PN ACD-448

ENERGY AUDIT
AO IVANOVSKAYA BREWING COMPANY
IVANOVO
RUSSIA

Prepared for

US AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D C 20253

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SECTION 1

EXECUTIVE SUMMARY

Cost-effective energy efficiency measures can result in large savings for an industrial enterprise thus releasing money spent on energy for other important uses by the management of the enterprise These cost savings can help to make the enterprise stronger, more productive and more competitive

One of the programs sponsored by the United States Agency for International Development (USAID) is the Energy Efficiency and Market Reform Project for Russia (Contract No CCN-0020-C-00-152-00) As part of this project, a team of engineers from East West Energy Agency in Moscow, led by Hagler Bailly carried out site activities at the AO Ivanovskaya Brewing Company facility in the Ivanovo Region Their objectives were to work with the enterprise personnel and technical personnel from Ivenergo and to identify opportunities for improvements in energy efficiency of the various industrial processes at Ivanovskaya Brewing

During the site visit, a vast amount of data was collected on the operating characteristics of the facility, the equipment installed, and the energy usage Metering and measurements were done at key locations to determine the energy usage levels and operating efficiencies of the equipment All of this information was then analyzed by the energy efficiency experts and evaluated for areas of potential improvements These evaluations resulted in some recommendations for implementing cost-effective modifications to improve the energy efficiency of the enterprise

Observations and measurements from the on-site energy audit revealed the following

- Appropriate monitoring of the energy consumption, by production type, has not been established thus making it more difficult for plant personnel to develop energy-saving strategies

- The specific consumption of energy per unit of output is higher than similar western European breweries The specific heat consumption at the facility is 118 Mcal/gallon while European companies consume 35-40 Mcal/gallon Electricity consumption is 22 Kwh/gallon compared to 9-15 Kwh/gallon in Europe, and water consumption is 15 liters/liter of beer compared to 5-9 liters/liter of beer in European companies

- There is a considerable amount of heat losses due to steam leakage and boiler condensate not returned to the cycle The annual losses are estimated to comprise 2,170 tons of conditional fuel

- Some steam pipes are in unsatisfactory condition It was observed that water is not deaerated in the boiler room and no condensate outlets are installed, which accelerates corrosion and results in deterioration of the pipes, thus resulting in leaks and steam losses Some pipeline locks are not properly sealed, thus leading to steam losses

Based on the recommendations, the estimated overall savings for all energy efficiency measures for Ivanovskaya Brewing Company is 706 2 million rubles per year Table 1 is a summary of these recommendations The table shows each recommended measure and includes the estimated costs and benefits, together with the simple payback for implementing these

The management of the Ivanovskaya Brewing Company should review these energy efficiency measures and the costs and benefits of each A decision on the measures to be implemented and the determination of the financing for these should occur as soon as possible Following that, the specifications for equipment and the business plans for implementation will be written These will be

used in determining the financing arrangements Once approved, the energy efficiency measures will be procured and installed

Table 1
Recommended Energy Efficiency Measures
for
AO Ivanovskaya Brewing

No	Description of Measure	Units Of Measure	Annual Energy Savings	Annual Savings in M Rubles	Cost of Measure M Rubles	Simple Payback Period
1	Disconnect unloaded transformers	Mwh	35 0	9 0	-	-
2	Malt drver operation optimization	Tsf Mwh	121 12 51 3	44 4	12	3 months
3	Elimination of inflows in the economizer	Tsf	120 0	30 7	2	< 1 month
4	Thermal Insulation Repair	Tsf	175	45	4	2 months
5	Condensate recovery and return	Tsf	1 612	419	46	2 months
6	Sectionalizing of compressed air network	Mwh Kw	84 1 40	51 71	45	10 months
7	Installation of ball valves	Mwh	210 24	52 77	45	10 months
8	Installation of electric metering	Kw	70	53 6	10	3 months
Total for all Measures		Tsf Mwh Kw	2 028 12 380 4 110	706 18	119	2 months

Section 2

Introduction

The purpose of conducting the energy audit at AO Ivanovskaya Brewing Company was to collect and analyze appropriate data and information about the enterprise and the energy usages within the facility then use this information to make recommendations on cost-effective measures to increase the efficiency level of the plant The process involved the collection of historical use of electricity, gas, coal and other fuels and their associated costs It also involved some metering and measurements of key energy using equipment at the facility This was done using the most current and sophisticated energy auditing equipment available

Section 3
Enterprise Description and Energy Consumption Analysis

In order to better understand the overall situation with the enterprise and it's energy use, it is important to look at the characteristics, operations, processes and energy requirements This section provides the description of the enterprise, followed by a description of the facility itself, and then a description of the energy uses and requirements

A Enterprise Description

The brewery of Ivanovo city was put into operation in 1973 Presently, it produces 4 1 million of Gliters of beer and soda annually The brewery work shop reconstruction is scheduled for the period of February 1997 through March 1998 to increase the company's productivity to 6 million Gliters per year

The company is supplied with the following energy resources gas, electricity and water

Gas consumption is measured by a commercial gas-meter DCC-710 with replaceable membranes for summer and winter periods

Electricity is transmitted from 2 sources to 4 transformer substations, commercial consumption is monitored by 3 active power meters (DPTZ - 2 units CAZY -I670M) and 2 reactive power meters (CP4Y-I673M - 2 units) installed in the high-voltage circuit

The 1996 consumption by the company were 7707 tcf of gas, 9004 thousand kWh of electric power and 614 m^3 of water The energy cost share in the cost of production is 11% The structure of energy resources consumption in monetary units is shown on Figure 3 1 The share of payments for electricity amounted to 49% and 31% for fuel This signifies that the search of new ways to minimize electricity consumption should become a priority for the company

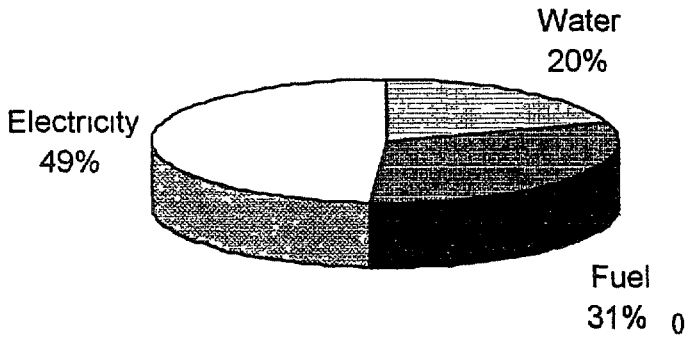


Figure 3 1 Monetary Structure of energy resources consumption in 1996

Table 3 1
Energy Provider Prices in 1996

Energy Use	Months											
	1	2	3	4	5	6	7	8	9	10	11	12
Fuel (Monthly Rubles)	257 151	263 940	269 852	280 212	280 212	247 892	247 892	251 858	254 880	260 232	260 232	260 232
Electricity												
Price of total electricity consumed (R/kwh)	174	174	174	209	209	209	209	209	261	261	251	251
Price of stated power consumed during peak hours (R/Kw)	48 200	48 200	48 200	51 314	51 314	51 314	51 314	51 314	68 134	68 134	63 753	63 753
Water												
Price of water consumed (R/m3)	937	929	929	1220	120	1220	1220	1220	1451	1445	1445	1445
Price of water outletting (R/m3)	627	622	622	916	916	916	916	916	1039	1037	1037	1037

Payments for energy providers are made in compliance with the prices shown in table 3 1

The payment structure for electricity shows that not only total electricity consumption should be lowered but also the stated electric power consumption during peak hours (See Figure 3 2)

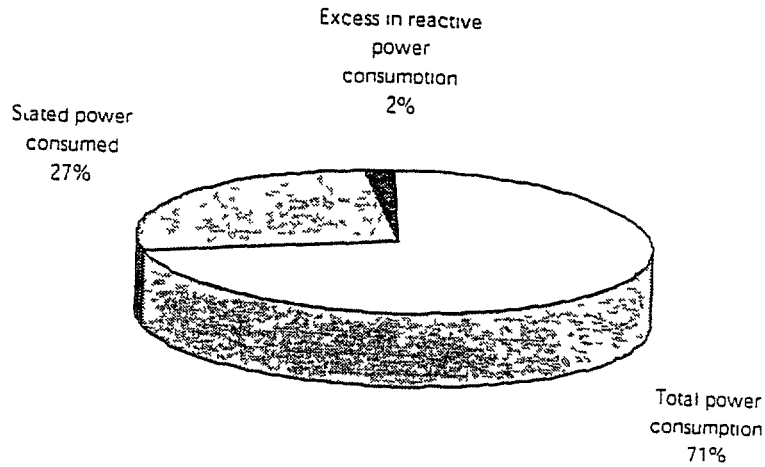


Figure 3 2 Electric Energy consumption payment structure in 1996

Since January 1, 1997 there were new charges introduced in the amount of 163 rubles per kWh for energy consumption during night hours (11 p m – 5 a m) Special multi-tariff meters should be installed to pay in accordance to the new charges

Medium pressure natural gas is used in the boiler-room for heat production for technological needs as well as for heating and hot water supply needs

Four boilers of DKVR-10/13 type are installed in the boiler-room, one of them being reserve 2 boilers are operated in winter time and only one boiler – in summer Produced steam is used as a heat carrier in the technological processes of brewery, in malt dryers' calorifiers and plenum ventilation system, in bottle washing machines and the pasteurizing unit Pipeline water, warmed by steam in the circuit heater is used for heating and hot water supply

The primary energy source for the technological equipment is electricity (380 V), electricity is also used for lighting (220 V) and for compressed air and cold production

Compressed air is produced at an air compressor station equipped with 2 compressors of the B27/9 type One of them is engaged 24 hours per day, the other one is in reserve Compressed air is used for barbotage of water-seed pulp in the soakage chamber as well as for "Alfaquattro" labeling machine operation, for the bottling-sealing machinery, for the product transportation and for the pneumatic machinery

Refrigeration is produced by 8 screw-piston ammonium compressor stations 1-2 units of AY-200 type are operating in winter while up to 7 machines are used in summer time Refrigeration is used for the creation of necessary microclimate in the rooms for malt germination, in the lager-fermentation room, at the second stage of ale-wort cooling, for beer cooling in the pasteurizer, in the soft drink workshop

Processes and Technology

Brewing beer consists of the following stages

1 Receipt, refining, sorting and storage of grain
2 Malt production
3 Refining of malt
4 Boiling of ale-wort
5 Fermentation
6 Bottling
7 Warehousing and distribution

Receipt, refining, sorting and storage of grain

The grain supply is unloaded from rail coaches into mechanical bunkers with a mechanical shovel Primary grain refining is performed in air-strainer separators Refined grain is transported by a bucket-elevator into the silage tower to be stored The storage capacity provides an eight month supply There is a facility provided for barley airing from silage to silage Secondary grain refining is performed in separators after which it is conveyed to bunkers After secondary refining barley is sorted at screening machines Assorted grain is distributed into bunkers I and II category barley gets weighed and is then transferred to the barley malt production building for 2 month maturation The III category barley is sold to customers

Malt production

Barley is passed from a grain-storage into the entrance bunker, then it is transported into a washing bowl where it is washed After a day, the grain from the washing bowl is pumped into a soakage bowl Upon the end of soakage, the grain containing water is passed to malt-germination chamber of the "mobile seedbed" type

Malt germination is performed in long-shaped boxes The under-strainer space of the box is divided into chambers, which are supplied with conditioned air by a ventilator The germinating grain is periodically shifted by a bucket mixer, moving it along the box towards the unloading side Raking is performed 1-2 times a day New seed malt is daily transferred for drying

Malt drying is conducted in two shaft dryers of the LCXA-10 type While drying, the water content is decreased form 45% to 3% which ensures tolerance during extended storage The dryer operation consists of loading shafts, a case with drying shafts, unloading shafts and unloading gear Drying is run by air which is warmed in a steam calorifier Air circulates from a number of ventilators supplying air from the bottom and drawing it from the top

Table 3 2

Technical properties of malt dryer LCXA-10

No	Property	Unit	Value
1	Dry malt capacity	kg/hour	440
		t/day	10-13
2	Hourly heat consumption		
	Summer +20□C	Mjoules	1277
	Winter -20□C	Mjoules	1901
3	Duration of malt drying	Hours	15-17
4	Electricity consumption	KWh	69
5	Heat consumption per 1 ton of dry malt		2640
6	Electricity consumption per 1 ton of dry malt	kWh/ton	4 4

Table 3 3
Standard features of malt production

No	Feature	Unit	Value
1	Specific steam consumption for technological needs	t/t	2 3
2	Specific water consumption for technological needs	M^3/t	8 9
3	Specific compressed air consumption for technological needs	Nm^3/t	160

Refining, finishing and storage of malt

Dry hot malt, dispatched from the dryers is passed to bud beating machines Mature malt is cleaned from dust and dirt in the finishing machine and gets transferred to a bunker Having been weighed, malt is put into a malt grinder Granulated malt is passed into a nipping bowl Nipped malt is pumped into a filtering bowl for filtration Washing water is collected in a tank where it is warmed up to the temperature of 80°C and used as needed in nipping units

Ale-wort boiling

Transparent wort is supplied to a boiling bowl where it is conditioned towards standard density and alcohol concentration Hot wort is pumped from the boiling bowl into a sedimentation bowl from which it is pumped into a separator for clarification Then it is cooled down to the temperature of +6°C in a membrane type of cooler Cooled malt is passed in to a yeast generator of uninterrupted operation with cooling jacket where yeast is supplied

Fermentation

Yeast is constantly supplied into fermentation tanks Fermentation takes four days at a temperature of 6-10°C New beer is cooled in membrane coolers down to 1-4°C after separation of yeast and then is passed to the tanks for further fermentation Final fermentation takes 14-15 days at a temperature of 0-1°C

After final fermentation, the beer is pumped into press-filters Light beer is cooled in a membrane cooler down to 1 ^{0}C and is collected in light beer collectors, from where it is passed further for bottling

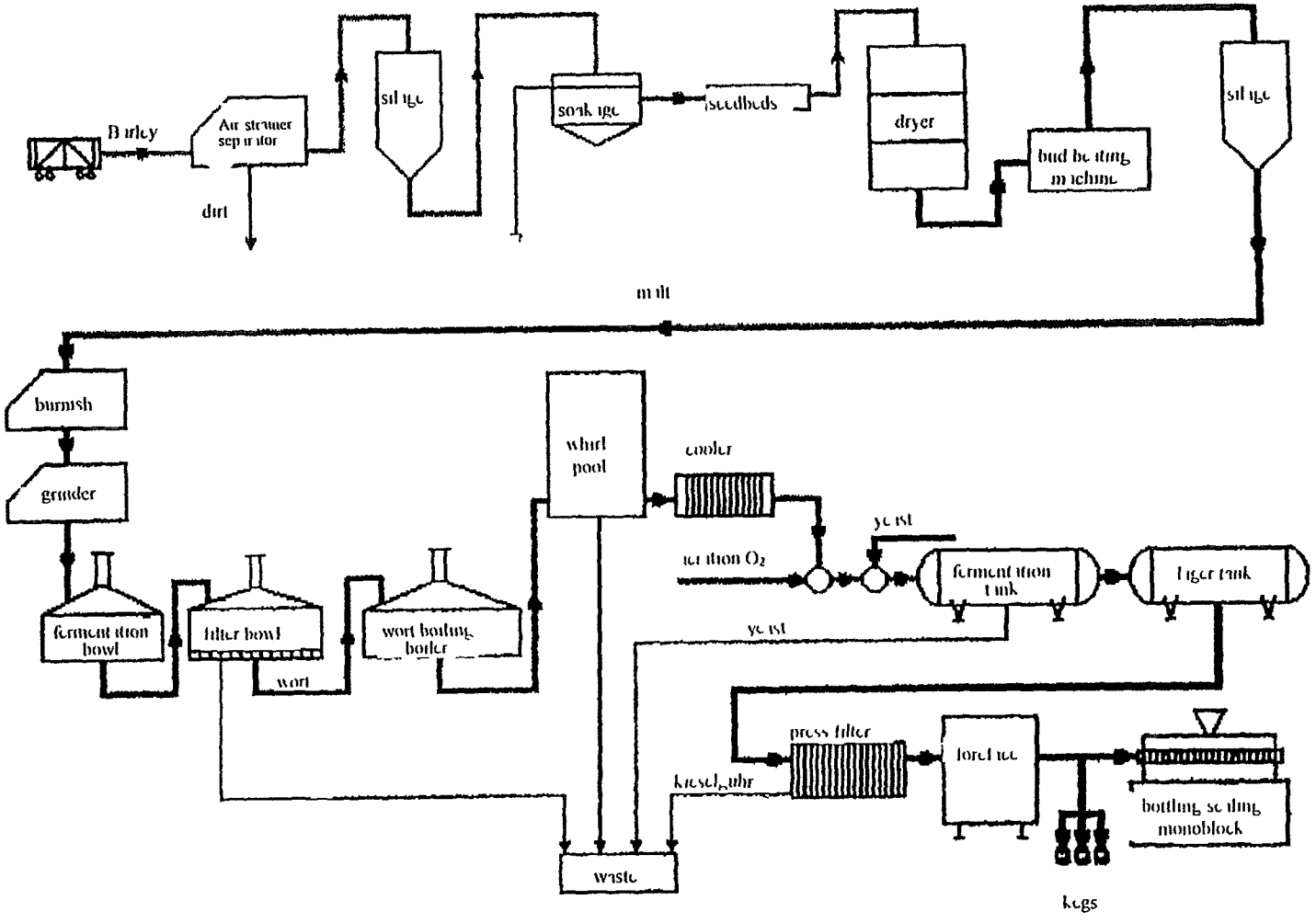
Bottling

Beer is bottled in 0 5 liter bottles There are two bottling lines installed at the plant with the total productivity of 26400 bottles per hour The line consists of automated equipment for removing bottles from the boxes, bottle washing machine, bottling-sealing machine, defect screening machine, labeling machine "Alfaquattro", a machine for packing bottles into boxes and other auxiliary equipment There is a light screen installed at each line for bottle cleanliness checking The line is fully automated and all the machines are connected by a single drink bottling conveyer The bottles are moved by membrane transporters and the boxes by chain transporters

Product storage and distribution

Electric loaders are used for transportation, warehousing and loading/unloading at the warehouse Boxes are transported on platforms by 20 units Cases of beer are shipped to wholesalers by trucks

There is also a fizzy water production workshop Energy consumption is negligible in this shop, thus this production line is not taken into consideration in this report


Barley
Air stoner separator
dirt
silage
soaking
steedbeds
dryer
bud beating machine
silage
malt
burnish
grinder
fermentation bowl
filter bowl
wort
wort boiling boiler
whirl pool
cooler
yeast
aeration O_2
fermentation tank
liger tank
yeast
press filter
kieselguhr
forced ice
bottling sealing monoblock
waste
kegs

C Energy Consumption

Furnace and boiler fuel

Furnace and boiler fuel (gas) is used in the boiler house for steam production in 3 boilers of DKVR-10/13 type with the capacity of 10 tons of steam per hour each Working steam pressure is 7 atm Fuel oil is used as reserve fuel but fuel oil has not been adopted a practice

The last tuning of boilers was performed in 1996 and the main standard technical properties are shown in table 3 4

Table 3 4
Boiler optimal operation mode properties

No	Property	Boiler No 3	Boiler No 4	Boiler No 2
1	Capacity, tons/hour	10	10	10
2	T_{water}, ^0C			
	before economizer	55-60	55-60	60-65
	after economizer	110	108	107
3	Boiler exhaust composition, %			
	CO_2	10 1	9 5	9 6
	CO	0	0	0
4	Exhaust composition after economizer, %			
	CO_2	9 4	8 7	8 8
	CO	0	0	0
5	Temperature of released gas, T, ^0C			
	From boiler	282	276	275
	From economizer	126	133	124
6	Excess air factor, a			
	After boiler	1 15	1 21	1 2
	After economizer	1 22	1 31	1 3
7	Gross efficiency, n brutto, %	92 9	92 2	92 7

The general scheme of the boiler house is provided in Appendix 1

The boilers are supplied with tap water which has passed through a system of chemical water purification and a deaerator where it gets warmed to 55-65 ^0C instead of the standard temperature of 102-104 ^0C This indicates that the deaerators are in a non working condition and virtually serve as mere water tanks The temperature in the deaerators is not raised to the required level because there is no deaerated water cooler installed since the pumps do not work in temperatures exceeding 100 ^0C Deaeration of the water supply is absolutely critical because it removes dissolved oxygen and carbon dioxide from the water The presence of the latter leads to accelerated pipe corrosion and hole and knot formation

Technical testing of the boiling house was conducted from 12 to 23 of June and during that period only one boiler was functioning (N3) Boiler work properties were registered in only those modes in which the boiler was operating during measure taking

Released gas parameters from the boiler and the economizer were measured by a gas analyzer "BACHARAH"-300, while the temperature of envelope was taken by a contact thermometer "OMEGA" Released gas features for different modes of operation are shown in table 5 1 2, the boiler surface temperature was within the allowed range During one of the measure taking there was carbon

dioxide high concentration fixed in released gas after the boiler – 1521 ppm Fuel and air supply to the boiler is handled manually, lack of controls does not allow the regulation of the burning mode with the required preciseness During the on-site work, the operator increased the air inflow only after he was told about excess concentration of carbon dioxide (see modes 1, 2, table 3 5) For prompt burning process control there should be a released gas composition control system introduced which will allow monitoring of the released gas parameters in different operation modes and hence, optimize the boilers' operation

Table 3 5
Boiler's operation features during technical examination

No	Feature	Operation mode		Required by mode scheme	Operation mode	Required by mode scheme	After economizer	Required by mode scheme
		1	2					
1	Gas pressure at gas burner kgforce m^2	100	100	100	75	75		
2	Air pressure at burner	35	50	47	35	36	97	97
3	Boiler□s productivity t hour	97	97	97	87	87	105	133
4	Released gas temperature ^{0}C	332	338	258	279	258	123	48
5	O-	18	36	46	4	46	48	94
6	CO	107	97	92	95	92	2	0
7	CO ppm	1521	8	0	0	0	23	127
8	Air excess factor	108	119	125	121	125		
9	Losses associated with released gas	129	142	492	11	492		

Analysis of the released gas parameters after the economizer signifies that there is a considerable amount of inleakage along the economizer's gas track The air excess factor was 2 3 against the required value of 1 27, oxygen content was 12 3%, while it should have been 4 2% according the mode scheme A 0 1% increase of leakage leads to the fuel consumption increase of 0 5% Over consumption of fuel would amount to 5% or about 120 tons of conditional fuel per year It is recommended to restore and compact the economizer's envelope and its gas track to eliminate the above mentioned over consumption of fuel

Heat Energy

Brewing Shop

Brewing shop exercises brewing in four-set brewing plant Steam with 2 5 atm working pressure is

recommended to restore and compact the economizer's envelope and its gas track to eliminate the above mentioned over consumption of fuel

Heat Energy

Brewing Shop

Brewing shop exercises brewing in four-set brewing plant Steam with 2 5 atm working pressure is used as heat carrier Condensate removal line houses condensate taps, fitted with bypass lines The presence of bypass lines indicates that condensate taps are not in proper working order Waste steam is tapped via bypasses Condensate with temperature around 120°C does not return to the cycle of boiler room It is dumped into the sewage system The brewing shop houses a power point with collector to supply steam under 4 5 ata pressure for process purposes Thermal insulation is disturbed or absent at certain areas of pipelines

Table 3 6 presents calculation of losses, related to lack of insulation on pipelines Their value is 1,070 Gcal per year or 175 tons of conventional fuel per year

Table 3 6
Calculation of Heat Losses from Non-insulated Pipelines

No	Pipe diameter, millimeters	Pipe length, meters	Losses for 1 meter, Wt per meter	Heat losses, joules per second	Annual heat losses, Gcal per year
1	200 mm inlet	3 5	1 500	5 250	39 5
2	300 mm collector	2	2 200	4 400	33 1
3	200 mm tap	1 5	1 500	2 250	16 9
4	200 mm tap	1 5	1 500	2 250	16 9
5	250 mm collector	2 5	1 800	4 500	33 6
6	150 mm pipeline	50	1 200	60 000	448 5
7	100 mm pipeline	20	800	16,000	119 6
8	80 mm pipeline	8 5	700	5,950	44 5
9	50 mm pipeline	55	500	22 500	168 2
10	40 mm pipeline	50	400	20 000	149 5
	Total				1 070 3

Production of malt

The malt drying is performed in two LSKHA-10 drying columns by air, heated in steam heaters 2-3 ata steam is delivered to heaters Condensate taps are not installed We should point out that in accordance with the certificate 3 atm steam should be delivered to heater of the drying column to provide for drying conditions, that is, lack of heat may be connected with insufficient temperature of supplied steam In winter time condensate after passing through heaters of drying columns is delivered to heating of water, used for soaking of grain In summer, the steam and condensate mixture is dumped into sewage system

Drying columns are operating virtually uninterruptedly The plant staff indicated that last year the drying columns stopped twice in February and in March Just one column operated in April A shop log-book to account the time of drying columns' operation is not run, therefore it is impossible to analyze their operating mode, to determine time of stops for repair, hot idle time, etc At the same time, the analysis of malt production volume in 1996 shows that average daily load of drying columns was often lower than nominal production output of 20 tons per day According to [1], LSKHA-10 drying column production output is 10-13 tons per day Losses of steam, connected with insufficient loading of drying columns' production capacity, constituted 1,154 tons (See Table 3 7), or, converted into fuel, accounted for 175 tons of conventional fuel tons per year To save heat energy and electric power the loading of drying columns should become nominal Instruments to account heat energy consumption for drying columns should be introduced in order to determine specific consumption of heat for drying

Use of passing steam and condensate enthalpy is also a reserve to save heat energy To this end it is necessary to install a condensate tap after the heater and to construct a condensate line We propose to add one more section for heaters if heat is insufficient

Table 3 7

Calculation of Steam Losses Resulting from the Malt Dryers Underloading

Month	1	2	3	4	5	6	7	8	9	10	11	12	Year
Malt production tons	546	326	459	237	512	511	488	511	521	589	532	605	
Number of working days	31	24	29	30	31	30	30	31	30	31	30	31	
Daily production output, tons per day	17 6	13 6	15 8	7 9	16 5	17 0	15 7	16 5	17 4	19 0	17 7	19 5	
Loading of production capacity	0 88	0 68	0 79	0 79	0 83	0 85	0 79	0 82	0 87	0 95	0 89	0 98	
Excess consumption of steam due to insufficient loading of drying columns tons per month	79	161	128	115	115	95	140	116	84	33	72	16	1 154

