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UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

OPINION NO. 500

BP Pipelines (Alaska) Inc.
ConocoPhillips Transportation Alaska, Inc.
ExxonMobil Pipeline Company
Koch Alaska Pipeline Company
Unocal Pipeline Company

Docket No. OR06-10-000

OPINION AND ORDER AFFIRMING INITIAL DECISION

Issued: March 20, 2008

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Before Commissioners: Joseph T. Kelliher, Chairman;
Marc Spitzer, Philip D. Moeller,
and Jon Wellinghoff.

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1. This case is before the Commission on the exceptions to an Initial Decision (ID) issued on September 7, 2007.¹ The matter involves valuation under the Trans Alaska Pipeline System (TAPS) Quality Bank, which is a system for making monetary adjustments among shippers on TAPS for the differing qualities of petroleum shipped on TAPS. The Quality Bank is included as part of each TAPS Carriers' tariff. The matter was before both the Commission and the Regulatory Commission of Alaska (RCA), and both agreed to hold joint hearings in this matter. Each designated an Administrative Law Judge (ALJ or Presiding Judge) to preside at the joint hearings and both Presiding Judges issued the ID.² The specific issue addressed in the ID is the processing cost adjustment to the West Coast Heavy Distillate cut under the current methodology for valuing the TAPS crude oil under Opinion No. 481.³ For the reasons set forth we deny the exceptions and affirm the ID.

¹ *BP Pipelines (Alaska) Inc. et al.*, 120 FERC ¶ 63,018 (2007).

² Each of the Commissions will issue a separate order on the exceptions.

³ *Trans Alaska Pipeline System*, 113 FERC ¶ 61,062 (2005) (Opinion No. 481), *order on rehearing*, 114 FERC ¶ 61,323 (Opinion No. 481-A) and 115 FERC ¶ 61,287 (2006) (Opinion No. 481-B). The United States Court of Appeals for the District of Columbia Circuit affirmed the Commission's orders in all respects in an unpublished decision. *Petro Star Inc. v. FERC* (D.C. Cir. No. 06-1166, *et al.* (March 6, 2008)).

Background

2. The ID includes a detailed account of the background and procedural history of this proceeding. We will set forth only what is necessary to understand the issue presented.

3. TAPS is a crude oil pipeline running approximately 800 miles from Pump Station No. 1 on the Alaska North Slope (ANS) to the Marine Terminal located in Valdez, Alaska. ANS producers inject crude oil streams of varying quality into TAPS at Pump station No. 1. There are also three refineries along TAPS where refineries extract the common stream and then process petroleum extracted from the ANS common stream and return unused portions of the stream to TAPS. The crude oil streams injected at Pump Station No. 1 and the return crude oil streams from the refineries become commingled, as a result. At the terminal point in Valdez, Alaska, all shippers receive the same ANS common stream, regardless of the quality of the crude oil each producer originally tendered to TAPS at Pump Station No. 1.

4. The TAPS Quality Bank was designed to compensate shippers for differences in the values of the crude oils originally tendered to TAPS, as compared to the value of the commingled ANS common stream. Shippers of crude oils that have a lower value than the common stream make payments into the Quality Bank, while shippers of crude oils with a value higher than the common stream receive payments from the Quality Bank. The shippers of the refinery return streams make Quality Bank payments based upon the differences between the quality of the petroleum delivered to them in the intake stream at the refinery, and the quality of the petroleum redelivered at the plant tailgate that is returned to TAPS. The Quality Bank is a “zero-sum” operation in that it ultimately pays to shippers of relatively higher-value streams all the money paid into the Quality Bank by shippers of relatively lower-value streams, less the expense incurred by the TAPS Carriers to administer the program.

5. The Quality Bank’s distillation valuation model calculates the value of crude oil streams by first determining the suite of end-use products refined from the ANS common stream, and then valuing these products based upon published, publicly available prices and allocating those values proportionally to each producer’s original tender at Pump Station No. 1. Under the distillation valuation methodology, refiners heat the crude oil until it starts to boil and then pipe it into a distillation tower. The different petroleum cuts condense at different temperatures in a distillation tower, with the lightest cuts condensing out at lower temperatures and the heaviest cuts condensing out at considerably higher temperatures. The temperature range at which each cut condenses defines the resultant cut. For example, the Heavy Distillate cut is all material that condenses at temperatures between 450 and 650 degrees Fahrenheit. Refiners can sell some Quality Bank cuts without further processing, while other cuts, including the Heavy Distillate cut, need further processing, and are then sold as finished petroleum products. The processing costs thus reduce the value of that particular cut. Producer

shippers therefore seek the lowest possible processing costs, while the refinery shippers seek the converse. The composite value of all such products, less any processing costs, determines the underlying crude stream's presumed market value.

6. The tariff provides that an independent neutral expert, the Quality Bank Administrator (QBA), will administer the Quality Bank. The tariff also requires the QBA to give notice of any proposed or needed modification to the pricing scheme.

7. Under a 1997 Settlement, the parties agreed to set the value for West Coast Heavy Distillate based on the Platts Oilgram Price Report (Platts) quotation for the price of West Coast High Sulfur, with 0.5 percent sulfur, or 5,000 parts per million (ppm), Waterborne Gasoil, less a processing cost adjustment of 1 cent per gallon because the ANS crude includes a higher percentage of sulfur than the proxy did. When Platts announced that effective November 1, 1999, it would no longer report the price for that proxy, the QBA notified the Commissions that this was a radical change in the published price, and a new proxy product to value the West Coast Heavy Distillate cut was required.

8. The QBA proposed that the new pricing basis for the West Coast Heavy Distillate cut should be Platts West Coast Los Angeles (LA) Pipeline Low Sulfur (LS) No. 2 with 0.05 percent sulfur, or 500 ppm, which is ten times less than the sulfur content of the prior proxy. In filed comments, all shippers agreed to the suggested new proxy, but they could not agree upon the processing cost adjustment. In February 2000, the Commission issued an order that accepted the proposed new proxy, but referred to a settlement judge the issue of the amount of the processing cost adjustment to the new proxy price.⁴

9. In November 2001, the Commission issued an order setting for hearing the issues remanded by the D.C. Circuit involving the valuation of other Quality Bank cuts. Because at that time no settlement had been achieved regarding the processing cost adjustment for the West Coast Heavy Distillate cut, that matter was set as one of the issues for the Presiding Judge to determine.⁵ In August 2004, after extensive proceedings, the Presiding Judge issued the underlying Initial Decision (UID) on all the issues, including the valuation of the West Coast Heavy Distillate cut.⁶ In October 2005, the Commission issued Opinion No. 481 that generally affirmed the UID. Opinion No. 481 adopted, without any modifications, the rulings by the Presiding Judge on the

⁴ *Trans Alaska Pipeline System*, 90 FERC ¶ 61,123 (2000).

⁵ *Trans Alaska Pipeline System*, 97 FERC ¶ 61,130 (2001).

⁶ *Trans Alaska Pipeline System*, 108 FERC ¶ 63,030 (2004) (UID).

processing cost adjustment used in valuing the West Coast Heavy Distillate cut, including the ALJs' ruling that accepted the parties' stipulation of February 1, 2000, as the effective date for the new valuation, with refunds back to that date.⁷

10. To derive the appropriate processing adjustment, the ALJ's chose to base their ruling on a methodology proposed by John B. O'Brien (O'Brien) of Baker & O'Brien, a witness in the hearing. They decided the QBA should calculate the adjustment using all of O'Brien's assumptions with exception. They directed the QBA to apply a West Coast location factor of 1.27 to the capital cost of the refining facilities and appurtenances. The O'Brien figures, which were based on 1996 dollars, were to be converted to a base year of 2000 using certain published inflation indices. The ALJ's did not specify the exact processing adjustment's amount, rather they left the calculation to the QBA. The QBA calculated the adjustment as 0.0502 cents per gallon (cpg) for year 2000, which the TAPS Carriers' included in their compliance tariff filing of July 3, 2006. The QBA, in February each year, adjusted the processing cost adjustment to reflect the increased cost of refining using the Nelson-Farrar Refinery Operating Cost Index (NFOCI) prescribed in the tariffs. Thus, the QBA in February 2006, established the processing cost adjustment at 6.4 cpg.

11. Relevant to the established proxy, in December 2000, the U.S. Environmental Protection Agency (EPA) issued new rules concerning the sulfur content of highway or on-road diesel fuel. The EPA rule stated that fuel retailers must reduce the sulfur content of on-road diesel fuel to 15 ppm at the pump by June 1, 2006. As a result, effective June 1, 2006, Platts discontinued the Low Sulfur Diesel (LSD) reference price and replaced it with a price quotation for West Coast LA Pipeline ULS (EPA) Diesel (Ultra Low Sulfur Diesel (ULSD)). To achieve that level of sulfur at the pump, refiners had to produce a ULSD fuel product that has a sulfur content of 8 ppm at the plant tailgate. Since this would require more costly processing to meet the lower sulfur specification, the QBA, on July 28, 2006, filed a notice of Radical Alteration in Basis for West Coast Heavy Distillate Price Quotation and Recommended Replacement Price (QBA Notice). The QBA recommended the use of Platts ULSD price quotation less a processing cost adjustment of 10.4549 cpg as the proposed new ULSD proxy product value. The QBA noted this was approximately 4 cpg more, in 2006 dollars, than the processing cost adjustment under the Commission's Opinion No. 481 decision in 2005.

12. Again, in comments filed on the QBA's Notice, although there was general agreement among the parties on the use of the ULSD price to value the Heavy Distillate cut, the parties disagreed with the QBA's proposed processing cost adjustment.

⁷ See Opinion No. 481 at P 58-77.

Accordingly, on September 26, 2006, the Commissions issued an order (the September 26 Order) setting the Heavy Distillate processing cost adjustment issues for a concurrent hearing before both agencies.⁸ That order, at P 10 defined the scope of the proceeding as follows:

The hearing should be governed, to the extent possible, by the results of prior Quality Bank rulings in Opinion Nos. 481 and 481-A. Thus, only issues as to cost elements that increase or change as a result of the more severe processing required to meet the sulfur specifications associated with the new Ultra Low Sulfur Diesel price used to value Heavy Distillate should be determined in this proceeding.

13. The Presiding Judges issued a Determination and Order on Scope of Hearing on May 18, 2007 (May 18 Determination) construing the September 26 Order to restrict the issues at hearing to the “cost elements that increase or change as a result of the more severe processing required to meet the sulfur specifications associated with the new Ultra Low Sulfur Diesel price used to value Heavy Distillate,” identical to the language in the September 26 Order.

The ID Rulings

14. As framed by the ID, the issue presented was to determine the cost to be imputed to processing Heavy Distillate down to ULSD (8 ppm sulfur content) which boils out of crude oil at temperatures between 450 and 650 degrees Fahrenheit. In addressing the issue, the ID noted that the Quality Bank valuation methodology is problematic in a key respect: no actual refining takes place because it is a purely economic model. Rather, the model “constructs” and “operates” typical—but entirely hypothetical—refining facilities in order to estimate the capital investment and operating costs that should be imputed to produce each of the component petroleum products from which the composite crude oil stream market values are extrapolated. Each component product’s imputed processing cost is then deducted from a published market reference price for the *refined* product in order to derive its TAPS Quality Bank value.

15. At the hearing, it was uncontested among the parties that processing the Heavy Distillate cut requires the Quality Bank model to incorporate a pressurized steam and catalyst unit commonly known as a hydrotreater.⁹ Where the parties principally

⁸ *BP Pipelines (Alaska) Inc.*, 116 FERC ¶ 61,291 (2006); Order No. P-06-10 (2) (RCA Sept. 26, 2006) [(September 26 Order)].

⁹ Hydrotreating involves the treatment of a petroleum stream with hydrogen. The concern here is for the removal of sulfur, or desulfurization. In simplest terms, the

(continued...)

disagreed was whether Opinion Nos. 481/481-A, interpreted in conjunction with the UID¹⁰ and the September 26 Order, required the model to incorporate a completely new hydrotreater hypothetically constructed in the 2005 timeframe for the specific purpose of satisfying the new 8 ppm ULSD sulfur specification or to revamp the existing one.

16. The ID first addressed the scope of this proceeding as directed by the September 26 Order that set this issue and the issue of the appropriate base year to use in determining the cost adjustment, for hearing. Although some parties sought to broaden the scope, the ID concluded that both the September 26 Order and the May 18 Determination restricted the hearing “to resolving in these proceedings only issues as to cost elements that increase or change as a result of the more severe processing required to meet the sulfur specifications associated with the new ULSD reference product/price. We lack jurisdiction to do anything more.”¹¹

17. Given this parameter, the next issue concerned the appropriate base year(s) to use for establishing that processing cost adjustment. Petro Star and Flint Hills argued for 2005, rather than the base year of 2000. EMT sought to use 2005 to cost elements they concede would increase or change as a result of the more severe processing.¹² The ID concluded that the parties should use 2000 as the base year.

18. The ID then addressed the various component operating costs to arrive at the processing cost adjustment to apply to the new proxy. In those rulings, the ID, relying

process involves mixing a petroleum stream with a hydrogen-rich gas under pressure in the presence of a catalyst. The hydrogen reacts with the sulfur to create hydrogen sulfide. The gaseous product, including the hydrogen sulfide, separates from the liquid petroleum stream and flows to a separate section of the refinery for removal of the sulfurous gas. The efficiency of the process relates to a number of factors, including the type and quality of catalyst, the pressure, and the richness of the hydrogen stream as well as many technical elements of the design of the unit. *See* QBA memo attached to July 28, 2006 Notice at 7.

¹⁰ Since Opinion No. 481 adopted significant portions of the UID by reference and without substantive discussion, the ID analyzed and relied upon the UID in many respects.

¹¹ ID at P 57.

¹² EMT did not file a Brief on Exceptions in this proceeding, only a Brief. Opposing Exceptions.

upon the determination as to the scope of the hearing, calculated the cost based on the assumption of a revamp of an existing hydrotreating unit rather than on the construction of a completely new unit.

19. BP Exploration Alaska, Inc. and BP Oil Supply (BP), ConocoPhillips Alaska, Inc. (CPAI), Chevron USA, Inc. and Union Oil Company of California Chevron (Chevron), the State of Alaska (Alaska), Flint Hills Resources (Flint Hills), Alaska, LLC, and Petro Star, Inc. filed both Briefs On Exceptions, and Briefs Opposing Exceptions. ExxonMobil Corporation and Tesoro Alaska Company (EMT) jointly only filed a Brief Opposing Exceptions.

Issue No. 1: Implementation of the Commission's September 26 Order

I. Scope of the Hearing and Base Year

A. The ALJs' Findings

20. The instant proceeding arose when Platts discontinued reporting the price for the existing proxy and a new proxy was required. The new proxy had a lower sulfur content than the discontinued proxy so the processing costs to the ANS crude would be higher to reach this lower sulfur level of the proxy. The hearing became necessary when the parties disagreed as to the amount of the increase. In the September 26 Order setting the hearing the Commissions specified that the issues to be addressed would be "only issues as to cost elements that increase or change as a result of the more severe processing required" The ALJs reiterated this limitation in the May 18 Determination.

