Dear Sphere Microcomputer User:

Thank you for ordering the enclosed packet of
information containing new software, hardware, and User
Group News. If you are one of our regular customers, then
you will already know our reputation in providing low-cost
software to the hobbyist. If you are a new customer, then
you will want to know who we are and why haven't you heard
of us before. These questions will be answered in the
following paragraphs.

First, PROGRAMMA CONSULTANTS is one of the worlds
"smallest" supplier of hobbyist computer software (TSC
claims to be the worlds largest and we don't want to
challenge their claim at this time). Our main function
is to provide reasonably priced software program products
to users of 6800 based machines. Specifically, we have
been providing support software for the Sphere Series/300
System since June 1976.

Until recently, we had been a "Distributor" of
Sphere hardware for Sphere Corporation in the Los Angeles
area. We had advised our "friends" at Sphere of the
library of programs that we had developed, with the hope
that they would in turn advise all users. Unfortunately,
the Global News Vol. 1, No. 4, "The SWAP Newsletter for
The Whole Earth", never got off the ground from Salt Lake
City. Hence, our hopes to advise all Sphere users of our
Library of Software was never realized.

During the past month, one of our "friends" at Sphere
provided us with a copy of the User's Mailing List. We
sent out postcards to all users advising each of the packet
of information that we have put together. Due to the low-
margin of profit that we are working with, we asked that
each user remit $1.00 ($2.00 if foreign) to cover the cost
of duplicating and mailing the material. It is now June
1977, one year later, and you are receiving information
that should have been passed by Sphere Corporation.

As you are well aware of, Sphere Corporation has filed
for Chapter 11 Protection under the Federal Bankrupcy Laws.
The judge handling the Sphere Corporation case, Civil No.
241306, has appointed Mr. Grant M. Prisbrey as Receiver of
Sphere Corporation by order dated the 1st day of April 1977.
The purpose of the receivership is to provide for an orderly
liquidation of the assets of Sphere Corporation and apply
the proceeds to the payment of corporate creditors.

All of the events that we have experienced with
Sphere Corporation culminating in the current bankrupcy of
the company, cause us to ponder the following paragraph
found in a letter sent from Sphere:

> "I would like to congratulate you on your
> choice of one of the finest Micro-Computer
> Systems available. We here at Sphere Cor-
> poration are proud of the Sphere Computer
> System that we have developed, our company
> and the success we've experienced; and quite
> frankly, we appreciate you as a system user.
> Why, you might ask? Because the feedback
> we receive from educated users provides us
> with valuable information which helps us
> further develop our markets."

>   Douglas S. Hancey
>   Executive Vice President

Now joining the ranks of the big mainframers that have
gone into "never-never land", General Electric, RCA,
XEROX, and Sphere, we are left as orphans in the micro-
computer field. Not so! If we can pull all users together
and continue the software and hardware development that has
been done, even independent of Sphere, we will continue to
keep our orphan Sphere systems viable.

Quite frankly, we are very happy with the Sphere
system. It contains a lot of capability not found in
comparable microcomputers, plus the software support that
we have developed, allow us a great degree of potential
and growth. Please notice that Sphere owners are the only
group of people that can successfully interchange software
without major modification difficulty. This asset alone
puts us far ahead of other microcomputer makes. With that,
then lets forget about Sphere Corporation and think ahead
on what we can do to improve the system. Perhaps, we might
be better off without having Sphere around!

The enclosed packet of information is subdivided into
several distinct sections. One section contains the new
Software Brochure, describing many new programs and improve-
ments to old ones. Another section contains information
on hardware boards that are being made to augment the system.
The General Information section contains bits and pieces of
information general in nature that we have gathered from our
user base. Most important is the User Profile Information
Form. This form will assure that each user is recorded on
our mailing list system, and also, it will allow us to
distribute software more efficiently. The form is confi-
dential and its content is distributed to no one. Please

make sure that you return the User Profile Information Form
to us, otherwise, your name and address will be dropped from
our mailing list and you will never hear from us again.

One of the best ways that we can continue to inter-
change information and ideas is by publishing a User Group
Newsletter. This task involves a lot of cooperation and
assistance from you, the users. You must send in ideas,
hints, suggestions, questions, answers, diagrams, programs,
wanted to buy ads, for sale ads, etc. to make up the contents
of the Newsletter. Several users have volunteered to edit
and publish the Newsletter. Others are interested in writing
articles for the Newsletter. Whatever you can do for the
Newsletter will certainly be appreciated. Now, the User
Group Newsletter will be provided on a subscription basis.
We are planning to publish a Newsletter every other month
(each odd month). There will be six Newsletters per year
and the subscription cost will be $12.00. This will include
first class mailing. Foreign subscriptions will cost $18.00
because each will be shipped air mail. To order your subs-
cription send a cheque and a notice with your name and
mailing address. Subscriptions will be handled by Programma
Consultants. Send all material for the Newsletter to us
also, and we will submit it to the editors for publication.

Finally, a word of encouragement, we're here to stay!
The investment that we have in our software, the continuing
effort to support that software, and our investment into
research of future software program products necessarily
shows our commitment to the end user. Take some time and
read through the enclosed packet of information and see
just what is offered. Remember to return the User Profile
Information Form.

Again, thank you for ordering the Information Packet
and we hope to be hearing from you soon.

Sincerely,

PROGRAMMA CONSULTANTS

Melvin L. Norell

Melvin L. Norell
General Manager

MLN:jpd

WHAT REALLY HAPPENED TO SPHERE CORPORATION?

Early in March 1977, EDO Western Corporation, a Utah corporation, had agreed to acquire the assets of Sphere Corporation under the following terms. EDO would be allowed to manage Sphere and Sphere would continue manufacturing its products. Further, all creditors of Sphere would agree to a schedule of monthly payments to meet the debt incurred by Sphere. All was fine and dandy and the Sphere personnel was employeed by EDO Western; soon the Sphere facilities were being moved to the EDO Western site. Then without any warning, Wangco Corporation and Orbis Systems Inc. filed suit in Federal Court against EDO Western Corporation and Sphere Corporation. EDO Western then reneged on their agreement to acquire Sphere and proceeded to boot Sphere out of the EDO site. All things in state of uproar and not being able to meet the payroll, the Sphere personnel began seeking employment elsewhere. Very conveniently, EDO Western re-hired ex-Sphere personnel and came out with their own microprocessor system within a period of a month. The unit produced by EDO Western is very similar to the Series 500 that Sphere had developed.

SO WHAT'S LEFT OF SPHERE CORPORATION?

From a very reliable source we have learned that at the time of filing for bankrupcy Sphere Corporation was in the hole for quantities over $600,000. Out of that amount, $90,000 is due to people who had ordered equipment and never received it. In our opinion, this is just unforgivable! The current asset value of Sphere Corporation has been placed somewhere within $100,000. That leaves $500,000 that are still due to major corporate creditors. So what's left of Sphere Corporation? Not Much!

WHO IS THE RECEIVER OF SPHERE CORPORATION?

The Third Judicial District Court of Salt Lake County has appointed Mr. Grant M. Prisbrey as Receiver of Sphere Corporation. As receiver, Mr. Prisbrey will seek all alternatives possible to liquidate the assets of the company and then to pay the creditors. All creditors should have received a letter from Mr. Prisbrey indicating that all claims need be filed before June 1, 1977. In the event that you have to get into contact with the receiver, here is his name and address:

        Mr. Grant M. Prisbrey
        2155 South Main
        Salt Lake City, Utah 84115

WILL I GET ANY MONEY BACK FROM SPHERE CORPORATION?

According to Utah State Law, the order of precedence in
disbursing monies in the case of a bankrupcy places the
end consumer at the end of the list. First, back salaries
due to the employees are paid off. Second, major creditors
are paid their share. Finally, the end user, the little guy
who saved his pennies and put them up front, gets his share
if there is any left. We don't want to alarm you, we just
want to show you a classic example of what can happen and
what has happened to a growing company. The lesson has been
quite simple in this case --- Beware of purchasing equipment
on a pre-payment basis. If you have to pre-pay, insist on
a deposit and balance due upon delivery of the equipment.

WILL ANY OTHER COMPANY BUY OUT SPHERE CORPORATION?

At the time of writing this document, we have learned that
the receiver has sold the right to manufacture Sphere systems
to another company. We understand that a license to manufacture
these systems can be obtained for $20,000; however, we are not
too sure about this figure.

CAN ANY SPARE BOARDS FOR THE SPHERE SYSTEM BE OBTAINED?

