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**Re: Comments on DEIS for Mandan, Hidatsa and Arikara Nation's
Proposed Clean Fuels Refinery Project**

I am writing regarding the proposed new oil refinery, entitled the Mandan, Hidatsa and Arikara (MHA) Nation's Proposed Clean Fuels Refinery Project in North Dakota (referred to below as "the Project"). I was asked to review the scoping documents and EIS by community members, due to my engineering and pollution prevention experience made on behalf of community members living near oil refineries during the past 20 years. In addition I was recently asked by the Environmental Integrity Project (EIP) in Washington, D.C. to review the Draft Environmental Impact Statement (DEIS) and associated documents and submit these comments on behalf of EIP and the community. I am commenting the DEIS and on the lack of a PSD permit.

First, I urge EPA and the BIA to provide a more detailed independent evaluation of the construction, operation, and air permitting requirements for this refinery, and to re-issue a new Draft EIS (rather than a Final EIS), and a draft PSD permit. The current DEIS and information provided by the Project proponent and consultants are extremely deficient due to its failure to identify air emissions and provide security that these emissions will be limited through permit conditions. It is almost inconceivable that an entire new oil refinery (even a "small" one) could be built and operated without ongoing air emissions high enough to easily trigger air permit requirements. My comments will address this further below.

Furthermore, it appears that EPA did not have internal staffing available with special expertise in oil refinery air emissions to enable an independent technical review that was not

overly dependent on the project proponent's assessment. For example, during the scoping process and consequent conversations with EPA staff, it emerged that EPA's refinery air expert on this project had left EPA and that EPA, without having this expertise available on the project, apparently made decisions not to require a PSD permit (Prevention of Significant Deterioration).¹ This shows in the lack of a PSD permit, for example. EPA should provide additional expertise specifically on oil refinery air emissions, and reassess the Project, DEIS, and PSD Permit far beyond the minimal assessment provided by the Project proponents and its consultants.

This is a severe case of Environmental Injustice. Building an entire new refinery on reservation land, without sufficient evaluation, permit limits, and consideration of alternatives, when other refineries outside of reservation territory in the United States receive more review for modifying one piece of equipment, amounts to one of the clearest examples of environmental racism I can imagine. **I know of no oil refinery in the country operating without any air permits.** The proposed decision of EPA and BIA to approve operation of an entire oil refinery with no air permit conditions will be virtually certain to result in much increased ongoing air emissions, and very likely to increase dangerous conditions at the refinery.

Oil refineries are inherently polluting, and require detailed, complete evaluation, especially when considering siting a new one. In addition to the virtual certainty that ground-water will be polluted by the new facility, accidents involving fires, explosions, leaks, and major air releases of Sulfur Oxides (SOx), particulate matter, Volatile Organic Compounds (VOCs), PAHs (Polycyclic Aromatic Hydrocarbons), heavy metals, and many other toxic pollutants will certainly occur as they do regularly at oil refineries, especially when permitting requirements are lax or non-existent. It is not uncommon for worker deaths to occur at oil refineries at some point in refinery operation. It is essential at a minimum that stringent permit limits and enforceable BACT (Best Available Control Technology) requirements be put in place, and even more important that EPA and BIA seriously consider project Alternatives. **The comments below show severe deficiencies in the Project itself, the DEIS Project description, identification of impacts, and consideration of project alternatives including the following:**

- **The Project description is incomplete and has discrepancies;**
- **Without necessary and federally enforceable air permits, the public cannot rely upon even the available information in the DEIS Project description;**
- **The Project is a major source requiring air permits and Best Available Control Technology (BACT) and is missing evaluation of many air pollution sources such as:**
 - Routine, non-emergency flaring due to lack of compressor and treatment capacity

¹ See email message, attached, from M. Morales, U.S. EPA, to myself, Julia May, 11/17/04, attached, which stated: *"I have a draft analysis of the air emissions from the proposed refinery that I'm currently evaluating. Our air refinery expert took a different job about a month ago and I was wondering if you would like to look at the document to see what additional questions you may have based on the analysis? From my cursory review, the refinery will not need to apply for a PSD permit."*

- Additional emissions from Storage Tanks and tank cleaning sludge evaporation
- Fugitive emissions resulting from lack of enforceable, government-reviewed and standardized Inspection and Maintenance programs and other sources
- Emissions caused by startup, shutdown, and maintenance
- Lack of any enforceable assurance that Project proponents will permanently use low sulfur syncrude refinery feedstock, especially when high-sulfur, heavy syncrude is cheaper and available
- **The Project fails to incorporate necessary air monitoring equipment and standards** which would verify air emissions and help effectively limit emissions

I. The Project Description is incomplete and has discrepancies

The DEIS should be rewritten as a new draft document and not a final EIS, because of major omissions and discrepancies in the current draft. For example, the DEIS makes two directly opposite statements about major equipment in the refinery:

The primary sources of air pollutants include the fluidized catalytic cracking unit and various heaters and boilers that serve the refinery's processes and general facility heating requirements. (page 4-118)

The refinery process would not include a fluidized catalytic cracking unit, which is the largest air-emitting unit in most refineries. (page 4-133) [emphasis added]

This is at a minimum confusing. The public cannot evaluate the project when it is unclear whether certain major sources of emissions will be present or not at the refinery.

Furthermore, in many key cases there is no information provided, even in technical appendices of the type of equipment to be used. For example, no mention is made of air emissions controls to prevent flaring (such as compressors) and other standard controls. The DEIS must describe the Project consistently and with enough detail to allow the public to fully assess the Project.

The Project description does not provide actual refinery maximum capacity, and leaves out description of plans to further expand the refinery, further increasing air emissions

Even something as basic and fundamentally important as the overall refinery capacity is unknown to the public-- some parts of the DEIS say the capacity will be 10,000 barrels per day,

others call it 15,000. As shown below, the actual capacity, and planned expanded capacity, will be larger yet, but is not defined in the DEIS.

In a public hearing meant for the purpose of providing the public with information on the proposed Project, it was reported that the President and CEO of Triad Corporation informed the public that the proposed MHA refinery would be expanded beyond the 15,000 barrels per day cited in the DEIS. Here are excerpts from the attached article:

Makoti area residents attend public hearing

Mountrail County Record, by Theodora Bird Bear

A number of area residents were at the public hearing on the draft Environmental Impact Statement (EIS) for the proposed oil refinery a couple of Saturdays ago in Makoti. A panel of officials from the Environmental Protection Agency (EPA) and Bureau of Indian Affairs (BIA) traveled to Makoti to accept public comments. . . .

Robert Wooley, President and CEO of Triad Corporation accompanied the panel throughout the week including the public hearing on Makoti.

When asked why the tribe would limit production to 15,000 barrels per stream day, Wooley said the relatively short pipeline between the proposed refinery site and Plaza can be redone to increase feedstock to the refinery.”

“**It can be expanded,**” he said. “Who’s going to be paying for this,” asked another area resident.

Wooley said other refinery expansions were in the works and investors are always very interested in refineries. “Investors have to be repaid.” “Will grant money be used to pay the investors?” the man asked. “**It’s very profitable,**” replied Wooley. [emphasis added]

The DEIS must be reissued to reflect in writing the actual maximum refinery capacity, and plans for further expansion. All emissions sources must be re-evaluated in light of maximum refinery capacity planned for the site, and the EIS re-issued as a new Draft. Otherwise permit conditions must be set limiting the crude input to the refinery to 10,000 barrels per day.

II. Without federally enforceable air permits, the public cannot rely on even the available Project description

As stated above, key air controls are missing from the DEIS, but even those that are present provide no assurance that they will:

- Actually be put in place or fully implemented,
- Be sufficient to minimize air emissions or meet Best Available Control Technology (BACT) limits,

- Be maintained in good operating condition without excessive downtime,
- Have any enforcement mechanism for emissions limits or monitoring requirements available to government oversight agencies through air permit conditions, or
- Have monitoring requirements of any kind reported to any government agency,
- Have monitoring compliant with standard EPA quality assurance and test methods.

It must be assumed that without enforceable permit limits, none of the general nor specific claims in the DEIS can be relied on. The DEIS implies that because this will be a new refinery compared to the other refineries around the nation, it will automatically have much improved operation and be modernized. However, the other refineries are subject to air permitting requirements which set limits on emissions, which require monitoring of these emissions, which require the application of provable BACT when new sources are added or sources are modified, and which have government enforcement of these conditions. None of this can be said for the proposed MHA Nation refinery because no air permitting conditions are currently proposed.

