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**METERING, BILLING AND COLLECTIONS SYSTEM
IMPROVEMENT REPORT**

**NIS Institutional Based Services Under the
Energy Efficiency and Market Reform Project
Contract No CCN-Q-00-93-00152-00**

**Delivery Order No 12
Improved Commercial Operation of Energy Sector
Distribution Companies in Armenia**

Final Report

Prepared for

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METERING, BILLING & COLLECTIONS SYSTEM IMPROVEMENT REPORT

EXECUTIVE SUMMARY

This report is part of Delivery Order 12, contract CCN-0002-Q-12-3152-03. It examines the system improvements (information technologies) required to support improved metering, billing and collection processes within the Armenian electricity and natural gas distribution sectors. The report describes the problems uncovered at the distribution companies and a software/hardware solution designed jointly by Hagler Bailly and CMP International to support business process redesign in the distribution sector. The main objective of the program is to improve revenue collections and revenue tracking for electricity and natural gas. The software program that has been developed for this purpose is called Abacus (which loosely stands for Automated Billing and Collections Utility System), it was created to help improve collections by mitigating or compensating for the weaknesses found in the distribution sector¹.

The Abacus system was tested on site at the Kievyan local office of the Komitas distribution network, and at the Komitas central office. During the on-site testing, procedural and other discrepancies were identified and resolved. Changes to the Abacus structure were also initiated as required by these newly discovered discrepancies. To help ensure Abacus' efficiency and effectiveness, a technical expert in PowerBuilder (the software language used to create Abacus) inspected the Abacus program and database (PowerBuilder is a fourth-generation programming language used to implement Abacus). A copy of the technical review report is attached. This report will be of great use should the decision be made to further replicate Abacus at other utilities.

It must be understood that infrastructure improvement is essential to improving collections. While good software can augment changes in structure and control and make a significant contribution to resolving the issues, software cannot do the job alone. Information technologies are a critical underpinning of the effort to improve business processes but they are of course, simply a tool. Such tools should not be overemphasized at the expense of other reform efforts (e.g., management training, accounting reform, human resource development).

¹ Of course, there are a number of weaknesses including lack of a management information system/management accounting, financial accounting and reporting, financial planning, and human resources to name a few. This effort focused only on the metering, billing and collections area.

This document 1) describes the business environment as it relates to the Abacus system, 2) lists problems identified during the analysis, 3) describes features of the Abacus program that remedy the identified problems, and, 4) recommends follow-up actions should Abacus be developed further

I. INTRODUCTION

In accordance with Delivery Order 12 of Contract CCN-0002-Q-12-3152-03, this report has been prepared to describe the system improvements required to support improved metering, billing and collections in the Armenian electricity and natural gas distribution sectors

Collections in Armenia, similar to other emerging markets, are far below the levels required for successful commercialization of the energy sector This collection deficit is the result of numerous problems including the poor economic state of the country, the lack of effective disconnection policies, internal financial control weaknesses and technological factors (e g , metering problems, excessive technical losses)

This report describes the weaknesses identified in the business processes within the Republic's energy distribution sector that affect the ability of the utilities to properly handle metering, billing and collections The ways in which system improvements (i e , software and hardware information based technologies) can support the redesign of business processes and provide the tools necessary for a sustained increase in the sector's financial performance are also described In particular, this report presents the development of a software tool, known as Abacus, and how it addresses the identified problems Abacus has been implemented to support the pilot projects undertaken as part of the same Delivery Order and has generally met with widespread user acceptance A number of recommendations are also provided, including detailed system changes that should be made, if there is a desire to further replicate the program in the Armenian energy sector

II. PROBLEMS IDENTIFIED REQUIRING SYSTEMIC IMPROVEMENT

Examination of the distribution sector identified a number of overall problem areas, as shown below, that adversely affected metering, billing and collections

Operational (day-to-day) categories

A number of operational problems were identified These include

- ☐ Manual (hand entry) paper based billing processes The usual errors and features that accompany such manual processes were present throughout and comprise
 - ⊗ accuracy and speed vary by accountant/clerk,
 - ⊗ arithmetic errors,
 - ⊗ data loss,
 - ⊗ data hoarding and unwillingness to share information,
 - ⊗ inconsistent application of tax and collection policies,
 - ⊗ no backup,
 - ⊗ no easy way to track or summarize daily receipts or amounts owed,
 - ⊗ original information stored only in one location,
 - ⊗ significant time lag to answer billing queries

- ☐ Inability to properly assess collection performance It was difficult to track and verify the work being performed by local collection agents and the proper commissions they deserved This process is now discontinued However, a similar situation exists with the distribution companies' meter readers It is difficult to track the performance of specific meter readers

- ☐ Lack of controls This included such factors as
 - ⊗ inaccurate billings,
 - ⊗ collusion with the account holder,
 - ⊗ faulty collection procedures,
 - ⊗ possible diversion of funds

- ☐ Inadequate government policies placed constraints on the distribution companies' ability to effectively manage their workforce The best example of such a policy is the requirement (still in effect) that all meters be read on the last day of the month This requirement is intended to allow management to compare meter readings at different distribution network levels and note discrepancies exceeding expected and normal line losses (in other words, to create an energy balance) The resulting inordinately heavy workload for that day leads to some meter readers falsifying some unknown number of meter readings This negates the rationale behind the single day meter reading program There are also much greater indications of data entry errors as clerks rush to input all of the meter readings collected at month's end

- ☐ Inadequate information about the meters in place This included the lack of a meter inventory to provide information such as 1) when the meter was installed, 2) the date the meter was last tested and calibrated, 3) the age of the meter (thus perhaps indicating obsolescence) Not surprisingly given the lack of such information, there was no comprehensive meter testing program in place

Administrative (analysis) category

The dependence on manual record keeping resulted in the lack of easily retrievable, historical information for any given customer or subset of customers. Data could not be independently verified, nor could management receive timely, accurate and auditable reports and summaries pertaining to financial performance. There were no current or historical records available for easy query by premise, by account, by individual, by payment history, or by metered/billed energy sales in a given area. Consumer debt was not aged. Financial information overall was not easily available in electronic form for analysis or verification purposes.

Lack of adequate information technology infrastructure

During the analysis period, it also became obvious that the utilities lacked computer equipment and modern software to support the metering, billing and collection process. The limited equipment that was available was generally obsolete. Few staff had adequate knowledge and training about computer hardware and software. The distribution utilities were not capturing easily gained efficiencies from adoption of even the simplest software programs.

In light of all of these weaknesses, Hagler Bailly and CMP International (the project team) decided that there was a need to introduce an information technology based solution to help support the redesign of the metering, billing and collection function. After discussion with USAID, the decision was made to begin development of a software program that would be used solely on a pilot basis to support the electricity and natural gas distribution commercialization pilot projects.

III. DEVELOPMENT OF ABACUS FOR BUSINESS PROCESS IMPROVEMENT

With the help and assistance of Armenian counterparts in the various ministries and companies, the project team created a program known as Abacus (for Automated Billing and Collection Utility System). The system design enables and facilitates the process of billing customers and collection of payments. It also provides proper reporting to meet the requirements of management, accounting, sales and technical departments of the distribution companies, as well as those of the Ministry of Energy. In addition, Abacus enables the distribution companies to maintain current and historical information about their distribution network (a meter database for instance).

Abacus supports the following overall metering, billing and collection strategy:

- ☐ Meter-reading routes and cycles,
- ☐ Separate procedures for meter reading, billing and payments,

- ☐ Database on meters and meter cycling,
- ☐ Debt aging and development of disconnection list

Abacus also supports the analysis of energy flow information throughout the distribution network through the use of a "tree" structure. This structure permits tracking of purchased energy, the flow of energy within the distribution company, and the consumption by end users. With this information, the program can highlight those areas where losses appear excessive, thus helping to pinpoint areas of the network that warrant closer inspection and more aggressive loss reduction/revenue collection efforts.

It should be noted that this "tree" structure is better suited for the electricity distribution utility. For natural gas utilities, this structure will work at the low pressure network level (such as encountered during the pilot projects), but due to the looping nature of a gas distribution network, the tree structure is not as effective at identifying areas of excessive losses.

Abacus stores various types of data:

- ☐ Customer information: Detailed information about each customer, including name, address, phone number, account number, account opening date, tariff, metering, billing and payments information.
- ☐ Associative relations between customers: This includes the cases where
 - ⊗ One customer is responsible for bills of other customers (consolidated billing), or,
 - ⊗ A customer is not responsible for consumption of its sub-customers who are connected to the same supply line.
- ☐ Metering of common areas: One bill is produced for each common area every month. Users are collectively responsible for paying the specified amount. It is possible to define the obligation or commitment of customers to pay a certain portion of the collective bill (e.g. the obligation of a water supply company to pay for a certain amount of power consumed by a water pump).
- ☐ Cycles/routes: The system helps to maintain information about meter reading cycles and billing routes. The cycle information also is used to produce monthly bills in a batch mode. This feature, which received great interest from management, has not yet been used due to the government policy that all meters are to be read on the last day of the month.
- ☐ Transformation and distribution losses: The system is able to specify fixed and variable losses that occur before or after the meter of each individual customer and whether the customer is responsible for payment of these losses.

- ☐ Meter information The system maintains detailed information about meters, including type, serial number, multiplier factor, maximum length of reading, installation date, last testing date, replacement date, etc
- ☐ Meter readings Periodic meter reading data are kept for each meter Normally, meter readings are entered into the system on a monthly basis, however, multiple readings during a month are also possible For exceptional cases, the system allows estimated consumption to be entered instead of the actual meter reading Corrections and adjustments can be made to the meter reading data entered into the system, however, all such instances are tracked in an unalterable audit database
- ☐ Billing The billing process is computerized and all bills are produced based on the metering information entered into the system In addition, the system allows checking the current balance of customers and printing out statements that reflect past due debt, late payment charge, power consumption, recent payments and outstanding balances
- ☐ Collections/payments Information about payments made with reference to the actual payment documents are stored in the system
- ☐ Multiple tariffs The system will support multiple tariff designs and discounts including time-of-use tariffs, demand charges, and customer charges
- ☐ Late payment charges Late payment charges are accrued on a monthly basis The system supports grace periods during which customers have to make payments for the power consumed by them during the previous month Late payment charges are not accrued during the grace period

Data collected by the branch offices is entered into Abacus and stored in the local databases This data is uploaded into the central database stored on the server located at the main office thus providing management, accounting and sales departments of the utilities full access to the collection and energy use information

Abacus can be used either “stand alone” on a single workstation, or in a computer network environment consisting of a server computer located at the main office of the distribution company and workstations located at the branch offices

Abacus does not require interactive updates and/or requests to the remotely stored databases The amount of data to be exchanged between the central and branch offices is not large and can be transferred using dial-up networking connections using remote access services supported by both Microsoft Windows 95 and NT Server

A back-up process using diskette or tape media has been developed to allow updating of the central database when dial-up connections are not possible

The program currently supports the Armenian, Russian and English languages. A translation module was developed and included to give the program the ability to accommodate any language and font

Abacus was developed in PowerBuilder and uses Sybase SQL Anywhere Server as a scalable "backend" database. Most necessary reports are included as context sensitive options but *ad hoc* reporting is possible through PowerBuilder's Infomaker or any SQL compatible tool and Microsoft's ODBC drivers

IV. SYSTEM IMPROVEMENTS TO ADDRESS THE IDENTIFIED PROBLEMS

Abacus has a number of features built in that are designed to specifically address the problems noted in section II of this report. The program includes a number of features to strengthen internal controls, streamline performance and improve productivity, and provide utility management with the information needed to properly manage the metering, billing and collections process

- ☐ Abacus permits the introduction of billing cycles and rotating meter reading. This helps to facilitate workforce rotation for better internal control (helps to reduce meter reader/consumer collusion). The model's ability to print out suggested routes and meter reading lists improves meter reader effectiveness. The meter cycle control ability and immediate reporting in Abacus will allow loss prevention and control even when meters are read on a cyclic basis. This can enable optimal use of labor with a significant improvement in both accuracy and control.
- ☐ The model reduces the likelihood of data entry errors. Batch based data entry is cross checked on entry thus making it easier to trace problems. The model also has the capability to upload and download data directly into handheld meter reading devices. These devices have been deployed in the Komitas network and Abacus is being used to support this effort²
- ☐ Bill production is automated. The model calculates a bill based on "raw" meter readings with data automatically checked for reasonableness. The bill production process is much faster and simpler using the model, thus increasing productivity. Further, there is considerable flexibility in the kind of information that can be shown on the bill (e.g., consumer debt, prior meter readings)

² This is taking place as part of the pilot project activities of Delivery Order 15

- ☐ The model's ability to quickly process large databases permits accounts receivables to be tracked and penalties imposed in an impartial and consistent manner
- ☐ The meter information database is able to track serials numbers for depreciation estimation purposes and also to develop a meter testing/calibration program. The model tracks meter "change outs" and includes a meter seal tracking number to help identify if the meter has been tampered with
- ☐ The model's tree structure, as described earlier, is one of the key features in that it helps to identify sources of current loss and diversion. An additional benefit of the tree structure that was unanticipated during model development is that it assists with network mapping³
- ☐ The model has a number of features that increase its flexibility. It is table driven thus making tax and rate changes straightforward, even with block rates and time-of-use provisions. It also includes a graphical user interface that provides instant visual identification of key issues using icons and color coding
- ☐ Management performance is improved by the reporting functions provided. Management reports include
 - ⊗ Summary/detailed receivable and collections performance by subdivision, by feeder, by meter reader,
 - ⊗ Branch office performance comparisons,
 - ⊗ Transaction audits,
 - ⊗ Account histories,
 - ⊗ Energy flow breakdown by organization,
 - ⊗ Meter junctions configuration,
 - ⊗ Delinquency and disconnection reports,
 - ⊗ Cycle totals report

Copies of the management reports produced by Abacus are attached in Exhibit A⁴

³ During the implementation of Abacus at the Kievan branch of the Komitas network utility, it became apparent that utility records did not match actual system configuration. During the energy crisis, many network reconfigurations took place and record-keeping did not keep up with the changes being made. Abacus provided a way for the utility to realize where its records needed updating due to large, unexplained differences between master metered nodes and the end user consumption

⁴ For more information about Abacus, see the *User Documentation* (September 1998) prepared by Taurus Ltd

V RECOMMENDATIONS

Based on the project team's assessment, there are a number of recommendations for further refinement and improvement of the Abacus model

1 Complete Further Technical Improvements to Abacus

Abacus has successfully met the requirements needed for the pilot project activities undertaken as part of this Delivery Order. Should, however, effort be made to replicate Abacus further, there are a number of technical changes suggested that will improve system performance. Exhibit B is a report from an expert reviewer of the model, the report provides suggested changes to the source code to improve the model's efficiency. Some screens and internal operations of the model can be modified to improve efficiency, both of Abacus itself and of the operators and other personnel that use it. Some of the algorithms used to monitor and track performance (e.g., energy losses in a given area) can also be refined. These changes, if implemented, can be expected to improve both execution speed and throughput.

It should be noted that these changes are designed to permit the model to be operate more efficiently, it does not change the functions that the model supports.

2 Update Abacus as Required

As the user-base gains experience and familiarity with Abacus, their comments and suggestions could be incorporated into Abacus to ensure continued improvements in user effectiveness. Particular attention should be paid to the interface between Abacus and the user community. The software language used is quite flexible and should be able to respond to user needs.

3 Create a Stronger Link to the Accounting Systems in Use

As the distribution companies move towards automated accounting and control functions, Abacus can be modified to facilitate exchange of financial and other information directly with an accounting package. One particular complexity with adopting this recommendation is that there is no standardized accounting package in use in the energy sector. This may mean that Abacus would have to have customized "hand shakes" for each particular utility.

4 Modify the Model to Better Support Gas Distribution Companies

Abacus' basic structure is sufficient whether it is used in an electric or natural gas utility. Since it is table driven, it can prepare accurate bills as long as it has access to the rate structure and accurate metering information. However, as currently configured, certain data views and presentations, such as the "tree" structure, are better suited for an electric utility. As gas commercialization efforts continue, it is warranted to consider development of a gas-specific

model that would take into account features of the gas industry, such as the “looping” nature of the network as referred to earlier

VI CONCLUSION

Armenia’s electricity and natural gas distribution utilities are in a poor condition with regards to the adoption and uptake of information technologies. Although such technologies should never be seen as a solution on their own, they are certainly an important part of the utility commercialization process. Based on an analysis of the problems seen in the sector, the project team identified the need for a software package that would permit other commercialization recommendations focusing on metering, billing and collections to be implemented. In addition to Armenia, the model has also been demonstrated in other settings, including Russia and Ukraine, and the reaction has been quite positive. Within Armenia, the software has received widespread user acceptance in the pilot project areas and based on the results seen to date, its further implementation should be seriously considered.

APPENDIX A
SOFTWARE ENHANCEMENT/MIGRATION PLAN

Hagler Bailly

Abacus Enhancement/Migration Plan

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Abacus Application Development Vision

The application needs to provide efficient and reliable performance in multiple languages. The application needs to support both distributed and centralized multi-user database models. I further believe that it is desirable that this application be able to support multiple database engines. The support of multiple database engines will enhance the scalability and portability of the application.

Executive Summary

In my opinion, the current state of the application will not support direct movement toward of the above vision. Several initial steps are required to create stable and reliable application capable of being migrated into the above vision. The are significant design and coding issues that must be addressed involve creating a complete consistent set of application objects and having those objects interface with their database in a fashion that protects the data. The database also requires enhancements so that it can assure that application requests do not violate data integrity requirements. After these basic items are addressed, there are some suggested enhancements to migrate this application to support the stated vision. Once a stable application is created, additional enhancement suggestions should be considered in support of the stated vision and beyond.

The Database Model

Two data models have been prepared. Abacus pdm and AbacusN pdm are the two database model files. As these files are manipulated by the Sybase PowerDesigner application, I do not expect that you will be able to process them. Therefore, I will enclose both black and white and color copies in the presentation booklets. I will also include two additional copies (b&w and color) separately to allow them to be assembled as wall posters. The first is the original database as received (see Appendix A). The second contains information resulting from the limited investigation of the application (see Appendix B).

Table Color	Meaning
Green	Location/Level tables – the suggested change is shown on the second diagram
Yellow	Cycle/Route tables – the suggested change is shown on the second diagram
Red	Tables with data problems preventing establishment of foreign key relationships
Gray	Unused tables

The ABACUS database

The abacus db file returned reflects the to be model diagram. Note that the application code was not modified to reflect the elimination of the cycle_route table or level1 – level5 tables. There were a couple of indices added for the customer and junction table's primary keys. The location table has a complete set of indices and keys assigned. Viewing the location table in PowerBuilder's database painter will present a clearly different picture than the original tables. Notice the indices appearing on the left --one key indicates a unique key index – two keys indicate a duplicate key index.

The Application Source (PowerBuilder Libraries - PBLs)

The application source has been rearranged into reasonable sized PBLs (see Appendix C). PBLs abaaerror, abaaress and abaxlate are temporary holding areas for functions to be placed into other objects. Please note the comment fields for the objects "[inherit]" shows the parent of the object. Object names appearing outside the brackets are where the object is used. The suggested library list for the application can be found in the main project object in the abacus pbl.

There is a folder of unused objects arranged in pbl(s) named nused__ where __ matches the abacus__ pbl in which they were received (see Appendix D).

Summary Application Enhancement / Migration Plan

Step 1 – create a complete and consistent copy of the application source code

There are missing objects in the current application
There are reporting references to tables that are never updated
There are references to columns that no longer exist in the tables

All of the above items should be resolved before building upon the existing application

Step 2 – Exchange memory resources for improved performance

Convert global functions to object functions to eliminate dynamic loading and the associated performance delays

Step 3 – Modify the existing application to insure the timely commitment of transactions

A database transaction consists of a set of one or more SQL statements that must either be applied or backed out as a set. Every set of updates should be bracketed with a "BEGIN TRANSACTION" and either a "ROLLBACK" or "COMMIT" based on the success of the operation

Step 4 – Modify the database to insure data integrity and improve performance

The database tables need to have primary keys, foreign keys and additional unique keys defined correctly and completely. In addition, table indices must be present to support the verification of the key relationships in an efficient fashion. Table indices also can improve performance of the application by eliminating table scans – using the indices to access only the required rows

Step 5 – Establish a secure multi-user environment

Most tables will require a concurrency checking mechanism to prevent updates of stale data. Many of the updates in the current application only check the key before updating a row. The most secure approaches use a timestamp or update counter to assure there has been no intervening update of the row. An alternate approach is to include the original column's data values in the update SQL statement. A strategy needs to be chosen and implemented on the appropriate tables

Step 6 – Reduce memory usage and increase performance

Any data window (especially reports) can save memory and database engine processing by replacing joins for decode operations with dropdowndatawindows (dddw). In desirable cases, the number of entries in the dddw is far less than the number of rows returned and the code is shorter than the decode value – net result a memory saving. Plus, network utilization savings with multi-user databases because fewer

characters of data are transferred Plus, execution savings from the lesser number of joins processed in the database engine

Step 7 – Creation of applications in various languages

The improved PowerBuilder Translation Toolkit that ships with version 6.5 automates the process of substituting alternate language text, font and width/location changes into a base application (developed in English) creating subsequent application(s) where the new language (such as Armenian or Russian) is the "native language" This development removes execution time changes that slow processing in the current application It will also eliminate most of the parallel maintenance issues The portion it will not eliminate is the translation, font and width/location changes of new items

The toolkit provides the following functions

- Supports extraction of the existing text from the application
- Provides for translation by either the developer
or a non-developer using a provided translation application
- Applies the translated text to the application creating new source code for the target language
- Assists in determining font and width/location changes for fields
- Stores the text, font and width/location changes to apply to future modified versions

Although Armenian does not exist in the Toolkit, the Toolkit does support addition of new languages The toolkit also supports right to left languages like Hebrew and Arabic with the appropriate versions of Windows 95 Keep in mind that Powerbuilder also has distribution kits in various languages (I do not believe that either Armenian or Russian is included)

Note I attempted to port the code from Abacus into a beta version of PowerBuilder 6.5 The port generated 7 warnings that instance variables typed from window structures would default to private in the next version I recompiled after explicitly scoping the affected instance variables private without error This is **NOT** an assurance that the application will run successfully However, it did port to the new version without problem

Step ? – MessageBox function

Windows will not display messageboxes during mouse capture events Should a messagebox command be coded during a mouse capture event, the default value is returned to the messagebox calling script. Generally, messageboxes are used to inform or receive critical information for the application I recommend replacement of messagebox calls with an application response window that will not be suppressed by Windows

A custom response window also provides the opportunity to add a print key to record errors for transmission to a help desk or developer Note also that the newer versions (I believe starting with 4) of PowerBuilder can print the screen image or the graphic version of a window By making the response window temporarily invisible during the print process the current screen image can also be printed with the error message – unfortunately on separate pieces of paper

Detailed Application Enhancement / Migration plan

Step 1 – create a complete and consistent copy of the application source code

Possible missing objects

w_report_delinquency_disconnect needs d_gj_child_id
w_report_for_group needs d_junction_debt_report_detail
w_rates may need d_vat
w_act and w_meter_corr
d_junction_head_e seems to correspond to d_junction_head_{lang}
d_bill_n_bal_ca_sc_e seems to correspond to d_bill_n_bal_ca_sc_{lang}
d_bill_n_bal_e seems to correspond to d_bill_n_bal_{lang}

Fix datawindows that specify non-existent columns (partial list)

(These can be found by opening the datawindow and doing "Edit Data Source", if the SQL can not be displayed in graphics mode there is a missing column or table)

d_meter references meter seal
d_dddw_route references route route_id
d_dddw_cycle references cycle cycle_id
d_org_path references org_group repl, org_group user_name and org_group extract

Identify and remove unused code attached to the application

(I found these by searching the application's objects with the table names)
w_genapp_sheet, m_genapp_sheet referenced by w_genapp_frame wf_newsheetsheet
- The only call to wf_newsheetsheet () is commented
w_act_by_list and d_act_by_list reference the temp_act table
there are no inserts for the table and no data in the table
d_conn_disconn_list probably accesses an unused table

add bmp/splash bmp to abacus pbr file

customer_type

- d_ds_jcc uses a ddlb instead of the d_dddw_cust_type
- d_ds_ca_respcust also uses a ddlb instead of d_dddw_cust_type

NOTE Also that the application contains a large amount of commented code Although this is not a performance issue at execution time, I would consider deleting such code when the application is considered stable

Step 2 – Exchange memory resources for improved performance

f_dwitemmodified - review function and premise and respond accordingly possibly add to uo_dwstandard (datawindow user object) and uo_dsstandard (datastore user object)

f_resize_em2dw - move into w_rates - only place used

f_resize_sle2dw - move to w_location - only place used

f_setmenutext - move to w_poss_conn - only place used (or Message/global object?)

f_setwindowtext - move to w_calendar - only place used (or Message/global object?)

Provide a global function stub for access (or leave as global functions) unless they can be removed from all datawindows

f_count_subcust
f_null

Create an extension of the PowerBuilder Error object containing public object functions to replace the global functions in abaerror pbl Place the created object into the abacus pbl

Extend the PB Error object implementing the following as PUBLIC functions

f_mess
mb
f_check

Create an extension of the PowerBuilder Message object containing public object functions to replace the global functions in abamess pbl Place the created object into the abacus pbl

Extend the PB Message object implementing the following as PUBLIC functions

f_is_win_active_sheet
f_maxdate
f_mindate
f_center_window (here or in response window ancestor)
f_days_fraction
f_deparse
f_global_replace
f_dmy2date
f_get_schdl
f_getactivesheet (review function - possible problem assumes number of parents to traverse to find frame)
f_maximize (review function - possible problem assumes parent of window is the frame)
f_open_help
f_resize_sheet2max (- move to w_tree and w_location instead?)

Temporarily add the abaxlate functions to the message object created above As part of converting to the Translation Toolkit, these functions will be removed

f_newdwtransl
f_xlatemenu
PROTECTED/PRIVATE (as desired)
f_xlatetab
f_xlatewindow
f_xlatetabpage
f_xlatewobj

Create an extension of the PowerBuilder transaction object containing public object stub functions to replace the global functions in abanew10 pbl The actual function code should be placed in a non-visual object that is created by the extended transaction object

Extend the PB Transaction object implementing the following as PUBLIC functions

(create stub functions that call the functions in an associated non-visual object
The non-visual will be the dynamic item that changes to support different database engines)

f_checksqlca
f_check_parents
f_contract
f_junct_org
f_load_side_kwh
d_ds_parent_orgs
d_contract_temp
d_ds_junction_orgs
d_ds_junction_child

```

f_logical_type      (new ds)
f_subcust_kwh      d_ds_subcust
f_count_subcust    (new ds)
f_aging            d_ds_for_aging
f_dw_validation    d_dw_validation
f_set_new_id
f_get_last_id
f_get_loc_id
f_relativedate ( check intent code may exit early if looking for a valid
                  calendar date less than or equal to a number of
                  days -- the first missing calendar date will cause
                  the exit -- should the last found calendar date be
                  returned?)
f_run_sql_long
    
```

Should your developer's have problems with this section I should be able to alter a copy of the code to do this in about a week Time estimate upwards of between 40 -80 hours Testing will require additional time – preferably returned to the normal developers

Step 3 – Modify the existing application to insure the timely commitment of transactions

A database transaction consists of a set of one or more SQL statements that must either be applied or backed out as a set Every set of updates should be bracketed with a "BEGIN TRANSACTION" and either a "ROLLBACK" or "COMMIT" based on the success of the operation These SQL commands should be implemented as PowerBuilder functions in the non-visual object associated with the extended transaction object and as stub functions in the extended transaction object

A quick investigation of objects with update commands indicates only 14 windows have commit commands to save database changes In scanning a dozen or so objects that issue an update The application object and seven windows have update commands without commits Two global functions that issue updates were also found that need to be traced into each object where they are used to assure a trailing commit to save their changes

There are no RollBack commands in the application and the application does not specify CommitOnDisconnect='No' Therefore I believe that the application is committing changes on disconnect Since there is no RollBack in the application – partial changes are being committed when database errors occur Adding the CommitOnDisconnect='No' to the DBParm ConnectString will NOT provide an immediate solution to the problem – because some windows do not commit their changes and they would be lost on disconnect if the change is made Use of RollBack in support of logical units of work would permit the application to recover from some database errors without having to immediately halt the application

Step 4 – Modify the database to insure data integrity and improve performance

The database tables need to have primary keys, foreign keys and additional unique keys defined correctly and completely In addition, table indices must be present to support the verification of the key relationships in an efficient fashion Table indices also can improve performance of the application by eliminating table scans – using the indices to access only the required rows

Non-Primary unique keys must be established as indices to provide complete data integrity checking Application code can not securely check for duplication and add a row because there is an intervening time delay The database engine will check during the insert/update operation assuring complete security

Although not simple to perform, application testing of key relationships with imbedded SQL can be removed from the application. Testing of the error codes from the database and analysis of the returned message can provide information as to key problems. Use of dropdown data windows can also provide advance validation without embedded SQL.

- cust_msg - a couple of delete commands and no other references
- no data - this table appears to be unused
- msg - no references - this table appears to be unused
- customer - customer_id and account_no both appear to be unique keys

cycle_route

- the cycle_route table supports many-to-many relationships
 - except that the primary key is ro_id and not both columns. Assuming the primary key to this table to be valid it appears that cy_id should be added to the route table as a foreign key to the cycle table. Making the cycle_route table unnecessary.
- dave pbl contains a pipeline that convert the data and one to rename the table

Possible consolidation of tables level1 - level5 & location

- dave pbl contains three pipelines that convert the data and one to rename the table
- these tables require three operations to add a new row
 - insert into location
 - insert into the appropriate level
 - update of location with the proper level value
- these tables can be redesigned into a single table

location_id	integer	
level	smallint	(1 - 5) (really 1, 2 or 4)
descr	varchar(20)	
level1_id	integer	(fk to location_id)
level2_id	integer nullable	(fk to location_id)
level3_id	integer nullable	(fk to location_id) (not used)
level4_id	integer nullable	(fk to location_id)
level5_id	integer nullable	(fk to location_id) (not used)

inserts are then a single operation

updates of parent location levels must be propagated to children in either example

The column level should be a duplicate key for accessing descriptions for drop down data windows

The column level and descr should comprise a unique key to assure each descr is unique by level

Updates for the set of tables or single table should be restricted to a single user at a time. Replication between multiple users on different databases would be difficult if not impossible – in either case

fin_transactions - lwp appears to be a pseudo foreign key to payment_type code

reports - insert commented - two report data windows and two rows of data
- this table appears to be unused

temp_act - no references - this table appears to be unused

temp_conn_disconn - no references this - table appears to be unused

temp_for_balance - no references - this table appears to be unused

temp_resp_customer - no references - this table appears to be unused

temp_tvicons

- d_dddw_tvicon is dddw for junction_type tvicon
- junction_type tvicon is joined to itself in the d_junct_type SQL syntax
- no rows in temp_tvicons - datatype does not match for foreign key between
 junct_type tvicon and temp_tvicons bmp_filename
- need to review this relationship

Step 5 – Establish a secure multi-user environment

Most tables will require a concurrency checking mechanism to prevent updates of stale data. Many of the updates in the current application only check the key before updating a row. The most secure approaches use a timestamp or update counter to assure there has been no intervening update of the row. An alternate approach is to include the original column's data values in the SQL statement WHERE clause. A strategy needs to be chosen and implemented on the appropriate tables.

Personally, I prefer the security of timestamps or update counters. These items are generally updated via a trigger. An audit trail user_id can also be updated in the trigger – useful only if users have unique ids. The trigger answer does limit the target database choice to ones having triggers. This is not extremely significant as most database engines support triggers. NOTE: Trigger code does differ between database engines. A tool like ErWin for PowerBuilder or PowerDesigner from Sybase can assist with trigger and table generation for different database engines.

Step 6 – Reduce memory usage and increase performance

Any data window (especially reports) can save memory and database engine processing by replacing joins for decode operations with dropdowndatawindows. In desirable cases, the number of entries in the dddw is far less than the number of rows returned and the code is shorter than the decode value – net result a memory saving. Note on report the arrow is suppressed and the tab order is set to zero to prevent actually using the drop down feature.

Additional memory savings can be achieved when shared decode data (possibly implemented as public datastores in the extended transaction object) is used for static or near-static decode dddw(s). Refresh of non-static codes is an issue in this technique. This shared object can occur at various levels. Application level objects would need to be the most static or refreshed consistently. Window level objects can be less static – the less static items would be refreshed more often probably on window retrieve commands.

Step 7 – Creation of applications in various languages

A great amount of effort has been expended to create a multi-lingual application. PB has a translation toolkit. Basically, it uses the following process to create a multi-language application,

- First a single language has its text strings extracted for translation
 strings not requiring translations like formulas and SQL can be eliminated
 from consideration manually by the developer
- Second the desired list of strings can be sent to another party for translation

Third the programmer applies the translated text to a copy of the original application the resulting application is adjusted for field width and fonts manually attributes (width and font of the adjusted application are then stored for future conversions of the modified application) As these attributes are saved and reapplied to the base application after maintenance Parallel maintenance of objects can be eliminated when they are not modified Modified objects in each version of the application will be required to pass through the translation processing However, text translations will be maintained and can be reused from the dictionary Fonts and widths may require setting at the appropriate time

The advantage of this process is as follows

- 1) There is no execution time modification of the application slowing it down
- 2) The application is not bloated with duplicate items (like windows and datawindows) where the language, font and items widths vary Making the search list for objects shorter and loading objects faster (These duplicate objects require parallel maintenance another potential source of error)
- 3) Each language's application appears to have been written specifically for the target language The performance should be about the same for all target languages

Disadvantages of the translation toolkit approach

The language text and datatype fonts are both set in the translation process Having the text in one language/font and the data in another would be difficult The current application does not appear to support this Except that the English version of the application may default to a Russian font (uo_dwstandard constructor) -- assuming this is the way the base application is defined - instead of MS San Serif Or that the English/Russian combination is not required translation toolkit should easily work for a multi-lingual application

Items to consider to migrate to using the translation toolkit.

- 1) the translation toolkit does not translate data When the data must be multi-lingual, the database will require columns and/or tables designed to allow the entry of data in each desired language
- 2) external files - such as message files are not translated by the toolkit When the files contain a reasonably small amount of text The text for the base language can be moved into the application (ie in this case the messages for english can be placed in the extension of the PB Error object as read-only text items) The translation toolkit can then be used to change them
- 3) Removal of the existing multi-lingual support code including the translation object functions noted above
- 4) Extraction of the existing translations from the code and supporting files into the translation toolkit database for creation of applications solely dedicated to a specific language

Step ? – MessageBox function

Windows will not display messageboxes during mouse capture events Should a messagebox command be coded during a mouse capture event, the default value is returned to the messagebox calling script Generally, messageboxes are used to inform or receive critical information for the application |

recommend replacement of messagebox calls with an application response window that will not be suppressed by Windows

Step ? – PowerBuilder Extended Attributes in the database

NOTE The following discussion concerns manipulations of PowerBuilder system tables. I strongly suggest experimentation on a backup copy of the database before applying changes to a live database.

The pbcattbl.pbd_ffce column contains the font name for the display of the data that is used in the PowerBuilder Database Painter. The same font is used during datawindow creation. Changing this font name to the appropriate font for the language stored in the database will allow the data to display in the development tool correctly.

Should the ad hoc query tool InfoMaker be considered for distribution with the application, there are two additional columns in pbcattbl that affect the header (pbh_ffce) and label (pbl_ffce) font display. The remaining pbcattbl tables such as pbcattcol have text items that are used during datawindow creation. If the text items in these fields match those used in the actual application, the translation table database may be able to be used in conjunction with these tables to "translate" the attribute text by writing SQL processing scripts.

Items that still concern me

Windows with large number of controls

The more windows recognized controls on a window the more operating system resources are consumed to control them. In any version of windows this translates to less windows and applications that can be opened simultaneously. Investigate possible decreased use of operating system resources by using external datawindows effectively.

Windows with large number of buttons

Should the buttons be menu items?

If not, should the buttons be simulated in an external datawindow?

If the ability to enable/disable menu items is the issue and the settings are not varied depending on the window with focus – the application can set the frame menu's enabled/disabled attributes and the sheet menus can copy the enabled/disabled status in the selected or clicked event of the main menu item.

Please do not plan to alter a menuitem's visible attribute – this is a very slow process.

Tab objects built on demand when appropriate?

This distributes the wait time away from the window open or retrieves event and places it in the tab selection event. It is more a perception of increased performance than an actual increase. There is an actual increase when the tab pages are not accessed. Generally your userobject constructor for the tabpage must be able to trigger/post it's own data retrieval / set up.

