LOUISIANA STATE UNIVERSITY
AND AGRICULTURAL AND MECHANICAL COLLEGE
Coastal Studies Institute
Center for Coastal, Energy & Environmental Resources

9400117
A01780

July 11, 1994

Mr. Francis J. Mitchell
National Oceanographic Data Center
1825 Connecticut Ave., NW
Washington, DC 20235

RE: Submission of Preliminary Data, NODC Project 0213
MMS Contract No. 14-35-0001-30632
Mississippi River Plume Hydrographic Study
Cruise P941

Dear Mr. Mitchell:

In accordance with requirements for the above referenced contract, we are submitting a preliminary data tape from our cruise P941. The standard NODC Data Documentation form accompanies the tape.

Please contact our office if you have any questions.

Sincerely,

Marie Newman
Data Management

cc:Murray Brown, COTR, MMS
enclosure (Data Document Form)

RECEIVED
JUL 26 1994
076

Howe/Russell Geoscience Complex, 3rd Floor (Old Geology Building)
Baton Rouge • Louisiana • 70803-7527 • 504/388-2395 • 504/388-5301 • FAX: 504/388-2520

ACCESSION NO. 9400117

A01780

DATA DOCUMENTATION FORM

NOAA FORM 24-13 (2-85)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANOGRAPHIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEANOGRAPHIC DATA CENTER
RECORD SECTION
WASHINGTON, D.C. 20235

FORM APPROVED
O.M.B. NO. 0648-0024
EXPIRES 2/29/87

(While you are not required to use this form, it is the most desirable mechanism for providing the required ancillary information enabling the NODC and users to obtain the greatest benefit from your data.)

This form should accompany all data submissions to NODC. Section A, Originator Identification, must be completed when the data are submitted. It is highly desirable for NODC to receive the remaining pertinent information at that time. This may be most easily accomplished by attaching reports, publications, or manuscripts which are readily available describing data collection, analysis,and format specifics. Readable, handwritten submissions are acceptable in all cases. All data shipments should be sent to the above address.

A. ORIGINATOR IDENTIFICATION

THIS SECTION MUST BE COMPLETED BY DONOR FOR ALL DATA TRANSMITTALS

1. NAME AND ADDRESS OF INSTITUTION LABORATORY, OR ACTIVITY WITH WHICH SUBMITTED DATA ARE ASSOCIATED
Louisisna State University
Coastal Ecology Institute
Coastal Studies Institute
335 Howe/Russell Bldg. West
Baton Rouge, LA 70803

JUL 26 1994
076

2. EXPEDITION, PROJECT, OR PROGRAM DURING WHICH DATA WERE COLLECTED
Minerals Management Service
Mississippi River Plume Hydrographic Study
Texas - Louisiana Shelf Physical Oceanographic Program
LATEX Part - B Contract # 14-35-0001-30632

3. CRUISE NUMBER(S) USED BY ORIGINATOR TO IDENTIFY DATA IN THIS SHIPMENT
Cruise P941 APRIL 12, 1994 - APRIL 21, 1994

4. PLATFORM NAME(S)?	5. PLATFORM TYPE (E.G.SHIP,BUOY,ETC)	6. PLATFORM AND OPERATOR NATIONALITY(IS)		7. DATES	
		PLATFORM	OPERATOR	FROM	TO
R. V. Pelican	Ship (UNOLS Vessel)	U.S.	U.S.	4/12/94	4/21/94

8. ARE DATA PROPRIETARY?
[ ] NO [XX] YES
IF YES WHEN CAN THEY BE RELEASED FOR GENERAL USE? YEAR_____ MONTH_____

9. ARE DATA DECLARED NATIONAL PROGRAM (I.E.,SHOULD THEY BE INCLUDED IN WORLD DATA CENTERS HOLDINGS FOR INTERNATIONAL EXCHANGE
[ ] NO [XX] YES [ ] PART

10. PERSON TO WHOM ENQUIRIES CONCERNING DATA SHOULD B E ADDRESSED WITH TELEPHONE NUMBER (AND ADDRESS IF OTHER THAN ITEM-1)

