Appendix D

New Source Review Issues for Project Aggregation

D.1 TFO Project Aggregation Analysis

The potential applicability of Federal permitting (PSD or non-attainment NSR) depends upon the magnitude of any project emissions; therefore, it is important that this determination consider all project emissions. The first step of the PSD applicability review is to evaluate the emissions increases of the current project. (*Note: this determination is separate from the consideration of contemporaneous projects in the PSD "netting" analysis which is the second step of the evaluation process that is only needed if project increases in the first step are significant*.) In considering the emissions increases of a project, it is important that appropriate consideration is given to situations where multiple projects may be developed and permitted during a similar period of time. Separate projects should be permitted separately and their emissions do not need to be "aggregated" for PSD applicability determination purposes. However, projects occurring in a similar time frame and which depend upon one another for their economic and or technical viability should normally be permitted as a single project. In such a case, their emissions would be "aggregated" in the first step of the PSD applicability review.

In consideration of this issue, BPH has evaluated recent past and potential future projects to verify that EPA's guidance on aggregation has been appropriately considered for the proposed TFO project. The following sections of this appendix present the evaluation and discuss other BPH Toledo projects that have been recently permitted or may be considered for the future. For each project, an explanation is provided discussing why that project has been determined to be a separate project and not appropriate for aggregation with the scope of the current TFO project.

D.2 US EPA Aggregation Guidance

Neither the Clean Air Act (CAA) nor EPA's current rules explicitly describe when aggregate is required. At issue is what must be treated as single physical or operational change under the CAA definition of "modification". In general, aggregation is required when nominally separate changes or projects can collectively be seen as one change.

EPA has advanced arguably inconsistent iterations of its aggregation policies over the years. EPA's guidance has historically been articulated in a series of guidance memoranda addressing specific projects over the years. Additionally, on January 14, 2009, EPA finalized changes to NSR regulations which directly addressed aggregation issues and were represented by US EPA as clarification of their long standing aggregation policy, not a change in policy. However, this new EPA rule never became effective. EPA stayed the rule "until the proceeding for judicial review of this rule is completed or EPA completes the reconsideration of the rule." Subsequently, US EPA announced on April 15, 2010 their intention to revoke the 2009 rule, and indicated they believed it would be appropriate to go back to performing case-by-case aggregation analysis outlined in the Maplewood[1] guidance to determine if multiple separate projects "*are sufficiently related to fit within one of the ordinary meanings of a single physical change.*" 75 Fed. Reg

[1] August 3, 1996 letter from John Rasnic at US EPA to George Czerniak at USEAP addressing applicability of NSR to 3M in Maplewood, Minnesota.

19567, 19571 (April 15, 2010). This is the last substantive position that USEPA has published on the aggregation issue. This recent EPA's Federal Register notice along with the Maplewood guidance and other EPA guidance on the issue of aggregation outlines that aggregation decisions should consider the following issues:

- How close is the timing of multiple projects?
- Are projects economically and/or technically dependent on each other?
- How related are the projects' scopes (do they contribute to the same overall production goals?)
- Are projects funded or managed together or separately?
- Do later projects involve "relaxing" or removing permit conditions from earlier projects?

BPH used the above criteria to review the relationship, or lack thereof, of the current proposed TFO project to other BPH Toledo Refinery projects that have occurred in the recent past or are contemplated in the near future.

D.3 Current Project Scope

The TFO Project allows flexibility to substitute BPH's own Sunrise Canadian crude or other somewhat more corrosive crude oil feedstocks for the Canadian crude oils being processed today. The project will not increase the refinery's overall crude capacity, but it will simply enable the refinery to increase the amount of more corrosive crudes relative to what is currently being processed at the BPH Toledo Refinery. The design basis of this project will accommodate the first tranche (approximately 80 kbpd) of oil-sands-derived Sunrise crude oil expected to become available from the new Alberta Canada "Sunrise" field in the 2014/2015 timeframe. As described in Section 1 of this permit application, The TFO project scope includes changes to allow processing this crude at the BPH Toledo refinery including metallurgical upgrades to the Crude and Vacuum 1 process unit (P011) and replacement furnaces for the existing unit heaters. The project will also debottleneck the existing Coker 3 process unit to accommodate the higher residual oil content and improve the light ends recovery and reduced total sulfur compounds in the fuel gas that is combusted in the refinery. The project may marginally increase diesel production, but should not otherwise impact other product or unit feed rates.

D.4 Recent Past Permits

The following paragraphs include brief descriptions of permits issued to the BPH Toledo Refinery in the last 12-18 months, which is the period of focus for aggregation reviews identified by EPA in the Maplewood guidance.

D.4.1 PTI P0108950 – BGOT Recycle Gas Compressor Project
(PTI issued 5-4-12, startup expected in 2013)

This permit was received for the installation of a new recycle compressor in the B-Gas Oil Hydrotreater (BGOT) process unit (B029). This compressor will function as a replacement for the existing compressor in the BGOT unit. The new compressor will be larger than the existing compressor and allow for more compression of recycled gas, which will improve the hydrotreating effectiveness of the unit. This will

allow the unit to either run longer between catalyst change outs or to run approximately 10% higher feed rates at the same catalyst change-out frequency.