Use of imbedded SQL in the application in lieu of datawindows to create a database independent application these must be relocated to the transaction object non-visual or placed into datawindows

506 SELECT statements

196 UPDATE statements

398 INSERT statements

310 DELETE statements

Use of the temp tables

Possible use of grouped reports to reduce the use of temp tables

Note leading totals can be generated in a datawindow -- a temp table is not required

Acquire knowledge of the uses of the temp files – consider alternatives

The replication process that merges the database - This still must be investigated

Appendix

A) Initial Database Model

B) To Be Database Model

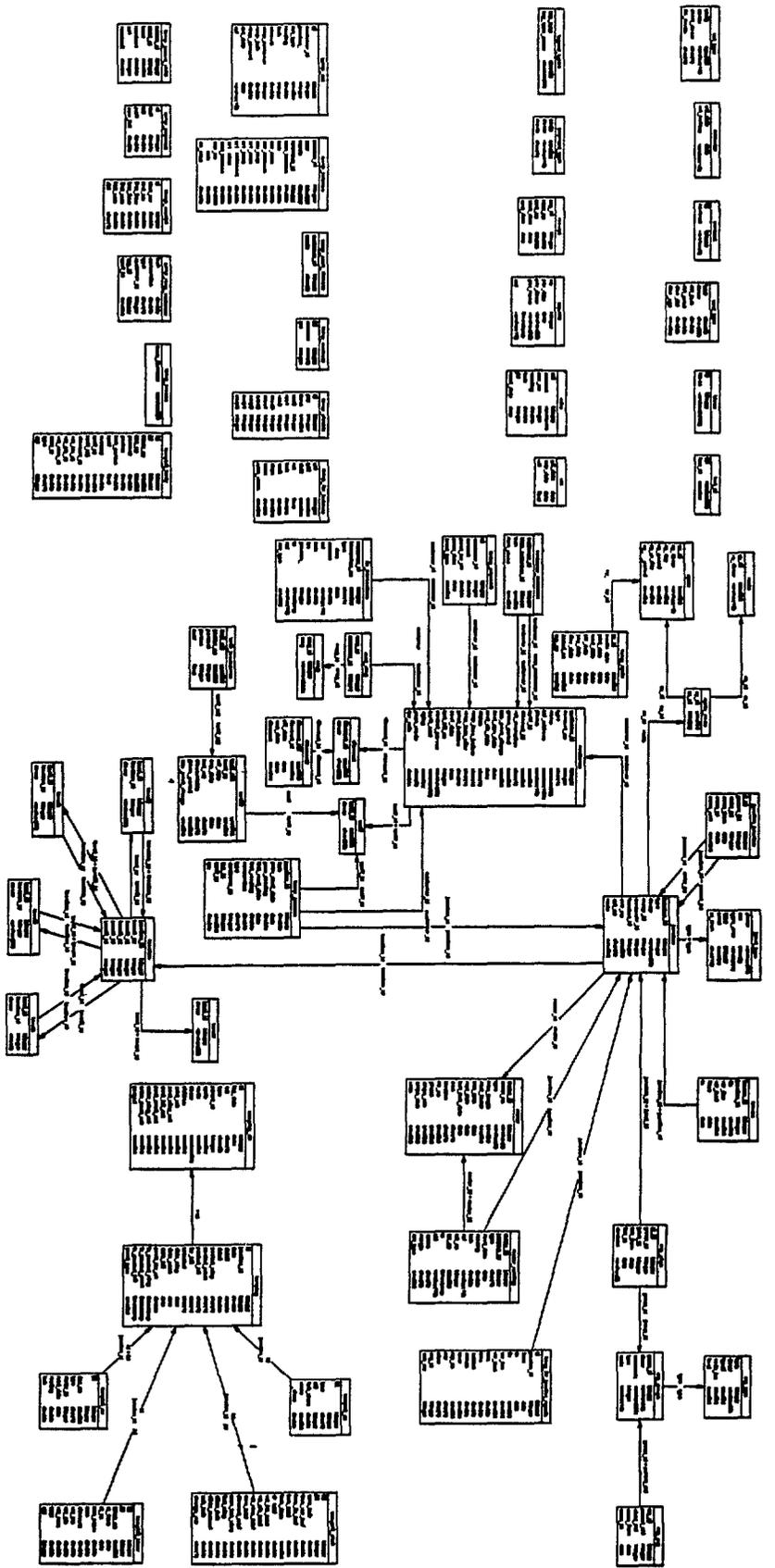
C) PowerBuilder Library Configuration

D) Lists of Unused Items

E) Conversion of global functions to object functions

Appendix A

Initial Database Model



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act_type	
code	smallint
descr	varchar(15)
short_descr	char(1)
fin_mode	char(1)

calendar	
cal_date	date
cal_holiday	varchar(15)

contract	
id	Integer
contract	varchar(6)

cust_type	
type	char(1)
descr	char(20)
ctrl_kwh	double
ctrl_pmnt	double
disc_del	double
disc_age	smallint

ideas	
id	Integer
ideas	varchar(5000)

last_id	
tbl	varchar(30)
last_id	smallint

logical_types	
log_type	char(1)
log_type_descr	varchar(20)

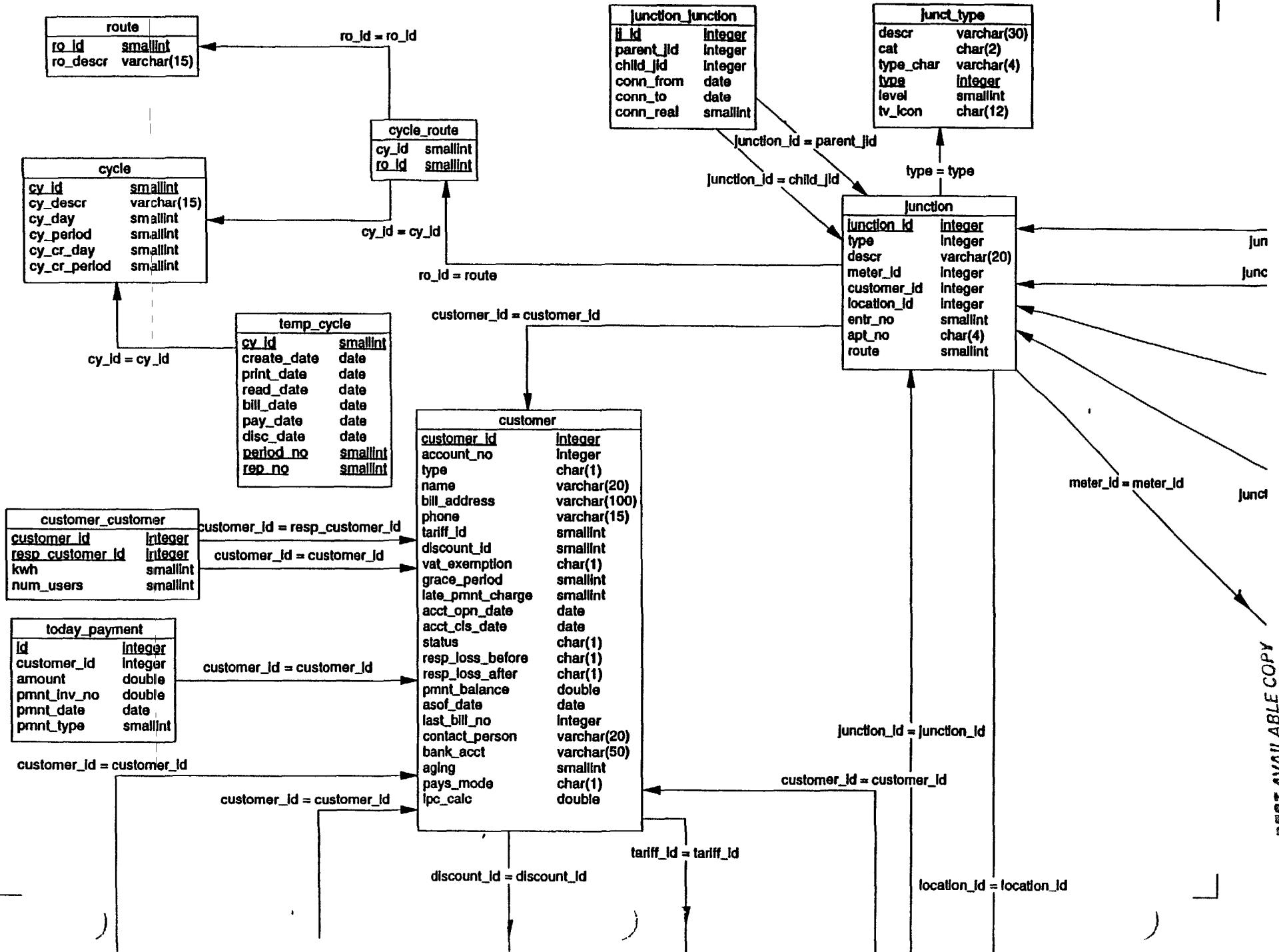
payment_type	
code	smallint
descr	varchar(15)
mode	char(1)

receipt	
org_id	integer
start_no	double
end_no	double
start_date	date
end_date	date

reports	
no	integer
psr_date	date
psr_descr	varchar(20)
psr_name	varchar(30)
ts	timestamp
uid	varchar(10)

vahe	
cid	Integer
contract	varchar(6)
acc_no	Integer
reading	double
kwh	double
jld	Integer
read_date	date

vat	
eff_date	date
exp_date	date
vat	float



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losses	
losses_id	Integer
junction_id	Integer
fix	smallint
var_line	smallint
var_load	smallint
from	date
to	date

org_type	
type	Integer
descr	varchar(30)
type2	smallint
code_len	smallint
level	smallint

org_phys	
gi_id	Integer
group_id	Integer
junct_id	Integer
link_from	date
link_to	date
contract	varchar(6)

org_groups	
group_id	Integer
descr	varchar(30)
comments	varchar(200)
type	Integer
code	varchar(16)

org_org	
oo_id	Integer
parent_old	Integer
child_old	Integer
conn_from	date
conn_to	date

junction_id = junction_id

junction_id = junct_id

group_id = group_id

type = type

group_id = parent_old

junction_id = junction_id

junction_id = junction_id

meter	
meter_id	Integer
serial_no	varchar(8)
type	varchar(6)
max_length	smallint
mult_factor	smallint
inst_date	date
repl_date	date
last_test_date	date
own	char(1)
location	char(1)
mr_no	smallint
phase	smallint
amps_min	smallint
amps_max	smallint
volts	smallint

meter_reading	
meter_id	Integer
junction_id	Integer
type	char(1)
read_date	date
reading	double
kwh	double
ref	varchar(10)
bill_no	integer
mr_no	smallint
ts	timestamp
uid	varchar(10)
status	char(1)
margin	char(1)
act_type	smallint

temp_for_junction_reports	
id	Integer
junction_id	Integer
from	date
to	date
fix	smallint
var_line	smallint
var_load	smallint
kwh	double
loss	double
subkwh	double
remain	double
level	smallint
rep_no	smallint
mtr	char(1)
other	char(1)
org_id	integer
sub_cnt	integer

meter_id = meter_id

temp_act	
id	integer
customer_id	integer
junction_id	integer
act_type	smallint
reading	double
kwh	integer
amount	double
resp_customer_id	integer
resp_kwh	double
resp_amount	double
act_date	date
ref	varchar(10)

temp_balance	
junction_id	integer
year	smallint
month	smallint
customer_id	integer
start_balance	double
kwh	double
cer_cash	double
cer_noncash	double
cer_resp	double
cr1_cash	double
cr1_bank	double
cr1_settlement	double
cr1_other	double
end_balance	double
rep_no	smallint
ch_deb	double
ch_cred	double

temp_conn_disconn	
customer_id	integer
mode	char(1)

temp_contract	
lid	integer
contract	char(6)
gid	integer

temp_electric	
id	integer
pid	integer
level	smallint
res0	integer
res1	integer
res3	integer
ores0	integer
ores1	integer
ores3	integer
corp0	integer
corp1	integer
corp3	integer

temp_for_balance	
cid	integer
tid2	smallint
did2	smallint
vat	float
kwh	double
mult	double
days	smallint
cons	double
num_users	smallint

temp_parent_child	
parent_id	integer
child_id	integer
level	smallint
number1	double
int1	integer
number2	double

temp_payment	
id	integer
kwh	double
bill	double
paid	double
curr_bal	double

temp_receipt	
id	integer
start_no	double
end_no	double
first_free	double
last_free	double
first_use	double
last_use	double
dbl	char(1)

temp_resp_customer	
kwh	double
consumtion	double
type	char(1)
customer_id	integer
log_id	integer
tariff_id	smallint

temp_tvicons	
bmp_filename	varchar(32)

tempbill_body	
lid	integer
tid	integer
intery_no	smallint
row_no	smallint
portion0	double
portion	double
kwh_portion	double
tariff	float
subtotal	double
tariff_id	smallint
tariff_id2	smallint
discount_st	double
vat_inc_st	double
vat_pis_st	double
vat_mns_st	double
total_st	double
type	char(1)
cid	integer

fin_transactions	
customer_id	integer
transaction_no	smallint
type	char(1)
tr_date	date
amount	double
ref	varchar(10)
kwh	double
lpc	double
function_id	integer
ts	timestamp
uid	varchar(10)
act_type	smallint

cust_msg	
msg_id	integer
customer_id	integer

msg_id = msg_id

msg	
msg_id	integer
msg	varchar(250)

discount	
discount_id	smallint
descr	char(30)

discount_id = discount_id

discount2	
discount_id2	smallint
discount_id	smallint
eff_date	date
exp_date	date
discount	smallint

tariff	
tariff_id	smallint
descr	char(30)

temp_junction	
junction_id	integer
kwh	double
prev_read_date	date
prev_reading	double
last_read_date	date
last_reading	double
consumption	double
type	char(1)
customer_id	integer
log_id	integer
tariff_id	smallint
lpc	double

tariff_breakdown	
tariff_id2	smallint
portion_no	smallint
portion0	integer
portion	integer
tariff	float

tariff2	
tariff_id2	smallint
tariff_id	smallint
eff_date	date
exp_date	date
Incl_vat	char(1)
discountable	char(1)
grace_period	smallint
late_pmnt_charge	smallint

level1	
level_id	integer
descr	varchar(20)

level2	
level_id	integer
location_id	integer
descr	varchar(20)

location	
location_id	integer
level1_id	integer
level2_id	integer
level3_id	integer
level4_id	integer
level5_id	integer

level3	
level_id	integer
location_id	integer
descr	varchar(20)

level4	
level_id	integer
location_id	integer
descr	varchar(20)

level5	
level_id	integer
location_id	integer
descr	char(6)

tariff_id2 = tariff_id2

tariff_id = tariff_id

location_id = location_id

level_id = level2_id

level_id = level1_id

level_id = level3_id

location_id = location_id

level_id = level4_id

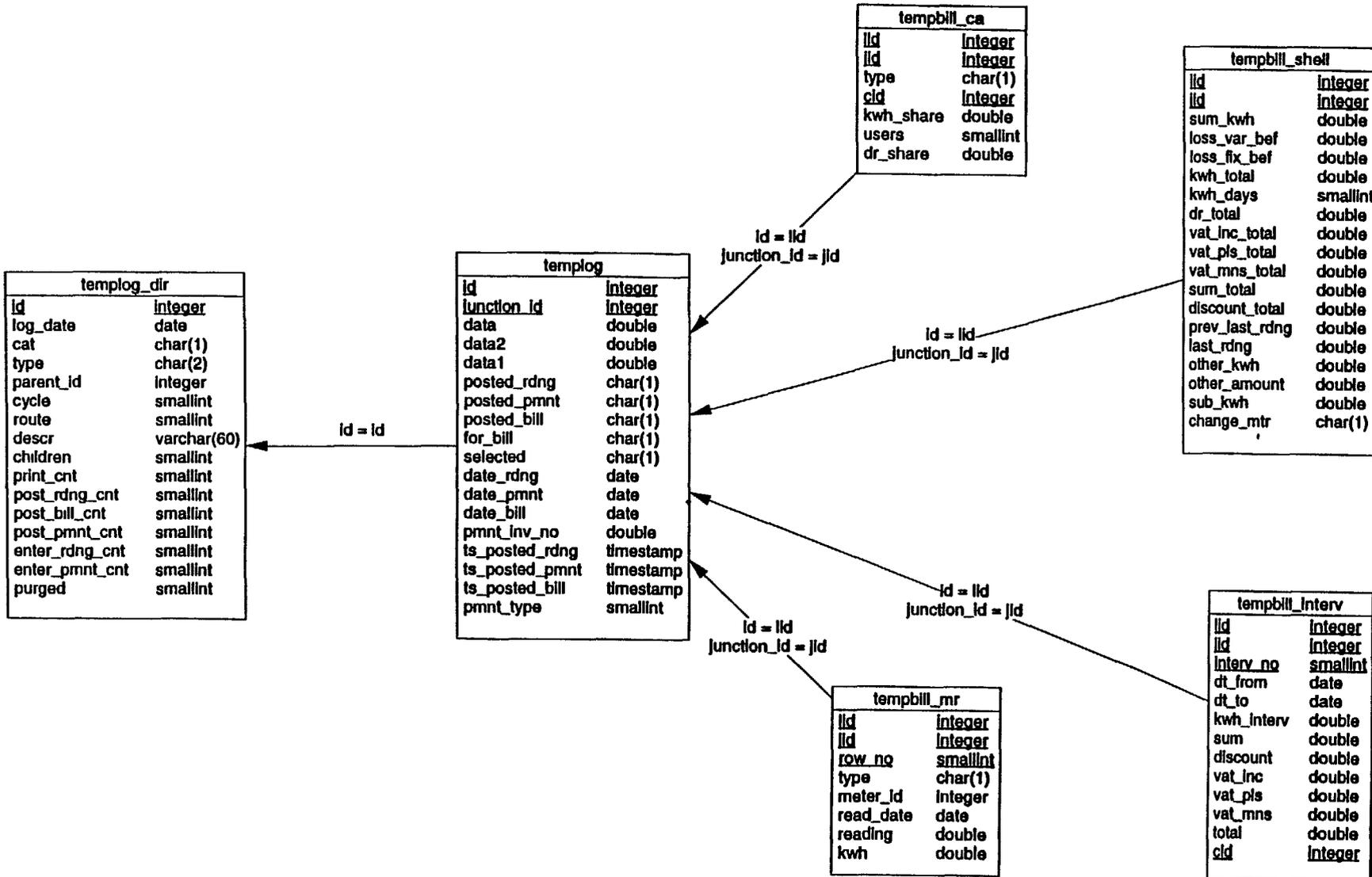
location_id = location_id

level_id = level5_id

location_id = location_id

location_id = location_id

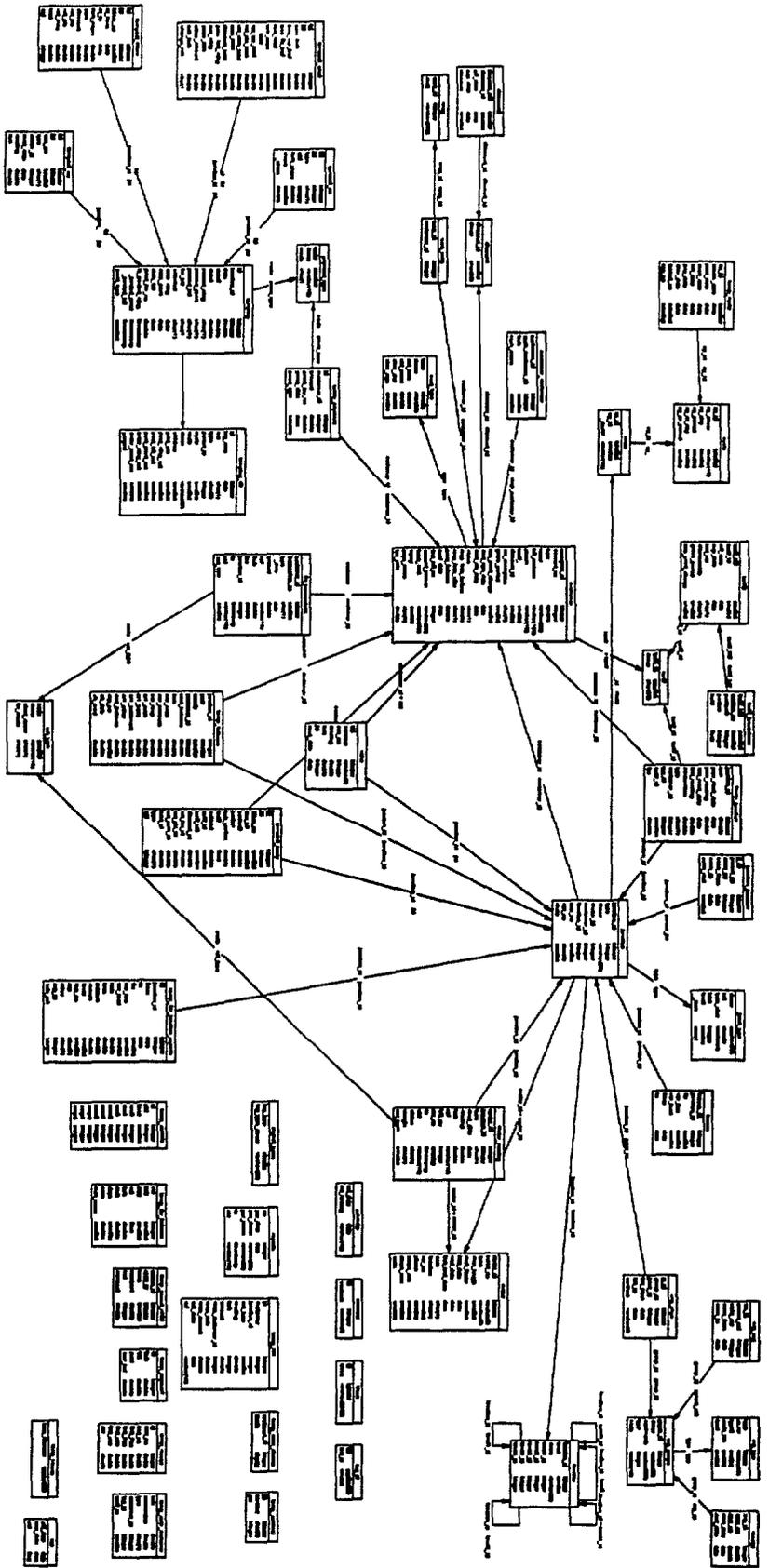
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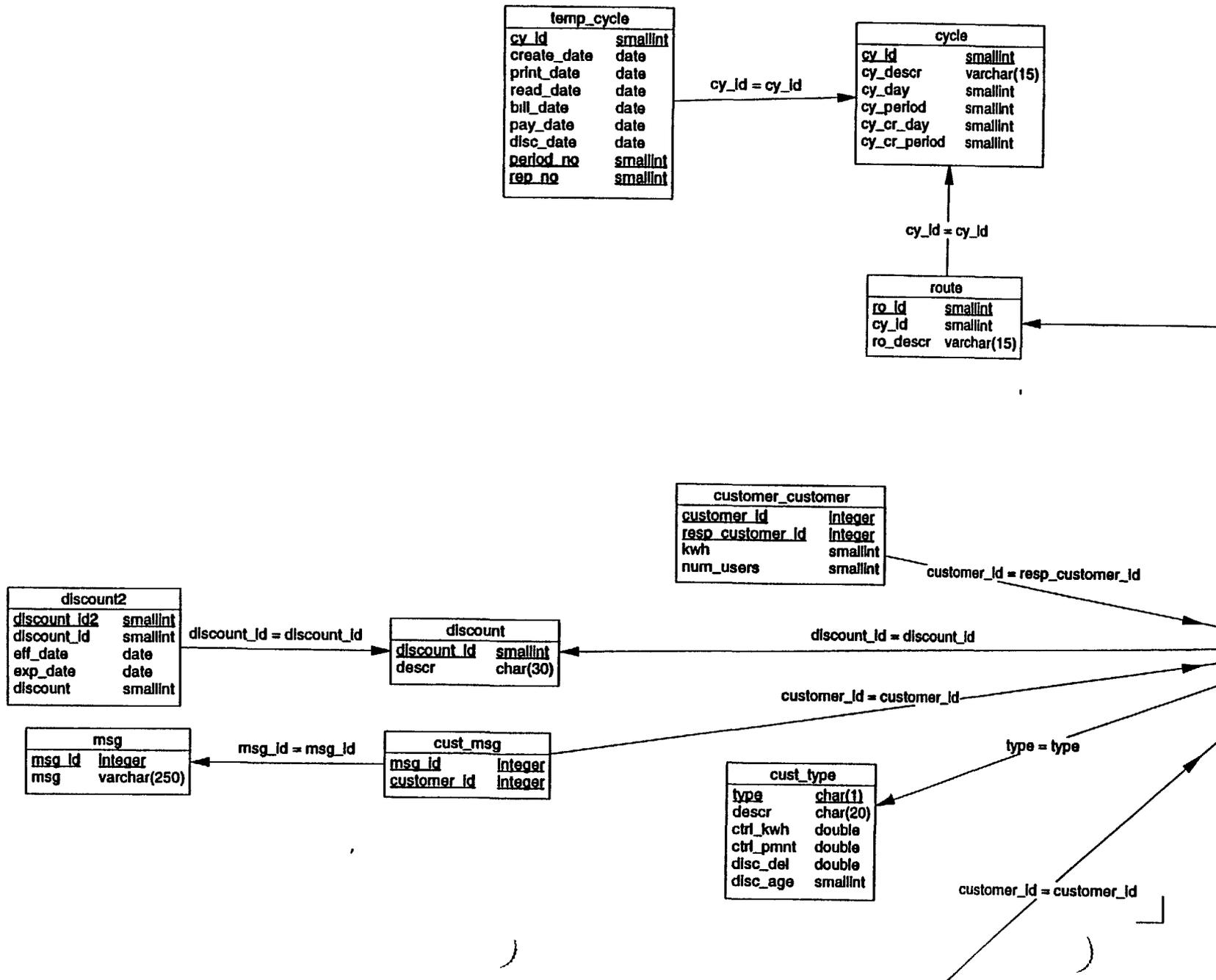


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Appendix B

To Be Database Model





tariff2	
tariff_id2	smallint
tariff_id	smallint
eff_date	date
exp_date	date
incl_vat	char(1)
discountable	char(1)
grace_period	smallint
late_pmnt_charge	smallint

tariff_breakdown	
tariff_id2	smallint
portion_no	smallint
portion0	integer
portion	integer
tariff	float

temp_junction	
junction_id	integer
kwh	double
prev_read_date	date
prev_reading	double
last_read_date	date
last_reading	double
consumption	double
type	char(1)
customer_id	integer
log_id	integer
tariff_id	smallint
lpc	double

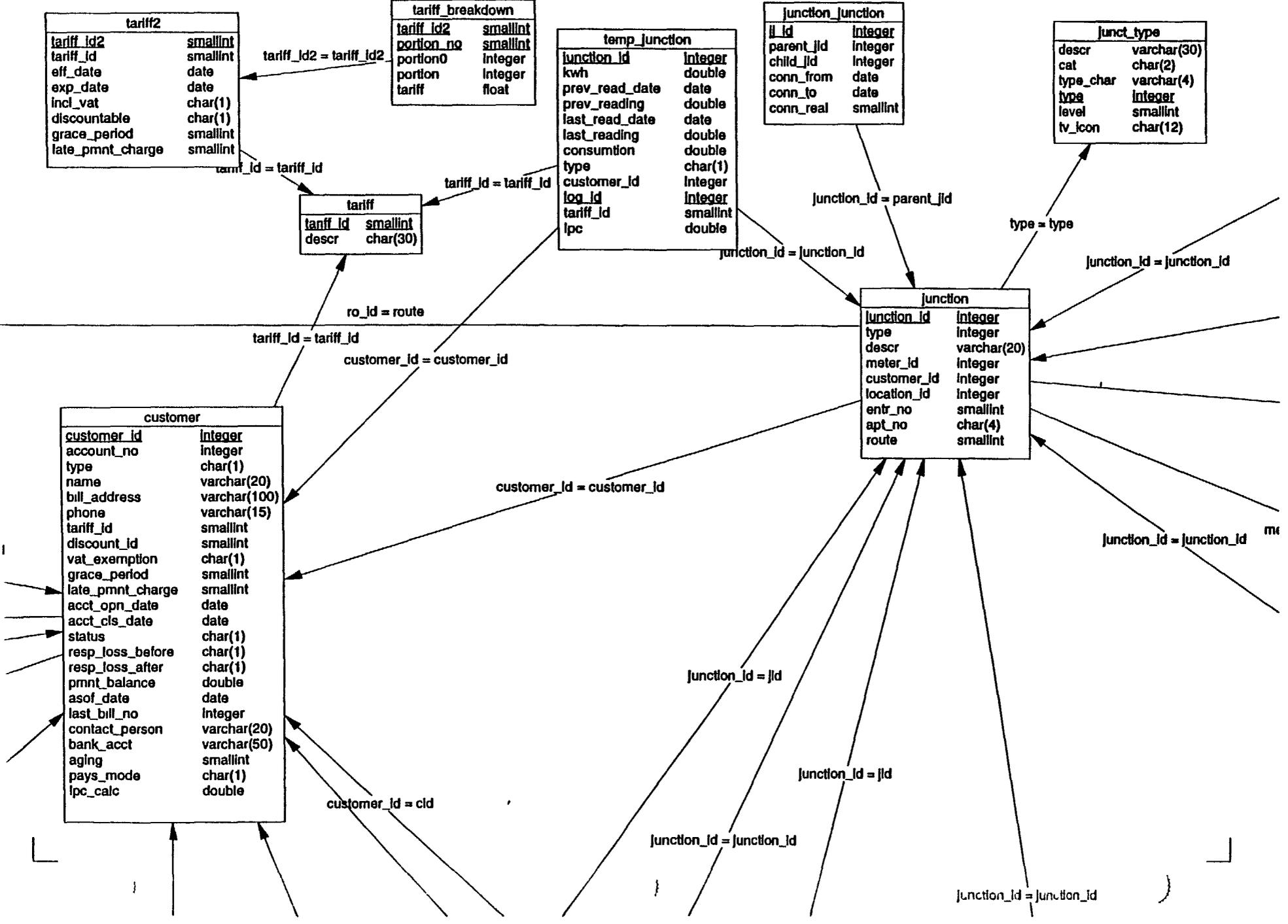
junction_junction	
jj_id	integer
parent_jid	integer
child_jid	integer
conn_from	date
conn_to	date
conn_real	smallint

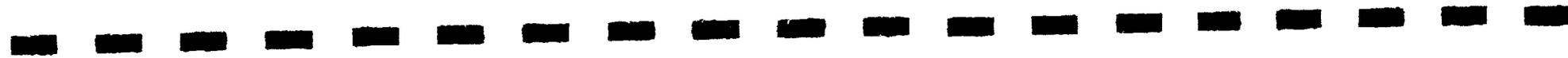
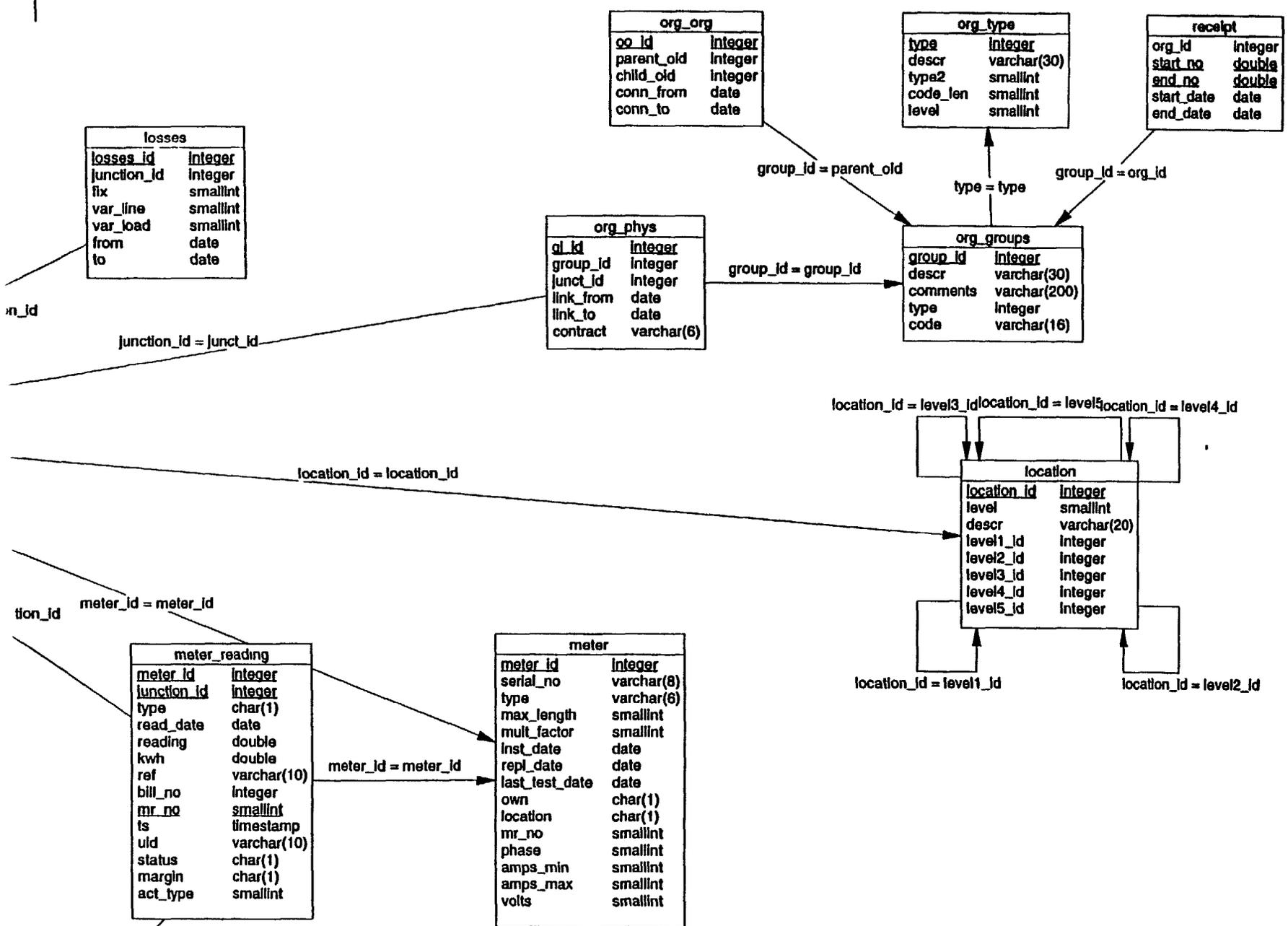
junct_type	
descr	varchar(30)
cat	char(2)
type_char	varchar(4)
type	integer
level	smallint
tv_icon	char(12)

tariff	
tariff_id	smallint
descr	char(30)

junction	
junction_id	integer
type	integer
descr	varchar(20)
meter_id	integer
customer_id	integer
location_id	integer
entr_no	smallint
apt_no	char(4)
route	smallint

customer	
customer_id	integer
account_no	integer
type	char(1)
name	varchar(20)
bill_address	varchar(100)
phone	varchar(15)
tariff_id	smallint
discount_id	smallint
vat_exemption	char(1)
grace_period	smallint
late_pmnt_charge	smallint
acct_opn_date	date
acct_cls_date	date
status	char(1)
resp_loss_before	char(1)
resp_loss_after	char(1)
pmnt_balance	double
asof_date	date
last_bill_no	integer
contact_person	varchar(20)
bank_acct	varchar(50)
aging	smallint
pays_mode	char(1)
lpc_calc	double





customer_id = Customer_id

25

tempbill_shell	
l1d	integer
l2d	integer
sum_kwh	double
loss_var_bef	double
loss_fix_bef	double
kwh_total	double
kwh_days	smallint
dr_total	double
vat_inc_total	double
vat_pls_total	double
vat_mns_total	double
sum_total	double
discount_total	double
prev_last_rdnng	double
last_rdnng	double
other_kwh	double
other_amount	double
sub_kwh	double
change_mtr	char(1)

tempbill_ca	
l1d	integer
l2d	integer
type	char(1)
c1d	integer
kwh_share	double
users	smallint
dr_share	double

payment_type	
code	smallint
descr	varchar(15)
mode	char(1)

today_payment	
id	integer
customer_id	integer
amount	double
pmnt_inv_no	double
pmnt_date	date
pmnt_type	smallint

code = pmnt_type

id = l1d
junction_id = j1d

id = l1d
junction_id = j1d

templog	
id	integer
junction_id	integer
data	double
data2	double
data1	double
posted_rdnng	char(1)
posted_pmnt	char(1)
posted_bill	char(1)
for_bill	char(1)
selected	char(1)
date_rdnng	date
date_pmnt	date
date_bill	date
pmnt_inv_no	double
ts_posted_rdnng	timestamp
ts_posted_pmnt	timestamp
ts_posted_bill	timestamp
pmnt_type	smallint

id = id

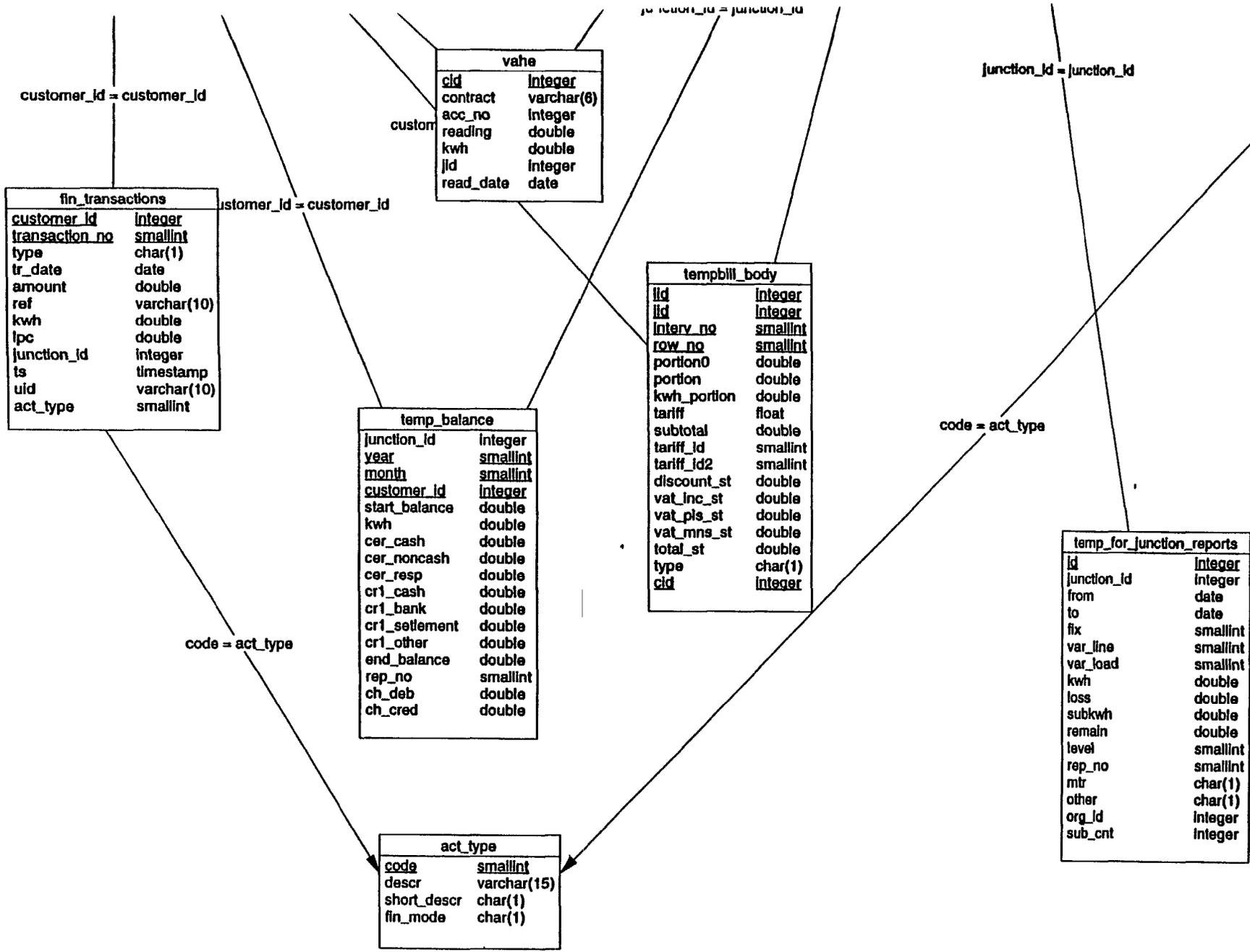
templog_dir	
id	integer
log_date	date
cat	char(1)
type	char(2)
parent_id	integer
cycle	smallint
route	smallint
descr	varchar(60)
children	smallint
print_cnt	smallint
post_rdnng_cnt	smallint
post_bill_cnt	smallint
post_pmnt_cnt	smallint
enter_rdnng_cnt	smallint
enter_pmnt_cnt	smallint
purged	smallint

tempbill_interv	
l1d	integer
l2d	integer
interv_no	smallint
dt_from	date
dt_to	date
kwh_interv	double
sum	double
discount	double
vat_inc	double
vat_pls	double
vat_mns	double
total	double
c1d	integer

id = l1d
junction_id = j1d

id = l1d
junction_id = j1d

tempbill_mr	
l1d	integer
l2d	integer
row_no	smallint
type	char(1)
meter_id	integer
read_date	date
reading	double
kwh	double



fin_transactions	
customer_id	Integer
transaction_no	smallint
type	char(1)
tr_date	date
amount	double
ref	varchar(10)
kwh	double
lpc	double
junction_id	integer
ts	timestamp
uid	varchar(10)
act_type	smallint

vahe	
cid	Integer
contract	varchar(6)
acc_no	Integer
reading	double
kwh	double
jid	Integer
read_date	date

tempbill_body	
lid	Integer
id	Integer
interv_no	smallint
row_no	smallint
portion0	double
portion	double
kwh_portion	double
tariff	float
subtotal	double
tariff_id	smallint
tariff_id2	smallint
discount_st	double
vat_inc_st	double
vat_pis_st	double
vat_mns_st	double
total_st	double
type	char(1)
cid	integer

temp_balance	
junction_id	integer
year	smallint
month	smallint
customer_id	integer
start_balance	double
kwh	double
cer_cash	double
cer_noncash	double
cer_resp	double
cr1_cash	double
cr1_bank	double
cr1_settlement	double
cr1_other	double
end_balance	double
rep_no	smallint
ch_deb	double
ch_cred	double

act_type	
code	smallint
descr	varchar(15)
short_descr	char(1)
fin_mode	char(1)

temp_for_junction_reports	
id	Integer
junction_id	integer
from	date
to	date
fix	smallint
var_line	smallint
var_load	smallint
kwh	double
loss	double
subkwh	double
remain	double
level	smallint
rep_no	smallint
mtr	char(1)
other	char(1)
org_id	integer
sub_cnt	integer

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calendar	
cal_date	date
cal_holiday	varchar(15)

contract	
id	integer
contract	varchar(6)

ideas	
id	integer
ideas	varchar(5000)

last_id	
tbl	varchar(30)
last_id	smallint

logical_types	
log_type	char(1)
log_type_descr	varchar(20)

reports	
no	integer
psr_date	date
psr_descr	varchar(20)
psr_name	varchar(30)
ts	timestamp
uid	varchar(10)

temp_act	
id	integer
customer_id	integer
junction_id	integer
act_type	smallint
reading	double
kwh	integer
amount	double
resp_customer_id	integer
resp_kwh	double
resp_amount	double
act_date	date
ref	varchar(10)

temp_conn_disconn	
customer_id	integer
mode	char(1)

temp_contract	
id	integer
contract	char(6)
gid	integer

temp_electric	
id	integer
pid	integer
level	smallint
res0	integer
res1	integer
res3	integer
ores0	integer
ores1	integer
ores3	integer
corp0	integer
corp1	integer
corp3	integer

temp_for_balance	
cid	integer
tid2	smallint
did?	smallint
vat	float
kwh	double
mult	double
days	smallint
cons	double
num_users	smallint

temp_parent_child	
parent_id	integer
child_id	integer
level	smallint
number1	double
int1	integer
number2	double

temp_payment	
id	integer
kwh	double
bill	double
pald	double
curr_bal	double

temp_receipt	
id	integer
start_no	double
end_no	double
first_free	double
last_free	double
first_use	double
last_use	double
dbl	char(1)

temp_resp_customer	
kwh	double
consumtion	double
type	char(1)
customer_id	integer
log_id	integer
tariff_id	smallint

temp_tvicons	
bmp_filename	varchar(32)

vat	
eff_date	date
exp_date	date
vat	float

Appendix C

PowerBuilder Library Configuration

A cation entries

Name	Date	Time	Size
main	8/26/98	13 35 46	(5031)

Menu entries

Name	Date	Time	Size
m_genapp_frame	8/26/98	13 36 03	(65688)

Window entries

Name	Date	Time	Size
w_genapp_about	8/26/98	13 38 50	(22730)
w_genapp_frame	8/26/98	13 38 51	(5726)
w_genapp_toolbars	8/26/98	13 38 51	(15543)
w_logon	8/26/98	13 38 52	(14572)

