

GEOLOGICAL SURVEY OF WYOMING

PHOTOGEOLOGIC MAP OF HANNA-MEDICINE BOW REGION,
WYOMING

by

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and

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EXPLANATION OF PHOTOGEOLOGIC MAP OF HANNA-
MEDICINE BOW REGION, WYOMING.

May 13, 1977

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Purpose

This map is **GEOLOGICAL SURVEY OF WYOMING** the result of work completed for a 2 credit problems course, 891M, in the Geology Department at the University of Wyoming designed to familiarize the writers with photo-geologic interpretation of structure and lithology. The area covered included most of T 21,22,23N and R 78,79,80,81,82W in eastern Carbon County. Major structures in the area are the Hanna Basin, Saddleback Hills anticline, Carbon Basin, Medicine Bow Anticline and the Flat Top Anticline.

Method

Mapping was carried out on acetate covered Intrasearch (Denver, Colorado) color photographs (2840(85-100), 2842(65-74), 2837(120-130, 225)) at an approximate scale of 1:32000. Each writer mapped half the area then checked the others work. The interpretation was done in stereo directly on the acetate covers and then transferred by Zoom Transfer Scope to three U.S. Geological Survey 15 minute topographic maps at a scale of 1:62500. The maps used were the Hanna, Saddleback Hills and Como Ridge quadrangles. Keeping the scale constant, geology from the topographic maps was then transferred onto a work mylar sheet.

After comparing our map with the Wyoming State Geologic map, the U.S.G.S. Bulletin 804 map, and including discussion with

Dr. Ron Marrs, "problem areas" were chosen for field checking. Unfortunately, time permitted the checking of only one area located in T23N and R78,79W, the Flat Top Anticline area. After field checking, comparisons were again made with the U.S.G.S. map, our map and RWIR BLM color infrared photographs. Photos used were Roll 3 lines 18 and 19, Roll 4 lines 21 and 22, Roll 2 line 20, and Roll 1 line 23. Reinterpretation was carried out in some of the areas where conflict existed, but our original mapping was left where this could not be resolved. The corrected work mylar was then transferred onto the final copy mylar, again maintaining the 1:62500 scale. All dips were derived from a chart of true dip and apparent dip using the known vertical exaggeration.

We had little knowledge of the formations present in the area so our photogeologic units do not coincide with actual contacts. Our lithologic units were based on persistent and/or resistant beds, and were labeled from youngest to oldest A-Z. In some cases numerical subdivisions were utilized to aid in understanding structural patterns.

Conclusions

An attempt was made at trying to interpret photogeologically a structurally complex area. The finished map should be viewed with the U.S. Geological Survey Bulletin 804 map present. Field checking, we discovered, is exceedingly important and should be carried out while interpretation is being made, and with the photographs in hand. The one area we did field check

showed that some features can be seen better from the air than from the ground; we also found the reverse to be true.

REFERENCES

Dobbin, C.E., Bowen, C.F., and Hoots, H.W., 1929, Geology and coal and oil resources of the Hanna and Carbon Basins, Carbon County, Wyoming: U.S.G.S. Bull. 804, 88p.

Love, J.D., Weitz, J.L., and Hose, R.K., 1955, Geologic map of Wyoming: U.S.G.S..

IMAGERY

Intrasearch (Denver, Colorado)- property of the Wyoming Geological Survey.

RWIR BLM- property of the Remote Sensing Laboratory, University of Wyoming.

- 4 -

Comparison of Lithology of the Hanna-Medicine Bow Region

Our photogeologic
interpretation

U.S.G.S. Bull. 804
and approximate map units

A	sandstone and shale	
B	sandstone, shale and caliche (?)	
C	shale and sandstone	Hanna fm., shale and sandstone all of A,B,C,D,E & H parts of F & G
D	shale and sandstone with caliche (?)	
E	sandstone, shale and caliche (?)	
F	1-caliche limestone (?) 2-sandstone and shale	
G	shale	
H	shale and caliche (?)	
I	indurated sandstone	Ferris fm., shale and sandstone all of I, parts of J,F,G & K
J	indurated sandstone, shale and sandstone	Medicine Bow fm., shale and sandstone; parts of J & K
K	indurated sandstone, shale and sandstone	
L	shale with some indurated sandstone	Lewis shale, shale with sandy shale; all of L & M, parts of K & N
M	shale with some indurated sandstone	
N	indurated sandstone with some shale	
O	indurated sandstone with some shale and sandstone	Mesaverde fm., sandstone and shale all of O, parts of N & P
P	indurated sandstone with some shale and sandstone	Steele shale, shale and sandstone with shaley ss.; parts of P & R
Q	shale with indurated sandstone	Niobrara fm., shale parts of R
R	sandy shale	Carlile shale, shale parts of R
S	indurated sandstone and shale	Frontier fm., sandstone and shale all of S & T
T	shale	Mowry shale, shale all of U
U	indurated shale	Thermopolis shale, shale with sandy layers; part of V
V	shale with some caliche (?)	Cloverly fm., sandstone and shale with cong. ss; parts of V & W
W	shale and sandstone	Morrison fm., shale and sandy shale; part of W
X	shale and sandstone with limestone and gypsum	Sundance fm., shale & sandstone part of W
Y	shale and sandstone with limestone and gypsum	Chugwater fm., shale & sandstone all of X & Y
Z	indurated sandstone	Ten Sleep sandstone, sandstone all of Z