11. PLEASE DARKEN ALL MARSDEN SQUARES IN WHICH ANY DATA CONTAINED IN YOUR SUBMISSION WERE COLLECTED.

GENERAL AREA

SEE ATTACHED LIST OF LONGITUDES AND LATITUDES

B. SCIENTIFIC CONTENT

Include enough information concerning manner of observation, instrumentation, analysis, and data reduction routines to make them understandable to future users. Furnish the minimum documentation considered relevant to each data type. Documentation will be retained as a permanent part of the data and will be available to future users. Equivalent information already available may be substituted for this section of the form. (i.e.,publications, reports and manuscripts describing observational and analytical methods) If you do not provide equivalent information by attachment, please complete the scientific content section.

NAME OF DATA FIELD	REPORTING UNITS OR CODE	METHODS OF OBSERVATION AND INSTRUMENTS USED (SPECIFY TYPE AND MODEL)	ANALYTICAL METHODS INCLUDING MODIFY-CATIONS AND LABOR-TORY PROCEDURES	DATAPROCESSING TECH-NIQUES WITH FILTERING AND AVERAGING
MIDAS DATA				
TD.Sys Date	DD-MM-YY	MIDAS PC clock	N/A	N/A
TD.SysTime	HH:MM:SS	MIDAS PC clock	N/A	N/A
ND.SourceLat	ddd mm.xx	Northstar 800X Loran?GPS		
ND.SourceLong	ddd mm.xx	Northstar 800X Loran/GPS		
ND.TD1	ddddd.d in microseconds	Northstar slave time		
ND.TD2	ddddd.d in microseconds	Northstar slave time		
ND.TD3	ddddd.d in microseconds	Northstar slave time		
ND.TD4	ddddd.d in microseconds	Northstar slave time		
ND.TD5	ddddd.d in microseconds	Northstar slave time		
ND.BlinkStatusTD	x where A=data valid & V=data invalid	LORAN		
ND.CycleStatus	x where A=data valid & V=data invalid	LORAN		
ND.SnrStatusTD	x where A=data valid & V=-data invalid	LORAN		
ND.GDOP	d.dd natutical miles	LORAN		
ND.TrueCOG	ddd degrees			
ND.TrueCOG	ddd degrees			
ND.MagneticCOG	ddd degrees			
ND.KnotsSOG	## . # in knots			
TD.SysDate				
TD.SysTime				

B. SCIENTIFIC CONTENT

Include enough information concerning manner of observation, instrumentation, analysis, and data reduction routines to make them understandable to future users. Furnish the minimum documentation considered relevant to each data type. Documentation will be retained as a permanent part of the data and will be available to future users. Equivalent information already available may be substituted for this equivalent information by attachment, please complete the scientific content section.

NAME OF DATA FIELD	REPORTING UNITS OR CODE	METHODS OF OBSERVATION AND INSTRUMENTS USED (SPECIFY TYPE AND MODEL)	ANALYTICAL METHODS INCLUDING MODIFICATIONS AND LABORATORY PROCEDURES	DATAPROCESSINGTECHNIQUES WITHFILTERING AND AVERAGING
ND . TimeToWayPt	hh : mm			
Nd . TimeToWayPt	hh : mm			
ND . WayPrCross TrkErrN	## . # nautical Miles miles			
ND . WayPtCross TrkErrDir	x where R=right & L=left			
ND . WayPTLat	ddd mm . xx			
ND . WayPTLong	ddd mm . xx			
ND . RangeToWayPt	### . #			
ND .BearingToWayPt	ddd			
ND . LoranLat	ddd mm . xx	LORAN - specific		
ND . LoranLong	ddd mm . xx	LORAN - specific		
ND . PreferredTD1	hh : mm	LORAN - specific		
ND . PreferredTD2	hh : mm	LORAN - specific		
ND . GPSLat		GPS specific, currently not available		
ND . GPSLong		GPS specific, currently not available		
HD . WaterTemp	### . ### Celsius	Seabird C -T meter		
HD . Conduct	### . ###	Seabird C -T meter siemens / meter		
HD . Salinity	### . ### ppt .	Seabird C- T meter		
HD . ChloroFluor Vt	## . ###	fluorometer		
HD . AuxFluorVt	## . ###	fluorometer		
HD. fluorSwitch	###	Fluorometer integer value 0-255 containing encoded fluorometer switch settings		
HD.LightTrans	###.# percent	transmissometer		
HD.FlowRate	##.# liters/minute	transmissometer		
MD.MeanHzntlWndSpd	###.# meters/second	wind sensor		