Project entries

Name	Date	Time	Size
m	8/26/98*	13 41 43	(11088)

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* -----*
I _ion entries
* -----*

Name	Date	Time	Size
f_check	8/26/98	13 35 52	(620)
f_mess	8/26/98	13 35 51	(1404)
mb	8/26/98	13 35 51	(489)

-----*
Function entries

Name	Date	Time	Size
f_center_window	8/26/98	13 35 51	(1095)
f_days_fraction	8/26/98	13 35 50	(1630)
f_dpars	8/26/98	13 35 49	(987)
f_day2date	8/26/98	13 35 48	(644)
f_get_schdl	8/26/98	13 35 48	(1434)
f_getactivesheet	8/26/98	13 35 47	(789)
f_global_replace	8/26/98	13 35 46	(913)
f_get_win_active_sheet	8/26/98	13 35 46	(989)
f_maxdate	8/26/98	13 35 47	(592)
f_maximize	8/26/98	13 35 47	(843)
f_mandate	8/26/98	13 35 48	(592)
f_null	8/26/98	13 35 49	(483)
f_open_help	8/26/98	13 35 49	(547)
f_getsizesheet2max	8/26/98	13 35 50	(692)

* -----*
L Window entries
* -----*

Name	Date	Time	Size
d_dddw_lev1	8/26/98	13 34 43	(2608)
d_dddw_lev2	8/26/98	13 34 43	(2836)
d_dddw_lev3	8/26/98	13 34 42	(2745)
d_dddw_lev4	8/26/98	13 34 42	(2745)
d_dddw_lev5	8/26/98	13 34 42	(2745)

* -----*
Function entries
* -----*

Name	Date	Time	Size
r_dwitemmodified	8/26/98	13 35 52	(940)

* -----*
Structure entries
* -----*

Name	Date	Time	Size
s_logdir_item	8/26/98	13 35 52	(598)

* -----*
UserObject entries
* -----*

Name	Date	Time	Size
uo_cb	8/26/98	13 35 53	(2669)
uo_cbcancel	8/26/98	13 35 53	(1519)
uo_asstandard	8/26/98	13 35 53	(6954)
uo_dwlocation	8/26/98	13 35 55	(4884)
uo_dwstandard	8/26/98	13 35 54	(7941)

 L Window entries

Name	Date	Time	Size
d_customer	8/26/98	13 34 50	(31590)
d_customer_qv	8/26/98	13 34 49	(17327)
d_dd_junct_type	8/26/98	13 34 49	(2810)
d_ad_logical_types	8/26/98	13 34 48	(2524)
d_dd_org	8/26/98	13 34 48	(2907)
d_dd_org_type	8/26/98	13 34 47	(2791)
d_dd_route	8/26/98	13 34 47	(2486)
d_dddw_act_type	8/26/98	13 34 46	(2659)
d_addw_contract	8/26/98	13 34 46	(2724)
d_dddw_cust_type	8/26/98	13 34 45	(2533)
d_dddw_cycle	8/26/98	13 34 45	(2854)
d_dddw_discount	8/26/98	13 34 45	(2576)
d_dddw_junct_cat	8/26/98	13 34 44	(2755)
d_addw_junct_type	8/26/98	13 34 44	(3666)
d_dddw_log_type	8/26/98	13 34 44	(2790)
d_dddw_logical_types	8/26/98	13 34 43	(2889)
a_dddw_meter_type	8/26/98	13 34 43	(2483)
d_dddw_org	8/26/98	13 34 43	(3121)
d_dddw_org_type	8/26/98	13 34 44	(2716)
d_dddw_pmnt_type	8/26/98	13 34 44	(2758)
d_dddw_route	8/26/98	13 34 44	(3563)
d_addw_tariff	8/26/98	13 34 45	(2575)
d_ds_junction_child_subkwh	8/26/98	13 34 45	(6897)
d_ds_junction_losses	8/26/98	13 34 45	(4954)
d_sup_junctions	8/26/98	13 34 46	(8680)
a_junct	8/26/98	13 34 46	(16228)
a_junction_child_id	8/26/98	13 34 47	(5633)
d_meter	8/26/98	13 34 47	(28729)
d_meter_rdnng	8/26/98	13 34 48	(16742)
d_meter_reading_detail	8/26/98	13 34 48	(12758)
d_org	8/26/98	13 34 49	(10092)
d_payment_detail_billing	8/26/98	13 34 49	(9598)
d_payment_detail_payment	8/26/98	13 34 50	(9954)
d_receipt_org	8/26/98	13 34 50	(8305)

Window entries

Name	Date	Time	Size
d_bill	8/26/98	13 34 55	(16830)
d_bill_ca_sc	8/26/98	13 34 54	(14404)
d_bill_n_bal_arm	8/26/98	13 34 54	(11229)
d_bill_n_bal_ca_sc_arm	8/26/98	13 34 53	(20103)
d_bill_n_bal_ca_sc_eng	8/26/98	13 34 52	(20045)
d_bill_n_bal_ca_sc_rus	8/26/98	13 34 52	(20071)
d_bill_n_bal_eng	8/26/98	13 34 51	(11851)
d_bill_n_bal_rus	8/26/98	13 34 51	(11754)
d_dddw_log_cust	8/26/98	13 34 51	(4135)
d_ds_exp_date1	8/26/98	13 34 51	(3085)
d_ds_exp_date2	8/26/98	13 34 51	(2654)
d_ds_exp_date3	8/26/98	13 34 52	(2618)
d_ds_org	8/26/98	13 34 53	(4248)
d_ds_tempbill_body	8/26/98	13 34 53	(16147)
d_ds_tempbill_mr	8/26/98	13 34 54	(11976)
d_ds_tempbill_other	8/26/98	13 34 54	(3977)
d_report_gj_in_cycle_for_hashv	8/26/98	13 34 55	(20931)

D /indow entries

Name	Date	Time	Size
d_contract_temp	8/26/98	13 34 56	(3248)
d_ds_for_aging	8/26/98	13 34 56	(4287)
d_as_junction_child	8/26/98	13 34 56	(4455)
d_ds_junction_orgs	8/26/98	13 34 56	(3997)
d_as_parent_orgs	8/26/98	13 34 56	(4412)
d_ds_subcust	8/26/98	13 34 55	(4922)
d_ow_validation	8/26/98	13 34 55	(3097)

Function entries

Name	Date	Time	Size
f_aging	8/26/98	13 35 58	(2405)
f_check_parents	8/26/98	13 35 57	(1551)
f_checksqlca	8/26/98	13 35 56	(792)
f_contract	8/26/98	13 35 56	(1991)
f_count_subcust	8/26/98	13 35 55	(921)
f_dw_validation	8/26/98	13 35 56	(3618)
f_get_last_id	8/26/98	13 35 57	(1127)
f_get_loc_id	8/26/98	13 35 57	(1760)
f_junct_org	8/26/98	13 35 58	(1335)
f_load_side_kwh	8/26/98	13 35 59	(2339)
f_logical_type	8/26/98	13 35 59	(1034)
f_ativedate	8/26/98	13 36 00	(1397)
f_sql_long	8/26/98	13 36 00	(1312)
t_set_new_id	8/26/98	13 36 00	(1083)
f_subcust_kwh	8/26/98	13 36 01	(2850)

L Window entries

Name	Date	Time	Size
d_conn_disconn_list	8/26/98	13 34 59	(7935)
d_conn_disconn_list_for_print	8/26/98	13 34 58	(8148)
d_cons_subcust	8/26/98	13 34 58	(7889)
d_cons_subcust_free	8/26/98	13 34 58	(6869)
d_consolidated	8/26/98	13 34 58	(6357)
d_ds_cust_having_resp	8/26/98	13 34 57	(3033)
d_junct_by_cat	8/26/98	13 34 57	(4032)
d_poss_conn_list_for_junction	8/26/98	13 34 57	(7331)
d_sporadic	8/26/98	13 34 57	(6947)
d_term_customer	8/26/98	13 34 57	(5570)

Function entries

Name	Date	Time	Size
f_setmenutext	8/26/98	13 36 01	(2484)

Menu entries

Name	Date	Time	Size
m_consolidated	8/26/98	13 36 05	(35045)
m_a_entry_conn_disconn	8/26/98	13 36 06	(33285)
m_top_possible	8/26/98	13 36 07	(4020)
m_sporadic	8/26/98	13 36 08	(31123)
m_terminate	8/26/98	13 36 08	(33012)

Window entries

Name	Date	Time	Size
w_conn_disconn_list	8/26/98	13 36 11	(34458)
w_consolidated	8/26/98	13 36 13	(54105)
w_poss_conn	8/26/98	13 36 15	(29761)
w_sporadic	8/26/98	13 36 16	(24933)
w_term_customer	8/26/98	13 36 17	(21755)

 D\window entries

Name	Date	Time	Size
d_act_list	8/26/98	13 35 01	(10768)
d_payment_bill_seach_list	8/26/98	13 35 01	(11153)
d_payment_master	8/26/98	13 35 01	(11935)
d_payment_master_corr	8/26/98	13 35 01	(11730)
d_payment_master_corr_cur	8/26/98	13 35 00	(11918)
d_payment_master_cur	8/26/98	13 35 00	(11905)
d_payment_seach_list	8/26/98	13 35 00	(11287)
d_today_payment_master	8/26/98	13 35 00	(11681)
d_today_payment_print	8/26/98	13 34 59	(15523)
d_today_payment_print_b	8/26/98	13 34 59	(16639)

 Menu entries

Name	Date	Time	Size
m_data_entry	8/26/98	13 36 06	(30749)
m_data_entry_act_by_list	8/26/98	13 36 19	(33283)
m_data_entry_payment_today	8/26/98	13 36 18	(33291)

 UserObject entries

Name	Date	Time	Size
uo_cobhelp	8/26/98	13 36 09	(1394)
uo_cbok	8/26/98	13 36 09	(1361)
uo_cxstandard	8/26/98	13 36 19	(1140)

 Window entries

Name	Date	Time	Size
w_act_by_list	8/26/98	13 36 21	(47519)
w_water_moving	8/26/98	13 36 22	(32476)
w_water_reading	8/26/98	13 36 24	(39868)
w_payment	8/26/98	13 36 26	(28787)
w_payment_corr	8/26/98	13 36 27	(26812)
w_payment_for_today	8/26/98	13 36 28	(42682)
w_payment_moving	8/26/98	13 36 29	(14278)
w_search_payment	8/26/98	13 36 31	(45345)

* -----*
D Window entries
* -----*

Name	Date	Time	Size
d_class_by_type	8/26/98	13 35 05	(4349)
d_class_type	8/26/98	13 35 05	(2667)
d_ad_contract	8/26/98	13 35 04	(2620)
d_didw_class_type	8/26/98	13 35 04	(2593)
d_dddw_group_type	8/26/98	13 35 04	(2593)
d_ds_check_parent	8/26/98	13 35 04	(4046)
d_group_by_type	8/26/98	13 35 04	(4031)
d_group_type	8/26/98	13 35 04	(2667)
d_junct_by_cycle_route_new	8/26/98	13 35 04	(9129)
d_junct_by_group_new	8/26/98	13 35 03	(10396)
d_junct_by_junct_new	8/26/98	13 35 03	(8632)
d_junct_subcat	8/26/98	13 35 03	(2630)
d_line_side	8/26/98	13 35 03	(11591)
d_link_org	8/26/98	13 35 03	(8291)
d_loc_qs	8/26/98	13 35 02	(7779)
d_org_by_type	8/26/98	13 35 02	(4009)
d_org_list_by_type	8/26/98	13 35 02	(3425)
d_org_type	8/26/98	13 35 02	(2665)
d_qs_list	8/26/98	13 35 02	(7348)
d_tmpllog_new	8/26/98	13 35 02	(8872)

* -----*
Window entries
* -----*

Name	Date	Time	Size
w_bill_now	8/26/98	13 36 34	(50171)
w_link	8/26/98	13 36 35	(17075)
w_link_class	8/26/98	13 36 36	(16692)
w_link_group	8/26/98	13 36 37	(17048)
w_logs_select	8/26/98	13 36 38	(26817)
wr_code	8/26/98	13 36 38	(6978)
wr_conn_type	8/26/98	13 36 39	(9805)
wr_contract	8/26/98	13 36 39	(7512)
wr_count	8/26/98	13 36 40	(7049)
wr_date	8/26/98	13 36 40	(8145)
wr_number	8/26/98	13 36 40	(7610)
wr_quicksearch	8/26/98	13 36 42	(66903)
wr_quicksearch_group	8/26/98	13 36 43	(13230)
wr_time_period	8/26/98	13 36 44	(12331)

[Window entries

Name	Date	Time	Size
d_ds_jcc	8/26/98	13 35 08	(6998)
d_ds_jjc	8/26/98	13 35 07	(8290)
d_ds_jjcl_org	8/26/98	13 35 07	(8855)
d_ds_jjcl_org2	8/26/98	13 35 06	(9020)
d_ds_jjcl_phys	8/26/98	13 35 06	(8634)
d_link_class	8/26/98	13 35 06	(8506)
d_link_group	8/26/98	13 35 05	(8291)
d_load_side	8/26/98	13 35 05	(8288)
d_losses	8/26/98	13 35 05	(8659)
d_temp_child	8/26/98	13 35 06	(4879)
dp_balance	8/26/98	13 35 06	(3485)
dp_bnakich	8/26/98	13 35 07	(11318)
dp_last_reading	8/26/98	13 35 07	(4008)

Menu entries

Name	Date	Time	Size
m_tree	8/26/98	13 36 46	(113866)

Window entries

Name	Date	Time	Size
w_tree	8/26/98	13 36 56	(272057)

-----*
I Window entries
-----*

Name	Date	Time	Size
d_act_for_junction	8/26/98	13 35 10	(8221)
d_bill_summary	8/26/98	13 35 09	(14067)
d_cust_fintr_bill_by_no	8/26/98	13 35 09	(5766)
d_ds_mr_interval_for_bill	8/26/98	13 35 08	(3319)
d_ds_tempbill_mr_bill_no	8/26/98	13 35 08	(9072)
d_junction_head_arm	8/26/98	13 35 08	(6096)
d_junction_head_eng	8/26/98	13 35 08	(5612)
d_junction_head_rus	8/26/98	13 35 09	(5688)
d_meter_rdnng_corr	8/26/98	13 35 09	(17797)

-----*
Window entries
-----*

Name	Date	Time	Size
w_act	8/26/98	13 37 04	(74657)
w_meter_corr	8/26/98	13 37 09	(82342)

 L Window entries

Name	Date	Time	Size
d_cons_resp_users_customers	8/26/98	13 35 12	(5246)
d_cust_type	8/26/98	13 35 12	(2645)
d_dd_cycle	8/26/98	13 35 12	(2484)
d_ad_junct_cat	8/26/98	13 35 12	(2925)
d_ds_cr_list	8/26/98	13 35 12	(5381)
d_ds_junction_cat_type	8/26/98	13 35 12	(4945)
d_ds_templlog	8/26/98	13 35 11	(7719)
d_ds_templlog_dir	8/26/98	13 35 11	(14816)
d_log_list	8/26/98	13 35 11	(10766)
d_log_list_for_balance	8/26/98	13 35 10	(9327)
d_log_list_for_reading	8/26/98	13 35 10	(14894)
d_meter_rdnng_hh	8/26/98	13 35 10	(11226)
d_templlog_dir	8/26/98	13 35 11	(13854)

 Menu entries

Name	Date	Time	Size
m_log_dir	8/26/98	13 37 11	(43529)

 UserObject entries

Name	Date	Time	Size
uo_rbstandard	8/26/98	13 36 30	(1098)

 Window entries

Name	Date	Time	Size
rw_openlogfor	8/26/98	13 37 11	(9658)
w_log_dir	8/26/98	13 37 20	(168625)
w_report_recollected	8/26/98	13 37 23	(7824)
wr_cur	8/26/98	13 37 23	(11723)
wr_print_bill	8/26/98	13 37 24	(8269)
wr_recollect	8/26/98	13 37 25	(37117)
wr_sporadic	8/26/98	13 37 26	(9104)

* -----*
L window entries
* -----*

Name	Date	Time	Size
d_classifiers	8/26/98	13 35 15	(5886)
d_classifiers2	8/26/98	13 35 14	(6151)
d_ds_org1	8/26/98	13 35 14	(3094)
d_group_orgs_parent	8/26/98	13 35 14	(4979)
d_groups	8/26/98	13 35 13	(5376)
d_groups2	8/26/98	13 35 12	(6183)
d_groups_in_org	8/26/98	13 35 13	(7020)
d_org_child	8/26/98	13 35 13	(3972)
d_org_path	8/26/98	13 35 13	(4259)
d_overflow	8/26/98	13 35 14	(11589)
d_tbl_ids	8/26/98	13 35 14	(8558)
d_tbl_lst	8/26/98	13 35 14	(2693)

* -----*
Menu entries
* -----*

Name	Date	Time	Size
m_logical	8/26/98	13 37 27	(109182)

* -----*
Window entries
* -----*

N	Date	Time	Size
w_logical	8/26/98	13 37 35	(229429)

 I Window entries

Name	Date	Time	Size
d_act_type	8/26/98	13 35 19	(7181)
d_customer_by_month	8/26/98	13 35 19	(23512)
d_customer_status	8/26/98	13 35 18	(12251)
d_customer_status_bill_arm	8/26/98	13 35 18	(5741)
d_customer_status_bill_eng	8/26/98	13 35 18	(5689)
d_customer_status_bill_rus	8/26/98	13 35 18	(5743)
d_customer_status_tr_arm	8/26/98	13 35 18	(5496)
d_customer_status_tr_eng	8/26/98	13 35 17	(5413)
d_customer_status_tr_rus	8/26/98	13 35 17	(5465)
d_customer_type	8/26/98	13 35 17	(8679)
d_addw_tvicons	8/26/98	13 35 17	(2867)
a_junct_type	8/26/98	13 35 17	(9974)
a_organization_type	8/26/98	13 35 16	(6252)
a_payment_type	8/26/98	13 35 15	(5821)
d_receipt	8/26/98	13 35 15	(17853)
d_receipt_day	8/26/98	13 35 16	(17200)
d_receipt_int	8/26/98	13 35 16	(15346)

 Menu entries

Name	Date	Time	Size
m_ldw	8/26/98	13 37 38	(31264)
m_report	8/26/98	13 37 39	(44461)

 Window entries

Name	Date	Time	Size
w_ldw	8/26/98	13 37 40	(11377)
w_act_type	8/26/98	13 37 41	(8478)
w_customer_type	8/26/98	13 37 42	(4876)
w_junct_type	8/26/98	13 37 42	(10805)
w_org_type	8/26/98	13 37 43	(10515)
w_payment_type	8/26/98	13 37 43	(8492)
w_report	8/26/98	13 37 22	(8363)
w_report_customer_status	8/26/98	13 37 44	(22805)
w_report_receipt	8/26/98	13 37 46	(40494)
w_reports_viewer	8/26/98	13 37 47	(8382)

I Window entries

Name	Date	Time	Size
d_class_subgroups	8/26/98	13 35 24	(6838)
d_cycle_child_customers	8/26/98	13 35 24	(4883)
d_cycle_child_junctions	8/26/98	13 35 23	(3198)
d_cycle_dd	8/26/98	13 35 23	(2616)
d_cycle_dddw	8/26/98	13 35 23	(3030)
d_dd_cycle_logical	8/26/98	13 35 23	(2806)
d_dddw_cycle_logical	8/26/98	13 35 23	(4982)
d_delinquency_report	8/26/98	13 35 23	(12250)
d_disconnection_report	8/26/98	13 35 22	(10378)
d_ds_discdel_by_cycle_route	8/26/98	13 35 22	(7209)
d_ds_mr_int	8/26/98	13 35 21	(7924)
d_ds_other_kwh	8/26/98	13 35 21	(5947)
d_ds_other_kwh_int	8/26/98	13 35 21	(5998)
d_junction_child_id_for_int	8/26/98	13 35 20	(5776)
d_org_or_group_junctions_for_int	8/26/98	13 35 20	(3987)
d_parent_childs_phys	8/26/98	13 35 19	(5660)
d_report_by_tariff	8/26/98	13 35 20	(29883)
d_report_disconn_list	8/26/98	13 35 20	(10249)
d_report_discount	8/26/98	13 35 21	(6613)
d_report_location	8/26/98	13 35 21	(6257)
d_report_meter_tst	8/26/98	13 35 22	(11350)
d_report_tariff	8/26/98	13 35 22	(8850)
d_report_vat	8/26/98	13 35 22	(5183)
d_sel_loc	8/26/98	13 35 23	(5012)

Window entries

Name	Date	Time	Size
w_report_by_tariff	8/26/98	13 37 49	(57734)
w_report_cycle_logical	8/26/98	13 37 52	(65383)
w_report_delinquency_disconnection	8/26/98	13 37 54	(65396)
w_report_location	8/26/98	13 37 56	(12596)
w_report_meter_tst	8/26/98	13 37 56	(9935)
w_report_rates	8/26/98	13 37 57	(23376)
wr_disc_del_report	8/26/98	13 37 58	(8191)

Window entries

Name	Date	Time	Size
d_bbm	8/26/98	13 35 28	(35583)
d_bbm_bill	8/26/98	13 35 27	(18695)
d_ds_cons_and_servprov_cust	8/26/98	13 35 27	(3267)
d_financial_changing	8/26/98	13 35 27	(16185)
d_group_subgroups	8/26/98	13 35 26	(7715)
d_group_subgroups_kwh	8/26/98	13 35 26	(7459)
d_junction_debt_report_gr	8/26/98	13 35 25	(4471)
d_junction_junction_report	8/26/98	13 35 25	(6089)
d_junction_report_gr	8/26/98	13 35 25	(5768)
d_junction_report_impl	8/26/98	13 35 24	(18917)
d_junction_report_impl_by_level	8/26/98	13 35 24	(16211)
d_junction_report_information	8/26/98	13 35 25	(11334)
d_lwh_act_list	8/26/98	13 35 25	(12967)
d_other_kwh	8/26/98	13 35 26	(8050)
d_receipt_control	8/26/98	13 35 26	(12801)
d_receipt_tr	8/26/98	13 35 26	(12252)
d_sales_by_logical	8/26/98	13 35 27	(15877)

Window entries

Name	Date	Time	Size
w_report_finance_by_month	8/26/98	13 38 01	(81229)
w_report_for_group	8/26/98	13 38 05	(65593)
w_report_for_group1	8/26/98	13 38 08	(38720)

Window entries

Name	Date	Time	Size
d_batch_junctions	8/26/98	13 35 31	(3357)
d_bill_cons	8/26/98	13 35 30	(18033)
d_bill_cons_head_arm	8/26/98	13 35 30	(7986)
d_bill_cons_head_eng	8/26/98	13 35 30	(7966)
d_bill_cons_head_rus	8/26/98	13 35 30	(7962)
a_control_db	8/26/98	13 35 29	(12056)
d_dd_log_link_junction	8/26/98	13 35 29	(2527)
a_dddw_log_link_junction	8/26/98	13 35 29	(2889)
a_electric	8/26/98	13 35 28	(14524)
a_electric_parents_cust_ds	8/26/98	13 35 28	(11109)
d_electric_parents_ds	8/26/98	13 35 29	(4507)
d_log_cust	8/26/98	13 35 29	(2540)
d_org_or_group_junctions	8/26/98	13 35 30	(4048)

Function entries

Name	Date	Time	Size
f_junct_org_sales	8/26/98	13 38 08	(1981)

Window entries

Name	Date	Time	Size
w_billing	8/26/98	13 38 12	(69673)
w_report_electric	8/26/98	13 38 15	(51777)
w_report_for_junction	8/26/98	13 38 19	(138827)
w_report_for_junction_and_childs	8/26/98	13 38 23	(57111)

 D\window entries

Name	Date	Time	Size
d_calendar	8/26/98	13 35 34	(5051)
d_cycle	8/26/98	13 35 34	(9968)
d_cycle_list	8/26/98	13 35 34	(12306)
d_discount	8/26/98	13 35 34	(2673)
d_discount2	8/26/98	13 35 33	(8468)
d_ideas	8/26/98	13 35 33	(2543)
d_lev1	8/26/98	13 35 33	(2610)
d_lev2	8/26/98	13 35 33	(2764)
d_lev3	8/26/98	13 35 33	(2480)
d_lev4	8/26/98	13 35 32	(2480)
d_lev5	8/26/98	13 35 32	(2746)
d_route	8/26/98	13 35 32	(6918)
d_route2	8/26/98	13 35 32	(6608)
d_tariff	8/26/98	13 35 31	(2706)
d_tariff2	8/26/98	13 35 31	(11665)
d_tariff_bd	8/26/98	13 35 31	(9790)
d_vat2	8/26/98	13 35 32	(7818)

 Function entries

Name	Date	Time	Size
f_resize_em2dw	8/26/98	13 38 24	(1194)
f_resize_sl2dw	8/26/98	13 38 24	(1212)
f_setwindowtext	8/26/98	13 38 25	(814)

 Menu entries

Name	Date	Time	Size
m_calendar	8/26/98	13 38 25	(31005)
m_cycle_route	8/26/98	13 38 26	(36447)
m_location	8/26/98	13 38 27	(38723)
m_rates	8/26/98	13 38 28	(40886)

 Window entries

Name	Date	Time	Size
w_calendar	8/26/98	13 38 30	(40621)
w_cycle_report	8/26/98	13 38 31	(16410)
w_cycle_route	8/26/98	13 38 33	(78867)
w_ideas	8/26/98	13 38 35	(6766)
w_location	8/26/98	13 38 36	(46031)
w_rates	8/26/98	13 38 38	(48382)

 Window entries

Name	Date	Time	Size
d_act_fin_tr	8/26/98	13 35 42	(8798)
d_act_rdnng	8/26/98	13 35 41	(9724)
d_all_customers	8/26/98	13 35 41	(4271)
d_contract	8/26/98	13 35 41	(4513)
d_customer_junction_regular	8/26/98	13 35 40	(3350)
d_dave_common_area	8/26/98	13 35 40	(6211)
d_dave_customers	8/26/98	13 35 40	(3135)
d_fin_tr_junct	8/26/98	13 35 39	(10588)
d_jj_connect_date	8/26/98	13 35 39	(3701)
d_junction_route	8/26/98	13 35 38	(3812)
d_loss_date	8/26/98	13 35 38	(3705)
d_temp_meter_readings	8/26/98	13 35 38	(9759)
d_trans	8/26/98	13 35 37	(3265)
ddave_aging	8/26/98	13 35 37	(3100)
ddave_cust_init	8/26/98	13 35 37	(3961)
ddave_fin_trans	8/26/98	13 35 36	(9007)
ddave_fin_trans_cust_junct	8/26/98	13 35 36	(4904)
ddave_init_balance	8/26/98	13 35 35	(4362)
ddave_kwh0	8/26/98	13 35 35	(5189)
ddave_log_rmn	8/26/98	13 35 34	(7946)
ddave_meter	8/26/98	13 35 35	(3706)
ddave_meter_phase	8/26/98	13 35 35	(9716)
ddave_mr_bill_no	8/26/98	13 35 36	(3875)
ddave_mr_margin	8/26/98	13 35 36	(4432)
d_pmnt_type	8/26/98	13 35 36	(4621)
ddave_read_date	8/26/98	13 35 37	(4927)
ddave_templog_type	8/26/98	13 35 37	(3657)
dddd	8/26/98	13 35 38	(5750)
dddd_jj	8/26/98	13 35 38	(3273)
dpt_log	8/26/98	13 35 38	(5097)
dpt_log_ft	8/26/98	13 35 39	(3997)
dvahc_last_meter_readings	8/26/98	13 35 39	(7788)
dvahc_last_meter_readings_hanr	8/26/98	13 35 39	(7788)
dvaz_cust	8/26/98	13 35 40	(4549)
dvaz_cust_fintr	8/26/98	13 35 40	(4933)
dvaz_cust_mrdng	8/26/98	13 35 41	(5364)
dvaz_mrdng	8/26/98	13 35 41	(4358)
tr_jj	8/26/98	13 35 42	(3750)

 Window entries

Name	Date	Time	Size
w_report_temp	8/26/98	13 38 40	(24325)
wv_service	8/26/98	13 38 43	(92333)

Function entries

Name	Date	Time	Size
f_newdwtransl	8/26/98	13 38 47	(1581)
f_xlatemenu	8/26/98	13 38 46	(1362)
f_xlatetab	8/26/98	13 38 46	(1448)
f_xlatetabpage	8/26/98	13 38 45	(3829)
f_xlatewindow	8/26/98	13 38 44	(1382)
f_xlatewobj	8/26/98	13 38 45	(3863)

UserObject entries

Name	Date	Time	Size
uo_stxlate	8/26/98	13 36 13	(1592)

Window entries

Name	Date	Time	Size
wr_xlate	8/26/98	13 38 48	(61897)

L Pipeline entries

Name	Date	Time	Size
pl_location1	8/21/98	17 52 04	(2151)
pl_location2	8/21/98	18 07 30	(2162)
pl_location4	8/21/98	18 14 43	(2073)
pl_location_copy	8/26/98	13 49 57	(1832)
pl_route2	8/26/98	13 55 39	(941)
pl_route_copy	8/26/98	13 57 24	(800)

Appendix D

List of Unused Objects

Window entries

Name	Date	Time	Size
w_genapp_sheet	8/24/98	09 09 10	(2999)

L Window entries

Name	Date	Time	Size
d_dd_report_name	8/24/98	16 28 23	(2876)
d_dddw_report_name	8/24/98	16 28 26	(3471)
d_dddw_resp_pers	8/25/98	14 11 45	(3078)

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 I Window entries

Name	Date	Time	Size
d_armen	8/25/98	09 08 54	(18451)
d_belongingness	8/24/98	09 09 13	(2757)
d_child_jj	8/24/98	09 10 09	(2929)
d_corporate_kwh_in_month	8/24/98	09 10 09	(6247)
d_cust_without	8/24/98	09 10 09	(6273)
d_customer_	8/24/98	09 09 15	(32494)
d_ds_child_jid	8/24/98	09 09 21	(2622)
d_ds_cr	8/24/98	09 09 21	(2855)
d_ds_tempbill_mr_vvv	8/24/98	09 10 10	(9095)
d_jj	8/24/98	09 09 25	(3582)
d_jjjjjj	8/24/98	09 09 25	(14654)
d_junct_	8/24/98	09 09 26	(16313)
d_pmnt_in_log	8/24/98	09 10 11	(4520)
ddave_bills	8/24/98	09 10 12	(8156)
ddave_corp_kredit	8/24/98	09 10 12	(4560)
ddave_err_aging	8/24/98	09 10 13	(4695)
ddave_pmnt_for_day	8/25/98	09 08 58	(5949)
dvahe_amsva_verj	8/24/98	09 10 16	(5580)
dvahe_deb_cr	8/24/98	09 10 16	(8004)
dvahe_meter_readings	8/25/98	09 09 00	(4047)
dvaz_cust_fintr_mrdng	8/24/98	09 10 18	(7976)
gd_contract	8/24/98	09 10 18	(3322)
gd_customer	8/24/98	09 10 18	(14091)
gd_customer_customer	8/24/98	09 10 19	(4302)
g_cle	8/24/98	09 10 19	(4379)
g_cycle_route	8/24/98	09 10 19	(3078)
gd_fin_transactions	8/24/98	09 10 19	(7727)
gd_junction	8/24/98	09 10 19	(6836)
gd_junction_junction	8/24/98	09 10 19	(5259)
gd_losses	8/24/98	09 10 20	(6169)
gd_meter	8/24/98	09 10 20	(9716)
gd_meter_reading	8/24/98	09 10 20	(6873)
gd_route	8/24/98	09 10 20	(3161)
gd_tariff	8/24/98	09 10 21	(3174)
gd_tariff2	8/24/98	09 10 21	(6479)
gd_tariff_breakdown	8/24/98	09 10 21	(4777)

D Window entries

Name	Date	Time	Size
d_child_customers	8/24/98	09 10 26	(3486)
d_cycle_gj_dd	8/24/98	09 10 27	(2760)
d_cycle_gj_dddw	8/24/98	09 10 27	(4475)
d_rep_loc	8/24/98	09 10 28	(4456)
d_report_by_tariff____	8/25/98	00 54 03	(29883)
d_report_by_tariff____x	8/25/98	00 54 03	(30682)
d_report_cycle_gj	8/24/98	09 10 30	(17012)
d_report_cycle_gj_mr_detail	8/24/98	09 10 30	(5892)
d_report_del_cycle	8/24/98	09 10 30	(10955)
d_report_del_group	8/24/98	09 10 31	(8403)
d_report_delinquency	8/24/98	09 10 31	(10971)
d_report_tariff_cycle	8/24/98	09 10 33	(20659)

Window entries

Name	Date	Time	Size
w_report_delinquency_cycle	8/24/98	09 10 40	(37918)

L window entries

Name	Date	Time	Size
d_dd_cycle_____	8/25/98	00 54 04	(2610)
d_templg	8/24/98	09 10 49	(9036)

D:\indow entries

Name	Date	Time	Size
d_cycle_route	8/24/98	09 11 10	(6167)
d_dddw_holiday	8/24/98	09 11 10	(2660)
d_ds_junctions_cr	8/24/98	09 11 11	(3539)
d_route2_	8/24/98	16 29 47	(6308)
d_route_	8/24/98	16 29 47	(6151)
d_route_free	8/24/98	09 11 11	(5821)

Window entries

Name	Date	Time	Size
w_bill_days	8/24/98	09 11 12	(7708)

D Window entries

Name	Date	Time	Size
d_bill_ca_sc_r_arm	8/24/98	09 11 19	(18568)
d_bill_ca_sc_r_eng	8/24/98	09 11 20	(18966)
d_bill_ca_sc_r_rus	8/24/98	09 11 20	(18992)
d_bill_n_mr	8/25/98	14 11 48	(6639)
d_customer_status_bill	8/24/98	09 11 25	(5728)
d_cycle_route_head_arm	8/24/98	09 11 26	(5082)
d_cycle_route_head_eng	8/24/98	09 11 26	(4917)
d_cycle_route_head_rus	8/24/98	09 11 26	(4938)
d_ca_respcust	8/24/98	09 11 27	(4463)

Function entries

Name	Date	Time	Size
f_cnt	8/24/98	09 11 30	(860)
f_current_balance	8/24/98	09 11 31	(889)

[/indow entries

Name	Date	Time	Size
d_act_for_customer	8/25/98	14 11 49	(6425)
d_bbm_bill_dave_porc	8/24/98	09 11 34	(29765)
d_customer_by_month_____	8/24/98	16 30 05	(23296)
d_customer_by_month_graph	8/24/98	09 11 36	(22852)
d_dd_log_type	8/24/98	09 11 36	(2692)
d_ds_junction_by_tariff	8/24/98	09 11 39	(2462)
d_ds_temphill_mr_by_tariff	8/25/98	14 11 52	(9160)
d_financial_changing_cons	8/25/98	14 11 53	(15120)
d_junct_by_cycle_route_new_____	8/25/98	14 11 53	(9712)
d_junction_report_impl_	8/24/98	09 11 44	(17826)
d_log_type	8/24/98	09 11 46	(2641)
d_tbl_ids__	8/25/98	14 11 56	(8721)

Query entries

Name	Date	Time	Size
ddd	7/11/98	03 17 18	(1203)

* -----*
D /indow entries
* -----*

Name	Date	Time	Size
d_akt	8/24/98	09 12 52	(17797)
d_meter_reading_detail_main	8/24/98	09 12 54	(6429)
d_mrd	8/25/98	00 54 26	(11957)

* -----*
Window entries
* -----*

Name	Date	Time	Size
w_meter_corr_070698	8/24/98	09 13 03	(82364)

* -----*
l entries
* -----*

Name	Date	Time	Size
m_genapp_sheet	8/24/98	09 13 12	(33055)

Window entries

Name	Date	Time	Size
d_system_error	8/24/98	20 33 24	(5178)

Function entries

Name	Date	Time	Size
f_centersheet	8/24/98	09 13 24	(1295)
f_function_last_contract	8/24/98	09 13 27	(1084)
f_select_dwrows	8/24/98	09 13 30	(1066)
f_selected_dwrows	8/24/98	09 13 31	(1002)
f_unslct_dwrows	8/24/98	09 13 32	(1096)

Menu entries

Name	Date	Time	Size
m_pop_print	8/24/98	09 13 34	(23778)

UserObject entries

Name	Date	Time	Size
uo_owstandard_old	8/24/98	09 13 39	(6633)
uo_plstandard	8/24/98	09 13 39	(859)

Window entries

Name	Date	Time	Size
w_system_error	8/24/98	09 13 41	(8132)

D:\window entries

Name	Date	Time	Size
dp_texas	8/25/98	00 57 25	(7420)
rrr	8/25/98	00 57 25	(9897)

Appendix E

Conversion of global functions to object functions

APPENDIX B
SAMPLE OF MODEL OUTPUT REPORTS

Junctions Implementation Report

18/06

Կիււաճ

I/I

01/05/1998 06/06/1998

Description	Meter No	From	To	Kwh	Cost	Sub Kwh	Losses	Remain	In/Out
1 (St 332)Sp 1	<input checked="" type="checkbox"/> 844798	01/05/98	06/06/98	30 720	125	28 229	1 166	1 325	
2 (St 337)Sp 1	<input checked="" type="checkbox"/> 163925	01/05/98	06/06/98	65 600	220	57 497	1 565	6 538	
3 (St 342)Sp 1	<input checked="" type="checkbox"/> 307722	01/05/98	06/06/98	40 000	220	45 982	1 696	7 678	
4 (St 342)Sp 2	<input checked="" type="checkbox"/> 548344	01/05/98	06/06/98	34 000	155	30 260	1 192	2 548	
5 (St 381)Sp 1	<input checked="" type="checkbox"/> 263221	01/05/98	06/06/98	13 560	67	12 089	471	1 000	
6 (St 381)Sp 2	<input checked="" type="checkbox"/> 553111	01/05/98	06/06/98	17 160	42	17 464	325	-629	
7 (St 135)Sp 1	<input checked="" type="checkbox"/> 339516	01/05/98	06/06/98	9 200	56	23 137	647	14 584	
8 (St 135)Sp 2	<input checked="" type="checkbox"/> 316161	01/05/98	06/06/98	27 800	85	18 515	771	8 514	
9 (St 252)Sp 1	<input checked="" type="checkbox"/> 164231	01/05/98	06/06/98	15 540	47	14 022	312	1 206	
10 (St 252)Sp 2	<input checked="" type="checkbox"/> 863853	01/05/98	06/06/98	18 000	64	15 625	503	1 872	
11 (St 272)Sp 1	<input checked="" type="checkbox"/> 168615	01/05/98	06/06/98	42 600	152	40 058	1 518	1 024	
12 (St 272)Sp 2	<input checked="" type="checkbox"/> 301710	01/05/98	06/06/98	19 680	105	19 039	745	104	
13 (St 318)Sp 1	<input checked="" type="checkbox"/> 310016	01/05/98	06/06/98	16 800	76	15 857	589	355	
14 (St 318)Sp 2	<input checked="" type="checkbox"/> 694600	01/05/98	06/06/98	21 840	80	14 845	554	6 442	
15 (St 385)Sp 1	<input checked="" type="checkbox"/> 170709	01/05/98	06/06/98	45 920	167	42 105	1 560	2 255	
16 (St 428)Sp 1	<input checked="" type="checkbox"/> 314493	01/05/98	06/06/98	39 400	146	35 788	1 327	2 285	
17 (St-461)Sp 1	<input checked="" type="checkbox"/> 227457	01/05/98	06/06/98	59 000	192	56 963	1 732	305	
18 (St-467)Sp 2	<input type="checkbox"/>	01/05/98	06/06/98	6 030	2	6 030	0	0	
19 (St-477)Sp 1	<input checked="" type="checkbox"/> 301218	01/05/98	06/06/98	48 000	198	40 301	1 493	6 206	
20 (St 583)Sp 1	<input checked="" type="checkbox"/> 315363	01/05/98	06/06/98	17 520	56	23 600	614	-6 694	
21 (St 656)Sp 1	<input checked="" type="checkbox"/> 676582	01/05/98	06/06/98	53 000	257	57 024	2 167	-6 191	
22 (St 711)Sp 1	<input type="checkbox"/>	01/05/98	06/06/98	16 920	55	16 920	0	0	
23 (St 715)Sp 1	<input checked="" type="checkbox"/> 493134	01/05/98	06/06/98	55 600	190	39 305	1 483	14 813	
24 (St 717)Sp 1	<input type="checkbox"/>	01/05/98	06/06/98	9 420	44	9 083	203	134	
25 (St 788)Sp 1	<input checked="" type="checkbox"/> 640348	01/05/98	06/06/98	46 800	207	47 247	1 969	2 416	
26 (St 854)Sp 1	<input checked="" type="checkbox"/> 542426	01/05/98	06/06/98	22 440	78	17 942	705	3 793	
27 (St 862)Sp 1	<input type="checkbox"/>	01/05/98	06/06/98	4 540	5	4 540	0	0	
28 (St 862)Sp 2	<input type="checkbox"/>	01/05/98	06/06/98	2 173	2	2 173	0	0	
29 (St 945)Sp 1	<input checked="" type="checkbox"/> 009452	01/05/98	06/06/98	29 160	86	27 322	900	938	
30 (St 945)Sp 2	<input checked="" type="checkbox"/> 025699	01/05/98	06/06/98	20 400	53	25 196	577	5 373	
31 (St 989)Sp 1	<input checked="" type="checkbox"/> 301493	01/05/98	06/06/98	10 880	42	9 838	410	632	
32 (St 989)Sp 2	<input checked="" type="checkbox"/> 347115	01/05/98	06/06/98	10 560	41	9 048	377	1 135	
33 (St 1030)Sp 1	<input checked="" type="checkbox"/> 554724	01/05/98	06/06/98	37 200	93	37 512	683	995	
34 (St 1030)Sp 2	<input checked="" type="checkbox"/> 544673	01/05/98	06/06/98	33 960	114	24 139	836	8 985	
35 (St 1132)Sp 1	<input checked="" type="checkbox"/> 173629	01/05/98	06/06/98	14 220	55	17 106	558	3 444	
36 (St 1132)Sp 2	<input checked="" type="checkbox"/> 179905	01/05/98	06/06/98	26 400	87	26 144	879	-623	
37 (St 1165)Sp 1	<input checked="" type="checkbox"/> 140827	01/05/98	06/06/98	36 360	138	32 324	1 218	2 818	
38 (St 1265)Sp 1	<input checked="" type="checkbox"/> 293138	01/05/98	06/06/98	14 240	79	15 278	634	1 672	
39 (St 1265)Sp 2	<input checked="" type="checkbox"/> 454212	01/05/98	06/06/98	5 680	41	11 998	351	-6 669	
40 (St 1439)Sp 1	<input checked="" type="checkbox"/> 415325	01/05/98	06/06/98	27 600	117	32 860	1 171	-6 431	
41 (St 1439)Sp 2	<input checked="" type="checkbox"/> 176220	01/05/98	06/06/98	48 480	81	29 709	948	17 823	
42 (St 1605)Sp 2	<input checked="" type="checkbox"/> 960239	01/05/98	06/06/98	75 200	233	59 872	2 083	13 245	
43 (St 1635)Sp 1	<input checked="" type="checkbox"/> 543301	01/05/98	06/06/98	14 040	56	12 869	431	740	
44 (St 313)Sp 1	<input checked="" type="checkbox"/> 341108	01/05/98	06/06/98	24 400	119	22 761	917	722	
45 (St 267)Sp 1	<input checked="" type="checkbox"/> 409791	01/05/98	06/06/98	29 880	113	25 291	1 054	3 535	
46 (St 267)Sp 2	<input checked="" type="checkbox"/> 170706	01/05/98	06/06/98	9 660	34	9 199	371	90	
47 (St 1666)Sp 1	<input checked="" type="checkbox"/> 544292	01/05/98	06/06/98	57 720	149	38 098	1 587	18 035	
Total				1 325 303	4 824	1 218 204	41 290	65 809	