We have been in contact with one of the companies that make
the PC Boards for Sphere Corporation. This company has at
the present time an inventory of over $8,000 in Sphere Series
300 and 500 boards. They cannot legally sell the boards to
the general consumer until the bankrupcy is fully consumated.
At the time that this happens, we will advise all users as to
the availability and types of boards that are present. We
can do a group purchase and hope to sell each board for
around $20.00 each. With regard to the boards under possession
of Sphere Corporation, these are being offered through the
receiver. However, we understand that the company that has
bought a license will be purchasing a great majority of these.

CAN ANY IRONWARE FOR THE SPHERE SYSTEM BE OBTAINED?

Ironware is the actual case and cover of the Sphere System.
We understand that the company that made the ironware for
Sphere Corporation has got an inventory left and would like
to sell it piece by piece. We received a price quote of $75.00
for the complete cover of a System 330. Their address is:

        Atwood Stamp Company
        170 W. Cudhuy Lane
        N. Salt Lake, Utah   (801) 364-5951

WHO IS GOING TO BE EDITING AND PUBLISHING THE NEWSLETTER?

We have received word from a group of our users in New York
State that they would be interested in editing and publishing
the User Group Newsletter. Since our primary job is to
develop and distribute software, we were very much relieved
at the chance of someone else tackling this job. We have
agreed to tackle the job maintaining the subscription dues
and receiving material to be placed within the Newsletter.
If you would like to offer your assistance in further
expanding the Newsletter project, please contact:

> Dr. Jeffrey E. Brownstein, D.D.S.
> 2 Tor Road
> Wappingers Falls, N.Y.   12590
> (914) 297-3950

HOW SHOULD I SEND IN MATERIAL FOR THE NEWSLETTER?

It will be most convenient if all material to be placed
within the Newsletter is sent in "camera ready form." That
is, clearly typed or printed. Please use black ink and make
sure that your diagrams are capable of being reproduced. The
above form will allow the Newsletter to be published quickly
and without too much effort on the part of the editors.
Remember, they are doing this job free of charge and on their
own time.

SHOULD WE GET ALL SPHERE SCHEMATICS REDRAWN?

Perhaps one of the first jobs that should be accomplished
by the User Group Newsletter is to assure that each user
contains a good set of readable schematics for his system.
If we all agree, then we have been advised by one of our
users that he will get the task accomplished. Distribution
of the schematics can proceed through the Newsletter.

WHERE CAN I OBTAIN CODING AND DOCUMENTATION FORMS?

We are preparing a complete Documentation Package that will
be general enough to satisfy any system documentation situation.
Enclosed are copies of some of the actual documentation forms
that will be available with the package. These forms are
available 50 to the pad at a cost of $1.50 per pad plus
mailing. You may purchase any particular ones by ordering
the Form number located at the bottom of the form itself.
Later on we will make available a booklet that will describe
sample usage of each of these forms.

SYSTEM NAME

SYSTEM NUMBER

CATALOG NUMBER

PROGRAM NAME

PROGRAM NUMBER

DATE DOCUMENTED

1	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72

© 1976 PROGRAMMA CONSULTANTS

CAN WE RUN MIKBUG UNDER THE SPHERE SYSTEM?

One of our users has modified the CRT board addressing to
D000 - D200 so that he may run the Motorola Mikbug System.
Another has modified Mikbug to run at a separate addressing
range. In turn, he puts all Mikbug derived software through
a translator that changes the old address references to the
new ones. Whichever method you like, both will be available
through Programma Consultants within weeks.

OS/68 - A NEW OPERATING SYSTEM THAT OFFERS 6800 COMPATABILITY

We have come to the conclusion that Mikbug is not the answer
as a sophisticated operating system. The Sphere PDS system
is far superior to the Motorola Mikbug, yet it lacks several
features that we would like to have. Therefore we have begun
the research, development, and coding of a new Operating
System, which we call OS/68. The primary objective of OS/68
is that it must be application program compatible at the
absolute object code level, irregardless of what type of
6800 hardware the user may have. As long as the hardware
operating system is OS/68, the user should be able to swap
software from machine to machine without any modification.
Enclosed are preliminary specifications for the OS/68 Operating
System. We would like to have your comments and ideas on
this project. If several users are interested in obtaining
the specifications of the system as it is developed, let us
know. We can make the specs available for the cost of
duplication and mailing.

WHEN IS THE PL/M COMPILER GOING TO BE AVAILABLE?

We have spoken to one of our users who is presently working
on the PL/M Compiler for the Sphere system. PL/M is a
language similar in structure to IBM's PL/1. The author of
the compiler tells us that he is more than 70% complete on the
project. We should hopefully have the first version of PL/M
sometime after the end of the Fall.   The compiler will
require at least 12K of memory and two audio cassettes. One
cassette will contain the source program text while the other
will receive the object code translation.

WHEN IS THE RELOCATABLE ASSEMBLER & LINKING LOADER AVAILABLE?

The user that is developing the Assembler that issues relo-
catable code tells us that the Assembler is completed. He
is now working on the Linking Loader. It will probably be
a couple of more months before the project is finished.

The advantage of issuing relocatable code through the Assembler is that the code can be processed through the Linking Loader and it can then be made to run anywhere within the addressing range without having to re-assemble the program. An additional advantage is that you can link several object modules into a single module through the Linking Loader. This piece of software will give our Sphere the same software potential found only in large mini-computers.

CAN I RUN THE V3N/V3D PROM SET ON MY NEW CRT/8?

We have successfully modified the V3N/V3D PROM set to operate transparently under the new CRT/8 board. There are several hardware patches that have to be made to the CRT/8 and you will require the ROM board to hold part of the code. The advantage of running the V3N/V3D PROM set under the new CRT/8 is that of remaining compatible with our software library of program products. Remember that all of our software program products run under the V3N/V3D PROMs.

DOES ANYONE HAVE FOCAL FOR THE 6800?

We know that FOCAL has been implemented under the 6502 processor by the Denver Amateur Computer Society. But, has anyone implemented this interpreter under the 6800? We would be very interested in finding out if it has been done. Otherwise, do we have any volunteers to translate 6502 FOCAL to the 6800?

WHAT EVER HAPPENED TO THE RPG II GENERATOR?

A while back, we found out that Computer Country in Denver, Colorado was in the process of creating an RPG II generator program. Does anyone have any idea about this? The advantage of having RPG II under the Sphere is the tremendously large library of programs that are available under RPG.

OS/1 - A DISK OPERATING SYSTEM

We created OS/1 as a replacement for the original FDOS-1 Floppy Disk System supplied by Sphere Corporation. OS/1 is a simple user oriented operating system that can be easily modified to operate under any type of mass storage device. A further description of the modules found under OS/1 are described within the new Software Brochure.

HOW WOULD YOU LIKE TO PLAY CHESS AGAINST YOUR SPHERE?

Our resident software genius, Chuck Crayne, has developed
a Chess Playing System that runs under control of the
Sphere system. The Chess System requires a graphics board
to be able to display the chess board and the playing pieces.
We are presently using the SWTPC Graphics Board, however,
our own Graphics board will soon be available. The Chess
Playing System will be available within a month or so.

HOW WOULD YOU LIKE TO PLAY TANK WAR AGAINST YOUR SPHERE?

Scott Adams, whose Graphics board we are planning to market,
has developed a large base of software that operates using
his developed graphics board. Notably amongst his software
products is the Tank War Game. He has successfully interfaced
joy sticks to the Sphere so that the Tank War Game can
operate in a Real-Time environment. The Tank War Game and
other related software will be available soon.

WHATEVER HAPPENED TO THE HIGHLY TOUTED SPHERE DOS SYSTEM?

We are proud to announce that we have contracted the original
designers and developers of the Sphere DOS System. The DOS
will soon be available with ICOM Disk drivers. We are going
to try to salvage as much as we can on this project, however,
it has been decided that our new OS/68 will form the basis of
any other DOS that may be developed.

DO YOU HAVE ANY SOFTWARE THAT YOU WOULD LIKE TO SHARE?

We are always interested in marketing software to other
users --- that's our business. If you have developed any
software that you think might be marketable, let us know
about it. We'll market your software on a royalty basis.
If you don't want to market your software, how about sending
it to the Newsletter for general distribution?

CAN I RUN ICOM'S FDOS-II AND MOTOROLA'S FORTRAN?

