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AUTOMATIC VEHICLE SCHEDULING (AVS), USER'S INSTRUCTION MANUAL F--ETC(U)
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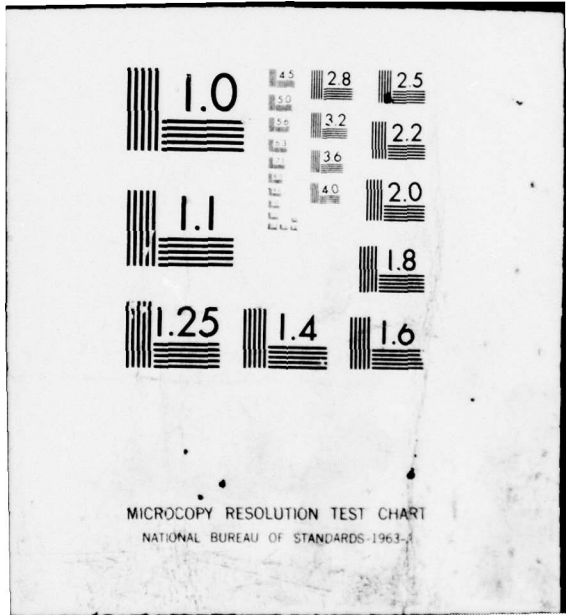
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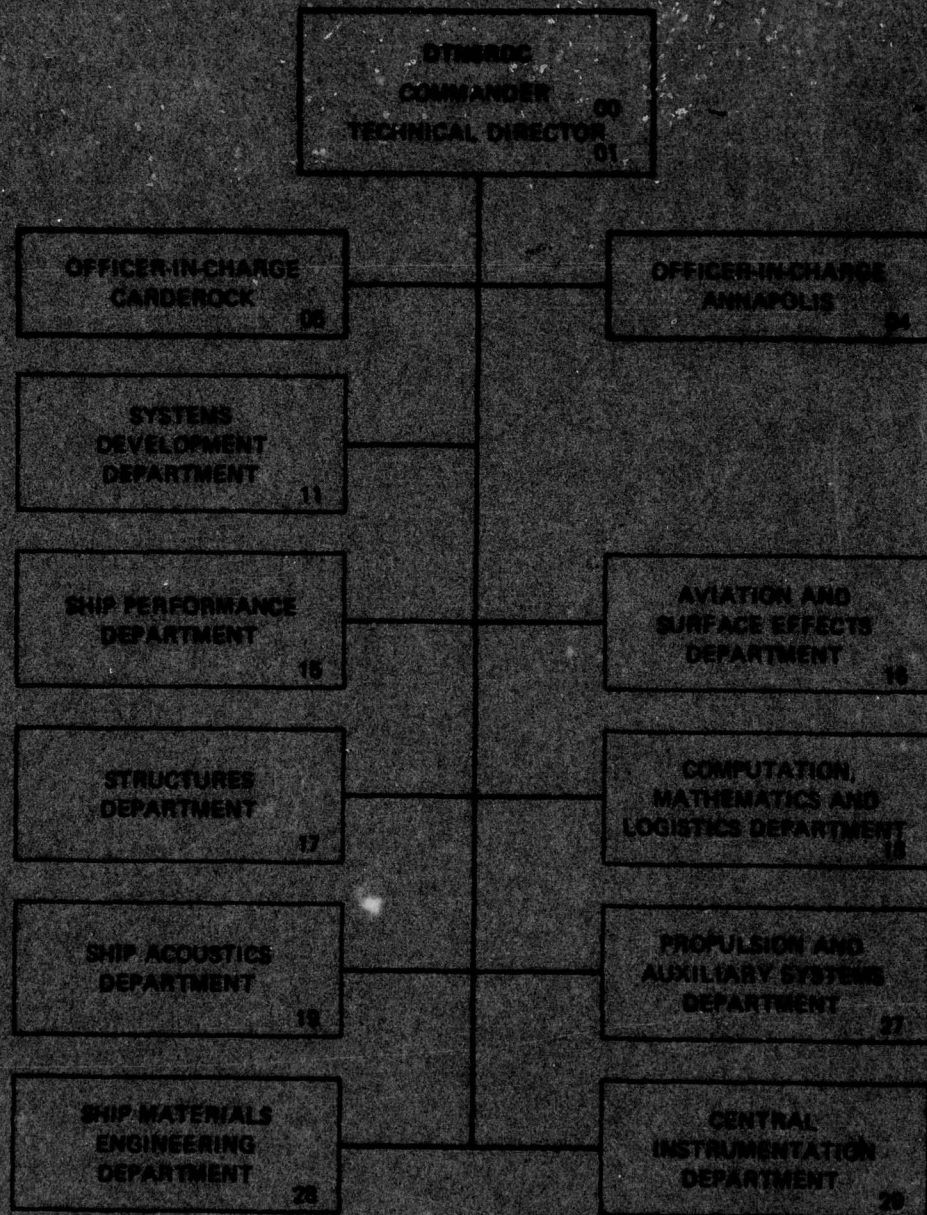