20/04/1998

Expected Revenue Calculation

01/03/1998 01/04/1998

(St-252)Sp 2

Desc	Portion	Tariff	Kwh	Amount	Discount	VAT plus	VAT minus	Total	Cash Կառվելի	VAT	Count	
											Total	Net Kwh
Total Non Residential			2486 00	62150 00	0 00	0 00	0 00	62150 00	62150 00	10358 33	8	5
Corporate			2486 00	62150 00	0 00	0 00	0 00	62150 00	62150 00	10358 33	8	5
Ցածր լարում	0 >>	25	2486 00	62150 00	0 00	0 00	0 00	62150 00	62150 00	10358 33	9	5
Total Residential			18888 00	407956 00	0 00	0 00	0 00	407956 00	407956 00	67992 69	57	6
Residential			18888 00	407956 00	0 00	0 00	0 00	407956 00	407956 00	67992 69	57	6
Բնակիչ	0 100	15	4844 00	72660 00	0 00	0 00	0 00	72660 00	72660 00	12110 00	57	6
Բնակիչ	100 250	22	5268 00	115896 00	0 00	0 00	0 00	115896 00	115896 00	19316 01	44	0
Բնակիչ	250 >>	25	8776 00	219400 00	0 00	0 00	0 00	219400 00	219400 00	36566 68	25	0
Total			21374 00	470106 00	0 00	0 00	0 00	470106 00	470106 00	78351 02	65	11

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Financial Act Report

Կիւայան

01/08/1998 31/08/1998

Name	Address	Act No	Date	Amount	Kwh	Reference
Common Area				473 675 00	18 947	
1 105501/000 Պոնակ Բարդ 85	Բարդ 85	Հաշվարկի սխալ	04/08/98	8 500 00	340	^
2 105503/000 Պոնակ Հակոբյան 1	Պոնակ Հակոբյան 1	Հաշվարկի սխալ	04/08/98	7 250 00	290	8
3 105504/000 Պոնակ Հակ4 Կոմ1	Հակ4 Կոմ1	Հաշվարկի սխալ	04/08/98	22 500 00	900	14
4 105505/000 Պոնակ Կոմիտաս 1	Պոնակ Կոմիտաս 1	Հաշվարկի սխալ	04/08/98	45 000 00	1 800	11
5 105506/000 Պոնակ Բարբ 63 65 67	Պոնակ Դում51 53 Բեռ58	Հաշվարկի սխալ	04/08/98	3 000 00	120	8
6 105507/000 Պոնակ Օրբելի 18	Պոնակ Օրբելի 18	Հաշվարկի սխալ	04/08/98	22 500 00	900	10
7 105509/000 Պոնակ Օրբելի 33	Պոնակ Օրբելի 18	Հաշվարկի սխալ	04/08/98	22 500 00	900	11
8 105511/000 Պոնակ Կոմիտաս 8	Պոնակ Կոմիտաս 8	Հաշվարկի սխալ	04/08/98	3 500 00	140	8
9 105512/000 Պոնակ Բարբյուս 7 9	Պոնակ Բարբյուս 7 9	Հաշվարկի սխալ	04/08/98	7 175 00	287	10
10 105513/000 Պոնակ Դում51 53 Բեռ58	Պոնակ Դում51 53 Բեռ58	Հաշվարկի սխալ	04/08/98	45 000 00	1 800	^
11 105514/000 Պոնակ Հակոբյան 7 9 11	Պոնակ Հակոբյան 7 9 11	Հաշվարկի սխալ	04/08/98	4 250 00	170	10
12 105515/000 Պոնակ Դուման 51	Պոնակ Դուման 51	Հաշվարկի սխալ	04/08/98	45 000 00	1 800	13
13 105551/000 Պոնակ Գյուլբեկյան 40	Գյուլբեկյան 40	Հաշվարկի սխալ	04/08/98	22 500 00	900	8
14 105552/000 Պոնակ Գյուլբեկյան 38ա	Գյուլբեկյան 38 ա	Հաշվարկի սխալ	04/08/98	22 500 00	900	8
15 105553/000 Պոնակ Խաչատրյան 10	Խաչատրյան 10	Հաշվարկի սխալ	04/08/98	45 000 00	1 800	7
16 350945/000 Կիւայան 32 լիֆտ		Հաշվարկի սխալ	04/08/98	5 000 00	200	9
17 355000/000 Կիւայան 2 լիֆտ	Կիւայան 2	Հաշվարկի սխալ	04/08/98	5 000 00	200	5
18 357441/000 Կիւայան 4/3 լիֆտ		Հաշվարկի սխալ	04/08/98	15 000 00	600	8
19 357640/000 Կիւայան 4/2 լիֆտ		Հաշվարկի սխալ	04/08/98	15 000 00	600	8
20 516284/000 Հակոբյան 1 լիֆտ 5մ		Հաշվարկի սխալ	04/08/98	12 500 00	500	10
21 516286/000 Հակոբյան 1 լիֆտ 9մ		Հաշվարկի սխալ	04/08/98	12 500 00	500	9
22 516288/000 Հակոբյան 1 լիֆտ 7մ		Հաշվարկի սխալ	04/08/98	12 500 00	500	9
23 517799/000 Հակոբյան 7 լիֆտ		Հաշվարկի սխալ	04/08/98	15 000 00	600	9
24 517940/000 Բարբյուս 65 լիֆտ		Հաշվարկի սխալ	04/08/98	12 500 00	500	9
25 518137/000 Բարբյուս 63 լիֆտ		Հաշվարկի սխալ	04/08/98	12 500 00	500	10
26 518359/000 Դումանի 53 լիֆտ		Հաշվարկի սխալ	04/08/98	15 000 00	600	10
27 518438/000 Բեռու 58 լիֆտ		Հաշվարկի սխալ	04/08/98	15 000 00	600	9
Corporate				43 750 00	1 750	
28 007090/000 ՍՊԸ «ՄԱՆԵ»	ԿՈՄԻՏԱՍ 1 223748	Հաշվարկի սխալ	04/08/98	0 00	0	15
29 260400/000 ՍՊԸ «ԲԱՂՂԱՍԱՐ»	ԿԻԵՎՅԱՆ 24	Հաշվարկի սխալ	04/08/98	20 000 00	800	17
30 260400/000 ՍՊԸ «ԲԱՂՂԱՍԱՐ»	ԿԻԵՎՅԱՆ 24	Հաշվարկի սխալ	02/08/98	23 750 00	950	16
Regular				153 150 00	6 344	
31 060202/000 Արարատ	Բակունց 5	Հաշվարկի սխալ	01/08/98	750 00	50	13
32 353136/000 Հայրապետյան	Կիւայան 5 Բճ 34	Հաշվարկի սխալ	04/08/98	44 850 00	1 794	14
33 353231/000 Դավրիձյան	Կիւայան 5 Բճ 84	Հաշվարկի սխալ	04/08/98	47 500 00	1 900	14
34 353665/000 Չկա անունը	Կիւայան 15 Բճ 5	Հաշվարկի սխալ	04/08/98	17 500 00	700	14
35 511937/000 Չկա անունը	Միամանթո 3 Բճ 37	Հաշվարկի սխալ	01/08/98	2 600 00	150	15
36 512307/000 Սարգսյան	Դումանի 9Ա	Հաշվարկի սխալ	02/08/98	7 500 00	300	7
37 512915/000 Կասյան	Կոմիտաս 8 Բճ 15	Հաշվարկի սխալ	01/08/98	3 700 00	200	14
38 512923/000 Բոհնիաթյան	Կոմիտաս 8 Բճ 23	Հաշվարկի սխալ	01/08/98	2 700 00	150	14
39 512924/000 Մլիխոնյան	Կոմիտաս 8 Բճ 24	Հաշվարկի սխալ	01/08/98	11 050 00	500	14
40 513671/000 Մկրտչյան	Խարկովյան 20	Հաշվարկի սխալ	04/08/98	15 000 00	600	13
Total				670 575 00	27 041	

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POWER FLOW WITHIN ORGANIZATION

Կիելյան

1/1

09/08/1998 09/09/1998

09/09/199

Description	Kwh	Subkwh	Planned Losses		Overplanned Losses	
			Kwh	%	Kwh	%
Կիելյան	408 893	373 290	0	0.0	35 603	8.7
Մանաչյան Սմբատ	42 038	41 094	1 682	4.0	738	1.8
Direct Customers	40 150	1 092	0	0.0	5 868	14.6
Աղսբաբյան Համլետ	41 720	29 535	1 579	3.8	10 606	25.4
Դավթաբյան Սմբատ	36 120	26 610	1 445	4.0	8 065	22.3
Մուրադյան Հրայր	46 332	38 504	1 853	4.0	5 975	12.9
Սաֆարյան Ս	65 420	61 400	2 617	4.0	1 403	2.1
Հովհաննիսյան Աշոտ	55 039	44 783	2 202	4.0	8 055	14.6
Վարդաբյուրյան Արթուր	46 471	38 769	1 859	4.0	5 843	12.6

BEST AVAILABLE COPY

Junctions Implementation Report

18/06 1998

Հիշյալն

1/1

01/05/1998 06/06/1998

Description	Meter No	From	To	Kwh	Ccu	Smbkwh	Posses	Reman	Outflow
1 (St 332)Sp 1	<input checked="" type="checkbox"/> 844798	01/05/98	06/06/98	30 720	125	28,229	1 166	1 325	
2 (St 337)Sp 1	<input checked="" type="checkbox"/> 163925	01/05/98	06/06/98	65 600	220	57 497	1 565	6 538	
3 (St 342)Sp 1	<input checked="" type="checkbox"/> 307722	01/05/98	06/06/98	40 000	220	45 982	1 696	7 678	
4 (St 342)Sp 2	<input checked="" type="checkbox"/> 548344	01/05/98	06/06/98	34 000	155	30 260	1 192	2 548	
5 (St 381)Sp 1	<input checked="" type="checkbox"/> 263221	01/05/98	06/06/98	13 560	67	12 089	471	1 000	
6 (St 381)Sp 2	<input checked="" type="checkbox"/> 553111	01/05/98	06/06/98	17 160	42	17 464	325	-629	
7 (St 135)Sp 1	<input checked="" type="checkbox"/> 339516	01/05/98	06/06/98	9 200	56	23 137	647	14 584	
8 (St 135)Sp 2	<input checked="" type="checkbox"/> 316161	01/05/98	06/06/98	27 800	85	18 515	771	8 514	
9 (St 252)Sp 1	<input checked="" type="checkbox"/> 164231	01/05/98	06/06/98	15 540	47	14 022	312	1 206	
10 (St 252)Sp 2	<input checked="" type="checkbox"/> 863853	01/05/98	06/06/98	18,000	64	15 625	503	1 872	
11 (St 272)Sp 1	<input checked="" type="checkbox"/> 168615	01/05/98	06/06/98	42 600	152	40 058	1 518	1 024	
12 (St 272)Sp 2	<input checked="" type="checkbox"/> 301710	01/05/98	06/06/98	19,680	105	19 039	745	104	
13 (St 318)Sp 1	<input checked="" type="checkbox"/> 310016	01/05/98	06/06/98	16 800	76	15 857	589	355	
14 (St 318)Sp 2	<input checked="" type="checkbox"/> 694600	01/05/98	06/06/98	21 840	80	14 845	554	6 442	
15 (St 385)Sp 1	<input checked="" type="checkbox"/> 170709	01/05/98	06/06/98	45 920	167	42 105	1 560	2 255	
16 (St-428)Sp 1	<input checked="" type="checkbox"/> 314493	01/05/98	06/06/98	39 400	146	35 788	1 327	2 285	
17 (St-461)Sp 1	<input checked="" type="checkbox"/> 227457	01/05/98	06/06/98	59 000	192	56 963	1 732	305	
18 (St-467)Sp 2	<input type="checkbox"/>	01/05/98	06/06/98	6 030	2	6 030	0	0	
19 (St-477)Sp 1	<input checked="" type="checkbox"/> 301218	01/05/98	06/06/98	48 000	198	40 301	1 493	6 206	
20 (St 583)Sp 1	<input checked="" type="checkbox"/> 315363	01/05/98	06/06/98	17 520	56	23 600	614	-6 694	
21 (St-656)Sp 1	<input checked="" type="checkbox"/> 676582	01/05/98	06/06/98	53 000	257	57 024	2 167	-6 191	
22 (St 711)Sp 1	<input type="checkbox"/>	01/05/98	06/06/98	16 920	55	16 920	0	0	
23 (St 715)Sp 1	<input checked="" type="checkbox"/> 493134	01/05/98	06/06/98	55 600	190	39 305	1 483	14 813	
24 (St 717)Sp 1	<input type="checkbox"/>	01/05/98	06/06/98	9 420	44	9 083	203	134	
25 (St 788)Sp 1	<input checked="" type="checkbox"/> 640348	01/05/98	06/06/98	46 800	207	47 247	1 969	2 416	
26 (St 854)Sp 1	<input checked="" type="checkbox"/> 542426	01/05/98	06/06/98	22 440	78	17 942	705	3 793	
27 (St 862)Sp 1	<input type="checkbox"/>	01/05/98	06/06/98	4 540	5	4 540	0	0	
28 (St 862)Sp 2	<input type="checkbox"/>	01/05/98	06/06/98	2 173	2	2,173	0	0	
29 (St 945)Sp 1	<input checked="" type="checkbox"/> 009452	01/05/98	06/06/98	29,160	86	27 322	900	938	
30 (St 945)Sp 2	<input checked="" type="checkbox"/> 025699	01/05/98	06/06/98	20 400	53	25 196	577	5 373	
31 (St 989)Sp 1	<input checked="" type="checkbox"/> 301493	01/05/98	06/06/98	10 880	42	9 838	410	632	
32 (St 989)Sp 2	<input checked="" type="checkbox"/> 347115	01/05/98	06/06/98	10 560	41	9 048	377	1 135	
33 (St 1030)Sp 1	<input checked="" type="checkbox"/> 554724	01/05/98	06/06/98	37 200	93	37 512	683	995	
34 (St 1030)Sp 2	<input checked="" type="checkbox"/> 544673	01/05/98	06/06/98	33 960	114	24 139	836	8 985	
35 (St 1132)Sp 1	<input checked="" type="checkbox"/> 173629	01/05/98	06/06/98	14 220	55	17 106	558	3 444	
36 (St 1132)Sp 2	<input checked="" type="checkbox"/> 179905	01/05/98	06/06/98	26 400	87	26 144	879	-623	
37 (St 1165)Sp 1	<input checked="" type="checkbox"/> 140827	01/05/98	06/06/98	36,360	138	32 324	1 218	2 818	
38 (St 1265)Sp 1	<input checked="" type="checkbox"/> 293138	01/05/98	06/06/98	14 240	79	15 278	634	1 672	
39 (St 1265)Sp 2	<input checked="" type="checkbox"/> 454212	01/05/98	06/06/98	5 680	41	11 998	351	6 669	
40 (St 1439)Sp 1	<input checked="" type="checkbox"/> 415325	01/05/98	06/06/98	27 600	117	32 860	1 171	-6 431	
41 (St 1439)Sp 2	<input checked="" type="checkbox"/> 176220	01/05/98	06/06/98	48 480	81	29 709	948	17 823	
42 (St 1605)Sp 2	<input checked="" type="checkbox"/> 960239	01/05/98	06/06/98	75 200	233	59 872	2 083	13 245	
43 (St 1635)Sp 1	<input checked="" type="checkbox"/> 543301	01/05/98	06/06/98	14 040	56	12 869	431	740	
44 (St 313)Sp 1	<input checked="" type="checkbox"/> 341108	01/05/98	06/06/98	24 400	119	22 761	917	722	
45 (St 267)Sp 1	<input checked="" type="checkbox"/> 409791	01/05/98	06/06/98	29 880	113	25 291	1 054	3 535	
46 (St 267)Sp 2	<input checked="" type="checkbox"/> 170706	01/05/98	06/06/98	9 660	34	9 199	371	90	
47 (St 1666)Sp 1	<input checked="" type="checkbox"/> 544292	01/05/98	06/06/98	57 720	149	38 098	1 587	18 035	
Total				1 325 303	4 824	1 218 204	41 290	65 809	

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Delinquency by 08/09/1998

					(St-1132)SP2
Name	Address	Balance	Asst Date	Aging	Contract
1 105502/000 Պոմպ Դուման 1	Դուման 1	345 450 00	03/07/98	29	
2 516989/000 Դումանի 1 1,2մ լիֆտ		486,500 00	04/08/98	13	
<u>Subtotal</u>		<u>831,950 00</u>			
3 007132/000-Ա/Չ «Արագ» Ա Ազատյան	Կիևյան 11	26,731 00	04/08/98	4	
<u>Subtotal</u>		<u>26,731 00</u>			
4 516914/000 Մնացականյան Բելա	Դուման 1 Բն 14	12,884 50	04/08/98	7	
5 516920/000 Հարոիթրոինյան Ժենյա?	Դուման 1 Բն 20	780 20	04/08/98	4	
6 516921/000 Չկա անունը	Դուման 1 Բն 21	3,320 00	04/08/98	36	
7 516933/000 Վարդանյան Արտավազդ	Դուման 1 Բն 33	37,141 00	04/08/98	12	
8 516936/000 Չկա անունը	Դուման 1 Բն 36	247 00	04/08/98	36	
9 516943/000 Մելիքսեթյան Լյոիսիա	Դուման 1 Բն 43	1,215 80	04/08/98	24	
10 516950/000 Խաչատրյան Ջախար	Դուման 1 Բն 50	1 065 36	04/08/98	3	
11 516955/000 Ավազյան Ռ-աֆիկ	Դուման 1 Բն 55	1,515 00	04/08/98	21	
12 516964/000 Օգանեզովա Սոնյա	Դուման 1 Բն 64	7 325 40	04/08/98	3	
13 516982/000 Չկա անունը	Դուման 1 Բն 82	2,835 00	04/08/98	4	
14 516986/000 Ջոհրաբյան Սերգեյ	Դուման 1 Բն 86	25,967 50	04/08/98	12	
<u>Subtotal</u>		<u>94,296 76</u>			
Total		952 977 76			

Disconnection List by 08/09/1998

(Sub-1132)Sp 2

Account No	Address	Meter Serial No	Alternate
1 105502/000	Դուման 1	104446	
2 516989/000		865424	
3 007132/000	Կիևյան 11	660022	
4 516914/000	Դուման 1 Բն 14	Բ3891107	
5 516920/000	Դուման 1 Բն 20	Բ7653360	
6 516921/000	Դուման 1 Բն 21	Բ0224482	
7 516933/000	Դուման 1 Բն 33	Բ2791175	
8 516936/000	Դուման 1 Բն 36	Ա6312937	
9 516943/000	Դուման 1 Բն 43	0661513	
10 516950/000	Դուման 1 Բն 50	0189851	
11 516955/000	Դուման 1 Բն 55	4130703	
12 516964/000	Դուման 1 Բն 64	1806463	
13 516982/000	Դուման 1 Բն 82	Բ4507492	
14 516986/000	Դուման 1 Բն 86	1270010	

Cycle Report

DAY 15

08/09/1998

Code	Descr	Day	Period	1 DAY	DAY 2	DAY 3	DAY 4	DAY 5	DAY 15
				Create Date	Print Date	Read Date	Bill Date	Pay Date	Disc Date
1	Յիկլ 1	31	1	28/08/1998	30/08/1998	31/08/1998	04/09/1998	05/09/1998	15/09/1998
		31	1	27/09/1998	29/09/1998	30/09/1998	04/10/1998	05/10/1998	15/10/1998
2	Յիկլ 2	31	1	28/08/1998	30/08/1998	31/08/1998	04/09/1998	05/09/1998	15/09/1998
		31	1	27/09/1998	29/09/1998	30/09/1998	04/10/1998	05/10/1998	15/10/1998
3	Յիկլ 3	31	1	28/08/1998	30/08/1998	31/08/1998	04/09/1998	05/09/1998	15/09/1998
		31	1	27/09/1998	29/09/1998	30/09/1998	04/10/1998	05/10/1998	15/10/1998
4	Յիկլ 4	31	1	28/08/1998	30/08/1998	31/08/1998	04/09/1998	05/09/1998	15/09/1998
		31	1	27/09/1998	29/09/1998	30/09/1998	04/10/1998	05/10/1998	15/10/1998
5	Յիկլ 5	31	1	28/08/1998	30/08/1998	31/08/1998	04/09/1998	05/09/1998	15/09/1998
		31	1	27/09/1998	29/09/1998	30/09/1998	04/10/1998	05/10/1998	15/10/1998
6	Յիկլ 6	31	1	28/08/1998	30/08/1998	31/08/1998	04/09/1998	05/09/1998	15/09/1998
		31	1	27/09/1998	29/09/1998	30/09/1998	04/10/1998	05/10/1998	15/10/1998
7	Յիկլ 7	31	1	28/08/1998	30/08/1998	31/08/1998	04/09/1998	05/09/1998	15/09/1998
		31	1	27/09/1998	29/09/1998	30/09/1998	04/10/1998	05/10/1998	15/10/1998
8	Յիկլ 8	31	1	28/08/1998	30/08/1998	31/08/1998	04/09/1998	05/09/1998	15/09/1998
		31	1	27/09/1998	29/09/1998	30/09/1998	04/10/1998	05/10/1998	15/10/1998
9	Յիկլ 9	31	1	28/08/1998	30/08/1998	31/08/1998	04/09/1998	05/09/1998	15/09/1998
		31	1	27/09/1998	29/09/1998	30/09/1998	04/10/1998	05/10/1998	15/10/1998
10	Յիկլ 10	31	1	28/08/1998	30/08/1998	31/08/1998	04/09/1998	05/09/1998	15/09/1998
		31	1	27/09/1998	29/09/1998	30/09/1998	04/10/1998	05/10/1998	15/10/1998
51	Հանրային 1	31	1	28/08/1998	30/08/1998	31/08/1998	04/09/1998	05/09/1998	15/09/1998
		31	1	27/09/1998	29/09/1998	30/09/1998	04/10/1998	05/10/1998	15/10/1998
52	Հանրային 2	31	1	28/08/1998	30/08/1998	31/08/1998	04/09/1998	05/09/1998	15/09/1998
		31	1	27/09/1998	29/09/1998	30/09/1998	04/10/1998	05/10/1998	15/10/1998
53	Հանրային 3	31	1	28/08/1998	30/08/1998	31/08/1998	04/09/1998	05/09/1998	15/09/1998
		31	1	27/09/1998	29/09/1998	30/09/1998	04/10/1998	05/10/1998	15/10/1998
99	Տրանսֆորմատոր	31	1	28/08/1998	30/08/1998	31/08/1998	04/09/1998	05/09/1998	15/09/1998
		31	1	27/09/1998	29/09/1998	30/09/1998	04/10/1998	05/10/1998	15/10/1998

Սահակյան Աղաբեկ

Դրաման 1 ԲԸ 46

Year Month	Start Balance	Kwh	Amount	Payment	Kwh		End Balance
						Amount	
1 1997 07	0 00	0	0 00	0 00	0	0 00	0 00
2 1997 08	0 00	151	2 320 00	2 320 00	0	0 00	0 00
3 1997 09	0 00	152	2 370 40	2 370 00	0	0 00	0 40
4 1997 10	0 40	182	3 304 00	3 304 00	0	0 00	0 40
5 1997 11	0 40	197	3 634 00	3 634 00	0	0 00	0 40
6 1997 12	0 40	107	1 913 00	1 913 00	0	0 00	0 40
7 1998 01	0 40	173	3 106 00	3 106 00	0	0 00	0 40
8 1998 02	0 40	147	2 534 00	2,534 00	0	0 00	0 40
9 1998 03	0 40	116	1 852 00	1 852 00	0	0 00	0 40
10 1998 04	0 40	170	3 040 00	3 040 00	0	0 00	0 40
11 1998 05	0 40	158	2 776 00	2 776 00	0	0 00	0 40
12 1998 06	0 40	171	3 062 00	3 062 00	0	0 00	0 40
13 1998 07	0 40	192	3 524 00	3 524 00	0	0 00	0 40
14 1998 08	0 40	178	3 216 00	0 00	0	0 00	3 216 40

Current Balance As Of Date 04/08/98 3 216 40

Summary balance 08/09/1998

Batch 3807, Cycle 10, Route 515

1/1

	Name	Start Balance	Days	Reading			Kwh in meter	Consumtion	Act		LPC	Total due	Paid	Signature
				+	Previous	Last			X	Kwh				
1	510114/000 Բարբյուսի 21	0 50	31	11901	12094	1	193 0	3546 00	0 0	0 00	0 00	3546 50		
2	512016/000 Բարբյուսի 36	0 00	31	704	915	1	211 0	3942 00	0 0	0 00	0 00	3942 00		
3	512018/000 Բարբյուսի 26	0 50	31	5234	5506	1	272 0	5350 00	0 0	0 00	0 00	5350 50		
4	512032/000 Բարբյուսի 30	0 50	31	4935	5290	1	355 0	7425 00	0 0	0 00	0 00	7425 50		
5	512034/000 Բարբյուս 38Ա	0 00	62	1797	1805	1	8 0	120 00	0 0	0 00	0 00	120 00		
6	512035/000 Բարբյուսի 36	0 00	31	5366	5749	1	383 0	8125 00	0 0	0 00	0 00	8125 00		
7	512069/000 Բարբյուս 23	0 50	31	3766	3923	1	157 0	2754 00	0 0	0 00	0 00	2754 50		
8	512070/000 Բարբյուս 23	2992 30	31	2861	3067	1	206 0	3832 00	0 0	0 00	0 00	6824 30		
9	512077/000 Բարբյուսի 36	12529 00	31	218	514	1	296 0	5950 00	0 0	0 00	0 00	18479 00		
10	512078/000 Բարբյուս 26	0 50	31	15020	15416	1	396 0	8450 00	0 0	0 00	0 00	8450 50		
11	512081/000 Բարբյուս 19	7525 50	31	3142	3235	1	93 0	1395 00	0 0	0 00	0 00	8920 50		
12	512083/000 Բարբյուս 25	0 00	31	1468	1620	1	152 0	2644 00	0 0	0 00	0 00	2644 00		
13	512109/000 Բարբյուսի 17	0 50	31	14408	14607	1	199 0	3678 00	0 0	0 00	0 00	3678 50		
14	512110/000 Բարբյուսի 17	-437 50	31	450	596	1	146 0	2512 00	0 0	0 00	0 00	2074 50		
15	512111/000 Բարբյուս 19	0 90	31	3623	3768	1	145 0	2490 00	0 0	0 00	0 00	2490 90		
16	512112/000 Բարբյուս 19/Ա	2650 50	31	134	413	1	279 0	5525 00	0 0	0 00	0 00	8175 50		
17	512176/000 Բարբյուս 19	225 00	31	8401	8624	1	223 0	4206 00	0 0	0 00	0 00	4431 00		
Subtotal		25488 70					3714 0	71944 00	0 0	0 00	0 00	97432 7		
Total		25488 70					3714 0	71944 00	0 0	0 00	0 00	97432 7		

nb

Batch for Reading
Cycle-01 Route-601
19/08/1998

	Address	Account no	Serial no	Last Reading	Length	Reading	Alternate
1	Կիեվյան 2Ա	901512	818172	10/08/98	2345 4		Ստրադյան հրա
2	Կիեվյան 2Ա Բճ 1	352601/000	547914	31/05/98	0002 4		
3	Կիեվյան 2Ա Բճ 10	352610/000	0237570	10/08/98	13440 5		
4	Կիեվյան 2Ա Բճ 11	352611/000	28915189	10/08/98	1367 4		
5	Կիեվյան 2Ա Բճ 12	352612/000	1238704	10/08/98	09286 5		
6	Կիեվյան 2Ա Բճ 13	352613/000	0459309	10/08/98	0023 4		
7	Կիեվյան 2Ա Բճ 14	352614/000		01/07/97	0000 4		
8	Կիեվյան 2Ա Բճ 15	352615/000	A3871446	10/08/98	4736 4		
9	Կիեվյան 2Ա Բճ 16	352616/000	0475778	10/08/98	19222 5		
10	Կիեվյան 2Ա Բճ 17	352617/000	0725118	10/08/98	08572 5		
11	Կիեվյան 2Ա Բճ 18	352618/000	104473	01/09/97	1790 4		
12	Կիեվյան 2Ա Բճ 19	352619/000	1156388	10/08/98	4474 4		
13	Կիեվյան 2Ա Բճ 2	352602/000	55223868	10/08/98	6143 4		
14	Կիեվյան 2Ա Բճ 20	352620/000	20361269	10/08/98	3145 4		
15	Կիեվյան 2Ա Բճ 21	352621/000	1309821	10/08/98	6085 4		
16	Կիեվյան 2Ա Բճ 22	352622/000	84778203	10/08/98	4483 4		
17	Կիեվյան 2Ա Բճ 3	352603/000	85837659	10/08/98	24966 5		
18	Կիեվյան 2Ա Բճ 4	352604/000	3639724	10/08/98	5797 4		
19	Կիեվյան 2Ա Բճ 5	352605/000	1068980	10/08/98	4939 4		
20	Կիեվյան 2Ա Բճ 6	352606/000	9986088	10/08/98	13720 5		
21	Կիեվյան 2Ա Բճ 7	352607/000	2445458	10/08/98	5816 4		
22	Կիեվյան 2Ա Բճ 8	352608/000	684702	10/08/98	0103 4		
23	Կիեվյան 2Ա Բճ 9	352609/000	6930141	10/08/98	3390 4		

APPENDIX C
EXAMPLES OF SCREENS

Armenian Billing And Collection Software Slides

slide 1 –

- ◆ Billing System main screen
- ◆ Batch processing window

slide 2 –

- ◆ Enter readings
- ◆ Bill print selection

slide 3 --

- ◆ Sample bill print preview
- ◆ Enter payments

slide 4 --

- ◆ Tariff maintenance
- ◆ Cycle/route maintenance

slide 5 --

- ◆ Junction Maintenance
- ◆ Sample of context sensitive report at a junction level

slide 6 --

- ◆ Accounts Receivable report
- ◆ Demonstration of context sensitive report function

slide 7 --

- ◆ Meter replacement/adjustment data entry
- ◆ Demonstration of context sensitive reporting

slide 8 --

- ◆ Context sensitive Customer reports
- ◆ Account summary

slide 9 --

- ◆ Context sensitive Meter reports
- ◆ Meter Change Out

slide 10--

- ◆ Help screen
- ◆ Payment correction

slide 11 --

- ◆ Metering correction
- ◆ Tree build - group junction

slide 12 –

- ◆ Search screen
- ◆ Sample results of search

Frame - [07/10/1997 Ref Inq-01_302]

353764 Ավագյան

Name: 353764-Ավագյան Tariff: Բնակչ.

Print Balance as of: 07/10/97 0.14

LPC 0.00

(Inclusive vat: 0000000.00) Total: 0.00

To be Paid: 0.00

Current Balance: 0.00

1	0.0	100.0	0.0	15.00	0.00
For 1 days 0.0 0.00					
Discount: 0.00					
Vat: 0.00					
Incl vat: 0.00					
Total: 0.00					

METER-RE-DEPOSIT For 1 days total: 0

Lost var: 0

Lost fix: 0

0	010100	1	07/10/97	9127.0	0.00
0					

Ready

Sample Print Bill preview

Frame - [Payment Data Entry]

Payment Data Log for 01/01/97-07/10/1997

Customer	Current Balance	Paid	New Balance
355401 Ավագյան	0 as of 07/10/97		
355402 Ավագյան	0 as of 01/01/97		
355403 Ավագյան	0.7 as of 07/10/97	8.526.00	
355404 Ավագյան	-8 as of 07/10/97	5.700.00	
355405 Ավագյան	-0.45 as of 07/10/97	2.125.00	
355406 Ավագյան	-0.55 as of 07/10/97	30.425.00	
355407 Ավագյան	-5.56 as of 07/10/97	6.950.00	
355408 Ավագյան	2.1 as of 07/10/97	2.575.00	
355409 Ավագյան	-4.6 as of 07/10/97	1.900.00	
355410 Ավագյան	-8.2 as of 07/10/97		
355411 Ավագյան	-0.42 as of 07/10/97	9.520.00	

Customer Information:

Customer: Ավագյան Account No: 355410

Type: Regular Account Open: 01/01/1997

Tariff Category: Բնակչ.