B. SCIENTIFIC CONTENT

NAME OF DATA FIELD	REPORTING UNITS OR CODE	METHODS OF OBSERVATION AND INSTRUMENTS USED (SPECIFY TYPE AND MODEL)	ANALYTICAL METHODS INCLUDING MODIFICATIONS AND LABORATORY PROCEDURES	DATA PROCESSING TECHNIQUES WITH FILTERING AND AVERAGING
MD.ResultWndSpd	###.# meters/second	wind sensor		
MD.Correct ResultWndSpd	###.# meters./second	wind sensor		
MD.MeanWndDir	### degrees	wind sensor		
MD.DevWndDir	ddd.d degrees	wind sensor		
MD.CorrentMeanWnd Dir	### degrees	wind sensor		
MD.AirTemp	###.# degrees celcius			
MD.BaroPres	##.## inches Hg.			
MD.SolarIrrad	###.## Kw/Sq meter			
ADCP				
Start Nav Time	hh.mm.ss	Acoustic Doppler		
Start Latitude	dd.mm.xx	Current profiler		
Start Longitude	dd.mm.xx	1200 KHz		
End Nav Time	hh.mm.ss			
End Latitude	dd.mm.xx			
End Longitude	dd.mm.xx			
ADCP Time	hh.mm.ss			
Date	mm.dd.yyyy			
Ensemble #				
Bottom Track direction E-W	degrees from north			
Bottom Track direction N-S	degrees from north			
Bottiach depth				
Bin #	meters			

B. SCIENTIFIC CONTENT

NAME OF DATA FIELD	REPORTING UNITS OR CODE	METHODS OF OBSERVATION AND INSTRUMENTS USED (SPECIFY TYPE AND MODEL)	ANALYTICAL METHODS INCLUDING MODIFICATIONS AND LABORATORY PROCEDURES	DATAPROCESSING TECHNIQUES WITH FILTERING AND AVERAGING
Depth	meters			
Velocity E-W	cm/sec			
Velocitiy N-S	cm/sec			
Amps	decibels			
CTD				
Depth	meters	serial# 264		
Conductivity	s/m	serial #657		Sampled at .5 second intervals
Temperature	deg C			
Salinity	ppt	serial #106		
Oxygen	mg/liter			
Backscatter	%	serial #442		
Transmissometer	%	Paroscientific digiquartz pressure sensor serial #39571		
Pressure	decibals			

C. DATA FORMAT

COMPLETE THIS SECTION FOR PUNCHED CARDS OR TAPE,MAGNETIC TAPE, OR DISC SUBMISSIONS

1. LIST RECORD TYPES, CONTAINED IN THE TRANSMITTAL OF YOUR FILE
   GIVE METHOD OF IDENTIFYING EACH RECORD TYPE..

RECORD TYPE	RECORD LENGTH	BLOCK SIZE
Cruise5.ADCP	100	32700 (772 used)
Cruise5.Biochem	3016	3020 (256 used)
Cruise5.CTD	3016	3020 (1983 used)
Cruise5.Midas	450	32400 (1453 used)

2. BRIEF DESCRIPTION

CRUISE5.CTD and CRUISE5.BIOCHEM are partitioned data sets.
CRUISE5.ADCP and CRUISE5.MIDAS are sequetial data sets.
The tape is standard label. produced on IBM MVS.