Yeast shop

The shop utilizes 2 atm working pressure steam on three heat exchangers in steam jackets The equipment is fitted with unserviceable floating condensate taps Condensate is removed via bypass lines According to information from plant staff, these condensate taps are unreliable in service During operation they caused a hazard of water accumulation and hydraulic strikes and therefore they were disconnected The potential reason of the existing situation may be insufficient pressure differential between steam and condensate lines, hampering opening of condensate tap valve Condensate lines from three plants are connected with common condensate line It results in pressure increase and, consequently, reduced pressure differential between steam and condensate

lines

Incoming Ventilation, Heating, and Hot Water Supply

Incoming ventilation heaters are installed in the brewing shop, refrigerating and compressing shop, bottling shop, crockery shop, soft drinks shop, and in forwarding service

Plant staff reported that heaters are fitted with condensate taps There was no possibility to verify efficiency of their operations since equipment was turned off during instrumentation survey

System water, heated by steam in steam heater, is used for demands of heating and hot water supply The temperature schedule is 85/75 C A small difference of temperatures between direct and reverse water results in increased volume of water in the system and increased electric power consumption by pumps Electric power consumption for water transportation in the heating system is in proportion to the cube of specific water consumption per 1 Gcal of supplied heat

Attention should be paid to the poor condition of steam lines steaming of locking accessories, flange joints and threaded connections, and the presence of gas pockets Steam losses may be observed According to experts' assessment they account for around 1 kg of steam per hour or around 0 8 tons of conventional fuel per year Steaming through 1-2 mm hole accounts for the loss of around 3-5 kg of steam per hour pr 2-4 tons of conventional fuel tons per year

An attempt was made during the instrumentation survey of the enterprise to determine the quantity of condensate, generated in the course of wort production Measurements were performed with the help of Flyuxus ultrasonic liquid flowmeter at the only one fitted with condensate tap line without bypass Attempts to conduct measurements in several points of the above-mentioned line were unsuccessful The instrument is designed for measurement of liquid consumption Obviously, the pipeline tapped steam and condensate mixture

Condensate taps are not installed on the heaters of drying columns in the malt production Condensate taps in the yeast shop are not operating Therefore full condensation of steam does not occur in all indicated points

The function of the condensate tap is to prevent presence of passing steam in pipeline behind the heat exchanger since efficiency of heating in such a case is sharply declining due to unused hidden heat of steam generation It accounts for 517 CCal per kg of steam in our case Moreover, hydraulic strikes hazard increases in case when steam is transported together with condensate Condensate also facilitates elimination of air from steam and condensate Air is disturbing heat transfer Carbon dioxide and oxygen, being dissolved in water, results in corrosion of pipelines

Installation of condensate pipeline to boiler house is planned during reconstruction of brewing compartment

The enterprise has no instruments to measure the steam consumption in different process areas, therefore it is impossible to provide a precise assessment of heat and condensate losses During the period of the instrumentation survey steam was used only for process needs The hot water boiler was turned off Therefore it is impossible to precisely determine steam consumption for hot water

supply Further calculations adopted this figure as 10% Steam production in summer months was determined to evaluate losses of heat energy and steam and condensate mixture The production of steam in boiler house was roughly assessed in accordance with the fuel consumption during corresponding period of last year The average monthly generation of steam, excluding supply to side users and hot water supply, accounted for 3,870 tons of fuel, that is, a corresponding quantity of steam and condensate mixture generated The share of passing steam in condensate may be tentatively evaluated by formula

$$X_{PS} = Sx\sqrt{P}x100\,0,\ \%$$

Where Xps is the share of passing steam in condensate, %,
S = 0 2 – empirical coefficient,
P – steam pressure in the plant

The average monthly losses of heat under the share of passing steam around 305 will constitute 950 Gcal per month or 11,400 Gcal per year This value is equal to 2,170 conventional fuel tons per year if converted into conventional fuel Moreover, attention should be paid to the following fact Water that underwent chemical cleaning is dumped into sewage system In order to save heat condensate taps should be installed in indicated points (9 pieces) Return of condensate to the boiler house cycle should be organized

Electric Power

Composition of Electric Power Consumption

Volumes of production output and power consumption for brewery have seasonal nature In so ding seasonal change of electric power consumption for the enterprise in general corresponds to the change of beer production volumes (See Figure 3 4)

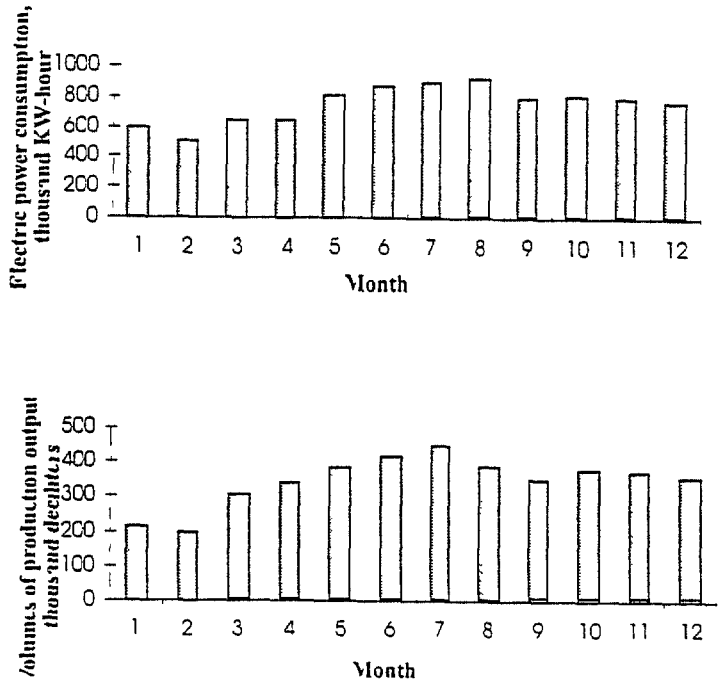


Figure 3 4 Seasonal change of electric power consumption and production output in 1996

The plants electric supply circuit allows to assign main power consuming sections to substations Electricity meters are installed on each transformer but accounting of electric power consumption with their help does not take place Accounting of electric power consumption is exercised with the help of commercial electricity meters, installed from the high voltage side Four transformer substations are supplying electric power to the enterprise

KTP-4 (Transformer substation) delivers power to air and cooling compressing stations, as well as to carbon dioxide shop (low power-consuming production) Substation houses two transformers 1,000 kVA each

KPT-3 powers brewing shop Substation has 1 630 kVA transformer

KTP-2 delivers power to boiler house and soft drinks shop (low power-consuming production) Two transformers of 250 kVA capacity each are mounted on the substation

KTP-1 is supplying power to wart production and beer bottling shop Substation has two transformers of 630 kVA each One of transformers is in reserve

We determined the composition of electric power consumption by main production divisions on the basis of plant=s reports for 1996 (See Figure 5 3 2)

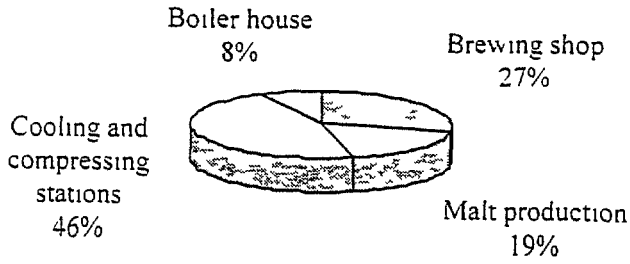


Figure 3 5 Composition of electric power consumption in 1996

It follows from the data on Figure 3 5 that cooling and air compressing stations are the most significant consumers of electric power In so doing the highest power-consuming equipment is installed on cooling station

Freezing Compressing Station

Cooling compressing station operates on one or two AU-200 cooling plants are all year long Plant=s production of cold is 0 4 Gcal per hour Determined power is 75 kW Plants provides for cooling of beer prior to and after filtration and before bottling, cooling of water for yeast compartment and pure culture compartment, cooling of beer in Fixterm pasteurizers, wart cooling at the second stage of wart cooler, cooling of syrup and water in soft drinks shop, tapping of fermentation heat from fermentation tanks

Four more cooling plants are switched to 24-hour operations in summer time Among these plants are AU-400 compressors (2 pieces), A-410-71, and A-280 plants Determined electric drive power for each of plants is 160 kW Total production output of cold is 1 49 Gcal per hour One of two A-410-7-3 cooling plants is also operating during daytime in summer Production output of cold for the plant is 0 82 Gcal per hour Determined motor power is 200 kW Additional production of cold in summer is required for creation of necessary microclimate in the apartment of fermentation and lager shop and in malt germinating room

Brines, supplied to three systems, are serving as cooling agents The temperature in the first system may vary from -4EC to -15EC, depending on the schedule of operations and season The system is intended for removal of fermentation heat from fermentation tanks All other users of cold are fed from the second system The temperature in the second system varies from -8EC to -15EC

Energy and Elite electric power detectors were mounted on main power consuming plants from June 23 to 25, during integrated plant=s instrumentation survey, in order to determine mode of operations, power consumption profile and changes of cos Recording of indications took place every 15 minutes Measurement results in tabular form are presented in Appendix No 1 They are presented in graphic form below (See Figures 3 3 - 3 5)

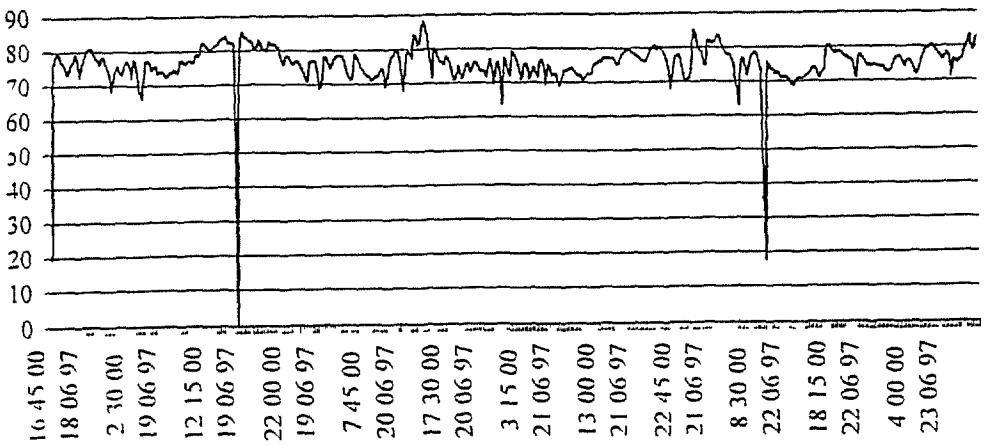


Figure 3 6 Active Power consumption profile for cooling compressor No 2

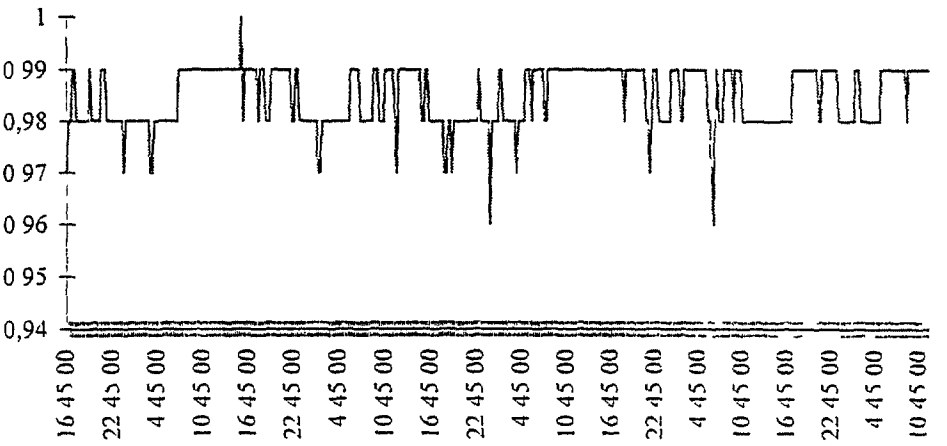


Figure 3 7 Power Factor changes profile for cooling compressor No 2

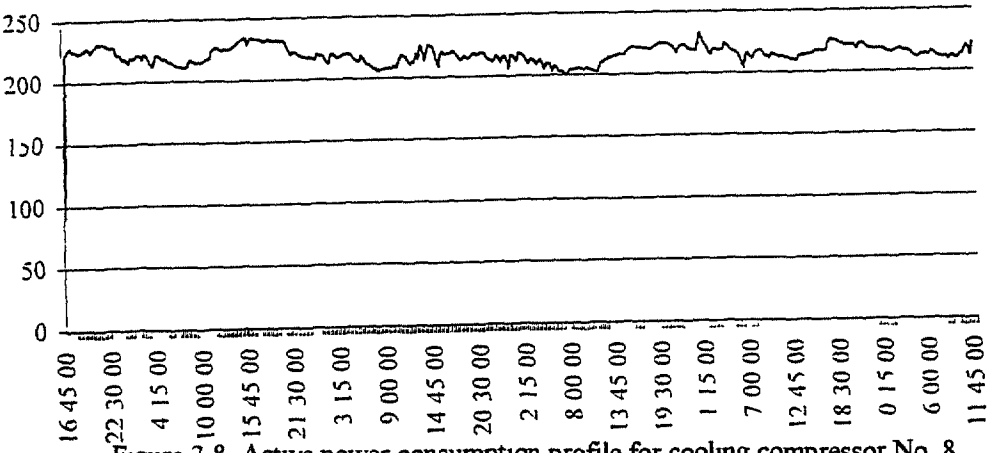


Figure 3 8 Active power consumption profile for cooling compressor No 8

Cooling compressing plants No 2 and No 8 operated without stops and failures during the observation period The consumed active power of compressor No 8 (Pinstalled = 200 kW) amounted to 200 – 240 kW under cos o equal to 0 98 0 0 99 The consumed active power of compressor No 2 (Pinstalled = 75 kW) constituted 75 – 88 kW under cos o equal to 0 96 – 0 99

The absence of thermal insulation on certain parts of the cold pipelines is obviously causing refrigeration losses

Air Compressing Station

The air compressing station houses two B27/9 compressors One of them is in stand-by mode The compressors are equipped with two-speed motors The installed capacity of the motors is 160/90 kW One of the compressors operates 24 hours per day without interruption When 7 atm of operating pressure is reached, the compressors enters its idle run mode The compressed air circulates and the motor consumes power at 90 kW When the pressure in the compressed air receivers drops due to air distribution to users, or due to air losses in the mains, the compressor enters the working mode at the first speed The first speed corresponds to 160 kW of electric power consumption The time of the compressor idle run operations is not limited The starting of the compressor requires a large starting torque and the plant personnel indicates that high working pressure is necessary to meet the demands of all uses

Energy and Elite electric power meters were installed from June 18 to June 23 to determine the mode of operation, power consumption profile and changes in power factor Readings were taken for each 15-minute time period The measurements are shown in tabular form in Appendix No 2 They are shown below in graphical form

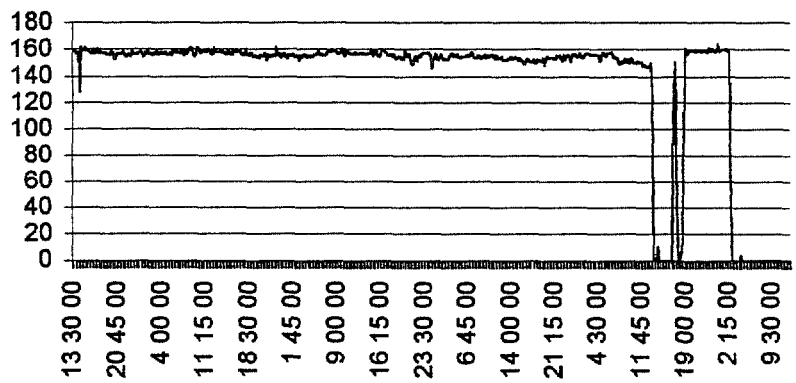


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Figure 3 9 Active power consumption profile for air compressor No 2

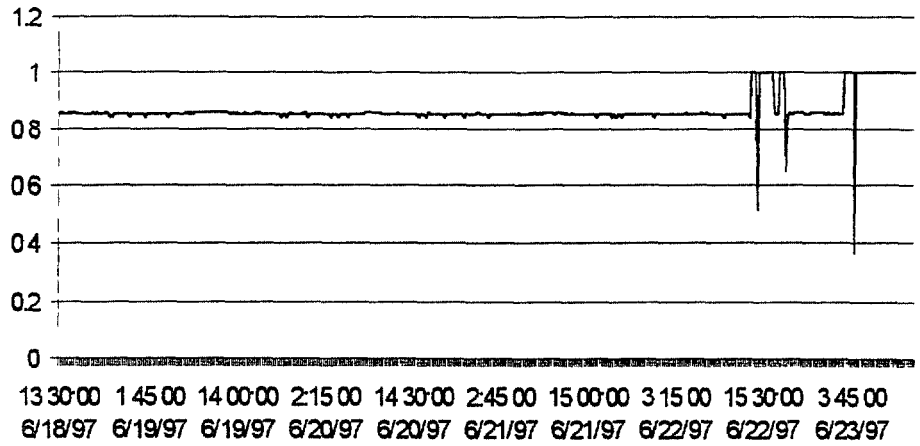

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Figure 3 10 Cos changes profile for air compressor No 2

Compressor No 2 during the period of survey was switched off for 3 5 hours on June 22, 1997 Compressor No 1 operated during that time Compressors are operating in turn, without switching-off on first speed and without transfer to idle run mode (second speed) Consumed active power ranges from 149 to 163 kW Cos has the value of 0 85

Uses for the compressor include

1 Fermentation and lager shop (reduces)
2 Bottling
One (1) Pasteurizer
Two (2) Bottling and packaging machines Working pressure is 1 5 ata, G = 20 m3 per hour
One (1) labeling machine Alfaquattro Working pressure is 4 ata, G = 1 m3 per hour
3 Wart production
Bubbling of grain during soaking
4 Soft drinks shop
Two (2) Bottling and packaging machines Working pressure is 1 5 ata, G = 20 m3 per hour
5 Pneumatic tools

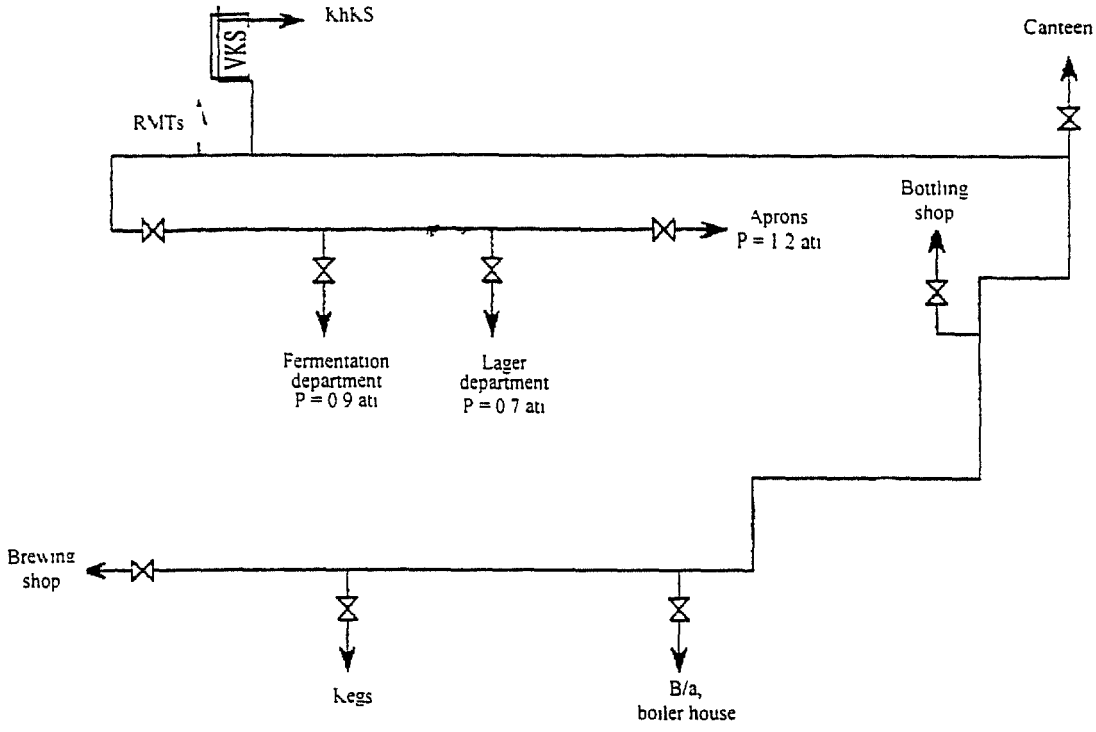

Figure 3 11 Schematic diagram of compressed air production and distribution

The above-mentioned data show that compressed air pressure, required by users, varies from 1 5 to 4 atm We propose to introduce sectioning of users to reduce electric power consumption for compressed air production Annual electric power saving will be around 90,000 kW-hour Moreover, the sectioning system of compressed air users will enable to align and reduce maximal values of enterprise loading schedules by timely switching and disconnection of mains It will allow a reduction in the reported enterprise power approximately by 50 kW Total saving from the introduction of compressed air users sectioning will amount to around 30 million Rubles per annum We propose to replace locking devices by ball cocks to reduce leakage of compressed air The saving from proposed measure may be tentatively estimated as 300,000 kW-hour per year

It seems reasonable after implementation of above-mentioned measures to consider the issue of minimal working pressure to provide for normal operation of compressed air users Reduced pressure of generated compressed air by 1 atmosphere will reduce electric power consumption by 6-7% Reduced pressure will also result in smaller number of leaks along the main

Malt Production

Two LSKHA-10 malt drying columns with 10 tons per day production output each are the main users of power at this section The analysis of malt production in 1996 showed that average daily loads of malt drying columns in certain months do not correspond to nominal level (See Table 3 8)

We determined electric power demand for malt drying columns operations in accordance with the

following formula

$$W = P_{determined} \times Kn \times T, \text{ kW hour}$$

Where Pdetermined – determined power of fans, kW
Kn – normative coefficient of power use,
T – time of fans' operation, hours per month

The specific electric power consumption is determined as the ratio between design electric power consumption and actual volume of production output, tons per month

5,837 tons of malt were produced in 1996 Such quantity of malt may be processed in 292 days under nominal loading of drying columns It follows that it is necessary to make a schedule of drying columns' operation more dense, to increase production up to 100%, and to switch columns off for two summer months Proposed measures will allow to reduce consumption of cold for conditioning of malt germination room In so doing electric power consumption will be reduced 51 3 Mwh per year or 13 million Rubles per year

Table 3 8
Calculation of electric power losses due to insufficient loading of drying columns

Months	1	2	3	4	5	6	7	8	9	10	11	12	Year
Malt tons	546	326	459	237	512	511	488	511	521	589	532	605	
Number of days	31	24	29	30	31	30	31	31	30	31	30	31	
Tons per day	17 61	13 58	15 83	7 90	16 52	17 03	15 74	16 48	17 37	19 00	17 73	19 52	
Loading	0 88	0 68	0 79	0 79	0 83	0 85	0 79	0 82	0 87	0 95	0 89	0 98	
Excess consumption of electric power due to insufficient loading of drying columns kW hour per month	4 484	9 307	7 380	13024	6 545	5 393	7 999	6 605	4 787	1 879	4 121	909	51 263

Analysis of Transformer Substations' Operation

Losses of active power in transformers are one of items of electric power losses at the enterprise Loading of transformers was studied during one week to determine this value Survey took place from March 11, 1997, to March 16, 1997 Table 3 9 presents the calculation of transformers' load

Table 3 9
Load of transformers from March 11 to March 16
Maximal load hour is from 19 00 to 21 00

No	Name of production	No of transformer	Nominal power of transformer, kVA	Active load, P, kW	Full load, kVA	Coefficient of transformer's load, Kz
	March 11, 1997 (Tuesday)					
1	Malt production	1	630	120	141	0 22
2	Air and cooling compressing stations	1	1 000	360	424	0 42
		2	1 000	264	311	0 31
3	Brewing shop	1	630	120	141	0 22
4	Boiler house	1	250	84	99	0 40
		2	250	36	42	0 17
	March 12, 1997 (Wednesday)					
5	Malt production	1	630	156	184	0 29
6	Air and cooling compressing stations	1	1 000	240	282	0 28
		2	1 000	240	282	0 28
7	Brewing shop	1	630	144	169	0 27
8	Boiler house	1	250	60	71	0 28
		2	250	12	14	0 06
	March 13, 1997 (Thursday)					
9	Malt production	1	630	108	127	0 20
10	Air and cooling compressing stations	1	1 000	456	536	0 54
		2	1 000	240	282	0 28
11	Brewing shop	1	630	168	198	0 31
12	Boiler house	1	250	96	113	0 45
		2	250	24	28	0 11
	March 14, 1997 (Friday)					
13	Malt production	1	630	120	141	0 22
14	Air and cooling compressing stations	1	1 000	384	452	0 45
		2	1 000	312	367	0 37
15	Brewing shop	1	630	120	141	0 22
16	Boiler house	1	250	60	71	0 28
		2	250	0	0	0
	March 15, 1997 (Saturday)					
17	Malt production	1	630	0	0	0
18	Air and cooling compressing	1	1 000	240	282	0 28
		2	1,000	240	282	0 28

No	Name of production stations	No of transformer	Nominal power of transformer, kVA	Active load, P, kW	Full load, kVA	Coefficient of transformer's load, Kz
19	Brewing shop	1	630	60	71	0 11
20	Boiler house	1	250	84	99	0 40
		2	250	24	28	0 11
	March 16 1997 (Sunday)					
21	Malt production	1	630	180	212	0 34
22	Air and cooling compressing stations	1	1 000	120	141	0 14
		2	1 000	360	424	0 42
23	Brewing shop	1	630	24	28	0 04
24	Boiler house	1	250	180	212	0 85
		2	250	0	0	0

It follows from above-listed data that coefficient of the transformers load in the hours of maximal load does not exceed 0 34 and the average was 0 25 for malt production, 0 54 and 0 46 for cooling and air compressing stations, 0 31 and 0 23 for the brewing shop

The calculation of the losses in the power transformers is performed by the formula

$$\Delta Ea = (Pxx \times Tg) + (Pkz \times Tr),$$

Where Ea – losses in transformer, kwh
Pxx and Pkz – losses of idle run and short circuit (certificate data),
P xx – 3 2 kW,
Pkz – 13 24 kW,

Kz -- load coefficient,
Tg – number of transformer operating hours per year, hours,
Tr – number of actual transformer operating hours, hours

The total losses of active power in the transformers account for 128,000 kwh To reduce these losses one of the transformers with low load (excluding transformers of boiler house) should be disconnected and the load transferred to other transformers In so doing, the electric power saving will constitute 35 Mwh per year or 9 million Rubles per year

Section 4

Recommended Energy Efficiency Measures

A Potential Energy Efficiency Measures

The energy auditors investigated as many potential efficiency measures as possible in the time budgeted for the project Subsequent to this, the most cost-effective measures are recommended for implementation by the enterprise Some of the potential energy efficiency measures are not reasonable because of the long payback period, or very high initial cost Those measures in the recommended list consist of actions that have simple pay backs of less than 1 year Given the economic conditions in Russia, this seems like the most reasonable maximum time period for the measures to be paid for by the savings

