USER'S MANUAL -- FLROUT

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USER'S MANUAL (FLROUT)

PROGRAM TITLE

Flood Routing Through a System of Streams and Reservoirs

GENERAL DESCRIPTION

The program is set up for remote batch processing on the U.S. Bureau of Reclamation CYBER 74.

This program allows the user to route a flood or floods through any system of streams and reservoirs. Ordinate values of hydrographs may be added at any point during the routing or the routed flood ordinate values may be saved at any point for future addition to another stream's ordinate values. Stream Routings, Reservoir Routings, Added Ordinate Values and Saved Ordinate Values may have different starting times; however, ALL time increments MUST BE THE SAME. Also, all starting times MUST BE an even increment of the first operation's starting time. The program automatically handles the different starting times by sliding the ordinate values until the times match.

The program uses the Modified Puls Method for reservoir routing and the Tatum Method for stream routing.

INPUT

The program has been set up to accept input in a Problem Oriented Format so that unnecessary confusion is avoided when the job stream is set up. This is accomplished by having the input consist of two types of input cards classified as CONTROL CARDS or DATA CARDS. The control cards tell the program which operation to perform (stream route, reservoir route, ordinate addition, save routed ordinate values, etc.). The data cards are used when required by the operation called for (see Table 1). When data cards are required, they must be followed by an END CARD before the next control card is encountered. The acceptable types of control cards are listed in Table 1. The program keys on the first three characters of the control card; therefore, any wording can be used on the control cards as long as the first three characters correspond to those shown in Table 1. Any other working in the first three characters will cause program exit.

TABLE 1

TYPES OF ACCEPTABLE CONTROL CARDS

TYPE	DATA CARDS FOLLOW	POINT ID'S USED	END CARD REQUIRED
Reservoir Routing	yes	yes	yes
Stream Routing	yes	yes	yes
Add Ordinate Values	yes	no	yes
Save Routed Values	no	yes	no
Add Saved Ordinate Values	no	yes	no
Zero Previous Routed Values	no	no	no
Stop Printing	no	no	no
Start Printing	no	no	no
End of Routing	no	no	no

NOTE: 1/ All control cards are unformatted; therefore, they can start in any card column. However, if BEGINNING and ENDING POINT ID'S are used on the control card, they must be separated from the control word and themselves by at least three (3) blanks.

2/ The control words cannot contain more than two blanks between each word

Each control card data setup sequence is described in detail below:

Stream Routing

The stream routing command causes the flood ordinate values to be stream routed through the reach starting at the time given on DATA CARD NO. 1.

CONTROL CARD

COLUMN	DESCRIPTION	FORMAT
1-80	The words "STREAM ROUTING" beginning in any column followed by at least 3 blanks followed by the beginning point and ending point ID's which must be separated by at least 3 blanks. NOTE: Only the first 12 characters of the BEGINNING-ID and ENDING-ID are saved.	80A1

DATA CARDS

DATA CARD 1

COLUMN	DESCRIPTION	FORMAT
1-10	Starting time (hrs)	F10.2
11-15	Integer Time Increment (hrs)	I5
16-20	No. of Steps (Integer)	I5
21-80	Routing Title	10A6

The following cards are used if you wish to add ordinate values directly within the stream routing routine without using the ADD ORDINATE VALUES control card before the stream routing. Each card contains eight (8) or less ordinate values. The first ordinate value corresponds to the value at the starting time given above. Any blank fields are read as zero values. Note: If no ordinate values are added before routing, the end card is still required.

DATA CARD 2 - NEXT TO LAST DATA CARD

COLUMN	DESCRIPTION	FORMAT
1-80	Ordinate values (ft^3/s)	8F10.2

LAST DATA CARD

COLUMN	DESCRIPTION	FORMAT
1-3	The word "END"	A3
4-80	Any alphanumerics desired	77X

Add Ordinate Values

The add ordinate command causes the ordinates given on the data cards to be added to the previous routed ordinate values starting at the starting time given on DATA CARD 1. Note: The program assumes that the first ordinate value is the base flow. If the added values start at a time later than the starting time of the previous routed flood ordinate values, this first added ordinate value is automatically extended to the previous routed flood starting time as base flow.