21. The ID held that the meaning of the September 26 Order was clear and was intended to restrict the hearing as specified therein since "the prefatory word 'only' cannot reasonably be construed as anything other than an intentional limitation." Therefore, the ALJs concluded that in the September 26 Order, the Commissions made it clear that they "intended the instant proceedings to determine only the *incremental* Heavy Distillate processing costs attributable to the enhanced 8 ppm ULSD specification."¹³ Moreover, the ID held that the September 26 Order required the use of 2000 as the base year in the instant proceedings to the extent possible – *i.e.* to the extent it is reasonably adaptable to the new 8 ppm ULSD reference product.

22. Further, the ID held that there was no merit in the contention of Petro Star and Flint Hills that the supposed limitation was really not so limited because of the qualifying term "to the extent possible." The ID held that "the qualifier was intended to preserve as

¹³ ID at P 62.

many of the prior rulings made in the UID and Opinion Nos. 481/481-A as reasonably possible,” because the Commissions wanted to prevent “reopening of the Opinion No. 481 proceeding here – particularly with respect to the Resid cut – potentially undermining principles the parties and Commissions had just expended vast time and resources to establish.”¹⁴

23. The ID held that the base year should be 2000. The ID stated that the UID had adopted 2000 as the appropriate base year for both the Resid and Heavy Distillate cuts, which became the ruling in Opinion No. 481 since no party filed exceptions to the UID base year rulings.¹⁵ This would achieve the goal of Quality Bank valuation of assigning accurate relative value to the petroleum by accurately valuing the component cuts, as required by the court in *OXY USA, Inc. v. FERC*, 64 F.3d 679, 693 (D.C. Cir. 1995) (*OXY*).

24. The ID also rejected the claim that Commission policy and precedent does not require base year consistency among Quality Bank processing adjustments, to the extent such consistency can be achieved, since Opinion No. 481 clearly sought base year consistency between the Resid and Heavy Distillate cuts. Further, the ID found that a 2000 base year does not freeze costs at 1996 levels which fail to reflect what refiners actually must spend to produce ULSD. The ID stated that both the UID and the record in this proceeding are conclusive that any 1996 Heavy Distillate processing cost bases used to establish 2000 base year costs were indexed to 2000 using a Nelson-Farrar Index which the parties stipulated to use in the Quality Bank proceeding.¹⁶ Specifically, the NFOCI tracks a basket of refining costs and as such, was never intended to reflect the “market reality” of any one individual refining cost, but rather the reality of the total set of costs taken as a whole.¹⁷ This index is used because the Quality Bank provides for the

¹⁴ *Id.* P 52.

¹⁵ *Citing* UID at P 1258, 1450; Opinion No. 481.

¹⁶ *Citing* UID at P 1257-58, 1405-06; Tr. 152-53, 156-57, 359-62 (QBA Mr. Mitchell); Tr. 1415-18 (Mr. Miller); Ex. TC-4 at 14-16; Ex. TC-15 at 7-8.

¹⁷ ID at P 40 n.20. The ID describes the NFOCI as follows: The NFOCI is published monthly in the *Oil & Gas Journal*. It is a true index [ed. roughly analogous to the consumer price index] which tracks, compares and reflects overall refinery operating costs rather than those costs’ individual components. It is regularly corrected for the productivity of labor, changes in the amounts of fuel used, productivity in the design and construction of refineries and the amounts of chemicals and catalysts employed. *See* Gerald L. Farrar, *How Nelson Cost Indexes are Compiled*, *Oil & Gas J.*, December 30, 1985 at 145.

annual escalation of costs to reflect the cost inflation factor. Base year 2000 costs would be indexed forward to the present/future using the NFOCI.

25. The ID also addressed the argument that the instant proceedings could not be governed by prior Heavy Distillate rulings in the UID and Opinion Nos. 481/481-A because those addressed a completely different reference product/price for the Heavy Distillate cut, the 500 ppm LSD proxy. The ID rejected this argument because the new 8 ppm ULSD proxy bore an identifiable relationship to the old 500 ppm LSD proxy. Each was/is used for the same purpose—highway diesel fuel at the refinery tailgate. The ID stated that the only difference between the two proxies was the intervening imposition of the stricter 8 ppm sulfur content specification for highway diesel fuel. Thus, the ID concluded that the 8 ppm ULSD reference product is nothing more than an incremental enhancement of the 500 ppm LSD reference product, and the prior rulings would apply in the instant proceedings insofar as those rulings are reasonably adaptable to the new 8 ppm ULSD reference product/price.

B. Exceptions

26. Petro Star and Flint Hills filed exceptions to the ID ruling on this issue. Flint Hills and Petro Star represent a majority of the refining capacity in the State of Alaska. Heavy Distillate is one of the principal crude oil cuts that each refiner retains to manufacture petroleum products. Since Petro Star and Flint Hills retain Heavy Distillate in the refinery process, they seek, in this proceeding, a result with the highest processing cost adjustment to reduce the value of the Heavy Distillate cut.

27. The issue of the base year relates to the large increase in the commodity price of natural gas from 1996 to 2000. Natural gas is the basis for the cost of the hydrogen used in the hydrotreating process. Basically the question is whether to use a 1996 basis, converted by use of the NFOCI to a base year of 2000 as the Commission specified in Opinion No. 481, or to use a more current year, such as 2005, which would have the higher natural gas price. While the indexes represent overall inflation in refinery costs, its use may not increase the hydrogen cost to a level commensurate with current natural gas prices in 2005.

28. Flint Hills asserts that the ID prejudged the use of year 2000 as the base year by narrowly interpreting the September 26 Order as requiring this outcome. Flint Hills contends that neither Opinion No. 481, nor the UID, address an ULSD hydrotreater with respect to the West Coast Heavy Distillate cut, nor did those opinions, or the September 26 Order specify that 2000 had to be the base year with respect to a processing cost adjustment which was to be effective June 1, 2006. However, Flint Hills goes on, if the ID correctly interpreted the September 26 Order as requiring that 2000 must be used as the base year in this proceeding, then the Commission must correct its own error in prejudging the merits of this issue.

29. To support the claim of prejudgment in the hearing, Flint Hills refers to the ID's repeated reliance on the September 26 Order as the basis for use of the year 2000 for the base year.¹⁸ Flint Hills argues that the actions of the Commission and the ID indicate that on some level the result of this contested issue was dictated in advance of the hearing. Thus, the ruling that the base year should be 2000 cannot be adopted.

30. Turning to the merit of using 2000 as the base year, Flint Hills asserts that since processing cost adjustment for other cuts, specifically Gulf Coast Heavy Distillate and Light Distillate, also do not use the year 2000, but rather are 1996-based, the ID's consistency argument is without merit. Flint Hills contends that the base year and the costs are driven by the time at which the processing cost adjustment has to be determined. It asserts that there is no dispute that 2005 is the last full year in which costs were incurred by refiners due to the more severe processing required to meet the 8 ppm sulfur pipeline specification, which they had to meet in 2006. Thus, it contends, it is essential that the costs be matched up with the time frame in which the refiners incurred their costs associated with producing the new finished ULSD reference product from which the processing cost adjustment is to be deducted.

31. Next, it argues that the ID erred by failing to consider real world actual refinery costs as a check to determine if the processing cost adjustment determined in the ID is reflective of the actual costs incurred by refiners in converting from the 500 ppm LSD specification to the new 8 ppm ULSD specification. In not using 2005 costs, Flint Hills believes the ID ignores the overwhelming evidence of the dramatic increases in costs that have occurred since 2000. This converted the long standing "TAPS Quality Bank Refinery" into a "purely economic model," and divorced it from the real world costs that were incurred by refiners to meet the significantly lower sulfur specification and the significantly increased costs refiners incurred to meet that specification.

32. Moreover, Flint Hills contends, the ID erred in use of the revamp approach because it is inconsistent with the approach used with all other TAPS Quality Bank cuts requiring a processing cost adjustment. Flint Hills asserts that the Commission has always selected a new purpose-built grassroots processing unit to establish the capital costs used to determine the processing cost adjustment of other cuts.

33. Flint Hills maintains that Opinion No. 481 did not address the base year for determining costs for the required ULSD distillate hydrotreater because it dealt only with a LSD hydrotreater and a LSD reference price while the instant proceeding involves the ULSD proxy. Since the construction of a new or revamped hydrotreater would not take place in 1996 nor 2000, but in 2005, the appropriate base year to use is 2005. Flint Hills argues that the actual 2005 costs of the items used to calculate the processing cost

¹⁸ *Citing* September 26 Order at P 57-65; May 18 Determination.

adjustment are much higher than the 2000 base year for those costs, which in fact reflect 1996 costs adjusted to 2000 by the Nelson-Farrar Index. Obviously, Flint Hills argues, the base year should match up with the year in which the Quality Bank refinery must install the processing unit necessary to meet the specifications of the new published finished product which is to become the reference price.

34. Petro Star echoes Flint Hills' argument, asserting that because of changes in energy prices that directly affect the cost of processing Heavy Distillate, the 1996 prices are outdated and inaccurate, even if escalated with Nelson-Farrar Indices, which reflects overall refinery operating costs, not individual cost components. As a result, the use of 1996-based cost data results in the arbitrary and erroneous understatement of processing costs and overvaluation of Heavy Distillate in the Quality Bank. Petro Star contends that the ID wrongly concluded that all factors needed to determine the cost of manufacturing LSD in the year 2000 were reasonably adaptable to ULSD in the year 2006 through the simple application of Nelson-Farrar Indexing, except for power and hydrogen consumption, catalyst using and cost, and the capital cost of revamping a distillate hydrotreater.

35. Consistent with its choice of a 2000 base year, Petro Star argues the ID mixes unit costs (*i.e.*, costs for such commodities as fuel and power) that are escalated from 1996 prices under the ID, with technological advances that have been accomplished only since 2000.¹⁹ Petro Star argues that this "temporal cherry-picking" results in an inaccurately low deduction and consequently, an inaccurately high Heavy Distillate valuation.

36. Petro Star contends that, contrary to the ID's conclusion that the Opinion No. 481 proceedings "clearly sought base year consistency between the Resid and Heavy Distillate cuts,"²⁰ that is not supported by what actually occurred in those proceedings. The UID demonstrates that although the decision to use 2000 as the base year for Heavy Distillate proceeded in parallel with the decision on Resid, the two decisions were independent.²¹

37. Moreover, Petro Star asserts, the ID erroneously relies heavily on escalation using the Nelson-Farrar Indices to support its selection of 2000 as a base year. In doing so,

¹⁹ ID at P 85 (1996 unit costs); *id.* P 202 (2006 catalyst costs); *id.* P 206 (2005 Inside the Battery Limits (ISBL) capital costs).

²⁰ *Id.* P 65.

²¹ UID at P 1118-1123.

Petro Star contends the ID not only grossly misconstrues the decisions in prior Quality Bank proceedings, but also unduly elevates Nelson-Farrar escalation as a Quality Bank goal rather than the practical tool that it actually is.

38. Thus, far from being “only incidentally material,” as the ID asserts at P 66, the costs that real world refiners incur to make ULSD, are precisely what this proceeding is required to determine under *OXY*.

C. Commission Determination

39. The May 18 Determination permitted any party to show, either factually or legally, that the base year issue was within the scope of the September 26 Order by refraining from ruling regarding any alleged deviations from prior rulings in Opinion No. 481. We find that there was no prejudgment of the base year issue. The determination after specifying the issue stated, at P 10:

We make no ruling concerning any Flint Hills deviation(s) from prior rulings in Opinion Nos. 481 and 481-A at this time. Such matters are better left to more thorough exploration at hearing.

40. In the ID, the ALJs reviewed the language of the September 26 Order in the context of the evidence presented at the hearing and the arguments made on brief, and again concluded, at P 57:

As we previously ruled in the May 18 Determination, Paragraph 10 unequivocally restricts us to resolving in these proceedings only issues as to cost elements that increase or change as a result of the more severe processing required to meet the sulfur specifications associated with the new ULSD reference product/price. We lack jurisdiction to do anything more. No evidence presented at hearing or argument made on brief supports a different conclusion.

41. The September 26 Order does not prejudice the merits of the case by requiring that 2000 must be used as the base year for all costs, since it included the qualifier “to the extent possible,” which left the door open to any party to establish that, because of the more severe processing required to meet the ULSD specification, some other base year is mandated. However, that was not shown at the hearing.

42. Whatever was stated in P 57, all parties, including Flint Hills and Petro Star were allowed to put on evidence in support of the contention that the base year should use 2005 costs, and the ALJs based their rulings on the record as a whole, having fully reviewed and considered the evidence and arguments.

43. What Flint Hills characterizes as prejudgment is no more than applying the law established in Opinion No. 481, consistent with the settled legal principles and settled Commission precedent that prohibits relitigation of decided issues absent a showing of changed circumstances.²²

44. Flint Hills also argues in the alternative that, if the ALJs did not prejudge the issues but instead accurately implemented the September 26 Order, then the Commission itself was guilty of prejudgment in issuing that order. While the September 26 Order was issued prior to the hearing, it was not an improper prejudgment. By limiting the scope of the hearing to those costs that changed as a result of the more severe processing, the Commission declined to permit the relitigation of the issues that Flint Hills now asserts have been prejudged – *i.e.* whether the unit costs and base year approved in Opinion No. 481 should continue to be used.

45. It is undisputed, and indeed indisputable, that unit costs *do not change* as a result of more severe processing. For example, the cost per thousand cubic feet of natural gas or per kilowatt-hour of electricity will be the same whether it is used in processing Heavy Distillate to the LSD specification or to the ULSD specification. The amount of natural gas or electricity consumed might change, but the *cost per unit consumed* will not change.

46. The sole purpose of the base year is to establish the year in which the individual elements of the processing cost adjustment, such as fuel, power, catalyst and capital costs, are totaled into a single processing adjustment. From the base year forward, the single processing cost adjustment is escalated in accordance with changes in the NFOCI.²³

47. We also find without merit Flint Hills' contention that its arguments were "ignored" or not even discussed. The ID described in great detail Flint Hills' contention, noting that Flint Hills presented "more subtle arguments [that] cannot be so easily dismissed."²⁴ It then explained in P 61 why the argument had no merit. The ID found that the Quality Bank hydrotreater model only needed to be modified, not replaced, and

²² See *e.g.*, *Alamito Co.*, 41 FERC ¶ 61,312, at 61,829 (1987); *Alamito Co.*, 43 FERC ¶ 61,274, at 61,753 (1988); *CNG Transmission Corp.*, 51 FERC ¶ 63,003, at 65,007 (1990).

²³ Ex. TC-1 at 11; Ex. TC-3 at 61 and 70.

²⁴ ID at P 60.

2005 costs could be taken into account for the cost elements that changed, and then indexed back to 2000.²⁵ For cost elements that did change, the 2000 base year would remain undisturbed.²⁶ This followed the direction in the September 26 Order.

48. The ruling in the ID adopting a 2000 base year requires the following steps: (1) all unit costs previously approved in Opinion No. 481 (fuel, power, water, steam, hydrogen, and labor) are adjusted to the year 2000 using the NFOCI, and then multiplied by the consumption rates adopted in the ID to derive a total cost for each individual cost element; (2) the catalyst cost, which was calculated by EMT on a year 2005 basis, is adjusted backwards to a year 2000 basis using the NFOCI; (3) the capital cost, which was based on a year 2001 estimate proposed by EMT, is adjusted backwards to a year 2000 basis, again using the NFOCI. Once all of these individual cost elements have been adjusted to a year 2000 basis, they are added up into a single processing cost adjustment. That single processing cost adjustment is then adjusted forward to 2007 using the NFOCI, and it will continue to be adjusted in future years using the NFOCI.

