Claims:

1. An integrated process for producing a low pour point MARPOL ~~complaint~~ compliant bunker fuel oil, said process comprising:

~~a) mild thermal cracking of residue feed stock (1);~~

~~b)~~ a) subjecting a residue feed stock to mild thermal cracking in a mild thermal cracking unit to produce a cracked effluent stream, wherein the mild thermal cracking unit comprises a furnace and a reactor;-wherein the residue feed stock is subjected to thermal cracking to form lighter fractions;

b) fractionating the thermally cracked effluent stream from an outlet of the reactor in a fractionator column for obtaining streams with boiling ranges 140°C-, 140-280°C, 280-380°C and 380°C+;

c) withdrawing the 140-280ºC boiling range stream ~~(8)~~ from the cracked effluent stream;

~~c)~~ d) subjecting the withdrawn stream ~~of 140-280ºC boiling range (8) along with~~and a straight run kerosene stream ~~(11)~~ to stripping ~~and~~ in a stripper and fractionating in a vacuum column ~~separation~~ separator for producing an aromatic enriched stream ~~(17) with a low pour point;~~ in-situ; and

~~d)~~ e) blending the aromatic enriched stream ~~(17) with~~, the 380°C+ fraction ~~(10) from mild thermal cracking,~~ and a paraffinic stream ~~(8)~~ to produce the low pour point MARPOL compliant bunker fuel oil~~-~~.

2. The process as claimed in claim 1, wherein the residue feed stock is selected from a group consisting of a vacuum residue, an atmospheric residue, and a pitch having ~~low pour point and high flash point.~~ a sulfur content in a range 0.1-0.6 wt%.

~~2.~~ 3. The process as claimed in claim 1, wherein the stripper has a top temperature in a range of 150-200°C, a top pressure in a range of 1-2 Kg/cm^2 (g) and a bottom temperature in a range of 200-300°C.

4. The process as claimed in claim 1, wherein the vacuum column separator has a top temperature in a range of 40-100°C, a pressure below 760 mm Hg and a bottom temperature in a range of 250-300°C.

5. The process as claimed in claim 1, wherein the low pour point MARPOL compliant bunker fuel is produced using the 380^{o} C+ boiling fraction in a range of 60-80 wt%, the 140-280^{o}C boiling fraction in a range of 5-15 wt%, the aromatic enriched stream in a range of 5-15 wt% and a 280-380^{o}C boiling fraction in a range of 0-5 wt%.

6. The process as claimed in claim 1, wherein the low pour point MARPOL compliant bunker fuel oil has a pour point of (+9^{o}C).

7. The process as claimed in claim 1, wherein the low pour point MARPOL compliant bunker fuel oil has sulfur in a range of 0.1- 0.5 wt%.

8. An integrated process for producing a low pour point MARPOL ~~complaint~~compliant bunker fuel oil, said process comprising ~~of steps~~:

a) ~~——~~heating a liquid hydrocarbon feedstock ~~(1)~~ in a furnace ~~(2)~~ of ~~the~~a mild thermal cracking unit;

b) ~~——~~sending the heated stream ~~(3)~~ from the furnace to a reactor ~~(4)~~ to obtain ~~reactor effluents (5);~~the cracked effluent stream;

c) ~~———~~ fractionating ~~reactor effluents (5)~~the cracked effluent stream in a ~~separator (6)~~fractionator column for obtaining fractions with boiling ranges 140°C ~~(7),-~~, 140-280°C ~~(8),~~, 280-380°C ~~(9)~~ and 380°C ~~+ (10);~~+;

d) ~~——~~withdrawing a paraffinic stream ~~(8)~~ of boiling range 140-280°C from the fractionator column ~~(6);~~;

e) ~~——~~using the paraffinic stream ~~(8)~~ along with a straight run kerosene stream ~~(11)~~ as a feed stock for in-situ aromatic enrichment through stripping in a stripper followed by separation in a vacuum column ~~separation~~separator to obtain an aromatic enriched stream ~~(17);~~;

f) ——blending the 380°C+ fraction ~~(10) with~~, the aromatic enriched stream ~~(17),~~, the paraffinic stream ~~(8)~~ and the 280-380ºC boiling fraction ~~(9)~~ to produce the low pour point MARPOL compliant bunker fuel oil.