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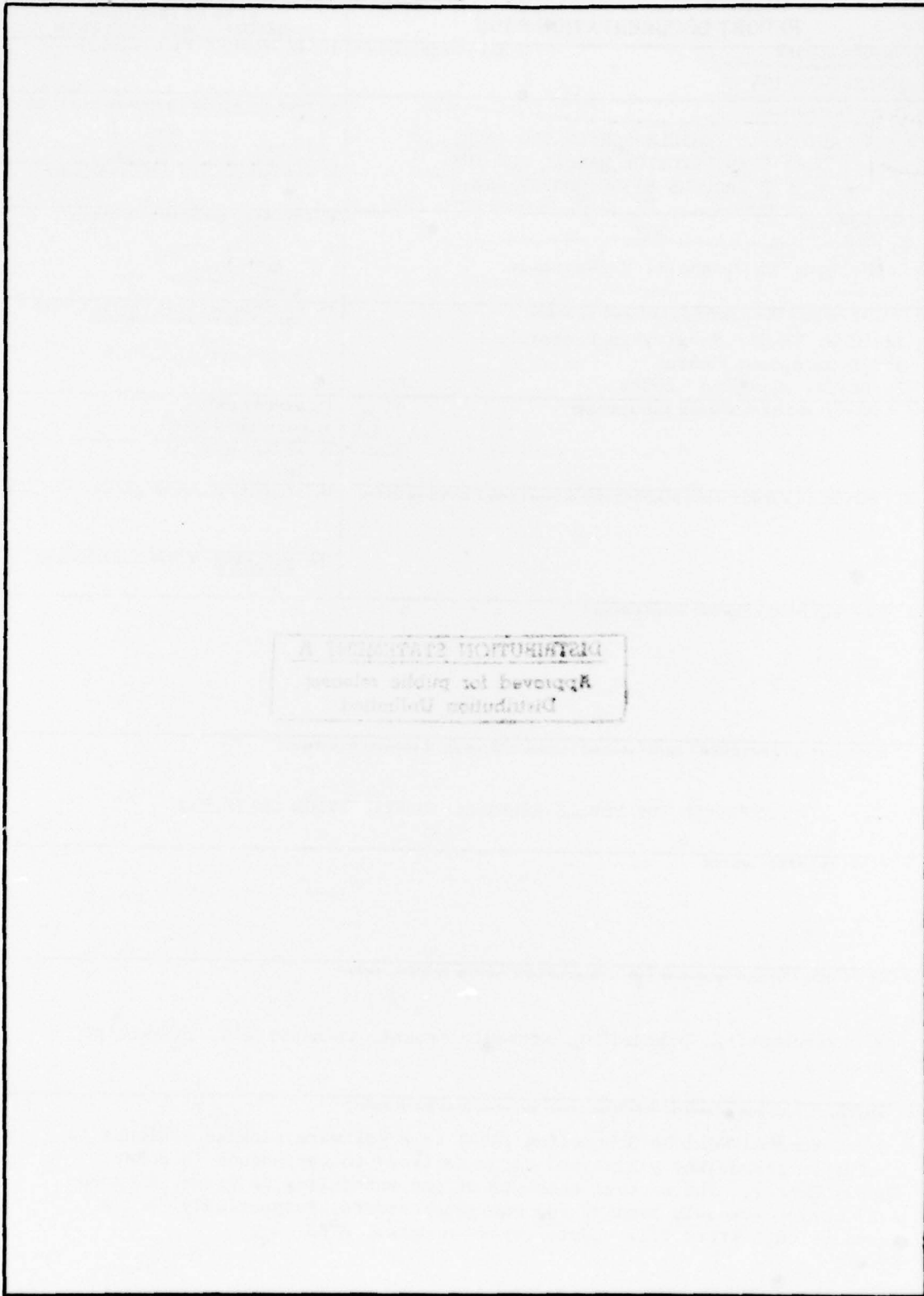
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ABSTRACT

Automated Vehicle Scheduling (AVS) is a software package designed to assist in scheduling palletized cargo delivery to warehouses in a Navy Supply Center. The package consists of two scheduling programs, AVS1 and AVS2, which schedule regular and emergency orders, respectively, and a transaction history file update/report program, AVS3.

INTRODUCTION

Automated Vehicle Scheduling (AVS) is a software package designed to assist in scheduling of palletized cargo delivery among warehouses in a Navy Supply Center (NSC). The package consists of two scheduling programs, AVS1 and AVS2, which schedule, respectively, regular and emergency orders, and a transaction history file update /report program, AVS3. They are written in FORTRAN and are designed to run on Burroughs B3500 computers at NSC, Charleston, S.C. and at the Fleet Material Support Office, Mechanicsburg, PA. An earlier version was designed for the CDC 6600 computer at DTNSRDC.

AVS1 can schedule up to 99 orders totaling about 2000 pallets among as many as 99 warehouses. Deliveries and/or pickups are made by as many as 50 vehicles of four general types: straddle trucks, transporter vehicles, tractor trailers, and industrial tractors. Two user options are available: routes may be built to "maximum" efficiency (in the context of the algorithm used) or to balance vehicle type utilization at some sacrifice in efficiency. (The latter system is currently used as default.)

AVS2 uses the routes prepared by AVS1 to schedule servicing of emergency orders placed during the regular daily routine. An emergency order can include from 1 to 99 pallets; it can preempt regular orders if the dispatcher desires; it can be handled by a single vehicle type or by a mix of vehicles; finally, the vehicles selected to service it may be those used for regular orders, a subset of these, vehicles previously unused, or any combination of the above. As many as five emergency orders may be considered in the same AVS2 run.

For AVS to be successful, the programs must be easily usable by dispatch personnel who have had minimal computer training. In addition, the scheduling programs must execute rapidly to assure fast response to orders. For these reasons the AVS programs are interactive, tutorial, and corrective, using cathode ray tube (CRT) terminals connected to the B3500. Program procedures, execution instructions, and output file storage are simple. Data are requested from the user by the Information Retrieval System (SINR) and inputs are checked for validity by a COBOL driver program, AVSIN1. Instructions are available to the user in frame form displayed on the CRT terminal. Schedules are generated only after the user has checked the correctness of his data.

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BACKGROUND

Since the impetus for undertaking the AVS project came from NSC Charleston, the AVS programs described here address their operation; consequently, a brief description of Charleston's local delivery procedures is in order.