Current Balance: 8.20 as of 07/10/1997

Payment Data:

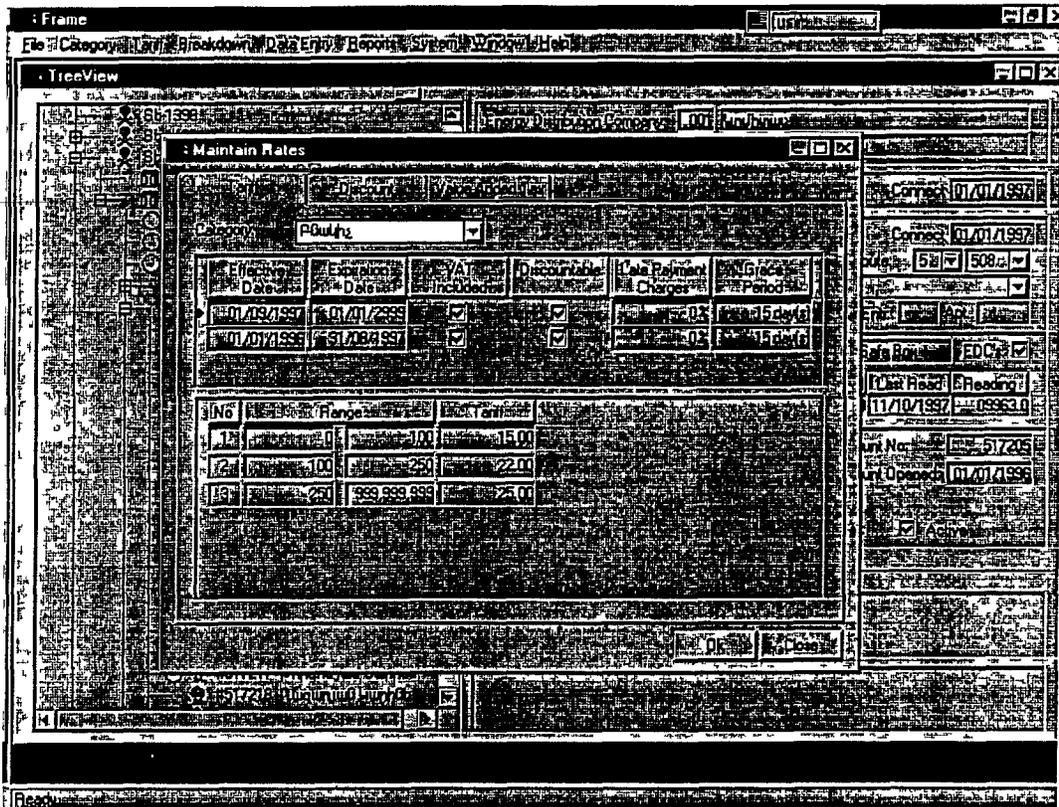
Date	Reference	Type	Amount
07/10/1997	0101301	Payment	
01/09/1997	010197	Payment	
19/08/1997	010197	Payment	
09/07/1997		Adjustment	

Ready

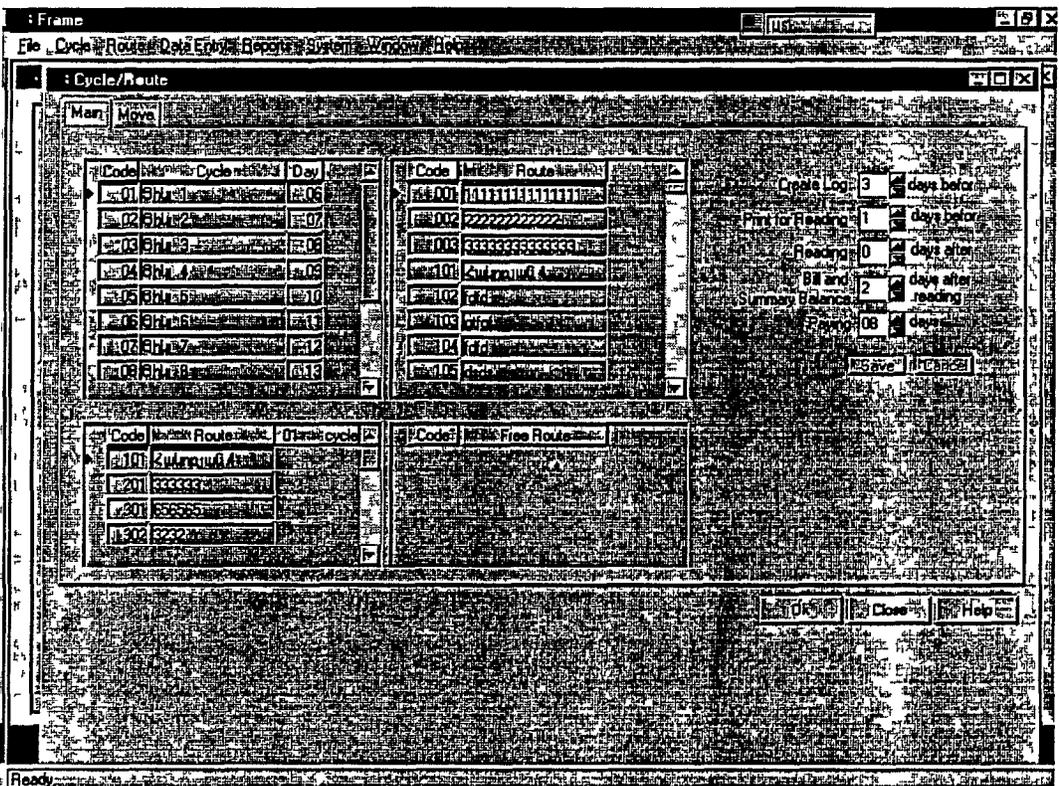
Enter Payments

BEST AVAILABLE COPY

BEST AVAILABLE COPY



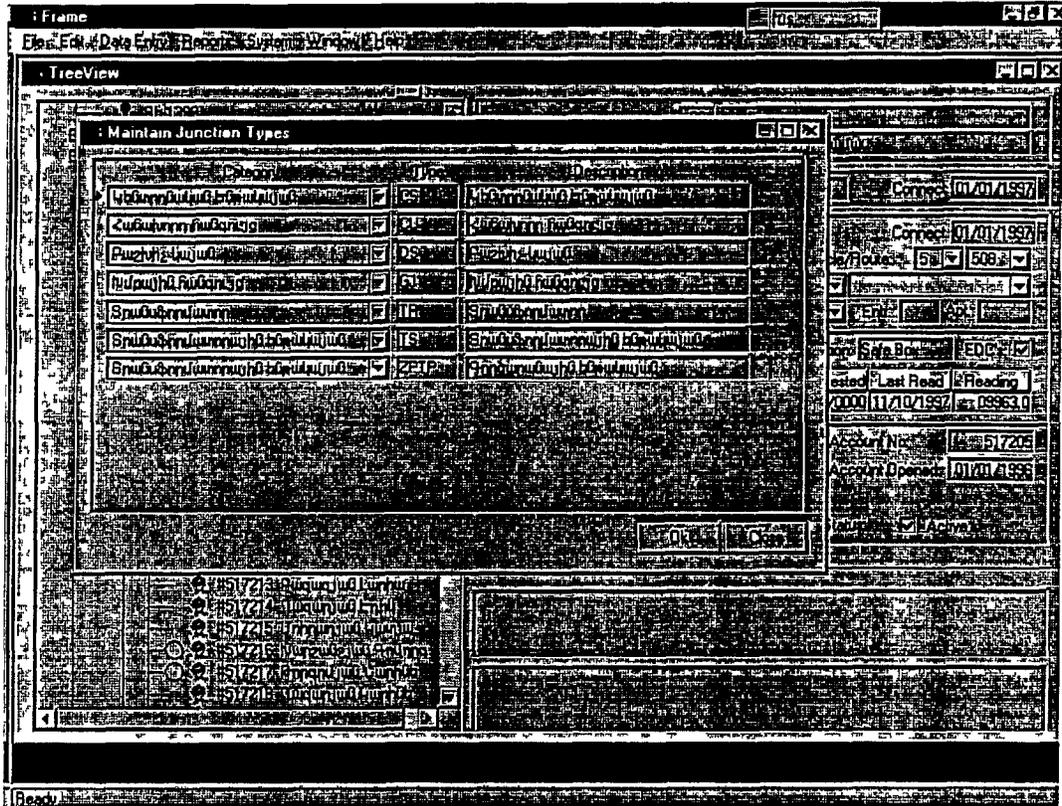
Tariff Maintenance



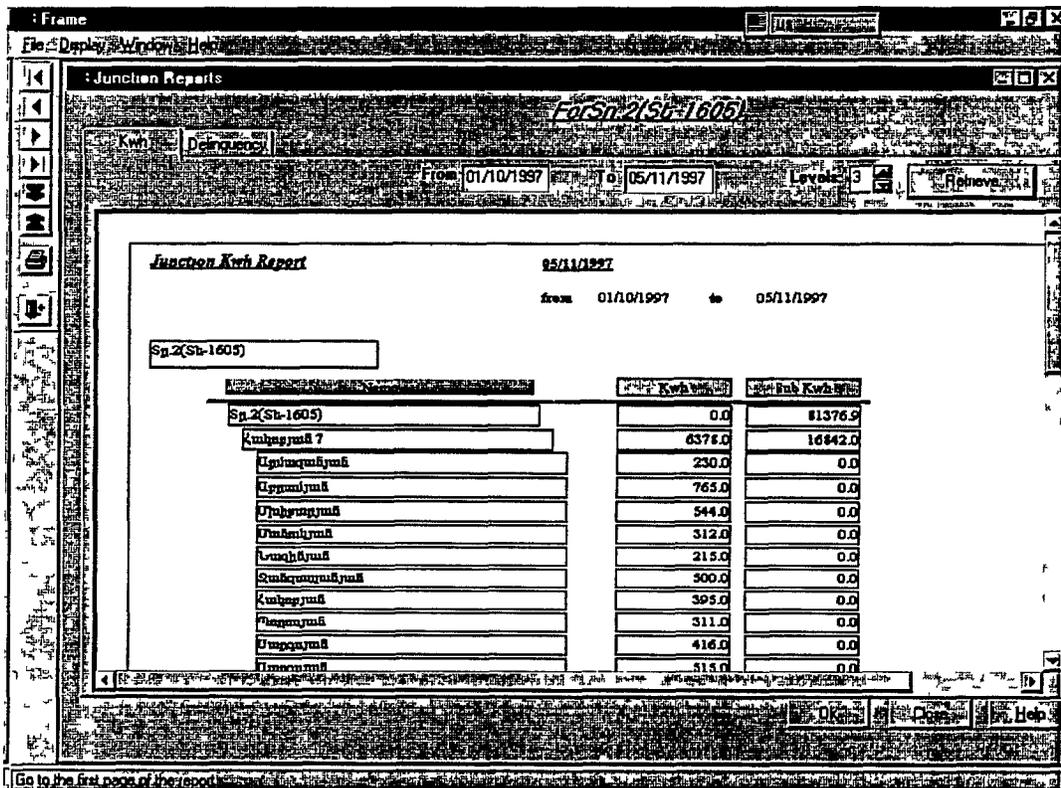
Cycle/Route Maintenance

WU/TA L WRE COPY

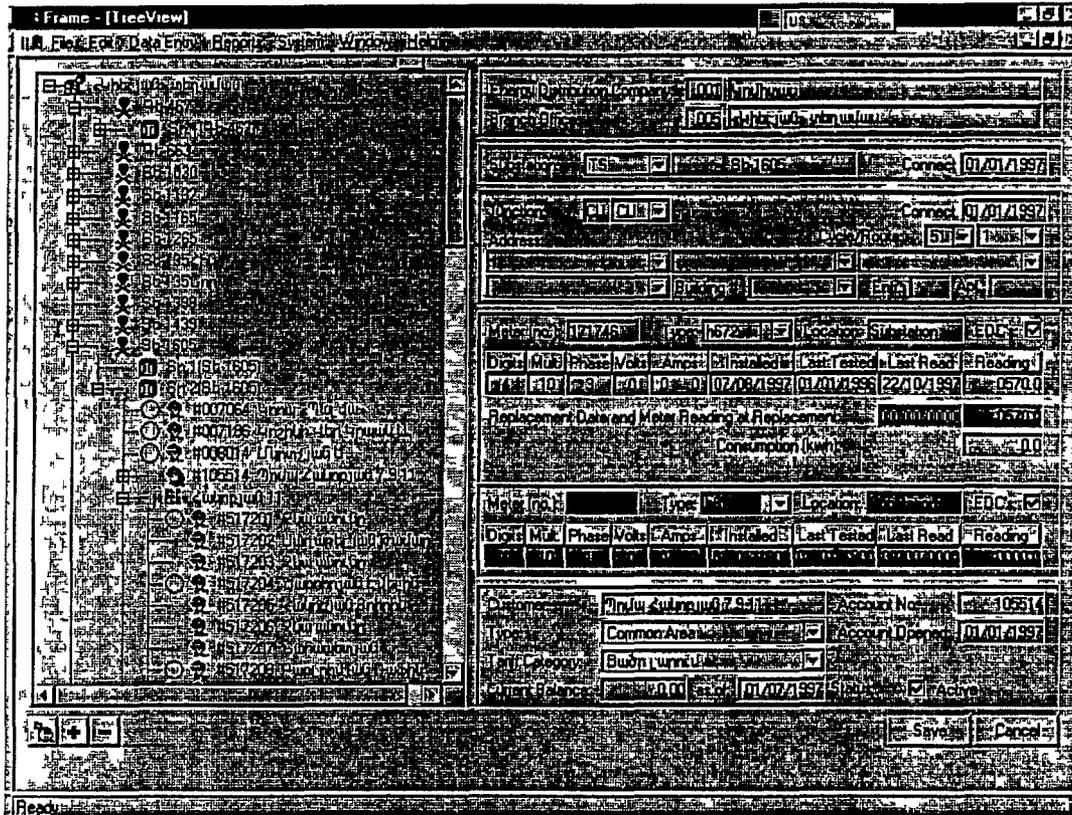
REST AVAILABLE COPY



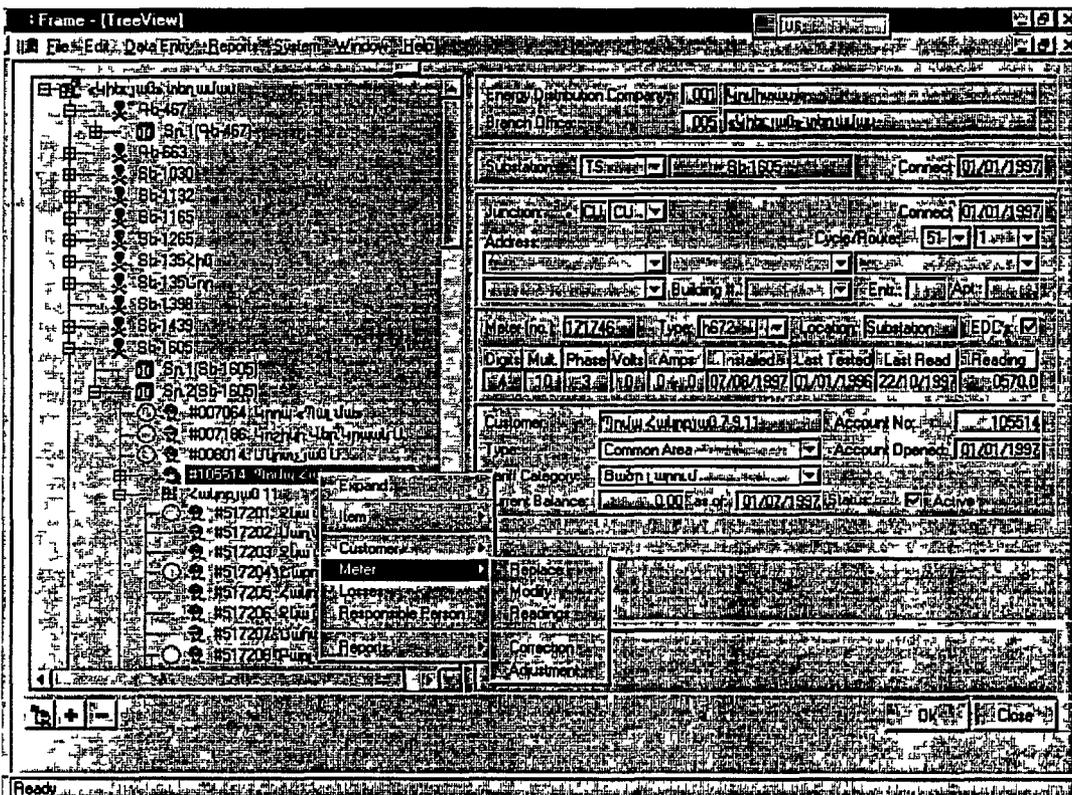
Junction Maintenance



Sample of context sensitive report at Junction Level

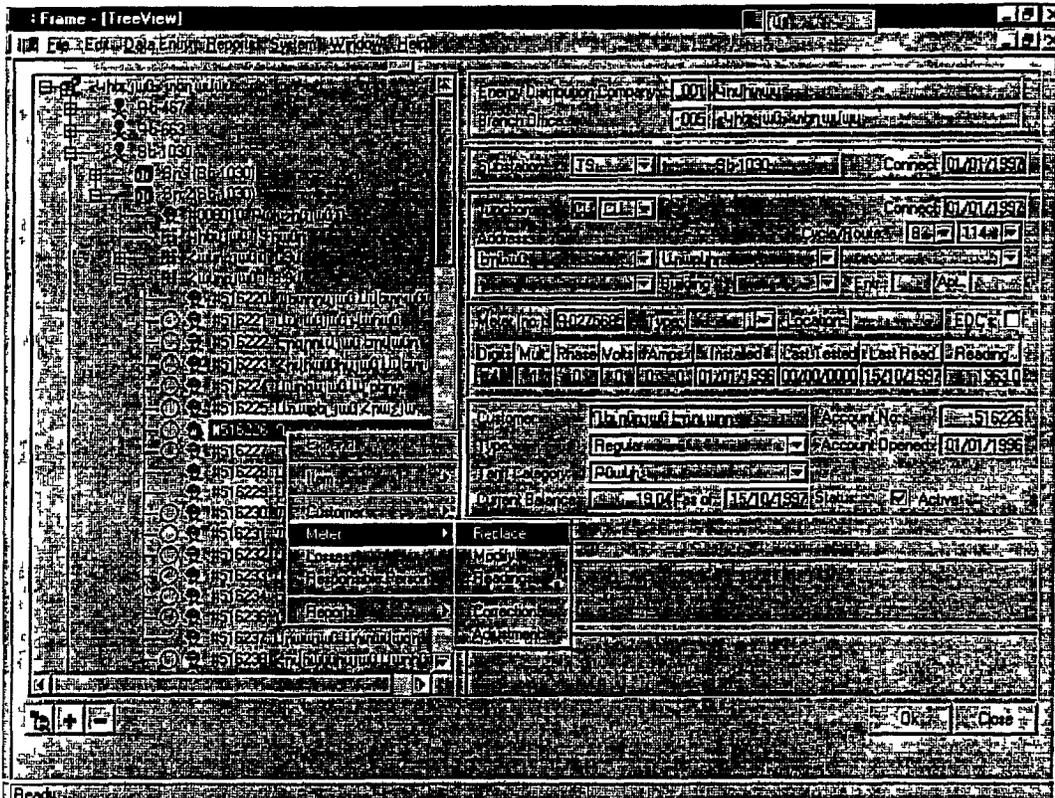


Meter replacement/adjustment data entry

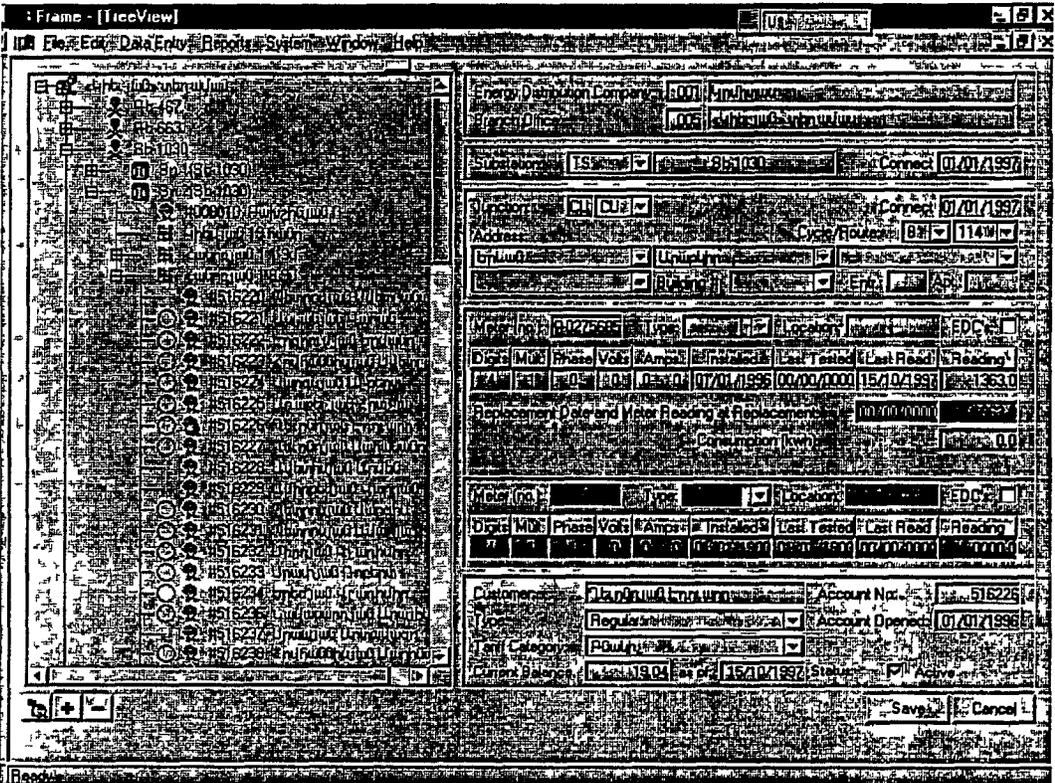


Demonstration of context sensitive reporting

REST AVAILARIF COPY



Context Sensitive meter reports

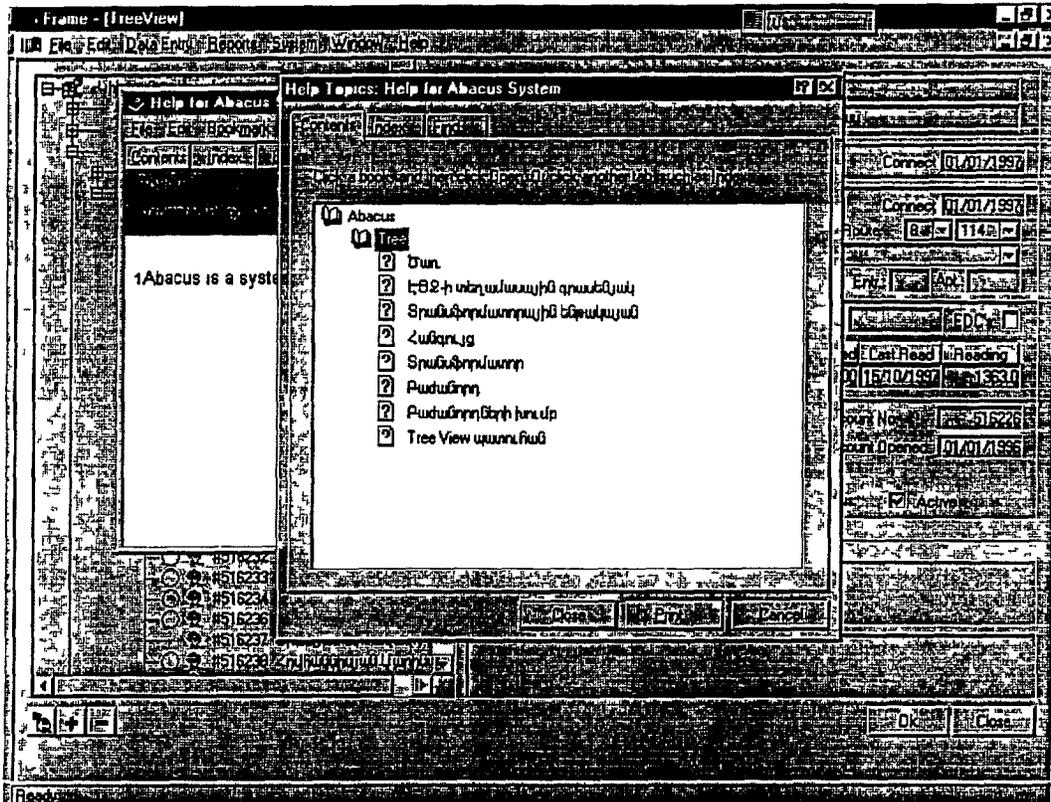


Meter Change out

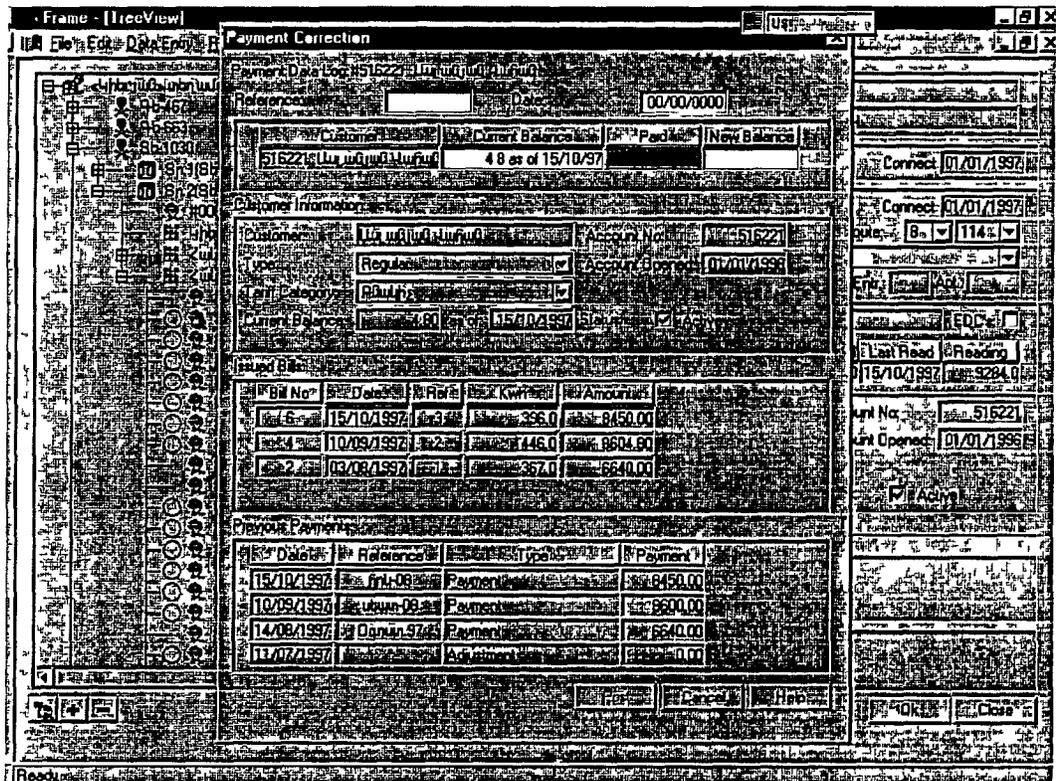
BEST AVAILABLE COPY

REST AVAILABLE COPY

104



Help screen



Payment Correction

Frame - [TreeView]

File Edit View Database Reports System Windows Help

Metering Correction

Meter No: 2134025

Name: [Blank] Type: [Blank] Last Read: 15/10/97

Customer and Meter Information

Customer: [Blank] Account No: 51622

Type: Regular Account

Account Opened: 01/01/1996

Current Balance: 15/10/1997

Meter No.	Last Read	Reading	kWh
2134025	11/07/97	8075	0
2134025	09/08/97	8442	367
2134025	10/09/97	8899	456
2134025	15/10/97	9284	385

Meter (No): 2134025

Phase: [Blank] Voltage: [Blank]

Discs: 14.9

Phase Volt: 230V

Watts: 1000

Max Amps: 16A

Max Demand: 20.00/0000

Last Read: 15/10/97

SR Reading: 0009284

Buttons: Save, Cancel, Help

Metering Correction

Frame - [DragSelect]

File Edit View Database Reports System Windows Help

Found:

ID	Customer	Meter No.	Group
01
02

Rows: 3

Customer and Meter Information

Meter (No): 12858

Phase: [Blank] Voltage: [Blank]

Discs: 14.9

Phase Volt: 230V

Watts: 1000

Max Amps: 16A

Max Demand: 20.00/0000

Last Read: 01/09/97

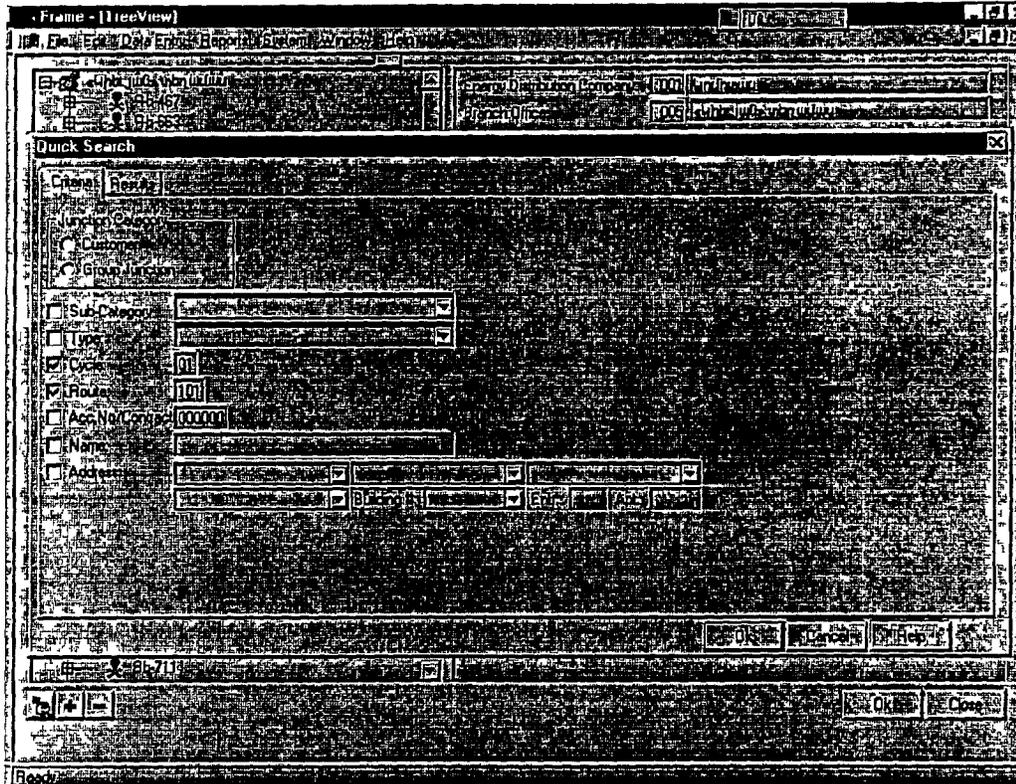
SR Reading: 0002750

Buttons: Save, Cancel, Help

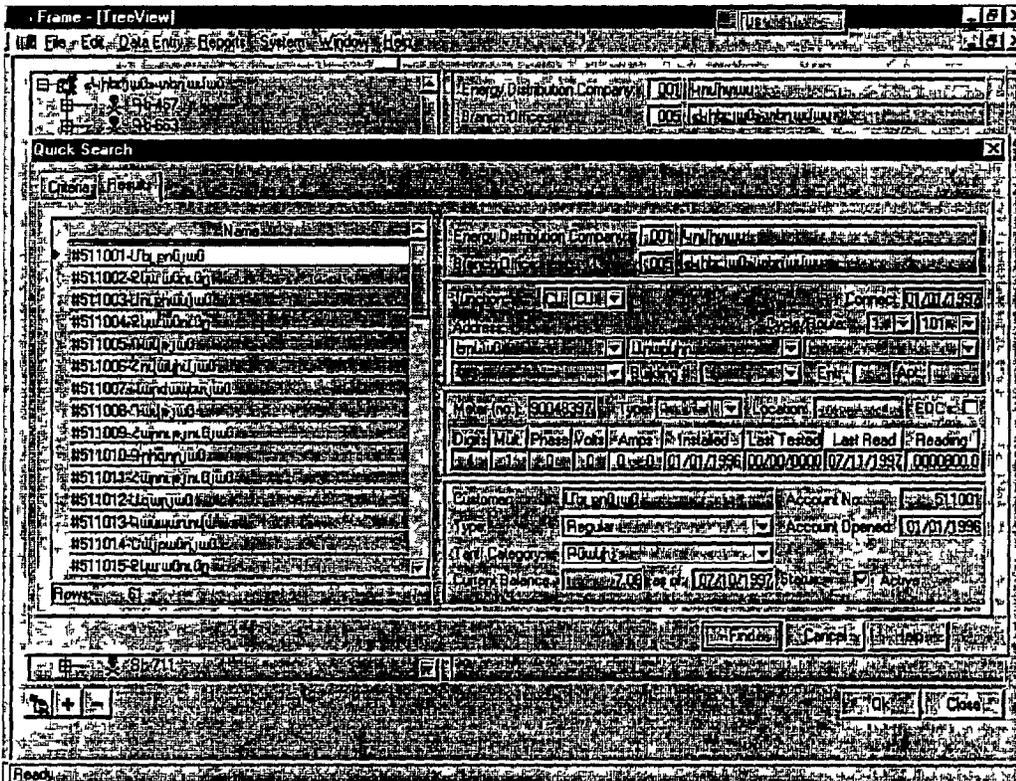
Tree build - group junction

2001-11-14 P11:00 AM

AVAILABLE COPY



Search Screen



Sample Search Results

APPENDIX D
USER DOCUMENTATION

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Introduction

About the Program

ABACUS is a many-featured program for entering and maintaining current and historical data on energy transformation and distribution networks, making calculations of the balance of meters and bills for customers, as well as for creating a large variety of reports required by administrative, accounting and technical departments, and by the Ministry of Energy

There are several major groups of operations the user of ABACUS can accomplish, like

- Create a database of all energy distribution substations and transformers, and customers for a given territorial energy supplier,
- Add new substations, transformers, and customers, modify the existing data on substations, transformers and customers,
- Create a variety of reports,
- Maintain and update data logs and make calculations

How to use this book

This book describes the major operations the user of ABACUS can accomplish

- | | |
|-------------------|---|
| Part I | Browsing Data describes how to view the company information, i.e. information on your company's various components |
| Part II | Entering and Modifying Data describes how to enter new components and their specifics, how to modify the existing data or to delete unnecessary information |
| Part III | Maintaining and Updating Data Logs describes how to maintain data logs and calculate various results, like new meter data, customer bills and payment balance, as well as how to maintain data logs on payments made on the current date |
| Part IV | Creating and Printing Reports describes to create various types of reports required by administrative, accounting and technical departments, as well as by the Ministry of Energy, and how to print them |
| Appendices | Describes how to work with various types of menus, dialog boxes and windows, which are created in the format of the standard Microsoft Windows applications. For more detailed information on these applications see "Microsoft Windows Users' Guide" |

Instructions for a User A Primer

A variety of operations described in this book can be carried out with a mouse or from the keyboard. The following symbols will help you find instructions you need at a glance.



Instructions for mouse users



Instructions for keyboard users

In addition, mouse users should know how to perform the following actions (Typical uses for these actions are noted in parentheses)

- | | |
|-----------------|---|
| To click | Position the tip of the mouse pointer over the specified element, and then press and release the left mouse button one time (Selecting windows, or items in a list, selecting dialog box options) |
| To double-click | Position the tip of the mouse pointer over the specified element, and then press and release the left mouse button twice in quick succession (Executing applications, choosing items from a list) |

Starting the Program

To start ABACUS do this



Double-click on the program icon in Microsoft Windows Program Manager

The program's main menu appears on your screen

Getting Help

To help you quickly resolve problems and to answer your questions, ABACUS provides on-line help that you can use from within ABACUS. Simply use one of the following techniques

- Choose a command from the Help menu on the menu bar
- Press F1 while working within the program
- Choose the Help button in a dialog box

The following list describes the Help commands provided by the program

Command	Function
Help Index	Opens a window showing the table with all terms and

	concepts used in the program and allows you to get help on any of them
Help Topic	Opens a window showing the table of contents for topics concerning the selected item
Search for Help On	Opens a dialog box that allows you to type a subject name for which the program displays a list of related help topics
About	Opens a window showing copyright information for the program

Exiting the Program

To exit ABACUS, do the following



Click on **Close** symbol () on the upper right corner of the screen



- 1 Choose **Exit** from the program's **File** menu. The Exit dialog box appears confirming that you want to exit
- 2 Choose **OK**

Part I Browsing Data

If you are using the system for the first time (i.e. the system does not contain any data) you need to skip this part and start with **Part II (Entering and Modifying Data)**. If your system already contains data you can browse information on various parts of the system by following the below described steps

Browsing Your Company's Structure - The Company Tree

You can browse various types of information on your company and the components of your company by following the steps described in the next several sections

To browse information on your company do the following



- 1 Click on **DataEntry** in the main menu,
- 2 Click on **Tree** option in the **DataEntry** menu



- 1 Press Alt+D,
- 2 Press Alt+T



When **Tree** is selected the items of the main menu on the top of your screen change (besides this, the title bar - top dark bar of the screen shows **Frame - (TreeView)** which means you are in the mode of view of the company **tree**. More in details about the **tree** see the next sections). The menu now contains the following items **F**ile, **E**dit, **D**ataEntry, **R**eports, **S**ystem, **W**indow and **H**elp

In this mode the screen is divided into the left part (*tree field*) and the right part (*data field*)

Browsing Information on Branch Offices

Initially, the list of names of your company's branch offices with a  symbol (*branch office symbol*) on the left side of each name appears on the left part of the screen below the menu (*tree field*)

The left side of the screen has a form of a **tree**. Each of the branches of the **tree** corresponds to one of your company's branch offices

To select one of branch offices do the following



- 1 Click on the  symbol of the corresponding branch office



Use UpArrow (↑) or DownArrow (↓) to select the desired branch office and press Enter (↵)

When a branch office is selected the  symbol on the left side of the branch office's name changes to the  symbol

The right side of the screen (*data field*) below the menu contains the following information on the energy distribution branch office

- code of the distribution company
- name of the distribution company
- code of the branch office
- name of the branch office¹

¹ Name of a branch office is unique for the given distribution company

The *data field* can be extended to show additional information on the branch office

To extend the data field do the following



Double-click on the data field

The following additional information will be shown in the *data field*

- contact data on the branch office (director's name, address and phone number of the office, etc)
- other information (for instance, number of transformer substations, number of transformers, etc)

 To return to the previous condition double-click on the data field again

Browsing Information on Transformer Substations of a Branch office

Each branch office serves several transformer substations This section describes how to browse the list of transformer substations

To view the list of transformer substations of your branch office do the following



Double-click on the  symbol on the left side of the selected branch office symbol ()



Use UpArrow (↑) or DownArrow (↓) to select the desired branch office and press Enter (↵)

The list of transformer substations appears on the screen The  symbol on the left side of the branch offices symbol changes into the  symbol



Note for the user To do the reverse action, i.e. to close the open list of transformer substations double-click on the  symbol on the left side of the branch office's symbol

The **tree** expands to show the following the list of the branch offices and the list of transformer substations of the selected branch office

Similar to the name of the branch office, each of the transformer substation symbols has a  symbol on the left side. This shows that this transformer substation serves several transformers the list of which can be viewed on the screen (to browse the list of transformers see section **Browsing Information on Transformers** below)

To select one of transformer substations do the following



Click on the  symbol of the corresponding transformer substation



Use UpArrow (↑) or DownArrow (↓) to select the desired transformer substation and press Enter (↵)

When a transformer substation is selected the  symbol on the left side of the transformer substation's name changes to the  symbol

The right side of the screen (*data field*) below the menu changes the contents. In addition to the information on the selected branch office, now it also contains the following information on the selected transformer substation

- code of the transformer substation
For transformer substations the standard (default) transformer substation code is "TS". A user can define other types of transformer substations if necessary (to define other types of transformer substations see Part II, section **Entering and Modifying System Data**)
- name of the transformer substation¹
- name of the responsible person
- status of the responsible person
- contract number for the responsible person
- date of the contract

¹ Name of each transformer substation is unique for the given branch office

Browsing Information on Transformers

Each of the transformer substations serves several transformers. This section describes how to browse the list of transformers.

To view the list of transformers of any of the transformer substations of your branch office do the following:



Double-click on the  symbol on the left side of the selected transformer substation symbol ().



Use UpArrow (↑) or DownArrow (↓) to select the desired transformer substation and press Enter (↵).

The list of transformers served by the selected transformer substation appears on the screen. The  symbol on the left side of the transformer substation symbol changes into the  symbol. (As it was noted above, you can do the reverse action, i.e. close the open list by double-clicking on the  symbol.)

The **tree** expands to show the following: the list of the branch offices, the list of transformer substations and the list of transformers of the selected transformer substation.

Each transformer name has a  symbol (*transformer symbol*) on its left side.

Similar to the branch office's symbol and transformer substation's symbol, each transformer symbol has a  symbol on the left side. This shows that this transformer serves one of the following: group junctions of customers (to browse the list of group junctions of customers see section ***Browsing Information on Group Junctions of Customers***) or individual customers (to browse the list of individual customers see section ***Browsing Information on Individual Customers***).

To select one of the transformers do the following:



Click on the  symbol of the corresponding transformer substation.



Use UpArrow (↑) or DownArrow (↓) to select the desired transformer and press Enter (↵).

When a transformer is selected the  symbol on the left side of the transformer's name changes to the  symbol.

The right side of the screen (*data field*) below the menu changes the contents. In addition to the information on the branch office and distribution

substation now it also contains the following information on the selected transformer

- junction code
For transformers the standard (default) junction code is "TR" A user can define other types of transformers if necessary (to define other types of transformers see Part II, section **Entering and Modifying System Data**)
- data on the transformer meter which consists of the following fields
 - ◇ "meter" field serial (factory) number of the meter,
 - ◇ "type" field type of the meter,
The type of the meter can be selected or changed from the meter type drop-down list (to define or change types of meters see Part II, section **Entering and Modifying System Data**)
 - ◇ "location" field location of the meter refers to the location where the meter is installed Location field can be one of the following -
 - 1 Substation - this means the meter is installed in the substation,
 - 2 Safe Box - the meter is installed in a metallic box,
 - 3 Customer - the meter is installed at the apartment or office of a customer
 - ◇ "EDC's" field this field shows to whom the meter belongs If there is a check mark () in this field, the meter belongs to the energy distribution company,
 - ◇ "digits" field number of digits of the meter,
 - ◇ "multiplier" field some meters are intended to meter big quantities of energy To avoid the necessity of providing too many digits in the meter the latter is designed to apply coefficients when indicating the quantity of the consumed energy Multiplier field indicates the value of the coefficient applied,
 - ◇ "phase" field number of phases,
 - ◇ "volts" field number of volts,
 - ◇ "amps" field range of amperes,
 - ◇ "installed" field date of installation of the meter,
 - ◇ "last tested" field date of last testing of the meter,
 - ◇ "last read" field shows the date when the meter indicator was last read,
 - ◇ "reading" field shows the last indicated value of the meter

In some cases the right part of the screen (*data field*) shows data on transformer customers For instance for factory-type transformers this part shows data on the customer (factory) which is served by this particular transformer (For more details on customer data see section **Browsing Information on Individual Customers**)

Browsing Information on Group Junctions of Customers

A group junction of customers is a group of customers (mostly groups of residents) served by the same energy supply cable. For instance, a group junction might include residents of an entrance of a building, residents of several entrances, residents of a building or several buildings, as well as residents of buildings on a particular street.

Each of the transformers serves several group junctions of customers. Each transformer might also serve several individual customers. This section describes how to browse the list of group junctions and/or individual customers served by a particular transformer.

To view the list of group junctions or individual customers served by any of the transformers do the following:



Double-click on the  symbol on the left side of the selected transformer symbol ().



Use UpArrow (↑) or DownArrow (↓) to select the desired transformer and press Enter (↵).

The list of group junctions and/or individual customers appears on the screen. The  symbol on the left side of the transformer symbol changes into the  symbol. (As it was noted above, you can do the reverse action, i.e. close the open list by double-clicking on the  symbol.)

The **tree** expands to show the following: the list of branch offices, the list of transformer substations, the list of transformers and the list of group junctions (and/or individual customers) of the selected transformer.

Each group junction name has a  symbol (*group junction symbol*) on its left side.

Similar to the branch office, transformer substation, and transformer symbols, each group junction symbol has a  symbol on the left side. This shows that a group junction contains several individual customers (to browse the list of individual customers see section ***Browsing Information on Individual Customers***).

To select one of group junctions do the following:



Click on the  symbol of the corresponding group junction.



Use UpArrow (↑) or DownArrow (↓) to select the desired group junction and press Enter (↵)

When a group junction is selected the  symbol on the left side of the group junction's name changes to the  symbol

The right side of the screen (*data field*) below the menu changes the contents. In addition to the information on branch offices, transformer substations, and transformers, now it also contains the following information on the selected group junction

- junction code
For transformer substations the standard (default) junction code is "GJ". A user can define other types of group junctions if necessary (to define other types of group junctions see Part II, section **Entering and Modifying System Data**)
- cycle/route
The cycle/route pair describes the schedule of inspections of this particular group junction
- address

In order to provide precise addressing for all items the system provides a many-component addressing. Five of the six components used for addressing a group junction can be selected from drop-down menus (More in details about the addressing see Part II, sections **Entering and Modifying Company Data** and **Entering and Modifying System Data**). The six components used for addressing of a group junction are

- 1 Marz name,
- 2 Community name,
- 3 Neighborhood name,
- 4 Street name,
- 5 Building number,
- 6 Entrance number

- data on the meter¹

¹ For detailed information on meter data see section **Browsing Information on Transformers**

The bottom segment of the right part of the screen (*data field*) will also contain the following information on the person responsible for this group junction of customers

- name of the responsible person
- type of the responsible person (for instance "agent")
- number of contract between the energy distribution company and the responsible person
- date of the contract
- other information on the contract¹

¹ This field is not always seen on the screen. To activate this field double-click on the lower part of the screen. To do the reverse action, i.e. to recover the previous view double-click on the field again.

Browsing Information on Individual Customers

Each of the transformers or group junctions serves several individual customers. This section describes how to browse the list of individual customers.

