Despite differences in petrographic type, H4-6, the high TL meteorites may derive from a single parent object as suggested by Benoit and Sears (1993). Radionuclide activities are all close to saturation values, indicating that the parent meteoroid was relatively small. The three-isotope plot for high TL samples suggests a simple irradiation history, which also supports the notion of a relatively small sized object. In addition to saturated radionuclide concentrations, the unusually high TL levels are consistent with the suggestion that the meteorite suite experienced an orbital change from $\geq 1.1$ A.U. to 1.0 A.U. within the last 105 yr: samples were irradiated at perihelia $\geq 1.1$ A.U. and were unable to adjust TL levels to the warmer temperatures at 1.0 A.U. before entering the Earth's atmosphere. By comparing radionuclide concentrations, TL data, petrographic types, geographic locations, and terrestrial ages, we conclude that these meteorites are fragments of a single parent object that experienced an unusual orbital change over a short time period (<105 yr). Currently, AMS studies are underway to determine the $^{14}$C content of each meteorite.

REFERENCES
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SURFACE $^{129}$IODINE/$^{127}$IODINE RATIOS – MARINE VS. TERRESTRIAL

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$^{129}$I/$^{127}$I ratios measured in surface marine materials such as seawater, recent marine sediments, and modern seaweeds, are compared with ratios measured in surface terrestrial materials such as freshwaters, soils and terrestrial plants. At the Earth's surface the $^{129}$I inventory is dominated by anthropogenic inputs. Away from point sources (nuclear fuel reprocessing facilities), anthropogenic $^{129}$I/$^{127}$I ratios measured in terrestrial materials are at least an order of magnitude greater than those from marine materials. For example, surface seawater from the Gulf of Mexico has a ratio of approximately $60 \times 10^{-12}$, while ratios measured in freshwater from the Trinity River on the adjacent continent are ca. $1100 \times 10^{-12}$. Likewise, terrestrial and aquatic plants exhibit higher ratios than seaweeds (on the order of $10^{-8}$ and $10^{-10}$, respectively). Ratios from surface soils and marine sediments near the sediment/water interface show a similar relationship. This is perhaps not surprising, given that ambient stable iodine concentrations are in general at least an order of magnitude lower for terrestrial materials than for their marine counterparts.

Data from soils and plants from Texas and from Western New York, along with an estimate for the current atmospheric ratio from rainwater and epiphyte samples will be presented. High ratios in rivers and lakes apparently reflect bomb fallout plus a component of atmospherically-delivered fuel reprocessing deposition. This suggests that this iodine has a relatively short residence time in watershed soils and plants. Fundamental unknowns are the residence time of various forms of iodine in soils, the stability of $^{129}$I/$^{127}$I ratios in soils and biota, and the nature and level of the atmospheric anthropogenic component.

The large difference between marine and terrestrial $^{129}$I/$^{127}$I ratios has several potential uses. We have begun a project for which the goal is to establish $^{129}$I as a tool to identify and trace terrestrial organic carbon in marine sediments. Post-bomb organic material in sediments from coastal areas could be characterized as primarily derived from terrestrial or marine inputs, based on the $^{129}$I/$^{127}$I ratios measured. This information is crucial in global carbon cycle models, since the largest marine