Foster/ NEPTUNE S. Lk Mich.
Folger NPTN 91-1
May 15-24, 1991
NAVIGATION LOG
9/013 NV1

104782

91013nv1

U.S.G.S.
INTEGRATED NAVIGATION SYSTEM
AND
NORTHSTAR LORAN-C NAVIGATION LOG

SHIP NPTN91-1 Neptune

CRUISE NO. NPTN91-1

DATE 5/15/91 - 5/24/91

CHIEF SCIENTIST D. Foster

Vessel:	*RV* NEPTUNE 67 ft length, 18.5 ft beam, 6 ft draft, twin screw Registered at Morgan City, Louisiana Homeport at Chicago, Illinois
Vessel Owner:	R. Race, President Hydrographic Survey Co. 1830 N. Narragansett Ave. Chicago, Illinois Home: (312) 637-3535 Boat: (312) 822-9684
Cruise no.:	NPTN91-1
Project:	Regional Great Lakes
Area of Operations:	Michiana, MI to Benton Harbor, MI
Dates and Ports:	May 15: Chicago, IL (mobilize) May 16-18: Michigan City, IN May 19-21: St. Joseph, MI May 22-23: Michigan City, IN May 24: Chicago, IL (demobilize)
Scientific Party:	D. Foster (AMG), Chief Scientist D. Folger (AMG), Scientist C. Brown (AMG), Scientist B. Irwin (AMG), Navigator K. Parolski (AMG), Technician D. Tagg (PMG), Navigator R. Laton (W. Michigan Univ.), Student D. Wardwell (W. Michigan Univ.), Student
Purpose of Cruise:	Acquisition of high-resolution seismic reflection, side scan sonar, and bathymetric data for the Regional Great Lakes Mapping Project. Reconnaissance of geologic framework and surficial sediment texture.

Navigation: Miniranger Falcon IV with GPS backup, Navigation Software provided by B. Irwin

Scientific Equipment:
- Klein Sidescan Sonar (500 kHz) with QMIPS data acquisition system
- ORE 3.5 kHz Subbottom System
- Boomer System
  - Huntec surface tow source
  - Geopulse Receiver
- EPC Graphic Recorder for seismic records
- Odem 200 kHz Echosounder
- Benthos Acoustic Transponder System

Days at Sea: 7 days

Data Collected:
- 256 line kilometers sidescan sonar
- 256 line kilometers echosounder
- 263 line kilometers 3.5 kHz subbottom
- 170 line kilometers Huntec boomer subbottom

WEDNESDAY MAY 15 (DAY 135)

TIME IS GMT UNLESS NOTED OTHERWISE

0800 CDT	BEGIN MOBILIZATION AT CHICAGO POLICE DOCK
1400 CDT	BEGIN TRANSIT TO MICHIGAN CITY, INDIANA
2000 EDT	DOCK MICHIGAN CITY PORT AUTHORITY

THURSDAY MAY 16 (DAY 136)

0800 EDT	CONTINUE MOBILIZATION, CALIBRATE MINIRANGER CODES 2,3,4,5
1839	DEPART DOCK, UNDERWAY TO SOL 1
1930	DEPLOYING GEAR (3.5, ODEM, KLEIN SSS) ODEM VELOCITY: 1450 m/s QMIPS VELOCITY: 1500 m/s
2128	**SOL 1, QMIPS TAPE #1** COURSE: 145 SPEED: 3-3.5
2233	LOST MR STATION A
2237	SWITCH TO GPS
2238	MR BACK ON
2240	MR OFF, RAIN, GPS IS ON
2251	MR BACK ON
2252	LOST MR STATION A AGAIN
2256	MR BACK ON, TAGG WIGGLED CABLES MR INTERMITTENT, RAINING SLIGHTLY ONSHORE, WAS RAINING HEAVY
2300	GPS IS ON
2315	MR BACK ON
2321	**EOL 1**
2330	UNDERWAY TO MICH. CITY DOCK
2006	DOCK AT MICH. CITY

