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Trading Floor/1:
A Prototype of an Automated
Securities Exchange

By

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and
Economic Research

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TRADING FLOOR/1:
A PROTOTYPE OF AN AUTOMATED SECURITIES EXCHANGE

by

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BACKGROUND TO THE CREATION OF TF/1

Fully automated securities exchanges will become a reality within the next two decades. This conclusion seems nearly inescapable when one considers that the powerful forces of technological pull--the rapidly increasing cost-effectiveness of information-processing systems--and economic push--rising volume, costs, and the "back-office problem"--are working in concert toward such a resolution. Even reactionary forces, some of which lie within the securities exchanges themselves, recognize the inevitability of automation and are working hard to guide its evolution into channels acceptable to their interests. The next five years or so, then, represent an exceptional opportunity for careful decision making. After that, the opportunity will be lost, possibly for a very long time: Because of the high capital costs of exchange automation, and because of the legislative actions which will accompany such steps, the structure of an automated securities market, once set, will tend to be quite permanent.

The time for research into structural issues surrounding automated exchanges is therefore right now; later will be too late. It is to this end that Trading Floor/1 (TF/1), a *working* prototype of an automated stock exchange, was created--to provide a facility wherein substantive research on structural issues could be performed. This paper will describe the workings of TF/1 as it was intended to fulfill this end.

TF/1 Hardware

In a fully automated exchange, trading will not take place in a particular physical location, but rather through a communication/computation network. That network must interface with traders at possibly remote individual locations. As a matter of terminology, we shall call the set of physical devices present at the remote physical location a *console station*; *communication channels* connect the console stations to a *central computational facility*, the actual physical location of which is irrelevant. In TF/1, the console stations consist of one model 33 teletype and one video (TV) display unit. Hardwired, twisted-pair lines serve as communication channels which connect the teletypes to a Digital Equipment Corporation PDP-5 computer which handles input/output processing, and which in turn is connected to a PDP-8 computer whose function is primarily computational. All of this equipment is housed in the Management and Behavioral Sciences Laboratory, maintained by the Center for Research in Management Science, University of California at Berkeley. A complete description of the laboratory and its capabilities is given by Esherick, Hoggatt, and Wheeler (1969). With the permission of these authors, their diagrams of the laboratory's physical space configuration and logical design have been included at the end of this work as Appendix I.

Functionally, the teletype component of each console station of TF/1 serves as a vehicle for participation in the securities auction process and for the statement of individual confirmations and accounts of its user. The video display component services a one-way communication

channel (coaxial cables) for the purpose of reporting the state of the market to all users (traders). Details of these functions are given in the following section.

Trading Via TF/1

At any point in time, teletype consoles may be in one of three possible modes: (1) the I.D. mode, (2) the READY mode, and (3) the TRADING POST mode.

Each user of TF/1 is assigned a unique identification number (I.D. number), which permits access to his accounts and to the trading mechanisms. In the I.D. mode, the console user has not been identified to TF/1; the user is therefore requested to input his number. A format which has been overstruck with random digits is provided to maintain the security of his number upon input. When a number is input, it is checked against a list of valid I.D. numbers. If the user number is valid, the teletype console makes transition to the READY mode; if not, a message to this effect is printed, and the console returns to the I.D. mode.

The READY mode corresponds to physical presence on the floor of a securities exchange in some general location which is not a trading post. In this mode, the user may access his accounts to receive a report of his cash balance and his portfolio of securities. He may also abandon the console by returning to the I.D. mode or exit from the READY mode by "going to" a trading post where the shares of any corporation's securities are traded--i.e. the TRADING POST mode. Naturally, this transition is logical rather than physical, since the user does not leave his console station. In the TRADING POST mode, the user may do the following:

- He may bid for or offer to sell shares of the security traded at that trading post. Bids and offers are firm commitments (unilateral contracts) to buy or sell specified quantities (stated in multiples of the round lot size) of the security at a specified price (stated in multiples of eighths of a dollar per share). These bids and offers may have specified conditions attached--for example, time limits for expiration, stop-loss orders, etc. Bids and offers may be entered into the market in one of two ways: for the current auction, in which case their price must lie within the current "bid" and "ask" price range;[1] or, alternatively, for the specialist's book, in which case no price restrictions apply.

- He may receive a quotation of the current bid, ask, and last prices, along with the tick.[2]

- He may cancel previous orders.

- He may leave that trading post--i.e. exit from the TRADING POST mode and return to the READY mode.

Input to the teletypes has been adapted to human-factors considerations. While all numeric input is in the form of digit strings, the teletypes otherwise operate in a single-character command fashion. That is, instead of typing the word "ACCOUNTS:" to evoke a statement of his portfolio position, the user simply types an "A" which the computer then completes by echoing "CCOUNTS:" before executing this command. Appendix II gives the summary of the single-character commands employed by TF/1 that are provided to participating users.

Whenever the user is in any kind of trouble--e.g. in an input loop from which he wishes to exit--he may always escape by typing a "K"

---

1. The bid price is the highest price of all active buy orders (bids) and the ask price is the lowest of all active sell orders (offers). The "spread" is the numeric difference between the latter and the former.

2. The "last" price is the price at which the previous transaction took place. The "tick" is the sign of the price movement between the last price and the price of the transaction preceding it; it has special significance to short sales and ratio tests of specialists' performance.

for "KILL." When numeric input is required, the normal delimiter is a space character. A typical console-user interaction is given in Appendix III.

The central computational facility of TF/1 performs the following functions:

- Updates order queues (the collections of bids, offers). The priority of orders is modeled after that of the New York Stock Exchange: First-level priority is assigned by price; the highest bid and lowest offer always have precedence. If there is a tie in price, second-level priority is assigned on the basis of earlier entry time. In the case of simultaneous entry, third-level priority favors orders with large quantity specification. Otherwise, priority is randomized.

- Matches orders for possible transactions. Whenever a buy order and a sell order agree on price, a transaction may take place.

- Executes transactions. If buy and sell orders agree on price, their quantities are compared. If these are unequal, the smaller order is completely filled, while the larger order's size is reduced appropriately. Confirmations are routed to the console of the user whose I.D. number matches that on the executed order.

- Updates the state of the market. New bids, offers, or sales which alter the state of the market are reported on a "ticker tape" teletype for shipment to users via the video display system.

Auxiliary Functions

There are certain reserved console stations in TF/1. One of these is a market operator's console. The operator may establish margin and short-sale limitations from this console, as well as control recovery from certain error conditions (primarily, memory space overflow in the small PDP-5/8 system). The specialist in each security is also allocated a console station which is somewhat different functionally from that of the ordinary user. In addition to all the usual mechanisms accessible by any trader, a specialist may open and close the market in his security as well as maintain and service orders in his book.

In the real world, certain "fundamental" factors like earnings reports, financial statements, and other pertinent news are thought to affect stock prices. To provide a well-controlled simulation of this situation, market "news" is generated in TF/1 via a prearranged sequence of transparency slides, the images of which are projected upon a reflective screen that may be viewed by traders. Slide projection is completely under computer control; "quarterly" reports are flashed on the screen at each expiration of an adjustable time delay (typically, five to ten minutes), as measured by the PDP-8 real-time clock, by a pulse line circuit.

When the slide projector is pulsed, the next company earnings report and other financial data are displayed. Simultaneously, an IBM punched card is read; the card contains information on dividends and interest rates. Each "quarter," interest on closing cash balances and dividends on securities held are credited to each trader's cash accounts. The sequencing of slides and punched cards thus allows a very flexible means of "driving" the market for experimental purposes.

All events in TF/1 are monitored and recorded on IBM-compatible magnetic tape. All bids, offers, sales, or other happenings are timed as to their occurrence and then coded and formatted as card-images for the magnetic tape unit. This feature permits completely automatic data acquisition for subsequent analysis by larger off-line computers.

TF/1 Software

TF/1 operates as an overlay of the standard PDP-5/8 time-sharing system (TSS) maintained by the Management and Behavioral Sciences

Laboratory; however, extensive changes were made in the TSS program to accommodate special data structures and arithmetic. For a complete description of TSS and its operation, the reader is referred to Moore (1971).

Modifications of TSS include those necessary to deal with two new data structures in TF/1, which we shall term *files* and *lists*. For the purposes of this discussion, a file will mean a sequentially allocated set of variable-sized records. The head cell of a file contains an integer which gives the record size; files are terminated by the delimiter "0." Identification numbers, individual names, asset account balances, and other information are maintained in files within TF/1. Orders, on the other hand, are organized into linked lists, since this structure is well adapted to handling their various priorities. Buy-order lists are ranked by decreasing price, and sell-order lists by increasing price. This means that price comparisons need take place only between the top records of the buy-order and sell-order lists in determining whether transactions should take place; bid and ask prices are also accessible in these top records.

Each record on an order list contains a price, a quantity, a time of entry, a user I.D. number, a logical console number, and a set of condition flags. (The latter is used internally to determine the processing status of the order, e.g. whether it has been reported on the video display, whether a confirmation of execution was issued, etc.)

Eight types of lists are employed internally in TF/1: (1) auction bids, (2) auction offers, (3) specialist book bids, (4) specialist book offers, (5) executed bids, (6) executed offers, (7) a temporary list,

and (8) a free-space list. (The first six of these would be replicated for each security.)

The Environmental Control Language (ECL/3; see Moore, 1971) which serves the laboratory programming language, was used for the definition (and interpretation under TSS) of TF/1.[3] However, certain changes were made to accommodate the specialized needs of TF/1. In particular, new language operations were created for (1) single-character I/O response mode, (2) file manipulation, and (3) list manipulation.

All ECL/3 floating-point arithmetic operations were replaced with one-word and two-word integer operations. Since prices in TF/1 are expressed in eighths of dollars, the internal octal representations of these prices employed an octal point before the last octal digit. Since quantity trading units are integral, cash balances were similarly represented in double-word integers, allowing positive and negative balances to more than $1,000,000. Single-word integer representation of round lot balances permitted traders to maintain long and short positions of more than 400,000 shares.

The text of the ECL/3 program which implements TF/1, along with the PDP-8 machine code for new ECL operations and changes to TSS are included as Appendix IV of this report.

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3. I am greatly indebted to my research assistant, George Morrow, for his outstanding programming efforts in TF/1. Jeff Moore and Bob Gray are also deserving of thanks for their able assistance.

Design Objectives of TF/1

There are three basic dimensions to the design objectives followed in the creation of TF/1. These may be characterized as descriptive, normative, and educational.

The descriptive aspect arises in the attempt to model the basic trading and informational mechanisms of TF/1 after those of the New York Stock Exchange (NYSE). As the major exchange in the U.S., the NYSE may be expected to be in a "price-leadership" situation vis-à-vis smaller exchanges where identical securities are listed; and in those securities not listed on the NYSE, trading is normally thin enough that it is not really representative of the auction process.

Although complicated, the trading rules of the NYSE--e.g. priorities of bids and offers--were straightforward enough to model. The informational mechanisms are a different matter. For example, at a physical trading post, one can tell exactly which traders (brokers) are in the auction simply by looking around. A trader might even read facial expressions in the trading crowd as a potential source of information. In an automated exchange there is really no way to duplicate this sort of fact-to-face interaction. Certain information transmission, on the other hand, may be enhanced over that available at a physical trading post: current bid, ask, last, tick, and past data on price movements may be readily accessible at a console station of an automated exchange.

In pursuing the descriptive approach, both for prediction and validation purposes, a large number of empirical questions might be tackled. As a sampling of such questions, consider the following:

- What is the statistical distribution of order interarrival times? If it is not Poisson, how does this fact affect price behavior?
- How do limit prices of orders depend upon current bid/ask prices and past transaction prices?
- How would abolishing the short-sale uptick rule affect price behavior?
- Does price volatility follow from relaxed margin requirements?
- What would happen if the specialist did not have to meet the tick test?
- Do specialist trading profits represent a fair return on capital? (Indeed, what are these returns?)

While many such questions could be answered by data from real trading behavior on the NYSE, most could not because of the following reasons: (1) such data may be nonexistent, irrelevant, or secret; (2) controlled experimentation with structural changes in the NYSE would lead to chaotic conditions; (3) hypotheses cannot be tested for statistical validity because of the nonreplicability of tests--each day's fundamental news affecting the NYSE market is entirely unique. Laboratory experimentation with a descriptive model of sufficient validity can overcome all of the foregoing objections.

The normative aspect of TF/1 design objectives centers about the following question: What is the optimal design of a fully automated securities exchange? The question has many components, a partial list of which follows:

- What does "optimal" mean? "Optimal" for whom--the public, the brokerage industry, or the various competing exchanges?
- Does full automation imply complete centralization of the securities market?

- Where centralization is implied, what monopolistic practices follow in (1) access to exchange mechanisms, (2) access to trading information, and (3) pricing policies?
- What human-factors considerations are relevant to the design of automated exchange console stations?
- What information-processing facilities are desirable in the software mechanisms provided to traders at remote console stations?

The present writer has learned a number of lessons regarding these and other such questions in the year-long process which gave birth to TF/1. Since these often fall into the realm of impressions and opinions, however, they will not be reported in this work. Rather, they will appear in a subsequent paper entirely devoted to such issues.

On the educational front, TF/1 has been used to teach the basic operations of securities exchanges. As of the current writing, more than 120 undergraduate students have participated in TF/1 experimental sessions. Their reactions have been quite favorable, and they seem to emerge from the experience with a very good "feel" for competitive securities trading. Presumably, TF/1 could also be used to teach novice broker-dealers in a context where mistakes are far less serious than those on the floor of an actual exchange.

CURRENT LIMITATIONS IN TF/1

As of this writing, TF/1 is actually "TF/1, Version 2." An earlier version was discarded because of serious human-factors problems in teletype I/O. A third version of TF/1 is in the planning stage, the objectives of which are the removal of limitations present in the current version. Among these limitations are the following:

- TF/1.2 permits trading in only one security, that of the "XYZ" corporation. The logical design permits easy extension to several securities, while this limitation reflects the small amount of core memory (4,096 words apiece in the PDP-5 and PDP-8) available. More core memory has recently been made available.

- Certain specialist's activities are incompletely programmed--e.g. the ability to peruse his book. Additional programming effort is required to remove this limitation.

- Approximately 7 console stations and 10 broker accounts are available. The maximum of approximately 50 orders can simultaneously co-exist in TF/1.2. Again, memory space was a binding constraint.

REFERENCES

1. Esherick, J., A. C. Hoggatt, and J. T. Wheeler, "A Laboratory to Facilitate Computer Controlled Behavioral Experiments," *Administrative Science Quarterly*, 14 (June 1969), 202-207.

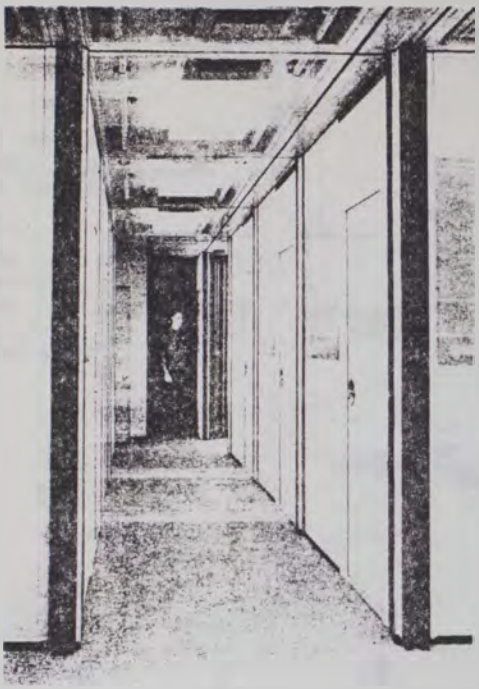
2. Moore, J., "ECL/3, The Environmental Control Language of the Management and Behavioral Sciences Laboratory Time-Sharing System," Research Report LR-15 (Berkeley: Center for Research in Management Science, University of California, 1971).

