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### INFORMATION REPORT

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PREPARED AND DISSEMINATED BY

CENTRAL INTELLIGENCE AGENCY

COUNTRY

Italy

SUBJECT

The Larderello (Tuscany Province) Geothermic Electric Power Plant

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1. The Larderello geothermic electric power plant in Tuscany Province utilizes the superheated steam geysers which intermittently spout from the ground. These steam geysers have been exploited for many years to obtain basic acid from them. The composition of the gases is:

- 95.5 % - pure steam water
- 0.035 % - basic acid
- 0.4 % - carbon dioxide
- remainder - mainly hydrogenated carbides and ammonia; and a very small amount of the rare gases of the atmosphere, including argon, helium, neon and krypton.

2. The steam, underground, reaches a pressure of 67.5 pounds per square inch and a temperature of 185°C, which are always constant.

3. A first attempt to obtain electric power from the steam geysers was started early in 1904; in 1932 the power installed was 14,770 KW; and in 1939 it was 60 thousand KW. The whole plant was completely destroyed during World War II, but in 1948 a new 150 thousand KW installation was built, which is also the present (1950) capacity. However, plans and developments are being made in order that an annual production from 10 to 20 billion KW will eventually be reached.

4. Originally the steam, collected by simply sinking a pipe into the ground, was brought directly to the turbines, the efficiency being 1 KWh per 42 pounds of steam. Later on, it was carried to special boilers, or "heat exchangers", where it was used to heat up pure water at a lower pressure, thus producing steam to supply the turbines. The efficiency by this method was improved up to 31 pounds of steam per KWh.

5. At present (1950) the steam, having been sucked by a vacuum pump, is fed into a condensing turbine. Such a proceeding is rather expensive, as far as machinery is concerned, but the efficiency is brought up to 22 pounds of steam

PER KWh.

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Electric power  
plant  
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Area

Italy  
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Tuscany  
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