49. Flint Hills and Petro Star argue that the year 2005 costs must be used because that matches the year in which the Quality Bank refinery must make the additional investment to meet the more severe processing requirement. They do not cite to any legal precedent that imposes such a matching principle. Moreover, the ID acknowledged that relevant costs rose between 1996 and 2005. However, we find no error in the ID's reason for rejecting the contention, as stated at P 70, n.34:

To be perfectly clear, we do not mean to imply that the Heavy Distillate processing costs developed through the model should/do not accurately reflect real world costs—only that the model achieves this through the NFOCI, which subsumes a complex of processing cost inputs and which is regularly corrected for real world changes to those inputs.

50. A slightly different related argument by Flint Hills and Petro Star is that the NFOCI does not reflect the increase in costs from 1996 to 2005, pointing to certain isolated costs which may have risen substantially during that time period. Here too, we agree with the ID that the NFOCI is not intended to reflect closely the changes in the cost of any particular cost component. Rather, it reflects the total “market basket” collection of refinery operating costs measured by that index. That index is used by the industry when changes in refinery operating costs are a consideration. Relying upon the change in a specific cost is inconsistent with using an index to reflect changes since a single cost is

²⁵ *Id.* P 65-66.

²⁶ *Id.*

subject to conditions unique to it. Thus, as the ID noted in n.31, “natural gas costs spiked in 2005 as a result of hurricane activity in the Gulf of Mexico... [but] natural gas prices receded in 2006.”

51. In challenging the ruling that only cost changes associated with more severe processing should be considered, Flint Hills and Petro Star make another argument based on the increase in the cost of natural gas since 2000. The unit cost of natural gas does not change due to more severe processing but the unit price of natural gas is now much higher than the 2000 base year price of natural gas escalated by the Nelson-Farrar Index. They argue that because that index has not fully reflected increases in natural gas prices, it is inappropriate to use the previously-approved unit costs, adjusted by the NFOCI, instead of recalculating all the unit costs on a 2005 year basis.

52. This challenge also has no merit. First, the Commission has relied on the use of the NFOCI for over ten years to adjust all processing costs used by the Quality Bank. The Index does include natural gas prices, but it weighs those along with other processing costs that comprise the Index. The Index is not designed to track any single cost item precisely. Hence, the Index is influenced by the steep rise in natural gas prices, but only at a proportional level. Accordingly, using year 2000 as a base year and then adjusting the processing cost adjustment forward with the Nelson-Farrar Index does not undervalue processing costs. Clearly, the Commission can continue its longstanding use of the NFOCI to adjust *total* processing costs, given that the index applies to *total* refinery costs, and is the standard used by the industry for this very purpose.

53. Retention of the previously-approved unit costs satisfies the *OXY* standard of consistency in valuing cuts since all three of the cuts that are valued through the use of a processing cost adjustment are treated consistently. They are all subject to the same annual adjustment of their costs based on changes in the NFOCI. Indeed, it would violate the *OXY* consistency standard to revise the costs for the Heavy Distillate processing cost adjustment and not revise them for the Resid processing cost adjustment, as this would put the two cuts on an unequal basis.

54. What Flint Hills and Petro Star propose is to depart from the past ten years of Quality Bank practice of adjusting the processing cost adjustment in accordance with changes in the NFOCI, but to do so for only one out of three cuts and only on a one-time basis. To follow this argument would require the same to be done for the costs relating to valuing Resid, one of the most contentious issues in Opinion No. 481.

55. Flint Hills and Petro Star argue that the ID erred in asserting the need for consistency in valuing the Resid and Heavy Distillate cuts because the Commission has approved different base years for different cuts, and there is no policy of maintaining base year consistency between cuts.

56. This argument fails to recognize that there has been an attempt to maintain consistency in how these two cuts are valued, and the ID²⁷ cited to the ruling in the UID that Light Distillate might not be similarly valued was not relevant because the valuation of that cut was not an issue in the UID.²⁸

57. Moreover, as Chevron states in its Brief Opposing Exceptions, it is important that the Resid and Heavy Distillate cuts be treated consistently because Heavy Distillate is one of the liquid products produced by coking Resid, whereas Light Distillate is not. In fact, Heavy Distillate accounts for 21.4 percent of Resid coker product yield, and hence 21.4 percent of Resid value.²⁹ Because Light Distillate is not produced from the Resid coker, it has no effect on Resid value. Hence, maintaining consistency in the way the Resid and Heavy Distillate cuts are valued is far more important than maintaining consistency between the Resid and Light Distillate cuts.

58. Flint Hills also argues that *OXY* requires that accurate relative values be assigned to the different Quality Bank cuts and that the ID's base year ruling sacrifices accuracy "at the altar of 'consistency.'"³⁰ In short, both Flint Hills and Petro Star argue that the ID fails to use 2005 costs, and that failure to use 2005 costs undervalues the Heavy Distillate processing costs, thereby increasing the value of the Heavy Distillate cut. This will cause refineries, such as them, to pay more into the Quality Bank than they should have to pay.

59. However, the ID sought to achieve both accuracy and consistency. Thus, it used the same base year for Heavy Distillate and the Resid cut, and that accuracy could be obtained by recognizing costs incurred in 2005 or 2006 to upgrade or revamp the hydrotreater, but only for costs that change as a result of the more severe processing required, and then adjusting those costs to 2000 to maintain consistency with the valuing of the Resid cut.³¹

60. Both Flint Hills and Petro Star claim the ID "cherry-picked" costs because the ID retained the previously-approved unit costs while adopting a catalyst and reactor design of more recent vintage. This argument is wrong because it ignores the Commission directive to govern this proceeding to the extent possible by the prior rulings, and address

²⁷ See ID at P 65 n.30.

²⁸ UID at P 1258, 1450.

²⁹ Chevron's Brief Opposing Exceptions at 17.

³⁰ Flint Hills' Brief on Exceptions at 17.

³¹ ID at P 70.

only cost elements that increase or change as a result of the more severe processing. The ID adopted all the cost element decisions from the prior rulings that could reasonably be adopted. The ID found changes that allegedly cause the “mismatch” are those cost elements that change as a result of the more severe processing.

61. Petro Star’s claim that the NFOCI has failed to keep pace with inflation, and thus underestimates actual processing costs, is essentially a collateral attack on Opinion No. 481’s approval of the NFOCI to adjust refinery operating costs from year-to-year. The UID and Opinion No. 481 specifically adopted use of the NFOCI to reflect the changes in those costs,³² and the Court recently affirmed that ruling. It is not permissible to use this proceeding to correct this alleged deficiency for a single cut.

62. Based on the findings above, we will now consider the various cost elements involved in the processing cost adjustment for Heavy Distillate. These include fixed operating costs,³³ variable operating costs³⁴ and capital recovery costs. The only costs at issue here, based on the exceptions filed to the ID, are the variable operating costs associated with power consumption, catalyst cost and hydrogen consumption and the capital recovery costs, which fall into two general categories: (1) Inside the Battery Limits (ISBL) costs consist of on-site plant investments such as hydrotreater unit components, pumps, compressors, heat exchangers and pipes; and (2) Outside the Battery Limits (OSBL) costs consist of off-site plant investments such as utility systems and storage tanks and are modeled as a percentage of ISBL costs.

Issue No. 2: Operating Costs

I. Power Consumption

A. The ALJs’ Findings

63. The ID held that the consumption level for power increases due to the more severe processing requirement.³⁵ The ALJs stated that the increased cost of power results from

³² See UID at P 1256 and 1450.

³³ The fixed costs are labor, maintenance, and tax and insurance. Maintenance cost is calculated at 4 percent of ISBL capital cost; tax and insurance is calculated at 1 percent of ISBL capital cost.

³⁴ The variable costs are fuel, power, steam, water, catalyst/chemicals and hydrogen.

³⁵ See Ex. EMT-1 at 20-21; Ex. EMT-15 at 24; Ex. BPX-1 at 73; Ex. TC-4 at 17; Ex. SOA-1 at 9; Ex. CPA-1 at 15-16.

the incremental increase in electricity needed to run the pumps and compressors associated with the hydrotreater, *e.g.*, a recycle gas scrubber/amine booster pump and an increase in make-up hydrogen compressor capacity. The ALJs found that the addition of this equipment results in an estimated increase in the previously approved power consumption by 14 percent. The ALJs therefore adopted the 14 percent power consumption increase. The ALJs also concluded that since the unit cost for power approved in Opinion Nos. 481/481-A did not change as a result of the more severe processing requirement,³⁶ the incremental increase in the specific power cost per barrel is determined by multiplying the previously-approved unit cost for power by the increased power consumption rate of 2.28 kWh.

B. Exceptions

64. BP argues that the ALJs erred in adopting an incremental 14 percent increase in power consumption since the ALJs based their decision on the fact that no party disputed EMT's proposed 14 percent incremental increase in power consumption.

65. BP asserts that it did not dispute EMT's proposal due to page restraints imposed on it by the ALJ. BP states that EMT's power consumption is based, in part, on the additional hydrogen required for the desulfurization process.³⁷ However, BP contends, EMT's hydrogen consumption is based primarily on a study that utilized a feedstock comprised of two-thirds virgin feed and one-third non-virgin feed.³⁸ Since EMT did not reduce the power consumption to account for the reduced compressor capacity required for the reduced hydrogen required for a virgin feed, EMT's incremental increase in power consumption is too high and therefore, falls outside the zone of reasonableness.

66. BP argues that putting aside whether EMT's power consumption proposal has merit, the ALJs never discussed the merits of BP's incremental power consumption proposal of 4 percent, which was explained in Dr. McGovern's direct and rebuttal testimony.³⁹

67. Therefore, BP asserts that the Commission should reject the ALJs' incremental 14 percent increase in power consumption and adopt Dr. McGovern's incremental 4 percent

³⁶ ID at P 85.

³⁷ See ID at P 108 and n.50.

³⁸ Ex. EMT-6 at 7-8.

³⁹ See Ex. BPX-1 at 73-74; see also Ex. BPX-19 at 66-68.

increase in power consumption. Alternatively, the Commission should reduce the ALJs' incremental 14 percent increase in power consumption to reflect the lower power requirements required to process a virgin feed.

C. Commission Determination

68. The Commission finds that BP's assertion that the ID erred in not giving due consideration to the proposal advanced by the BP witness is unavailing. BP's decision to base its estimates on a feedstock sulfur content less than 500 ppm had a "ripple effect" on its incremental processing cost adjustment calculations, which resulted in incorrect power consumption estimates. In addition, Mr. Schneider explained that the difference between BP's estimate of a 4 percent increase in power consumption and EMT's 14 percent increase likely results from BP's lower estimate of hydrogen consumption and its omission of an amine scrubbing tower.⁴⁰

69. The Commission also finds that the 14 percent power consumption increase, adopted by the ID, was based on specific calculations that measured the need for additional power and was not challenged by any party during the hearing phase of the proceeding, and rejects BP's argument that it could not advance detailed arguments due to "page constraints." Moreover, the EMT power consumption estimates were closely linked to the physical plant design – including the pumps and compressors and like equipment for which additional power is needed – which underlay the capital costs that the ID also adopted.⁴¹

II. High Activity Catalyst

A. The ALJs' Findings

70. The ALJs resolved this issue in paragraph 202 of the ID that relied on UID paragraph 1450 to conclude it is appropriate to incorporate high activity catalyst(s) which did not exist in year 2000 into the model hydrotreater revamp. The ALJs also concluded at paragraph 202 that the per-unit cost associated with such catalyst(s) should be determined as of June 1, 2006, and indexed to the 2000 base year. In addition, the ALJs found at paragraph 206 that the hydrotreater revamp should be achieved primarily by (1) installing a second reactor unit; (2) doubling the catalyst volume; and (3) replacing the Cobalt molybdenum (CoMo) catalyst currently employed in the model with high-

⁴⁰ See Ex. EMT-15 at 24:5-16.

⁴¹ ID at P 114.

activity catalyst(s) – all in accordance with Ex. EMT-6 and Ex. EMT-7 at 2. The ALJs stated that any issues concerning catalyst volume or type are resolved in accordance with those rulings.

71. The ALJs adopted the EMT catalyst unit cost, which is based on an actual year 2005 purchase of high activity catalyst for use by a single-stage hydrotreater revamped to satisfy the ULSD specification.⁴² The ALJs rejected EMT's \$0.038/gallon total catalyst cost figure, stated in 2006 dollars brought forward from 2005 using the NFOCI, because the 2005 cost figure first should have been adjusted to a 2000 base year, then brought forward using the NFOCI in accordance with the UID/Opinion No. 481.⁴³

B. Exceptions

72. BP argues that the ALJs erred in finding that the CoMO catalyst currently employed must be replaced with an unidentified, technologically-advanced high activity catalyst (presumably a NiMo (Nickel molybdenum) catalyst) and that such catalyst did not exist in 2000.

73. BP states that the ALJs erred by dismissing BP's proposal on the grounds that they were unable to conclude on the record here that "interim advances in single-stage high pressure hydrotreater design enable the 8 ppm ULSD specification to be satisfied using the less active catalyst contemplated in [...] Opinion No. 481[.]"⁴⁴ BP claims that its proposal was the most appropriate and the only catalyst proposal that complied with the September 26 Order and the 1996/2000 base year principle.

74. BP claims that the ALJs base their adoption of a 2005 unit cost, which deviates from the Commission's order, on their flawed belief that high activity catalysts did not exist in 2000. BP argues that EMT relied upon Ex. EMT-6⁴⁵ for its CoMo catalyst proposal, which was presented in March 2001. Arguably, the underlying study and analysis had to be undertaken no later than during the same time period. Thus, even EMT's catalyst proposal is based on catalyst technology that existed in or about 2000. BP also claims that unit costs for hydrotreating catalysts remained flat between the period

⁴² Ex. EMT-1 at 21; Ex. EMT-15 at 10; Ex. EMT-26.

⁴³ ID at P 143.

⁴⁴ *Id.* P 201.

⁴⁵ Ex. EMT-6 at 9, 11.

1996-2001,⁴⁶ thereby justifying that the catalyst cost did not increase or change as a result of the more severe processing required to produce ULSD. Moreover, EMT's capital cost is based on a single-stage design that incorporates a CoMo catalyst which negates the ALJs' fear that single-stage units cannot produce ULSD utilizing a CoMo catalyst that existed in 2000.

75. BP requests that the Commission either adjust the ALJs' catalyst cost component to reflect the proper unit cost; or alternatively, reject the ALJs' catalyst cost proposal in its entirety and adopt BP's catalyst cost proposal.

C. Commission Determination

76. The ID's findings concerning catalyst cost are well-reasoned and supported by substantial evidence and are only excepted by BP.⁴⁷ BP's assertions that the unit cost for catalyst had not increased or changed since 1996, and should be based on 1996 values escalated using the NFOCI are ill-founded.

