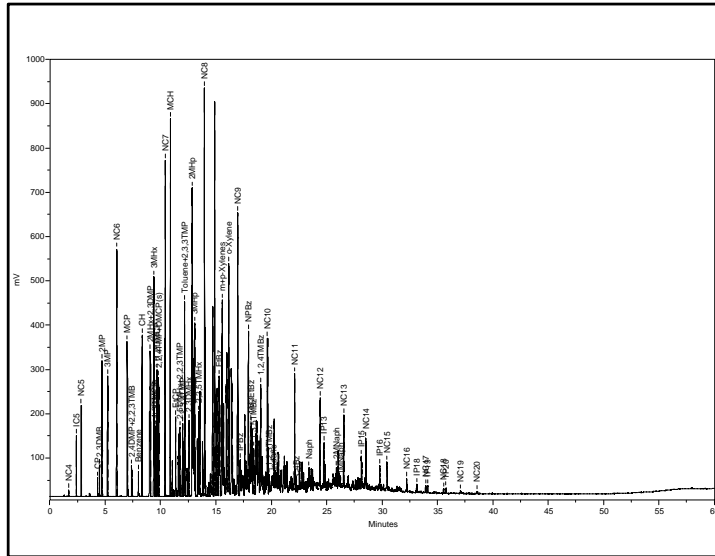
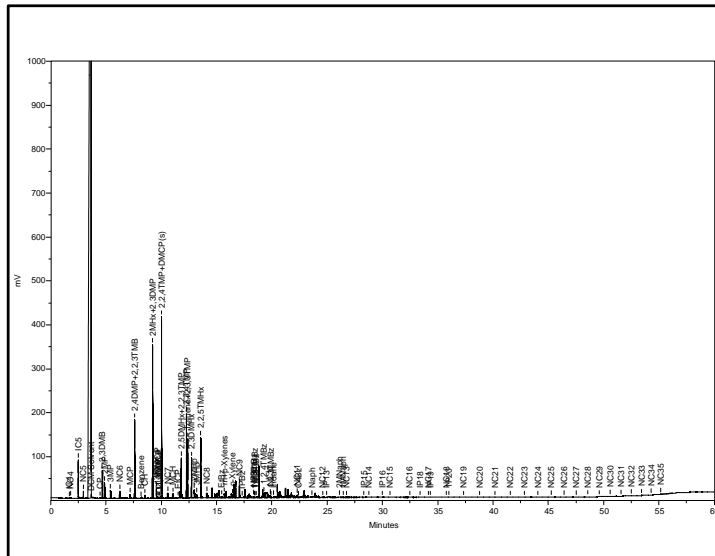


REFINERY SITE - HRGC/FID OF SELECTED FREE PRODUCT SAMPLES AND N-BUTANE CONCENTRATIONS MAP

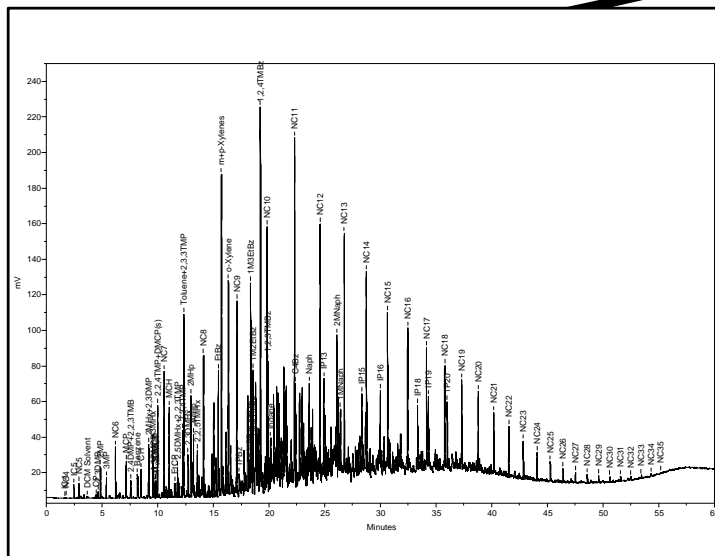
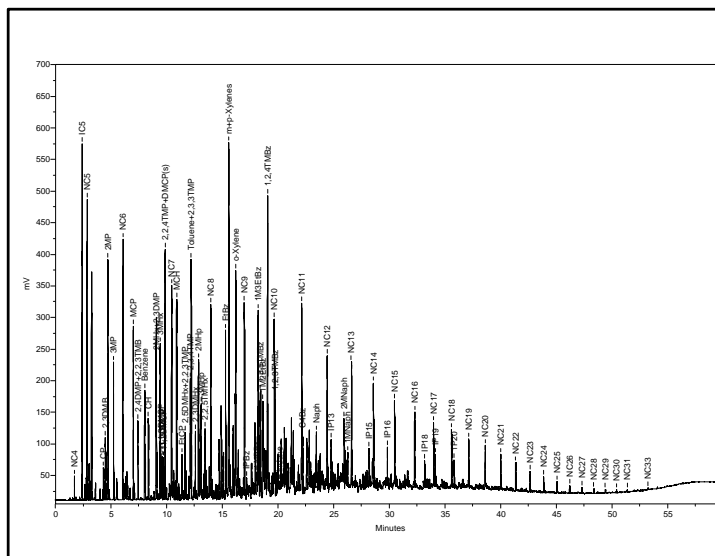
DOMINATE: Non degraded light oil that terminates at C20
 Does not look like other crude types. Could be atmospheric distillate of crude oil
Heavy ends not present