For example, the DEIS gives the following sources and emissions:

	VOCs	NOx	SOx	PM	CO
DEIS & APPENDICES IDENTIFIED THE FOLLOWING:					
Heaters & Boilers	5.97	26.87	19.35	8.23	40.88
Flares (DEIS appendix states this includes combustion of vapors from wastewater system, loading system, Pressure Relief Device, storage tank vapor recovery, and some fugitives emissions)	6.13	2.98	0.85	0	16.21
Sulfur Recovery Tail Gas	0	0	30.84	0	20.85
Emergency Generator	0.1	4.92	0.12	0.04	0.36
Fire Pump	0.01	0.91	0.02	0.01	0.04
Storage Tanks	26.7	0	0	0	0
Soybean oil extrusion (Truck unloading, meal handling & loadout)		0	0	8.51	0
Total identified in DEIS:	38.9	35.7	51.2	16.8	78.3

Yet there are no air permit conditions limiting emissions from Heaters and Boilers, Flares, any of the devices that the flares are purported to control (such as the wastewater system, loading operations, Pressure Relief Devices, storage tanks, or some fugitives sources), nor for the Sulfur Recovery Unit, Emergency Generator, Fire Pumps, Storage Tanks, or Soybean oil extrusion processes, nor any oil refinery process proposed. Consequently, the emissions above are effectively allowed to be unlimited. There are no permit conditions, for example, for ensuring that tank seals have no gaps, that there be no tears or holes in seal fabric, that floating

roof tanks rest on liquid surfaces, that approved emission control systems be gas tight or meet a specific control efficiency, that pressure tanks be gas tight, that fittings, and sampling or gauging wells have tight, engineered fittings, that pressure-vacuum valves be kept leak tight, and inspected, that vapor pressure of materials in tanks be tested, or that any conditions at all are set. Please see attached BAAQMD rule which does set such enforceable standards (currently being updated and made more stringent).² There are no limitations for the MHA Project such as those required in the BAAQMD³ regulation (attached) for sulfur recovery plants, sour water strippers, and other activities generating SO_x emissions, including requirements for measuring sulfur content in crude inputs, requirements for ground-level monitors of deadly H₂S gas (hydrogen sulfide) generated by such processes, limits on sulfur content in particular gas streams, etc. These are just examples; there are many more pieces of equipment (such as Heaters and Boilers) proposed in the DEIS for which regulators throughout the nation have set specific and enforceable standards of operation.

These regulations set limits for existing refineries which have operated for many decades. Yet the proposed new MHA refinery is not even being required to meet regulatory limits that old refineries are meeting, let alone meeting BACT limits required for new sources. The detailed limits set in regulations by various regulators throughout the country are too voluminous to attach, but they represent a body of specific standards available for review, and which are normal and necessary standards for limiting emissions from all parts of oil refinery equipment and operating conditions. Such standards are not being met by the proposed MHA Project.

Either enforceable and specific permit limits with EPA-approved monitoring techniques, recordkeeping, and sufficient government inspections must be put in place to actually limit emissions to those listed above and to limit crude oils and other inputs to the refinery to 10,000 barrels per day, or the DEIS must be amended to reflect the maximum impacts which can occur due to the unlimited emissions allowed, and the PSD permit re-opened. The extent of lack of specific, conditions to ensure minimizing of emissions, are too far ranging to fully comment on these in detail. While it is conceivable, it is not practical that commenters like myself or other members of the public should be required to pull together and submit documentation for an entire new oil refinery, for each and every part of the proposed facility, all of the following:

- All appropriate permit conditions for every pollutant, reflecting BACT limits met in other parts of the country for an entire refinery
- All appropriate standardized monitoring techniques, test methods, quality assurance protocol, and inspection procedures used by regulators,
- All appropriate recordkeeping requirements, fees, and penalties for lack of compliance, etc.

² BAAQMD, REGULATION 8, ORGANIC COMPOUNDS, RULE 5, STORAGE OF ORGANIC LIQUIDS, adopted Nov. 27, 2002, attached, <http://www.baaqmd.gov/dst/regulations/rg0805.pdf>,

³ BAAQMD, REGULATION 9, INORGANIC GASEOUS POLLUTANTS, RULE 1, SULFUR DIOXIDE, March 15, 1995, attached, <http://www.baaqmd.gov/dst/regulations/rg0901.pdf>

Such a task may not be asked of the public as a practical matter, and the time allotted for public comments does not allow this. It took two years for the Project proponents and consultants to pull together even the deficient DEIS; the public cannot be expected to produce the necessary set of permit conditions for an entire refinery in a couple of months. The public sorely needs the leadership and detailed attention of EPA and BIA to reopen the PSD process, set detailed and enforceable BACT limits and monitoring requirements for all the refinery sources, including all those listed in these comments and the DEIS, fairly compare these to more benign project alternatives such as a biodiesel facility, and resubmit these for public review as new drafts.

The proposed “new” refinery apparently will include used, rusted equipment

Without clear air permits requiring BACT and proper equipment maintenance, there is nothing within Project requirements stopping refinery proponents from purchasing old equipment phased out from use at other refineries. It appears that this is the case for at least part of the proposed MHA refinery. A DEIS appendix⁴ which lists the use of rusted Storage Tanks for the Project, seems to clearly indicate that old tanks are being purchased for the Project, rather than new ones constructed:

Tanks 4.0
Emissions Report – Summary Format
Tank Identification and Physical Condition . . .
Description: Crude Oil Storage . .
Paint Characteristics:
Internal Shell Condition: **Light Rust**

All the following tanks listed in this appendix are described as having “Light Rust,” including the tanks labeled: Crude Oil, Hydrocrackate Storage, Naphtha Storage, Ethanol Storage, Alkylate Storage, Reformate Storage, Biodiesel Storage, Raw Light Hydrocarbon Storage, Light Slop Hydrocarbon Storage, Regular Gasoline Storage, Premium Gasoline Storage, Off Road Gasoline Storage, and Mid Distillate Storage. The condition of additional Floating Roof Tanks and Pressure Vessels described in the DEIS is not provided, but they may also be used and rusted.

Furthermore, the DEIS fails to identify whether other equipment at the refinery is being purchased in a used condition. If the proposed refinery will consist of old pieces of equipment relocated to the Project site, this is quite different from new construction. Such plans must be elucidated to provide basic information about equipment reliability. The apparent use of old equipment can mean higher associated emissions, and more likelihood of leaks and even fires or explosions. In addition, without air permits to ensure that equipment is well maintained, the

⁴ Air Report Appendix C, which is entitled on its first page as “TAT Refinery Constants.” Beginning with the 34th page of this appendix, labeled as “Page 1” are the Tanks characteristics pages.

refinery proponents have an incentive to purchase the cheapest surplus equipment available. Tank seals, tank fittings, pressure/vacuum valves, and many other components may be in poor condition, ill-fitted, or with seal gaps, causing high emissions, or even leaks and spills, in addition to simply being rusted.

Equipment such as tanks, for example, not in good repair can cause major spills, air emissions, or worse accidents. A January 2003 BAAQMD incident report for the Valero Benicia, California refinery, found that a small, 3-inch hole in a crude oil tank caused a major spill of 250,000 gallons of oil, in addition to odor complaints from community members.⁵

The DEIS should provide details on all the proposed equipment, whether new or used, and provide information on the origin and history of use and maintenance of this equipment, rather than implying that an entirely new refinery is being constructed if that is not the case.

“Small” refineries can be more polluting than large ones

The DEIS also implies that because this refinery will be relatively “small” compared to many refineries in the nation, it will automatically be much less polluting. However, frequently, smaller facilities have less capital resources for investing in pollution prevention equipment and procedures, and can therefore sometimes be operated in a sloppy manner, lacking in pollution controls, or with less redundancy or less backup equipment. When processing units are shutdown either unexpectedly or as planned, in smaller refineries with no redundant equipment, there may be nowhere to route excess gases, causing increased air pollution during refinery equipment shutdown periods, which occur frequently at refineries. Accidents happen frequently at “smaller” refineries as well, not just larger ones.

For example, the Pacific Refining Co., Hercules, CA, 50,000 bpd,⁶ which closed in 1997 after a long history of accidents and air pollution violations, was the smallest refinery in the San Francisco Bay Area. This refinery had many more air quality violations as determined by the BAAQMD, than any of the large refineries in the region, with hundreds of complaints every year by neighbors. Problems were so severe with this small refinery, that the local BAAQMD took the unusual action of bringing inspectors to the community to take legal depositions from neighbors under penalty of perjury. These were reviewed by the local Health Department (of the Contra Costa County), which found good evidence that days when neighbors made pollution and odor complaints and reported health problems (such as breathing difficulties and headaches), coincided with days that the BAAQMD found high air releases and accidents at the facility. The Health Department stated that, while this was not a controlled study, there was good evidence that neighbors’ health was being impacted by this smaller oil refinery.⁷ Dr. Walker, Medical Director of the Contra Costa County Health Services Department, reviewed the material and found:

⁵ BAAQMD incident report, Valero Benicia Jan 29 2003 (I030129), attached, <http://www.baaqmd.gov/enf/incidents/2003/I030129.doc>

⁶ http://www.environmentaldefense.org/documents/1659_Methodology.htm, attached

⁷ Pacific Refinery Health Survey Review (August 5, 1992), BAAQMD and Contra Costa County Health Department

There is a striking consistency among the types of acute health effects complained of by the declarants. Many of the declarants complain of headaches, sore throats, coughing and nausea resulting from the odors and emissions from Pacific Refining Company. Some, who have pre-existing asthma conditions, complain of exacerbation of those symptoms due to the refinery's emissions. These are exactly the kind of acute symptoms which one might expect to result from significant odor and emission releases from an oil refinery.