CONTROL CARD

COLUMN	DESCRIPTION	FORMAT
1-80	The words "ADD ORDINATE VALUES" beginning in any card column	80A1

DATA CARDS

DATA CARD 1

COLUMN	DESCRIPTION	FORMAT
1-10	Starting time (hrs)	F10.2
11-15	Integer Time Increment (hrs)	I5

DATA CARD 2 - NEXT TO LAST CARD

COLUMN	DESCRIPTION	FORMAT
1-80	Ordinate values (ft^3/s)	8F10.2

LAST DATA CARD

COLUMN	DESCRIPTION	FORMAT
1-3	The word "END"	A3
4-80	Any alphanumerics desired	77X

Reservoir Routing

The reservoir routing command causes the flood ordinate values to be routed through the reservoir described by the data cards starting at the time and outflow given on DATA CARD 1.

CONTROL CARD

COLUMN	DESCRIPTION	FORMAT
1-80	The words "RESERVOIR ROUTING" beginning in any column followed by at least 3 blanks, followed by the BEGINNING POINT and ENDING POINT ID'S which must also be separated by at least 3 blanks.	80A1

DATA CARDS

DATA CARD 1

COLUMN	DESCRIPTION	FORMAT
1-10	Starting time (hrs)	F10.2
11-20	Initial spillway outflow at starting time (ft^3/s)	F10.2
21-30	Spillway crest elevation (msl)	F10.2
31-80	Routing Title	8A6,A2

The following cards input the spillway rating table and reservoir flood storage capacity above the spillway crest:

DATA CARD 2 - NEXT TO LAST CARD

COLUMN	DESCRIPTION	FORMAT
1-10	Blank	10X
11-20	Depth of flow over spillway above crest (ft)	F10.2
21-30	Flow over spillway at these depths (ft^3/s)	F10.2
31-40	Storage in reservoir between spillway crest elevation and elevation of reservoir (af)	F10.2

Note: Storage = 0 at no flow over spillway.

LAST DATA CARD

COLUMN	DESCRIPTION	FORMAT
1-3	The word "END"	A3
4-80	Any alphanumerics desired	77X

Save Routed Values

This command causes the previous routed ordinate values to be saved for future use. They will be identified by the SAVE ID supplied by the user. This command would be used when routing floods down several tributaries of a stream to one common point.

CONTROL CARDS

COLUMN	DESCRIPTION	FORMAT
1-80	The words "SAVE ROUTED VALUES" beginning in any card column followed by at least 3 blanks followed by the SAVE-ID Note: Only the first 6 characters of the SAVE-ID are used for future identification.	80A1

Add Saved Ordinate Values

This command will add ordinate values which were saved under the SAVE ROUTED VALUES command to the present routed values (previous routed ordinate values). The results of this addition will be printed unless you are in the nonprint mode.

CONTROL CARD

COLUMN	DESCRIPTION	FORMAT
1-80	The words "ADD ROUTED VALUES" beginning in any card column followed by at least 3 blanks followed by the SAVE-ID. Note: The first 6 characters of this ID must match an ID saved under the SAVE ROUTED VALUES command or no addition will be made.	80A1

Zero Previous Routed Values

This command allows the user to zero the previous routed ordinate values. This command is used when starting at the beginning of a new branch or tributary. The command must be used at this point or the routed values (previous routed ordinate values) from the previous branch will be carried over to the new branch or tributary.

CONTROL CARD

COLUMN	DESCRIPTION	FORMAT
1-80	The words "ZERO PREVIOUS ROUTED VALUES" beginning in any card column.	80A1

Start Printing

This command starts printing after it has been stopped by the STOP PRINTING command. Note: The START PRINTING card IS NOT necessary to start printing of the output initially. It is only used to start printing after it has been stopped by the STOP PRINTING card.

CONTROL CARD

COLUMN	DESCRIPTION	FORMAT
1-80	The words "START PRINTING" beginning in any card column.	80A1

Stop Printing

This command stops printing of output. To restart printing, the START PRINTING command must be given.

CONTROL CARD

COLUMN	DESCRIPTION	FORMAT
1-80	The words "STOP PRINTING" beginning in any card column.	80A1

End of Routing

This command signals the end of the data input to the computer. Note: This card must be used or an error message will result (see ERROR MESSAGES, page 9).

CONTROL CARD

COLUMN	DESCRIPTION	FORMAT
1-80	The words "END OF FLOOD ROUTING" beginning in any card column.	80A1

OUTPUT

Output consists of printed tables showing the results of each operation performed. The add ordinate and add routed values commands produce output which shows the added values and their sum as a function of time. The stream and reservoir routings produce output which shows the inflow and routed outflow from the reach as a function of time. In addition, the reservoir routing command produces a printout of the spillway rating table. The amount of printed output can be regulated by use of the START and STOP PRINTING commands (see discussion of these above).

