbers are called bytes. Each byte represents a combination of on/off conditions or, as explained earlier, ones and noughts. These eight on/off conditions can represent 255 combinations, 256 if we count 00000000.

The 255 combination available in a byte give more than enough space to allocate a byte to each letter of the alphabet in upper and lower case, each decimal number, and plenty of special symbols like punctuation marks etc. Each one of these can be displayed on the screen and are known as characters. With all these included only half the available 255 combination are used. The rest are used as the computer's own special instructions for the processor.

This 8-bit bus, or eight lane motorway, can only handle a single character at a time, each successive character being sent sequentially. By increasing the width of this motorway to sixteen lanes and using a 16-bit bus, it is possible to send two bytes simultaneously, therefore, making the transference of data quicker.

Also by making the processor itself 16-bit it is possible to increase the number of inbuilt processing functions quite dramatically. If we now split a byte of memory into 16 bits we can increase the number of characters available as follows:

We know that 11111111 = 255
11111111 11111111 = 65 535

The result of increasing the number of characters available to the processor, is that the computer can "address" each portion of memory at a far greater rate, therefore the computer becomes more powerfull.

DATABASE MANAGEMENT SYSTEMS (D.B.M.S.)

WHAT IS A DATABASE?

First of all, what is Data?, Data is information and can be organised in two ways, structured and unstructured.

Unstructured data has no particular size, length or position. Examples of this would be letters, books and the "pile of papers" on top of your desk. In a computer, word-processors are usually used for processing unstructured data, i.e. WordStar.

Structural data has a predefined format, with the groups of data limited in length and identified by what they contain. An asset input form is an example of structured data that you are all familiar with. In a computer, Database Management Systems are usually used for processing structured data, i.e. DataFlex.

All of the data which makes up a particular information system is referred to as the "database".

Groups of structured information about like things, make up DATABASE FILES. Database files can be compared to a filing cabinet drawer full of asset input forms. Dataflex can have from 1 to 250 database files (125 in 8-bit systems) of structured information. Each is immediately accessible or "ON LINE" to the system. Each database file is assigned to Dataflex FILENAME and a FILE NUMBER to identify it uniquely.

There are basically three types of data:-

1) ASCII - This refers to the full set of printable characters that your computer can generate. It includes all letter, numbers and special characters. Examples of fields which would be "typed" as ASCII data include - names, descriptions and notes. Each ASCII field is assigned a maximum length (number of characters) that the data in the field can occupy. Each ASCII character requires ONE byte of storage. Numbers (0 - 9) entered in fields that are of the ASCII type will be treated only as characters without numeric properties.

2) NUMERIC - The only characters that can be put into a numeric field are the numbers (0 - 9), a minus sign "-", and the decimal point ".". Numeric fields are used to store numbers.

Examples are: prices, amounts and quantities.

Numeric fields can be used in calculation. In Dataflex each TWO numeric characters defined in a numeric data field require ONE byte of storage, so numeric fields take up half the amount of space as ASCII fields.

Numeric fields must be assigned a number of characters before and after the decimal point. This storage CANNOT be split over the decimal point. thus, 5.4 and 54.5 and 54.54 would all require TWO bytes of storage.

3) DATE - Although dates can be represented as ASCII or NUMERIC fields it is more convenient to have a special data type for them. In Dataflex, a date can be entered in a data screen window in the following formats.

MMDDYY, MM/DD/YY, MM.DD.YY, or MM,DD,YY.

Once the date data is entered it will be displayed formulated as MM/DD/YY. Date fields always require 3 bytes of storage.

It is important that each data field is assigned the correct type and is of sufficient length to hold the largest or longest possible value that you would want to put into the field.

The total storage requirement for each record, or the RECORD LENGTH, can be computed by adding up the length in bytes for each field in the data record. Space consumption is determined by a field's defined length, not the length of data actually entered into it from one record to the next.

To summarise then, the makeup of a database is as follows:

A database is a collection of related files

A file is a collection of records grouped in an orderly way

A record is a consistent collection of fields of information clustered around a central identifier. For example - the information regarding one asset in the file.

A field is one specific piece of information. For example - the name of one asset. Location and Item Codes are also fields for each asset.

A database may be defined as a collection of structured data supporting the operations of the whole or major areas of a business. It may also be defined as a centrally located data file providing the foundations of a computer based management information system.

The following definition of a database was given at a conference on databases in 1973: "A non-redundant collection of all data serving one or more defined business applications, that data being structurally linked to and permitting access to all other data in that collection for which a natural or logical business relationship has been defined to exist, however complex."

A typical example would be a computer file containing the following information:

i	Employees Name
ii	Employees Number
iii	Date of Employment
iv	Clock Number
v	Sex (M or F)
vi	Marital Status
vii	Date of birth
viii	National Insurance No.
ix	Method of Payment Code
x	Bank Account Number
xi	Trade Code
xii	Cost Code
xiii	Rate of Pay
xiv	Tax Code
xv	Pay to date
	etc.

As can be seen from this list, only a few of the items would be applicable to the wages department, a few to personnel department and even less to the employing department.

The individual departments would only access the information relevant to their discipline.

An essential requirement of a database is not merely to store data efficiently but also to provide an effective means of retrieval. The objective of a database is to provide reliable up-to-date unambiguous information on demand.

The term "data" in the context of a database refers to a collection of data elements which, when related in a logical manner, provide meaningful information.

Important factors related to the use of databases are summarised below:

a	Data should be input once only
b	Redundant data should be eliminated
c	Data should be capable of being speedily retrieved
d	Files should be easy to maintain
e	Files should be expandable
f	Access to files should be restricted to authorised users by the use of passwords
g	Restart and recovery procedures are necessary
h	Selective print-outs should be provided for the specific information requirements of managers
i	Ad-hoc print-outs should be available to cater for special requirements

A database need not be a single file, as it is often practicable to implement several small databases serving the needs of several integrated systems.

For example, a sales accounting system may be integrated to provide for invoicing and stock control.

PRODUCT FILE	CUSTOMER FILE
Description	Name
Cost Price	Address for Invoicing
Selling Price	Address for Delivery (if different)
V.A.T. rate	Credit Limit
Stock Balance	Accounts Balance Age Analysis
History of Stock Movement	Sales History

The product file enables stock schedules and re-order lists to be printed on demand.

The customers file enables lists of account balances, accounts which have exceeded credit limit, age analysis of account balances, profitability reports and statement of account to be printed out as required.

By using these two separate files a complete Stock Control/Purchasing/Invoicing system can be run.

WHAT IS A DATABASE MANAGEMENT SYSTEM?

A D.B.M.S. is a highly complex software package for creating, updating and extracting information from a computer-oriented database.

As an example, DATAFLEX is a D.B.M.S. using Pascal as a host language, which provides users with a simplified and easy to use method for record processing using mass storage index sequential filing.

It is a general purpose system which can be used to build a variety of databases ranging from a single file serving an individual application up to and including a complex integrated database serving an entire business.

Typical D.B.M.S. specifications include:

	DataFlex 8 bit	16 bit	D base II 8 bit
Max D.B.M.S. files	125	250	16
Max Data elements per file	255	255	32
Max Indicies per file	5	10	1
Max Elements per Index	4	6	9
Max File size	8 M bytes	2 G bytes	8 M bytes
Max Records per file	65.536	16.7 million	65.535
Max Record size	4 K bytes	16 K bytes	1000 characters

DATAFLEX UTILITIES MENU

1. Define a Database (FILEDEF)
2. Define Menus (MENUDEF)
3. Edit a Text File
4. Create an Application (AUTODEF)
5. Compile a Configuration
6. Run a Configuration
7. Re-Index a Data File
8. Generate a READ Application
9. Query Database

PLEASE ENTER YOUR SELECTION -----> _

Use UP or DOWN ARROW to select option, then <RETURN>
Press <ESCAPE> to return to previous menu.

GENERAL RULES

Below is a screen image for a single entry program.

```
/FORM

                    ADDRESS BOOK

SURNAME  : _____________________(20)   INITIALS : ___

COMPANY  : ____________________________________ (40)

ADDRESS  : ____________________________ (30)

ADDRESS 1: ____________________________ (30)

ADDRESS 2: ____________________________ (30)

ADDRESS 3: ____________________________ (30)

ADDRESS 4: _________________________ (25)

POST CODE: ________ (8)  TELEPHONE : _______________ (17)

DATE OF MEETING : -- / -- / --

/*.
```

Where : _

/Form Denotes the name of the form or image. It must start on the first line in the first column i.e. in the top left of the screen.