APPENDIX I

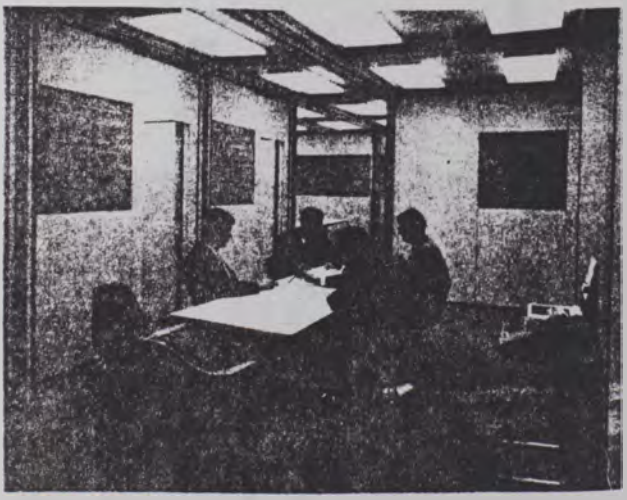
THE PHYSICAL AND LOGICAL DESIGN OF THE MANAGEMENT AND BEHAVIORAL SCIENCES LABORATORY

taken from

Esherick, Hoggatt, and Wheeler (1969)



The experimental area is here partitioned into 7' X 7' experimental cubicles. Sound-baffled air conditioning outlet, T.V. mounting racks and tracking for the panels are visible in the ceiling.



Modification of the spatial arrangement is quick and easy. Here, the same experimental area is shown above is depicted with one row of cubicles broken down, thus creating a large area adaptable to conferences, debriefing sessions, etc.

Figure 1

Management Science Laboratory

FLOOR PLAN

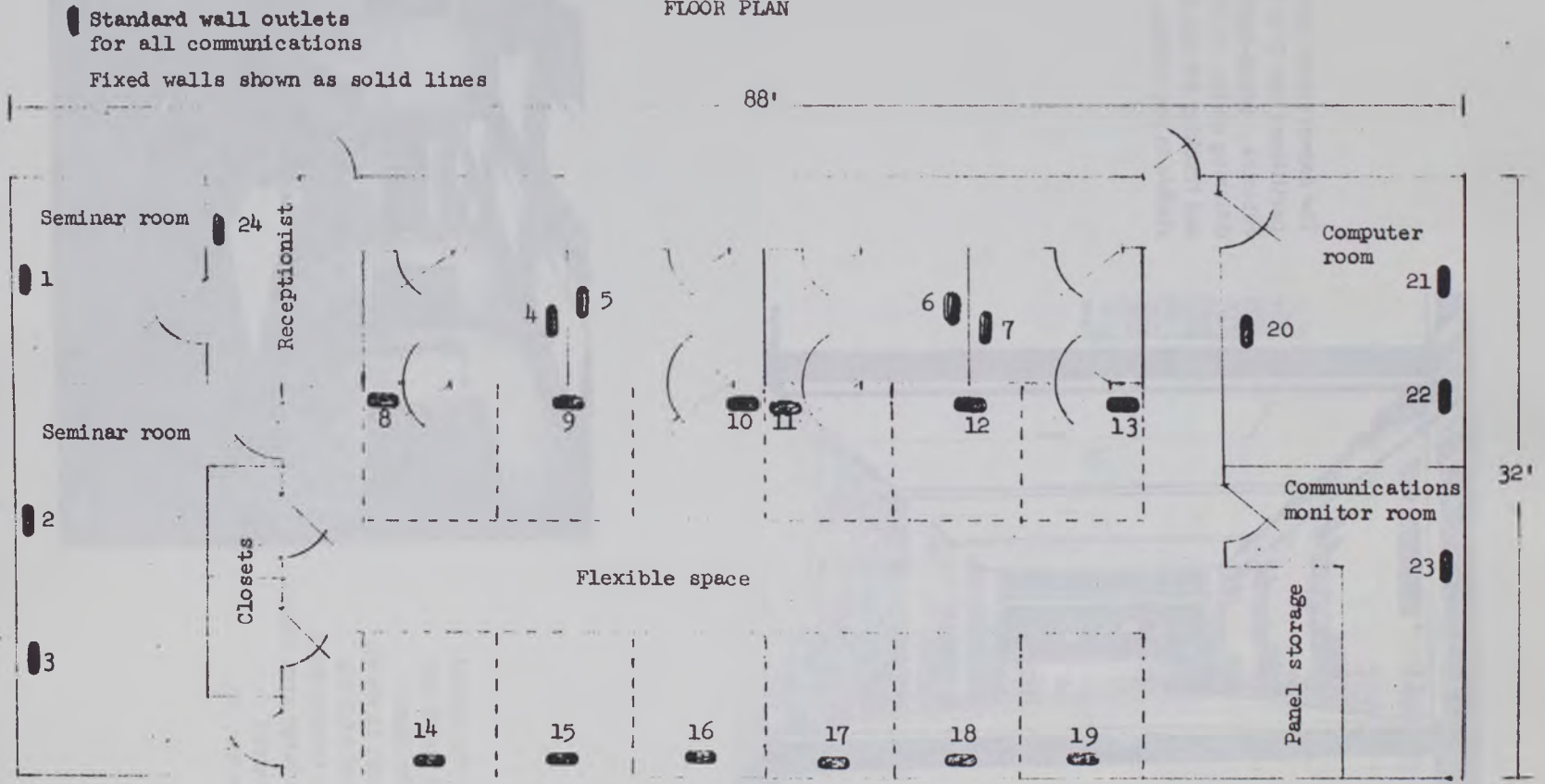
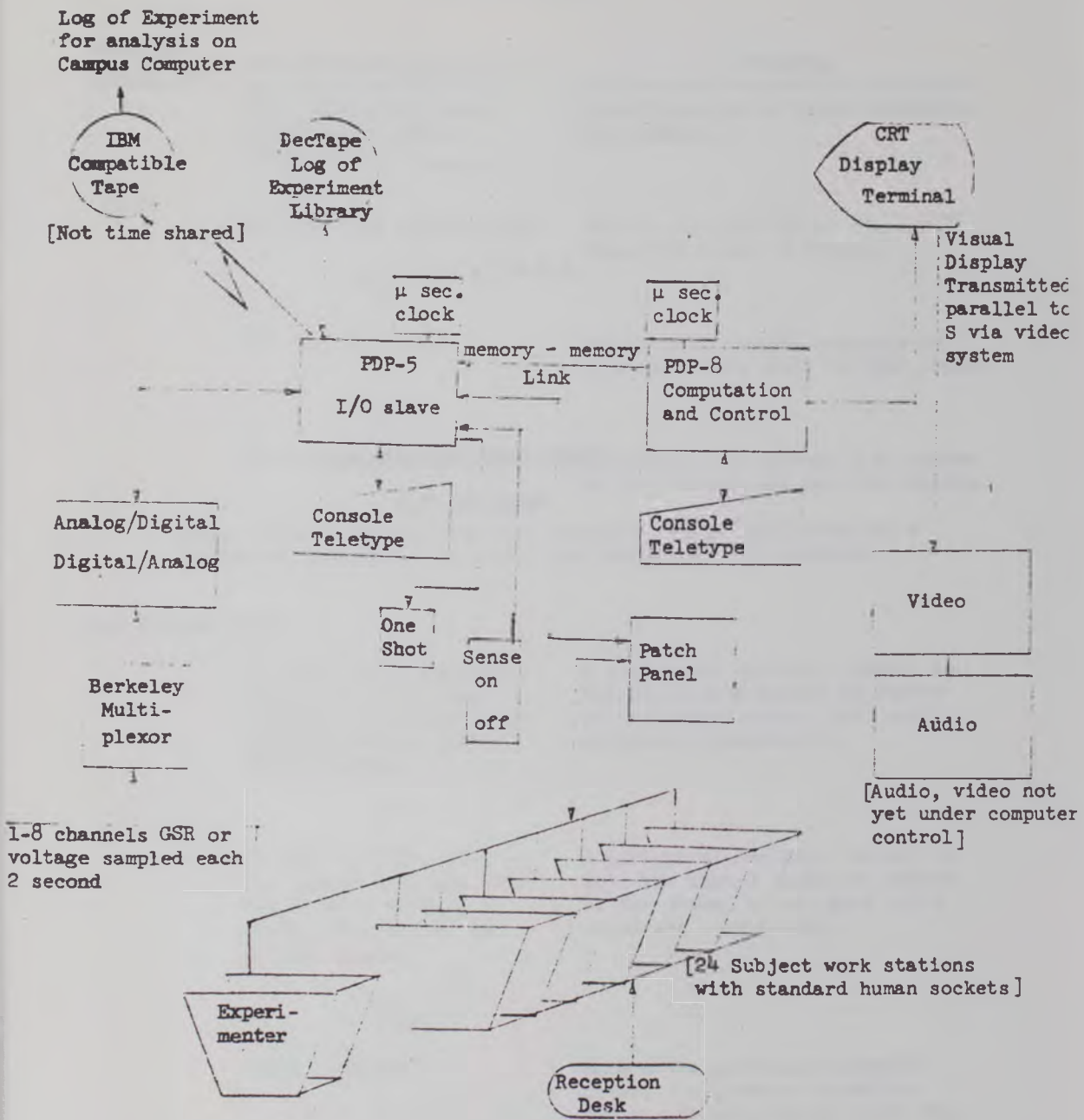


Figure 2

Logical Design of Computer Control System

CRMS Lab



A P P E N D I X II

SINGLE-CHARACTER RESPONSE MODES OF TF/1

REMINDERS--TF/1

When the output is:	Your expected input is:	Meaning:
I.D.:	Your three-digit user number and a space. (Your number is _____.)	Identifies you and your account to the system.
READY	"X" for "XYZ TRADING POST"	This is how you "go to the post" where XYZ stock is traded.
	or	
	"A" for "ACCOUNTS"	Prints your current balances of cash and round lots, in that order.
	or	
	"F" for "FINISHED"	Un-defines the current i.d. number so that others may use the console.

Note: If the console has been inactive in the READY mode for a period of more than 3 minutes, the latter input is assumed.

XYZ TRADING POST

"B" for "BID": then your price, as space, the number of round lots you wish to purchase and another space.	A unilateral contract (order) to buy the stated number of shares at the stated price, good until withdrawn (cancelled).
or	
"O" for "OFFER": then the number of round lots you wish to sell, a space, your price, and another space.	A unilateral contract (order) to sell the stated number of shares at the stated price, good until withdrawn (cancelled).
and then	
"E" for "ENTER"	Enters the previously created order, i.e., makes it active. (If you do not wish to enter it, input "K" for "KILL.")

REMINDERS--TF/1 (continued)

Note: Prices are stated on a per-share basis with eighths given by a trailing digit separated by a dash. Thus the order "BID: 37-5 for 1" bids 37 5/8 dollars per share for 100 shares (1 round lot), which may require $3,762.50 cash outlay if subsequently executed.

Note: Prices and quantities are stated in a different order in BIDs and OFFERs, as per stock exchange conventions.

or

"Q" for "QUOTE"	Prints the bid and asks prices of the current market.

or

"C" for 'CANCELLED"	Cancels all your active orders.

or

"R" for "RETURN"	Leave the XYZ trading post and return to the READY mode. All of your active orders there are cancelled, as above.

Note: If the console has been inactive at the XYZ trading post for a period exceeding one minute, the latter input is assumed.

APPENDIX III

A TYPICAL CONSOLE ENCOUNTER WITH TF/1
(With Annotations)

```
I.D.:
$$?
                    cash                 round lots, XYZ stock
READY.

ACCOUNTS:$50,000.00+      15

READY.

XYZ TRADING POST.

QUOTE: BID  45-3    ASK  45-7

XYZ TRADING POST.

OFFER: 2 AT 45-3
ENTER - OK


XYZ TRADING POST.

YOU SOLD     2 ROUND LOTS AT  45-3

RETURN!

READY.

ACCOUNTS:$59,075.00+      13

READY.

XYZ TRADING POST.

OFFERXSD AT-4INVALID INPUT
AT 46KILL!

XYZ TRADING POST.

OFFER: 1 AT 46
ENTER - NOT ENTERED
PRICE TOO HIGH
QUOTE: BID  45-3    ASK  45-7

XYZ TRADING POST.

X - INVALID COMMAND
XYZ TRADING POST.
```

Note: "~~" denotes user input; other characters are output by TF/1.