There are 68 cargo pick-up/delivery sites and eight piers in the NSC Charleston complex, plus six off-base sites (Table 1). Twenty or more of these are used in a typical half-day's schedule. The dispatch operation is run from building 1078. (A map of the Charleston complex is given in Figure 1; the warehouses are listed in Table 1.) Orders for palletized cargo movement fall into three priority classes. Group 3 orders are telephoned to the dispatcher twice a day: at 1100 and 1500. Group 2 and Group 1 orders are of a priority, nature, requiring service within 8 hours and 4 hours, respectively. They may be called in at any time, but in practice are usually phoned in at the same time as Group 3 orders. Orders are ready for shipment at the warehouses when the dispatcher is called to request transportation. At present the dispatch supervisor prepares the vehicle schedules from the order list using his knowledge of the base layout; there is no documented, formal procedure. The vehicles are radio dispatched to service these requests.

There is additional cargo movement which is not handled by the above method; at certain warehouses the high volume of cargo that is routinely shipped/received is moved by vehicles assigned exclusively for that purpose. These movements will not be scheduled by AVS initially.

Orders are serviced by four types of vehicles: straddle trucks, transporter vehicles, conventional tractor trailers, and industrial tractors. These vehicles will be designated in the remainder of this report by the abbreviations ST, TR, TT, and IT, respectively. These vehicles are distinguished by their operational characteristics, such as highway speed, load time, manner of loading, and the skills and ratings of the drivers who operate them.

TABLE 1 - NSC CHARLESTON WAREHOUSES SERVICED BY AVS
LISTED BY GROUP AND NUMBER WITHIN GROUP

Group		
Num	Name(s)	Activity
NORTH		
1	191	NSC
2	1601a	"
3	1601b	"
4	1602	"
5	1603	"
6	1604	"
7	1605	"
8	1606	B279
9	1621	NSC
10	1622	"
CENTR		
11	SM,45	Serve Mart
12	46	6th Nav Dist
13	53C	"
14	64E	NSC
15	64W	"
16	66E	"
17	66W	"
18	67E	"
19	67W	"
20	198	"
21	1078	"
22	1127	"
23	1138	"
NSYN		
24	2	USNSY
24	3	"
26	5	"
27	6	"
28	35	"
29	43C	"
30	44	"
31	59	"
32	223	"
WEST		
33	1502	NSC
34	1503	"
35	1507	"
NSYW		
36	80	USNSY
37	177	"
38	1143	Spec Serv
39	1199	USNSY

Group		
Num	Names(s)	Activity
NSYC		
40	98	NSC
41	187	USNSY
42	216	"
43	218	"
44	1013	"
45	1169	"
46	1171	S.O.A.P.
47	1172	NSC
48	1173	USNSY
49	1174	"
NSYS		
50	X10	AS17
51	193	NSC
52	224	USNSY
53	L	PIER
54	M	"
55	N	"
56	P	"
57	Q	"
58	R	"
59	S	"
60	T	"
SOUTH		
61	30	RTC1
62	43S	not used
63	61	FBMTC
64	84	Comm.Ctr.
65	202	RTC1
66	646	USNS
67	647	"
68	655	Comm.Store
69	656	Navy Ex.
MCRFT		
70	1	Mine Craft
71	7	"
72	16	"
73	23	"
74	26	"
75	53S	"
X54		
76	X54	Comm.Ctr.

TABLE 1 (Continued)

Group		
Num	Name(s)	Activity
OFF BASE		
77	ABASE	Air base
78	NWS,4	Nav Weap Sta
79	DEYTN	Deytens SY
80	BRASW	Braswell SY
81	CSNWS	ComStoreNWS
82	NMEDC	Nav Hosp

TT's carry from four to fourteen pallets, are capable of highway speeds, but are relatively slow at loading and unloading. They must be backed up to a loading platform and loaded by forklifts. TT's are the only vehicles which service the off-base sites, and they can carry cargo for more than one stop.

TR's carry either ten or twelve pallets, are somewhat slower than TT's, and are more efficient at loading. They drive up to a loading platform, the operator's cab swings out of the way, the height of the truck bed is adjusted, and pallets are loaded onto a gravity conveyor which delivers them to a roller bed in the truck. When gravity conveyors are not available at a site, forklifts must be used instead. TR's also can make more than one stop.

ST's carry five or seven pallets, are slower than TT's or TR's on the road, but are the most efficient at loading. Pallets are aligned at the pick-up site; the ST lowers a set of lifting rails which fit in to the channels on the sides of the pallets; the ST then lifts the pallets and drives off. The procedure is reversed for unloading. ST's can service only one stop at a time.

IT's carry up to fourteen pallets, are slower than TT's, TR's, or ST's on the road. Loading and unloading is the same as TT's. Like the TT's, the IT's can service more than one stop at a time. IT's are for complex use only.

INFORMATION RETRIEVAL SYSTEM (SINR)

For ease of user data entry, AVS employs the SINR routines provided by the Fleet Material Support Office as a uniform automatic data processing system for Naval Supply Centers. User instructions and data formatting are displayed on a CRT screen. This display is referred to by SINR as a "frame". AVS frames are given as follows:

<u>FRAME #</u>	<u>DESCRIPTION</u>
A00	General description of all frames available to AVS
A01	Order description input
A02	Vehicle description input
A03	Input options for regular and emergency orders
A04	Run execution
A05	Input options for emergency orders
A07	History file update options

SYSTEM OPERATING PROCEDURES

The operating procedure is a dialogue between the user and the computer. The user enters specific information when told to do so by statements that appear on a CRT.

