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INCORPORATED RESEARCH INSTITUTIONS FOR SEISMOLOGY

CONTENTS

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Electronic mail users can send messages or articles to RICK@UTKVX on BITNET, or to RICK@ROCKYTOP.GG.UTK.EDU on DARPA/Internet. Articles can be sent "camera ready," (single-spaced, 1" margins on all sides, no page numbers) or on disk in either ASCII text, Wordstar 3.x, or Wordperfect formats.

A subscription to the NEWSLETTER can be obtained free of charge by request to

IRIS
Suite 1440
1616 N. Ft. Myer Drive
Arlington, VA 22209
USA

Products of the Data Management Center

by Tim Ahern
Program Manager
IRIS Data Management Systems
February 20, 1990

The IRIS Data Management Center in Austin, Texas accepts two basic types of data requests. IRIS users can make a request for a customized collection of seismograms based on station/time windows of their own choosing. The Data Management Center will produce an output SEED volume and ship the data to the requestor within a day of receiving the request.

When major earthquakes occur, the IRIS DMC takes the initiative and assembles the relevant seismograms that the majority of users will wish to use. The DMC makes these datasets available as DMC Products.

At the present time the DMC has six products assembled, ready for immediate shipment. The following table identifies these products.

PRODUCT	FORMAT	Description	
JVE1	SAC Unix tar	Joint Verification Experiment - Nevada	August 17, 1988
JVE2	SAC Unix tar	Joint Verification Experiment - USSR	September 14,1988
ARM	SEED	Armenian Earthquake	December 7, 1988
MCQ	SEED	Macquarie Islands Earthquake	May 23, 1989
LPP	SAC-AH-SEGY Unix tar	Loma Prieta Aftershocks-Passcal	10/28/89-10/30/89
LPR	SEED	Loma Prieta GSN Data	October 18, 1989

If you wish to make a request for one of these products you can do it in any of the following ways.

1. Use the Electronic Bulletin Board by
   rlogin irisdmc -l bulletin (password board)
   or telnet 128.83.149.25 and login as bulletin

   and select the "n" (note) option of the main menu.

2. Send email to tim@iris.edu or becky@iris.edu requesting the dataset.

3. Call DMC staff at (512)471-0404.

4. Send us mail at
   IRIS Data Management Center
   Suite 205
   8701 MOPAC BLVD.
   Austin, TX 78759

Whichever method you choose, be sure to provide the following information:

PRODUCT Designation (LPR, LPP, etc)
Name
IRIS Institution
Address
Telephone Number
Electronic Mail address
Medium

At the present time the DMC supports the following media types;
1) Electronic (small requests),
2) Exabyte tape,
3) 6250 BPI 1/2" tape,
4) 1600 BPI 1.2" tape,
5) 1/4" Cartridge.

Our preference is to send the data on Exabytes if at all possible. Some datasets are much too large to permit us to put on types 4 and 5 above.

We look forward to receiving your requests for IRIS DMC Products in the near future. Another article in this newsletter summarizes the LPR product that is now available. The list of products changes from time to time and so it is advisable to consult the Electronic Bulletin Board frequently and view the assembled data sets using the "a" option.

STATUS OF THE DMC ARCHIVE

The IRIS Data Management Center has been routinely making data available to the seismological community for several months. It is the goal of the IRIS Data Management Center to provide timely access to data from the Global Seismic Network (GSN) seismographic stations that are operating around the world.

At the present time the Data Management Center is receiving data delayed about sixty days behind real time. In the near future we anticipate reducing the delay to less than one week after the data have been quality controlled. The DMC archive is now fairly complete for the year 1989 although some late reporting stations have yet to be archived. New tools within the Electronic Bulletin Board allow the user to determine what data are presently archived in the DMC archive. Using the "C" (Check current holdings) from the main menu of the bulletin board allows you to see which data are available for a given station and year or for the entire network by month. Summaries of the data available by month are reproduced here.

As of February 20, 1990 the size of the IRIS DMC archive was as follows.

Archive Size	20.351 Gigabytes
# of Seismograms	82141
# of Stations	49
# of Station Channels	780
# of Station Days	10961

In the next few months the DMC will concentrate on reducing the time required to archive data from the GSN stations. We anticipate being able to reduce the time delay to as little as three weeks behind real time for some stations that ship their data to a Data Collection Center (DCC) within two weeks after recording. We will also be able to eliminate the extraordinarily long delay required to archive data that arrived after the sixty day cut off period for assembling the Network Day Tapes for the USGS. It is our goal to have all data in the archive and available to our users, one week after quality control.

January 1989

STN	NETWORK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
AFI	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X							
ANMC	SRO																															
ANMO	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ANTO	SRO		X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ARU	IRIS-SOV																															
BCAO	SRO																															
BDF	DWWSSN																															
BGIO	SRO																															
BJI	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CCM	IRIS-UNV																															
CHTO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CMB	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
COL	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
COR	IRIS-UNV																															
CTAO	ASRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ENH	CDSN																															
ESK	IRIS-IDA																															
GAC	GSC	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GAR	IRIS-SOV																															
GDH	DWWSSN	X	X			X				X	X	X	X		X	X	X		X	X	X	X		X	X		X	X	X	X	X	X
GRFO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GUMO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
HIA	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
HON	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
HRV	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
KEV	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X
KIP	IRIS-UNV																															
KIV	IRIS-SOV																															
KMI	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
KONO	ASRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X																
LEM	DWWSSN																															
LON	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
LZH	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MAJO	ASRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MDJ	CDSN																															
NNA	IRIS-IDA																															
NWAO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
OBN	IRIS-SOV																															
PAS	IRIS-UNV																															
PFO	IRIS-IDA																															
RPN	IRIS-IDA																															
SCP	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SLR	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X		X
SNZO	SRO																															
SSE	CDSN																															
TATO	SRO																															
TAU	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X						X		X	X	X	X	X	X	X	X	X
TOL	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
WMQ	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X															
ZOBO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

February 1989

STN	NETWORK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
AFI	DWWSSN															X	X	X	X	X	X	X	X	X	X	X	X	X				
ANMC	SRO																															
ANMO	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
ANTO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
ARU	IRIS-SOV																															
BCAO	SRO																															
BDF	DWWSSN																															
BGIO	SRO																															
BJI	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
CCM	IRIS-UNV																															
CHTO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
CMB	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
COL	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
COR	IRIS-UNV																															
CTAO	ASRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
ENH	CDSN																															
ESK	IRIS-IDA																															
GAC	GSC	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
GAR	IRIS-SOV																															
GDH	DWWSSN	X	X	X	X	X								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
GRFO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
GUMO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X	X	X			
HIA	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
HON	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
HRV	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
KEV	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
KIP	IRIS-UNV																															
KIV	IRIS-SOV																															
KMI	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
KONO	ASRO																															
LEM	DWWSSN																															
LON	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
LZH	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
MAJO	ASRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
MDJ	CDSN																															
NNA	IRIS-IDA																															
NWAO	SRO	X	X	X	X	X	X						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
OBN	IRIS-SOV																											X	X			
PAS	IRIS-UNV																															
PFO	IRIS-IDA																															
RPN	IRIS-IDA																															
SCP	DWWSSN	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
SLR	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X									X	X		X	X			
SNZO	SRO																X	X	X	X	X		X	X								
SSE	CDSN																															
TATO	SRO																															
TAU	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X							
TOL	DWWSSN	X								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
WMQ	CDSN										X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
ZOBO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X											