We have a user that is presently running the ICOM FDOS-II
Floppy Disk System and the Motorola FORTRAN Compiler under
the Sphere System. The drawback of this is of course the
cost of the software --- $250 for the FDOS-II and $500 for
the FORTRAN Compiler. If anyone is interested in doing the
above, we can put you into contact with the user.

CAN I RUN SWTPC 8K BASIC UNDER MY SPHERE?

We have successfully modified both Version 1.0 and Version 2.0
of SWTPC 8K BASIC to run under the Sphere system. We are
supplying a patch routine that modifies the SWTPC 8K BASIC
cassette to make it Sphere operational. The patch routine is
described under the new Software Brochure.

HOW GOOD IS THE SOFTWARE PUT OUT BY TSC?

We have purchased several of the software program products
made by TSC (Technical System Consultants) and are quite
impressed. Their new Text Edit System is excellent and we
recommend it to anyone. The majority of the TSC games can
be easily modified to operate under the Sphere. We have
modified all of the software that we have purchased from
them, so that it is Sphere operational. At the present time,
we are trying to make an arrangement with TSC so that we may
distribute their software program products (modified to
operate under the Sphere) to all Sphere users. We'll keep
you informed of our progress in this matter. Their address is:

      Technical Systems Consultants
      P.O. Box 2574
      W. Lafayette, Indiana 47906

WHEN IS THE FORTH LANGUAGE GOING TO BE AVAILABLE?

At the present time, we have an operational version of the
FORTH Language under the 6502 processor. We estimate that
it will take a couple of months before we can translate the
compiler to the 6800. The FORTH Language uses concepts and
techniques such as virtual memory and stack organization.
The key to FORTH is a vocabulary of words. Some words are
defined by the user, while others are supplied with the
language. A FORTH program consists entirely of vocabulary
entries, each one stated in terms of other words already
defined. To run a "program", you type a word on the computer
console and that word is executed. FORTH programs run quite
fast and can compare favorably to hand coded assembly
programs.

HOW ABOUT RUNNING THE APL LANGUAGE UNDER THE SPHERE?

One of our friends is currently developing an APL Interpreter
for the 8080 system. The interpreter is a full implementation
of the APL Language and requires at least 32K of RAM memory.
He has advised us that he'll be willing to write the APL
system for the 6800 if there is enough interest and incentive.
If you are interested in running the APL Language in your
system, write to us and let us know. As with all our software,
we'll set a reasonable price on the interpreter and let our
friend know of the number of potential users.

WHAT IS THE AVAILABILITY OF CROSS COMPILERS FOR THE 6800?

We are developing and implementing a cross compiler system
that will operate under a large scale system. The system
is written in FORTRAN and can be easily modified. If you
are interested in this product let us know.

COULD SOFTWARE PROGRAMS BE TRANSMITTED THROUGH THE PHONE?

We have installed a communications oriented mini-computer
system that will allow our users to call it by using their
Sphere system. The central mini will contains our library
of programs on disk and magnetic tape. A user may access
the system by dialing a special telephone number, making the
connection, and then specifying his user account number and
password. Once access has been validated, the user may
request a transfer of the index of programs, together with
each program's abstract. Alternatively, the user may request
a transfer of the object/source code for one or several
programs in the library. The user will also have the
capability of transfering a file from the Sphere to the
central mini. We will be offering data conversion services
from one type of media to another. Also, you will be able
to have your files printed through our mini, in the event
that you do not have a printer interfaced to your Sphere.
For each access to the system you will be charged a service
charge. The system maintains record of the programs that
you have requested and the services performed. At the end
of each month, you receive a billing for your account. The
cost of calling the telephone number would be approximately
35¢ if done in the late evening. This centralized data bank
will allow faster software distribution. At the time that
a user obtains his account/password, we will supply the
programs that drive the Sphere to do the communications task.
Note that you will need to add a modem/coupler to the Sphere
system. This whole project is presently being developed and
we will keep you informed through the User Group Newsletter.

CAN THE KEYBOARD AND CRT BE MODIFIED TO DISPLAY FULL ASCII?

One of our users has modified the Keyboard to put out Full
ASCII (256) with parity. He is presently modifying the
ROMS to accept command codes with parity. The present CRT
board has been modified to FULL ASCII. All of the develop-
ment and implementation information on the above will be
made available through the User Group Newsletter.

CAN 2708 EPROMS BE ADDED TO THE SPHERE SYSTEM?

One of our users has successfully replaced the four 1702
EPROMS on the CPU board with 2708s (1K X 8). He has designed
and implemented a small board that plugs directly on top of
the 1702 socket. The small board contains the 2708. There
are some etches that have to be cut and there is minimal
wiring that has to be done to expand the addressing range
of the new EPROMS. Effectively, you will have the capability
of having 3.5K of EPROM on your CPU board. More information
on this subject will appear within the Newsletter.

A NEW CRT BOARD WITH SWITCHABLE CHARACTER SIZES

One of our users has developed a new CRT board that replaces
the Sphere CRT board. His design includes the ability to
switch the size of the characters being displayed plus the
ability to display bar charts. He has added several other
nifty features to the board and more information on this
will be printed in the Newsletter.

HARDWARE ASSIST FOR THE SPHERE

Due to the bad review that we received in issue No. 6 of
KILOBAUD, regarding the TBX BASIC Interpreter and how slow
it is, we have decided to add a processor hardware assist
feature to the Sphere. The AMD Am9511 Arithmetic Processing
Unit is a micro-processor chip that offers a full range of
commonly used arithmetical functions, in addition to the
basic add, subtract, multiply, and divide for single and
double precision (16/32 bit) fixed point operations and
single precision (32 bit) floating point. The APU works
in parallel to the 6800 CPU and interrupts it when its
task has been completed. The commands available through
the APU are: add, subtract, multiply, divide, copy, delete,
exchange, change sign, push zero. The functions that are
available are all done in floating point: Sin, Cos, Tan,
Sin^{-1}, Cos^{-1}, Tan^{-1}, e^x, x^y, Square Root, Log, Ln, Push π,
Push e, Fix to Float, Float to Fix. We are planning to

make a board that will contain the Am9511 Arithmetic Processing Unit with several other optional features. The optional features of the board might consist of: several PIA/ACIA chips, several sockets for 2708 EPROMS, room for an interrupt vector chip that will eliminate polling. If you would like to see other things included in this board, please send us your ideas. We want to make this board as cost effective and value packed as possible. Once the APU has been implemented, the FBX BASIC will be modified to operate with it. This hardware assist capability will increase the computational speed of the FBX dramatically. Notice that any other compilers available through us will use the APU facility if available. AMD has given a preliminary delivery schedule of two months, so we should have more information on this in about three to four months.

WHEN WILL COLOR GRAPHICS BE AVAILABLE FOR THE SPHERE?

One of our users is presently using the OSI Graphics board to display to a black and white monitor. The same board can be modified to generate color graphics. The user is trying to develop the necessary interface to be able to do the color graphics display under control of the Sphere system. Information on this subject will appear in the Nesletter.

HOW ABOUT CONNECTING A VIDEO TAPE RECORDER TO THE SPHERE?

One of our users has developed an interface board that allows the Sphere system to control a video tape recorder system. The video recorder is under complete software control of the Sphere and both digital and video information can be displayed on the color monitor. The applications of this particular interface are unlimited. Information and availability of the board will be provided through the User Group Newsletter.

HOW ABOUT ADDING THE TI 9900 16 BIT PROCESSOR TO THE SPHERE?

One of our users is looking at the possibility of adding a board to the Sphere system that contains the TI 9900 processor. This 16 Bit processor could be made to run in parallel with the 6800, thus greatly enhancing the viability of our Sphere system. The idea is that eventually all of us will want to move to a 16 Bit processor, but why should we have to buy new memories, interfaces, etc. We'll keep you posted on the progress of this project through the Newsletter.

CAN THE SPHERE BE CONVERTED TO THE S-100 BUS SYSTEM?

One of our users has successfully attached an S-100 Bus
system to the Sphere. The Sphere controls the S-100 Bus,
and consequently it can use any of the controllers, memories,
and devices that are available to S-100 compatible systems.
The connection is done by extending the ribbon cable bus
of the Sphere into the S-100 Bus motherboard. We are
presently looking at the possiblity of either using the
above system to upgrade our Sphere machine or to actually
make the Sphere boards S-100 Bus compatible. Information
on both of these systems will be made available through the
User Group Newsletter.

WHICH FLOPPY DISC UNIT SHOULD YOU BUY FOR YOUR SPHERE?