Job Stream Setup

```
JOBFL,CM55000,T10.
ACCOUNT,--------.
CHARGE,---------.

FTN(B=FLOUT)

FLOUT.
SAVE,FLOUT                    (Use this card if you plan to make
7/8/9                          more than one run.  Remember to
                               PURGE this file when you are done
                               with the program.)
   PROGRAM DECK

7/8/9

   DATA DECK

6/7/8/9
```

NOTE: To make additional runs after initial run, use the following setup.

```
JOBFL,CM55000,T10.
ACCOUNT,--------.
CHARGE,---------.
GET,FLOUT.
FLOUT.
7/8/9

   DATA DECK

6/7/8/9
```

ERROR MESSAGES

***THE FOLLOWING JOB STREAM CARD IS IN ERROR

An illegal control card was encountered during the flood routing sequence. The illegal card is printed under the message.

***TIME INCREMENT IN ERROR---CHECK INPUT AT POINT _____ INC = _____

The time increment read from the present stream routing or add ordinate data cards does not equal the previous time increments used.

***STARTING TIME IN ERROR---IS NOT AN EVEN INCREMENT OF THE MASTER TIME---CHECK AT POINT _____ START. TIME = _____

The starting time read from the present stream routing, reservoir routing, or add ordinate operation is not an even multiple of the previous operation starting time.

***STORAGE INDICATOR HAS EXCEEDED THE S-I CURVE, SI = _____
SICRV(NUMBR) = _____ HN = _____

Indicates that there is an error in the reservoir routing rating table input. Check the maximum storage in reservoir.