Even though the group of declarants constitutes a self-selected group, there is remarkable specificity, consistency, and time-relatedness in the declarations taken as a whole. For this reason, I believe that these declarations provide credible and reliable evidence that the periodic odor and emission releases from Pacific Refining Company are causing acute health effects in the Rodeo Community. People do not generally present in these large numbers in a single community this specific range of health complaints unless there is a common inciting factor, which in this case I believe is environmental.

Despite the DEIS's implying so, there is actually no such thing as a "small" oil refinery. Any oil refinery is by its nature a major heavy industrial facility using massive amounts of explosive, flammable, and acutely hazardous materials with potential consequences that must not be minimized or described as benign (as the DEIS frequently does). For example, the DEIS states:

The refinery has been designed to completely avoid many of the types of exposure that could lead to these potential impacts and to minimize other types of exposure. Typical refinery-related impacts to human health may include damage to specific organs or tissues from excessive direct exposure to hydrocarbons, metals, and other site-related chemicals. (page 4-117)

It is patently false to imply that the MHA proposed refinery is designed to be fundamentally different from other oil refineries. In fact, the Project has many aspects which are substandard compared to other refineries (even very old, and much larger ones), because the older and larger refineries are required to apply BACT as they modernize, and have government-reviewed air permit limits, monitoring, and enforcement.

The DEIS has no basis for implying that because of the relatively smaller feedstock capacity of the refinery, emissions will be lower. This is certainly not always the case. For example, the Mid-Atlantic Regional Air Management Association (MARAMA, an association of ten state and local air pollution control agencies) found in an evaluation of different refineries:⁸

There is considerable variation in emissions from refinery to refinery. These variations do not appear to be directly correlated with the refinery capacities shown in Table

⁸ *Mid-Atlantic Regional Air Management Association Evaluating Petroleum Industry VOC Emissions in Delaware, New Jersey and Southeastern Pennsylvania, Final Report*, October, 2003, excerpt attached http://www.marama.org/reports/refinery_VOC.pdf#search=%22BP%20Amoco%20Yorktown%20Oil%20refinery%20C%20enclosed%20wastewater%20system%22

1. For example, the BP refinery in Yorktown ranks relatively small in terms of capacity, but ranks relatively high in terms of VOC emissions. (page 8)

A joint EPA-Amoco pollution prevention audit to evaluate in detail emissions from this same Amoco refinery found:⁹

The release inventory process allowed a comparison of pollutant generation, on-site management and ultimate releases to the environment. The Refinery generates about 27,500 tons/year of pollutants. As a result of site hydrogeology, on-site wastewater treatment, and solid waste recycling practices, about 12,000 tons are recovered, treated or recycled and do not leave the Refinery site. **Of the remaining 15,500 tons about 90 percent are released to the air.**

The emissions from this relatively smaller refinery were actually higher than emissions from larger refineries. Ninety percent of the 15,500 tpy of emissions found were attributed to air emissions, adding up to 13,950 ton per year. The Amoco refinery did have enforceable government agency oversight over its air releases, unlike the proposed Project.

The MHA Nation refinery, by contrast, is proposed to be constructed with no air permits nor any air emission limits at all. It is being estimated with air pollutant emissions of VOCs, NOx, SOx, CO, and PM totaling about 221 tons per year for these five categories, even though the facility would essentially be allowed to have unlimited air emissions. The MHA Nation proposed refinery DEIS estimate amounts to only about 1.6% of the total estimated through the detailed EPA-Amoco study. This extremely low estimate for the MHA Nation proposed refinery is simply not credible, especially for a refinery with no enforceable permitted air emissions limits at all. Below are a few examples of missing emissions sources not included in the DEIS estimates.

III. The Project is a Major Source requiring air permits and BACT

The Project is a major source of air pollutants requiring a PSD permit and BACT. Air emissions have been vastly underestimated. Air emissions for the project are currently allowed to be unlimited, because no proposed air permits exist. Conservatively low estimates of individual sources provided easily put Project criteria emissions at several hundred to thousands of tons each year for multiple pollutants. Enforceable BACT emission limits are missing for all sources of the refinery since no permit conditions are proposed, and due to a failure to list key controls at all.

⁹ Amoco/US EPA P2 Project, last updated May 1996, <http://es.epa.gov/techinfo/facts/amova-d.html#summary>, attached

The DEIS is Missing Major Sources of Air Emissions (tons per year)

	VOCs	NOx	SOx	PM	CO
DEIS & APPENDICES IDENTIFIED THE FOLLOWING:					
Heaters & Boilers	5.97	26.87	19.35	8.23	40.88
Flares (DEIS appendix states this includes combustion of vapors from wastewater system, loading system, Pressure Relief Device, storage tank vapor recovery, and some fugitives emissions)	6.13	2.98	0.85	0	16.21
Sulfur Recovery Tail Gas	0	0	30.84	0	20.85
Emergency Generator	0.1	4.92	0.12	0.04	0.36
Fire Pump	0.01	0.91	0.02	0.01	0.04
Storage Tanks	26.7	0	0	0	0
Soybean oil extrusion (Truck unloading, meal handling & loadout)		0	0	8.51	0
Total identified in DEIS:	38.9	35.7	51.2	16.8	78.3
A FEW ADDITIONAL AIR EMISSIONS NOT ASSESSED IN THE DEIS WHICH MUST BE ADDED:					
<u>Routine, non-emergency Flaring Events</u> (not included above) due to no identified requirement for compressor and treatment capacity to prevent non-emergency flaring	113 to 2190 or more	197	203 to 1606	Should be assessed	Should be assessed
<u>Fixed Roof Storage Tank vapor recovery system leaks:</u> Fixed roof tanks with vapor recovery can have <u>higher</u> emissions than fixed roof tanks due to valve leak	Should be assessed				
<u>Storage Tank Cleaning:</u> No control of evaporative emissions from cleaning 23 tanks	153				
<u>Inspection and Maintenance for tanks</u> -- No enforced inspection	Should be assessed				
<u>Inspection and Maintenance for Fugitive leakage emissions from valves</u> -- No enforced inspection	7 to 1084 or more				
<u>Inspection and Maintenance for Fugitive leakage emissions from all other fugitives sources</u> -- No enforced inspection	Should be assessed				
<u>Fugitive leaks from flanges</u>	150 to 1830 or more				
<u>Startup / Shutdown emissions must be included:</u>	45 to 368 or more	Should be assessed	10 to 100 or more	Should be assessed	Should be assessed
Range of Emissions, Partial Totals (tons per year):	More than 507 to 5664	More than 233	More than 264 to 1757	Should be assessed	Should be assessed

A. Flare emissions are grossly underestimated and the MHA Nation proposed refinery flare system is designed for routine flaring

Having sufficient compressor and treatment capacity to reduce the volume of gases within the refinery on a routine basis so that these gases can be recycled and used for fuel makes the difference between routine daily flaring, illegal under the Clean Air Act, and flaring which occurs only during true emergencies. The DEIS for the Project does state that flaring will be done only during emergencies, yet this is inconsistent with the Project description, which does not include compressor and treatment capacity to prevent flaring. It is so common for oil refinery officials to inaccurately claim that they use flaring only for emergencies, that EPA published an Enforcement Alert¹⁰ (attached) letting refiners know that routine flaring, without sufficient flare prevention equipment, is not emergency flaring and can be illegal. EPA has taken enforcement action against refiners for failure to have sufficient equipment to prevent routine flaring. EPA found that “clean fuels” projects can lead to greater emissions of sulfur compounds through flaring. EPA found that oil refinery flares are subject to 40CFR60, NSPS, Subpart J,¹¹ which limits emissions from Fuel Gas Combustion Devices, including flares at refineries. EPA found:

Frequent, Routine Flaring May Cause Excessive, Uncontrolled Sulfur Dioxide Releases, Practice Not Considered ‘Good Pollution Control Practice,’ May Violate Clean Air Act

EPA investigations suggest that flaring frequently occurs in routine, nonemergency situations or is used to bypass pollution control equipment. **This results in unacceptably high releases of sulfur dioxide and other noxious pollutants and may violate the requirement that companies operate their facilities in a manner consistent with good air pollution practices for minimizing emissions. New “clean fuels” requirements will lead to the removal of even greater amounts of sulfur from feed stocks.** Companies should ensure they have adequate capacity to treat these pollutants without resorting to excess flaring.

Good pollution control practices include:

1. Procedures to diagnose and prevent malfunctions; and
2. Adequate capacity at the back end of the refinery to process acid gas. . . .

¹⁰ EPA Enforcement Alert, Vol. 3, Number 9, October 2000

¹¹ § 60.100 Applicability, designation of affected facility, and reconstruction.:

(a) The provisions of this subpart are applicable to the following affected facilities in petroleum refineries: fluid catalytic cracking unit catalyst regenerators, fuel gas combustion devices, and all Claus sulfur recovery plants except Claus plants of 20 long tons per day (LTD) or less. The Claus sulfur recovery plant need not be physically located within the boundaries of a petroleum refinery to be an affected facility, provided it processes gases produced within a petroleum refinery.