77. Although BP correctly notes that the catalyst reflected in EMT's estimate was discussed in the "2001 Mustang Study," BP neglects to mention that the Opinion No. 481 catalyst was of 1996 vintage,⁴⁸ and the Mustang Study referred to the catalyst it discussed as being of "the latest generation of high activity desulfurization catalysts."⁴⁹ Thus, within the industry, major efforts at catalyst improvement were ongoing as the 2006 implementation date for the new sulfur regulations approached.⁵⁰ Significantly, the ID specifies "high activity" catalyst, not necessarily the NiMo catalyst that BP presumes.⁵¹

78. BP's statement that its catalyst cost proposal should be adopted because it is the only one that complies with the 1996/2000 base year principle is misguided.

⁴⁶ Ex. BPX-16 at 7, Figure 7.

⁴⁷ ID at P 143.

⁴⁸ UID at P 1402, 1449 (Mr. O'Brien's costs in Opinion No. 481 proceedings were based on a 1996 base year).

⁴⁹ Ex. EMT-6 at 8.

⁵⁰ See e.g., Ex. BPX-9 at 1, Ex. BPX-10 at 3; Ex. SOA-10 at 70; compare Tr. 1334:16-22 (Dr. McGovern) with Tr. 1342:1-3 (Dr. McGovern); Tr. 569:1-5 (QBA Mr. Mitchell).

⁵¹ ID at P 141.

Dr. McGovern may have used escalated catalyst costs from the Opinion No. 481 proceeding,⁵² but he based his estimates of incremental catalyst volume on some of the very latest catalyst technology available, directly importing catalyst performance results from a 2006 paper entitled “Special Report: Study: Most-active catalyst improves ULSD economics,”⁵³ to calculate the catalyst needed to revamp the Opinion No. 481 hydrotreater.⁵⁴ Pairing these 2005-era catalyst performance data with catalyst cost data that the witness acknowledged were wrong for 2005,⁵⁵ demonstrates that the ID properly declined to rely on BP’s catalyst cost estimate.

III. Hydrogen Consumption

A. The ALJs’ Findings

79. The ALJs stated that all parties agree that there is an increase in hydrogen consumption as a result of the more severe processing required, but disagree on the magnitude of that increase. The ID adopted as a starting point for this proceeding a pre-existing high pressure hydrotreater unit that processes Heavy Distillate to a low sulfur diesel with a sulfur content of *exactly* 500 ppm.

80. The ALJs pointed out that three parties (EMT, Flint Hills, and the TAPS Carriers/QBA) estimate that hydrogen consumption increases 100 standard cubic feet (scf) per barrel, from 250 to 350 scf per barrel. Petro Star asserts that we should adopt the TAPS Carriers/QBA proposal of 350 scf per barrel. CPAI and SOA estimate incremental increase of 75 scf and 80 scf (from 250 to 325 and 330 scf per barrel), respectively. SOA and CPAI assert that the other parties’ higher estimates are flawed because they rely on studies that assume some cracked stock in the feedstock, resulting in higher estimates of hydrogen consumption. BP makes a similar argument. The ALJs agreed that the testimony in the record supports a conclusion that cracked stock is more difficult to process than virgin feed and that processing cracked stock would increase the hydrogen consumption. However, the ALJs did not believe that such conclusion requires disregarding the recommendations of either the QBA or EMT.

⁵² Tr. 1338:23 – Tr. 1339:3 (Dr. McGovern).

⁵³ Ex. BPX-13.

⁵⁴ Ex. BPX-1 at 57:10-58:6.

⁵⁵ Tr. 1339:4-10 (Dr. McGovern).

81. The ALJs concluded that the record evidence supports an incremental increase in hydrogen consumption of 100 scf as a result of the more severe processing. The ALJs also found that the unit cost for hydrogen that was approved in Opinion Nos. 481 and 481-A did not change as a result of the more severe processing requirement. Therefore, the ALJs concluded that the incremental increase for hydrogen for the more severe processing is determined by multiplying the previously-approved unit cost for hydrogen by the increased hydrogen consumption rate of 100 scf per barrel.

B. Exceptions

82. BP argues that the ALJs erred by adopting an incremental 100 scf/bbl increase in hydrogen consumption and summarily rejecting BP's hydrogen consumption proposal based on their conclusion that the desulfurization starting point for calculating the incremental processing cost adjustment components should be *exactly* 500 ppm.⁵⁶ BP argues that the ALJs failed to recognize that in addition to starting from the current sulfur-content level of 350 ppm, BP's hydrogen consumption proposal is the only proposal based on processing a virgin feed, and that non-virgin feed (*i.e.*, cracked stock) is more difficult to process than virgin feed and requires significantly more hydrogen.

83. BP also argues that processing cracked stock impacts hydrogen consumption far more than processing to lower sulfur from 500 ppm to 350 ppm. Thus, BP argues, the ALJs erred by disregarding the evidence showing that cracked stocks require more hydrogen than virgin feed, and therefore the Commission must reject the ALJs' adoption of an incremental hydrogen consumption of 100 scf/bbl and instead, adopt BP's incremental hydrogen consumption of 50 scf/bbl, based on virgin feed.

C. Commission Determination

84. The Commission finds that the ID's decision to increase hydrogen consumption by 100 scf/bbl is supported by substantial evidence. BP's claim that only its 50 scf proposal is based on virgin feedstock is rebutted by the SOA's and CPAI's estimates of 80 scf/bbl and 75 scf/bbl, respectively, also based on straight-run feedstocks.⁵⁷ In addition, the QBA's estimate of 100 scf/bbl is supported by EMT's and Flint Hills' estimates of 100

⁵⁶ ID at P 153.

⁵⁷ *Id.* P 154; *see also* Ex. CPA-1 at 5:20-24, 19; Ex. TC-7; Ex. SOA-1 at 4:13-15.

scf/bbl.⁵⁸ Therefore, BP's exception, as well as its estimate, overstates the importance of "virgin" feed and ignores record evidence refuting its position that the ID's estimate of hydrogen consumption was based solely on cracked stock data.⁵⁹

85. BP attempts to justify its 350 ppm starting point choice by asserting that only an additional 3 scf of hydrogen is required to reduce the Heavy Distillate sulfur content from 500 ppm to 350 ppm. It is difficult to reconcile that position with BP's earlier claim that the 500 ppm versus 350 ppm difference was "critically important."⁶⁰ In addition, BP's failure to account for required purge gas, which accounts for an additional 44 scf of hydrogen, in its hydrogen consumption analysis, undercuts the credibility of its 50 scf estimate.⁶¹ Adding the 44 scf of hydrogen for purge gas to BP's estimate of 3 scf, constitutes the difference between BP's estimate of 50 scf/bbl and the 100 scf/bbl hydrogen consumption level approved by the ID.

86. Finally, the credibility of BP's position is further undermined by its own witness's primary recommendation to conduct a pilot test, and that the 50 scf estimate was advanced as an alternative to the pilot plant proposal. The ID "summarily rejected" the pilot plant proposal for several reasons, including BP's witness's admission that the pilot study might not produce an accurate estimate.⁶²

Issue No. 3: ISBL Capital Costs

The ALJs' Findings

87. Consistent with prior rulings, the ALJs adopted as starting points in the instant proceedings: (1) a pre-existing high pressure hydrotreater unit with a Heavy Distillate processing capacity of 50,000 barrels/day; and (2) ISBL capital costs associated with such a unit processing Heavy Distillate down to LSD with a sulfur content of exactly 500 ppm.⁶³ Adopting this starting point also dictated that the model be modified in

⁵⁸ See Ex. EMT-1 at 13:5-11, 20; Ex. FHR-10 at 50.

⁵⁹ ID at P 155.

⁶⁰ BP's Brief. On Exceptions at P 10.

⁶¹ Ex. EMT-15 at 22:22-23:14.

⁶² See ID at P 152.

⁶³ The ALJs stated that the UID does cite the fact that a study published in 2000 stated many refiners constructing hydrotreaters to meet the 500 ppm LSD specification
(continued...)

accordance with the revamp approach and therefore, the ID rejected any proposal predicated on a replacement approach. Therefore, the ALJs concluded that the ISBL cost component is determined by adding the indicated revamp capital costs to the \$62.865 million 1996 West Coast basis capital costs imputed to the Heavy Distillate hydrotreater in the Opinion No. 481 proceeding.⁶⁴

88. The ALJs then addressed the specific base hydrotreater design parameters for revamp purposes, and noted that hydrotreater design is inextricably linked to the catalyst(s) employed. The ALJs held that based on UID Paragraph 1450, it is appropriate to incorporate high activity catalyst(s) which did not exist in year 2000 into the model hydrotreater revamp.⁶⁵ The per-unit cost associated with such catalyst(s) should be determined as of June 1, 2006 and indexed to the 2000 base year using the NFOCI.

89. The ALJs concluded that EMT's proposal should be adopted and the Heavy Distillate model hydrotreater revamp should be achieved by (1) installing a second reactor unit; (2) doubling the catalyst volume; (3) replacing the CoMo catalyst currently employed in the model with high-activity catalyst(s); (4) adding make-up hydrogen compressor capacity; and (5) installing a recycle hydrogen gas amine scrubber. In

had constructed units of at least 800 psi instead of lower pressure units because the incremental costs were "small" and "protected their investment" in the event the specification was lowered in the future. *See* UID at P 1422. The UID neither quantifies the incremental costs/processing capabilities nor explains why or to what degree such investment protected the investments. Nor does the UID state what weight it accorded the study among the various factors it cites in support of adopting a high pressure hydrotreater. Our reading of the UID suggests it endorsed a high pressure 50,000 barrel/day unit primarily because it typified hydrotreater units commonly employed by refiners to process Heavy Distillate to a 500 ppm sulfur specification. *Id.* P 1420-21, 1426 and n.570.

⁶⁴ The total capital costs imputed to the Heavy Distillate hydrotreater in the Opinion No. 481 proceeding was \$49.5 million on a Gulf Coast basis. Applying the Commission-approved location factor of 1.27 (*see* UID at P 1437) produces a base hydrotreater capital cost component totaling \$62.865 million on a 1996 West Coast basis.

⁶⁵ With regard to the base year to be used in connection with Heavy Distillate, the UID stated that the base year should be 2000 and the existence or non-existence of certain equipment should not be considered in making any calculations. *See* UID at P 1450.

addition, the ALJs concluded that EMT's revamp cost estimate of \$18.49 million on an NFCCI-adjusted 2005 West Coast basis must be appropriately adjusted to a 2000 base year using the NFOCI in accordance with the UID/Opinion No. 481.

I. ID's Rejection of Chevron's and BP's Proposals

A. Real World Evidence

1. Exceptions

90. Chevron and BP argue that the ALJs erred by finding that the Chevron and BP proposals⁶⁶ are infeasible and speculative because of their refineries' low output levels of 30,000 and 35,000 barrels/day. Chevron and BP respond that their refineries are demonstrably capable of processing 50,000 barrels/day of Heavy Distillate to the 8 ppm ULSD specification. They therefore urge the Commission to accept their proposal in place of the proposal accepted by the ALJs.

91. Chevron states that the ALJs disregarded Chevron's real world proposal, based on actual, real world revamps of Chevron's Richmond and El Segundo Refineries, on the grounds that the Chevron refineries processed 30,000 and 35,000 barrels/day, respectively, rather than the 50,000 barrels/day called for by the Quality Bank model, and the adjustment to the capital cost component of Chevron's proposal, based on the El Segundo Refinery, from \$6.1 million to \$8.7 million using a simple mathematical proportional adjustment based on 50,000 barrels/day output.

92. Chevron argues that the ALJs disregarded record testimony to the contrary, since its witness, Mr. Engibous,⁶⁷ testified that the El Segundo Refinery was achieving the 8 ppm specification after investing a mere \$6.1 million in revamp improvements.⁶⁸ Chevron argues that it increased its capital investment from \$6.1 million to \$8.7 million, which *increased* the processing costs included in Chevron's proposal, making it more conservative than needed. Further, that witness testified that in actual operations following the revamp, Chevron was able to increase throughput of ULSD to 50,000

⁶⁶ Both the Chevron and BP proposals involve adapting the current base unit's single-stage configuration to incorporate recent technological advances.

⁶⁷ Ex. CVX-1 at 1:5-9.

⁶⁸ *Id.* at 8-13; Ex. CVX-2.

barrels/day.⁶⁹ Accordingly, Chevron argues, there is no basis in the record for concluding that the Chevron revamp is not “demonstrably capable” of achieving the 8 ppm specification and therefore the ALJs erred.

93. Chevron requests that the Commission average the three proposals of Chevron, BP and EMT in setting the adjustment factor for use with the ULSD price, using 2006 as the cost year. Chevron asserts that developing the increment cost for a revamp in this fashion is consistent with the ID’s prescription to take current costs into account.⁷⁰ In addition, consistent with the ID, this average number can be deflated to year 2000 and added to 5.02 cents/gallon, the base year adjustment factor for use with the LSD price,⁷¹ to derive the new processing cost adjustment for use with ULSD.

94. BP argues that its ISBL capital cost proposal is not speculative and is based on Dr. McGovern’s 30+ years of industry experience, his analysis of an actual revamp project, and his utilization of an industry-accepted computer program to calculate major equipment factor estimates for both a hydrotreater capable of producing low sulfur diesel and one capable of producing ULSD.⁷² BP also argues that BP’s and Chevron’s ISBL capital cost proposals are the only proposals not speculative since they were the only ones based on actual revamps, not studies of what was anticipated to be necessary.

95. BP also states that its ISBL capital cost proposal to add a second reactor is supported by the evidence and is capable of processing 50,000 barrels per day of Heavy Distillate to an 8 ppm specification. BP argues that the ALJs rejected Dr. McGovern’s proposal because they claim Dr. McGovern’s own evidence does not confirm an additional reactor by itself is sufficient, *citing* Ex. BPX-12 and Ex. BPX-23.⁷³ BP asserts that Dr. McGovern allowed for the possible need of some additional pieces of equipment and therefore proposed an ISBL capital cost estimate that was *more than twice* the cost of the additional installed reactor for the actual project presented in Ex. BPX-12.⁷⁴

⁶⁹ Tr. 1632:9-11 (Mr. Engibous).

⁷⁰ ID at P 70.

⁷¹ *Id.* P 21.

⁷² Ex. BPX-1 at 4-9, 61-69.

⁷³ ID at P 204.

