stream 205 from the vacuum unit. A resin stream, 54, is produced from unit 50, and sent to a residue hydrocracking unit, 500. With less asphaltenes, that are highly exothermic when reacted, sent to unit 500, the residue hydrocracker can run at higher conversions (+8-15%) producing more material as final transportation fuel product. The solid asphaltene stream, 111, from unit 110 can be sent to the gasification unit for hydrogen generation.

As in Figure 4, the benefits of adding the integrated unit in Figure 5 are:

1. Maximum yield of incoming crude to plant.
2. Debottlenecking, if existing, or reduction of coking unit size
3. Debottlenecking, if existing, or reduction of residue hydrocracking size
4. Debottlenecking, if existing, or reduction of gasification unit size
5. Overall carbon footprint reduced for complex.

The integrated process ~~in Figure 3~~ of this invention can also ~~can~~ help sweet, low complexity (hydro-skimming) refiners take heavier, cheaper crudes which are more readily available, and thus reposition assets to capture more value. The integrated process can be placed at the front of the refinery to provide the initially conditioning of the heavier crude.

The previous description of the disclosed embodiments is provided to enable any person skilled in the art to make or use the present invention. Various modifications to those embodiments will be readily apparent to those skilled in the art, and the generic principles defined herein may be applied to other embodiments without departing from

34. The apparatus of claim 25 operating at pressures below 50 psig.

35. The apparatus of claim 25 with pneumatic transport means to handle the dry thermally-affected asphaltenese.

36. The process of claim 1, where the vapour-solid separation performed in step d can comprise of a settling chamber, baffle chamber, inertial separator or centrifugal collectors. The centrifugal collector can comprise of a single or multi-stage cyclone.

37. The process of claim 36, where transport gas is added to the concentrated asphaltene stream to enable and enhance pneumatic conveyance to the inertial separation unit.

38. The process of claim 36, where transport gas for pneumatic conveyance can be any suitable light molecular weight gas, including but not limited to natural gas, steam, or nitrogen.

39. The process of claim 1, where the integrated process is applied to an existing coker-based bitumen upgrader or refinery by accepting as feedstock the upgrader's or refinery's virgin or processed heavy hydrocarbon streams and providing light liquid hydrocarbon, and heavy deasphalted hydrocarbon process streams to the upgrader or refinery.

40. The process of claim 1, where the integrated process is applied to an existing residue hydrocracking upgrader or refinery by accepting as feedstock the upgrader's or refinery's virgin or processed heavy hydrocarbon streams and