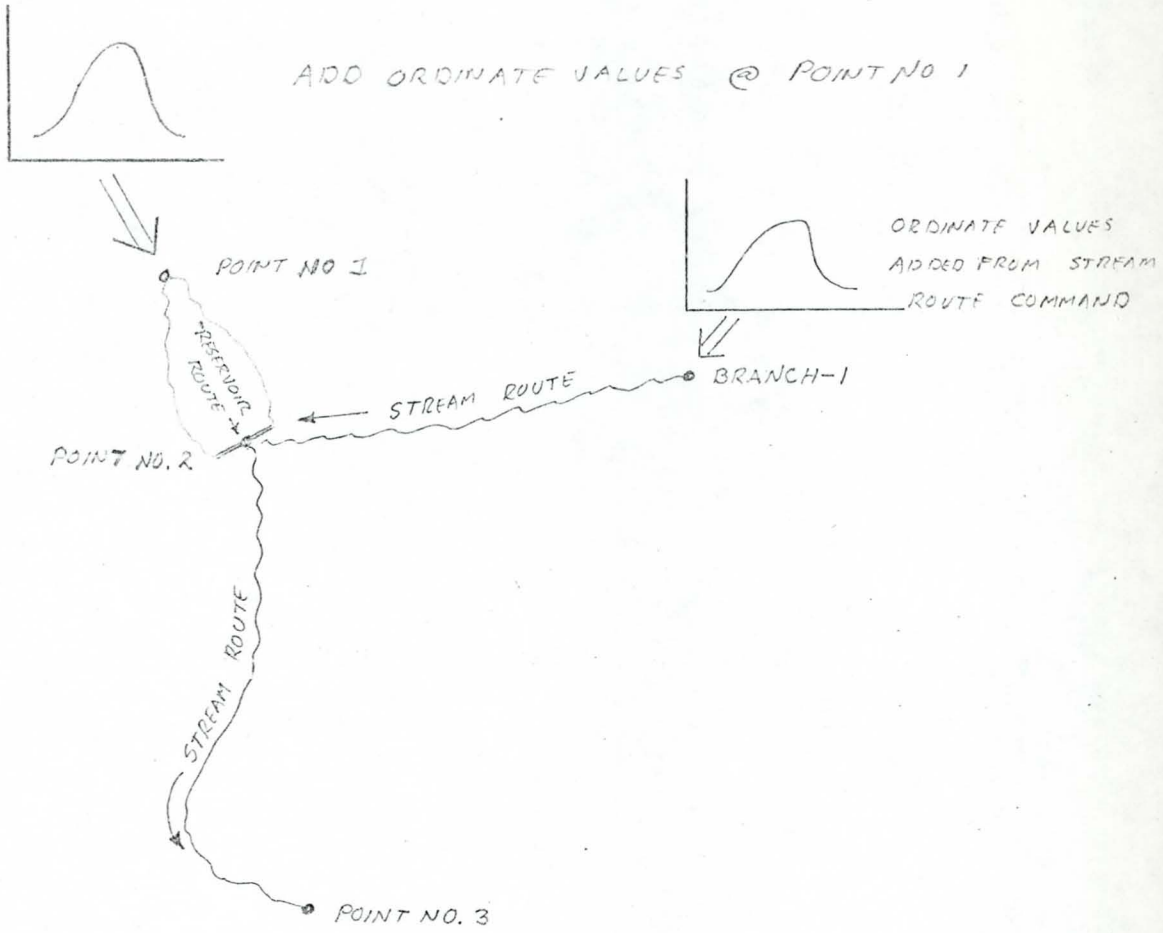
APPENDIX A

SAME PROBLEM

The following sample problem illustrates the data setup and corresponding output.

*U.S. Government Printing Office: 1973-784-215/1142 Region 6

BY	DATE	PROJECT	SHEET ____ OF ____
		PROGRAM ROUT	
CHKD BY	DATE	FEATURE	
		EXAMPLE PROBLEM	
DETAILS			



NOTE: SEE LISTING FOR SAMPLE DATA SETUP AND OUTPUT

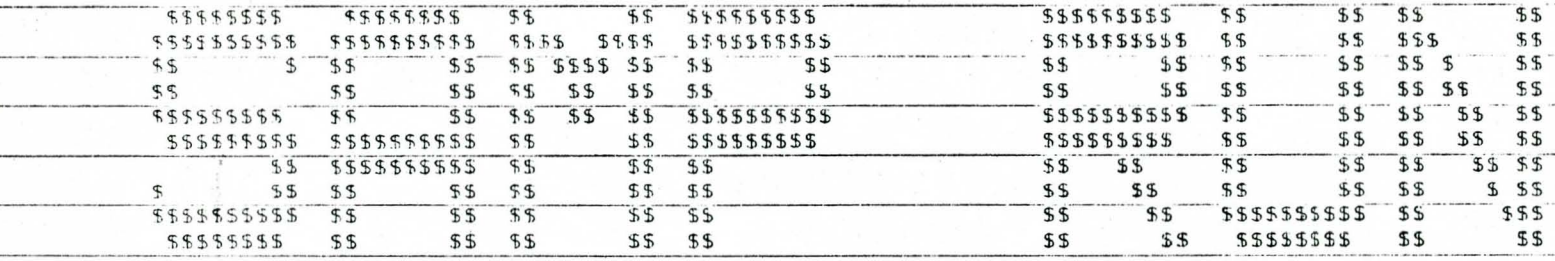
```
 $$$$$$$$    $$$$$$$$   $$       $$  $$$$$$$$$$                $$$$$$$$    $$$$$$$$   $$$$$$$$$$   $$$$$$$$
 $$$$$$$$$$  $$$$$$$$$$  $$$$   $$$$  $$$$$$$$$$                $$$$$$$$$$  $$$$$$$$$$  $$$$$$$$$$  $$$$$$$$$$
 $$        $  $$        $$  $$$$  $$  $$        $$              $$        $$  $$        $$  $$        $$  $$        $$
 $$           $$        $$  $$  $$  $$  $$        $$           $$        $$  $$        $$  $$        $$  $$        $$
 $$$$$$$$$$   $$        $$  $$  $$  $$  $$$$$$$$$$             $$        $$  $$        $$  $$        $$  $$$$$$$$$$
  $$$$$$$$$$  $$$$$$$$$$$$  $$      $$  $$$$$$$$$$             $$        $$  $$$$$$$$$$$$  $$        $$  $$$$$$$$$$$$
        $$    $$$$$$$$$$$$  $$      $$  $$                     $$        $$  $$$$$$$$$$$$  $$        $$  $$$$$$$$$$$$
 $      $$    $$        $$  $$      $$  $$                     $$        $$  $$        $$  $$        $$  $$        $$
 $$$$$$$$$$   $$        $$  $$      $$  $$                     $$$$$$$$$$  $$        $$  $$        $$  $$        $$
  $$$$$$$$    $$        $$  $$      $$  $$                     $$$$$$$$$   $$        $$  $$        $$  $$        $$

 $$          $$$$$$$$$$   $$$$$$$$   $$$$$$$$$$  $$$$$$$$$$  $$        $$   $$$$$$$$
 $$          $$$$$$$$$$$  $$$$$$$$$  $$$$$$$$$$  $$$$$$$$$$  $$$       $$  $$$$$$$$$$
 $$              $$       $$         $       $$        $$      $$ $      $$  $$
 $$              $$       $$                 $$        $$      $$ $$     $$  $$
 $$              $$       $$$$$$$$$          $$        $$      $$  $$    $$  $$$$$
 $$              $$        $$$$$$$$$         $$        $$      $$  $$    $$  $$$$$
 $$              $$                $$        $$        $$      $$   $$   $$  $$
 $$              $$       $        $$        $$        $$      $$     $  $$  $$
 $$$$$$$$$$$   $$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$
 $$$$$$$$$$$   $$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$
```

```
ADD ORDINATE VALUES
     12      6

   34500    33500    33400      339      343      349      354      360
     367      363      343      328      313      300      290
END
    RESERVOIR ROUTING     POINT NO. 1     POINT NO. 2
     60      471     9604  TEST OF ROUTING  TRAPPER LAKE  7/24/73
                30        2       93
                50        4      160
               100       16      320
               150       40      480
               200       85      640
               250      142      800
               300      214      965
               350      324     1130
               400      472     1290
               450      660     1460
               500      900     1630
               550     1220     1800
               600     1630     1960
               650     2150     2140
               700     2820     2300
               750     3700     2480
               800     4750     2650
               850     6200     2830
               900     7800     2990
END
   SAVE ORDINATE VALUES    STR-1
ZERO PREVIOUS ORD VALUES
    STREAM ROUTE    BRANCH-1    POINT NO. 2
      42      6     6  TEST TATUM ROUTING  BRANCH-1 TO POINT NO. 2

    1042    13204    28930    34446    25649    34081    52019    55741
   37116    22174    16773    14387    11353     8378     6703     5594
    4342     3367     2710     2221     1833     1517     1259     1047
     870      723      601      499      415      345      287      238
     198      165      137      114       94       79       65       54
      45       37       31       26
END
  ADD SAVED ORDINATE VALUES     STR-1
STREAM ROUTING    POINT NO.2     POINT NO. 3
     12      6     9     TEST STREAM ROUTE POINT NO. 2 TO POINT NO. 3
END
   END OF JOB
```