After carefully reviewing the information from various floppy
disc manufacturers, we have decided that the PerSci Model 270
Dual Diskette Drive with the PerSci Model 1070 Intelligent
Diskette Controller is the unit to buy. This particular
floppy disc manufacturer not only offers you the most for
your dollar, but also it is the fastest and one of the most
reliable units in the market today. The intelligent controller
has been successfully interfaced to a 6800 system through a
PIA chip. For your information, we have enclosed copies of
the unit, specifications, pricing, and features. If enough
people are interested in purchasing a floppy, perhaps, we
can arrange a group purchase and lower the cost. Please let
us know if you are interested in purchasing a floppy.

ARE THERE OTHER FLOPPY UNITS WHICH CAN BE ATTACHED?

For those users that cannot afford the dual drive PerSci, we
suggest that you look into the OSI 470 Floppy Disc Storage.
The $599 OSI diskette drive is fully assembled, as is the
critical read/write electronics. Each is carefully tested at
the factory and OSI. Also included are complete manuals,
mating connectors (less cables), system interface board (bare),
and a 6800 operating system (quite rudementary and plainly
awful!). Delivery is guarateed to be less than 120 days. You
need to spend an estimated additional $145 to purchase the
parts necessary to build the controller. Optionally, you
may purchase the controller parts from OSI. The OSI diskette
drive is manufactured by GSI. We have enclosed specification
information on the GSI floppy disc drive for your information.
If you would like to contact OSI, they are located at:

     OHIO SCIENTIFIC INSTRUMENTS
     11679 Hayden Street
     Hiram, Ohio 44234

HOW ABOUT CONNECTING THE MICRO-FLOPPY DISC UNITS?

We have already looked at the possibility of interfacing the
micro-floppy disc units to the Sphere system. We have decided
that the cost/storage ratio of the micro-floppy does not
compare as well as that of some large diskette units. We will
not be putting any effort into this area, however, if there
are enough users interested in interfacing the micro-floppy,
we will certainly offer software support. Let us know if you
have interfaced the micro-floppy disc unit to your system and
we will publish the information in the User Group Newsletter.

CAN A DISK PACK UNIT BE CONNECTED TO A SPHERE?

One of our users is currently designing a controller board
that will allow an IBM 2311 (or equivalent) Disk Pack Unit
to be interfaced to the Sphere system. A disk pack unit
offers large capacity random storage of data at a price
which can be very competative with floppy disc units.
Obviously, the disk pack unit would have to be purchased
in used condition. Information on the interface will appear
in the User Group Newsletter.

CAN 9 TRACK 800 BPI MAGNETIC TAPE UNITS BE INTERFACED?

We are at the present time interfacing several 9 track 800
BPI magnetic tape units to the Sphere system. This will
allow us to interchange information between the Sphere
system and much larger scale mainframes (IBM 370/158 and
Burroughs B3700). Information on the interface will be
provided through the Newsletter.

HOW ABOUT PROGRAMMING 1702 EPROM'S DIRECTLY FROM THE SPHERE?

We have a user that has interfaced his EPROM programmer to
the Sphere system. Consequently, he is able to program the
1702's by having his object code in the memory of the Sphere.
When he wants to program an EPROM, he calls a program that
drives the programmer. He can also verify the EPROM with
the original contents in memory. Information on this neat
interface will be made available through the Newsletter.

INFORMATION

POLICY -   Our aim is to provide working M6800 Software Programs
           at reasonable prices; therefore, we do not expect to
           recover software development costs unless we can
           achieve a high volume of sales. Please help us stay
           in business by respecting the (c) COPYRIGHT notices
           on the software and documentation.

EXCHANGE - We are extremely interested in receiving programs
            designed to run under any M6800 System. We will pay
            a royalty (usually 40% of the retail price) to the
            author and act as the main distributor. We will not
            knowingly handle COPYRIGHTED or PROPRIETARY material
            without permission of the author, and wished to be
            advised should this happen.

CLASSIFICATION - For purposes of classification, all software
                  program products available through us are categorized
                  into one of the major group types:

           S - System Software
           A - Application Software
           G - Games Software
           E - Education Software

AVAILABILITY - All software program products are available on
                four (4) major media distribution classes. Each class
                contains the type of media storage, the type of
                coding, and the type of documentation available. The
                classes are as follows:

           A - OBJECT Code on CASSETTE
                 Operational DOCUMENTATION on PAPER

           B - All available for CLASS A
                 SOURCE Code on PAPER

           C - All available for CLASS B
                 SOURCE Code on CASSETTE

           D - All available for CLASS C
                 Internal Documentation and Flowcharts
                 Theory of Operation Manual

REGISTRATION - Software program products purchased directly
                from PROGRAMMA CONSULTANTS is automatically
                registered and serialized. Software purchased from
                our dealers bear each dealer's serialization and
                registration. The serial number is a permanent record

INFORMATION

of the user of the software and his address.

DEALERS - PROGRAMMA CONSULTANTS has several dealers through-
out the Continental U.S., Europe, South America, and
the Far East. When you purchase our software program
products from a dealer make sure that he is an
authorized dealer. Otherwise you may be purchasing
stolen software! A list of authorized dealers is
enclosed for your information.

GUARANTEE - While we disclaim liability for errors, PROGRAMMA
CONSULTANTS offers a 90 day GUARANTEE that the
software purchased will operate in the manner as
stated in the Operational Documentation. PROGRAMMA
will provide (at its discretion) patches or replace-
ment listings for any known bugs found during the
GUARANTEE period.

SOFTWARE BUGS - We want our programs to be as ERROR-FREE as
possible. If you find a problem, report it directly
to PROGRAMMA CONSULTANTS. Send hard copy and as
much documentation as possible illustrating the
problems that you have encountered.

CASSETTE TAPES - OBJECT Code of software program products is
available on high quality audio cassettes. The tapes
are available in either Sphere SIM Format or in
Motorola MIKBUG Format. Cassettes are recorded at
300 BAUD using the Kansas City Standard. If the
user purchases SOURCE Code, it is also available on
cassette.

NEW VERSIONS - Newer versions of previously purchased software
program products are available for the difference in
the retail price between the older and the newer
version. Please provide verification of purchase
when updating to a newer version.

COPYRIGHTS - PROGRAMMA CONSULTANTS software program products
are copyrighted (c), which means that it is ILLEGAL
to make copies of any form. We can only continue to
offer Low-Cost software if the Copyright (c) notices
are respected. Ethics is all important!

PRICES - Prices for each of the classes of software program
products are listed in the Software Price Schedule.
The prices reflected in the schedule are those

INFORMATION

current at the time that the catalog was printed.
We reserve the right to change prices without notice.

ORDERING INFORMATION

ORDERS - Send a Purchase Order or letter that clearly describes
the software program products that you would like to
purchase.

PAYMENT - All orders must be prepaid, unless you have an
account with us. Foreign orders must remit cheques
in U.S. Dollars and not foreign currency.

SHIPPING - We ship one (1) cassette containing the OBJECT and
SOURCE code for all software program products ordered.
Operational documentation for each program ordered is
also shipped with the cassette.

PROCESSING - All orders are processed on a first-come first
served basis. Our usual processing cycle is five
(5) days. The user is notified in the event of a
longer delay.

POSTAGE - Include $1.00 to cover the cost of mailing the
cassette and $0.15 per five (5) sheets or fraction
thereof of documentation mailed. Foreign orders
include $2.00 for the cassette and $0.25 per five
sheets or fraction thereof of documentation.

DELIVERY - F.O.B. Los Angeles, California, U.S.A.
We will normally ship small orders via First Class
Mail. Foreign orders are shipped Air Mail.

RETURNS - All sales are final. We do not handle returns;
except for, cassettes that are returned due to a
malfunction.

TAXES - California State residents add 6% sales tax to your
order.

ADDRESS - PROGRAMMA CONSULTANTS
3400 Wilshire Boulevard
Los Angeles, California 90010

TELEPHONE (213) - 243-0810

PROGRAM DESCRIPTION FORMAT

AAAAA-BBB-CDEFF-G   Catalogue Number Format

AAAAA   -   One to five characters of Program Name

BBB   -   Operating System Version   (V3N/V3D, MKB)

C   -   Software Major Classification

D   -   Source Language Software written in

        A   -   Assembler
        B   -   BASIC
        F   -   FORTRAN
        M   -   Machine Language

E   -   Program Sequence number

FF   -   Revision level

G   -   Distribution Class

EXAMPLE:

ASM-V3N-SA002-C

                Assembler Program
                V3N Operating System
                System Software
                Written in Assembler
                Program Sequence 0
                Revision Level 2
                Distribution Class C

ASM-V3N-SA003   FULL MNEMONIC ASSEMBLER VER. 2.0

SPHERE/300   CLASS=A/B/C   DOC=25
PREREQUISITES:
ABSTRACT:
COMMENTS:

The first line gives the program catalog number and the name
of the the software program product. The second line gives
the hardware that the program is operational under, the
distribution classes available, and the total number of pages
of opeartional documentation.