March 1989

STN	NETWORK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
AFI	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ANMC	SRO																															
ANMO	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ANTO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ARU	IRIS-SOV																															
BCAO	SRO																															
BDF	DWWSSN																															
BGIO	SRO																															
BJI	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CCM	IRIS-UNV																															
CHTO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CMB	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
COL	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
COR	IRIS-UNV																															
CTAO	ASRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X									X	X	X	X	X
ENH	CDSN																															
ESK	IRIS-IDA																															
GAC	GSC	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GAR	IRIS-SOV																															
GDH	DWWSSN	X	X	X	X	X										X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	
GRFO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GUMO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
HIA	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
HON	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
HRV	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
KEV	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
KIP	IRIS-UNV																															
KIV	IRIS-SOV																															
KMI	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
KONO	ASRO																															
LEM	DWWSSN																															
LON	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
LZH	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MAJO	ASRO	X	X	X	X	X	X	X	X	X	X	X	X										X	X	X	X	X	X	X	X	X	X
MDJ	CDSN																															
NNA	IRIS-IDA																															
NWAO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
OBN	IRIS-SOV																															
PAS	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PFO	IRIS-IDA																															
RPN	IRIS-IDA																															
SCP	DWWSSN	X	X	X	X	X	X	X	X	X	X																					
SLR	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X
SNZO	SRO					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SSE	CDSN																															
TATO	SRO																						X	X	X	X	X	X	X	X	X	X
TAU	DWWSSN															X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TOL	DWWSSN	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
WMQ	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ZOBO	SRO																	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

April 1989

STN	NETWORK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
AFI	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
ANMC	SRO																															
ANMO	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
ANTO	SRO	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
ARU	IRIS-SOV																															
BCAO	SRO				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
BDF	DWWSSN																															
BGIO	SRO																															
BJI	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
CCM	IRIS-UNV																															
CHTO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
CMB	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
COL	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
COR	IRIS-UNV																															
CTAO	ASRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
ENH	CDSN																															
ESK	IRIS-IDA																															
GAC	GSC	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
GAR	IRIS-SOV																															
GDH	DWWSSN	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X												
GRFO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
GUMO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X		
HIA	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X								
HON	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
HRV	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
KEV	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
KIP	IRIS-UNV																															
KIV	IRIS-SOV																															
KMI	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
KONO	ASRO																	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
LEM	DWWSSN																															
LON	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
LZH	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
MAJO	ASRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
MDJ	CDSN										X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
NNA	IRIS-IDA																															
NWAO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
OBN	IRIS-SOV																															
PAS	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PFO	IRIS-IDA																															
RPN	IRIS-IDA																															
SCP	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	
SLR	DWWSSN	X	X	X	X	X	X	X	X	X	X									X	X	X	X	X	X	X	X	X	X	X	X	
SNZO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SSE	CDSN																															
TATO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
TAU	DWWSSN	X	X							X	X		X	X	X	X	X	X	X	X	X	X	X	X	X							
TOL	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
WMQ	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
ZOBO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

May 1989

STN	NETWORK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
AFI	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ANMC	SRO																															
ANMO	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X
ANTO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ARU	IRIS-SOV																							X	X							
BCAO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
BDF	DWWSSN																															
BGIO	SRO																															
BJI	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CCM	IRIS-UNV																															
CHTO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CMB	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
COL	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
COR	IRIS-UNV																															
CTAO	ASRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ENH	CDSN																															
ESK	IRIS-IDA																															
GAC	GSC	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GAR	IRIS-SOV																							X	X	X						
GDH	DWWSSN																															X
GRFO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GUMO	SRO	X	X	X	X	X	X	X	X																			X	X	X	X	X
HIA	CDSN																															
HON	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
HRV	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
KEV	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
KIP	IRIS-UNV																															
KIV	IRIS-SOV																							X	X	X						
KMI	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
KONO	ASRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
LEM	DWWSSN																															
LON	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
LZH	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MAJO	ASRO	X	X	X	X	X	X	X	X																							
MDJ	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
NNA	IRIS-IDA																							X	X	X						
NWAO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
OBN	IRIS-SOV																							X	X	X						
PAS	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PFO	IRIS-IDA																							X	X	X						
RPN	IRIS-IDA																							X	X	X						
SCP	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SLR	DWWSSN			X	X	X	X	X	X	X	X																					
SNZO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SSE	CDSN																															
TATO	SRO	X		X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
TAU	DWWSSN								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TOL	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X														
WMQ	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ZOBO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X						X	X	X	X	X	X	X	X	X	X	X	X

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STN	NETWORK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
AFI	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
ANMC	SRO																															
ANMO	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
ANTO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
ARU	IRIS-SOV																															
BCAO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
BDF	DWWSSN																													X	X	X
BGIO	SRO																															
BJI	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
CCM	IRIS-UNV																															
CHTO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
CMB	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
COL	DWWSSN	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
COR	IRIS-UNV																															
CTAO	ASRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
ENH	CDSN																			X	X	X	X	X	X	X	X	X	X	X	X	
ESK	IRIS-IDA																															
GAC	GSC	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	
GAR	IRIS-SOV																															
GDH	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
GRFO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X										
GUMO	SRO	X	X	X	X	X	X	X	X	X	X																					
HIA	CDSN																								X	X	X	X	X	X	X	
HON	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
HRV	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
KEV	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
KIP	IRIS-UNV																															
KIV	IRIS-SOV																															
KMI	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	
KONO	ASRO	X	X	X																X	X	X	X	X	X	X	X	X	X	X	X	
LEM	DWWSSN																															
LON	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
LZH	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
MAJO	ASRO																															
MDJ	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
NNA	IRIS-IDA																															
NWAO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
OBN	IRIS-SOV																															
PAS	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PFO	IRIS-IDA																															
RPN	IRIS-IDA																															
SCP	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SLR	DWWSSN																															
SNZO	SRO						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SSE	CDSN																															
TATO	SRO			X	X	X	X	X	X		X	X		X	X	X	X	X	X													
TAU	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X						X	
TOL	DWWSSN	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
WMQ	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
ZOBO	SRO	X	X	X																												

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STN	NETWORK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
AFI	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ANMC	SRO																															
ANMO	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ANTO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ARU	IRIS-SOV																															
BCAO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
BDF	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
BGIO	SRO																															
BJI	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CCM	IRIS-UNV																															
CHTO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CMB	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
COL	DWWSSN	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
COR	IRIS-UNV																															
CTAO	ASRO	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ENH	CDSN	X	X	X																												
ESK	IRIS-IDA																															
GAC	GSC	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GAR	IRIS-SOV																															
GDH	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GRFO	SRO					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GUMO	SRO						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
HIA	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
HON	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
HRV	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
KEV	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
KIP	IRIS-UNV																									X	X	X	X	X	X	X
KIV	IRIS-SOV																															
KMI	CDSN	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
KONO	ASRO	X	X	X	X	X	X	X	X	X	X																X	X	X	X	X	
LEM	DWWSSN																															
LON	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
LZH	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MAJO	ASRO																								X	X	X	X	X	X	X	X
MDJ	CDSN	X	X	X													X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
NNA	IRIS-IDA											X	X	X	X	X	X	X	X	X	X	X	X	X								
NWAO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
OBN	IRIS-SOV											X	X	X	X	X	X	X	X	X	X	X										
PAS	IRIS-UNV	X	X	X	X	X								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PFO	IRIS-IDA																								X	X	X	X		X	X	X
RPN	IRIS-IDA																									X	X	X	X	X	X	X
SCP	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SLR	DWWSSN																								X	X	X	X	X	X	X	X
SNZO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SSE	CDSN																X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TATO	SRO																										X	X	X	X	X	X
TAU	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TOL	DWWSSN	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
WMQ	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ZOBO	SRO																															