ORDINATE ADDITION

POINT #A00000000#A00000000 74/07/23.

TIME (HRS.)	PREVIOUS ROUTED HYDROGRAPH	ADDED ORDINATE VALUES	SUM
12.00	0.00	-0.00	0.00
18.00	0.00	-0.00	0.00
24.00	0.00	-0.00	0.00
30.00	0.00	-0.00	0.00
36.00	0.00	-0.00	0.00
42.00	0.00	-0.00	0.00
48.00	0.00	-0.00	0.00
54.00	0.00	-0.00	0.00
60.00	0.00	345.00	345.00
66.00	0.00	335.00	335.00
72.00	0.00	334.00	334.00
78.00	0.00	339.00	339.00
84.00	0.00	343.00	343.00
90.00	0.00	349.00	349.00
96.00	0.00	354.00	354.00
102.00	0.00	360.00	360.00
108.00	0.00	367.00	367.00
114.00	0.00	363.00	363.00
120.00	0.00	343.00	343.00
126.00	0.00	328.00	328.00
132.00	0.00	313.00	313.00
138.00	0.00	300.00	300.00
144.00	0.00	290.00	290.00
150.00	0.00	-0.00	0.00

MODIFIED PULS RESERVOIR ROUTING

TEST OF ROUTING TRAPPER LAKE 7/24/73 74/07/23.

POINT NO. 1 TO POINT NO. 2

SPILLWAY RATING CURVE		STORAGE INDICATOR CURVE	
ELEVATION (FT-MSL)	RATING (CFS)	STORAGE (AC-FT)	S + O/2 (CFS)
9604.30	2.	93.	189.
9604.50	4.	160.	325.
9605.00	16.	320.	653.
9605.50	40.	480.	988.
9606.00	85.	640.	1333.
9606.50	142.	800.	1684.
9607.00	214.	965.	2053.
9607.50	324.	1130.	2441.
9608.00	472.	1290.	2838.
9608.50	660.	1460.	3274.
9609.00	900.	1630.	3737.
9609.50	1220.	1800.	4240.
9610.00	1630.	1960.	4768.
9610.50	2150.	2140.	5391.
9611.00	2820.	2300.	6048.
9611.50	3700.	2480.	6851.
9612.00	4750.	2650.	7719.
9612.50	6200.	2830.	8807.
9613.00	7800.	2990.	9930.

