HESS' LAW 2

Find : $\quad C(s) + \frac{1}{2}\,O_2(g) + N_2(g) + 2\,H_2(g) \longrightarrow CO(NH_2)_2(s) \qquad \Delta H = ?$

Given :

(1)	$2\,NH_3(g) + 3\,H_2O(l) \longrightarrow NH_4NO_3(s) + 4\,H_2(g)$	$\Delta H = +\ 583.6$ kJ
(2)	$CH_2O(l) \longrightarrow CO(g) + H_2(g)$	$\Delta H = -\ \ 1.9$ kJ
(3)	$CH_2O(l) + 2\,NH_3(g) \longrightarrow CO(NH_2)_2(s) + 2\,H_2(g)$	$\Delta H = -\ 133.1$ kJ
(4)	$C(s) + \frac{1}{2}\,O_2(g) \longrightarrow CO(g)$	$\Delta H = -\ 110.5$ kJ
(5)	$H_2(g) + \frac{1}{2}\,O_2(g) \longrightarrow H_2O(l)$	$\Delta H = -\ 285.8$ kJ
(6)	$N_2(g) + 2\,H_2(g) + \frac{3}{2}\,O_2(g) \longrightarrow NH_4NO_3(s)$	$\Delta H = -\ 583.6$ kJ

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(3)	$CH_2O(l) + 2\,NH_3(g) \longrightarrow CO(NH_2)_2(s) + 2\,H_2(g)$	$\Delta H = -\ 133.1$ kJ
rev (2)	$CO(g) + H_2(g) \longrightarrow CH_2O(l)$	$\Delta H = +\ \ 1.9$ kJ
rev (1)	$NH_4NO_3(s) + 4\,H_2(g) \longrightarrow 2\,NH_3(g) + 3\,H_2O(l)$	$\Delta H = -\ 583.6$ kJ
(4)	$C(s) + \frac{1}{2}\,O_2(g) \longrightarrow CO(g)$	$\Delta H = -\ 110.5$ kJ
(6)	$N_2(g) + 2\,H_2(g) + \frac{3}{2}\,O_2(g) \longrightarrow NH_4NO_3(s)$	$\Delta H = -\ 583.6$ kJ
re 3 x (5)	$3\,H_2O(l) \longrightarrow 3\,H_2(g) + \frac{3}{2}\,O_2(g)$	$\Delta H = +\ 857.4$ kJ

$C(s) + \frac{1}{2}\,O_2(g) + N_2(g) + 2\,H_2(g) \longrightarrow CO(NH_2)_2(s) \qquad \Delta H = -\ 551.5$ kJ