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STN	NETWORK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
AFI	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ANMC	SRO																															
ANMO	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X	X	X
ANTO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X										X	X	X	X	X	X
ARU	IRIS-SOV																															
BCAO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
BDF	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
BGIO	SRO																															
BJI	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CCM	IRIS-UNV																															
CHTO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CMB	DWWSSN	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
COL	DWWSSN	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
COR	IRIS-UNV																															
CTAO	ASRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ENH	CDSN																															
ESK	IRIS-IDA														X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GAC	GSC	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GAR	IRIS-SOV																															
GDH	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GRFO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GUMO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
HIA	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X				
HON	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
HRV	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
KEV	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
KIP	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
KIV	IRIS-SOV						X	X	X	X	X	X	X	X	X	X	X															
KMI	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
KONO	ASRO								X	X	X	X	X																			
LEM	DWWSSN																															
LON	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
LZH	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MAJO	ASRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MDJ	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
NNA	IRIS-IDA										X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
NWAO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
OBN	IRIS-SOV						X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PAS	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PFO	IRIS-IDA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RPN	IRIS-IDA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SCP	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X
SLR	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SNZO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SSE	CDSN																															
TATO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
TAU	DWWSSN	X	X	X	X										X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
TOL	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
WMQ	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ZOBO	SRO																															

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STN	NETWORK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
AFI	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
ANMC	SRO																															
ANMO	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
ANTO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
ARU	IRIS-SOV																															
BCAO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
BDF	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
BGIO	SRO																															
BJI	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
CCM	IRIS-UNV									X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
CHTO	SRO	X	X	X	X	X	X	X																								
CMB	DWWSSN	X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
COL	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
COR	IRIS-UNV																															
CTAO	ASRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
ENH	CDSN																															
ESK	IRIS-IDA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
GAC	GSC	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
GAR	IRIS-SOV																															
GDH	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
GRFO	SRO	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
GUMO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
HIA	CDSN														X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
HON	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
HRV	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	
KEV	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
KIP	IRIS-UNV	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
KIV	IRIS-SOV																															
KMI	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
KONO	ASRO																															
LEM	DWWSSN																															
LON	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
LZH	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
MAJO	ASRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
MDJ	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
NNA	IRIS-IDA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
NWAO	SRO	X	X	X	X														X	X	X	X	X	X	X	X	X	X	X	X	X	
OBN	IRIS-SOV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	
PAS	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PFO	IRIS-IDA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
RPN	IRIS-IDA	X	X	X	X	X	X	X	X	X	X	X	X	X	X																	
SCP	DWWSSN	X	X	X	X	X	X	X	X																							
SLR	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SNZO	SRO	X	X	X	X	X																									X	
SSE	CDSN																															
TATO	SRO															X	X	X	X	X	X	X	X	X	X							
TAU	DWWSSN																	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
TOL	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X													X	X	X	
WMQ	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
ZOBO	SRO																															

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STN	NETWORK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
AFI	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ANMC	SRO																															
ANMO	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ANTO	SRO	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ARU	IRIS-SOV																		X	X												
BCAO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
BDF	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X						X	X	X	X	X	X	X	X
BGIO	SRO																															
BJI	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CCM	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X
CHTO	SRO														X	X	X															
CMB	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X	X
COL	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
COR	IRIS-UNV																													X	X	X
CTAO	ASRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ENH	CDSN																															
ESK	IRIS-IDA	X	X	X	X										X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
GAC	GSC	X																														
GAR	IRIS-SOV																															
GDH	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X		X	X	X	X	X	X	X
GRFO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GUMO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
HIA	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
HON	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
HRV	IRIS-UNV	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
KEV	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
KIP	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X																				
KIV	IRIS-SOV																															
KMI	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
KONO	ASRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
LEM	DWWSSN																															
LON	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
LZH	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MAJO	ASRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MDJ	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X								
NNA	IRIS-IDA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X												
NWAO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
OBN	IRIS-SOV	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X													
PAS	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PFO	IRIS-IDA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RPN	IRIS-IDA									X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X	X	X
SCP	DWWSSN												X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X
SLR	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SNZO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X																	X	X
SSE	CDSN																															
TATO	SRO																															
TAU	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TOL	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
WMQ	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ZOBO	SRO																															

November 1989

STN	NETWORK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
AFI	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
ANMC	SRO																															
ANMO	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
ANTO	SRO	X																								X	X	X	X	X	X	
ARU	IRIS-SOV																															
BCAO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
BDF	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
BGIO	SRO																															
BJI	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
CCM	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X													
CHTO	SRO																															
CMB	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
COL	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
COR	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X																		
CTAO	ASRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
ENH	CDSN																															
ESK	IRIS-IDA		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
GAC	GSC																															
GAR	IRIS-SOV																															
GDH	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	
GRFO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
GUMO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
HIA	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	
HON	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
HRV	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
KEV	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
KIP	IRIS-UNV																		X	X	X	X	X	X	X	X	X	X	X	X	X	
KIV	IRIS-SOV																															
KMI	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
KONO	ASRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
LEM	DWWSSN																															
LON	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
LZH	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
MAJO	ASRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
MDJ	CDSN																															
NNA	IRIS-IDA		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
NWAO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
OBN	IRIS-SOV																															
PAS	IRIS-UNV	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PFO	IRIS-IDA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
RPN	IRIS-IDA	X	X	X	X	X	X												X	X	X	X	X	X	X	X	X	X	X	X	X	
SCP	DWWSSN	X	X	X	X	X	X	X																								
SLR	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SNZO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X	X	X			X	X	X	X	X		
SSE	CDSN																															
TATO	SRO																															
TAU	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
TOL	DWWSSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
WMQ	CDSN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
ZOBO	SRO	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