FRIDAY MAY 17 (DAY 137)

0745 EDT	ARRIVE BOAT
0843 EDT	DEPART MICH. CITY DOCK DEPLOY GEAR (3.5, ODEM, KLEIN SSS)
1420	**SOL 2, QMIPS TAPE # 2** COURSE: 143.9 SPEED: 3.5
1440	QMIPS DOWN, LOST PORT SIDE CHANNEL ON SIDESCAN
1454	QMIPS BACK ON, FOUND BAD SPLICE IN DECK CABLE
1543	STATION B HAS WEAK SIGNAL
1544	LOST MR STATION B

CONTINUE FRIDAY MAY 17 (DAY 137)

1548 SWITCH TO GPS
1553 MR BACK ON THEN OFF AGAIN

1558 GPS IS ON
1559 MR BACK ON
1609 **EOL 2**

1700 **SOL 3, QMIPS TAPE # 3** SEAS BUILDING ON THE BOW
1854 **EOL 3**

1858 DONE FOR THE DAY, 3 FT WAVES AND BUILDING HIGHER, WIND NW
1633 EDT ARRIVE MICH. CITY DOCK
HUNTEC STREAMER ARRIVED AT IND. DNR

SATURDAY MAY 18 (DAY 138)

1000 EDT DEPART MICH. CITY DOCK TO CHECK SEA CONDITIONS
4-5 FT SWELLS FROM THE NW OUTSIDE THE HARBOR - WEATHER DAY

SUNDAY MAY 19 (DAY 139)

0715 EDT DEPART MICH. CITY DOCK, LIGHT SE WIND, WAVES 0-2 FT
DEPLOY GEAR (3.5, HUNTEC, KLEIN SSS, ODEM)

1323 **SOL 4, QMIPS TAPE # 4** COURSE: 133 SPEED: 4.2
LARGE DIFFERENCE MR VS. GPS, PROBLEM W/ MR STATION D X,Y
MR VS. GPS 562'(X), -344'(Y)
1413 HUNTEC OFF, CAUSING NOISE ON SIDESCAN
1439 **EOL 4** OFF LAKESIDE

1512 **SOL 5** COURSE: 311 SPEED: 3.8, MR VS. GPS -67'(X), -62'(Y)
1515 MR INTERMITTENT, JUMPY
1517 MR BACK ON
1610 HUNTEC OFF, LOOKING FOR NOISE PROBLEM
1636 **EOL 5**

1717 **SOL 6** COURSE: 123 SPEED: 4.5, MR VS. GPS -24'(X), 19'(Y)
1829 **EOL 6**

1829 **SOL 7** COURSE: 028 SPEED: 4.2
1833 SWITCH TO GPS, MR STATION F DOWN (NEED CABLE FOR STATION G)
1900 **EOL 7** ON GPS, MR DOWN

CONTINUE SUNDAY MAY 19 (DAY 139)

1900	**SOL 8** COURSE: 296 SPEED: 4.1, STILL USING GPS
1910	MR BACK ON
1945	**QMIPS TAPE # 5**
2016	**EOL 8**
2016	**SOL 9** COURSE: 037 SPEED: 4.1, USING GPS
2038	SWITCH TO MR - MR VS. GPS -12'(X), -33'(Y)
2048	**EOL 9**
2048	**SOL 10** COURSE: 111 SPEED: 4.3, MR VS. GPS -45'(X), 50'(Y)
2151	**EOL 10**
2208	UNDERWAY TO BENTON HARBOR
1917 EDT	DOCK ST. JOSEPH, MICH. - WEST BASIN MARINA

MONDAY MAY 20 (DAY 140)

