Mr. Blake is attempting to market a parabolic trough solar collector system to the Academy for heating some of the classrooms on the site. At the meeting, Dr. Michaels discussed the history, status and accomplishments of the IEA Solar Heating and Cooling Program. Mr. Breger discussed the preliminary design draft and required additional information for the CSHPSS. I described the general geohydrology of the area and discussed the potential for incorporating an aquifer thermal energy storage system with the solar heating plant. The geohydrology appears favorable for development of relatively small (~ 2-3 megawatt), low temperature (<100 degree Centigrade) doublet aquifer storage systems (or larger multiple well systems). The Dawson Formation composes the principal aquifer in the vicinity of the Air Force Academy. The aquifer consists of discontinuous and lenticular beds of interbedded arkosic and andesitic sandstone, claystone, siltstone and shale layers. The Dawson Formation is greater than 400 ft thick at the site, and the aquifer is at least 200 ft thick. Depth to water varies from about 100 ft to 400 ft below the ground, depending upon elevation of the land surface. Aquifer transmissivity is on the order of 200 ft squared per day. The upper part of the aquifer is essentially unconfined, and the lower part is partially confined (because the claystone, siltstone and shale beds form discontinuous and partly confining layers). Ground-water quality is fairly good at the Academy site. Total dissolved solids content is from about 100 to 300 mg/ℓ, but iron concentration may exceed 0.3 mg/ℓ. The water is predominately sulfate or bicarbonate type. Use of ground water appears to be small adjacent to the Academy even though the Dawson aquifer would seem to be an attractive alternative to the surface water and imported water supplies generally used in the Colorado Springs area. These factors would seem to make the Dawson aquifer nearly ideal for small, low temperature thermal energy storage systems. The underlying Laramie Formation and Fox Hills Sandstone also might be considered for potential thermal energy storage, but they are at least 1000 ft below land surface at the Academy site, and aquifer transmissivity probably is low. I believe that Colorado has strict ground-water quantity/quality control laws. Therefore considerable investigation should be made of the legal/institutional aspects of aquifer thermal energy storage before decisions are made to proceed with ATES.

From discussions with Mr. Barns and Ms. Walker, it seemed that plans previously had been made to utilize a solar salt gradient pond for demonstration of both solar heat generation and storage; but this approach apparently has been abandoned.

Mr. Barns indicated that they wanted to proceed with geohydrologic investigations. I hope that they will contact and consult with ANL/PNL before they rush into planning and field work, so that they can take advantage of our experience (and avoid some of the obvious and obscure mistakes that we and others have made) in ATES. We should keep in contact with Allan Michaels and indicate our active interest in assisting with the Air Force Academy project.

JRR:ks