B Recommended Cost-Effective Measures

Table 1, in the Executive Summary , is a summary of the recommended measures and shows the costs, benefits and simple payback for each The following is a description of each of the recommended energy efficiency measures for implementation at the brewery

Project No 1 – Switching Off unloaded Transformers

1	Objective	Saving of electrical energy
2	Project Description	One of the underloaded transformers (not including the transformers for the boiler house) should be switched off, and the load transferred to the other transformers Energy losses resulting from the under-loading are calculated as follows Ea = (Pxx*Tg) + (Pkz*Tr) Where Ea – losses in the transformer (kwh) Pxx – no-load losses Pkz – short circuit losses Kz – load factor Tg – yearly hours of the transformer operation Total losses of the active energy in the transformers equals 124,000 kwh
3	Costs	None
4	Annual Savings	35 Mwh 9 million rubles
5	Payback Period	Less than one month

Project No 2 Optimization of Malt Drying Operations

1	Objective	Thermal and electric power saving
2	Project description	Steam losses resulting from the inefficient utilization of the dryers capicity was 1,154 tons in 1996, or in terms of fuel, 121 12 tons f standard fuel per year To save thermal and electrical energy, the utilization of the dryers should be increased to their nominal values, and the dryers equipped with meters to register the unit consumption of heat for drying The electrical energy required for the malt dryers was calculated from the following $W = P_{inst} \times K_n \times T$ kwh Where P_{inst} = installed fan capacity (Kw) K_n = standard capacity utilization factor T = time of fan operation (hours/month) Losses of electrical energy in a motor due to underloading are calculated from the following $W = W \times (1 - K_z)$, kwh Where K_z = loading factor Malt ouput in 1996 was 5,837 tons With the dryers utilized at nominal capacity, this amount of malt can be produced in 292 says If the operating schedule were modified to increase the operating efficiency to 100 %, then they could be switched off for 2 months This would reduce the consumption of refrigeration for air conditioning the barley germination room The resulting electrical energy savings would equal 51,300 kwh/year or 12 9 million rubles/year
3	Costs	12 million rubles
4	Annual Saving	
	Energy	51 3 Mwh
	Tfs	121 12 tfs
	Expenses	44 4 million Rubles
5	Payback term	3 months

<u>Project No 3 Elimination of Inflows in the economizer</u>

1	Objective	Saving of thermal energy
2	Project description	Analysis of the parameters of effluent gases after the economizer indicates greater numbers of inflows along the flue gas path of the

		economizer This results in excessive fuel fue of 5%, or nearly 120 tsf/year Measures should be taken to seal the setting of the economizer and that of the flue gas path
3	Costs	2 million Rubles
4	Annual Saving Energy Expenses	 120 tons of conventional fuel 30 7 million Rubles
5	Payback term	less than 1 month

Project No 4 Restoration of thermal insulation

1	Objective	Saving of Thermal energy
2	Project description	Restoration of pipeline insulation in the brewing shop The calculation of losses due to the absence of insulation of the pipes are shown in Table ___ equal 1,070 3 Gcal/year This could be saved with the installation of pipeline insulation
3	Costs	2 million Rubles
4	Annual Saving Energy Expenses	 175 tfs 45 million Rubles
5	Payback term	2 months

Project No 5 Condensate recovery and Return

1	Objective	Saving of thermal energy
2	Project description	Install nine steam traps modify system to return the condensate to the cycle of boiler-house The average monthly heat losses are 819 Gcal/month or 9,828 Gcal/year The is equal to 1 612 tfs/year, or 419 44 million rubles/year This is based on the following Q = Gcond * Gtech * (1 – Xts) - mass flow rate of condensate Gts = Gtect * Xts - mass flow rate of transit steam hcond = 102 Gcal/ton - condensate enthalpy hts = 0 6 Gcal/ton - transit steam enthalpy
3	Costs	46 million Rubles
4	Annual Saving Energy Expenses	 1,612 tfs 419 million Rubles

Section 5

Appendices

These appendices contain data and information that was collected during the on-site activities and were used in the development of the recommended efficiency measures

Appendix No 1

Characteristics of Air Compressing Station's Electrical Equipment

			Chan 5 - Compressor No 2 N=165 kW				Chan 6 - Compressor No 1 N=165 kW			
Record Number	Record Date	Record End Time	Chan 5 Avg kW	Chan 5 Avg kVA	Chan 5 Avg PF	Chan 5 Avg kVAR	Chan 6 Avg kW	Chan 6 Avg kVA	Chan 6 Avg PF	Chan 6 Avg kVAR
1	18 06 97	13 30 00	158 54	185 596	0 85	96 389	0	0	1	0
2	18 06 97	13 45 00	158 116	184 252	0 86	94 541	0	0	1	0
3	18 06 97	14 00 00	156 112	183 838	0 85	97 019	0	0	1	0
4	18 06 97	14 15 00	157 691	184 729	0 85	96 143	0	0	1	0
5	18 06 97	14 30 00	128 124	150 024	0 85	77 961	0	0	1	0
6	18 06 97	14 45 00	161 056	188 266	0 86	97 432	0	0	1	0
7	18 06 97	15 00 00	159 025	186 907	0 85	98 104	0	0	1	0
8	18 06 97	15 15 00	158 753	185 441	0 86	95 8	0	0	1	0
9	18 06 97	15 30 00	161 025	187 54	0 86	96 084	0	0	1	0
10	18 06 97	15 45 00	158 705	186 007	0 85	96 927	0	0	1	0
11	18 06 97	16 00 00	158 362	185 468	0 85	96 478	0	0	1	0
12	18 06 97	16 15 00	157 196	184 498	0 85	96 545	0	0	1	0
13	18 06 97	16 30 00	156 235	184 877	0 85	98 735	0	0	1	0
14	18 06 97	16 45 00	159 609	187 106	0 85	97 548	0	0	1	0
15	18 06 97	17 00 00	156 185	183 295	0 85	95 8	0	0	1	0
16	18 06 97	17 15 00	157 061	184 433	0 85	96 599	0	0	1	0
17	18 06 97	17 30 00	159 92	187 091	0 85	97 046	0	0	1	0
18	18 06 97	17 45 00	156 233	183 501	0 85	96 162	0	0	1	0
19	18 06 97	18 00 00	158,279	184 79	0 86	95 335	0	0	1	0
20	18 06 97	18 15 00	156 796	183 555	0 85	95 354	0	0	1	0
21	18 06 97	18 30 00	157 357	183 851	0 86	95 049	0	0	1	0
22	18 06 97	18 45 00	156 853	184 073	0 85	96 251	0	0	1	0
23	18 06 97	19 00 00	156 382	184 381	0 85	97 585	0	0	1	0
24	18 06 97	19 15 00	155 302	183 403	0 85	97 466	0	0	1	0
25	18 06 97	19 30 00	155 869	183 854	0 85	97 431	0	0	1	0
26	18 06 97	19 45 00	158 745	185 424	0 86	95 795	0	0	1	0
27	18 06 97	20 00 00	156 995	184 675	0 85	97,212	0	0	1	0
28	18 06 97	20 15 00	152 301	181 355	0 84	98 363	0	0	1	0
29	18 06 97	20 30 00	153 41	182 689	0 84	99 086	0	0	1	0
30	18 06 97	20 45 00	156 094	183 839	0 85	97 056	0	0	1	0
31	18 06 97	21 00 00	156 525	184 284	0 85	97 195	0	0	1	0
32	18 06 97	21 15 00	156 241	184 397	0 85	97 835	0	0	1	0
33	18 06 97	21 30 00	156 374	184 439	0 85	97 72	0	0	1	0
34	18 06 97	21 45 00	157 847	185 649	0 85	97 645	0	0	1	0

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35	18 06 97	22 00 00	155 727	183 532	0 85	97 022	0	0	1	0
36	18 06 97	22 15 00	153 94	181 541	0 85	96 164	0	0	1	0
37	18 06 97	22 30 00	155 891	183 793	0 85	97 257	0	0	1	0
38	18 06 97	22 45 00	156 26	184 169	0 85	97 395	0	0	1	0
39	18 06 97	23 00 00	153 9	182 387	0 84	97 801	0	0	1	0
40	18 06 97	23 15 00	159 131	186 282	0 85	96 793	0	0	1	0
41	18 06 97	23 30 00	155 568	182 386	0 85	95 157	0	0	1	0
42	18 06 97	23 45 00	156 433	184 37	0 85	97 475	0	0	1	0
43	19 06 97	0 00 00	155 618	183,122	0 85	96 434	0	0	1	0
44	19 06 97	0 15 00	157 481	184 82	0 85	96 615	0	0	1	0
45	19 06 97	0 30 00	158 109	185 709	0 85	97 338	0	0	1	0
46	19 06 97	0 45 00	157 198	184 089	0 85	95 734	0	0	1	0
47	19 06 97	1 00 00	153 882	182,686	0 84	98 373	0	0	1	0
48	19 06 97	1 15 00	157 545	184 749	0 85	96 411	0	0	1	0
49	19 06 97	1 30 00	155 731	183 227	0 85	96 445	0	0	1	0
50	19 06 97	1 45 00	159 122	186 798	0 85	97 79	0	0	1	0
51	19 06 97	2 00 00	155 461	183 697	0 85	97 74	0	0	1	0
52	19 06 97	2 15 00	155 915	182 978	0 85	95 677	0	0	1	0
53	19 06 97	2 30 00	156 724	183 872	0 85	96 089	0	0	1	0
54	19 06 97	2 45 00	155 436	182 831	0 85	96 182	0	0	1	0
55	19 06 97	3 00 00	157 489	184 405	0 85	95 874	0	0	1	0
56	19 06 97	3 15 00	157 966	184 869	0 85	95 983	0	0	1	0
57	19 06 97	3 30 00	155 422	183 05	0 85	96 614	0	0	1	0
58	19 06 97	3 45 00	156 482	184 295	0 85	97,291	0	0	1	0
59	19 06 97	4 00 00	157 42	184 201	0 85	95 587	0	0	1	0
60	19 06 97	4 15 00	156 106	184 937	0 84	99 08	0	0	1	0
61	19 06 97	4 30 00	157 632	184 82	0 85	96 407	0	0	1	0
62	19 06 97	4 45 00	157 631	184 818	0 85	96 412	0	0	1	0
63	19 06 97	5 00 00	155 528	183 062	0 85	96 459	0	0	1	0
64	19 06 97	5 15 00	155 634	182 567	0 85	95 382	0	0	1	0
65	19 06 97	5 30 00	157 27	184 099	0 85	95 65	0	0	1	0
66	19 06 97	5 45 00	154 891	181 734	0 85	94 993	0	0	1	0
67	19 06 97	6 00 00	157 879	185 216	0 85	96 769	0	0	1	0
68	19 06 97	6 15 00	157 366	184 449	0 85	96 158	0	0	1	0
69	19 06 97	6 30 00	158 567	185 912	0 85	96 989	0	0	1	0
70	19 06 97	6 45 00	158 228	184 348	0 86	94 553	0	0	1	0
71	19 06 97	7 00 00	157 183	183 429	0 86	94 454	0	0	1	0
72	19 06 97	7 15 00	156 101	182 823	0 85	95 066	0	0	1	0
73	19 06 97	7 30 00	159 21	185 023	0 86	94 236	0	0	1	0
74	19 06 97	7 45 00	154 827	182 893	0 85	97,295	0	0	1	0
75	19 06 97	8 00 00	158 764	184 568	0 86	94 068	0	0	1	0
76	19 06 97	8 15 00	155 868	182 023	0 86	93 9	0	0	1	0
77	19 06 97	8 30 00	158 557	184 378	0 86	94 036	0	0	1	0
78	19 06 97	8 45 00	159 228	185 03	0 86	94 188	0	0	1	0
79	19 06 97	9 00 00	160 976	186 643	0 86	94 42	0	0	1	0
80	19 06 97	9 15 00	158 727	184 366	0 86	93 716	0	0	1	0
81	19 06 97	9 30 00	153 933	179,296	0 86	91 892	0	0	1	0
82	19 06 97	9 45 00	155 496	181 535	0 86	93 614	0	0	1	0
83	19 06 97	10 00 00	160 69	186 735	0 86	95 035	0	0	1	0

84	19 06 97	10 15 00	160 178	18ɔ 699	0 86	93 883	0	0	1	0
8ɔ	19 06 97	10 30 00	156 582	182 51	0 86	93 711	0	0	1	0
86	19 06 97	10 45 00	157 919	183 991	0 86	94 35	0	0	1	0
87	19 06 97	11 00 00	158 69ɔ	184 463	0 86	93 973	0	0	1	0
88	19 06 97	11 1ɔ 00	158 09	184 218	0 86	94 499	0	0	1	0
89	19 06 97	11 30 00	157 55	184 048	0 86	95 05	0	0	1	0
90	19 06 97	11 45 00	1ɔ9 976	18ɔ 839	0 86	94 469	0	0	1	0
91	19 06 97	12 00 00	158 906	184 805	0 86	94,295	0	0	1	0
92	19 06 97	12 15 00	1ɔ6 819	183 303	0 86	94 829	0	0	1	0
93	19 06 97	12 30 00	155 795	181 553	0 86	93 167	0	0	1	0
94	19 06 97	12 4ɔ 00	160 779	187,269	0 86	95 9ɔ3	0	0	1	0
95	19 06 97	13 00 00	157 527	184 338	0 8ɔ	95 67	0	0	1	0
96	19 06 97	13 15 00	157 397	183 9ɔ3	0 86	95 119	0	0	1	0
97	19 06 97	13 30 00	157 565	184 649	0 8ɔ	96 202	0	0	1	0
98	19 06 97	13 45 00	1ɔ8 215	184 647	0 86	95 146	0	0	1	0
99	19 06 97	14 00 00	157 225	184 069	0 8ɔ	95 637	0	0	1	0
100	19 06 97	14 15 00	157 988	185 365	0 85	96 856	0	0	1	0
101	19 06 97	14 30 00	157 019	184 407	0 8ɔ	96 609	0	0	1	0
102	19 06 97	14 4ɔ 00	155 864	182 731	0 85	95 293	0	0	1	0
103	19 06 97	1ɔ 00 00	158 ɔ76	184 85	0 86	94 92	0	0	1	0
104	19 06 97	15 15 00	1ɔ7 815	18ɔ 603	0 8ɔ	97 ɔ62	0	0	1	0
10ɔ	19 06 97	1ɔ 30 00	155 653	182,232	0 85	94 714	0	0	1	0
106	19 06 97	15 45 00	155 114	182 683	0 85	96 44	0	0	1	0
107	19 06 97	16 00 00	159 391	187 627	0 8ɔ	98 903	0	0	1	0
108	19 06 97	16 1ɔ 00	157 659	185 401	0 8ɔ	97 458	0	0	1	0
109	19 06 97	16 30 00	158,294	184 799	0 86	95 299	0	0	1	0
110	19 06 97	16 4ɔ 00	157 65	184 492	0 85	95 784	0	0	1	0
111	19 06 97	17 00 00	159 075	185 858	0 86	96 082	0	0	1	0
112	19 06 97	17 15 00	156 32	184 168	0 85	97 287	0	0	1	0
113	19 06 97	17 30 00	154 935	183,232	0 85	97 715	0	0	1	0
114	19 06 97	17 4ɔ 00	155 72	184 197	0 8ɔ	98 301	0	0	1	0
115	19 06 97	18 00 00	159 338	187 267	0 8ɔ	98 328	0	0	1	0
116	19 06 97	18 1ɔ 00	1ɔ5 0ɔ2	183 261	0 8ɔ	97 619	0	0	1	0
117	19 06 97	18 30 00	15ɔ 396	183 059	0 85	96 683	0	0	1	0
118	19 06 97	18 45 00	157 066	185 43	0 85	98 495	0	0	1	0
119	19 06 97	19 00 00	156 923	185 04	0 8ɔ	97 977	0	0	1	0
120	19 06 97	19 1ɔ 00	153 982	181 832	0 85	96 632	0	0	1	0
121	19 06 97	19 30 00	154 77	182 698	0 8ɔ	96,969	0	0	1	0
122	19 06 97	19 45 00	153 751	181 752	0 8ɔ	96 879	0	0	1	0
123	19 06 97	20 00 00	154 487	183 019	0 84	98 061	0	0	1	0
124	19 06 97	20 15 00	153 064	180 529	0 85	95 66	0	0	1	0
125	19 06 97	20 30 00	155 558	183 078	0 85	96 505	0	0	1	0
126	19 06 97	20 45 00	154 431	183 58	0 84	99 151	0	0	1	0
127	19 06 97	21 00 00	154 948	182 139	0 85	95 634	0	0	1	0
128	19 06 97	21 1ɔ 00	156 499	182 802	0 86	94,431	0	0	1	0
129	19 06 97	21 30 00	151 266	178 139	0 85	93 993	0	0	1	0
130	19 06 97	21 45 00	1ɔ5 719	182 718	0 85	95,499	0	0	1	0
131	19 06 97	22 00 00	154 106	181 856	0 85	96 478	0	0	1	0
132	19 06 97	22 15 00	155 389	182 047	0 85	94 774	0	0	1	0

133	19 06 97	22 30 00	154 483	181 885	0 85	95 939	0	0	1	0
134	19 06 97	22 45 00	154 359	181 647	0 85	95 666	0	0	1	0
135	19 06 97	23 00 00	161 106	187 7	0 86	96,272	0	0	1	0
136	19 06 97	23 15 00	155 012	182 032	0 85	95 356	0	0	1	0
137	19 06 97	23 30 00	156 674	183 182	0 86	94 889	0	0	1	0
138	19 06 97	23 45 00	152 904	181 032	0 84	96 826	0	0	1	0
139	20 06 97	0 00 00	155 312	182 584	0 85	95 901	0	0	1	0
140	20 06 97	0 15 00	156 565	183 934	0 85	96 458	0	0	1	0
141	20 06 97	0 30 00	154 612	181 753	0 85	95 464	0	0	1	0
142	20 06 97	0 45 00	152 798	180 341	0 85	95 698	0	0	1	0
143	20 06 97	1 00 00	155 662	183 019	0 85	96 192	0	0	1	0
144	20 06 97	1 15 00	154 861	182 927	0 85	97 252	0	0	1	0
145	20 06 97	1 30 00	154 394	181 968	0 85	96 213	0	0	1	0
146	20 06 97	1 45 00	155 852	183 891	0 85	97 506	0	0	1	0
147	20 06 97	2 00 00	154 019	180 955	0 85	94 93	0	0	1	0
148	20 06 97	2 15 00	153 442	180 872	0 85	95 694	0	0	1	0
149	20 06 97	2 30 00	154 852	181 995	0 85	95 562	0	0	1	0
150	20 06 97	2 45 00	151 11	180 004	0 84	97 668	0	0	1	0
151	20 06 97	3 00 00	154 823	182 221	0 85	96 033	0	0	1	0
152	20 06 97	3 15 00	153 283	181 037	0 85	96 228	0	0	1	0
153	20 06 97	3 30 00	155 638	183 291	0 85	96 726	0	0	1	0
154	20 06 97	3 45 00	155 378	182 651	0 85	95 918	0	0	1	0
155	20 06 97	4 00 00	153 409	181 651	0 84	97,2	0	0	1	0
156	20 06 97	4 15 00	154 643	181 847	0 85	95 581	0	0	1	0
157	20 06 97	4 30 00	154 946	182 595	0 85	96 524	0	0	1	0
158	20 06 97	4 45 00	153 673	181 717	0 85	96 893	0	0	1	0
159	20 06 97	5 00 00	154 166	181 975	0 85	96 611	0	0	1	0
160	20 06 97	5 15 00	155 483	184 292	0 84	98 812	0	0	1	0
161	20 06 97	5 30 00	155 228	182 562	0 85	96 029	0	0	1	0
162	20 06 97	5 45 00	156 489	184 372	0 85	97 418	0	0	1	0
163	20 06 97	6 00 00	157 864	185 309	0 85	96 994	0	0	1	0
164	20 06 97	6 15 00	155 331	182 402	0 85	95 51	0	0	1	0
165	20 06 97	6 30 00	156 129	183 021	0 85	95 416	0	0	1	0
166	20 06 97	6 45 00	154 708	181 8	0 85	95 402	0	0	1	0
167	20 06 97	7 00 00	155 404	183 063	0 85	96 679	0	0	1	0
168	20 06 97	7 15 00	155 999	182 535	0 85	94 743	0	0	1	0
169	20 06 97	7 30 00	159 121	185 176	0 86	94 638	0	0	1	0
170	20 06 97	7 45 00	157 845	184 304	0 86	95 058	0	0	1	0
171	20 06 97	8 00 00	157 479	183 963	0 86	95 023	0	0	1	0
172	20 06 97	8 15 00	158 373	184 098	0 86	93,831	0	0	1	0
173	20 06 97	8 30 00	158 088	183 89	0 86	93 873	0	0	1	0
174	20 06 97	8 45 00	158 91	185 409	0 86	95 476	0	0	1	0
175	20 06 97	9 00 00	156,23	182 313	0 86	93 904	0	0	1	0
176	20 06 97	9 15 00	156 485	182,208	0 86	93 276	0	0	1	0
177	20 06 97	9 30 00	157 025	183 107	0 86	94 145	0	0	1	0
178	20 06 97	9 45 00	159 904	185 518	0 86	94 025	0	0	1	0
179	20 06 97	10 00 00	157 042	184 001	0 85	95 807	0	0	1	0
180	20 06 97	10 15 00	154 116	181 336	0 85	95 463	0	0	1	0
181	20 06 97	10 30 00	158 429	185 365	0 85	96 174	0	0	1	0

182	20 06 97	10 45 00	158 64	185 71	0 85	96 484	0	0	1	0
183	20 06 97	11 00 00	156 838	183 74	0 85	95 654	0	0	1	0
184	20 06 97	11 15 00	156 311	183 489	0 85	96 001	0	0	1	0
185	20 06 97	11 30 00	156 447	184 167	0 85	97 067	0	0	1	0
186	20 06 97	11 45 00	155 872	182 995	0 85	95 759	0	0	1	0
187	20 06 97	12 00 00	157 768	184 712	0 85	96 004	0	0	1	0
188	20 06 97	12 15 00	156 378	182 717	0 86	94 417	0	0	1	0
189	20 06 97	12 30 00	155 883	182 889	0 85	95 564	0	0	1	0
190	20 06 97	12 45 00	156 914	183,941	0 85	95 931	0	0	1	0
191	20 06 97	13 00 00	156 235	183,663	0 85	96 445	0	0	1	0
192	20 06 97	13 15 00	156 52	183 279	0 85	95 282	0	0	1	0
193	20 06 97	13 30 00	156 364	183 132	0 85	95 274	0	0	1	0
194	20 06 97	13 45 00	155 914	183 285	0 85	96 262	0	0	1	0
195	20 06 97	14 00 00	156 467	183 12	0 85	95 076	0	0	1	0
196	20 06 97	14 15 00	156 578	184 465	0 85	97 402	0	0	1	0
197	20 06 97	14 30 00	157,29	184 375	0 85	96 132	0	0	1	0
198	20 06 97	14 45 00	159 665	187 323	0 85	97 909	0	0	1	0
199	20 06 97	15 00 00	154 308	182 83	0 84	97 986	0	0	1	0
200	20 06 97	15 15 00	157 025	185 268	0 85	98 23	0	0	1	0
201	20 06 97	15 30 00	158 446	185 388	0 85	96 207	0	0	1	0
202	20 06 97	15 45 00	154 86	183 132	0 85	97 632	0	0	1	0
203	20 06 97	16 00 00	154 115	182 431	0 84	97 483	0	0	1	0
204	20 06 97	16 15 00	155,233	182 197	0 85	95 305	0	0	1	0
205	20 06 97	16 30 00	160 005	186 104	0 86	95 034	0	0	1	0
206	20 06 97	16 45 00	158 435	185 278	0 86	96 05	0	0	1	0
207	20 06 97	17 00 00	158 509	186 35	0 85	97 923	0	0	1	0
208	20 06 97	17 15 00	157 276	184 624	0 85	96 659	0	0	1	0
209	20 06 97	17 30 00	154 973	183 336	0 85	97 834	0	0	1	0
210	20 06 97	17 45 00	155 02	182 71	0 85	96 602	0	0	1	0
211	20 06 97	18 00 00	155 747	183,243	0 85	96 496	0	0	1	0
212	20 06 97	18 15 00	154 085	181 625	0 85	96 071	0	0	1	0
213	20 06 97	18 30 00	155 914	183 286	0 85	96 325	0	0	1	0
214	20 06 97	18 45 00	152 747	182,265	0 84	99 321	0	0	1	0
215	20 06 97	19 00 00	153 526	181 363	0 85	96 496	0	0	1	0
216	20 06 97	19 15 00	154 555	182 222	0 85	96 458	0	0	1	0
217	20 06 97	19 30 00	153 782	180 938	0 85	95 308	0	0	1	0
218	20 06 97	19 45 00	152 77	180 492	0 85	96 013	0	0	1	0
219	20 06 97	20 00 00	152 058	179 798	0 85	95 839	0	0	1	0
220	20 06 97	20 15 00	158 698	186 047	0 85	97 015	0	0	1	0
221	20 06 97	20 30 00	154 7	182 471	0 85	96 715	0	0	1	0
222	20 06 97	20 45 00	154 483	182 186	0 85	96 503	0	0	1	0
223	20 06 97	21 00 00	156 398	184 746	0 85	98,27	0	0	1	0
224	20 06 97	21 15 00	150 484	177 777	0 85	94 57	0	0	1	0
225	20 06 97	21 30 00	147 964	176 3	0 84	95 765	0	0	1	0
226	20 06 97	21 45 00	152 013	179 536	0 85	95 471	0	0	1	0
227	20 06 97	22 00 00	154 423	181 576	0 85	95 465	0	0	1	0
228	20 06 97	22 15 00	150 728	177 776	0 85	94 191	0	0	1	0
229	20 06 97	22 30 00	154 893	182 107	0 85	95 682	0	0	1	0
230	20 06 97	22 45 00	153 754	181 107	0 85	95 601	0	0	1	0

