

National Radio Astronomy Observatory

Green Bank, West Virginia

June 4, 1975

To: C. Wade

25 METER - MILLIMETER WAVE TELESCOPE

From: Buck Peery

MEMO # 23

Subject: Cable Car Installations

The writer visited the Sandia Peak cable car installation near Albuquerque, N.M. and spent three hours with their maintenance engineer and operating personnel. The following is a summary of facts and conclusions reached:

1. The cable car system:

- a. Has two cars with a capacity of 10,000 lbs. each (one goes up as the other goes down).
- b. Operates on two track cables.
- c. Has a single tow cable.
- d. Operates at an average speed of 900 ft. per minute or approximately 10 mph.
- e. Operates between elevation 6559' and 10,378', a vertical rise of 3819'.
- f. The slope distance between the top and bottom is 14,657 ft.
- g. Has two intermediate towers.
- h. Is driven by a 600 hp motor.
- i. Original cost (1965) 2 million dollars plus.
- j. Estimated 1975 cost for the same system - 4 million dollars minimum.

2. Operation and Maintenance:

- a. Made numerous changes and improvements. Estimated it took them six years to get all the bugs out.
- b. Must ride top of car up and back once a day to inspect track cables, sheaves, guides, towers, etc.
- c. Maintenance is a continuous procedure. The primary operator is a qualified mechanic and he is used for maintenance during the time the system is not in motion (between runs), or during periods when the system is not operating.
- d. Intermittent operation causes more maintenance problems than continuous or frequent operations.
- e. Rescue and safety equipment must be provided and checked frequently for protection of the passengers.
- f. The minimum operating personnel is four with a fifth man nearby, available any time the system is operating. A primary operator at the main console at the base, one attendant or operator in each car, and an operator at the top landing.
- g. The operator in the car has very limited control of the system. It must be controlled from the base.

- h. Wind and ice do present operating problems. They do not operate when the wind is 35 mph or higher. The car might strike the intermediate towers or the landing docks when the wind is blowing.
- i. The equipment for such a system is manufactured in Switzerland and replacement parts have very long delivery time and are expensive.

Mr. J. Marymor talked with the engineer in charge of the cable car at Palm Springs, California and their comments were very similar with emphasis on maintenance which they estimated to cost \$600,000.00 a year. The cable car system at Palm Springs:

- a. Was built in 1963.
- b. The original cost was 8 million plus.
- c. It is estimated it would cost 25 million today.
- d. The cable car system has a vertical lift of 8514 feet and a slope length of 12,500 feet.
- e. The cars are similar to those at Sandia Peak.

BP/sm