

Data Repository

DP APPENDIX A. Additional Graphics

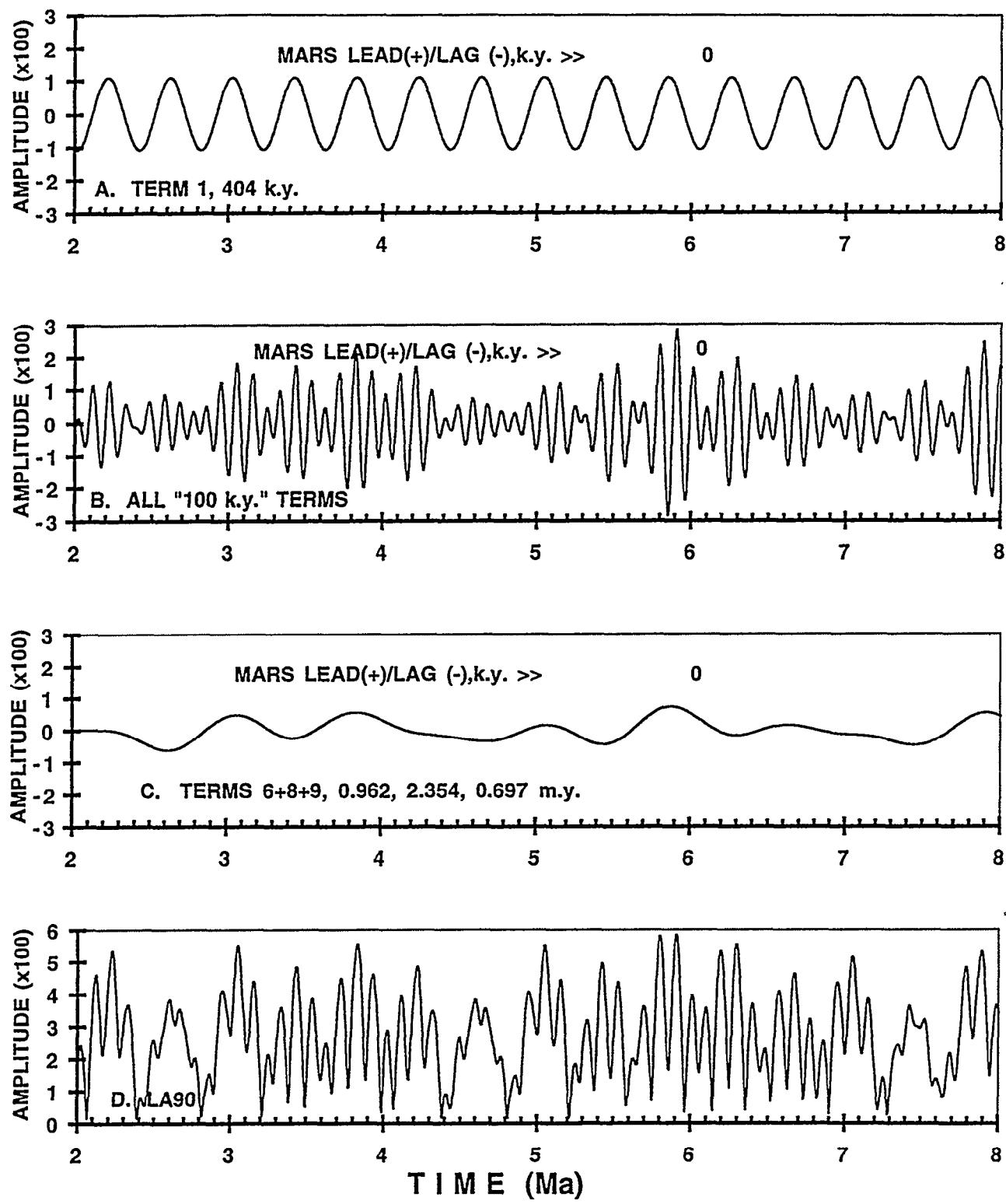
Figure DP1. Plot of amplitude of various combinations of eccentricity terms as function of time, 2 -8 Ma. The interval is chosen to illustrate our calculations because it includes three highly visible 400 k.y. smooth eccentricity features (2.4-2.8 Ma, 4.4-4.8 Ma, and 7.2-7.6 Ma). All amplitudes are plotted to same scale. Note in panel B that sum of all "100 k.y." terms exhibits complex modulation. Note that relatively smooth 400 k.y. eccentricity structures cited above occur at nodes in 100 k.y. modulation. 404 k.y. sine wave is the strongest term in the eccentricity trigometric expansion. and is clear at nodes in the 100 k.y. modulated signal.