The user must enter the following instructions/commands on the CRT terminal keyboard:

Screen Display

PASSWORD

Enter 6 digit password and transmit by pressing XMIT key. When "PASS-WORD" has been cleared from the screen, enter the following commands:

ENTER

*DCH MODE FRAME (transmit)

System Reply

FRAME MODE ENABLED

ENTER

FRM #Name, #A01, #A02, #A03, #A04, #A05, or #A07, of frame desired
(transmit)

SYSTEM REPLY

The frame specified will appear on the screen

ENTER

Key in data between displayed []. The skip tab key may be used to position data. When the frame is complete, (transmit).

SYSTEM REPLY

The system will check the correctness of the data entered and will display error or acceptance messages. If errors appear in the data, position the cursor at the beginning of the frame and re-enter the frame. To clear the screen before the next frame request, key "HOME" and "SHIFT" at the same time. When the screen is clear, the user may request the next frame. When all necessary frames have been completed and AVS has been executed, the user may exit the system by:

ENTER

DCH BYE (transmit)

SYSTEM REPLY

PASSWORD

* System commands are specified by upper case letters.

REGULAR ORDERS SCHEDULING INSTRUCTIONS

To perform a regular order scheduling run, frames A01, A02, A03, and A04 must be completed.

FRAME A01

Figure 2 shows a typical FRAME A01 as it appears on the CRT screen. Data to be entered on A01 are as follows:

<u>FIELD</u>	<u>DESCRIPTION</u>
1	Enter "AVS" system Doc ID
2	Enter "1" for this data frame
3	Order size or number of pallets to be moved from the origin site to the destination site. If the number of pallets is less than 10, enter leading zero
4	Origin site name, up to 6 characters, for a site as given in Table 1
5	Destination site, up to 6 characters, for a site as given in Table 1

Twenty orders may be entered on each A01 frame. If more than 20 orders are needed, fill and transmit A01 as many times as required. The maximum number of orders per run is 99. If the number of orders needed is less than 20, skip forward and position cursor at "LAST ORDER PROCESSED" space and transmit. Wait for the system's reply. If errors appear, enter corrections and transmit.

FRAME A02

Figure 3 shows FRAME A02 as it appears on the CRT screen. Enter the following data on A02:

<u>FIELD</u>	<u>DESCRIPTION</u>
1	Enter "AVS" system Doc ID
2	Enter "2" for this data frame

FRAME A02

AUTOMATED VEHICLE SCHEDULING -AVS- VEHICLE INPUT

```

(FRM #A02
DOCID [ 1 ]
FRAME [ 2 ] (ENTER 2)
(SELECT VEHICLES, SPECIFY CAPACITIES AND TIMES BELOW
( TYPE USE CAPAC TIME USE CAPAC TIME USE CAPAC TIME
(STRADDLES 1|[ 3 ] | [ 4 ] | [ 5 ] | ( 2|[ ] | ( 3|[ ] | ( 4|[ ] |
( 4|[ ] | ( 5|[ ] | ( 6|[ ] | ( 7|[ ] | ( 8|[ ] | ( 9|[ ] |
(10|[ ] | (11|[ ] | (12|[ ] | ( 3|[ ] | ( 6|[ ] | ( 9|[ ] |
(TRANSPTR 1|[ ] | ( 2|[ ] | ( 3|[ ] | ( 4|[ ] | ( 5|[ ] | ( 6|[ ] |
( 7|[ ] | ( 8|[ ] | ( 9|[ ] | (10|[ ] | (11|[ ] | (12|[ ] |
(INDRCTRS 1|[ ] | ( 2|[ ] | ( 3|[ ] | ( 4|[ ] | ( 5|[ ] | ( 6|[ ] |
( 7|[ ] | ( 8|[ ] | ( 9|[ ] | (10|[ ] | (11|[ ] | (12|[ ] |
(POSITION CURSOR HERE) | (BEFORE XMITTING DATA
(WAIT FOR OUTPUT BELOW BEFORE PROCEEDING
( LAST VEHICLE PROCESSED) | | |

```

Figure 3 - Frame A02

<u>FIELD</u>	<u>DESCRIPTION</u>
3	Enter "X" if this vehicle is to be used in AVS Enter "*" if specified industrial tractor is to be an IT.* Otherwise, the vehicle will be considered a tractor trailer, TT.
4	Enter capacity, maximum number of pallets vehicle can carry. Skip field if default value is desired. Defaults: ST = 5, TR = 12, TT = 14, IT = 10
5	Enter time in minutes of maximum route for this vehicle. Skip if default is desired Default = 240 min

After data have been entered, follow instruction given on frame.

FRAME A03

Figure 8 shows A03 as it appears on the CRT screen. Enter the following on A03:

<u>FIELD</u>	<u>DESCRIPTION</u>
1	Enter "AVS" system DOC ID
2	Enter "3" for this data frame
3	Enter Date of schedule
4	Start time of shift using 24 hr clock
5	Enter maximum length of shift Default = 240 min

Position cursor at "CURSOR" and transmit. Wait until system replies before proceeding.

FRAME A04

Figure 5 gives A04 as it appears on the CRT screen. Data to be entered by A04 are as follows:

*When IT's are specified, orders for delivery to off-base sites may not be entered.

FIELD

DESCRIPTION

1

Enter "AVS" for system Doc ID

2

Enter "4" to produce schedules for data
entered by A01, A02, A03, A05;
"6" to clear registers and re-enter
data for frames A01, A02, A03, A05

Move cursor to "CURSOR" and transmit. No reply will be made by system.