December 1989

STN	NETWORK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
AFI	DWWSSN	X	X	X	X	X	X																									
ANMC	SRO																															
ANMO	IRIS-UNV	X	X	X	X	X	X																									
ANTO	SRO	X	X	X	X	X	X																									
ARU	IRIS-SOV																															
BCAO	SRO	X	X	X	X	X	X																									
BDF	DWWSSN	X	X	X	X	X	X																									
BGIO	SRO																															
BJI	CDSN	X	X	X	X	X	X																									
CCM	IRIS-UNV																															
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CMB	DWWSSN	X	X	X	X	X	X																									
COL	DWWSSN	X	X	X	X	X	X																									
COR	IRIS-UNV																															
CTAO	ASRO																															
ENH	CDSN																															
ESK	IRIS-IDA	X	X	X	X	X	X																									
GAC	GSC																															
GAR	IRIS-SOV																															
GDH	DWWSSN	X	X	X	X	X	X																									
GRFO	SRO	X	X	X	X	X	X																									
GUMO	SRO	X	X	X	X	X	X																									
HIA	CDSN	X	X	X	X	X	X																									
HON	DWWSSN	X	X	X	X	X	X																									
HRV	IRIS-UNV	X	X	X	X	X	X																									
KEV	DWWSSN	X	X	X	X	X	X																									
KIP	IRIS-UNV	X	X	X	X	X	X																									
KIV	IRIS-SOV																															
KMI	CDSN	X	X		X	X	X																									
KONO	ASRO	X	X	X	X	X	X																									
LEM	DWWSSN																															
LON	DWWSSN	X	X	X	X	X	X																									
LZH	CDSN	X	X	X	X	X	X																									
MAJO	ASRO	X	X	X	X	X	X																									
MDJ	CDSN																															
NNA	IRIS-IDA	X	X	X	X	X	X																									
NWAO	SRO																															
OBN	IRIS-SOV																															
PAS	IRIS-UNV	X	X	X	X	X	X																									
PFO	IRIS-IDA	X	X	X	X	X	X																									
RPN	IRIS-IDA	X	X	X	X	X	X																									
SCP	DWWSSN																															
SLR	DWWSSN																															
SNZO	SRO	X	X	X	X	X	X																									
SSE	CDSN																															
TATO	SRO																															
TAU	DWWSSN	X	X	X	X	X	X																									
TOL	DWWSSN	X	X	X	X	X	X																									
WMQ	CDSN	X	X	X	X	X	X																									
ZOBO	SRO	X	X	X	X	X	X																									

SUMMARY OF PASSCAL STATUS

Instrumentation

The first major purchase of instruments was made at the end of 1988 and the beginning of 1989. All of the instruments from that purchase are now in the instrument pool. A second small purchase was made at the end of 1989. These instruments will be delivered during the Spring of 1990. Once the final budget is received from the NSF, there will be another major purchase of instrument this Spring. These instruments will be delivered toward the end of 1990. The results of all of these purchases is summarized in Table I below:

TABLE I

PASSCAL INSTRUMENTATION 1989-1990

Equipment	Total Available as of 2/90	Total Available as of 6/90	Approximate Total as of 12/90
Data Loggers	45	60	95
Disk Units	30	60	95
Exabyte Recorders	6	9	16
3-Channel Cables	70	100	170
L-22 2 Hz sensor sets	70	100	170
L-4 1 Hz sensor sets	5	5	5
S-13 1 Hz sensor sets	10	10	10
Broadband sensor set	1	4	17
Field Computers	4	6	8

Miscellaneous support equipment such as antennas, external clocks, tool kits, and GPS Receivers are also available through the PASSCAL Instrument Center.

Instrument Schedule for 1990

The preliminary instrument schedule for 1990 is shown in Table II below. There are two large scale experiments (Brooks Range, and the Onshore-offshore study) and several smaller ones. This schedule will continue to be updated as new experiments receive funding.

Areas of Future Work

The PASSCAL Instrument Program has made significant strides in many areas in the last few years. However, there are still several areas where we have not been able to get the type of equipment we need. We are currently working on two of these areas to obtain new equipment which will enhance our current capabilities. The major areas for system improvement are:

Simple Instrument - We have developed and started procuring large quantities of the PASSCAL Instrument. This instrument is a sophisticated six channel instrument capable of performing many different types of experiments. However, with a basic cost on the order of $15,000, the PASSCAL Instrument is relatively expensive for certain reflection/refraction experiments where it is more important to have a large number of receiving channels than it is to have sophisticated instruments. These experiments would be better served with a simple low cost instrument which is optimized for reflection/refraction experiments.

PASSCAL can not afford the time or money to go through another equipment development program for this simple instrument. Since there are several instruments currently being manufacturered which could be modified to fit our needs, we have sent a request to the various manufacturers involved asking if they are willing to modify their existing instruments to meet our requirements. We plan to purchase up to five prototypes this year for testing. We then plan to buy large numbers of these simple instruments next year. A list of the desired instrument capabilities is given at the end of this section.

TABLE II			
SCHEDULE FOR PASSCAL INSTRUMENTS 1989-1990			
Dates	Institution	Number of Instruments	Comments
1989			
Sept-Mar90	Wisc/UCLA	10	Teleseismic experiment in Kenya Rift Zone
Oct-May90	Utah	4	Record teleseismic and local events in Yellowstone Park
1990			
Mar-2 yrs	NMSU/NMIT	4	Receiver function study in Rio Grande Rift
Mar-Apr	U of Wash	4	Study of ambient noise in Beaufort Sea
Mar-May	Eurasian Sesimic Studies Program	35	Array studies in Pinyon Flats, in preparation for Soviet deployments
Apr-Aug	WHOI	10	EDGE piggyback experiment on Chesapeake Bay
Jun-Jul	Rice	35+	Seismic profile in the Brooks Range
Jul-Nov	Wisc/UCSB	12	Study Kaoiki seismic zone on Hawaii
Sept-Oct	Oregon State	35	Onshore-offshore propagation study of ambient seafloor noise
Oct-Mar	Stanford	5+	Seismic reflection/refraction profile in Antarctic

Broadband Sensor - The PASSCAL Instrument gives us the capability to record in a portable environment seismic data of a quality which in the past could only be obtained from a permanent installation. In order to take advantage of this capability we need good high quality portable broadband sensors. To date we have not been able to settle on a suitable sensor. We have purchased and will be testing several different types of sensors in the next few months. These include at least one set of each of the following:

Guralp CMG3-T

Guralp CMG3-ESP

Kinemetrics WR-1

Kinemetrics SV-1, SH-1

Streckeisen STS-2

These tests will be conducted at the Instrument Center and during some of the teleseismic field experiments this summer and fall.

Field Computer Software - The basic programs for processing the data exist within the field computer, however, a significant amount of work must be done in making it easier to get the data into the system and to provide the basic quick-look, quality control, editing and archiving capability which will allow the experimenter to have access to the data in the quickest possible time. This development effort is currently being done by personnel at the Instrument Center

Simple Instrument Characteristics

The simple instrument will be used for reflection/refraction experiments. These experiments will involve the use of explosive sources with recording instruments located up to a couple of hundred kilometers from the source. Instrument spacing could be anywhere from a hundred meters to several kilometers. A reasonable simple instrument should have the following characteristics:

Three channels of analog input capable of accepting standard exploration seismometers with resonant frequencies ranging from 2 to 20 Hz;

Twelve or sixteen bit gain ranged A/D converter with at least 60 dB and preferably 90 dB of gain ranging;

Optional preamplifiers which are operator selectable with ranges which bring the overall system gain to 120 dB;

Sample rates and alias filters for sample rates ranging from 2 to 16 ms per channel(Note a sample rate of 1ms is desirable but not necessary);

Timing system which can easily be corrected to better than 10 msec during post processing;

Minimum of one MByte of storage capability expandable to at least 4 Mbytes;

Capable of multiple timed turn-ons or external triggering;

Capable of accepting record lengths ranging from a few seconds to more than 60 seconds;

Capable of having all data dumped in less than a minute via a standard interface;

Capable of being deployed for at least three days on internal batteries;

The units should be able to be quickly deployed and picked up; and

A cost of about $4,500 in quantity of 50.

There currently is no instrument which meets all of the above criteria. The simple instrument, if purchased, will be a refraction instrument with limited capabilities with respect to natural sources. In order to evaluate the potential problems associated with the simple instrument approach, PASSCAL will purchase and test a limited quantity of instruments during this year.