Each image must be uniquely named within a configuration.

The number of images per program is system limited.

The number of windows per image must not exceed 254.

/* Denotes the end of all the screen images and must be the image terminator.

_ Denotes a character of information. The number of underscores determines the length of the field.

. A full stop at the end of a window denotes a numeric field.

-- / -- / -- Denotes a date field.

Once you have designed your screen image you can use AUTODEF or FILEDEF2 to create your file definition and produce a simple entry program.

OPTION 4 Create an Application

CREATING A FILE DEFINITION USING AUTODEF

There are three main stages when using AUTODEF and they are as follows:-

a. State the maximum number of records in the file.

b. State the field name of each of the fields.

c. State the field(s) to be indexed.

A. MAXIMUM NUMBER OF RECORDS

```
        IMAGE NAME     TRAINING
    FILE ROOT NAME     TRAINING
DATAFLEX FILE NAME     TRAINING
CONFIGURATION NAME     TRAINING.FRM

NEW FILE TRAINING ASSIGNED FILE NUMBER 2

WHAT IS THE MAXIMUM NUMBER OF RECORDS "TRAINING" COULD HAVE __

(Up to 16.7 million can be input here)
```

B. NAMING FIELDS

```
NAME **********************

ADDRESS ______________________

DATE __ /__ / __

ENTER FIELD NAME FOR FIELD 1

(For the window where the ****** appear type the field name, each
is asked in turn)
```

C. DEFINING INDEXES

```
1 NAME          2 ADDRESS       3 DATE


DEFINING INDEX 1
ENTER FIELD NUMBER(S) TO INDEX OR RETURN TO END:

(Enter the field number(s) for the first index)

WILL DATA IN THIS INDEX BE UNIQUE <N>

(Answer Y(es) or return for N(o)
```

OPTION 5 Compile a Configuration

USING THE COMPILER TO COMPILE CONFIGURATIONS

After a program has been written in DataFlex it must be compiled before it can be used. The compiler will change Source code (your DataFlex program) into Object code.

While the compiler runs it will display to the screen your source code with line numbers beside and any error messages that occur. The compiled code will be put into a file with a .FLX extension.

A semi-colon after the file name followed by one of the letters below will produce the following :-

E	Pause on error
S	Save intermediate code
L	Send to list Jevice (printer)
M	Expand/contract memory for macro expansion
Q	Quiet, don't ring bell
F	Send to a file
D	Save .FLX extension on specified drive

OPTION 6 Run a Configuration

USING DATAFLEX TO RUN CONFIGURATIONS

Choose this option and type in your program name and DataFlex will run it.

OPTION 7 Re-Index a Data File

USING RE-INDEX TO RE-CREATE AN INDEX STRUCTURE

At some stage in using your database the index on a file may either become damaged or you may simply wish to change the indexed field in a file. When this occurs you can use the REINDEX utility to re-create the index in the file without losing or re-entering your data.

OPTION 8 Generate a READ Application

USING READ TO READ DATA INTO A FILE

The READ utility generates a program that will read data from an ASCII sequential text file either line or comma delimited, into a DataFlex data file.

HOW TO CREATE A SIMPLE DATAFLEX APPLICATION

Create an "image" of a database file on your screen using a word processor.

a Type in WS and press RETURN
b When "Editing no file menu" is displayed open a non-document file by entering N
c Type in STOCK and press RETURN
d Create the dataflex image by typing in the following:

```
                    STOCK MASTER FILE
                          ENTRY

     (6)  STOCK No :_____

(20)  DESCRIPTION  :_________________   (10)  :_____________

(4,2)UNIT COST:£___.__  (4,2)RETAIL PRICE:£___.__  (4,2)VAT:£___.__

          (3)  STOCK  :___.          (3)  RE-ORDER QTY  :___.

(15)  SUPPLIER NAME  :_________________   LAST ORDER DATE  :__/__/__

/*
```

e Type in CTRL KX to finish processing with Wordstar.

Load DataFlex from the operating system by typing FLEX and press RETURN. The master menu will be displayed. Select the DataFlex configuration option from this Master Menu. From the next menu displayed, select the option AUTODEF.

The screen will clear and prompt:

ENTER RETURN TO EXIT OR

"ROOT NAME" OF FILE DEFINITION TO CREATE:

If you want to return to the menu, press RETURN, otherwise type STOCK to let AUTODEF know the name of the file that you want to work on.

DataFlex will now display a list of the files created as a result of AUTODEF's processing of the STOCK file:

FILENAME SUMMARY:

IMAGE NAME	STOCK
FILE ROOTNAME	STOCK
DATAFLEX FILE NAME	STOCK
CONFIGURATION FILE	STOCK.FRM

DataFlex will then prompt:

WHAT IS THE MAXIMUM NUMBER OF RECORDS "STOCK" COULD HAVE?

For the purpose of this exercise enter 100 and press RETURN.

AUTODEF will now read the STOCK image file from the disc. When the image has been read, you will be prompted for the names of the data windows on the image. Enter the following list of window names as they are requested.

```
      Stock number ---------> STOCK_NUM
       Description ---------> DESC
          Category ---------> CAT
              Cost ---------> COST
             Price ---------> PRICE
               Vat ---------> VAT
             Stock ---------> STOCK
     Recorder Qty ---------> RE_ORDER
    Supplier Name ---------> SUP
Last Order Date ---------> L_ORD
```

Each window will be highlighted by asterisks (*****) in place of the underline character (_____) as you are being asked about it.

If the above list has been properly entered, press "C" to continue, if not, press "R" to re-enter the window names.

When "C" is pressed, a list of the window names will be displayed for you to make a selection of the fields which are to be used to FIND the data in the data base.

Since we will want to find Stock by its number enter "1" to select that window for indexing.

DataFlex can allow for duplicate entries in a data file, or it can reject them. The next prompt establishes whether or not duplication is allowed:

WILL THE DATA IN THIS INDEX BE UNIQUE? "N"

If you want duplication allowed, press "N". If you want to reject duplicate entries, press "Y". Select the option for unique data.

Let us also select field number 3 for CATEGORY

Press RETURN to end selection. AUTODEF will process the file definition and create the index and data files for the operation of the application.

STOCK.FRM must now be "compiled" to be run under DataFlex. The DataFlex compiler reads STOCK.FRM in the form that we see it here, and processes it into a highly compressed file that contains the internal codes and instruction on which DataFlex operates.

After processing STOCK.FRM the compiler will output a file called STOCK.FLX.

Select the Database Configuration option from the Master Menu screen. On the Configuration Menu, enter the number for the Compile a Configuration option. When prompted there for the file name to compile, type STOCK.FRM.

Upon successful completion of this operation you are now ready to test your first DataFlex application.

From the Configuration Menu or Master Menu, select the "Run a Dataflex Configuration" Option. When the option is selected, you will be prompted for the name of the application that you want to run.

Enter STOCK and press RETURN. In a few seconds, your screen should look like the image you created, but it is more than just an image, it is an active data entry screen that is waiting for you to enter data into, and recall data from the data base.

The Filedef program can be used to examine and alter the structure of a database.

Enter the file number for the stock example and use option 3 from the menu. The following details will be displayed:-

```
==================================================================

          FILE DEFINITION LISTING FOR FILE £3
******************************************************************
          FILE ROOT NAME      = STOCK
          USER DISPLAY NAME   = STOCK
          DATAFLEX FILE NAME  = STOCK
******************************************************************
          RECORD LENGTH = 73  (USED  =  67)
          MAX NUMBER OF RECORDS = 25   (USED   =  10)
          DELETED SPACE IS REUSED
          MULTI-USER RE-READ ACTIVE
******************************************************************
```

FIELD NMBR	FIELD OFFSET	FIELD LEN	FIELD TYPE	DEC PTS	MAIN INDEX	RELATES TO FILE	RELATES TO FIELD	
1	1	6	ASCII		1	0	0	STOCK_NUM
2	7	20	ASCII		0	0	0	DESC
3	27	10	ASCII		2	0	0	CAT
4	37	3	NUMERIC	2	0	0	0	COST
5	40	3	NUMERIC	2	0	0	0	PRICE
6	43	3	NUMERIC	2	0	0	0	VAT
7	46	2	NUMERIC	0	0	0	0	STOCK
8	48	2	NUMERIC	0	0	0	0	RE_ORDER
9	50	15	ASCII		0	0	0	SUP
10	65	3	DATE		0	0	0	L_ORD

```
INDEX 1:  FIELD SEGMENTS: <1>
INDEX 2:  FIELD SEGMENTS: <3>      <0>

==================================================================
```

Note that the second index (CATEGORY) must include record no. to make it a non-unique index. This allows more than one entry of the same category.