⁷⁴ BP states that the additional reactor in Ex. BPX-12’s actual revamp was \$4.3 million (1996 adjusted). Ex. BPX-1 at 67. Dr. McGovern proposed an ISBL capital cost

2. Commission Determination

96. The Commission agrees with the ID's rejection of both the Chevron and BP proposals as being speculative and not adequately supported by record evidence.⁷⁵

97. First, the Commission finds that the ID's assessment of Chevron's evidence was appropriate, given that (1) the Chevron refineries already were hydrotreating to sulfur specifications of 300 ppm (El Segundo) and 30-50 ppm sulfur (Richmond); (2) El Segundo employed a hydrotreater operating at 1050 psi, rather than the 800 psi assumed in this proceeding; and (3) El Segundo processed light as well as Heavy Distillate through its diesel hydrotreater.⁷⁶ In addition, the ID correctly found that there are significant differences between "real world" refinery projects and the Quality Bank model that limit the usefulness of "real world" project cost data in determining Quality Bank costs, as evidenced in Chevron's proposal.⁷⁷ Specifically, the ID stated "the Quality Bank "refinery" does not exist in the real world. It is a purely economic model designed to assist in establishing values for ANS crude cuts for which actual market prices are unavailable. The model extrapolates proxy values for those cuts by subtracting *typical* processing costs derived *through the model* from published reference prices for refined products in order to estimate what each cut's value theoretically *should* be in its unrefined state."⁷⁸ In addition, the ID also stated that because the Quality Bank model hydrotreater is hypothetical in nature, and therefore, not constrained by real world considerations, it is capable of simplifying assumptions unachievable in any real world refinery.⁷⁹

98. Second, the Commission finds that the ID's assessment of BP's evidence was appropriate, given that (1) BP's proposal was the "average" of two widely varying estimates derived by its witness – a \$5 million estimate based on cost data for the revamp of an LSD hydrotreater in Germany, and a \$16.6 million estimate based on a computer-driven engineering program (ESTPRO) used to calculate the difference between the cost

estimate, in 1996 dollars, of \$10 million (\$12.7 million after applying the West Coast factor). Ex. BPX-1 at 83.

⁷⁵ ID at P 204 and n.80.

⁷⁶ Tr. 1620:6-20 (Mr. Engibous); Tr. 1632:9-16 (Mr. Engibous); Tr. 1639:25 – Tr. 1640:11 (Mr. Engibous).

⁷⁷ ID at P 204.

⁷⁸ *Id.* P 66.

⁷⁹ *See id.* P 70; *see also id.* P 196.

of constructing an LSD and ULSD hydrotreater;⁸⁰ (2) both estimates were problematic and unclear concerning costs;⁸¹ (3) BP's witness testified that the \$16.6 million estimate was erroneous, and should be \$8.6 million,⁸² resulting in an average (with the \$5 million German refinery estimate) of \$6.8 million, but continued to adhere to his previously submitted \$10 million estimate.⁸³

99. Thus, the Commission finds that there is substantial record support for the ID's conclusion that both Chevron's and BP's proposals, were "merely speculative" and not shown capable of meeting the required processing.⁸⁴

B. Desulfurization Starting Point

1. Exceptions

100. Chevron and BP argue that the record evidence in this proceeding does not support the ALJs' finding that the existing Quality Bank's hydrotreater processes Heavy Distillate to produce a diesel fuel with a sulfur content of *exactly* 500 ppm⁸⁵ and, in fact, they argue the evidence clearly suggests otherwise.

101. BP states that the ALJs' reliance on one paragraph and its accompanying footnote⁸⁶ in the UID and Opinion No. 481 does not provide overwhelming evidence, much less confirm a desulfurization level of *exactly* 500 ppm. BP states that the product in that paragraph was LSD, and that product's EPA regulatory sulfur specification was 0.05 percent (*i.e.*, 500 ppm), but the ALJs failed to mention that this 0.05 percent EPA regulatory specification is a pump specification, and that in the real world a refinery produced product at 350 ppm can achieve that pump specification.

⁸⁰ Ex. BPX-1 at 62:9-69:11 and 73 n.43.

⁸¹ *See* Ex. EMT-25 at 28:15-22 (Dr. Toof); Ex. EMT-15 at 21:5-18 (Mr. Schneider); Ex. EMT- 16 at 1-2.

⁸² Tr. 1266:20 – Tr. 1273:16 (Dr. McGovern).

⁸³ Tr. 1273:17 – Tr. 1275:9 (Dr. McGovern).

⁸⁴ ID at P 204.

⁸⁵ *Id.* P 195-197.

⁸⁶ *See* UID at P 1415 n.567 (citations omitted).

102. BP asserts that the ALJs also rely on the QBA's Notice and the September 26 Order, stating that both documents "specifically and exclusively" cite 500 ppm as the "obsolete Heavy Distillate reference product/price."⁸⁷ BP argues that the 500 ppm referred to in the QBA's Notice and the September 26 Order is Platt's reference to the standard applicable to the product at the retail pump,⁸⁸ and has nothing to do with the ppm level that refiners were producing at the refinery to achieve that pump specification. BP argues that the ALJs' attempt to equate these 500 ppm citations as the LSD equivalent of the ULSD's 8 ppm is erroneous.

103. BP asserts that the EPA recognized that refiners were producing 350 ppm diesel to meet the EPA's LSD product specifications and because the existing Quality Bank hydrotreater was designed to replicate what refiners were doing to meet those specifications, the Commission should recognize that the existing Quality Bank hydrotreater is capable of producing LSD with a sulfur content of 350 ppm. BP argues that the costs associated with removing sulfur from 500 ppm to 350 ppm were accounted for in the existing Quality Bank hydrotreater and cannot be accounted for again in the instant proceeding.

104. Finally, BP argues that by completely ignoring the real world evidence, and the evidence presented in this case, the ALJs allow the Quality Bank hydrotreater's processing cost to include costs associated with removing sulfur from 500 ppm to approximately 350 ppm in both the existing Quality Bank hydrotreater's processing cost adjustment and in the incremental processing cost adjustment calculated in this proceeding. BP stresses that such double-counting is unjust and unreasonable, and should be rejected. Therefore, BP asks the Commission to reject the ALJs' desulfurization starting point of *exactly* 500 ppm and find that the proper desulfurization starting point is the 350 ppm used by the refiners whose costs were relied on at the time the Commission calculated the previous adjustment under Opinion No. 481.

105. Chevron argues that the ID overlooks evidence in Dr. McGovern's cross-examination, which quantifies the cost difference between a hydrotreater producing 500

⁸⁷ ID at P 197 (*citing* Ex. TC-4 at 2; September 26 Order at P 5) (citations omitted).

⁸⁸ September 26 Order at P 5 (citation omitted).

ppm diesel and a hydrotreater producing 340 ppm diesel as 3.5 percent.⁸⁹ Thus, the Chevron and BP proposals could have been adopted in a modified form by applying the 3.5 percent adjustment.⁹⁰

2. Commission Determination

106. The Commission finds that the ID correctly decided the “starting point” for calculating the incremental cost of making ULSD is 500 ppm sulfur, which is the sulfur content of the fuel that the Opinion No. 481 hydrotreater was designed to produce: “Platts West Coast LA Pipeline LS No. 2 (0.05 percent sulfur).”⁹¹ We are not persuaded by Chevron’s and BP’s argument that the 500 ppm sulfur discussed in Opinion No. 481 was actually a 350 ppm refinery product and so the costs to reducing from 500 ppm to 350 ppm are already included. Therefore, the Commission finds that since Chevron’s and BP’s proposals were based on incorrect desulfurization starting points, rather than the 500 ppm specified in Opinion No. 481 and the UID, the ID properly rejected those proposals.

C. Distinction between Pipeline and Pump Specification

1. Exceptions

107. BP states that the ALJs claimed that they considered the pump-versus-pipeline distinction and also that the varying lower pipeline specification (*i.e.*, actual refiners’ production of LSD with sulfur contents less than 500 ppm) were marginal safeguards to ensure delivery of 500 ppm.⁹² BP argues that is *precisely* what the 8 ppm specification represents: a pipeline *mandated* safeguard that the refiners’ product must meet upon entrance into the pipeline to ensure the product delivered at the retail pump meets the EPA’s 15 ppm specification.

⁸⁹ Tr. 1386:12 – Tr. 1387:16 (Dr. McGovern).

⁹⁰ Chevron states the Dr. McGovern’s testimony was based on the EPA’s *Final Regulatory Analysis: Control of Emissions from Nonroad Diesel Engines* (May 2004), which Dr. McGovern sponsored as Ex. BPX-22.

⁹¹ Opinion No. 481 at P 52-53; *see* ID at P 194 (*citing* UID at P 1420-23, 1428 and n.570).

⁹² ID at 196-197 (citations omitted).

108. BP argues that the ALJs' acknowledgement of the importance of the pump/pipeline specification distinction was relegated to a footnote,⁹³ wherein the ALJs dismiss its relevance.⁹⁴ The ALJs note that they believe the appropriate desulfurization range for calculating the incremental costs is 500-to-15 ppm (the EPA pump specification for LSD to the EPA pump specification for ULSD).⁹⁵ Apparently, argues BP, because no party proposed an incremental processing cost adjustment based on the pump-to-pump (500-to-15 ppm) specification range, the ALJs discredit the importance of a pipeline-to-pipeline (350-to-8 ppm) specification as well. Within the same footnote, the ALJs observed that the lower the desulfurization starting point, the more costly it becomes to remove incremental sulfur.⁹⁶ BP states that therefore, the cost of desulfurization increases exponentially the lower the starting point,⁹⁷ making it more costly to remove incremental sulfur from 15-to-8 ppm than to remove incremental sulfur from 500-to-350 ppm. However, asserts BP, in rejecting proposals based on a 350-to-8 ppm desulfurization range, the ALJs approve an incremental processing cost adjustment that encompasses *both* ends of the cost spectrum: the 500-to-350 ppm desulfurization range *and* the 15-to-8 ppm desulfurization range.

109. BP also argues that the ALJs' reason that real world facts (*i.e.*, that refiners actually produced, on average, 350 ppm LSD) are immaterial because the Quality Bank hydrotreater is an economic model, is incorrect.⁹⁸ BP argues that while the Quality Bank hydrotreater is an economic model, and as such, should not attempt to emulate the real world with exactitude, it must have *some* bases. BP states that in the previous proceeding, the Commission calculated the costs to a refinery that existed in the 500 ppm pump specification world that actually produced 350 ppm product at the refinery gate. BP states that thus, the economic model that the Commission approved in that proceeding

⁹³ ID at n.72 (reasoning that the incremental desulfurization at issue in this proceeding should be from 500 ppm to 15 ppm).

⁹⁴ *Id.* BP states that the ALJs appear to dismiss the entire pump/pipeline distinction because it was "unknown" whether any party's proposal was based on what the ALJs thought was the proper desulfurization range (500-to-15: pump-to-pump specification).

⁹⁵ *Id.*

⁹⁶ *Id.* (citing Tr. 402, 422-25 (QBA Mr. Mitchell)).

⁹⁷ *See e.g.*, Tr. 1379-80 (Dr. McGovern).

⁹⁸ ID at P 196.

was based on costs to reach that refinery gate desulfurization level. BP stresses that desulfurization realities cannot be summarily dismissed as immaterial to an economic model whose primary function is calculating sulfur removal costs.

110. Therefore, BP argues that the ALJs inappropriately ignored the distinction between pipeline and pump specifications in finding that the existing Quality Bank's hydrotreater processes Heavy Distillate only down to a sulfur content of *exactly* 500 ppm. BP requests that the Commission reject the ALJs' finding and adopt a desulfurization starting point for this proceeding as the 350 ppm level supported by the record evidence.

2. Commission Determination

111. First, the Commission finds that there is no mention in any of the prior Quality Bank decisions of the distinction between a pump specification and a pipeline specification. In addition, the ID properly found that the ALJs were limited by the September 26 Order, which found 500 ppm as the proper starting sulfur content.⁹⁹

112. Second, the Commission agrees with the ID that lower sulfur specifications proposed by BP and Chevron are real world marginal safeguards, unnecessary for economic modeling purposes.¹⁰⁰ In addition, the Commission emphasizes the ID's findings that (1) incremental costs are greater at the low sulfur content end of the range than at the high end due to a higher concentration of sterically-hindered compounds; and (2) no evidence was provided in the UID proceeding, and virtually none in this proceeding, quantifying the incremental processing costs for the 500 to 350/340 ppm band.¹⁰¹ Under these circumstances, the Commission finds it reasonable to set the starting point for desulfurization at 500 ppm.

II. ID's Adoption of EMT's Revamp Approach

A. Adjustment to a 2000 Base Year

1. Exceptions

113. BP and the SOA argue that if EMT's ISBL capital cost proposal is affirmed, the ALJs erred in adjusting EMT's \$18.49 million (2005 West Coast) ISBL capital cost

⁹⁹ *Id.* P 195-197.

¹⁰⁰ *Id.* 197; *see supra* P 98 (*citing* ID at P 66, 70 and 196).

¹⁰¹ *See id.* P 197 n.72, 73.

proposal to a 2000 base year using the NFOCI.¹⁰² BP and the SOA state that this capital cost estimate from Ex. EMT-6, is a 2001 cost estimate, adjusted to 2005, using the NFCCI. The ALJs' use of the NFOCI to adjust the 2005 cost estimate to the 2000 base year is unnecessarily complex and inappropriate according to BP and the SOA.

114. BP and the SOA assert that the record evidence supports simply adjusting EMT's 2001 incremental ISBL capital cost estimate back to 2000. BP and the SOA argue that the UID states "the base year should be [y]ear 2000 and the existence or non-existence of certain equipment should not be considered in making any calculations,"¹⁰³ and the Commission did not modify the UID on this point.¹⁰⁴ Accordingly, BP and the SOA assert the Commission should affirm the use of EMT's ISBL capital cost proposal and adjust EMT's 2001 ISBL capital cost proposal directly to 2000.

2. Commission Determination

115. The Commission agrees with the ID's finding that EMT's revamp cost estimate of \$18.49 million on a NFCCI-adjusted 2005 West Coast basis must be appropriately adjusted to a 2000 base year using the NFOCI in accordance with the UID/Opinion No. 481.¹⁰⁵ BP and the SOA assert that the ID directs that EMT's ISBL cost estimate must first be put on a 2005 year basis using the NFCCI and then adjusted back to 2000 using the NFOCI. The Commission interprets the ID differently. The Commission finds that, consistent with the UID and Opinion No. 481,¹⁰⁶ EMT's 2001 ISBL cost estimate in Ex. EMT-6 must be adjusted directly from the year 2001 to year 2000, using the NFOCI. To do otherwise, would be inconsistent with the UID and Opinion No. 481.

B. Cost of Replacement Catalyst

1. Exceptions

116. The SOA argues that the ALJs erred by failing to include the cost of the replacement high activity catalyst in EMT's \$18.49 million revamp ISBL capital cost.¹⁰⁷

¹⁰² *Id.* P 206.

¹⁰³ UID at P 1450.

¹⁰⁴ *See* Opinion No. 481 at P 1, 19-20.

¹⁰⁵ ID at P 206.

¹⁰⁶ UID at P 1450 (2004); *see* Opinion No. 481 at 19-20.

¹⁰⁷ *Id.*

117. The SOA states that the industry standard procedure in developing an ISBL capital cost is to include the initial catalyst charge in the ISBL capital cost.¹⁰⁸ The SOA states that EMT's witness, Mr. Schneider, did not include the initial catalyst load in his ISBL capital cost estimate.¹⁰⁹ The SOA also states that even assuming that the ISBL cost Mr. Schneider used for his base 500 ppm LSD hydrotreater revamp includes a charge for the initial catalyst load cost, that cost falls far short of the cost of the initial catalyst load required for the revamped ULSD unit. The SOA claims that the initial catalyst load for an LSD hydrotreater is approximately \$1.06 million (in 2000 dollars) and Mr. Schneider's initial catalyst charge, not included in his ISBL capital cost, is \$5.16 million (in 2000 dollars).¹¹⁰ Therefore, based on the difference between the two costs, the SOA argues that Mr. Schneider has understated the ISBL cost for his revamp by approximately \$4.1 million. Accordingly, the Commission must direct that an additional \$4.1 million (in 2000 dollars) be added to the ISBL cost for the approved revamp model.

