

Joe

From: Julie M Donnelly-Nolan [jdnolan@usgs.gov]
Sent: Tuesday, November 29, 2005 12:29 PM
To: Joe Moore
Subject: ash-flow tuffs near Med L

Joe -

As best I can tell, hole 14-23 is located a little east of Fourmile Hill, a little south but about halfway between holes 57-13 and 68-16. The hole must begin at about 6600 ft. elevation. Just a little north of Fourmile Hill, there are outcrops of the tuff of Antelope Well (formerly Andesite Tuff) at about 6300 ft. elevation. Thus, the tuff you describe at 1918 ft cannot be the tuff of Antelope Well (which is approx. 180 ka in age). At that depth, it is very likely a pre-Medicine Lake tuff. Of course, it's possible that the tuff is an early Medicine Lake unit, but none of it shows up at the surface. About 7 miles NW of Fourmile Hill there's a 1-million-year-old tuff (otb, older tuff of Box Canyon) exposed at the NW edge of Medicine Lake volcano. Directly north at the top of Gillem Bluff in NW Lava Beds National Monument, there's otg, the older tuff of Gillem Bluff, which is about 2 million years old. About 13 miles east of Fourmile Hill, near the eastern edge of Med L lavas, there's a drillhole near Tionesta (labeled 84-27, although it should correctly be 87-24) that goes through basalt from MLV into a series of alternating ash-flow tuffs and mafic flows. The uppermost of these tuffs is reversed in magnetic polarity and thus pre-MLV. Ash-flow tuffs are also exposed farther SE along Hwy 139 on the way to Canby; these are also pre-MLV in age.

- Julie

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"Joe Moore" <jmoore@egi.utah.edu>

To "Julie M Donnelly-Nolan" <jdnolan@usgs.gov>

cc

11/28/05 11:08 AM

Subject RE: yes, please

Julie,

How about this:

7000 ft due N or Grouse Hill (on caldera rim)

¼ mile due east of Fourmile Hill

Due N or Medicine Lake

Joe

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Joe Moore
 Associate Editor for the Americas of Geothermics

10/3/2006

Hi Julie,

We have been logging the fractures in Medicine Lake well 14-23, which is one I think you examined. It contains a conspicuous welded ash flow tuff. My sample from 1918 contains crystals of plagioclase, orthopyroxene and clinopyroxene. Being colorblind gets in the way here and it is a bit difficult picking up the pleochroism of the opx and estimating relative amounts of opx and cpx. As this appears to be a unique unit, I wondered if you know its age, composition, and source. Does it crop out at the surface. Would be happy to send thin sections or samples if you need them.

Hope you enjoy your Thanksgiving holiday.

With best regards,
Joe

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