DATAFLEX "FLEXKEYS"

The Dataflex Manual refers to FLEXKEYS , these are keys which are used throughout the operation of any Dataflex program. Flexkeys are pre-programmed function keys set up during installation of your terminal , a full list of the Flexkeys and their values are below.

RETURN OR ENTER KEY	RETURN
ESC (EXIT PROGRAM)	ESCAPE
PREVIOUS FIELD	LINE FEEL
FILL CHARACTER (DATA WINDOW)	_(u/line char)
FIND A RECORD	TAB
SUPERFIND	CTRL F
SAVE A RECORD	CTRL S
DELETE A RECORD	CTRL D
PREVIOUS RECORD (SEQUENTIAL)	CTRL P
NEXT RECORD (SEQUENTIAL)	CTRL N
CALCULATE FUNCTION	CTRL C
CLEAR DATA WINDOWS ON SCREEN	CTRL A
HELP KEY	CTRL Q
PRINT DATA DISPLAYED ON SCREEN	CTRL U
LEFT ARROW (NON DESTRUCTIVE)	CTRL H
UP ARROW	CTRL K
DOWN ARROW	CTRL V
RIGHT ARROW	CTRL L
INSERT CHARACTER	CTRL Z
DELETE CHARACTER	CTRL X

SAMPLE DATA

STOCK NUM	DESC	CAT	COST	PRICE
000010	8" DSDD floppy discs	DISCS	37.00	45.00
VAT	STOCK RE-ORDER	SUPPLIER	ORDER DATE	
6.75	4 2	Cotswold	14/07/86	
000020	8" SSDD floppy discs	DISCS	27.00	37.00
5.55	1 3	Cotswold	14/07/86	
000030	Wordstar Handbook	BOOKS	7.50	12.50
1.87	1 1	Hayes	14/07/86	
000040	WordStar User Manual	BOOKS	13.50	17.50
2.62	1 1	Hayes	14/07/86	
000050	Listing Paper 9"	STATIONERY	7.50	12.50
1.87	2 6	John Knowles	14/07/86	
000060	Listing Paper 15"	STATIONERY	13.50	17.50
2.62	3 5	John Knowles	14/07/86	
000070	Headed Let Qu Paper	STATIONERY	12.00	19.50
2.02	5 4	John Knowles	14/07/86	
000080	Envelopes	STATIONERY	12.00	19.50
2.92	4 4	John Knowles	14/07/86	

The following is a listing of the simple entry configuration produced by Autodef:-

```
/FORM

                    STOCK MASTER FILE ENTRY SCREEN
                    ==============================

          STOCK No :______

     DESCRIPTION    :____________________      CATEGORY :__________

          COST :£____.__       PRICE :£____.__      VAT :£____.__

          STOCK :___.                              RE-ORDER QTY :___.

     SUPPLIER NAME :_______________      LAST ORDER DATE :__/__/__

/*
PAGE FORM
OPEN STOCK
ENTER STOCK
AUTOPAGE STOCK
  ENTRY STOCK.STOCK_NUM
  ENTRY STOCK.DESC
  ENTRY STOCK.CAT
  ENTRY STOCK.COST
  ENTRY STOCK.PRICE
  ENTRY STOCK.VAT
  ENTRY STOCK.STOCK
  ENTRY STOCK.RE_ORDER
  ENTRY STOCK.SUP
  ENTRY STOCK.L_ORD
  RETURN
ENTEREND
ABORT
```

There are certain options that can be included in this file that will enhance data entry.

AUTOFIND Executes a find Equals on the main index of the database. This is useful in this example to stop the duplication of stock numbers.

CAPSLOCK Converts all lower case input to upper case without the need of the shift key.

REQUIRED Cursor cannot be moved to next window until entry has been made.

CHECK Applies a match string test against the data that has been entered into a window.

Here is the simple report configuration produced by QUERY.

For notes on how to use the Query facility see Appendix V

```
/HEADER

                              STOCK LISTING

STOCK NUM DESC                              COST  STOCK  REORDER L ORD

/BODY RESIDENT

_____  ____________________ _______.__  ____.    ____. __/__/___

/*

OUTFILE
OPEN STOCK
REPORT STOCK BY RECNUM
SECTION HEADER
  OUTPUT HEADER
SECTION BODY
  PRINT STOCK.STOCK_NUM
  PRINT STOCK.DESC
  PRINT STOCK.COST
  PRINT STOCK.STOCK
  PRINT STOCK.RE_ORDER
  PRINT STOCK.L_ORD
  OUTPUT BODY
REPORTEND
ABORT
```

Use QUERY to produce a price list for the stock control system. Create a report image and use the editor to enhance this report.

Use the editor to add the word "CON:" after the word OUTFILE. This will direct the report to the screen rather than the printer.

Remove the number of records printed
Remove "total" statements

The Heading for the report will be PRICE LIST.
The file name PRICELST

Finally produce a menu for all the configurations produced today. The Menudef program is self explanatory and will allow the creation of a new menu that can be called up by the main menu.

A relationship is a link formed between the records of two or more files. In DataFlex this relationship is a many to one relationship. (i.e. many transactions records can be related to one stock record.)

The purpose to having related files is really two fold.

1. It cuts down the amount of data redundancy in files. This means that information stored in one file need not be stored in another, but can still be retrieved via a relationship.

2. By splitting the data stored into logical groups (files) we can look at the data in different ways (different programs) with the possibility that not all segments of the data (not all the files) need be opened in all the programs.

The next exercise is to create a transaction file relating to the stock file already created. We will then create a more detailed report from the two files.

Using EDITOR create the screen below, in a file called TRANS.

```
/FORM

    (6) Stock No :_____          (10) Category :_________

         (3) Qty :___.            (1) Discount :_.%

 (4,2) Nett Value :£____.__        (4,2) VAT :£____.__

(4,2) Total Value :£____.__

/*
```

Now using Autodef create the file definition for the transaction file. Index the transaction file by category this will allow us to take a report based on stock file and the transaction file sub-totalled by category. It is important that this index be non-unique as there will be many entries of the same category.

Next use FILEDEF to relate the Stock_Num field in the TRANS file to the Stock_Num field in the STOCK file

```
                    FILE DEFINITION FOR FILE £5
*****************************************************************
                    FILE ROOT NAME      = TRANS
                    USER DISPLAY NAME   = TRANS
                    DATAFLEX FILE NAME = TRANS
*****************************************************************
                    RECORD LENGTH = 41  (USED = 41)
                    MAX NUMBER OF RECORDS = 50  (USED =0)
                    DELETED SPACE IS REUSED
                    MULTI-USER RE-READ ACTIVE
*****************************************************************
```

FIELD NMBR	FIELD OFFSET	FIELD LEN	FIELD TYPE	DEC PTS	MAIN INDEX	RELATES TO FILE	RELATES TO FIELD	
1	1	6	ASCII		0	3	1	STOCK_NUM
2	7	10	ASCII		1	0	0	CAT
3	17	2	NUMERIC	0	0	0	0	QTY
4	19	1	NUMERIC	0	0	0	0	DISCOUNT
5	20	3	NUMERIC	2	0	0	0	NETTVAL
6	29	3	NUMERIC	2	0	0	0	VAT
7	33	3	NUMERIC	2	0	0	0	TOTVAL

INDEX 1: FIELD SEGMENTS: <2> <0>

Now use EDITOR to amend the program in the file TRANS.FRM to that shown below.

```
/FORM

                    Sales Transaction - Entry

  Stock No :_____            Description : _________________

  Category :_________

     Price :£____.__         Qty :___.              Discount :_.%

Nett Value :£____.__         VAT :£____.__   Total Value :£____.__

/*
STRING PAUSE 1 BLEEP 1
CHARACTER 7 TO BLEEP
PAGE FORM
OPEN TRANS
OPEN STOCK
ENTER TRANS STOCK
AUTOPAGE FORM
ENTRY STOCK.STOCK_NUM        {CAPSLOCK,FINDREQ,AUTOFIND}
ENTRY STOCK.DESC             {NOENTER}
ENTRY STOCK.CAT              {NOENTER}
ENTRY STOCK.PRICE            {NOENTER}
REPEAT
CLEARFORM FORM.5
AUTOPAGE FORM 5
  ENTRY TRANS.QTY
  IF FORM.5 GT STOCK.STOCK BEGIN
  GOTOXY 23 0
  SHOW " INSUFFICIENT STOCK NUMBER QUANTITY IN STOCK IS " STOCK.STOCK BLE
  INKEY PAUSE
  CLEARXY 23 0
  END
  UNTIL FORM.5 LE STOCK.STOCK
  ENTRY TRANS.DISCOUNT
  CALC (FORM.4*FORM.5-(FORM.4*FORM.5*FORM.6/100)) TO FORM.7
  ENTRY TRANS.NETTVAL
  CALC (FORM.7*.15) TO FORM.8
  ENTRY TRANS.VAT
  CALC (FORM.7+FORM.8) TO FORM.9
  ENTRY TRANS.TOTVAL
  RETURN
ENTER.SAVE:
  CALC (STOCK.STOCK-FORM.5) TO STOCK.STOCK
  MOVE STOCK.CAT TO TRANS.CAT
  RETURN
ENTEREND
ABORT
```

DataFlex Error Messages and How to Recover from them

There are two types of Error Messages that can be generated by DataFlex. There are those which occur when a program is compiled and those which occur when a program is run.