RESERVOIR ROUTING

POINT NO. 1 TO POINT NO. 2

TIME (HRS.)	INFLOW (CFS)	OUTFLOW (CFS)
60.00	345	471
66.00	335	422
72.00	334	389
78.00	339	370
84.00	343	359
90.00	349	354
96.00	354	353
102.00	360	355
108.00	367	358
114.00	363	361
120.00	343	358
126.00	326	349
132.00	313	339
138.00	300	327
144.00	290	317

MESSAGE---THE FLOOD HYDROGRAPH ORDINATE VALUES AT POINT (POINT NO. 2) HAVE BEEN SAVED UNDER SAVE-ID (STR-1

MESSAGE---THE PREVIOUS HYDROGRAPH VALUES HAVE BEEN SET EQUAL TO ZERO

TATUM STREAM ROUTING

TEST TATUM ROUTING BRANCH-1 TO POINT NO. 2 74/07/23.

BRANCH-1 TO POINT NO. 2

STEP= 6

TIME (HRS.)	ORDINATE	PREVIOUS HYDROGRAPH	SUM	ROUTED HYDROGRAPH
42.00	-0.00	0.00	0.00	0.00
48.00	-0.00	0.00	0.00	0.00
54.00	-0.00	0.00	0.00	0.00
60.00	-0.00	0.00	0.00	0.00
66.00	-0.00	0.00	0.00	0.00
72.00	-0.00	0.00	0.00	0.00
78.00	-0.00	0.00	0.00	0.00
84.00	-0.00	0.00	0.00	0.00
90.00	1042.00	0.00	1042.00	16.28
96.00	13204.00	0.00	13204.00	304.00
102.00	28930.00	0.00	28930.00	1934.13
108.00	34446.00	0.00	34446.00	6670.72
114.00	25649.00	0.00	25649.00	14781.02
120.00	34081.00	0.00	34081.00	23243.39
126.00	52019.00	0.00	52019.00	28818.38
132.00	55741.00	0.00	55741.00	32742.56
138.00	37116.00	0.00	37116.00	38340.75
144.00	22174.00	0.00	22174.00	44076.88
150.00	16773.00	0.00	16773.00	44246.83
156.00	14387.00	0.00	14387.00	37066.64
162.00	11353.00	0.00	11353.00	27124.30
168.00	8378.00	0.00	8378.00	19356.38
174.00	6703.00	0.00	6703.00	14636.89
180.00	5594.00	0.00	5594.00	11518.11
186.00	4342.00	0.00	4342.00	9053.14
192.00	3367.00	0.00	3367.00	7118.19
198.00	2710.00	0.00	2710.00	5657.63
204.00	2221.00	0.00	2221.00	4505.19
210.00	1833.00	0.00	1833.00	3571.03
216.00	1517.00	0.00	1517.00	2846.58
222.00	1259.00	0.00	1259.00	2304.22
228.00	1047.00	0.00	1047.00	1889.97
234.00	870.00	0.00	870.00	1561.06
240.00	723.00	0.00	723.00	1293.78
246.00	601.00	0.00	601.00	1074.20
252.00	499.00	0.00	499.00	892.59
258.00	415.00	0.00	415.00	741.80
264.00	345.00	0.00	345.00	616.44
270.00	287.00	0.00	287.00	512.27
276.00	238.00	0.00	238.00	425.77
282.00	198.00	0.00	198.00	353.92
288.00	165.00	0.00	165.00	294.17
294.00	137.00	0.00	137.00	244.48
300.00	114.00	0.00	114.00	203.25

BRANCH-1 TO POINT NO. 2

(CONTINUED)

TIME (HRS.)	ORDINATE	PREVIOUS HYDROGRAPH	SUM	ROUTED HYDROGRAPH
306.00	94.00	0.00	94.00	169.03
312.00	79.00	0.00	79.00	140.53
318.00	65.00	0.00	65.00	116.75
324.00	54.00	0.00	54.00	96.97
330.00	45.00	0.00	45.00	80.55
336.00	37.00	0.00	37.00	66.88
342.00	31.00	0.00	31.00	55.48
348.00	26.00	0.00	26.00	46.03
354.00	-0.00	0.00	0.00	37.89
360.00	-0.00	0.00	0.00	29.52
366.00	-0.00	0.00	0.00	19.56
372.00	-0.00	0.00	0.00	9.58
378.00	0.00	0.00	0.00	2.92
384.00	0.00	0.00	0.00	.41
390.00	0.00	0.00	0.00	0.00
396.00	0.00	0.00	0.00	0.00
402.00	0.00	0.00	0.00	0.00
408.00	0.00	0.00	0.00	0.00

ORDINATE ADDITION

POINT POINT NO. 2 74/07/23.

