#757

89-089A-02A
COBE
COBE DIRBE TIME-ORDERED DATA

89-089A-03A
COBE
COBE DMR TIME ORDERED DATA

89-089A-02A

COBE

COBE DIRBE TIME-ORDERED DATA

THIS DATASET CONSIST OF 7 MAGNETIC TAPES. THE TAPES ARE 4MM, 6250 BPI, WRITTEN IN BINARY AND ARE VAX LABELED. A COPY OF THE DIRECTORY OF EACH TAPE IS INCLUDED IN THE CATALOG. THE D AND THE C NUMBER ALONG WITH THE TAPE LABEL NAME, NUMBER OF DATA FILES AND THE TIMESPAN ARE LISTED BELOW. SUPPORT DOCUMENTATION FOR THIS DATA IS CONTAINED ON-LINE IN THE ANON_DIR FOR COBE.

D#	C#	TAPE NAME	FILES	TIMESPANS
D-108021	C-031749	B_PDS3	6	04/24/94-04/27/94
D-108022	C-031750	B_PDS4	6	04/28/94-05/01/94
D-108023	C-031751	B_PDS5	6	05/02/94-05/06/94
D-108024	C-031752	B_PDS6	6	05/07/94-05/09/94
D-108025	C-031753	B_PDS7	6	05/10/94-05/13/94
D-108026	C-031754	B_PDS8	6	05/14/94-05/17/94
D-108027	C-031755	B_PDS9	5	05/17/94-05/20/94

```
DIRECTORY OF B_PDS3:

  BPC_DTOCI.CAL_INTNS_941141021;1
  BPC_DTOCI.CAL_INTNS_941141845;1
  BPC_DTOCI.CAL_INTNS_941151449;1
  BPC_DTOCI.CAL_INTNS_941161445;1
  BPC_DTOCI.CAL_INTNS_941170033;1
  BPC_DTOCI.CAL_INTNS_941171026;1

Total of 6 files.
```

```
DIRECTORY OF B_PDS4

   BPC_DTOCI.CAL_INTNS_941181312;1
   BPC_DTOCI.CAL_INTNS_941182255;1
   BPC_DTOCI.CAL_INTNS_941190836;1
   BPC_DTOCI.CAL_INTNS_941201907;1
   BPC_DTOCI.CAL_INTNS_941210523;1
   BPC_DTOCI.CAL_INTNS_941211514;1

Total of 6 files.
```

```
DIRECTORY OF B_PDS5

  BPC_DTOCI.CAL_INTNS_941221145;1
  BPC_DTOCI.CAL_INTNS_941222108;1
  BPC_DTOCI.CAL_INTNS_941241943;1
  BPC_DTOCI.CAL_INTNS_941251352;1
  BPC_DTOCI.CAL_INTNS_941252355;1
  BPC_DTOCI.CAL_INTNS_941261030;1

Total of 6 files.
```

DIRECTORY OF B_PDS6

BPC_DTOCI.CAL_INTNS_941270959;1
BPC_DTOCI.CAL_INTNS_941272017;1
BPC_DTOCI.CAL_INTNS_941280559;1
BPC_DTOCI.CAL_INTNS_941282356;1
BPC_DTOCI.CAL_INTNS_941291009;1
BPC_DTOCI.CAL_INTNS_941292110;1

Total of 6 files.

DIRECTORY OF B_PDS7

BPC_DTOCI.CAL_INTNS_941301350;1
BPC_DTOCI.CAL_INTNS_941310012;1
BPC_DTOCI.CAL_INTNS_941310948;1
BPC_DTOCI.CAL_INTNS_941320904;1
BPC_DTOCI.CAL_INTNS_941321937;1
BPC_DTOCI.CAL_INTNS_941330521;1

Total of 6 files.

DIRECTORY OF PDS8

BPC_DTOCI.CAL_INTNS_941340926;1
BPC_DTOCI.CAL_INTNS_941341905;1
BPC_DTOCI.CAL_INTNS_941352102;1
BPC_DTOCI.CAL_INTNS_941361244;1
BPC_DTOCI.CAL_INTNS_941362224;1
BPC_DTOCI.CAL_INTNS_941370753;1

Total of 6 files.

```
DIRECTORY PDS9.LOG

 BPC_DTOCI.CAL_INTNS_941372155;1
 BPC_DTOCI.CAL_INTNS_941380723;1
 BPC_DTOCI.CAL_INTNS_941381658;1
 BPC_DTOCI.CAL_INTNS_941391344;1
 BPC_DTOCI.CAL_INTNS_941400010;1

Total of 5 files.
```

DMR Time Ordered Data

89-089A-03A

COBE

COBE DMR TIME ORDERED DATA

THIS DATASET CONSISTS OF 3 MAGNETIC TAPES. THE TAPES ARE 8MM LOW DENSITY, WRITTEN IN BINARY, FITS FORMATED AND ARE VAX LABELED. THE D AND C NUMBERS, ARE LISTED BELOW ALONG WITH THE TAPE NAME, DIRECTORY OF EACH TAPE, NUMBER OF DATA FILES AND THE TIMESPAN. ALSO, INCLUDED IN THE CATALOG ARE VARIOUS SUPPORT DOCUMENTS.

DD#	DC#	TAPE NAME	FILES	TIMESPAN
D-107717	C-031746	DMRPD2	257	11/20/89-08/02/90
D-107718	C-031747	DMRPD3	256	08/04/90-04/17/91
D-107719	C-031748	DMRPD4	256	04/18/91-12/31/91

DIRECTORY LISTING OF D-107717

LABEL = DMRPD2

DCA4_TOD.P2_8932400	2700	DCA4_TOD.P2_8932500	2700
DCA4_TOD.P2_8932600	2700	DCA4_TOD.P2_8932700	2700
DCA4_TOD.P2_8932800	2700	DCA4_TOD.P2_8932900	2700
DCA4_TOD.P2_8933000	2700	DCA4_TOD.P2_8933100	2700
DCA4_TOD.P2_8933200	2700	DCA4_TOD.P2_8933300	2700
DCA4_TOD.P2_8933400	2700	DCA4_TOD.P2_8933500	2700
DCA4_TOD.P2_8933600	2700	DCA4_TOD.P2_8933700	2700
DCA4_TOD.P2_8933800	2700	DCA4_TOD.P2_8933900	2700
DCA4_TOD.P2_8934000	2700	DCA4_TOD.P2_8934100	2700
DCA4_TOD.P2_8934200	2700	DCA4_TOD.P2_8934300	2700
DCA4_TOD.P2_8934400	2700	DCA4_TOD.P2_8934500	2700
DCA4_TOD.P2_8934600	2700	DCA4_TOD.P2_8934700	2700
DCA4_TOD.P2_8934800	2700	DCA4_TOD.P2_8934900	2700
DCA4_TOD.P2_8935000	2700	DCA4_TOD.P2_8935100	2700
DCA4_TOD.P2_8935200	2700	DCA4_TOD.P2_8935300	2700
DCA4_TOD.P2_8935400	2700	DCA4_TOD.P2_8935500	2700
DCA4_TOD.P2_8935600	2700	DCA4_TOD.P2_8935700	2700
DCA4_TOD.P2_8935800	2700	DCA4_TOD.P2_8935900	2700
DCA4_TOD.P2_8936000	2700	DCA4_TOD.P2_8936100	2700
DCA4_TOD.P2_8936200	2700	DCA4_TOD.P2_8936300	2700
DCA4_TOD.P2_8936400	2700	DCA4_TOD.P2_8936500	2700
DCA4_TOD.P2_9000100	2700	DCA4_TOD.P2_9000200	2700
DCA4_TOD.P2_9000300	2700	DCA4_TOD.P2_9000400	2700
DCA4_TOD.P2_9000500	2700	DCA4_TOD.P2_9000600	2700
DCA4_TOD.P2_9000700	2700	DCA4_TOD.P2_9000800	2700
DCA4_TOD.P2_9000900	2700	DCA4_TOD.P2_9001000	2700
DCA4_TOD.P2_9001100	2700	DCA4_TOD.P2_9001200	2700
DCA4_TOD.P2_9001300	2700	DCA4_TOD.P2_9001400	2700
DCA4_TOD.P2_9001500	2700	DCA4_TOD.P2_9001600	2700
DCA4_TOD.P2_9001700	2700	DCA4_TOD.P2_9001800	2700
DCA4_TOD.P2_9001900	2700	DCA4_TOD.P2_9002000	2700
DCA4_TOD.P2_9002100	2700	DCA4_TOD.P2_9002200	2700
DCA4_TOD.P2_9002300	2700	DCA4_TOD.P2_9002400	2700
DCA4_TOD.P2_9002500	2700	DCA4_TOD.P2_9002600	2700
DCA4_TOD.P2_9002700	2700	DCA4_TOD.P2_9002800	2700
DCA4_TOD.P2_9002900	2700	DCA4_TOD.P2_9003000	2700
DCA4_TOD.P2_9003100	2700	DCA4_TOD.P2_9003200	2700
DCA4_TOD.P2_9003300	2700	DCA4_TOD.P2_9003400	2700
DCA4_TOD.P2_9003500	2700	DCA4_TOD.P2_9003600	2700
DCA4_TOD.P2_9003700	2700	DCA4_TOD.P2_9003800	2700
DCA4_TOD.P2_9003900	2700	DCA4_TOD.P2_9004000	2700
DCA4_TOD.P2_9004100	2700	DCA4_TOD.P2_9004200	2700
DCA4_TOD.P2_9004300	2700	DCA4_TOD.P2_9004400	2700
DCA4_TOD.P2_9004500	2700	DCA4_TOD.P2_9004600	2700
DCA4_TOD.P2_9004700	2700	DCA4_TOD.P2_9004800	2700
DCA4_TOD.P2_9004900	2700	DCA4_TOD.P2_9005000	2700
DCA4_TOD.P2_9005100	2700	DCA4_TOD.P2_9005200	2700
DCA4_TOD.P2_9005300	2700	DCA4_TOD.P2_9005400	2700
DCA4_TOD.P2_9005500	2700	DCA4_TOD.P2_9005600	2700
DCA4_TOD.P2_9005700	2700	DCA4_TOD.P2_9005800	2700
DCA4_TOD.P2_9005900	2700	DCA4_TOD.P2_9006000	2700
DCA4_TOD.P2_9006100	2700	DCA4_TOD.P2_9006200	2700
DCA4_TOD.P2_9006300	2700	DCA4_TOD.P2_9006400	2700
DCA4_TOD.P2_9006500	2700	DCA4_TOD.P2_9006600	2700

DCA4_TOD.P2_9006700	2700	DCA4_TOD.P2_9006800	2700
DCA4_TOD.P2_9006900	2700	DCA4_TOD.P2_9007000	2700
DCA4_TOD.P2_9007100	2700	DCA4_TOD.P2_9007200	2700
DCA4_TOD.P2_9007300	2700	DCA4_TOD.P2_9007400	2700
DCA4_TOD.P2_9007500	2700	DCA4_TOD.P2_9007600	2700
DCA4_TOD.P2_9007700	2700	DCA4_TOD.P2_9007800	2700
DCA4_TOD.P2_9007900	2700	DCA4_TOD.P2_9008000	2700
DCA4_TOD.P2_9008100	2700	DCA4_TOD.P2_9008200	2700
DCA4_TOD.P2_9008300	2700	DCA4_TOD.P2_9008400	2700
DCA4_TOD.P2_9008500	2700	DCA4_TOD.P2_9008600	2700
DCA4_TOD.P2_9008700	2700	DCA4_TOD.P2_9008800	2700
DCA4_TOD.P2_9008900	2700	DCA4_TOD.P2_9009000	2700
DCA4_TOD.P2_9009100	2700	DCA4_TOD.P2_9009200	2700
DCA4_TOD.P2_9009300	2700	DCA4_TOD.P2_9009400	2700
DCA4_TOD.P2_9009500	2700	DCA4_TOD.P2_9009600	2700
DCA4_TOD.P2_9009700	2700	DCA4_TOD.P2_9009800	2700
DCA4_TOD.P2_9009900	2700	DCA4_TOD.P2_9010000	2700
DCA4_TOD.P2_9010100	2700	DCA4_TOD.P2_9010200	2700
DCA4_TOD.P2_9010300	2700	DCA4_TOD.P2_9010400	2700
DCA4_TOD.P2_9010500	2700	DCA4_TOD.P2_9010600	2700
DCA4_TOD.P2_9010700	2700	DCA4_TOD.P2_9010800	2700
DCA4_TOD.P2_9010900	2700	DCA4_TOD.P2_9011000	2700
DCA4_TOD.P2_9011100	2700	DCA4_TOD.P2_9011200	2700
DCA4_TOD.P2_9011300	2700	DCA4_TOD.P2_9011400	2700
DCA4_TOD.P2_9011500	2700	DCA4_TOD.P2_9011600	2700
DCA4_TOD.P2_9011700	2700	DCA4_TOD.P2_9011800	2700
DCA4_TOD.P2_9011900	2700	DCA4_TOD.P2_9012000	2700
DCA4_TOD.P2_9012100	2700	DCA4_TOD.P2_9012200	2700
DCA4_TOD.P2_9012300	2700	DCA4_TOD.P2_9012400	2700
DCA4_TOD.P2_9012500	2700	DCA4_TOD.P2_9012600	2700
DCA4_TOD.P2_9012700	2700	DCA4_TOD.P2_9012800	2700
DCA4_TOD.P2_9012900	2700	DCA4_TOD.P2_9013000	2700
DCA4_TOD.P2_9013100	2700	DCA4_TOD.P2_9013200	2700
DCA4_TOD.P2_9013300	2700	DCA4_TOD.P2_9013400	2700
DCA4_TOD.P2_9013500	2700	DCA4_TOD.P2_9013600	2700
DCA4_TOD.P2_9013700	2700	DCA4_TOD.P2_9013800	2700
DCA4_TOD.P2_9013900	2700	DCA4_TOD.P2_9014000	2700
DCA4_TOD.P2_9014100	2700	DCA4_TOD.P2_9014200	2700
DCA4_TOD.P2_9014300	2700	DCA4_TOD.P2_9014400	2700
DCA4_TOD.P2_9014500	2700	DCA4_TOD.P2_9014600	2700
DCA4_TOD.P2_9014700	2700	DCA4_TOD.P2_9014800	2700
DCA4_TOD.P2_9014900	2700	DCA4_TOD.P2_9015000	2700
DCA4_TOD.P2_9015100	2700	DCA4_TOD.P2_9015200	2700
DCA4_TOD.P2_9015300	2700	DCA4_TOD.P2_9015400	2700
DCA4_TOD.P2_9015500	2700	DCA4_TOD.P2_9015600	2700
DCA4_TOD.P2_9015700	2700	DCA4_TOD.P2_9015800	2700
DCA4_TOD.P2_9015900	2700	DCA4_TOD.P2_9016000	2700
DCA4_TOD.P2_9016100	2700	DCA4_TOD.P2_9016200	2700
DCA4_TOD.P2_9016300	2700	DCA4_TOD.P2_9016400	2700
DCA4_TOD.P2_9016500	2700	DCA4_TOD.P2_9016600	2700
DCA4_TOD.P2_9016700	2700	DCA4_TOD.P2_9016800	2700
DCA4_TOD.P2_9016900	2700	DCA4_TOD.P2_9017000	2700
DCA4_TOD.P2_9017100	2700	DCA4_TOD.P2_9017200	2700
DCA4_TOD.P2_9017300	2700	DCA4_TOD.P2_9017400	2700
DCA4_TOD.P2_9017500	2700	DCA4_TOD.P2_9017600	2700
DCA4_TOD.P2_9017700	2700	DCA4_TOD.P2_9017800	2700
DCA4_TOD.P2_9017900	2700	DCA4_TOD.P2_9018000	2700
DCA4_TOD.P2_9018100	2700	DCA4_TOD.P2_9018200	2700
DCA4_TOD.P2_9018300	2700	DCA4_TOD.P2_9018400	2700

DCA4_TOD.P2_9018500	2700	DCA4_TOD.P2_9018600	2700
DCA4_TOD.P2_9018700	2700	DCA4_TOD.P2_9018800	2700
DCA4_TOD.P2_9018900	2700	DCA4_TOD.P2_9019000	2700
DCA4_TOD.P2_9019100	2700	DCA4_TOD.P2_9019200	2700
DCA4_TOD.P2_9019300	2700	DCA4_TOD.P2_9019400	2700
DCA4_TOD.P2_9019500	2700	DCA4_TOD.P2_9019600	2700
DCA4_TOD.P2_9019700	2700	DCA4_TOD.P2_9019800	2700
DCA4_TOD.P2_9019900	2700	DCA4_TOD.P2_9020000	2700
DCA4_TOD.P2_9020100	2700	DCA4_TOD.P2_9020200	2700
DCA4_TOD.P2_9020300	2700	DCA4_TOD.P2_9020400	2700
DCA4_TOD.P2_9020500	2700	DCA4_TOD.P2_9020600	2700
DCA4_TOD.P2_9020700	2700	DCA4_TOD.P2_9020800	2700
DCA4_TOD.P2_9020900	2700	DCA4_TOD.P2_9021000	2700
DCA4_TOD.P2_9021100	2700	DCA4_TOD.P2_9021200	2700
DCA4_TOD.P2_9021300	2700	DCA4_TOD.P2_9021400	2700
DCA4_TOD.P2_9021500	2700		

Total of 257 files, 693900 blocks.

