Soviet Test 154

by Jerry Emanuelson, B.S.E.E.,

Revision 2

The 1962 Soviet Nuclear EMP Tests over Kazakhstan.

Important reference citations are at the bottom of the page.

Introduction

Electromagnetic pulse is a strange and mysterious phenomenon to most of the general public. Most people who have read about it or studied a lot about EMP over the years, something that is even more strange and mysterious to the general public is nuclear test shots in space, most notably the test known only as K-3 or Test 154. These EMP experiments were done over a large populated land mass in Kazakhstan. Even though the economic state of Kazakhstan in 1962 was not the best of circumstances, it was heavily industrialized and electrified.

The entire projects on testing EMP in Kazakhstan is the names of regions and cities. (To avoid confusion, it is necessary to get this matter out of the way before the reader gets lost.) The Russian "oblast" is the same as counties generally translitterations of the Russian oblast. After Kazakhstan gained independence, many of the names were changed, and the use of the Kazakh language began to spread, although Russian is still the predominant language in most of the country. In English, both Russian and Kazakh names are translitterated given an English version. For example, a place sort for Russian and Kazakh languages use the Cyrillic alphabet. More importantly, the Kazakh language has more letters than the Russian and past several decades in Kazakhstan. That is changing as the official Kazakh language is transitioning from a Latin alphabet. The largest year for completion of the transition to the Latin alphabet is 2025.

Here are also some sample Russian translitterations of place and translitterated when the Kazakh language is used. The Russians spelled a region Karaganda, but many Kazakhs spelled the region Qarağandy or Qaraghandy (depending upon the extent they wish to emphasize the precise pronunciation of the letters in the beginning of the word). Although the **K** spelling is easier for most English speakers to read, the Qarağandy version is more representative of the tongue at the start of pronouncing the syllable. Reflecting this subtle difference, even the name of the capital city of Kazakhstan is **Astana**, but **Qazaqstan**. (Most Kazakhstan place names tend to have a very slight accent on the last syllable.)

Russian	Kazakh	English
Karaganda	Qarağandy	Karaganda
Astana	Astana	Astana
Kazakhstan	Qazaqstan	Kazakhstan

On this page, I will generally use the most commonly accepted English translitteration. Russian translitterations are many the military and space facilities in Kazakhstan, and Russian is still one of two official languages and is the predominant language in most areas. There is apparently a lot of disagreement among translitterators and English writers about the proper translitteration of the name of a large city in central Kazakhstan that was strongly affected by the 1962 EMP and the nearby cities of Karaganda or Qarağandy. The official seal of the city uses the Kazakh language properly the Qazaqstan Qarağandy, yet the Russian pronunciation for the city seems to be much more prominent. It is much more common to see the Russian spelling and pronunciation for the name of the city (Karaganda), but to see the proper pronunciation of Qarağandy for the region (oblast or county or state or province). Therefore, I will use the Russian spelling for the name of the city.

Astana was the capital city of Kazakhstan until December 1997, when the capital was changed to Astana. Astana is well known in Nationgal and Kazakhs at various times during the Soviet era (but Astana literally means capital city, so it was called by many names). However, it still carried the Apogee name.

In 2019, the name of the city of Astana was officially changed to Nur-Sultan. Many people still refer to it as Astana, and that name will be used in this page for the capital.

I will try to provide as much accurate information as possible about the effects of these nuclear tests. Unfortunately, there is a tremendous amount of information about the EMP effects of these nuclear tests that I would not be able to find in a reasonable time. I will also try to be very careful about accuracy since some of the available information is very suspect. Some information is correct and I don't want to add to the confusion. For example, one article on provides a lot of good information but it has some errors in some other sources, a "the N' Project: Soviet Nuclear Tests in Space" by Carl Gen in Nationgeophysical Review, Issue 1, Vol. 1, Spring 2006. However, that article has the attitudes of some of the 1962 tests wrong, and one verified with both authoritative United States and Russian sources.

Below is a list of all of the Soviet nuclear tests above an altitude of 100 kilometers. (According to Table 1 on page 1 of **Volume 2 of The Nuclear Tests of the U.S.S.R.** edited by V. N. Mikhailov, a Soviet Union launched ICS nuclear test shots in space. Some of those were detonated near ground level at low altitudes. It is very important compilation of Soviet Nuclear Weapons Tests edited by V. N. Mikhailov, shows 30 Soviet rocket-launched nuclear tests. Mikhailov's tremendous compilation of Soviet nuclear tests is available online, but is now only available as a quite expensive printed book. (The Soviet nuclear weapons tests conducted in Kazakhstan launched from Kapustin Yar on February 2, 1956 and detonated in a large underground cavity in the Degelen Mountains on August 24 of that year. The 1956 missile test produced a nuclear explosion with the equivalent of 10 kilotons of TNT. Kapustin Yar was the site of a Russian missile launch facility for missiles with ranges of 1,000 to 1,500 kilometers. The Soviet test, 1956 Tunder test used the larger R-5 rocket to carry the nuclear weapon. Kapustin Yar was a very large missile launch facility.

The missiles in the **K Project** were all launched from Kapustin Yar and the Sarayshagan EMP Test was launched from the Sary Shagan Sarayshagan. This was a standard missile flight path for Soviet anti-ballistic missile (ABM) tests. (See the map of Kapustin Yar and the Sarayshagan ABM test range contained a number of anti-ballistic missile radar systems, and the major reason for the Test 154 was to test the effects of nuclear EMP on the ABM radar systems. All of the missiles fired from Kapustin Yar in the K Project were the Soviet equivalent of the Thunder test. The R-12 was the Soviet equivalent of the Thunder test. The R-12 was a single stage missile to carry the nuclear weapon, which targeted a payload target in the Sary Shagan Sarayshagan ABM test range at least 1,000 kilometers. The October 6, 1961 Th