IRIS SierraSeis Users Group
Information on SierraSeis and IRIS-Seis

SierraSeis Maintenance Center
Lawrence Berkeley Laboratory
February 1990

Changes in IRIS-Sierra interaction

Sierra has initiated several changes in the interaction between IRIS and Sierra. These changes present substantial benefit to SierraSeis users within the IRIS community. A summary of these changes is given below, but a complete and accurate list is available from Tim Ahern or Jim Fowler. Tim remains our contact when dealing with Sierra.

Foremost is a pricing change which reflects a change in pricing philosophy for all Sierra products. Under the new system, each SUN/MicroVax workstation version of a SierraSeis package costs $9K and includes the basic and the extension packages. Annual software support runs $1.5K. This is an academic discounted price; commercial price for a SUN package is $12K with $2K annual support.

Unlike the previous setup where there was to be only one IRIS contact through which we could reach Sierra, each university can now directly contact Sierra to ask for user help, report bugs, or ask for other information. Sierra prefers to have contact with only one designated person per site.

Sierra will also provide training for one person per site license per year. The cost of the training session is included in the annual maintenance (excluding travel expenses). More on training below.

SierraSeis releases

SierraSeis version 1.2 is available for all workstations (SUN using OS-3/OS-4 and MicroVax) but is not available for CONVEX's. SierraSeis v1.3 will soon be available for Sun-3, Sun-4, and Sun-4 SparcStations using OS-4 operating systems. Final testing of this version is underway at Sierra for these hardware configurations. V1.3 is already available for CONVEX and other platforms. Certain combinations of version/hardware/operating systems may not become available - Sierra has this information.

All Sierra products share certain basic system independent routines and graphics drivers. SierraSeis is in the process of converting to these routines. SierraSeis currently uses SierraLIB 1.5 and Graphics Driver 15.7. Future versions of SierraSeis will use SierraLib 4.0. You may wish to upgrade if you have earlier version numbers.

Sierra has fixed for v1.3 a number of bugs that have surfaced in v1.0-1.2. If you encounter strange behavior, report it to Sierra. They are usually pretty good about responding as to whether it's (a) a bug, (b) behaving that way due to unusual input parameters, or (c) normal. Keep in mind that in its current form SierraSeis is somewhat rigid in behavior (it likes uniform data), so the stronger your desire to process non-standard data, the stronger you'll have to understand how the package works.

Training

Sierra is planning to hold training sessions for all Sierra products at their Houston office starting in April. A different product will be taught each week and user demand will dictate the duration between the same training course. Normal training costs are initially set at $250/day/person (3-5 days for SierraSeis). Travel and lodging costs are separate. Due to available workstations, training sessions are likely to be limited to enrollments of eight or less.

Under the revised IRIS agreement, Sierra will train one person per site license per year (covered by the annual support fee). Additional people will be charged full course rates to attend ($250/day/person). It's possible to have Sierra hold a SierraSeis course specifically for IRIS members, assuming that we can get several people to commit to the same week. Given the types of questions we're more likely to ask based on the types of data we're using with SierraSeis, it makes sense for us to attend the same class (rather than be mixed with production-mode oil company processors). Classes could be scheduled as early as April, so we should target likely dates for our designated attendees.

On-site training is available from Sierra at $2500 for the first day and $1250 each day after (with course materials $150/person beyond eight attendees). Scenarios exist where paying for on-site training may be cheaper than sending several people to Houston, primarily when on-site travel costs are low and people other than the free trainees attend.

SierraSeis Maintenance Center

Lawrence Berkeley Laboratory was selected by PASSCAL to serve as the SierraSeis Maintenace Center (SMC). Prior to Sierra's revised interaction with IRIS, LBL was to provide to the SierraSeis users in the IRIS community services such as installation help, training, user support, software development, and collection/distribution of community routines.

Due to the revised services that Sierra will provide, LBL will be available as a secondary source for installation help, user support and help in using the software package. LBL will concentrate on providing additional help, the collection and dissemination of information useful to SierraSeis users, and the development, support, and distribution of IRIS-Seis, a structural framework within the SierraSeis environment which allows for the inclusion of new routines and functionality. In essence, LBL will try to provide as much help as it can based on the experiences already gained in the use of SierraSeis. People to contact at LBL are listed on page 4.

The SierraSeis Maintenance Center is housed at the Center for Computational Seismology within the Earth Sciences Division at LBL. SierraSeis v1.3 runs on a CONVEX C1-XP with 48 Mbytes of memory and 4 Gbytes hard disk. A Solbourne 4/602 (with Exabyte tape reader) front-ends the CONVEX and has four satellite workstations and two high-resolution Tektronix terminals. Three 9-track tri-density tape drives and a 36" Versatec plotter are available for seismic processing. SierraSeis and the newly developed IRIS-Seis will also exist on a SUN SparcStation; we will try to make this SparcStation accessible by IRIS users (for module retrieval/updating and direct communication with the SMC). SierraSeis is currently being used to process reflection profiles, multi-component VSP, microearthquake, refraction, and Vibroseis travel-time delay data sets, in addition to being used for its seismogram display capability (e.g., display of synthetic seismogram results).

Users Group information

Because of the relative youthfulness of SierraSeis and the steep learning curves associated with using such a package, it's in our best interests to share as much information about what works and does not work. We'll be exercising the package in ways which the package was not originally intended due to the non-standard recording geometries and different types of data we push through; through experience we'll learn what works or how to make something work. Groups at the University of Arizona and LBL have now successfully stacked multichannel data; members of the PASSCAL Instrument Center at Lamont-Doherty have used the package on the PASSCAL field computers during recent field experiments. As more of us use the package, our collective experience will grow. This will create a broader base of expertise especially if we share information about the package.

Processing run streams within the SierraSeis environment are sensitive to the run-time description of the data; that is, it's just as important to describe the data and regulate its behavior between processing modules as it is to select proper parameters within modules. SierraSeis keeps track of data flow with (often hidden) "global common variables" (GCV's);

understanding the behavior of these GCV's will make a job more likely to succeed.

As a users group, it will be beneficial to share information such as:

*data types and run examples (''I tried to sort 3-component VSP gathers with/without success by doing...'');
*module behavior or ways to make modules behave (e.g., resetting GCV's a specific way);
*specific bugs in the software and in what context they were found, whether Sierra was notified and what their response was;
*creation of new modules - description of functionality, run-time parameter options and behavior, source code availability;
*hardware/software configurations and incompatibilities - useful info for anyone who's upgrading or replacing components;
*questions & answers - if someone's stuck, maybe someone else has an answer;
*coordinate training or accessing of other capability (e.g., demultiplexing of a data set).

Different mechanisms exist for sharing information. The DMC has electronic bulletin boards established for DMC information; Tim Ahern is willing to create a bulletin board for Sierra users. The SMC at LBL is willing to collect information by email or regular mail, disseminating summaries of user notes, bug reports, etc. We need to establish which communication methods work given computer system capabilities (e.g., do you have email capability, a modem, rlogin, or telnet for logging into the DMC computer, prefer regular mail..).

IRIS-SEIS - IRIS processing routines compatible with SierraSeis

SierraSeis allows for the addition of new processing routines. These new routines must conform in structure and in the use of common variables which regulate trace handling behavior and trace identification parameters. The applications within the new routines can conduct any types of processing on the seismograms or GCV's; the routines can even be constructed to examine external data base files for processing information.