Hydrocarbon Flaring Considered Fuel Gas Combustion Subject to NSPS

The NSPS defines “fuel gas” to be any gas generated and combusted at a refinery and identifies flares as NSPS affected facilities. EPA’s letter to Koch Petroleum Company (Dec. 2, 1999) provides a detailed explanation of the various types of gases subject that are [sic] to NSPS requirements because they meet the definition of fuel gas (see <http://www.epa.gov/oeca/ore/aed>).

The NSPS exempts flaring of fuel gas from the standards for sulfur oxides and monitoring requirements only when there is a process upset or an emergency malfunction. (40 C.F.R. Section 60.104(a)(1)). **This “plain English” exemption applies only to true emergencies, and the Agency expects other flaring to be monitored and comply with applicable emission limits.** [emphasis added]

EPA believes that many affected facilities at petroleum refineries may not be in compliance with applicable NSPS requirements (fuel gas monitoring and emission limits for fuel gas combustion devices) because of their routine reliance on flaring to control releases of hydrocarbons. The Agency also believes that, as with acid gas flaring, good air pollution control practices include investigating the causes of flaring events and taking corrective action to avoid or reduce the probability of their recurrence. One way to address these potential compliance issues may be through the proper design, operation and maintenance of flare gas recovery systems

The DEIS fails to identify the methods and equipment discussed by EPA such as flare monitoring, good air pollution control practices, flaring prevention investigations and methods, sufficient sulfur gas treatment capacity to meet the 230 mg/dscm hydrogen sulfide limit within the flare (which limits SO_x emissions from the flare), and other NSPS requirements for flares.

The DEIS describes the process of flaring and gases routed to the flare from various sources, but without describing any compressor, or treatment capacity to recycle gases back to the refinery fuel gas system, nor any procedures to prevent repeated malfunctions causing flaring. Deficiencies of this kind inherently result in routine flaring, which by itself can constitute a major source of emissions requiring a PSD permit. Facilities with no, or insufficient flare gas and treatment capacity can easily have daily flaring of **many tons per day**, as shown for the Tesoro facility below which had some, but insufficient, compressor and treatment capacity. The DEIS must be corrected to reflect large emissions from flaring currently designed into the MHA Nation Project, and must require that BACT and NSPS standards be applied to flares, including sufficient compressor and treatment capacity to prevent routine flaring, with sufficient monitoring.

Comprehensive regulations controlling and preventing flaring episodes have been adopted by at least three areas of the U.S. which have large concentrations of oil refineries and consequently plenty of examples of routine flaring. These regulators (BAAQMD in Northern California, the South Coast Air Quality Management District (SCAQMD) in Southern California, and the State of Texas (Texas Commission on Environmental Quality)), have scrutinized flaring emissions and have all recognized flaring as major sources of criteria pollutant emissions.

The BAAQMD produces an on-line inventory of flaring events and emissions from the five Bay Area oil refineries for public access, and also requires that refineries videotape their flaring events, in addition to monitoring gas flow and chemical constituency within the flare.

Data is produced according the BAAQMD flare monitoring rule and quality assurance test methods.¹² I am attaching comments I made to the BAAQMD during the flare regulation process, which include charts I produced by compiling BAAQMD monthly 2004 online flaring events from Bay Area refineries.¹³ Attached also are the spreadsheets with the BAAQMD data I compiled.¹⁴ My attached comment also discusses readily available methods for preventing flaring, frequent unnecessary flaring at refineries due to repeated preventable malfunctions, lack of compressor capacity, and other preventable occurrences, and the prevention of flaring as an inherently safer practice for refineries.

Excerpted below from my previously cited flare comments to the BAAQMD are charts showing huge emissions from flaring at San Francisco Bay Area oil refineries. These events were documented by the BAAQMD website through its BAAQMD flare monitoring regulation, which is the most comprehensive flare monitoring program in the nation. While this detailed assessment by the BAAQMD show substantial, repeated, large flaring events, this agency concluded that the large 2004 emissions were actually lower than previous flaring in the region. 2004 flaring occurred after certain regulatory and public scrutiny. The charts below show large and frequent flaring events which occurred even after the refineries had reduced flaring. This following table summarizes data from the charts, which used flaring events downloaded directly from Bay Area Refinery 2004 monthly Flaring Emissions Reports and compiled together:

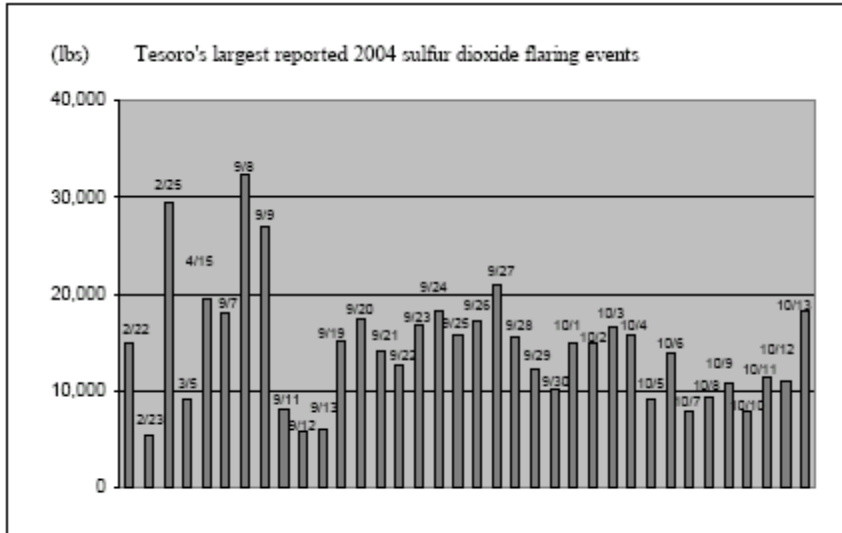
Refinery	Number of 2004 Flaring Events	VOCs	SOx
Tesoro, Avon	205	183 tons per year	296 tons per year
Valero, Benicia	563	99 tpy	71 tpy
Conoco, Rodeo	112	57 tpy	243 tpy
Average of above	293	113 tpy	203

These charts and table show large emissions from routine flaring at Bay Area refineries.

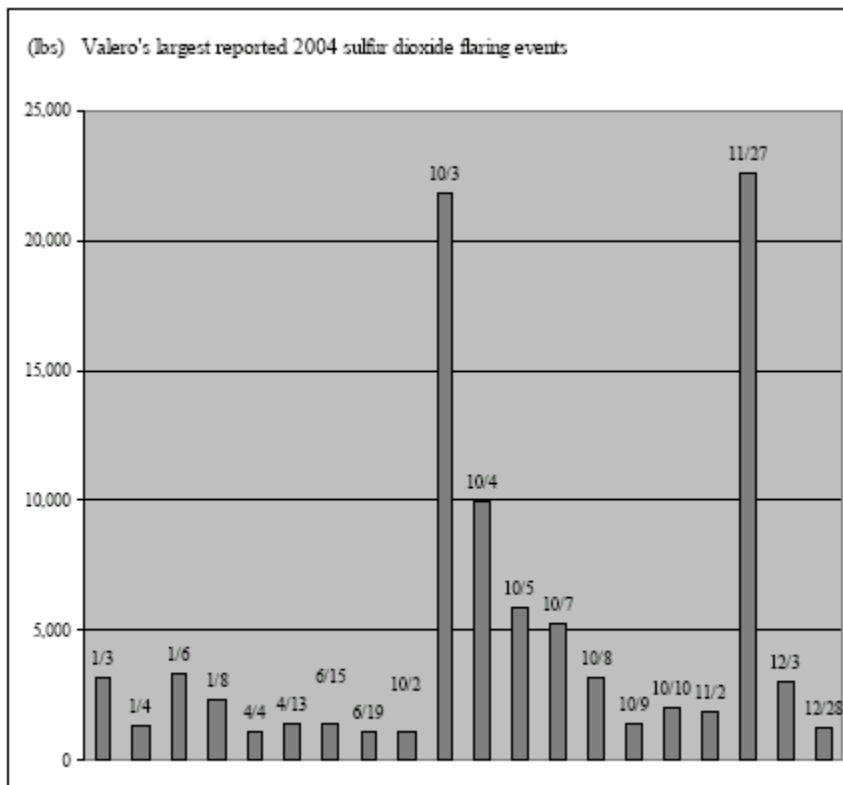
¹² BAAQMD website, <http://www.baaqmd.gov/enf/flares/> provides monthly flare reports for each flare at each Bay Area refinery

¹³ *Comments on proposed BAAQMD Regulation 12, Rule12, Miscellaneous Operations, Flares at Petroleum Refineries*, Julia May, April 13, 2005 to BAAQMD, Jack Broadbent, Air Pollution Control Officer