A P P E N D I X IV

PROGRAM LISTING OF TF/1

PROGRAM LISTING

```
                /
                /TEXT 1 -        PAGE 1  -        TEXT 1  PAGE 1
                /ASSEMBLER SYMBOL DEFINITIONS
                EXPUNGE
FIXMRI          AND=0
FIXMRI          TAD=1000
FIXMRI          ISZ=2000
FIXMRI          DCA=3000
FIXMRI          JMS=4000
FIXMRI          JMP=5000
                NOP=7000
                IAC=7001
                RAL=7004
                RTL=7006
                RAR=7010
                RTR=7012
                CML=7020
                CMA=7040
                CIA=7041
                CLL=7100
                STL=7120
                CLA=7200
                GLK=7204
                STA=7240
                HLT=7402
                OSR=7404
                SKP=7410
                SNL=7420
                SZL=7430
                SZA=7440
                SNA=7450
                SMA=7500
                SPA=7510
                LAS=7604
                MUY=7405
                DVI=7407
                SHL=7413
                ASR=7415
                LSR=7417
                MQL=7421
                MQA=7501
                CAM=7621
                /
```

```
/
RECLOC=3
USERNO=4
BUFLOC=5
STKY=7
DELIM=16
STKPTR=14
READS=27
WRITES=30
EXIT=33
EXITBK=6124
VRCNTS=7414
USRCNT=7435
K4000=7442
/
/
SET=0
SETM=200
LOAD=400
INADD=1000
TAB=1000
SPACE=1100
XMIT=1200
STORE=1400
SUBSTK=2000
RETURN=2100
SUBABS=2200
ADDABS=2400
XMITID=3000
/
LOADR=4756
BRNZAC=5400
BRZAC=5404
BRMIAC=5407
PULSE=5415
CLEAR=5426
WAIT=5444
HALT=5575
ENMATH=5636
RELSYS=5774
BRUPAR=6067
BRROUT=6072
BRCHAR=6075
CENTRY=6104
BRANCH=6170
STORER=6236
TIME=6245
WRITE=6474
```

```
                    CLRLOG=6505
                    LJADDL=6526
                    SUBROU=6545
                    SETDEL=6670
                    BRDEL=6727
                    FETCH=6766
                    READ=6777
                    INTLOG=7055
                    PRINT=7066
                    RDCARD=7276
                    LVMATH=7777
                    LOGDLM=7777
                    /
                    /TEXT 2    -    PAGE 2    -    TEXT 2    -    PAGE 2
                    /
                    /
                    /SYSTEM VARIABLES          TSS + ECL/3
                    *STKPTR
0014  1560          GOMONT-1
                    *7324
7324  0237          237
                    *7330
7330  1650          CONTRL-1
                    *7334
7334  0237          237
                    *7340
7340  0237          237
                    *7344
7344  0237          237
                    *7350
7350  0237          237
                    *7354
7354  0237          237

0016  7540          *16 (7540)
                    *7360
7360  0237          237
                    *7364
7364  0237          237
                    *VRCNTS
7414  0060          60
                    *USRCNT
7435  7766          -12
                    *X4000
7442  4200          4200
                    /
                    /
                    /PDP-8 VARIABLE EQUIVALENCES
```

```
/
AUTODX=15
TEMPY1=20
TEMPY2=21
STOP=21
RESPON=21
TEMPY3=22
IDNUM=22
BRLABL=22
TEMPY4=23
TEMPY5=24
TEMPY6=25
TEMPY7=26
COUNT=44
DELTA=45
BUFFBP=46
RECADD=46
EXTRA=46
LAST=47
NOW=50
BUYMRK=51
RECPTR=52
TEMPRY=52
EXTPTR=52
NOWPTR=53
LENGTH=54
ADRHLD=55
BOOKMK=56
STKPRC=57
POINT1=60
POINT2=61
POINT3=62
POINT4=63
SGNFLG=71
/
/
XYZBUY=MKBUY
XYZSEL=MKSELL
XBKBUY=BKBUY
XBKSEL=BKSELL
XYZBID=BIDPRC
XYZASK=ASKPRC
/
/
/USER VARIABLE LISTS
/
/USER 1,3,4,...
/
```

```
UPAFLG=0
MINUTE=1
FLAG=2
SPARE=6
FRACTN=7
BOOKFG=10
STOPFG=30
PRICE=31
RNDLOT=32
BRKPID=33
TIMES=34
USER=35
BUYFLG=36
ACTIVY=37
X1=40
X2=41
X3=42
X4=43
X5=44
X6=45
OPENFG=46
/
/USER 2
/
SECS=0
MINS=1
HRS=2
PREV=6
Z2=7
MAN2=10
BID=25
ASK=26
ZERO=27
TICK=30
Z1=31
PRIX=32
QUAN=33
MAN=34
DLAY=35
CONSOL=36
VERB1=37
VERB2=40
MAN1=41
Y1=42
/
/PDP -8 PROGRAM SPECIAL MEMORY CELLS
*100
```

```
0100   7540   BUYFIX, SMA SZA
0101   7510   SELFIX, SPA
0102   3703   APRINT, PRINT5
0103   3045   AWRTRC, WRITRC
0104   3065   ASETUP, SETUP
0105   3024   ATCHA,  ATTACH
0106   4311   ARELSE, RELES
0107   5733   ADMINS, DMINUS
0110   4327   ADBLAD, DBLADD
0111   5746   AGTUSR, GETUSR
0112   6104   ACNTRY, CENTRY
0113   6124   EXITPL, EXITRK
0114   3266   AISZFR, ISZFDR
0115   3274   ASUB,   SUBTRT
0116   1777   FREES,  1777
0117   1776   MKSELL, 1776
0120   1775   MKBUY,  1775
0121   1774   BKSELL, 1774
0122   1773   BKBUY,  1773
0123   1772   SELQUE, 1772
0124   1771   BUYQUE, 1771
0125   1770   DMYFLE, 1770
0126   0000   BIDPRC, 0
0127   0000   ASKPRC, 0
0130   0000   XBKBID, 0
0131   0000   XBKASK, 0
0132   0002   K0002,  2
0133   7776   M0002,  -2
0134   0003   K0003,  3
0135   7775   M0003,  -3
0136   0004   K0004,  4
0137   0005   K0005,  5
0140   7773   M0005,  -5
0141   0006   K0006,  6
0142   0007   K0007,  7
0143   7770   M0010,  -10
0144   0077   K0077,  77
0145   0100   K0100,  100
0146   7700   M0100,  -100
0147   0177   K0177,  177
0150   0377   K0377,  377
0151   0255   K0255,  255
0152   0260   K0260,  260
0153   0502   K0502,  502
0154   2020   K2020,  2020
0155   7000   K7000,  7000
0156   7400   K7400,  7400
0157   7770   K7770,  7770
```

```
0160  0150  INT,     150
0161  0000  DIV,     0
0162  0001           1
0163  2600  BRP,     BROKER
0164  3323  MULTI,   MULT
0165  6142  XMTCHK,  6142
0166  0000  OPNOP,   0
0167  0000  SHSALS,  0
0170  0000  LOANS,   0
                     /
                     /
0171  7450  XAQQC,   -330
0172  7477           -301
0173  7472           -306
0174  7461           -317
0175  7475           -303
0176  0000           0
0177  7473  FBO,     -305
0200  7476  BO,      -302
0201  7461           -317
0202  0000           0
0203  7456  RBOS,    -322
0204  7476           -302
0205  7461           -317
0206  7455           -323
0207  7457           -321
0210  7475           -303
0211  0000           0
0212  7476  BE,      -302
0213  7473  E,       -305
0214  0000           0
0215  7447  YN,      -331
0216  7462           -316
0217  0000           0
0220  7465  TRPLST,  -313
0221  7401           -377
0222  7540           7540
0223  0000           0
                     /
                     /PLAYER + BROKER FILES
                     /
                     /
                     *2600
2600  0003  BROKER,  3
2601  0255           255
2602  2636           BRKR1
2603  0100           100
2604  0410           410
```

```
2605  2644          BRKR2
2606  0101          101
2607  0522          522
2610  2652          BRKR3
2611  0102          102
2612  0713          713
2613  2660          BRKR4
2614  0103          103
2615  0777          777
2616  2666          BRKR5
2617  0104          104
2620  1200          1200
2621  2674          BRKR6
2622  0110          110
2623  1322          1322
2624  2702          BRKR7
2625  0111          111
2626  1601          1601
2627  2710          BRKR8
2630  0112          112
2631  1633          1633
2632  2716          BRKR9
2633  0113          113
2634  0000          0
2635  0000          0
2636  0004  BRKR1,   4
2637  0255          255
2640  5200          5200
2641  0141          141
2642  0017          17
2643  0000          0
2644  0004  BRKR2,   4
2645  0410          410
2646  5200          5200
2647  0141          141
2650  0017          17
2651  0000          0
2652  0004  BRKR3,   4
2653  0522          522
2654  5200          5200
2655  0141          141
2656  0017          17
2657  0000          0
2660  0004  BRKR4,   4
2661  0713          713
2662  5200          5200
2663  0141          141
2664  0017          17
```

```
2665  0000          0
2666  0004  BRKR5,   4
2667  0777          777
2670  5200          5200
2671  0141          141
2672  0017          17
2673  0000          0
2674  0004  BRKR6,   4
2675  1200          1200
2676  5000          5000
2677  0606          606
2700  0074          74
2701  0000          0
2702  0004  BRKR7,   4
2703  1322          1322
2704  5200          5200
2705  0141          141
2706  0017          17
2707  0000          0
2710  0004  BRKR8,   4
2711  1601          1601
2712  5200          5200
2713  0141          141
2714  0017          17
2715  0000          0
2716  0004  BRKR9,   4
2717  1633          1633
2720  5200          5200
2721  0141          141
2722  0017          17
2723  0000          0
                    /
                    /
                    /
                    /T3*****T3*****T3*****T3*****T3*****T3*****T3*****T3
                    /
                    /MAIN PROGRAM    -        MAIN PROGRAM
                    /
                    *240
0240  0000          SET 0
0241  1433          STORE BRKRID
0242  1446          STORE OPENFG
0243  4756
0244  0004          LOAD8 (USERNO)
0245  1435          STORE USER
                    /
                    /
```

```
0246  1201  BRKRNO, XMIT 1  /*
0247  1201          XMIT 1  /*
0250  1201          XMIT 1
0251  1201          XMIT 1
0252  1201          XMIT 1
0253  1205          XMIT 5  /I
0254  1206          XMIT 6  /.D.
0255  0074          SET 74
0256  1401          STORE MINUTE
0257  1275          XMIT 75 /:
0260  1212          XMIT 12 /NUMBERS
0261  2002
0262  1454
0263  0246
0264  0261  WAITT,  SUBSTK 2 (TRAPUR)(BRKRNO)(WAITT)
0265  6777
0266  0033
0267  0304          READ (BRKRID)(BADBKR)
0270  0433          LOAD BRKRID
0271  3625
0272  2600          SEARCH (BROKER)
0273  5400
0274  0310          BRNZAC (START)
0275  1210          XMIT 10 / - INVALID
0276  1205          XMIT 5  /I
0277  1206          XMIT 6  /.D.
0300  0000          SET 0
0301  1433          STORE BRKRID
0302  6170
0303  0246          BRANCH (BRKRNO)
                    /
                    /
0304  1210  BADBKR, XMIT 10 / - INVALID
0305  1204          XMIT 4  / INPUT
0306  6170
0307  0246          BRANCH (BRKRNO)
                    /
                    /
0310  1201  START,  XMIT 1
0311  1202          XMIT 2  /@READY.@@
0312  0177          SET 177
0313  1401          STORE MINUTE
0314  2002
0315  1460
0316  0310
0317  0246          SUBSTK 2 (TRAP)(START)(BRKRNO)
0320  0074          SET 74
0321  1401          STORE MINUTE
0322  6766          FETCH
```

```
0323  3600
0324  0171
0325  0532
0326  0336
0327  0372
0330  0423
0331  0402              TEST (XAQQC)(XYZ)(ACCNTS)(QUIT)(OPENXZ)(CLOSEZ)
0332  1210  LABLS,     XMIT 10 / - INVALID
0333  1213              XMIT 13 / COMMAND
0334  6170
0335  0310              BRANCH (START)
                        /
                        /
0336  1236  ACCNTS,    XMIT 36 /CCOUNTING
0337  1275              XMIT 75 /:
0340  0433              LOAD BRKRID
0341  2000
0342  1375              SUBSTK (LOCATE)
0343  4407
0344  0006              CONVRT (SPARE)
0345  1103              SPACE 3
0346  2402
0347  0006              ADDABS 2 (SPARE)
0350  6526
0351  0006              LOADRI (SPARE)
0352  5407
0353  0361              BRMIAC (SHORT)
0354  1440              STORE X1
0355  7066
0356  0040              PRINT (X1)
0357  6170
0360  0310              BRANCH (START)
0361  5636  SHORT,     ENMATH
0362  7041              CIA
0363  7777              LVMATH
0364  1440              STORE X1
0365  7066
0366  0040              PRINT (X1)
0367  1307              XMIT 107          / SHORT
0370  6170
0371  0310              BRANCH (START)
                        /
                        /
0372  1260  QUIT,      XMIT 60 /INISHED
0373  0000              SET 0
0374  1433              STORE BRKRID
0375  5754              SPCHK
0376  5400
```

```
0377  0246            BRNZAC (BRKRNO)
0400  1201            XMIT 1  /*
0401  1242            XMIT 42 / C
0402  5754  CLOSEZ,   SPCHK
0403  5400
0404  0332            BRNZAC (LABL5)
0405  1241            XMIT 41 /LOSE
0406  1277            XMIT 77 /X
0407  1215            XMIT 15 /YZ
0410  1216            XMIT 16 / TRADING
0411  0000            SET 0
0412  6236
0413  0166            STORER (OPNOP)
0414  6236
0415  0130            STORER (XBKBID)
0416  6236
0417  0131            STORER (XBKASK)
0420  1446            STORE OPENFG
0421  6170
0422  0246            BRANCH (BRKRNO)
                      /
                      /
0423  5754  OPENXZ,   SPCHK
0424  5400
0425  0332            BRNZAC (LABL5)
0426  0446            LOAD OPENFG
0427  5400
0430  0332            BRNZAC (LABL5)
0431  1240            XMIT 40 /PEN
0432  1277            XMIT 77 /X
0433  1215            XMIT 15 /YZ
0434  0001            SET 1
0435  6236
0436  0166            STORER (OPNOP)
0437  1446            STORE OPENFG
0440  1216            XMIT 16 / TRADING
0441  1201  OPENPT,   XMIT 1  /*
0442  2002
0443  1460
0444  0441
0445  0310            SUBSTK 2 (TRAP)(OPENPT)(START)
0446  6766            FETCH
0447  3600
0450  0177
0451  0524
0452  0462
0453  0504            TEST (FBO)(ALDONE)(BIDSET)(ASKSET)
0454  1210            XMIT 10 / - INVALID
0455  1213            XMIT 13 / COMMAND
```

```
0456  6170
0457  0441            BRANCH (OPENPT)
                      /
                      /
0460  1201            XMIT 1
0461  1211            XMIT 11 /B
0462  1232  BIDSET,   XMIT 32 /ID
0463  1275            XMIT 75 /:
0464  2002
0465  1454
0466  0460
0467  0310            SUBSTK 2 (TRAPUR)(BIDSET-2)(START)
0470  2001
0471  1505
0472  0460            SUBSTK 1 (CODEPL)(BIDSET-2)
0473  0431            LOAD PRICE
0474  6236
0475  0130            STORE8 (XBKBID)
0476  6236
0477  0126            STORE8 (XYZBID) /****
0500  6170
0501  0441            BRANCH (OPENPT)
                      /
                      /
0502  1201            XMIT 1
0503  1243            XMIT 43 /O
0504  1233  ASKSET,   XMIT 33 /FFER
0505  1275            XMIT 75 /:
0506  2002
0507  1454
0510  0502
0511  0310            SUBSTK 2 (TRAPUR)(ASKSET-2)(START)
0512  2001
0513  1505
0514  0502            SUBSTK 1 (CODEPL)(ASKSET-2)
0515  0431            LOAD PRICE
0516  6236
0517  0131            STORE8 (XBKASK)
0520  6236
0521  0127            STORE8 (XYZASK) /****
0522  6170
0523  0441            BRANCH (OPENPT)
                      /
                      /
0524  1271  ALDONE,   XMIT 71 /NTER
0525  1273            XMIT 73 / - OK
0526  6170
0527  0311            BRANCH (START+1)
```

```
                        /
                        /
                        /
0530  1201               XMIT 1  /*
0531  1277               XMIT 77 /X
0532  1215  XYZ,         XMIT 15 /YZ
0533  1216               XMIT 16 / TRADING
0534  1217               XMIT 17 / POST.*
0535  0001               SET 1
0536  1437               STORE ACTIVY
0537  4756
0540  0124  XYZGO,       LOAD8 (BUYQUE)
0541  2001
0542  1542
0543  0562               SUBSTK 1 (LOOKNG)(SELLNG)
0544  0442               LOAD X3
0545  2000
0546  1375               SUBSTK (LOCATE)
0547  0201               SETM 1
0550  7176
0551  0006
0552  0041
0553  0040               ACCONT (SPARE)(X2)(X1)
0554  0045               SET 45  / BOUGHT
0555  1406               STORE SPARE
0556  2000
0557  1410               SUBSTK (SAYSAL)
0560  6170
0561  0537               BRANCH (XYZGO)
                        /
                        /
0562  4756
0563  0123  SELLNG, LOAD8 (SELQUE)
0564  2001
0565  1542
0566  0605               SUBSTK 1 (LOOKNG)(ACTIVE)
0567  0442               LOAD X3
0570  2000
0571  1375               SUBSTK (LOCATE)
0572  0000               SET 0
0573  7176
0574  0006
0575  0041
0576  0040               ACCONT (SPARE)(X2)(X1)
0577  0046               SET 46  / SOLD
0600  1406               STORE SPARE
0601  2000
0602  1410               SUBSTK (SAYSAL)
0603  6170
0604  0562               BRANCH (SELLNG)
```

```
                        /
                        /
0605  3437  ACTIVE,  LOAD ACTIVY
0606  5400
0607  0621           BRNZAC (SALEOK)
0610  0202           SETM 2
0611  5540           WITHDR
0612  0433           LOAD BRKRID
0613  4644
0614  0002
0615  0042           SETVAL (2)(Y1)
0616  3444           UPDATE
0617  6170
0620  0310           BRANCH (START)
                        /
                        /
0621  4756
0622  0166  SALEOK,  LOADB(OPNOP)
0623  5400
0624  0631           BRNZAC(OPOK)
0625  1216           XMIT 16 /TRADING
0626  1220           XMIT 20 /CLOSED
0627  6170
0630  0310           BRANCH (START)
0631  4756
0632  0116  OPOK,    LOADB(FREES)
0633  6577           LOADS
0634  5400
0635  0641           BRNZAC (XYZOK)
0636  1221           XMIT 21 /*MARKET FILES FULL - TRY LATER
0637  6170
0640  0310           BRANCH (START)
                        /
                        /T4*****T4*****T4*****T4*****T4*****T4*****T4*****T4*****T*
                        /
0641  0000  XYZOK,   SET 0
0642  1410           STORE BOOKFG
0643  1430           STORE STOPFG
0644  1440           STORE X1
0645  1441           STORE X2
0646  0001           SET 1
0647  0000           ENFG
0650  4756
0651  0004           LOADB (USERNO)
0652  1435           STORE USER
                        /
                        /
```

```
0653  1201  BRKRNO, XMIT 1  /*
0654  1201          XMIT 1  /*
0655  1201          XMIT 1
0656  1201          XMIT 1
0657  1201          XMIT 1
0660  1205          XMIT 5  /I
0661  1206          XMIT 6  /.D.
0662  0074          SET 74
0663  1401          STORE MINUTE
0664  1275          XMIT 75 /:
0665  1212          XMIT 12 /NUMBERS
0666  2002
0667  1454
0670  0246
0671  0261  WAITT,  SUBSTK 2 (TRAPUR)(BRKRNO)(WAITT)
0672  6777
0673  0033
0674  0334          READ (BRKRID)(BADBKR)
0675  0433          LOAD BRKRID
0676  3625
0677  2600          SEARCH (BROKER)
0700  5400
0701  0310          BRNZAC (START)
0702  1210          XMIT 10 / - INVALID
0703  1205          XMIT 5  /I
0704  1206          XMIT 6  /.D.
0705  0000          SET 0
0706  1433          STORE BRKRID
0707  6170
0710  0246          BRANCH (BRKRNO)
                    /
                    /
0711  1210  BADBKR, XMIT 10 / - INVALID
0712  1204          XMIT 4  / INPUT
0713  6170
0714  0246          BRANCH (BRKRNO)
                    /
                    /
0715  1201  START,  XMIT 1
0716  1202          XMIT 2  /@READY.@@
0717  0177          SET 177
0720  1401          STORE MINUTE
0721  2002
0722  1460
0723  0310
0724  0246          SUBSTK 2 (TRAP)(START)(BRKRNO)
0725  0074          SET 74
0726  1401          STORE MINUTE
0727  6766          FETCH
```

```
0730  3600
0731  0171
0732  0532
0733  0336
0734  0372
0735  0423
0736  0402            TEST (XAOOC)(XYZ)(ACCNTS)(QUIT)(OPENXZ)(CLOSEZ)
0737  1210  LABLS,    XMIT 10 / - INVALID
0740  1213            XMIT 13 / COMMAND
0741  6170
0742  0310            BRANCH (START)
                      /
                      /
0743  1236  ACCNTS,   XMIT 36 /CCOUNTING
0744  1275            XMIT 75 /:
0745  0433            LOAD BRKRID
0746  0000
0747  1375            SUBSTK (LOCATE)
0750  4407
0751  0006            CONVRT (SPARE)
0752  1103            SPACE 3
0753  2402
0754  0006            ADDABS 2 (SPARE)
0755  6526
0756  0006            LOADRI (SPARE)
0757  5407
0760  0361            BRMIAC (SHORT)
0761  1440            STORE X1
0762  7066
0763  0040            PRINT (X1)
0764  6170
0765  0310            BRANCH (START)
0766  5636  SHORT,    ENMATH
0767  7041            CIA
0770  7777            LVMATH
0771  1440            STORE X1
0772  7066
0773  0040            PRINT (X1)
0774  1307            XMIT 107          / SHORT
0775  6170
0776  0310            BRANCH (START)
                      /
                      /
0777  1260  QUIT,     XMIT 60 /INISHED
1000  0000            SET 0
1001  1433            STORE BRKRID
1002  5754            SPCHK
1003  5400
```

```
1004  0246            BRNZAC (BRKRNO)
1005  1201            XMIT 1  /*
1006  1242            XMIT 42 / C
1007  5754  CLOSEZ,   SPCHK
1010  5400
1011  0332            BRNZAC (LABLS)
1012  1241            XMIT 41 /LOSE
1013  1277            XMIT 77 /X
1014  1215            XMIT 15 /YZ
1015  1216            XMIT 16 / TRADING
1016  0000            SET 0
1017  6236
1020  0166            STORER (OPNOP)
1021  6236
1022  0130            STORER (XBKBID)
1023  6236
1024  0131            STORER (XBKASK)
1025  1446            STORE OPENFG
1026  6170
1027  0246            BRANCH (BRKRNO)
                      /
                      /
1030  5754  OPENXZ,   SPCHK
1031  5400
1032  0332            BRNZAC (LABLS)
1033  0446            LOAD OPENFG
1034  5400
1035  0332            BRNZAC (LABLS)
1036  1240            XMIT 40 /PEN
1037  1277            XMIT 77 /X
1040  1215            XMIT 15 /YZ
1041  0001            SET 1
1042  6236
1043  0166            STORER (OPNOP)
1044  1446            STORE OPENFG
1045  1216            XMIT 16 / TRADING
1046  1201  OPENPT,   XMIT 1  /*
1047  2002
1050  1460
1051  0441
1052  0310            SUBSTK 2 (TRAP)(OPENPT)(START)
1053  6766            FETCH
1054  3600
1055  0177
1056  0524
1057  0462
1060  0504            TEST (FBO)(ALDONE)(BIDSET)(ASKSET)
1061  1210            XMIT 10 / - INVALID
1062  1213            XMIT 13 / COMMAND
```

```
1063  6170
1064  0441            BRANCH (OPENPT)
                      /
                      /
1065  1201            XMIT 1
1066  1211            XMIT 11 /B
1067  1232  BIDSET,   XMIT 32 /ID
1070  1275            XMIT 75 /:
1071  2002
1072  1454
1073  0460
1074  0310            SUBSTK 2 (TRAPUR)(BIDSET-2)(START)
1075  2001
1076  1505
1077  0460            SUBSTK 1 (CODEPL)(BIDSET-2)
1100  0431            LOAD PRICE
1101  6236
1102  0130            STORE8 (XBKBID)
1103  6236
1104  0126            STORE8 (XYZBID) /****
1105  6170
1106  0441            BRANCH (OPENPT)
                      /
                      /
1107  1201            XMIT 1
1110  1243            XMIT 43 /O
1111  1233  ASKSET,   XMIT 33 /FFER
1112  1275            XMIT 75 /:
1113  2002
1114  1454
1115  0502
1116  0310            SUBSTK 2 (TRAPUR)(ASKSET-2)(START)
1117  2001
1120  1505
1121  0502            SUBSTK 1 (CODEPL)(ASKSET-2)
1122  0431            LOAD PRICE
1123  6236
1124  0131            STORE8 (XBKASK)
1125  6236
1126  0127            STORE8 (XYZASK) /****
1127  6170
1130  0441            BRANCH (OPENPT)
                      /
                      /
1131  1271  ALDONE,   XMIT 71 /NTER
1132  1273            XMIT 73 / - OK
1133  6170
1134  0311            BRANCH (START+1)
                      /
```

```
                        /
                        /
1135  1201              XMIT 1  /*
1136  1277              XMIT 77 /X
1137  1215  XYZ,        XMIT 15 /YZ
1140  1216              XMIT 16 / TRADING
1141  1217              XMIT 17 / POST.*
1142  0001              SET 1
1143  1437              STORE ACTIVY
1144  4756
1145  0124  XYZGO,      LOADB (BUYQUE)
1146  2001
1147  1542
1150  0562              SUBSTK 1 (LOOKNG)(SELLNG)
1151  0442              LOAD X3
1152  2000
1153  1375              SUBSTK (LOCATE)
1154  0201              SETM 1
1155  7176
1156  0006
1157  0041
1160  0040              ACCONT (SPARE)(X2)(X1)
1161  0045              SET 45  / BOUGHT
1162  1406              STORE SPARE
1163  2000
1164  1410              SUBSTK (SAYSAL)
1165  6170
1166  0537              BRANCH (XYZGO)
                        /
                        /
1167  4756
1170  0123  SELLNG,     LOADB (SELQUE)
1171  2001
1172  1542
1173  0605              SUBSTK 1 (LOOKNG)(ACTIVE)
1174  0442              LOAD X3
1175  2000
1176  1375              SUBSTK (LOCATE)
1177  0000              SET 0
1200  7176
1201  0006
1202  0041
1203  0040              ACCONT (SPARE)(X2)(X1)
1204  0046              SET 46  / SOLD
1205  1406              STORE SPARE
1206  2000
1207  1410              SUBSTK (SAYSAL)
1210  6170
1211  0562              BRANCH (SELLNG)
```

```
                        /
                        /
1212  0437  ACTIVE,  LOAD ACTIVY
1213  5400
1214  0621          BRNZAC (SALEOK)
1215  0202          SETM 2
1216  5540          WITHDR
1217  0433          LOAD BRKRID
1220  4644
1221  0002
1222  0042          SETVAL (2)(Y1)
1223  3444          UPDATE
1224  6170
1225  0310          BRANCH (START)
                        /
                        /
1226  4756
1227  0166  SALEOK,  LOADB(OPNOP)
1230  5400
1231  0631          BRNZAC(OPOK)
1232  1216          XMIT 16 /TRADING
1233  1220          XMIT 20 /CLOSED
1234  6170
1235  0310          BRANCH (START)
1236  4756
1237  0116  OPOK,    LOADB(FREES)
1240  6577          LOAD5
1241  5400
1242  0641          BRNZAC (XYZOK)
1243  1221          XMIT 21 /*MARKET FILES FULL - TRY LATER
1244  6170
1245  0310          BRANCH (START)
                        /
                        /T5*****T5*****T5*****T5*****T5*****T5*****T5*****T5
                        /
1246  0430  INSERT,  LOAD STOPFG
1247  3770
1250  0032          ROTAT (RNDLOT)
1251  1432          STORE RNDLOT
1252  0436          LOAD BUYFLG
1253  4004
1254  0031
1255  0010
1256  1364
1257  1370          RNKINS (PRICE)(BOOKFG)(FULLUP)(ALRITE)
                        /