CATALOG NO.	DESCRIPTION	A	B	C
ASM-V3N-SA003	Full Mnemonic Assembler	$15.00	$20.00	$25.00
FBX-V3N-SA005	FBX Full Basic Extended*	20.00	25.00	30.00
DASM-V3N-SA003	Disassembler & Trace	20.00	-	-
XDBUG-V3N-SA005	Extended Debugging Aid	-	8.00	10.00
UPDTE-V3N-SA001	Update Translator	-	8.00	10.00
COPY-V3N-SA001	Tape Copy Utility	-	8.00	10.00
MEM-V3N-SA001	Memory Test Utility	5.00	8.00	10.00
MEM-V3N-SAA01	Scrolling Memory Test	5.00	8.00	10.00
CASUT-V3N-SA002	Cassette Utilities	-	8.00	10.00
SBUG-V3N-SA001	Sphere-Bug Utility	7.50	10.00	12.00
SWTBA-V3N-SA002	SWTPC 8K BASIC Patch	7.50	10.00	
FLOAT-V3N-SA001	Floating Point Package	10.00	13.00	16.00
PDS8-V3N-SA001	CRT-8 V3N Compatible PDS	20.00	25.00	30.00
PGMUT-V3N-SM001	PGREAD & PGWRITE Utility	-	8.00	10.00
PGMUT-V3N-SMA01	STOSTR & PUTSTR Utility	-	8.00	10.00
PGMUT-V3N-SMB01	REALTIME, BLKMOV, MEMDUMP	-	8.00	10.00
IPL-OS1-SA001	OS/1 IPL Routine	5.00	8.00	10.00
EXEC-OS1-SA001	OS/1 Exec & Directory	25.00	32.00	35.00
EDIT-OS1-SA001	OS/1 Editor Processor	15.00	20.00	23.00
COPY-OS1-SA001	OS/1 Copy Processor	10.00	13.00	15.00
DUMP-OS1-SA001	OS/1 Dispdisk Processor	10.00	13.00	15.00
ASM-OS1-SA001	OS/1 Disc Assembler	15.00	20.00	23.00
ACCTG-V3N-AB001	Home Accounting Program	10.00	-	-
FIGHT-V3N-GB004	Fighter-Trainer Program	10.00	-	-

CATALOG NO.	DESCRIPTION	A	B	C
LUNAR-V3N-GB001	Tiny Lunar Lander	5.00	–	–
MASTR-V3N-GB001	Mastermind Game	5.00	–	–
GOMO-V3N-GA004	Gomoku Game	5.00	8.00	10.00
LIFE-V3N-GA001	Life Game	5.00	8.00	10.00
STAR-V3N-GA001	Shooting Stars Game	5.00	–	–
HANG-V3N-GM001	Hangman Game	5.00	–	–
WUMP-V3N-GM001	Wumpus Hunt Game	5.00	–	–
CHASE-V3N-GB004	Chase Game	5.00	–	–
HAMMA-V3N-GB004	Hammarabi Game	5.00	–	–
SUMER-V3N-GB001	Sumer Game	10.00	–	–
PKG1-V3N-GB004	FBX Games Package 1	10.00	–	–
PKG2-V3N-GB001	FBX Games Package 2	10.00	–	–
BJACK-V3N-GB001	Blackjack Game	10.00	–	–

M A N U A L S

FBX User's Manual & Reference Guide	5.00
ASM User's Manual & Reference Guide	5.00

* The FBX-V3N-SA005 Program Product will be released July 15, 1977. Available is TBX Version 1.3.

ASM-V3N-SA003   FULL MNEMONIC ASSEMBLER VER. 2.0

SPHERE/300   CLASS=A/B/C   DOC=25
PREREQUISITES: Minimum of 8K of RAM Memory
                V3N/V3D PROM Set
                CASS I or CASS II

ABSTRACT: The Full Mnemonic Assembler is a memory resident
stand-alone system capable of translating assembler
language source statements into absolute machine language
object code. The Assembler contains extensions to the
Sphere PDS Editor Routine allowing the user to position
the source text either at the beginning or end. A power
scrolling feature is implemented to facilitate the
scanning of the text either in a forward or backwards
direction. A line number is continuously displayed
advising the user the current line number of the
statement pointed by the curser. Source program text
may be created throught the Assembler and it may be
saved to cassette. Consequently, source program text
may be also loaded from cassette. Upon initiating an
assembly, the object code generated is automatically
written to cassette. The Assembler detects several
syntax errors during an assembly, and these are displayed
upon the CRT screen. Large source programs may be
broken into subroutines, and independent assemblies may
be done. The user has commands to print a full formatted
source/object address/line number listing upon demand.
The symbol table may be printed at any time. Symbolic
labels may be six characters long. The Assembler follows
the general conventions set by the Motorola Assembler,
although, it is not fully compatible with the later.

COMMENTS: Print routines are available for the Teletype 33/35,
SWTPC PR-40, Okidata CP110, DataProducts PortaCom.

FBX-V3N-SA005   FBX - FULL BASIC EXTENDED VER. 1.4

SPHERE/300   CLASS=A/B/C   DOC=75
PREREQUISITES: Minimum 12K of RAM Memory
                V3N/V3D PROM Set
                CASS I or CASS II

ABSTRACT: FBX is a subset of Dartmouth BASIC undergoing
development until full compatability is achieved. At
the present time, FBX contains the necessary routines
to allow program communication with Floppy Disc and
Cassette and to maintain sequential files under program
control. Source program text may be created through
FBX and saved to cassette or disc. Alternatively, source
program text may be loaded from cassette or from disc.
Special commands are implemented to save an on-line
session to disc and to re-load at a later time. The

FBX operates in either the demand or program mode, and multiple statements per line are implemented. The commands that are available through FBX are:

    LIST, RUN, NEW, SAVE, LOAD, CSAVE, CLOAD, CLEAR, EDIT
    CTL A - to transfer control back to FBX   SIZE
    CTL D - to transfer control to Sphere PDS Debug
    CTL E - to transfer control to OS/1 Executive
    TAB   - to print the information displayed by CRT

Statements that are available under FBX are:

    REM, DIM, LET, FOR, NEXT, END, GOSUB, GOTO, IF...,
    INPUT, PRINT, RETURN, PEEK, POKE, USER, DUMP,
    RESTORE, CLEAR

Functions that are implemented in FBX are:

    ABS, INT, RND, SGN, LEN, PI, STR

This version of the FBX contains full floating-point routines with user selectable precision. The EDIT command allows easy program modification and correction.

COMMENTS: Print routines are available for the Teletype 33/35, SWTPC PR-40, Okidata CP110, DataProducts PortaCom. Floppy Disc routines are interfaced to the ICOM FD-360 Floppy Disc System.

DASM-V3N-SA003   DISASSEMBLER & TRACE VER 2.0

SPHERE/300   CLASS=A   DOC=5
PREREQUISITES: Minimum 4K of RAM Memory
               V3N/V3D PROM Set
               CASS I or CASS II

ABSTRACT: The Disassembler/Trace routines allow the user to examine (or examine and execute) any area of memory under complete operator control. The hexadecimal machine code is decoded to determine if it is a 1 byte, 2 byte, or 3 byte instruction, and the code itself, along with the MP6800 mnemonic instruction and the operand may be displayed or printed on the system output device. When using the trace function, the contents of the B accumulator, the A accumulator, the Index register, the Stack pointer, and the Condition Codes register may be displayed or printed. The complete CPU status before and after execution of any instruction are known when the trace function is used. In addition to the above, the target location (effective address) of any relative branch is shown as a 4 digit hexadecimal number. If an operand is an ASCII character between Hex 20 - 60, its corresponding ASCII character equivalent is also shown. In the trace mode, the operator may change the contents of any of the registers as well as any location in memory.

COMMENTS: Print routines are available for the Teletype 33/35, the SWTPC PR-40, and the Okidata CP110.