Figure DP2. Plot of amplitude versus time for the sum of all "100 k.y." terms with Mars phase angle lag increasing from 0 to 40,000 yr. Note especially that node at 4.4-4.8 Ma in panel A migrates to left (younger) with increasing Mars phase angle lag. Migration of nodes and antinodes in 100 k.y. amplitude should produce recognizable shifts in geologic time series.

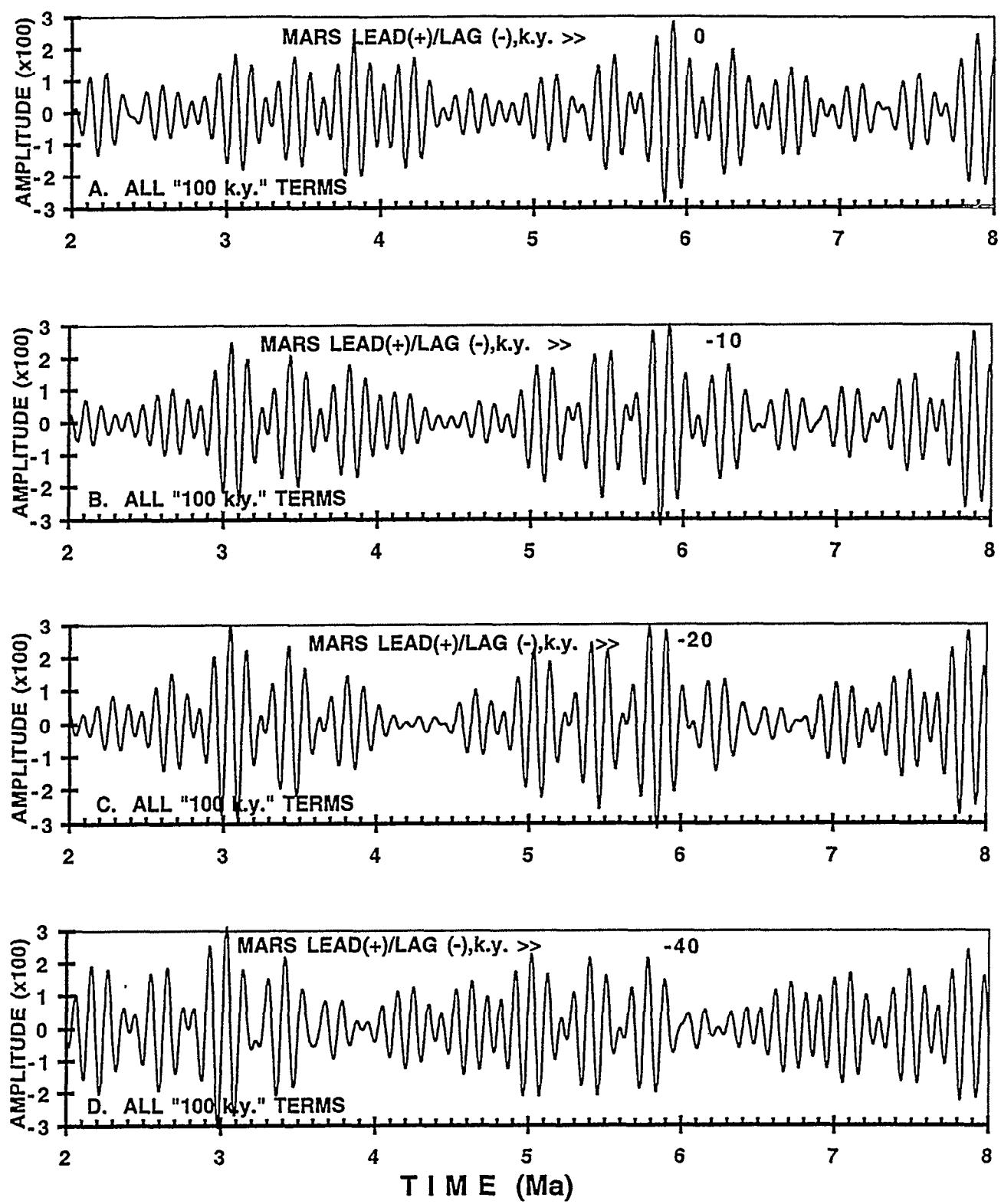
Figure DP3. Plot of amplitude versus time for MFD 97 eccentricity model with Mars phase angle lag increasing from 0 to 40,000 yr. As with Figure DP2, change in time series as function of Mars phase angle lag is best followed by tracking migration of smooth 400 k.y. structure located at 4.4-4.8 Ma in panel A to location 3.6-4.0 Ma in panel D.