DIRECTORY LISTING OF D-107718

LABEL = DMRPD3

DCA4_TOD.P2_9021600	2700	DCA4_TOD.P2_9021700	2700
DCA4_TOD.P2_9021800	2700	DCA4_TOD.P2_9021900	2700
DCA4_TOD.P2_9022000	2700	DCA4_TOD.P2_9022100	2700
DCA4_TOD.P2_9022200	2700	DCA4_TOD.P2_9022300	2700
DCA4_TOD.P2_9022400	2700	DCA4_TOD.P2_9022500	2700
DCA4_TOD.P2_9022600	2700	DCA4_TOD.P2_9022700	2700
DCA4_TOD.P2_9022800	2700	DCA4_TOD.P2_9022900	2700
DCA4_TOD.P2_9023000	2700	DCA4_TOD.P2_9023100	2700
DCA4_TOD.P2_9023200	2700	DCA4_TOD.P2_9023300	2700
DCA4_TOD.P2_9023400	2700	DCA4_TOD.P2_9023500	2700
DCA4_TOD.P2_9023600	2700	DCA4_TOD.P2_9023700	2700
DCA4_TOD.P2_9023800	2700	DCA4_TOD.P2_9023900	2700
DCA4_TOD.P2_9024000	2700	DCA4_TOD.P2_9024100	2700
DCA4_TOD.P2_9024200	2700	DCA4_TOD.P2_9024300	2700
DCA4_TOD.P2_9024400	2700	DCA4_TOD.P2_9024500	2700
DCA4_TOD.P2_9024600	2700	DCA4_TOD.P2_9024700	2700
DCA4_TOD.P2_9024800	2700	DCA4_TOD.P2_9024900	2700
DCA4_TOD.P2_9025000	2700	DCA4_TOD.P2_9025100	2700
DCA4_TOD.P2_9025200	2700	DCA4_TOD.P2_9025300	2700
DCA4_TOD.P2_9025400	2700	DCA4_TOD.P2_9025500	2700
DCA4_TOD.P2_9025600	2700	DCA4_TOD.P2_9025700	2700
DCA4_TOD.P2_9025800	2700	DCA4_TOD.P2_9025900	2700
DCA4_TOD.P2_9026000	2700	DCA4_TOD.P2_9026100	2700
DCA4_TOD.P2_9026200	2700	DCA4_TOD.P2_9026300	2700
DCA4_TOD.P2_9026400	2700	DCA4_TOD.P2_9026500	2700
DCA4_TOD.P2_9026600	2700	DCA4_TOD.P2_9026700	2700
DCA4_TOD.P2_9026800	2700	DCA4_TOD.P2_9026900	2700
DCA4_TOD.P2_9027000	2700	DCA4_TOD.P2_9027100	2700
DCA4_TOD.P2_9027200	2700	DCA4_TOD.P2_9027300	2700
DCA4_TOD.P2_9027400	2700	DCA4_TOD.P2_9027500	2700
DCA4_TOD.P2_9027600	2700	DCA4_TOD.P2_9027700	2700
DCA4_TOD.P2_9027800	2700	DCA4_TOD.P2_9027900	2700
DCA4_TOD.P2_9028000	2700	DCA4_TOD.P2_9028100	2700
DCA4_TOD.P2_9028200	2700	DCA4_TOD.P2_9028300	2700
DCA4_TOD.P2_9028400	2700	DCA4_TOD.P2_9028500	2700
DCA4_TOD.P2_9028600	2700	DCA4_TOD.P2_9028700	2700
DCA4_TOD.P2_9028800	2700	DCA4_TOD.P2_9028900	2700
DCA4_TOD.P2_9029000	2700	DCA4_TOD.P2_9029100	2700
DCA4_TOD.P2_9029200	2700	DCA4_TOD.P2_9029300	2700
DCA4_TOD.P2_9029400	2700	DCA4_TOD.P2_9029500	2700
DCA4_TOD.P2_9029600	2700	DCA4_TOD.P2_9029700	2700
DCA4_TOD.P2_9029800	2700	DCA4_TOD.P2_9029900	2700
DCA4_TOD.P2_9030000	2700	DCA4_TOD.P2_9030100	2700
DCA4_TOD.P2_9030200	2700	DCA4_TOD.P2_9030300	2700
DCA4_TOD.P2_9030400	2700	DCA4_TOD.P2_9030500	2700
DCA4_TOD.P2_9030600	2700	DCA4_TOD.P2_9030700	2700
DCA4_TOD.P2_9030800	2700	DCA4_TOD.P2_9030900	2700
DCA4_TOD.P2_9031000	2700	DCA4_TOD.P2_9031100	2700
DCA4_TOD.P2_9031200	2700	DCA4_TOD.P2_9031300	2700
DCA4_TOD.P2_9031400	2700	DCA4_TOD.P2_9031500	2700
DCA4_TOD.P2_9031600	2700	DCA4_TOD.P2_9031700	2700
DCA4_TOD.P2_9031800	2700	DCA4_TOD.P2_9031900	2700
DCA4_TOD.P2_9032000	2700	DCA4_TOD.P2_9032100	2700
DCA4_TOD.P2_9032200	2700	DCA4_TOD.P2_9032300	2700
DCA4_TOD.P2_9032400	2700	DCA4_TOD.P2_9032500	2700

DCA4_TOD.P2_9032600	2700	DCA4_TOD.P2_9032700	2700
DCA4_TOD.P2_9032800	2700	DCA4_TOD.P2_9032900	2700
DCA4_TOD.P2_9033000	2700	DCA4_TOD.P2_9033100	2700
DCA4_TOD.P2_9033200	2700	DCA4_TOD.P2_9033300	2700
DCA4_TOD.P2_9033400	2700	DCA4_TOD.P2_9033500	2700
DCA4_TOD.P2_9033600	2700	DCA4_TOD.P2_9033700	2700
DCA4_TOD.P2_9033800	2700	DCA4_TOD.P2_9033900	2700
DCA4_TOD.P2_9034000	2700	DCA4_TOD.P2_9034100	2700
DCA4_TOD.P2_9034200	2700	DCA4_TOD.P2_9034300	2700
DCA4_TOD.P2_9034400	2700	DCA4_TOD.P2_9034500	2700
DCA4_TOD.P2_9034600	2700	DCA4_TOD.P2_9034700	2700
DCA4_TOD.P2_9034800	2700	DCA4_TOD.P2_9034900	2700
DCA4_TOD.P2_9035000	2700	DCA4_TOD.P2_9035100	2700
DCA4_TOD.P2_9035200	2700	DCA4_TOD.P2_9035300	2700
DCA4_TOD.P2_9035400	2700	DCA4_TOD.P2_9035500	2700
DCA4_TOD.P2_9035600	2700	DCA4_TOD.P2_9035700	2700
DCA4_TOD.P2_9035800	2700	DCA4_TOD.P2_9035900	2700
DCA4_TOD.P2_9036000	2700	DCA4_TOD.P2_9036100	2700
DCA4_TOD.P2_9036200	2700	DCA4_TOD.P2_9036300	2700
DCA4_TOD.P2_9036400	2700	DCA4_TOD.P2_9036500	2700
DCA4_TOD.P2_9100200	2700	DCA4_TOD.P2_9100300	2700
DCA4_TOD.P2_9100400	2700	DCA4_TOD.P2_9100500	2700
DCA4_TOD.P2_9100600	2700	DCA4_TOD.P2_9100700	2700
DCA4_TOD.P2_9100800	2700	DCA4_TOD.P2_9100900	2700
DCA4_TOD.P2_9101000	2700	DCA4_TOD.P2_9101100	2700
DCA4_TOD.P2_9101200	2700	DCA4_TOD.P2_9101300	2700
DCA4_TOD.P2_9101400	2700	DCA4_TOD.P2_9101500	2700
DCA4_TOD.P2_9101600	2700	DCA4_TOD.P2_9101700	2700
DCA4_TOD.P2_9101800	2700	DCA4_TOD.P2_9101900	2700
DCA4_TOD.P2_9102000	2700	DCA4_TOD.P2_9102100	2700
DCA4_TOD.P2_9102200	2700	DCA4_TOD.P2_9102300	2700
DCA4_TOD.P2_9102400	2700	DCA4_TOD.P2_9102500	2700
DCA4_TOD.P2_9102600	2700	DCA4_TOD.P2_9102700	2700
DCA4_TOD.P2_9102800	2700	DCA4_TOD.P2_9102900	2700
DCA4_TOD.P2_9103000	2700	DCA4_TOD.P2_9103100	2700
DCA4_TOD.P2_9103200	2700	DCA4_TOD.P2_9103300	2700
DCA4_TOD.P2_9103400	2700	DCA4_TOD.P2_9103500	2700
DCA4_TOD.P2_9103600	2700	DCA4_TOD.P2_9103700	2700
DCA4_TOD.P2_9103800	2700	DCA4_TOD.P2_9103900	2700
DCA4_TOD.P2_9104000	2700	DCA4_TOD.P2_9104100	2700
DCA4_TOD.P2_9104200	2700	DCA4_TOD.P2_9104300	2700
DCA4_TOD.P2_9104400	2700	DCA4_TOD.P2_9104500	2700
DCA4_TOD.P2_9104600	2700	DCA4_TOD.P2_9104700	2700
DCA4_TOD.P2_9104800	2700	DCA4_TOD.P2_9104900	2700
DCA4_TOD.P2_9105000	2700	DCA4_TOD.P2_9105100	2700
DCA4_TOD.P2_9105200	2700	DCA4_TOD.P2_9105300	2700
DCA4_TOD.P2_9105400	2700	DCA4_TOD.P2_9105500	2700
DCA4_TOD.P2_9105600	2700	DCA4_TOD.P2_9105700	2700
DCA4_TOD.P2_9105800	2700	DCA4_TOD.P2_9105900	2700
DCA4_TOD.P2_9106000	2700	DCA4_TOD.P2_9106100	2700
DCA4_TOD.P2_9106200	2700	DCA4_TOD.P2_9106300	2700
DCA4_TOD.P2_9106400	2700	DCA4_TOD.P2_9106500	2700
DCA4_TOD.P2_9106600	2700	DCA4_TOD.P2_9106700	2700
DCA4_TOD.P2_9106800	2700	DCA4_TOD.P2_9106900	2700
DCA4_TOD.P2_9107000	2700	DCA4_TOD.P2_9107100	2700
DCA4_TOD.P2_9107200	2700	DCA4_TOD.P2_9107300	2700
DCA4_TOD.P2_9107400	2700	DCA4_TOD.P2_9107500	2700
DCA4_TOD.P2_9107600	2700	DCA4_TOD.P2_9107700	2700
DCA4_TOD.P2_9107800	2700	DCA4_TOD.P2_9107900	2700

```
DCA4_TOD.P2_9108000    2700       DCA4_TOD.P2_9108100    2700
DCA4_TOD.P2_9108200    2700       DCA4_TOD.P2_9108300    2700
DCA4_TOD.P2_9108400    2700       DCA4_TOD.P2_9108500    2700
DCA4_TOD.P2_9108600    2700       DCA4_TOD.P2_9108700    2700
DCA4_TOD.P2_9108800    2700       DCA4_TOD.P2_9108900    2700
DCA4_TOD.P2_9109000    2700       DCA4_TOD.P2_9109100    2700
DCA4_TOD.P2_9109200    2700       DCA4_TOD.P2_9109300    2700
DCA4_TOD.P2_9109400    2700       DCA4_TOD.P2_9109500    2700
DCA4_TOD.P2_9109600    2700       DCA4_TOD.P2_9109700    2700
DCA4_TOD.P2_9109800    2700       DCA4_TOD.P2_9109900    2700
DCA4_TOD.P2_9110000    2700       DCA4_TOD.P2_9110100    2700
DCA4_TOD.P2_9110200    2700       DCA4_TOD.P2_9110300    2700
DCA4_TOD.P2_9110400    2700       DCA4_TOD.P2_9110500    2700
DCA4_TOD.P2_9110600    2700       DCA4_TOD.P2_9110700    2700
Total of 256 files, 691200 blocks.
$!
$ exit:
$ dismount/nounload $1$mua83:
$ deallocate $1$mua83:
$ set noverify
  MYERS        job terminated at 23-JAN-1995 14:39:59.71

  Accounting information:
  Buffered I/O count:              755         Peak working set size:    3610
  Direct I/O count:                280         Peak page file size:      7736
  Page faults:                    5022         Mounted volumes:             1
  Charged CPU time:           0 00:00:01.93    Elapsed time:     0 01:52:40.18
```

DIRECTORY LISTING OF D-107719

LABEL = DMRPD4

```
$ dir/size/col=2/width=filename=20 $1$mua40:

        Directory $1$MUA40:[]

        DCA4_TOD.P2_9110800     2700        DCA4_TOD.P2_9110900     2700
        DCA4_TOD.P2_9111000     2700        DCA4_TOD.P2_9111100     2700
        DCA4_TOD.P2_9111200     2700        DCA4_TOD.P2_9111300     2700
        DCA4_TOD.P2_9111400     2700        DCA4_TOD.P2_9111500     2700
        DCA4_TOD.P2_9111600     2700        DCA4_TOD.P2_9111700     2700
        DCA4_TOD.P2_9111800     2700        DCA4_TOD.P2_9111900     2700
        DCA4_TOD.P2_9112000     2700        DCA4_TOD.P2_9112100     2700
        DCA4_TOD.P2_9112200     2700        DCA4_TOD.P2_9112300     2700
        DCA4_TOD.P2_9112400     2700        DCA4_TOD.P2_9112500     2700
        DCA4_TOD.P2_9112600     2700        DCA4_TOD.P2_9112700     2700
        DCA4_TOD.P2_9112800     2700        DCA4_TOD.P2_9112900     2700
        DCA4_TOD.P2_9113000     2700        DCA4_TOD.P2_9113100     2700
        DCA4_TOD.P2_9113200     2700        DCA4_TOD.P2_9113300     2700
        DCA4_TOD.P2_9113400     2700        DCA4_TOD.P2_9113500     2700
        DCA4_TOD.P2_9113600     2700        DCA4_TOD.P2_9113700     2700
        DCA4_TOD.P2_9113800     2700        DCA4_TOD.P2_9113900     2700
        DCA4_TOD.P2_9114000     2700        DCA4_TOD.P2_9114100     2700
        DCA4_TOD.P2_9114200     2700        DCA4_TOD.P2_9114300     2700
        DCA4_TOD.P2_9114400     2700        DCA4_TOD.P2_9114500     2700
        DCA4_TOD.P2_9114600     2700        DCA4_TOD.P2_9114700     2700
        DCA4_TOD.P2_9114800     2700        DCA4_TOD.P2_9114900     2700
        DCA4_TOD.P2_9115000     2700        DCA4_TOD.P2_9115100     2700
        DCA4_TOD.P2_9115200     2700        DCA4_TOD.P2_9115300     2700
        DCA4_TOD.P2_9115400     2700        DCA4_TOD.P2_9115500     2700
        DCA4_TOD.P2_9115600     2700        DCA4_TOD.P2_9115700     2700
        DCA4_TOD.P2_9115800     2700        DCA4_TOD.P2_9115900     2700
        DCA4_TOD.P2_9116000     2700        DCA4_TOD.P2_9116100     2700
        DCA4_TOD.P2_9116200     2700        DCA4_TOD.P2_9116300     2700
        DCA4_TOD.P2_9116400     2700        DCA4_TOD.P2_9116500     2700
        DCA4_TOD.P2_9116600     2700        DCA4_TOD.P2_9116700     2700
        DCA4_TOD.P2_9116800     2700        DCA4_TOD.P2_9116900     2700
        DCA4_TOD.P2_9117000     2700        DCA4_TOD.P2_9117100     2700
        DCA4_TOD.P2_9117200     2700        DCA4_TOD.P2_9117300     2700
        DCA4_TOD.P2_9117400     2700        DCA4_TOD.P2_9117500     2700
        DCA4_TOD.P2_9117600     2700        DCA4_TOD.P2_9117700     2700
        DCA4_TOD.P2_9117800     2700        DCA4_TOD.P2_9117900     2700
        DCA4_TOD.P2_9118000     2700        DCA4_TOD.P2_9118100     2700
        DCA4_TOD.P2_9118200     2700        DCA4_TOD.P2_9118300     2700
        DCA4_TOD.P2_9118400     2700        DCA4_TOD.P2_9118500     2700
        DCA4_TOD.P2_9118600     2700        DCA4_TOD.P2_9118700     2700
        DCA4_TOD.P2_9118800     2700        DCA4_TOD.P2_9118900     2700
        DCA4_TOD.P2_9119000     2700        DCA4_TOD.P2_9119100     2700
        DCA4_TOD.P2_9119200     2700        DCA4_TOD.P2_9119300     2700
        DCA4_TOD.P2_9119400     2700        DCA4_TOD.P2_9119500     2700
        DCA4_TOD.P2_9119600     2700        DCA4_TOD.P2_9119700     2700
        DCA4_TOD.P2_9119800     2700        DCA4_TOD.P2_9119900     2700
        DCA4_TOD.P2_9120000     2700        DCA4_TOD.P2_9120100     2700
        DCA4_TOD.P2_9120200     2700        DCA4_TOD.P2_9120300     2700
        DCA4_TOD.P2_9120400     2700        DCA4_TOD.P2_9120500     2700
```