3.ATTRIBUTES AS EXPRESSED IN [ ] PL1 [ ] ALGOL [ ] COBOL

[ ] FORTRAN [ ] LANGUAGE

4. RESPONSIBLE COMPUTER SPECIALIST
   NAME AND PHONE NUMBER Mary L. White (504) 388-6359

ADDRESS Coastal Studies Institute
Howe-Russell Geoscience Complex, Rm. 335
Louisiana State University
Baton Rouge, LA 70803

COMPLETE THIS SECTION OF DATA ARE ON MAGNETIC TAPE

5. RECORDING MODE [ ] BCD [ ] BINARY [ ] ASCII [XX] EBCDIC [ ] _____	9. LENGTH OF INTER-RECORD GAP (IF KNOWN) [ ] 3/4 INCH [ ] _____
6. NUMBER OF TRACKS [ ] SEVEN [XX] NINE [ ] _____	10. END OF FILE MARK [ ] OCTAL 17 END OF FILE MARK [ ] _____
7. PARITY [ ] ODD [ ] EVEN	11. PASTE-ON-PAPER LABEL DESCRIPTION (INCLUDE ORIGINATOR NAME AND SOME LAY-SPECIFICATIONS OF DATA TYPE, VOLUME NUMBER)
8. DENSITY [ ] 200BPI [ ] 1600BPI [ ] 556BPI [ ] 800BPI [XX] 6250BPI	12. PHYSICAL BLOCK LENGTH 13. LENGTH OF BYTES IN BITS

RECORD FORMAT DESCRIPTION

RECORD NAME TAPE # 1 FILE # 1 CRUISE5.ADCP

14. FIELDNAME	15. POSITION FROM -1 MEASURED IN	16. LENGTH		17. ATTRIBUTES	18. USE AND MEANING
		NUMBER	UNITS		
Data is organized in row s of data Row one field 1 - 5 contains: ensemble time - - month(at start) - Day - Hour - Minute - Second field 6: Ensemble number (or segment number for processed data) field 7: Pitch - average for this ensemble (degrees) field 8: Roll - average for this ensemble (degrees) field 9: Corrected Heading - average ADCP heading + heading offset - magnetic variation field 10: adcp temperature - average for this ensemble (°C) Row 2 field 1 - 4: Bottom-track velocity - east (+)/West(-); average for this ensemble (cm/s or ft/s) - north(+)/South(-); - vertical (up[+]/down [-]) - error					Whenever Transect (the program that creates the ADCP data) displays a new data segment (a Raw or averaged data ensemble), it writes the following data to the ASCII-out file. The first 6 rows contain leader, scaling, navigation, and discharge information. Starting with row 7, transect writes information in columns based on the bin depth. When transect writes the information for all bins in the current ensemble, it goes to the next ensemble and repeats the cycle starting with Row 1. Each field is separated by one or more spaces. Transect does not split ensembles between files. The file size automatically increases to fit at least one ensemble. Missing data (data not sent from adcp) is not included (no dashes or fill values). Assigned "bad data" values: velocity (32767); discharge (214783647); latitude/longitude (30000).

RECORD FORMAT DESCRIPTION

RECORD NAME TAPE # 1 FILE # 1 CRUISE5.ADCP

14. FIELD NAME	15. POSITION FROM -1 MEASURED IN	16. LENGTH		17. ATTRIBUTES	18. USE AND MEANING
		NUMBER	UNITS		
field 5 - 8: depth reading - beam 1 avg. forensemble (m or ft) - beam 2 - beam 3 - beam 4 row 3 - fields 1 - 3: total elapsed distance - through this ensemble (from bottom-track data; in m or ft) elapsed time - through this ensemble (in seconds) course made good - through this ensemble (from bottom-track data) row 4 fields 1 - 5: navigation data: - latitude average for this ensemble (degrees) - longitude: average for this ensemble (degrees) - north(+)/South(-) ship movement; average for this ensemble (cm/s or ft/s) - East(+)/West(-) ship movement; average for this ensemble (cm/s or ft/s) - Total distance traveled through this ensemble (cm or ft)					