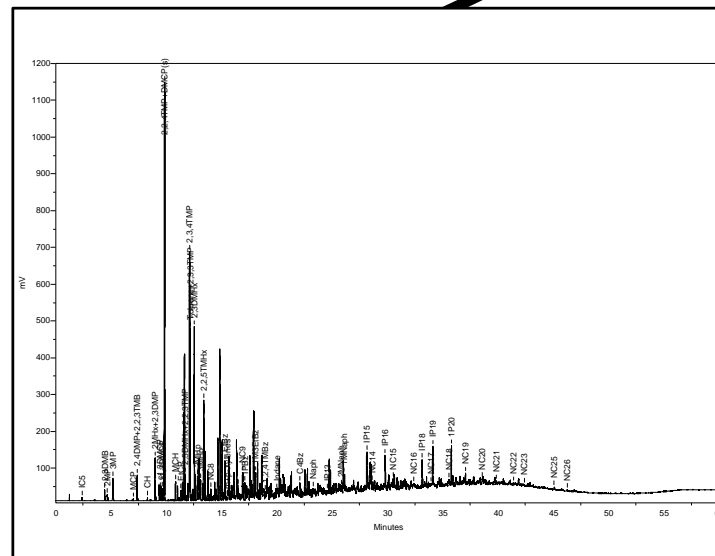
Entirely alkylate stream
Heavy ends not present



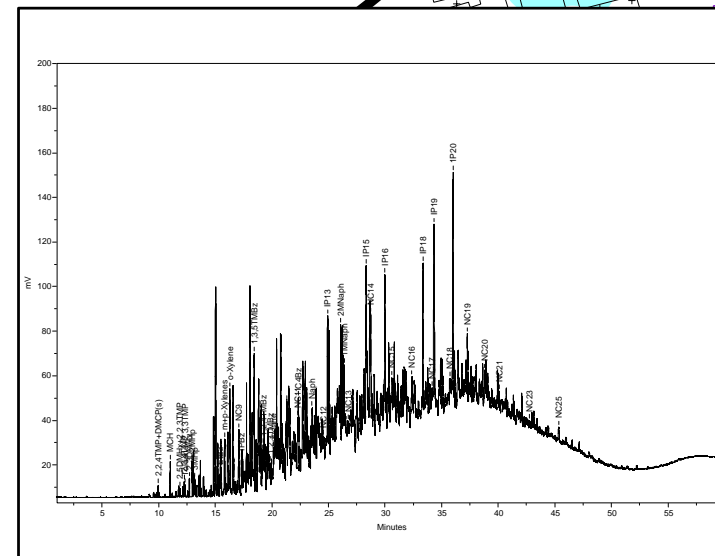
DOMINATE: Gasoline Type IV
SUBORDINATE: Minimally biodegraded crude oil
CRUDE TYPE: I