~~3.~~9. The process as claimed in claim ~~1 or 2~~8, wherein the liquid hydrocarbon feedstock ~~(1)~~ is selected from a group ~~comprising heavy hydrocarbon feed stocks like~~consisting of a vacuum residue, an atmospheric residue, a pitch~~–~~ having ~~-~~sulfur content in ~~the~~a range of 0.1-0.6 wt%.

~~4.~~10. The process as claimed in claim ~~1 or 2~~8, wherein the reactor of the mild thermal cracking ~~process~~unit is ~~-~~operated at ~~the desired~~an operating temperature ranging from 400 to 470ºC and ~~desired~~at an operating pressure ranging from 5 to 20 Kg/cm^2 (g).

~~5.~~11. The process as claimed in claim ~~1 or 2~~8, wherein the reactor of the mild thermal cracking ~~process~~unit is~~-~~ operated at a residence time ranging from 10-40 minutes.

~~6.~~12. The process as claimed in claim ~~1 or 2~~8, wherein the stripper ~~section (12) is having~~has a top temperature in ~~the~~a range of 150-200°C, a top pressure 1-2 Kg/cm^2 (g) and a bottom temperature~~:~~ in a range of 200-300°C.

~~7.~~13. The process as claimed in claim ~~1 or 2~~8, wherein the vacuum ~~separation system is having~~column separator has a top temperature~~:~~ in a range of 40-100°C, a pressure below 760 mm Hg and a bottom temperature ~~of the vacuum separator ranges from~~in a range of 250-300°C.

~~8.~~14. The process as claimed in claim ~~1 or 2~~8, wherein ~~said~~the aromatic enriched stream ~~(17) is having~~has a higher flash point and aromatic content as compared to the liquid hydrocarbon feed stock ~~(8/11).~~.

~~9~~18. The process as claimed in claim~~-~~ ~~8~~1 ~~or 2~~, wherein the low pour point MARPOL compliant~~said~~ bunker fuel oil ~~is having~~has a sulfur in ~~the~~ a range of 0.1- 0.5 wt%.

~~10~~19. The process as claimed in claim ~~1 or 2~~8, wherein the low pour point MARPOL compliant ~~said~~ bunker fuel oil ~~is having~~has a ~~lower~~ pour point of (+9ºC).

~~11~~16. The process as claimed in claim ~~1 or 2~~ 8, wherein aromatic enrichment of 140-280ºC boiling stream ~~(8)~~ provides stability to ~~the~~ a residue from the mild thermal cracking unit by solubilizing ~~the~~ asphaltenes present ~~in it~~.

~~12. Low pour point MARPOL complaint bunker fuel oil obtained by the process as claimed in claims 1 or 2 having lower pour point (+9ºC) and sulfur in the range of 0.1- 0.5 wt%.~~

~~13~~15. The process as claimed in claim ~~1 or 2~~ 8 ~~,~~ wherein the low pour point, MARPOL compliant bunker fuel oil is produced using the 380ºC+ boiling fraction ~~(10)~~ in ~~the~~ a range of 60-80 wt%, the 140-280ºC boiling fraction ~~(8)~~ in ~~the~~ a range of 5-15 wt%, the aromatic enriched stream ~~(17)~~ in ~~the~~ a range of 5-15 wt% and the 280-380 ºC boiling fraction ~~(9)~~ in ~~the~~ a range of 0-5 wt%.

~~14.~~17. The process as claimed in claim ~~1 or 2~~8, wherein a flash point of the paraffinic stream is in ~~the~~a range of 30-60ºC and ~~it~~ increases to 100-130ºC due to the aromatic enrichment.