DCA4_TOD.P2_9120600	2700	DCA4_TOD.P2_9120700	2700
DCA4_TOD.P2_9120800	2700	DCA4_TOD.P2_9120900	2700
DCA4_TOD.P2_9121000	2700	DCA4_TOD.P2_9121100	2700
DCA4_TOD.P2_9121200	2700	DCA4_TOD.P2_9121300	2700
DCA4_TOD.P2_9121400	2700	DCA4_TOD.P2_9121500	2700
DCA4_TOD.P2_9121600	2700	DCA4_TOD.P2_9121700	2700
DCA4_TOD.P2_9121800	2700	DCA4_TOD.P2_9121900	2700
DCA4_TOD.P2_9122000	2700	DCA4_TOD.P2_9122100	2700
DCA4_TOD.P2_9122200	2700	DCA4_TOD.P2_9122300	2700
DCA4_TOD.P2_9122400	2700	DCA4_TOD.P2_9122500	2700
DCA4_TOD.P2_9122600	2700	DCA4_TOD.P2_9122700	2700
DCA4_TOD.P2_9122800	2700	DCA4_TOD.P2_9122900	2700
DCA4_TOD.P2_9123000	2700	DCA4_TOD.P2_9123100	2700
DCA4_TOD.P2_9123200	2700	DCA4_TOD.P2_9123300	2700
DCA4_TOD.P2_9123400	2700	DCA4_TOD.P2_9123500	2700
DCA4_TOD.P2_9123600	2700	DCA4_TOD.P2_9123700	2700
DCA4_TOD.P2_9123800	2700	DCA4_TOD.P2_9123900	2700
DCA4_TOD.P2_9124000	2700	DCA4_TOD.P2_9124100	2700
DCA4_TOD.P2_9124200	2700	DCA4_TOD.P2_9124300	2700
DCA4_TOD.P2_9124400	2700	DCA4_TOD.P2_9124500	2700
DCA4_TOD.P2_9124600	2700	DCA4_TOD.P2_9124700	2700
DCA4_TOD.P2_9124800	2700	DCA4_TOD.P2_9124900	2700
DCA4_TOD.P2_9125000	2700	DCA4_TOD.P2_9125300	2700
DCA4_TOD.P2_9125400	2700	DCA4_TOD.P2_9125500	2700
DCA4_TOD.P2_9125600	2700	DCA4_TOD.P2_9125700	2700
DCA4_TOD.P2_9125800	2700	DCA4_TOD.P2_9125900	2700
DCA4_TOD.P2_9126000	2700	DCA4_TOD.P2_9126100	2700
DCA4_TOD.P2_9126200	2700	DCA4_TOD.P2_9126300	2700
DCA4_TOD.P2_9126400	2700	DCA4_TOD.P2_9126500	2700
DCA4_TOD.P2_9126600	2700	DCA4_TOD.P2_9126700	2700
DCA4_TOD.P2_9126800	2700	DCA4_TOD.P2_9126900	2700
DCA4_TOD.P2_9127000	2700	DCA4_TOD.P2_9127100	2700
DCA4_TOD.P2_9127200	2700	DCA4_TOD.P2_9127300	2700
DCA4_TOD.P2_9127400	2700	DCA4_TOD.P2_9127500	2700
DCA4_TOD.P2_9127600	2700	DCA4_TOD.P2_9127700	2700
DCA4_TOD.P2_9127800	2700	DCA4_TOD.P2_9127900	2700
DCA4_TOD.P2_9128000	2700	DCA4_TOD.P2_9128100	2700
DCA4_TOD.P2_9128200	2700	DCA4_TOD.P2_9128300	2700
DCA4_TOD.P2_9128400	2700	DCA4_TOD.P2_9128500	2700
DCA4_TOD.P2_9128600	2700	DCA4_TOD.P2_9128700	2700
DCA4_TOD.P2_9128800	2700	DCA4_TOD.P2_9128900	2700
DCA4_TOD.P2_9129000	2700	DCA4_TOD.P2_9129100	2700
DCA4_TOD.P2_9129200	2700	DCA4_TOD.P2_9129300	2700
DCA4_TOD.P2_9129400	2700	DCA4_TOD.P2_9129500	2700
DCA4_TOD.P2_9129600	2700	DCA4_TOD.P2_9129700	2700
DCA4_TOD.P2_9129800	2700	DCA4_TOD.P2_9129900	2700
DCA4_TOD.P2_9130000	2700	DCA4_TOD.P2_9130100	2700
DCA4_TOD.P2_9130200	2700	DCA4_TOD.P2_9130300	2700
DCA4_TOD.P2_9130400	2700	DCA4_TOD.P2_9130500	2700
DCA4_TOD.P2_9130600	2700	DCA4_TOD.P2_9130700	2700
DCA4_TOD.P2_9130800	2700	DCA4_TOD.P2_9130900	2700
DCA4_TOD.P2_9131000	2700	DCA4_TOD.P2_9131100	2700
DCA4_TOD.P2_9131200	2700	DCA4_TOD.P2_9131300	2700
DCA4_TOD.P2_9131400	2700	DCA4_TOD.P2_9131500	2700
DCA4_TOD.P2_9131600	2700	DCA4_TOD.P2_9131700	2700
DCA4_TOD.P2_9131800	2700	DCA4_TOD.P2_9131900	2700
DCA4_TOD.P2_9132000	2700	DCA4_TOD.P2_9132100	2700
DCA4_TOD.P2_9132200	2700	DCA4_TOD.P2_9132300	2700
DCA4_TOD.P2_9132400	2700	DCA4_TOD.P2_9132500	2700

```
DCA4_TOD.P2_9132600      2700        DCA4_TOD.P2_9132700      2700
DCA4_TOD.P2_9132800      2700        DCA4_TOD.P2_9132900      2700
DCA4_TOD.P2_9133000      2700        DCA4_TOD.P2_9133100      2700
DCA4_TOD.P2_9133200      2700        DCA4_TOD.P2_9133300      2700
DCA4_TOD.P2_9133400      2700        DCA4_TOD.P2_9133500      2700
DCA4_TOD.P2_9133600      2700        DCA4_TOD.P2_9133700      2700
DCA4_TOD.P2_9133800      2700        DCA4_TOD.P2_9133900      2700
DCA4_TOD.P2_9134000      2700        DCA4_TOD.P2_9134100      2700
DCA4_TOD.P2_9134200      2700        DCA4_TOD.P2_9134300      2700
DCA4_TOD.P2_9134400      2700        DCA4_TOD.P2_9134500      2700
DCA4_TOD.P2_9134600      2700        DCA4_TOD.P2_9134700      2700
DCA4_TOD.P2_9134800      2700        DCA4_TOD.P2_9134900      2700
DCA4_TOD.P2_9135000      2700        DCA4_TOD.P2_9135100      2700
DCA4_TOD.P2_9135200      2700        DCA4_TOD.P2_9135300      2700
DCA4_TOD.P2_9135400      2700        DCA4_TOD.P2_9135500      2700
DCA4_TOD.P2_9135600      2700        DCA4_TOD.P2_9135700      2700
DCA4_TOD.P2_9135800      2700        DCA4_TOD.P2_9135900      2700
DCA4_TOD.P2_9136000      2700        DCA4_TOD.P2_9136100      2700
DCA4_TOD.P2_9136200      2700        DCA4_TOD.P2_9136300      2700
DCA4_TOD.P2_9136400      2700        DCA4_TOD.P2_9136500      2700

Total of 256 files, 691200 blocks.

$!
$ exit:
$ dismount $1$mua40:
$ deallocate $1$mua40:
$ set noverify
  BROWLAND     job terminated at 24-OCT-1994 23:16:20.34

Buffered I/O count:              909        Peak working set size:    2494
Direct I/O count:                345        Peak page file size:      6679
Page faults:                    4638        Mounted volumes:             2
Charged CPU time:           0 00:00:01.59   Elapsed time:     0 03:35:05.9
```

ASDS p.1

DMR Analyzed Science Data Sets (ASDS) Explanatory Supplement

1 Introduction

The purpose of the COBE Differential Microwave Radiometers (DMR) experiment is to measure the large angular scale anisotropies of the cosmic microwave background (CMB) radiation. Smoot et al. (1990) and Bennett et al. (1992a) provide detailed descriptions of the DMR instrument. This release of the DMR Analyzed Science Data Sets covers the first two years of instrument operation, specifically the time range from 1989 December 22 to 1991 December 21. The data sets are in the Flexible Image Transport System (FITS) format. The detailed analysis and systematic error limits that apply to the two years of data covered by this release are described in Bennett et al. (1994).

2 DMR Analyzed Science Data Sets

The DMR Analyzed Science Data Sets consist of Galactic emission and cosmic emission maps. Bennett et al. (1992b) discuss the separation of the Galactic foreground emission from the cosmic emission. Four components are important at microwave wavelengths: CMB anisotropies, synchrotron emission, free-free emission, and thermal emission from dust. The latter three compose the Galactic foreground.

Tables 1 and 2 describe, respectively, the parameters of the Data Sets and the information given for each pixel.

Table 1: DMR Analyzed Science Data Sets

Time range	0 UT Dec 22, 1989 to 0 UT Dec 22, 1991
Temperature Unit	milliKelvin thermodynamic temperature for CMB maps milliKelvin antenna temperature for Galactic maps
Ecliptic Latitude	-90° to + 90°
Ecliptic Longitude	0° to 360°
Pixelization	2.59°, ecliptic coordinates
Beamwidth	7° FWHM Gaussian, circular
Corrections	Satellite velocity, Earth velocity, Sun velocity, Magnetic susceptibility, Moon in sidelobes, Instrument Memory, Jupiter, Mars, Saturn

2.1 Galactic Emission Maps

The 53 GHz synchrotron model, dust model and free-free maps are delivered in this release of the DMR Analyzed Science Data Sets (ASDS). The details about deriving these Galactic emission maps are described in Bennett et al. (1992b).

Synchrotron emission arises from relativistic electrons accelerated in the Galactic magnetic field. We use the observed local electron spectrum in conjunction with 408 MHz and 1420 MHz radio data to model the synchrotron radiation at the DMR frequencies.

Thermal emission from dust is also important at microwave wavelengths. We utilize the full sky measurements of the dust intensity and spectrum at higher frequencies from the COBE-FIRAS experiment and extrapolate these to the DMR frequencies.

Free-free emission occurs when free electrons are accelerated by interactions with ions. The free-free emission map is obtained by the simultaneous fitting of the DMR 31 and 53 GHz maps for the free-free and cosmic emission after subtracting the model synchrotron and dust maps. This is the first all-sky map of the Galactic free-free emissions.

2.2 DMR Cosmic Emission Sky Maps

Two techniques are used for separating the cosmic emission from the foreground Galactic emission. The details are described in Bennett et al. (1992b, 1994). The resulting cosmic emission maps from both techniques are delivered in this release of the DMR Analyzed Science Data Sets (ASDS). The combination factors for the three DMR channels are slightly different in the FITS headers than in Bennett et al (1992b, 1994) owing to the use of ecliptic coordinate maps for these ASDS Data Sets.

1. Subtraction technique. We first subtract the Galactic emission maps from the DMR maps, where Galactic emission is based on maps of synchrotron and dust emission derived from measurements at frequencies where these type of emissions are strong. The free-free galactic emission is then separated and subtracted from the remaining cosmic signal by making a linear combination, based on the assumed free-free spectral index, of the 31 GHz map with the 53 GHz map.

2. Combination technique. We form a linear combination of the DMR maps to 1) cancel the Galactic emission for $|l| > 30$ degrees and $|b| < 6$ degrees, 2) cancel the free-free emission based on the assumed free-free spectral index, and 3) normalize the cosmic emission map in thermodynamic temperature.

3 References

Bennett, C. L., et al. 1992a, "*COBE* Differential Microwave Radiometers: Calibration Techniques", ApJ, 391, 466-482

Bennett, C. L., et al. 1992b, "Preliminary Separation of Galactic and Cosmic Microwave Emission for the *COBE* Differential Microwave Radiometer", ApJ, 396, L7-L12

Bennett, C. L., et al. 1994, "Cosmic Temperature Fluctuations from Two Years of *COBE*-DMR Observations", ApJ, (in press)

Smoot, G., et al. 1990, "*COBE* Differential Microwave Radiometers: Instrument Design and Implementation", ApJ, 360, 685-695

ASDS p.3

Table 2: Data Fields in DMR Analyzed Science Data Sets

Data field	Description
PIXEL	Pixel number (0 to 6143)
SIGNAL	Sky temperature (mK)
N_OBS	Number of observations
SERROR	Statistical uncertainty (mK, 68% confidence level)
ECLON	Ecliptic longitude of pixel center (degrees)
ECLAT	Ecliptic latitude of pixel center (degrees)
GALON	Galactic longitude of pixel center (degrees)
GALAT	Galactic latitude of pixel center (degrees)
RA	Right ascension of pixel center (degrees)
DEC	Declination of pixel center (degrees)

DMR Project Data Sets (PDS) Explanatory Supplement

1 The Differential Microwave Radiometers Experiment

The purpose of the Cosmic Background Explorer (COBE) Differential Microwave Radiometers (DMR) experiment is to measure large angular scale anisotropies of the cosmic microwave background (CMB) radiation. This release of the DMR Project Data Sets covers the first two years of instrument operation, specifically the time range from 1989 December 22 to 1991 December 21. The DMR Project Data Sets are (i) maps of the full sky at three microwave frequencies, (ii) the corresponding differential data coadded by sky position, and (iii) the time-ordered raw differential temperatures. Data sets (i) and (ii) are in the Flexible Image Transport System (FITS) format, and (iii) are in the DMR native data format.

Smoot et al. (1990) and Bennett et al. (1992a) provide detailed descriptions of the DMR instrument. The instrument consists of six differential microwave radiometers, two nearly independent channels (labelled A and B) at each of three frequencies: 31.5, 53, and 90 GHz (wavelengths 9.5, 5.7, and 3.3 mm). Each radiometer measures the difference in power, expressed as a differential antenna temperature, between two regions of the sky separated by 60°. The combined motions of spacecraft spin (73 s period), orbit (103 m period) and orbital precession ($\sim 1°$/day) allow each sky position to be compared to all others through a highly redundant set of all possible difference measurements spaced 60° apart.

The DMR has three separate receiver boxes, one for each frequency, that are mounted 120° apart on the outside of the COBE cryostat containing the Far Infrared Absolute Spectrophotometer (FIRAS) and the Diffuse Infrared Background Experiment (DIRBE). There are ten horn antennas, all of which have an approximately Gaussian main beam with a 7° FWHM. The pair of horns for each channel are pointed 60° apart, 30° to each side of the spacecraft spin axis and are designated as Horn 1 and Horn 2. The differential temperature is always in the sense Horn 1 minus Horn 2. For each channel, the switching between Horns 1 and 2 is at a rate of 100 Hz, and the switched signals undergo amplification, detection, and synchronous demodulation with a 0.5 s integration period. Table 1 describes the noise level per measurement (0.5 sec being the duration of a measurement) for each DMR channel in units of antenna temperature.

Table 1: Noise Level (per 0.5 sec measurement) for Each DMR Channel

DMR Channel	31A	31B	53A	53B	90A	90B
Flight RMS (mK)	58.6	60.4	23.2	27.1	39.7	30.2

The 53 and 90 GHz channels use two separate linearly polarized horn pairs, while the 31 GHz channels receive opposite circular polarizations in a single pair of horns. The polarization of the 53 and 90 GHz receivers is such that the E-plane of each horn is perpendicular to the plane of the two horns of a given channel. A shield surrounding the aperture plane protects all three instruments from solar and terrestrial emission. As the spacecraft spins, a point 30° from the spin axis is swept successively by the 31 GHz Horn 1, 31 GHz Horn

2, 53 GHz A and B Horns 1, 53 GHz A and B Horns 2, 90 GHz A and B Horns 1, and 90 GHz A and B Horns 2 respectively. See Figure 8 of Bennett at al. (1992a) for a schematic illustration of the *COBE* aperture plane.

2 The Software System

The purpose of the DMR software system is to take the raw telemetry data from the instrument and produce calibrated maps of the sky that have systematic effects (instrumental and environmental) reduced below well specified levels. The techniques used and resulting systematic error limits for the initial product dataset release of July 1993, covering the first year of DMR data, are described by Kogut et al. (1992). A description of the more detailed analysis and lower systematic error limits that apply to the two years of data covered by this release is described by Bennett et al. (1994). The software system and data processing algorithms are also described by Janssen & Gulkis (1991) and Jackson et al. (1992).

2.1 Data Reduction

The DMR telemetry consists of uncalibrated differential temperatures, taken every 0.5 second for each of the six channels, plus housekeeping data (voltages, temperatures, relay states, etc). These are merged with spacecraft attitude data into a time-ordered dataset. Various algorithms are used to check data quality and flag bad data in this dataset (Keegstra et al. 1992). For these DMR datasets, the data from a channel are flagged as bad when either horn was within 21° of the Moon, or when the limb of the Earth was higher than 1° below the plane of the shield (3° at 31 GHz).

The instrumental offset was removed by fitting a smooth baseline to the uncalibrated time-ordered data. As a cross-check, baselines were routinely fitted three different ways: a running mean, a slowly varying cubic spline, and a more rapidly varying cubic spline fitted to the data after correction for magnetic susceptibility. The averaging period for the running mean is two orbit periods (the orbit period is 103 minutes); the slowly varying cubic spline has a knot every 52 minutes; and the fast spline has a knot every 9 minutes. The aim is to use the longest baseline consistent with instrument stability in order to reduce the influence of possible systematic errors. The fast baseline retains information only over the 73-second spin period; the slower spline retains information over the roughly 15-minute time period where the orbital motion is less than the 60° separation between the horns; and the mean baseline retains information over the *COBE* orbital period. The sky maps for this data release use the mean baseline.

Calibration of the data to antenna temperature is achieved by turning on noise sources of known antenna temperature for two minutes every two hours. Long-term stability of the noise sources is checked by observations of the Moon and by the amplitude of the modulation of the CMB signal over the course of a year caused by the Earth's 30 km/sec orbital motion. See Bennett et al. (1992a, 1994) for a detailed description of DMR calibration techniques.

In the preparation of the DMR Pixelized Differential Data and Sky Maps Project Data Sets, the calibrated time-ordered data were corrected for known instrumental and systematic effects: the Doppler effect from the *COBE* velocity about the Earth ("satellite velocity") and the Earth's velocity about the solar system barycenter ("Earth velocity"); the susceptibility of the instrument to the Earth's magnetic field; emission from the Moon

in the antenna sidelobes; the slight 3.2% 'memory' of the previous observation (arising in the lock-in amplifier); and emission from the planets Jupiter, Mars, and Saturn. In order to reduce the errors inherent in pixelizing over the non-uniformly sampled sky, the calibrated time-ordered data were also corrected for a nominal CMB dipole ("Sun velocity") assuming a dipole of 3.356 mK (in thermodynamic temperature) directed towards 2000 R.A. = 11^h 12^m $57^s.6$, Dec =-6° 0′ 36″ .

2.2 Pixelization

The time-ordered data are pixelized according to the quadrilateralized spherical cube projection (White & Stemwedel 1992), which projects the entire sky onto six cube faces. Each face is pixelized into $2^{2(N-1)}$ approximately equal-area pixels. For these DMR Project Data Sets, we use $N = 6$, which divides the sky into 6144 pixels; each pixel subtends 6.7 square degrees. (For the actual solutions of the maps, we used a smaller pixel size of 1.7 square degrees, corresponding to $N = 7$, for all data within 20° of the Galactic plane in order to minimize the effects of gradients in the Galactic disk emission. These pixels were then block-averaged to form the $N = 6$ maps).

3 DMR Project Data Sets

3.1 Pixelized Differential Data

The baseline-subtracted, calibrated and corrected time-ordered data were sorted according to the pixel number seen by Horn 1, and then by the pixel number seen by Horn 2. All such data for a given pixel pair were then combined into four statistics: the sums of the first to fourth powers of the differential temperatures. These sums, the Horn 1 and 2 pixel numbers, and the number of occurrences of each pixel permutation comprise the DMR Pixelized Differential Data. Note that linear polarization information for 53 and 90 GHz is retained since the E-plane is perpendicular to the great circle joining the two pixels. For each channel, there are over a million pixel permutations of the 6144 pixels. Tables 2 and 3 describe, respectively, the parameters of the Data Set and the information given for each pixel permutation.

A simple program, PIXPRM, listed in Appendix A, can be used to read the FITS binary table from the DMR Pixelized Project Data set. This FORTRAN example uses the FITSIO library and should run, as written, on all platforms on which the library is supported. FITSIO was written by William Pence of NASA GSFC HEASARC, and is available by anonymous FTP from tetra.gsfc.nasa.gov. For illustrative purposes, the example calculates some simple statistics from the data sets; users may wish to substitute their own code to perform the calculations in which they are interested.

3.2 DMR Sky Maps

A sky temperature is derived for each pixel by simultaneously fitting (i.e. minimizing the chi-squared) a linear system of equations to the DMR observations and the coefficients of systematic error models (see Janssen & Gulkis 1992). Since the instrument only measures temperature differences between different sky directions, these maps of the sky only

represent differences of the sky temperature. Tables 2 and 4 describe, respectively, the parameters of the Data Set and the information given for each pixel.

The noise level of the DMR Sky Maps Project Data Set varies by more than a factor of two over the sky owing to differences in sky coverage during the mission. The greatest redundancy is on rings of 60° diameter centered at the North and South ecliptic poles since those regions are sampled on every orbit. The least redundancy is near the ecliptic plane owing to the presence of the Moon (we do not use data when either DMR horn is within 21° of the Moon). For channels 31A and 31B, the more stringent limits on the position of the limb of the Earth relative to the shield, and the rejection of data during the two months when there is an 'eclipse' of *COBE* by the Earth (see below) also reduce coverage considerably for certain pixels.

