

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

WASHINGTON

October 3, 1923.

*Sent to
Bayer Oct 5*

My dear Mr. Hayden:

As I promised you I would do in my letter of September 21st, I requested Superintendent Crosby of the Grand Canyon National Park to make a special trip to inspect the powder magazine where the T.N.T. is stored, and have just had the following report from him:

"Pursuant to the suggestion contained in the last paragraph of your letter to Mr. Hayden, I personally rode out there again yesterday afternoon and carefully re-examined the situation as to our storage of T.N.T.

"The T.N.T. is located in the upper bend of sort of a gooseneck curve in Shoski Canyon, and the main road and the railroad, which closely parallel each other outside the mouth of the Canyon, are protected from the T.N.T. by a couple of ridges. Any explosion of the T.N.T. would have to pass up over these ridges, which are anywhere from 50 to 100 feet higher than the T.N.T. and then come down again, in order to have the forces of the explosion strike either the road or the railroad. This would be contrary to the general laws governing the forces of explosives.

"I have handled or been responsible for the handling of a great deal of explosives in my engineering experiences, and from observation I am somewhat familiar with the practices observed in the manufacture of explosives, and I really think our storage of T.N.T. as described is about the best that could be devised, all things considered. It is necessary to have the stored explosives accessible to our uses, and the only quarry we operate is the one shown on the sketch within reasonable distance of the stored T.N.T. It is not desirable to store explosives in too confined a manner. Many explosives are practically harmless until they are confined, and this would be the case with T.N.T. It simply burns and does not explode if unconfined.

"It is a well-known fact that the tendency of T.N.T. is to deliver its greatest explosive force vertically and unless so confined as to be obliged to take the line of least resistance. Hence, in this instance, it may be expected that should our present store explode, aside from the noise and some back-draft, there would be absolutely no effect noticeable out on the road or the railroad or at Rowe's Well, unless it were some vibration and the reception of possibly some debris cast up by the explosion, because of the lateral protection from the explosion of the ridges and the circuitous course of the Canyon opening.

"I gave the Hermit Rim road contractors permission to locate their camp in the vicinity of the quarry. I rather expected they would go down about where the two stream courses meet, but instead they put their camp nearer the quarry. They have about 25 men, plus several women and children in the camp. Yesterday I asked the foreman of the camp what he thought about the danger of the T.N.T. storage and he laughed at the idea that it could be dangerous in its present situation to anyone outside of Shoski Canyon or even to his own camp and people, because of the configuration of the ground. He said he was entirely satisfied to have it right where it was and he lives in his own camp. Of course he is the contractor's man, actually in charge of the quarry operations and of the use of T.N.T. from this pile in the frequent blasting at the quarry.

"If unauthorized persons will obey our signs and instructions to keep out of Shoski Canyon, and if we can prevent, as we try to do, by patrols and otherwise, the entrance of the public into Shoski Canyon, where they have no business in any event, I believe our present storage of T.N.T. will be free from real objection. "

After reading Superintendent Crosby's report I believe you will agree with me that every possible precaution is being taken to safeguard the storage of the T.N.T.

Sincerely yours,

Amos B. Hammer
Assistant Director.

Hon. Carl Hayden,
House of Representatives, U.S.