SYMBOLS

CONTACT
AND
MARKER BEDS



CONTACT AND MARKER
BEDS LOCATED
APPROXIMATELY



CONTACT AND MARKER
BEDS LOCATED
VERY APPROXIMATELY



CONTACT AND MARKER BEDS
PROJECTED BENEATH
MAPPED UNITS

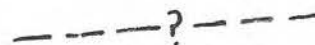


FAULT- APPROXIMATELY
WHERE DASHED



D- DOWNTOWN SIDE
U- UPTHROWN SIDE

FAULT
EXISTENCE
UNCERTAIN



ANTICLINE



DASHED WHERE LOCATED
APPROXIMATELY

SYNCLINE



DASHED WHERE LOCATED
APPROXIMATELY

ASYMMETRIC ANTICLINE



STEEPER LIMB TO THE
NORTH

ASYMMETRICAL SYNCLINE



STEEPER LIMB TO THE
NORTH

STRIKE AND DIP
OF BEDDING



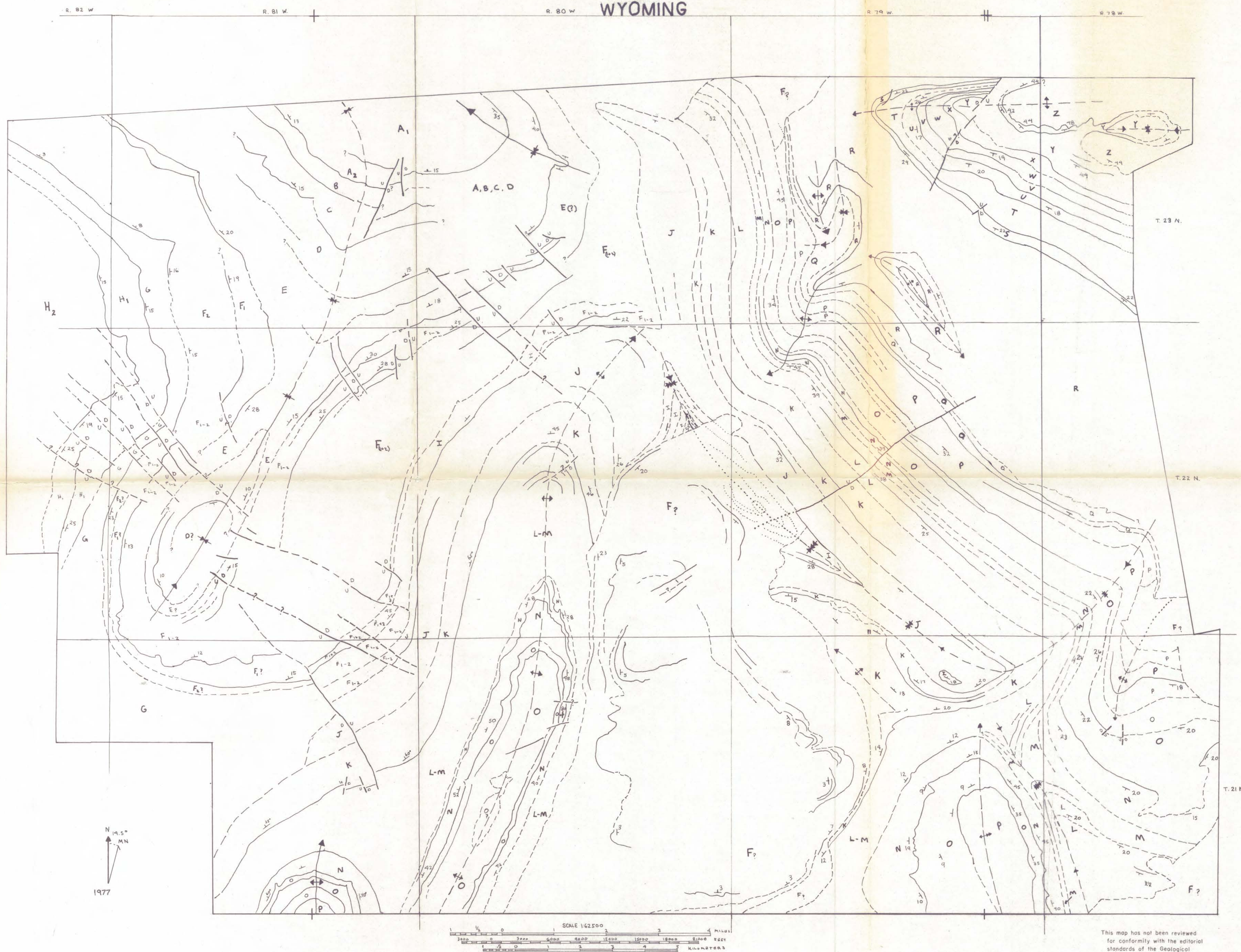
STRIKE AND DIP OF
OVERTURNED BEDDING



PHOTO GEOLOGIC UNIT
SYMBOL

A

SEE COMPARATIVE LITHOLOGY

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