                        /
```

```
1260  1306  LABL10, XMIT 106
1261  1201          XMIT 1
1262  1231          XMIT 31 / PRICE
1263  0436          LOAD BUYFLG
1264  5400
1265  1361          BRNZAC (TOOLOW)
1266  1270          XMIT 70 / TOO HIGH
1267  6170
1270  0716          BRANCH (OUT-2)
                    /
                    /
1271  1274  TOOLOW, XMIT 74 / TOO LOW
1272  6170
1273  0716          BRANCH (OUT-2)
1274  1221  FULLUP, XMIT 21 /*MARKET FILES FULL - TRY LATER
1275  1201          XMIT 1  /*
1276  6170
1277  0676          BRANCH (RETRN-1)
                    /
                    /
1300  3444  ALRITE, UPDATE
1301  1273          XMIT 73 / - OK*
1302  1201          XMIT 1
1303  6170
1304  0530          BRANCH (XYZ-2)
                    /
                    /
                    /
1305  3625
1306  2600  LOCATE, SEARCH (BROKER)
1307  1406          STORE SPARE
1310  2401
1311  0006          ADDABS 1 (SPARE)
1312  6526
1313  0006          LOADBI (SPARE)
1314  1406          STORE SPARE
1315  2402
1316  0006          ADDABS 2 (SPARE)
1317  2100          RETURN
                    /
                    /
                    /
1320  0442  SAYSAL, LOAD X3
1321  5636          ENMATH
1322  7041          CIA
1323  1033          INADD BRKRID
1324  7777          LVMATH
1325  5400
```

```
1326  1432           BRNZAC (FORGET)
1327  1244           XMIT 44 /*YOU
1330  3006           XMITID SPARE
1331  7066
1332  0041           PRINT (X2)
1333  1101           SPACE 1
1334  1247           XMIT 47 / ROUND LOTS
1335  1250           XMIT 50 / AT
1336  0440           LOAD X1
1337  1431           STORE PRICE
1340  2000
1341  1433           SUBSTK (DECODE)
1342  2100  FORGET,  RETURN
                     /
                     /
                     /
1343  0431  DECODE,  LOAD PRICE
1344  6571           EIGHTH
1345  1407           STORE FRACTN
1346  0431           LOAD PRICE
1347  6573           WHOLE
1350  1431           STORE PRICE
1351  7066
1352  0031           PRINT (PRICE)
1353  0407           LOAD FRACTN
1354  5404
1355  1452           BRZAC (SPC)
1356  1226           XMIT 26 /-
1357  3432
1360  0007           FRAC (FRACTN)
1361  2100           RETURN
1362  1102  SPC,     SPACE 2
1363  2100           RETURN
                     /
                     /
                     /
1364  0001  TRAPUR,  SET 1
1365  1400           STORE UPAFLG
1366  6170
1367  1462           BRANCH (GOTOIT)
1370  0000  TRAP,    SET 0
1371  1400           STORE UPAFLG
1372  5426  GOTOIT,  CLEAR
1373  6670
1374  0001           SETDEL (MINUTE)
1375  6727
1376  1504  CHECK,   BRDEL (.JMPBK)
1377  4343
```

```
1400  1465            FETCHL (CHECK)
1401  3600
1402  0220
1403  1503
1404  1502
1405  1501            TEST (TRPLST)(KILL)(TRYAGN)(MOVEON)
1406  0400            LOAD UPAFLG
1407  5400
1410  1465            BRNZAC (CHECK)
1411  2100  MOVEON,   RETURN
1412  2101  TRYAGN,   RETURN 1
1413  1203  KILL,     XMIT 3  /ILL?
1414  2102  JMPBK,    RETURN 2
                      /
                      /
1415  0000  CODEPL,   SET 0
1416  1407            STORE FRACTN
1417  3715            DASH
1420  1402            STORE FLAG
1421  6777
1422  0031
1423  1536            READ (PRICE)(BADPR)
1424  0402            LOAD FLAG
1425  5400
1426  1523            BRNZAC (NOEITH)
1427  3740            RESET
1430  6777
1431  0007
1432  1536            READ (FRACTN)(BADPR)
1433  0431  NOEITH,   LOAD PRICE
1434  3312            PRCFIX
1435  5404
1436  1536            BRZAC (BADPR)
1437  5636            ENMATH
1440  1007            INADD FRACTN
1441  7777            LVMATH
1442  5404
1443  1536            BRZAC (BADPR)
1444  1431            STORE PRICE
1445  2100            RETURN
1446  1210  BADPR,    XMIT 10 / - INVALID
1447  1204            XMIT 4
1450  1201            XMIT 1
1451  2101  OVRTIM,   RETURN 1
                      /
                      /TEXT 6 -       PAGE 6  -       TEXT 6  -       PAGE
                      /
                      /
```

```
                        /
1452  6577  LOOKNG,  LOAD5
1453  1406            STORE SPARE
1454  5400
1455  1547            BRNZAC (LABL1)
1456  2101            RETURN 1
1457  5524  LABL1,   USRTST
1460  5400
1461  1555            BRNZAC (LABL2)
1462  0406            LOAD SPARE
1463  6170
1464  1542            BRANCH (LOOKNG)
1465  0406  LABL2,   LOAD SPARE
1466  4370
1467  0040            GETREC (X1)
1470  2100            RETURN 0
                        /
                        /
                        /
1471  5426  GOMONT,  CLEAR
1472  1235            XMIT 35 /@RUN NUMBER:
1473  5444
1474  1561            WAIT (GOMONT)
1475  6777
1476  0031
1477  1561            READ (PRICE)(GOMONT)
1500  5426  CAT,     CLEAR
1501  1315            XMIT 115          /@SHORT SALES?
1502  5444
1503  1570            WAIT (CAT)
1504  6777
1505  0040
1506  1570            READ (X1)(CAT)
1507  0440            LOAD X1
1510  6236
1511  0167            STORE8 (SHSALS)
1512  5426  MOUSE,   CLEAR
1513  1316            XMIT 116          /@LOANS?
1514  5444
1515  1602            WAIT (MOUSE)
1516  6777
1517  0041
1520  1602            READ (X2)(MOUSE)
1521  0441            LOAD X2
1522  6236
1523  0170            STORE8 (LOANS)
1524  6505            CLRLOG
1525  7055
```

```
1526  0031
1527  0001
1530  0040
1531  0005
1532  0041
1533  0011            INTLOG (PRICE)(1)(X1)(5)(X2)(11)
1534  7777            LOGDLM
1535  6474            WRITE
1536  5426  DOG,       CLEAR
1537  1202            XMIT 2
1540  5444
1541  1626            WAIT (DOG)
1542  6777
1543  0031
1544  1643            READ (PRICE)(EREXIT)
1545  0431            LOAD PRICE
1546  3650            INITLZ
1547  1273            XMIT 73
1550  1201            XMIT 1
1551  6170
1552  1626            BRANCH (DOG)
1553  1210  EREXIT,   XMIT 10
1554  6170
1555  1626            BRANCH (DOG)
1556  1137  TESTIT,   TAD K0005
1557  4427            JMS I READS
1560  5407            JMP I STKX
                        /TEXT 31                TEXT 31                 TEXT 3
1561  0000  CONTRL,     SET 0
1562  1406              STORE PREV
1563  1427              STORE ZERO
1564  1430              STORE TICK
1565  1442            STORE Y1
1566  1443            STORE Y1+1
1567  1444            STORE Y1+2
1570  1445            STORE Y1+3
1571  1446            STORE Y1+4
1572  1447            STORE Y1+5
1573  1450            STORE Y1+6
1574  1451            STORE Y1+7
1575  1452            STORE Y1+10
1576  4756
1577  0153            LOAD8(K0502)
1600  1407            STORE Z2
1601  6670
1602  0007            SETDEL(Z2)
1603  4756
1604  0166            LOAD8 (OPNOP)
```

```
1605  5404
1606  1651              BRZAC(CONTRL)
1607  0000  CLOOP,       SET 0
1610  1410              STORE MAN2
1611  1440              STORE VERB2
1612  0025              SET 25
1613  1437              STORE VERB1
1614  3357
1615  0117
1616  0004
1617  0001
1620  7777              MATCH (MKSELL)(4)(1)(-1)
1621  5404
1622  1717              BRZAC (BYPAS1)
1623  2000
1624  2317              SUBSTK (GETNAM)
1625  2000
1626  2174              SUBSTK (LINE)
1627  3357
1630  0123
1631  0004
1632  0002
1633  7777  BYPAS1, MATCH (SELQUE)(4)(2)(-1)
1634  5404
1635  1732              BRZAC (BYPAS2)
1636  2000
1637  2317              SUBSTK (GETNAM)
1640  2000
1641  2174              SUBSTK (LINE)
1642  0024  BYPAS2,     SET 24
1643  1437              STORE VERB1
1644  3357
1645  0120
1646  0004
1647  0001
1650  7777              MATCH (MKBUY)(4)(1)(-1)
1651  5404
1652  1747              BRZAC (BYPAS3)
1653  2000
1654  2317              SUBSTK (GETNAM)
1655  2000
1656  2174              SUBSTK (LINE)
1657  3357
1660  0124
1661  0004
1662  0002
1663  7777  BYPAS3, MATCH (BUYQUE)(4)(2)(-1)
1664  5404
```

```
1665  1764              BRZAC (BYPAS4)
1666  2000
1667  2317              SUBSTK (GETNAM)
1670  2000
1671  2174              SUBSTK (LINE)
1672  6170
1673  1677            BRANCH (CLOOP)
1674  4576  BYPAS4,   SEZSYS
1675  3357
1676  0124
1677  0004
1700  0000
1701  0000            MATCH (BUYQUE)(4)(0)(0)
1702  1431            STORE Z1
1703  5404
1704  2004            BRZAC (BYPAS5)
1705  6545
1706  1646            SUBROU (TESTIT)
1707  5400
1710  2004            BRNZAC (BYPAS5)
1711  0431            LOAD Z1
1712  6545
1713  2331            SUBROU (PURGE)
1714  3357
1715  0123
1716  0004
1717  0000
1720  0000  BYPAS5,   MATCH (SELQUE)(4)(0)(0)
1721  1431            STORE Z1
1722  5404
1723  2023            BRZAC (BYPAS6)
1724  6545
1725  1646            SUBROU (TESTIT)
1726  5400
1727  2023            BRNZAC (BYPAS6)
1730  0431            LOAD Z1
1731  6545
1732  2331            SUBROU (PURGE)
1733  5774  BYPAS6,   RELSYS
1734  0053            SET 53
1735  1437              STORE VERB1
1736  0054              SET 54
1737  1440              STORE VERB2
1740  4576              SEZSYS
1741  3357
1742  0123
1743  0004
1744  0001
```

```
1745  0000            MATCH (SELOUE)(4)(1)(0)
1746  5400
1747  2043            BRNZAC (OVER)
1750  5774            RELSYS
1751  6170
1752  2124            BRANCH (GONE)
1753  3357
1754  0124
1755  0004
1756  0001
1757  7777  OVER,     MATCH (BUYOUE)(4)(1)(-1)
1760  5400
1761  2055            BRNZAC (PORT)
1762  5774            RELSYS
1763  6170
1764  2124            BRANCH (GONE)
1765  2000
1766  2317  PORT,     SUBSTK (GETNAM)
1767  0441            LOAD MAN1
1770  1410            STORE MAN2
1771  3357
1772  0123
1773  0004
1774  0001
1775  7777            MATCH (SELOUE)(4)(1)(-1)
1776  5774            RELSYS
1777  2000
2000  2317            SUBSTK (GETNAM)
2001  0406              LOAD PREV
2002  5636              ENMATH
2003  7041              CIA
2004  1032            INADD PRIX
2005  7777            LVMATH
2006  5404
2007  2110              BRZAC (ZOT)
2010  5407
2011  2114              BRMIAC (MINUS)
2012  0000              SET 0
2013  1427              STORE ZERO
2014  0055            SET 55
2015  1430              STORE TICK
2016  6170
2017  2120              BRANCH (DONE)
2020  0043  ZOT,       SET 43
2021  1427              STORE ZERO
2022  6170
2023  2120              BRANCH (DONE)
```

```
2024  0000  MINUS,    SET 0
2025  1427            STORE ZERO
2026  0026          SET 26
2027  1430            STORE TICK
2030  0432  DONE,    LOAD PRIX
2031  1406          STORE PREV
2032  2000
2033  2174          SUBSTK (LINE)
2034  0000  GONE,    SET 0
2035  1410          STORE MAN2
2036  1440          STORE VERB2
2037  1433          STORE QUAN
2040  1432          STORE PRIX
2041  0057          SET 57
2042  1437          STORE VERB1
2043  0041          SET Y1-1
2044  7251            SCAN
2045  5404
2046  2144          BRZAC (CKNEWS)
2047  1434          STORE MAN
2050  2000
2051  2317          SUBSTK (GETNAM)
2052  2000
2053  2174          SUBSTK (LINE)
2054  6727
2055  2150  CKNEWS, BRDEL (NEWS)
2056  6170
2057  1677            BRANCH (CLOOP)
2060  4756
2061  0153  NEWS,    LOADB (K0502)
2062  1407            STORE Z2
2063  6670
2064  0007            SETDEL (Z2)
2065  5415          PULSE
2066  7276
2067  0160
2070  7775          RDCARD (INT)(-3)
2071  3470          NTREST
2072  4756
2073  0162          LOADB (DIV+1)
2074  5404
2075  2170          BRZAC (FIN)
2076  6170
2077  1677          BRANCH (CLOOP)
2100  5575  FIN,    HALT
2101  1226  PANIC,    XMIT 26
2102  6170
2103  1677            BRANCH (CLOOP)
```

```
2104  6245
2105  0000  LINE,     TIME (SECS)
2106  3037            XMITID VERB1
2107  1275          XMIT 75 /:
2110  3041            XMITID MAN1
2111  3040            XMITID VERB2
2112  3010            XMITID MAN2
2113  0433          LOAD QUAN
2114  5404
2115  2216          BRZAC (VEGA)
2116  7066
2117  0033            PRINT (QUAN)
2120  1101          SPACE 1
2121  1250            XMIT 50     /AT
2122  0432            LOAD PRIX
2123  1431            STORE Z1
2124  2000
2125  1433            SUBSTK (DECODE)
2126  1201  VEGA,    XMIT 1
2127  1201          XMIT 1
2130  1102          SPACE 2
2131  1224            XMIT 24     /BID
2132  4756
2133  0126            LOADR (BIDPRC)
2134  1425            STORE BID
2135  1431            STORE Z1
2136  2000
2137  1433            SUBSTK (DECODE)
2140  1103          SPACE 3
2141  1256            XMIT 56     /ASK
2142  4756
2143  0127            LOADR (ASKPRC)
2144  1426            STORE ASK
2145  1431            STORE Z1
2146  2000
2147  1433            SUBSTK (DECODE)
2150  1103          SPACE 3
2151  1251          XMIT 51
2152  0406            LOAD PREV
2153  1431            STORE Z1
2154  2000
2155  1433            SUBSTK (DECODE)
2156  1103          SPACE 3
2157  3027            XMITID ZERO
2160  3030            XMITID TICK
2161  1201          XMIT 1
2162  1201          XMIT 1
2163  1201          XMIT 1
```

```
2164  1201            XMIT 1
2165  1201            XMIT 1
2166  6505  LOGIT,     CLRLOG
2167  7055
2170  0000
2171  0001
2172  0001
2173  0005
2174  0002
2175  0011
2176  0032
2177  0015            INTLOG (SECS)(1)(MINS)(5)(HRS)(11)(PRIX)(15)

2200  0033
2201  0021
2202  0006
2203  0025
2204  0041
2205  0031
2206  0010
2207  0035            (QUAN)(21)(PREV)(25)(MAN1)(31)(MAN2)(35)

2210  0037
2211  0041
2212  0027
2213  0045
2214  0030
2215  0051
2216  0025
2217  0055          (VERB1)(41)(ZERO)(45)(TICK)(51)(BID)(55)

2220  0026
2221  0061
2222  0035
2223  0065            (ASK)(61)(DLAY)(65)
2224  7777            LOGDLM
2225  6474            WRITE
2226  2100            RETURN 0
                      /
                      /
                      /
                      /
2227  0434  GETNAM,    LOAD MAN
2230  3625
2231  2600            SEARCH (BROKER)
2232  1441            STORE MAN1
2233  2402
2234  0041            ADDABS 2 (MAN1)
```

```
2235  6526
2236  0041              LOADBI (MAN1)
2237  1441              STORE MAN1
2240  2100              RETURN 0
2241  4427  PURGE,  JMS I READS
2242  3021            DCA TEMPY2
2243  4506            JMS I ARELSE
2244  0077            77
2245  1021            TAD TEMPY2
2246  7421            MQL
2247  1077            TAD 77
2250  4430            JMS I WRITES
2251  5407            JMP I STKX
                      /
                      /TEXT 7 -        PAGE 7  -        TEXT 7  -        PAGE
                      /
                      /
                      *3000
3000  0000  SETTNG, 0
3001  1116            TAD FREES
3002  4427            JMS I READS
3003  7450            SNA
3004  5623            JMP I AFULLP
3005  3062            DCA POINT3
3006  1062            TAD POINT3
3007  4427            JMS I READS
3010  7450            SNA
3011  5623            JMP I AFULLP
3012  3063            DCA POINT4
3013  1063            TAD POINT4
3014  4427            JMS I READS
3015  7421            MQL
3016  1116            TAD FREES
3017  4430            JMS I WRITES
3020  1062            TAD POINT3
3021  4224            JMS ATTACH
3022  5600            JMP I SETTNG
3023  4126  AFULLP, FULL+1
                      /
                      /
3024  0000  ATTACH, 0
3025  7421            MQL
3026  1047            TAD LAST
3027  4427            JMS I READS
3030  3050            DCA NOW
3031  1047            TAD LAST
3032  4430            JMS I WRITES
3033  7501            MQA
```

```
3034  4427          JMS I READS
3035  3047          DCA LAST
3036  7501          MQA
3037  3046          DCA EXTRA
3040  3045          DCA DELTA
3041  1050          TAD NOW
3042  4502          JMS I APRINT
3043  1047          TAD LAST
3044  5624          JMP I ATTACH
                    /
                    /
3045  0000  WRITRC, 0
3046  3052          DCA RECPTR
3047  7001          IAC
3050  3045          DCA DELTA
3051  1140          TAD M0005
3052  3054          DCA LENGTH
3053  1052          TAD RECPTR
3054  4427          JMS I READS
3055  4502          JMS I APRINT
3056  2052          ISZ RECPTR
3057  2054          ISZ LENGTH
3060  5253          JMP .-5
3061  1140          TAD M0005
3062  1046          TAD BUFFRP
3063  3046          DCA BUFFRP
3064  5645          JMP I WRITRC
                    /
                    /
3065  0000  SETUP,  0
3066  1047          TAD LAST
3067  4427          JMS I READS
3070  3050          DCA NOW
3071  1046          TAD EXTRA
3072  3052          DCA EXTPTR
3073  1050          TAD NOW
3074  7450          SNA
3075  5301          JMP ABEND
3076  3053          DCA NOWPTR
3077  2265          ISZ SETUP
3100  5665          JMP I SETUP
3101  1665  ABEND,  TAD I SETUP
3102  3265          DCA SETUP
3103  5665          JMP I SETUP
                    /
                    /
3104  0000  BUILD,  0
```

```
3105  4514          JMS I AISZFR
3106  1060          TAD POINT1
3107  4427          JMS I READ5
3110  7421          MQL
3111  1062          TAD POINT3
3112  4430          JMS I WRITE5
3113  1063          TAD POINT4
3114  4430          JMS I WRITE5
3115  4514          JMS I AISZFR
3116  1060          TAD POINT1
3117  4427          JMS I READ5
3120  3020          DCA TEMPY1
3121  1061          TAD POINT2
3122  4427          JMS I READ5
3123  3021          DCA TEMPY2
3124  1021          TAD TEMPY2
3125  7041          CIA
3126  1020          TAD TEMPY1
3127  7710          SPA CLA
3130  5334          JMP .+4
3131  1021          TAD TEMPY2
3132  3022          DCA TEMPY3
3133  5336          JMP .+3
3134  1020          TAD TEMPY1
3135  3022          DCA TEMPY3
3136  1021          TAD TEMPY2
3137  7041          CIA
3140  1020          TAD TEMPY1
3141  7510          SPA
3142  7041          CIA
3143  3021          DCA TEMPY2
3144  1022          TAD TEMPY3
3145  7421          MQL
3146  1062          TAD POINT3
3147  4430          JMS I WRITE5
3150  1063          TAD POINT4
3151  4430          JMS I WRITE5
3152  1060          TAD POINT1
3153  4515          JMS I ASUB
3154  1022          TAD TEMPY3
3155  7421          MQL
3156  1061          TAD POINT2
3157  4515          JMS I ASUB
3160  1135          TAD M0003
3161  3020          DCA TEMPY1
3162  4514          JMS I AISZFR
3163  1060          TAD POINT1
```

```
3164  4427          JMS I READ5
3165  7421          MQL
3166  1062          TAD POINT3
3167  4430          JMS I WRITE5
3170  1061          TAD POINT2
3171  4427          JMS I READ5
3172  7421          MQL
3173  1063          TAD POINT4
3174  4430          JMS I WRITE5
3175  2020          ISZ TEMPY1
3176  5262          JMP .-14
3177  5704          JMP I BUILD
                    /
                    /
                    *3200
3200  0000  ORDER,  0
3201  1051          TAD BUYMRK
3202  7640          SZA CLA
3203  5211          JMP BUYSET
3204  1117          TAD MKSELL
3205  3047          DCA LAST
3206  1101          TAD SELFIX
3207  3226          DCA DECIDE
3210  5215          JMP .+5
3211  1120  BUYSET, TAD MKBUY
3212  3047          DCA LAST
3213  1100          TAD BUYFIX
3214  3226          DCA DECIDE
3215  1600          TAD I ORDER
3216  3055          DCA ADRHLD
3217  2200          ISZ ORDER
3220  1455          TAD I ADRHLD
3221  4427          JMS I READ5
3222  3046          DCA EXTRA
3223  4504  LOOP1,  JMS I ASETUP
3224  3240          FINISH
3225  4253          JMS COMPR5
3226  7000  DECIDE, NOP
3227  5240          JMP FINISH
3230  7640          SZA CLA
3231  5250          JMP NOGOOD
3232  4253          JMS COMPR5
3233  7740          SMA SZA CLA
3234  5240          JMP FINISH
3235  1050          TAD NOW
3236  3047          DCA LAST
3237  5223          JMP LOOP1
```

```
3240  7200  FINISH, CLA
3241  1046         TAD EXTRA
3242  4505         JMS I ATCHA
3243  7421         MQL
3244  1455         TAD I ADRHLD
3245  4430         JMS I WRITE5
3246  2200         ISZ ORDER
3247  5600         JMP I ORDER
3250  1600  NOGOOD, TAD I ORDER
3251  3200         DCA ORDER
3252  5600         JMP I ORDER
                   /
                   /TEXT 8 -       PAGE 8  -       TEXT 3  -       PAGE
                   /
3253  0000  COMPR5, 0
3254  2052         ISZ EXTPTR
3255  1052         TAD EXTPTR
3256  4427         JMS I READ5
3257  3020         DCA TEMPY1
3260  2053         ISZ NOWPTR
3261  1053         TAD NOWPTR
3262  4427         JMS I READ5
3263  7041         CIA
3264  1020         TAD TEMPY1
3265  5653         JMP I COMPR5
                   /
                   /
3266  0000  ISZFOR, 0
3267  2060         ISZ POINT1
3270  2061         ISZ POINT2
3271  2062         ISZ POINT3
3272  2063         ISZ POINT4
3273  5666         JMP I ISZFOR
                   /
                   /
                   /
                   /
3274  0000  SUBTRT, 0
3275  3310         DCA SUBTEM
3276  7501         MQA
3277  7041         CIA
3300  3311         DCA SAVESB
3301  1310         TAD SUBTEM
3302  4427         JMS I READ5
3303  1311         TAD SAVESB
3304  7421         MQL
3305  1310         TAD SUBTEM
```

```
3306  4430          JMS I WRITES
3307  5674          JMP I SUBTRT
3310  0000  SUBTEM,  0
3311  0000  SAVESB,  0
                    /
                    /
3312  3020  PRCFIX,  DCA TEMPY1
3313  1020          TAD TEMPY1
3314  0155          AND K7000
3315  7640          SZA CLA
3316  5407          JMP I STKX
3317  1020          TAD TEMPY1
3320  7106          CLL RTL
3321  7004          RAL
3322  5407          JMP I STKX
                    /
                    /
                    *3600
3600  3021  TEST,   DCA RESPON
3601  1414          TAD I STKPTR
3602  3046          DCA BUFFRP
3603  1446  PICKUP, TAD I BUFFRP
3604  7450          SNA
3605  5217          JMP GETOUT
3606  1021          TAD RESPON
3607  7650          SNA CLA
3610  5214          JMP REPLAC
3611  2014          ISZ STKPTR
3612  2046          ISZ BUFFRP
3613  5203          JMP PICKUP
3614  7240  REPLAC, STA
3615  1414          TAD I STKPTR
3616  3014          DCA STKPTR
3617  5407  GETOUT, JMP I STKX
                    /
                    /
                    /
3620  3022  BSERCH, DCA IDNUM
3621  1414          TAD I STKPTR
3622  1005          TAD BUFLOC
3623  4427          JMS I READS
3624  5227          JMP ENTRY
                    /
                    /
3625  3022  SEARCH, DCA IDNUM
3626  1414          TAD I STKPTR
3627  3046  ENTRY,  DCA RECADD
```

```
3630  1446           TAD I RECADD
3631  3045           DCA DELTA
3632  2046           ISZ RECADD
3633  1446           TAD I RECADD
3634  7450           SNA
3635  5407  ENDFLE,  JMP I STKX
3636  7041           CIA
3637  1022           TAD IDNUM
3640  7650           SNA CLA
3641  5246           JMP .+5
3642  1045           TAD DELTA
3643  1046           TAD RECADD
3644  3046           DCA RECADD
3645  5233           JMP .-12
3646  1046           TAD RECADD
3647  5407  FOUND,   JMP I STKX
                     /
                     /
3650  7041  INITLZ,  CIA
3651  3054           DCA LENGTH
3652  1142           TAD K0007
3653  7041           CIA
3654  3020           DCA TEMPY1
3655  7240           STA
3656  1125           TAD DMYFLE
3657  3046           DCA BUFFRP
3660  7001           IAC
3661  3045           DCA DELTA
3662  4502           JMS I APRINT
3663  2020           ISZ TEMPY1
3664  5262           JMP .-2
3665  3045           DCA DELTA
3666  1116           TAD FREES
3667  3046           DCA BUFFRP
3670  1154           TAD K2020
3671  4502           JMS I APRINT
3672  7501           MQA
3673  3046           DCA BUFFRP
3674  1046           TAD BUFFRP
3675  1141           TAD K0006
3676  4502           JMS I APRINT
3677  2054           ISZ LENGTH
3700  5272           JMP .-6
3701  4502           JMS I APRINT
3702  5407           JMP I STKX
                     /
                     /
```

```
3703  0000  PRINTS, 0
3704  2044        ISZ COUNT       /*****
3705  7000        NOP
3706  7421        MQL
3707  1046        TAD BUFFRP
3710  1045        TAD DELTA
3711  3046        DCA BUFFRP
3712  1046        TAD BUFFRP
3713  4430        JMS I WRITES
3714  5703        JMP I PRINTS
                  /
                  /
3715  7300  DASH,  CLA CLL
3716  1003        TAD RECLOC
3717  4427        JMS I READS
3720  0147        AND K0177
3721  1003        TAD RECLOC
3722  1135        TAD M0003
3723  3021        DCA TEMPY2
3724  1021        TAD TEMPY2
3725  4427        JMS I READS
3726  7041        CIA
3727  1151        TAD K0255
3730  7440        SZA
3731  5407        JMP I STKX
3732  1016        TAD DELIM
3733  7041        CIA
3734  7421        MQL
3735  1021        TAD TEMPY2
3736  4430        JMS I WRITES
3737  5407        JMP I STKX
                  /
                  /TEXT 9 -       PAGE 9  -       TEXT 9  -       PAGE
                  /
                  /
3740  7201  RESET, CLA IAC
3741  3045        DCA DELTA
3742  1133        TAD M0002
3743  3021        DCA TEMPY2
3744  1003        TAD RECLOC
3745  1144        TAD K0077
3746  3046        DCA BUFFRP
3747  1046        TAD BUFFRP
3750  3020        DCA TEMPY1
3751  2020        ISZ TEMPY1
3752  1020        TAD TEMPY1
```