2. Commission Determination

118. The Commission finds no merit in the argument that the ID failed to include the cost of the initial load of the new high-activity catalyst needed to reach the 8 ppm sulfur specification in EMT's ISBL cost estimate,¹¹¹ since Mr. Schneider's processing cost adjustment already includes catalyst costs as an operating cost.¹¹² This is evident from the ID's discussion of these costs,¹¹³ as well as the parties' Joint Exhibits in this proceeding setting forth the processing cost adjustment that resulted from the UID and Opinion No. 481.¹¹⁴

¹⁰⁸ See e.g., Ex. TC-6 at 102; Ex. TC-7 at 3; Ex. TC-10 at 22; Ex. TC-17 at 7.

¹⁰⁹ Ex. EMT-16 at 1.

¹¹⁰ See Ex. FHR-56 at 2-3 for the NFOCI factors.

¹¹¹ The SOA's Brief on Exceptions at 21-23; see also Petro Star's Brief on Exceptions at 27 (making a similar argument).

¹¹² See ID at P 143 (adopting Mr. Schneider's catalyst cost estimate and incorporating it in the processing cost adjustment as an "operating cost").

¹¹³ *Id.* P 133-143.

¹¹⁴ See Ex. JS-1 at 1 and Ex. JS-2 at 1 (each showing catalyst cost as a variable operating cost). EMT argues that because the Quality Bank methodology treats catalyst costs as an operating cost, rather than a capital cost, the fact that a different approach is taken in some studies (SOA's Brief on Exceptions at 22), or is even "standard

(continued...)

C. Clarification of EMT's Proposal

1. Exceptions

119. CPAI states that the ID could be read as holding that an incremental cost approach be followed even if such an approach leads to using inefficiently-sized units that cost more than efficiently-sized grass roots units. CPAI and the SOA request that the Commission clarify that it is not deviating from its prior rulings¹¹⁵ requiring the use of efficiently-sized, economic processing units in developing processing cost adjustments.¹¹⁶ They request that the Commission clarify that EMT's proposal is selected on the basis that it produces a lower ISBL capital cost adjustment¹¹⁷ than the other applicable alternatives, including those alternatives recommending the use of a new unit specifically modeled to satisfy the 8 ppm ULSD specification. They argue that the revamp facilities selected in the ID are not inefficiently-sized and, when properly calculated, the cost of the revamp facilities is not uneconomic when compared to the cost of a new grassroots unit.¹¹⁸

120. CPAI and the SOA request that the Commission clarify that EMT's proposal is selected on the basis that it produces a lower ISBL capital cost adjustment than the other applicable alternatives and is therefore the most cost efficient. CPAI and the SOA also argue that the NFOCI escalation effectively builds a Quality Bank "model" in which a new hydrotreater is built "each time the 2000 base year total operating costs are indexed forward..." Therefore, they claim that the ID erroneously decided that prior rulings

procedure" is irrelevant. EMT notes also that not all studies include capital costs in their ISBL cost estimates, *see e.g.*, Ex. EMT-6 at 16.

¹¹⁵ UID at P 1221-27.

¹¹⁶ Chevron states that it does not object to the clarification sought by CPAI that allows the use of stand-alone proposals in future cases as a check to insure that revamp costs do not exceed the costs of a new replacement facility, and to use a replacement cost approach if that were proved to be the most efficient and economical.

¹¹⁷ *See* ID at P 199.

¹¹⁸ *See* Ex. CPA-10 at 31 (Table 8) comparing capital cost calculations of EMT's revamp to Mr. O'Brien's new grassroots unit; *see* EMT's Reply Brief at 26; Tr. 1534 (Mr. Schneider); *see also* ID at P 199.

required that the Opinion No. 481 hydrotreater be revamped and therefore wrongly rejected processing cost estimates based on the “grass-roots” construction of a new hydrotreater.¹¹⁹

2. Commission Determination

121. The Commission finds no basis for CPAI’s and SOA’s request for clarification. The Commission agrees with the ALJs’ finding that the revamp proposal adopted was cost-efficient for the reasons set forth in the ID.¹²⁰ Second, the Commission reiterates the ALJs’ findings that the purpose of NFOCI escalation is merely to adjust processing cost deductions (or other adjustments) for inflation, not to update individual cost elements, including capital costs. As stated in the ID, the NFOCI merely escalates the hydrotreater’s original imputed capital costs in conjunction with every other individual cost element on an annual basis through the NFOCI.¹²¹ As such, the Quality Bank model cannot be characterized as constructing a brand new hydrotreater every year. In addition, the Commission agrees with the ALJs’ finding that the September 26 Order expressly intended to preserve the model hydrotreater adopted in the UID/Opinion No. 481 to the extent possible. Thus, replacing that hydrotreater with a new hydrotreater is inconsistent with that intent.

D. Prejudgment in Adopting Revamp Approach

1. Exceptions

122. Flint Hills argues that the ALJs’ selection of the revamp approach is the result of a two-step prejudgment process. First, Flint Hills argues, the ALJs, consistent with the UID and Opinion Nos. 481/481-A,¹²² adopted (1) a preexisting high pressure hydrotreater unit with a Heavy Distillate processing capacity of 50,000 barrels/day and (2) ISBL capital costs associated with such a unit processing Heavy Distillate down to LSD with a sulfur content of exactly 500 ppm.¹²³ Then, continues Flint Hills, the ALJs bootstrap

¹¹⁹ The SOA’s Brief on Exceptions at 17, and 19-20; Petro Star’s Brief on Exceptions at 10-12, 14-15.

¹²⁰ ID at P 199.

¹²¹ *Id.* P 200.

¹²² *See* ID at P 195.

¹²³ Flint Hills states that once again it is important to note that the ID is devoid of any cite to the UID and Opinion No. 481 requiring such a finding.

these requirements into a further conclusion to adopt a revamp approach.¹²⁴ Thus, argues Flint Hills, the ALJs, by pointing to past decisions, the UID and Opinion No. 481, prejudge the outcome.

123. Flint Hills submits that its witness, Mr. Sanderson, used a revamp approach in the first instance because he felt constrained by the Commission's September 26 Order.¹²⁵ However, Mr. Sanderson also testified that between the two options, the grassroots approach has a "lot of advantages and fewer complications."¹²⁶ Consistent with that statement, and prior to the September 26 Order, Flint Hills advocated that the QBA adopt a purpose-built grassroots approach.¹²⁷ Consequently, Flint Hills argues, the ALJs prejudged conclusions are arbitrary and capricious and thus not reasoned decision-making.

2. Commission Determination

124. We find that there was no prejudgment in the adoption of the revamp approach. The Commission agrees with the ID's findings that the UID/Opinion Nos. 481/481-A required adoption of a preexisting high pressure hydrotreater unit with a Heavy Distillate processing capacity of 50,000 barrels/day and ISBL capital costs associated with such a unit processing Heavy Distillate down to LSD with a sulfur content of exactly 500 ppm.¹²⁸ Moreover, creating a new, grassroots hydrotreater along with a wholly new processing cost adjustment is inconsistent with the September 26 Order's clear intention to retain the existing processing cost adjustment to produce LSD and then add only the incremental cost required to produce ULSD.

¹²⁴ ID at P 198; Flint Hills states that once again the ID does not point to any specific paragraph of either the UID or Opinion No. 481 in support of its ID's conclusions.

¹²⁵ Ex. FHR-10 at 20:11-21:10 (Mr. Sanderson); Tr. 1056:25 – Tr. 1057:19 (Mr. O'Brien).

¹²⁶ Tr. 863:7-10 (Mr. Sanderson).

¹²⁷ See Flint Hills' Comments to TAPS Carriers and QBA's Notice of Radical Alteration in Basis for West Coast Heavy Distillate Price Quotation and Recommended Replacement Price, and Motion to Intervene (dated August 28, 2006) at 14-18.

¹²⁸ ID at P 194-195, 198; see UID at P 1420-23, 1428 and n.570.

E. Evidence Supporting Revamp Approach

1. Exceptions

125. Petro Star and Flint Hills argue that the record evidence, in particular real world ISBL capital costs provided by EMT's witness, Mr. Schneider, demonstrates that the EMT revamp of ISBL capital costs is too low and thus overvalues the West Coast Heavy Distillate cut. Moreover, they contend that the ID's approval of EMT's proposal, which was derived from the Mustang Study¹²⁹ and based on an "equipment list" approach,¹³⁰ is contrary to the Opinion No. 481 proceedings, where the Commission rejected an "equipment list" approach to calculate Resid processing costs.¹³¹

126. Petro Star asserts that this discrepancy is more than simply an unnecessary departure from the approach adopted in the Opinion No. 481 proceedings. Petro Star submits that to use an "equipment list" approach for a revamp, it is necessary for the existing unit to be well defined,¹³² and there is no assumed process configuration for the Opinion No. 481 hydrotreater.¹³³

127. Finally, contends Petro Star, in recommending an OSBL cost estimate, EMT totally turned its back on the Mustang Study and created its own methodology.¹³⁴ Therefore, Petro Star requests that the Commission reject the ID's adoption of EMT's ISBL cost proposal as arbitrary and capricious and unsupported by substantial evidence.

128. Flint Hills argues that there are numerous problems with the Mustang Study, which CPAI's witness, Mr. O'Brien, also relied on in preparing his revamp cost

¹²⁹ Ex. EMT-6.

¹³⁰ Ex. EMT-1 at 16:14-23; Ex. EMT-6 at 16.

¹³¹ See UID at P 1184.

¹³² Ex. FHR-10 at 32:12-18.

¹³³ *Id.* at 32:23-33:3 (citations omitted); Tr. 1048:10-25 (Mr. O'Brien).

¹³⁴ Ex. EMT-1 at 17:2-21.

estimate.¹³⁵ Flint Hills states that not only did Mr. Schneider and Mr. O'Brien disagree on which ISBL cost case from the Mustang Study to use,¹³⁶ they also used different starting years.¹³⁷

129. Flint Hills states that EMT indicates that "Mr. Schneider confirmed the reasonableness of the Mustang Study by referring to his and his firm's own experience with the cost of refinery units."¹³⁸ Flint Hills argues that this statement is contrary to the record evidence. Flint Hills argues that one of the projects Mr. Schneider relied upon, the Western Refining El Paso refinery ULSD hydrotreater project,¹³⁹ actually supported the testimony of Flint Hills' witness, Mr. Sanderson, concerning revamp capital cost, rather than Mr. Schneider's.¹⁴⁰ Flint Hills argues that testimony of Mr. Sanderson with respect to Western Refining Company's actual ULSD project costs was uncontroverted.¹⁴¹ In addition, continues Flint Hills, based on the Stancil & Co. cost curve,¹⁴² Mr. Sanderson testified that the calculated cost curve ISBL capital cost of \$47.4 million on a 2003 basis "is significantly higher than Mr. Schneider's revamp ISBL capital cost estimate of \$14.56 million (2005 basis)... [and] appears to support my revamp capital cost estimate of \$49.5

¹³⁵ See Ex. CPA-7 at 2. Flint Hills states that while Mr. O'Brien did not base his actual processing cost adjustment on his revamp calculation, he did use it to support his grassroots processing cost estimate; see e.g., Ex. CPA-1 at 24.

¹³⁶ Flint Hills states that Mr. O'Brien chose case 1B with a Gulf Coast ISBL capital cost of \$7.7 million (Ex. CPA-7 at 2), while Mr. Schneider chose case 2B with a Gulf Coast ISBL capital cost of \$8.6 million (Ex. EMT-5), or \$900,000 more than Mr. O'Brien.

¹³⁷ See e.g., Tr. 1158:9-25 (Mr. O'Brien); Ex. EMT-5 and Ex. EMT-6 at 1.

¹³⁸ EMT's Initial Brief at 33.

¹³⁹ See Ex. FHR-23 at 2; Ex. FHR-24. Flint Hills argues that initially, the identity of Western Refining Company was confidential, and thus Ex. FHR-23 and FHR-24 were confidential (as well as Ex. FHR-22, the Stancil & Co. cost curve). However, at the hearing, EMT waived the confidentiality of this information and the three exhibits. Tr. 609:1 – Tr. 611:17 (Jones and Bendernagel).

¹⁴⁰ See Ex. FHR-10 at 37:19-38:13. (citations omitted)

¹⁴¹ See Flint Hills' Brief on Exceptions at n.60.

¹⁴² Ex. FHR-22.

million rather than Mr. Schneider's estimate of \$14.56 million."¹⁴³ Flint Hills stresses that this rebuttal testimony also was never controverted, and argue the ID's rejection of this evidence was error.

130. Therefore, maintains Flint Hills, the only reliable evidence in the record, the Western Refining revamp costs, which was uncontroverted, shows EMT's witness Mr. Schneider's ISBL revamp estimate is unreasonably low. Moreover, continues Flint Hills, the Western Refining capital cost estimate of \$47.4 million supports Flint Hills' witness Mr. Sanderson's revamp capital cost estimate of \$49.5 million.¹⁴⁴ Flint Hills requests the Commission to reject the ID's selection of the EMT revamp approach as unsupported and unrealistically low.

2. Commission Determination

131. The Commission finds no merit to Flint Hills' and Petro Star's claim that EMT's estimate is unsupported by the record, unreliable, or too low. Specifically, the record and the ID amply demonstrate that EMT's ISBL cost estimate is supported by substantial evidence that includes, but is not limited to, the Mustang Study, as well as, Ex. BPX-23 and Ex. SOA-10.¹⁴⁵ EMT's estimate was fully documented and presented by an expert witness, Mr. Schneider.¹⁴⁶ Further, Mr. Schneider testified that more than adequate information exists about the Quality Bank's existing hydrotreater to justify using the revamp proposal in the Mustang Study.¹⁴⁷

132. Flint Hills' and Petro Star's contention that EMT's estimate is inconsistent with Mr. Schneider's firm's cost curves is wrong. It ignores Mr. Schneider's testimony that the difference between his firm's LSD and ULSD cost curves was not indicative of the

¹⁴³ Ex. FHR-10 at 37:9-14.

¹⁴⁴ *Id.* at 37:12-14. Flint Hills argues that perhaps this result is why the ID elects to treat real world refining costs as "simply immaterial to the task at hand." ID at P 70.

¹⁴⁵ ID at P 206.

¹⁴⁶ *See* Ex. EMT-1 at 3-6, 15:13-16:5.

¹⁴⁷ Tr. 1545:9-1546:3 (Mr. Schneider); *see also* Tr. 1292:12-1294:4 (Dr. McGovern).

cost of a revamp and, further, that his firm's ULSD curve included hydrotreaters with much higher pressures, and therefore greater costs, than the units at issue in this proceeding.¹⁴⁸

133. The Commission finds that the assertion that the Commission departed from the cost curve approach, adopted in Opinion No. 481, is misplaced. The previous proceeding determined the processing cost adjustments, for the first time, for the Resid cut and the Heavy Distillate cut,¹⁴⁹ since both were new units and there was nothing to revamp. In addition, the UID did not reject the "equipment list" approach because it was an equipment list,¹⁵⁰ but because the ALJ in that proceeding had concerns about how it was developed.¹⁵¹ Those facts do not exist now and identifying the individual major pieces of equipment necessary to remove the additional sulfur does not constitute an unnecessary departure from Opinion No. 481. In the instant proceeding, a hydrotreater (from the previous proceeding) exists that can produce LSD and simply needs enhancement to accommodate the additional sulfur removal.