M6800 SOFTWARE LIBRARY	PAGE	OF

SYSTEM NAME	SYSTEM NUMBER	CATALOGUE NUMBER
PROGRAM NAME	PROGRAM NUMBER	DATE DOCUMENTED 06/05/77

XDBUG-V3N-SA005   EXTENDED DEBUGGING AID VER 5.0

SPHERE/300   CLASS=B/C   DOC=12
PREREQUISITES: Minimum 4K of RAM Memory
                 V3N/V3D PROM Set
                 CASS I or CASS II
ABSTRACT: XDEBUG is an extended debugger designed to be
     resident during all program development and operation.
     The XDEBUG program provides the following extensions
     to the Sphere PDS Debugger: Formatted Memory Dump
     to CRT or Printer, Block Data Transfers, Memory Fill
     Routine, Cassette Store and Load Commands, Jumps to
     Sphere Debug, Executive, and Re-Edit. The features
     found in the XDEBUG program have proven to save
     considerable time and frustration in the development
     and trouble shooting of program products.
COMMENTS: The XDEBUG program may be encoded in PROM and
     it may serve the destination address routine of an
     NMI Interrupt.

UPDTE-V3N-SA001   UPDATE TRANSLATOR VER 1.0

SPHERE/300   CLASS=B/C   DOC=8
PREREQUISITES: Minimum 4K of RAM Memory
                 V3N/V3D PROM Set
                 CASS I or CASS II
ABSTRACT: This program automatically converts a program
     written for use with the Sphere PDS V3A PROM into a
     form which will run with the PDS V3N or V3D PROM set.
     Included is a lookup table for the 25 most used sub-
     routines in the V3A PROM set. By changing the lookup
     table, the user may convert from any version to any
     other. For example, MIKBUG format to a Sphere compa-
     tible MIKBUG routine. This program will allow
     conversion and upgrading to a new or special PDS
     version with a minimum impact on present programs.

COPY-V3N-SA001   TAPE COPY UTILITY VER 1.0

SPHERE/300   CLASS=B/C   DOC=20
PREREQUISITES: Minimum 4K of RAM Memory
                 V3N/V3D PROM Set
                 CASS I or CASS II
ABSTRACT: This program is designed to copy a cassette
     using very little buffer space. The program can
     also display all or part of a cassette record on the
     screen. Under the copy mode, the read recorder
     cassette is copied to the write recorder cassette
     until the user keys and end command. Information
     being copied can be displayed on the CRT in either

ASCII or HEXADECIMAL.   Under the display mode, the
user display cassette information on the CRT, while
a facility is available to start and stop the reading
cassette recorder.   A copy/verify operation is also
available in this program.

MEM-V3N-SA001   MEMORY TEST UTILITY VER 1.0

    SPHERE/300   CLASS=A/B/C   DOC=2
    PREREQUISITES: Minimum 4K of Memory
                 V3N/V3D PROM Set
                 CASS I or CASS II
    ABSTRACT: The memory test routine conducts a test of
        memory and advises the user of potential error
        conditions. All available memory locations, except
        the program's resident area, may be tested. A
        random pattern is generated through a pseudo algo-
        rithm and enough refresh cycles are allowed to go by
        before re-generating the pattern and testing memory
        for discrepancies. Errors are displayed upon the
        CRT Screen, while the test continuously runs.

MEM-V3N-SAA01   SCROLLING MEMORY TEST VER 1.0

    SPHERE/300   CLASS=A/B/C   DOC=2
    PREREQUISITES: Minimum 4K of RAM Memory
                 V3N/V3D PROM Set
                 CASS I or CASS II
    ABSTRACT: The Scrolling Memory Test conducts a test of
        memory and advises the user of potential error
        conditions. All available memory locations, except
        the program's resident area, may be tested. A
        pattern of characters is continuously displayed and
        written to the memory. As the memory locations are
        written, the pattern is also displayed upon the CRT
        screen. The user can see any discrepancies by looking
        at the pattern that is displayed.

CASUT-V3N-SA002   CASUTL - CASSETTE UTILITIES VER 1.1

    SPHERE/300   CLASS=B/C   DOC=25
    PREREQUISITES: Minimum 4K of RAM Memory
                 V3N/V3D PROM Set
                 CASS I or CASS II
    ABSTRACT: The CASUTL program provides nicely formatted
        commands for most common cassette operations. The
        program uses the Sphere PDS Monitor routines and the
        SIM Board PROM. The facilities that are available
        through the CASUTL program are: Assemble source,

M6800 SOFTWARE LIBRARY		PAGE OF
SYSTEM NAME	SYSTEM NUMBER	CATALOGUE NUMBER
PROGRAM NAME	PROGRAM NUMBER ,	DATE DOCUMENTED 06/06/77

               call PDS Editor, call PDS Re-Edit, Bootstrap Program
               Load, Cassette Copy, Return to Sphere Debug, Go to a
               program, Record Load, and Record Store.
     COMMENTS: The CASUTL may be placed on ROM or it may be
               runned off cassette.

SBUG-V3N-SA001   SPHERE-BUG UTILITY VER 1.0

     SPHERE/300   CLASS=A/B/C   DOC=2
     PREREQUISITES: Minimum 4K of RAM Memory
                     V3N/V3D PROM Set
                     CASS I or CASS II
     ABSTRACT: The Sphere-Bug Utility program allows the
           Sphere system user to read MIKBUG formatted (S
           format) tapes on a Sphere.   The program automatically
           changes the stack pointer from 1FF to high memory.
           Automatic tape control is included in the program
           and all characters read from cassette are echoed on
           the CRT screen.   At the end of file, the cassette
           is shut off and control is passed to Sphere PDS
           Debug.   The program that is being read in is loaded
           into its memory resident area.
     COMMENTS: The program will read either the SWTPC and
           ALTAIR 680 tapes since each is written in the MIKBUG
           "S" Format.

SWTBA-V3N-SA002   SWTPC 8K BASIC VER 2.0 PATCH

     SPHERE/300   CLASS=A   DOC=3
     PREREQUISITES: Minimum 12K of RAM Memory
                     V3N/V3D PROM Set
                     CASS I or CASS II
                     SWTPC 8K BASIC VER 2.0 CASSETTE
                     SPHERE-BUG UTILITY - SBUG-V3N-SA001
     ABSTRACT: The SWTPC 8K BASIC VER 2.0 PATCH routine allows
           a Sphere user to run SWTPC 8K BASIC VER 2.0 under his
           system.   Enhancements have been added to allow the
           loading and saving of source BASIC programs using the
           Sphere Block I/O scheme, thus allowing for faster
           loading and saving.   An editing function has been
           implemented to allow modification of existing programs .
           by line number.   Printer routines are interfaced for
           the SWTPC PR-40, the Teletype 33, and Okidata CP110.
     COMMENTS: The SWTPC 8K BASIC VER 2.0 Cassette comes with
           a user's manual and may be purchased from:

           Southwest Technical Products Corp.
           219 W. Rhapsody
           San Antonio, Texas   78216

FLOAT-V3N-SA001   FLOATING POINT PACKAGE VER 1.0

SPHERE/300   CLASS=B/C   DOC=12
PREREQUISITES: Minimum 4K of RAM Memory
                  V3N/V3D PROM Set
                  CASS I or CASS II
ABSTRACT: The Floating Point Package multiplies, divides,
    adds and subtracts numbers represented with 3 bytes.
    Two bytes represent the magnitude of the number, while
    one byte contains the sign and the exponent part of
    the number.
COMMENTS: The program source is well documentated and easy
    to understand.

DEBUG-V3N-SA001   DEBUG UTILITY SYSTEM VER 1.0

SPHERE/300   CLASS=B/C   DOC=15
PREREQUISITES: Minimum 4K of RAM memory
                  V3N/V3D PROM Set
                  CASS I or CASS II
ABSTRACT: The Debug Utility System is an extended debugging
    utility designed to be resident while developing and
    running other programs. The system contains a series
    of options that are user selectable. The options that
    are available are: Load and Save to/from cassette,
    print and character store operations, formatted
    memory dump with curser modification, move blocks of
    memory, transfer control to Sphere Debug, fill memory
    with special character, and return control to the
    Debug Utility System.
COMMENTS: This program may be encoded in PROM in the event
    that the user wants to have it resident always.