FRAME A04

(FRM #A04 AUTOMATED VEHICLE SCHEDULING -AVS-
 (START / CLEAR AND RESTART)
DOCID [1]

 (TO GENERATE SCHEDULES ENTER 4)
 (TO CLEAR ALL DATA AND RESTART ENTER 6)) [2]
(CURSOR)[]

Figure 5 - Frame A04

EMERGENCY ORDERS SCHEDULING INSTRUCTIONS

To perform an emergency order scheduling run, frames A01, A02, A03, A04, and A05 must be completed. The emergency order program (AVS2) uses the same information as the regular orders. Delivery preference options are given in Frame A05, Figure 6. The items for frames A01, A02, and A03 which apply only to the emergency orders are described as follows:

FRAME A01

<u>FIELD</u>	<u>DESCRIPTION</u>
1	Enter "AVS" system Doc ID
2	Enter "1" for this frame
3	Order size, number of pallets
4	Origin site name
5	Destination site name

A maximum of five emergency orders may be entered per emergency order run.

FRAME A02

<u>FIELD</u>	<u>DESCRIPTION</u>
1	Enter "AVS" system Doc ID
2	Enter "2" for this frame
3	Enter "S" to use the same vehicle as the previous regular order run. Otherwise, enter "X" or "*" for each vehicle to be used and complete Field 5 for each vehicle to be modified
5	Enter time in minutes of maximum route Default = 240 min

FRAME A03

<u>FIELD</u>	<u>DESCRIPTION</u>
1	Enter "AVS" system Doc ID
2	"3" for this frame
3	Enter date
4	Enter time of emergency orders using 24-hr clock
5	Enter maximum length of shift (same as regular orders) Default = 240 min

FRAME A05

Figure 6 shows Frame A05 as it appears on CRT screen. Data to be entered on A05 are as follows:

<u>FIELD</u>	<u>DESCRIPTION</u>
1	Enter "AVS" system Doc ID
2	Enter "5" for this frame
3/4	Answer questions on frame Position cursor at "CURSOR" and transmit. Do not clear screen until MIX and PROPT values are returned.

FRAME A04

Use Frame A04 is used as before to execute the emergency orders program.

FRAME A05

EMERGENCY VEHICLE SCHEDULING -EVS- OPTION INPUT

DOCID([1]) ENTER AVS

FRAME[2] ENTER 5 FOR THIS FRAME

MAY THE USE OF MORE THAN ONE VEHICLE TYPE

BE ALLOWED TO FILL THIS ORDER [3] ENTER Y FOR YES - N FOR NO

MAY NON-EMERGENCY ORDERS BE BUMPED TO FILL

THIS ORDER [4] ENTER Y FOR YES - N FOR NO

CURSOR []

RESULTS

MIX []

PROPT []

Figure 6 - Frame A05

HISTORY FILE INSTRUCTIONS

To perform updates and report generation of the AVS History File, frame A07 must be completed (See Figure 7). The following four functions may be performed using this frame:

<u>FUNCTION</u>	<u>ACTION</u>
1	Update the History File using the schedule produced by AVS1 or AVS2.
2	Update or add specific entries to the History File
3	Merge two or more records to create an aggregate of the records in the History File, replacing the old records with the new one.
4	Produce a report of either an individual record or an aggregate of several records.

Frame A07 as it is filled out for each of the functions is described as follows:

<u>FIELD</u>	<u>DESCRIPTION</u>
1	Enter "AVS" system Doc ID
2	Enter "7" for this frame.
3	Enter desired function "1", "2", "3" or "4".

Function 1 Instructions

<u>FIELD</u>	<u>DESCRIPTION</u>
4	Enter "Y" or "N". If "Y", a file containing any orders that were not scheduled by AVS 1 or AVS 2 will be included in the next AVS run. (UNIMPLEMENTED)

FRAME A07

```

(FRM #A07          AUTOMATED VEHICLE SCHEDULING - HISTORY FILE INPUT
DOCID [ 1 ]
FRAME [ 2 ] (ENTER 7) (FUNCTION [ 3 ] (1-UPDATE FROM AVS SCHEDULE) (FOR FUNCTIONS 3&4
(FOR FUNCTION 1) (2-UPDATE FROM KEYBOARD) MMDDYY
(DO YOU WANT BACKLOG INCLUDED) (3-MERGE RECORDS) (START DATE [ 13 ]
(IN NEXT AVS RUN - Y OR N)[ 4 ] (4-REPORT) (END DATE [ 14 ]
MMDDYY (SHIFT [ 15 ]
(FOR FUNCTION 2)(ENTER DATE FOR ALL UPDATES)[ 5 ] (SHIFT)[ 6 ]
(ORIGIN) (DESTINATION) (SIZE) (VEHICLE) (EMERGENCY?) (RPLCE ENTRY?)
(1)[ 7 ] [ 8 ] [ 9 ] [ 10 ] [ 11 ] [ 12 ]
(2)[  ] [  ] [  ] [  ] [  ] [  ]
(3)[  ] [  ] [  ] [  ] [  ] [  ]
(4)[  ] [  ] [  ] [  ] [  ] [  ] (BEFORE X-MIT.)
(5)[  ] [  ] [  ] [  ] [  ] [  ] (POSITION)
(6)[  ] [  ] [  ] [  ] [  ] [  ] (CURSOR HERE [  ]
(ERROR)[  ] [  ] (FIELD) (DESCRIPTION) (ERROR) (DESCRIPTION)
(ERROR)[  ] [  ] (ERROR)[  ]
(ERROR)[  ] [  ] (ERROR)[  ]
(ERROR)[  ] [  ] (ERROR)[  ]

```

Figure 7 - Frame A07

Function 2 Instructions

<u>FIELD</u>	<u>DESCRIPTION</u>
5	Enter date (MMDDYY) of the AVS History File record to be updated.
6	Enter time (24-hour clock) of AVS History File record to be updated.
7	Enter warehouse from which shipment was sent.
8	Enter warehouse which received shipment.
9	Enter number of pallets.
10	Enter name of vehicle on which the shipment was made.
11	Enter "Y" or "N". If this represents an emergency order, enter "Y"; otherwise, enter "N".
12	Enter "Y" or "N". If the entry is to replace any data in the History File, enter "Y". Enter "N" if the corresponding entry in the History File is to be incremented by the number in Field 9.