RECORD FORMAT DESCRIPTION

RECORD NAME TAPE # 1 FILE # 1 CRUISE5.ADCP

14. FIELD NAME	15. POSITION FROM -1 MEASURED IN	16. LENGTH		17. ATTRIBUTES	18. USE AND MEANING
		NUMBER	UNITS		
Row 5 fields 1 - 5: Accumulated discharge values - middle part of profile (measured); m3/s or ft3/s - top part of profile (estimated) - bottom part of profile (estimated) - start-shore estimate - end-shore estimate Row 6 fields 1 - 3: Number of bins to follow: measurement unit - cm or ft velocity reference - BT or none Row 7 fields 1 - 13 Depth - corresponds to depth of data for present bin (depth cell); includes ADCP depth and blanking value: in m or ft. Velocity magnitude velocity direction east velocity component - east(+)/west(-) north velocity component - north(+)/south(-) vertical velocity component - up(+)/down(-) error velocity					

RECORD FORMAT DESCRIPTION

RECORD NAME TAPE # 1 FILE # 1 CRUISE5.ADCP

14. FIELDNAME	15. POSITION FROM -1 MEASURED IN	16. LENGTH		17. ATTRIBUTES	18. USE AND MEANING
		NUMBER	UNITS		
echo intensity : - beam 1 - bean 2 - beam 3 - beam 4 percent - good discharge					

RECORD FORMAT DESCRIPTION

RECORD NAME TAPE # 1 FILE # 2 CRUISE5.MIDAS

14. FIELD NAME	15. POSITION FROM -1 MEASURED IN	16. LENGTH		17. ATTRIBUTES	18. USE AND MEANING
		NUMBER	UNITS		
MIDAS DATA					
TD.SysDate	1-10		days		System date on MIDAS PC clock
TD.SysTime	11-18		hours		System date on MIDAS PC clock
ND.SourceLat	19-29				Latitude
ND.SourceLong	30-40				Longitude
ND.TD1	41-47		microseconds		slave time differences
ND.TD2	48-54		microseconds		
ND.TD3	55-61		microseconds		
ND.TD4	62-68		microseconds		
ND.TD5	69-75		microseconds		
ND.CycleStatusTD	76				X where A=data valid & V where data invalid
ND.CycleStatusTD	77				X where A=data valid & V where data invalid
ND.SnrStatusTD	78				X where A=data valid & V where data invalid
ND.GDOP	79-83		nautical miles		Signal 1-to noise ration of preferred
ND.True GOG	84-86		degrees		True course overground
ND.MagneticGOG	87-89		degrees		Magnetic course over ground
ND.KnotsSOG	90-93		knots		speed over ground
ND.WayPointETA	94-98				estimated time to current way point
ND.TimeToWayPT	99-103				estimated time to current way point

RECORD FORMAT DESCRIPTION

RECORD NAME TAPE # 1 FILE # 2 CRUISE5.MIDAS

14. FIELDNAME	15. POSITION FROM -1 MEASURED IN	16. LENGTH		17. ATTRIBUTES	18. USE AND MEANING
		NUMBER	UNITS		
ND.WayPtCrossTrkErrNMiles	104-107				
ND.WayPtCrossTrkErrDir	108				
ND.WayPtLat	109-119				
ND.WayPtLong	120-130				
ND.RnageToWayPt	131-135				
ND.LoranLat	139-149				
ND.LoranLong	150-160				
ND.PreferredTD1	161-165				
ND.PreferredTD2	166-170				
ND.GPSLat	171-181	not currently used			
ND.GPSLong	182-192				
HD.WaterTemp	193-199		degrees celcuis		
HD.Conduct	200-213		siemens/meter		
HD.Salinity	207-213		ppt		
HD.ChloroFluorVt	214-219				
HD.AuxFluorVt	220-225		voltage		interger value 0-225
HD.FluorSwitch	226-228				
HD.LightTRans	229-233		%		
HD.FlowRate	234-237		liters/min		
MD.MeanHzntlWndSpd	238-242		meters/sec		resultant wind spd from sensor
MD.ResultWndSpd	243-247		meters/sec		resultant wind spd
MD.CorrectResultWndSpd	248-252		meters/sec		corrected for ships sped over ground, course over ground and hdg.