134. The Commission rejects Flint Hills' and Petro Star's contentions that real world data and/or actual project revamp estimates demonstrate that the EMT revamp proposal is too low. The ALJs specifically considered and rejected reliance on the actual project revamp evidence as inadequate and possibly unreliable.¹⁵² Differences between the methodology used by the Quality Bank for valuing the Heavy Distillate cut and real world data require sufficiently detailed real world project data in order to make valid comparison to the Quality Bank data. Therefore, the ALJs correctly found that none of the evidence produced regarding such projects contained such detail.¹⁵³

¹⁴⁸ See Tr. 1518:2-1525:4 (Mr. Schneider).

¹⁴⁹ See generally UID.

¹⁵⁰ UID at P 1184.

¹⁵¹ *Id.* n.431.

¹⁵² ID at P 205.

¹⁵³ *Id.*

III. ID's Rejection of Flint Hills' Grassroots and Revamp Approaches

A. Exceptions

135. Flint Hills argues that the ALJs erred by not selecting Flint Hills' proposed processing cost adjustment based on a new purpose-built grassroots hydrotreater, which is most consistent with the year (2005) in which refiners incurred most of their costs to meet the specifications of the new Platt's reference price. Flint Hills also argues that the grassroots approach avoids the analytical complications of a revamp because it avoids the steps of first adjusting capital costs back to 2000 and then forward to 2006, using different indices.¹⁵⁴ In addition, asserts Flint Hills, the purpose-built grassroots approach is consistent with the methodology employed in calculating the ISBL capital portion of the processing costs for Resid and Light Distillate, both of which use a grassroots process unit.¹⁵⁵

136. Flint Hills argues that alternatively, the ALJs erred by refusing to consider Flint Hills' proposed revamp approach because they concluded that Flint Hills ultimately expressed a preference for the purpose-built grassroots approach. The ALJs arbitrarily refused to consider Flint Hills' revamp approach, stating in a footnote: "We do not consider revamp 'alternatives' discussed by parties advocating a replacement approach."¹⁵⁶

137. Flint Hills argues that when the ALJs requested that the parties "consider" choosing either the purpose-built grassroots or revamp approach rather than support both approaches,¹⁵⁷ the ALJs never stated that if one approach were chosen by a party, that party's alternative proposal would be ignored. In Flint Hills' view, the failure of the ID to discuss Flint Hills' alternative is arbitrary and capricious, *citing ExxonMobil Gas Marketing Co. v. FERC*.¹⁵⁸

¹⁵⁴ Flint Hills argues that this counterintuitive result is exactly what the ID orders. *See* ID at P 206. (citation omitted).

¹⁵⁵ *See* Ex. FHR-10 at 17:20-18:1 (Mr. Sanderson); Flint Hills states that the QBA also acknowledges this fact in the Notice of Radical Alternation at 8 and CPAI's witness, Mr. O'Brien, states that the revamp approach is inconsistent with the replacement cost methodology, *see* Ex. CPA-10 at 32:15-21; *see also* Flint Hills' Brief on Exceptions at 36 and n.43 (*citing* Mr. O'Brien).

¹⁵⁶ ID at P 204 n.79.

¹⁵⁷ Tr. 1666:2-5 (Judge Young).

¹⁵⁸ 297 F.3d 1071 (D.C. Cir. 2002), *cert denied*, 540 U.S. 937 (2003).

B. Commission Determination

138. The Commission finds that Flint Hills' argument that the ID erred in not selecting its grassroots approach is without merit. First, Flint Hills' grassroots estimate was based on cost curve data extracted from a May 2001 EIA Report, and then updated by KBC Advanced Technologies Inc. (KBC) using an unpublished and unexplained cost index.¹⁵⁹ Second, Flint Hills' witness, Mr. Sanderson, could not explain the discrepancy between the cost curve data relating to cracked stocks, not straight-run Heavy Distillate as reported in the KBC article.¹⁶⁰ Third, the cost curve data in the May 2001 EIA Report, which formed the basis for the KBC data on which Mr. Sanderson relied, was based on outdated technology and included the cost of catalyst as a capital expense even though the Quality Bank methodology treats catalyst as an operating expense.¹⁶¹ Fourth, Flint Hills' reliance on Ex. FHR-27 and Ex. FHR-16 to substantiate its grassroots estimate, reported only "total capital cost" and total project cost information. Such lump sum total cost information was found inadequate and unreliable by the ID.¹⁶² Fifth, Flint Hills' claim that a cost curve submitted by EMT's expert, Mr. Schneider, "fully supports" Flint Hills' grassroots estimate is rebutted by Mr. Schneider's conclusion that he does not recommend using the cost curve in deriving a grassroots estimate because it included cracked stocks and higher pressure units than are involved here.¹⁶³

139. The Commission also finds that because Flint Hills' revamp estimate is based on its flawed grassroots estimate, it suffers from all of the infirmities of the latter estimate. In addition, Mr. Sanderson, the revamp estimate's sponsor, could not explain the basis for any of the revamp percentages in the May 2001 EIA Report, which he relied on to

¹⁵⁹ Ex. FHR-10 at 26:6-27:14 (Mr. Sanderson); Tr. 690:12 – 692:19; Tr. 839:21 – 846:2 (Mr. Sanderson).

¹⁶⁰ Tr. 692:20 – Tr. 694:2 (Mr. Sanderson); Tr. 694:3 – Tr. 697:15 (Mr. Sanderson).

¹⁶¹ Tr. 835:8 – Tr. 837:3 (Mr. Sanderson); *see e.g.*, Ex. BPX-19 at 25-40 (Dr. McGovern); Ex. EMT-15 at Tr. 8:20 – Tr. 9:8 (Mr. Schneider).

¹⁶² ID at P 205.

¹⁶³ Tr. 1518:2 – Tr. 1525:4 (Mr. Schneider).

conclude that the ISBL cost of a revamp would equate to 55 percent of the ISBL cost of a new, grassroots unit.¹⁶⁴ Furthermore, the May 2001 EIA Report and the December 2000 EPA Report indicate these percentages were based on outdated technology.¹⁶⁵

140. The Commission rejects Flint Hills' arguments that the merits of its grassroots approach should have been addressed by the ALJs and affirms the ALJs' adoption of a revamp approach for the Heavy Distillate incremental processing cost adjustment.¹⁶⁶

141. The cases cited by Flint Hills not only do not support its arguments. Flint Hills states that in *ExxonMobil* "[the court] declared that the [Commission's] decision to ignore 'reasonable' and 'plausible' alternatives was 'arbitrary and capricious.'"¹⁶⁷ In fact, the *ExxonMobil* court found the exact opposite of Flint Hills' assertion since the court affirmed the Commission's policy choice.¹⁶⁸ Flint Hills' contention that *ExxonMobil* supports its position has no basis since the quotes it relies upon are from the dissenting opinion.¹⁶⁹

142. Flint Hills' reliance upon a quote in *Farmers Union* is also misplaced. That quote states that "It is well established that an agency has a duty to consider reasonable [sic] alternatives to its chosen policy, and to give a reasonable explanation for its rejection of such alternatives."¹⁷⁰ *Farmers Union* is inapposite to the instant proceeding because in that case, the Commission was determining what policy to adopt in setting overall oil pipeline ratemaking principles.¹⁷¹ In the instant proceeding, the ALJs are not making policy decisions. Moreover, in *Farmers Union*, the court stated that an agency has a duty to consider alternatives especially "when the agency admits its *own* choice is

¹⁶⁴ Tr. 863:20 – Tr. 868:16 (Mr. Sanderson).

¹⁶⁵ *Id.*

¹⁶⁶ ID at P 198, 199.

¹⁶⁷ Flint Hills' Brief on Exceptions at 39.

¹⁶⁸ *ExxonMobil* at 1084.

¹⁶⁹ *See id.* at 39 (citing *ExxonMobil* at 1094); *see id.* at 1091-1094.

¹⁷⁰ Flint Hills' Brief on Exceptions at 39-40; *Farmers Union Cent. Exchange, Inc. v. FERC*, 734 F.2d 1486, 1511 (D.C. Cir. 1984).

¹⁷¹ *Farmers Union* at 1492.

substantially flawed,”¹⁷² and here, no such admission was made. The ALJs were under no obligation to consider all alternatives in reaching their decision, as long as the one considered was not unreasonable.¹⁷³ Moreover, Flint Hills’ alternative grassroots proposal was considered by the ALJs, but they concluded that the revamp hydrotreater was the proper one to use for the reasons described above.

IV. ID’s Rejection of the TAPS Carriers’ Approach

A. Exceptions

143. Petro Star argues that the ID’s reason for selecting the EMT estimate as “exhibit[ing] none of the deficiencies cited in the preceding analysis” was in error since the ID’s analysis of other estimates was flawed.¹⁷⁴

144. Petro Star asserts that as to the TAPS Carriers’ proposal, the ID’s statement that the QBA’s proposal is flawed, because it presumes a medium pressure hydrotreater to be revamped,¹⁷⁵ is incorrect for a number of reasons. First, the QBA settled on the capital cost estimate presented in the EIA Study only after a careful review of the literature; and two of his corroborating sources, the EPA Regulatory Impact Statement (RIP) and the Baker & O’Brien Study confirmed the EIA’s \$30 million estimate based on their own analysis of revamping 800 psi hydrotreaters.¹⁷⁶ Moreover, the EIA Study itself lumped 650 and 800 psi vessels into the same group and differentiated them from true high pressure vessels that are significantly different.¹⁷⁷

¹⁷² *Id.* at 1511.

¹⁷³ Flint Hills also cites to *Gas Research Institute*, 46 FERC ¶ 61,171 (1989), whose facts bear no relationship to the instant proceeding.

¹⁷⁴ ID at P 206.

¹⁷⁵ ID at P 205.

¹⁷⁶ See Ex. TC-4 at 15 (citations omitted). The EPA RIP and Baker & O’Brien Study upon which the QBA relied appear in the record in Ex. TC-13 at 251 and Ex. TC-5 at 32-33, respectively.

¹⁷⁷ Ex. TC-6 at 29.

145. Second, the ID faults the QBA for relying on an “outmode” two-stage process.¹⁷⁸ This does not justify rejection because it is not known whether the “Opinion No. 481” ULSD hydrotreater is a single- or two-stage process¹⁷⁹ and the additional costs (particularly when netted against the additional benefits) of a two-stage process are minimal.¹⁸⁰

146. Petro Star argues that the ID’s conclusion that the QBA’s actual project revamp evidence supporting his proposal is inadequate and may be unreliable,¹⁸¹ sets the bar so high that it is hard to imagine any real world evidence as being beyond attack, considering what the QBA actually considered.¹⁸² This is particularly telling since the QBA did a thorough analysis of the literature, focusing in particular on industry-group or agency studies to arrive at his ISBL estimate, and then checked it against such actual project data as became available. Given the neutral position of the TAPS Carriers, the neutral sources of the bulk of his data, and his salutary approach of testing his original estimate against actual data lend his proposal a reliability and credence that more biased proposals lack. Therefore, Petro Star requests the Commission adopt the TAPS Carriers’ proposal as stated by the QBA.

147. Finally, Petro Star asserts that the QBA’s adjustment of his OSBL recommendation,¹⁸³ argues strongly that he was not wedded to his original ISBL estimate, and that if actual project data *had* called it into question he would have revisited it as well as his OSBL estimate.

B. Commission Determination

148. We agree with the ID that the flaws in the QBA model identified in the ID were not immaterial and justified rejection of the QBA’s model.

¹⁷⁸ ID at P 205.

¹⁷⁹ Tr. 1048:10-25 (Mr. O’Brien).

¹⁸⁰ Tr. 855:19 – Tr. 856:18 (Mr. Sanderson); Tr. 858:6-20 (Mr. Sanderson).

¹⁸¹ ID at P 205.

¹⁸² The QBA himself testified that you have to deal with the data you have. Tr. 446:18-21 (QBA Mr. Mitchell).

¹⁸³ Tr. 109:15-25 (QBA Mr. Mitchell).

149. First, the QBA model is designed to revamp a medium-pressure hydrotreater.¹⁸⁴ While Petro Star tries to justify its medium-pressure hydrotreater by pointing to an August 2000 Baker & O'Brien Study (Ex. TC-5) and a December 2000 EPA Study (Ex. TC-13) stating that the pressure of the base hydrotreater does not matter, this case involves a high-pressure 800 psi unit.¹⁸⁵

150. Second, the QBA model "relies on a two-stage process incorporating inter-stage stripping which the record indicates is outmoded. *See, e.g.*, Exh. TC-6 at 33, 104-05; Tr. 378-79; Exh. BPX-22 at 92."¹⁸⁶ Petro Star does not refute either the evidence or the conclusion, arguing instead only that "the additional costs (particularly when netted against the additional benefits) of a two-stage process are minimal."¹⁸⁷ The ALJs already answered this contention finding no need for the additional benefits.¹⁸⁸ Thus, sound reason existed in not selecting the QBA's model.

Issue No. 4: OSBL Capital Costs

The ALJs' Findings

151. The ALJs found it not reasonably possible in this instance to adhere to prior UID/Opinion Nos. 481/481-A rulings on this issue. The 29 percent OSBL factor adopted in those opinions was predicated on the completely new 500 ppm LSD Heavy Distillate base hydrotreater incorporated into the Quality Bank model in the Opinion No. 481 proceeding. Therefore, that factor they held cannot rationally be applied to any model revamp.¹⁸⁹

152. The ALJs next rejected BP's zero OSBL factor. The ALJs agreed, however, with BP's conclusion that the OSBL facilities modeled to support base LSD hydrotreater operations in Opinion No. 481 should be presumed capable of supporting the revamped

¹⁸⁴ ID at P 205 (citations omitted).

¹⁸⁵ *Id.* P 194.

¹⁸⁶ ID at P 205.

¹⁸⁷ Petro Star's Brief on Exceptions at 29.

¹⁸⁸ ID at P 203.

¹⁸⁹ UID at P 1434; This part of the UID was not challenged on review by the Commission and thus became part of Opinion No. 481.

ULSD model unit as well. However, the ALJs held that it did not follow that the revamped model hydrotreater requires no incremental OSBL facilities whatsoever to satisfy the 8 ppm ULSD specification.