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3753  4427           JMS I READS
3754  1016           TAD DELIM
3755  7640           SZA CLA
3756  5351           JMP .-5
3757  2020           ISZ TEMPY1
3760  1020           TAD TEMPY1
3761  4427           JMS I READS
3762  4502           JMS I APRINT
3763  2021           ISZ TEMPY2
3764  5357           JMP .-5
3765  5407           JMP I STKX
                     /
                     /
3766  0156  SIZECK,  AND K7400
3767  5407           JMP I STKX
                     /
                     /
3770  7112  ROTAT,   CLL RTR
3771  7421           MQL
3772  1414           TAD I STKPTR
3773  1005           TAD BUFLOC
3774  4427           JMS I READS
3775  7501           MQA
3776  5407           JMP I STKX
                     /
                     /
                     *4000
4000  3253  ACMPRS,  COMPRS
4001  3200  AORDER,  ORDER
4002  3000  ASET,    SETTNG
4003  4200  NEXTPG,  4200
4004  3051  RNKINS,  DCA BUYMRK
4005  1051           TAD BUYMRK
4006  7640           SZA CLA
4007  5215           JMP BUYNG
4010  1121           TAD BKSELL
4011  3047           DCA LAST
4012  1101           TAD SELFIX
4013  3241           DCA WHICH
4014  5221           JMP .+5
4015  1122  BUYNG,   TAD BKBUY
4016  3047           DCA LAST
4017  1100           TAD BUYFIX
4020  3241           DCA WHICH
4021  1116           TAD FREES
4022  4427           JMS I READS
4023  7450           SNA
```

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4024  5325          JMP FULL
4025  3046          DCA EXTRA
4026  1414          TAD I STKPTR
4027  1005          TAD BUFLOC
4030  4503          JMS I AWRTRC
4031  1414          TAD I STKPTR
4032  1005          TAD BUFLOC
4033  4427          JMS I READ5
4034  7650          SNA CLA
4035  5255          JMP MKRANK
4036  4504  LOOP2,  JMS I ASETUP
4037  4046          DONEIT
4040  4600          JMS I ACMPR5
4041  7000  WHICH,  NOP
4042  5246          JMP DONEIT
4043  1050          TAD NOW
4044  3047          DCA LAST
4045  5236          JMP LOOP2
4046  7200  DONEIT, CLA
4047  1046          TAD EXTRA
4050  4505          JMS I ATCHA
4051  7421          MQL
4052  1116          TAD FREE5
4053  4430          JMS I WRITE5
4054  5325          JMP FULL
4055  1046  MKRANK, TAD EXTRA
4056  7001          IAC
4057  4427          JMS I READ5
4060  3057          DCA STKPRC
4061  1051          TAD BUYMRK
4062  7640          SZA CLA
4063  5274          JMP BUYCHK
4064  1057          TAD STKPRC
4065  7041          CIA
4066  1127          TAD ASKPRC
4067  7710          SPA CLA
4070  5332          JMP BADPRC
4071  1057          TAD STKPRC
4072  3127          DCA ASKPRC
4073  5303          JMP .+10
4074  1057  BUYCHK, TAD STKPRC
4075  7041          CIA
4076  1126          TAD BIDPRC
4077  7740          SMA SZA CLA
4100  5332          JMP BADPRC
4101  1057          TAD STKPRC
```

```
4102  3126            DCA BIDPRC
4103  4601            JMS I AORDER
4104  3116            FREES
4105  4132  BOOKPT,   BADPRC
4106  1126            TAD BIDPRC
4107  7450            SNA
4110  5325            JMP FULL
4111  7041            CIA
4112  3020            DCA TEMPY1
4113  1127            TAD ASKPRC
4114  7450            SNA
4115  5325            JMP FULL
4116  1020            TAD TEMPY1
4117  7740            SMA SZA CLA
4120  5325            JMP FULL
4121  1051            TAD BUYMRK
4122  7640            SZA CLA
4123  5335            JMP BUYSTK
4124  5353            JMP SELSTK
4125  2014  FULL,     ISZ STKPTR
4126  7240            STA
4127  1414            TAD I STKPTR
4130  3014            DCA STKPTR
4131  5407            JMP I STKX
4132  2014  BADPRC,   ISZ STKPTR
4133  2014            ISZ STKPTR
4134  5407            JMP I STKX
4135  1117  BUYSTK,   TAD MKSELL
4136  4427            JMS I READS
4137  7450            SNA
4140  5325            JMP FULL
4141  3061            DCA POINT2
4142  1120            TAD MKBUY
4143  4427            JMS I READS
4144  3060            DCA POINT1
4145  1124            TAD BUYQUE
4146  3047            DCA LAST
4147  4602            JMS I ASET
4150  7421            MQL
4151  1123            TAD SELQUE
4152  5370            JMP ENTRPT
4153  1120  SELSTK,   TAD MKBUY
4154  4427            JMS I READS
4155  7450            SNA
4156  5325            JMP FULL
4157  3061            DCA POINT2
```

```
4150  1117          TAD MKSELL
4151  4427          JMS I READS
4152  3060          DCA POINT1
4153  1123          TAD SELQUE
4154  3047          DCA LAST
4155  4602          JMS I ASET
4156  7421          MQL
4157  1124          TAD BUYQUE
4170  3047  ENTRPT, DCA LAST
4171  5603          JMP I NEXTPG
                    /
                    /TEXT 10        -       PAGE 10 -       TEXT 10 -
                    /
                    *4200
4200  7501          MQA
4201  4505          JMS I ATCHA
4202  7200          CLA
4203  4707          JMS I ABUILD
4204  1124          TAD BUYQUE
4205  4355          JMS INCMNT
4206  1123          TAD SELQUE
4207  4355          JMS INCMNT
4210  1021          TAD TEMPY2
4211  7640          SZA CLA
4212  5220          JMP WHONE
4213  4311          JMS RELES
4214  0120          MKBUY
4215  4311          JMS RELES
4216  0117          MKSELL
4217  5230          JMP CLENUP
4220  1120  WHONE,  TAD MKBUY
4221  4427          JMS I READS
4222  1132          TAD K0002
4223  4427          JMS I READS
4224  7640          SZA CLA
4225  5215          JMP .-10
4226  4311          JMS RELES
4227  0120          MKBUY
4230  1120  CLENUP, TAD MKBUY
4231  4427          JMS I READS
4232  7450          SNA
4233  5236          JMP .+3
4234  7001          IAC
4235  4427          JMS I READS
4236  3126          DCA BIDPRC
4237  1117          TAD MKSELL
4240  4427          JMS I READS
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4241  7450          SNA
4242  5245          JMP .+3
4243  7001          IAC
4244  4427          JMS I READ5
4245  3127          DCA ASKPRC
4246  1133          TAD M00002
4247  3020          DCA TEMPY1
4250  7001          IAC
4251  3051          DCA BUYMRK
4252  1120          TAD MKBUY
4253  3021          DCA TEMPY2
4254  1021  LOOP3,  TAD TEMPY2
4255  4427          JMS I READ5
4256  7450          SNA
4257  5275          JMP RENTPT+4
4260  7421          MQL
4261  1125          TAD DMYFLE
4262  4430          JMS I WRITE5
4263  7421          MQL
4264  1021          TAD TEMPY2
4265  4430          JMS I WRITE5
4266  4706          JMS I ADORDR
4267  0125          DMYFLE
4270  4302          RLESE
4271  1125  RENTPT, TAD DMYFLE
4272  4427          JMS I READ5
4273  7640          SZA CLA
4274  5266          JMP .-6
4275  2020          ISZ TEMPY1
4276  5710          JMP I ABPLSE
4277  3051          DCA BUYMRK
4300  1117          TAD MKSELL
4301  5254          JMP LOOP3
4302  4311  RLESE,  JMS RELES
4303  0125          DMYFLE
4304  5271          JMP RENTPT
4305  4125  AFULL,  FULL
4306  3200  ADORDR, ORDER
4307  3104  ABUILD, BUILD
4310  4106  ABPLSE, BOOKPT+1
                    /
                    /
4311  0000  RELES,  0
4312  1116          TAD FREE5
4313  3047          DCA LAST
4314  1711          TAD I RELES
4315  3326          DCA RELSTO
```

```
4316  1726          TAD I RELSTO
4317  4427          JMS I READ5
4320  4505          JMS I ATCHA
4321  7421          MQL
4322  1726          TAD I RELSTO
4323  4430          JMS I WRITE5
4324  2311          ISZ RELES
4325  5711          JMP I RELES
4326  0000  RELSTO, 0
                    /
                    /
4327  0000  DBLADD, 0
4330  7100          CLL
4331  3026          DCA TEMPY7
4332  7501          MQA
4333  1727          TAD I DBLADD
4334  7421          MQL
4335  2327          ISZ DBLADD
4336  7004          RAL
4337  1727          TAD I DBLADD
4340  1026          TAD TEMPY7
4341  2327          ISZ DBLADD
4342  5727          JMP I DBLADD
                    /
                    /
4343  7621  FETCHL, CAM
4344  1003          TAD RECLOC
4345  4427          JMS I READ5
4346  0144          AND K0077
4347  7450          SNA
4350  5433          JMP I EXIT
4351  1144          TAD K0077
4352  1003          TAD RECLOC
4353  4427          JMS I READ5
4354  5513          JMP I EXITPL
                    /
                    /
4355  0000  INCMNT, 0
4356  4427          JMS I READ5
4357  1136          TAD K0004
4360  3020          DCA TEMPY1
4361  1020          TAD TEMPY1
4362  4427          JMS I READ5
4363  7001          IAC
4364  7421          MQL
4365  1020          TAD TEMPY1
4366  4430          JMS I WRITE5
4367  5755          JMP I INCMNT
```