0840 EDT	DEPART DOCK ST. JOE., UNDERWAY TO LINE 11
1500	3.5 kHz TRANSCEIVER NOT WORKING, CONTINUE WITHOUT GEAR DEPLOYED (HUNTEC, KLEIN SSS, ODEM)
1520	**SOL 11, QMIPS TAPE #6** COURSE: 293 SPEED: 4.2, USING GPS
1527	SWITCH TO MR, MR VS. GPS -27.8'(X), -95.6'(Y)
1543	NAV CRASHED
1547	NAV ON LINE
1550	NAV CRASHED AGAIN
1554	NAV ON LINE
1557	NAV CRASHED
1610	NAV ON LINE, 1603 IS FIRST TIME ON 2nd NAV DISK DISABLED STA. I2, MR VS. GPS 7.9'(X), -52.5'(Y)
1618	MR STA. I,I2,ST JOE. HOTEL, MR VS. GPS 1.7'(X), 9.2'(Y)
1628	**EOL 11**
1628	**SOL 12** COURSE: 010 SPEED: 4.0
1654	**EOL 12**
1654	**SOL 13** COURSE: 114 SPEED: 4.0, MR VS. GPS -14'(X), 15'(Y)
1709	BREAK OFF LINE, SIDESCAN CABLE PROBLEM AND TAKING ON SPARES TO REPAIR 3.5, RENDEZVOUS W/ FOLGER ON HAPPY HOUR II
1758	CIRCLING BACK ON LINE 13
1814	**RESTART LINE 13** COURSE: 115 SPEED: 4.2, SIDESCAN OK, NO 3.5 YET
1817	MR VS. GPS -0.9(X), -34(Y)

CONTINUE MONDAY MAY 20 (DAY 140)

1835 3.5kHz BACK ON
1839 LOST BOTH MR STATIONS, SWITCH TO GPS
1843 MR BACK ON BUT JUMPY
1844 MR VS. GPS 19'(X), -29'(Y)
1900 MR DOWN, SWITCH TO GPS, GETTING TOO CLOSE TO SHORE
1916 **EOL 13**

1916 **SOL 14** USING GPS
1919 NO NAV, GPS PDOP TOO HIGH
1927 GPS OK, MR IS STILL DOWN
1943 MR BACK ON, MR VS. GPS -1'(X), 25'(Y)
1950 **EOL 14**

1950 **SOL 15** COURSE: 294 SPPED: 3.5, MR VS. GPS 18'(X), 19'(Y)
2058 **EOL 15**

2058 **SOL 16** COURSE: 019 SPEED: 4.4
2122 SWITCH TO MR STATION K, MR VS. GPS 10'(X), 22'(Y)
2138 **EOL 16**

2138 **SOL 17** COURSE: 111 SPEED: 4.2, MR VS. GPS 89'(X), 101'(Y)
2208 MR DOWN, INTERMITTENT
2221 MR STA. K BACK ON, BAD POWER CABLE, MR VS. GPS 3'(X),23'(Y)
2235 MR VS. GPS 26'(X), 38'(Y)
ODEM TIME 2230 IS REALLY 2234 ?
2254 **EOL 17**, UNDERWAY TO DOCK WEST BASIN MARINA

2325 DOCKED ST. JOE. WEST BASIN MARINA

TUESDAY MAY 21 (DAY 141)

0800 EDT DEPART DOCK, UNDERWAY TO START M1 MOSAIC
GEAR DEPLOYED (3.5, ODEM, KLEIN SSS)
0900 EDT HEADING OFFSHORE TO SOL 18, TUNING SIDESCAN GAIN
1308 CHECKING NAV, MR VS. GPS 80'(X), 24'(Y)

1330 **SOL 18, M1 MOSAIC, QMIPS TAPE # 7** COURSE 115 SPEED: 4.4
1401 MR VS. GPS 35'(X), -1'(Y)
1405 **EOL 18**

1408 **SOL 19** COURSE: 295 SPEED: 4.4, SWITCHED TO GPS, LOST MR STA.
CLOSE TO SHORE

CONTINUE TUESDAY MAY 21 (DAY 141)

1434 **ABORT LINE 19,** QMIPS DEVICE ERROR, DATA NOT RECORDING

TAPE DRIVE Z:, POSSIBLY A BAD TAPE?