153. The ALJs adopted the model hydrotreater revamp ISBL design parameters proposed by EMT. The ALJs stated that the record reflects substantial credible evidence that the EMT revamp proposal would require incremental OSBL facilities to supply power (*i.e.* electricity) to the new amine booster pump and the additional make-up hydrogen compressor.¹⁹⁰ EMT's calculated OSBL cost totaled \$1.1 million (translating to approximately 5.5 percent of EMT's ISBL figure) on a 2005 West Coast basis. The \$1.1 million figure was increased to \$1.85 million (10 percent of EMT's ISBL figure) to reflect minor mechanical modifications to account for small increases in off-site amine and sour water stripping capacities, sulfur recovery capacity and enhancing the hydrogen supply system to the revamped hydrotreater. The ALJs concluded that this evidence supports adopting a 10 percent OSBL factor—adjusted, as appropriate, to a 2000 base year using the NFOCI in accordance with the Opinion No. 481.¹⁹¹

I. ID's Rejection of BP's OSBL Capital Cost Proposal

A. Exceptions

154. BP argues that the ALJs erred by adopting an incremental 10 percent increase in OSBL capital cost. BP states that it properly determined that no incremental OSBL capital costs were required; and having agreed with BP on its analysis, the ALJs should have adopted BP's OSBL capital cost proposal.

155. BP asserts that the ALJs agree with BP on every building block argument that forms the basis for BP's OSBL proposal, and then conclude, without citation to any record evidence, that "[i]t does not follow...that the revamped [] hydrotreater requires no incremental OSBL facilities[.]"¹⁹² BP argues that the ALJs' OSBL capital cost decision rests primarily on its adoption of EMT's ISBL capital cost proposal, which, according to

¹⁹⁰ Ex. EMT-1 at 17.

¹⁹¹ The ALJs stated that this ruling obviates the need to discuss the 19 percent proposal, except to observe it is necessarily overstated in light of the 10 percent ruling, as well as the fact it is premised on the discredited need for additional storage tanks; *see* Ex. TC-15 at 13.

¹⁹² ID at P 217.

the ALJs, is supported by record evidence.¹⁹³ BP claims that had the ALJs accepted its ISBL capital cost proposal, the ID also would have accepted its OSBL capital cost proposal. Thus, concludes BP, consistent with BP's request to accept its ISBL capital cost proposal, and because the ALJs agree with all the building block bases that underlie BP's OSBL capital cost proposal, the Commission should find BP's OSBL capital cost proposal is just and reasonable and adopt it.

B. Commission Determination

156. The Commission finds no merit to BP's objection to the ID's adoption of EMT's proposed OSBL factor, as well as the rejection of BP's arguments for zero incremental OSBL costs.

157. First, BP's own arguments, contradict its proposal for zero OSBL factor.¹⁹⁴ According to BP, Dr. McGovern provided no OSBL capital for his increased hydrogen consumption, increased compression, or amine circulation or amine stripping, so the proposed zero OSBL factor is unreasonable. The ID points out that there are undoubted incremental OSBL costs attendant even to EMT's proposed cost structure.¹⁹⁵ Second, as the ID noted,¹⁹⁶ BP's assumption that sufficient spare capacity was previously installed in the Quality Bank's hydrotreater to accommodate the demands of the more severe processing required to satisfy the 8 ppm sulfur specification,¹⁹⁷ is inconsistent with the manner in which costs have previously been determined for the Quality Bank.

158. The Commission finds that the ID correctly found that substantial credible evidence supports the 10 percent factor and¹⁹⁸ rejection of BP's request for no incremental OSBL costs.

¹⁹³ *Id.* P 218.

¹⁹⁴ *See* BP's Brief on Exceptions at 30-31.

¹⁹⁵ *See* ID at P 217, 218.

¹⁹⁶ *See e.g.*, ID at P 203 (citation omitted).

¹⁹⁷ *See e.g.*, Tr. 1363:9-16 (Dr. McGovern); Tr. 1363:12 – Tr. 1364:8 (Dr. McGovern).

¹⁹⁸ ID at P 218.

II. ID's Rejection of Flint Hills' and Petro Star's OSBL Capital Cost Proposals

A. Exceptions

159. Flint Hills argues that the ALJs erred in not selecting its 29 percent OSBL capital cost factor. Flint Hills submits that Mr. Sanderson's West Coast OSBL capital cost for his purpose-built grassroots ULSD distillate hydrotreater is \$33.15 million, which is derived by multiplying his West Coast ISBL capital cost of \$114.30 million by the OSBL factor of 29 percent¹⁹⁹ adopted by the Commission in Opinion No. 481.²⁰⁰ Mr. Sanderson also used the 29 percent OSBL factor²⁰¹ for his revamp approach.²⁰²

160. Flint Hills argues that the 10 percent OSBL factor is unrealistic and insufficient to meet the requirements of the new ULSD specification. Mr. Sanderson²⁰³ indicated that there is not enough money from Mr. Schneider's 10 percent OSBL factor,²⁰⁴ for the necessary tanks required for the ULSD product or product contamination issues.²⁰⁵ Flint Hills asserts that the QBA also recognizes the potential need for additional tanks and included among his recommendations the use of a 19 percent OSBL factor.²⁰⁶

161. Petro Star argues that the ID's determination to base OSBL hydrotreater capital costs on the premise that no storage is needed for off-spec product is arbitrary and, contrary to the record. Petro Star also argues that in reaching its conclusion that additional storage for off-spec product is not required, the ID errs in two major respects.²⁰⁷ First, argues Petro Star, the record evidence is uncontroverted that

¹⁹⁹ See Ex. FHR-13, Capital Recovery Section and Note 20.0 thereto.

²⁰⁰ UID at P 1434.

²⁰¹ Flint Hills states that the 29 percent OSBL factor is adequately supported by Ex. FHR-10 at 39-41 and Flint Hills' Initial Brief at 42-44.

²⁰² Ex. FHR-1 at 24:8-12.

²⁰³ See Ex. FHR-10 at 39:4-21 and 40:4-41:4.

²⁰⁴ *Id.* at 40-41.

²⁰⁵ *Id.*

²⁰⁶ Ex. TC-15 at 13; Ex. TC-23.

²⁰⁷ ID at P 217.

desulfurizing distillate to ultra-low sulfur levels is technically more difficult than making LSD fuel, and meeting the 8 ppm specification requires both extracting more sulfur and more resistant sulfur than does meeting the obsolete 500 ppm specification.²⁰⁸ In addition, continues Petro Star, the ULSD regulations themselves explicitly allow refiners to manufacture a portion of their highway diesel and their entire non-road diesel at a 500 ppm sulfur specification until May 31, 2010.²⁰⁹ Even the QBA, while advocating a retreat from his original 29 percent OSBL factor, acknowledged that most refiners need to build additional storage unless they have spare storage available, and that it is expensive.²¹⁰

162. Second, Petro Star contends that the ID's simplifying assumption that the Quality Bank distillate hydrotreater meets specification 100 percent of the time, ignores, in the calculations, the economic cost of producing and storing off-spec fuel. Ignoring those costs overvalues Heavy Distillate in violation of the consistency requirement set forth in *OXY*. Therefore, Petro Star requests that the Commission reject the ID's selection of a 10 percent OSBL factor and adopt instead at least a 19 percent factor.²¹¹

B. Commission Determination

163. The Commission finds that the ALJs properly rejected Flint Hills' proposed 29 percent OSBL factor. First, Flint Hills' proposal is not based on an analysis of the OSBL costs associated with the specific additional equipment and processing involved in revamping the Quality Bank's existing high pressure hydrotreater.²¹² Second, it is based on testimony²¹³ that relies merely on Opinion No. 481's adoption of 29 percent for installation of a *new* unit. The ID pointed out that OSBL costs for the revamp of the

²⁰⁸ Tr. 402:17-24 (QBA Mr. Mitchell).

²⁰⁹ 40 C.F.R. § 80.530 (highway); *id.* § 80.510 (non-road). Petro Star argues that outside of specified areas, refiners may manufacture locomotive and marine diesel fuel at the 500 ppm sulfur specification until May 31, 2012. 40 C.F.R. § 80.510.

²¹⁰ Tr. 176:14-25 (QBA Mr. Mitchell).

²¹¹ The ID's adoption of too low an OSBL factor is exacerbated because the OSBL factor is applied to too low an ISBL capital cost. The resultant calculation grossly underestimates actual OSBL costs incurred by West Coast refiners.

²¹² ID at P 216.

²¹³ *See* Ex. FHR-10 at 39-41; *see also* Flint Hills' Initial Brief at 42-44.

Quality Bank's existing hydrotreater are not as large as for initially installing the unit.²¹⁴ There is no support for Flint Hills' view that the OSBL costs of a revamp equal the OSBL costs of a new grassroots unit; to the contrary, all of the evidence that addresses this issue indicates that the costs are significantly less for a revamp.²¹⁵

164. The Commission also finds that the ALJs properly rejected Petro Star's 19 percent OSBL factor. That proposal is based on the assumption that additional storage is needed for off-spec product, which the ID found unnecessary, stating that no additional tankage or piping is needed for off-spec product, "because one of [the Quality Bank] model's simplifying assumptions is that the Heavy Distillate hydrotreater satisfies the relevant specification 100 percent of the time."²¹⁶

165. Nevertheless, Petro Star complains that, despite the Quality Bank's simplifying assumption that no off-spec product is made, it is unfair or unreasonable not to include some cost in OSBL for the additional off-spec storage costs that it asserts would arise as a result of the more stringent sulfur specifications.²¹⁷ The Commission finds that the ALJs determination that there is no need for additional on-spec product or off-spec product storage tanks and therefore no related costs, did not conflict with but, rather, complied with, *OXY*.²¹⁸

166. Since the 10 percent OSBL factor is just and reasonable and includes the appropriate costs associated with the revamp hydrotreater, the Commission finds that the Heavy Distillate cut is accurately valued in a manner consistent with the other Quality Bank cuts and therefore consistent with *OXY*.

²¹⁴ ID at P 217.

²¹⁵ See e.g., Ex. SOA-10 at 65; see Tr. 393:11 – Tr. 394:3 (QBA Mr. Mitchell); see also e.g., Ex TC-13 at 240, 265 and Ex. TC-6 at 106.

²¹⁶ ID at P 217 (citing Tr. 458-460 (QBA Mr. Mitchell)); *id.* P 218 n. 81.

²¹⁷ Petro Star's Brief on Exceptions at 32-33.

²¹⁸ *OXY*, 64 F.3d at 693-694.

Issue No. 5: Total Processing Cost Adjustment**I. The ALJs' Findings**

167. The ALJs found that this issue is resolved in accordance with all prior rulings.

II. Exceptions

168. BP argues that the ALJs failed to calculate a total incremental processing cost adjustment and failed to evaluate whether such end result fell within the zone of reasonableness.²¹⁹ BP asserts that the ALJs never sum their individual processing cost adjustment component decisions and the ALJs never evaluate the resultant total incremental processing cost adjustment. BP stresses that by foregoing these critical steps, the ALJs fail to evaluate the end result of their decision to determine whether or not such result is just and reasonable.

169. BP asserts that legal precedent requires an agency to ensure that the end result of its decision falls within the zone of reasonableness.²²⁰ BP refers to the fact that the ALJs acknowledged that the record supports the position that cracked stock is more difficult to process than virgin feed and that cracked stock increases hydrogen consumption,²²¹ but then dismissed this vital evidence at the individual processing cost component level. This example, BP argues, falls squarely within the ALJs' legal obligation to ensure the individual processing cost adjustment components, as well as the total incremental processing cost adjustment end result, fall within the zone of reasonableness and thus produce a just and reasonable result.

170. Therefore, BP requests that the Commission evaluate the total processing cost adjustment to determine if it produces a just and reasonable end result that falls within the zone of reasonableness established by the record in this case.

²¹⁹ *Id.* P 219-220.

²²⁰ BP's Reply Brief at 37-38 (citing *e.g.*, *FPC v. Hope Natural Gas Co.*, 320 U.S. 591 (1944); *Duquesne Light Co. v. Barasch*, 488 U.S. 299 (1989); *OXY*, 64 F.3d 679; *Jersey Central Power & Light Co. v. FERC*, 810 F.2d 1168, 1177 (D.C. Cir. 1987)).

²²¹ ID at P 154.

III. Commission Determination

171. The Commission finds that BP's argument that the ALJs failed to actually calculate a processing cost adjustment to evaluate whether the result of their decision fell within the zone of reasonableness is without merit.

172. The law is clear that the ALJs are not required to determine the precise value that results from their rulings, and their obligation is only to decide the disputed issues presented to them by the parties. The ALJs properly left it to the QBA and the TAPS Carriers to calculate the precise value of the Heavy Distillate cut in compliance with the rulings in the ID or as modified by the Commission, a practice consistently followed by the Commission and upheld by the courts.²²² Moreover, in prior TAPS Quality Bank Commission orders,²²³ the actual cost adjustment was left to the QBA, which the ALJs followed in this proceeding.²²⁴

173. The Commission rejects BP's argument that the total processing cost adjustment "end result" must fall within "the zone of reasonableness."²²⁵ BP failed, in its Brief On Exceptions, to define the "zone of reasonableness" in this context but declared, in its Post-Hearing Reply Brief, that "the zone of reasonableness is bounded on the top by [State witness] Mr. Miller's proposal and on the bottom by [Chevron witness] Mr. Engibous' proposal."²²⁶ Using BP's definition, the zone of reasonableness for the Heavy Distillate processing cost adjustment would range from approximately 7.5 cents per gallon (Mr. Engibous' proposal) to approximately 8.5 cents per gallon (Mr. Miller's proposal).²²⁷ The processing cost adjustment that results from the rulings in the ID – approximately 8.13 cents per gallon – falls squarely within the range posited by BP.

²²² *FPC v. Natural Gas Pipeline Co.*, 315 U.S. 583-85; *see e.g., Texaco Refining and Marketing Inc.*, 108 FERC ¶ 63,036, at PP 302-524 (2004); *Electrical District No. 1 v. FERC*, 774 F.2d 490, 492 (D.C. Cir. 1985).

²²³ *Trans Alaska Pipeline Sys.*, 65 FERC ¶ 61,277, at 62,290 (1993); *Trans Alaska Pipeline System*, 66 FERC ¶ 61,188, at 61,419-20 (1994); *see also* Opinion No. 481 at P 48.

²²⁴ ID at P 221.

²²⁵ BP's Brief on Exceptions at 35-37.

²²⁶ BP's Reply Brief at 39.

²²⁷ *See* corrected Ex. CVX-2 at 1; Tr. 1584:13-21 (Mr. Engibous); corrected SO A-1 at 12:1 (Mr. Miller); Tr. 1411:14 – Tr. 1412:8 (Mr. Miller) (citations omitted).

Thus, even assuming *arguendo* that the “zone of reasonableness” concept is pertinent to this proceeding and that the “end result” of the ID must fall within such a zone, the rulings in the ID fall within the specific zone identified by BP.

The Commission orders:

(A) The Initial Decision is hereby affirmed.

(B) TAPS Carriers are hereby directed to make a compliance filing establishing the processing cost adjustment for the West Coast Heavy Distillate cut within thirty days of this order, unless there is a request for rehearing, in which case the compliance filing must be made within thirty days of a final order by the Commission.

By the Commission. Commissioner Kelly not participating.

(S E A L)

Nathaniel J. Davis, Sr.,
Deputy Secretary.

EXHIBIT A

Witnesses

Dr. McGovern on behalf of BP
Mr. Schneider on behalf of EMT
Dr. Toof on behalf of EMT
Mr. Engibous on behalf of Chevron
Mr. Sanderson on behalf of Flint Hills
Mr. O'Brien on behalf of CPAI
Mr. Miller on behalf of the SOA
QBA Mr. Mitchell sponsored by TAPS Carriers

Document Content(s)

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