The DataFlex compiler takes your English command source code and translates it into a "compiled" form that is more efficient to execute. This compiled form is not machine language, but an internal form unique to DataFlex.

When this compilation takes place, the compiler may encounter a command line which is logically impossible, or which it in some other way can not make any sense of. This is called a compile time error. Most errors in the use of commands, as well as typographical errors, are caught at compile time, which guarantees that your program is syntactically correct when it runs. Other errors may be caused by the action of the operator, the data which is acted upon by the program, or faulty logic by the programmer. These errors are usually flagged when the compiled program is actually run (runtime).

Compiler Error Messages

During normal running of the system you will never encounter a compiler error message, these can only appear after creating a new program or after carrying out a "bug-fix". For more information about the compiler error messages use pages F24 - F29 of the DataFlex User Manual.

Runtime Error Statuses

Errors in DataFlex are reported on STATUS messages, starting with explanatory text, followed by the name of the configuration running.

Runtime statuses are those which occur when you are actually running a configuration. Runtime statuses can be the result of a fault in a file definition, the specifications made in the installation of DataFlex, configuration of your operating system, or operator actions.

Operator Errors

Lets look at the Operator Errors first, their being the most common.

STATUS 11 : NUMBER TOO LARGE FOR FIELD ALLOCATION

The number entered in a particular data field is too large. Try entering a lesser number.

STATUS 13 : AN ENTRY IS REQUIRED ON THIS WINDOW

This is a compulsory field. Therefore enter valid data before continuing.

STATUS 14 : PLEASE ENTER A NUMBER

This is a numeric field and an attempt has been made to enter alpha characters. Enter a number and continue.

STATUS 15 : INVALID ENTRY FOR THIS WINDOW

The entry made does not conform to the system specification. It this is the screen or printer option enter only S or P, If this is the start print option enter only Y or N.

STATUS 16 : PLEASE ENTER A VALID DATE (MM/DD/YY)

An invalid date format or value has been entered. Enter a valid date in the correct format before continuing.

STATUS 17 : NUMERIC ENTRY IS OUT OF RANGE

The entry made does not conform to the system specification. Enter a number within the range specified.

STATUS 28 : DUPLICATE RECORDS NOT ALLOWED IN FILE

An attempt was made to enter two records with the name key field. All key fields have to be unique and the system will not allow this to happen. Enter another record with a unique key field.

STATUS 41 : FIND PAST BEGINNING OF FILE

An attempt has been made to find a previous record at the beginning of the file.

STATUS 42 : FIND PAST END OF FILE

An attempt has been made to find a next record at the end of the file.

STATUS 71 : NO RECORD IN MEMORY TO DELETE

An attempt has been made to delete a record which does not exist in the data file being accessed.

STATUS 92 : CONFIGURATION FILE NOT FOUND

An attempt has been made to run a DataFlex program which does not exist on the logged in disc drive. Enter a valid DataFlex program name or press the return key to return to the main menu.

None of the above status would involve any data recovery action being taken, they are errors which can happen at any time during operation of the system. Try entering a character other than the ones specified where there is an option, you will get a STATUS 15 displayed.

Media and Hardware Errors

SYSTEM STOPS or "LOCKS UP" at random times.

Most probably a power flicker or spike. Although if you have asked the computer to carry out a search on a very large file you may think that the system has "locked-up" when in fact it hasn't.

BDOS Error; Bad Sector; I/O Error; Read/Write Error.

These errors are returned directly from the operating system and can be the result of:

a) If you are trying to access a floppy disc, you may have entered the disc into the drive the wrong way.

b) Has the floppy disc been formatted.

c) Is the floppy disc formatted to a format which can be read by your computer.

d) If you are accessing a hard disc drive, or the floppy disc has been formatted and inserted correctly, you have a serious problem.

Usually the only way to recover from the situation is to revert to your backup discs, assuming that you have been taking regular back ups.

If this happens frequently, have your hardware checked cut. If you are using floppy discs, try using another brand.

STATUS 4

This status indicates problems with the operating system directory structure of the disc drive. Power failure is a common cause of directory corruption. The only way to recover from this is to reformat the disc and revert to your back ups.

STATUS 20, 21, 22 & 26

Status 20, 22 and 26 are caused by a corrupted index file, generally caused by power failure, flicker or spike. Status 21 can also be caused by a disc full condition. To recover from this use the REINDEX facility of DataFlex. How to use this is described later in the mannual. If this happens repeatedly, there may be a subtle problem with the operating system or equipment. If you are on a multiuser system, carry out the checks in the following checklist.

1) Run SETSCREE Option 1 must be set to Multiuser.
2) Run FILEDEF to set the data file to re-read, true.
3) Have you followed each step of the installation

4) Is your DataFlex a Multiuser version? When DataFlex signs on after the system has been booted, it will show you the Multiuser Operating System that your copy of DataFlex is to operate on. Make sure this matches (or is compatible with) your operating system. If it signs on "single user" or with an incompatible operating system, contact your dealer.

STATUS 81 : RECORD NUMBER OUT OF RANGE

If a record number out of range status occurs when running a record, it indicates a corrupted data file. Use REINDEX on the file.

STATUS 30 : CAN'T READ CONFIGURATION FILE

The configuration file (.FRM) is not a compiled DataFlex program or the file is damaged. Check that the correct program name is being used, if so revert to your back up copy of the program.

Any of the above status in this section can result in data recovery techniques being used. There is a good statistical probability that eventually you will have a media failure of some kind, so it is important that you are aware of the data recovery techniques available to you. Some of these data recovery techniques require that you have back up copies of your programs and data files so be warned TAKE BACK UP COPIES REGULARLY.

DATA RECOVERY TECHNIQUES : WHY WOULD YOU NEED TO RECOVER DATA?

Due to power problems, media failure and sometimes configuration errors, it may become necessary to restore the integrity of your data. This recovery may be necessary on several levels. If you have a corrupted disc directory, you will need to recover all of the files on a disk (primary data recover). If only one file is corrupted, there are specific methods for recovering one file (secondary data recovery).

Before starting any kind of data recovery you should consider whether it is worthwhile. Assuming you have made proper back ups, it may be simpler to restore your back ups and bring those files up to date by manually re-inputting the data.

PRIMARY DATA RECOVERY : CORRUPTED DIRECTORY

If the directory on your disc is corrupted, you will need to recover the integrity of your disk before you start on the individual data files. You should first make another back up of your entire disc drive and then reformat the disc according to the operating system instruction. Next, verity the disc drive to make sure there are no media errors. Finally, restore the files from your back ups. You should examine all data files for corrections and proceed with secondary file recover on ALL files.

SECONDARY DATA RECOVERY : CORRUPTED FILE

If the integrity of any file is suspect, you should use the REINDEX utility on each file. Instructions on how to use this facility are included in this handout. REINDEX will restore the internal list of deleted records in the .DAT file and recreate the indexes. If there are any bad or duplicate records in the file, they will be removed. After this procedure, it is a good idea to use QUERY (instructions included in this handout) to look at the data files.

If REINDEX cannot recover the badly damaged data, it is usually better to restore the back up files than to try further recovery.

Once again emphasis is on the importance of taking regular back ups.

Another problem that may be encountered while running DataFlex is a disc full condition, particularly if you are using a floppy disc based system.

The following status codes are returned for disc full.

