MOAPA VALLEY: A SECOND NON-ANTARCTIC CM1 CHONDRITE FROM NEVADA, USA. A. J. Irving[1], S. M. Kuehner[1], D. Rumble, III[2], R. L. Korotev[3] and S. Clary. [1]Dept. of Earth & Space Sciences, University of Washington, Seattle, WA 98195, USA, irving@ess. washington.edu; [2]Geophysical Laboratory, Carnegie Institution, Washington, DC, 20015, USA; [3]Dept. of Earth & Planet. Sciences, Washington University, St. Louis, MO 63130, USA.

Discovery: A single dark gray, flattened stone (698.8 g), exhibiting subparallel contraction cracks and partially coated with black, vesicular fusion crust was found in 2004 in the Moapa Valley, southeast of Logandale, Nevada.

Petrography: Rounded to ellipsoidal objects (0.05 to 0.7 mm across), exhibiting a preferred orientation of their long axes, are set in a very fine grained, dark matrix containing small clusters of sulfide grains. The larger objects (presumably former chondrules) are composed mainly of serpentine minerals and S-bearing phase(s) (probably tochinilite), and in thin section range in color from pale yellow-brown to red- brown to sepia brown; some such objects have serpentine-rich rims and/or larger, subhedral, dark brown grains composed of serpentine/cronstedtite. The sulfides consist of finely intergrown pyrrhotite and pentlandite. Very rare magnetite and calcite are present in the matrix, and the specimen is traversed by narrow open fractures and several thin veinlets filled with chalcedony.

Broad electron beam analysis of different components gave the following ranges in composition (in wt.%): ***ellipsoidal objects*** SiO_2 31.7-38.4, TiO_2 0.07-0.25, Al_2O_3 1.8-7.2, Cr_2O_3 0.19-0.73, FeO 15.9-26.3, MnO 0.07-0.18, MgO 22.7-28.8, CaO 0.06-0.25, Na_2O 0.04-0.29, SO_3 0.03-0.87, SUM 85.7-87.4; ***matrix*** SiO_2 27.1-28.4, TiO_2 0.11-0.16, Al_2O_3 2.7, Cr_2O_3 0.48-0.57, FeO 34.1-39.7, MnO 0.20-0.25, MgO 14.7-16.5, CaO 0.36-2.9, Na_2O 0.21-0.42, SO_3 3.9-8.5, SUM 89.9-94.1. The specimen must be very porous on a fine scale, judging from the great difficulty in fully degassing small fragments under vacuum.

Oxygen Isotopes: Analyses of two acid-washed whole rock fragments by laser fluorination gave, respectively, $\delta^{18}O$ = 6.29, 6.08; $\delta^{17}O$ = 0.93, 0.68; $\Delta^{17}O$ = -2.382, -2.519 per mil. These compositions plot on the CM chondrite trend [1], close to compositions for anomalous CM2 chondrite NWA 3340 [2] and another, 19 gram non-Antarctic CM1 chondrite from Northwest Africa [3].

Bulk Composition: INAA of two ~100 mg samples gave the following mean abundances: FeO 28.7 wt.%, Na_2O 0.11 wt.%, Ni 1.6 wt.%; in ppm, Sc 8.9, Cr 3900, La 0.38, Sm 0.24, Eu 0.06, Yb 0.28, Lu 0.041. The REE pattern is flat at ~1.3xCI chondrites, and is similar to those of other CM chondrites [4].

References: [1] Clayton R. N. and Mayeda T. K. 1999. *Geochim. Cosmochim. Acta* 63:2089-2104. [2] Kuehner S. M. et al. 2007. *Meteoritics & Planetary Science* 32:A74. [3] Weisberg M. K. et al. 2009. *Meteorit. Bull.* 96. [4] Wasson J. T. and Kallemeyn G. W. 1988. *Phil. Trans. Roy. Soc. Lond.* A325: 535-544.