Volume of Earth:	$V_\oplus$	$\approx$	1.087×10^{21}		m^3
Volume of Earth's core:	$V_{Fe} \approx 0.16 V_\oplus$	$\approx$	1.739×10^{20}		m^3
Volume of outer core + mantle:	$V_{SiO_2} \approx 0.84 V_\oplus$	$\approx$	9.129×10^{20}		m^3
Density of core:	$\rho_{Fe,core}$	$\approx$	10 000		kg/m^3
Mass of Earth:	$m_\oplus$	$\approx$	5.972×10^{24}		kg
Mass of core:	$m_{Fe} = \rho_{Fe} V_{Fe}$	$\approx$	1.739×10^{24}		kg
Mass of core + mantle:	$m_{SiO_2} = m_\oplus - m_{Fe}$	$\approx$	4.233×10^{24}		kg
PRESUMED core temperature:	T_{Fe}		6 000		K
ESTIM. mean outer core + mantle temp.:	$T_{SiO_2} = T_{Fe}/2$		3 000		K
Specific heat capacity of core:	c_{Fe}	$\approx$	450		J/kg/K
of outer core + mantle:	c_{SiO_2}	$\approx$	700		J/kg/K
ESTIM. heat in core:	$Q_{Fe} = c_{Fe} m_{Fe} T_{Fe}$	$\approx$	4.695×10^{30}		J
ESTIM. heat in core + mantle:	$Q_{SiO_2} = c_{SiO_2} m_{SiO_2} T_{SiO_2}$	$\approx$	8.889×10^{30}		J
ESTIM. total heat inside Earth:	$Q_\oplus = Q_{Fe} + Q_{SiO_2}$	$\approx$	1.358×10^{31}		J
For comparison: Earth's rotational energy:	$E_{k,rot,\oplus}$	$\approx$	2.136×10^{29}		J
Pot. energy of homogeneous spherical cloud:	$E_p = \frac{-3GM^2}{5R}$				
Current pot. energy inside Earth:	$E_{p,\oplus} = \frac{-3GM_\oplus^2}{5R_\oplus}$	$\approx$	-2.239×10^{32}		J
Collapse energy:	$E_{coll} = \frac{-3GM_\oplus^2}{5R_{pre}} - E_{p,\oplus} = \frac{3GM_\oplus^2}{5R_\oplus} - \frac{3GM_\oplus^2}{5R_{pre}}$				

(ignoring/neglecting initial kinetic energy, which, according the the virial theorem, would equal $-E_p/2$)

PRESUMPTION:	$E_{coll} = Q_\oplus$				
then:	$\frac{3GM_\oplus^2}{5R_{pre}} = \frac{3GM_\oplus^2}{5R_\oplus} - Q_\oplus$				
hence:	$\frac{1}{R_{pre}} = \frac{5}{3GM_\oplus^2}\left(\frac{3GM_\oplus^2}{5R_\oplus} - Q_\oplus\right)$				
	$= \frac{1}{R_\oplus} - \frac{5Q_\oplus}{3GM_\oplus^2} = \frac{3GM_\oplus^2 - 5R_\oplus Q_\oplus}{3GR_\oplus M_\oplus^2}$				
yielding:	$R_{pre} = \frac{3GR_\oplus M_\oplus^2}{3GM_\oplus^2 - 5R_\oplus Q_\oplus}$	$\approx$	6 790		km
as well as:	$\frac{R_{pre}}{R_\oplus} = \frac{3GM_\oplus^2}{3GM_\oplus^2 - 5R_\oplus Q_\oplus}$	$\approx$	**1.065**		

A pre-collapse radius merely 6.5% larger then Earth's current radius would provide enough energy = heat for Earth's inside to achieve the **PRESUMED** temperature of **~6000 K.** GOLD! BRRR!

Earth must be ***WAY*** hotter than 6000 kelvins!

In http://henk-reints.nl/astro/HR-BH-temperature.pdf,

I derived: 105 kilokelvins.