Table 5 gives the maximum, mean, and minimum coverages and the corresponding pixel-to-pixel rms noise levels. Note that since the DMR beam covers several pixels, the rms uncertainty in the determination of the strength of a point source is about 0.6 that of the pixel-to-pixel rms noise. Of course, the DMR was designed to be insensitive to point sources: a 1,000 Jy point source would yield peak antenna temperatures of 1.55 mK, 0.54 mK, and 0.19 mK at 31.5, 53, and 90 GHz respectively.

The DMR Sky Maps Project Data Set are in units of mK antenna temperature which have been calibrated to correct for any losses in the instrument and antenna system. To scale these to maps of the differential thermodynamic temperature of the cosmic microwave background, multiply by the frequency-dependent scaling factors given in Table 1 of Bennett et al (1992a), which are based on an assumed background thermodynamic temperature of 2.735K.

A simple program, SKYMAP, listed in Appendix B, can be used to read the FITS binary table from the DMR Sky Maps Project Data Set. This FORTRAN program also uses the FITSIO library described above.

3.3 DMR Time-Ordered Data

The DMR telemetry, merged with spacecraft attitude data, comprise the DMR Time-Ordered Data (TOD) Project Data Set. Included in the TOD are various warning flags and indicators of data quality. Table 6 gives the basic parameters of the data set, Appendix C describes its structure, and Appendix D provides more details.

Before the DMR Sky Map and Pixelized data sets were made, the Time-Ordered Data were corrected for the following systematic effects:

- emission from the Moon when it lies between 21 and 90 degrees from the axis of either of the two DMR horns
- emission from Jupiter, Mars, and Saturn when they lie within 15 degrees of the axis of either of the two DMR horns
- susceptibility of the instrument to the ambient magnetic field
- instrument "memory"
- the Doppler velocities of the COBE satellite around the Earth and the Earth around the Sun, and

- a dipole of 3.356 mK thermodynamic temperature considered to be produced by the Doppler velocity of the Sun with respect to the cosmic microwave background.

Correction algorithms coded in VAX Fortran, and the reference datasets that they use, are available to Guest Investigators. An IDL routine, which converts the Time-Ordered Data from its native format to an IDL save set but does not apply the corrections, is also available.

4 Warnings and Limitations

Bennett et al. (1992a) present the DMR calibration and its uncertainties and Kogut et al. (1992) give a summary of upper limits on residual systematic errors affecting the DMR Initial Product (first year of data) released in July 1993. A summary of the calibration and systematic errors affecting the two-year Project Data Sets is described by Bennett et al. (1994). Our maps of systematic errors are available on request to the NSSDC. Scientific conclusions based on the DMR Project Data Sets should take proper account of the systematic error limits and the calibration uncertainties.

Near the time of the summer solstice, the *COBE* spacecraft enters the Earth's shadow during a portion of each orbit and is thus 'eclipsed'. This causes changes in the spacecraft temperature and electrical systems. Systematic errors during the eclipse season significantly affect the DMR 31 GHz channels. Hence, these DMR Project Data Sets do not include 31 GHz data for the period 0 UT on 1990 May 21 through 0 UT on 1990 July 25; and from 0 UT on 1991 May 21 through 0 UT on 1991 July 25.

On 1991 October 4, the 31B channel suffered an increase in receiver noise by more than a factor of 2. Data following this event are not included in the Sky Maps and Pixelized Differential Data Project Data Sets; however, these data are included in the Time-Ordered Data Project Data Set.

Scientific results based on the first year of DMR data have been published by Smoot et al. (1992, 1994), Bennett et al. (1992b, 1993), Wright et al. (1992, 1994a), Kogut et al. (1993), and Hinshaw et al. (1994). Smoot et al. (1992) review the overall results. Bennett et al. (1992b) analyze the Galactic emission and derive a value for the cosmic quadrupole. Wright et al. (1992) intepret the DMR anisotropy in terms of cold dark matter cosmological models. Bennett et al. (1993) search for evidence of noncosmological source contributions. Kogut et al. (1993) analyze the dipole anisotropy and derive the Solar velocity, relative to the cosmic background radiation, implied by the observed dipole. Wright et al. (1994a) comment on the power spectrum normalization implied by the excess variance in the first-year maps. Hinshaw et al. (1994) analyze the 3-point correlation function to search for evidence of non-Gaussian fluctuations. Smoot et al. (1994) search for evidence of non-Gaussian fluctuations by analyzing the third and fourth moments and the genus of the first year maps. Scientific results based on the first two years of data have been published by Bennett et al. (1994), Wright et al. (1994b), and Kogut et al. (1994). Bennett et al. (1994) review the overall results of the first two years of data. Wright et al. (1994b) analyze the angular power spectrum. Kogut et al. (1994) search for unresolved point sources in the two-year maps.

5 References

Bennett, C. L., et al. 1992a, "*COBE* Differential Microwave Radiometers: Calibration Techniques", ApJ, 391, 466-482

Bennett, C. L., et al. 1992b, "Preliminary Separation of Galactic and Cosmic Microwave Emission for the *COBE* Differential Microwave Radiometer", ApJ, 396, L7-L12

Bennett, C. L., et al. 1993, "Noncosmological Signal Contributions to the *COBE* DMR Anisotropy Maps", ApJ, 414, L77-L80

Bennett, C. L., et al. 1994, "Cosmic Temperature Fluctuations from Two Years of *COBE*-DMR Observations", ApJ, (in press)

Gorski, K., 1994, " On Determining the Spectrum of Primordial Inhomogeneity from the *COBE* DMR Sky Maps: I Method", ApJ, (in press).

Gorski, K., et al. 1994, " On Determining the Spectrum of Primordial Inhomogeneity from the *COBE* DMR Sky Maps: II Results of Two Year Data Analysis", ApJ, (in press)

Hinshaw, G., et al. 1994, "Limits on Three-Point Correlations in the *COBE*-DMR First-Year Anisotropy Maps", ApJ, (in press)

Jackson, P.D., Smoot, G.F., Bennett, C.L., Aymon, J., Backus, C., De Amici, G., Hinshaw, G., Keegstra, P. B., Kogut, A., Lineweaver, C., Rokke, L.A., & Tenorio, L. 1992, "*COBE* Differential Microwave Radiometer (DMR) Data Processing Techniques", in Astronomical Data Analysis Software and Systems I, ed D.M. Worrall, C. Biemesderfer, and J. Barnes (San Francisco: ASP), pp 382-384

Janssen, M. A., & Gulkis, S. 1992, "Mapping the Sky with the *COBE* Differential Microwave Radiometers", in The Infrared and Submillimeter Sky after *COBE*, ed. M. Signore & C. Dupraz (Dordrecht:Kluwer)

Keegstra, P.B., Smoot, G.F., Bennett, C.L., Aymon, J., Backus, C., De Amici, G., Hinshaw, G., Jackson, P. D., Kogut, A., Lineweaver, C., Rokke, L.A., Santana, J., and Tenorio, L. 1992, "Daily Quality Assurance Software for a Satellite Radiometer System", in Astronomical Data Analysis Software and Systems I, ed D.M. Worrall, C. Biemesderfer, and J. Barnes (San Francisco: ASP), pp 530-532

Kogut, A., et al. 1992, "*COBE* Differential Microwave Radiometers: Preliminary Systematic Error Analysis", ApJ, 401, 1-18

Kogut, A., et al. 1993, "Dipole Anisotropy in the *COBE-DMR* First Year Sky Maps", ApJ, 419, 1-6

Kogut, A., et al. 1994, "Search For Unresolved Sources in the *COBE-DMR* Two-Year Sky Maps", ApJ, (in press)

Lineweaver, C., et al. 1994, "Correlated Noise in the *COBE* DMR Sky Maps", ApJ, (in press)

Smoot, G., et al. 1990, "*COBE* Differential Microwave Radiometers: Instrument Design and Implementation", ApJ, 360, 685-695

Smoot, G., et al. 1992, "Structure in the *COBE* Differential Microwave Radiometer First-Year Maps", ApJ, 396, L1-L5

Smoot, G., et al. 1994, "Statistics and Topology of the *COBE*-DMR First-Year Sky Maps", ApJ, submitted

White, R. A. & Stemwedel, S. W. 1992, "The Quadilateralized Spherical Cube and Quad-Tree for All Sky Data", in Astronomical Data Analysis Software and Systems I, ed D.M. Worrall, C. Biemesderfer, and J. Barnes (San Francisco: ASP), pp 379-381

Wright, E. L., et al. 1992, "Interpretation of the Cosmic Microwave Background Radiation Anisotropy Detected by the *COBE* Differential Microwave Radiometer", ApJ, 396, L13-L18

Wright, E. L., et al. 1994a, "Comments on the Statistical Analysis of Excess Variance in the *COBE* DMR Maps", ApJ, 420, 1-8

Wright, E. L., et al. 1994b, "Angular Power Spectrum of the Microwave Background Anisotropy Seen by the *COBE* Differential Microwave Radiometer", ApJ, (in press)

Table 2: DMR Pixelized Differential Data and Sky Maps Project Data Sets

Time range 53,90 GHz	0 UT Dec 22, 1989 to 0 UT Dec 22, 1991
31 GHz Channel A	0 UT Dec 22, 1989 to 0 UT May 21, 1990 plus
	0 UT July 25, 1990 to 0 UT May 21, 1991 plus
	0 UT July 25, 1991 to 0 UT Dec 22, 1991
31 GHz Channel B	0 UT Dec 22, 1989 to 0 UT May 21, 1990 plus
	0 UT July 25, 1990 to 0 UT May 21, 1991 plus
	0 UT July 25, 1991 to 0 UT Sept 23, 1991
Temperature Unit	milliKelvin antenna temperature
Ecliptic Latitude	-90° to + 90°
Ecliptic Longitude	0° to 360°
Frequencies	31.5, 53, and 90 GHz
Channels	two independent channels, A and B at each freq
Wavelengths	9.5, 5.7, and 3.3 mm
Pixelization	2.59°, ecliptic coordinates
Beamwidth	7° FWHM Gaussian, circular
Corrections	Satellite velocity, Earth velocity, Sun velocity,
	Magnetic susceptibility, Moon in sidelobes,
	Instrument Memory, Jupiter, Mars, Saturn

Table 3: Data Fields in DMR Pixelized Differential Data Project Data Set

Data field	Description
PIX_PLUS	Pixel number (0 to 6143) for horn 1
PIX_MINU	Pixel number (0 to 6143) for horn 2
N_OBS	Number of observations for differential temperatures ΔT
SUM	$\Sigma\ \Delta T$ (mK)
SUM_2	$\Sigma\ \Delta T^2$ (mK^2)
SUM_3	$\Sigma\ \Delta T^3$ (mK^3)
SUM_4	$\Sigma\ \Delta T^4$ (mK^4)

Table 4: Data Fields in DMR Sky Maps Project Data Set

Data field	Description
PIXEL	Pixel number (0 to 6143)
SIGNAL	Sky antenna temperature (mK)
N_OBS	Number of observations
SERROR	Estimate of uncertainty as RMS/SQRT(N_OBS) (mK)
ECLON	Ecliptic longitude of pixel center (degrees)
ECLAT	Ecliptic latitude of pixel center (degrees)
GALON	Galactic longitude of pixel center (degrees)
GALAT	Galactic latitude of pixel center (degrees)
RA	Right ascension of pixel center (degrees)
DEC	Declination of pixel center (degrees)

Table 5: DMR Sky Map Coverage and Sensitivity Limits

DMR Channel	31A	31B	53A	53B	90A	90B
Max obs/pixel	72499	63157	81890	82550	81247	81130
Noise level(mK)	0.218	0.241	0.081	0.094	0.139	0.106
Mean obs/pixel	29727	24484	35672	35681	35655	35643
Noise level(mK)	0.340	0.386	0.123	0.143	0.210	0.160
Min obs/pixel	11622	8108	21535	21489	21499	21560
Noise level(mK)	0.544	0.671	0.158	0.185	0.271	0.205

Table 6: DMR Time-Ordered Data Project Data Set

Time range	16 UT Nov 19, 1989 to 0 UT Jan 1, 1992
Temperature Unit	"Telemetry" units, integers from 0 to 4095
Ecliptic Latitude	-90° to + 90°
Ecliptic Longitude	0° to 360°
Frequencies	31.5, 53, and 90 GHz
Channels	two independent channels, A and B at each freq
Wavelengths	9.5, 5.7, and 3.3 mm
Beamwidth	7° FWHM Gaussian, circular
Data Rate	Every 0.5 sec for each of 6 DMR channels
Corrections available	Satellite velocity, Earth velocity, Sun velocity, Magnetic susceptibility, Moon in sidelobes, Instrument Memory, Jupiter, Mars, Saturn

A FORTRAN Source Code to Read the DMR Pixelized Differential Data

```
      program pixprm

C     A simple program to read the FITS binary table from the DMR
C     Pixelized Project Data Set.

      integer maxdim
      parameter (maxdim = 20)
      character*30 errtxt, extnam,
     &             ttype(maxdim),
     &             tform(maxdim),
     &             tunit(maxdim)
      logical simple,extend,anyflg
      integer iunit,status,bitpix,naxis,naxes(maxdim),pcount,gcount
      integer group,fpixel,nelem,nrows
      integer i,j,nobs,nperm,npoint
      integer tfield,rwstat,bksize,vardat
      integer colnum,frow,felem
      integer hdutyp,inull
      real    sum,sum2,enull
      doubleprecision sumsum,sum_sq

      status=0
      iunit=15
C     open the existing FITS file with readonly access
      rwstat=0
      call ftopen(iunit,'dmr_pixperm_31a.fits',rwstat,bksize,status)
      if (status .ne. 0) goto 99

C     read the required primary array keywords
      call ftghpr(iunit,maxdim,simple,bitpix,naxis,naxes,
     &            pcount,gcount,extend,status)
      if (status .ne. 0) goto 99

C     now move to the binary table extension
      call ftmahd(iunit,2,hdutyp,status)
      if (status .ne. 0) goto 99

C     get the binary table parameters
      call ftghbn(iunit,maxdim,nrows,tfield,ttype,tform,tunit,
     &            extnam,vardat,status)
      if (status .ne. 0) goto 99

C     test that this is a DMR pixperm dataset, and its fields
```

```
C       are as expected.
        if (extnam .ne. 'DMR_PIXPERM' .or.
     &      ttype(4) .ne. 'SUM'   .or.
     &      ttype(5) .ne. 'SUM_2' .or.
     &      ttype(3) .ne. 'N_OBS') then
          print *, 'extnam   = ', extnam
          print *, 'ttype(4) = ', ttype(4)
          print *, 'ttype(5) = ', ttype(5)
          print *, 'ttype(3) = ', ttype(3)
          stop 'Not a DMR pixperm dataset.'
        endif

C       initialize statistical accumulators
        nperm  =  0
        npoint =  0
        sumsum =  0.0d0
        sum_sq =  0.0d0
C       read each pix-perm and process
        do 10 frow = 1, nrows
          felem=1
          nelem=1
          inull=0
          colnum=4
          call ftgcve(iunit,colnum,frow,felem,nelem,enull,sum,
     &                anyflg,status)
          if (status .ne. 0) goto 99
          colnum=5
          call ftgcve(iunit,colnum,frow,felem,nelem,enull,sum2,
     &                anyflg,status)
          if (status .ne. 0) goto 99
          colnum=3
          call ftgcvj(iunit,colnum,frow,felem,nelem,inull,nobs,
     &                anyflg,status)
          if (status .ne. 0) goto 99

          if (nobs .gt. 0) then
            nperm  = nperm  + 1
            npoint = npoint + nobs
            sumsum = sumsum + sum
            sum_sq = sum_sq + sum2
          endif
10      continue

C       print out statistics
        print 1000, nperm, npoint, sumsum/dble(npoint),
     &              sqrt(sum_sq/dble(npoint))
```

```
1000    format(' Pix-perms read in  = ',i9/
     &         ' Total observations = ',i9/
     &         '           Data mean = ',2x,f14.6/
     &         '            Data RMS = ',2x,f14.6)

C       now close the table and quit
        call ftclos(iunit,status)

99      if (status .le. 0)then
                print *,'*** Program completed successfully ***'
        else
C          get the error text description
           call ftgerr(status,errtxt)
           print *,'*** ERROR - program did not run successfully ***'
           print *,'status =',status,': ',errtxt
        end if

100     continue
        end
```

B FORTRAN Source Code to Read the DMR Sky Maps

```
      program skymap

C     A simple program to read the FITS binary table from the DMR
C     Sky Maps Project Data Set.

      integer maxdim
      parameter (maxdim = 20)
      real    d2r
      parameter (d2r = 0.017453292e0)
      character*30 errtxt, extnam,
     &             ttype(maxdim),
     &             tform(maxdim),
     &             tunit(maxdim)
      character*80 fname
      logical simple,extend,anyflg
      logical sunv
      integer iunit,status,bitpix,naxis,naxes(maxdim),pcount,gcount
      integer group,fpixel,nelem,nrows
      integer i,j,nobs,npseen,tfield,rwstat,bksize,vardat
      integer colnum,frow,felem
      integer hdutyp,inull
      real    temp,enull,tmax,tmin
      real    dt,elat,elon,dtd,elatd,elond
      doubleprecision sum,sum_sq,sumd,sumd_sq

      status=0
      iunit=15
C     open the existing FITS file with readonly access
      rwstat=0

      print *,'Enter the name of the FITS sky map to read:'
      read(*,'(a80)') fname
      call ftopen(iunit,fname,rwstat,bksize,status)
      if (status .ne. 0) goto 99

C     read the required primary array keywords
      call ftghpr(iunit,maxdim,simple,bitpix,naxis,naxes,
     &            pcount,gcount,extend,status)
      if (status .ne. 0) goto 99

C     if dipole has been supressed, get dipole to add back in.
      call ftgkyl(iunit,'VEL_SUN',sunv,comment,status)
      if (status .ne. 0) goto 99
```

```
      if (sunv) then
        call ftgkyd(iunit,'DIP_MAG', dtd, comment,status)
        if (status .ne. 0) goto 99
        call ftgkyd(iunit,'DIP_ELAT',elatd,comment,status)
        if (status .ne. 0) goto 99
        call ftgkyd(iunit,'DIP_ELON',elond,comment,status)
        if (status .ne. 0) goto 99
        elond = d2r*elond
        elatd = d2r*elatd
      endif

C     now move to the binary table extension
      call ftmahd(iunit,2,hdutyp,status)
      if (status .ne. 0) goto 99

C     get the binary table parameters
      call ftghbn(iunit,maxdim,nrows,tfield,ttype,tform,tunit,
     &            extnam,vardat,status)
      if (status .ne. 0) goto 99

C     test that this is a DMR sky map dataset, and its fields
C     are as expected.
      if (extnam .ne. 'DMR_SKYMAP' .or.
     &    ttype(2) .ne. 'SIGNAL' .or.
     &    ttype(3) .ne. 'N_OBS') then
        print *, 'extnam   = ', extnam
        print *, 'ttype(2) = ', ttype(2)
        print *, 'ttype(3) = ', ttype(3)
        stop 'Not a DMR sky map.'
      endif

C     initialize statistical accumulators
      npseen =  0
      sum    =  0.0d0
      sum_sq =  0.0d0
      tmax   = -1e30
      tmin   =  1e30
C     read each pixel and process
      do 10 frow = 1, nrows
        felem=1
        nelem=1
        inull=0
        colnum=2
        call ftgcve(iunit,colnum,frow,felem,nelem,enull,temp,
     &              anyflg,status)
        if (status .ne. 0) goto 99
```

```
      colnum=3
      call ftgcvj(iunit,colnum,frow,felem,nelem,inull,nobs,
     &            anyflg,status)
      if (status .ne. 0) goto 99
      colnum=5
      call ftgcve(iunit,colnum,frow,felem,nelem,inull,elon,
     &            anyflg,status)
      if (status .ne. 0) goto 99
      elon = d2r*elon
      colnum=6
      call ftgcve(iunit,colnum,frow,felem,nelem,inull,elat,
     &            anyflg,status)
      if (status .ne. 0) goto 99
      elat = d2r*elat

      if (nobs .gt. 0) then
        npseen = npseen + 1
        sum    = sum + temp
        sum_sq = sum_sq + temp*temp
        tmax   = max(tmax,temp)
        tmin   = min(tmin,temp)

C     add dipole term
        if (sunv) then
          temp = temp
     &         + dtd*( sin(elatd)*sin(elat) +
     &                 cos(elatd)*cos(elat)*cos(elond-elon) )
          sumd    = sumd + temp
          sumd_sq = sumd_sq + temp*temp
          tmaxd   = max(tmaxd,temp)
          tmind   = min(tmind,temp)
        endif

      endif
10    continue

C     print out statistics
      if (sunv) then
        print 1020
        print 1010, npseen, npseen,
     &              tmax, tmaxd,
     &              tmin, tmind,
     &              sum/dble(npseen),
     &              sumd/dble(npseen),
     &              sqrt( (dble(npseen)*sum_sq - sum*sum)
     &                 /dble(npseen)/dble(npseen-1) ),
```