Under the current form of SierraSeis, new routines have to be mixed in with original routines supplied by Sierra (archive libraries, processor name lists, etc.). The potential to unintentionally affect original routines exists in this scheme. This problem has been addressed by making minor modifications and additions into the structural framework of SierraSeis to allow us add routines without affecting original SierraSeis source, object, or executable code. This modification leads to the formation of ''IRIS-Seis'', a package which has the architectural framework of SierraSeis but keeps IRIS-developed code separate from the Sierra code. The primary advantage here to both Sierra and IRIS is that our additions will not affect the behavior of the Sierra routines.

IRIS-Seis is designed to provide the full functionality of SierraSeis in addition to IRIS-added routines. IRIS-Seis is constructed by linking SierraSeis object code with the object code of new routines. Changes in one set of object code does not affect the other set. The IRIS routines are stored and compiled in a file and directory structure similar to SierraSeis in order to preserve commonality (IRIS-Seis code and executables occupy 10 Mbytes disk while full SierraSeis uses 30 Mbytes). Essentially, if you know how IRIS-Seis works, you'll know how SierraSeis works (and vice-versa).

IRIS-Seis was initially developed for in-house use at LBL (more locally known as CCS-Seis). In the process of using CCS-Seis, we've added functionality which was missing from SierraSeis but was required for local processing needs. Major features are described below, but a more detailed description of IRIS-Seis is attached. IRIS-Seis for SUN-3, SUN-4, and SUN-4 SparcStations should be available by the time of the IRIS meeting (March 5-6, 1990).

In order to ease the creation of routines, skeletal subroutines for processors are provided. These subroutines provide the shells for parameter interpretation and communication with the processing subroutines. The processing subroutines can be constructed with either trace-in/trace-out data flow or multiple trace accumulation/release behavior.

The current version of SierraSeis does not provide for user-definition and manipulation of trace headers (GCV's). IRIS-Seis has this ability to define new GCV's either at run-time or explicitly within new processors. These new headers can be used for trace identification or manipulation (e.g., variable distance plotting). Ability to sort on these new headers is planned (there are some structural details in SierraSeis which need to be worked out in order to use any header; sorting can be done now but downstream processing is affected). New headers can be saved using IRIS-Seis disk I/O routines.

The need for importing and exporting partial results in and out of SierraSeis appeared quite quickly. Stand-alone programs can often operate on portions of seismic data faster or more efficiently than SierraSeis can. A routine exists which stores SierraSeis data in binary disk format which can be accessed by stand-alone programs (written in C or FORTRAN). These modified traces can then be returned back into a SierraSeis flow stream for subsequent processing. SierraSeis GCV's can be kept or dropped in the external disk files.

A kinder, gentler SierraSeis

The IRIS contract with Sierra specified several additions to the functionality of the SierraSeis package. A major item was the ability to define seismic trace headers and manipulate seismic traces based on these headers (e.g., sort traces based on your own trace header). Sierra has implemented basic functionality using dynamic headers and is in the process of in-house testing. These changes will be released as SierraSeis v. 2.0 after review by a beta test site. Hopefully, they will add sufficient capability to take advantage of the dynamic trace headers.

This capability may not seem like a big deal, but it's quite significant: it's the difference between having a basic seismic reflection data processing package and having a seismological manipulation package. One can manipulate a variety of seismograms in the Cogniseis DISCO package (reflection, refraction, VSP, microearthquake, teleseismic) due to its dynamic trace header system; we should strive for the same capability. The flexibility needed to handle such a diverse set of seismograms is based on how the overall package handles seismograms - the infrastructure associated with user-definable trace headers allows for such diversity. If the IRIS community is going to take advantage of a seismic processing package, we will need this capability.

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IRIS-SEIS: IRIS ADDITIONS TO SIERRA-SEIS

ADDED FUNCTIONALITY TO SIERRA-SEIS

(1) **Dynamic trace headers (GCV's):** dynamic headers available using /DEFHEAD, /HEADEQL, /HEADLIST and programming utility functions OK_DEFHED and OK_GETHED. Disk storage available using /CONVEXIO or /SUNIO. Tape storage must use predefined slots of /IN, /OUT. Distance plotting available using /DISTPLOT (v1.1-v1.2) or /DISPLAY (v1.3). Gathering not available yet.

(2) **Data external transport:** External data transport in and out of SierraSeis is available using /CONVEXIO. This routine writes disk files of binary traces with or without trace headers (GCV's and dynamic additions). These traces can be manipulated external to SierraSeis using stand-alone C- or FORTRAN programs, then brought back in using /CONVEXIO. This routine works on any UNIX-based system (Convex, Sun, DEC) and is named /SUNIO on SUN versions of IRIS-Seis.

(3) **External job monitor:** Monitoring a job through SierraSeis uses the /PRMODCOM MONITOR option. Unfortunately, the gather/trace values printed to the screen cannot be turned off after the job is started. The /MONITOR process stores a job's gather/trace numbers in a temporary disk file. External utility program 'MONITOR' displays to the screen the updated gather/trace numbers. MONITOR can be started/stopped at any time.

(4) **Remote console tape request reply:** For SierraSeis /IN, /OUT processors, tape mounting is done either interactively at a terminal screen or within shell files. In general, a user or user's terminal has to supply needed information (tape drive, tape density, etc.). Tape drive availability and allocation becomes an issue for batch-type jobs as does the tie-up of a terminal for interactive querying. /INOPER and /OUTOPER allows for flexible tape mounting. These two processors send interactive queries to a disk file rather than to the user's screen. A utility program 'tapeop' interacts with the disk file, allowing ANYONE to reply to a tape request from ANY terminal. Useful in a multi-user environment or if the tape drive is not near the terminal from where the job is run.

(5) **Conformity of irregular data:** Irregular gathers read by /IN can have GCV headers reset using /GATHCNTR and /TRCOUNTR. /IN will incorrectly renumber irregular gathers to have a uniform KNTR traces per gather (thus trace counters KSHOT and KTRC will be incorrect). /GATHCNTR will reset KSHOT to change when KFLDFN does. /TRCOUNTR will reset the trace # within a gather to 1 when the gather number (KSHOT, KFLDFN, KCDP) changes and increment subsequent trace #'s accordingly. Irregular gathers can also be automatically padded to full gathers of KNTR traces using /INTRLEAV.

(6) **Import of DISCO VMS internal tapes:** DISCO VMS/VAX tapes can be read into SierraSeis using /VAXIN and /INTOREAL. /IN will byte-swap VAX trace values but will not swap the integer headers correctly. /VAXIN swaps both. /INTOREAL unpacks the DISCO real headers from integer values.

(7) **Shell routines for adding processors:** Shell routines are available for the development and addition of new routines. These or other existing routines can be duplicated and modified to add new functionality.

/EASYADD is a routine which performs trace in/trace out processing. Algorithm is to be hardwired in; no user parameters are defined.

/EXTRCTRC is an example of a trace in/trace out processor which has several input

parameters. These input parameters are defined, obtained in the INIT phase, and passed to the EXEC phase for use in the /EXTRCTRC algorithm.

/EXMULTRC is an example of multiple trace flow within a processor. Trace logic is set up to accumulate a full gather, process the gather, then release all traces within the gather. Partial gathers can be either treated as partial or padded to a full gather size. Traces are released in the order received but the flow logic can be modified to release traces in any order.