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                        /
                        /
                        *4644
4644  3020  SETVAL,     DCA TEMPY1
4645  1414              TAD I STKPTR
4646  3251              DCA .+3
4647  1664              TAD I AVRCNT
4650  7425              MQL MUY
4651  0000              0
4652  7701              MQA CLA
4653  1665              TAD I BOTTOM
4654  1664              TAD I AVRCNT
4655  1414              TAD I STKPTR
4656  1004              TAD USERNO
4657  3046              DCA BUFFRP
4660  3045              DCA DELTA
4661  1020              TAD TEMPY1
4662  4502              JMS I APRINT
4663  5407              JMP I STKX
4664  7414  AVRCNT,     7414
4665  7441  BOTTOM,     7441
                        /
                        /
                        *4765
4765  1005  INDXMT,     TAD BUFLOC
4766  4427              JMS I READ5
4767  1377              TAD K7777
4770  7001              IAC
4771  5772              JMP I XMTADR
4772  6130  XMTADR,     6130
                        /
                        /
                        *5524
5524  3020  USRTST,     DCA TEMPY1
5525  1020              TAD TEMPY1
5526  1137              TAD K0005
5527  4427              JMS I READ5
5530  7650              SNA CLA
5531  5407              JMP I STKX
5532  1020              TAD TEMPY1
5533  4511              JMS I AGTUSR
5534  7640              SZA CLA
5535  5407              JMP I STKX
5536  7240              STA
5537  5407              JMP I STKX
                        /
                        /
```