STATUS 2,5 : DIRECTORY OVERFLOW (DISC FULL)

The maximum number of files allowed in a disc directory has been exceeded, the maximum number varies from machine to machine. To recover from this situation you must delete any obsolete files from the disc drive.

STATUS 1,6 : SEEK PAST END OF DISC (DISC FULL)

The full amount of available disc space has been used up. Recover as for previous status.

STATUS 21 : WRITE ERROR ON DISC FILE

The full amount of available disc space has been used up when trying to expand an index file. Recover as for previous status.

STATUS 32 : CAN'T OPEN OUTPUT FILE

The disc directory has become full when trying to open an output file. Recover as for previous status.

One status that is due to configuration limitation that may arise is:

STATUS 23 : INDEX FILE, EXCEEDS DEFINED SIZE

When running FILEDEF and AUTODEF you are asked for the maximum number of records that could be in a file. If this number is greatly exceeded, you will get STATUS 23. To recover from this, simply re-enter FILEDEF and change the maximum number of records. You will then have to rebuild all indexes for the file using REINDEX instructions on how to use FILEDEF and REINDEX are included in this handout.

Other status you may come across while running a configuration comes under the heading of Configuration Errors. In any program or configuration, it is possible to use commands which are syntactically correct but which make no sense or cause errors when the program is run. The majority of these errors should be deleted during the validation stage of program writing.

STATUS 10 : +++ OUT OF MEMORY +++

If this is a new installation on 16 bit machine, run the SETSCREE utility. Otherwise you are out of memory, see the section on memory requirements.

STATUS 31 : CONFIGURATION FILE NOT FOUND

DataFlex configuration file you are trying to run has not been found. Press the return key and have a look at the directory of the disc to ensure that the configuration name is correct. This can also be caused by an improper menu configuration or an error in a CHAIN" statement.

The final set of errors you may come across, although would be the first ones to be encountered, are associated with installation of the DataFlex system or the placement of the required files or the data files on your system. These are some files that are required to be on the default drive and other files that reside on the drive specified by the configuration. Refer to the Appendix for more information on the file extension.

The following files are ABSOLUTELY required on the default (logged in) drive:

AT ALL TIMES:

FILELIST.CFG	(This is the file containing the current terminal configuration and location/names of active data files).

AT RUN TIME:

RUN.OVF	(8 bit runtime overlay file).
RUN.00?	(16 bit runtime overlay files).
FLEXERRS.DAT	(status messages).

AT COMPILE TIME:

COMP.OVF	(8 bit compile overlay file)
FLEX.CFL	(compiler command file)
*.FD	(File definition file - one for each data file).

WHEN RUNNING SETSCREEN

TERMLIST.CFG (List of terminal codes and your serial number).

DataFlex will not run if you have not activated FILELIST.CFG by running SETSCREE.

THE DataFlex distribution disc contains multiple copies of FILELIST.CFG and MENU.DAT. These set up DataFlex properly to run on floppy or hard disc systems depending on the sequence in which the discs are copied. If you do not copy the discs in the correct (A, B, C etc) sequence, you will get set up status.

The following status commonly arise from improper set up:

STATUS 43 : CAN'T OPEN INDEX FILE

The index information is kept in a separate file from the actual data. The indexes have the "ROOT" file name with a ".K?" extension, where "?" is the index number. These files must reside on the same drive as the data file.

STATUS 74 : CAN'T OPEN "FILELIST.CFG"

FILELIST.CFG must be present on the logged in disc drive.

STATUS 75 : CAN'T OPEN DATA FILE (.DAT)

The data file name contained in FILELIST.CFG can't be found. Make sure that the data files are on the correct disc drive, typically B:.

The list of status given here is not a definition list. For further information on status refer to the DataFlex Users Manual.

APPENDIX 1

Dataflex Files are made of more than 1 physical disc file. The following list shows the purpose for each part of the database, and which disc they should reside on.

*.DAT This contains the actual data and structure of the file. The .DAT file must NEVER be deleted. This file must reside on the Data Disk as specified for this file in the Filelist.

*.K?? These files contain the indexing information for the data file. They must reside on the same disk as the .DAT file.

*.TAG This file contains the individual names of the fields within each record of the file. It is used by QUERY and FILEDEF to name the fields. (The information in this file produces the titles on reports produced by QUERY). The .TAG file should reside on the data disk.

*.FD This file describes the structure of the file in a condensed form. It is used only by the compiler and should reside on the same disc as the compiler.

*.DEF This file describes the structure of the data file in ASCII (ie. printable form). This file is produced by FILEDEF using option 3. This file may be used to rebuild the data file structure - note that only the structure may be rebuilt, not the actual data.

*.RPT These files are produced by QUERY. These may be EDITED and then compiled to form a program.

*. These files are usually the "Raw Screen" entry forms that have been created in the EDITOR. These can be run through AUTODEF to produce source code and data files.

*.FRM This file is the source code file that is produced by AUTODEF.

OPTION 3

EDIT A TEXT FILE

TEXT EDIT COMMANDS

The Editor can be used to design the screen layout for a DataFlex entry progam.

X	- Delete a character
¨Z	- Insert a character
RETURN RETURN	- Insert a Line
¨D	- Delete a line
<- or ¨H or BACKSPACE	- 1 character left
-> or ¨L	- 1 character right
¨ or ¨K	- 1 line up
V or ¨V	- 1 line down
¨N	- Next Page

CREATING A FILE DEFINITION USING FILEDEF

This facility can be used to:-

1. Set up total file definition (as in Autodef)

2. Read in and set up file definitions from other systems

3. Amend existing file definitions

There are 10 facilities that can be used as follows:-

1. CREATE/EDIT FIELD SPECIFICATIONS

   Allows the user to create a new file definition or amend an existing one.

2. CREATE/EDIT INDEXES

   Allows the user to add/delete/edit indexes.

3. DISPLAY/PRINT FILE DEFINITION

   Allows the user to display the file definition to the screen, to the printer or save it in a file on disc <filename>.def.

4. SET FILE PARAMETERS AND NAMES

   Allows change in actual record length and number of records used.
   Can set REUSE DELETED SPACE Yes/No
   MULTI USER RE-READ On/Off

   Can change file names
   ROOT NAME
   DISPLAY NAME
   DATAFLEX NAME

5. ERASE DATA FILE

   Will erase all data in a .DAT file.

6. SET FILE INACTIVE

   Sets a file and all its associated files i.e. index files inactive on the database.

7. CREATE DEFINITION FROM A SCREEN IMAGE

   Has the same function as AUTODEF.

8. CREATE DEFINITION FROM A .DEF FILE

Once a file definition has been written to a disc file as in Option 3 it can be ported to another DataFlex system, once there it can be put onto the date directory using this option.

9. SAVE FILE DEFINITION AND EXIT

10. ABORT WITHOUT SAVING DEFINITION

OPTION 2 Define Menus (MENUDEF)

USING MENUDEF TO CREATE MENUS

MENUDEF is a DataFlex utility that allows the programmer to create new, and modify the standard DataFlex menu options with ease.

When this option is chosen from the utilities menu the following screens will appear:-

```
DATAFLEX MENU SYSTEM                                    MENU SELECTION

Number                        Header

   1                    ---- DataFlex ----
                           MASTER MENU

   2                    ---- DataFlex ----
                     Sample Applications Menu

   3                      DataFlex Utilites
                               Menu

   4                    ---- DataFlex ----
                      System Utilities Menu

ENTER NUMBER OF MENU YOU WISH TO EDIT : _
```

Enter the menu number to edit an existing menu or return to create a new menu.

If a return is entered the following screen will appear:-

```
DATAFLEX MENU SYSTEM                              MENU CONFIGURATION

MENU NUMBER :___                    HEADER1 :____________________
                                    HEADER2 :____________________

                                    DEFAULT MENU :___ (on return)

   PROMPT                           ACTION              PASSWORD

1. ____________________________     ____________        ____________
2. ____________________________     ____________        ____________
3. ____________________________     ____________        ____________
4. ____________________________     ____________        ____________
5. ____________________________     ____________        ____________
6. ____________________________     ____________        ____________
7. ____________________________     ____________        ____________
8. ____________________________     ____________        ____________
9. ____________________________     ____________        ____________

(N)ew Menu     (H)eader     (Q)uestions     (P)rint     (S)ave
(I)nsert       (D)elete     (C)hange        (A)ppend    (E)xit
```

(N) This will return you to the previous screen and allow you to choose a NEW MENU.