TIME (HRS.)	PREVIOUS ROUTED HYDROGRAPH	ADDED ORDINATE VALUES	SUM
42.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00
60.00	0.00	471.00	471.00
66.00	0.00	422.12	422.12
72.00	0.00	389.43	389.43
78.00	0.00	369.68	369.68
84.00	0.00	358.98	358.98
90.00	16.28	354.14	370.42
96.00	304.00	353.15	657.15
102.00	1934.13	354.59	2288.71
108.00	6670.72	357.91	7028.63
114.00	14781.02	360.56	15141.57
120.00	23243.39	357.74	23601.13
126.00	28818.38	349.44	29167.82
132.00	32742.56	338.64	33081.21
138.00	38340.75	326.65	38667.40
144.00	44076.88	317.04	44393.91
150.00	44246.83	0.00	44246.83
156.00	37066.64	0.00	37066.64
162.00	27124.30	0.00	27124.30
168.00	19356.38	0.00	19356.38
174.00	14636.89	0.00	14636.89
180.00	11518.11	0.00	11518.11
186.00	9053.14	0.00	9053.14
192.00	7118.19	0.00	7118.19
198.00	5657.63	0.00	5657.63
204.00	4505.19	0.00	4505.19
210.00	3571.03	0.00	3571.03
216.00	2846.58	0.00	2846.58
222.00	2304.22	0.00	2304.22
228.00	1889.97	0.00	1889.97
234.00	1561.06	0.00	1561.06
240.00	1293.78	0.00	1293.78
246.00	1074.20	0.00	1074.20
252.00	892.59	0.00	892.59
258.00	741.80	0.00	741.80
264.00	616.44	0.00	616.44
270.00	512.27	0.00	512.27
276.00	425.77	0.00	425.77
282.00	353.92	0.00	353.92
288.00	294.17	0.00	294.17
294.00	244.48	0.00	244.48
300.00	203.25	0.00	203.25

POINT POINT NO. 2 CONTINUED

306.00	169.03	0.00	169.03
312.00	140.53	0.00	140.53
318.00	116.75	0.00	116.75
324.00	96.97	0.00	96.97
330.00	80.55	0.00	80.55
336.00	66.88	0.00	66.88
342.00	55.48	0.00	55.48
348.00	46.03	0.00	46.03
354.00	37.89	0.00	37.89
360.00	29.52	0.00	29.52
366.00	19.56	0.00	19.56
372.00	9.58	0.00	9.58
378.00	2.92	0.00	2.92
384.00	.41	0.00	.41

TATUM STREAM ROUTING

TEST STREAM ROUTE POINT NO. 2 TO POINT NO. 3 74/07/23.

POINT NO.2 TO POINT NO. 3

STEP= 9

TIME (HRS.)	ORDINATE	PREVIOUS HYDROGRAPH	SUM	ROUTED HYDROGRAPH
12.00	0.00	0.00	0.00	0.00
18.00	0.00	0.00	0.00	0.00
24.00	0.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	0.00
54.00	0.00	0.00	0.00	0.00
60.00	0.00	471.00	471.00	.92
66.00	0.00	422.12	422.12	9.10
72.00	0.00	389.43	389.43	41.30
78.00	0.00	369.68	369.68	114.52
84.00	0.00	358.98	358.98	219.75
90.00	0.00	370.42	370.42	316.71
96.00	0.00	657.15	657.15	370.68
102.00	0.00	2288.71	2288.71	390.15
108.00	0.00	7028.63	7028.63	442.11
114.00	0.00	15141.57	15141.57	697.74
120.00	0.00	23601.13	23601.13	1527.39
126.00	0.00	29167.82	29167.82	3507.84
132.00	0.00	33081.21	33081.21	7154.78
138.00	0.00	38667.40	38667.40	12464.81
144.00	0.00	44393.91	44393.91	18738.45
150.00	0.00	44246.83	44246.83	25018.96
156.00	0.00	37066.64	37066.64	30699.31
162.00	0.00	27124.30	27124.30	35480.59
168.00	0.00	19356.38	19356.38	38743.65
174.00	0.00	14636.89	14636.89	39399.90
180.00	0.00	11518.11	11518.11	36742.25
186.00	0.00	9053.14	9053.14	31346.95
192.00	0.00	7118.19	7118.19	24871.11
198.00	0.00	5657.63	5657.63	18948.75
204.00	0.00	4505.19	4505.19	14351.42
210.00	0.00	3571.03	3571.03	11025.80
216.00	0.00	2846.58	2846.58	8605.04
222.00	0.00	2304.22	2304.22	6779.05
228.00	0.00	1889.97	1889.97	5366.65
234.00	0.00	1561.06	1561.06	4263.15
240.00	0.00	1293.78	1293.78	3399.97
246.00	0.00	1074.20	1074.20	2728.25
252.00	0.00	892.59	892.59	2208.22
258.00	0.00	741.80	741.80	1803.96
264.00	0.00	616.44	616.44	1484.90
270.00	0.00	512.27	512.27	1228.25