1621 UNDERWAY TO RESTART LINE 19, QMIPS TAPE DRIVE WORKING, NEW TAPE **QMIPS TAPE # 8**

1649 **RESTART LINE 19**

1652 QMIPS TAPE DRIVE ERROR, REBOOT QMIPS

1720 **ABORT LINE 19,** UNDERWAY TO RERUN 3.5 kHz ON LINE 11, WILL CALL IT LINE 20

1816 **SOL 20** COURSE: 293 SPEED: 4.1, USING GPS, 3.5 kHz ONLY

1827 SWITCH TO MR, MR VS. GPS 2.3'(X), -7.8'(Y)

1917 **EOL 20**

1917 **SOL 21** MR VS. GPS 17'(X), -28'(Y), 3.5 kHz ONLY

1935 **EOL 21**

1935 **SOL 22** COURSE: 118 SPEED: 5.2, 3.5 kHz ONLY

2029 **EOL 22**

2047 **SOL 23, QMIPS TAPE # 9** COURSE: 029 SPEED: 4.2 (3.5, ODEM, HUNTEC, KLEIN) QMIPS HAD A LOOSE BOARD - OK NOW
MR IS JUMPY (TOO CLOSE TO SHORE), ON GPS

2103 SWITCH TO MR, MR VS. GPS 52'(X), 78'(Y)

2219 ENABLED MR STA K, MR VS. GPS -3'(X), 111'(Y)

2224 SWITCH TO GPS, LOSING MR STA I AND K

2240 MR BACK ON

2241 **EOL 23** MR DOWN GPS ON, UNDERWAY TO ST. JOE. DOCK

2315 DOCKED ST. JOE. WEST BASIN MARINA

WEDNESDAY MAY 22 (DAY 142)

0750 EDT DEPART DOCK ST. JOE. WEST BASIN MARINA
GEAR DEPLOYED (3.5, ODEM, KLEIN SSS)
QMIPS TAPE # 10

1245 **SOL 24, M1 MOSAIC** COURSE: 114 SPEED: 4.5, MR VS. GPS 1'(X), 6'(Y)

1319 **EOL 24**

1321 **SOL 25** COURSE: 294 SPEED: 4.3, MR VS. GPS 26'(X), 20'(Y)

1356 **EOL 25**

1400 **SOL 26** COURSE: 114 SPEED: 4.5

1433 **EOL 26**

CONTINUE WEDNESDAY MAY 22 (DAY 142)

1435 **SOL 27** COURSE: 295 SPEED: 4.4
1510 **EOL 27**
1518 **SOL 28** COURSE: 114 SPEED: 4.5, MR VS. GPS 40'(X),37'(Y)
1552 **EOL 28**
1554 **SOL 29** COURSE: 294 SPEED: 4.0
1618 SWITCH TO GPS, MR STA. I AND J ARE OUT
1620 MR BACK ON, JUMPY, SWITCH BACK TO GPS
1624 MR BACK ON
1630 **EOL 29**
1640 VELOCITY PROFILE AT THE END OF LINE 29

WATER DEPTH (FEET)	VELOCITY (FEET/SECOND)
SURFACE	4794
5	4792
10	4786
15	4784
20	4773
25	4763
30	4755
35	4749
40	4739
45	4734
50	4729