(8) **Extended correlation:** SierraSeis will perform conventional Vibroseis correlation but not extended correlation. A new processor, /EXCORTPR, will prepare uncorrelated shot gathers for self-truncating extended correlation by cosine-tapering and zero-padding the ends of the uncorrelated seismograms. SierraSeis's Vibroseis correlation routine /VCORR can then be routinely applied.

PROCESSORS AVAILABLE IN INITIAL VERSION OF IRIS-SEIS

LBL-DEVELOPED

Processor	Function
AIRWVMUT	automated mute of air wave using offset, sound velocity; like /MUTE
AMPMATH	applys scalar math to trace amplitudes
AMPDUMP	amplitude dump; like /TRDUMP
CLIPIT	clip amplitudes above a threshold
COMVARPR	prints hidden GCV values
CONVEXIN	input C unformatted files
CONVEXIO	read/write binary unformatted files with/without GCV's
DEFHEAD	create new GCV/headers
DIPFIL	(x,t) butterworth dip filter
EASYADD	shell routine to create simple trc-to-trc module (no parameters)
EXCORTPR	taper uncorrelated traces and pad for extended correlation
EXMULTRC	example of multiple trace handling routine (memory storage)
EXTRCTRC	example of trace in/trace out routine (with parameters)
FILTER	simple trapezoid (zero-phase) FFT bandpass filter
FLOTDAT	floating datum statics calc
GATHCNTR	recount KSHOT based on changes in KFLDFN
HDMINMAX	get GCV min/max values in data
HEADEQL	set any GCV value w/ scalar and incrementing math options
HEADLIST	print any 6 specified GCV's
HRZCONT	select events for line drawings
INTOREAL	unpacks DISCO real-value headers (from DISCO VAX-VMS tape)
INTRLEAV	interleave, pad, or block edit (irregular) gathers
LINEDRAW	create line drawings
MONITOR	monitor job by saving GCV's for external checking
NULENGTH	changes trace length
OKAGC	more effective AGC than /AGC
OMIT	physically omit traces from run stream
RMSAMP	print RMS-AMP for traces/section
ROT	rotate three component data

LBL-DEVELOPED (cont'd)

SEGDHTOD	convert /IN SEGD headers HEX --> DECIMAL (translate BCD code)
SUNIO	read/write binary unformatted files with/without GCV's
TRCIN	input .trc files
TRCMATH	use a reference trace for math
TRCOUNTR	recount trace header (KTRC, KTRACE, or KFLDTN) keyed on gather
TROUT	output .trc files
TRTAPER	taper ends of data dropouts
XCORR	simple (and faster) cross-correlation using VECLIB (CONVEX only)

MODIFIED SIERRASEIS

Processor	Function
AREPLACE	input fortran formatted files
*CGGSEGD	/IN for CGG-SEGD 2.5 byte field tapes
CORRCONZ	CORRCON with longer input window
*DISTPLOT	/DISPLAY w/ variable distance using any GCV
FIGURE	/DISPLAY for slides/paper figs.
INOPER	/IN with console response (external operator program)
OUTOPER	/OUT with console response (external operator program)
PARKSTAT	print julian day/RMS values
PEAKVAL	prints trace peak amplitudes
REGEOM	reapply /GEOMETRY to data subset
TRACECUT	new trace based on start/end times
VAXIN	/IN with proper VAX header and trace byte swapping

*routines whose functionality is now incorporated into SierraSeis V1.3

UTILITY PROGRAMS (Stand-alone)

Processor	Function
CIODUMP	dump key GCV/headers for traces in /CONVEXIO or /SUNIO file
CIOMINMAX	print min/max trace amplitudes for /CONVEXIO or /SUNIO file (useful for /DISPLAY's SCALE SECT AVGAMP x option.
LENGTHCIO	display dimensions and GCV's of disk file stored by /CONVEXIO or /SUNIO
MONITOR	screen display of SHOT/TRACE as stored by /MONITOR
TAPEOP	respond to /IN /OUT queries at any terminal (allows for sharing of tape drives by different jobs)

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IRIS PRODUCT DISTRIBUTION
Loma Prieta Earthquake
October 18, 1989

The IRIS Data Management Center has assembled the relevant seismograms for the magnitude 7.1 earthquake of October 18, 1989. In addition to the main earthquake time series, we have included data which contain information for a series of aftershocks.

Data included in this distribution were selected by extracting data from the IRIS DMC archive for all stations that had been received by the IRIS DMC by February 1, 1990. The time window used in the data selection process was 00:00:00 October 18, 1989 through midnight on October 19, 1989.

Data from the following networks are included.

Seismic Research Observatory (SRO)
Abbreviated Seismic Research Observatory (ASRO)
Digital World-Wide Standard Seismograph Network (DWWSSN)
China Digital Seismograph Network (CDSN)
IRIS University
IRIS/IDA

Data have been quality controlled at the IRIS/USGS Data Collection Center (DCC) in Albuquerque for the SRO, ASRO, DWWSSN, CDSN, and IRIS/UNIV data. The IRIS/IDA DCC at the University of California, San Diego performed the quality control for the IRIS/IDA stations.

This dataset is in the Standard for Exchange of Earthquake Data (SEED) format. Documentation for the SEED format is available through the Data Management Center upon request. Additionally a SEED reading program (RDSEED) is available from the IRIS Data Management Center.

The RDSEED program extracts selected seismograms from this SEED distribution tape and writes data files in Seismic Analysis Code (SAC) format. SAC is a powerful analysis tool developed by Lawrence Livermore Laboratory and is available from the IRIS DMC for IRIS members. Others may obtain SAC directly from Lawrence Livermore. The SAC trace format is easily converted to other analysis formats such as AH format developed at Lamont Doherty Geological Observatory.

The relevant section of the Preliminary Determination of Epicenter (PDE) bulletin is reproduced on the next page.

If you have any difficulties reading this distribution tape and need assistance, please contact the IRIS Data Management Center in Austin, Texas. The telephone numbers are (512)471-0403, 0404 or 0405.