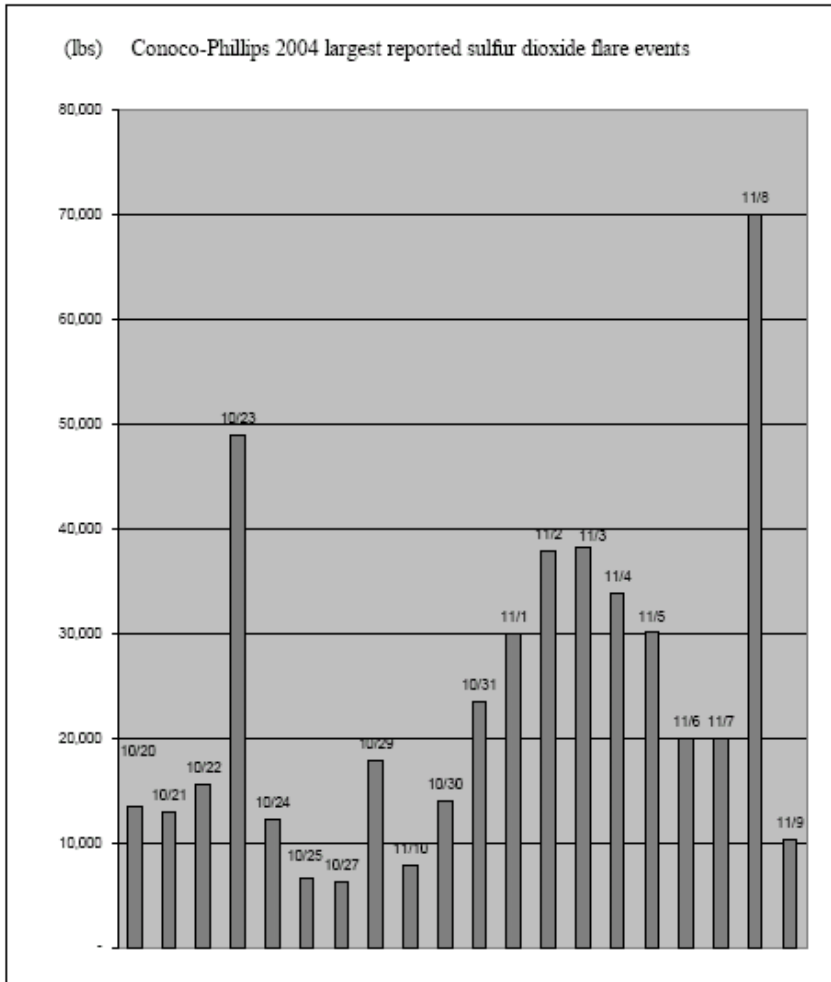
¹⁴ Spreadsheets, JMay flaring events compiled from BAAQMD 2004 online data



Tesoro in Avon had 36 flaring events that generated more than 5,000 lbs. of sulfur dioxide each.



Valero in Benicia reported 20 flaring events with sulfur dioxide emissions of more than 1,000 lbs. each (plus dozens of additional smaller events).



Conoco-Phillips in Rodeo reported the largest sulfur dioxide flaring events in 2004. 20

The Tesoro facility had even higher flaring emissions in previous years; the BAAQMD found flaring at that facility had gone down substantially after adding compressors. However, even Tesoro did previously have some compressor capacity for flares, unlike the proposed MHA Nation Project. The BAAQMD staff report found that flaring was reduced by adding compressors, and found that other Bay Area refineries also reduced flaring during startup/shutdown and due to many other regular refinery activities:¹⁵

While the District staff was studying flare emissions during the TAD [Technical Assessment Document] period, the Tesoro Refinery was in the process of installing a fuel gas compressor capital improvement project to recover hydrocarbons previously sent to the flare.

Tesoro added an additional 8 million standard cubic feet of recovery capacity to the flare system. This project significantly reduced the volume of gases flared and

¹⁵ BAAQMD, *Staff Report, Proposed Regulation, Regulation 12, Miscellaneous Standards of Performance, Rule 12, Flares at Petroleum Refineries*, July 8, 2005, Alex Ezersky et al., attached

emissions from flaring. Additionally, all the refineries instituted programs to reduce flaring. Measures implemented include improvements in flare gas compressor reliability, prolonging the interval between major maintenance activities, better process controls during startup and shutdown, source reduction efforts and increased scrutiny of flare gas systems. (pages 12-13)

In 2002, before the addition of compressor capacity at Tesoro, the BAAQMD gathered data on flaring at this refinery.¹⁶ For the period when SOx emissions were available for this refinery, there was daily flaring of **SOx emissions averaging over 17,500 lbs/day**, or about 8.8 tons per day, for two flares, even though the facility did have compressor capacity of over 2 million standard cubic feet per day. VOC emissions were also daily, at an average of 23,625 lbs/day or almost 12 tons per day. The MHA Nation proposed refinery is a smaller refinery than the Tesoro facility, but would have no compressor capacity. It could certainly have daily flaring. If the MHA Nation had daily flaring at half the rate which did occur at the Tesoro facility, this would equal 1606 tons per year of SOx, and 2190 tons per year of VOCs (including methane). Alternately, comparing the MHA Nation at about one tenth the capacity of the Tesoro facility, with daily flaring, the MHA Nation flaring might be predicted at 321 tons per year of SOx, and 431 tons per year of VOCs.

The BAAQMD regulation of flaring includes a detailed air monitoring regulation (discussed further in the monitoring section of this document), which is the most advanced in the nation, and detailed regulations requiring prevention of flaring. The BAAQMD data and EPA Enforcement Alert show clearly that when accurately assessed, ongoing flaring emissions are large and frequent. EPA and BIA must evaluate in detail the compressor and treatment capacity planned for the planned MHA Nation refinery, and must require sufficient capacity as part of "Good Engineering Practices" required by EPA to prevent routine flaring. The DEIS must provide this information to the public in detail, and an air permit must be established to prevent huge emissions from flaring which would be allowed under the current proposal.

Furthermore, the flare NOx emissions should be drastically increased for the Project, unless permit conditions are set to monitor flare gases and limit NOx to the levels described in the DEIS. Although the BAAQMD online database for flares does not include NOx emissions, the most recently adopted BAAQMD Ozone Attainment Plan did include oil refinery flare NOx emissions, estimated to be much higher than the number used for the MHA Nation Project DEIS. The proposed MHA Nation refinery estimates flare NOx emissions at a maximum of 2.98 tons per year, even though there is no equipment or operational requirement in place to prevent unnecessary routine flaring. The BAAQMD, where compressor capacity and inspection and enforcement departments and permits are in place, published an inventory for refinery NOx emissions of 2.7 tons per day,¹⁷ or on average pf about 197 tons per year for each Bay Area refinery. This Bay Area average was much lower than the maximum for the worst refinery.

¹⁶ Attached spreadsheets Tesoro 03 BAAQMD Database were provided to me by the BAAQMD in 2003, which include 2002 flaring data for Tesoro refinery

¹⁷ BAAQMD, *Revised San Francisco Bay Area Ozone Attainment Plan for the 1-Hour National Ozone Standard*, Adopted October 24, 2001, excerpt attached

Although these refineries have higher crude capacity than the proposed MHA Nation refinery, every Bay Area refinery did have compressor capacity to prevent flaring, otherwise flaring would have been even higher. We can reasonably use the average BAAQMD figure of 197 tons per year for NOx for the MHA Nation, unless the Project is provided an enforceable permit limit of 2.98 tons per year of NOx from flaring cited in the DEIS.

Flaring is also the source of particulate emissions, especially during an entire refinery shutdown when all the refinery gases are vented to the flare, when flare combustion becomes highly inefficient due to suddenly overwhelming the flare with large amounts of refinery gases. The following photographs show black smoke from a flare event which occurred when a refinery was suddenly shut down due to errors resulting in a power outage, and all the gases were vented to the flare (July 10, 2002, Conoco-Phillips Rodeo, CA). This facility was cited for violating air quality regulations, and a large area was covered by black smoke. The potential emissions of particulate matter from flaring was not analyzed at all in the MHA Nation DEIS; flaring particulate matter emissions were simply listed as zero. The DEIS must add an assessment of flare particulate emissions.



Photo from video by community member Ethel Dotson using video camera provided to her by the BAAQMD, July 10, 2002, at the Conoco-Phillips oil refinery next to the Boys & Girls Club, Video footage was submitted to the BAAQMD and shown in public hearings.



Additional photo from Ethel Dotsen video

Another photo, by community member Jesse Marquez, of flaring in the South Coast Air Quality Management District, attached, also shows shows major smoking (particulate matter emissions) from a large flaring event in Southern California (attached). Particulate emissions from flaring, especially during sudden refinery shutdown periods, must be assessed and included in the DEIS.

Flares should be appropriately reserved for use in true, non-preventable emergencies. New refinery flaring sources must be designed with sufficient compressor and treatment capacity and sufficient operating procedures to prevent unnecessary, preventable flaring, which cause huge air emissions. The current MHA Nation DEIS fails to provide these required safeguards and emissions prevention methods.

