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=====
=          DEEP SEA DRILLING PROJECT          =
=          PALEOMAGNETICS MEASUREMENTS       =
=          SEDIMENT PALEOMAGNETICS DATA FILE =
=====

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## I. INTRODUCTION

### A. BACKGROUND

This file contains paleomagnetic measurements made on discrete sediment samples by the Digico computerized spinner magnetometer. This instrument measures the direction (inclination and declination) and intensity of magnetization of the sample. The file holds two sets of measurements for each sample: (1 Natural remanent magnetization (NRM) values. For some DSDP legs these will be the only available results. (2 Stable magnetic values. These are the results from optimally demagnetized samples. Usually pilot demagnetizations were carried out on a few samples to determine how strong a field was needed to produce stable directions of magnetization. Once the optimum demagnetizing field was determined, all of the samples were demagnetized in that field.

Data were encoded primarily from the shipboard "Hole Summary Book", the DSDP data archives and the "Initial Reports of the Deep Sea Drilling Project". The file contains both shipboard measurements and measurements made at onshore laboratories. Shipboard paleomagnetic apparatus included a Digico balanced fluxgate spinner magnetometer, a Schonstedt alternating field GSD-1 demagnetizer, and a Bison magnetic susceptibility meter.

Magnetic measurements contained in this file are from core samples recovered by the punch core-rotary drilling and the hydraulic piston coring methods. Each logical record contains a code for the coring method.

### B. METHODS

Magnetic properties recorded in the file include natural remanent magnetization (NRM) intensity, declination, inclination, initial susceptibility, stable magnetization intensity, declination, inclination, and mean demagnetizing field.

Results of more than one demagnetization - pilot demagnetizations fall into this class - are contained in the

Alternating Field Demagnetization file.

In some cases thermal rather than alternating field demagnetization was used. Information about the heat demagnetization was stored in the comment record.

The following quote concerning data reliability is taken from the Hole Summary Book paleomagnetism section for Leg 79, "It is important to mention here a crucial limitation of the shipboard magnetometer. Magnetization intensity values are often not repeatable and can fluctuate by up to 50% for samples with intensities one order of magnitude above noise level... Magnetization directions are generally repeatable."

Each record contains an identifying code for the analyst's or first author's name. See Table 1 for the index to analysts' codes.

A blank field means not determined.

Magnetic intensities are expressed in emu/cm<sup>3</sup>. In a few later DSDP reports data were expressed in SI units. The DSDP encoders converted these to CGS units. The following conversions were used:

$$\begin{aligned} \text{A/m} \times 10^{-3} &= \text{emu/cm}^3 \\ \text{mT} \times 10 &= \text{oersteds} \end{aligned}$$

Each sediment paleomagnetism set includes a lead record followed by one paleomagnetism data record. One or more comment records may follow the data record. Comment records contain lithologic information about the sediment and may contain information about the analysis.

#### C. LEGS IN DATA SET

The data set contains data from Legs 1-8, 13, 15, 17, 22-23, 27-28, 33, 37-38, 41-42, 47-48, 51-52, 54, 57-64, 66, 68, 71-82, 84-87, 89-91, and 93-94.

#### D. BIBLIOGRAPHY

Partial references to analytical methods for shipboard measurements

Ludwig, W. J. and V. Krasheninnikov. 1980. Hole Summary Book for Leg 71. Paleomagnetists: J. Salloway and J. Bloemendal.

Barker, P. F. and R. L. Carlson. 1980. Hole Summary Book for Leg 72. Paleomagnetists: N. Hamilton and A. Suzyumov.

Hsu, K. J. and J. L. La Brecque. 1980. Hole Summary Book for Leg 73. Paleomagnetists: J. L. La Brecque, N. P. Petersen, L. Tauxe, and P. Tucker.

Hay, W. W. and J.-C. Sibuet. 1980. Hole Summary Book for Leg 75. Paleomagnetist: B. Keating.

Roberts, D. G. and D. Schnitker. 1981. Hole Summary Book for Leg 81. Paleomagnetist: K. Krumsiek.

For methods used in a shore-based study, consult the paper in the Initial Reports. The results and analytical information about shipboard analyses similarly are published in the Initial Reports and the Hole Summary Books. See Table 1 for the index to analysts' codes.