C DMR Time-Ordered Data Project Data Set Structure

```
                    RECORD DT04_TOD/DURATION="00:00:32"

Offset Length Description
------ ------ -----------
(Bytes)(Bytes)
            !
            !   ****** DMR TIME ORDERED DATA (TOD) FILE STRUCTURE ******
            !
            !         Record Size 2048 Bytes [4 x 512 Byte Blocks]
            !
            !-------------------------------------------------------
   0   8      Scalar/ADT             TIME
            !-------------------------------------------------------
   8  22      STRUCTURE       COBETRIEVE_HEADER
   8   4      Scalar/Long            MAJOR_FRAME_NUMBER
  12   4      Scalar/Long            ORBIT_NUMBER
  16   1      Scalar/Byte            SPIKE_LEVEL
            !                      ( x RMS X 10 for spike flagging )
  17   1      Scalar/Byte            WRITE_HIST
            !                      ( Last Write: 0=DSA,2=DTO,4=DCA )
  18   1      Scalar/Byte            DSA_FLAG
            !                      ( 1=Derived From a Simulated Archive )
  19   2      Scalar/Word            FRAME_FLAG          !Bits 0 to 15 set for
            !                      Not_clear, Gap, Eng, Dump, Bad_att, Prev_cal,
            !                      Cal_up, Cal_dn, All_bad, 31A -> 90B_bad,spare
            !                      ( Major-Frame Quality Flag )
  21   1      Scalar/Byte            SEARCH_FLAG
  22   1      Scalar/Byte            CELESTIAL_OBJECTS   !Bits 0 to 7 for
            !                      Moon, Earth (31,53,90),
            !                      Jupiter, Mars, Saturn, Galaxy
  23   1      Scalar/Byte            ATTITUDE_TYPE
            !                      ( 0=None, 1=SunEarth, 2=Definitive )
  24   1      Scalar/Byte            Galaxy_Cut_Angle   ! Degrees
  25   1      Scalar/Byte            Planet_Cut_Angle   ! Degrees
  26   1      Scalar/Byte            Moon_Cut_Angle     ! Degrees
  27   3      Array/Byte/Dim=3       Earth_Cut_Angle    ! Degrees for 31, 53, 90
              ENDSTRUCTURE  ! COBETRIEVE_HEADER
            !-------------------------------------------------------
  30 518      STRUCTURE       SPACECRAFT_INFORMATION
  30 144      Array/Float/Dim=(4,9)  ATTITUDE_QUATERNION
            !                      ( 9 quaternions per frame to interpolate )
 174 224      Array/Byte/Dim=(4,56)  ATTITUDE_RESIDUAL
```

```
          !                          ( Residuals for the interpolator )
398  12     Array/Float/Dim=3        SPACECRAFT_VELOCITY ! meters / sec
410  12     Array/Float/Dim=3        SPACECRAFT_POSITION ! Celestial coord J2000
422  12     Array/Float/Dim=3        EARTH_VELOCITY      ! meters / sec
434   4     Scalar/Float             Orbit_Angle         ! Degrees
438   4     Scalar/Float             DIPDUATH_Orbit_Var          ! D.U.
442   4     Scalar/Float             DP28VRUA_Orbit_Var          ! D.U.
          ! MPA_BRACKET_THERM_31A  Major frame average
446   4     Scalar/Float             MPA_BRACKET_THERMISTOR_31  ! DMT31MAA
          ! ABSOLUTE_PRT_53A and ABSOLUTE_PRT_90A Major frame averages
450   4     Scalar/Float             CRITICAL_REGION_53          ! DAP53MAA
454   4     Scalar/Float             CRITICAL_REGION_90          ! DAP90MAA
          !
          ! Fields from spacecraft archive NSB_SCDB_CS
          ! Torquer bar currents
458   2     ARRAY /BYTE /DIM= 2       AMABI    !MODULO 64 MMA A BAR CURRENT
460   2     ARRAY /BYTE /DIM= 2       AMAXBI   !MODULO 64 MMA AX BAR CURRENT
462   2     ARRAY /BYTE /DIM= 2       AMBBI    !MODULO 64 MMA B BAR CURRENT
464   2     ARRAY /BYTE /DIM= 2       AMBXBI   !MODULO 64 MMA BX BAR CURRENT
466   2     ARRAY /BYTE /DIM= 2       AMCBI    !MODULO 64 MMA C BAR CURRENT
468   2     ARRAY /BYTE /DIM= 2       AMCXBI   !MODULO 64 MMA CX BAR CURRENT
          ! Magnetometer field components, 4 per major frame in NSB_SCDB_CS
          !(For each set of six values,the first value is the last value from
          ! NSB_SCDB_CS for the previous major frame, and the sixth value
          ! is the first value from NSB_SCDB_CS for the next major frame)
470   6     ARRAY /BYTE /DIM= 6  ATAMA  !MODULO 32 TAM A  FIELD
476   6     ARRAY /BYTE /DIM= 6  ATAMAP !MODULO 32 TAM AP FIELD(PERPENDICULAR)
482   6     ARRAY /BYTE /DIM= 6  ATAMAX !MODULO 32 TAM AX FIELD
488   6     ARRAY /BYTE /DIM= 6  ATAMB  !MODULO 32 TAM B  FIELD
494   6     ARRAY /BYTE /DIM= 6  ATAMBP !MODULO 32 TAM BP FIELD
500   6     ARRAY /BYTE /DIM= 6  ATAMBX !MODULO 32 TAM BX FIELD
506   6     ARRAY /BYTE /DIM= 6  ATAMC  !MODULO 32 TAM C  FIELD
512   6     ARRAY /BYTE /DIM= 6  ATAMCP !MODULO 32 TAM CP FIELD
518   6     ARRAY /BYTE /DIM= 6  ATAMCX !MODULO 32 TAM CX FIELD
          ! Momentum and Reaction Wheels
          ! (For each set of six reaction wheel values, the first value is the
          ! last value from NSB_SCDB_CS for the previous major frame, and the
          ! sixth value is the first value from NSB_SCDB_CS for the next major
          ! frame)
524   1     SCALAR/BYTE       AMW1WSP  !ACS MOMENTUM WHEEL 1 WHEEL  SPEED.RPM.
525   1     SCALAR/BYTE       AMW1SPER !ACS MOMENTUM WHEEL 1 SPEED  ERROR.RPM.
526   1     SCALAR/BYTE       AMW2WSP  !ACS MOMENTUM WHEEL 2 WHEEL  SPEED.RPM.
527   1     SCALAR/BYTE       AMW2SPER !ACS MOMENTUM WHEEL 2 SPEED  ERROR.RPM.
528   6     ARRAY/BYTE/DIM=6  ARWASP   !ACS REACTION WHEEL A SPEED. RPM.
534   6     ARRAY/BYTE/DIM=6  ARWBSP   !ACS REACTION WHEEL B SPEED. RPM.
540   6     ARRAY/BYTE/DIM=6  ARWCSP   !ACS REACTION WHEEL C SPEED. RPM.
```

```
546   2      ARRAY/BYTE/DIM=2  SPARE    !Spares
             ENDSTRUCTURE  ! SPACECRAFT_INFORMATION
            !-------------------------------------------------------
548  12      STRUCTURE       MOON_DATA
548   4      Scalar/Float           ANGLE_SPIN_MOON  ! Degrees
552   4      Scalar/Float           PHASE            ! Radians
556   4      Scalar/Float           POLARIZATION     ! Radians
             ENDSTRUCTURE  ! MOON_DATA
            !-------------------------------------------------------
560 1392     STRUCTURE/Dim=(3,2)        SIGNAL   !Signal Name  6 x 232 bytes
560 128      Array/Word/Dim=64      DIFFERENTIAL_TEMPERATURE
688   8      Array/Word/Dim=4       TOTAL_POWER
696  16      STRUCTURE       AVERAGE
696   4      Scalar/Float           DIFFERENTIAL_TEMPERATURE
700   4      Scalar/Float           ABSOLUTE_STEP
704   4      Scalar/Float           LOCK_IN_AMP_THERM
708   4      Scalar/Float           LOCAL_OSC_THERM
             ENDSTRUCTURE  ! AVERAGE
712   4      Scalar/Float           DIODE_GAIN           ! (du/mK)
             UNION
              MAP
716  12        Array/Float/Dim=3  BASELINE ! Alias for baselines
              ENDMAP
              MAP
716   4        Scalar/Float  MEAN_BASELINE     !Long time constant running mean
720   4        Scalar/Float  SPLINE_BASELINE   !Medium time constant baseline
724   4        Scalar/Float  FAST_CTD_BASELINE !Short time constant corrected
                                               !baseline
              ENDMAP
             ENDUNION
728  64      Array/Byte/Dim=64      FLAG          ! Bits 0 to 7 set for
            !                         Bad_data, Moon, Spike, Offscale,
            !                         Planet, Galaxy, (spare), Bad_att
            !                         (Minor-Frame (Science) Quality Flag)
            !
             ENDSTRUCTURE  ! SIGNAL
            !-------------------------------------------------------
1952  96     STRUCTURE       HOUSEKEEPING_DATA    ! 96 bytes
            !From SUBCOM_99
1952   1     Scalar/Byte              DSCRBY       !S/C REG BUS VOLT
1953   1     Scalar/Byte              DNESBI       !S/C NON-ES BUS CURR
1954   1     Scalar/Byte              DP28VRUA     !IPDU +28 V MON
1955   1     Scalar/Byte              DP5VMRUA     !IPDU +5 V MON
1956   1     Scalar/Byte              DP15VRUA     !IPDU +15V MON
1957   1     Scalar/Byte              DN15VRUA     !IPDU -15V MON
1958   1     Scalar/Byte              DIPDUVMA     !IPDU BUSV MON
```

1959	1	Scalar/Byte	DIPDUIMA	!IPDU BUSI MON
1960	1	Scalar/Byte	DIICBIMA	!IPDU CONV BUSI
1961	1	Scalar/Byte	DIPHBVMA	!IPDU HEAT BUSV
1962	1	Scalar/Byte	DIPHBIMA	!IPDU HEAT BUSI
1963	1	Scalar/Byte	DPR1OVMA	!IPDU PR1V MON
1964	1	Scalar/Byte	DPR2OVMA	!IPDU PR1V MON
1965	1	Scalar/Byte	D31MIVMA	!31 MPA/IPA PRVM
1966	1	Scalar/Byte	D531PRTA	!53 GHz 1K PRT
1967	1	Scalar/Byte	D901PRTA	!90 GHz 1K PRT
1968	1	Scalar/Byte	DIPDUTHA	!IPDU BOX THERM
1969	1	Scalar/Byte	DIPLMTHA	!IPWR LMAC THERM
1970	1	Scalar/Byte	DHPLMTHA	!HPWR LMAC THERM
1971	1	Scalar/Byte	DPRGTH1A	!PRE-REG 1 THERM
1972	1	Scalar/Byte	DPRGTH2A	!PRE-REG 2 THERM
1973	1	Scalar/Byte	DINTCTHA	!IPDU INT CONV T
1974	1	Scalar/Byte	D53NSVMA	!53 GHz NSIV MON
1975	1	Scalar/Byte	D90MIVMA	!90 MPA/IFA PRVM
1976	1	Scalar/Byte	D90NSVMA	!90 GHz NSIV MON
1977	1	Scalar/Byte	DDEP5VMA	!DE +5V IV MON
1978	1	Scalar/Byte	D31TCM1A	!31 GHz TCVM #1
1979	1	Scalar/Byte	D53TCM1A	!53 GHz TCMV #1
1980	1	Scalar/Byte	D90TCM1A	!90 GHz TCMV #1
1981	1	Scalar/Byte	DDEUTCMA	!DATA ELEC TCVM
1982	1	Scalar/Byte	D31NSVMA	!31 GHz NSIV MON
1983	1	Scalar/Byte	D53MIVMA	!53 MPA/IFA PRVM
1984	1	Scalar/Byte	DP28VRUB	!+28 IPDU IV MON
1985	1	Scalar/Byte	DP5VMRUB	!+5 IPDU IV MON
1986	1	Scalar/Byte	DP15VRUB	!+15 IPDU IV MON
1987	1	Scalar/Byte	DN15VRUB	!-15 IPDU IV MON
1988	1	Scalar/Byte	DIPDUVMB	!IPDU I BUSV MON
1989	1	Scalar/Byte	DIPDUIMB	!IPDU I BUSI MON
1990	1	Scalar/Byte	DIICBIMB	!IPDU IC BUSI MON
1991	1	Scalar/Byte	DIPHBVMB	!IPDU HBUSV MON
1992	1	Scalar/Byte	DIPHBIMB	!IPDU HBUSI MON
1993	1	Scalar/Byte	DPR1OVMB	!IPDU PR1 OV MON
1994	1	Scalar/Byte	DPR2OMVB	!IPDU PR2 OV MON
1995	1	Scalar/Byte	D31MIVMB	!31 MPA/IFA PRVM
1996	1	Scalar/Byte	D531PRTB	!53 GHz 1K PRT
1997	1	Scalar/Byte	D901PRTB	!90 GHz 1K PRT
1998	1	Scalar/Byte	DIPDUTHB	!IPDU BOX THERM
1999	1	Scalar/Byte	DIPLMTHB	!IPWR LMAC THERM
2000	1	Scalar/Byte	DHPLMTHB	!HTRP LMAC THERM
2001	1	Scalar/Byte	DPRGTH1B	!PRE-REG 1 THERM
2002	1	Scalar/Byte	DPRGTH2B	!PRE-REG 2 THERM
2003	1	Scalar/Byte	DINTCTHB	!IPDU INT CONV T
2004	1	Scalar/Byte.	D53NSVMB	!53 GHz NSIV MON

2005	1	Scalar/Byte	D90MIVMB	!90 MPA/IFA PRVM
2006	1	Scalar/Byte	D90NSVMB	!90 GHz NSIV MON
2007	1	Scalar/Byte	DDEP5VMB	!DE +5V INSV MON
2008	1	Scalar/Byte	D31TCM2B	!31 GHz TCVM #2
2009	1	Scalar/Byte	D53TCM2B	!53 GHz TCVM #2
2010	1	Scalar/Byte	D90TCM2B	!90 GHz TCVM #2
2011	1	Scalar/Byte	DDEUTCMB	!DATA ELEC TCVM
2012	1	Scalar/Byte	D31NSVMB	!31 GHz NS IVM
2013	1	Scalar/Byte	D53MIVMB	!53 MPA/IFA PRVM
2014	1	Scalar/Byte	DIPDUATH	!IPDU-A BOX S/CT
2015	1	Scalar/Byte	DIPDUBTH	!IPDU-B BOX S/CT
2016	1	Scalar/Byte	DDEUABTH	!DEU-A BOX S/CT
2017	1	Scalar/Byte	DDEUBBTH	!DEU-B BOX S/CT
2018	1	Scalar/Byte	DI8NSCA	!NS CALIBRATE
2019	5	Array/Byte/Dim=5	DRELA99A	!RelayA group

```
!Byte 1
!Bit0 = DI7DEVRA  Bit1 = D690LIAA  Bit2 = DI590DSA  Bit3 = D453LIAA
!DE VOLT REG      90 GHz LI AMP    90 GHz DK SW     53 GHz LI AMP
!Bit4 = DI353DSA  Bit5 = D231LIAA  Bit6 = DI131DSA  Bit7 = DK831CCA
!53 GHz DK SW     31 GHz LI AMP    31 GHz DK SW     31 GHz CH CNV
!Byte 2
!Bit0 = D7DETG5A  Bit1 = D690NSDA  Bit2 = DK590MIA  Bit3 = D453NSDA
!DE TIM GEN +5    90 GHz NS DIS    90 MPA/IFA       53 GHz NS DIS
!Bit4 = DK353MIA  Bit5 = D231NSDA  Bit6 = DK131MIA  Bit7 = D853FMHA
!53 MPA/IFA       31 GHz NS DIS    31 MPA/IFA       53 FAIL M HTR
!Byte 3
!Bit0 = D731FMHA  Bit1 = D690WBCA  Bit2 = D590CRCA  Bit3 = D453WBCA
!31 FAIL M HTR    90 CASE T CNT    90 CRIT T CNT    53 CASE T CNT
!Bit4 = D353CRCA  Bit5 = DH231CCA  Bit6 = D131CRCA  Bit7 = D1290LOA
!53 CRIT T CNT    31 CASE T CNT    31 CRIT T CNT    90 GHz LO CNV
!Byte 4
!Bit0 = D1153LOA  Bit1 = D10DETCA  Bit2 = D990FMHA  Bit3 = DK12DECA
!53 GHz LO CNV    DE TEMP CNT      90 FAIL M HTR    DATA ELEC CNV
!Bit4 = D1131LOA  Bit5 = D1090CCA  Bit6 = DK953CCA  Bit7 = D31MODEA
!31 GHz LO CNV    90 GHz CH CNV    53 GHz CH CNV    31A INST MODE
!Byte 5
!Bit0 = D53MODEA  Bit1 = D90MODEA  Bit2 = D90GAINA  Bit3 = D53GAINA
!53A INST MODE    90A INST MODE    90 GHz GAIN      53 GHz GAIN
!Bit4 = D31GAINA  Bit5 = D31BWTHA  Bit6 = DILMACOA  Bit7 = DHLMACOA
!31 GHz GAIN      31 GHz BANDWD    LMAC OVTP OVR    HPWR OVTP OVR
```