(H) This will allow you to enter a menu title into the HEADER windows.

(Q) This will allow you to add QUESTIONS to the bottom of the menu when a specific option is chosen.

(P) This will allow you to PRINT the menu.

(S) This will allow you to SAVE the edited menu.

(I) This will allow you to INSERT menu options into the screen at a given line number.

(D) This will allow you to DELETE a line

(C) This will allow you to CHANGE a line in the menu.

(A) This will allow you to add options at the end of the menu.

APPENDIX V

DATAFLEX QUERY FACILITY

The DataFlex QUERY program enables any level of system user to quickly and easily extract information from a DataFlex database file. QUERY can automatically format the file data for reports, screen displays, or disc files. The information can be output by any index, and can be selectively extracted according to specifications entered at run time. The operation of QUERY is completely interactive and non-technical.

Additional features of the QUERY program include optional totalling of numeric fields, and a full range of logical selections (less than, less than or equal to, etc) can be used. Up to ten selections per session are allowed.

Output from QUERY is device-independent, meaning that it can be directed to the screen, printer or a disc file, the data is stored in ASCII format so that it can be edited or read by other programs. QUERY also has the ability to generate a report configuration source file which can be compiled and run as a DataFlex program.

QUERY is designed to handle one DataFlex data base file at a time with an 8 bit machine and multiple files with a 16 bit machine.

OPTION 9 Query Database

USING QUERY TO WRITE REPORTS

SCREEN ONE

The names of the DataFlex databases you can Query are listed on this screen. These are not actual filenames; they are the "User Display Names" of data-bases defined for operation with DataFlex. Picking one of these gives you access to any other database(s) to which your choice relates.

MAKING A SELECTION

SELECTION is the process of having Query pick out ("select") those records in the database that satisfy your criteria. A criterion is composed of a database field, a way to compare it and a value you enter to compare with the field. Query will prompt you through the steps necessary to build up to 10 criteria.

EXAMPLE, suppose you wanted to select records from a database of PARTS supplied by a supplier called "ACME" with a cost of £ 100. First, you would choose the SUPPLIER field, pick EQUAL TO as the way to compare, and finally enter a value of "ACME" to form the first criterion. Then, you would choose the COST field. GREATER THAN for the comparison and "100" to form the second criterion.

At this stage of Query, you should "POINT" to a field by which you want to make a selection. After establishing your selection criteria press <SAVE> to proceed with Query.

If the Database you have chosen has too many fields to display on one screen press <NEXT RECORD> to display more of the fields available to you. If the database you have picked relates to any others, you can use their fields for selection also. You can display the related files list by pressing <FIND>.

You must now tell Query how to compare the information in the database field you just picked with the value you will enter to form the selection criteria.

In our example, we have established that we want to select records based on the content of the SUPPLIER field in the PARTS database. Since there will be many SUPPLIERS, Query needs to be "told" how to select the records that you want from the others (ones with a SUPPLIER field EQUAL TO "=" a value of "ACME"). You use "POINT & SHOOT" symbols to define how to make the selection comparison.

SYMBOL	COMPARISON	Record is selected if data in FIELD:
=	EQUAL TO	is the same as criteria
X	NOT EQUAL	is not the same as criteria
>	GREATER THAN	is larger/higher than criteria
<	LESS THAN	is smaller/lower than criteria
}	GREATER THAN OR EQUAL TO	is the same as or larger/higher than criteria
{	LESS THAN OR EQUAL TO	is the same as or smaller/lower than criteria
@	INCLUDES	contains the criteria value (ASCII fields only)

SCREEN 2

The selected records may be listed in any of the sequences for which your database has an index (a finding list). The existing indexes are listed on this screen for you to choose from. "POINTS & SHOOT" your choice.

Any database may be listed in order by record numbers, which is the physical order in which the records are stored on the disc and may be the order in which the records were entered. Record number listings can be made even if no indexes exist for the database. This may be meaningful where DataFlex assigned record numbers are used as account numbers or serial numbers.

If one of the indexes were listed as "SUPPLIER COST", for example, that choice would produce a list of the records in alphabetic order by SUPPLIER and then for each SUPPLIER, by COST (each SUPPLIER's list would start with PART having the lowest COST, and proceed upward, going on to the next SUPPLIER alphabetically after the highest COST PART was listed for the previous SUPPLIER).

SCREEN THREE

This screen will ask you to select all the fields that you want to appear on your report. You do this by moving the cursor to the field you require (POINT) and press the return key (SHOOT).

SCREEN FOUR

Here you can pick the form of output for your Query. (S)creen will output to your screen. (P)rinter will output to your printer. (D)isc File will output your data to an ASCII (text) file on your disk drive which can be processed further, merged with a document or transferred to another program or system.

The (G)enerate Program option doesn't output your data; it writes a DataFlex program which, after ycu compile it, can create the same Query output that you have here without having to answerthe questions all over again.

Each of these choices will return you to this screen after output, so you could: (a) check your output on the screen, then (b) print the output to the printer, and finally (c) generate a program to repeat the query any time you like. (R)estart abandons your current query and lets you start a new one, and (E)xist aborts QUERY altogether.

DATAFLEX WIMS ADVANTAGES

1. INDEX SEQUENTIAL FILING (NO "TIDYING")

The files that use this version of data storage are commonly called ISAM (Index Sequential Access Method) files. The data entered is immediately available for use (Real Time Processing) as opposed to the RAM (Random Access Method) filing where it is necessary to carry out a File Tidying routine (Batch Processing) before the data is available.

2. TRANSPARENT MULTI-USER OPERATION

A number of users are given simultaneous write privilege to the same record at the same time. This provides a transparent multi-user operation with data protection to the field level.

3. ON-SCREEN EDITING USING FLEXKEYS

DataFlex uses "Flexkeys" to accomplish various actions on a screen display. These are in lieu of a menu which would list the options available to as system operator at any given point while running WIMS. The same keys are used for the same function throughout all DataFlex applications on a given system. For example, by pressing the CTRL and N keys together the next record in the current file is displayed, CTRL and P keys displays the previous record.

4. AD HOC REPORTING PROCEDURE USING QUERY

Special one-off reports are quickly and easily obtained using the DataFlex Query Facility. The output can be sequenced by any index in existence for the database, and can be selectively extracted according to specifications entered at run-time.

5. ALL REPORTS CAN BE DISPLAYED OR PRINTED

All standard reports available from the WIMS programs can be displayed on the screen or printed. With the original version of WIMS some reports are print only.

6. EXISTING DATA FILES CAN BE CONVERTED TO DATAFLEX FILES

All data created in the RAM version of WIMS can be quickly and easily converted into DataFlex ISAM files by using the conversion programs supplied.

DATAFLEX WIMS DISADVANTAGES

1. HARD DISC OVERHEADS

The number of files created by a DataFlex configuration is usually greater than a basic configuration because of the number of indexes created. For an 8 bit system there may be up to 4 indexes plus the data files and for a 16 bit system up to 9 indexes plus the data files.

Other files are also required by the system for each data file such as:

a) The file which contains the individual names at the fields within each record of the file.

b) The file which describes the structure of the file in a condensed form.

c) The file which describes the structure of the data file is ASCII.

For File Extension meansings see Appendix I of handout.

2. To carry out "Bug-fixes" the full development package of DataFlex is required. The source program is written in a form of PASCAL and therefore is not as commonly known as BASIC. Once "Bug-fixes" have been carried out it is necessary to compile the new source program.

3. To run DataFlex there is a minimum requirement of RAM after loading the operating system. On 8 bit system there is 52K and on 16 bit system 100K.

   This means that if you have a 16 bit computer with 128K of RAM and your operating system consumes 34K, you do NOT have enough memory to run DataFlex properly.

APPENDIX D

COPY OF UNIDO CORPORATE WIMS LICENCE

Licence Agreement No: P1188

This Licence cancels and replaces Licence P0487 dated 10 March 1987

Agreement for Use of the Computerised Works Information and Management System (WIMS)

We UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
(hereinafter called "the Licensee")

of VIENNA INTERNATIONAL CENTRE, A-1400, VIENNA

wish to acquire a right to use the computer software known as the Works Information and Management System (WIMS) (which, together with any associated information, documentation, additions, modifications and updating material, shall be hereinafter called "the WIMS Package"). We acknowledge the ownership rights of the Secretary of State for whom Pierce Management Services (hereinafter called "the Agents") market the WIMS package.