Figure DP4. Plot of amplitude versus time for sum of all "100 k.y." terms with Mars phase angle lag increasing from 50,000 to 193,000 yr. Lag of 193.33 k.y. in panel D produces near-perfect node to antinode alignment in modulation of Venus-Earth-Mars 100 k.y. terms as compared to Jupiter-Mars-Earth terms. Note progressive loss of modulation from panel A to panel D. Note the breakup of complex, modulated 100 k.y. power in panel A into alternating intervals of 97 k.y. power and 127 ka power. Intervals of 97 k.y. power occur where the antinodes of the Jupiter-Mars-Earth terms dominate "100 k.y." signal. The 127 k.y. power occurs where antinodes of Venus-Mars-Earth modulation dominate the "100 k.y." signal.

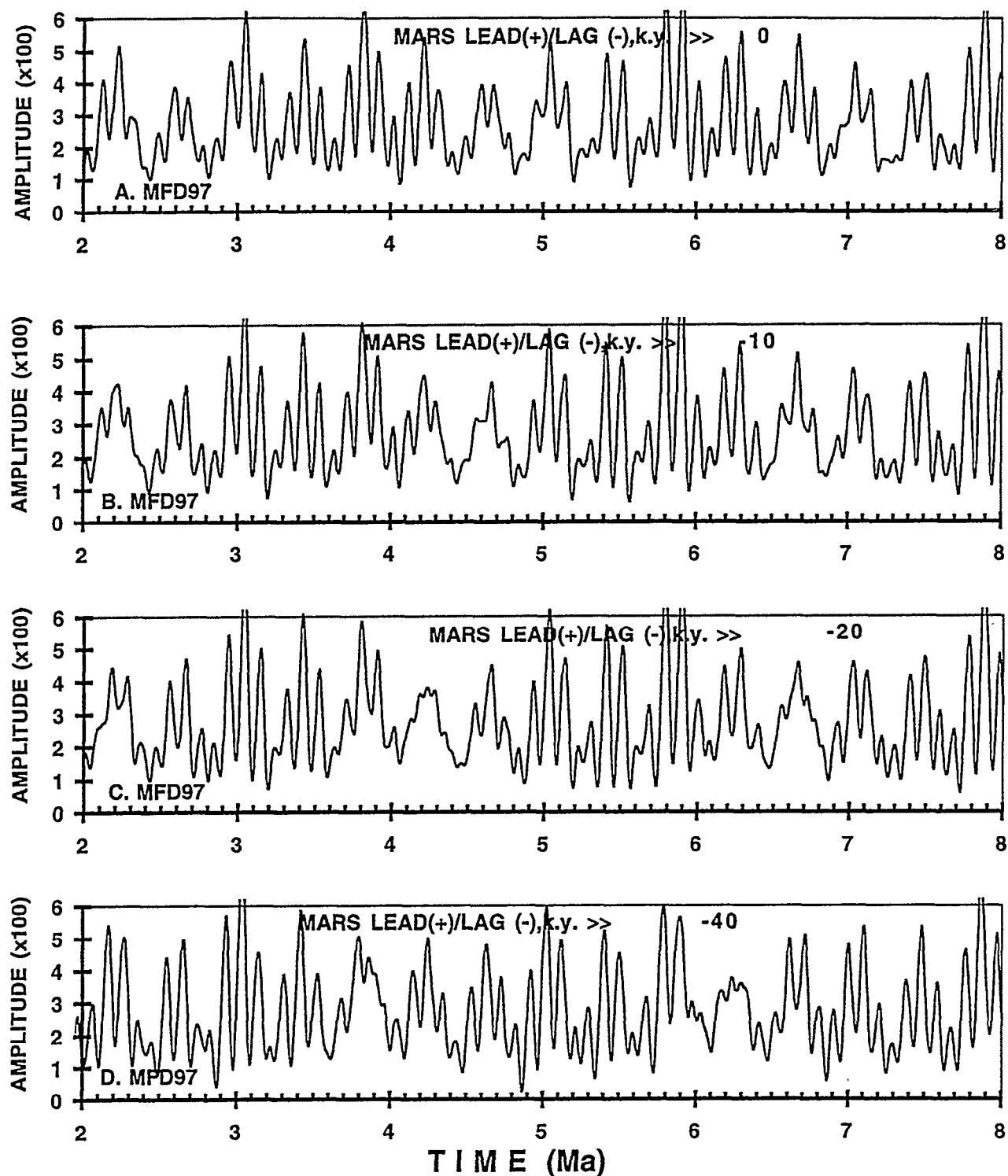
Figure DP5. Plot of amplitude versus time for MFD 97 eccentricity model with Mars phase angle lag increasing from 50,000 to 193,000 yr. In panel A, note mix of 100 k.y. power and 400 k.y. power to times of high amplitude and times of relatively low amplitude. In contrast, note in panel D much more uniform representation of 400 k.y. power at times of near zero amplitude and stronger representation of 100 k.y. power at times of relatively high amplitude. If these or similar perturbations of planetary orbits have occurred during the Phanerozoic, they have likely left differences in stratigraphic signature that should be discernible.