2024	1	Scalar/Byte	D31NSSTA	!31A NS STATUS
2025	1	Scalar/Byte	D53NSSTA	!53A NS STATUS
2026	1	Scalar/Byte	D90NSSTA	!90A NS STATUS
2027	1	Scalar/Byte	D31NSSTB	!31B NS STATUS

```
2028   1     Scalar/Byte              D53NSSTB     !53B NS STATUS
2029   1     Scalar/Byte              D31SCBTH     !31 GHz BOX TH
2030   1     Scalar/Byte              D90NSSTB     !90B NS STATUS
2031   1     Scalar/Byte              D53SCBTH     !53 GHz BOX TH
2032   1     Scalar/Byte              D90SCBTH     !90 GHz BOX TH
2033   1     Scalar/Byte              DI8NSCB      !NS CALIBRATE
2034   5     Array/Byte/Dim=5         DRELA99B     !RelayB group

             !Byte 1
             !Bit0 = DI7DEVRB  Bit1 = D690LIAB  Bit2 = DI590DSB  Bit3 = D453LIAB
             !DE VOLT REG      90 GHz LI AMP    90 DICKE SW      53 GHz LI AMP
             !Bit4 = DI353DSB  Bit5 = D231LIAB  Bit6 = DI131DSB  Bit7 = DK831CCB
             !53 DICKE SW      31 GHz LI AMP    31 DICKE SW      31 GHz CH CNV
             !Byte 2
             !Bit0 = D7DETG5B  Bit1 = D690NSDB  Bit2 = DK590MIB  Bit3 = D453NSDB
             !DE TIM GEN +5    90 GHz NS DIS    90 MPA/IFA       53 GHz NS DIS
             !Bit4 = DK353MIB  Bit5 = D231NSDB  Bit6 = DK131MIB  Bit7 = D853FMHB
             !53 MPA/IFA       31 GHz NS DIS    31 MPA/IFA       53 FAIL M HTR
             !Byte 3
             !Bit0 = D731FMHB  Bit1 = D690WBCB  Bit2 = D590CRCB  Bit3 = D453WBCB
             !31 FAIL M HTR    90 CASE T CNT    90 CRIT T CNT    53 CASE T CNT
             !Bit4 = D353CRCB  Bit5 = DH231CCB  Bit6 = D131CRCB  Bit7 = D1290LOB
             !53 CRIT T CNT    31 CASE T CNT    31 CRIT T CNT    90 GHz LO CNV
             !Byte 4
             !Bit0 = D1153LOB  Bit1 = D10DETCB  Bit2 = D990FMHB  Bit3 = DK12DECB
             !53 GHz LO CNV    DE TEMP CNT      90 FAIL M HTR    DATA ELEC CNV
             !Bit4 = D1131LOB  Bit5 = D1090CCB  Bit6 = DK953CCB  Bit7 = D31MODEB
             !31 GHz LO CNV    90 GHz CH CNV    53 GHz CH CNV    31B INST MODE
             !Byte 5
             !Bit0 = D53MODEB  Bit1 = D90MODEB  Bit2 = D90GAINB  Bit3 = D53GAINB
             !53A INST MODE    90A INST MODE    90 GHz GAIN      53 GHz GAIN
             !Bit4 = D31GAINB  Bit5 = D31BWTHB  Bit6 = DILMACOB  Bit7 = DHLMACOB
             !31 GHz GAIN      31 GHz BANDWD    LMAC OVTP OVR    HPWR OVTP OVR

2039   1     Scalar/Byte              Spare
             !
             !From  SUBCOM_98
2040   1     Scalar/Byte              DRELA98      !Relay group

             !Byte1
             !Bit0 = DIPIC28A        Bit1 = DIPIC28B        Bit2 = DHSC28VA
             !+28V IPDU INT CONV A   +28V IPDU INT CONV B   +28V HEATER SWITCH A
             !Bit3 = DHSC28VB        Bit4 = DIPPR28A        Bit5 = DIPPR28B
             !+28V HEATER SWITCH B   +28V IPDU PRE REG  A   +28V IPDU PRE REG  B

2041   1     Scalar/Byte.             D31BOXSH     !31 GHz BOX SURV HEATER
```

```
2042   1      Scalar/Byte              D53BOXSH     !53 GHz BOX SURV HEATER
2043   1      Scalar/Byte              D90BOXSH     !90 GHz BOX SURV HEATER
2044   1      Scalar/Byte              DDEUABSH     !DEU-A BOX SURV HEATER
2045   1      Scalar/Byte              DDEUBBSH     !DEU-B BOX SURV HEATER
2046   1      Scalar/Byte              DIPDUBSH     !IPDU BAY SURV HEATER
2047   1      Scalar/Byte              DBUSVOLT     !DMR BUS VOLTAGE
            !
              ENDSTRUCTURE  ! HOUSEKEEPING_DATA
            !-------------------------------------------------------------
2048          END_RECORD


 TOTAL LENGTH OF RECORD:   2048 BYTES
 TOTAL NUMBER OF FIELDS:    161
```

D Comments for the Related Data Fields in DMR Time-Ordered Data Project Data Set

Offset	Length	Description	
0	8	Scalar/ADT	TIME

This time field is of primary use by the COBE archiving database system (COBETRIEVE). In VAX ADT format, it is defined as the number of 100 nanosecond intervals that have elapsed since 0 UT on November 17, 1858 (not counting leap-seconds), and so currently has values of order 4×10^{16}. It is conceptually an 8-byte signed integer, and can be handled as such on certain 64-bit systems, e.g. DEC Alpha with OSF/1. For systems without such luxuries it may be thought of as (e.g., in C) a structure combining a signed long and an unsigned long. Unfortunately, VAX Fortran does not provide unsigned integer types, so using ADT times in Fortran is quite cumbersome.

It is evaluated in VAX Fortran as two INTEGER*4 numbers, but the sign bit of the first number is used so that it is not straightforward to reconstruct the value. Here is a method of evaluating the ADT time as a REAL*8 number:

```
      INTEGER*4 ADT(2)
      REAL*8 I4MAX/4.294967296D+9/, TADT
         IF (ADT(1) .GE. 0)
     &         TADT = DBLE(ADT(1)) + I4MAX*DBLE(ADT(2))
         IF (ADT(1) .LT. 0)
     &         TADT = I4MAX + DBLE(ADT(1)) + I4MAX*DBLE(ADT(2))
```

In the COBE ingest system, the ADT time is calculated from the UTC (Coordinated Universal Time) for each major frame. Hence, the ADT time increases by exactly 320,000,000 for each 32 second major frame, except for those major frames which follow a 'leap second', in which case the ADT time increases by exactly 310,000,000 from the previous frame. Hence, to convert ADT time back to UTC or to T81 (seconds of UTC or IAT that have elapsed since 0 UTC on Jan 1, 1981), specialized routines are necessary that can make the adjustments at the leap-second times, and these routines will be available to the COBE guest investigators. In case this documentation survives the availability of such routines, the following table will allow a user to make the conversion. The table gives values of UTC, TADT, and T81 for the four leap-seconds that occurred during the COBE mission (UTC times are expressed in the format YYDDDHHMMSS):

Leap-second number 1 (Dec 31, 1989)

	Previous Second	Leap Second	Following Second
UTC	89365235959	89365235960	90001000000
T81	283,996,804	283,996,805	283,996,806
TADT/10**7	4,137,868,799	----------	4,137,868,800

Leap-second number 2 (Dec 31, 1990)

	Previous Second	Leap Second	Following Second

```
                UTC      90365235959      90365235960      91001000000
                T81      315,532,805      315,532,806      315,532,807
          TADT/10**7   4,169,404,799      -----------    4,169,404,800

Leap-second number  3   (June 30, 1992)
                       Previous Second    Leap Second    Following Second
                UTC      92182235959      92182235960      92183000000
                T81      362,793,606      362,793,607      362,793,608
          TADT/10**7   4,216,665,599      -----------    4,216,665,600

Leap-second number  4   (June 30, 1993)
                       Previous Second    Leap Second    Following Second
                UTC      93181235959      93181235960      93182000000
                T81      394,329,607      394,329,608      394,329,609
          TADT/10**7   4,248,201,599      -----------    4,248,201,600
```

Note that since the ADT time is not definable for leap-seconds, TADT can be thought of as being 'frozen' during the entire leap-second.

Each of the records of this time-ordered data set spans 32 seconds and is called a 'Major Frame'. The major frame contains data for 64 half-second DMR integration periods, called 'DMR Minor Frames'. The TIME field of the major frame corresponds to the time at the end of the first of these 64 integration periods. (The times in the DMR time-ordered dataset are one-eighth second [0.125 sec] less than the times in the ingested COBE telemetry in order to compensate for a time delay in the DMR instrument).

Offset	Length	Description	
8	4	Scalar/Long	MAJOR_FRAME_NUMBER

Integer giving the current major frame number. This number was reset to zero at the beginning of each new ingest tape. Normally each tape had more or less one day's data or 2700 frames and started between 0900 and 1000 UTC.

Offset	Length	Description	
12	4	Scalar/Long	ORBIT_NUMBER

Integer giving the current orbit number. The origin of this number was apparently arbitrary and the COBE mission starts at about orbit number 7232. There are slightly more than 14 orbits per day. A new orbit begins near orbit angle 310° which is between the South Pole and the equator moving northward.

Offset	Length	Description	
16	1	Scalar/Byte	SPIKE_LEVEL

Individual data points beyond a certain threshhold from the mean are flagged as spikes [see comments for data field DTO4_TOD.SIGNAL(frequency,channel).FLAG(1:64)]. DMR used the threshhold of 5.0 times the daily RMS value, so that SPIKE_LEVEL has the value of 50.

```
Offset Length     Description
------ ------     -----------
  17       1      Scalar/Byte            WRITE_HIST
                  !                      ( Last Write: 0=DSA,2=DTO,4=DCA )
```

The delivered DMR time-ordered data was produced by the DCA (CAlibrate time-ordered data) facility, so that WRITE_HIST has the value of 4.

```
Offset Length     Description
------ ------     -----------
  18       1      Scalar/Byte            DSA_FLAG
                  !                      ( 1=Derived From a Simulated Archive )
```

For the real, non-simulated data, DSA_FLAG = 0.

```
Offset Length     Description
------ ------     -----------
  19       2      Scalar/Word            FRAME_FLAG
                  !                      Bits 0 to 15 set for Not_clear, Gap,
                  !                      Eng, Dump, Bad_att, Prev_cal,Cal_up,
                  !                      Cal_dn, All_bad,31A -> 90B_bad,spare
                  !                      ( Major-Frame Quality Flag )
```

Determines whether the major frame has usable data. Evaluated as a number FRAME_FLAG can have values from 0 to 65535. If all 6 channels have at least some minor frames with usable data, then FRAME_FLAG, evaluated as a number will be 0 or 1.

```
Offset Length     Description
------ ------     -----------
  21       1      Scalar/Byte            SEARCH_FLAG
```

This is a bit-by-bit logical OR of the 384 (6 channels by 64 minor frames) minor frame science FLAGs. See comments for data field DTO4_TOD.SIGNAL(frequency,channel).FLAG(1:64).

```
Offset Length     Description
------ ------     -----------
  22       1      Scalar/Byte            CELESTIAL_OBJECTS
                  !                      Bits 0 to 7 set for Moon,
                  !                      Earth(31,53,90), Jupiter, Mars,
                  !                      Saturn, Galaxy
```

This flag tells the user whether to search the individual minor-frame science FLAGS for occurrence of the particular celestial object. Data flagged as Moon or Earth close are not considered usable. Data flagged for planets were corrected for those planets in the DMR Sky Maps and Pixelized Project Data Sets. The Galaxy flag is a warning only. If bits 0, 4, 5, 6, or 7 were set, then the data for at least one minor frame for at least one channel were affected. If bits 1, 2, or 3 were set, then the data for the respective frequency or frequencies were not used for the entire major frame.

```
Offset Length     Description
------ ------     -----------
  23       1      Scalar/Byte            ATTITUDE_TYPE
                  !                      ( 0=None, 1=SunEarth, 2=Definitive )
```

Usable DMR data must have attitude types of 1 or 2. The Definitive attitude is usually of higher quality and was obtained from analyzing DIRBE observations of stars.

```
Offset Length     Description
------ ------     -----------
  24       1      Scalar/Byte            Galaxy_Cut_Angle    ! Degrees
```

DMR data within 15° of the galactic plane are flagged as Galaxy_close (see comments on DTO4_TOD.COBETRIEVE_HEADER.CELESTIAL_OBJECTS). Such data are usable with this caveat.

```
Offset Length     Description
------ ------     -----------
  25       1      Scalar/Byte            Planet_Cut_Angle    ! Degrees
```

DMR data from within 15° of Mars, Jupiter, or Saturn are flagged (see comments on DTO4_TOD.COBETRIEVE_HEADER.CELESTIAL_OBJECTS). Data so flagged were corrected for planetary emission in the DMR Sky Maps and Pixelized Project Data Sets.

```
Offset Length     Description
------ ------     -----------
  26       1      Scalar/Byte            Moon_Cut_Angle      ! Degrees
```

DMR data from within 21° of the Moon are flagged and were not used in the production of DMR Sky Maps or Pixelized Project Data Sets.

```
Offset Length     Description
------ ------     -----------
  27       3      Array/Byte/Dim=3       Earth_Cut_Angle     ! Degrees
```

Data obtained when the Earth's limb was too close to the COBE ground shield (less than 3° below the shield for 31 GHz data and less than 1° below for 53 and 90 GHz data) were flagged (see comments on DTO4_TOD.COBETRIEVE_HEADER.CELESTIAL_OBJECTS), and not used in the production of DMR Sky Maps or Pixelized Project Data Sets.

Offset	Length	Description	
30	144	Array/Float/Dim=(4,9)	ATTITUDE_QUATERNION

The are the four quaternions describing the spacecraft attitude for nine of the DMR integration periods (DMR minor frames). These are integration periods 1,9,17,25,33,41,49,56,and 65 (which corresponds to the first integration period of the next record or major frame).

Offset	Length	Description	
174	224	Array/Byte/Dim=(4,56)	ATTITUDE_RESIDUAL

These are residuals so that attitude interpolation routine in the DMR software could accurately reconstruct the spacecraft attitude quaternions for the ramaining 56 DMR integration periods. The actual pointings for the ten DMR horns were constructed from the quaternions by adding the vectors defining the offsets of the horns from the spacecraft spin axis.

Offset	Length	Description	
398	12	Array/Float/Dim=3	SPACECRAFT_VELOCITY ! meters/sec

This field contains the Cartesian components (x,y,z) of the spacecraft velocity around the earth in J2000 equatorial coordinates. It is evaluated at the center of the major frame, specifically, at the time 16 seconds later than the timestamp of the frame. (Note that this is the boundary between DMR integration periods 33 and 34.)

Offset	Length	Description	
410	12	Array/Float/Dim=3	SPACECRAFT_POSITION !Celestial coord

This field contains the Cartesian components (x,y,z) of the spacecraft position in J2000 equatorial coordinates. It is evaluated at the center of the major frame, specifically, at the time 16 seconds later than the timestamp of the frame. (Note that this is the boundary between DMR integration periods 33 and 34.)

Offset	Length	Description	
422	12	Array/Float/Dim=3	EARTH_VELOCITY ! meters / sec

For the preparation of the Sky Maps and Pixelized Project Data Sets, the DMR time-ordered data were corrected for the velocity of the spacecraft around the Earth, the Earth around the Sun, and 'Sun Velocity' (velocity which would produce a nominal CMB Dipole). This field contains the Cartesian components (x,y,z) of the earth velocity about the solar system barycenter in J2000 equatorial coordinates.

Offset	Length	Description	
434	4	Scalar/Float	Orbit_Angle

The spacecraft orbit angle is defined as the angle between the spacecraft and the ascending node of the orbit with vertex at the center of the Earth. Thus the orbit angle is 0 at the ascending node, 90° over the North Pole, 180° at the descending node, and 270° over the South Pole.

Offset	Length	Description		
438	4	Scalar/Float	DIPDUATH_Orbit_Var	! D.U.

Residual of DIPDUATH (IPDU-A box thermistor) for this frame after subtracting mean value from 2 orbits centered on this frame. See Appendix E for conversion to Kelvin.

Offset	Length	Description		
442	4	Scalar/Float	DP28VRUA_Orbit_Var	! D.U.

Residual of DP28VRUA (IPDU +28 Voltage monitor) for this frame after subtracting mean value from 2 orbits centered on this frame. See Appendix E for conversion to Volts.

Offset	Length	Description		
548	4	Scalar/Float	ANGLE_SPIN_MOON	! Degrees

The angle between the spacecraft spin axis and the direction to the moon as seen from COBE at the middle of the major frame.

Offset	Length	Description		
552	4	Scalar/Float	PHASE	! Radians

The phase of the moon as seen from the COBE satellite. Full = 0, Last Quarter = $\pi/2$, New = π, and First quarter = $-\pi/2$.

Offset	Length	Description		
556	4	Scalar/Float	POLARIZATION	! Radians

Always zero (not used).

Offset	Length	Description	
560	128	Array/Word/Dim=64	DIFFERENTIAL_TEMPERATURE

Differential temperature telemetry. Each point is an unsigned integer between 0 and 4095 data units (du) representing the difference in input power between the two horns averaged over a half-second. Each half-second interval is called a "minor frame". See DIODE-GAIN (below) to correct to antenna temperature in mK.

Offset	Length	Description	
688	8	Array/Word/Dim=4	TOTAL_POWER

Total power telemetry. Each point is an unsigned integer between 0 and 4095 data units (du) representing the total radiometer output over an eight-second integration period. Note that four 8-second total power samples are taken for every 64 half-second differential temperature samples.

Offset	Length	Description	
696	4	Scalar/Float	DIFFERENTIAL_TEMPERATURE

Average of the differential temperatures measured during this frame. The average is over minor frames 3 to 64 to avoid transients during calibration.

Offset	Length	Description	
700	4	Scalar/Float	ABSOLUTE_STEP

Absolute step is defined as the average absolute difference between successive differential temperatures. It is computed on a frame by frame basis and used as an alternative to the standard deviation because of its greater computational efficiency. It is computed only for minor frames 3 to 64 to avoid transients during calibration.

