

U.S.G.

INTER-OFFICE MEMORANDUM

SUBJECT: Analysis of water from a Newcastle Hot Well,
Iron County, Utah

DATE March 9, 1976

TO: W. M. Dolan, H. J. Olson, A. L. Lange, M. H. Alldredge

FROM: F. Dellechaie

Ken Rush of the U.S.G.S. Geothermal Division in Salt Lake has given me the most recent water analysis of a hot well drilled in the fall of 1975 near Newcastle, Utah. The well is 500 feet deep and is cased to the bottom. The casing is perforated from 300 to 500 feet. The temperature was 107°C at 300 feet and 105°C at 500 feet. The well can be pumped at 2500 gpm with an outlet temperature of 97°C.

An analysis of hot water obtained during the last pump test is shown below.

Newcastle Hot Well

pH	7.6	T°C	97
Cl	52	Flow (gpm)	2500
F	7.3		
SO ₄	580	TSiO ₂ °C	137
HCO ₃	64	TNa/K°C	156
CO ₃	0	TNa-K-Ca°C	166
SiO ₂	99		
Na	270		
K	21		
Ca	58		
Mg	0.4		
Li	0.5		
B	0.7		
TDS	1152.7		

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The water is of the sodium sulfate variety as seen below:



The water is low in chloride, high in fluoride and generally low in boron and lithium. pH is near neutral.

The subsurface temperatures indicated by the water chemistry range from 137 to 166°C (see preceding table).

The water may ascend up a range front fault and disperse in alluvium. Another hot well and several warm wells occur in an area of approximately one square mile. This geologic model could be very conducive to dilution in which case the above water analysis may be conservative. This water is not of compelling interest if cold water mixing does not occur.

This writer will keep abreast of further developments in the Newcastle area via Ken Rush.


Frank Dellechaie

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