In consideration of the payment by the Licensee (within 30 days) of the licence fee £16900 the Agents hereby agree

(a) to supply the WIMS package for use on A maximum of 14 (fourteen) IBM PC or compatible computers as detailed in the Appendix.

(b) to grant a licence to use the WIMS package for a period as described in condition (8) below.

(c) to the copying of the programs and documents in the WIMS package as necessary for use solely in the installation nominated in (a) above.

The Licensee agrees to notify the Agents of any intention to use the above WIMS package on any additional computer installations (Central Processor Unit/Disk Drive System) and to pay a copy fee in respect of every additional WIMS installation, unless special arrangements have been made for a multi-user licence.

The Licensee agrees to accept the following conditions:-

(1) Ownership and Property Rights.

(a) The WIMS Package shall remain the sole property of the Secretary of State.

(b) All patent, copyright and other industrial property rights shall remain the sole property of the Secretary of State who reserves the right to sell the WIMS Package to any party or parties as he thinks fit.

(c) The Licensee shall at all times ensure that the programs and documentation which form part of the WIMS Package be clearly marked "Crown Copyright Reserved ©" followed by the relevant year of first publication and a notice in the following terms:-

"The material herein remains the property of the Crown and is Crown Copyright. It may only be used as stated in the licence agreement no. P1188 and it may not be reproduced, adapted or used for any other purposes without prior written permission of the Agents, acting for the Secretary of State."

(2) Modifications.

(a) The Agents will supply, subject to the Licensee paying necessarily incurred costs, copies of all relevant refinements to the originally supplied programs which may from time to time be issued by the Secretary of State to the Agents.

(b) The Licensee shall be entitled to amend the WIMS Package by updating it, making improvements, modifications and/or innovations, (hereinafter called "the Amendments"), on condition that the Licensee notifies the Agents in writing of the Amendments within one month of amendment action.

(c) The Crown shall be entitled to a free, irrevocable and non-exclusive licence to copy the said amendments and to use the same for its own purposes within the NHS estate or similar areas of Crown responsibility, but excluding use by non-Crown controlled commercial users, unless with the specific written authority of the Licensee.

(d) Additional programs which may be added by the Secretary of State to the WIMS Package as supplied at the date of this agreement shall be offered by the Agents to the Licensee when such additions are made available to the Agent by the Secretary of State, at a price to be determined and quoted at the time that the additional programs are made available.

(3) Publicity.

All publicity about or referring to the use of the WIMS Package by the Licensee shall be subject to the prior written agreement of the Agents, acting for the Secretary of State.

(4) Caveat.

The Agents accept no liability whatsoever in respect of any failure or defect in the WIMS Package causing any loss, damage or injury (including injury resulting in death) to any property or persons (including and without prejudice to the generality of the foregoing any servant, employee, agent or licensee of the Licensee) arising in any way out of or in connection with the use of the WIMS Package or the amended WIMS Package or any part thereof. The Licensee shall indemnify the Agents against all costs, charges, expenses, actions claims and demands in respect of any such loss, damage or injury.

(5) Security.

(a) The Licensee shall be responsible for the safety, care and protection of the WIMS Package or any parts thereof.

(b) The Licensee shall effect and maintain adequate security measures to safeguard the WIMS Package from theft, unauthorised copying or access by any person other than his servants or employees.

(c) The Licensee shall take all reasonable precautions to maintain the confidentiality and integrity of the WIMS Package and shall not disclose or permit disclosure of the WIMS Package without the prior consent of the Agents acting for the Secretary of State.

(d) The Licensee shall instruct all staff having access to the WIMS Package to comply with the above requirements.

(e) In the event that the WIMS Package or any part or parts of it should come into the hands of a third party through the Licensee or any employees, or former employees, contrary to the terms of this licence, the Licensee shall compensate the Agents for any claims made on the Agents by the Secretary of State.

(6) Licences.

(a) The Licensee is not permitted to grant licences of the WIMS Package to any third party.

(b) The Licensee shall not, without the prior written consent of the Agents, acting for the Secretary of State, sell, lease, assign or part with any benefit or with any of the rights granted herein or otherwise make available for any purpose whatsoever whether gratuitously or for valuable consideration the WIMS Package or any part thereof of any information in respect thereof to any person or persons or company.

(7) Suitability.

The Agents offer the licence on condition that the Licensee has satisfied himself as to the suitability of the WIMS programs for his particular local circumstances, including the suitability of the computer on which he intends to run the programs. Such condition shall not negate the normal Common Law rights existing between buyers and sellers.

(8) Duration.

This licence shall come into effect on the date of signature hereof and shall remain in force for an initial period of five years subject to those rights of termination contained in condition (9) hereof. If the licence has not been terminated under condition (9) hereof at the expiration of the aforesaid five year period then the Licence shall continue in force subject to the same rights of termination.

(9) Termination.

(1) In the event of non-compliance with the Conditions of this Agreement and the Licence hereunder, the licence may be terminated by either party giving to the other not less than one month's notice in writing, and upon termination of the Agreement the User shall certify to the Agents in writing that the package and all relevant documentation and information in any form connected with the Package and any copies thereof have been destroyed.

(2) Termination of this Agreement howsoever caused shall not release the User from any duty or obligation of confidence which falls on him under this Agreement or under the general law governing confidential information nor shall it prejudice or affect any right, action or remedy which shall have accrued before termination or shall accrue thereafter to either party.

(3) In the event of termination in accordance with condition (9) (1) above being caused by non-compliance with the Conditions by the Agents, full or partial refund of purchase monies paid by the Licensee shall be subject to mutual agreement between the parties. In the event of a failure to agree such refund the matter is to be referred for arbitration to DHSS, Works Group, representing the Secretary of State as the Owner of the WIMS package, with whom the User shall have the right to renegotiate a reissue of the License at the discretion of the Secretary of State.

(10) Notices.

(1) Any notice, consent and communication authorised or required to be given hereunder for the purposes hereof shall be deemed to be duly given if left or sent by first class post addressed to the User at his last known place of abode or business or address of its registered office or if sent by cable or telegram so addressed and confirmed by first class post in like manner and by the User if sent by first class post, or if sent by cable or telegram, and confirmed by first class post in like manner.

(10) Notices. (Contd.)

(2) Any such notice if served by first class post, cable or telegram shall be deemed to have been given at the time when it would have been received in due course by first class post, cable or telegram respectively and in proving service of such notice it shall only be necessary to prove that the letter, cable or telegram containing the same was properly addressed and (if necessary) pre-paid and put into the post or left at the office of the cable company or the Post Office as the case may be.

(3) This Agreement shall be construed as a contract made in England and shall be subject to English law.

(11) Definition.

The "WIMS Package" referred to in this agreement relates to the following programs .....

The Asset Management Module, The Stock Control and Purchase Orders Module (DataFle.. 2.3 version)

(12) Warranty.

(1) The WIMS Package as defined in (11) above is warranted for 90 days from the date of this agreement to be free from normal statement errors. Any such errors must be reported to the Agents in detail in writing within the warranty period, and the Agents will issue in writing such corrections as are necessary to correct the program function. The same warranty will apply to modifications to the programs by the Agents for a period of 90 days from the date of supply of such modifications.
The Agents cannot accept responsibility for errors occurring in modifications where these modifications are made by parties other than the Agents.

(2) Notwithstanding the above, the Agents will inform the licensee of program statement errors as and when these are reported to the Agents by the Secretary of State, when such errors are relevant to the programs detailed in (11) above.

Signed on behalf of
Pierce Management Services.

Signed _____

NAME TIMOTHY CHARLES HUBBARD

Position PARTNER

Signed on behalf of
the Licensee.

Signed _____

NAME DAGMAR TRKALOVÁ

Position CHIEF EXECUTIVE

Date 6 February 1989

V5C11105

WORKS INFORMATION MANAGEMENT SYSTEM (WIMS)

LICENCE NO: P1168

LICENSEE: UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION (UNIDO)

APPENDIX

This licence is issued for a maximum of 14 (fourteen) installations in establishments participating in UNDP Project DP/RER/87/036. The 14 nominated installations consist of one National Focal Point Institution and one node in each of the following participating nations:

Czechoslovakia
Bulgaria
Cyprus
Hungary
Yugoslavia
Poland
Portugal

The Licensee must inform the Agent of the Name, address and contact at each of the 14 installations as issues are made.

Installations in addition to the 14 above must be the subject of additional licensing which the Agent will supply on request.

