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(54) **Improvements in hydrolysis**

(57) The invention provides an improved two stage process for use on kerogen bearing and/or "heavy oils" wherein the process comprises a two-stage catalytic hydrolysis process for recovering biomarkers from a geological oil-bearing sample, said process comprising the steps of:

in a first stage heating a geological oil-bearing sample incorporating a dispersed hydrotreating catalyst

up to a temperature of from 450°C to 520°C, in the presence of hydrogen at a pressure of from 5 MPa to 15 MPa so as to release into the vapour phase from said geological oil-bearing sample organic compound material containing biomarkers; and in a second stage contacting the material released in the first stage with a hydrotreating catalyst at a temperature in the range of from 300°C to 350°C in the presence of hydrogen at a pressure of from 5 MPa to 15 MPa so as to release chemically bonded biomarkers.

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EUROPEAN SEARCH REPORT

Application Number
EP 99 31 0278

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	BISHOP LOVE MCULAY SNAPE FARRIMOND: "Release of kerogen-bonded hopanoids by hydropyrolysis." ORG. GEOCHEMIE, vol. 29, no. 4, 1998, pages 989-1001, XP000910528 * the whole document *	1-40	C10G1/06 C10G1/00
D,A	GB 2 007 255 A (COAL INDUSTRY PATENTS LTD) 16 May 1979 (1979-05-16) * the whole document *	1-40	
D,A	EP 0 284 213 A (COAL INDUSTRY PATENTS LTD) 28 September 1988 (1988-09-28) * the whole document *	1-40	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.7) C10G
Place of search THE HAGUE		Date of completion of the search 18 May 2000	Examiner De Herdt, 0
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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18-05-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2007255 A	16-05-1979	DE 2845182 A	10-05-1979
		FR 2407977 A	01-06-1979
		JP 54079235 A	25-06-1979
		US 4218303 A	19-08-1980
EP 0284213 A	28-09-1988	GB 2202545 A	28-09-1988
		DE 3863212 D	18-07-1991