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ABSTRACT

The results of the radiological survey for Region VI (Water Tank Area) of the SRE are described. All survey results are below the applicable limits, indicating that this area may be released to unrestricted use.

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I. INTRODUCTION

This report covers SRE Region VI (see Figure 1), which is made up mainly of sandstone formations, several hundred feet high, northeast of the main reactor complex. The only man-made structure in this region was a large wooden water tank and access stairway. Both of these structures were destroyed by a brush fire some years ago. The water tank stored emergency cooling water for the Edison Company steam generator portion of the Sodium Reactor program. Due to its inaccessibility, no other use was made of this region.

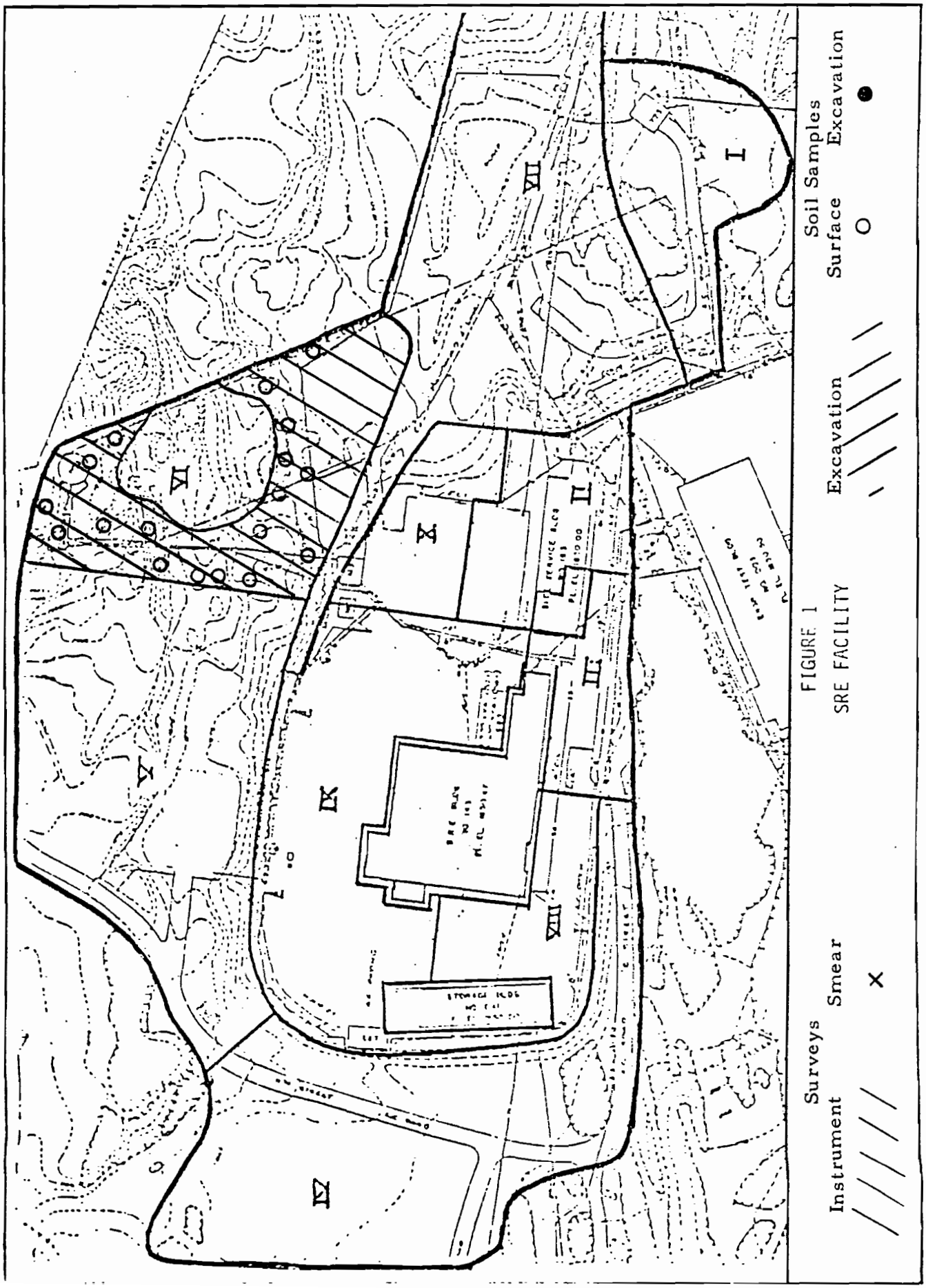

FIGURE 1

SRE FACILITY

II. SURVEYS AND RESULTS

A. REMOVABLE CONTAMINATION

The only structures in this region, a wooden water tank and access stairway, were destroyed by a brush fire after the reactor program was terminated. Smear surveys are not applicable for this part of the survey.

B. SURFACE RADIATION

Two radiation survey instruments were used for this portion of the report. They were a Technical Associates Model CP-7 ion chamber detector and a Technical Associates PUG1A/P-11A probe (a thin window G-M pancake detector). This latter instrument was needed for its faster response and audible output. The CP-7 detector measures absorbed dose and has the range and absorber thickness required by the specifications for this test. Each instrument was held above the natural ground cover brush, approximately 18 in. above the soil.

All accessible locations were checked with particular attention to weeds that might conceal an unexpected radiation source. No locations were found where either instrument indicated a level greater than 0.05 mrad/hr or 75 counts per minute. Such readings are essentially background for these instruments, as measured at a location more than one mile from the test site.

C. SOIL SAMPLES

The majority of this area, consisting of hard sandstone, does not lend itself to standard soil sampling techniques. Each location tested was designed to check for entrapment in depressions under the overhead cliff surfaces. Wooden stakes were not used to identify each location

since a representative pattern could not be established. The highest level detected was 31.6 pCi/g, while an average level of about 22 pCi/g was recorded for this region. A total of 18 samples were taken.

A small salve can was used to collect each sample. At each location to be tested, several small bits of dirt were added to the sample can until it was almost full. The can was then thoroughly shaken to mix the sample contents. All samples were then transferred to a hot plate, set for low temperature, to drive off any moisture present. When dry, a portion was passed through a Gooch crucible and a one-gram sample taken. After weighing, the soil was placed in an aluminum planchette, alcohol added, and the sample tapped until a flat, uniform sample was prepared. No chemical additives were included to bind the sample in place.

A thin window gas proportional automatic counting system was used to count these samples. This system has an efficiency of approximately 35% for a Bi-210 standard beta source. With each group of unknown samples, a prepared 1-gram KCl source was counted to determine the self absorption and counter efficiency factor. Normal background measured by a 10 minute test each day is approximately 22 counts per minute. Based upon the factors described and the uncertainties of a single observation, the minimum detection level is approximately 9 pCi/g at the 95% confidence level. The efficiency for alpha activity in the beta mode is 25%.

D. CONCRETE SAMPLES

The remaining concrete foundations in this area were not sampled since no spills of radioactive material occurred here, and there was no possibility of activation. Concrete samples are not applicable to this part of the survey.

E. WATER SAMPLES

There are no man-made or natural structures to entrap and hold water in this area. Water samples are not applicable to this survey.

III. CONCLUSIONS

In each type of test performed, all samples indicated levels less than those limits prescribed by the Decontamination and Disposition of Facilities Program for release to unrestricted use.

All appropriate surveys indicate that current existing radioactivity in the area is below the applicable limits for release to unrestricted uses.