Offset	Length	Description	
704	4	Scalar/Float	LOCK_IN_AMP_THERM

Average of the lock-in amplifier thermistor telemetry for this frame (du). See Appendix E (DLTH31A) for conversion to Kelvin.

Offset	Length	Description	
708	4	Scalar/Float	LOCAL_OSC_THERM

Average of the local oscillator thermistor telemetry for this frame (du). See Appendix E (DLOT31A) for conversion to Kelvin.

Offset	Length	Description		
712	4	Scalar/Float	DIODE_GAIN	! (du/mK)

Gain pertaining to this major frame derived from a noise source measurement. Divide the baseline-subtracted differential temperatures in data units by this number to obtain the uncorrected measurement in milliKelvin antenna temperature.

Offset	Length	Description	
716	4	Scalar/Float	MEAN_BASELINE ! Long time constant running mean

Mean baseline value pertaining to this major frame. This value may be subtracted from the differential temperatures in data units to remove the instrument offset.

Offset	Length	Description	
720	4	Scalar/Float	SPLINE_BASELINE ! Medium time constant baseline

Spline baseline value pertaining to this major frame. This value may be subtracted from the differential temperatures in data units to remove the instrument offset.

Offset	Length	Description	
724	4	Scalar/Float	FAST_CTD_BASELINE ! Short time constant corrected baseline

Fast corrected baseline value pertaining to this major frame. This value may be subtracted from the differential temperatures in data units to remove the instrument offset.

```
Offset Length     Description
------ ------     -----------
 728      64      Array/Byte/Dim=64      FLAG
                 !                       Bits 0 to 7 set for Bad_data, Moon,
                 !                       Spike, Offscale, Planet, Galaxy,
                 !                       (Spare), Bad_att
                 !                       (Minor-Frame (Science) Quality Flag)
                 !
```

Determines whether the corresponding minor frame datum is usable. Each bad data flag is a single byte whose interpretation is given in the following table.

DTO4_TOD.COBETRIEVE_HEADER.FRAME_FLAG

Bit	Hex	Set Condition	Comments
0	0001	Any bad data	If clear, entire frame is clean (all channels)
1	0002	Gap	If set, frame is gap (data unusable)
2	0004	Engineering	If set, data were taken in engineering mode
3	0008	Dump	If set, frame is in dump mode (data unusable)
4	0010	Bad attitude	If set, no attitude available for this frame
5	0020	Prev Cal	If set, previous frame was calibration and current is not
6	0040	Cal up	If set, calibrating with UP noise source
7	0080	Cal down	If set, calibrating with DOWN noise source
8	0100	Unusable frame	If set, entire frame is unusable (all channels)
9	0200	31A Unusable	If set, there is no usable data for 31A channel
10	0400	31B Unusable	If set, there is no usable data for 31B channel
11	0800	53A Unusable	If set, there is no usable data for 53A channel
12	1000	53B Unusable	If set, there is no usable data for 53B channel
13	2000	90A Unusable	If set, there is no usable data for 90A channel
14	4000	90B Unusable	If set, there is no usable data for 90B channel
15	8000	Spare	(not used)

DTO4_TOD.COBETRIEVE_HEADER.CELESTIAL_OBJECTS

Bit	Hex	Set Condition	Comments
0	01	Moon close	If set, the Moon is within the cut angle of spin axis
1	02	Earth, 31 GHz	If set, the Earth is above the 31 GHz cut angle
2	04	Earth, 53 GHz	If set, the Earth is above the 53 GHz cut angle
3	08	Earth, 90 GHz	If set, the Earth is above the 90 GHz cut angle
4	10	Jupiter close	If set, Jupiter is within cut angle of at least 1 channel
5	20	Mars close	If set, Mars is within cut angle of at least 1 channel
6	40	Saturn close	If set, Saturn is within cut angle of at least 1 channel
7	80	Galaxy close	If set, the Galactic plane is within cut angle

DTO4_TOD.SIGNAL(frequency,channel).FLAG(1:64)

Bit	Hex	Significance of bit value = 1	Comments
0	01	Unusable datum	This datum is unusable. This usually means that there were bad quality flags set in the raw data telemtery for this major frame or that the time range and channel were specified in the 'bad data log' (DQU4_BAD_LOG)
1	02	Moon	Moon is within cut angle of beam center. These data were not used.
2	04	Spike	Datum deviates from local mean by more than threshold These data were not used.
3	08	Off-scale	Datum is off scale (0 or 4095). These data were not used.
4	10	Planet	One or more planets (Jupiter, Mars, and Saturn) are within cut angle of beam center. These data were used after correction.
5	20	Galaxy	Galaxy is within cut angle of beam center. This is a warning only and the data were used.
6	40	Spare	Not used.
7	80	Bad attitude	Residual too large to interpolate attitude for this datum. These data were not used.

E Conversion of DMR Housekeeping Signals and Spacecraft Signals from Telemetry Digital Units to Physical Units

Some of the DMR housekeeping signals and spacecraft signals specified in the Time-Ordered Data Project Data Set are given in Telemetry Digital Units (DU's). For purposes of converting data in Telemetry Digital Units into Physical Units, one of the following type of conversions is applied.

1. Polynomial conversion:

$$Y = C(1) + C(2)X + C(3)X^2 + C(4)X^3 + C(5)X^4 + C(6)X^5$$

2. Reciprocal Logarithm conversion:

$$Y = \frac{1.0}{C(1) \cdot \log[C(4)X + C(5)] + C(2)} + C(3)$$

Where X is given in Telemetry Digital Units (DU) and Y is the corresponding value in Physical Units (Kelvin,Volts or Amps); C(0), C(1),...,and C(5) are coefficients whose values are given in the following table.

Note:

- The type of conversion (given in the table) depends on the type of signal (temperature, voltage or current). Type "0" represents the case where no conversion is applied.
- All mnemonics begining with the letter "D" denote DMR signals, and letter "A" spacecraft signals.
- No conversion is applied for Differential Temperatures, Total Powers, Gains and Baselines.

Signal Name	Coefficients						Type of Conv.
	C(1)	C(2)	C(3)	C(4)	C(5)	C(6)	
AMABI	-2.00000E+05	1.60000E+03	3.39897E-02	-2.64241E-04	1.01191E-06	-1.51852E-09	1
AMAXBI	-5.00000E+04	4.00000E+02	3.39897E-02	-2.64241E-04	1.01191E-06	-1.51852E-09	1
AMBBI	-2.00000E+05	1.60000E+03	3.39897E-02	-2.64241E-04	1.01191E-06	-1.51852E-09	1
AMBXBI	-5.00000E+04	4.00000E+02	3.39897E-02	-2.64241E-04	1.01191E-06	-1.51852E-09	1
AMCBI	-2.00000E+05	1.60000E+03	3.39897E-02	-2.64241E-04	1.01191E-06	-1.51852E-09	1
AMCXBI	-5.00000E+04	4.00000E+02	3.39897E-02	-2.64241E-04	1.01191E-06	-1.51852E-09	1
ATAMA	6.39260E-01	-5.15996E-03	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
ATAMAP	6.39300E-01	-5.15597E-03	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
ATAMAX	6.39920E-01	-5.14403E-03	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
ATAMB	6.37350E-01	-5.09684E-03	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
ATAMBP	6.38690E-01	-5.19247E-03	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
ATAMBX	6.39260E-01	-5.13479E-03	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
ATAMC	6.39920E-01	-5.16796E-03	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
ATAMCP	6.39510E-01	-5.14272E-03	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
ATAMCX	6.40290E-01	-5.15730E-03	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
AMW1WSP	2.03446E+00	-1.28926E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
AMW1SPER	1.27000E+02	-1.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
AMW2WSP	2.03446E+00	-1.28926E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
AMW2SPER	1.27000E+02	-1.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
ARWASP	-2.75000E+03	2.20000E+01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
ARWBSP	-2.75000E+03	2.20000E+01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
ARWCSP	-2.75000E+03	2.20000E+01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DMBT31A	2.09805E-04	1.41211E-03	-3.18000E+01	-1.19150E+01	4.92328E+04	-2.98106E-09	2
DPRT31A	2.02037E+01	-9.86502E-03	2.83949E-08	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DPRT53A	1.89732E+01	-9.26421E-03	2.83949E-08	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DPRT53B	1.89732E+01	-9.26421E-03	2.83949E-08	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DPRT90A	1.89732E+01	-9.26421E-03	2.83949E-08	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DPRT90B	1.89732E+01	-9.26421E-03	2.83949E-08	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DASP31B	3.15214E+02	-9.92608E-03	1.48992E-08	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DASP53A	1.54213E+02	-9.38283E-03	2.83949E-08	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DASP53B	1.54213E+02	-9.38283E-03	2.83949E-08	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DASP90A	1.54213E+02	-9.38283E-03	2.83949E-08	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DASP90B	1.54213E+02	-9.38283E-03	2.83949E-08	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DLTH31A	2.09805E-04	1.41211E-03	-3.18000E+01	-1.19150E+01	4.92328E+04	-2.98106E-09	2
DLTH31B	2.09805E-04	1.41211E-03	-3.18000E+01	-1.19150E+01	4.92328E+04	-2.98106E-09	2
DLTH53A	2.09805E-04	1.41211E-03	-3.18000E+01	-1.19150E+01	4.92328E+04	-2.98106E-09	2
DLTH53B	2.09805E-04	1.41211E-03	-3.18000E+01	-1.19150E+01	4.92328E+04	-2.98106E-09	2
DLTH90A	2.09805E-04	1.41211E-03	-3.18000E+01	-1.19150E+01	4.92328E+04	-2.98106E-09	2
DLTH90B	2.09805E-04	1.41211E-03	-3.18000E+01	-1.19150E+01	4.92328E+04	-2.98106E-09	2
DLOT31A	2.09805E-04	1.41211E-03	-3.18000E+01	-1.19150E+01	4.92328E+04	-2.98106E-09	2
DLOT31B	2.09805E-04	1.41211E-03	-3.18000E+01	-1.19150E+01	4.92328E+04	-2.98106E-09	2
DLOT53A	2.09805E-04	1.41211E-03	-3.18000E+01	-1.19150E+01	4.92328E+04	-2.98106E-09	2
DLOT53B	2.09805E-04	1.41211E-03	-3.18000E+01	-1.19150E+01	4.92328E+04	-2.98106E-09	2
DLOT90A	2.09805E-04	1.41211E-03	-3.18000E+01	-1.19150E+01	4.92328E+04	-2.98106E-09	2
DLOT90B	2.09805E-04	1.41211E-03	-3.18000E+01	-1.19150E+01	4.92328E+04	-2.98106E-09	2

Signal Name	Coefficients						Type of Conv.
	C(1)	C(2)	C(3)	C(4)	C(5)	C(6)	
DSCRBY	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0
DNESBI	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0
DP28VRUA	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DP5VMRUA	0.00000E+00	4.00000E-02	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DP15VRUA	0.00000E+00	8.00000E-02	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DN15VRUA	-2.04000E+01	8.00000E-02	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DIPDUVMA	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DIPDUIMA	0.00000E+00	2.00000E-02	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DIICBIMA	0.00000E+00	4.00000E-03	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DIPHBVMA	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DIPHBIMA	0.00000E+00	2.00000E-02	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DPR10VMA	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DPR20VMA	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
D31MIVMA	0.00000E+00	8.00000E-02	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
D531PRTA	7.52052E+01	9.69722E-01	2.18727E-04	0.00000E+00	0.00000E+00	0.00000E+00	1
D901PRTA	7.52052E+01	9.69722E-01	2.18727E-04	0.00000E+00	0.00000E+00	0.00000E+00	1
DIPDUTHA	3.80965E+02	-2.72743E+00	4.18229E-02	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DIPLMTHA	3.80965E+02	-2.72743E+00	4.18229E-02	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DHPLMTHA	3.80965E+02	-2.72743E+00	4.18229E-02	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DPRGTH1A	3.80965E+02	-2.72743E+00	4.18229E-02	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DPRGTH2A	3.80965E+02	-2.72743E+00	4.18229E-02	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DINTCTHA	3.80965E+02	-2.72743E+00	4.18229E-02	-3.75715E-04	1.68846E-06	-2.98106E-09	1
D53NSVMA	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
D90MIVMA	0.00000E+00	8.00000E-02	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
D90NSVMA	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DDEP5VMA	0.00000E+00	4.00000E-02	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
D31TCM1A	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
D53TCM1A	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
D90TCM1A	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DDEUTCMA	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
D31NSVMA	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
D53MIVMA	0.00000E+00	8.00000E-02	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DP28VRUB	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DP5VMRUB	0.00000E+00	4.00000E-02	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DP15VRUB	0.00000E+00	8.00000E-02	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DN15VRUB	-2.04000E+01	8.00000E-02	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DIPDUVMB	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DIPDUIMB	0.00000E+00	2.00000E-02	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DIICBIMB	0.00000E+00	4.00000E-03	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DIPHBVMB	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DIPHBIMB	0.00000E+00	2.00000E-02	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DPR10VMB	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DPR20VMB	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1

Signal Name	Coefficients						Type of Conv.
	C(1)	C(2)	C(3)	C(4)	C(5)	C(6)	
D31MIVMB	0.00000E+00	8.00000E-02	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
D531PRTB	7.52052E+01	9.69722E-01	2.18727E-04	0.00000E+00	0.00000E+00	0.00000E+00	1
D901PRTB	7.52052E+01	9.69722E-01	2.18727E-04	0.00000E+00	0.00000E+00	0.00000E+00	1
DIPDUTHB	3.80965E+02	-2.72743E+00	4.18229E-02	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DIPLMTHB	3.80965E+02	-2.72743E+00	4.18229E-02	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DHPLMTHB	3.80965E+02	-2.72743E+00	4.18229E-02	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DPRGTH1B	3.80965E+02	-2.72743E+00	4.18229E-02	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DPRGTH2B	3.80965E+02	-2.72743E+00	4.18229E-02	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DINTCTHB	3.80965E+02	-2.72743E+00	4.18229E-02	-3.75715E-04	1.68846E-06	-2.98106E-09	1
D53NSVMB	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
D90MIVMB	0.00000E+00	8.00000E-02	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
D90NSVMB	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DDEP5VMB	0.00000E+00	4.00000E-02	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
D31TCM2B	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
D53TCM2B	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
D90TCM2B	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DDEUTCMB	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
D31NSVMB	0.00000E+00	1.60000E-01	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
D53MIVMB	0.00000E+00	8.00000E-02	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	1
DIPDUATH	3.80965E+02	-2.72743E+00	4.18229E-02	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DIPDUBTH	3.80965E+02	-2.72743E+00	4.18229E-02	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DDEUABTH	3.80965E+02	-2.72743E+00	4.18229E-02	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DDEUBBTH	3.80965E+02	-2.72743E+00	4.18229E-02	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DI8NSCA	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0
DRELA99A	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0
D31NSSTA	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0
D53NSSTA	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0
D90NSSTA	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0
D31NSSTB	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0
D53NSSTB	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0
D31SCBTH	3.80965E+02	-2.72743E+00	4.18229E-02	-3.75715E-04	1.68846E-06	-2.98106E-09	1
D90NSSTB	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0
D53SCBTH	3.80965E+02	-2.72743E+00	4.18229E-02	-3.75715E-04	1.68846E-06	-2.98106E-09	1
D90SCBTH	3.80965E+02	-2.72743E+00	4.18229E-02	-3.75715E-04	1.68846E-06	-2.98106E-09	1
DI8NSCB	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0
DRELA99B —	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0
D31BOXSH	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0
D53BOXSH	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0
D90BOXSH	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0
DDEUABSH	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0
DDEUBBSH	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0
DIPDUBSH	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0
DBUSVOLT	0.00000E+00	2.00000E-02	4.18229E-02	-3.75715E-04	1.68846E-06	-2.98106E-09	1

D-108027
89-089A-02A

HEX DUMP OF B_PDS9

FILE 1 RECORD 1 80 BYTES

(0)	564F4C31	425F5044	53392020	20202020	20202020	20202020	20202020	20202020	20202020	20202020
(40)	20202020	20202020	20202020	20202020	20202020	20202020	20202020	20202020	20202020	20202033

HEX DUMP OF B_PDS9

FILE 1 RECORD 5 80 BYTES

(0)	48445234	204E535F	39343133	37323135	35202020	20202020	20202020	20202020	20202020	20202020
(40)	20202020	20202020	20202020	20202020	20202020	20202020	20202031	32202020	20202020	20202020

HEX DUMP OF B_PDS9

FILE 2 RECORD 1 10240 BYTES

(0)	39303233	32303030	30303336	3435D06E	1BD737B7	9300850E	00D8FD6E	5F060000	00000000	01000000
(40)	00000000	00000000	00000000	00000000	00000000	00000000	5A00E800	00000340	135C37B7	1BD7D06E
(80)	00000000	E94A8F0E	9D4B190F	904BD0C1	41462AA6	7446CA7A	ABC6B869	C4BF1CF3	564025AA	903F92B4
(120)	863F4C81	D9BFD069	47401C36	D73FA2D2	433FA980	E7BFD718	3140D6E7	0C40B253	E83E7834	EDBF7398
(160)	17404261	2840B9A2	053EDF23	ECBFC8BD	F03F67C8	4040D504	49BEF7C7	E4BF9B93	AB3F58BB	5140FAC5
(200)	04BF5C72	D5BFA458	433F3713	5D405F64	52BF8C4B	BFBF0D8D	243E6411	62408E83	8CBF1AB4	02010000
(240)	00000000	00904EE8	EF284DC1	F51F0000	00000000	00000000	00000000	00000000	00000000	00000000
(280)	00000000	00000000	00000000	00002B00	00000000	00000000	00000000	00002200	00000000	00000000
(320)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00800001	00010000
(360)	00010001	01010101	01E13D6E	1FF73FED	3F843DA0	19003EA6	20EF3D5B	20743D16	18DA3D4D	1FD33DDF
(400)	1D580052	0000544B	4812271A	1D646564	63121300	000C0000	00814C00	00000000	0039BCCE	09230928
(440)	0A015078	57638285	7D7C7E7E	7D7E6786	68A07F97	7F747373	73686868	68656566	667A7A7D	6E3CDC03
(480)	05817F10	02830000	00000000	00000000	00000000	00000000	00000000	00000000	35913591	35917600
(520)	35913591	35913591	35913591	35916702	35913591	35913591	35913591	35910BFE	35913591	35913591
(560)	35913591	35914100	35913591	35913591	35913591	3591C701	35913591	35913591	35913591	3591DE01
(600)	35913591	35913591	35913591	35919A00	35913591	35913591	35913591	3591F104	35913591	35913591
(640)	35913591	35915402	35913591	35913591	35913591	3591DE00	35913591	35913591	35913591	35918800
(680)	35913591	35913591	35913591	35912C04	35913591	35913591	35913591	35916400	35913591	35913591
(720)	35913591	3591A3FF	35913591	35913591	35913591	3591AAFE	35913591	35913591	35913591	35911803

