CLAIMS:

1. A method for producing a lubricant base oil product, comprising:

providing a feedstock comprising a 650°F+ (343°C) fraction, at least 10 wt% of the 650°F+ fraction comprising a portion having a boiling point of at least 1050°F (566°C);

exposing at least a portion of the 650°F+ (343°C) fraction to effective thermal cracking conditions to form a thermal cracking effluent, the thermal cracking effluent comprising at least a first thermal cracking effluent fraction having a 10% distillation point of at least 700°F (371°C) and a second thermal cracking effluent fraction having a lower boiling range, the effective thermal cracking conditions being selected for single pass conversion of 30 wt% to 80 wt% of the portion having a boiling point of at least 1050°F (566°C); and

deasphalting at least a portion of the first thermal cracking effluent fraction to form at least a deasphalted thermal cracking effluent and a deasphalting residue;

wherein at least a first portion of the deasphalted thermal cracking effluent has a viscosity index of at least 50 and a viscosity at 100°C of at least 7.0 cSt.

2. The method of claim 1, wherein the at least a first portion of the deasphalted thermal cracking effluent having a viscosity index of at least 50 and a viscosity of at least 7.0 cSt at 100°C comprises a raffinate from performing a solvent extraction on at least a second portion of the deasphalted thermal cracking effluent, a raffinate yield from performing the solvent extraction on the at least a second portion of the deasphalted thermal cracking effluent optionally being at least 30 wt%.

3. The method of claim 1, the method further comprising:

exposing the at least a first portion of the deasphalted thermal cracking effluent to a dewaxing catalyst under effective catalytic dewaxing conditions and

a hydrofinishing catalyst under effective hydrofinishing conditions, to form a dewaxed, hydrofinished effluent,

wherein the dewaxed, hydrofinished effluent has a viscosity index that is at least 5 greater than the viscosity index of the at least a portion of the deasphalted thermal cracking effluent.

4. The method of claim 1, wherein at least 50 wt% of the 650°F+ (343°C) fraction has a boiling point of at least 1050°F (566°C), wherein the first thermal cracking effluent fraction has a T95 boiling point of at least 1050°F (566°C), or a combination thereof.

5. The method of claim 1, wherein the at least a first portion of the deasphalted thermal cracking effluent has a viscosity index of at least 80, or wherein the at least a first portion of the deasphalted thermal cracking effluent has a viscosity at 100°C of at least 8.0 cSt, or a combination thereof.

6. The method of claim 1, further comprising hydrotreating the at least a first portion of the deasphalted thermal cracking effluent under effective hydrotreating conditions to form a hydrotreated deasphalted thermal cracking effluent having a sulfur content of 300 wppm or less.

7. The method of claim 1, further comprising hydrocracking at least a second portion of the deasphalted thermal cracking effluent under effective hydrocracking conditions to form a hydrocracked deasphalted thermal cracking effluent having a sulfur content of 300 wppm or less, the at least a first portion of the deasphalted thermal cracking effluent comprising at least a portion of the hydrocracked deasphalted thermal cracking effluent.

8. The method of claim 1, wherein the effective thermal cracking conditions comprise hydroconversion conditions, the hydroconversion conditions

including a temperature of at least 400°C and a hydrogen partial pressure of 1500 psig (10.3 MPa) or less.

9 The method of claim 1, wherein the effective thermal cracking conditions comprise fluidized coking conditions, including a temperature of at least 500°C and a pressure of 50 psig (345 kPa) or less.

10. A method for producing a lubricant base oil product, comprising:

providing a feedstock comprising a 650°F+ (343°C) fraction, at least 10 wt% of the 650°F+ fraction comprising a portion having a boiling point of at least 1050°F (566°C);

deasphalting a first portion of the feedstock to form at least a first deasphalted oil and a first deasphalting residual product;

exposing at least a first portion of first deasphalting residual product to effective thermal cracking conditions to form a thermal cracking effluent, the thermal cracking effluent comprising at least a first thermal cracking effluent fraction having a 10% distillation point of at least 650°F (343°C) and a second thermal cracking effluent fraction having a lower boiling range, the effective thermal cracking conditions being selected for single pass conversion of 50 wt% to 80 wt% of the portion having a boiling point of at least 1050°F (566°C);

deasphalting at least a portion of the first thermal cracking effluent fraction to form at least a deasphalted thermal cracking effluent, the deasphalted thermal cracking effluent having a first viscosity index;

exposing at least a portion of the deasphalted thermal cracking effluent to a hydrocracking catalyst under effective hydrocracking conditions to form a hydrocracked effluent; and

exposing at least a portion of the hydrocracked effluent to a dewaxing catalyst under effective catalytic dewaxing conditions, and a hydrofinishing catalyst under effective hydrofinishing conditions, to form one or more lubricant products, the one or more lubricant products having a viscosity of

at least 6 cSt at 100°C and a viscosity index of at least 90, a yield of the one or more lubricant products being at least 15 wt% of the 650°F+ (343°C) fraction of the feedstock.

11. The method of claim 10, further comprising combining a second portion of the feedstock and a second portion of the first deasphalting residual product to form an asphalt feed.

12. The method of claim 10, further comprising at least one of:

a) forming a Group I base oil from the first deasphalted oil, the forming a Group I base oil comprising:

solvent extracting at least a portion of the first deasphalted oil to form an extraction raffinate; and

solvent dewaxing at least a portion of the extraction raffinate to form a Group I base oil; or

b) forming a base oil from the first deasphalted oil, the forming a base oil comprising:

hydrocracking at least a portion of the first deasphalted oil in the presence of a hydrocracking catalyst to form a hydrocracked effluent;

dewaxing at least a portion of the hydrocracked effluent in the presence of a dewaxing catalyst and hydrofinishing at least a portion of the hydrocracked effluent in the presence of a hydrofinishing catalyst to form a base oil.