B. Storage Tank emissions are underestimated

Inspection program for tank seals and vents

According to the BAAQMD, lack of inspection programs has in the past resulted in large emissions from tanks. Without an independent and federally enforceable program of inspection, a simple statement that internal voluntary inspections will occur has no meaning for effectively minimizing emissions. Self-inspection, without additional government oversight, is like car drivers giving themselves a ticket for speeding. As discussed earlier in this comment, tank operation includes many seals, fittings, and vents, which are normally identified and enforceably

regulated by government agencies, and which can be sources of large emissions if unregulated. The BAAQMD audit on tanks,¹⁸ found 39% non-compliance with regulatory requirements, and as a result found high associated emissions and recommended additional controls and enforcement procedures. The report and its details are attached.

Some particularly relevant findings included violations involving Internal Floating roof tanks causing air emissions. These included liquid on top of the tank roof, liquid on top of the tank seal, manway on the floating roof not closed, missing or sunk slotted guide pole/sample well, excessive sample well opening, excessive gap at other roof penetration, and vertical pipes (part of ladder through floating roof) with hydrocarbon product inside, not capped (page 14). The MHA Nation proposed Project has many internal floating roof tanks, and seems to rely on the tank type alone to eliminate emissions, rather than also setting specific permit conditions addressing these types of gaps, malfunctions, and poor operations identified in the BAAQMD report that can cause excessive air emissions if not addressed. The BAAQMD staff report also found excessive emissions from pressure vacuum valves on a fixed roof tank that had vapor recovery. The MHA Nation proposed refinery is depending on vapor recovery on fixed roof tanks to eliminate emission sources, but the Bay Area staff report showed that additional attention on pressure vacuum valves is needed for fixed roof tanks, to prevent emissions. The report also found significant emissions from slotted guide poles. It is unclear whether the MHA Nation project will include slotted guide poles (very highly emitting structures on floating roof tanks) or not. The DEIS must clarify this and all details related to tank fittings and design as well as setting permit conditions to prevent these emissions, and reassessing project emissions to include emissions from tank fittings and all the issues identified in the BAAQMD tank audit.

Tank cleaning

The DEIS didn't include evaporation of VOCs to the air caused by tank cleaning – but only considered solid waste generated by tank cleaning. Tank cleaning is a major source of air emissions. Dr. Phyllis Fox, an expert on oil refinery emissions, described the emissions from tank cleaning in the attached comment¹⁹ and found that evaporation of tank sludge during cleaning can cause air emissions of 50 tons per tank per cleaning:

Sludges at the bottoms of tanks typically contain over 90 percent oil. These sludges emit large quantities of hydrocarbons to the atmosphere throughout tank degassing and cleaning, sludge removal, and sludge treatment. One vendor who centrifuges tank sludges to reduce their volume prior to disposal estimates that emissions from a 200 foot diameter crude oil tank are as high as 50 tons/day.

The DEIS also acknowledges that tank bottoms contain hydrocarbons and even cancer-causing, light hydrocarbons such as benzene, the Project fails to provide control of evaporation

¹⁸ Rule Effectiveness Study, Storage Tanks for Organic Liquids, Regulation 8 Rule 5, Final Report, January 16, 1992

¹⁹ Russell Resources, Inc., Environmental Management, November 1, 1992, *Re: September 15, 1992 Draft of Regulation 8, Rule 5: Storage of Organic Liquids*, to Mr. Ramo, attached

of these hydrocarbons, or to include any air emissions from this source in the estimation of the Project.

Tank bottom wastes that accumulate in storage tanks typically consist of solids found in the stored material (for example, crude and various intermediate process streams); rust or scale from tanks, pipes, and other equipment; and heavy hydrocarbons (California Environmental Protection Agency 2004). Periodic cleaning of the tanks would occur to remove these solids that settle in the tank over several years of operation. The purpose of the cleaning includes recovery of lost tank capacity, tank integrity inspection, change in service, and repair. **The frequency of tank cleanouts would depend upon the type of material stored. The storage tanks that typically require more frequent cleanout are crude oil and heavy and middle distillates.** It is currently estimated that cleaning of the tanks may be required every 6 to 9 years. However, a storage tank can be cleaned out more frequently if it needs repair or refurbishment. . . .

At the refinery, light products may contain benzene levels high enough to cause the bottom sludge to be designated as a hazardous waste. However, the middle distillates may not contain benzene and specific metals at levels that would cause the bottom wastes to be considered as a hazardous waste. (page 2-56) [emphasis added]

The DEIS identifies 32 tanks total for the Project (page 3-5, Table 10, “Summary of Tanks to be Constructed”), including 23 liquid storage tanks (with 12 falling into the categories identified in the DEIS that may require more frequent cleaning -- crude oil, and heavy and middle distillates. (These are the tanks labeled as follows -- 2 Crude Oil, 4 Mid Distillate, 1 Biodiesel, 1 Atm Red Crude, 1 Raw Heavy HC, 1 Raw Heavy Diesel, 1 Raw Light Diesel, 1 Heavy Slop HC, and 11 additional liquid storage tanks with lighter hydrocarbon materials). The remaining 9 tanks are pressure vessels containing hydrocarbon gases.

Calculating emissions from tank cleaning at 50 tons each, cleaned on average every 7.5 years according to the DEIS for 23 liquid storage tanks, results in 153 tons per year of emissions from tank cleaning unaccounted for by the DEIS ((50 tons / 7.5 year average) x 23 tanks = 153 tons per year). Tank cleaning sludge emissions can be controlled through vapor recovery and other means, and must be assessed by the DEIS.

C. Fugitive Emissions are wrongly characterized as zero

The DEIS appendix (Greystone report) includes no fugitive air emissions. This report states (page 4-5):

- Flanges would be minimized and seal rings would be applied;
- Double-seal or seal-less pumps would be used;
- Leakless valves would be used;
- Open-ended valves would be blinded or plugged;
- Relief valves would be discharged to flare;
- Compressor seals would be recycled to process, would have enclosed distance pieces, and would have crankcases vented to flare;
- Drains would be hard-piped to Maintenance Drain Out (MDO) system;
- Sample connections would have totally enclosed sample loops;

- Tanks would have floating roofs;
- Fixed-roof tanks would have vapor recovery;
- Loading arms at rail and truck loading would have integral vapor recovery systems; and
- Boilers and heaters would have integral combustion controls . .

Based on the information provided in the EPA document “Protocol for Equipment Leak Emission Estimates” (U. S. Environmental Protection Agency 1995), **the control measures listed above should provide 100 percent control of fugitive VOC emissions.** Captured emissions would either be vented back to the refinery processes or to the flare. [emphasis added]

Thus the Greystone report includes no fugitive air emissions at all. Fugitive emissions are considered a huge source of ongoing emissions at oil refineries throughout the country. The Greystone report is patently incorrect in stating that EPA’s Protocol for Equipment Leak Emission Estimates provides for 100 percent control of fugitive VOC emissions if the Project applies the above listed methods. The Greystone report provides this list representing theoretically perfect control efficiency, without considering the circumstances which could cause greatly increased emissions from these sources. A list of bullets in an appendix, without standards for inspection and maintenance of these components, is no assurance of even minimizing emissions, let alone meeting “zero-emission” rates for fugitive components.

EPA itself refutes such claims of zero emissions in the 1995 Protocol for Equipment Emission Estimates which the consultant relied on. EPA states that the sources listed by the consultant above can have large emissions, as discussed in the following Table²⁰ where footnotes describe large non-zero emissions. EPA finds:

^a**Sealless equipment can be a large source of emissions in the event of equipment failure.**

^b**Actual efficiency of a closed-vent system depends on percentage of vapors collected and efficiency of control device to which vapors are routed.**

^c**Control efficiency of closed vent-systems installed on a pressure relief device may be lower than other closed-vent systems,** because they must be designed to handle both potentially large and small volumes of vapor.

Table 5-1 from the EPA Protocol:

²⁰ page 5-3 excerpted from the EPA ’95 Protocol,
<http://www.epa.gov/ttn/chief/efdocs/equiplks.pdf#search=%22EPA%2C%20Protocol%20for%20Equipment%20Leak%20Estimate%22>, attached

TABLE 5-1. SUMMARY OF EQUIPMENT MODIFICATIONS

Equipment type	Modification	Approximate control efficiency (%)
Pumps	Sealless design	100 ^a
	Closed-vent system	90 ^b
	Dual mechanical seal with barrier fluid maintained at a higher pressure than the pumped fluid	100
Compressors	Closed-vent system	90 ^b
	Dual mechanical seal with barrier fluid maintained at a higher pressure than the compressed gas	100
Pressure relief devices	Closed-vent system	c
	Rupture disk assembly	100
Valves	Sealless design	100 ^a
Connectors	Weld together	100
Open-ended lines	Blind, cap, plug, or second valve	100
Sampling connections	Closed-loop sampling	100

^aSealless equipment can be a large source of emissions in the event of equipment failure.

^bActual efficiency of a closed-vent system depends on percentage of vapors collected and efficiency of control device to which the vapors are routed.

^cControl efficiency of closed vent-systems installed on a pressure relief device may be lower than other closed-vent systems, because they must be designed to handle both potentially large and small volumes of vapor.