Ref: WIMUNAPP.LIC

APPENDIX E

UNIDO REPORT ON INITIAL TRAINING

UNDP/UNIDO regional project RER/87/036

Industrial Computerized Management Systems

R E P O R T

of the Initial Training on Works Information and Management System (WIMS) held in Prague, Czechoslovakia during 6 - 10 February 1989

Based on the conclusions of the 2nd Regional Project Network Steering Committee (Warsaw, Poland, December 1988) and the UNIDO Contract No. 88/136 with Pierce Management Services, Chipping Norton, U.K. one-week initial training on Computerized Maintenance Management System for Personal Computers "Works Information and Management System" (WIMS) was organized by the UNIDO-Czechoslovakia Joint Programme for Cooperation, Metallic Industries (JP/MI) in Prague as the Regional Network Leading Institution (RNLI) during 6 - 10 February 1989 with the participation of 18 specialists - the representatives of NFPIs of project participating countries (for the list of participants, see Annex 1).

The host institution (JP/MI) provided Daily Subsistance Allowance for participants as well as training facilities and teaching aids. The international travel was borne by the National Focal Point Institutions (NFPIs).

The training was conducted by the lecturers of Pierce Management Services, Messrs. Timothy Charles Hubbard and Haydn John Evans (for training schedule, see Annex 2).

The UNIDO representatives Messrs. Krystyn Zaleski and Alexander Makovets of IOT/IMRB branch took part at the training evaluation. The training execution as well as organization was positively evaluated by all the participants, lecturers and UNIDO representatives as well. The special thanks were addressed to the organizers (JP/MI).

The representatives of NFPIs received the Agreement for the Use of Dataflex and WIMS software systems. This Agreement will be signed in their home countries by the respective authorities of NFPIs and NNPs. The signed Agreement will be returned to JP/MI for signature of INORGA Institute represenatative. One copy of the Agreement will then be returned to NFPIs through UNIDO together with floppy discs containing WIMS.

The representatives of NFPIs received also both DataFlex 2.3 versions (run-time version and development version) and documentation.

The Pierce Management Services representatives will receive the list of addresses and references of 4 installations of WIMS consisting of one NFPI and one NNP in participating country, together with copies of Agreements signed by each NFPI.

It was agreed that UNIDO would provide 250 pieces of 5 1/4" floppy discs for the preparation of the appropriate number of WIMS package copies for every participating country. The copies of WIMS system will be prepared by JP/MI staff and distributed to all NFPs through UNIDO.

It was also agreed that in case of any queries concerning WIMS installation, running and customization all NFPIs can contact directly Pierce Management Services that are prepared to assist them in the WIMS implementation and customization.

The training participants felt that the training was prepared and organized on a good level. They appreciated that all country represenatives could use their own PC computer. One PC computer with large-screen projector equipment (Kodak Datashow) was used by lecturer. As the lectures were held daily from 9 till 17 o'clock, the training workshop was considered as very intesive one. However, because of extensive training subject (Dataflex database system and WIMS software package), all participants expressed their opinion that additional training and exchange of experience with WIMS implementation in project participating countries would be desirable. In this respect Mr. Makovets asked one of project participating countries, preferably Hungary or Bulgaria or Poland, to organize such a workshop/ exchange of experience in autumn of 1989, preferably before the 3rd meeting of the Network Stering Committee in Ljubljana in October 1989. It is expected that the host country will carry daily and subsistance allowance of participants (one user from each project participating country) and the participating countries will provide international travel of their representative. UNIDO will invite also a representative of Pierce Management Services for this workshop. As a part of social programme, a party was organized being attended by Mr. T. Kurtha, the First Deputy Minister, Federal Ministry of Metalurgy, Mechanical and Electrical Engineering and by Mrs. D. Trkalova, the Managing Director of INORGA Institute and JP/MI Chief Executive.

The idea was also expressed by all the participants that each country will require additional WIMS installations. Mr. Makovets informed that UNIDO has already requested additional financial support from UNDP budget. Based on the availability of these funds the question of additional installations will be discussed on 3rd NSC meeting in Ljubljana, Yugoslavia in October 1989.

Mr. A. Tikhomirov, the representative of Moscow University, USSR participated in the training as an observer. During the discussions with JP/MI and UNIDO representatives he expressed the interest of USSR to join the regional project and take part in the project activities. He was given a copy of project document to study it thoroughly and to prepare recommentions concerning possible participation in the project activities.

During the training workshop, specification of equipment requested by project participating countries was finalized as well as nomination of participants for study tour to SICOB

conference and exhibition, Paris.

The representative of Bulgarian NFPI Mr. Lazar Kovatchki visited JP/MI during 8-10 February 1989 to discuss the development of spare parts module to be included to WIMS. This module will be developed jointly by Bulgaria and Czechoslovakia. Possibilities to use some of the already prepared systems (developed either in Bulgaria or in Czechoslovakia) were discussed and demo-version of such modules were presented. Due to problems concerning different national languages and cyrilic characters, it was agreed that the final decision concerning adaptation of both software packages would require a short tour of INORGA specialist to Bulgaria, which should be carried out as soon as possible, preferable in March or April this year. The exact time of travel to Sofia will be agreed upon later and subsequently the work programme for the module development will be prepared including the requested support from project budget.

All participants as well as JP/MI staff expressed the appreciation of Messrs. Hubbard and Evans highly enthusiastic lecturing and their apparent willingness to cooperate in very friendly way in future.

Prague, 14 February 1989.

Mr. Slavoj Chladek
JP/MI Chief Advisor

Annex 1

List of Participants
WIMS Initial Training

DP/RER/87/036

Prague, 6 - 10 February 1989

Bulgaria	Ms. Mihaylova Joulia Petrova Ms. Popova Tatiana Georgieva	TMK "Lenin" Iron & Steel Works, Pernik
Cyprus	Mr. Moditis Ioannis Mr. Panayiotou Costakis	Cyprus Productivity Centre, POB 536, Nicosia
Czechoslovakia	Mr. Borovsky Robert Ms. Bydzovska Dagmar Mr. Martinek Miloslav Mr. Ordnung Mikulas	UNIDO-CSSR Joint Programme INORGA, Letenska 17 118 06 Prague 1
Hungary	Mr. Kaldi Tamas Mr. Kis Laszlo	SZAMALK, 1502 Budapest 112, POB 146
Poland	Mr. Pasnik Jacek Mr. Tymolewski Boleslaw	IEPCH, Krakow, ul. Przy rondzieg Merinotex, Torun, ul. Szola bydgoska 40/62
Portugal	Mr. Joao Blasco Augusto Mr. dos Santor Pedro Reis	Cometna s.a., Steel Factory IPE s.a., av. Julio Dinis, Lisboa
Yugoslavia	Mr. Altman Dusan Mr. Hribar Viktor Mr. Zevnik Marko	ISKRA Delta, 11070 Belgrade, 42, Narodnih heroja Produktivnost, 61000 Ljubljana, Titova 118
Observer		
USSR	Mr.Tikhomirov Alexei A.	Moscow University, Economics Department

WORKS INFORMATION MANAGEMENT SYSTEM - (WIMS)©

DATAFLEX AND WIMS FAMILIARIZATION COURSE PROGRAMME

6 - 10 February 1989

VENUE: NTCTC, NARODNI STREET, PRAGUE, CZECHOSLOVAKIA

COURSE TUTORS: HAYDN EVANS AND TIM HUBBARD, PIERCE MANAGEMENT SERVICES, U.K.

DAY	0900 - 1030	1045 - 1230	1315 - 1500	1515 - 1700
1	RECEPTION. ASSEMBLY. INTRODUCTIONS.	THE ASSET MANAGEMENT MODULE. Step by Step Guidance Through The Various Stages With Maximisation Of "Hands-on" Practice		
2	THE Step by Step	ASSET MANAGEMENT MODULE. Guidance Through The Various Stages With Maximisation of "Hands-on" Practice.		
3	THE STOCK Step by Step	CONTROL AND PURCHASE ORDERS MODULE. Guidance Through The Various Stages With Maximisation of "Hands-on" Practice.		
4	INTRODUCTION TO DATAFLEX	RELATIONSHIP BETWEEN DATAFLEX FILES (FILEDEF)	AD-HOC REPORTS USING "QUERY"	CREATING APPLICATIONS (AUTODEF)
5	MODIFYING MENUS (MENUDEF)	MODIFYING PROGRAMS (COMPILE)	MODIFYING PROGRAMS (COMPILE)	MODIFYING PROGRAMS (COMPILE). CLOSING FORUM. DISPERSAL.

REF: UINFICDF.PRG