The Geological Survey of Japan conducted a helicopter-borne high-resolution aeromagnetic survey over the Fukui Plain, central Japan, to better understand concealed faults associated with the 1948 Fukui Earthquake (Mj =7.1) that caused tremendous damage to this area. The observed magnetic data have been processed and total magnetic intensity anomalies were compiled on a smoothed observed surface. 3-D magnetic imaging has been applied to the magnetic anomalies to better understand the subsurface structure of the area. The characteristics of the results of the imaging are summarized as follows:

(1) Magnetization highs of 2.0 A/m lie south of the Awara Hot Spring in the western part of the plain, implying the existence of a past volcanic center associated with the hot spring.

(2) A broad high-magnetization area which includes the local highs south of the Awara Hot Spring occupies the western part of the plain, suggesting buried volcanic rocks trapped inside the Neogene basin inferred from seismic and gravity surveys.

(3) The broad high-magnetization area is bounded by the Fukui Earthquake Fault to the east. Whereas, magnetization lows are dominant in the eastern part of the plain.

(4) Negative magnetizations are dominant along the coastline of the Sea of Japan north of the Kaetsu Plateau, suggesting the existence of reversely magnetized volcanic rocks.

(5) On the basis of these results, it is suggested that the 1948 Fukui Earthquake occurred along the boundary of the old basement structure.