II. FORMAT, FIELD DESCRIPTIONS, AND CODES

A. RECORD FORMAT

=====  
 = LEAD RECORD =  
 =====

Record length = 60 characters

COLUMN	FIELD	FORMAT
=====	=====	=====
1-2	LEG	A2
3-5	SITE	A3
6	HOLE	A1
7-9	CORE	A3
10-11	SECTION	A2
12-15	TOP INTERVAL DEPTH (centimeters)	F4.1
16-19	BOTTOM INTERVAL DEPTH (centimeters)	F4.1
20-27	TOP OF CORE DEPTH (meters)	F8.2
28-35	SAMPLE MIDPOINT DEPTH (meters)	F8.2
36	unused	
37	REPEAT COLUMN	I1
38	CORING DEVICE CODE	A1
39	unused	
40-43	ANALYST CODE	A4
44	unused	
45-46	NUMBER OF PHYSICAL RECORDS	I2
47-58	unused	
59-60	PHYSICAL RECORD NUMBER	I2

=====  
 = MAGNETIC MEASUREMENTS RECORD =  
 =====

Record length = 60 characters

COLUMN	FIELD	FORMAT
=====	=====	=====
1	EXPONENT NRM INTENSITY	I1
2	EXPONENT AFD INTENSITY	I1
3	EXPONENT SUS INTENSITY	I1
4-10	NRM INTENSITY	F7.0
11-16	NRM DECLINATION	F6.0

17-21	NRM INCLINATION	F5.0
22-25	ALTERNATING FIELD DEMAGNETIZATION	I4
26-28	MEAN DEMAGNETIZING FIELD	I3
29-35	AFD INTENSITY	F7.0
36-41	AFD DECLINATION	F6.0

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42-46	AFD INCLINATION	F5.0
47-53	INITIAL SUSCEPTIBILITY	F7.0
54-58	unused	
59-60	PHYSICAL RECORD NUMBER	I2

=====  
 = COMMENT RECORD =  
 =====

Record length = 60 characters

COLUMN	FIELD	FORMAT
=====	=====	=====
1-50	COMMENT	A50
51-58	unused	
59-60	PHYSICAL RECORD NUMBER	I2

B. FIELD DESCRIPTIONS AND CODES

The definition of leg, site, hole, core and section may be found in the explanatory notes. In addition, the special core designations, as well as the methods of sample labeling and calculating absolute sample depths are discussed.

INTERVAL DEPTH:

Refers to the depth in centimeters within the section at which the rock was sampled. Values are encoded with an implicit decimal point.

TOP OF CORE DEPTH:

The subbottom depth in meters to the top of the core.

SAMPLE MIDPOINT DEPTH:

The subbottom depth in meters to the level at which the core was sampled.

REPEAT COLUMN:

The paleomagnetist occasionally repeated the measurement.

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Column 37 has been reserved to indicate repeat status. A "0" was entered in column 37 if there was only one measurement for the interval. There is a "1" for the first repeat and so on.

CORING DEVICE CODE:

H = Hydraulic Piston Corer  
(includes Variable Length Piston Corer)  
R = Conventional Rotary Drilling Corer  
(includes Extended Core Barrel)

## ANALYST CODE:

TABLE 1 - ANALYSTS'/AUTHORS' CODES

"IR" = Initial Reports of the Deep Sea Drilling Project

"HSB" = Hole Summary Book

"ARCH" = Data Archives of the Deep Sea Drilling Project

LEG	CODE	ANALYST/AUTHOR	SHIP	ONSHORE	DATA SOURCE
====	=====	=====	=====	=====	=====
1	OP	Opdyke, N. D.		X	IR
2	OP	Opdyke, N. D.		X	IR
3	OP	Opdyke, N. D.		X	IR
4	OP	Opdyke, N. D.		X	IR
5	DOEL	Doell, R. R.		X	IR
6	DOEL	Doell, R. R.		X	IR
7	SCLA	Sclater, J. G.		X	IR
8	DOEL	Doell, R. R.		X	IR
13	RYAN	Ryan, W. B. F.		X	IR
15	OP	Opdyke, N. D.		X	IR
17	JARR	Jarrard, R. D.		X	IR
22	JARR	Jarrard, R. D.		X	IR
23	HAM	Hamilton, N.		X	IR
27	BREC	Brecher, A.		X	IR
	JARR	Jarrard, R. D.		X	IR
28	ALL	Allis, R. G.		X	IR
33	JARR	Jarrard, R. D.		X	IR
37	HALL	Hall, J. M.	X		IR
38	LVL	Lovlie, R.		X	IR
41	HAWO	Hailwood, E. A.		X	IR
42	HAM	Hamilton, N.		X	IR
47	HAM	Hamilton, N.		X	IR
	MGAN	Morgan, G.		X	IR
48	HAWO	Hailwood, E. A.	X	X	IR
51	BLEI	Bleil, U.		X	IR
	KELT	Kelts, K.		X	IR
52	BLEI	Bleil, U.		X	IR