POINT NO.2 TO POINT NO. 3

(CONTINUED)

TIME (HRS.)	ORDINATE	PREVIOUS HYDROGRAPH	SUM	ROUTED HYDROGRAPH
276.00	0.00	425.77	425.77	1018.64
282.00	0.00	353.92	353.92	845.88
288.00	0.00	294.17	294.17	702.79
294.00	0.00	244.48	244.48	584.02
300.00	0.00	203.25	203.25	485.37
306.00	0.00	169.03	169.03	403.40
312.00	0.00	140.53	140.53	335.29
318.00	0.00	116.75	116.75	278.70
324.00	0.00	96.97	96.97	231.67
330.00	0.00	80.55	80.55	192.59
336.00	0.00	66.88	66.88	160.10
342.00	0.00	55.48	55.48	133.07
348.00	0.00	46.03	46.03	110.57
354.00	0.00	37.89	37.89	91.85
360.00	0.00	29.52	29.52	76.26
366.00	0.00	19.56	19.56	63.24
372.00	0.00	9.58	9.58	52.20
378.00	0.00	2.92	2.92	42.45
384.00	0.00	.41	.41	33.31
390.00	0.00	0.00	0.00	24.42
396.00	0.00	0.00	0.00	16.10
402.00	0.00	0.00	0.00	9.18
408.00	0.00	0.00	0.00	4.36
414.00	0.00	0.00	0.00	1.65
420.00	0.00	0.00	0.00	.48
426.00	0.00	0.00	0.00	.10
432.00	0.00	0.00	0.00	.01
438.00	0.00	0.00	0.00	.00

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AQJIDEF.   74/07/23.USBR CYBER 74-28 KRONOS 2.1 LEV4++ PSR367+


15.01.10.FLOUT,CM60000,T15.
15.01.11.ACCOUNT,LCA216F.
15.01.11.CHARGE,LCA216,3600.
15.01.11.PURGE,OUT.
15.01.11.GET,FLROUT.
15.01.12.HEADING,OUT.$1FLOOD ROUT
15.01.12.HEADING,OUT.$ LISTING
15.01.13.FTN(I=FLROUT,L=OUT)
15.01.20.      2.954 CP SECONDS COMPILATION TIME
15.01.20.HEADING,OUT.$1SAMP DATA
15.01.20.HEADING,OUT.$ LISTING
15.01.20.HEADING,OUT.$
15.01.20.COPY,INPUT,DATA.
15.01.20.  END OF INFORMATION ENCOUNTERED.
15.01.20.REWIND,DATA.
15.01.21.COPYSBF,DATA,OUT.
15.01.21.  COPY COMPLETE.
15.01.21.REWIND,DATA.
15.01.21.HEADING,OUT.$1SAMP RUN
15.01.21.HEADING,OUT.$
15.01.22.LGO,DATA,OUT.
15.01.25.     STOP
15.01.25.        .473 CP SECONDS EXECUTION TIME
15.01.25.REWIND,OUT.
15.01.25.COPY,OUT,OUTPUT.
15.01.26.  END OF INFORMATION ENCOUNTERED.
15.01.26.REWIND,OUT.
15.01.26.COPY,OUT,OUTPUT.
15.01.26.  END OF INFORMATION ENCOUNTERED.
15.01.26.CP         3.833 SEC.
15.01.26.CM         0.025 KWH.
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