```
5540  3026  WITHDR, DCA TEMPY7
5541  1117          TAD XYZSEL
5542  3367          DCA ZWKTP
5543  1367          TAD ZWKTP
5544  3022  GOPONT, DCA TEMPY3
5545  1022          TAD TEMPY3
5546  4427          JMS I READ5
5547  7450          SNA
5550  5363          JMP DETCHB
5551  3021          DCA TEMPY2
5552  1021          TAD TEMPY2
5553  4511          JMS I AGTUSR
5554  7650          SNA CLA
5555  5360          JMP PULLIT
5556  1021          TAD TEMPY2
5557  5344          JMP GOPONT
5560  4506  PULLIT, JMS I ARELSE
5561  0022          TEMPY3
5562  5343          JMP GOPONT-1
5563  1120  DETCHB, TAD XYZBUY
5564  2026          ISZ TEMPY7
5565  5342          JMP GOPONT-2
5566  5407          JMP I STKX
5567  0000  ZWKTP,  0
                    /
                    /TEXT 11        -       PAGE 11 -       TEXT 11 -
                    /
                    *5733
5733  0000  DMINUS, 0
5734  7140          CLL CMA
5735  3026          DCA TEMPY7
5736  7240          STA
5737  3071          DCA SGNFLG
5740  7501          MQA
5741  7041          CIA
5742  7421          MQL
5743  7004          RAL
5744  1026          TAD TEMPY7
5745  5733          JMP I DMINUS
                    /
                    /
                    *5746
5746  0000  GETUSR, 0
5747  1137          TAD K0005
5750  4427          JMS I READ5
5751  7041          CIA
```

```
5752  1004          TAD USERNO
5753  5746          JMP I GETUSR
                    /
                    /
                    *5754
5754  7240  SPCHK,  STA
5755  1004          TAD USERNO
5756  5407          JMP I STKX
                    /
                    /
                    *6055
6055  6553          ADDABA-2
6056  6553          ADDABA-2
6057  6555          ADDABA
6060  6555          ADDABA
6061  6555          ADDABA
                    /
                    /
                    *6553
6553  0144          AND K0077
6554  7041          CIA
6555  3026  ADDABA, DCA TEMPY7
6556  1414          TAD I STKPTR
6557  1005          TAD BUFLOC
6560  3024          DCA TEMPY5
6561  1024          TAD TEMPY5
6562  4427          JMS I READ5
6563  1026          TAD TEMPY7
6564  7421          MQL
6565  1024          TAD TEMPY5
6566  4430          JMS I WRITE5
6567  1020          TAD TEMPY1
6570  5407          JMP I STKX
                    /
                    /
                    *6571
6571  0142  EIGHTH, AND K0007
6572  5407          JMP I STKX
                    /
                    /
                    *6573
6573  0157  WHOLE,  AND K7770
6574  7112          CLL RTR
6575  7010          RAR
6576  5407          JMP I STKX
                    /
                    /
```

```
                        *6577
6577    4427    LOADS,  JMS I READS
6600    5407            JMP I STKX
                        /
                        /
                        *7176
7176    3045    ACCONT, DCA DELTA
7177    7240            STA
7200    1045            TAD DELTA
7201    3046            DCA BUFFRP
7202    1414            TAD I STKPTR
7203    1005            TAD BUFLOC
7204    4427            JMS I READS
7205    3020            DCA TEMPY1
7206    1420            TAD I TEMPY1
7207    3231            DCA LOW
7210    2020            ISZ TEMPY1
7211    1420            TAD I TEMPY1
7212    3232            DCA HIGH
7213    1414            TAD I STKPTR
7214    1005            TAD BUFLOC
7215    4427            JMS I READS
7216    3225            DCA PLACE
7217    1414            TAD I STKPTR
7220    1005            TAD BUFLOC
7221    4427            JMS I READS
7222    7425            MQL MUY
7223    0144            144
7224    4650            JMS I AMULT
7225    0000    PLACE,  0
7226    2046            ISZ BUFFRP
7227    4507            JMS I ADMINS
7230    4510            JMS I ADBLADD
7231    0000    LOW,    0
7232    0000    HIGH,   0
7233    3420            DCA I TEMPY1
7234    7240            STA
7235    1020            TAD TEMPY1
7236    3021            DCA TEMPY2
7237    7501            MQA
7240    3421            DCA I TEMPY2
7241    2020            ISZ TEMPY1
7242    1225            TAD PLACE
7243    2045            ISZ DELTA
7244    7041            CIA
7245    1420            TAD I TEMPY1
7246    3420            DCA I TEMPY1
7247    5407            JMP I STKX
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```
7250  3323  AMULT,  MULT
                    *4370
4370  7001  GETREC, IAC
4371  3020          DCA TEMPY1
4372  3044          DCA COUNT
4373  7240          STA
4374  1414          TAD I STKPTR
4375  1005          TAD BUFLOC
4376  3046          DCA BUFFRP
4377  1020          TAD TEMPY1
4400  4503          JMS I AWRTRC
4401  7421          MQL
4402  1020          TAD TEMPY1
4403  1136          TAD K0004
4404  4430          JMS I WRITE5
4405  5407          JMP I STKX
                    *3323
3323  0000  MULT,   0
3324  3354          DCA OSAVE
3325  7501          MQA
3326  3355          DCA MSAVE
3327  1723          TAD I MULT
3330  3333          DCA .+3
3331  1355          TAD MSAVE
3332  7425          MQL MUY
3333  0000          0
3334  3356          DCA ESAVE
3335  7501          MQA
3336  3355          DCA MSAVE
3337  1723          TAD I MULT
3340  3343          DCA .+3
3341  1354          TAD OSAVE
3342  7425          MQL MUY
3343  0000          0
3344  7701          CLA MQA
3345  3354          DCA OSAVE
3346  1355          TAD MSAVE
3347  7421          MQL
3350  1356          TAD ESAVE
3351  1354          TAD OSAVE
3352  2323          ISZ MULT
3353  5723          JMP I MULT
3354  0000  OSAVE,  0
3355  0000  MSAVE,  0
3356  0000  ESAVE,  0
```

```
                        /TEXT   30              TEXT  30
3357  7200  MATCH,      CLA                                    TEXT 0
3360  1414              TAD I STKPTR
3361  3021              DCA TEMPY2
3362  1414              TAD I STKPTR
3363  3022              DCA TEMPY3
3364  1414              TAD I STKPTR
3365  3023              DCA TEMPY4
3366  1414              TAD I STKPTR
3367  3024              DCA TEMPY5
3370  1421              TAD I TEMPY2          /GET FILE PTR
3371  3020              DCA TEMPY1            /CURRENT REC.
3372  1020  ABOUT,      TAD TEMPY1
3373  3077            DCA 77
3374  1020            TAD TEMPY1
3375  4427              JMS I READ5
3376  7450              SNA
3377  5407              JMP I STKX
3400  3020              DCA TEMPY1
3401  1020              TAD TEMPY1
3402  1022              TAD TEMPY3            /ADD FIELD NO.
3403  4427              JMS I READ5
3404  7041              CIA
3405  1023              TAD TEMPY4            /COMPARE TEST VAL.
3406  7640              SZA CLA
3407  5631            JMP I ABOUTI
3410  1020              TAD TEMPY1
3411  1022              TAD TEMPY3
3412  4427              JMS I READ5
3413  1024              TAD TEMPY5            /ADD DECREMENT
3414  7421              MQL
3415  1020              TAD TEMPY1
3416  1022              TAD TEMPY3
3417  4430              JMS I WRITE5
3420  1005              TAD BUFLOC
3421  1230              TAD APRIX
3422  3046              DCA BUFFRP
3423  7001              IAC
3424  1020              TAD TEMPY1
3425  4503              JMS I AWRTRC
3426  1020              TAD TEMPY1
3427  5407              JMP I STKX
3430  0031  APRIX,    PRIX-1
3431  3372  ABOUTI,   ABOUT
                        /
                        /
```

```
3432  4565  FRAC,   JMS I XMTCHK
3433  1414          TAD I STKPTR
3434  1005          TAD BUFLOC
3435  4427          JMS I READ5
3436  1152            TAD K0260
3437  3045            DCA 45      /BUF+1, ECL
3440  7001            IAC
3441  3044            DCA 44      /BUF, ECL
3442  5643            JMP I .+1   /XMITR, ECL
3443  6200            6200
                      /
                      /
                    *7251
7251  1005  SCAN,      TAD BUFLOC
7252  3020            DCA TEMPY1
7253  1143            TAD K0010
7254  3021            DCA TEMPY2
7255  2020  LUPE,     ISZ TEMPY1
7256  1020            TAD TEMPY1
7257  4427            JMS I READ5
7260  7440            SZA
7261  5265            JMP LEAVNG
7262  2021            ISZ TEMPY2
7263  5255            JMP LUPE
7264  5407            JMP I STKX
7265  3021  LEAVNG,   DCA TEMPY2
7266  7421            MQL
7267  1020            TAD TEMPY1
7270  4430            JMS I WRITES
7271  1021            TAD TEMPY2
7272  5407            JMP I STKX
                      /
                      /
                    *3444
3444  7200  UPDATE,  CLA
3445  1131          TAD XBKASK
3446  3127          DCA ASKPRC
3447  1117          TAD MKSELL
3450  4427          JMS I READ5
3451  7450          SNA
3452  5256          JMP .+4
3453  7001          IAC
3454  4427          JMS I READ5
3455  3127          DCA ASKPRC
3456  1130          TAD XBKBID
3457  3126          DCA BIDPRC
3460  1120          TAD MKBUY
```

```
3461  4427            JMS I READ5
3462  7450            SNA
3463  5267            JMP .+4
3464  7001            IAC
3465  4427            JMS I READ5
3466  3126            DCA BIDPRC
3467  5407            JMP I STKX
3470  7300  NTREST,   CLA CLL /CLEAR ALL
3471  1160            TAD INT /GET INTEREST RATE
3472  3326            DCA MPY /INTO MULTIPLIER
3473  1161            TAD DIV /GET DIV. RATE
3474  3356            DCA MY1 /STORE AS MULT.
3475  1563            TAD I BRP
3476  3020            DCA TEMPY1        /RECORD SIZE
3477  7240            STA
3500  1163            TAD BRP /SET BASE ADD.
3501  1020  NEXBR,    TAD TEMPY1        /ADD INCREMENT
3502  3021            DCA TEMPY2        /CURRENT BROKER NAME
3503  1421            TAD I TEMPY2      /CURRENT BROKER LOC.
3504  7450            SNA     /NULL?
3505  5407            JMP I STKX        /YES,EXIT
3506  1134            TAD K0003
3507  3022            DCA TEMPY3        /ADD. HI ORDER BALANCE
3510  1422            TAD I TEMPY3      /LOAD OLD HI O.B.
3511  3341            DCA ZORO+1        /STORE FOR MULT.
3512  7240            STA
3513  1022            TAD TEMPY3
3514  3023            DCA TEMPY4        /ADD. OLD LO O.B.
3515  1423            TAD I TEMPY4      /GET VALUE
3516  3340            DCA ZORO          /STORE FOR MULT.
3517  3071            DCA SGNFLG        /CLEAR SIGN FLAG
3520  1423            TAD I TEMPY4      /OLD LO BAL. TO AC
3521  7421            MQL     /TO MQ
3522  1422            TAD I TEMPY3      /OLD HI BAL.
3523  7510            SPA     /+?
3524  4507            JMS I ADMINS      /NO, COMPLEMENT
3525  7425            MUY MQL /MULTIPLY
3526  0000  MPY,      0       /MULTIPLIER
3527  3025            DCA TEMPY6        /HI ORDER RESULT (DIV. VAL.)
3530  1071            TAD SGNFLG        /LOAD SIGN
3531  7700            SMA CLA /SKIP IF -
3532  5336            JMP .+4 /YES, GOTO ADDITION
3533  1025            TAD TEMPY6        /NO,
3534  4507            JMS I ADMINS      /THEN COMPLEMENT IT
3535  5337            JMP .+2
3536  1025            TAD TEMPY6        /RESTORE AC IF + (HI RESULT)
3537  4510            JMS I ADBLAD      /ADD
```