Tim Ahern
Program Manager
IRIS
Data Management Center

DAY	TIME	LATITUDE	LONGITUDE	DEPTH	mb	Ms	COMMENT
18	00:04:15.2	37.036 N	121.883 W	19	6.6	7.1	Central California
	00:23:37.4	36.998 N	121.823 W	5			Central California
	00:25:04.9	37.043 N	121.723 W	5 G	5.0		Central California
	00:30:41.4	37.123 N	121.963 W	5			Central California
	00:38:28.8	37.150 N	122.053 W	20			Central California
	00:41:24.7	37.198 N	122.105 W	19	4.8		Central California
	00:45:39.6	36.913 N	121.760 W	27			Central California
	02:15:50.0	37.012 N	121.740 W	3	4.4		Central California
	02:26:06.6	37.030 N	121.805 W	11	4.1		Central California
	04:16:33.1	37.062 N	121.903 W	14			Central California
	04:50:27.6	37.177 N	122.027 W	13	4.6		Central California
	05:18:34.2	36.982 N	121.838 W	12	4.5		Central California
	10:22:04.8	37.008 N	121.808 W	7	4.3		Central California
	10:40:58.5	14.634 N	45.153 W	10 G	5.0		North Atlantic Ridge
	10:53:47.9	14.528 N	44.832 W	10 G	5.1	5.1	North Atlantic Ridge
	11:40:48.7	10.137 S	161.123 E	33 N	6.1	5.6	Solomon Islands
	12:35:18.2	10.141 S	161.069 E	80	5.3		Solomon Islands
	13:01:02.3	49.913 N	18.445 E	10 G			Czechoslovakia
	13:04:01.5	40.588 N	24.093 E	10 G			Aegean Sea
	13:06:47.6	14.614 N	45.049 W	10 G	5.2	5.0	North Atlantic Ridge
	14:57:22.3	39.900 N	113.841 E	10 G	5.2	5.4	Northeastern China
	16:19:14.1	18.035 S	176.619 W	307?	5.2		Fiji Islands
	16:56:23.0	7.404 N	127.101 E	33 N	4.7	5.4	Philippine Islands
	17:01:35.3	40.084 N	113.958 E	10 G	5.2	5.7	N.E. China
	17:11:23.5	39.730 N	113.889 E	33 N	4.6		N.E. China
	17:30:12.5	51.306 N	179.067 E	33 N	5.0		Rat Islands
	18:01:01.8	36.882 N	121.846 W	15 G			Central California
	18:20:47.3	40.093 N	113.923 E	10 G	5.4	5.3	N.E. China
	18:41:23.7	2.080 N	126.544 E	49 *	5.2	4.9	Molucca Passage
	19:13:56.2	18.96 N	67.10 W	10 G			Mona Passage
	21:27:21.4	39.756 N	8.073 W	10 G			Portugal
	22:21:00.8	15.51 N	98.24 W	33 N			Guerrero Mexico
	22:51:47.9	40.992 N	22.652 E	10 G			Greece
	23:30:10.3	56.631 N	152.204 W	33 N	4.8		Kodiak Islands
	23:43:01.1	21.093 S	11.547 W	10 G	4.9		S. Atlantic Ridge

DAY	TIME	LATITUDE	LONGITUDE	DEPTH	mb	Ms	COMMENT
19	01:11:00.3	1.154 N	99.349 E	33 N			N. Sumatera
	05:20:47.4	41.37 N	140.18 E	176?			Hokkaido, Japan
	08:19:52.1	39.946 N	23.733 E	10 G			Aegean Sea
	08:45:48.2	36.926 N	121.929 W	15 G			Central California
	09:01:31.2	2.520 N	127.079 E	33 N	4.6		Molucca Passage
	09:40:06.9	61.884 N	151.073 W	33 N			S. Alaska
	09:49:57.1	49.920 N	79.001 E	0 G	5.9	4.5	Eastern Kazakh, SSR
	09:53:50.4	36.948 N	121.670 W	10	4.3	3.6	Central California
	10:14:35.1	36.963 N	121.845 W	13	4.6	4.2	Central California
	10:29:03.5	40.035 N	113.771 E	10 G	4.5		N.E. China
	10:59:55.9	36.941 N	121.922 W	15 G			Central California
	11:15:20.6	36.927 N	121.957 W	15 G			Central California
	11:29:24.1	36.925 N	122.042 W	15 G			Central California
	11:50:26.2	36.913 N	121.501 W	15 G			Central California
	12:14:06.6	21.175 S	11.476 W	10 G	5.0		S. Atlantic Ridge
	12:25:31.6	36.876 N	121.785 W	15 G			Central California
	12:31:38.9	36.947 N	121.854 W	15 G			Central California
	13:15:05.5	36.943 N	121.569 W	15 G			Central California
	14:28:26.5	51.826 N	176.015 W	50	4.9	4.6	Andreanof Is.
	14:39:03.7	36.85 N	122.40 W	15 G			Central California
	15:27:02.5	21.32 S	179.82 W	630*	4.9		Fiji Islands
	16:30:48.3	36.967 N	121.314 W	15 G			Central California
	16:47:05.0	8.105 N	126.901 E	62 ?	5.2	4.4	Mindanao
	17:01:57.8	37.07 N	122.88 W	15 G			Central California
	17:15:05.7	36.899 N	121.545 W	15 G			Central California
	17:26:15.5	36.848 N	121.975 W	15 G			Central California
	20:44:26.9	1.090 S	15.784 W	10 G	4.5		N. of Ascension Is.
	23:33:27.1	41.832 N	12.771 E	10 G			S. Italy

The LPR SEED volume contains the following logical volumes:

LPR SEED VOLUME			
Logical Volume	Time	Size	Data
1	1989 10 18	103.9 Megabytes	October 18, 1989 data
2	1988 10 19	66.9 Megabytes	October 19, 1989 data

Depending on the type of medium this data product was shipped on, the two logical volumes may be on the same physical tape separated by a filemark or may be on separate physical tape reels.

Incorporated Research Institutions for Seismology
Data Management Center

c/o UTIG
8701 Mo-Pac Expressway, suite 205
Austin, TX 78759
Telephone 512-471-0404 / FAX 512-471-8844

Loma Prieta Earthquake Dataset, 00:00:00 Oct. 18, 1989 -- 23:59:59 Oct.19, 1989

Including data from:

Seismic Research Observatory (SRO)
Abbreviated Seismic Research Observatory (ASRO)
Digital World-Wide Standard Seismograph Network (DWWSSN)
China Digital Seismograph Network (CDSN)
IRIS University
IRIS/IDA
IRIS/SOVIET

1. Distribution medium.			
_____	1/2" 6250 bpi tape, SEED format	_____	1/2" 1600 bpi tape, SEED format
_____	Exabyte, SEED format	_____	1/4" tape, SEED format

Other (please specify) _____

If no medium is specified, the dataset will be shipped on 1/2" 6250 bpi tape.

2. Shipping information.	
Name:	_____
Address:	_____
	_____
	_____
Telephone:	_____
Email:	_____

IRIS Global Seismographic Network

ERRATUM

In the last newletter, the station coordinates for the Easter Island site, Rapa Nui, were incorrectly given with those for the old EIC site which has been abandoned. The correct latitude and longitude for RPN follows:

RPN Rapa Nui, Easter Island

Host	Universidad de Chile
Location	27.1267°S 109.3344°W
Data Logger	IDA Mark 3 (16-bit)
Seismometers	Streckeisen STS-1 VBB Continuous: 5; 0.1 sps high gain Triggered: 5; 0.1 sps low gain Triggered: 20 sps high and low gain LaCoste-Romberg accelerometer Continuous: 0.1 sps; 1 sample/minute
Data Collection Center	IRIS/IDA
Affiliation	IRIS/IDA Network

IRIS E-mail Directory
by Rick Williams

Last modified 26 January 1990

To get the most recent version of this list, use the command "finger rick@cherokee.gg.utk.edu" (IP address 128.169.201.152) or send a mail message either to "rick@rockytop.gg.utk.edu" or to "rick@utkvx.bitnet"

An astrisk (*) preceeding a name means that I was unable to send mail to the address given, but others may be able to use it. A carat (^) before a name means that individual is a member of the anisotropy interest group assembled by Joe Dellinger; contact Joe for details. The letter (j) before a name indicates a Japanese seismologist from the list compiled by Kioyshi Suyehiro with additions by Kazuki Koketsu.

The letter (o) before a name means the address is old, and did not work the last time I tried it. Users are requested to let me know when they find anold or invalid address in this list, particularly when it is their own.

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