231	20 06 97	23 00 00	156 289	183,251	0 85	95 593	0	0	1	0
232	20 06 97	23 15 00	157 16	183 413	0 86	94 518	0	0	1	0
233	20 06 97	23 30 00	156 951	183 546	0 86	95 101	0	0	1	0
234	20 06 97	23 45 00	156 767	184 136	0 85	96 523	0	0	1	0
235	21 06 97	0 00 00	157 038	184 304	0 85	96 365	0	0	1	0
236	21 06 97	0 15 00	157 087	184 008	0 85	95 746	0	0	1	0
237	21 06 97	0 30 00	154 727	181 874	0 85	95 527	0	0	1	0
238	21 06 97	0 45 00	145 559	173 323	0 84	94 032	0	0	1	0
239	21 06 97	1 00 00	152 255	178 897	0 85	93 854	0	0	1	0
240	21 06 97	1 15 00	154 257	181 615	0 85	95 79	0	0	1	0
241	21 06 97	1 30 00	156 018	183 129	0 85	95 843	0	0	1	0
242	21 06 97	1 45 00	151 822	178 952	0 85	94 659	0	0	1	0
243	21 06 97	2 00 00	152 133	179 819	0 85	95 81	0	0	1	0
244	21 06 97	2 15 00	155 656	182 637	0 85	95 474	0	0	1	0
245	21 06 97	2 30 00	153 277	180 533	0 85	95 319	0	0	1	0
246	21 06 97	2 45 00	151 566	179 005	0 85	95 13	0	0	1	0
247	21 06 97	3 00 00	152 564	179 87	0 85	95,2	0	0	1	0
248	21 06 97	3 15 00	151 828	179,294	0 85	95,272	0	0	1	0
249	21 06 97	3 30 00	151 646	178 52	0 85	94 145	0	0	1	0
250	21 06 97	3 45 00	153 757	181 356	0 85	96 095	0	0	1	0
251	21 06 97	4 00 00	156 059	183 569	0 85	96 582	0	0	1	0
252	21 06 97	4 15 00	156 798	184 09	0 85	96 374	0	0	1	0
253	21 06 97	4 30 00	155 062	182 492	0 85	96 129	0	0	1	0
254	21 06 97	4 45 00	154 62	181 522	0 85	95 006	0	0	1	0
255	21 06 97	5 00 00	155 964	182 244	0 86	94 2	0	0	1	0
256	21 06 97	5 15 00	153 929	181 097	0 85	95 346	0	0	1	0
257	21 06 97	5 30 00	152 98	179 939	0 85	94 679	0	0	1	0
258	21 06 97	5 45 00	153 928	180 307	0 85	93 814	0	0	1	0
259	21 06 97	6 00 00	153 93	180 713	0 85	94 585	0	0	1	0
260	21 06 97	6 15 00	153 915	181 316	0 85	95 742	0	0	1	0
261	21 06 97	6 30 00	154 664	181 358	0 85	94 599	0	0	1	0
262	21 06 97	6 45 00	155 417	181 218	0 86	93 141	0	0	1	0
263	21 06 97	7 00 00	154 637	181 072	0 85	94 136	0	0	1	0
264	21 06 97	7 15 00	156 731	182 399	0 86	93,25	0	0	1	0
265	21 06 97	7 30 00	157 534	183 618	0 86	94,24	0	0	1	0
266	21 06 97	7 45 00	153 479	179 533	0 85	93 055	0	0	1	0
267	21 06 97	8 00 00	153 641	179 409	0 86	92 575	0	0	1	0
268	21 06 97	8 15 00	153 262	179 64	0 85	93 627	0	0	1	0
269	21 06 97	8 30 00	154 848	180 268	0 86	92 228	0	0	1	0
270	21 06 97	8 45 00	155 046	180 451	0 86	92,289	0	0	1	0
271	21 06 97	9 00 00	152 797	178 593	0 86	92 39	0	0	1	0
272	21 06 97	9 15 00	153 458	178 85	0 86	91 796	0	0	1	0
273	21 06 97	9 30 00	155 112	180 738	0 86	92 693	0	0	1	0
274	21 06 97	9 45 00	152 88	178 52	0 86	92 127	0	0	1	0
275	21 06 97	10 00 00	154 862	180 223	0 86	92 106	0	0	1	0
276	21 06 97	10 15 00	153 459	179 794	0 85	93 627	0	0	1	0
277	21 06 97	10 30 00	154 337	179 477	0 86	91 58	0	0	1	0
278	21 06 97	10 45 00	155 155	181,214	0 86	93 565	0	0	1	0
279	21 06 97	11 00 00	155 812	181 636	0 86	93,279	0	0	1	0

280	21 06 97	11 15 00	152 587	178 825	0 85	93 166	0	0	1	0
281	21 06 97	11 30 00	155 441	180 881	0 86	92 458	0	0	1	0
282	21 06 97	11 45 00	152 977	178 132	0 86	91 207	0	0	1	0
283	21 06 97	12 00 00	152 684	178 759	0 85	92 901	0	0	1	0
284	21 06 97	12 15 00	153 049	179 52	0 85	93 727	0	0	1	0
285	21 06 97	12 30 00	153 752	179 774	0 86	93 12	0	0	1	0
286	21 06 97	12 45 00	151 062	177 407	0 85	92 932	0	0	1	0
287	21 06 97	13 00 00	151 8	178 45	0 85	93 77	0	0	1	0
288	21 06 97	13 15 00	151 402	177,111	0 85	91 85	0	0	1	0
289	21 06 97	13 30 00	152 728	178 828	0 85	92 964	0	0	1	0
290	21 06 97	13 45 00	152 826	179 443	0 85	93 95	0	0	1	0
291	21 06 97	14 00 00	153 92	180 617	0 85	94 398	0	0	1	0
292	21 06 97	14 15 00	152 31	178 855	0 85	93 686	0	0	1	0
293	21 06 97	14 30 00	153,287	180 132	0 85	94 501	0	0	1	0
294	21 06 97	14 45 00	153 972	180 18	0 85	93 52	0	0	1	0
295	21 06 97	15 00 00	152 943	179 337	0 85	93 584	0	0	1	0
296	21 06 97	15 15 00	151 439	178 249	0 85	93 922	0	0	1	0
297	21 06 97	15 30 00	153,219	179 732	0 85	93 914	0	0	1	0
298	21 06 97	15 45 00	151 872	178 306	0 85	93 363	0	0	1	0
299	21 06 97	16 00 00	150 039	177 77	0 84	95,259	0	0	1	0
300	21 06 97	16 15 00	148 291	175,268	0 85	93 345	0	0	1	0
301	21 06 97	16 30 00	150 68	177 048	0 85	92 879	0	0	1	0
302	21 06 97	16 45 00	152 432	179 562	0 85	94 811	0	0	1	0
303	21 06 97	17 00 00	151 899	178 372	0 85	93 486	0	0	1	0
304	21 06 97	17 15 00	150 135	177 641	0 85	94 855	0	0	1	0
305	21 06 97	17 30 00	149 658	176,269	0 85	93 091	0	0	1	0
306	21 06 97	17 45 00	152 043	178 632	0 85	93 687	0	0	1	0
307	21 06 97	18 00 00	149 098	176 944	0 84	95 175	0	0	1	0
308	21 06 97	18 15 00	151 556	178 257	0 85	93 774	0	0	1	0
309	21 06 97	18 30 00	150 526	177 642	0 85	94 236	0	0	1	0
310	21 06 97	18 45 00	151 436	179 299	0 84	95 91	0	0	1	0
311	21 06 97	19 00 00	150 419	177 753	0 85	94 633	0	0	1	0
312	21 06 97	19 15 00	152 986	180 171	0 85	95 075	0	0	1	0
313	21 06 97	19 30 00	147 554	174 985	0 84	94 023	0	0	1	0
314	21 06 97	19 45 00	152 773	180 035	0 85	95 165	0	0	1	0
315	21 06 97	20 00 00	154 552	181 607	0 85	95,269	0	0	1	0
316	21 06 97	20 15 00	152 834	179 572	0 85	94,209	0	0	1	0
317	21 06 97	20 30 00	153,221	180 816	0 85	95 933	0	0	1	0
318	21 06 97	20 45 00	153 141	179 991	0 85	94 485	0	0	1	0
319	21 06 97	21 00 00	153,106	180,294	0 85	95 138	0	0	1	0
320	21 06 97	21 15 00	152 162	179,286	0 85	94 692	0	0	1	0
321	21 06 97	21 30 00	153 67	179 868	0 85	93 411	0	0	1	0
322	21 06 97	21 45 00	154 711	181 183	0 85	94 228	0	0	1	0
323	21 06 97	22 00 00	155	182 08	0 85	95 455	0	0	1	0
324	21 06 97	22 15 00	153 758	180 635	0 85	94 764	0	0	1	0
325	21 06 97	22 30 00	150 73	177 774	0 85	94 179	0	0	1	0
326	21 06 97	22 45 00	155 326	181 843	0 85	94 47	0	0	1	0
327	21 06 97	23 00 00	152 198	179 753	0 85	95 582	0	0	1	0
328	21 06 97	23 15 00	154 449	180 692	0 85	93 727	0	0	1	0

329	21 06 97	23 30 00	155 203	181 896	0 85	94 785	0	0	1	0
330	21 06 97	23 45 00	153 461	180.291	0 85	94 558	0	0	1	0
331	22 06 97	0 00 00	150 351	178 008	0 84	95,205	0	0	1	0
332	22 06 97	0 15 00	156 388	183 787	0 85	96 451	0	0	1	0
333	22 06 97	0 30 00	154 956	182 311	0 85	95 955	0	0	1	0
334	22 06 97	0 45 00	155 956	183 485	0 85	96 614	0	0	1	0
335	22 06 97	1 00 00	153 622	181 516	0 85	96 613	0	0	1	0
336	22 06 97	1 15 00	153 298	180 867	0 85	95 893	0	0	1	0
337	22 06 97	1 30 00	156 847	183 59	0 85	95 346	0	0	1	0
338	22 06 97	1 45 00	153 416	180 886	0 85	95 717	0	0	1	0
339	22 06 97	2 00 00	152 837	179 32	0 85	93 697	0	0	1	0
340	22 06 97	2 15 00	155 383	182 483	0 85	95 583	0	0	1	0
341	22 06 97	2 30 00	156 073	183 406	0 85	96 24	0	0	1	0
342	22 06 97	2 45 00	156 081	182 833	0 85	95 153	0	0	1	0
343	22 06 97	3 00 00	156 14	184 281	0 85	97 779	0	0	1	0
344	22 06 97	3 15 00	155 521	182 424	0 85	95,263	0	0	1	0
345	22 06 97	3 30 00	155 533	182 985	0 85	96 344	0	0	1	0
346	22 06 97	3 45 00	155 926	183 563	0 85	96 76	0	0	1	0
347	22 06 97	4 00 00	155 754	182 48	0 85	95 03	0	0	1	0
348	22 06 97	4 15 00	155 123	182 268	0 85	95 653	0	0	1	0
349	22 06 97	4 30 00	155 496	181 771	0 86	94 095	0	0	1	0
350	22 06 97	4 45 00	150 842	178,23	0 85	94 857	0	0	1	0
351	22 06 97	5 00 00	155 161	182 031	0 85	95 117	0	0	1	0
352	22 06 97	5 15 00	156 965	183 875	0 85	95 669	0	0	1	0
353	22 06 97	5 30 00	155 811	182 454	0 85	94 864	0	0	1	0
354	22 06 97	5 45 00	154 575	181 074	0 85	94 242	0	0	1	0
355	22 06 97	6 00 00	156 497	183 23	0 85	95 216	0	0	1	0
356	22 06 97	6 15 00	156 608	183 917	0 85	96 349	0	0	1	0
357	22 06 97	6 30 00	157 078	183 678	0 86	95,137	0	0	1	0
358	22 06 97	6 45 00	157 637	185 06	0 85	96 875	0	0	1	0
359	22 06 97	7 00 00	153 094	179 973	0 85	94 572	0	0	1	0
360	22 06 97	7 15 00	153 566	181 026	0 85	95 747	0	0	1	0
361	22 06 97	7 30 00	153 956	179 948	0 86	93 121	0	0	1	0
362	22 06 97	7 45 00	152 085	178 735	0 85	93 812	0	0	1	0
363	22 06 97	8 00 00	148 65	175 335	0 85	92 923	0	0	1	0
364	22 06 97	8 15 00	149 643	176 761	0 85	94 026	0	0	1	0
365	22 06 97	8 30 00	150 925	177 754	0 85	93 83	0	0	1	0
366	22 06 97	8 45 00	149 3	176 005	0 85	93 152	0	0	1	0
367	22 06 97	9 00 00	152 729	179 166	0 85	93 62	0	0	1	0
368	22 06 97	9 15 00	149 888	176 1	0 85	92 392	0	0	1	0
369	22 06 97	9 30 00	151 919	177 952	0 85	92 635	0	0	1	0
370	22 06 97	9 45 00	148 992	176 52	0 84	94 589	0	0	1	0
371	22 06 97	10 00 00	153 22	180 057	0 85	94 509	0	0	1	0
372	22 06 97	10 15 00	151 015	177 141	0 85	92 532	0	0	1	0
373	22 06 97	10 30 00	148 808	175 378	0 85	92 7	0	0	1	0
374	22 06 97	10 45 00	149 077	175 468	0 85	92 449	0	0	1	0
375	22 06 97	11 00 00	150 136	176 747	0 85	93 158	0	0	1	0
376	22 06 97	11 15 00	150 679	176 902	0 85	92 574	0	0	1	0
377	22 06 97	11 30 00	150 526	176 644	0 85	92 382	0	0	1	0

378	22 06 97	11 45 00	149 82ɔ	176,216	0 85	92 686	0	0	1	0
379	22 06 97	12 00 00	147 01	173 397	0 85	91 874	0	0	1	0
380	22 06 97	12 15 00	148 074	173 49ɔ	0 85	90 36	0	0	1	0
381	22 06 97	12 30 00	147 137	173 492	0 8ɔ	91 841	0	0	1	0
382	22 06 97	12 45 00	146 807	173 174	0 8ɔ	91 796	0	0	1	0
383	22 06 97	13 00 00	146 497	171 884	0 85	89 8ɔ2	0	0	1	0
384	22 06 97	13 1ɔ 00	149 ɔ94	17ɔ 523	0 85	91 777	0	0	1	0
385	22 06 97	13 30 00	127 085	150 49	0 84	80 538	61 212	72 516	0 84	38 847
386	22 06 97	13 4ɔ 00	0	0	1	0	164 456	191 291	0 86	97 644
387	22 06 97	14 00 00	0	0	1	0	166 726	194 31	0 86	99 689
388	22 06 97	14 15 00	0	0	1	0	165 823	193 486	0 86	99 577
389	22 06 97	14 30 00	10 196	19 49	0 52	14 601	16ɔ 253	192 664	0 86	98 974
390	22 06 97	14 45 00	0	0	1	0	162 817	189 902	0 86	97 7
391	22 06 97	1ɔ 00 00	0	0	1	0	156 12	184 907	0 84	98 961
392	22 06 97	1ɔ 1ɔ 00	0	0	1	0	162 997	190,779	0 85	99 088
393	22 06 97	1ɔ 30 00	0	0	1	0	161 012	189 04	0 8ɔ	98 986
394	22 06 97	15 45 00	0	0	1	0	162 754	190 167	0 86	98 241
39ɔ	22 06 97	16 00 00	0	0	1	0	160 048	188 471	0 8ɔ	99 407
396	22 06 97	16 1ɔ 00	0	0	1	0	162 889	192 09ɔ	0 8ɔ	101 672
397	22 06 97	16 30 00	0	0	1	0	161 957	189 797	0 85	98 855
398	22 06 97	16 4ɔ 00	0	0	1	0	163 183	190 997	0 8ɔ	99 173
399	22 06 97	17 00 00	118 874	139 645	0 85	73 218	62 087	73 ɔ6	0 84	39 407
400	22 06 97	17 1ɔ 00	149 811	175 774	0 85	91 876	0	0	1	0
401	22 06 97	17 30 00	69 875	81 6ɔ5	0 86	42,232	104 179	129 903	0 8	73 564
402	22 06 97	17 45 00	0	0	1	0	1ɔ9 128	187 448	0 8ɔ	98 976
403	22 06 97	18 00 00	0	0	1	0	166 536	194 76	0 86	100 877
404	22 06 97	18 15 00	0	0	1	0	165 273	193 918	0 85	101 37ɔ
40ɔ	22 06 97	18 30 00	13 ɔ71	21 029	0 65	14 961	165 806	194 578	0 85	101 713
406	22 06 97	18 4ɔ 00	102 921	120 411	0 85	62 474	88 603	102 8	0 86	52 122
407	22 06 97	19 00 00	159 853	186 4	0 86	95 81	0	0	1	0
408	22 06 97	19 15 00	1ɔ5 725	182 401	0 85	94 877	0	0	1	0
409	22 06 97	19 30 00	157 286	184 096	0 85	95 588	0	0	1	0
410	22 06 97	19 4ɔ 00	1ɔ8 153	184 376	0 86	94 712	0	0	1	0
411	22 06 97	20 00 00	158 801	184 914	0 86	94 677	0	0	1	0
412	22 06 97	20 15 00	159 13	185 194	0 86	94 656	0	0	1	0
413	22 06 97	20 30 00	158 746	185 022	0 86	94 991	0	0	1	0
414	22 06 97	20 45 00	157 701	184 22	0 86	95 146	0	0	1	0
415	22 06 97	21 00 00	158 438	184 847	0 86	95 143	0	0	1	0
416	22 06 97	21 15 00	158 495	185 625	0 85	96 512	0	0	1	0
417	22 06 97	21 30 00	158 398	185 427	0,85	96 304	0	0	1	0
418	22 06 97	21 45 00	157 437	184 326	0 85	95 772	0	0	1	0
419	22 06 97	22 00 00	159,207	186 192	0 86	96 473	0	0	1	0
420	22 06 97	22 15 00	157 868	184 541	0 86	95 489	0	0	1	0
421	22 06 97	22 30 00	158 94	185 211	0 86	95 026	0	0	1	0
422	22 06 97	22 4ɔ 00	157 366	183 935	0 86	95 17	0	0	1	0
423	22 06 97	23 00 00	160,908	187 125	0 86	95 443	0	0	1	0
424	22 06 97	23 15 00	158 193	184 264	0 86	94 438	0	0	1	0
425	22 06 97	23 30 00	159 733	186 101	0 86	9ɔ 408	0	0	1	0
426	22 06 97	23 45 00	159 344	186 329	0 86	96 524	0	0	1	0

427	23 06 97	0 00 00	157 583	184 441	0 85	95 746	0	0	1	0
428	23 06 97	0 15 00	158 32	185 188	0 85	95 995	0	0	1	0
429	23 06 97	0 30 00	163 739	190 203	0 86	96 75	0	0	1	0
430	23 06 97	0 45 00	157 389	185 599	0 85	98 28	0	0	1	0
431	23 06 97	1 00 00	158 886	186 388	0 85	97 381	0	0	1	0
432	23 06 97	1 15 00	158 859	185 356	0 86	95 444	0	0	1	0
433	23 06 97	1 30 00	159 241	186 333	0 85	96 678	0	0	1	0
434	23 06 97	1 45 00	159 926	186 816	0 86	96 519	0	0	1	0
435	23 06 97	2 00 00	158,408	185 955	0 85	97,293	0	0	1	0
436	23 06 97	2 15 00	157 629	185 331	0 85	97 37	0	0	1	0
437	23 06 97	2 30 00	64 676	75 388	0 86	38 709	144 395	169 434	0 85	88 52
438	23 06 97	2 45 00	0	0	1	0	165 344	193 661	0 85	100 723
439	23 06 97	3 00 00	0	0	1	0	163 093	191 174	0 85	99 605
440	23 06 97	3 15 00	0	0	1	0	162 151	190 063	0 85	99 083
441	23 06 97	3 30 00	0	0	1	0	159 119	187 372	0 85	98 844
442	23 06 97	3 45 00	0	0	1	0	164 372	192 387	0 85	99 896
443	23 06 97	4 00 00	0	0	1	0	158 883	187 168	0 85	98 811
444	23 06 97	4 15 00	3 983	10 679	0 37	9 909	160 793	188 339	0 85	98 027
445	23 06 97	4 30 00	0	0	1	0	160 827	188 337	0 85	97 951
446	23 06 97	4 45 00	0	0	1	0	158 637	187 368	0 85	99 595
447	23 06 97	5 00 00	0	0	1	0	160 735	188 778	0 85	98 913
448	23 06 97	5 15 00	0	0	1	0	158 271	187 653	0 84	100 701
449	23 06 97	5 30 00	0	0	1	0	158 713	187 003	0 85	98 787
450	23 06 97	5 45 00	0	0	1	0	162 192	189 887	0 85	98 625
451	23 06 97	6 00 00	0	0	1	0	164 486	192 333	0 86	99 606
452	23 06 97	6 15 00	0	0	1	0	164 48	193 255	0 85	101 342
453	23 06 97	6 30 00	0	0	1	0	160 136	187 485	0 85	97 4
454	23 06 97	6 45 00	0	0	1	0	163 113	190 685	0 86	98 711
455	23 06 97	7 00 00	0	0	1	0	162 367	191,221	0 85	100 894
456	23 06 97	7 15 00	0	0	1	0	164 29	193 222	0 85	101 588
457	23 06 97	7 30 00	0	0	1	0	164 477	191 88	0 86	98 731
458	23 06 97	7 45 00	0	0	1	0	164 431	191 9	0 86	98 884
459	23 06 97	8 00 00	0	0	1	0	164 851	193 221	0 85	100 667
460	23 06 97	8 15 00	0	0	1	0	167 796	195 214	0 86	99 688
461	23 06 97	8 30 00	0	0	1	0	169 28	196 031	0 86	98 804
462	23 06 97	8 45 00	0	0	1	0	170 019	196 508	0 87	98 502
463	23 06 97	9 00 00	0	0	1	0	165 311	193 32	0 86	100 125
464	23 06 97	9 15 00	0	0	1	0	164 579	192 914	0 85	100 52
465	23 06 97	9 30 00	0	0	1	0	165 686	193 244	0 86	99 338
466	23 06 97	9 45 00	0	0	1	0	164 724	191 853	0 86	98,277
467	23 06 97	10 00 00	0	0	1	0	162 797	190 487	0 85	98 817
468	23 06 97	10 15 00	0	0	1	0	166 744	194 012	0 86	99 08
469	23 06 97	10 30 00	0	0	1	0	167 168	194 272	0 86	98 915
470	23 06 97	10 45 00	0	0	1	0	165 335	192 191	0 86	97 935
471	23 06 97	11 00 00	0	0	1	0	165 148	192 096	0 86	98 033
472	23 06 97	11 15 00	0	0	1	0	162 922	190 929	0 85	99 448
473	23 06 97	11 30 00	0	0	1	0	165 505	193 458	0 86	100 062
474	23 06 97	11 45 00	0	0	1	0	167 027	195 002	0 86	100 537
475	23 06 97	12 00 00	0	0	1	0	163 282	191 556	0 85	100 021

476	23 06 97	12 15 00	0	0	1	0	166,278	193 517	0 86	98 931
477	23 06 97	12 30 00	0	0	1	0	169 095	197 132	0 86	101,254

Appendix No 2

Characteristics of Cooling Compressing Station Electrical Equipment

			Chan 5 - Compressor No 18				Chan 6 - Compressor No 2			
Record Number	Record Date	Record End Time	Chan 5 Avg kW	Chan 5 Avg kVA	Chan 5 Avg PF	Chan 5 Avg	Chan 6 Avg kW	Chan 6 Avg kVA	Chan 6 Avg PF	Chan 6 Avg
1	18 06 97	16 45 00	90 951	144 989	-0 92	-37 558	19 667	21,249	0 97	5 02
2	18 06 97	17 00 00	221 544	224 629	0 99	37 079	76 025	77 254	0 98	13 68
3	18 06 97	17 15 00	223 067	226 404	0 99	38 706	77 825	79 017	0 98	13 63
4	18 06 97	17 30 00	225 947	229 258	0 99	38 774	79 755	80 871	0 99	13 34
5	18 06 97	17 45 00	227 348	230 374	0 99	37,2	79 08	80 192	0 99	13,26
6	18 06 97	18 00 00	224 671	227 792	0 99	37 564	76 805	78 037	0 98	13 76
7	18 06 97	18 15 00	225 091	228 309	0 99	38 183	76 556	77 831	0 98	13 992
8	18 06 97	18 30 00	223 916	227 117	0 99	37 98	74 912	76 289	0 98	14 38
9	18 06 97	18 45 00	223 011	226 401	0 99	39 013	73 213	74 774	0 98	15 15
10	18 06 97	19 00 00	223 693	227 155	0 98	39 494	74 675	76 14	0 98	14 81
11	18 06 97	19 15 00	224 942	228 44	0 98	39 808	76 422	77 783	0 98	14 4
12	18 06 97	19 30 00	225 195	228 633	0 98	39 487	77 045	78 348	0 98	14 18
13	18 06 97	19 45 00	227,293	230 753	0 99	39 794	79,262	80 462	0 99	13 801
14	18 06 97	20 00 00	226 717	230 312	0 98	40 509	77 522	78 869	0 98	14 44
15	18 06 97	20 15 00	223 538	227 462	0 98	42 059	72 529	74 319	0 98	16 171
16	18 06 97	20 30 00	225 939	229 724	0 98	41 515	75 169	76 726	0 98	15 32
17	18 06 97	20 45 00	227 791	231 401	0 98	40 704	77 527	78 876	0 98	14 48
18	18 06 97	21 00 00	229 285	232 868	0 98	40 68	79 063	80 329	0 98	14 16
19	18 06 97	21 15 00	231 149	234 757	0 98	40 985	80 803	82 003	0 99	13 93
20	18 06 97	21 30 00	230 725	234 138	0 99	39 814	80 808	81 953	0 99	13 611
21	18 06 97	21 45 00	230,245	233 691	0 99	39 971	80 643	81 8	0 99	13 66
22	18 06 97	22 00 00	229 687	233 427	0 98	41 601	79 487	80 765	0 98	14 271
23	18 06 97	22 15 00	228 89	232 938	0 98	43 222	77 969	79 409	0 98	15 01
24	18 06 97	22 30 00	227 902	231 84	0 98	42 544	77 414	78 85	0 98	14 93
25	18 06 97	22 45 00	227 139	231 177	0 98	43 004	76 178	77 727	0 98	15 39
26	18 06 97	23 00 00	227 904	232 004	0 98	43 411	78 042	79 468	0 98	14 95
27	18 06 97	23 15 00	227 984	232 066	0 98	43 271	78 523	79 912	0 98	14 7
28	18 06 97	23 30 00	221 904	224 95	0 99	36 879	76 422	77 613	0 98	13 502
29	18 06 97	23 45 00	221 329	224 659	0 99	38 526	74 921	76 288	0 98	14 332
30	19 06 97	0 00 00	220 745	224 154	0 98	38 934	73 321	74 843	0 98	14 966
31	19 06 97	0 15 00	217 614	221 329	0 98	40 366	68 512	70 465	0 97	16 416
32	19 06 97	0 30 00	219 179	222 628	0 98	39 009	72 2	73 796	0 98	15 155
33	19 06 97	0 45 00	217,217	220 89	0 98	40 014	74 598	76 001	0 98	14 496
34	19 06 97	1 00 00	215 202	218 987	0 98	40 468	75 88	77 174	0 98	14 033
35	19 06 97	1 15 00	219 65	223 253	0 98	39 936	73 943	75 436	0 98	14 891
36	19 06 97	1 30 00	218 727	222 546	0 98	41 039	73 12	74 721	0 98	15 342
37	19 06 97	1 45 00	219 432	223 141	0 98	40 506	74 871	76 306	0 98	14 68
38	19 06 97	2 00 00	220 708	224 302	0 98	39 983	76 642	77 931	0 98	14 077
39	19 06 97	2 15 00	220 989	224 473	0 98	39 382	77 131	78 367	0 98	13 827
40	19 06 97	2 30 00	220 345	223 93	0 98	39 893	75 764	77 116	0 98	14 37
41	19 06 97	2 45 00	217 715	221 475	0 98	40 625	72 384	74 012	0 98	15 37
42	19 06 97	3 00 00	221 97	225 357	0 98	38 915	77 668	78 867	0 98	13 658