Function 3 and 4 Instructions

<u>FIELD</u>	<u>DESCRIPTION</u>
13	Enter Start Date (MMDDYY) for the range of History File Records to be included in the report or in the merge record.
14	Enter End Date (MMDDYY) to indicate the date of the last record to be included in the report or in the merge record. A value equal to the start date (Field 13) indicates all records for that date are to be included.
15	Enter Shift of record to be in the report. This field is used only for function 4 (report generator) and only when fields 13 and 14 are the same. It is ignored in all other instances.

Appendix A provides illustrative examples of AVS1, AVS2, and History file entries and output. The output printouts are designed to be used directly as the dispatch schedules.

ACKNOWLEDGMENT

The authors wish to acknowledge the cooperation and B3500 System expertise of Robert E. Lee, Eugene Singleton, and Robert Owens Code 61 - NSC, Charleston, S.C. Without their assistance AVS could not have been modified for the B3500.

APPENDIX A - SAMPLE REGULAR ORDER RUN

PRECEDING PAGE BLANK - NOT FI

Turn on line printer

Turn on CRT terminal and open queue

PASSWORD _____

DCH MODE FRAME	(command)
FRAME MODE ENABLED	(reply)
* FRM #A01	(command)
** DCH ZIP RM VS2IN	(command)
ZIP RM OK	(reply)
DCH ZIP RM SCHED2	(command)
ZIP RM OK	(reply)
see FRM A01	
"HOME"/"SHIFT"	(clear screen)
FRM #A02	
see FRM A02	
"HOME"/"SHIFT"	(clear screen)
FRM #A03	
see FRM A03	
"HOME "/"SHIFT"	(clear screen
FRM #A04	
see FRM A04	
"HOME"/"SHIFT"	(clear screen)
DCH BYE	(end run)

When run is complete, schedule will be printed automatically.

*Frame A04, FRM #A04 should be entered first, specifying option "6" to clear and restart SINR.

**Commands only necessary when more than one AVS2 run has been made on the same day.

FRAME A01

AUTOMATED VEHICLE SCHEDULING -AVS- ORDER INPUT

```

(FRM #A01
DOCID [ AVS ]
FRAME [ 1 ]
) (ENTER ORDERS -
( ORDERS      SIZE ORIGIN DESTINATION
( 1)[ 05 ] [ 191 ] [ 1601A ] (
( 3)[ 07 ] [ 191 ] [ 1605 ] (
( 5)[ 04 ] [ 53C ] [ 1622 ] (
( 7)[ 05 ] [ 98 ] [ 1174 ] (
( 9)[ 10 ] [ 30 ] [ SM ] (
( 11)[ 20 ] [ 1605 ] [ 435 ] (
( 13)[ 18 ] [ 435 ] [ 193 ] (
( 15)[ ] [ ] [ ] (
( 17)[ ] [ ] [ ] (
( 19)[ ] [ ] [ ] (
(LAST ORDER PROCESSED) [ 13 ]

) ( ERRORS      ORDER      EXPLANATION
( ERRORS      [ ] [ ] (
( ERRORS      [ ] [ ] (
( ERRORS      [ ] [ ] (
( ERRORS      [ ] [ ] (
( ERRORS      [ ] [ ] (
( ERRORS      [ ] [ ] (
(CURSORS*)

```


ORDERS

1	5 PAL	191	TO 1601A	7	5 PAL	98	TO 1174
2	2 PAL	191	TO 1601B	8	7 PAL	30	TO 193
3	7 PAL	191	TO 1605	9	10 PAL	30	TO 45
4	2 PAL	53C	TO 64E	10	20 PAL	1605	TO 193
5	4 PAL	53C	TO 1622	11	20 PAL	1605	TO 43S
6	6 PAL	98	TO 1013	12	20 PAL	43S	TO 1605
				13	18 PAL	43S	TO 193

VEHICLE - ST1
 CAPACITY - 5 PALLETS
 TIME LIMIT - 240 MINUTES
 START TIME - 800
 DATE 7/23/79

STOP	SITE	TIME	DELIVER	PICK UP	ORDER	STAY TIME
1	30	820		5 PALLETS	9	3
2	45	843	5 PALLETS			3
3	98	855		5 PALLETS	7	3
4	1174	859	5 PALLETS			3
5	98	904		1 PALLETS	6	2
6	1013	908	1 PALLETS			2
7	98	912		5 PALLETS	6	3
8	1013	917	5 PALLETS			3
9	30	933		5 PALLETS	9	3
10	45	956	5 PALLETS			3
11	53C	1001		2 PALLETS	4	2
12	64E	1005	2 PALLETS			2
13	53C	1009		4 PALLETS	5	3
14	1622	1020	4 PALLETS			3
15	191	1025		5 PALLETS	1	3
16	1601A	1030	5 PALLETS			3
17	191	1034		2 PALLETS	2	2
18	1601B	1038	2 PALLETS			2

ROUTE FINISHED AT 1050
 LOCATION = 1078
 TIME LEFT = 70.8 MINUTES
 PALLETS MOVED = 34

VEHICLE - TR1
CAPACITY - 10 PALLETS
TIME LIMIT - 240 MINUTES
START TIME - 800
DATE 7/23/79

STOP	SITE	TIME	DELIVER	PICK UP	ORDER	STAY TIME
1	191	807		7 PALLETS	3	8
2	1605	817	7 PALLETS	10 PALLETS	11	16
3	43S	860	10 PALLETS	10 PALLETS	12	18
4	1605	946	10 PALLETS	10 PALLETS	11	18
5	43S	1031	10 PALLETS	10 PALLETS	12	18
6	1605	1117	10 PALLETS			10

