

Central Sierra Snow Laboratory
Soda Springs, California

10 July 1946

Dr. George D. Clyde
Soil Conservation Service
Utah Agricultural College
Logan, Utah.

Subject: Snow Transportation M-7 Snow Tractor

Dear Dr. Clyde:

Fred Paget has written me stating that he is compiling the papers presented at the Western Snow Conference last February and I remembered that you wished to have a report on the operation of our M-7 snow tractor. We received this machine on March 1, 1946 and had rather a good opportunity to try it out in all kinds of snow.

The M-7 Snow Tractor built by the Allis-Chalmers has proven very satisfactory for snow survey work in the Central Sierra, over the Castle Creek Basin near Donner Summit, California. The machine will carry two persons with comfort together with all necessary equipment for snow surveying together with skis or snowshoes. With its side curtains and canvas top, lights, and a sturdy engine this little tractor will meet any situation in the snow fields.

The hill climbing ability is almost unbelievable. It climbs and travels better in fresh snow than it does on old snow after the 'corn' stage has been reached. The machine is very maneuverable. By virtue of the ability to brake one track and walk around a very sharp corner with the other. Through timber is the most difficult because of the unevenness of the snow cover. However the machine does not dig itself down into the snow when stuck. By packing snow under the tracks one can always pull out of any hole. In 40 inches of fresh snow of the powder variety the machine traveled very well sinking down only 10 inches. We found very few places that we could not take the M-7.

During the entire winter we had no trouble with the tracks coming off or such difficulty. Even though the tracks and framework became so incased in snow that you could only see the top track slide by maneuverability and traction were not reduced. On one occasion sticky snow clung to the skis but a little ski wax cured that trouble.

Gasoline consumption was approximately 9 to 10 miles per gallon and oil very low. Of course this would depend upon how much climbing one did and how much time the tractor was run in compound gear. We found it very economical on fuel.

Most of our travel was over exceedingly rough terrain up mountain sides and along Forest Service roads. During the Snow Melt Season the

front wheels were attached with the skis also and we were able to travel over the bare spots and patchy snow with equal ease. Due to the light construction of the track large rocks and rocky stretches in a road are rather destructive to skis and tracks alike.

Of course there are a few modifications that appear on the surface that should be made to fit the civilian work. This machine was built for the Army and their needs are different than the civilian. A stronger front end would help considerably. The worm gear steering knuckle is fastened to the frame work with too light construction. Some provision should be made to have the braking pedals of the two tracks put on levers to be operated with the right hand or they should be moved to the left side so that they could be operated by the left foot while the right foot is on the throttle. The present arrangement makes one become very busy with feet and hands when in a tight spot.

Following is a list of specifications copied from the M-7 Snow Tractor Manual:

Snow Tractor M-7 and 1-ton Snow Trailer M-19 Tm 9 774

Engine ... 4-cylinder, liquid-cooled 4 cycle, L-head (Willis Model MB) 63 H. P. at 3,900 RPM.

Wheelbase with wheels	81 inches
Length over-all (with Skis)	10' 11"
Width (over-all with Skis)	5' 3"
Height overall (with skis)	5' 3.5"
Weight of vehicle empty	2,620 Lbs.
with personnel	3,120 Lbs.
Ground pressure on skis	1.1 psi.
Ground pressure (tracks on snow)	3/4 psi.
Ground tractor area (with skis)	3348 sq. in.

Performance:

Maximum allowable speed (with auxillary transmission
(in low gear)

1st gear	4 mph
2nd gear	7 mph
3rd gear	10 mph
(with auxiliary transmission in high gear)	
1st gear	15 mph
2nd gear	26 mph
3rd gear	41 mph

Minimum turning radius right or left 15 ft.

Fording depth 30"

Maximum drawbar pull 1000 lbs.

Maximum grade ascending ability 75%

(Signed)

Very truly yours,
Ashton R. Codd
Ashton R. Codd
Hydrologic Engineer