To view the list of individual customers of any of the transformers do the following:



Double-click on the  symbol on the left side of the selected transformer symbol ().



Use UpArrow (↑) or DownArrow (↓) to select the desired transformer and press Enter (↵).

The list of group junctions and individual customers appears on the screen. The  symbol on the left side of the transformer symbol or group junction symbol changes into the  symbol. (As it was noted above, you can do the reverse action, i.e. close the open list by double-clicking on the  symbol.)

To view the list of individual customers of any of the group junctions do the following:



Double-click on the  symbol on the left side of the selected group junction symbol ().



Use UpArrow (↑) or DownArrow (↓) to select the desired group junction and press Enter (↵).

The list of individual customers appear on the screen. Each individual customer has a  symbol (*individual customer symbol*) on its left side.

Individual customer symbols have no  symbol on the left side. This shows that individual customers are the lowest level of the **tree** (“*leaves of the tree*”).

The **tree** expands to show the following: the list of branch offices, the list of transformer substations, the list of transformers, and the list of individual customers of the selected transformer (if the individual customers are served directly by this transformer) or the list of individual customers of the selected group junction (if the individual customers are served by a group junction).

To select one of individual customers do the following



Click on the  symbol of the corresponding group junction



Use UpArrow (↑) or DownArrow (↓) to select the desired individual customer and press Enter (↵)

When an individual customer is selected the  symbol on the left side of the individual customer's name changes to the  symbol

The screen below the menu changes its format it now consists of three parts left (*tree field*), right (*data field*) and bottom (*customer data field*) to show detailed information on the selected customer

The right side of the screen (*data field*) below the menu changes the contents In addition to the information on branch offices, transformer substations, and transformers, now it also contains the following information on the individual customer

- junction code
For individual customers the standard (default) junction code is "CU"
A user can define other types of individual customers if necessary (to define other types of individual customers see Part II, section **Entering and Modifying System Data**)
- cycle/route
The cycle/route pair describes the schedule of inspections of this particular customer
- address
In order to provide precise addressing for all items the system provides a many-component addressing Five of the seven components used for addressing of an individual customer can be selected from drop-down menus (More in details about the addressing see sections **Entering and Modifying Customer Data** and **Entering and Modifying System Data**) The seven components used for addressing of an individual customer are
 - 1 Marz name,
 - 2 Community name,
 - 3 Neighborhood name,
 - 4 Street name,
 - 5 Building number,
 - 6 Entrance number,
 - 7 Apartment number
- data on the customers' meter¹

¹ For detailed information on meter data see section **Browsing Information on Transformers**

The bottom part of the screen (*customer data field*) will show the following information on the selected individual customer

- number of the customer's individual card (Account No)
 - date of opening of the customer's card (Account Opened)
 - current balance as of the date (Current Balance)
 - type of the customer
 - Type of the customer should be one of the following
 - ◇ Regular - for residents,
 - ◇ Corporate - for enterprises and organizations,
 - ◇ Common Area - for consumers of common areas, these are
 - * service providers,
 - * users groups, **check!!!**
 - ◇ Subcustomer - for subcustomers
 - name of the customer
 - Based on the type of the customer the name can be either a name of a person or a name of an enterprise or organization
 - telephone number of the customer
 - billing address
 - Billing address is the address to which the payment bills are being sent. Sometimes the address of the meter and the address of the customer are different (for instance, a customer paying for energy supply of a studio space lives at a different address)
-

The *customer data field* can be extended to show additional information on the branch office

To extend the *customer data field* do the following



Double-click on the *customer data field*



To return to the previous condition double-click on the *customer data field* again

The following additional information will be shown in the *customer data field*

- tariff category
 - This field shows to which tariff category this particular customer belongs
- discount category
 - This field shows if the customer belongs to any of the social groups eligible for discounts
- late payment charge status
 - This field shows if the customer is subject to payment of fines for delinquency

- grace period
This field shows the length of the period during which a delinquent customer will not be subject to payment of fines
- VAT exemption
This field shows if the customer has a Value Added Tax exempt status
- responsible for losses
This field shows if the customer will be responsible for inevitable losses
- status of the customer
Status of the customers can be active or disconnected (terminated) If there is a check mark () in this field, the customer's status is active

Browsing Your Company's Structure Quick View

The previous sections described how to get information on your company's various components distribution substations, transformer substations, transformers, group junctions, and individual customers Getting information on each of these components requires to follow certain steps described above After each step the company **tree** expands to show the sub-components (a lower level of the tree)

However, besides the above described procedures, which provide for step-by-step expansion of the company tree, the system also provides for quick view, i.e., complete expansion of the **tree** to show all its components

To quickly expand the **tree** to show all sub-components do one of the following actions



- 1 Select **DataEntry** option from the main menu,
- 2 Select **Tree** option from the DataEntry menu,
- 3 Select **Edit** option from the Tree menu,
- 4 Click on **Expand** option of Edit menu,

or

Click on the  button on the lower left corner of the screen

The **tree** expands to show all elements of the system The  symbols on the left side of branch offices, transformer substations, transformers and group junctions symbols change into the  symbols

The  symbol on the left side of the selected branch office's name changes to the  symbol

The right side of the screen (*data field*) below the menu contains the following information on the energy distribution branch office

- code of the distribution company
- name of the distribution company

- code of the branch office
- name of the branch office

To do the reverse action, i.e. to recover the previous condition of the **tree** do the following



Click on the  button on the lower left corner of the screen

Browsing Your Company's Components Quick Search

The system provides quick search of any of the components of the company's tree by using the option called quick search based on certain criteria. The following criteria can be used for quick search: customer, group junction, and so on.

To start quick search do the following



Click on the  button on the lower left corner of the screen

A text box will appear on the screen asking you to enter the criterion for search. Enter the criterion into the text box and press Enter.

The system will find the corresponding item (component) **check!!!**

Part II Entering and Modifying Data

There are two major categories of data you need to have in the system to be able to use it. These categories are:

- 1 **Company data**, i.e. data on branch offices, transformer substations, transformers, group junctions, customers, meters, losses, responsible persons of your company,
- 2 **System data**, i.e. rates, tariffs, discount categories, value added tax data, and others. (Values of these parameters may be established or changed by special government or municipal regulations)

Entering and Modifying Company Data

Company data is a major group of data which consists of the following elements required for the system:

- Data on the distribution company
code and name of the company
 - Data on branch offices
codes and names of branch offices
 - Data on transformer substations
codes and names of transformer substations, as well as names, status, contract numbers and contract dates of agents,
 - Data on transformers
codes and names of transformers, data on transformer meters
 - Data on group junctions
codes and names of group junctions, cycles/routes of inspections, addresses, data on meters
 - Data on customers
data on individual and consolidated customers
 - Data on meters
fields of the meters: number, date of installation, type, and so on
 - Data on losses
data on side losses of the company
 - Data on responsible persons
name, contract number and other information of the person responsible for energy distribution
- ☞ To enter or modify company data, i.e. any of the components of data on your company you need to activate the corresponding component. For instance, if there is need to change or remove one of the transformer codes this transformer should be activated (selected) first. More in details on this operations see in the next sections.

To start entering new company data or modifying the existing company data do the following:



- 1 Click on **DataEntry** in the main menu,
- 2 Click on **Tree** option in the **DataEntry** menu



- 1 Press Alt+D,
- 2 Press Alt+T



When **Tree** is selected the items of the main menu on the top of your screen change (besides this, the title bar - top dark bar of the screen shows **Frame - (TreeView)** which means you are in the mode of view of the company **tree** More in details about the **tree** see the next sections) The menu now contains the following items **F**ile, **E**dit, **D**ataEntry, **R**eports, **S**ystem, **W**indow and **H**elp

In this mode the screen is divided into the left part (*tree field*) and the right part (*data field*)

 More in details about the company **tree** see **Part I, Browsing Data**

Entering and Modifying Data on Branch offices

To enter a new branch office, to modify data on any of the existing branch offices, or to remove an existing branch office, do the following



- 1 Click on the  symbol of any of branch offices When a branch office is selected the symbol on the left side of the branch office's name changes to the  symbol
- 2 Click on **Edit** of the Tree menu The **Edit** menu offers several options
- 3 Click on **Item** option of the Edit menu



- 1 Use UpArrow (↑) or DownArrow (↓) to select a branch office and press Enter (↵) When a branch office is selected the  symbol on the left side of the branch office's name changes to the  symbol
- 2 Press Alt+E
- 3 Use UpArrow (↑) or DownArrow (↓) to select **Item** option and press Enter (↵)

The **Item** submenu has a * on its right side which means it offers several options you can select from These options will be seen on the screen when **Item** is selected

The available actions are

New Item - adding a new branch office,

- New Subitem** - adding a new transformer substation in the selected branch office ("subitem" is an item of a lower level on the tree, for instance, for the selected branch office a new transformer substation will be a subitem),
- Modify** - modifying the existing information on the selected branch office, and
- Delete** - deleting the selected branch office

More in details these actions are described below in this section. After you have selected one of the actions you can enter or modify information in text boxes on the right side of the screen (*data field*)

1 **New Item** To add a new branch office do the following



Click on **New Item** option of the **Item** submenu



Use UpArrow (↑) or DownArrow (↓) to select **New Item** option of the **Item** submenu and press Enter (↵)

A new element - a branch office - with the name **New** and without the branch office symbol appears on the **tree**. The **tree** becomes inactive and the right side of the screen (*data field*) enters into editing mode.

Enter information on your energy distribution branch office into the following text boxes on the right side of the screen (*data field*)

- code of the distribution company
- name of the distribution company
- code of the branch office
- name of the branch office



Click on the corresponding text box and type the information



Use Tab key to switch from one text box to another and type the information



- The following requirements exist for the above mentioned data fields
- * The name and the code of the branch office cannot be omitted
 - * The name of each branch office should be unique for the given distribution company

The *data field* can be extended to show additional information on the branch office

To expand the data field do the following



Double-click on the data field



To return to the previous condition double-click on the data field again

The following additional text boxes will be shown in the *data field*

- contact data on the branch office (director's name, address and phone number of the office, etc)
- other information (number of transformer substations, number of transformers, etc)

2 **New Subitem** To add a new transformer substation to the selected branch office do the following



Click on **New Subitem** option of the **Item** submenu



Use UpArrow (↑) or DownArrow (↓) to select **New Subitem** option of the **Item** submenu and press Enter (↵)

A new element - a transformer substation - with the name **New** and without the transformer substation symbol appears on the **tree** The **tree** becomes inactive and the right side of the screen (*data field*) enters into editing mode

More in details on entering information on a new transformer substation see next section - **Entering and Modifying Data on Transformer Substations** on page 23

3 **Modify** To start modifying data on the selected branch office do the following



Click on **Modify** option of the **Item** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Modify** option of the **Item** submenu and press Enter (↵)

The **tree** becomes inactive, the right side of the screen (*data field*) enters into editing mode, and you can modify data in any of the text boxes



Click on the corresponding text box and type the information



Use Tab key to switch from one text box to another and type the information

4 **Delete** If necessary you can remove any of the existing branch offices To remove (delete) the selected branch office do the following



Click on **Delete** of the **Item** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Delete** of the **Item** submenu and press Enter (↵)

To save the entered information do the following



Click on the **Save** button



Press **Enter** (↵)

If the entered data format does not correspond to the requirements of the system a message will appear on the screen and the system will not allow to continue work until data is corrected to satisfy the requirements

To cancel changes and to return to the previous screen without save do the following



Click on the **Cancel** button



Press **Esc**

Entering and Modifying Data on Transformer Substations

To enter a new transformer substation, to modify data on any of the existing transformer substations, or to remove an existing transformer substation, do the following



- 1 Click on the  symbol of any of transformer substations. When a transformer substation is selected the symbol on the left side of the transformer substation's name changes to the  symbol
- 2 Click on **Edit** of the Tree menu. The Edit menu offers several options
- 3 Click on **Item** option of the Edit menu



- 1 Use UpArrow (↑) or DownArrow (↓) to select a transformer substation and press Enter (↵). When a transformer substation is selected the  symbol on the left side of the transformer substation's name changes to the  symbol
- 2 Press Alt+E
- 3 Use UpArrow (↑) or DownArrow (↓) to select **Item** option and press Enter (↵)

The **Item** submenu has a  on its right side which means it offers several options you can select from. These options will be seen on the screen when **Item** is selected.

The available actions are

- New Item** - adding a new transformer substation,
- New Subitem** - adding a new subitem ("subitem" is an item of a lower level on the tree, for instance, for the selected

- transformer substation a new transformer will be a subitem),
- Modify -** modifying the existing information on the selected transformer substation, and
- Delete -** deleting the selected transformer substation

More in details these actions are described below in this section After you have selected one of the actions you can enter or modify information in text boxes on the right side of the screen (*data field*)

1 **New Item** To add a new transformer substation do the following



Click on **New Item** option of the **Item** submenu



Use UpArrow (↑) or DownArrow (↓) to select **New Item** option of the **Item** submenu and press Enter (↵)

A new element - a transformer substation - with the name **New** and without the transformer substation symbol appears on the **tree** The **tree** becomes inactive and the right side of the screen (*data field*) enters into editing mode

Enter information on the new transformer substation into the following text boxes on the right side of the screen (*data field*)

- code of the transformer substation
For transformer substations the standard (default) transformer substation code is "TS" A user can define other types of transformer substations if necessary

To define other types of the transformer substations do the following



Click on the downward arrow on the right side of the Transformer Substation drop-down list ()

The drop-down list will expand to show more options for the transformer substation code

If the list does not contain the desired code, you can define new codes of transformer substations To define a new type of transformer substations see section "**Entering and Modifying System data**"

- name of the transformer substation
- name of the responsible person
- status of the responsible person
- number of the contract of the responsible person
- date of the contract of the responsible person



Click on the corresponding text box and type the information



Use Tab key to switch from one text box to another and type the information

-  The following requirements exist for the above mentioned data fields
- * The name and the code of the transformer substation cannot be omitted
 - * The name of each transformer substation should be unique for the given branch office

2 New Subitem To add a new transformer in the selected transformer substation do the following



Click on **New Subitem** option of the **Item** submenu



Use UpArrow (↑) or DownArrow (↓) to select **New Subitem** option of the **Item** submenu and press Enter (↵)

A new element - a transformer - with the name **New** and without the transformer symbol appears on the **tree**. The **tree** becomes inactive and the right side of the screen (*data field*) enters into editing mode.

More in details on entering information on a new transformer see next section - **Entering and Modifying Data on Transformers**

3 Modify To start modifying data on the selected transformer substation do the following



Click on **Modify** option of the **Item** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Modify** option of the **Item** submenu and press Enter (↵)

The **tree** becomes inactive, the right side of the screen (*data field*) enters into editing mode, and you can modify any data in text boxes.

4 Delete If necessary you can remove any of the existing transformer substations. To remove (delete) the selected transformer substation do the following



Click on **Delete** of the **Item** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Delete** of the **Item** submenu and press Enter (↵)

To save the entered information do the following



Click on the **Save** button



Press **Enter** (↵)

If the entered data format does not correspond to the requirements of the system a message will appear on the screen and the system will not allow to continue work until data is corrected to satisfy the requirements

To cancel changes and to return to the previous screen without save do the following



Click on the **Cancel** button



Press **Esc**

Entering and Modifying Data on Transformers

To enter a new transformer, to modify data on any of the existing transformer, or to remove an existing transformer, do the following



- 1 Click on the  symbol of any of transformers. When a transformer is selected the symbol on the left side of the transformer's name changes to the  symbol
- 2 Click on **Edit** of the Tree menu. The Edit menu offers several options
- 3 Click on **Item** option of the Edit menu



- 1 Use UpArrow (↑) or DownArrow (↓) to select a transformer and press Enter (↵). When a transformer substation is selected the  symbol on the left side of the transformer substation's name changes to the  symbol
- 2 Press Alt+E
- 3 Use UpArrow (↑) or DownArrow (↓) to select **Item** option and press Enter (↵)

The **Item** submenu has a * on its right side which means it offers several options you can select from. These options will be seen on the screen when **Item** is selected

The available actions are

- New Item** - adding a new transformer substation,
- New Subitem** - adding a new subitem, ("subitem" is an item of a lower level on the tree, for instance, for the selected transformer a new group junction will be a subitem),
- Modify** - modifying the existing information on the selected transformer, and
- Delete** - deleting the selected transformer

More in details these actions are described below in this section. After you have selected one of the actions you can enter or modify information in text boxes on the right side of the screen (*data field*)

1 **New Item** To add a new transformer do the following



Click on **New Item** option of the **Item** submenu



Use UpArrow (↑) or DownArrow (↓) to select **New Item** option of the **Item** submenu and press Enter (↵)

A new element - a transformer - with the name **New** and without the transformer symbol appears on the **tree** The **tree** becomes inactive and the right side of the screen (*data field*) enters into editing mode

Enter information on the new transformer into the following text boxes on the right side of the screen (*data field*)

- junction code

For transformers the standard (default) junction code is "TR" A user can define other types of transformers if necessary

To define other types of the transformers do the following



Click on the downward arrow on the right side of the Transformers drop-down list (TR ▾)

The drop-down list will expand to show more options for the transformer code

If the list does not contain the desired code, you can define new codes of transformers To define a new type of transformers see section

Entering and Modifying System data

- data on the transformer meter

* More in details on the meters see section ***Entering and Modifying Data on Meters***



The following requirements exist for the above mentioned data fields

- * The name and the code of a transformer cannot be omitted
- * The name of each transformer should be unique for the given transformer substation

2 **New Subitem** To add a new group junction in the selected transformer do the following



Click on **New Subitem** option of the **Item** submenu



Use UpArrow (↑) or DownArrow (↓) to select **New Subitem** option of the **Item** submenu and press Enter (↵)

A new element - a group junction - with the name **New** and without the group junction symbol appears on the **tree** The **tree** becomes inactive and the right side of the screen (*data field*) enters into editing mode

More in details on entering information on a new group junction see next section - ***Entering and Modifying Data on Group Junctions***

3 Modify To start modifying data on the selected transformer do the following



Click on **Modify** option of the **Item** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Modify** option of the **Item** submenu and press Enter (↵)

The **tree** becomes inactive, the right side of the screen (*data field*) enters into editing mode, and you can modify any data in text boxes

4 Delete If necessary you can remove any of the existing transformers To remove (delete) the selected transformer do the following



Click on **Delete** of the **Item** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Delete** of the **Item** submenu and press Enter (↵)

To save the entered information do the following



Click on the **Save** button



Press **Enter** (↵)

If the entered data format does not correspond to the requirements of the system a message will appear on the screen and the system will not allow to continue work until data is corrected to satisfy the requirements

To cancel changes and to return to the previous screen without save do the following



Click on the **Cancel** button



Press **Esc**

Entering and Modifying Data on Group Junctions

To enter a new group junction, to modify data on any of the existing group junction, or to remove an existing group junction, do the following



1 Click on the  symbol of any of group junctions When a group junction is selected the symbol on the left side of the group junction's name changes to the  symbol

- 2 Click on **Edit** of the Tree menu The Edit menu offers several options
- 3 Click on **Item** option of the Edit menu



- 1 Use UpArrow (↑) or DownArrow (↓) to select a group junction and press Enter (↵) When a group junction is selected the  symbol on the left side of the group junction's name changes to the  symbol
- 2 Press Alt+E
- 3 Use UpArrow (↑) or DownArrow (↓) to select **Item** option and press Enter (↵)

The **Item** submenu has a * on its right side which means it offers several options you can select from These options will be seen on the screen when **Item** is selected

The available actions are

- New Item** - adding a new group junction,
- New Subitem** - adding a new subitem, ("subitem" is an item of a lower level on the tree, for instance, for the selected group junction a new customer will be a subitem),
- Modify** - modifying the existing information on the selected group junction, and
- Delete** - deleting the selected group junction

More in details these actions are described below in this section After you have selected one of the actions you can enter or modify information in text boxes on the right side of the screen (*data field*)

1 **New Item** To add a new group junction do the following



Click on **New Item** option of the **Item** submenu



Use UpArrow (↑) or DownArrow (↓) to select **New Item** option of the **Item** submenu and press Enter (↵)

The **Select Junction Type** option button box appears on the screen It offers three options

- Customer
- Group Junction
- Vacant

The default option for this box is *Customer*

Select a) *Group Junction* or b) *Vacant* option from the option button box

a) **Group Junction**

To select Group Junction option button do the following



Click on the Group Junction option Click OK



Use Tab key to move the darkened circle to the Group Junction option Press Enter (↵)

A new element - a group junction - with the name **New** and without the group junction's symbol appears on the **tree** The **tree** becomes inactive and the right side of the screen (*data field*) enters into editing mode

Enter information on the new group junction into the following text boxes on the right side of the screen (*data field*)

- junction code

For group junctions the standard (default) junction code is "GJ" A user can define other types of group junctions if necessary

To define other types of the group junctions do the following



Click on the downward arrow on the right side of the Group Junction drop-down list ()

The drop-down list will expand to show more options for the group junction code

If the list does not contain the desired code, you can define new codes of group junctions To define a new type of group junction see section **Entering and Modifying System data**

- cycle/route

The cycle/route pair describes the schedule of inspections of this particular group junction

- address

In order to provide precise addressing for all items the system provides a many-component addressing Five of the six components used for addressing a group junction can be selected from drop-down menus (More in details about the addressing see section **Entering and Modifying System Data**) The six components used for addressing of a group junction are

- 1 Marz name,
- 2 Community name,
- 3 Neighborhood name,
- 4 Street name,
- 5 Building number,
- 6 Entrance number

The first five items of an address (Marz, community, neighborhood, street and building) can be selected from the drop-down lists

To select the Marz name from the drop-down list do the following



Click on the downward arrow on the right side of the Marz

drop-down list ()

The drop-down list will expand to show the names of Marz's in Armenia

If the list does not contain all the names of Armenia's Marz's, you can define new names. To define a new Marz name see section ***Entering and Modifying Data on Location***

Similarly, you can either select the community name, the neighborhood name, the street name and the building number from the "Community", "Neighborhood", "Street" and "Building" drop-down lists using the same procedure as described for the Marz names, or to add new names for these items using the procedure described in section ***Entering and Modifying Data on Location***

- data on the meter

* More in details on the meters see section ***Entering and Modifying Data on Meters***

The bottom segment of the right part of the screen (*data field*) will also contain the following information on the person responsible for this group junction of customers

- name of the responsible person
- type of the responsible person (for instance "agent")
- number of contract between the energy distribution company and the responsible person
- date of the contract
- other information on the contract

This field is not always seen on the screen. To activate this field double-click on the lower free part of the screen. A new field for other (additional) information will appear and you can enter any necessary data. To do the reverse action, i.e. to recover the previous view double-click on the field again.

-  The following requirements exist for the above mentioned data fields
- * The name and the code of a group junction cannot be omitted
 - * The name of each group junction should be unique for the given transformer

b) Vacant

This option is used for creating a list of customers who have many similar characteristics, for instance they are the residents of the same building and most of the addressing components are the same (Marz, community, street, building number). When using this option the common characteristics will be filled into the corresponding fields automatically.

To select the Vacant option button do the following

1.  Click on the *Vacant* option
2. Click on the small text box on the right side of the *Vacant* option and enter the number of vacant items you want to add

3 Click OK



- 1 Use Tab key or arrow keys to move the darkened circle to the *Vacant* option
- 2 Use Tab key to move the cursor to the small text box on the right side of the *Vacant* option and enter the number of vacant items you want to add
- 3 Press Enter (↵)

A new element or elements (depending on the number you entered into the number text box) with the name **Vacant** and with the (check!!!) symbol appears on the *tree*. The *tree* becomes inactive and the right side of the screen (*data field*) enters into editing mode.

The vacant element(s) contains the same text boxes and the same data on the right side of the screen (*data field*) as the transformer to which this element(s) belongs.

2 New Subitem To add a new individual customer to the selected group junction do the following:



Click on **New Subitem** option of the **Item** submenu.



Use UpArrow (↑) or DownArrow (↓) to select **New Subitem** option of the **Item** submenu and press Enter (↵).

The **Select Junction Type** option button box appears on the screen. Select Customer option from the button box.

To select Customer option do the following:



Click OK.



Press Enter (↵).

A new element - an individual customer - with the name **New** and without the individual customer symbol appears on the *tree*. The *tree* becomes inactive and the right side of the screen (*data field*) enters into editing mode.

More in details on entering information on a new customer see next section - **Entering and Modifying Data on Customers**

3 Modify To start modifying data on the selected group junction do the following:



Click on **Modify** option of the **Item** submenu.



Use UpArrow (↑) or DownArrow (↓) to select **Modify** option of the **Item** submenu and press Enter (↵).

The **tree** becomes inactive, the right side of the screen (*data field*) enters into editing mode, and you can modify any data in text boxes

4 **Delete** If necessary you can remove any of the existing group junctions To remove (delete) the selected group junction do the following



Click on **Delete** of the **Item** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Delete** of the **Item** submenu and press Enter (↵)

To save the entered information do the following



Click on the **Save** button



Press **Enter** (↵)

If the entered data format does not correspond to the requirements of the system a message will appear on the screen and the system will not allow to continue work until data is corrected to satisfy the requirements

To cancel changes and to return to the previous screen without save do the following



Click on the **Cancel** button



Press **Esc**

Entering and Modifying Data on Individual Customers

To enter a new customer, to modify data on any of the existing customer, or to remove an existing customer, do the following



- 1 Click on the  symbol of any of individual customers When a customer is selected the symbol on the left side of the customer's name changes to the  symbol
- 2 Click on **Edit** of the Tree menu The Edit menu offers several options
- 3 Click on **Item** option of the Edit menu



- 1 Use UpArrow (↑) or DownArrow (↓) to select an individual customer and press Enter (↵) When a customer is selected the  symbol on the left side of the customers name changes to the  symbol
- 2 Press Alt+E

- 3 Use UpArrow (↑) or DownArrow (↓) to select **Item** option and press Enter (↵)

The **Item** submenu has a ▶ on its right side which means it offers several options you can select from. These options will be seen on the screen when **Item** is selected.

The available actions are

- New Item** - adding a new customer,
- New Subitem** - adding a new subitem, ("subitem" is an item of a lower level on the tree, for instance, for the selected customer either a users group or a service provider* will be a subitem),
- Modify** - modifying the existing information on the selected customer, and
- Delete** - deleting the selected customer

* More in details on service providers see section **Entering and Modifying Data on Service Providers**

More in details these actions are described below in this section. After you have selected one of the actions you can enter or modify information in text boxes on the right side of the screen (*data field*)

- 1 **New Item** To add a new customer do the following



Click on **New Item** option of the **Item** submenu



Use UpArrow (↑) or DownArrow (↓) to select **New Item** option of the **Item** submenu and press Enter (↵)

A new element - a customer - with the name **New** and without the customer's symbol appears on the **tree**. The **tree** becomes inactive, and the screen is now divided into tree parts: upper left (the tree), upper right and bottom. The upper right part and the bottom part of the screen (*customer data fields*) enter into editing mode.

Enter information on the new customer into the following text boxes on the upper right part

- junction code

For customer the standard (default) junction code is "CU". A user can define other types of customers if necessary.

To define other types of customers do the following



Click on the downward arrow on the right side of the Junction drop-down list ()

The drop-down list will expand to show more options for the customers code

If the list does not contain the desired code, you can define new codes of customers To define a new type of customers see section **Entering and Modifying System data**

- cycle/route

The cycle/route pair describes the schedule of inspections for this particular customer For a new customer default cycle/route is

To define the cycle/route for the new customer do the following

 Click on the **Cycle/Route** text box and type the information

More in details on cycles/routes see section **Entering and Modifying System data**

- address

In order to provide precise addressing for all items the system provides a many-component addressing Five of the seven components used for addressing of an individual customer can be selected from drop-down menus (More in details about the addressing see section **Entering and Modifying System Data**) The seven components used for addressing of an individual customer are

- 1 Marz name,

To define the Marz name do the following

 Click on the downward arrow on the right side of the **Marz** drop-down list (the first drop-down list in the first row) The drop-down list will expand to show the available names of Marzes

Click on the desired name of the Marz

If the desired name is not available in the list you can add the name as described in section **Entering and Modifying System Data**

- 2 Community name

To define the community name do the following

 Click on the downward arrow on the right side of the **Community** drop-down list (the second drop-down list in the first row) The drop-down list will expand to show the available names of communities

Click on the desired name of the community

If the desired name is not available in the list you can add the name as described in section **Entering and Modifying System Data**

- 3 Neighborhood name

To define the neighborhood name do the following

 Click on the downward arrow on the right side of the **Neighborhood** drop-down list (the third drop-down list in the first row) The drop-down list will expand to show the available names of neighborhoods

Click on the desired name of the community

If the desired name is not available in the list you can add the name as described in section **Entering and Modifying System Data**

4 Street name

To define the street name do the following

 Click on the downward arrow on the right side of the **Street** drop-down list (the first drop-down list in the second row) The drop-down list will expand to show the available names of streets

Click on the desired name of the street

If the desired name is not available in the list you can add the name as described in section **Entering and Modifying System Data**

5 Building number

To define the building number do the following

 Click on the downward arrow on the right side of the **Building** drop-down list (the second drop-down list in the second row) The drop-down list will expand to show the available numbers of buildings

Click on the desired number of the building

If the desired number is not available in the list you can add the number as described in section **Entering and Modifying System Data**

6 Entrance number

To define the entrance number do the following

 Click on the **Entr** text box and type the number

7 Apartment number

To define the apartment number do the following

 Click on the **Apt** text box and type the number

The bottom part of the screen will show the following information on the selected individual customer

- number of the customer's individual card (Account No)
The default card number is **000000**
To define the card number for the new customer do the following
- date of opening of the customer's individual card (Account Opened)
The default date of opening for the new customer is **00/00/000**
To define the date of opening for the new customer do the following
- current balance as of the date
The default current balance of payment for the new customer is

as
of

To define the date for the new customer do the following



Click on the **Current Balance** text box and type the information

- type of the customer

To define the type for the new customer do the following



Click on the downward arrow on the right side of the **Type** drop-down list. The drop-down list will expand to show the available types of customers

Type of the customer can be one of the following

- ◇ Regular - for residents,
- ◇ Corporate - for enterprises and organizations,
- ◇ Common Area - for consumers of common areas (users group)
- ◇ Subcustomer - for subcustomers



Click on the desired type of the customer

☞ If the type of the customer is Corporate or Subcustomer two new text boxes appear on the left bottom part of the screen

Contact Person and Bank Account

- name of the customer

Based on the type of the customer the name can be either a name of a person or a name of an enterprise or organization

To enter the name of the customer do the following



Click on the **Name** text box and type the name

- telephone number of the customer

To enter the telephone number of the customer do the following



Click on the **Telephone** text box and type the number

- billing address

Billing address is the address to which the payment bills are being sent. Sometimes the address of the meter and the address of the customer are different (for instance, a customer paying for energy supply of a studio space lives at a different address)

To enter the billing address of the customer do the following



Click on the **Billing Address** text box and type the address

The *customer data field* can be extended to show additional information on the branch office

To extend the *customer data field* do the following



Double-click on the *customer data field*



To return to the previous condition double-click on the *customer data field* again

The following additional information will be shown in the *customer data field*

- tariff category
This field shows to which tariff category this particular customer belongs
To define the tariff category for the new customer do the following
 Click on the downward arrow on the right side of the **Tariff Category** drop-down list. The drop-down list will expand to show the available categories
Click on the desired category
If the desired tariff category is not available in the list you can add the category as described in section **Entering and Modifying System Data**
- discount category
This field shows if the customer belongs to any of the social groups eligible for discounts. The default discount category for a new customer is **None**
To define a new discount category for the new customer do the following
 Click on the downward arrow on the right side of the **Discount Category** drop-down list. The drop-down list will expand to show the available categories
Click on the desired category
If the desired discount category is not available in the list you can add the category as described in section **Entering and Modifying System Data**
- late payment charge status
This field shows if the customer is subject to payment of fines for delinquency
To define the late payment charge amount for the new customer do the following
 Click on the **Late Payment Charge** text box and type the information
- grace period
This field shows the length of the period during which a delinquent customer will not be subject to payment of fines
To define the grace period for the new customer do the following
 Click on the **Grace Period** text box and type the information
- VAT exemption
This field shows if the customer has a Value Added Tax exempt status
To define a VAT exempt status for the new customer do the following
 Click on the **VAT Exemption** check box. A check mark () will appear in the box
- responsible for losses

This field shows if the customer will be responsible for inevitable losses

To define a responsible for losses status for the new customer do the following



Click on the **Responsible for losses (line-side)** check box. A check mark () will appear in the box

- status of the customer

Status of the customers can be active or disconnected

(terminated). If there is a check mark () in this field, the customer's status is active

The default status for a new customer is **Active**

To define a disconnected (terminated) status for the new customer do the following



Click on the **Status** check box. The check mark will disappear

2 New Subitem To add a new subcustomer to the selected customer do the following



Click on **New Subitem** option of the **Item** submenu



Use UpArrow (↑) or DownArrow (↓) to select **New Subitem** option of the **Item** submenu and press Enter (↵)

A new element - a subcustomer - with the name **New** and without the customer symbol appears on the **tree**. The **tree** becomes inactive and the right side of the screen (*data field*) enters into editing mode



Availability of a subcustomer for an individual customer means that this customer pays for common area energy consumption. **Check!!!**

Enter information on the following text boxes on the bottom part of the screen

- number of the customer's individual card (Account No)

The default card number is **000000**

To define the card number for the new customer do the following



Click on the **Account No** text box and type the number

- date of opening of the customer's individual card (Account Opened)

The default date of opening for the new customer is **00/00/000**

To define the date of opening for the new customer do the following



Click on the **Account Opened** text box and type the date

- current balance as of the date

The default current balance of payment for the new customer is

as

of

To define the date for the new customer do the following



Click on the **Current Balance** text box and type the information

- type of the customer

Type of the customer can be only Users Group

To enter the type of the customer do the following



Click on the **Type** text box and type "Users Group"

- name of the customer

To enter the name of the customer do the following



Click on the **Name** text box and type the name

- telephone number of the customer

To enter the telephone number of the customer do the following



Click on the **Telephone** text box and type the number

- billing address

Billing address is the address to which the payment bills are being sent. Sometimes the address of the meter and the address of the customer are different (for instance, a customer paying for energy supply of a studio space lives at a different address)

To enter the billing address of the customer do the following



Click on the **Billing Address** text box and type the address

- number of users of the common area

To define the number of users of the common area do the following



Click on the **Number of Users** text box and type the number

- status of the customer

Status of the customers can be active or disconnected

(terminated). If there is a check mark () in this field, the customer's status is active

The default status for a new customer is **Active**

To define a disconnected (discontinued) status for the new customer see next section - **Working with Data on Customers**

3 Modify To start modifying data on the selected group junction do the following



Click on **Modify** option of the **Item** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Modify** option of the **Item** submenu and press Enter (↵)

The **tree** becomes inactive, the right side of the screen (*data field*) enters into editing mode, and you can modify any data in text boxes

4 Delete If necessary you can remove any of the existing group junctions
To remove (delete) the selected group junction do the following



Click on **Delete** of the **Item** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Delete** of the **Item** submenu and press Enter (↵)

To save the entered information do the following



Click on the **Save** button



Press **Enter** (↵)

If the entered data format does not correspond to the requirements of the system a message will appear on the screen and the system will not allow to continue work until data is corrected to satisfy the requirements

To cancel changes and to return to the previous screen without save do the following



Click on the **Cancel** button



Press **Esc**

Working with Data on Customers

There are several actions you can perform with the data on individual customers To start working with customer data do the following



- 1 Click on the  symbol of any of individual customers When a customer is selected the symbol on the left side of the customer's name changes to the  symbol
- 2 Click on **Edit** of the Tree menu The Edit menu offers several options
- 3 Click on **Customer** option of the Edit menu



- 1 Use UpArrow (↑) or DownArrow (↓) to select an individual customer and press Enter (↵) When a customer is selected the  symbol on the left side of the customers name changes to the  symbol
- 2 Press Alt+E
- 3 Use UpArrow (↑) or DownArrow (↓) to select **Customer** option and press Enter (↵)

The **Customer** submenu has a * on its right side which means it offers several options you can select from. These options will be seen on the screen when **Customer** is selected.

The available actions are

- Bill** - preparing the bill for the selected customer without opening the corresponding data log (more in details about the data logs see **Part IV Maintaining and Updating Data Logs**)
- Disconnect** - disconnecting the selected customer. This action cannot be accomplished with the **Modify** option in the **Edit** menu
- Discontinue** - discontinuing the selected customer
- Status** - getting a report on the selected customer's status
- Bills/Payments** - getting a report on the bills sent to the customer and payments made by the customer
- Correction** - making corrections if errors have occurred in calculations made in the **Tree** mode
- Adjustment** - making adjustments to the amounts not reflected in calculated data **check!!!**

More in details these actions are described below in this section

1 **Bill** To prepare the bill for the selected customer do the following



Click on **Bill** option of the **Customer** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Bill** option of the **Customer** submenu and press Enter (↵)

check!!!

2 **Disconnect** To disconnect the selected customer from the system do the following



Click on **Disconnect** option of the **Customer** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Disconnect** option of the **Customer** submenu and press Enter (↵)

When this option is selected the **Confirm Disconnect** window appears on the screen. To confirm disconnection do the following



Click on the **OK** button

To cancel disconnection and to return to the previous screen do the following



Click on the **Cancel** button

 For the disconnected customer the **Disconnect** option in the submenu becomes **Connect**. You can connect the disconnected customer by using the **Connect** option. In this case instead of the **Confirm Disconnect** window the **Confirm Connect** window appears on the screen.

3 **Discontinue** To discontinue the selected customer do the following



Click on **Discontinue** option of the **Customer** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Discontinue** option of the **Customer** submenu and press Enter (↵)

check!!!

4 **Status** To get information on the status of selected customer do the following



Click on **Status** option of the **Customer** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Status** option of the **Customer** submenu and press Enter (↵)

A status report on the selected customer will appear on the screen, showing the name, type, address, phone number, current balance, tariff category, discount category, late payment charge status, and other information

To return to the previous screen do the following



Click on the **OK** button,
Click on the **Close** button



Press **Enter** (↵)

5 **Bills/Payments** to get a report on the bills sent to the selected customer and payments made by the customer do the following



Click on **Bills/Payments** option of the **Customer** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Bills/Payments** option of the **Customer** submenu and press Enter (↵)

The Bills and Payments window will appear on the screen showing the bills sent and payments made

To return to the previous screen do the following



Click on the **OK** button, or
Click on the **Close** button



Press **Enter** (↵)

6 Corrections To make corrections in the calculations make in the **Tree** mode do the following



Click on **Corrections** option of the **Customer** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Corrections** option of the **Customer** submenu and press Enter (↵)

The **Payment Correction** window will appear on the screen showing data for the selected customer, the balance of payment, bills sent and previous payments made

To make corrections click on the corresponding text boxes and make corrections The following information should be entered into the text boxes on the lower part of the screen

- date of the document
- name of the document
- amount paid

After the necessary data is entered the **Post** button on the bottom of the screen will be activated and you can save the information by doing the following



Click on the **Post** button on the bottom of the screen,
Click on the **Close** button



Press **Enter** (↵)

To cancel changes and to return to the previous screen do the following



Click on the **Cancel** button



Press **Esc**

7 Adjustments to make adjustments to the amounts not reflected in calculated data do the following

The same **Payment Correction** window will appear on the screen allowing to make all necessary adjustments

The procedure of entering and saving the information is the same as for the previous option - **Corrections**

check!!!

Entering and Modifying Data on Service Providers

Service providers are enterprises which provide services (for instance, communal) to a group of customers

To start entering data on new service providers or modifying the existing data on service providers do the following



- 1 Click on **DataEntry** in the main menu,
- 2 Click on **Service Providers** option in the **DataEntry** menu



- 1 Press Alt+D, ???
- 2 Press Alt+C ???