```
3540  0000  ZORO,   0          /OLD LO O. B.
3541  0000          0          /OLD HI
3542  3371          DCA ORDZ+1
3543  7501          MQA
3544  3370          DCA ORDZ          /SET UP NEXT SUM
3545  3071          DCA SGNFLG        /CLEAR FLAG
3546  7421          MQL       /CLEAR MQ
3547  1022          TAD TEMPY3        /
3550  7101          IAC CLL /ADD. NO. SHARES
3551  3024          DCA TEMPY5
3552  1424          TAD I TEMPY5
3553  7510          SPA
3554  4507          JMS I ADMINS
3555  7425          MUY MQL /MULT BY AC ONLY
3556  0000  MY1,     0
3557  3025          DCA TEMPY6        /DIV.
3560  1071          TAD SGNFLG
3561  7700          SMA CLA
3562  5366          JMP .+4
3563  1025          TAD TEMPY6
3564  4507          JMS I ADMINS
3565  5367          JMP .+2
3566  1025          TAD TEMPY6
3567  4510          JMS I ADBLAD
3570  0000  ORDZ,    0
3571  0000          0
3572  3422          DCA I TEMPY3      /STORE AS NEW HI
3573  7501          MQA
3574  3423          DCA I TEMPY4      /STORE AS NEW LO
3575  1021          TAD TEMPY2        /CURR. BROKER ADD.
3576  5301          JMP NEXBR         /ITERATE
                    *4575
4575  5400          5400
4576  3020  SEZSYS, DCA TEMPY1
4577  1375          TAD .-2
4600  3603          DCA I .+3
4601  1020          TAD TEMPY1
4602  5407          JMP I STKX
4603  5606          5606
                    *4406
                    TEMWRD=72
                    DIVFLG=73
                    DBLWRD=74
                    /
                    /
```

```
4406  0000          SPOT,   0
4407  4565  CONVRT, JMS I XMTCHK
4410  1414          TAD I STKPTR
4411  1005          TAD BUFLOC
4412  4427          JMS I READ5
4413  3206          DCA SPOT
4414  7300          CLA CLL
4415  3044          DCA COUNT
4416  3071          DCA SGNFLG
4417  1367          TAD M0004
4420  3022          DCA TEMPY3
4421  1003          TAD 3
4422  1370          TAD K0070
4423  3046          DCA BUFFRP
4424  7240          STA
4425  3045          DCA DELTA
4426  1606          TAD I SPOT
4427  3021          DCA TEMPY2
4430  1021          TAD TEMPY2
4431  7421          MQL
4432  2206          ISZ SPOT
4433  1606          TAD I SPOT
4434  7510          SPA
4435  4507          JMS I ADMINS
4436  7417          LSR
4437  0002          2
4440  3074          DCA DBLWRD
4441  7501          MQA
4442  3075          DCA DBLWRD+1
4443  1074          TAD DBLWRD
4444  7440          SZA
4445  5250          JMP .+3
4446  7240          STA
4447  3073          DCA DIVFLG
4450  7427          MQL DVI
4451  0012          12
4452  3072          DCA TEMWRD
4453  7501          MQA
4454  3074          DCA DBLWRD
4455  1075          TAD DBLWRD+1
4456  7421          MQL
4457  1072          TAD TEMWRD
4460  7407          DVI
4461  0012          12
4462  3072          DCA TEMWRD
4463  7501          MQA
```

```
4464  3075          DCA DBLWRD+1
4465  2022          ISZ TEMPY3
4466  5273          JMP .+5
4467  1373          TAD K0254
4470  4502          JMS I APRINT
4471  1135          TAD M0003
4472  3022          DCA TEMPY3
4473  1072          TAD TEMWRD
4474  1152          TAD K0260
4475  4502          JMS I APRINT
4476  1075          TAD DBLWRD+1
4477  7650          SNA CLA
4500  2073          ISZ DIVFLG
4501  5243          JMP .-36
4502  1371          TAD K0244
4503  4502          JMS I APRINT
4504  1003          TAD 3
4505  7041          CIA
4506  1046          TAD BUFFRP
4507  3074          DCA DBLWRD
4510  7001          IAC
4511  3045          DCA DELTA
4512  7240          STA
4513  1003          TAD 3
4514  1370          TAD K0070
4515  3046          DCA BUFFRP
4516  1374          TAD K0256
4517  4502          JMS I APRINT
4520  1071          TAD SGNFLG
4521  3075          DCA DBLWRD+1
4522  1021          TAD TEMPY2
4523  2075          ISZ DBLWRD+1
4524  5326          JMP .+2
4525  7041          CIA
4526  0142          AND K0007
4527  7421          MQL
4530  7413          SHL
4531  0010          10
4532  7405          MUY
4533  0012          12
4534  3072          DCA TEMWRD
4535  7501          MQA
4536  3022          DCA TEMPY3
4537  1072          TAD TEMWRD
4540  1152          TAD K0260
4541  4502          JMS I APRINT
```

```
4542  1022          TAD TEMPY3
4543  7425          MQL MUY
4544  0012          12
4545  1152          TAD K0260
4546  4502          JMS I APRINT
4547  1372          TAD K0253
4550  7421          MQL
4551  1151          TAD K0255
4552  2071          ISZ SGNFLG
4553  7701          CLA MQA
4554  4502          JMS I APRINT
4555  1044          TAD COUNT
4556  7425          MQL MUY
4557  0100          100
4560  1074          TAD DBLWRD
4561  7501          MQA
4562  7421          MQL
4563  1003          TAD 3
4564  7001          IAC
4565  4430          JMS I 30
4566  5407          JMP I STKX
4567  7774  M0004,  -4
4570  0070  K0070,  70
4571  0244  K0244,  244
4572  0253  K0253,  253
4573  0254  K0254,  254
4574  0256  K0256,  256
            / PAL 3 DELIMINATOR (DOLLAR SIGN)
```

ABEND	3101
ABOUT	3372
ABOUTI	3431
ABPLSE	4310
ABUILD	4307
ACCNTS	0336
ACCONT	7176
ACMPRS	4000
ACNTRY	0112
ACTIVE	0605
ACTIVY	0037
ADBLAD	0110
ADDABA	6555
ADDABS	2400
ADMINS	0107
ADORDR	4306
ADRHLD	0055
AFULL	4305
AFULLP	3023
AGTUSR	0111
AISZFR	0114
ALDONE	0524
ALRITE	1370
AMULT	7250
AND	0000
AORDER	4001
APRINT	0102
APRIX	3430
ARELSE	0106
ASET	4002
ASETUP	0104
ASK	0026
ASKBOK	1126
ASKENT	1244
ASKPRC	0127
ASKSET	0504
ASR	7415
ASUB	0115
ATCHA	0105
ATTACH	3024
AUTODX	0015
AVRCNT	4664
AWRTRC	0103
BADBKR	0304
BADPR	1536
BADPRC	4132
BADTIM	1332

```
BE      0212
BID     0025
BIDPRC  0126
BIDSET  0462
BKBUY   0122
BKSELL  0121
BO      0200
BOOKFG  0010
BOOKIT  1262
BOOKMK  0056
BOOKPT  4105
BOTTOM  4665
BRANCH  6170
BRCHAR  6075
BRDEL   6727
BRKRID  0033
BRKRNO  0246
BRKR1   2636
BRKR2   2644
BRKR3   2652
BRKR4   2660
BRKR5   2666
BRKR6   2674
BRKR7   2702
BRKR8   2710
BRKR9   2716
BRLABL  0022
BRMIAC  5407
BRNZAC  5400
BROKER  2600
BRP     0163
BRROUT  6072
BRUPAR  6067
BRZAC   5404
BSERCH  3620
BUFFRP  0046
BUFLOC  0005
BUILD   3104
BUYCHK  4074
BUYFIX  0100
BUYFLG  0036
BUYMRK  0051
BUYNG   4015
BUYQUE  0124
BUYSET  3211
BUYSTK  4135
BYPAS1  1717
BYPAS2  1732
```

```
BYPAS3  1747
BYPAS4  1764
BYPAS5  2004
BYPAS6  2023
CAM     7621
CANCEL  0704
CAT     1570
CENTRY  6104
CHECK   1465
CIA     7041
CKNEWS  2144
CLA     7200
CLEAR   5426
CLENUP  4230
CLL     7100
CLOOP   1677
CLOSEZ  0402
CLRLOG  6505
CMA     7040
CML     7020
CODEPL  1505
COMPRS  3253
CONSOL  0036
CONTRL  1651
CONVRT  4407
COUNT   0044
DASH    3715
DBLADD  4327
DBLWRD  0074
DCA     3000
DECIDE  3226
DECODE  1433
DELIM   0016
DELTA   0045
DETCHR  5563
DIV     0161
DIVFLG  0073
DLAY    0035
DMINUS  5733
DMYFLE  0125
DOG     1626
DONE    2120
DONEIT  4046
DVI     7407
E       0213
EIGHTH  6571
ENDFLE  3635
```

```
ENMATH  5636
ENTR    1143
ENTRPT  4170
ENTRY   3627
EREXIT  1643
ESAVE   3356
EXIT    0033
EXITBK  6124
EXITPL  0113
EXTPTR  0052
EXTRA   0046
FBO     0177
FETCH   6766
FETCHL  4343
FIN     2170
FINISH  3240
FLAG    0002
FORGET  1432
FOUND   3647
FRAC    3432
FRACTN  0007
FREES   0116
FULL    4125
FULLUP  1364
GETDEL  1313
GETNAM  2317
GETOUT  3617
GETREC  4370
GETUSR  5746
GLK     7204
GOMONT  1561
GONE    2124
GOPONT  5544
GOTOIT  1462
HALT    5575
HEBUYS  1070
HESELS  1027
HIGH    7232
HLT     7402
HRS     0002
IAC     7001
IDNUM   0022
INADD   1000
INCMNT  4355
INDXMT  4765
INITLZ  3650
INSERT  1336
```

INT	0160
INTLOG	7055
ISZ	2000
ISZFOR	3266
JMP	5000
JMPBK	1504
JMS	4000
KILL	1503
K0002	0132
K0003	0134
K0004	0136
K0005	0137
K0006	0141
K0007	0142
K0070	4570
K0077	0144
K0100	0145
K0177	0147
K0244	4571
K0253	4572
K0254	4573
K0255	0151
K0256	4574
K0260	0152
K0377	0150
K0502	0153
K2020	0154
K4000	7442
K7000	0155
K7400	0156
K7770	0157
LABB	1102
LABL1	1547
LABL10	1350
LABL2	1555
LABL3	0761
LABL4	0667
LABL5	0332
LABL8	1266
LABL9	1302
LABS	1047
LAS	7604
LAST	0047
LEAVNG	7265
LENGTH	0054
LINE	2174
LOAD	0400

```
LOAD5    6577
LOAD8    4756
LOAD8I   6526
LOANS    0170
LOCATE   1375
LOGDLM   7777
LOGIT    2256
LOOKNG   1542
LOOP1    3223
LOOP2    4036
LOOP3    4254
LOW      7231
LSR      7417
LUPE     7255
LVMATH   7777
MAN      0034
MAN1     0041
MAN2     0010
MATCH    3357
MINS     0001
MINUS    2114
MINUTE   0001
MKBUY    0120
MKRANK   4055
MKSELL   0117
MOUSE    1602
MOVEON   1501
MPY      3526
MQA      7501
MQL      7421
MSAVE    3355
MULT     3323
MULTI    0164
MUY      7405
MY1      3556
M0002    0133
M0003    0135
M0004    4567
M0005    0140
M0010    0143
M0100    0146
NAY      1174
NEWS     2150
NEXBR    3501
NEXTPG   4003
NGLOT1   1062
NGLOT2   1121
```

```
NOEITH   1523
NOGOOD   3250
NOP      7000
NOSTOP   1312
NOW      0050
NOWPTR   0053
NTREST   3470
OPENFG   0046
OPENPT   0441
OPENXZ   0423
OPNOP    0166
OPOK     0631
ORDER    3200
OROZ     3570
OSAVE    3354
OSR      7404
OVER     2043
OVRTIM   1541
PANIC    2171
PICKUP   3603
PLACE    7225
POINT1   0060
POINT2   0061
POINT3   0062
POINT4   0063
PORT     2055
PRCFIX   3312
PREV     0006
PRICE    0031
PRINT    7066
PRINT5   3703
PRIX     0032
PULLIT   5560
PULSE    5415
PURGE    2331
QOT      0720
QUAN     0033
QUIT     0372
RAL      7004
RAR      7010
RBOS     0203
RDCARD   7276
READ     6777
READ5    0027
RECADD   0046
RECLOC   0003
RECPTR   0052
```

```
RELES   4311
RELSTO  4326
RELSYS  5774
RENTPT  4271
REPLAC  3614
RESET   3740
RESPON  0021
RETRN   0677
RETURN  2100
RLESE   4302
RNDLOT  0032
RNKINS  4004
ROTAT   3770
RTL     7006
RTR     7012
SALEOK  0621
SAVESB  3311
SAYSAL  1410
SCAN    7251
SEARCH  3625
SECS    0000
SELFIX  0101
SELLNG  0562
SELQUE  0123
SELSTK  4153
SET     0000
SETDEL  6670
SETM    0200
SETTNG  3000
SETUP   3065
SETVAL  4644
SEZSYS  4576
SGNFLG  0071
SHL     7413
SHORT   0361
SHSALS  0167
SIZECK  3766
SKP     7410
SMA     7500
SNA     7450
SNL     7420
SPA     7510
SPACE   1100
SPARE   0006
SPASK   1007
SPBACK  0652
SPBID   0767
```

```
SPC     1452
SPCHK   5754
SPLIST  0741
SPOT    4406
STA     7240
START   0310
STKPRC  0057
STKPTR  0014
STKX    0007
STL     7120
STOP    0021
STOPFG  0030
STOPIT  1305
STORE   1400
STORER  6236
SUBABS  2200
SUBROU  6545
SUBSTK  2000
SUBTEM  3310
SUBTRT  3274
SZA     7440
SZL     7430
TAB     1000
TAD     1000
TEMPRY  0052
TEMPY1  0020
TEMPY2  0021
TEMPY3  0022
TEMPY4  0023
TEMPY5  0024
TEMPY6  0025
TEMPY7  0026
TEMWRD  0072
TEST    3600
TESTIT  1646
TICK    0030
TIME    6245
TIMES   0034
TOOLOW  1361
TRAP    1460
TRAPUR  1454
TRPLST  0220
TRYAGN  1502
UPAFLG  0000
UPDATE  3444
USER    0035
USERNO  0004
USRCNT  7435
```

```
USRTST  5524
VEGA    2216
VERB1   0037
VERB2   0040
VRCNT5  7414
WAIT    5444
WAITT   0261
WHICH   4041
WHOLE   6573
WHONE   4220
WITHDR  5540
WRITE   6474
WRITE5  0030
WRITRC  3045
XAQQC   0171
XBKASK  0131
XBKBID  0130
XBKBUY  0122
XBKSEL  0121
XMIT    1200
XMITID  3000
XMTADR  4772
XMTCHK  0165
XYZ     0532
XYZASK  0127
XYZBID  0126
XYZBUY  0120
XYZGO   0537
XYZOK   0641
XYZSEL  0117
X1      0040
X2      0041
X3      0042
X4      0043
X5      0044
X6      0045
YEA1    1200
YN      0215
Y1      0042
ZAPEM   1240
ZERO    0027
ZORO    3540
ZOT     2110
ZWKTP   5567
Z1      0031
Z2      0007
```