The DEIS must re-assess fugitive emissions to include annual rates of equipment failure, and less than 100% collection and control efficiency for control devices. It is especially important to assess malfunctions and less than optimal operation, since the Project is proposed to operate without any air permit requirements which would set standards for inspection and maintenance. The DEIS should re-assess fugitive emissions based on a survey of such sources which are in actual service at refineries throughout the nation, rather than using a theoretical, perfectly functioning system unrealistically assessed in the DEIS as automatically reaching a zero emissions rate.

EPA identifies additional means of large emissions from the fugitive sources, and further states in the Protocol (page 5-4):

The actual emissions reduction achievable through use of dual mechanical seals depends on the frequency of seal failure. Failure of both the inner and outer seals could result in relatively large releases of the process fluid. Pressure monitoring of the barrier fluid may be used to detect failure of the seals, allowing for a quick response to a failure. . .

Under proper operating conditions, the control efficiency of sealless pumps is essentially 100 percent; however, **if a catastrophic failure of a sealless pump occurs, there is a potential for a large quantity of emissions.**

Although they are also pressure relief devices, RD's [Rupture Disks] can be installed upstream of a PRV to prevent fugitive emissions through the PRV seat. **Rupture disk/pressure relief valve combinations require certain design constraints and criteria to avoid potential safety hazards, which are not covered in this document. If the RD fails, it must be replaced.** The control efficiency of the RD/PRV combination is assumed to be 100 percent **when operated and maintained properly.**

A closed-vent system can be used to transport equipment leaks from a pressure relief device to a control device such as a flare. **The equipment leak control efficiency for a closed-vent system installed on a pressure relief device may not be as high as the control efficiency that can be achieved by installing a closed-vent system on other equipment types. This is because emissions from pressure relief devices can be either high flow emissions during an overpressure incident or low flow emissions associated with equipment leaks, and it may be difficult to design a control device to efficiently handle both high and low flow emissions. . . .**

Emissions from process valves can be eliminated if the valve stem can be isolated from the process fluid. Two types of sealless valves are available: diaphragm valves and sealed bellows valves. The control efficiency of both diaphragm and sealed bellows valves is virtually 100 percent. **However, a failure of these types of valves has the potential to cause temporary emissions much larger than those from other types of valves.**

EPA also states in the forward to the Protocol, that it cannot be applied to all conditions, and that it does not identify all possible fugitive emissions:

The EPA has put forth considerable effort to make this document as comprehensive as possible. **However, it should be understood that not all details and topics pertaining to equipment leaks could feasibly be included in this document.**

Additionally, it should be understood that the procedures presented in this document are not necessarily suitable for all applications. There will be cases where it will be necessary for the user of the document to make a professional judgement as to the appropriate technical approach for collecting and analyzing data used to estimate equipment leak emissions. **Additional data on equipment leak emissions continues to be collected. It is the intent of the EPA to periodically update this document after analysis of the data warrants such an update. For example, data recently collected in the petroleum industry has been used to revise the existing refinery correlations, which are based on data collected in the late 1970s. Furthermore, as new techniques for collecting and analyzing data are developed, they will be included in updated versions of this document.**

Certainly the complete absence of air permits, emission limits, standardized monitoring techniques, leak detection requirements, and maintenance requirements with government oversight, must be considered the type of application mentioned by EPA above, which represent circumstances unsuitable for using zero leak estimates. Equipment failures and leaks could easily go undetected due to lack of an enforced leak detection program, and if detected, leaks would have no deadline for repair. There would be no penalty assessed for failure to maintain zero leak rates.

Clearly EPA's Protocol does not justify the use of a zero emissions estimate for fugitive emissions for the MHA Nation Project under these circumstances. The DEIS must re-assess the fugitive emissions related to problems identified above in the EPA document, caused by double-mechanical pump seal failure, sealless pump failures, failures or lack of Rupture Disks on Pressure Relief Devices, the less than 100% control efficiency of PRVs, and the failure of leakless valves, as identified by the EPA discussion above and as identified through multiple regulatory programs such as those of the BAAQMD, which set enforceable 100 ppm leak standards for fugitive emissions, with tight deadlines for leak repair. The DEIS must reassess all fugitives leaks sources for the Project.

Flange emissions are missing from the DEIS fugitives emission estimate

Flanges are a source of fugitive emissions which were not assessed in the DEIS. Although the DEIS includes flanges on the bulleted list of fugitives components estimated at zero emissions, the EPA '95 Protocol does not provide a basis for this. The EPA Protocol distinguishes between flanges and connectors, although it is not clear if the DEIS makes this distinction. Flanges are not included on the EPA Protocol Table 5-1 list excerpted earlier of certain sources which could meet 100% control under special circumstances unless they are included as welded connectors.

The DEIS did not identify another method recognized by the EPA Protocol for limiting flanges to zero emissions. The EPA Protocol did identify a possible method for welding connectors to meet a zero leak rate, but it is unlikely that the DEIS does is proposing to weld all 20,000 flanges and additional connectors. EPA only identified welding as appropriate in limited cases, and this may not be safe in all circumstances. EPA found: "In cases where connectors are not required for safety, maintenance, process modification, or periodic equipment removal, emissions can be eliminated by welding the connectors together."

EPA also found that there can be leaks even when measured leaks had a screening value of zero. Furthermore, EPA found that measuring equipment must be known to have sufficient detection limits to ensure that a zero leak rate really means zero leak:

The "default-zero" leak rate is the mass emission rate associated with a screening value of zero. (Note that any screening value that is less than or equal to ambient [background] concentration is considered a screening value of zero.) The correlations mathematically predict zero emissions for zero screening values. **However, data collected by the EPA show this prediction to be incorrect. Mass emissions have been measured from equipment having a screening value of zero.** A specific goal when revising the SOCFI and petroleum industry correlations was to collect mass emissions data from equipment that had a screening value of zero. These data were used to determine a default-zero leak rate associated with equipment with zero screening values.

Table 2-11 lists the SOCFI default-zero leak rates and table 2-12 presents the petroleum industry default-zero leak rates for each of the equipment types with correlation equations. **These default-zero leak rates are applicable only when the minimum detection limit of the portable monitoring instrument is 1 ppmv or less above background.**

The portable monitoring device used to collect the default-zero data was sufficiently sensitive to indicate a screening value of 1 ppmv or less. **In cases where a monitoring instrument has a minimum detection limit greater than 1 ppmv, the default-zero leak rates presented in tables 2-11 and 2-12 are not applicable.** For these cases, an alternative approach for determining a default-zero leak rate is to (1) determine one-half the minimum screening value of the monitoring instrument, and (2) enter this screening value into the applicable correlation to determine the associated default-zero leak rate. (pages 2-32 to 2-33)

In the case of the proposed MHA Nation refinery, the DEIS does not have an enforceable program for measuring leaks with sufficient detection limits, but only states that flanges will be minimized. Even if minimized, the DEIS appendix gives a counts for flanges at 20,635 flanges in gas or light liquid service, and an additional 5,370 in heavy liquid service, as shown below (excerpted from the Greystone Report, page App A-3):

:

Source	Capacity Units	Emission Controls	Bypass?	NSPS
Flanges – Gas	12225 count	Minimize flanges	No	Subpart GGG
Flanges - Lt Liquid	8410 count	Minimize flanges	No	Subpart GGG
Flanges – Hvy Liquid	5370 count	Minimize flanges	No	Subpart GGG

EPA's '95 Protocol finds the following equations for estimating emissions from flanges at refineries (page 2-27):

TABLE 2-10. PETROLEUM INDUSTRY LEAK RATE/SCREENING VALUE CORRELATIONS ^a	
Equipment type/service	Correlation ^{b, c}
Valves/all	Leak rate (kg/hr) = 2.29E-06 × (SV) ^{0.746}
Pump seals/all	Leak rate (kg/hr) = 5.03E-05 × (SV) ^{0.610}
Others ^d	Leak rate (kg/hr) = 1.36E-05 × (SV) ^{0.589}
Connectors/all	Leak rate (kg/hr) = 1.53E-06 × (SV) ^{0.735}
Flanges/all	Leak rate (kg/hr) = 4.61E-06 × (SV) ^{0.703}
Open-ended lines/all	Leak rate (kg/hr) = 2.20E-06 × (SV) ^{0.704}

^aThe correlations presented in this table are revised petroleum industry correlations.

^bSV = screening value in ppmv.

^cThese correlations predict total organic compound emission rates (including non-VOC's such as methane and ethane).

^dThe "other" equipment type was derived from instruments, loading arms, pressure relief valves, stuffing boxes, and vents. This "other" equipment type should be applied to any equipment type other than connectors, flanges, open-ended lines, pumps, or valves.

For Flanges, the Leak rate (in kg/hr) = $4.61E-06 \times (SV)^{0.703}$. SV is a Screening value or measured concentration of hydrocarbon gas leak to the atmosphere in ppmv (ppm or part per million by volume). Since there is no program or permit limit set to measure the Screening value, unlimited concentrations of emissions are allowed to leak indefinitely, with no repairs or reporting. Leaks have been detected at refinery facilities at 100,000 ppm, and EPA even provides equations for estimating emissions from monitoring equipment pegged at 100,000 ppm (meaning the leaks are even higher). These emissions factors result in emissions of dozens to hundreds of tons per year from the large number of flanges present, depending on what leak concentration is detected, and the number of leaks.