When **Service Providers** is selected the items of the main menu on the top of your screen change. The menu now contains the following items: File, Edit, DataEntry, Reports, System, Window and Help

In this mode the screen is divided into four sections

- 1 Responsible Consolidated Customers (Service Providers) - (upper left section),
This section contains account numbers and names of responsible consolidated customers, and the number of subcustomers for each responsible consolidated customer
- 2 Responsible Consolidated Customer Information (upper right section),
This section shows detailed information on the selected responsible consolidated customer
- 3 Subcustomers of the selected Service Provider (lower left section),
This section contains the account numbers and names of subcustomers of the selected responsible consolidated customer, as well as the number of kwh's of energy consumed by the subcustomer for which the Service Provider will pay
- 4 Unbound Customers (lower right section)
These are subcustomers which are not assigned to any of the existing responsible consolidated customers

To enter a new service provider (responsible consolidated customer), to modify data on any of the existing service provider, or to remove an existing service provider, do the following



- Click on **Edit** of the Service Providers menu
- Press Alt+E

The **Edit** submenu offers several actions you can select from. These actions are

- Enter New** - adding a new service provider,
- Modify** - modifying the existing information on the selected service provider, and
- Delete** - deleting the selected service provider

 To do any of these actions you need to select a service provider first

To select a service provider (responsible consolidated customer) do the following



Click on the desired responsible consolidated customer name

Use UpArrow (↑) or DownArrow (↓) to select the desired responsible consolidated customer

A little dark **triangle** on the left side of this section shows the selected consolidated subcustomer

More in details these actions are described below in this section

1 **Enter New** To add a new consolidated customer do the following



Click on **Enter New** option of the **Edit** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Enter New** option of the **Edit** submenu and press Enter (↵)

An empty line appears over the selected responsible consolidated customer line on the upper left side of the screen, and the screen enters into the editing mode

Enter information on the new responsible consolidated customer into the following fields

a) **Responsible Consolidated Customers** (upper left side of the screen)

- ◇ "Account number" by default the account number is equal to 0,
- ◇ "Name",
- ◇ "Subcustomer" this field contains the number of subcustomers of the selected responsible consolidated customer, by default it is equal to 0

b) **Responsible Consolidated Customer Information** (upper right side of the screen)

- ◇ "Account number" by default it is equal to 0,
- ◇ "Account opened" by default this date is 00/00/0000,
- ◇ "Current balance" by default the balance is 0,
- ◇ "as of" the date as of the balance was last specified, by default this field is 00/00/0000,
- ◇ "Type" of the customer

 The type of the consolidated customer is **Service Provider** and it cannot be modified

- ◇ "Name" of the consolidated customer,
- ◇ "Phone" number of the consolidated customer,
- ◇ "Address",

c) **Subcustomers of the selected Service Provider** (lower left side of the screen)

- ◇ "Account" account number for a subcustomer of the newly entered consolidated subcustomer
- ◇ "Subcustomers" names of subcustomers of the newly entered consolidated subcustomer
- ◇ "Kwh" amount of energy consumed by the subcustomers for which the new responsible consolidated customer will pay

check!!!

d) **Unbound Customers** (lower left side of the screen)

To bound one or more of the unbound customers (i.e. customers which are not attached to any of the responsible consolidated customers) to the newly entered responsible consolidated customer do the following

-  1 Click on the desired unbound customer name to select it (If you want to select several unbound customers press and hold **Shift** key and click on the desired names sequentially)
- 2 Drag and drop the selected name(s) into the Responsible Customer window (upper left section of the screen)

2 **Modify** To start modifying data on the selected responsible consolidated customer do the following



Click on **Modify** option of the **Edit** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Modify** option of the **Edit** submenu and press Enter (↵)

Modify information on the selected responsible consolidated customer in the fields described in the section above (Enter New)

3 **Delete** If necessary you can remove any of the existing responsible consolidated customers To remove (delete) the selected consolidated customer do the following



Click on **Delete** of the **Edit** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Delete** of the **Edit** submenu and press Enter (↵)

A window will appear on the screen asking to confirm delete



Click on **Yes** button to confirm delete



Click on **No** button to reject delete
 Press **Y** to confirm delete
 Press **N** to reject delete

To save the entered information do the following



Click on the **Save** button



Press **Enter** (↵)

If the entered data format does not correspond to the requirements of the system a message will appear on the screen and the system will not allow to continue work until data is corrected to satisfy the requirements

To cancel changes and to return to the previous screen without save do the following



Click on the **Cancel** button



Press **Esc**

Entering and Modifying Consolidated Customer Data

Consolidated Customers are enterprises which pay for energy consumed by other organizations (For instance, a central service provider organization might pay for several subordinate service provider organizations)

To start entering new consolidate customer data or modifying the existing consolidate customer data do the following



- 1 Click on **DataEntry** in the main menu,
- 2 Click on **Consolidated** option in the **DataEntry** menu



- 1 Press Alt+D,
- 2 Press Alt+C



When **Consolidated** is selected the items of the main menu on the top of your screen change The menu now contains the following items File Edit, DataEntry, Reports, System Window and Help

In this mode the screen is divided into four sections

- 1 Responsible Customers for Consolidated Billing (upper left section),
This section contains account numbers and names of consolidated customers, and the number of subcustomers for each consolidated customer
- 2 Customer Information (upper right section),

This section shows detailed information on the selected consolidated customer

A little dark triangle on the left side of this section shows the selected consolidated subcustomer

To select a consolidated customer do the following



Click on the desired consolidated customer name



Use UpArrow (↑) or DownArrow (↓) to select the desired consolidated customer

- 3 Consolidated Customers (lower left section),
This section contains the account numbers and names of subcustomers for the selected consolidated customer
- 4 Unbound Customers (lower right section)
These are subcustomers which are not assigned to any of the existing consolidated customers

To enter a new consolidated customer, to modify data on any of the existing consolidated customer, or to remove an existing consolidated customer, do the following



Click on **Edit** of the Consolidated menu The **Edit** menu offers several options



Press Alt+E

The **Edit** submenu offers several actions you can select from These actions are

- Enter New** - adding a new consolidated customer,
- Modify** - modifying the existing information on the selected consolidated customer, and
- Delete** - deleting the selected consolidated customer

 To do any of these actions you need to select a consolidated customer first

To select a consolidated customer do the following



Click on the desired consolidated customer name



Use UpArrow (↑) or DownArrow (↓) to select the desired consolidated customer

A little dark **triangle** on the left side of this section shows the selected consolidated subcustomer

More in details these actions are described below in this section

- 1 **Enter New** To add a new consolidated customer do the following



Click on **Enter New** option of the **Edit** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Enter New** option of the **Edit** submenu and press Enter (↵)

An empty line appears over the selected consolidated customer line on the upper left side of the screen, and the upper left and right sides of the screen enter into editing mode

Enter information on the new consolidated customer into the following fields

a) **Responsible Customers for Consolidated billing** (upper left side of the screen)

- ◇ "Account number" by default the account number is equal to 0,
- ◇ "Name",
- ◇ "Subcustomer" this field contains the number of subcustomers of the selected consolidated customer, by default it is equal to 0

b) **Customer Information** (upper right side of the screen)

- ◇ "Account number" by default it is equal to 0,
- ◇ "Account opened" by default this date is 00/00/0000,
- ◇ "Current balance" by default the balance is 0,
- ◇ "as of" the date as of the balance was last specified, by default this field is 00/00/0000,
- ◇ "Type" of the customer by default the type is "Consolidated",

To define other types do the following



Click on the downward arrow on the right side of the type drop-down list. The drop-down list will expand to show the list of the types of customers. Click on the desired type

- ◇ "Name" of the consolidated customer,
- ◇ "Phone" number of the consolidated customer,
- ◇ "Billing address",
- ◇ "Contact person",
- ◇ "Bank account" contains the name of the bank and the account number

c) **Consolidated Customers** (lower left side of the screen)

- ◇ "Account" account number for a subcustomer of the newly entered consolidated subcustomer
- ◇ "Subcustomers" names of subcustomers of the newly entered consolidated subcustomer

check!!!

d) **Unbound Customers** (lower left side of the screen)

To bound one or more of the unbound customers (i.e. customers which are not attached to any of the consolidated customers) to the newly entered consolidated customer do the following



- 1 Click on the desired unbound customer name to select it (If you want to select several unbound customers press and hold **Shift** key and click on the desired names sequentially)

- 2 Drag and drop the selected name(s) into the Responsible Customer window (upper left section of the screen)

2 **Modify** To start modifying data on the selected consolidated customer do the following



Click on **Modify** option of the **Edit** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Modify** option of the **Edit** submenu and press Enter (↵)

Modify information on the selected consolidated customer in the fields described in the section above (Enter New)

3 **Delete** If necessary you can remove any of the existing consolidated customers To remove (delete) the selected consolidated customer do the following



Click on **Delete** of the **Edit** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Delete** of the **Edit** submenu and press Enter (↵)

A window will appear on the screen asking to confirm delete



Click on **Yes** button to confirm delete

Click on **No** button to reject delete



Press **Y** to confirm delete

Press **N** to reject delete

To save the entered information do the following



Click on the **Save** button



Press **Enter** (↵)

If the entered data format does not correspond to the requirements of the system a message will appear on the screen and the system will not allow to continue work until data is corrected to satisfy the requirements

To cancel changes and to return to the previous screen without save do the following



Click on the **Cancel** button



Press **Esc**

Entering and Modifying Data on Meters

To change data on meters, to modify meter data, or to read meter data do the following



- 1 Click on any of the elements of the system (starting with the transformer level) for which you want to enter or modify data on the meter
- 2 Click on **Edit** of the Tree menu The Edit menu offers several options
- 3 Click on **Meter** option of the Edit menu



- 1 Use UpArrow (↑) or DownArrow (↓) to select any of the elements of the system (starting with the transformer level¹) for which you want to enter or modify data on the meter and press Enter (↵)
- 2 Press Alt+E
- 3 Use UpArrow (↑) or DownArrow (↓) to select **Meter** option and press Enter (↵)

Data on meters is available starting with transformers level for the higher levels the **Meter** option is not active

The **Meter** submenu has a ➤ on its right side which means it offers several options you can select from These options will be seen on the screen when **Meter** is selected

The available actions are

- Change** - changing the meter
- Modify** - modifying data on the current meter
- Meter Reading** - readings of the current meter

More in details these actions are described below in this section After you have selected one of the actions you can enter or modify information in text boxes on the right side of the screen (*data field*)

- 1 **Change** To change the meter do the following



Click on **Change** option of the **Meter** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Change** option of the **Meter** submenu and press Enter (↵)

The right side of the screen (*data field*) enters into editing mode

The *data field* will contain the following

- 1 Data on the old meter,
- 2 Date of changing the old meter
- 3 Reading of the old meter before the change

- 4 Fields for the new meter (below the data on the old meter) Some of these fields contain default data The user can change data in any of the fields These fields are

- ◇ "meter number" field serial (factory) number of the meter,
- ◇ "type" field type of the meter,

To define other types of meters do the following



Click on the downward arrow on the right side of the meter type drop-down list The drop-down list will expand to show more options for the types of meters Click on the desired type

- ◇ "location" field location of the meter refers to the location where the meter is installed Location field can be one of the following -
 - 1 Substation - this means the meter is installed in the substation,
 - 2 Safe Box - the meter is installed in a metallic box,
 - 3 Customer - the meter is installed at the apartment or office of a customer
- ◇ "EDC's" field this field shows to whom the meter belongs If there is a check mark () in this field, the meter belongs to the energy distribution company,

To put a check mark in this field do the following



Click on the field

- ◇ "digits" field number of digits of the meter,
- ◇ "multiplier" field some meters are intended to meter big quantities of energy To avoid the necessity of providing too many digits in the meter the latter is designed to apply coefficients when indicating the quantity of the consumed energy Multiplier field indicates the value of the coefficient applied,
- ◇ "phase" field number of phases,
- ◇ "volts" field number of volts,
- ◇ "amps" field range of amperes,
- ◇ "installed" field date of installation of the meter,
- ◇ "last tested" field date of last testing of the meter,
- ◇ "last read" field shows the date when the meter indicator was last read,
- ◇ "reading" field shows the last indicated value of the meter

To save the entered information do the following



Click on the **Save** button



Press **Enter** (↵)

If the entered data format does not correspond to the requirements of the system a message will appear on the screen and the system will not allow to continue work until data is corrected to satisfy the requirements

To cancel changes and to return to the previous screen without save do the following



Click on the **Cancel** button



Press **Esc**

2 Modify To modify data on the current meter do the following



Click on **Modify** option of the **Meter** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Modify** option of the **Meter** submenu and press Enter (↵)

The right side of the screen (*data field*) enters into editing mode and you can modify the data on the meters

To save the entered information do the following



Click on the **Save** button



Press **Enter** (↵)

If the entered data format does not correspond to the requirements of the system a message will appear on the screen and the system will not allow to continue work until data is corrected to satisfy the requirements

To cancel changes and to return to the previous screen without save do the following



Click on the **Cancel** button



Press **Esc**

3 Meter Reading To read information of the current meter do the following



Click on **Meter Reading** option of the **Meter** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Meter Reading** option of the **Meter** submenu and press Enter (↵)

The **Meter Readings** window appears on the screen The window contains the following fields

- ◇ "Factory number" of the meter
- ◇ "Date" of reading,
- ◇ "Reading" of the meter
- ◇ "KW/H" - number of kilowatt/hours
- ◇ "Actual number"
- ◇ "Number of account"

To close the **Meter Readings** window do the following



Click on the **Close** button



Press **Esc**

Entering and Modifying Data on Losses

Two types of losses may occur in a energy distribution company

- fixed** amount of losses does not depend on the amount of the consumed energy, and
- variable** amount of losses is proportionate to the amount of the consumed energy

Distribution companies currently use average values of losses defined by the Ministry of Energy Part of the losses occur on the line side, and the other part occurs on the load side

To enter data on losses for the distribution company do the following



- 1 Click on **Edit** of the Tree menu The **Edit** menu offers several options
- 2 Click on **Losses** option of the Edit menu



- 1 Press Alt+E
- 2 Use UpArrow (↑) or DownArrow (↓) to select **Losses** option and press Enter (↵)

The right side of the screen (*data field*) enters into editing mode The *data field* will contain the following fields on the energy distribution losses

- Line-Side Losses Fixed and Variable
- Load-Side Losses Fixed and Variable

To save the entered information do the following



Click on the **Save** button



Press **Enter** (↵)

To cancel changes and to return to the previous screen without save do the following



Click on the **Cancel** button



Press Esc

Entering and Modifying Data on Responsible Persons

Responsible persons of the distribution company are responsible for checking data of meters installed on transformer substations, as well as meters of customers

To enter information or to modify the existing information on a responsible person do the following



- 1 Click on the  symbol of any of transformer substations. When a transformer substation is selected the symbol on the left side of the transformer substation's name changes to the  symbol
- 2 Click on **Edit** of the Tree menu. The Edit menu offers several options
- 3 Click on **Responsible Person** option of the Edit menu



- 1 Use UpArrow (↑) or DownArrow (↓) to select a transformer substation and press Enter (↵). When a transformer substation is selected the  symbol on the left side of the transformer substation's name changes to the  symbol
- 2 Press Alt+E
- 3 Use UpArrow (↑) or DownArrow (↓) to select **Responsible Person** option and press Enter (↵)

The right side of the screen (*data field*) enters into editing mode. The *data field* will contain the following fields on the responsible person(s) of the selected transformer substation

- ◇ "name" field name of the current responsible person,
To assign a different responsible person do the following
 Click on the downward arrow on the right side of the name drop-down list. The drop-down list will expand to show the list of the responsible persons of the selected transformer substation. Click on the desired name
- ◇ "type" field by default this field contains the **Responsible** type,
- ◇ "contract" field the number of the contract of the responsible person,
- ◇ "expiration date" field expiration date of the contract of the responsible person,
- ◇ "other information" field allows to keep additional information on the responsible person

To save the entered information do the following



Click on the **Save** button



Press **Enter** (↵)

If the entered data format does not correspond to the requirements of the system a message will appear on the screen and the system will not allow to continue work until data is corrected to satisfy the requirements

To cancel changes and to return to the previous screen without save do the following



Click on the **Cancel** button



Press **Esc**

Entering and Modifying System data

System data is a major group of data which consists of the following elements required by the system

- Data on rates
tariff category, discount category and value added tax data
- Data on junction types
customers, group junctions and auto-generate customers
- Data on location
Marz's, communities, settlements, streets, buildings
- Name of the distribution company
name of the distribution company using the system
- Deviations
allowed deviations from the ???
- Calendar
weekends and holidays
- Cycle/Route
cycles/routs of inspections

To start entering new system data or modifying the existing system data do the following



Click on **S**ystem in the main menu,
Press Alt+S,



When **S**ystem is selected the items of the main menu on the top of your screen change. The menu now contains the following items: File, Edit, DataEntry, Reports, System, Window and Help

Data that you can enter or modify using the **S**ystem option is required for the normal operation of the system. This information is used for many purposes. For instance, information on location of customers is used to enter complete

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addresses of customers of the system. As it was mentioned above, for precise addressing of customers a seven-component addressing is used in the system. Five of the seven components (Marz, community, neighborhood, street and building) are drop-down lists which offer a number of options to select from. These components can be entered or modified using one of the options of the **System** menu.

Entering and Modifying Data on Rates

The **Rates** option of the **System** submenu allows to create or modify data required for the fee calculation system, i.e. tariffs, discount rates and value added tax status for any of the customers of the system.

To select the **Rates** option do the following:



Click on **R**ates in the System submenu.



Press Alt+R.



When **Rates** is selected the items of the main menu on the top of your screen change. The menu now contains the following items: **F**ile, **C**ategory, **T**ariff, **B**reakdown, **D**ataEntry, **R**eports, **S**ystem, **W**indow and **H**elp.

The **Maintain Rates** window appears on the screen. The window contains tree option buttons on the top:

1. **Tariff**
2. **Discount**
3. **Value Added Tax**

To select an option button do the following:



Click on the desired option.

1. **Tariff** when this option is selected the window contains the following fields:

- **Category drop-down list** allows to select an existing category or do add a new category.

To select one of the existing categories do the following:



1. Click on the dark triangle on the right side of the drop-down list. The list will expand to show the existing categories.
2. Click on the desired category to select it.

To add a new tariff category do the following:



Click the mouse right button on the Category field. A submenu with option **Create New** and **Rename** will

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appear on the screen
Click on **Create New** option

The Category drop-down list will become a text box, a cursor will appear in the text box and allow for entering data

After the category is selected or new category entered, the following data should be entered

- Effective date for the given category
Click on the Effective Date button and enter the date
- Expiration date for the given category
Click on the Expiration Date button and enter the date
- VAT included
If VAT is included click on the VAT Included check box a check mark will appear in the box
- Discountable
If this category is discountable click on the Discountable check box a check mark will appear in the box
- Late payment charges
Click on the Late Payment Charges button to enter the percent of charges for late payments and enter the percent (0% if no charges required)
- Grace period
Click on the Grace Period button and enter the period of grace for late payments (for instance, 15 days)

The lower part of the window will contain numbered ranges and corresponding tariffs for this category

To add a new tariff to the given category do the following



- 1 Select **Tariff** from the top menu
- 2 Select **Enter New** from the pop-up menu

The Effective Date field should be filled in The Expiration date of the old tariff will be automatically filled in Enter the new tariff into the Tariff field

To add a new range to the given category do the following



- 1 Select **Breakdown** from the top menu
- 2 Select **Insert** from the pop-up menu

A new row will be added (numbering of rows is fulfilled automatically) to the existing ranges Enter the new range into the range field

2 **Discount** when this option is selected the window contains the following fields

- **Category drop-down list** allows to select an existing category or do add a new category

To select one of the existing categories do the following



- 1 Click on the dark triangle on the right side of the drop-down list. The list will expand to show the existing categories
- 2 Click on the desired category to select it

To add a new tariff category do the following



- 1 Click the mouse right button on the Category field. A submenu with option **Create New** and **Rename** will appear on the screen
- 2 Click on **Create New** option

The Category drop-down list will become a text box, a cursor will appear in the text box and allow for entering data

After the category is selected or new category entered, the following data should be entered

- Effective date for the given category
Click on the Effective Date button and enter the date
- Expiration date for the given category
Click on the Expiration Date button and enter the date
- Discount percent for the given category
Click on the Discount button and enter the percent of discount

3 **Value Added Tax** when this option is selected the window contains the following fields

- Effective date for the given category
Click on the Effective Date button and enter the date
- Expiration date for the given category
Click on the Expiration Date button and enter the date
- Value Added Tax percent for the given category

To add a new value added tax to the given category do the following



- 1 Click the mouse right button on the Value Added Tax button. A pop-up menu will appear on the screen. Select **Enter New** from the pop-up menu

A new row will appear below the existing value added tax data. Enter the Effective Date, Expiration Date and the Value Added Tax for the given category.

To save the entered information do the following:



Click on the **Save** button



Press **Enter** (↵)

If the entered data format does not correspond to the requirements of the system, a message will appear on the screen and the system will not allow to continue work until data is corrected to satisfy the requirements.

To cancel changes and to return to the previous screen without save do the following:



Click on the **Cancel** button



Press **Esc**

Entering and Modifying Data on Junction Types

The **Junction Type** option of the **System** submenu allows to create or modify data on junction types - distribution substations, transformer substations, transformers, group junctions, etc.

To select the **Junction Type** option do the following:



Click on **Junction Type** in the System submenu



Press **Alt+J**

☞ When **Junction Type** is selected, the items of the main menu on the top of your screen change. The menu now contains the following items: **F**ile, **E**dit, **D**ataEntry, **R**eports, **S**ystem, **W**indow and **H**elp.

The **Maintain Junction Types** window appears on the screen. The window contains a table of categories of various junctions, the shortcuts for each junction category and corresponding descriptions.

There are standard (for instance, TS, TR) and user defined types of junctions. The shortcuts of standard types are underlined.

To add a new junction type do the following:



Click the mouse right button on the **Maintain Junction Types** window. A pop-up menu will appear on the screen. Select **Enter**.

New from the pop-up menu

A new empty row with a cursor will appear on the bottom of the table. Below the new empty line there will be a list of the existing types of junctions. The list has a scroll bar on the right side which will allow to navigate through the existing list. The user can enter a new junction type into the empty row, or select from the list of the existing types.

To save the entered information do the following:

 Click on the **Save** button

 Press **Enter** (↵)

To cancel changes and to return to the previous screen without save do the following:

 Click on the **Cancel** button

 Press **Esc**

Entering and Modifying Data on Location

The **Location** option of the **System** submenu allows to create an addressing system which will provide precise addressing of all customers of the system. Five of the components of the address (Marz, Community, Settlement, Street, Building) of any of the customers can be entered using this option.

To select the **Location** option do the following:

 Click on **Location** in the System submenu

 Press Alt+L

 When **Location** is selected the items of the main menu on the top of your screen change. The menu now contains the following items: **F**ile, **L**ocation, **D**ataEntry, **R**eports, **S**ystem, **W**indow and **H**elp.

The **Maintain Location** window appears on the screen. The window contains check boxes and drop-down lists of the five components of an address: Marzes, communities, settlements, streets and buildings.

Adding a new address to the system consists of several steps.

Step 1 Adding a name of a Marz

To add a new Marz to the system do the following:

- 1  Click the mouse right button on the **Marz** drop-down list. Initially, if the list is empty the drop-down lists intended for **Community, Settlement, Street** and **Buildings** are inactive (shaded) and do not allow for access.
- 2 A pop-up menu will appear on the screen. Select **Enter New** from the pop-up menu. Enter New option contains a * on its right side which means it offers several options you can select from.
- 3 Click on the *. A second pop-up menu will appear on the right side of the first pop-up menu. Select **Marz** from the second pop-up menu (initially, the other components are inactive and do not allow for access).

The Marz drop-down list becomes a text box with a cursor and allows for editing.

Enter the name of a Marz into the text box.

To save the entered information do the following.

 Click on the **Save** button.

 Press **Enter** (↵).

To cancel changes and to return to the previous screen without save do the following.

 Click on the **Cancel** button.

 Press **Esc**.

The Marz text box again becomes a drop-down list. A check mark appears in the Marz check box on the left side of the Marz drop-down list.

You can browse the list of Marzes by clicking on the downward triangle on the right side of the drop-down list.

Step 2 Adding a name of a Community

When the Marz drop-down list is not empty (i.e. it contains names of Marzes) you can add names of communities of the selected Marz to the system.

To add a new Community to the system do the following.

- 1  Select the desired Marz name from the **Marz** drop-down list.
- 2 Click the mouse right button on the **Community** drop-down list. Initially, if the list only contains the name of the Marz without its corresponding components, the drop-down lists

intended for **Settlement**, **Street** and **Buildings** are inactive (shaded) and do not allow for access

- 3 A pop-up menu will appear on the screen Select **Enter New** from the pop-up menu Enter New option contains a * on its right side which means it offers several options you can select from
- 4 Click on the * A second pop-up menu will appear on the right side of the first pop-up menu Select **Community** from the second pop-up menu (the remaining components are inactive and do not allow for access)

 **For the selected Marz, you can only add names of communities of this Marz**

The Community drop-down list becomes a text box with a cursor and allows for editing

Enter the name of a Community into the text box

To save the entered information do the following



Click on the **Save** button



Press **Enter** (↵)

To cancel changes and to return to the previous screen without save do the following



Click on the **Cancel** button



Press **Esc**

The Community text box again becomes a drop-down list A check mark appears in the Community check box on the left side of the Community drop-down list

You can browse the list of Communities by clicking on the downward triangle on the right side of the drop-down list

Step 3 Adding a name of a Settlement

When the Community drop-down list is not empty, i.e. it contains names of communities you can add names of settlements of the selected community to the system

 **Settlement drop-down list might be empty if the selected community does not have any settlements In this case, skip Step 3 and go to Step 4**

To add a new Settlement to the system do the following

- 1 Select the desired Marz name from the **Marz** drop-down list
- 2 Select the desired Community name from the **Community** drop-down list
- 3 Click the mouse right button on the **Settlement** drop-down list The **Street** and **Building** elements are inactive (shaded) and do not allow for access
- 4 A pop-up menu will appear on the screen Select **Enter New** from the pop-up menu Enter New option contains a ▶ on its right side which means it offers several options you can select from
- 5 Click on the * A second pop-up menu will appear on the right side of the first pop-up menu Select **Settlement** from the second pop-up menu (the remaining components are inactive and do not allow for access)

☞ **For the selected Community, you can only add names of settlements of this Community**

The Settlement drop-down list becomes a text box with a cursor and allows for editing

Enter the name of a Settlement into the text box

To save the entered information do the following

 Click on the **Save** button

 Press **Enter** (↵)

To cancel changes and to return to the previous screen without save do the following

 Click on the **Cancel** button

 Press **Esc**

The Settlement text box again becomes a drop-down list A check mark appears in the Settlement check box on the left side of the Settlement drop-down list

You can browse the list of Settlements by clicking on the downward triangle on the right side of the drop-down list

Step 4 Adding a name of a Street

When the Community or the Settlement drop-down list is not empty, i.e. it contains names of communities you can add names of streets of the selected community or settlement to the system

To add a new Street to the system do the following



- 1 Select the desired Marz name from the **Marz** drop-down list
- 2 Select the desired Community name from the **Community** drop-down list
- 3 If there are any settlements in the selected community select the desired Settlement name from the Settlement drop-down list
- 4 Click the mouse right button on the **Street** drop-down list
The **Building** element is inactive (shaded) and does not allow for access
- 4 A pop-up menu will appear on the screen Select **Enter New** from the pop-up menu Enter New option contains a ▶ on its right side which means it offers several options you can select from
- 5 Click on the ▶ A second pop-up menu will appear on the right side of the first pop-up menu Select **Street** from the second pop-up menu (the last component is inactive and does not allow for access)

 **For the selected Community, you can only add names of settlements of this Community**

The Settlement drop-down list becomes a text box with a cursor and allows for editing

Enter the name of a Settlement into the text box

To save the entered information do the following



Click on the **Save** button



Press **Enter** (↵)

To cancel changes and to return to the previous screen without save do the following



Click on the **Cancel** button



Press **Esc**

The Settlement text box again becomes a drop-down list A check mark appears in the Settlement check box on the left side of the Settlement drop-down list

You can browse the list of Settlements by clicking on the downward triangle on the right side of the drop-down list

Entering and Modifying Distribution Company's Name

The **Distribution Company** option of the **S**ystem submenu allows to create or modify data on junction types - distribution substations, transformer substations, transformers, group junctions, etc

To select the **Distribution Company** option do the following



Click on **Distribution Company** in the System submenu



Press Alt+C

☞ When **Distribution Company** is selected the items of the main menu on the top of your screen change. The menu now contains the following items: **F**ile, **E**dit, **D**ataEntry, **R**eports, **S**ystem, **W**indow and **H**elp

The **EDC** (energy distribution company) window appears on the screen. The window contains a table of codes and names of energy distribution companies using the system.

To add a new distribution company do the following



Click the mouse right button on the **EDC** window. A pop-up menu will appear on the screen. Select **Enter New** from the pop-up menu.

A new empty row with a cursor will appear on the bottom of the table. Add the code and the name of the distribution company.

To save the entered information do the following



Click on the **Save** button



Press **Enter** (↵)

To cancel changes and to return to the previous screen without save do the following



Click on the **Cancel** button



Press **Esc**

Entering and Modifying Data on Deviations

The **Deviations** option of the **S**ystem submenu allows to define permitted deviations from the established norms, such as numbers of days, amounts of debts, and so on.

To select the **Deviations** option do the following



Click on **Deviations** in the System submenu



Press Alt+D

The **For Reading** window appears on the screen. The window contains the following text boxes:

- number of permitted deviation from the defined number of days (Permitted Deviation of Days)

To enter the number of days or to modify the existing number, do the following:



Click on the small upward or downward triangles on the right side of the **Permitted Deviation of Days** window to increase or to decrease the number.



Type the number of the permitted deviation of days.

- permitted deviation from the debt amount

- ◊ for residents
- ◊ for state organizations

To enter or modify the amount of permitted deviation from the debt amount, do the following:



Type the amount of the permitted deviation of the debt for residents (**Resident** window) and for state organizations (**State** window).

To save the entered information, do the following:



Click on the **Save** button.
Click on the **Close** button.

To cancel changes and to return to the previous screen without save, do the following:



Click on the **Cancel** button.



Press **Esc**.

Working with the Calendar

The **Calendar** option of the **System** submenu allows to specify weekends and holidays of each year. It is used for working with cycles/routes.

To select the **Calendar** option, do the following:



Click on **Calendar** in the **System** submenu.



Press Alt+???

The **Calendar** window appears on the screen. The window consists of the following parts

- Upper left part shows the current month of the year and the calendar for this month

You can view the calendar of any of the months and years by doing the following



Click on rightward or leftward triangles on the right and left sides of the current month's name

- Bottom left part allows search for any of the days, weeks, months or years

To find a desired date do the following



Click on <<Day or Day>> button

To simplify the process of search you can use also the buttons

<<Week	Week>>
<<Month	Month>>
<<Year	Year>>

The text box with the **Find** button shows the desired date. Default value of this text box is **00/00/000**

To show the today's date do the following



Click on **Today** button

The text box on the right side of the button will show today's date

The calendar in the upper left side will show the month and year of the selected date, and the selected date in shading

- Right part shows the list of weekends and holidays

To add any date to the list of weekends and holidays do the following



Double click on the desired date. The date will appear in the list of weekends and holidays

To save the information do the following



Click on the **OK** button

Click on the **Close** button

Entering and Modifying Data on Cycles/Routes

The **Cycle/Route** option of the **System** submenu allows to specify cycles/routes of inspections of any of the parts of the system

To select the **Cycle/Route** option do the following



Click on **Cycle/Route** in the System submenu



Press Alt+???

 When **Cycle/Route** is selected the items of the main menu on the top of your screen change. The menu now contains the following items: File, Cycle, Route, DataEntry, Reports, System, Window and Help

The **Cycle/Route** window appears on the screen. The window contains two option buttons on the top:

- 1 Main
- 2 Move

1 **Main** this option allows to work with cycles and routes (to add new cycles and routes, to modify or delete the existing cycles and routes)

When this option is selected the window contains the following fields:

- list of the existing cycles (upper left part)
- list of routes of the selected cycle (bottom left part)
- list of the existing routes (upper right part)
- list of routes not included into any of the existing cycles (bottom right part)

 The dark little triangle on the left side of any of these lists shows the selected item.

The right part of the screen also contains instructions on cycles/routes to be accomplished on specified dates. **check!!!**

a) Working with cycles

* To add a new cycle do the following:

-  1 Select **Cycle** from the top menu
- 2 Select **New** from the pop-up menu

A new empty line will add to the list below the existing cycles. Add the code, name and the date for the new cycle.

* To modify data on any of the existing cycles do the following:

-  1 Select **Cycle** from the top menu
- 2 Select **Modify** from the pop-up menu

The selected cycle will enter into editing mode and will allow for changes.

* To delete any of the existing cycles do the following:

-  1 Select **Cycle** from the top menu
- 2 Select **Delete** from the pop-up menu

A window will appear on the screen asking to confirm delete.

-  Click on **Y**es button to confirm delete.



Click on **N**o button to reject delete
Press **Y** to confirm delete
Press **N** to reject delete

b) Working with routes

* To add a new route do the following



- 1 Select **R**oute from the top menu
- 2 Select **N**ew from the pop-up menu

A new empty line will add to the list below the existing routes Add the code, name and the date for the new route

* To modify data on any of the existing routes do the following



- 1 Select **R**oute from the top menu
- 2 Select **M**odify from the pop-up menu

The selected route will enter into editing mode and will allow for changes

* To delete any of the existing cycles do the following



- 1 Select **R**oute from the top menu
- 2 Select **D**elete from the pop-up menu

If the route being deleted belongs to any of the cycles, a window will appear on the screen with the message "**This Route Belongs to a Cycle**" and deleting will not be allowed



Click on **O**K button

* To include any of the not included routes into one of the cycles do the following



- 1 Select a route (or routes) from the list of routes not included into any of the existing cycles by clicking on the corresponding route (To select more than one route press and hold **S**hift key and click on as many routes as you need)
- 2 Drag and drop the selected route (routes) into the list of routes of the selected cycle

To save the entered information do the following



Click on the **S**ave button
Click on the **C**lose button

To cancel changes and to return to the previous screen without save do the following



Click on the **Cancel** button



Press **Esc**

2 Move this option allows to move a route (routes) from one cycle to another

When this option is selected the window contains the following fields

- 2 identical lists of the existing cycles (first two lists on the first row)
- list of the routes of the selected cycle on the first list of cycles
- list of the routes of the selected cycle on the second list of cycles
 *each list of routes is located below the corresponding list of cycles*
- list of all existing routes
- list of routes not included into any of the existing cycles

 the dark little triangle on the left side of the any of these lists shows the selected item

To move a route (routes) from one cycle to another do the following



- 1 On one of the lists of cycles select the cycle from which a route (routes) will be moved
- 2 On the other list of cycles select the cycle to which the selected route (routes) will be moved
- 3 Select the routes to be moved on the corresponding list of routes of the first selected cycle
- 4 Drag and drop the selected route (routes) to the list of routes of the second cycle

A window with the message "**X routes have been found Are you sure?**" (where X is the number of routes found) will appear on the screen asking to confirm move



Click on **OK** to confirm move
Click on **Cancel** to reject move



Press **Enter** to confirm move
Press **Esc** to reject move

Part III Maintaining and Updating Data Logs

Data logs allow to maintain data on meter readings, bills, payments, to update data on pre-specified intervals, and to make necessary calculations. There are several types of data logs you can create with the help of the program these types are called *General*, *Readings*, *Bills*, and *Payments*. *General* type data log includes the three other types of logs.

To start working with data logs do the following:



- Click on **DataEntry** in the main menu,
Click on **DataLog** option in the **DataEntry** menu



- 1 Press Alt+D,
- 2 Press Alt+L ???

The **Maintain Batch** window will appear on the screen. This window allows to do the following actions:

- to browse the lists of the existing data logs based on the following criteria
 - ◇ type of the data log
 - ◇ readings of meters
 - ◇ bills to customers
 - ◇ payments made by customers
- to select the type of a new data log to be created,
- to select the method of creation of a new data log,
- to open an existing data log and make calculations

Maintaining Data Logs

Browsing the Existing Data Logs

To browse an existing data log it is necessary to select the type of the log. To select the type of a data log do the following:



- Click on the corresponding *Type* option button on the upper left side of the **Maintain Batch** window

After you select the type of the data log to browse, the **Maintain Batch** window will display the existing data logs of the selected type and the number of the logs of this type (bottom part of the window).

Creating New Data Logs

You can create new data logs by following the below described steps:

Step 1 *Select the type of the data log to be created (as described in the previous section **Browsing the Existing Data Logs**)*

Step 2 *Select the method of creation of the new data log*

The following methods of creation are available

◇ by a Cycle/Route

To create a data log for a cycle/route do the following

- 1  Click on the Cycle/Route option button on the upper middle side of the **Maintain Batch** window
- 2 Click on the cycle text box (next to the option button) and type the number of cycle
- 3 Click on the route text box (next to the route text box) and type the number of route

◇ by a Group or a Junction

To create a data log for a Group or a Junction do the following

- 1  Click on the Group or Junction option button on the upper middle side of the **Maintain Batch** window The **TreeView** window will appear on the screen
- 2 Select the desired group or junction on the *tree*

◇ by a Consolidated Customer

To create a data log for a Consolidated Customer do the following

- 1  Click on the Consolidated Customer option button on the upper middle side of the **Maintain Batch** window The **Consolidated** window will appear on the screen
- 2 Select the desired consolidated customer

◇ by a Common Object

To create a data log for a Common Object do the following

- 1  Click on the Common Object option button on the upper middle side of the **Maintain Batch** window The **???** window will appear on the screen
- 2 Select the desired common object

Another option is to create a data log based on all above mentioned criteria at once For this do the following

- 1  Click on the *All* check box on the upper middle side of the **Maintain Batch** window

- 2  For any of the above described types of the data logs only some of the methods of creation can be used The following relationship exists between the **type** of the data log being created and the **method of creation**

For the type of	Data Log can be created by the method of
General and Readings	Cycle/Rout Group Junction

Bills	Cycle/Rout Group Customer* Consolidate
Payments	Cycle/Rout Group Customer* Consolidate Common Object

* In these cases instead of the *Junction* option the *Customer* option will be shown in the window

Step 3 *Specify the name of the document (data log) and the date of creation*

For this do the following



Click on the *Document* text box on the upper right side of the **Maintain Batch** window and type the name

Click on the *Date* text box below the *Document* text box and type the date

The date of creation is filled in automatically with the current date and verification is accomplished to prevent creation of a data log by an old date

Step 4 *Create the data log based on the criteria specified in the previous steps*

For creation of the data log do the following



Click on the **Create** button on the bottom part of the **Maintain Batch** window

When a *General* data log is created a data log is automatically added to the list of each type of data logs (*Readings, Bills, and Payments*)

Another method of creation of a data log is to use **30-Day Control** button. It allows to browse objects which within a 30-day period have not made any payments, have not received any bills, and for which no meter reading has been accomplished

For creation of the data log by this method do the following



Click on the **30-Day Control** button on the upper part of the **Maintain Batch** window

A **30-Day Control** window with the message "**Are you sure**" appears on the screen asking to confirm creation



Click on **Yes** button to confirm creation

Click on **No** button to reject creation



Press **Y** to confirm creation

Press **N** to reject creation

In the case creation is confirmed a new window appears on the screen It allows to specify the number of days within which no bills have been created, no readings or payments made

To specify the number of days do the following

-  Click on the upward little triangle on the right side of the **30+00** window to increase the number of days, or on the downward triangle to decrease it

The following options are available

- ◇ No Billing for customers for which no bills have been received by the corresponding customer
- ◇ No Reading for customers for which no reading of meters has been accomplished
- ◇ No Payment for the customers which have made no payments

To create a new document (data log) by this method do the following

-  1 Select an option by clicking on the corresponding option button
- 2 Click on the **Update** button to update the lists
- 3 Click on the *Document* text box and type the name
- 4 Click on the *Date* text box and type the date
- 5 Click on the **Create** button to create the document

A new General data log will be created

-  A data log created by **30-Day Control** method will be shown in the list only in the case if the **All** check box is active (a check mark is available in the box) on the **Maintain Batch** window

Working with Data Logs

Opening Data Logs

To work with any of the data logs you should open it first To open a data log do the following

-  1 Click on one of the *Type* option button to select the type of the data log
- 2 Click on the *Method of Creation* option button to select the method of creation of the data log
- 3 Click on the desired data log to select it
- 4 Click on the **Open** button to activate the selected data log (**Open** button is activated only if a data log is selected)

When a *General* data log is selected an **Open for** window will appear on the screen to define the action (*Readings* - for updating the meter readings, *Bills* - for calculating the bills, and *Payments* - for calculating the payment balance)

you want to accomplish with the data log being open. Click on the desired option.

In other cases the corresponding data log will open automatically.

Updating Meter Data

To update the meter data do the following:

-  1. Click on the *Readings* option on the *Type* option button on the **Maintain Batch** window.
2. Click on the *Method of Creation* option button to select the method.
3. Click on the desired data log to select it.
4. Click on the **Open** button to activate the selected data log (**Open** button is activated only if a data log is selected).

When the *Readings* option is selected a new window will appear on the screen allowing to enter new meter data.

-  When *Readings* is selected the items of the main menu on the top of your screen change. The menu now contains the following items: File, Post, DataEntry, Reports, System, Window and Help.

To select a customer on the list click on the desired name. The little dark triangle on the left side of the list will show the selected item on the list. The *New Reading* text box for the selected customer will enter into the editing mode and allow for typing the new meter reading.

The bottom part of the window will show detailed information on the customer name, type, tariff category, data on the meter, old meter reading, and so on.

-  The difference between the old and the new readings will be calculated and the meter data will be updated automatically.

To save the entered data do the following:

-  Click on the **Save** button.
-  Press **Enter** (↵).