Although this project will not physically change the FCCU unit (P007), this project could allow FCCU feed rates to increase marginally above rates experienced in the past couple of years, but not above levels previously achieved in the baseline period (2004-2005). Since 2006, new fuel standards requiring lower sulfur in gasoline have functionally required all of Toledo's FCCU feed to be hydrotreated in the BGOT unit. As such, the FCCU, which has a design capacity of 55 KB/D, has not operated above the current BGOT capacity of about 48 thousand barrels per day (KB/D) since this time. Since the installation of the new compressor will increase BGOT rates approximately 4 to5 KB/D on average, it will allow a similar feed rate increase to the FCCU unit vs. recent levels. Therefore, the BGOT RGC project will, in effect, merely restore the FCCU rates to levels close to those achieved in practice the pre-2006 operating period.

The BGOT RGC project and the TFO project have entirely different purposes. The BGOT RGC project is a capacity restoration project for the FCCU, returning it to pre-2006 feed rates. In contrast, the TFO project is being performed to enable processing "Sunrise" crude, which does not contain more FCCU feed and will not affect FCCU feed rates. Similarly, the technical and economic merits of the projects are independent. The BGOT project economics derive from higher FCCU rates and gasoline production vs. recent levels. The TFO project economics come from enabling use of less expensive crudes and providing an outlet for the Husky Sunrise field crude *(Note. The Sunrise oil field, along with the Toledo refinery, is owned and operated by a joint venture of BP and Husky Oil.*) Likewise, the two projects have been conceived, are being funded, and are being managed as completely separate projects by BPH. Lastly, their relative timing also separates the two projects. The BGOT RGC project has been permitted, and will be started up, more than a year ahead of the TFO project. For all these economic, technical and timing reasons, the BGOT RGC project is considered a separate project from the TFO project and need not be aggregated.

D.4.2 PTI P0108887 - FCCU Preheat Exchanger

(PTI issued 5/4/2012, startup expected in late 2012)

This project is to replace the existing gas-fired FCC Preheater furnace (B018) with new shell and tube heat exchangers which will heat the FCC Feed using heat from the existing FCC Slurry Reflux stream. BPH is planning to install this equipment because the FCC Preheater furnace (B018) is of 1960's vintage and is at the end of its life. The existing Preheater furnace will be taken out of service, and the new heat exchangers placed in service, during the refinery's fall 2012 Turnaround. This project merely replaces the function of an old furnace. It is not related to the TFO project and its need and justification are unrelated to the TFO project. Further, the timing of these projects are separated by more than one year, which is further indication that these projects should not be aggregated.

D.4.3 PTI 0110265 - CV1 Offgas Rerouting

(PTI issued 8/22/12, startup expected Fall 2012.)

Originally, the Vacuum 1 off-gas stream from the Crude and Vacuum 1 process unit is amine treated and burned as supplemental fuel gas to the Crude 1 heater (B015). This permit allows BPH to route this off-gas stream into the main refinery fuel gas system for amine treatment and subsequent use as fuel in the refinery. This change will result in energy savings by not having to operate the separate amine treater for this off-gas stream. The modified operation is also simpler and expected to be more reliable. This project is not

related to the TFO project and its need and justification is unrelated. Further, these projects are separated by more than one year. This project is not appropriate for aggregation with the TFO project.

D.4.4 PTI P0106190 - Roof Modification of Tank T084

(PTI Issued 6/24/2012, startup in April 2011)

This permit is for the modification of the existing Tank T084 (PR-500134) to upgrade the tank's level monitoring system by installing radar gauges. This 71,166-barrel external floating roof tank is used for the storage of various light hydrocarbons, including naphtha, reformate, and gasoline. Installation of new tank roof fittings triggers NSPS Kb for this previously grandfathered tank. This project will not change the size or service of this tank and has no relationship to, or synergy with, the TFO project.

D.5 Possible Future Permits

The following are brief descriptions of possible future projects and a brief explanation describing why each is not related to the current TFO permit application.

D.5.1 Future Tier 3 Gasoline Standard Related Projects

EPA issued new "Tier 2" fuel standards in 2006 and is currently considering further lowering of gasoline sulfur standards. At one point, new "Tier 3" standards were anticipated in 2016. However, new fuel standards are likely to be delayed versus that previous schedule and the ultimate level of future standards are uncertain. If at such time, US EPA does lower the gasoline sulfur standards, BPH Toledo will likely have to implement a project to comply. Such projects are only conceptual at this time. Since much of the sulfur in gasoline comes from gasoline produced by the FCCU, compliance project options could require either pretreatment of the FCCU feed or post-treatment of the FCCU naphtha (gasoline). In either case, the project would be driven by external product specification requirements. Its justification would be independent of the TFO project and it would be considered appropriate for aggregation with the TFO project.

D.5.2 Future Further Heavy Crude Upgrade

The BPH Toledo refinery may desire, at some future time, to pursue projects to enable the processing of additional Canadian crude oils. For example, as mentioned previously, the current TFO project will enable the refinery to process the first tranche of Sunrise crude commercially available around 2014/2015. The timing of a possible second tranche of Sunrise crude is uncertain, but it is not anticipated until at least 2020. If the tranche 2 development proceeds, it could lead to one or more additional projects at the BPH Toledo refinery in the future such as adding additional residual oil destruction or building a new crude unit. Such projects are little more than a concept at this time. Definitive plans have not been developed and timing is uncertain but should be no sooner than 5 years after the TFO project completion. It is far from certain that any such projects will occur at the Toledo refinery and the current TFO project is not technically or economically dependent on any such potential future project. The TFO project has been planned, engineered, evaluated and economically justified as an independent project.

While possible future heavy crude projects might serve similar strategic goals as the TFO project, for the reasons stated above, such future projects cannot reasonably be considered as fitting within the ordinary meaning of a single physical change with the TFO project and need not be aggregated with it.