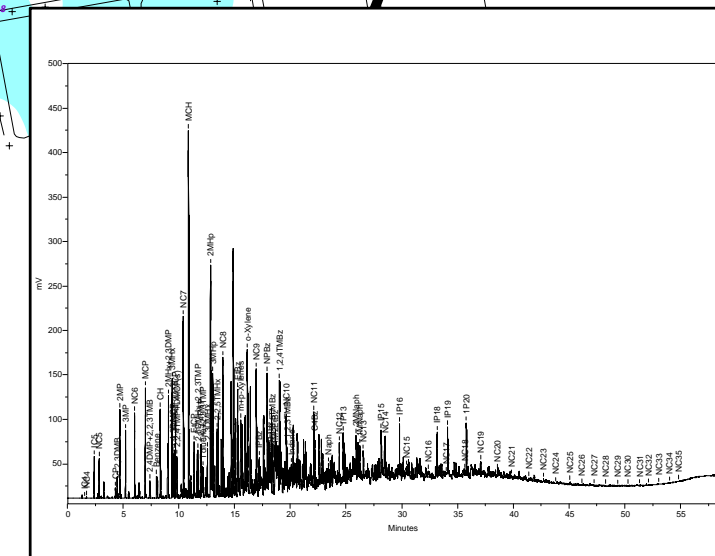
SUBORDINATE: Gasoline Type IV
DOMINATE: Minimally biodegraded crude
CRUDE TYPE: I



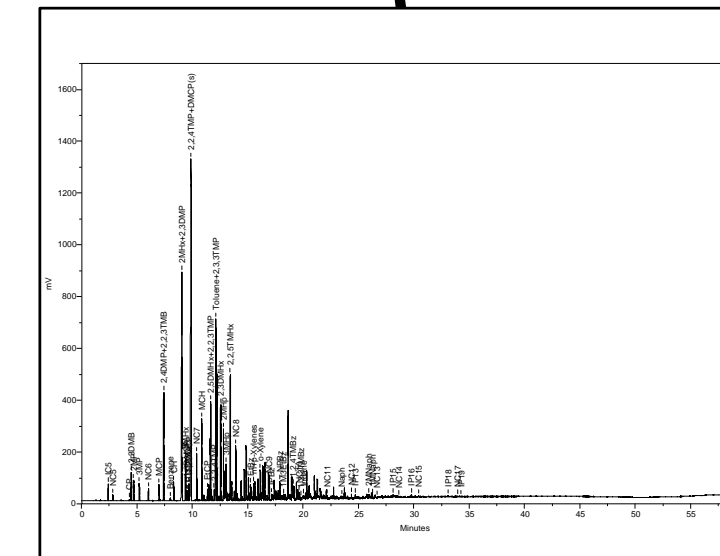
DOMINATE: Mostly alkylate stream
SUBORDINATE: Severely degraded crude oil
CRUDE TYPE: II