43	19 06 97	3 15 00	220 879	224,256	0 98	38 759	76 853	78 083	0 98	13 762
44	19 06 97	3 30 00	217 876	221 6	0 98	40 438	72 488	74 1	0 98	15 298
45	19 06 97	3 45 00	214 898	219 228	0 98	43 349	68 086	70 199	0 97	17 053
46	19 06 97	4 00 00	212 41	216 925	0 98	44 017	66 08	68 415	0 97	17 676
47	19 06 97	4 15 00	215 596	219 654	0 98	41 959	70 701	72 539	0 98	16 048
48	19 06 97	4 30 00	221 112	224 649	0 98	39 695	77,273	78 519	0 98	13 9
49	19 06 97	4 45 00	220 993	224 672	0 98	40 478	77 085	78 374	0 98	14 122
50	19 06 97	5 00 00	220 111	223 848	0 98	40 722	76 49	77 818	0 98	14,272
51	19 06 97	5 15 00	217 969	221,703	0 98	40 508	74 534	75 976	0 98	14 688
52	19 06 97	5 30 00	217 928	221 39	0 98	38 987	75 322	76 632	0 98	14 066
53	19 06 97	5 45 00	218 132	221 57	0 98	38 868	75 829	77 098	0 98	13 89
54	19 06 97	6 00 00	215 523	219 02	0 98	38 967	73 56	74 977	0 98	14 469
55	19 06 97	6 15 00	215 032	218 254	0 99	37 35	74 176	75 461	0 98	13 823
56	19 06 97	6 30 00	214 245	217,257	0 99	36 038	74 219	75 431	0 98	13 424
57	19 06 97	6 45 00	212 991	215 796	0 99	34 67	73 393	74 599	0 98	13 32
58	19 06 97	7 00 00	212 049	214 792	0 99	34 204	72 488	73 726	0 98	13 406
59	19 06 97	7 15 00	211 801	214 426	0 99	33 435	72 933	74 097	0 98	13 037
60	19 06 97	7 30 00	211 82	214 204	0 99	31 853	73 907	74 939	0 99	12 348
61	19 06 97	7 45 00	210 748	212 871	0 99	29 967	73 88	74 83	0 99	11 839
62	19 06 97	8 00 00	210 956	212 897	0 99	28 665	74 693	75 556	0 99	11 337
63	19 06 97	8 15 00	211 563	213 507	0 99	28 729	73 855	74 776	0 99	11 64
64	19 06 97	8 30 00	213 774	216 101	0 99	31 519	73 53	74 611	0 99	12 564
65	19 06 97	8 45 00	216 757	218 876	0 99	30 358	77 17	78 022	0 99	11 456
66	19 06 97	9 00 00	216 047	218 018	0 99	29 238	77 24	78 041	0 99	11 116
67	19 06 97	9 15 00	215 024	216 853	0 99	28 087	76 383	77 18	0 99	11 021
68	19 06 97	9 30 00	214 319	216 046	0 99	27 244	76 18	76 953	0 99	10 837
69	19 06 97	9 45 00	214 742	216 397	0 99	26 69	77 117	77 835	0 99	10 51
70	19 06 97	10 00 00	214 96	216 606	0 99	26 626	77 238	77 948	0 99	10 455
71	19 06 97	10 15 00	215 674	217 512	0 99	28 201	76 644	77 434	0 99	11 003
72	19 06 97	10 30 00	215 784	217 581	0 99	27 892	76 721	77 5	0 99	10 917
73	19 06 97	10 45 00	217 464	219 144	0 99	27 059	79 143	79 81	0 99	10 249
74	19 06 97	11 00 00	217 42	219 099	0 99	27 054	78 519	79 211	0 99	10 4
75	19 06 97	11 15 00	218 251	219 873	0 99	26 56	79 187	79 848	0 99	10 187
76	19 06 97	11 30 00	223 854	225 877	0 99	30 148	82 247	82 931	0 99	10 597
77	19 06 97	11 45 00	225 431	226 955	0 99	26 156	82 137	82 731	0 99	9 854
78	19 06 97	12 00 00	226 643	228 179	0 99	26 387	81 525	82 156	0 99	10 124
79	19 06 97	12 15 00	226 322	227 896	0 99	26 7	80 961	81 615	0 99	10 272
80	19 06 97	12 30 00	225 392	227 026	0 99	27 071	80 075	80 768	0 99	10 511
81	19 06 97	12 45 00	223 812	226 054	0 99	31 744	80 623	81 422	0 99	11 338
82	19 06 97	13 00 00	224 997	227,297	0 99	32,235	81 404	82 193	0 99	11 322
83	19 06 97	13 15 00	225 763	228 094	0 99	32 509	81 658	82 452	0 99	11 373
84	19 06 97	13 30 00	225 365	227 589	0 99	31 722	81 911	82 664	0 99	11 091
85	19 06 97	13 45 00	225 82	227,764	0 99	29 678	83 027	83 684	0 99	10 416
86	19 06 97	14 00 00	226 365	228,272	0 99	29 431	83 434	84 07	0 99	10,281
87	19 06 97	14 15 00	227 56	229 658	0 99	30 938	83 768	84 442	0 99	10 612
88	19 06 97	14 30 00	228 739	230 929	0 99	31 676	84,257	84 94	0 99	10 706
89	19 06 97	14 45 00	230 637	232 214	0 99	26 994	82 089	82 743	0 99	10 346
90	19 06 97	15 00 00	232 07	233 835	0 99	28 667	82 491	83 188	0 99	10 708
91	19 06 97	15 15 00	232 572	234 425	0 99	29 398	82 286	83 018	0 99	10 961

92	19 06 97	15 30 00	234 309	236 202	0 99	29 829	81 877	82 644	0 99	11 189
93	19 06 97	15 45 00	233 339	235 799	0 99	33 94	0	0 121	1	-0 121
94	19 06 97	16 00 00	228 556	232 263	0 98	41 29	65 697	66 782	0 98	11 538
95	19 06 97	16 15 00	232 666	235 069	0 99	33 462	83 763	84 551	0 99	11 444
96	19 06 97	16 30 00	234 452	236 88	0 99	33 805	85 479	86 222	0 99	11 243
97	19 06 97	16 45 00	233 4	236 115	0 99	35 693	83 987	84 845	0 99	11 986
98	19 06 97	17 00 00	233 351	236 14	0 99	36 174	83 595	84 483	0 99	12 171
99	19 06 97	17 15 00	233 387	236 437	0 99	37 839	82 949	83 926	0 99	12 724
100	19 06 97	17 30 00	232 757	235 928	0 99	38 539	82 784	83 785	0 99	12 868
101	19 06 97	17 45 00	232 214	235 731	0 99	40,552	81 774	82 894	0 99	13 536
102	19 06 97	18 00 00	231 067	234 83	0 98	41 852	80 114	81 361	0 98	14 143
103	19 06 97	18 15 00	231 363	235,203	0 98	42 305	80 795	82 035	0 99	14 136
104	19 06 97	18 30 00	233 508	237 234	0 98	41 865	82 993	84 117	0 99	13 66
105	19 06 97	18 45 00	232 383	236 158	0 98	42 045	81 654	82 837	0 99	13 912
106	19 06 97	19 00 00	231 375	235 228	0 98	42 388	80 502	81 751	0 98	14 196
107	19 06 97	19 15 00	231 327	235 287	0 98	42 973	80 09	81 385	0 98	14 421
108	19 06 97	19 30 00	230 592	234 57	0 98	43 001	79 772	81 096	0 98	14 545
109	19 06 97	19 45 00	232 517	236 311	0 98	42 163	82 535	83 682	0 99	13 764
110	19 06 97	20 00 00	231 082	234 973	0 98	42 572	81 703	82 894	0 99	13 954
111	19 06 97	20 15 00	231 384	235,264	0 98	42 533	81 615	82 819	0 99	14 026
112	19 06 97	20 30 00	231 722	235 588	0 98	42 49	81 842	83 034	0 99	13 971
113	19 06 97	20 45 00	229 642	233 414	0 98	41 702	80 763	81 962	0 99	13 906
114	19 06 97	21 00 00	225 807	228 594	0 99	35 573	80 623	81 563	0 99	12 307
115	19 06 97	21 15 00	222 165	225 092	0 99	36 167	76 899	78 03	0 99	13 187
116	19 06 97	21 30 00	220 193	223 086	0 99	35 785	75 879	77 042	0 99	13 27
117	19 06 97	21 45 00	221 735	224 639	0 99	35 99	78 096	79 144	0 99	12 795
118	19 06 97	22 00 00	221 847	224 925	0 99	37 067	78 301	79 378	0 99	12 99
119	19 06 97	22 15 00	220 938	224 014	0 99	36 982	77 832	78 922	0 99	13 032
120	19 06 97	22 30 00	219 11	222 213	0 99	36 992	76 103	77 279	0 98	13 383
121	19 06 97	22 45 00	218 462	221 618	0 99	37 254	75 802	77 004	0 98	13 501
122	19 06 97	23 00 00	218 539	221 679	0 99	37 169	76 781	77 91	0 99	13 174
123	19 06 97	23 15 00	218 131	221 465	0 98	38,274	76 88	78 043	0 99	13 384
124	19 06 97	23 30 00	217 858	221 392	0 98	39 389	75 868	77 146	0 98	13 935
125	19 06 97	23 45 00	216 851	220 458	0 98	39 705	74 712	76 077	0 98	14,296
126	20 06 97	0 00 00	217 412	221 165	0 98	40 564	73 346	74 885	0 98	15 057
127	20 06 97	0 15 00	216 434	220 182	0 98	40 441	71 477	73 144	0 98	15 481
128	20 06 97	0 30 00	215 901	219 842	0 98	41 412	70 933	72 689	0 98	15 785
129	20 06 97	0 45 00	220 229	223 772	0 98	39 65	76 862	78 115	0 98	13 892
130	20 06 97	1 00 00	219 413	223 012	0 98	39 894	76 922	78 17	0 98	13 875
131	20 06 97	1 15 00	219 229	222 979	0 98	40 713	77 074	78 34	0 98	13 987
132	20 06 97	1 30 00	218 71	222 59	0 98	41 368	76 358	77 699	0 98	14 32
133	20 06 97	1 45 00	216 13	220 148	0 98	41 857	72 921	74 535	0 98	15 377
134	20 06 97	2 00 00	212 777	217 044	0 98	42 803	68 899	70 864	0 97	16 497
135	20 06 97	2 15 00	213 326	217 673	0 98	43,227	69 342	71 326	0 97	16 529
136	20 06 97	2 30 00	220 672	224 525	0 98	41 404	77 926	79 189	0 98	14 051
137	20 06 97	2 45 00	220 151	224 098	0 98	41 86	77 787	79 065	0 98	14 115
138	20 06 97	3 00 00	218 588	222 593	0 98	42 025	76 313	77 682	0 98	14 475
139	20 06 97	3 15 00	216 878	220 953	0 98	42 231	74 588	76 085	0 98	14 972
140	20 06 97	3 30 00	217 575	221 63	0 98	42 19	75 802	77 205	0 98	14 598

141	20 06 97	3 45 00	218 756	222 726	0 98	41 851	77 46	78 744	0 98	14 12
142	20 06 97	4 00 00	219 329	223.245	0 98	41 623	78 335	79 558	0 98	13 85
143	20 06 97	4 15 00	219 418	223 35	0 98	41 71	78 515	79 729	0 98	13 8
144	20 06 97	4 30 00	219 961	223 963	0 98	42 139	78 453	79 696	0 98	13 98
145	20 06 97	4 45 00	219 852	223 907	0 98	42 411	78 218	79 486	0 98	14 10
146	20 06 97	5 00 00	218 526	222 658	0 98	42 681	76 731	78 094	0 98	14 48
147	20 06 97	5 15 00	216 613	220 975	0 98	43 681	73 997	75 615	0 98	15 50
148	20 06 97	5 30 00	215 097	219 528	0 98	43 876	72 32	74 073	0 98	15 97
149	20 06 97	5 45 00	214 092	218 571	0 98	43 999	71 366	73 18	0 98	16 15
150	20 06 97	6 00 00	214 088	218 483	0 98	43 571	72.287	74 007	0 98	15 77
151	20 06 97	6 15 00	218 362	221 84	0 98	39 106	78 833	79 922	0 99	13 10
152	20 06 97	6 30 00	216 099	219,203	0 99	36 738	77 933	78 955	0 99	12 628
153	20 06 97	6 45 00	213 135	216 008	0 99	35 103	76 446	77 455	0 99	12 418
154	20 06 97	7 00 00	211 263	214 178	0 99	35 204	74 832	75 92	0 99	12 761
155	20 06 97	7 15 00	210 905	213 788	0 99	34 982	74 137	75 26	0 99	12 906
156	20 06 97	7 30 00	209 035	211 824	0 99	34 248	73 091	74 237	0 98	12 94
157	20 06 97	7 45 00	207 78	210 488	0 99	33 647	72 387	73 551	0 98	12 988
158	20 06 97	8 00 00	207 128	209 682	0 99	32 618	72.274	73 391	0 98	12 71
159	20 06 97	8 15 00	206 06	208 554	0 99	32 139	71 102	72 265	0 98	12 8
160	20 06 97	8 30 00	206 03	208 535	0 99	32 125	71 412	72 556	0 98	12 77
161	20 06 97	8 45 00	207 583	210 346	0 99	33 963	72 448	73 612	0 98	12 998
162	20 06 97	9 00 00	207 421	210 043	0 99	33 072	72 266	73 406	0 98	12 838
163	20 06 97	9 15 00	207 678	209 951	0 99	30 769	73 29	74 27	0 99	11 963
164	20 06 97	9 30 00	208,235	210 141	0 99	28 223	74 492	75 312	0 99	11 044
165	20 06 97	9 45 00	207 724	209 569	0 99	27 736	73 749	74 593	0 99	11 14
166	20 06 97	10 00 00	208 327	211 564	0 98	36 729	69 129	70 673	0 98	14 614
167	20 06 97	10 15 00	210 034	214 029	0 98	41 07	72 02	73 57	0 98	14 979
168	20 06 97	10 30 00	208 508	212 828	0 98	42 646	75 822	77 112	0 98	13 997
169	20 06 97	10 45 00	211 573	215 722	0 98	42 09	77 756	78 927	0 99	13 514
170	20 06 97	11 00 00	216 219	219 992	0 98	40 526	78 387	79 524	0 99	13 362
171	20 06 97	11 15 00	218 287	221 394	0 99	36 928	79 754	80 711	0 99	12 347
172	20 06 97	11 30 00	217 074	219 886	0 99	35 043	79 487	80 376	0 99	11 884
173	20 06 97	11 45 00	216 286	219 421	0 99	36 941	77 238	78 301	0 99	12 818
174	20 06 97	12 00 00	213 377	216 847	0 98	38 614	71 671	73 179	0 98	14 682
175	20 06 97	12 15 00	210 688	214 702	0 98	41 231	67 787	69 795	0 97	16 31
176	20 06 97	12 30 00	213 011	216 708	0 98	39 755	77 309	78 44	0 99	13,237
177	20 06 97	12 45 00	212 169	215 928	0 98	40 086	79 498	80 511	0 99	12 685
178	20 06 97	13 00 00	218 741	221 954	0 99	37 6	78 717	79 755	0 99	12 773
179	20 06 97	13 15 00	215 115	218 723	0 98	39 449	77 393	78 538	0 99	13,296
180	20 06 97	13 30 00	225 367	228 071	0 99	35	84,23	84 992	0 99	11 305
181	20 06 97	13 45 00	223 413	226 221	0 99	35 455	83 957	84 723	0 99	11 312
182	20 06 97	14 00 00	213 572	217,243	0 98	39 755	81,272	82 187	0 99	12 187
183	20 06 97	14 15 00	218 849	222 394	0 98	39 478	82 031	82 955	0 99	12,294
184	20 06 97	14 30 00	225 668	228 829	0 99	37 892	86 635	87 372	0 99	11,282
185	20 06 97	14 45 00	225 671	229 226	0 98	40 191	88 102	88 843	0 99	11 396
186	20 06 97	15 00 00	224 844	228 865	0 98	42 686	85 968	86 866	0 99	12 394
187	20 06 97	15 15 00	220 555	225 37	0 98	46 319	82 924	84 047	0 99	13 648
188	20 06 97	15 30 00	213 589	218 306	0 98	45 066	77 087	78 441	0 98	14 466
189	20 06 97	15 45 00	208 56	212 964	0 98	43 059	71 657	73 283	0 98	15 297

190	20 06 97	16 00 00	218 409	221 95	0 98	39 467	79 793	80 829	0 99	12 858
191	20 06 97	16 15 00	220 639	224 576	0 98	41 85	80 138	81 265	0 99	13 447
192	20 06 97	16 30 00	218 15	222 249	0 98	42 474	77 763	79 029	0 98	14 052
193	20 06 97	16 45 00	218 156	222 626	0 98	44 373	76 358	77 809	0 98	14 914
194	20 06 97	17 00 00	218 821	223 386	0 98	44 916	76 205	77 701	0 98	15 134
195	20 06 97	17 15 00	218 695	223 596	0 98	46 541	75 472	77 108	0 98	15 744
196	20 06 97	17 30 00	220 539	225,211	0 98	45 619	78 032	79 443	0 98	14 871
197	20 06 97	17 45 00	218 969	223 393	0 98	44 223	77,275	78 661	0 98	14 663
198	20 06 97	18 00 00	217 93	222 376	0 98	44 235	75 933	77 404	0 98	14 979
199	20 06 97	18 15 00	215 912	220 531	0 98	44 885	72 967	74 704	0 98	15 968
200	20 06 97	18 30 00	213 677	218 433	0 98	45 32	70 834	72 744	0 97	16 512
201	20 06 97	18 45 00	214 112	218 97	0 98	45 852	71 561	73 454	0 97	16 507
202	20 06 97	19 00 00	216 813	221 397	0 98	44 804	74 83	76 412	0 98	15 427
203	20 06 97	19 15 00	215 015	219 746	0 98	45 342	72 795	74 561	0 98	16 091
204	20 06 97	19 30 00	214 308	219 311	0 98	46 567	71 135	73 103	0 97	16 804
205	20 06 97	19 45 00	216 013	221 013	0 98	46 735	72 914	74 76	0 98	16 468
206	20 06 97	20 00 00	217 767	222 396	0 98	45 12	75 259	76 845	0 98	15 485
207	20 06 97	20 15 00	218 819	223 339	0 98	44 696	75 628	77 175	0 98	15 339
208	20 06 97	20 30 00	217 143	221 876	0 98	45 571	73 28	75 064	0 98	16 223
209	20 06 97	20 45 00	217 329	222 156	0 98	46 045	74,23	75 942	0 98	15 981
210	20 06 97	21 00 00	219 144	223 815	0 98	45 476	76 093	77 638	0 98	15 377
211	20 06 97	21 15 00	218 896	223 61	0 98	45 66	76 032	77 587	0 98	15 42
212	20 06 97	21 30 00	218 339	223 249	0 98	46 547	74 634	76 353	0 98	16 06
213	20 06 97	21 45 00	214 656	218 739	0 98	41 908	73 472	75 021	0 98	15 095
214	20 06 97	22 00 00	213 439	217 104	0 98	39 718	73 581	74 99	0 98	14 43
215	20 06 97	22 15 00	213 134	216 814	0 98	39 766	73,269	74 701	0 98	14 519
216	20 06 97	22 30 00	211 78	215 551	0 98	40 126	71 813	73 359	0 98	14 934
217	20 06 97	22 45 00	214 052	217 626	0 98	39 258	74 845	76 154	0 98	13 979
218	20 06 97	23 00 00	216 775	220,24	0 98	38 9	77 075	78 241	0 99	13 422
219	20 06 97	23 15 00	214 113	217 757	0 98	39 657	74 104	75 478	0 98	14,292
220	20 06 97	23 30 00	211 23	215,251	0 98	41 382	69 639	71 431	0 98	15 808
221	20 06 97	23 45 00	215 383	219 122	0 98	40 248	75 559	76 895	0 98	14 112
222	21 06 97	0 00 00	215 824	219,21	0 98	38 357	76 061	77 255	0 98	13 49
223	21 06 97	0 15 00	212 842	216 434	0 98	39 244	71 95	73 465	0 98	14 783
224	21 06 97	0 30 00	206 222	210 886	0 98	44 036	63 622	66 173	0 96	17 952
225	21 06 97	0 45 00	216 499	220 01	0 98	39 091	77 055	78,244	0 98	13 508
226	21 06 97	1 00 00	216 95	220 59	0 98	39 898	76 145	77 42	0 98	13 952
227	21 06 97	1 15 00	214 146	218 077	0 98	41 206	72 784	74 344	0 98	15 091
228	21 06 97	1 30 00	211 691	215 842	0 98	42 082	71 779	73 433	0 98	15 363
229	21 06 97	1 45 00	218 107	221 604	0 98	39,204	79 172	80,238	0 99	13 005
230	21 06 97	2 00 00	217 831	221 391	0 98	39 529	78 599	79 708	0 99	13 219
231	21 06 97	2 15 00	216 74	220 447	0 98	40 246	77 311	78 507	0 98	13 621
232	21 06 97	2 30 00	214 97	218 902	0 98	41 289	75 512	76 855	0 98	14 264
233	21 06 97	2 45 00	212 007	216 174	0 98	42 224	72 739	74 307	0 98	15 143
234	21 06 97	3 00 00	209 585	214 005	0 98	43 263	70 949	72 676	0 98	15 712
235	21 06 97	3 15 00	213 042	217 033	0 98	41 418	75,263	76 607	0 98	14,247
236	21 06 97	3 30 00	213 35	217 435	0 98	41 936	75 673	77 007	0 98	14 237
237	21 06 97	3 45 00	211 696	216 111	0 98	43 445	73 841	75 377	0 98	15 084
238	21 06 97	4 00 00	209 161	213 967	0 98	45 084	70 88	72 709	0 97	16 163

239	21 06 97	4 15 00	212 014	216 643	0 98	44 534	73 316	74 96	0 98	15 57
240	21 06 97	4 30 00	213 079	217 757	0 98	44 882	74 488	76 056	0 98	15 32
241	21 06 97	4 45 00	209 291	213 416	0 98	41 631	72 483	74 013	0 98	14 92
242	21 06 97	5 00 00	205 589	209 03	0 98	37 746	71 749	73 098	0 98	13 91
243	21 06 97	5 15 00	209 6	212 611	0 99	35 635	76,22	77 225	0 99	12 38
244	21 06 97	5 30 00	209 945	212 896	0 99	35 312	76 782	77 747	0 99	12 18
245	21 06 97	5 45 00	208 301	211 339	0 99	35 695	75 149	76 207	0 99	12 61
246	21 06 97	6 00 00	203 026	206 511	0 98	37 739	69 503	70 983	0 98	14 34
247	21 06 97	6 15 00	207 286	210 092	0 99	34 169	75 165	76 155	0 99	12 17
248	21 06 97	6 30 00	206 401	209 003	0 99	32 864	74 492	75 453	0 99	11 97
249	21 06 97	6 45 00	203 475	205 996	0 99	32 118	72 035	73 096	0 99	12 37
250	21 06 97	7 00 00	203 026	205 51	0 99	31 844	72 457	73 476	0 99	12 1
251	21 06 97	7 15 00	202 898	205,226	0 99	30 815	72 506	73 481	0 99	11 88
252	21 06 97	7 30 00	201 198	203 476	0 99	30 347	70 663	71 718	0 99	12 21
253	21 06 97	7 45 00	200 026	202 337	0 99	30 485	69 017	70 164	0 98	12 59
254	21 06 97	8 00 00	201 866	204,267	0 99	31 211	70 411	71 528	0 98	12 54
255	21 06 97	8 15 00	204 643	206 992	0 99	31 074	73 234	74 189	0 99	11 8
256	21 06 97	8 30 00	204,239	206 343	0 99	29 371	73 577	74 446	0 99	11 30
257	21 06 97	8 45 00	204 549	206 466	0 99	28 056	73 813	74 624	0 99	10 93
258	21 06 97	9 00 00	204 902	206 809	0 99	28 012	74 089	74 89	0 99	10 88
259	21 06 97	9 15 00	205 547	207 395	0 99	27 607	74 436	75 209	0 99	10 719
260	21 06 97	9 30 00	205 239	207 088	0 99	27 597	73 485	74 304	0 99	10 963
261	21 06 97	9 45 00	204 6	206 36	0 99	26 876	72 908	73 726	0 99	10 912
262	21 06 97	10 00 00	204 468	206 318	0 99	27 548	72 164	73 051	0 99	11 306
263	21 06 97	10 15 00	205 336	207 351	0 99	28 821	72 243	73 183	0 99	11 65
264	21 06 97	10 30 00	205 217	207 275	0 99	29 117	71 747	72 735	0 99	11 901
265	21 06 97	10 45 00	204 06	206 094	0 99	28 874	70 525	71 566	0 99	12 124
266	21 06 97	11 00 00	203 637	205 913	0 99	30 417	71 537	72 57	0 99	12 156
267	21 06 97	11 15 00	202 793	205 32	0 99	32 098	72 565	73 582	0 99	12 154
268	21 06 97	11 30 00	202 403	204 882	0 99	31 762	72 714	73 698	0 99	11 965
269	21 06 97	11 45 00	202 389	204 837	0 99	31 56	72 764	73 736	0 99	11 892
270	21 06 97	12 00 00	206 6	209 608	0 99	35 253	75 01	76 033	0 99	12 376
271	21 06 97	12 15 00	209 601	212 391	0 99	34 226	75 89	76 854	0 99	12 1
272	21 06 97	12 30 00	210 544	212 948	0 99	31 894	75 493	76 412	0 99	11 781
273	21 06 97	12 45 00	212 011	214 362	0 99	31 65	76 465	77 339	0 99	11 563
274	21 06 97	13 00 00	212 224	214 686	0 99	32,405	76 085	77 004	0 99	11 829
275	21 06 97	13 15 00	213 906	216 361	0 99	32 483	77 315	78 194	0 99	11 659
276	21 06 97	13 30 00	214 303	216 695	0 99	32 091	77 138	78 021	0 99	11 661
277	21 06 97	13 45 00	214 878	217 352	0 99	32 692	77 281	78,18	0 99	11 782
278	21 06 97	14 00 00	215 696	218 361	0 99	33 998	77,219	78 174	0 99	12 144
279	21 06 97	14 15 00	215 717	218 562	0 99	35 138	76 912	77 925	0 99	12 487
280	21 06 97	14 30 00	216 356	219 188	0 99	35 11	77 273	78,271	0 99	12 417
281	21 06 97	14 45 00	215 984	218 8	0 99	34 979	76 389	77 429	0 99	12 612
282	21 06 97	15 00 00	215 728	218 685	0 99	35 822	75 176	76 319	0 99	13 11
283	21 06 97	15 15 00	215 968	219 015	0 99	36 395	75 524	76 675	0 99	13 187
284	21 06 97	15 30 00	218 558	221 424	0 99	35 498	77 702	78 725	0 99	12 612
285	21 06 97	15 45 00	219 828	222 541	0 99	34 631	78 315	79 289	0 99	12,348
286	21 06 97	16 00 00	220 999	223 807	0 99	35 326	78 999	79 974	0 99	12 414
287	21 06 97	16 15 00	221 898	224 737	0 99	35 596	79 379	80 35	0,99	12 417