PDS8-V3N-SA001   SPHERE PDS V3N/V3D CRT-8 COMPATIBLE MONITOR

SPHERE/300/500   CLASS=B/C   DOC=20
PREREQUISITES: CRT-8 Board
                  ROM Board
ABSTRACT: The purpose of this monitor system is to make
    available a monitor that drives the CRT-8 board while
    remaining compatible to the V3N/V3D PROM Set. The
    advantage in remaining compatible is the obvious
    availability of software program products that run
    under the V3N/V3D PROM Set. The ROM Board is required
    to hold the extra code that is necessary in order to
    implement the CRT-8. Note that there are several
    hardware modifications that must be made to the CRT-8
    board before it can be used with this monitor.
COMMENTS: Included with the source listing are the
    necessary hardware modifications that must be made

to the CRT-8 Board, prior to installation.

PGMUT-V3N-SM001   PGREAD & PGWRITE UTILITY VER 1.0

    SPHERE/300   CLASS=B/C   DOC=5
    PREREQUISITES: Minimum 4K of RAM Memory
                 V3N/V3D PROM Set
                 CASS I or CASS II
    ABSTRACT: PGREAD and PGWRITE are designed to be used
        with endless cassette tapes, although, regular tapes
        may be used with manual rewind at tape end. PGWRITE
        allows the user to enter and store to cassette pages
        of text. A page is a 512 byte screen of information.
        The programs keeps track of the current block name,
        number of blocks entered, and approximate tape time
        used. PGREAD seeks the first block on a tape and all
        subsequent blocks thereafter. While reading a block,
        the information is displayed upon the CRT screen.
    COMMENTS: This program may be used for window advertising,
        supermarket specials, private messages, real estate
        listings, speed reading drills, etc.

PGMUT-V3N-SMA01   STOSTR & PUTSTR UTILITY VER 1.0

    SPHERE/300   CLASS=B/C   DOC=3
    PREREQUISITES: Minimum 4K of RAM Memory
                 V3N/V3D PROM Set
                 CASS I or CASS II
    ABSTRACT: STOSTR and PUTSTR free the programmer from
        having to create strings such as instructions and
        error messages, lists, etc. by loading and storing
        individual ASCII values. STOSTR is a subroutine
        which creates a string upon input from the keyboard
        into consecutive memory locations. The beginning
        location is specified also from the keyboard. PUTSTR
        is a subroutine that allows the user to display any
        string that has been created through STOSTR.

PGMUT-V3N-SMB01   REALTIME, BLKMOV, & MEMDUMP VER 1.0

    SPHERE/300   CLASS=B/C   DOC=5
    PREREQUISITES: Minimum 4K of RAM Memory
                 V3N/V3D PROM Set
                 CASS I or CASS II
    ABSTRACT: REALTIME is a time delay subroutine that may be
        called by another program. At the end of the delay,
        control is returned to the calling program. BLKMOV
        is a subroutine that allows the user to move a block
        of data from one memory location to another. MEMDUMP

is a program which permits the user to dump blocks
of memory to the CRT screen for easy analysis.

IPL-OS1-SA001   OS/1 IPL ROUTINE VER 1.0

    SPHERE/300   CLASS=A/B/C   DOC=1
    PREREQUISITES: Minimum 8K of RAM Memory
                       V3N/V3D PROM Set
                       CASS I or CASS II
                       ICOM FD-360 DISK
                       OS/1 EXECUTIVE
    ABSTRACT: The Initial Program Load (IPL) routine is a
          boot routine that brings into RAM memory the OS/1
          Executive from Floppy Disc. The IPL routine is
          relocatable and may be loaded anywhere in memory,
          except the OS/1 Executive Nucleus resident area.
    COMMENTS: The IPL routine may be encoded in the PROM
          area currently being used by the Mini-Assembler.

EXEC-OS1-SA001   OS/1 EXECUTIVE & DIRECTORY VER 1.0

    SPHERE/300   CLASS=A/B/C   DOC=2
    PREREQUISITES: Minimum 8K of RAM Memory
                       V3N/V3D PROM Set
                       ICOM FD-360 DISK
    ABSTRACT: The OS/1 Executive and Directory maintain all
          files on disc storage by name. The Data Management
          scheme of OS/1 facilitates the implementation of
          object code files, assembler source program files,
          BASIC language source program files, and data files.
          To add a new file to the system, space for the file
          is assigned and the file is stored. All object code
          files automatically become callable system program
          files by name. The resident portion of OS/1 is
          designed to take up very little user space. Several
          processors are available to augment the function of
          the OS/1 Executive. These are listed below.
    COMMENTS: The IPL routine is needed to boot OS/1 into
          memory, if the IPL is not encoded in PROM.

EDIT-OS1-SA001   OS/1 EDITOR PROCESSOR VER 1.0

    SPHERE/300   CLASS=A/B/C   DOC=5
    PREREQUISITES: Minimum 8K of RAM Memory
                       V3N/V3D PROM Set
                       OS/1 EXEC - EXEC-OS1-SA001
    ABSTRACT: The Editor processor allows the user to allocate
          space for new files that do not exist on disc. It
          can create and edit new and old files from the

keyboard, and it can load and save a file from/to cassette/disc. The EDITOR program is prompt driven and it carries the user through its sequence of operations. Facilities are provided to delete file directory entries within OS/1 and to create new file names and space. While editing a program, scrolling of the text is available on a page by page basis. The scrolling may be done either in a forward or backward direction. A search routine is also implemented that will search for a particular line number. The editor routine maintains a status line of information always on the CRT screen.

COPY-OS1-SA001   OS/1 COPY PROCESSOR VER 1.0

    SPHERE/300   CLASS=A/B/C   DOC=1
    PREREQUISITES: Minimum 8K of RAM Memory
                  V3N/V3D PROM Set
                  OS/1 EXEC - EXEC-OS1-SA001
    ABSTRACT: The COPY processor of OS/1 copies the diskette on drive 0 to the diskette on drive 1.

DUMP-OS1-SA001   OS/1 DISPDISK PROCESSOR VER 1.0

    SPHERE/300   CLASS=A/B/C   DOC=1
    PREREQUISITES: Minimum 8K of RAM Memory
                  V3N/V3D PROM Set
                  OS/1 EXEC - EXEC-OS1-SA001
    ABSTRACT: The DISDISK processor is used to obtain a formatted disk dump on a sector by sector basis. The processor can display the contents of the diskette on drive 0 or drive 1 without removing the diskette. Commands are available to return the head to the beginning of the diskette, to display the next sector, to display the previous sector, to go to the first sector of the next track, and to switch between drive 0 and drive 1.

ASM-OS1-SA001   OS/1 DISC TO DISC ASSEMBLER VER 1.0

    SPHERE/300   CLASS=A/B/C   DOC=25
    PREREQUISITES: Minimum 8K of RAM Memory
                  V3N/V3D PROM Set
                  OS/1 EXEC - EXEC-OS1-SA001
    ABSTRACT: The OS/1 Disc to Disc Assembler is a software processor that accepts assembler language source statements and translates each into M6800 machine language object code. The assembler is similar to the stand-alone cassette assembler (ASM-V3N-SA003),

except that the disc to disc assembler allows simple
arithmetic expressions in the operand field of most
instructions. All assembler source text must be
created with the Text Editor, since the assembler
can only read a disc file as input. Large source
programs may be chained on a file basis. The object
code can be transferred to a disc file or to
cassette. The assembler can write a full formatted
listing in the event that the user has a printer
interfaced to the system.

COMMENTS: Print routines are available for the Teletype 33,
the SWTPC PR-40, and the Okidata CP110.

ACCTG-V3N-AB001   HOME ACCOUNTING PROGRAM VER 1.0

SPHERE/300   CLASS=A   DOC=2
PREREQUISITES: Minimum 20K of RAM Memory
                 V3N/V3D PROM Set
                 CASS I or CASS II
                 FBX-V3N-SA005

ABSTRACT: The Home Accounting program is a self prompted
program that can keep financial balance for a user
on a balance forward basis. A table of accounts is
supplied and can be easily modified to any particular
situation. The program has several modes that the
user may choose. The user can select information,
he may enter a check written, he may enter a deposit
made, or he may clear the data bank. Totals are
kept for the period of a year and each is available
on a monthly basis. The data bank area can be loaded
from cassette and in turn updated and consequently
stored back on cassette.

COMMENTS: This program is also available in a disk version
that substitutes a disk file for the data bank.