RECORD FORMAT DESCRIPTION

RECORD NAME TAPE # 1 FILE # 2 CRUISE5.MIDAS

14. FIELDNAME	15. POSITIN FROM -1 MEASURED IN	16.LENGTH		17. ATTRIBUTES	18. USE AND MEANING
		NUMBER	UNITS		
MD.SensorMeanWndDir	253-255		degrees		mean wind direction
MD.Dev.WndDir	256-260		degrees		wind deviation
MD.CorrectMeanWndDir	261-263		degrees		corrected for ship's speed over ground, course over ground and heading
MD.AirTemp	264-268		degrees celcius		
MD.BaroPress	269-273		in.Hg.		
MD.SolarIrrad	274-279		kw/sq.meter		

RECORD FORMAT DESCRIPTION

RECORD NAME Tape #1 File #3 CRUISE5.BIOCHEM

14. FIELDNAME	15. POSITION FROM -1 MEASURED IN	16. LENGTH		17. ATTRIBUTES	18. USE AND MEANING
		NUMBER	UNITS		
ALL OF THE FILES ARE IN SPREADSHEET FORMAT. SAVED AS CSV IN EXCEL. Files beginning with U, T, & W are the property of Dr. Jay Means and are pollutant chemistry data.					

RECORD FORMAT DESCRIPTION

RECORD NAME: TAPE # 1 FILE # 4 CRUISE5.CTD

14. FIELDNAME	15. POSITION FROM -1 MEASURED IN	16. LENGTH		17. ATTRIBUTES	18. USE AND MEANING
		NUMBER	UNITS		
Depth	0 - 11		meters		
conductivity	12 - 22		s/m		
temperature	23 - 33		degrees celcius		
Salinity	34 - 44		P 55-78		
Oxygen	45 - 55		me per/liter		
Backscatter	56 - 66				
Transmissometer	67 - 77		volts		
Pressure	78 - 88		decibars		
Flagend	89 - 96	0 et			

90° 31.92	29° 03.42
90° 21.28	28° 58.42
90° 31.47	28° 57.00
90° 29.22	28° 54.83
90° 28.07	28° 52.22
90° 55.92	28° 49.92
90° 16.60	28° 47.30
90° 13.26	28° 46.81
90° 10.00	28° 35.01
90° 09.97	28° 40.01
90° 09.99	28° 44.99
90° 10.00	08° 49.98
90° 10.02	28° 54.98
90° 10.03	29° 00.04
90° 10.00	29° 03.03
90° 10.00	29° 05.50
90° 00.00	29° 12.00
90° 00.00	29° 09.96
90° 00.00	29° 04.99
90° 00.03	28° 59.97
90° 00.00	28° 55.14
90° 00.01	28° 49.98
90° 00.05	28° 44.95
90° 00.00	28° 40.00
90° 00.02	28° 34.93
89° 49.99	28° 16.97
89° 50.00	28° 40.00
89° 50.00	28° 44.99
89° 50.00	28° 50.00
89° 50.00	28° 54.97
89° 50.00	29° 00.00
89° 50.00	29° 05.00
89° 50.01	29° 10.00
89° 49.97	29° 14.98
89° 49.98	29° 17.00
89° 39.99	29° 15.99
89° 39.99	29° 10.00
89° 40.02	29° 05.00
89° 39.97	28° 59.97
89° 40.00	28° 54.99
89° 40.00	28° 50.02
89° 39.99	28° 44.98
89° 40.00	28° 40.01
89° 40.00	28° 35.00
89° 30.02	28° 35.00
89° 30.00	28° 40.02

89° 29.97	28° 45.05
89° 29.97	28° 47.49
89° 29.99	28° 49.99
89° 30.00	28° 52.50
89° 29.98	28° 54.95
89° 30.09	28° 59.98
89° 30.00	29° 05.00
89° 29.99	29° 10.02
89° 26.00	29° 05.52
89° 25.99	29° 00.00
89° 26.01	28° 57.50
89° 25.31	28° 54.90
89° 26.00	28° 52.50
89° 25.99	28° 50.00
89° 26.00	28° 44.99
89° 25.98	28° 39.95
89° 26.00	28° 35.00
89° 14.95	28° 35.00
89° 15.00	28° 40.00
89° 15.01	28° 45.00
89° 15.00	28° 50.00
89° 15.00	28° 54.98
89° 16.10	28° 57.56
89° 08.27	28° 57.76
89° 07.03	28° 56.00
89° 05.97	28° 53.47
89° 04.00	28° 49.00
89° 02.49	28° 45.00
88° 54.00	28° 50.00
88° 58.02	28° 54.00
89° 01.23	28° 57.99
89° 03.00	29° 00.00
89° 05.00	29° 01.98
89° 02.22	29° 05.00°
88° 59.03	29° 04.00
88° 56.00	29° 02.50
88° 49.95	28° 59.95
88° 54.00	29° 04.99
88° 55.98	29° 07.49
88° 57.57	29° 09.53
88° 55.01	29° 12.00
88° 50.00	29° 15.00
88° 58.00	29° 15.02
89° 01.98	29° 15.01
89° 27.30	28° 53.12
89° 44.82	28° 49.62