To assign the entered data to the corresponding customers do the following:

-  Click on **Post** option in the menu.
-  Press **Alt+P**.

The **Post** window will appear on the screen asking to confirm assignment.

-  Click on **Yes** button to confirm post.
-  Click on **No** button to reject post.
-  Press **Y** to confirm post.

Press **N** to reject post

In the case of confirmation the system will accomplish update of the data on customers, and the program will return to the previous screen

When opening the same data log for the second time (after updating) the customer whose data have been posted will be marked with a + sign. Data market with this sign cannot be modified

Preparing Bills

To prepare the bills do the following

-  1 Click on the *Bills* option on the *Type* option button on the **Maintain Batch** window
- 2 Click on the *Method of Creation* option button to select the method
- 3 Click on the desired data log to select it
- 4 Click on the **Open** button to activate the selected data log (**Open** button is activated only if a data log is selected)

When the *Bills* option is selected a new window will appear on the screen showing the list of customers. Check marks in check boxes on the left side of each name show that there have been changes in data of the corresponding customer

-  Check boxes allow for editing, i.e. the user is free to put or take off the check marks in the boxes

To prepare the bills for the list do the following

-  Click on the **Bill** button

-  Press **Enter** (↵)

A new window will appear on the screen showing the list of customers, amount of used energy as of the specified date, the amount to be paid, and other data

-  When this window appears the items of the main menu on the top of your screen change. The menu now contains the following items: File, Show, DataEntry, Reports, System, Window and Help

-  All calculations will be made by the system automatically

There are two command buttons on the top of the window

- ◇ Brief, and
- ◇ Detailed

When *Brief* option is selected the screen will show the list of prepared bills. The *Detailed* option allows to show the bills the way as they will be sent to each customer. The drop-down list on the top of the screen (immediately

below the command buttons) contains the list of customers and allows to select a customer and view the bill for this customer on the screen

To print the brief or detailed lists of bills do the following



Click on the **Print** button () on the upper right side of the screen **check!!!**

To assign the updated data to the corresponding customers do the following



Click on **Print** icon () on the toolbar **check!!!**



Press Alt+P

The **Post** window (**check!!!**) will appear on the screen asking to confirm assignment



Click on **Yes** button to confirm post
Click on **No** button to reject post



Press **Y** to confirm post
Press **N** to reject post

In the case of confirmation the system will not only accomplish update of the data on customers, but also print all bills and reports

To view the reports on the prepared bills use the **Show** option of the menu. It allows to view any selected page of the reports, and to zoom it to the desired percent. This option is standard for all reports. (For more details on this option see **Part IV** section **Printing Reports**)

Calculating the New Payment Balance

To calculate the new payment balance do the following



- 1 Click on the *Payments* option on the *Type* option button on the **Maintain Batch** window
- 2 Click on the *Method of Creation* option button to select the method
- 3 Click on the desired data log to select it
- 4 Click on the **Open** button to activate the selected data log (**Open** button is activated only if a data log is selected)



When *Payments* is selected the items of the main menu on the top of your screen change. The menu now contains the following items: File, Post, DataEntry, Reports, System, Window and Help

When the *Payments* option is selected a new window will appear on the screen allowing to enter data on payments for a selected customer. The window will show the list of customers, current balances as of dates of the

previous payments, text boxes for the last payments made and corresponding text boxes for the new balances

- ☞ After the last payment data is entered the new balance will be calculated automatically

Maintaining Data on Everyday Payments

The system provides for an option to a maintain data log on everyday payments

To start working with data logs on everyday payments do the following



- Click on **DataEntry** in the main menu,
Click on **Everyday Payments** option in the **DataEntry** menu



- 1 Press Alt+D,
- 2 Press Alt+E ???

- ☞ When **Everyday Payments** is selected the items of the main menu on the top of your screen change (besides this, the title bar - top dark bar of the screen shows **Frame - (Payment Data Entry for Today)** The menu now contains the following items **File**, **P**ost, **E**dit, **D**ataEntry, **R**eports, **S**ystem, **W**indow and **H**elp

In this mode the screen is divided into four sections

- 1 Payment log of the current date (upper left section),
This section contains account numbers, addresses, current balances (amount due for the energy consumed), payments made on the current date and the new balances after the payments are made by customers
- 2 Previous payments (upper right section),
This section shows information on previous payments of the selected customer
- 3 Details on the Customer (lower left section),
This section contains details (name, type, tariff category, balance, account number, status, etc) on the selected customer
- 4 Presented invoices on payments made (lower right section)
This section shows information on invoices of payments made by the selected customer on the current date

Initially, the data log on payments made during the current date will be empty
To make an entry into the data log of everyday payments do the following



- Click on **Edit** of the **Payment Data Entry for Today** menu
Press Alt+E

The **Edit** submenu offers several actions you can select from These actions are

Enter New - adding a new record on payment,
Delete - deleting the existing record
Print - printing a report on the payments made on the current date

More in details these actions are described below in this section

1 **Enter New** To add a new record on a payment made do the following



Click on **Enter New** option of the **Edit** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Enter New** option of the **Edit** submenu and press Enter (↵)

An empty line appears on the bottom of the upper left side of the screen, and the upper left and right sides of the screen enter into editing mode

Enter information on the new payment made into the following fields

- ◇ "Account number" by default the account number is equal to 0, If the account number entered into this field does not correspond to the account number of any of the customers of the system a window will appear on the screen with the message "**xxxxxxx account number does not exist**" The system will require to enter a correct account number, otherwise the work with the system cannot be continued



Click on **OK**



Press **Enter** (↵)

Type the correct account number

If the entered account number already exists in the data log of everyday payments a window will appear on the screen with the message "**xxxxxxx account number already exists**" The system, however, will allow to continue working, since a customer can make more than payments per day When a correct account number is entered the lower left part of the screen (*Details on the customer*) will show data on the customer having the specified account number

- ◇ "Address", this field is filled in automatically, **check!!!**
- ◇ "Current balance", this field is filled in automatically,
- ◇ "Paid amount", this field should be filled in based on the produced invoices Click on the field and enter the amount,
- ◇ "New balance" new payment balance is calculated automatically

2 **Delete** If necessary you can remove any of the existing records on payments made To remove (delete) the selected entry do the following



Click on the desired entry to select it
Click on **Delete** of the **Edit** submenu

A window will appear on the screen asking to confirm delete



Click on **Yes** button to confirm delete
Click on **No** button to reject delete



Press **Y** to confirm delete
Press **N** to reject delete

3 **Print** If necessary you can print the data log on everyday payments To print the data log do the following



Click on **Print** of the **Edit** submenu

To save the entered information do the following



Click on the **Save** button

To assign the newly entered data to the customers of the system do the following



Click on **Post** of the **Payment Data Entry for Today** menu

To finish working with the data log on everyday payments do the following



Click on the **Close** button

Part III Maintaining and Updating Data Logs

Data logs allow to maintain data on meter readings, bills, payments, to update data on pre-specified intervals, and to make necessary calculations. There are several types of data logs you can create with the help of the program these types are called *General*, *Readings*, *Bills*, and *Payments*. *General* type data log includes the three other types of logs.

To start working with data logs do the following:



- Click on **DataEntry** in the main menu,
- Click on **DataLog** option in the **DataEntry** menu



- 1 Press Alt+D,
- 2 Press Alt+L ???

The **Maintain Batch** window will appear on the screen. This window allows to do the following actions:

- to browse the lists of the existing data logs based on the following criteria
 - ◊ type of the data log
 - ◊ readings of meters
 - ◊ bills to customers
 - ◊ payments made by customers
- to select the type of a new data log to be created,
- to select the method of creation of a new data log,
- to open an existing data log and make calculations

Maintaining Data Logs

Browsing the Existing Data Logs

To browse an existing data log it is necessary to select the type of the log. To select the type of a data log do the following:



- Click on the corresponding *Type* option button on the upper left side of the **Maintain Batch** window

After you select the type of the data log to browse, the **Maintain Batch** window will display the existing data logs of the selected type and the number of the logs of this type (bottom part of the window).

Creating New Data Logs

You can create new data logs by following the below described steps:

Step 1 *Select the type of the data log to be created (as described in the previous section **Browsing the Existing Data Logs**)*

Step 2 *Select the method of creation of the new data log*

The following methods of creation are available

◇ by a Cycle/Route

To create a data log for a cycle/route do the following

- 1  Click on the Cycle/Route option button on the upper middle side of the **Maintain Batch** window
- 2 Click on the cycle text box (next to the option button) and type the number of cycle
- 3 Click on the route text box (next to the route text box) and type the number of route

◇ by a Group or a Junction

To create a data log for a Group or a Junction do the following

- 1  Click on the Group or Junction option button on the upper middle side of the **Maintain Batch** window The **TreeView** window will appear on the screen
- 2 Select the desired group or junction on the *tree*

◇ by a Consolidated Customer

To create a data log for a Consolidated Customer do the following

- 1  Click on the Consolidated Customer option button on the upper middle side of the **Maintain Batch** window The **Consolidated** window will appear on the screen
- 2 Select the desired consolidated customer

◇ by a Common Object

To create a data log for a Common Object do the following

- 1  Click on the Common Object option button on the upper middle side of the **Maintain Batch** window The **???** window will appear on the screen
- 2 Select the desired common object

Another option is to create a data log based on all above mentioned criteria at once For this do the following

- 1  Click on the *All* check box on the upper middle side of the **Maintain Batch** window

- 2  For any of the above described types of the data logs only some of the methods of creation can be used The following relationship exists between the **type** of the data log being created and the **method of creation**

For the type of	Data Log can be created by the method of
General and Readings	Cycle/Rout Group Junction

Bills | Cycle/Rout
Group
Customer*
Consolidate

Payments | Cycle/Rout
Group
Customer*
Consolidate
Common Object

* In these cases instead of the *Junction* option the *Customer* option will be shown in the window

Step 3 Specify the name of the document (data log) and the date of creation

For this do the following



Click on the *Document* text box on the upper right side of the **Maintain Batch** window and type the name

Click on the *Date* text box below the *Document* text box and type the date

The date of creation is filled in automatically with the current date and verification is accomplished to prevent creation of a data log by an old date

Step 4 Create the data log based on the criteria specified in the previous steps

For creation of the data log do the following



Click on the **Create** button on the bottom part of the **Maintain Batch** window



When a *General* data log is created a data log is automatically added to the list of each type of data logs (*Readings, Bills, and Payments*)

Another method of creation of a data log is to use **30-Day Control** button It allows to browse objects which within a 30-day period have not made any payments, have not received any bills, and for which no meter reading has been accomplished

For creation of the data log by this method do the following



Click on the **30-Day Control** button on the upper part of the **Maintain Batch** window

A **30-Day Control** window with the message "**Are you sure**" appears on the screen asking to confirm creation



Click on **Yes** button to confirm creation
Click on **No** button to reject creation



Press **Y** to confirm creation
Press **N** to reject creation

In the case creation is confirmed a new window appears on the screen It allows to specify the number of days within which no bills have been created, no readings or payments made

To specify the number of days do the following

-  Click on the upward little triangle on the right side of the **30+00** window to increase the number of days, or on the downward triangle to decrease it

The following options are available

- ◇ No Billing for customers for which no bills have been received by the corresponding customer
- ◇ No Reading for customers for which no reading of meters has been accomplished
- ◇ No Payment for the customers which have made no payments

To create a new document (data log) by this method do the following

-  1 Select an option by clicking on the corresponding option button
- 2 Click on the **Update** button to update the lists
- 3 Click on the *Document* text box and type the name
- 4 Click on the *Date* text box and type the date
- 5 Click on the **Create** button to create the document

A new General data log will be created

-  A data log created by **30-Day Control** method will be shown in the list only in the case if the **All** check box is active (a check mark is available in the box) on the **Maintain Batch** window

Working with Data Logs

Opening Data Logs

To work with any of the data logs you should open it first To open a data log do the following

-  1 Click on one of the *Type* option button to select the type of the data log
- 2 Click on the *Method of Creation* option button to select the method of creation of the data log
- 3 Click on the desired data log to select it
- 4 Click on the **Open** button to activate the selected data log (**Open** button is activated only if a data log is selected)

When a *General* data log is selected an **Open for** window will appear on the screen to define the action (*Readings* - for updating the meter readings, *Bills* - for calculating the bills, and *Payments* - for calculating the payment balance)

you want to accomplish with the data log being open. Click on the desired option.

In other cases the corresponding data log will open automatically.

Updating Meter Data

To update the meter data do the following:

-  1 Click on the *Readings* option on the *Type* option button on the **Maintain Batch** window
- 2 Click on the *Method of Creation* option button to select the method
- 3 Click on the desired data log to select it
- 4 Click on the **Open** button to activate the selected data log (**Open** button is activated only if a data log is selected)

When the *Readings* option is selected a new window will appear on the screen allowing to enter new meter data.

-  When *Readings* is selected the items of the main menu on the top of your screen change. The menu now contains the following items: File, Post, DataEntry, Reports, System, Window and Help.

To select a customer on the list click on the desired name. The little dark triangle on the left side of the list will show the selected item on the list. The *New Reading* text box for the selected customer will enter into the editing mode and allow for typing the new meter reading.

The bottom part of the window will show detailed information on the customer name, type, tariff category, data on the meter, old meter reading, and so on.

-  The difference between the old and the new readings will be calculated and the meter data will be updated automatically.

To save the entered data do the following:

-  Click on the **Save** button.

-  Press **Enter** (↵).

To assign the entered data to the corresponding customers do the following:

-  Click on **Post** option in the menu.

-  Press **Alt+P**.

The **Post** window will appear on the screen asking to confirm assignment.

-  Click on **Yes** button to confirm post.

Click on **No** button to reject post.

-  Press **Y** to confirm post.

Press **N** to reject post

In the case of confirmation the system will accomplish update of the data on customers, and the program will return to the previous screen

When opening the same data log for the second time (after updating) the customer whose data have been posted will be marked with a + sign. Data marked with this sign cannot be modified

Preparing Bills

To prepare the bills do the following

-  1 Click on the *Bills* option on the *Type* option button on the **Maintain Batch** window
- 2 Click on the *Method of Creation* option button to select the method
- 3 Click on the desired data log to select it
- 4 Click on the **Open** button to activate the selected data log (**Open** button is activated only if a data log is selected)

When the *Bills* option is selected a new window will appear on the screen showing the list of customers. Check marks in check boxes on the left side of each name show that there have been changes in data of the corresponding customer

-  Check boxes allow for editing, i.e. the user is free to put or take off the check marks in the boxes

To prepare the bills for the list do the following

-  Click on the **Bill** button

-  Press **Enter** (↵)

A new window will appear on the screen showing the list of customers, amount of used energy as of the specified date, the amount to be paid, and other data

-  When this window appears the items of the main menu on the top of your screen change. The menu now contains the following items: File, Show, DataEntry, Reports, System, Window and Help

-  All calculations will be made by the system automatically

There are two command buttons on the top of the window

- ◇ Brief, and
- ◇ Detailed

When *Brief* option is selected the screen will show the list of prepared bills. The *Detailed* option allows to show the bills the way as they will be sent to each customer. The drop-down list on the top of the screen (immediately

below the command buttons) contains the list of customers and allows to select a customer and view the bill for this customer on the screen

To print the brief or detailed lists of bills do the following



Click on the **Print** button () on the upper right side of the screen **check!!!**

To assign the updated data to the corresponding customers do the following



Click on **Print** icon () on the toolbar **check!!!**



Press Alt+P

The **Post** window (**check!!!**) will appear on the screen asking to confirm assignment



Click on **Yes** button to confirm post

Click on **No** button to reject post



Press **Y** to confirm post

Press **N** to reject post

In the case of confirmation the system will not only accomplish update of the data on customers, but also print all bills and reports

To view the reports on the prepared bills use the **Show** option of the menu. It allows to view any selected page of the reports, and to zoom it to the desired percent. This option is standard for all reports. (For more details on this option see **Part IV** section **Printing Reports**)

Calculating the New Payment Balance

To calculate the new payment balance do the following



1 Click on the *Payments* option on the *Type* option button on the **Maintain Batch** window

2 Click on the *Method of Creation* option button to select the method

3 Click on the desired data log to select it

4 Click on the **Open** button to activate the selected data log (**Open** button is activated only if a data log is selected)



When *Payments* is selected the items of the main menu on the top of your screen change. The menu now contains the following items: **F**ile, **P**ost, **D**ataEntry, **R**eports, **S**ystem, **W**indow and **H**elp

When the *Payments* option is selected a new window will appear on the screen allowing to enter data on payments for a selected customer. The window will show the list of customers, current balances as of dates of the

previous payments, text boxes for the last payments made and corresponding text boxes for the new balances

- ☞ After the last payment data is entered the new balance will be calculated automatically

Maintaining Data on Everyday Payments

The system provides for an option to maintain data log on everyday payments

To start working with data logs on everyday payments do the following



- Click on **DataEntry** in the main menu,
Click on **Everyday Payments** option in the **DataEntry** menu



- 1 Press Alt+D,
- 2 Press Alt+E ???



When **Everyday Payments** is selected the items of the main menu on the top of your screen change (besides this, the title bar - top dark bar of the screen shows **Frame - (Payment Data Entry for Today)**) The menu now contains the following items File, Post, Edit, DataEntry, Reports, System, Window and Help

In this mode the screen is divided into four sections

- 1 Payment log of the current date (upper left section),
This section contains account numbers, addresses, current balances (amount due for the energy consumed), payments made on the current date and the new balances after the payments are made by customers
- 2 Previous payments (upper right section),
This section shows information on previous payments of the selected customer
- 3 Details on the Customer (lower left section),
This section contains details (name, type, tariff category, balance, account number, status, etc) on the selected customer
- 4 Presented invoices on payments made (lower right section)
This section shows information on invoices of payments made by the selected customer on the current date

Initially, the data log on payments made during the current date will be empty
To make an entry into the data log of everyday payments do the following



- Click on **Edit** of the **Payment Data Entry for Today** menu
Press Alt+E

The **Edit** submenu offers several actions you can select from. These actions are

- Enter New** - adding a new record on payment,
- Delete** - deleting the existing record
- Print** - printing a report on the payments made on the current date

More in details these actions are described below in this section

1 **Enter New** To add a new record on a payment made do the following



Click on **Enter New** option of the **Edit** submenu



Use UpArrow (↑) or DownArrow (↓) to select **Enter New** option of the **Edit** submenu and press Enter (↵)

An empty line appears on the bottom of the upper left side of the screen, and the upper left and right sides of the screen enter into editing mode

Enter information on the new payment made into the following fields

- ◇ "Account number" by default the account number is equal to 0, If the account number entered into this field does not correspond to the account number of any of the customers of the system, a window will appear on the screen with the message "**xxxxxxx account number does not exist**". The system will require to enter a correct account number, otherwise the work with the system cannot be continued



Click on **OK**



Press **Enter** (↵)

Type the correct account number

If the entered account number already exists in the data log of everyday payments a window will appear on the screen with the message "**xxxxxxx account number already exists**". The system, however, will allow to continue working, since a customer can make more than payments per day. When a correct account number is entered the lower left part of the screen (*Details on the customer*) will show data on the customer having the specified account number

- ◇ "Address", this field is filled in automatically, **check!!!**
- ◇ "Current balance", this field is filled in automatically,
- ◇ "Paid amount", this field should be filled in based on the produced invoices. Click on the field and enter the amount,
- ◇ "New balance" new payment balance is calculated automatically

2 **Delete** If necessary you can remove any of the existing records on payments made To remove (delete) the selected entry do the following



Click on the desired entry to select it
Click on **Delete** of the **Edit** submenu

A window will appear on the screen asking to confirm delete



Click on **Yes** button to confirm delete
Click on **No** button to reject delete



Press **Y** to confirm delete
Press **N** to reject delete

3 **Print** If necessary you can print the data log on everyday payments To print the data log do the following



Click on **Print** of the **Edit** submenu

To save the entered information do the following



Click on the **Save** button

To assign the newly entered data to the customers of the system do the following



Click on **Post** of the **Payment Data Entry for Today** menu

To finish working with the data log on everyday payments do the following



Click on the **Close** button

Part IV Creating and Printing Reports

This part describes how to create various types of reports on the components of the system, which are required by various departments of your company (section **Creating Reports**) and how to print these reports (section **Printing Reports**)

To start working with reports do the following



Click on **Reports** option in the main menu



Press Alt+R

The **Reports** menu offers several types of reports you can select from
These are

- Rates Reports -** creating and printing reports on the current rates, discount categories and VAT percent
- Location Report -** creating and printing reports on various address components (more in details on addressing components see **Part 2 Entering and Modifying Data**)
- Meter Testing Report -** creating and printing reports on the meters which have not been tested (no meter reading) during a specified period
- Classifiers Report -** **check!!!**
- Checking Reports -** creating and printing reports on the customers who have received no bills, made no payments and for which no meter reading has been accomplished during a specified period
- Group Junction Reports -** creating and printing reports on (1) activities related to each cycle, (2) calculations acts and consumption, (3) list of debts and disconnections, and (4) summary reports by tariffs for each group junction
- Group Junction Reports for Agents -** creating and printing reports on (1) contracts and consumption, and (2) summary reports by tariffs for the agents of each group junction
- Group Junction Reports for Responsible Persons -** creating and printing reports on the responsible persons of each group junction

More in details these actions are described below in this section. Once you have selected one of the options you can create and print the corresponding report (some of the reports are created automatically, as soon as you select the option, and no additional action is required to be taken by the user of the system)

Creating Reports

This section describes to how to create various types of reports

Rates Report

To create a rates report do the following



Click on **Rates** option in the Reports submenu



Use UpArrow (↑) or DownArrow (↓) to select **Rates** option and press Enter (↵)

The **Rates Report** window appears on the screen. It has three buttons on the left upper part of the screen: *Rates*, *Discount* and *VAT*. These options allow to create and print reports on the current rates, on the existing discount categories and the current VAT percent.

a) To create a report on the current energy rates do the following



Click on **Rates** button on the left upper side of the screen

Initially, the screen will show no data on the rates. To get the data do the following



Click on **Update** button on the right upper side of the screen

The screen will show data on the existing rate categories, periods during which each category will be valid, etc.

To get data on the rates for a specific period do the following



Click on **All** check box below the *Rates* button to make it inactive (i.e. no check mark in the box) and fill in the beginning and ending dates for the desired period into the text boxes on right side of the check box.

The screen will show data on the existing rate categories during the determined period.

b) To create a report on the existing discount categories do the following



Click on **Discount** button on the left upper side of the screen

Initially, the screen will show no data on the discount categories To get the data do the following



Click on **Update** button on the right upper side of the screen

To get data on the discounts for a specific period to the following



Click on **All** check box below the *Discount* button to make it inactive (i e no check mark in the box) and fill in the beginning and ending dates for the desired period into the text boxes on right side of the check box

The screen will show data on the existing discount categories during the determined period

c) To create a report on the existing VAT percent do the following



Click on **VAT** button on the left upper side of the screen

Initially, the screen will show no data on the VAT percent To get the data do the following



Click on **Update** button on the right upper side of the screen

To get data on the VAT percent for a specific period to the following



Click on **All** check box below the *VAT* button to make it inactive (i e no check mark in the box) and fill in the beginning and ending dates for the desired period into the text boxes on right side of the check box

The screen will show data on the current VAT percent during the determined period

Location Report

To create a report on a specific location (for instance, the list of communities in a Marz or the list of streets in a specific community) do the following



Click on **Location** option in the Reports submenu



Use UpArrow (↑) or DownArrow (↓) to select **Location** option and press Enter (↵)

The **Location Report** window appears on the screen. It has five drop-down lists on the upper part of the screen (corresponding to the five addressing components of the system described in details in **Part 2 Entering and Modifying Data**)

To create a report on a location do the following

-  1 Click on the corresponding drop-down lists on the upper part of the screen to select the desired location
 -  2 Click on **Update** button on the right upper side of the screen
-  To create a location report at least one of the drop-down lists should be filled in

To bring the drop-down lists to the initial condition (i.e. to empty them) do the following

-  Click with the mouse right button on **Location** drop-down lists

Meter Testing Report

To create a report on the meters which have not been tested during a specified period (number of months) do the following

-  Click on **Meter Testing** option in the Reports submenu
-  Use UpArrow (↑) or DownArrow (↓) to select **Meter Testing** option and press Enter (↵)

The **Meter Testing Report** window appears on the screen

To get the data on meters that have not been tested during a specified period do the following

-  1 Specify the period by clicking on the upward triangle (to increase the number of months) or the downward triangle (to decrease the number of months) on the right side of the small text box near the **Update** button on the upper right side of the screen
- 2 Get data by clicking on **Update** button

 More in details on updating meter testing data see **Part 2 Entering and Modifying Data**

Classifiers Report
check!!!

Checking Reports

To create a report on the customers who have not received bill, whose meters have not been tested or who have not made any payments during a specified period do the following



Click on **Checking** option in the Reports submenu



Use UpArrow (↑) or DownArrow (↓) to select **Checking** option and press Enter (↵)

The **Checking Report** window appears on the screen. It has three buttons on the left upper part of the screen: *No Bill*, *No Reading* and *No Payment*

a) To create a report on the customers who have not received bills during a specified period do the following



- 1 Specify the period by clicking on the upward triangle (to increase the number of months) or the downward triangle (to decrease the number of months) on the right side of the small text box on the upper left part of the screen
- 2 Click on **No Bill** button

b) To create a report on the customers whose meters have not tested during a specified period do the following



- 1 Specify the period by clicking on the upward triangle (to increase the number of months) or the downward triangle (to decrease the number of months) on the right side of the small text box on the upper left part of the screen
- 2 Click on **No Reading** button

c) To create a report on the customers who have not made any payment during a specified period do the following



- 1 Specify the period by clicking on the upward triangle (to increase the number of months) or the downward triangle (to decrease the number of months) on the right side of the small text box on the upper left part of the screen
- 2 Click on **No Payment** button

Group Junction Reports

To create reports on group junctions do the following



Click on **Group Junctions** option in the Reports submenu



Use UpArrow (↑) or DownArrow (↓) to select **Group Junctions** option and press Enter (↵)

The **Group Junctions** submenu has a * on its right side which means it offers several actions you can select from These are

- ◇ List
- ◇ Calculations Act/Consumption
- ◇ Debts/Disconnections
- ◇ Summary Report by Tariffs

a) **List** To create a report on the activities of group junctions for a specified date do the following



- 1 Click on the * of the Group Junction submenu
- 2 Click on **List** option
- 3 Specify the date in the text box in the upper right part of the screen
- 4 Click on the **Update** button

On this report, activities for the current day will be shown on the diagonal (in red color), activities that should have been accomplished during the previous days will be shown above the diagonal (in blue color) and activities for the next days will be shown below diagonal (in black color)

b) **Calculations Act/Consumption** To create a calculations act or a report on consumption do the following



- 1 Click on the * of the Group Junction submenu
- 2 Click on **Calculations Act/Consumption** option

The **Calculations Act/Consumption Report** window appears on the screen It has two buttons on the left upper part of the screen *Calculations Act*, and *Consumption*

To create a calculations act do the following



- 1 Click on the **Calculations Act** button on the left upper part of the screen
- 2 Click on the drop-down list on the upper right part of the screen to specify the cycle for which the calculations act will be created

The system will try to find groups which belong to this cycle If there are not groups for this cycle a message will appear on the screen "**There are no groups to select**" Click on **OK** button

If there are groups belonging to this cycle, drop-down list will appear on the screen and you can select the desired group

- ☞ Once you select the group, the report will be created automatically. If you want to print a report on all groups of the cycle use Print All icon () More in details on printing options see next section **Printing Reports**

To create a consumption report do the following

-  1 Click on the **Consumption** button on the left upper part of the screen
- 2 Click on the drop-down list on the upper right part of the screen to select a customer for which the consumption report will be created

c) **Debts/Disconnections** To create a report on the debts and disconnections of the specified group junctions do the following

-  1 Click on the * of the Group Junction submenu
- 2 Click on **Debts/Disconnections** option

The **Debts/Disconnections Report** window appears on the screen. It has two buttons on the left upper part of the screen: *Debts of the Cycle*, and *Debts of the Group*

To create a report on the debts of the cycle do the following

-  Click on the drop-down list on the upper right part of the screen to specify the cycle for which the calculations will be created

- ☞ The list of debts of customers of the cycle will be created automatically

If there are not groups for this cycle the "Debts of the Group" button will remain inactive

If there are groups in the cycle, you can get the list of individual customers of any of the group. To do this select the desired group. The Debts of the Group card will become active

- ☞ The report on customers who are subject to disconnection will be created automatically. If you want to print a report on all customers subject to disconnection use Print All icon () More in details on printing options see next section **Printing Reports**

The list of customers subject to disconnection will be created based on pre-specified deviations. (More in details on deviations see **Part 2 Entering and Modifying Data**)

d) **Summary Report by Tariffs** To create a summary report on the customers, expected payments, tariff categories, and so on, do the following

-  1 Click on the * of the Group Junction submenu

- 2 Click on **Summary Report by Tariffs** option

The **Summary Report by Tariffs Report** window appears on the screen

To create a summary report on a specified customer do the following

-  1 Click on the drop-down list on the upper right part of the screen to select a customer
- 2 Click on the **By Tariffs** button

Group Junction Reports for Agents

To create reports on agents do the following

-  Click on **Agent** option in the Reports submenu
-  Use UpArrow (↑) or DownArrow (↓) to select **Agent** option and press Enter (↵)

The **Agent** submenu has a ▶ on its right side which means it offers two options you can select from These are

- ◇ Consumption
- ◇ Summary Report by Tariffs

a) **Consumption** To create a report on consumption do the following

-  1 Click on the ▶ of the Agent submenu
- 2 Click on **Consumption** option

A window appears on the screen having two buttons on the left upper part of the screen *Contracts*, and *Consumption*

To create a report on the contracts of the specified agent do the following

-  1 Click on the drop-down list on the upper right part of the screen to select the agent
- 2 Click on the **Contracts** button

To create a report on the consumption of energy of the specified agent do the following

-  1 Click on the drop-down list on the upper right part of the screen to select the agent
- 2 Click on the **Consumption** button
- 3 Click on the dates text boxes and fill in the dates (beginning and end of the desired period)
- 4 Click on the **Update** button

b) **Summary Report by Tariffs** To create a summary report on the customers, expected payments, tariff categories, and so on, for the specified agent do the following



- 1 Click on the * of the Agent submenu
- 2 Click on **Summary Report by Tariffs** option

The **Summary Report by Tariffs Report** window appears on the screen
To create a summary report on customers of a specified agent do the following



- 1 Click on the drop-down list on the upper right part of the screen to select an agent
- 2 Click on the **By Tariffs** button

Group Junction Reports for Responsible Persons check!!!

Printing Reports

Once you have created a report you can print it by using the menu options or special icons which you can see every time you work with reports, i.e. printing options are standard for all types of reports

To print a report do the following



- 1 Click on **File** option in the main menu
- 2 Click on the **Print** option in the File submenu



- 1 Press Alt+F
- 2 Use UpArrow (↑) or DownArrow (↓) to select **Print** option and press Enter (↵)



You can print a report also by clicking on the Printer icon () on the left side of the screen

To select the type of the printer do the following



- 1 Click on **File** option in the main menu
- 2 Click on the **Printer** option in the File submenu



- 1 Press Alt+F
- 2 Use UpArrow (↑) or DownArrow (↓) to select **Printer** option and press Enter (↵)

The **Printer Setup** window will appear on the screen and will allow not only to select the type of the printer but also to select the size of the paper, to change the fonts and other setup options by clicking on the **Setup** button on the bottom part of the Printer Setup window

Print Preview option allows to preview the created report on the screen before printing it To preview the report do the following



Click on **Preview** option in the main menu



Press Alt+???

The Preview submenu allows to preview the first and last pages, previous and next pages, as well as to zoom down and up the picture, to show and hide the ruler

To select the page to preview do the following



Click on **First (Previous, Next, Last) Page** option in the main menu



Use UpArrow (↑) or DownArrow (↓) to select **First (Previous, Next, Last) Page** option and press Enter (↵)



You can select the page to preview also by clicking on the following icons on the left side of the screen

First Page



Previous Page



Next Page



Last Page



To view the picture on the screen in a certain percent of its natural size do the following



- 1 Click on **View** option in the Preview submenu
- 2 Click on the % of the View option to select the percent to increase or decrease the picture on the screen



- 1 Use UpArrow (↑) or DownArrow (↓) to select **View** option in the Preview submenu and press Enter (↵)
- 2 Use UpArrow (↑) or DownArrow (↓) to select **View** option in the Preview submenu and press Enter (↵)

Example you can view the picture on the screen in 20% or 80% of its natural size By default the picture will be shown 100% size, i.e its natural size

To zoom down or zoom up the picture do the following



Click on **Zoom Down** or **Zoom Up** option in the Preview submenu



Use UpArrow (↑) or DownArrow (↓) to select **Zoom Down** or **Zoom Up** option in the Preview submenu and press Enter (↵)

- ☞ You can zoom down or zoom up the picture also by clicking on the Zoom Down () or Zoom Up () icons on the left side of the screen

To show and hide the ruler do the following



Click on **Ruler** option in the Preview submenu



Use UpArrow (↑) or DownArrow (↓) to select **Ruler** option in the Preview submenu and press Enter (↵)

To exit from the print window do the following



Click on **Ruler** option in the Preview submenu

- ☞ You can exit from the print window also by clicking on the Exit icon () on the left side of the screen

Appendices

Working with Menus

Immediately below program window's title bar is a menu bar. The menu bar lists the names of one or more *menus* (lists of related commands). For example the **TreeView** menu bar contains the following items File, Edit, DataEntry Reports, System, Window and Help

Opening a Menu

To open a menu, do the following



Click on the menu name



Press Alt+X, where X is the key that represents the desired menu item. (Each menu item has an underlined character that represents the menu. For instance, press Alt+H to get on-line help)

When you open a menu, a list of commands appears, as shown in Figure 1

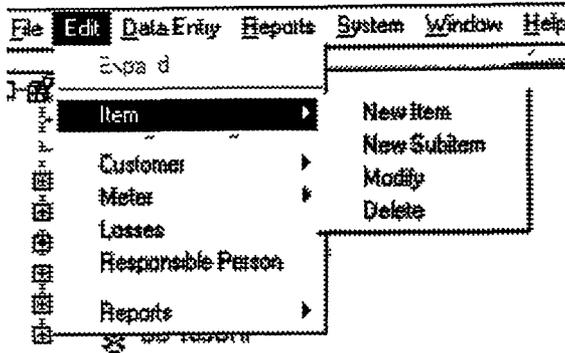


Figure 1

Selecting a Command

To select a command from a command menu, follow these steps

-  Click on the command
-  Press X, where X is the letter underlined in the command. If the command has no underlined letter, use the arrow keys to highlight the command, and then press **Enter**

Closing a Menu

To close a menu without selecting a command, click on a location outside of the menu, or press **Esc** key

Working with Dialog Boxes

A dialog box is a window that frequently provides information and always requests a user response. Dialog boxes can contain several fields of information, as described in the following paragraphs. To select a field within a dialog box, do the following:

-  Click on the desired field
-  Press Alt+X, where X is the letter underlined in the field name. Use the Tab key to advance from one dialog box field to the next. Use Shift+Tab to return to the previous field.

Command buttons - A command button directs a dialog box to perform a specific action.

For instance, as shown in Figure 2, to save the changes, click on the Save button, to reject changes, click on the Cancel button.



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Figure 2

Text box - A text box lets you type in a text string as shown in Figure 3. Sometimes a text box contains default text. To enter different text, simply type in the new text, which replaces the old text automatically. To make minor changes to the default text, press the left arrow key, and edit the text using the Backspace, Delete, and arrow keys.



Figure 3

If there are more than one text boxes on the screen you can switch from one text box to another by doing the following:

-  Click on the desired text box
-  Use **Tab** key to switch from one text box to another

List box - A list box provides you with a list of options. If the list contains more options than the box can display, the box contains a scroll bar. To choose an option, do the following:

-  Double click on the option
-  Use the arrow keys to select the option, and then press Enter

Drop-down list - Dialog boxes use drop-down lists when there's not enough room for a list box (Figure 4). To drop down the list, do the following:

-  Double click on the downward pointing arrow at the right of the list
-  Select the drop-down list, and then press Alt+Down arrow

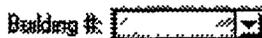


Figure 4

Option button - When the options you can select from are mutually exclusive - that is, when you are allowed to select only one of them at a time - they are grouped together as *option buttons*. Option buttons appear as circles with text next to them (see Figure 5). One option in each group (the currently selected

2/2

option) has a darkened circle. Gray or dimmed options are inappropriate for the current situation and cannot be selected.

To select an option button, do the following:



Click on the option button.



Press Alt+X, where X is the letter underlined in the option name. If the option name doesn't have an underlined letter, press the Tab key until one of the option names is encircled by a dotted line. Use the arrow keys to move the darkened circle to the desired option.

Junction Type

- Custom
- Group Junction
- Auto-generate Customers

Figure 5

Check box - Options that can be individually turned on or off are displayed as check boxes (see Figure 6). When a check box is empty, the option is off. A in the check box indicates that the option is selected. Gray or dimmed options are inappropriate for the current situation and cannot be selected.

To select or deselect a check box:



Click on the check box.



Press Alt+X, where X is the letter underlined in the check box name. If the check box name doesn't have an underlined letter, press the Tab key until the option is encircled by a dotted line and then press the Spacebar.

Active

Figure 6

Scrolling for Information

When a window contains more information than can fit in a window, vertical and horizontal scroll bars appear along the window's right and bottom edges, as shown in Figure 7. Within the scroll bars, a *scroll box* moves to reflect your relative position within the document.

To use scroll bars, do the following



- To move a short distance, click on the up and down or left and right arrows at each end of the scroll bar
- To move up by approximately one screen, click on the vertical scroll bar above the scroll box. To move down by approximately one screen, click on the vertical scroll bar below the scroll box. To move to the left by approximately one screen, click on the horizontal scroll bar to the left of the scroll box. To move to the right by approximately one screen, click on the horizontal scroll bar to the right of the scroll box
- To move to a specific location, drag the scroll box along the scroll bar to quickly scan through the window's contents



Use the arrow keys or the PgUp and PgDn keys to scroll through the window's contents

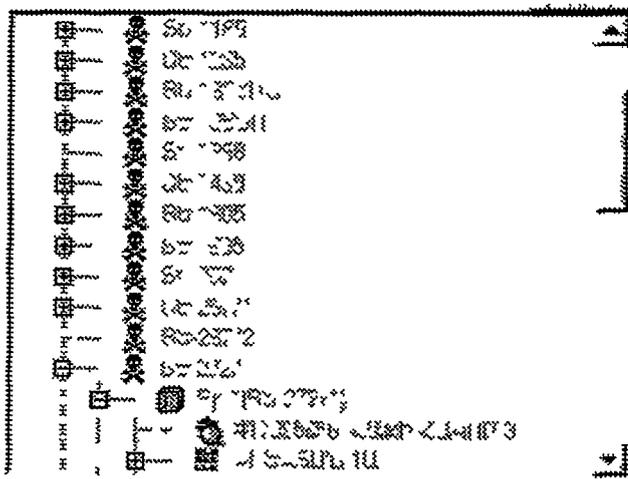


Figure 7

Working with Windows

The program provides you with several ways to increase and decrease the size of a window

Minimizing a Window

To minimize a window - that is, to reduce it to an icon - do the following



Click on the Minimize button () in the upper right corner of the window



For an application window, press Alt+Spacebar, N
 For a document or group window, press Alt+Hyphen, N

Restoring a Minimized Window

To restore a window - that is, to expand an icon to a window - do the following



Double-click on the icon



For an icon on the desktop, press Alt+Spacebar, R
 For a document or group icon, press Alt+Hyphen, R

Maximizing a Window

To maximize a window - that is, to enlarge it to the fullest possible size - do the following



Click on the Maximize button () in the upper right corner of the window



For an application window, press Alt+Spacebar, X ???
 For a document or group window, press Alt+Hyphen, X

Closing a Window

When you close an application window, the corresponding application stops. If you have made changes and have not yet saved the changes on a disk, a dialog box appears asking whether you want to save the changes.

To close a window, do the following



Click on the Close button () in the upper right corner of the window



For an application window, press Alt+Spacebar, C
 For a document or group window, press Alt+Hyphen, C

Tiling or Cascading Windows

The Window option of the main menu has several commands that help you view several windows on the screen.

The *Tile* command changes the size and position of each window so that each is fully visible. The *Tile* command has two versions: *Tile Vertical*, which arranges the windows one on top of another, and *Tile Horizontal*, which arranges the windows side by side.

The *Layer* command

check!!!

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The *Cascade* command arranges windows one on top of another, leaving the title bar of each window uncovered

Arranging icons

As you work with the program, icons sometimes become disorganized on the screen. To tidy up the arrangement of icons use *Arrange Icons* options in the *Window* submenu

As you work with the program, icons sometimes become disorganized on the screen. To tidy up the arrangement of icons use *Arrange Icons* options in the *Window* submenu