(760)	35913591	35913591	35913591	35911E00	35913591	35913591	35913591	3591A300	35913591	35913591
(800)	35913591	3591FC01	35913591	35913591	35913591	359106FE	35913591	35913591	35913591	35912F00
(840)	35913591	35913591	35913591	3591A300	35913591	35913591	35913591	359197FC	35913591	35913591
(880)	35913591	3591DE01	35913591	35913591	35913591	359114FF	35913591	35913591	35913591	35915401
(920)	35913591	35913591	35913591	3591E9FF	35913591	35913591	35913591	35910502	35913591	35913591
(960)	35913591	35915300	35913591	35913591	35913591	3591DE00	35913591	35913591	35913591	3591A301
(1000)	35913591	35913591	35913591	3591B601	35913591	35913591	35913591	3591FAFF	35913591	35913591
(1040)	35913591	35912D02	35913591	35913591	35913591	35910C00	35913591	35913591	35913591	35912C03
(1080)	35913591	35913591	35913591	35914B01	35913591	35913591	35913591	35911900	35913591	35913591
(1120)	35913591	35919B02	35913591	35913591	35913591	35916801	35913591	35913591	35913591	3591D5FD
(1160)	35913591	35913591	35913591	3591B601	35913591	35913591	35913591	35913102	35913591	35913591
(1200)	35913591	3591B602	35913591	35913591	35913591	35910503	35913591	35913591	35913591	35915302
(1240)	35913591	35913591	35913591	35910D02	35913591	35913591	35913591	3591F103	35913591	35913591
(1280)	35913591	3591D002	35913591	35913591	35913591	35918F01	35913591	35913591	35913591	35919A00
(1320)	35913591	35913591	35913591	35917CFF	35913591	35913591	35913591	35919A00	35913591	35913591
(1360)	35913591	3591DE00	35913591	35913591	35913591	35914B01	35913591	35913591	35913591	3591B602
(1400)	35913591	35913591	35913591	3591BD00	35913591	35913591	35913591	3591B601	35913591	35913591
(1440)	35913591	35915300	35913591	35913591	35913591	35916702	35913591	35913591	35913591	35912701
(1480)	35913591	35913591	35913591	35916702	35913591	35913591	35913591	3591B3FF	35913591	35913591
(1520)	35913591	3591CA02	35913591	35913591	35913591	3591EA01	35913591	35913591	35913591	3591F201
(1560)	35913591	35913591	35913591	35917600	35913591	35913591	35913591	35912D02	35913591	35913591
(1600)	35913591	3591BD00	35913591	35913591	35913591	35916702	35913591	35913591	35913591	3591CF00
(1640)	35913591	35913591	35913591	35912C04	35913591	35913591	35913591	3591FAFF	35913591	35913591
(1680)	35913591	35910502	35913591	35913591	35913591	359198FE	35913591	35913591	35913591	35918F01
(1720)	35913591	35913591	35913591	3591E9FF	35913591	35913591	35913591	35917B03	35913591	35913591
(1760)	35913591	3591B603	35913591	35913591	35913591	3591F004	35913591	35913591	35913591	359190FF
(1800)	35913591	35913591	35913591	3591C903	35913591	35913591	35913591	35918103	35913591	35913591
(1840)	35913591	35917B03	35913591	35913591	35913591	35918800	35913591	35913591	35913591	3591B602
(1880)	35913591	35913591	35913591	35914100	35913591	35913591	35913591	3591DE01	35913591	35913591
(1920)	35913591	3591F200	35913591	35913591	35913591	35915302	35913591	35913591	35913591	3591F200
(1960)	35913591	35913591	35913591	35911803	35913591	35913591	35913591	3591D7FF	35913591	35913591
(2000)	35913591	35911902	35913591	35913591	35913591	35915E03	35913591	35913591	35913591	35916702
(2040)	35913591	35913591	35913591	35918800	35913591	35913591	35913591	3591B602	35913591	35913591
(2080)	35913591	35912701	35913591	35913591	35913591	3591CA00	35913591	35913591	35913591	35916400
(2120)	35913591	35913591	35913591	3591B602	35913591	35913591	35913591	35917600	35913591	35913591
(2160)	35913591	3591DC05	35913591	35913591	35913591	3591AB00	35913591	35913591	35913591	35916702
(2200)	35913591	35913591	35913591	35917702	35913591	35913591	35913591	35912D02	35913591	35913591
(2240)	35913591	35916E01	35913591	35913591	35913591	35918C06	35913591	35913591	35913591	35910D02
(2280)	35913591	35913591	35913591	35910404	35913591	35913591	35913591	359190FF	35913591	35913591
(2320)	35913591	35915304	35913591	35913591	35913591	3591D801	35913591	35913591	35913591	35916703
(2360)	35913591	35913591	35913591	35916602	35913591	35913591	35913591	35916703	35913591	35913591
(2400)	35913591	3591C601	35913591	35913591	35913591	35913E06	35913591	35913591	35913591	35918001
(2440)	35913591	35913591	35913591	35917A04	35913591	35913591	35913591	35918800	35913591	35913591
(2480)	35913591	35917B03	35913591	35913591	35913591	35917EFF	35913591	35913591	35913591	35912C04
(2520)	35913591	35913591	35913591	35919A00	35913591	35913591	35913591	3591B504	35913591	35913591
(2560)	35913591	3591D801	35913591	35913591	35913591	35915303	35913591	35913591	35913591	3591D002
(2600)	35913591	35913591	35913591	3591F002	35913591	35913591	35913591	3591CF00	35913591	35913591
(2640)	35913591	35912C04	35913591	35913591	35913591	35919303	35913591	35913591	35913591	35913F03
(2680)	35913591	35913591	35913591	35916602	35913591	35913591	35913591	3591A104	35913591	35913591
(2720)	35913591	3591FC01	35913591	35913591	35913591	3591DB05	35913591	35913591	35913591	35910D02
(2760)	35913591	35913591	35913591	3591A104	35913591	35913591	35913591	35911501	35913591	35913591
(2800)	35913591	3591C807	35913591	35913591	35913591	35915504	35913591	35913591	35913591	35915303
(2840)	35913591	35913591	35913591	35918800	35913591	35913591	35913591	35915304	35913591	35913591
(2880)	35913591	35914202	35913591	35913591	35913591	35915206	35913591	35913591	35913591	3591B603
(2920)	35913591	35913591	35913591	35911707	35913591	35913591	35913591	3591FC01	35913591	35913591
(2960)	35913591	35916604	35913591	35913591	35913591	35911E00	35913591	35913591	35913591	3591B602
(3000)	35913591	35913591	35913591	35911703	35913591	35913591	35913591	35916702	35913591	35913591
(3040)	35913591	35910C00	35913591	35913591	35913591	35913F04	35913591	35913591	35913591	35915C01
(3080)	35913591	35913591	35913591	3591F003	35913591	35913591	35913591	35917600	35913591	35913591
(3120)	35913591	35918F02	35913591	35913591	35913591	35912F00	35913591	35913591	35913591	35917B03

```
( 8920)   53707C71  015BAD96  6545914D  E880990D  E6BB7965  5B6D47AB  21543B40  1C6F2190  D43CBE12  4F08E85D
( 8960)   80C04873  F63D7C97  A8B659E7  1CBC4898  97BB522D  73BAD2F7  863FF089  3040BB44  8FBD0820  5EC1A5F2
( 9000)   94412DE2  153E379F  AFBE1AC7  7E39D85D  97BBFDFC  AFBE03C7  DA3A8E23  92BB0E71  AFBEEAC6  3C3B34AF
( 9040)   80BBE01F  AFBE78F2  773B47C8  44BB0236  AFBE28D9  8C3B1382  F0BA0783  AFBE6CF2  8E3BFFE6  15BAA417
( 9080)   AFBE7BF2  833B0F23  3B3A8ABC  B0BE3F1E  553B4129  F53AFE98  00000000  00000000  00000000  00000000
( 9120)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 9160)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 9200)   00000000  00000000  00000000  00000000  21212121  21212121  21212020  20202121  17071C0C  1A0A1E0E
( 9240)   16061000  13031D0D  12021101  19091F0F  15051808  1B0B1404  01080000  00000100  00000000  00010000
( 9280)   3F7F7F7F  3FFF7FFF  FFFFFFFF  7F3FFF7F  06010504  05050501  05050104  05050505  32323232  32323232
( 9320)   32322525  51515A40  0D0D0D0D  0D0D0D0D  0D0D0606  05000000  06000000  05001602  FFFF0000  0100FEFF
( 9360)   00000000  FFFFE501  00000100  03000000  06000000  05001602  FFFF0000  0000FDFF  00000000  FFFFE501
( 9400)   00000100  0200FFFF  04005A00  A2FFF6FF  EEFFF2FF  0000F4FF  FAFFFCFF  FCFFE0FF  00000000  06000400
( 9440)   06000000  A6FF0000  F2FFEEFF  EEFFDAFF  FCFFFAFF  FAFF0800  00000400  08000400  12000B00  F4FFFFFF
( 9480)   1E001300  DCFFF3FF  A7FFDEFF  65003000  77FFCEFF  9D004800  00000000  00000000  00C00110  03808000
( 9520)   00005B47  9EAB4E47  9081FD46  FF4EA947  9BD12649  299A5F49  0CF71E48  A7DE8E48  0F3D6646  AE347646
( 9560)   7AD30000  00000000  00000000  00000000  00000082  90969065  6672838E  7F6E6465  6E7E8E84  7367658F
( 9600)   9691839D  9E9E9F9C  9D9D9E9D  9D9E9F30  4A7E5213  00000000  40007171  5085BD40  00141C00  08000000
( 9640)   00079A00  00000000  00000000  00000100  00000000  00000000  00000000  00000000  00000000  00000000
( 9680)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
( 9720)   00000000  00000000  02000000  AE494847  5B475C53  5A565F50  625C595C  59FFFFFF  00000000  00000000
( 9760)   00005C50  5B4F594E  5E590000  00000100  321A56AE  AF009AAE  AE644C59  5B5D5B4F  574A0000  00ADB6C3
( 9800)   0F000102  03040506  0708090A  0B0C0D0E  FD03B701  DAFBA4FE  9B00C705  0D01D206  5300FC00  AE01A801
( 9840)   4B01A101  B9FE0101  0B0B0B0B  84848484  0B0B0B0B  BDBDBDBD  00000000  00000000  00000000  00000000
( 9880)   20081020  08102008  10200810  20081020  2008624A  53624A53  20081020  08102008  EAFFFF06  AAFEA9C0
( 9920)   6959643F  5D63624F  4F4EFFFF  00000036  B4BE627B  00010001  00010101  01010101  01010101  01010101
( 9960)   01010101  00010100  00000000  00010001  00010001  00010101  01010101  01000001  00010001  00000000
(10000)   00000101  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  02000102
(10040)   00010200  01020001  02000102  00080000  08000008  00000800  00080000  00000000  00000000  00000000
(10080)   00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000101
(10120)   01010101  00000000  00000000  02000200  01020001  02000102  00010200  0008020A  03020A03  00080000
(10160)   08000008  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  B9000000
(10200)   00010000  01000000  00000100  0100FF00  FF000000  9C018000  00000000  00000000  00000000  00000000
```

HEX DUMP OF B_PDS9

FILE 15 RECORD 1 80 BYTES

```
(    0)   454F4631  4250435F  44544F43  492E4341  4C5F494E  54425F50  44533930  30303130  30303530  30303130
(   40)   30203934  31343020  30303030  30203031  31373832  44454346  494C4531  31412020  20202020  20202020
```

HEX DUMP OF B_PDS9

FILE 15 RECORD 4 80 BYTES

```
(  0)  454F4634  204E535F  39343134  30303031  30202020  20202020  20202020  20202020  20202020  20202020
( 40)  20202020  20202020  20202020  20202020  20202020  20202020  20202031  32202020  20202020  20202020
```

```
MM  MM  MM  AA      AA          JJ  AA      AA  MM  MM  MM  EE          SS
MM      MM  AA      AA          JJ  AA      AA  MM      MM  EEEEEEEE      SSSSSS
MM      MM  AA      AA          JJ  AA      AA  MM      MM  EEEEEEEE      SSSSSS
MM      MM  AAAAAAAAAA  JJ      JJ  AAAAAAAAAA  MM      MM  EE                  SS
MM      MM  AAAAAAAAAA  JJ      JJ  AAAAAAAAAA  MM      MM  EE                  SS
MM      MM  AA      AA  JJ      JJ  AA      AA  MM      MM  EE                  SS
MM      MM  AA      AA  JJ      JJ  AA      AA  MM      MM  EE                  SS
MM      MM  AA      AA    JJJJJJ    AA      AA  MM      MM  EEEEEEEEEE  SSSSSSSS
MM      MM  AA      AA    JJJJJJ    AA      AA  MM      MM  EEEEEEEEEE  SSSSSSSS
```

```
DDDD    M   M  RRRR   PPPP   DDDD    333
D   D   MM MM  R   R  P   P  D   D  3   3
D   D   M M M  R   R  P   P  D   D      3
D   D   M   M  RRRR   PPPP   D   D     3
D   D   M   M  R R    P      D   D      3
D   D   M   M  R  R   P      D   D  3   3
DDDD    M   M  R   R  P      DDDD    333
```

```
J   OOO   BBBB          222    999   55555
J  O   O  B   B        2   2  9   9  5
J  O   O  B   B            2  9   9  555
J  O   O  BBBB            2    9999     5
J  J  O   O  B   B       2         9      5
J  J  O   O  B   B       2         9  5   5
 JJJ   OOO   BBBB       22222   999    555
```

Job DMRPD3 (295) queued to LG01 on 17-MAR-1995 13:08 by user MAJAMES, UIC [NSSDCOPS,MAJAMES], under account NSSDCOPS at priority 100, started on printer LTA3: on 17-MAR-1995 13:08 from queue LG01.

```
1111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111
1111111111111111111111111111111111111111  Digital Equipment Corporation - VAX/VMS Version V6.1  1111111111111111111111111111111111111111
1111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111
```

HEX DUMP OF DMRPD3

FILE 1 RECORD 1 80 BYTES

VOL1 DMRPD3

```
(    0)  564F4C31  444D5250  44332020  20202020  20202020  20202020  20202020  20202020  20202020  20202020
(   40)  20202020  20202020  20202020  20202020  20202020  20202020  20202020  20202020  20202020  20202033
```

HEX DUMP OF DMRPD3

FILE 1 RECORD 5 80 BYTES

HDR4

(0)	48445234	20303020	20202020	20202020	20202020	20202020	20202020	20202020	20202020	20202020
(40)	20202020	20202020	20202020	20202020	20202020	20202020	20202030	32202020	20202020	20202020

Binary

HEX DUMP OF DMRPD3

FILE 2 RECORD 1 2048 BYTES

(0)	60D56A30	A5AA9300	5F060000	632A0000	32040041	000C0002	0F0F15FD	FFFF5F40	0CC2DB3F	205A63BF
(40)	B5CD60BE	25135E40	5BACEC3F	C60116BF	681EC73E	CF165640	DADBF53F	7AE787BE	CD7E7B3F	BDF44840
(80)	4B8CF83F	E3B4873D	3B97C63F	53573440	8632F43F	FA4BCA3E	75C70440	BC4B1A40	986DE83F	FFC4373F
(120)	C0302140	9162F83F	170CD63F	286E813F	04FC3940	1F91B33F	DDD1BD3F	4FCAA43F	1BC24C40	1C1C543F
(160)	DA709F3F	F885C23F	4DE35840	9C77F7FC	01FFF1FA	02FEF0F9	02FDF1FA	02FDF4FB	02FEF8FD	01FFFCFF
(200)	00000301	00000603	FF010804	FF010904	FF010804	FF010603	00010302	00000502	FF000804	FF000A05
(240)	FF010B06	FF020A05	FF020804	00020402	00010201	01030403	01050604	01050604	01060604	01050503
(280)	01040201	00020302	00010503	00030704	00050705	00050704	00050503	00040202	00020202	01020403
(320)	01050604	02060604	02070504	02060403	01050201	01030101	00030302	01060403	02070403	02080303
(360)	02070202	02060101	0103FFFF	FFFDFCFD	FEF9FAFB	FDF5F9F9	FDF3F8F9	FDF2F9F9	FDF3FCFC	FEF8D245
(400)	E0694846	5FC2C946	85C594CB	892B81CB	D72C4D4B	804CAA47	CFDB8C47	8555F346	B161DF42	4E9D853E
(440)	00544ABE	00B07546	0030C945	00E0C145	00607A98	7D7C7CA2	7E7E756A	7E7D9A98	89746460	778C999A
(480)	8D784949	48484848	697D909A	9686665F	66788D99	47474747	47467261	5E697D90	988A7665	5F684848
(520)	48484847	9F7F987F	73727171	72726766	66656566	65656565	65640000	8343151E	04C0191D	00000000
(560)	6106A109	D609090A	0F0ADC09	260A150A	190AEF09	0B0AFE09	270A520A	0D0A140A	220A230A	1C0A290A
(600)	070A1E0A	0B0A3F0A	060A380A	1F0AF009	020A1A0A	C2092F0A	1C0A290A	FC09EF09	060AE909	170A160A
(640)	3A0A110A	EF090D0A	100A060A	EB09070A	020A090A	010AFF09	440A250A	240A280A	050A2A0A	020A270A
(680)	440A040A	1D0ADD09	CF04CF04	CF04CF04	21463206	F64269F3	7A460030	76460060	ED3FC98D	C6457714
(720)	C6450118	C6453254	04000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(760)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	6B08D40C	380D4C0D
(800)	460D4D0D	5A0D530D	5C0D410D	460D3F0D	4A0D450D	4E0D550D	4E0D680D	4E0D5B0D	540D5F0D	5A0D510D
(840)	410D440D	480D730D	5D0D550D	4E0D5B0D	570D490D	4F0D590D	470D5E0D	5A0D680D	540D580D	540D5C0D
(880)	630D6A0D	4A0D610D	620D5F0D	550D500D	6C0D650D	640D5E0D	530D3B0D	560D4A0D	660D530D	4B0D510D
(920)	16051605	15051505	5546EF45	434237EF	79460040	73460090	0740D4C0	0546BC42	0546C33E	05465B34
(960)	04040000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1000)	00000000	00000000	00000000	00000000	00000000	00000000	E306900A	DD0A170B	EB0AFD0A	FB0A0B0B
(1040)	030BF10A	230B110B	070B0B0B	F20A0D0B	FC0AFD0A	0E0B000B	160B0E0B	0D0B090B	080BFE0A	130B340B
(1080)	3B0B230B	2C0B0A0B	C70A150B	170B200B	E80A070B	0C0B160B	120B0C0B	110B0B0B	020B030B	060B1F0B
(1120)	310BE80A	ED0AF80A	050BF60A	130B150B	EB0A2E0B	190BE50A	0D0B020B	070B100B	C203C303	C303C303