13. The method of claim 10, wherein deasphalting a feedstock comprising a 650°F+ (343°C) fraction comprises deasphalting a feedstock comprising the 650°F+ fraction and a recycled fraction,

~~wherein exposing at least a portion of the deasphalting residual product to effective thermal cracking conditions further comprises forming a third thermal cracking effluent having a 10% distillation point of at least 800°F (427°C),~~

~~wherein the method further comprises recycling at least a portion of the third thermal cracking effluent as the recycled fraction, and~~

~~wherein exposing at least a portion of the deasphalted thermal cracking effluent to a hydrocracking catalyst comprises exposing at least a portion of the deasphalted thermal cracking effluent and at least a portion of the first deasphalted oil.~~

~~14. The method of claim 13, wherein the effective thermal cracking conditions comprise fluidized coking conditions, including a temperature of at least 500°C and a pressure of 50 psig (345 kPa) or less.~~

~~15.~~1. A naphthenic base oil composition comprising:

~~a)~~ at least 40 wt% naphthenes, the naphthenic base oil ~~and~~ having a viscosity index of at least 120, the naphthenic base oil having a viscosity at 100°C of at least 10 cSt.~~; or~~

~~b) at least 20 wt% 3+ ring naphthenes having a viscosity of at least 15 cSt at 100°C and a viscosity index of 80 - 120.~~

2. The naphthenic base oil composition of claim 1, wherein the naphthenic base oil composition comprises at least 90 wt% saturated molecules.

3. The naphthenic base oil composition of claim 2, wherein the naphthenic base oil composition comprises less than 0.03 wt% sulfur.

4. The naphthenic base oil composition of claim 2, wherein the naphthenic base oil composition has a pour point of -15°C or less.

5. The naphthenic base oil composition of claim 2, wherein the naphthenic base oil composition has a pour point of -18°C or less.

6. The naphthenic base oil composition of claim 2, wherein the naphthenic base oil composition has a pour point of -20°C or less.

7. The naphthenic base oil composition of claim 2, wherein the naphthenic base oil composition has a viscosity index of about 120 to about 160.

8. The naphthenic base oil composition of claim 7, wherein the naphthenic base oil composition has a viscosity index of about 140 to about 160.

9. The naphthenic base oil composition of claim 2, wherein the naphthenic base oil has a viscosity at 100°C of about 15 cSt to about 50 cSt.

10. The naphthenic base oil composition of claim 9, wherein the naphthenic base oil has a viscosity at 100°C of about 20 cSt to about 50 cSt.

11. The naphthenic base oil composition of claim 2, wherein the naphthenic base oil has at least 25 wt % 3+ ring naphthenes.

12. The naphthenic base oil composition of claim 11, wherein the naphthenic base oil has at least 35 wt % 3+ ring naphthenes.

13. The naphthenic base oil composition of claim 12, wherein the naphthenic base oil has at least 40 wt % 3+ ring naphthenes.

14. The naphthenic base oil composition of claim 2, wherein the naphthenic base oil has a T5 boiling point of at least 370°C.

15. The naphthenic base oil composition of claim 2, wherein the naphthenes are 2-4 ring naphthenes having linear sidechains.

16. A naphthenic base oil composition comprising:

at least 20 wt% 3+ ring naphthenes, the naphthenic base oil having a viscosity of at least 15 cSt at 100°C and a viscosity index of about 80 to about 120.

17. The naphthenic base oil of claim 16, wherein the naphthenic base oil has at least 35 wt% 3+ ring naphthenes.

18. The naphthenic base oil composition of claim 17, wherein the naphthenic base oil has at least 40 wt% 3+ ring naphthenes.

19. The naphthenic base oil composition of claim 16, wherein the naphthenic base oil has a viscosity at 100°C of about 20 cSt to about 50 cSt.

20. The naphthenic base oil composition of claim 16, wherein the naphthenes have linear sidechains.

~~16. The naphthenic base oil composition of claim 15, wherein the naphthenic base oil comprising at least 20 wt% 3+ ring naphthenes further comprises at least 40 wt% naphthenes.~~

~~17. A deasphalted oil formed from propane deasphalting of a thermally cracked gas oil composition, the thermally cracked gas oil composition having a 10 wt% distillation point of at least 343°C, 2.0 wt% – 5.0 wt% of micro carbon~~

residue, and an API gravity of 15 or less, at least 15 wt% of the thermally cracked gas oil composition having boiling point of greater than 510°C, the thermally

cracked gas oil composition having a kinematic viscosity at 100°C of at least 8 cSt.

18. The deashalted oil of claim 17, wherein the thermally cracked gas oil composition comprises at least 15 wt% olefins.

19. The deasphalted oil of claim 17, wherein the thermally cracked gas oil composition comprises at least 0.03 wt% of n-heptane insolubles, 0.1 wt% to 2.0 wt% of pentane insolubles, or a combination thereof.

20. The deasphalted oil of claim 17, wherein the thermally cracked gas oil composition is formed by the method comprising:

providing a feedstock comprising a 343°C+ fraction, at least 10 wt% of the 343°C+ fraction comprising a portion having a boiling point of at least 566°C;

exposing at least a portion of the 343°C+ fraction to effective thermal cracking conditions to form a thermal cracking effluent, the thermal cracking effluent comprising at least the thermally cracked gas oil composition and a second thermal cracking effluent fraction having a lower boiling range, the effective thermal cracking conditions being selected for conversion of 30 wt% to 80 wt% of the portion having a boiling point of at least 1050°F.