ROUTE FINISHED AT 1134
LOCATION = 1078
TIME LEFT = 26.6 MINUTES
PALLETS MOVED = 47

VEHICLE -*TT1
CAPACITY - 14 PALLETS
TIME LIMIT - 240 MINUTES
START TIME - 800
DATE 7/23/79

STOP	SITE	TIME	DELIVER	PICK UP	ORDER	STAY TIME
1	1605	809		14 PALLETS	10	29
2	193	901	14 PALLETS			29
3	30	939		7 PALLETS	8	17
4	43S	958		4 PALLETS	13	12
5	193	1019	11 PALLETS			24
6	43S	1051		14 PALLETS	13	29
7	193	1129	14 PALLETS			29

ROUTE FINISHED AT 1210
LOCATION = 1078
TIME LEFT = -9.6 MINUTES
PALLETS MOVED = 39

VEHICLE -*TT2
CAPACITY - 14 PALLETS
TIME LIMIT - 240 MINUTES
START TIME - 800
DATE 7/23/79

STOP	SITE	TIME	DELIVER	PICK UP	ORDER	STAY TIME
1	1605	809		6 PALLETS	10	16
2	193	848	6 PALLETS			16

ROUTE FINISHED AT 915
LOCATION = 1078
TIME LEFT = 165.6 MINUTES
PALLETS MOVED = 6

APPENDIX B - SAMPLE EMERGENCY ORDER RUN

PRECEDING PAGE BLANK - NO

Turn on line printer
Turn on CRT terminal and open queue

PASSWORD _____

DCH MODE FRAME	(command)
FRAME MODE ENABLED	(reply)
* FRM #A01	(command)
** DCH ZIP RM VS2IN	(command)
ZIP RM OK	(reply)
DCH ZIP RM SCHED2	(command)
see FRM A01	
"HOME"/"SHIFT"	(clear screen)
FRM #A02	
see FRM A02	
"HOME"/"SHIFT"	(clear screen)
FRM #A03	
see FRM A03	
"HOME "/"SHIFT"	(clear screen
FRM #A05	
see FRM A05	
"HOME"/"SHIFT"	(clear screen)
FRM #A04	
see FRM A04	
"HOME"/"SHIFT"	(clear screen)
*** DCH ZIP RM SCHED1	(command)
ZIP RM OK	(reply)
DCH ZIP CH SCHED2 SCHED1	(command)
ZIP CH OK	(reply)
DCH BYE	(end run)

When run is complete, schedule will be printed automatically.

*Frame A04, FRM #A04 should be entered to clear and restart SINR.

**Commands necessary only when more than one AVS2 run has been made on the same day.

***Command used only to save updated schedule produced by AVS2. Otherwise, omit.

FRAME A01

AUTOMATED VEHICLE SCHEDULING -AVS- ORDER INPUT

```

(FRM #A01
DOCID [ AVS ]
FRAME [ 1 ]
) (ENTER ORDERS -
  ( ORDERS      SIZE [ 15 ] ORIGIN [ 193 ] DESTINATION [ 1171 ] ) (
  ( ORDERS      SIZE [ 12 ] ORIGIN [   ] DESTINATION [ ABASE ] ) (
  ( ORDERS      SIZE [ 4 ]   ORIGIN [   ] DESTINATION [   ] ) (
  ( ORDERS      SIZE [ 6 ]   ORIGIN [   ] DESTINATION [   ] ) (
  ( ORDERS      SIZE [ 8 ]   ORIGIN [   ] DESTINATION [   ] ) (
  ( ORDERS      SIZE [ 10 ]  ORIGIN [   ] DESTINATION [   ] ) (
  ( ORDERS      SIZE [ 12 ]  ORIGIN [   ] DESTINATION [   ] ) (
  ( ORDERS      SIZE [ 14 ]  ORIGIN [   ] DESTINATION [   ] ) (
  ( ORDERS      SIZE [ 16 ]  ORIGIN [   ] DESTINATION [   ] ) (
  ( ORDERS      SIZE [ 18 ]  ORIGIN [   ] DESTINATION [   ] ) (
  ( ORDERS      SIZE [ 20 ]  ORIGIN [   ] DESTINATION [   ] ) (
(LAST ORDER PROCESSED) [ 02 ]
) ( ERRORS      ORDER [   ] EXPLANATION [   ] (CURSOR*)
  ( ERRORS      ORDER [   ] EXPLANATION [   ]
  ( ERRORS      ORDER [   ] EXPLANATION [   ]
  ( ERRORS      ORDER [   ] EXPLANATION [   ]
  ( ERRORS      ORDER [   ] EXPLANATION [   ]
  ( ERRORS      ORDER [   ] EXPLANATION [   ]

```


FRAME A05

EMERGENCY VEHICLE SCHEDULING -EVS- OPTION INPUT

DOCID([AVS]) ENTER AVS

FRAME [5] ENTER 5 FOR THIS FRAME

MAY THE USE OF MORE THAN ONE VEHICLE TYPE
BE ALLOWED TO FILL THIS ORDER [Y] ENTER Y FOR YES - N FOR NO

MAY NON-EMERGENCY ORDERS BE BUMPED TO FILL
THIS ORDER [Y] ENTER Y FOR YES - N FOR NO
CURSOR []

RESULTS

MIX [1]

PROPT [1]

FRAME A04

(FRM #A04 AUTOMATED VEHICLE SCHEDULING -AVS-
 (START / CLEAR AND RESTART)

DOCID [AVS]

(TO GENERATE SCHEDULES ENTER 4)