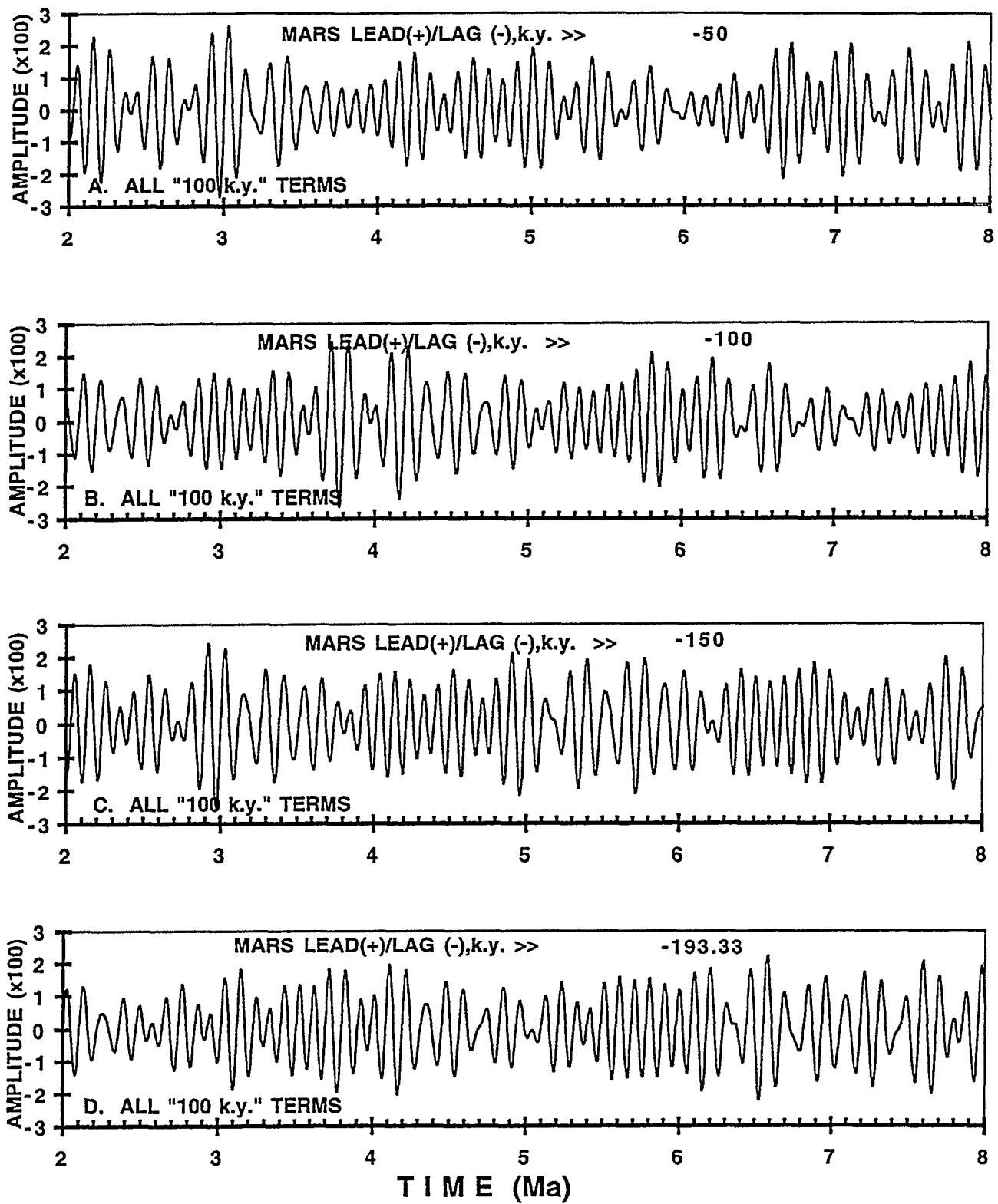
RKM MS#G13769A
Appendix Fig. DP1



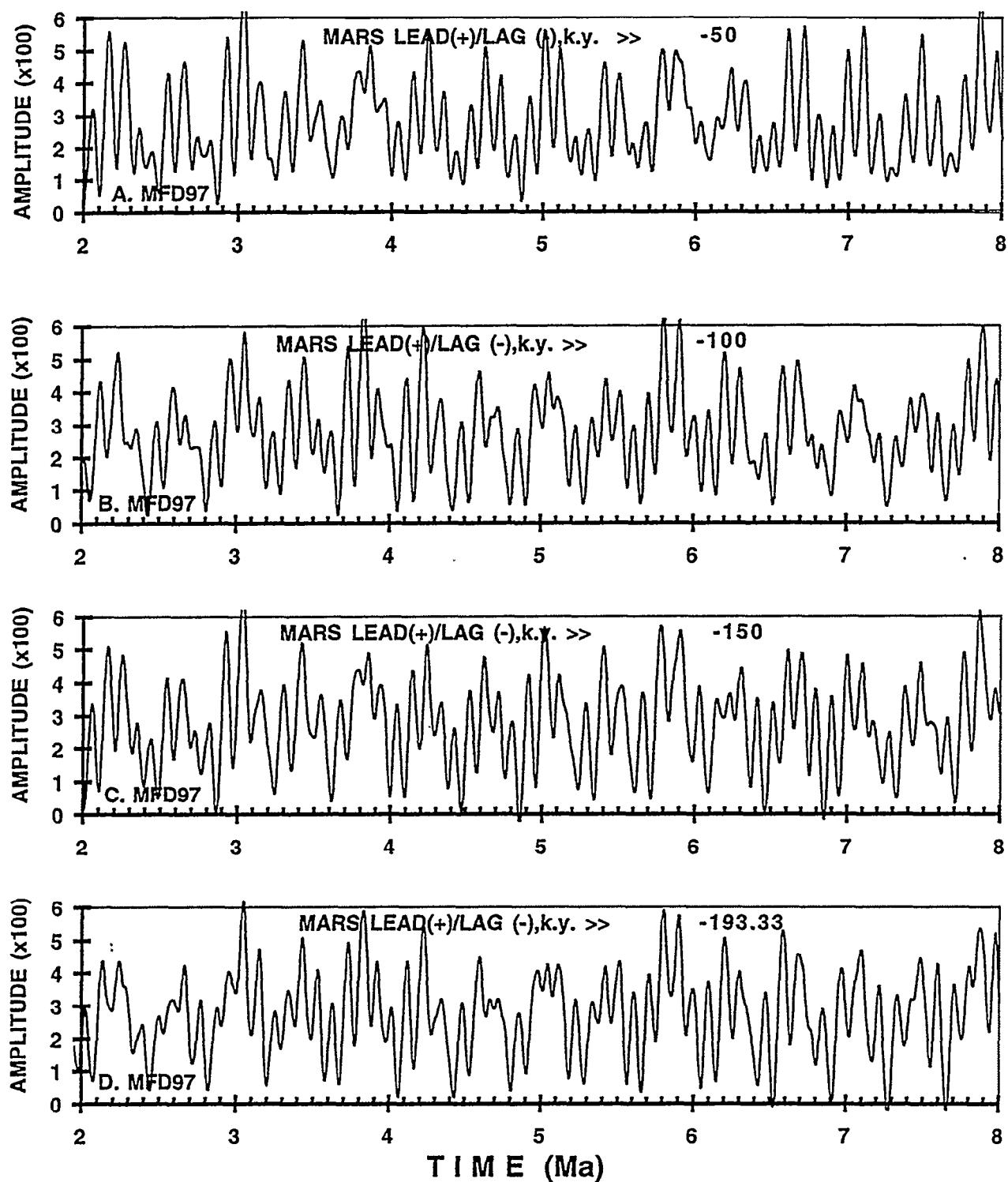
RKM MS#13769A
Appendix Fig. DP2



RKM MS#13769A
Appendix Fig. DP3



RKM MS#13769A
Appendix Fig. DP4



RKM MS#13769A
Appendix Fig. DP5