288	21 06 97	16 30 00	222 018	224 717	0 99	34 708	79 764	80 683	0 99	12 107
289	21 06 97	16 45 00	222 002	224 683	0 99	34 598	79 641	80 558	0 99	12 083
290	21 06 97	17 00 00	221 641	224 52	0 99	35 831	78 416	79 443	0 99	12 697
291	21 06 97	17 15 00	221 844	224 898	0 99	36 93	78 147	79,225	0 99	12 99
292	21 06 97	17 30 00	220 953	223 963	0 99	36 583	77 612	78 698	0 99	12 997
293	21 06 97	17 45 00	220 653	223 587	0 99	36 086	77 367	78 445	0 99	12 925
294	21 06 97	18 00 00	220 754	223 625	0 99	35 706	76 753	77 849	0 99	12 982
295	21 06 97	18 15 00	220 385	223 307	0 99	35 997	76 369	77 503	0 99	13 165
296	21 06 97	18 30 00	220 122	223 143	0 99	36 582	76 026	77 203	0 98	13 389
297	21 06 97	18 45 00	220 378	223 399	0 99	36 601	76 283	77 445	0 99	13 322
298	21 06 97	19 00 00	221 576	224 522	0 99	36,244	77 549	78 639	0 99	13 005
299	21 06 97	19 15 00	222 447	225 197	0 99	35 069	78 889	79 873	0 99	12 456
300	21 06 97	19 30 00	223 242	225 908	0 99	34 588	79 805	80 73	0 99	12 149
301	21 06 97	19 45 00	223 879	226 459	0 99	34 078	80 198	81 094	0 99	11 982
302	21 06 97	20 00 00	224 991	227 581	0 99	34 225	80 723	81 608	0 99	11 949
303	21 06 97	20 15 00	224 533	227,241	0 99	34 965	79 37	80 343	0 99	12 427
304	21 06 97	20 30 00	224 714	227 406	0 99	34 874	80 214	81 143	0 99	12 207
305	21 06 97	20 45 00	224 573	227,249	0 99	34 755	80 045	80 979	0 99	12,223
306	21 06 97	21 00 00	223 852	226 612	0 99	35 246	78 536	79 56	0 99	12 687
307	21 06 97	21 15 00	222 659	225 489	0 99	35 598	77 252	78 349	0 99	13 026
308	21 06 97	21 30 00	221 661	224 516	0 99	35 677	75 734	76 912	0 98	13 372
309	21 06 97	21 45 00	219 469	222 464	0 99	36 356	72 244	73 689	0 98	14 457
310	21 06 97	22 00 00	216 459	220 001	0 98	39 298	67 839	69 764	0 97	16 228
311	21 06 97	22 15 00	219 807	222 985	0 99	37 441	73 106	74 563	0 98	14 49
312	21 06 97	22 30 00	222 379	225 228	0 99	35 688	77 329	78 422	0 99	13 011
313	21 06 97	22 45 00	222 497	225,286	0 99	35 314	77 608	78 674	0 99	12 869
314	21 06 97	23 00 00	223 026	225 808	0 99	35 31	78 036	79 084	0 99	12 791
315	21 06 97	23 15 00	221 701	224 658	0 99	36 299	76 181	77 365	0 98	13 431
316	21 06 97	23 30 00	220 133	223 301	0 99	37 457	73 237	74 671	0 98	14 515
317	21 06 97	23 45 00	219 144	222 573	0 98	38 875	70 851	72 534	0 98	15 482
318	22 06 97	0 00 00	218 395	221 911	0 98	39 311	69 935	71 707	0 98	15 798
319	22 06 97	0 15 00	218 745	222 377	0 98	40 005	70 928	72 653	0 98	15 702
320	22 06 97	0 30 00	218 151	222 162	0 98	41 974	71 043	72 849	0 98	16 086
321	22 06 97	0 45 00	222 979	227 383	0 98	44 498	78 739	80 146	0 98	14 797
322	22 06 97	1 00 00	232 626	236 112	0 99	40 412	85 309	86 267	0 99	12 787
323	22 06 97	1 15 00	229,277	232 495	0 99	38 407	83 491	84 433	0 99	12 525
324	22 06 97	1 30 00	224 749	227 378	0 99	34 461	81 319	82 186	0 99	11 874
325	22 06 97	1 45 00	222 277	225 08	0 99	35 393	79 406	80 368	0,99	12 365
326	22 06 97	2 00 00	219 902	222 96	0 99	36 783	78 049	79 106	0 99	12 848
327	22 06 97	2 15 00	216 109	219 581	0 98	38 853	74 704	76 016	0 98	14 023
328	22 06 97	2 30 00	215 206	218 772	0 98	39 323	74 883	76 214	0 98	14 069
329	22 06 97	2 45 00	219 76	223 035	0 99	38 072	81 985	82 883	0 99	12 134
330	22 06 97	3 00 00	219 495	222 874	0 98	38 654	81 825	82 745	0 99	12,27
331	22 06 97	3 15 00	218 884	222 34	0 98	39 037	81 301	82 252	0 99	12 44
332	22 06 97	3 30 00	218 881	222 412	0 98	39 463	81 526	82 476	0 99	12 453
333	22 06 97	3 45 00	219 022	222 647	0 98	40,004	81 91	82 862	0 99	12 497
334	22 06 97	4 00 00	219 278	222 849	0 98	39 726	83 596	84 46	0 99	12 019
335	22 06 97	4 15 00	223 928	226 909	0 99	36 645	83 454	84,279	0 99	11 729
336	22 06 97	4 30 00	222 258	225 482	0 99	37 981	81 596	82 531	0 99	12 35

337	22 06 97	4 45 00	220 957	224 303	0 99	38 588	80 106	81 123	0 99	12 [illegible]
338	22 06 97	5 00 00	218 835	222 162	0 99	38 294	78 53	79 596	0 99	12 948
339	22 06 97	5 15 00	217 689	221 037	0 98	38 317	77 912	79 004	0 99	1 057
340	22 06 97	5 30 00	216 995	220,281	0 99	37 893	78 079	79 138	0 99	12 869
341	22 06 97	5 45 00	216 027	219 362	0 98	38 089	77 174	78 287	0 99	13 112
342	22 06 97	6 00 00	215 035	218 628	0 98	39 461	75 341	76 622	0 98	1 9
343	22 06 97	6 15 00	212 001	215 908	0 98	40 878	71 344	72 968	0 98	15.258
344	22 06 97	6 30 00	208 055	212 013	0 98	40 768	67 806	69 655	0 97	15 893
345	22 06 97	6 45 00	204 225	208 641	0 98	42 679	62 806	65 294	0 96	17 724
346	22 06 97	7 00 00	215 848	219,247	0 98	38 437	76 299	77 491	0 98	13 488
347	22 06 97	7 15 00	215 748	218 812	0 99	36 474	76 922	77 991	0 99	12 842
348	22 06 97	7 30 00	213 516	216 643	0 99	36 667	74 525	75 732	0 98	13 427
349	22 06 97	7 45 00	211 112	214 408	0 98	37 441	71 905	73 314	0 98	14 267
350	22 06 97	8 00 00	213 697	216 895	0 99	37 094	74 953	76 155	0 98	1 419
351	22 06 97	8 15 00	217 008	220 036	0 99	36 366	77 499	78 547	0 99	12 757
352	22 06 97	8 30 00	217 238	220 116	0 99	35 463	78 298	79,272	0 99	12 356
353	22 06 97	8 45 00	217 849	220 679	0 99	35 215	78 745	79 694	0 99	12.231
354	22 06 97	9 00 00	217 262	219 982	0 99	34 475	77 795	78 757	0 99	12.243
355	22 06 97	9 15 00	215 102	217 894	0 99	34 75	75 111	76 216	0 99	12 884
356	22 06 97	9 30 00	213 113	216 026	0 99	35 343	72 757	74 027	0 98	15 601
357	22 06 97	9 45 00	213 478	217 212	0 98	39 737	35 948	36 516	0 99	5 925
358	22 06 97	10 00 00	211 375	215 83	0 98	43 477	17 813	18 188	0 99	2 816
359	22 06 97	10 15 00	215 472	218 327	0 99	35 185	75 746	76 804	0 99	12 663
360	22 06 97	10 30 00	214 644	217 461	0 99	34 878	74 493	75 633	0 99	13 046
361	22 06 97	10 45 00	213 791	216 662	0 99	35 141	73 307	74 545	0 98	15 484
362	22 06 97	11 00 00	213 531	216 333	0 99	34 691	73 379	74 593	0 98	13 357
363	22 06 97	11 15 00	212 233	214 917	0 99	33 847	72 173	73 429	0 98	13 478
364	22 06 97	11 30 00	212 994	215 575	0 99	33 248	72 805	73 996	0 98	13 178
365	22 06 97	11 45 00	212 655	215 292	0 99	33 584	72 042	73 304	0 98	13 498
366	22 06 97	12 00 00	211 55	214 179	0 99	33 443	70 957	72,274	0 98	13 69
367	22 06 97	12 15 00	211 676	214 344	0 99	33 703	71 433	72 731	0 98	13 636
368	22 06 97	12 30 00	211 421	214 113	0 99	33 836	71 378	72 682	0 98	13 667
369	22 06 97	12 45 00	210 494	213 141	0 99	33 478	70 885	72 19	0 98	13 619
370	22 06 97	13 00 00	209 881	212 453	0 99	32 949	70 094	71 424	0 98	13 675
371	22 06 97	13 15 00	209 386	212 142	0 99	34 071	68 911	70 369	0 98	14 199
372	22 06 97	13 30 00	209 538	212 311	0 99	34 172	68 883	70 356	0 98	14,264
373	22 06 97	13 45 00	213 192	216 584	0 98	38 173	70,343	71 953	0 98	15 093
374	22 06 97	14 00 00	213 365	216 783	0 98	38 332	70 779	72 372	0 98	15 06
375	22 06 97	14 15 00	214 239	217 753	0 98	38 96	71 052	72 668	0 98	15 195
376	22 06 97	14 30 00	213 574	216 837	0 98	37 443	70 723	72,279	0 98	14 873
377	22 06 97	14 45 00	214 605	217 821	0 99	37 284	70 987	72 528	0 98	14 83
378	22 06 97	15 00 00	214 829	218 055	0 99	37 364	71 551	73 054	0 98	14 704
379	22 06 97	15 15 00	214 719	217 934	0 99	37,288	71 95	73 417	0 98	14 563
380	22 06 97	15 30 00	215 157	218 187	0 99	36 23	72 639	74 011	0 98	14 147
381	22 06 97	15 45 00	216 587	219 611	0 99	36 312	73 907	75 204	0 98	13 862
382	22 06 97	16 00 00	217 582	220 686	0 99	36 871	74 051	75 377	0 98	14 037
383	22 06 97	16 15 00	217 716	220 976	0 99	37 807	73 415	74 834	0 98	14 465
384	22 06 97	16 30 00	217 597	221 098	0 98	39 185	71 875	73 479	0 98	15.222
385	22 06 97	16 45 00	217 09	220 535	0 98	38 813	71 114	72 757	0 98	15 329

386	22 06 97	17 00 00	217 378	220 073	0 99	34 262	72 772	74 082	0 98	13 818
387	22 06 97	17 15 00	217 549	220 071	0 99	33.208	73 499	74 704	0 98	13 318
388	22 06 97	17 30 00	222 809	225 253	0 99	33 052	79 027	79 954	0 99	12 089
389	22 06 97	17 45 00	225 862	228 61	0 99	35 329	80 617	81 571	0 99	12 398
390	22 06 97	18 00 00	226 323	229 182	0 99	36 085	80 605	81 586	0 99	12 569
391	22 06 97	18 15 00	225 335	228 164	0 99	35 81	79.204	80,242	0 99	12 819
392	22 06 97	18 30 00	224 684	227 511	0 99	35 723	78 178	79 258	0 99	12 992
393	22 06 97	18 45 00	224 406	226 852	0 99	33 147	78 869	79 82	0 99	12 23
394	22 06 97	19 00 00	223 283	225 492	0 99	31 479	78 474	79 371	0 99	11 859
395	22 06 97	19 15 00	223 345	225 458	0 99	30 779	78 465	79 34	0 99	11 706
396	22 06 97	19 30 00	222 416	224 364	0 99	29 488	77 934	78 78	0 99	11 469
397	22 06 97	19 45 00	221 435	223 436	0 99	29 823	76 95	77 847	0 99	11 743
398	22 06 97	20 00 00	222 438	224 535	0 99	30 602	77 348	78 262	0 99	11 883
399	22 06 97	20 15 00	221 542	223 631	0 99	30 485	76 428	77 375	0 99	12 022
400	22 06 97	20 30 00	222 1	224 199	0 99	30 599	76 342	77 305	0 99	12 119
401	22 06 97	20 45 00	222,276	224 447	0 99	31 131	75 811	76 822	0 99	12 375
402	22 06 97	21 00 00	220 142	222 481	0 99	32 155	73 062	74 288	0 98	13 375
403	22 06 97	21 15 00	218 508	221 066	0 99	33 519	70 961	72 378	0 98	14 188
404	22 06 97	21 30 00	222 964	225 139	0 99	31 196	77 333	78 277	0 99	12 075
405	22 06 97	21 45 00	222 88	225 066	0 99	31 281	77 665	78 59	0 99	11 989
406	22 06 97	22 00 00	222.232	224 502	0 99	31 837	76 692	77 683	0 99	12 328
407	22 06 97	22 15 00	221 156	223 409	0 99	31 634	75 747	76 773	0 99	12 472
408	22 06 97	22 30 00	219 7	221 948	0 99	31 496	74 827	75 887	0 99	12 598
409	22 06 97	22 45 00	218 854	221 105	0 99	31 462	74.213	75 298	0 99	12 695
410	22 06 97	23 00 00	218 789	220 977	0 99	31 009	74 724	75 76	0 99	12 446
411	22 06 97	23 15 00	218 401	220 684	0 99	31 646	74 545	75 611	0 99	12 614
412	22 06 97	23 30 00	218 407	220 73	0 99	31 931	74 503	75 58	0 99	12 674
413	22 06 97	23 45 00	218 564	221 077	0 99	33 22	74 303	75 454	0 98	13 086
414	23 06 97	0 00 00	218 651	221 445	0 99	35 051	74 003	75 255	0 98	13 63
415	23 06 97	0 15 00	218 717	221 674	0 99	36 077	74 018	75 315	0 98	13 876
416	23 06 97	0 30 00	218 715	221 753	0 99	36 562	74 253	75 557	0 98	13 933
417	23 06 97	0 45 00	217 536	220 823	0 99	37 95	73 209	74 645	0 98	14 529
418	23 06 97	1 00 00	216 267	219 59	0 98	38 043	72 62	74 088	0 98	14 635
419	23 06 97	1 15 00	215 576	218 943	0 98	38 242	72 491	73 97	0 98	14 677
420	23 06 97	1 30 00	215 562	218 87	0 98	37 904	73 21	74 614	0 98	14 367
421	23 06 97	1 45 00	216 212	219 563	0 98	38 198	74 693	75 999	0 98	13 986
422	23 06 97	2 00 00	217 023	220,203	0 99	37 275	76,28	77 443	0 99	13 333
423	23 06 97	2 15 00	217,254	220,269	0 99	36 31	76 897	77 991	0 99	12 981
424	23 06 97	2 30 00	218,202	221 506	0 99	38 032	77 329	78 476	0 99	13 32
425	23 06 97	2 45 00	218 633	222 422	0 98	40 874	76 936	78,221	0 98	14 088
426	23 06 97	3 00 00	217 249	221 186	0 98	41 534	75 353	76 771	0 98	14 639
427	23 06 97	3 15 00	216 019	220	0 98	41 657	74 187	75 685	0 98	14 938
428	23 06 97	3 30 00	216 793	220 741	0 98	41 554	75 978	77 337	0 98	14 394
429	23 06 97	3 45 00	216 439	220 451	0 98	41 858	76 041	77 403	0 98	14 417
430	23 06 97	4 00 00	215 682	219 803	0 98	42 356	75 445	76 862	0 98	14 649
431	23 06 97	4 15 00	214 113	218 173	0 98	41 863	74 015	75 512	0 98	14 914
432	23 06 97	4 30 00	212,6	216 694	0 98	41 909	72 726	74 317	0 98	15 252
433	23 06 97	4 45 00	211 478	215 687	0 98	42 394	71 811	73 485	0 98	15 556
434	23 06 97	5 00 00	211 703	215 627	0 98	40 938	73 135	74 636	0 98	14 853

435	23 06 97	5 15 00	212 62	216 151	0 98	38 897	75 574	76 801	0 98	13 622
436	23 06 97	5 30 00	214 032	217,225	0 99	37 099	77 509	78 563	0 99	12 79
437	23 06 97	5 45 00	213 309	216 406	0 99	36 469	78 423	79 394	0 99	12 348
438	23 06 97	6 00 00	214 693	217 652	0 99	35 755	79 657	80 549	0 99	11 922
439	23 06 97	6 15 00	213 982	216 702	0 99	34 195	79 64	80 474	0 99	11 524
440	23 06 97	6 30 00	213,276	215 584	0 99	31 414	80 262	80 976	0 99	10 693
441	23 06 97	6 45 00	216 433	219 705	0 99	37 769	80 712	81 629	0 99	12 161
442	23 06 97	7 00 00	215 086	218 405	0 98	37 92	79 647	80 607	0 99	12 37
443	23 06 97	7 15 00	213 994	217 424	0 98	38 454	78 814	79 827	0 99	12 643
444	23 06 97	7 30 00	212 262	215 613	0 98	37 849	77 823	78 85	0 99	12 646
445	23 06 97	7 45 00	211 413	214 603	0 99	36 852	76 887	77 918	0 99	12 599
446	23 06 97	8 00 00	210 867	213 946	0 99	36 149	76 143	77 188	0 99	12 619
447	23 06 97	8 15 00	211 281	214 2	0 99	35 22	77 108	78 075	0 99	12 203
448	23 06 97	8 30 00	211 771	214 15	0 99	31 813	78 135	78 943	0 99	11,232
449	23 06 97	8 45 00	212 16	214 569	0 99	31 938	76 966	77 845	0 99	11 573
450	23 06 97	9 00 00	209 1	212 148	0 99	35 825	71 185	72 539	0 98	13 912
451	23 06 97	9 15 00	211 174	213 701	0 99	32 749	76 223	77 151	0 99	11 871
452	23 06 97	9 30 00	212 721	215 047	0 99	31 534	75 77	76 688	0 99	11 788
453	23 06 97	9 45 00	211 148	213 535	0 99	31 811	75 084	76 034	0 99	11 944
454	23 06 97	10 00 00	209 617	212 054	0 99	32 04	76 279	77 158	0 99	11 578
455	23 06 97	10 15 00	211 015	213 396	0 99	31 771	76 261	77 145	0 99	11 612
456	23 06 97	10 30 00	213 367	215 621	0 99	31 08	78 297	79 09	0 99	11 134
457	23 06 97	10 45 00	213 559	215 711	0 99	30 381	79 579	80 29	0 99	10 623
458	23 06 97	11 00 00	216 95	218 822	0 99	28 526	80 938	81 577	0 99	10 135
459	23 06 97	11 15 00	219 826	221 399	0 99	26 319	83 223	83 75	0 99	9 332
460	23 06 97	11 30 00	218 6	221 412	0 99	35 128	79 002	79 94	0 99	12 16
461	23 06 97	11 45 00	212 325	215 852	0 98	38 834	79 132	80 12	0 99	12 504
462	23 06 97	12 00 00	222 315	225,213	0 99	35 951	82 595	83 428	0 99	11 703

			Chan 5 - Compressor No 7 N=200 kW				Chan 6 - Compressor No 5 N=75 kW			
Record	Record	Record	Chan 5	Chan 5	Chan 5	Chan 5	Chan 6	Chan 6	Chan 6	Chan 6
Number	Date	End Time	Avg kW	Avg kVA	Avg PF	Avg	Avg kW	Avg kVA	Avg PF	Avg
1	18 06 97	12 15 00	128 119	146 177	0 88	70 366	0	0 005	1	-0 002
2	18 06 97	12 30 00	127 501	145 959	0 87	71 004	46 552	61 664	0 76	39 686
3	18 06 97	12 45 00	122 617	142 367	0 86	72 329	157 732	201,263	0 78	125 007
4	18 06 97	13 00 00	125 871	145 789	0 86	73 547	160 957	205 092	0 78	127 103
5	18 06 97	13 15 00	129 972	150	0 87	74 868	165 141	209,266	0 79	128 529
6	18 06 97	13 30 00	130 533	150 318	0 87	74 531	167 995	210 977	0 8	127 626
7	18 06 97	13 45 00	130 484	150 365	0 87	74 711	168 675	212 016	0 8	128 449
8	18 06 97	14 00 00	127 255	147,217	0 86	74 007	167 317	211 056	0 79	128 643
9	18 06 97	14 15 00	124 996	145 098	0 86	73 671	166 548	211 096	0 79	129 703
10	18 06 97	14 30 00	135 724	155 986	0 87	76 865	175 074	219 295	0 8	132 055
11	18 06 97	14 45 00	138 533	158 832	0 87	77 681	177 124	221 345	0 8	132 74
12	18 06 97	15 00 00	136 532	156 847	0 87	77 188	176 177	220 681	0 8	132 895
13	18 06 97	15 15 00	134 757	155 016	0 87	76 606	175 476	220 028	0 8	132 739
14	18 06 97	15 30 00	133 414	153 714	0 87	76 333	174 835	219 706	0 8	133 053
15	18 06 97	15 45 00	130 959	151 562	0 86	76 279	172 432	218 78	0 79	134 644
16	18 06 97	16 00 00	128 889	149 722	0 86	76 172	170 806	218 251	0 78	135 86
17	18 06 97	16 15 00	127 301	148 349	0 86	76 157	170 142	218 376	0 78	136 891
18	18 06 97	16 30 00	127 223	148 491	0 86	76 562	169 902	218 974	0 78	138 138
19	18 06 97	16 45 00	126 281	147 825	0 85	76 833	169 384	219 556	0 77	139 691
20	18 06 97	17 00 00	121 445	142 026	0 86	73 6	169 463	215 633	0 79	133 32
21	18 06 97	17 15 00	122,228	142 965	0 86	74 093	171 269	217 558	0 79	134 153
22	18 06 97	17 30 00	137 615	158 795	0 87	79 216	130 636	165 169	0 79	100 959
23	18 06 97	17 45 00	136 224	156 948	0 87	77 933	176 891	223 129	0 79	135 998
24	18 06 97	18 00 00	129 69	150 326	0 86	76 001	173 498	220 046	0 79	135 342
25	18 06 97	18 15 00	128 002	148 734	0 86	75 732	172 861	219 798	0 79	135 756
26	18 06 97	18 30 00	125 36	146 031	0 86	74 886	172 121	218 723	0 79	134 958
27	18 06 97	18 45 00	121 264	142 058	0 85	73 982	171 122	218 133	0 78	135,272
28	18 06 97	19 00 00	123 695	144 527	0 86	74 737	171 556	218 695	0 78	135 63
29	18 06 97	19 15 00	126 992	147 972	0 86	75 939	172 467	220 014	0 78	136 604
30	18 06 97	19 30 00	128 557	149 492	0 86	76 28	172 94	220 245	0 79	136 378
31	18 06 97	19 45 00	132 832	153 795	0 86	77 499	175 423	222 632	0 79	137 077
32	18 06 97	20 00 00	131 809	152 867	0 86	77 402	179 048	226 479	0 79	138 662
33	18 06 97	20 15 00	123 411	144 609	0 85	75 354	171 028	219 559	0 78	137 676
34	18 06 97	20 30 00	126 792	148 031	0 86	76 387	173 346	221 915	0 78	138 553
35	18 06 97	20 45 00	130 351	151 64	0 86	77 467	176 063	224,61	0 78	139,466
36	18 06 97	21 00 00	132 429	153 732	0 86	78 062	178 158	226 662	0 79	140 125
37	18 06 97	21 15 00	136 004	157 44	0 86	79,295	180 361	229 103	0 79	141,272
38	18 06 97	21 30 00	136 837	158 114	0 87	79 205	180 865	228 897	0 79	140,289
39	18 06 97	21 45 00	136 99	158,204	0 87	79 121	180 862	228 771	0 79	140 088
40	18 06 97	22 00 00	134 048	155 344	0 86	78 489	179 127	227 708	0 79	140 584
41	18 06 97	22 15 00	130 126	151 62	0 86	77 805	176 849	226 461	0 78	141 452
42	18 06 97	22 30 00	128 737	150 1	0 86	77 166	176 224	225 284	0 78	140 349
43	18 06 97	22 45 00	125 853	147 336	0 85	76 594	175 003	224 454	0 78	140 545
44	18 06 97	23 00 00	129 156	150 669	0 86	77 574	176 303	225 949	0 78	141 314
45	18 06 97	23 15 00	130 566	152 181	0 86	78 162	176 9	226 919	0 78	142 119