1647 UNDERWAY TO MOSAIC M2
1736 **SOL 30** COURSE: 114 SPEED: 4.3, MR VS. GPS -20'(X), -70'(Y)
1812 **EOL 30**
1823 **SOL 31** COURSE: 293 SPEED: 4.5, MR JUMPY NEAR SHORE
1900 **EOL 31**
1907 **SOL 32** COURSE: 114 SPEED: 4.4, MR OFF AND ON
1942 LOST HOTEL MR STA. NEAR SHORE, SWITCH TO GPS
1943 MR BACK ON
1944 **EOL 32** SWITCH TO GPS
1946 **SOL 33** COURSE: 294 SPEED: 4.2, USING GPS
1947 MR BACK ON, MR VS. GPS 8'(X), 17'(Y)
2022 **EOL 33**
2030 **SOL 34** COURSE: 113 SPEED: 4.5, MR OK OFFSHORE
2032 **NEW QMIPS TAPE # 11**
2102 SWITCH TO GPS
2103 MR BACK ON
2105 **EOL 34** LOST FIX GPS, UNDERWAY TO MICH. CITY
2345 DOCKED MICH. CITY PORT AUTHORITY

THURSDAY MAY 23 (DAY 143)

0730 EDT	ARRIVE BOAT
0800 EDT	DEPART MICH. CITY DOCK, UNDERWAY TO SOL 35 (TIE LINE)
	GEAR DEPLOYED (3.5, ODEM HUNTEC, KLEIN SSS)
	QMIPS TAPE # 12
1247	**SOL 35** COURSE: 058 SPEED: 4.5, USING GPS, ONLY 1 MR STA.
1311	NO NAV, GPS DOWN, STILL NO MR
1315	GPS PDOP 77 - 45 & COMING DOWN
1321	GPS PDOP 17 DOGLEG JUMP, HOLDING PREVIOUS COURSE STEADY
	COURSE: 054 SPEED: 4.9
	PASSING LINE 2 SOUTH OF NEW BUFFALO
1325	LORAN: 33178.98 50256.50
1330	LORAN: 33174.50 50254.59
1335	LORAN: 33170.11 50252.43
1340:30	LORAN: 33165.23 50249.97 PASSING NEW BUFFALO BREAKWALL
1345	LORAN: 33161.20 50248.10
1350	LORAN: 33156.81 50245.78 GPS PDOP 4
1355	LORAN: 33152.56 50243.74 C/C TO POINT ON LINE 4, STILL NO NAV
1400	LORAN: 33147.70 50241.60
1406	LORAN: 33142.70 50238.12
1410	LORAN: 33139.26 50235.79
1415	LORAN: 33134.54 50232.38 TURNING TO AVOID FISHING BOAT
1419	TURNING BACK ON COURSE
1420	LORAN: 33130.46 50229.63
1425	LORAN: 33125.91 50226.51
1430	LORAN: 33121.38 50223.19 CLOSE TO PASSING LINE 4
1435	LORAN: 33116.78 50219.98 PASSING LINE 4, C/C TO LINE 5
1440	LORAN: 33112.29 50217.99
1443	GPS BACK ON, COURSE: 050 SPEED: 5.2
1445	LORAN: 33107.38 50215.75
1450	LORAN: 33102.67 50213.48
1453	C/C COURSE: 040 SPEED: 5.1
1455	LORAN: 33098.36 50211.09
1528	C/C COURSE: 030 SPEED: 5.4
1551	C/C COURSE: 018 SPEED: 5.2
1615	PASSING COOK NUCLEAR PLANT WATER INTAKE
1633	**EOL 35** UNDERWAY TO M3 MOSAIC OFF LAKESIDE
	GEAR DEPLOYED (3.5, ODEM, KLEIN SSS)
1714	MR ON, MR VS. GPS -798'(X), 628'(Y), LARGE DIFFERENCE AS WAS
	LINE 4
	M3 MOSAIC
1807	**SOL 36** COURSE: 134 SPEED: 4.8, MR VS. GPS 289'(X), -268'(Y)

CONTINUE THURSDAY MAY 23 (DAY 143)

1822	**EOL 36**
1824	**SOL 37** COURSE: 134 SPEED: 4.9
1837	**EOL 37**
1842	**SOL 38** COURSE: 134 SPEED: 5.1
1856	**EOL 38**

END OF NPTN91-1, TRANSIT TO MICH. CITY

1645 EDT DOCKED MICH. CITY PORT AUTHORITY