54	PET	Petersen, N.	X		IR
57	HALL	Hall, J. M.		X	IR
58	KNS	Kinoshita, H.	X	X	IR
59	KEA	Keating, B.	X	X	IR
60	BLEI	Bleil, U.	X	X	IR
61	STR	Steiner, M.	X	X	IR
62	SYR	Sayre, W. O.	X	X	IR, HSB
63	DEN	Denham, C. R.		X	IR
64	LV	Levi, S.		X	MANUSCRIPT
66	NM	Niitsuma, N.	X	X	IR
68	HAWO	Hailwood, E. A.	X		IR
71	SAL	Salloway, J.	X		HSB
72	HAM	Hamilton, N.	X		HSB
73	PET	Petersen, N.	X		ARCH
74	CHA	Chave, A.		X	MANUSCRIPT

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75	KEA	Keating, B.	X	X	MANUSCRIPT
76	OGG	Ogg, J.		X	IR
77	TEST	Testarmata, M.	X		HSB
78	WIL	Wilson, D.	X		IR
79	CNL	Channell, J.	X		HSB
80	TOWN	Townsend, H. A.	X	X	IR
81	KRMK	Krumsiek, K.	X	X	IR
82	KHAN	Khan, M.	X		HSB
84	LIE	Lienert, B.	X		HSB
85	WEIN	Weinreich, N.	X	X	IR, HSB
86	BLEI	Bleil, U.	X		HSB
	LV	Levi, S.		X	IR
		(additional data available on magnetic tape from ODP)			
87	NM	Niitsuma, N.	X		IR
89	OGG	Ogg, J.	X	X	HSB, IR
90	BRTN	Barton, C.	X	X	ARCH, HSB, IR
91	MONT	Montgomery, A.		X	IR
93	OGG	Ogg, J.		X	IR
94	CLEM	Clement, B.	X		ARCH

NUMBER OF PHYSICAL RECORDS:

The total number of physical records which together  
comprise a complete set of measurements for a sample.

PHYSICAL RECORD NUMBER:

Each physical record number in a set is numbered  
sequentially in columns 59-60.

NRM, AFD, SUS INTENSITY EXPONENTS:

In this file magnetic intensity is recorded in scientific notation. Each magnetic intensity value should be multiplied by 10 to the negative value of the number in column 1, 2, or 3 of the data record.

NRM, AFD INTENSITY:

Expressed here in CGS units and in scientific notation. The negative exponent of the power of ten is stored in column 1 of the data record for NRM, column 2 for AFD magnetic intensity.

DECLINATION:

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Units are degrees.

INCLINATION:

The sign (-, or blank for +) gives the polarity of the inclination. Units are degrees.

ALTERNATING FIELD DEMAGNETIZATION:

Demagnetizing force in oersteds. In some cases thermal demagnetization was used. Information about heat demagnetization was stored in the comment card.

MEAN DEMAGNETIZING FIELD:

Alternating field necessary to erase half the original magnetic intensity. It is a measure of stability of remanence.

INITIAL SUSCEPTIBILITY:

Always represented in scientific notation. See col 3 for the exponent. Units are gauss/oersteds.

COMMENT RECORD:

The rock name and comments about the results belong here. Lithological information about the rock sample is taken from the Visual Core Descriptions forms, which are completed by the shipboard scientists soon after core recovery.

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NGDC NOTES: (list of deviations from field descriptions)

Description of deviation =====	Record Number(s) =====
nrm intensity of 1.9.5 found	13334,13336,15193
nrm declination of 1.8.6 found	15153
afd intensity of ".58 2" found	20678

An explicit decimal found in the bottom interval depth field in record number 23007 was removed by NGDC staff.

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