46	18 06 97	23 30 00	128 741	149 139	0 86	75 273	175 338	220 548	0 8	135 776
47	18 06 97	23 45 00	125 277	145 773	0 86	74 521	172 947	218 849	0 79	134 103
48	19 06 97	0 00 00	123 032	143 588	0 86	74 019	174 686	220 568	0 79	134 637
49	19 06 97	0 15 00	111 784	132 666	0 84	71 414	168 014	214 724	0 78	133 704
50	19 06 97	0 30 00	115 584	136 312	0 85	72 201	168 911	214 991	0 79	132 998
51	19 06 97	0 45 00	124 844	145 576	0 86	74 862	170 733	217 375	0 79	134 536
52	19 06 97	1 00 00	127 351	148 09	0 86	75 568	168 455	215 276	0 78	134 034
53	19 06 97	1 15 00	124 121	144 991	0 86	74 929	170 664	217 812	0 78	135 334
54	19 06 97	1 30 00	121 777	142 729	0 85	74 432	169 018	216 523	0 78	135 332
55	19 06 97	1 45 00	124 711	145 593	0 86	75 116	170 53	217 732	0 78	135 374
56	19 06 97	2 00 00	128 086	148 858	0 86	75 833	173 174	219 868	0 79	135 47
57	19 06 97	2 15 00	128,97	149 691	0 86	75 977	173 915	220 377	0 79	135 349
58	19 06 97	2 30 00	126 96	147 732	0 86	75 523	172 83	219 458	0 79	135 245
59	19 06 97	2 45 00	118 951	139 7	0 85	73 235	168 169	214 983	0 78	133 925
60	19 06 97	3 00 00	129 204	149 909	0 86	76 004	174 622	220 814	0 79	135 147
61	19 06 97	3 15 00	129 107	149 733	0 86	75 825	174 699	220 659	0 79	134 796
62	19 06 97	3 30 00	121 115	141 801	0 85	73 726	169 318	215 911	0 78	133 967
63	19 06 97	3 45 00	107 625	128 957	0 83	71 023	164 312	212 4	0 77	134 59
64	19 06 97	4 00 00	102 05	123 723	0 82	69 936	161 853	210 311	0 77	134 289
65	19 06 97	4 15 00	109 985	131 397	0 84	71 797	164 829	212 586	0 78	134,237
66	19 06 97	4 30 00	129 04	149 951	0 86	76 368	174 768	221 429	0 79	135 966
67	19 06 97	4 45 00	128 503	149 487	0 86	76 365	173 715	220 805	0 79	136 299
68	19 06 97	5 00 00	127 443	148 372	0 86	75 964	173 404	220 48	0 79	136 169
69	19 06 97	5 15 00	123 946	144 746	0 86	74 746	170 904	217 73	0 78	134 898
70	19 06 97	5 30 00	124 872	145 494	0 86	74 656	171 764	217 81	0 79	133 932
71	19 06 97	5 45 00	126 503	147 059	0 86	74 978	172 312	218 088	0 79	133 68
72	19 06 97	6 00 00	122 943	143 406	0 86	73 816	170 065	215 639	0 79	132 582
73	19 06 97	6 15 00	123 927	144 194	0 86	73 703	170 377	215 207	0 79	131 472
74	19 06 97	6 30 00	124 407	144 404	0 86	73 305	170 821	214 611	0 8	129 912
75	19 06 97	6 45 00	123 916	143 667	0 86	72 686	170 367	213 391	0 8	128 494
76	19 06 97	7 00 00	122 005	141 72	0 86	72 094	169 314	212 104	0 8	127 75
77	19 06 97	7 15 00	122 715	142 36	0 86	72 151	169 772	212 296	0 8	127 462
78	19 06 97	7 30 00	125 108	144 521	0 87	72 337	170 909	212 389	0 8	126 09
79	19 06 97	7 45 00	125 714	144 852	0 87	71 95	171 067	211 461	0 81	124 301
80	19 06 97	8 00 00	127 311	146 199	0 87	71 864	171 952	211 383	0 81	122 94
81	19 06 97	8 15 00	127 886	146 776	0 87	72 018	172 861	212 2	0 81	123 074
82	19 06 97	8 30 00	123 883	143 103	0 87	71 611	171 129	211 92	0 81	124 969
83	19 06 97	8 45 00	132 039	151 37	0 87	74 006	176 903	217 508	0 81	126 547
84	19 06 97	9 00 00	133 196	152 323	0 87	73 889	177 214	217 033	0 82	125 292
85	19 06 97	9 15 00	131 524	150 422	0 87	72 984	176 728	215 829	0 82	123 89
86	19 06 97	9 30 00	130 996	149 716	0 87	72 48	176 368	214 769	0 82	122 555
87	19 06 97	9 45 00	133 485	152 178	0 88	73 065	177 384	215 612	0 82	122 569
88	19 06 97	10 00 00	133 826	152 597	0 88	73 314	177,599	215 98	0 82	122 903
89	19 06 97	10 15 00	131 769	150 698	0 87	73 111	176 956	216,251	0 82	124 3
90	19 06 97	10 30 00	132 381	151 217	0 88	73 078	177 904	216 848	0 82	123 987
91	19 06 97	10 45 00	137 165	156 065	0 88	74 43	180 481	219 114	0 82	124,242
92	19 06 97	11 00 00	137 002	155 817	0 88	74 212	180 357	218,558	0 83	123 444
93	19 06 97	11 15 00	137 43	156 196	0 88	74 216	180 572	218 6	0 83	123 197
94	19 06 97	11 30 00	143 473	163 136	0 88	77 635	184 1	225 418	0 82	130 076

95	19 06 97	11 45 00	143 648	163 308	0 88	77 675	186 67	228 014	0 82	[illegible]
96	19 06 97	12 00 00	142 803	162 533	0 88	77 605	187 881	229 494	0 82	[illegible]
97	19 06 97	12 15 00	140 653	160 422	0 88	77 137	186 539	228 536	0 82	[illegible]
98	19 06 97	12 30 00	138 646	158 172	0 88	76 117	185 674	226 838	0 82	[illegible]
99	19 06 97	12 45 00	139 095	158 634	0 88	76 26	183 418	224 828	0 82	[illegible]
100	19 06 97	13 00 00	140,283	159 951	0 88	76 834	184 034	225 911	0 81	[illegible]
101	19 06 97	13 15 00	140 985	160 738	0 88	77 189	184 593	226 683	0 81	[illegible]
102	19 06 97	13 30 00	142 015	161 667	0 88	77,242	184 961	226 582	0 82	[illegible]
103	19 06 97	13 45 00	144 058	163 676	0 88	77 688	185 888	227 06	0 82	[illegible]
104	19 06 97	14 00 00	145 393	165 023	0 88	78 05	186 599	227 663	0 82	[illegible]
105	19 06 97	14 15 00	145 24	165 032	0 88	78 354	186 84	228 744	0 82	[illegible]
106	19 06 97	14 30 00	146 367	166 42	0 88	79 188	187 642	230 558	0 81	[illegible]
107	19 06 97	14 45 00	142 875	162 676	0 88	77 77	188 934	231 266	0 82	[illegible]
108	19 06 97	15 00 00	142 935	162 918	0 88	78 168	189 848	233 122	0 81	[illegible]
109	19 06 97	15 15 00	142 487	162 499	0 88	78 115	189 719	233 406	0 81	[illegible]
110	19 06 97	15 30 00	141 741	161 95	0 88	78 329	190 887	235,287	0 81	[illegible]
111	19 06 97	15 45 00	137 315	157 682	0 87	77 496	188 01	233 122	0 81	[illegible]
112	19 06 97	16 00 00	131 187	152 074	0 86	76 906	180 356	228 057	0 79	[illegible]
113	19 06 97	16 15 00	142 056	162 457	0 87	78 787	187 637	232 449	0 81	[illegible]
114	19 06 97	16 30 00	148 344	168 936	0 88	80 818	190 846	235 279	0 81	[illegible]
115	19 06 97	16 45 00	144 848	165 247	0 88	79 524	188 42	233 659	0 81	[illegible]
116	19 06 97	17 00 00	143 874	164 377	0 88	79 491	187 96	233 729	0 8	[illegible]
117	19 06 97	17 15 00	141 857	162 666	0 87	79 593	186 974	233 984	0 8	[illegible]
118	19 06 97	17 30 00	140 739	161 666	0 87	79 539	186 339	233 815	0 8	[illegible]
119	19 06 97	17 45 00	138 016	159 159	0 87	79 251	184 739	233 11	0 79	[illegible]
120	19 06 97	18 00 00	133 939	155 237	0 86	78 463	182 346	231 303	0 79	[illegible]
121	19 06 97	18 15 00	133 122	154 475	0 86	78 343	184 131	233 365	0 79	[illegible]
122	19 06 97	18 30 00	140 426	161 811	0 87	80 381	185 558	234 585	0 79	[illegible]
123	19 06 97	18 45 00	137 076	158 451	0 87	79 466	183 457	232 687	0 79	[illegible]
124	19 06 97	19 00 00	134 156	155 576	0 86	78 765	181 531	231 106	0 79	[illegible]
125	19 06 97	19 15 00	132 909	154 42	0 86	78 604	180 96	230 814	0 78	[illegible]
126	19 06 97	19 30 00	131 814	153 296	0 86	78 245	180 106	229 703	0 78	[illegible]
127	19 06 97	19 45 00	138 539	160 037	0 87	80 105	184 016	233 318	0 79	[illegible]
128	19 06 97	20 00 00	137 174	158 609	0 86	79 612	182 871	232 197	0 79	143 084
129	19 06 97	20 15 00	136 848	158 302	0 86	79 562	182 65	232 133	0 79	143,263
130	19 06 97	20 30 00	137 374	158 901	0 86	79 849	183 303	232 811	0 79	143 529
131	19 06 97	20 45 00	135 727	157 189	0 86	79 274	181 819	231 443	0 79	143 197
132	19 06 97	21 00 00	137 002	157,293	0 87	77 265	181 874	226 708	0 8	135 343
133	19 06 97	21 15 00	130 102	150 32	0 87	75 284	177 616	222 775	0 8	134 464
134	19 06 97	21 30 00	126 332	146 359	0 86	73 884	174 598	219 092	0 8	132 344
135	19 06 97	21 45 00	132 67	152 784	0 87	75 763	178 143	222 55	0 8	133 389
136	19 06 97	22 00 00	132 798	153 112	0 87	76,2	177 555	222 728	0 8	134 467
137	19 06 97	22 15 00	131 841	152 123	0 87	75 879	176 913	222 137	0 8	134 337
138	19 06 97	22 30 00	128 603	148 735	0 86	74 71	175 058	219 868	0 8	133 026
139	19 06 97	22 45 00	126 539	146 792	0 86	74 391	173 508	218 628	0 79	133 013
140	19 06 97	23 00 00	128 736	149 017	0 86	75 042	174 041	219 185	0 79	133,234
141	19 06 97	23 15 00	128 761	149 093	0 86	75 151	173 742	219 098	0 79	133 481
142	19 06 97	23 30 00	126 965	147 371	0 86	74 81	172 842	218 565	0 79	133 775
143	19 06 97	23 45 00	124 825	145 268	0 86	74 297	171 748	217 784	0 79	133 911

144	20 06 97	0 00 00	122 124	142 745	0 86	73 895	170 703	217 24	0 79	134 362
145	20 06 97	0 15 00	118 36	138 992	0 85	72 853	168 042	214 668	0 78	13 [illegible]
146	20 06 97	0 30 00	113 195	134 137	0 84	71 938	165 943	213 241	0 78	133 911
147	20 06 97	0 45 00	128 389	149 071	0 86	75 741	174 568	220 834	0 79	135,252
148	20 06 97	1 00 00	129 252	149 925	0 86	75 959	174 492	220 908	0 79	135 47[illegible]
149	20 06 97	1 15 00	129 029	149 804	0 86	76 101	174 037	221 007	0 79	136,216
150	20 06 97	1 30 00	128 683	149 53	0 86	76 147	173 252	220 536	0 79	136 45[illegible]
151	20 06 97	1 45 00	125,215	146 017	0 86	75 103	169 6	217 001	0 78	135 368
152	20 06 97	2 00 00	113 772	134 757	0 84	72 183	164 413	212 183	0 77	134 121
153	20 06 97	2 15 00	109 198	130 548	0 84	71 47	163 156	211 5	0 77	134 56[illegible]
154	20 06 97	2 30 00	131 346	152 306	0 86	77 095	174 502	221 815	0 79	136 933
155	20 06 97	2 45 00	131 38	152 29	0 86	77 006	174,208	221 5	0 79	136 797
156	20 06 97	3 00 00	127 956	148 829	0 86	75 998	172 49	219 959	0 78	136 488
157	20 06 97	3 15 00	125 035	145 889	0 86	75 156	170 662	218 046	0 78	135 714
158	20 06 97	3 30 00	126 524	147 363	0 86	75 539	171 599	218 956	0 78	135 996
159	20 06 97	3 45 00	129 692	150 545	0 86	76 436	173 162	220 457	0 79	136 44
160	20 06 97	4 00 00	131 476	152 324	0 86	76 911	173 835	221 094	0 79	136 615
161	20 06 97	4 15 00	131 741	152 564	0 86	76 933	174 111	221 295	0 79	136 589
162	20 06 97	4 30 00	131 421	152 255	0 86	76 869	173 649	221 069	0 79	136 81
163	20 06 97	4 45 00	130 953	151 796	0 86	76 758	173 646	221 058	0 79	136 797
164	20 06 97	5 00 00	128 433	149 272	0 86	76 063	172 545	220 154	0 78	136 732
165	20 06 97	5 15 00	123 132	144 066	0 85	74 78	169 835	217 831	0 78	136 403
166	20 06 97	5 30 00	119 209	140 153	0 85	73 692	167 978	215 917	0 78	135 657
167	20 06 97	5 45 00	116 756	137 839	0 85	73 248	165 95	214 084	0 78	135,247
168	20 06 97	6 00 00	116 586	137 653	0 85	73 172	165 226	213 424	0 77	135 088
169	20 06 97	6 15 00	132 153	152 734	0 87	76 558	173 971	219 868	0 79	134 44
170	20 06 97	6 30 00	132 884	153 09	0 87	76 007	173 851	218 314	0 8	132 047
171	20 06 97	6 45 00	129 928	149 634	0 87	74 215	172 058	214 823	0 8	128 626
172	20 06 97	7 00 00	126 643	146 185	0 87	73 01	169 98	212 502	0 8	127 529
173	20 06 97	7 15 00	124 666	144 115	0 87	72 293	169 369	211 556	0 8	126 766
174	20 06 97	7 30 00	123 485	142 834	0 86	71 776	168 534	210 451	0 8	126 037
175	20 06 97	7 45 00	122 448	141 737	0 86	71 377	167 472	209 188	0 8	125 348
176	20 06 97	8 00 00	122 795	141 967	0 86	71 238	167 785	208 913	0 8	124 467
177	20 06 97	8 15 00	120 939	140 01	0 86	70 537	167 054	207 804	0 8	123 591
178	20 06 97	8 30 00	121 144	140 055	0 87	70 271	166 972	207 077	0 81	122 462
179	20 06 97	8 45 00	122 858	142 138	0 86	71 47	167 556	209 002	0 8	124 925
180	20 06 97	9 00 00	125 579	144 645	0 87	71 771	167 703	208 304	0 81	123 553
181	20 06 97	9 15 00	127 777	146 695	0 87	72 049	168 326	208,215	0 81	122 546
182	20 06 97	9 30 00	129 842	148 483	0 87	72 022	171 054	209 504	0 82	120 962
183	20 06 97	9 45 00	128 873	147 327	0 87	71 387	171 741	209 594	0 82	120 143
184	20 06 97	10 00 00	114 917	134 39	0 86	69 63	164 063	206 366	0 8	125 105
185	20 06 97	10 15 00	120 67	141 005	0 86	72 938	166 814	212 307	0 79	131 318
186	20 06 97	10 30 00	126 757	147 215	0 86	74 857	163 232	209 517	0 78	131 347
187	20 06 97	10 45 00	131 645	152 138	0 87	76,252	165 289	211 629	0 78	132 159
188	20 06 97	11 00 00	132 817	153 391	0 87	76 729	170 588	216 891	0 79	133 937
189	20 06 97	11 15 00	137 479	157 755	0 87	77,361	175 769	220,259	0 8	132 728
190	20 06 97	11 30 00	137 964	157 941	0 87	76 879	176 378	219,625	0 8	130 865
191	20 06 97	11 45 00	132 977	153 014	0 87	75 692	174 704	218 927	0 8	131 935
192	20 06 97	12 00 00	122 261	142 35	0 86	72 89	170 083	214 975	0 79	131 468

193	20 06 97	12 15 00	107 051	127 837	0 84	69 765	162 814	208 997	0 78	131 01
194	20 06 97	12 30 00	131 405	151 588	0 87	75 57	170 877	215 713	0 79	131 626
195	20 06 97	12 45 00	135 904	156 225	0 87	77 042	167 331	212 815	0 79	131 49
196	20 06 97	13 00 00	135 005	155 292	0 87	76 733	178 291	223 165	0 8	134 187
197	20 06 97	13 15 00	129 591	149 978	0 86	75 487	171 172	217 032	0 79	133 408
198	20 06 97	13 30 00	145 663	166 132	0 88	79 88	183 379	227 759	0 81	135 072
199	20 06 97	13 45 00	148 497	168 947	0 88	80 567	184 838	228 881	0 81	134 981
200	20 06 97	14 00 00	141 501	161 813	0 87	78 488	171 429	217 038	0 79	133 105
201	20 06 97	14 15 00	140 512	161 027	0 87	78 646	177 707	223 786	0 79	135 977
202	20 06 97	14 30 00	148 774	169 46	0 88	81 13	187 674	232 833	0 81	137 793
203	20 06 97	14 45 00	148 904	169 594	0 88	81 171	198 881	243 942	0 82	141 236
204	20 06 97	15 00 00	144 398	165.215	0 87	80 274	201 851	247 959	0 81	143 993
205	20 06 97	15 15 00	138 341	160 377	0 86	81 125	3 87	4 799	0 81	2 832
206	20 06 97	15 30 00	127 998	149 854	0 85	77 918	0	0 006	1	0 005
207	20 06 97	15 45 00	115 646	136 928	0 84	73 302	35 587	46 772	0 76	30 022
208	20 06 97	16 00 00	133 12	153 555	0 87	76 518	171 146	217 121	0 79	133 604
209	20 06 97	16 15 00	136 417	157 183	0 87	78 076	172 112	219 585	0 78	136 361
210	20 06 97	16 30 00	131 231	151 914	0 86	76 519	170 513	217 962	0 78	135 766
211	20 06 97	16 45 00	127 977	148 922	0 86	76 148	169 733	218 234	0 78	137 173
212	20 06 97	17 00 00	126 515	147 638	0 86	76 092	169 749	218 72	0 78	137 924
213	20 06 97	17 15 00	124 511	145 922	0 85	76 084	168 874	218 966	0 77	139 378
214	20 06 97	17 30 00	129 844	151 244	0 86	77 551	171 131	221 067	0 77	139 94
215	20 06 97	17 45 00	129 156	150 265	0 86	76 795	171 312	220 1	0 78	138 187
216	20 06 97	18 00 00	126 615	147 706	0 86	76 057	172 185	220 665	0 78	138 002
217	20 06 97	18 15 00	121 286	142 421	0 85	74 647	171 283	219 908	0 78	137 915
218	20 06 97	18 30 00	116 142	137 387	0 85	73 383	167 226	216 087	0 77	136 849
219	20 06 97	18 45 00	115 406	136 777	0 84	73 399	166 67	215 721	0 77	136 947
220	20 06 97	19 00 00	124 103	145 373	0 85	75 702	172 561	221 32	0 78	138 581
221	20 06 97	19 15 00	120 378	141 702	0 85	74 75	170 424	219 401	0 78	138 172
222	20 06 97	19 30 00	115 887	137 436	0 84	73 878	166 729	216 384	0 77	137 922
223	20 06 97	19 45 00	118 378	139 985	0 85	74 705	168 91	218 708	0 77	138 929
224	20 06 97	20 00 00	123 814	145 275	0 85	75 986	172 585	221 87	0 78	139 427
225	20 06 97	20 15 00	125 282	146 732	0 85	76 38	174 236	223 387	0 78	139 797
226	20 06 97	20 30 00	121 271	142 771	0 85	75 338	172 026	221 513	0 78	139 55
227	20 06 97	20 45 00	121 166	142 8	0 85	75 559	171 325	221 265	0 77	140 018
228	20 06 97	21 00 00	125 602	147 199	0 85	76 752	174 429	224 207	0 78	140 865
229	20 06 97	21 15 00	125 809	147 384	0 85	76 768	174 374	224 16	0 78	140 857
230	20 06 97	21 30 00	123 585	145 326	0 85	76 456	173,216	223 675	0 77	141 514
231	20 06 97	21 45 00	121 931	143 073	0 85	74 831	171 842	220 089	0 78	137 462
232	20 06 97	22 00 00	123,289	143 812	0 86	74 034	172 037	217 96	0 79	133 827
233	20 06 97	22 15 00	123 098	143 643	0 86	74 024	171 901	217 876	0 79	133 865
234	20 06 97	22 30 00	120 642	141 179	0 85	73 321	170 728	216 71	0 79	133 47
235	20 06 97	22 45 00	124 128	144 72	0 86	74 383	172 271	218 293	0 79	134 061
236	20 06 97	23 00 00	131 461	152 012	0 86	76 321	176 365	222 163	0 79	135 098
237	20 06 97	23 15 00	127 595	148 154	0 86	75 208	173 312	219 401	0 79	134 533
238	20 06 97	23 30 00	117 285	138 033	0 85	72 76	167 874	214 757	0 78	133 92
239	20 06 97	23 45 00	123 262	144 144	0 86	74 641	171 277	218 204	0 79	135 154
240	21 06 97	0 00 00	68 385	79,234	0 86	40 013	176 139	223 658	0 79	137 817
241	21 06 97	0 15 00	0	0 011	1	0 011	172 463	222 374	0 78	140 373

242	21 06 97	0 30 00	0	0 009	1	0 009	159 607	211 633	0 75	138 95
243	21 06 97	0 45 00	0	0 011	1	0 011	173 359	224 052	0 77	141 896
244	21 06 97	1 00 00	0	0 011	1	0 011	176 505	227 325	0 78	143 254
245	21 06 97	1 15 00	0	0 011	1	0 011	172 707	224 071	0 77	142 756
246	21 06 97	1 30 00	0	0 01	1	0 01	166 455	218 378	0 76	141 34
247	21 06 97	1 45 00	0	0 012	1	0 012	184,219	234 682	0 79	145 325
248	21 06 97	2 00 00	0	0 011	1	0 011	176 219	227 393	0 77	143 715
249	21 06 97	2 15 00	0	0 01	1	0 01	175 095	226 496	0 77	143 674
250	21 06 97	2 30 00	0	0 01	1	0 01	173 314	224 958	0 77	143 416
251	21 06 97	2 45 00	0	0 01	1	0 01	170 037	221 84	0 77	142 479
252	21 06 97	3 00 00	0	0 01	1	0 01	166 774	218 918	0 76	141 812
253	21 06 97	3 15 00	0	0 01	1	0 01	170 662	222 381	0 77	142 571
254	21 06 97	3 30 00	0	0 01	1	0 01	171 293	223 162	0 77	143 038
255	21 06 97	3 45 00	0	0 01	1	0 009	169 539	221 759	0 76	142 943
256	21 06 97	4 00 00	0	0 01	1	0 009	165 346	218 223	0 76	142 412
257	21 06 97	4 15 00	0	0 01	1	0 01	168 72	221 451	0 76	145 435
258	21 06 97	4 30 00	0	0 01	1	0 009	169 778	222 858	0 76	144 363
259	21 06 97	4 45 00	0	0 01	1	0 01	168 565	219 824	0 77	141 064
260	21 06 97	5 00 00	0	0 01	1	0 01	166 296	213 931	0 78	134 579
261	21 06 97	5 15 00	0	0 011	1	0 011	170 553	217 719	0 78	135 325
262	21 06 97	5 30 00	0	0 011	1	0 011	171 408	218 336	0 79	135 239
263	21 06 97	5 45 00	0	0 011	1	0 011	170 335	217 116	0 78	134 629
264	21 06 97	6 00 00	0	0 01	1	0 01	164 322	211 447	0 78	133 051
265	21 06 97	6 15 00	0	0 011	1	0 011	168 355	214 33	0 79	132 621
266	21 06 97	6 30 00	0	0 011	1	0 011	170 399	215 411	0 79	131 779
267	21 06 97	6 45 00	0	0 011	1	0 011	168 603	212 614	0 79	129 527
268	21 06 97	7 00 00	0	0 011	1	0 011	168 266	211 875	0 79	128 751
269	21 06 97	7 15 00	0	0 011	1	0 011	168 977	211 957	0 8	127 954
270	21 06 97	7 30 00	0	0 011	1	0 011	168 095	210 784	0 8	127 175
271	21 06 97	7 45 00	0	0 011	1	0 011	166,281	208 711	0 8	126 137
272	21 06 97	8 00 00	0	0 011	1	0 01	167 156	210 206	0 8	127 455
273	21 06 97	8 15 00	0	0 011	1	0 011	170 258	214 181	0 79	129 941
274	21 06 97	8 30 00	0	0 011	1	0 011	171 051	213 661	0 8	128 03
275	21 06 97	8 45 00	0	0 012	1	0 012	172 243	213 909	0 81	126 843
276	21 06 97	9 00 00	0	0 012	1	0 012	172 633	214 113	0 81	126 656
277	21 06 97	9 15 00	0	0 011	1	0 011	173 559	214 817	0 81	126 583
278	21 06 97	9 30 00	0	0 012	1	0 012	173 484	214 82	0 81	126 692
279	21 06 97	9 45 00	0	0 012	1	0 012	173 542	214 459	0 81	125 998
280	21 06 97	10 00 00	0	0 012	1	0 012	173 23	214 402	0 81	126 329
281	21 06 97	10 15 00	0	0 012	1	0 012	173 41	215 141	0 81	127 336
282	21 06 97	10 30 00	0	0 012	1	0 012	172 675	214 813	0 8	127 779
283	21 06 97	10 45 00	0	0 012	1	0 012	171 334	213 169	0 8	126 827
284	21 06 97	11 00 00	0	0 013	1	0 013	170 832	212 35	0 8	126 126
285	21 06 97	11 15 00	0	0 012	1	0 012	169 526	210 946	0 8	125 534
286	21 06 97	11 30 00	0	0 012	1	0 012	169 33	210 489	0 8	125 031
287	21 06 97	11 45 00	0	0 012	1	0 012	169 429	210 677	0 8	125,212
288	21 06 97	12 00 00	0	0 012	1	0 011	170 85	214 237	0 8	129 222
289	21 06 97	12 15 00	0	0 013	1	0 013	173 702	218 923	0 79	133 239
290	21 06 97	12 30 00	0	0 013	1	0 013	177 013	221 322	0 8	132 852