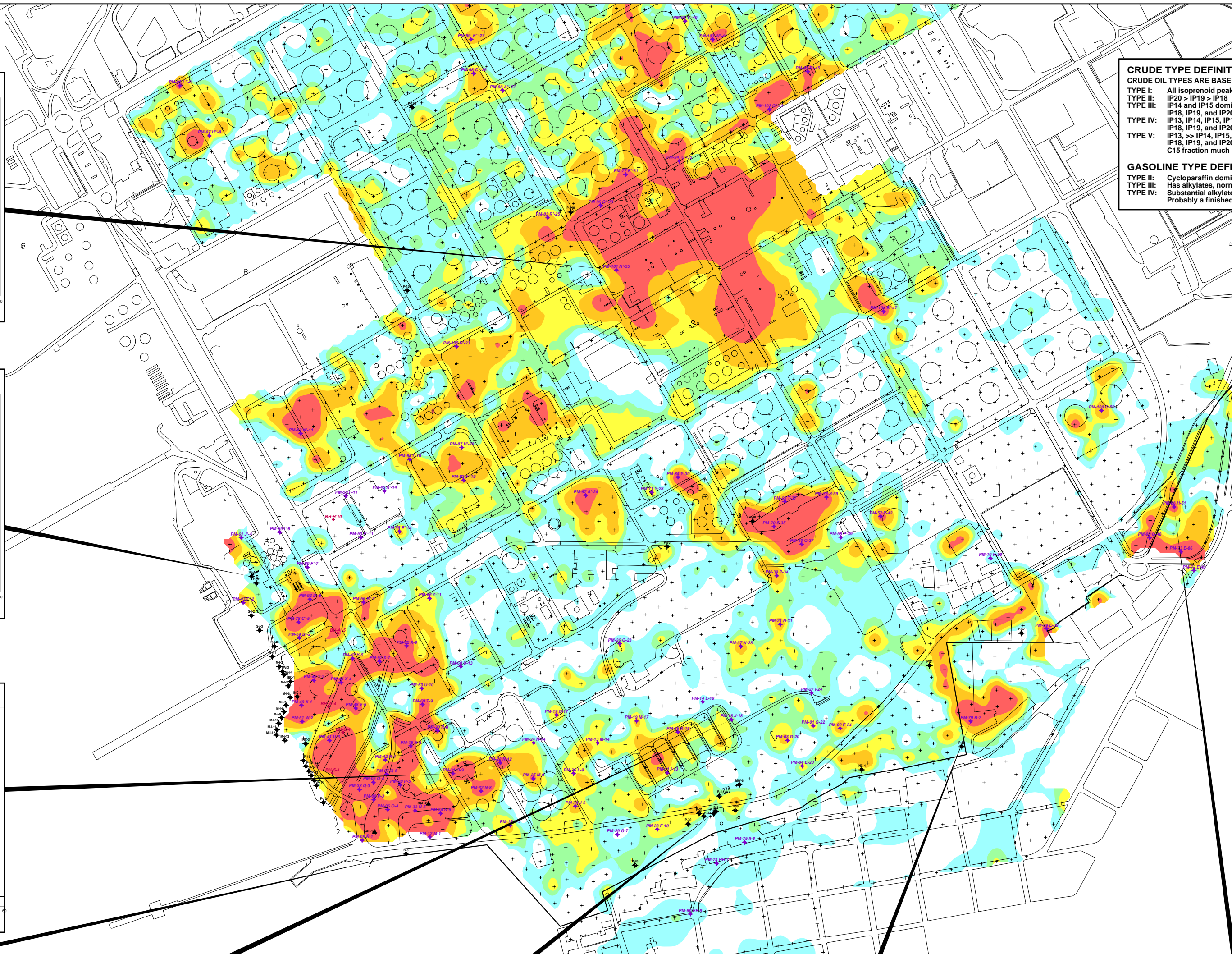
VERY SUBORDINATE: Cycloparaffin rich
DOMINATE: Entirely severely degraded crude (older)
CRUDE TYPE: II



DOMINATE: Straight run gasoline cut? (no alkylates)
SUBORDINATE: Severely biodegraded crude or diesel fuel oil
CRUDE TYPE: II



DOMINATE: Very weathered alkylate rich, cycloparaffin rich.
 Probably not finished gasoline
Heavy ends not present



CRUDE TYPE DEFINITIONS
 CRUDE OIL TYPES ARE BASED ON RELATIVE ISOPRENOID CONCENTRATIONS
TYPE I: All isoprenoid peaks approximately equal
TYPE II: IP20 > IP19 > IP18
TYPE III: IP14 and IP15 dominate isoprenoids
 IP18, IP19, and IP20 approximately equal
TYPE IV: IP13, IP14, IP15, IP16 > IP18, IP19, IP20
 IP18, IP19, and IP20 approximately equal
TYPE V: IP13 >> IP14, IP15, IP16 > IP18, IP19, IP20
 IP18, IP19, and IP20 approximately equal
 C15 fraction much lower than Type I

GASOLINE TYPE DEFINITIONS
TYPE II: Cycloparaffin dominate. Probably not finished gasoline. o-xylene > m-, p-xylenes
 Has alkylates, normal paraffins relatively low. Ethylbenzene > or = m-, p-xylenes
TYPE IV: Substantial alkylates, relatively high normal paraffins, m-, p-xylenes > o-xylene.
 Probably a finished gasoline

FREE PRODUCT SAMPLES
HIGH RESOLUTION FID GC

LIGHT ENDS
HEAVY ENDS
CRUDE TYPE