89° 29.10	28° 52.05
89° 29.70	28° 52.28
89° 29.69	28° 52.61
89° 29.73	28° 52.90
89° 29.76	28° 53.25
89° 26.62	28° 48.55
89° 26.73	28° 49.26
89° 27.02	28° 49.83
89° 27.23	28° 50.23
89° 27.44	28° 50.69
89° 27.10	28° 49.67
89° 33.56	28° 49.13°
89° 33.58	28° 49.11
89° 33.67	28° 49.32
89° 33.69	28° 49.52
89° 16.10	28° 57.57
89° 14.97	28° 54.94
89° 15.00	28° 50.00
89° 15.00	28° 44.99
89° 15.00	28° 40.00
89° 15.00	28° 35.00
89° 26.00	28° 35.00
89° 26.00	28° 40.00
89° 26.00	28° 45.00
89° 26.00	28° 50.00
89° 26.00	28° 52.50
89° 25.10	28° 55.15
89° 25.99	28° 57.52
89° 26.13	29° 00.10
89° 25.93	29° 05.44
89° 30.02	29° 10.00
89° 30.00	29° 04.96
89° 30.00	29° 00.00
89° 30.00	28° 54.99
89° 30.00	28° 52.50
89° 30.00	28° 50.00
89° 30.07	28° 47.49
89° 30.07	28° 45.02
89° 30.00	28° 39.99
89° 29.98	28° 34.97
89° 35.02	28° 35.02
89° 35.00	28° 40.02
89° 34.98	28° 45.00
89° 35.03	28° 47.52
89° 35.00	28° 50.04
89° 35.00	28° 52.51

89° 35.00	28° 55.02
89° 35.00	29° 00.01
89° 35.00	29° 05.01
89° 34.99	29° 10.02
89° 34.99	29° 13.50
89° 39.99	29° 16.00
89° 39.98	29° 09.94
89° 39.99	29° 05.00
89° 39.99	28° 59.98
89° 39.98	28° 54.99
89° 40.00	28° 49.99
89° 39.97	28° 44.98
89° 40.01	28° 39.97
89° 39.96	28° 34.96
89° 50.07	28° 35.04
89° 50.00	28° 39.99
89° 50.02	28° 49.99
89° 50.07	28° 50.05
89° 49.99	28° 55.00
89° 50.00	29° 00.01
89° 49.99	29° 05.02
89° 49.99	29° 00.00
89° 49.98	29° 15.02
89° 51.01	29° 16.98
90° 00.00	29° 12.00
90° 00.00	29° 10.00
90° 00.00	29° 05.01
89° 59.99	29° 00.00
90° 00.00	28° 55.13
89° 59.98	28° 50.02
90° 00.00	28° 45.00
89° 59.96	28° 39.93
89° 59.96	28° 34.95
90° 10.01	28° 35.03
90° 10.02	28° 40.04
90° 09.99	28° 44.95
90° 10.02	28° 50.03
90° 10.00	28° 55.02
90° 10.00	29° 00.00
90° 09.90	29° 03.01
90° 10.00	29° 05.50
90° 13.29	28° 46.75
90° 16.69	28° 47.29
90° 23.53	28° 49.92
90° 28.07	28° 52.20
90° 29.24	28° 54.88

90° 31.50	28° 57.00
90° 31.28	28° 59.47
90° 31.97	29° 03.44