291	21 06 97	12 45 00	0	0 013	1	0 013	178 893	223 252	0 8	133 561
292	21 06 97	13 00 00	0	0 013	1	0 013	178 938	223 701	0 8	134,249
293	21 06 97	13 15 00	0	0 013	1	0 013	180 47	225 828	0 8	135 749
294	21 06 97	13 30 00	0	0 013	1	0 013	180 582	225 662	0 8	135 325
295	21 06 97	13 45 00	0	0 013	1	0 013	181 059	226 784	0 8	136 559
296	21 06 97	14 00 00	0	0 013	1	0 013	181 306	227 948	0 8	138 158
297	21 06 97	14 15 00	0	0 013	1	0 012	180 725	228 089	0 79	139 149
298	21 06 97	14 30 00	0	0 012	1	0 012	181 579	229 077	0 79	139 66
299	21 06 97	14 45 00	0	0 012	1	0 012	181 345	228 383	0 79	138 823
300	21 06 97	15 00 00	0	0 012	1	0 012	179 908	227 484	0 79	139 218
301	21 06 97	15 15 00	0	0 012	1	0 012	179 504	227 326	0 79	139 481
302	21 06 97	15 30 00	0	0 012	1	0 012	183 009	230 631	0 79	140 349
303	21 06 97	15 45 00	0	0 012	1	0 012	185 146	232 438	0 8	140 527
304	21 06 97	16 00 00	0	0 013	1	0 013	185 98	233 471	0 8	141 137
305	21 06 97	16 15 00	0	0 012	1	0 012	187 55	235 698	0 8	142 752
306	21 06 97	16 30 00	0	0 013	1	0 012	188 605	236 402	0 8	142 525
307	21 06 97	16 45 00	0	0 013	1	0 013	188 678	236 532	0 8	142 645
308	21 06 97	17 00 00	0	0 013	1	0 013	188 007	236 175	0 8	142 935
309	21 06 97	17 15 00	0	0 012	1	0 012	186 818	235 753	0 79	143 798
310	21 06 97	17 30 00	0	0 013	1	0 013	185 679	234 415	0 79	143 085
311	21 06 97	17 45 00	0	0 013	1	0 013	185 473	233 884	0 79	142 48
312	21 06 97	18 00 00	0	0 012	1	0 012	185 463	233 906	0 79	142 532
313	21 06 97	18 15 00	0	0 012	1	0 012	184 529	233 091	0 79	142 408
314	21 06 97	18 30 00	0	0 012	1	0 012	183 492	232 209	0 79	142 307
315	21 06 97	18 45 00	0	0 012	1	0 012	183 797	232 567	0 79	142 498
316	21 06 97	19 00 00	0	0 012	1	0 012	186 021	234 466	0 79	142 723
317	21 06 97	19 15 00	0	0 012	1	0 012	188 551	236 605	0 8	142 934
318	21 06 97	19 30 00	0	0 013	1	0 013	190 113	237 813	0 8	142 869
319	21 06 97	19 45 00	0	0 013	1	0 013	191 305	238 971	0 8	143,21
320	21 06 97	20 00 00	0	0 012	1	0 012	192 515	240 152	0 8	143 563
321	21 06 97	20 15 00	0	0 012	1	0 012	191 168	239 339	0 8	144 005
322	21 06 97	20 30 00	0	0 013	1	0 013	191 672	239 818	0 8	144 13
323	21 06 97	20 45 00	0	0 013	1	0 013	192 119	240 137	0 8	144 069
324	21 06 97	21 00 00	0	0 013	1	0 013	190 631	238 838	0 8	143 885
325	21 06 97	21 15 00	0	0 012	1	0 012	188 55	236 644	0 8	142 999
326	21 06 97	21 30 00	0	0 013	1	0 012	185 521	233 819	0 79	142 311
327	21 06 97	21 45 00	0	0 011	1	0 011	178 752	227 631	0 79	140 927
328	21 06 97	22 00 00	0	0 011	1	0 01	171 772	222 121	0 77	140 823
329	21 06 97	22 15 00	0	0 012	1	0 012	181 91	231 373	0 79	142 845
330	21 06 97	22 30 00	0	0 013	1	0 013	189 712	238 186	0 8	144 004
331	21 06 97	22 45 00	0	0 012	1	0 012	188 325	236 904	0 79	143 724
332	21 06 97	23 00 00	0	0 013	1	0 013	188 781	237 348	0 8	143 859
333	21 06 97	23 15 00	0	0 013	1	0 013	185 951	234 643	0 79	143 1
334	21 06 97	23 30 00	0	0 011	1	0 011	178 083	227,78	0 78	142 014
335	21 06 97	23 45 00	0	0 012	1	0 012	174 595	224 907	0 78	141 77
336	22 06 97	0 00 00	0	0 011	1	0 011	172 474	223 101	0 77	141 514
337	22 06 97	0 15 00	0	0 012	1	0 012	173 182	224 18	0 77	142 351
338	22 06 97	0 30 00	0	0 012	1	0 011	171 884	223 646	0 77	143 082
339	22 06 97	0 45 00	0	0 013	1	0 012	180 762	232 556	0 78	146 302

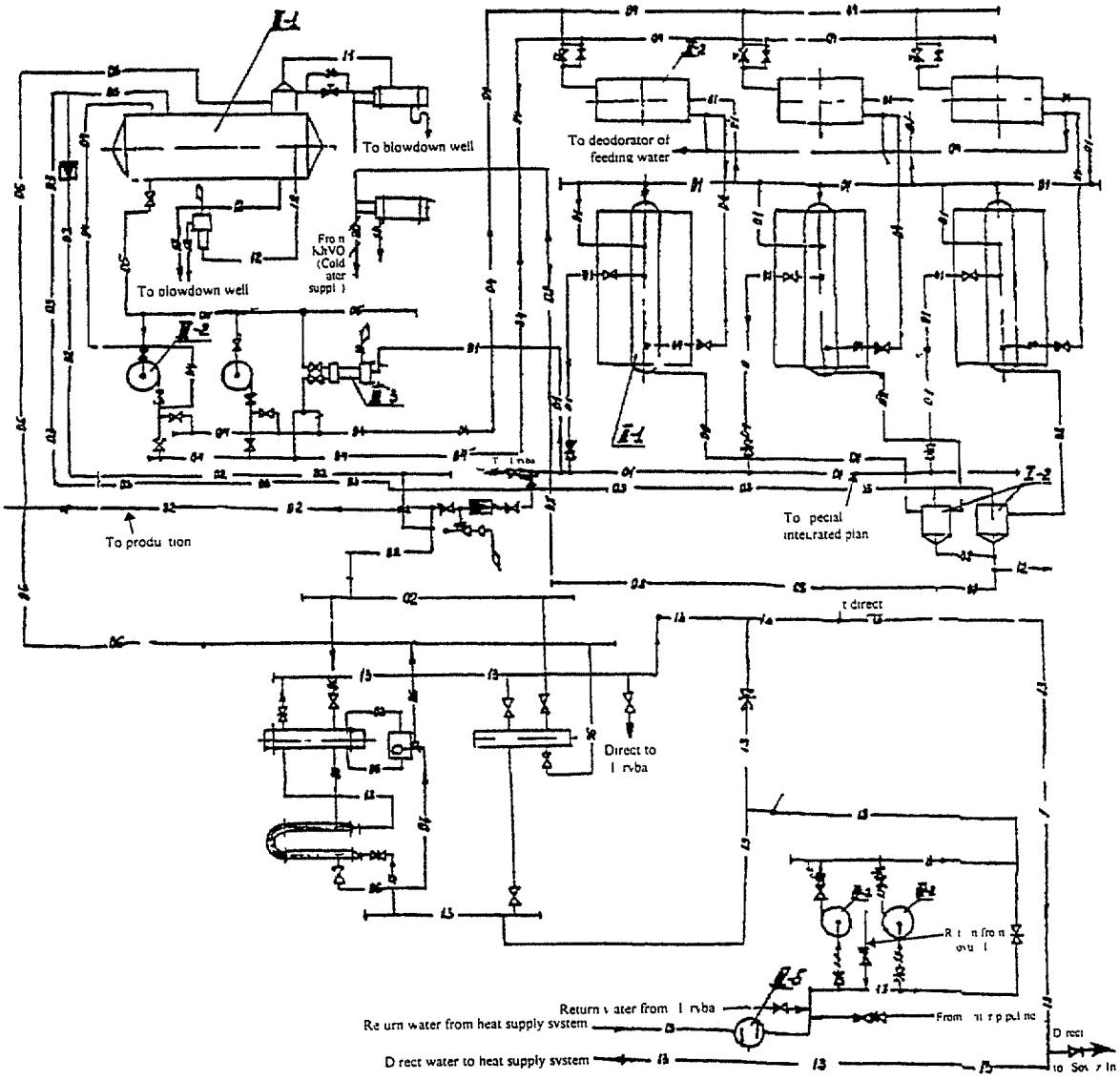
340	22 06 97	1 00 00	146 539	170 207	0 86	85 835	195 554	243 385	0 8	144 885
341	22 06 97	1 15 00	147 41	169 601	0 87	83 868	195 6	242 392	0 81	145 131
342	22 06 97	1 30 00	143 247	164 234	0 87	80 33	193 235	236 603	0 82	136 533
343	22 06 97	1 45 00	128 93	149 684	0 86	76 008	190 291	234 114	0 81	136 375
344	22 06 97	2 00 00	107 401	126 843	0 85	67 224	186 083	230 704	0 81	136 364
345	22 06 97	2 15 00	51 787	60 12	0 86	30 521	179 916	226,228	0 8	137 121
346	22 06 97	2 30 00	44 48	53 7	0 83	29 794	175 683	222 62	0 79	136 719
347	22 06 97	2 45 00	0	0 007	1	0 006	182 965	230 484	0 79	140 166
348	22 06 97	3 00 00	0	0 008	1	0 007	182 206	229 836	0 79	140 09
349	22 06 97	3 15 00	0	0 007	1	0 006	181 303	229 016	0 79	139 918
350	22 06 97	3 30 00	0	0 007	1	0 006	180 973	228 775	0 79	139 952
351	22 06 97	3 45 00	0	0 007	1	0 006	180 592	228 583	0 79	140 131
352	22 06 97	4 00 00	0	0 007	1	0 006	181 108	229 148	0 79	140 387
353	22 06 97	4 15 00	123 891	142 493	0 87	69 473	187 701	232 721	0 81	137 549
354	22 06 97	4 30 00	143 868	164 894	0 87	80 572	187 972	232 47	0 81	136 78
355	22 06 97	4 45 00	139 774	160 661	0 87	79 215	186 184	230 987	0 81	136 712
356	22 06 97	5 00 00	135 627	156 276	0 87	77 637	184 166	228 749	0 81	135 679
357	22 06 97	5 15 00	134 298	154 822	0 87	77 029	182 885	227 316	0 8	135 002
358	22 06 97	5 30 00	134 075	154 508	0 87	76 789	182 249	226 522	0 8	134 526
359	22 06 97	5 45 00	132 684	153 017	0 87	76 216	181 494	225 626	0 8	134 04
360	22 06 97	6 00 00	128 8	149 208	0 86	75 321	179 277	224 06	0 8	134 396
361	22 06 97	6 15 00	120 67	141 204	0 85	73 322	172 953	218 451	0 79	133 435
362	22 06 97	6 30 00	111 578	132 219	0 84	70 928	165 359	211 14	0 78	131 284
363	22 06 97	6 45 00	96 46	117 972	0 82	67 884	158 61	205 492	0 77	130 641
364	22 06 97	7 00 00	127 028	147 709	0 86	75 346	178 569	223 683	0 8	134 682
365	22 06 97	7 15 00	131 969	152 357	0 87	76 135	182 504	226 473	0 81	134 096
366	22 06 97	7 30 00	127 72	147 923	0 86	74 621	179 711	223 366	0 8	132 65
367	22 06 97	7 45 00	121 899	142 086	0 86	72 999	175,288	219,204	0 8	131 619
368	22 06 97	8 00 00	126 06	146 316	0 86	74 268	177 695	221 673	0 8	132 52
369	22 06 97	8 15 00	132 982	153 289	0 87	76 244	183 712	227 435	0 81	134 075
370	22 06 97	8 30 00	134 383	154 581	0 87	76 395	184 617	227 954	0 81	133 714
371	22 06 97	8 45 00	135 737	155 888	0 87	76 658	185 837	228 897	0 81	133 635
372	22 06 97	9 00 00	134 781	154 773	0 87	76 083	185 721	228 345	0 81	132 85
373	22 06 97	9 15 00	129 566	149 39	0 87	74 361	182 994	225 347	0 81	131 506
374	22 06 97	9 30 00	123 324	143 166	0 86	72 713	176 658	219 522	0 8	130 304
375	22 06 97	9 45 00	66 538	76 729	0 87	38 209	100 548	124 325	0 81	73 019
376	22 06 97	10 00 00	0 325	0 377	0 92	0 185	0	0	1	0
377	22 06 97	10 15 00	130 061	150 17	0 87	75 065	173 176	215 347	0 8	127 629
378	22 06 97	10 30 00	128 43	148 453	0 87	74 456	182 047	224 471	0 81	131 325
379	22 06 97	10 45 00	125 608	145 599	0 86	73 632	179 437	221 879	0 81	130 506
380	22 06 97	11 00 00	125 687	145 599	0 86	73 496	179 741	221 953	0 81	130 213
381	22 06 97	11 15 00	123 644	143 387	0 86	72 607	177 297	219 053	0 81	128 643
382	22 06 97	11 30 00	125 094	144 797	0 86	72 921	179 531	220 969	0 81	128 822
383	22 06 97	11 45 00	123 804	143 512	0 86	72 58	178,269	219 818	0 81	128 603
384	22 06 97	12 00 00	121 111	140 779	0 86	71 768	175 167	216 759	0 81	127 67
385	22 06 97	12 15 00	121 211	140 918	0 86	71 872	175 817	217 489	0 81	128 019
386	22 06 97	12 30 00	121 529	141 242	0 86	71 971	176 286	217 909	0 81	128 09
387	22 06 97	12 45 00	120 525	140 151	0 86	71 525	174 871	216 304	0 81	127 306
388	22 06 97	13 00 00	118 987	138 457	0 86	70 797	172 809	213 765	0 81	125 823

389	22 06 97	13 15 00	116 174	135 837	0 86	70 389	170 588	212 191	0 8	126 18
390	22 06 97	13 30 00	115 467	135 102	0 85	70 127	170 389	211 758	0 8	125 70
391	22 06 97	13 45 00	118 104	137 204	0 86	69 828	172 385	211 853	0 81	123 14
392	22 06 97	14 00 00	118 41	137 582	0 86	70 055	172 653	212 341	0 81	123 60
393	22 06 97	14 15 00	119 863	139 063	0 86	70 506	174 049	213 814	0 81	124 18
394	22 06 97	14 30 00	119 227	138 348	0 86	70 176	173 868	213 335	0 82	123 61
395	22 06 97	14 45 00	119 677	138 799	0 86	70 301	174 887	214 35	0 82	123 932
396	22 06 97	15 00 00	120 934	140 058	0 86	70 646	176 376	215 817	0 82	124 36
397	22 06 97	15 15 00	121 69	140 85	0 86	70 921	177 193	216 661	0 82	124 673
398	22 06 97	15 30 00	123 242	142 303	0 87	71 142	179 045	218 022	0 82	124 401
399	22 06 97	15 45 00	125 523	144 633	0 87	71 85	181 638	220 752	0 82	125 452
400	22 06 97	16 00 00	126 312	145 469	0 87	72 154	182 695	221 959	0 82	126 046
401	22 06 97	16 15 00	124 81	144 108	0 87	72 038	180 888	220 875	0 82	126 744
402	22 06 97	16 30 00	121 116	140 584	0 86	71 372	177 196	217 996	0 81	126 967
403	22 06 97	16 45 00	117 881	137 379	0 86	70 541	174 839	215 759	0 81	126 414
404	22 06 97	17 00 00	123 325	142 865	0 86	72 117	180 203	221 052	0 82	128 014
405	22 06 97	17 15 00	124 94	144 908	0 86	73 405	182 047	224 319	0 81	131 06
406	22 06 97	17 30 00	135 701	155 396	0 87	75 7	192 328	232 752	0 83	131 05
407	22 06 97	17 45 00	139 945	159 388	0 88	76 286	195 412	234 528	0 83	129 68
408	22 06 97	18 00 00	139 511	158 965	0 88	76,2	195 709	235 111	0 83	130 286
409	22 06 97	18 15 00	137 259	156 586	0 88	75 358	194 424	233 681	0 83	129 636
410	22 06 97	18 30 00	134 454	153 72	0 87	74 508	192 21	231 622	0 83	129 24
411	22 06 97	18 45 00	136 287	155 686	0 88	75 255	194 119	233 866	0 83	130 412
412	22 06 97	19 00 00	136,26	156 116	0 87	76 191	194 057	235 604	0 82	133 606
413	22 06 97	19 15 00	136 665	156 49	0 87	76 234	194 524	235 875	0 82	133 403
414	22 06 97	19 30 00	136 183	155 772	0 87	75 624	194 284	234 886	0 83	132 002
415	22 06 97	19 45 00	133 814	153 317	0 87	74 833	191 801	232 363	0 83	131 165
416	22 06 97	20 00 00	134 519	154 132	0 87	75 241	192 911	233 839	0 82	132 156
417	22 06 97	20 15 00	132 756	152 316	0 87	74 671	191 151	232 081	0 82	131 615
418	22 06 97	20 30 00	131 942	151 461	0 87	74 374	190 892	231 755	0 82	131 416
419	22 06 97	20 45 00	130 876	150 418	0 87	74 14	189 944	230 972	0 82	131 41
420	22 06 97	21 00 00	126 006	145 568	0 87	72 882	184 494	225 911	0 82	130 364
421	22 06 97	21 15 00	118 65	138 338	0 86	71 126	178 89	220 951	0 81	129 675
422	22 06 97	21 30 00	132 696	152 491	0 87	75 13	191 612	233 075	0 82	132 687
423	22 06 97	21 45 00	134 98	154 783	0 87	75 749	193 347	234 803	0 82	133 225
424	22 06 97	22 00 00	133 405	153,211	0 87	75 341	191 578	233 214	0 82	132 99
425	22 06 97	22 15 00	131 242	150 924	0 87	74 521	189 743	231 126	0 82	131 97
426	22 06 97	22 30 00	129 143	148 732	0 87	73 777	187 323	228 515	0 82	130 875
427	22 06 97	22 45 00	127 857	147 399	0 87	73 342	185,649	226 821	0 82	130 314
428	22 06 97	23 00 00	129 293	148 845	0 87	73 743	187 296	228,236	0 82	130 429
429	22 06 97	23 15 00	128 71	148 291	0 87	73 647	186 541	227 617	0,82	130 427
430	22 06 97	23 30 00	128 052	147 627	0 87	73 457	185 838	227 058	0 82	130 456
431	22 06 97	23 45 00	127 631	147 345	0 87	73 625	185 323	227 048	0 82	131 168
432	23 06 97	0 00 00	126 515	146 48	0 86	73 825	183 664	226 354	0 81	132 297
433	23 06 97	0 15 00	126 023	146 147	0 86	74 007	183 046	226 335	0 81	133 119
434	23 06 97	0 30 00	126 791	146 966	0 86	74 316	184 299	227 664	0 81	133 657
435	23 06 97	0 45 00	124 833	145 151	0 86	74 063	181 074	225 131	0 8	133 773
436	23 06 97	1 00 00	123 29	143 613	0 86	73 648	179 228	223 423	0 8	133 394
437	23 06 97	1 15 00	123 037	143 413	0 86	73 68	178 687	222 992	0 8	133 399

438	23 06 97	1 30 00	124 609	145 015	0 86	74 172	182 668	226 846	0 81	1[illegible]
439	23 06 97	1 45 00	126 845	147 317	0 86	74 916	184 982	229 31	0 81	135 47
440	23 06 97	2 00 00	130 232	150 651	0 86	75 73	183 529	227 645	0 81	134 68[illegible]
441	23 06 97	2 15 00	132 24	152 5[illegible]	0 87	75 951	185,283	228 619	0 81	133 92[illegible]
442	23 06 97	2 30 00	132 885	152 685	0 87	75 19	185 341	226 931	0 82	130 931
443	23 06 97	2 45 00	131,213	150 821	0 87	74 363	183 496	224 619	0 82	129 546
444	23 06 97	3 00 00	128 162	147 762	0 87	73 537	181 105	222 458	0 81	129 181
445	23 06 97	3 15 00	125 271	144 827	0 86	72 675	178 493	219 956	0 81	128 5[illegible]
446	23 06 97	3 30 00	128 206	147 859	0 87	73 656	180 747	222 251	0 81	129 326
447	23 06 97	3 45 00	128 696	148 368	0 87	73 825	180 249	221 893	0 81	129 408
448	23 06 97	4 00 00	127 428	147 13	0 87	73 546	179 122	220 937	0 81	129 336
449	23 06 97	4 15 00	125 237	144 825	0 86	72 73	177 229	218 787	0 81	128 284
450	23 06 97	4 30 00	122 849	142 312	0 86	71 831	175 323	216 475	0 81	126 974
451	23 06 97	4 45 00	120 305	139 79	0 86	71 188	173 17	214 422	0 81	126 447
452	23 06 97	5 00 00	123 185	142 543	0 86	71 718	175 232	215 863	0 81	126 052
453	23 06 97	5 15 00	128 17	147 358	0 87	72 707	178 049	217 767	0 82	125 379
454	23 06 97	5 30 00	133 234	152 394	0 87	73 976	180 974	220 13	0 82	125 319
455	23 06 97	5 45 00	135 777	154 914	0 88	74 582	180 169	219 115	0 82	124 [illegible]
456	23 06 97	6 00 00	138 662	157 768	0 88	75 254	181 75	220 369	0 82	124 614
457	23 06 97	6 15 00	139 376	158 366	0 88	75 191	182 013	220 041	0 83	123 645
458	23 06 97	6 30 00	141 545	160 202	0 88	75 029	182 739	219 145	0 83	120 957
459	23 06 97	6 45 00	140 832	160 178	0 88	76 307	182 599	222 332	0 82	126 831
460	23 06 97	7 00 00	138 169	157 417	0 88	75 427	181 407	221 096	0 82	126 389
461	23 06 97	7 15 00	136 317	155 567	0 88	74 956	179 801	219 638	0 82	126 14
462	23 06 97	7 30 00	134 375	153 479	0 88	74 153	179 043	218 55	0 82	125 327
463	23 06 97	7 45 00	135 241	154 226	0 88	74 128	178 972	217 852	0 82	124 209
464	23 06 97	8 00 00	134 282	153 091	0 88	73 518	178 636	216 895	0 82	123 011
465	23 06 97	8 15 00	134 942	153 741	0 88	73 663	179 825	217 861	0 83	122 983
466	23 06 97	8 30 00	138 529	157 058	0 88	74 002	182 179	218 632	0 83	120 87
467	23 06 97	8 45 00	136 159	154 523	0 88	73 055	183 482	219 582	0 84	120 608
468	23 06 97	9 00 00	122 813	141 322	0 87	69 915	174 844	212 787	0 82	121 267
469	23 06 97	9 15 00	117 309	135 651	0 87	68 043	180 648	217 451	0 83	121 027
470	23 06 97	9 30 00	135 909	154 373	0 88	73 209	184 81	221 015	0 84	121 211
471	23 06 97	9 45 00	132 491	150 821	0 88	72 06	183,213	219 327	0 84	120 565
472	23 06 97	10 00 00	133 187	151 477	0 88	72 154	180 053	216 026	0 83	119 361
473	23 06 97	13 45 00	48 538	55,287	0 88	26 431	67,211	80 838	0 83	44 826

											Chan 5 Compressor No 7 N=200 kW						Chan 6 Compressor No 5 N=75 kW					
Record	Record	Record	Chan 1	Chan 1	Chan 2	Chan 2	Chan 3	Chan 3	Chan 4	Chan 4	Chan 5	Chan 5	Chan 5	Chan 5	Chan 5	Chan 5	Chan 6	Chan 6	Chan 6	Chan 6	Chan 6	Chan 6
Number	Date	End	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg kW	Avg	Avg PF	Avg	Avg	Avg	Avg kW	Avg	Avg PF	Avg
1	23 06 97	12 45 00	391	301 1	390 6	294 7	391 1	113 9	390 6	112 3	390 8	595 8	159 397	199 395	0 8	119 729	390 8	226 2	61 164	75 996	0 8	45 086
2	23 06 97	13 00 00	389 7	306 8	389 5	301 3	389 8	116 3	389 6	114 4	389 6	608 2	164 054	202 767	0 81	119 144	389 7	230 8	62 736	77 159	0 81	44 909
3	23 06 97	13 15 00	393 9	301 4	393 5	294 8	394	114 9	393 5	113 2	393 7	596 2	158 732	200 847	0 79	123 056	393 7	228 2	62 023	77 225	0 8	46
4	23 06 97	13 30 00	392 9	298 3	392 4	292	392 9	113 5	392 4	111 7	392 7	590 3	157 208	198 521	0 79	121 225	392 7	225 2	61 15	76 057	0 8	45 215
5	23 06 97	13 45 00	393	296 2	392 7	290 3	393	111 3	392 6	109 6	392 8	586 5	155 687	197 232	0 79	121 081	392 8	220 9	59 673	74 607	0 8	44 77

Heat Supply Diagram of the Boiler House



"Approved"

[Signed]

G Ragimov

Technical Director, JSC Ivanovo Brewing Company

May 5, 1997

IV-3		1		MVN-1244-21
IV-4				
IV-2	16 HDV-type system water pump	3	Q = 250 m^3/4 h H = 54 meters of water column	"Livgidromash" Plant
IV-I	c) RP-80 overflow regulator	2	Diameter = 80 mm P = 25 atm	
	b) Condensate cooler	2	F = 2 x 21 = 42 m^2	
	a) PP-2 type steam and water heater	2	F = 62 3 m^2	
III-3	PNP 60/20 V Steam feeding pump	1	Qr H = 200 meters of water column	Svessky Pump Plant
III-2	TSNG-60 type centrifugal feeding pump	2		
III-1	DSA-50 deaerator with flash steam cooler	1	D = 50 tons per hour	Chernovitsky Machine-building Plant
II-2	VE-VII-16P type block economizer	3	F = 330 4 m^2	Kusinsky Machine-building plant
II-1	DKVR-10/13 steam boiler	3	D = 15 tons per hour P = 14 atm	BIKZ
I-3	Continuous blowdown heat exchanger	1	C = 5 0 m^2	BIKZ
I-2	Continuous blowdown separator	2	V = 0 7 m^3	Biysky Boiler Plant
I-1	Reduction plant	1	Q = 30 tons per hour P1/P = 18/6 atm (g)	Biysky Boiler Plant
No	Name	Q-ty	Characteristics	Note

List of equipment

JSC "Ivanovo Brewing Company"

Heat supply system of the boiler house (Boiler DKVR-10/13)

			Regulating valve for steam
	Direction		No joint
10	Atmospheric pipelines	•	Pipelines joint
08	Continuous blowdown	•	Valve that regulates behind itself
06	Condensate pipelines		Regulating valve
05	Feed pipelines suction	15	Raw water pipelines
04	Feeding head pipelines	14	Replenishment pipelines
03	Steam pipelines P = 0 6 kgs/cm^2	13	System water pipelines
02	Steam pipelines P = 6 kgs/cm2	12	Discharge pipelines
01	Steam pipelines P = 13 kgs/cm^2	11	Flash steam pipelines
		Legend	

Literature

1 V E Balashev Diploma Designing of Beer and Soft Drinks Producing Enterprises 1983

2 Ukrainian industry, way to efficiency of power industry

3 Albert Thumann Handbook of energy audits