(TO CLEAR ALL DATA AND RESTART ENTER 6))

[4]

(CURSOR)[]

AVS EMERGENCY ORDER PROGRAM

DATE - 6/15/79
SHIFT - 800
TIME - 945
SIZE - 15 PALLETS
FROM - 193
TO - 1171

(MIX=1)
(PROPT=1)

VEHICLE AVAILABILITY

ST1 AVAILABLE AT 958. / 45
ST2 AVAILABLE AT 945. / 1078
ST3 AVAILABLE AT 945. / 1078
TR1 AVAILABLE AT 945. / 1078
TR2 AVAILABLE AT 945. / 1078
TR3 AVAILABLE AT 945. / 1078
TT1 AVAILABLE AT 951. / 1605
TT2 AVAILABLE AT 1028. / 1078

SPECIAL ORDER ASSIGNED TO THE FOLLOWING VEHICLES

---> 1 TR1
---> 2 TR2

VEHICLE - TR1
 CAPACITY - 12 PALLETS
 TIME LIMIT - 240 MINUTES
 START TIME - 800
 DATE 6/15/79

STOP	SITE	TIME	DELIVER	PICK UP	ORDER	STAY TIME
1	191	807		7 PALLETS	3	8
2	1605	817	7 PALLETS			8
3	1078	823.0				
*****SPECIAL ORDER*****						
4	193	1005		12 PALLETS	-1	12
5	1171	1023	12 PALLETS			12

ROUTE FINISHED AT 1041
 LOCATION = 1078
 TIME LEFT = 79.4 MINUTES

VEHICLE - TR2
 CAPACITY - 12 PALLETS
 TIME LIMIT - 240 MINUTES
 START TIME - 800
 DATE 6/15/79

STOP	SITE	TIME	DELIVER	PICK UP	ORDER	STAY TIME
*****SPECIAL ORDER*****						
1	193	1005		3 PALLETS	-1	4
2	1171	1015	3 PALLETS			4

ROUTE FINISHED AT 1027
 LOCATION = 1078
 TIME LEFT = 93.8 MINUTES

AVS EMERGENCY ORDER PROGRAM

DATE - 6/15/79
SHIFT - 800
TIME - 945
SIZE - 12 PALLETS
FROM - 193
TO - ABASE

(MIX=1)
(PROPT=1)

VEHICLE AVAILABILITY

ST1 AVAILABLE AT 958. / 45
ST2 AVAILABLE AT 945. / 1078
ST3 AVAILABLE AT 945. / 1078
TR1 AVAILABLE AT 1041. / 1078
TR2 AVAILABLE AT 1019. / 1171
TR3 AVAILABLE AT 945. / 1078
TT1 AVAILABLE AT 951. / 1605
TT2 AVAILABLE AT 1028. / 1078
TIME OVERRUN WILL OCCUR IF TT1 IS SELECTED
TIME LEFT = .2
TIME OVERRUN WILL OCCUR IF TT2 IS SELECTED
TIME LEFT = 92.0

SPECIAL ORDER ASSIGNED TO THE FOLLOWING VEHICLES

---> 1 TT2

VEHICLE - TT2
CAPACITY - 14 PALLETS
TIME LIMIT - 240 MINUTES
START TIME - 800
DATE 6/15/79

STOP	SITE	TIME	DELIVER	PICK UP	ORDER	STAY TIME
1	1605	804				
2	DEYTN	916	10 PALLETS	11	22	22
3	1078	835.0				
4	193	1048				
5	ABASE	1144	12 PALLETS			

*****SPECIAL ORDER*****

			12 PALLETS	-2	26	26
--	--	--	------------	----	----	----

ROUTE FINISHED AT 1239
LOCATION = 1078
TIME LEFT = -38.8 MINUTES

APPENDIX C - SAMPLE HISTORY FILE UPDATE RUN

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Turn on line printer

Turn on CRT terminal and open queue

PASSWORD _____

* DCH ZIP RM VS3IN	(command)
ZIP RM OK	(reply)
DCM MODE FRAME	(command)
FRAME MODE ENABLED	(reply)
** FRM #A07	(command)
see FRM A07	
"HOME"/"SHIFT"	(clear screen)
FRM #A04	(command)
see FRM A04	
"HOME"/"SHIFT"	(clear screen)
*** DCH ZIP RM ORFGL	(command)
ZIP RM OK	(reply)
DCH ZIP CH PRMFLE ORGFL	(command)
ZIP CH OK	(reply)
DCH BYE	(card run)

When run is complete, new history file record will be printed automatically.

*Command only necessary if the AVS3 runs have been made on the same day.

**Frame A04, FRM #A04 should be entered to clear and restart SINR.

***Commands performed at completion of AVS3 run to save updated history file. Otherwise, omit.

FRAME A04

(FRM #A04 AUTOMATED VEHICLE SCHEDULING -AVS-
 (START / CLEAR AND RESTART)

DOCID [AVS]

(TO GENERATE SCHEDULES ENTER 4)

(TO CLEAR ALL DATA AND RESTART ENTER 6))

[4]

(CURSOR)[]

AVS HISTORY FILE REPORT
 26JUN79
 SHIFT- 745.0

WAREHOUSE NAME	TRUCK	DELIVERIES (PALLETS)		BACKLOG
		REGULAR	EMERGENCY	
FROM	TO	NAME		
1138	ARASF			12
	DEYTN	TT2	14	0
		TT3	14	0
	64F	ST1	12	0
193	1601R	TT1	23	0
198	1138	ST1	12	0
	1601A	ST1	5	0
		ST2	7	0
	1605	TR1	30	0
45	DEYTN			23
	1138	ST2	24	0
	193	TT1	14	0
		TT2	9	0
	64W	ST1	88	0
		ST2	5	0

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