FIGHT-V3N-GB004   FIGHTER-TRAINER PROGRAM VER 1.3

SPHERE/300   CLASS=A   DOC=4
PREREQUISITES: Minimum 20K of RAM Memory
                 V3N/V3D PROM Set
                 CASS I or CASS II
                 FBX-V3N-SA005

ABSTRACT: In Fighter-Trainer you practise destroying
and/or evading homing torpedoes with a one-man
training spacecraft. All information necessary to
control and navigate the trainer is contained in the
ship's library. You can access one subject per turn.
This game assumes familiarity with Newton's Laws for

Motion, and an acquaintance with trigonometry. Each turn is one "minute" of ship's time; and a complete game takes from 50 to 100 minutes. The game ends after 6 torpedoes have been destroyed, or if the ship is destroyed at any point. You are given a score and comments at the end of the game.

LUNAR-V3N-GB001   TINY LUNAR LANDER VER 1.0

SPHERE/300   CLASS=A   DOC=2
PREREQUISITES: Minimum 12K of RAM Memory
                  V3N/V3D PROM Set
                  CASS I or CASS II
                  FBX-V3N-SA005
ABSTRACT: This tiny version of Lunar Lander simulates the
     manual landing of a lunar vehicle on the moon. It is
     a simplified version of the many landing type games
     available with higher level BASIC's. The purpose of
     the game is to land the vehicle before fuel has been
     exhausted and at a speed reasonable for the total
     weight at the time of impact.

MASTR-V3N-GB001   MASTERMIND GAME VER 1.0

SPHERE/300   CLASS=A   DOC=3
PREREQUISITES: Minimum 12K of RAM Memory
                  V3N/V3D PROM Set
                  CASS I or CASS II
                  FBX-V3N-SA005
ABSTRACT: Mastermind consists of a game board with pegs
     that consist of six basic colours. The computer
     chooses a total of four colored pegs at random from
     any of the six basic colours. It is up to the user
     to select the exact color and location of the four
     pegs in ten moves or less.
COMMENTS: The MASTERMIND Game is described in the Mar-
     APR 1976 issue of "Creative Computing" Vol.2 No. 2.

GOMO-V3N-GA004   GOMOKU GAME VER 3.5

SPHERE/300   CLASS=A/B/C   DOC=2
PREREQUISITES: Minimum 4K of RAM Memory
                  V3N/V3D PROM Set
                  CASS I or CASS II
ABSTRACT: GOMOKU is a traditional Japanese game played
     on a 19 X 19 board. The object is to occupy five
     adjacent points in a straight line (horizontal,
     vertical, or diagonal) anywhere on the board. In
     this implementation of GOMOKU, you are playing

M6800 SOFTWARE LIBRARY	PAGE OF

SYSTEM NAME	SYSTEM NUMBER	CATALOGUE NUMBER
PROGRAM NAME	PROGRAM NUMBER	DATE DOCUMENTED 06/07/77

against the computer. The computer automatically
keeps a tally of the number of wins by the human
and by the computer.
COMMENTS: This game offers good competition and fun.

LIFE-V3N-GA001   LIFE GAME VER 1.0

SPHERE/300   CLASS=A/B/C   DOC=2
PREREQUISITES: Minimum 4K of RAM Memory
                  V3N/V3D PROM Set
                  CASS I or CASS II
ABSTRACT: LIFE is a population simulation game played on
      the face of the CRT screen. All births, deaths, and
      survivals occur simultaneously, and each constitutes
      a single generation of the initial configuration.
      Life will recognize stable patterns, and likewise,
      will stop after detecting an oscillatory state that
      reproduces in ten generations or less. The display
      characters may be modified to any desired by the user.
      The Life pattern can wrap from top to bottom and
      from side to side. An automatic counter is displayed
      to count the number of generations derived.

STAR-V3N-GA001   SHOOTING STARS GAME VER 1.0

SPHERE/300   CLASS=A   DOC=2
PREREQUISITES: Minimum 4K of RAM Memory
                  V3N/V3D PROM Set
                  CASS I or CASS II
ABSTRACT: Shooting Stars is played on a 3 X 3 board,
      where each position is assigned a number. The game
      begins with a single star in the center with black
      holes surrounding it. You win when the pattern of
      only the central black hole is achieved. If the
      board is cleared to all black holes, you lose and
      the game terminates.

HANG-V3N-GM001   HANGMAN GAME VER 1.0

SPHERE/300   CLASS=A   DOC=1
PREREQUISITES: Minimum 4K of RAM Memory
                  V3N/V3D PROM Set
                  CASS I or CASS II
ABSTRACT: This version of HANGMAN does not draw the
      hanging scene. It plays in manner very similar to
      the scoring in Golf. The less points you have, the
      better it is. The user may enter a list of words
      into the program to create a new word list. The
      system is automatically written to cassette upon

writing a new word list. Letters are entered while playing the game and each is displayed on the CRT screen for reference. Total scores are kept and displayed at the end of a playing session.

WUMP-V3N-GM001   WUMPUS HUNT GAME VER 1.0

SPHERE/300   CLASS=A   DOC=1
PREREQUISITES: Minimum 4K of RAM Memory
                  V3N/V3D PROM Set
                  CASS I or CASS II
ABSTRACT: The WUMPUS lives in a cave with hundreds of interconnecting caves. The only way out is to shoot the WUMPUS with one arrow --- you get only 5 arrows to start. In searching for the WUMPUS you could fall into a Bottomless Pitt, or you could go into a cave that has swarms of Super Bats. When you shoot an arrow, the WUMPUS wakes up and moves caves.

CHASE-V3N-GB004   CHASE GAME VER 1.3

SPHERE/300   CLASS=A   DOC=2
PREREQUISITES: Minimum 12K of RAM Memory
                  V3N/V3D PROM Set
                  CASS I or CASS II
                  FBX-V3N-SA005
ABSTRACT: CHASE puts the user in a maze made up of high-voltage fences and posts. There are five interceptor robots seeking to destroy you. The object of the game is for you to dodge the robots and drive each into a fence or post. If the robots touch you, that's the end of the game and you. If you manage to destroy all the robots, you live!

HAMMA-V3N-GB004   HAMMARABI GAME VER 1.3

SPHERE/300   CLASS=A   DOC=2
PREREQUISITES: Minimum 16K of RAM Memory
                  V3N/V3D PROM Set
                  CASS I or CASS II
                  FBX-V3N-SA001
ABSTRACT: In this game, you direct the administration of a city. You buy and sell land with your neighboring cities for bushels of grain. You must feed you people grain as well as plant your acres for the next year crop. You will have to contend with plague, starvation, variable harvests, and roddents. The game plays for a period of ten cycles (years).

SUMER-V3N-GB001   SUMER GAME VER 1.0

    SPHERE/300   CLASS=A   DOC=2
    PREREQUISITES: Minimum 20K of RAM Memory
                  V3N/V3D PROM Set
                  CASS I or CASS II
                  FBX-V3N-SA005
    ABSTRACT: The game of SUMER is similar in structure to
        the game of HAMMARABI. The major differences are that
        SUMER introduces several variable factors into the
        concept as the user is playing the game. These
        variable concepts make the game more sophisticated
        and challenging.

PKG1-V3N-GB004   FBX BASIC GAMES PKG 1 VER 1.3

    SPHERE/300   CLASS=A   DOC=2
    PREREQUISITES: Minimum 20K of RAM Memory
                  V3N/V3D PROM Set
                  CASS I or CASS II
                  FBX-V3N-SA005
    ABSTRACT: This package of BASIC games contains the
        following: STARS, ACEY-DUCEY, TRAP, & SLOTS. The
        Stars and TRap games are basically number games
        where the user tries to guess the number that has
        been randomly selected by the computer. Slots is
        a simulation of a slot machine using the computer.
        Acey-Ducey is a card game, where the user is
        allowed to bet on the card to be drawn.

PKG2-V3N-GB001   FBX BASIC GAMES PKG 2 VER 1.0

    SPHERE/300   CLASS=A   DOC=2
    PREREQUISITES: Minimum 20K of RAM Memory
                  V3N/V3D PROM Set
                  CASS I or CASS II
                  FBX-V3N-SA005
    ABSTRACT: This package of BASIC games contains the
        following programs: BAGELS, REVERSE, and two
        other surprise games.

BJACK-V3N-GB001   BLACKJACK CARD GAME VER 1.0

    SPHERE/300   CLASS=A   DOC=2
    PREREQUISITES: Minimum 20K of RAM Memory
                  V3N/V3D PROM Set
                  CASS I or CASS II
                  SWTPC 8K BASIC VER 2.0
    ABSTRACT: This program plays the card game of BLACKJACK.