The South Coast Air Quality Management District also published fugitives emissions calculations based on EPA's Protocol,²¹ attached, which provided mass emission limits for measuring instruments pegged at 10,000 ppm and up to 100,000 ppm leak concentrations. Leaks detected pegged at 10,000 ppm are calculated for flanges at 0.209 lbs/hr. If 10% of the approximately 20,000 flanges for the Project leak at this rate for one day, that adds up to $(20,000 \times 0.1 \times .209 \text{ lbs/hour} \times 24 \text{ hours} / (2000 \text{ lbs/ton})) = 5$ tons of emissions, for one day. For an undetected leak for a month, this would add 150 tons of emissions. However, these emissions are allowed to continue forever, due to the lack of permit conditions unabated. Annually, this adds up to 1830 tons, but only accounts for 10% of leaks. This rate was found at one refinery in the Waxman report cited below, but leak rates at the proposed MHA refinery are currently allowed to be even higher (unlimited).

The DEIS must reassess the emissions from flanges using standard emissions calculations, and set permit requirements to limit these emissions.

Inspection and Maintenance programs are essential for ensuring that fugitive source emissions are minimized but are missing from the DEIS

The Amoco and EPA pollution prevention project discussed above found:²²

Most hydrocarbons are released through a large number of widely distributed sources (valves, flanges, pump seals and tank vents). Even a small refinery may have more than 10,000 potentially different sources.

Since the MHA Nation Project is lacking in any air permit requirements, there is no enforceable leak detection program with government oversight, nor identification of standard EPA test procedures, quality assurance requirements, recordkeeping requirements, nor timely

²¹ *Guidelines for Fugitive Emissions Calculations, June 2003*, http://www.ecotek.com/aqmd/2006/forms_and_instructions_pdf/2003_fugitive_guidelines.pdf#search=%22fugitive%20emission%20calculation%20methods%20for%20refineries%22, attached

²² Amoco/US EPA P2 Project, Revised May 1992, <http://es.epa.gov/techinfo/facts/amova-d.html#summary>

repair requirements. This leaves the Inspection and Maintenance as an entirely voluntary action, and allows unlimited leaks from the seals of thousands of valves, flanges, pumps and compressors for an unlimited time.

A Congressional report prepared by U.S. Representative Waxman (*Oil Refineries Fail to Report Millions of Pounds of Harmful Emissions*)²³ showed that EPA inspectors identified much higher fugitive leak rates at oil refineries they inspected compared to the leak rates reported by these companies. EPA identified leak rates ranging from 1.35% to 10.5% with an average of 5%, instead of the range of 0.2 to 3.6% with an average of 1.3% reported by the refineries. The report found that the unreported leaks resulted in millions of pounds every year in harmful emissions.

Another document,²⁴ *Proper Monitoring Essential to Reducing 'Fugitive Emissions' Under Leak Detection and Repair Programs*, was produced by ChemAlliance, which provides services for industry including information on environmental regulations affecting the chemical and refining industry, and which found:

The Clean Air Act requires refineries to develop and implement a Leak Detection and Repair (LDAR) program to control fugitive emissions. **Fugitive emissions occur from valves, pumps, compressors, pressure relief valves, flanges, connectors and other piping components. Comparison monitoring conducted by the U.S. Environmental Protection Agency's (EPA) National Enforcement Investigation Center (NEIC) shows that the number of leaking valves and components is up to 10 times greater than had been reported by certain refineries (see Table 1).** EPA believes this great disparity between what refineries are reporting and what EPA is finding may be attributable to refineries not monitoring in the manner prescribed in 40 CFR Part 60, Appendix A, Method 21.

Federal regulations require refiners to routinely monitor for leaks and to fix any equipment found leaking. **Failure to identify leaking equipment results in necessary repairs not being made and continuing fugitive emissions of volatile organic chemicals (VOCs) and other hazardous chemicals.** EPA estimates that the failure to identify and repair leaks at petroleum refineries could be resulting in additional VOC emissions of 80 million pounds annually. VOCs contribute to ground-level ozone, a principal component of smog, which can cause significant health and environmental problems. [emphasis added]

This document listed fugitive valve leaks found by EPA but which were undetected by the 17 companies evaluated, ranging from 1.6 lbs/hr to 247.5 lbs/hr, which equals 7 tons to 1084 tons per year. These companies did have some government oversight; the MHA Nation would have no independent review of such leaks, so the Project fugitive emissions and leaks could go on undetected for an unlimited amount of time. The DEIS must assess and add emissions from undetected fugitive valve leaks. Even though the Project states that leakless valves will be put in

²³ Prepared for Rep. Henry A. Waxman, Minority Staff, Special Investigations Division, Committee on Government Reform, U.S. House of Representatives, November 10, 1999, <http://www.democrats.reform.house.gov/Documents/20040827114147-65907.pdf#search=%22Fugitive%20emissions%20from%20oil%20refineries%22>, attached

²⁴ ChemAlliance, is operated by a partnership of environmental professionals in academia, government and industry, *Proper Monitoring Essential to Reducing 'Fugitive Emissions' Under Leak Detection and Repair Programs*, <http://www.chemalliance.org/Columns/Enforcement/Enf991214.asp>, attached

place, as stated by EPA above, these valves are not leakless under all circumstances and still must be monitored. The numbers above represented emissions from fugitive valves, not from other undetected fugitive sources such as leaks from flanges, pumps, compressors, tanks, wastewater systems, loading systems and more. The DEIS must reassess all these sources using actual field data on leak rates, especially under conditions lacking strong inspection programs.

D. The DEIS failed to include emissions caused by startup, shutdown, and malfunctions

The DEIS failed to assess the very substantial emissions from startup/and shutdown and malfunction of refinery equipment. This is a major subject area for which emissions are missing; it is necessary for EPA and BIA to perform a major review of this issue which Project proponents have not provided. Federal PSD regulations require that startup/shutdown and malfunction emissions be included in Project emissions. Startup/shutdown emissions of refinery equipment occurs regularly, during planned maintenance of individual process units, for planned shutdown of the entire refinery periodically, and for unplanned startup/shutdown periods which happen at all refineries due to malfunctions, power outage, operational errors, etc. For example, **the following sources at refineries cause large emissions during startup / shutdown activities which must be quantified in the DEIS and regulated:**

- **Sulfur Recovery Unit shutdown causes major emissions** – Shutdown of Sulfur Recovery Units occurs regularly, either for planned maintenance, or due to unexpected emergencies. This results in very large SO_x emissions from other parts of the refinery, which must be accounted for in the DEIS.
- **Shutdown of Other Major Process units causes major emissions** – Shutdown of other units at the refinery mean the vapors in the vessel have to go elsewhere, or could mean continued operation with pollution controls bypassed. (For example, the hydrotreater removes sulfur compounds from hydrocarbon products.) Emissions might be routed to the flare, which results in additional flaring emissions which must be accounted for, or controls may be bypassed altogether emissions be direct to atmosphere. In either case, the DEIS failed to evaluate these emissions, must do so, and must set permit conditions to monitor, set plans for procedures to minimize emissions, and limit allowable emissions.
- **Vessel depressurization can cause major emissions** : When any refinery process vessel has to be shutdown and opened for maintenance, emissions to the atmosphere occur. Generally refineries depressure vessels through control systems down to a certain concentration of pollutants, then open the vessels. Regulatory permit conditions are usually set to minimize these emissions. However, in the case of the MHA Nation Project, no permit conditions nor monitoring requirements are being set. These emissions must be evaluated, and permit conditions set to monitor and minimize these emissions.

- **Flares have major emissions during startup/ and shutdown:** If vessels are depressurized through the flare, major emissions of hydrocarbon, SO_x, NO_x, and other pollutants occur. Nitrogen may be used to blow vapors from vessels to the flare. This can cause conditions toward the end of the vessel depressurization with low concentrations of hydrocarbons being burned in the flare, causing poor hydrocarbon destruction efficiency, and consequently high emissions of VOCs (and sulfur compounds). The DEIS failed to evaluate these emissions as part of the Project.
- **Heaters and boiler shutdown:** When a heater or boiler is shutdown for planned maintenance or due to malfunction, other refineries have switched alternate heaters or boilers, which are not always optimized for the purpose, and which frequently cause much higher emissions of SO_x, particulate matter, and other pollutants. These emissions must be quantified and included in the DEIS.

It is incorrect to treat all unplanned shutdowns as unpreventable true emergencies. To the contrary, the fact that they occur so regularly at the nation's refineries mean that many are routine and predictable events. Furthermore, many of these events have happened due to repeated malfunctions of the same equipment.

Actual examples of refinery shutdowns and malfunctions and the documented emissions should be surveyed and listed in the DEIS, based on numerous government databases available from around the country. These reflect actual conditions in the field, rather than idealized, theoretical conditions described in the DEIS.

One community-based report gathered data from the State of Texas on refinery and other heavy industry accidents, and documented the community's concern about these huge releases. The "Refinery Reform Campaign" report (attached) listed data from TNRCC (the former Texas Natural Resources Conservation Commission, now the Texas Commission on Environmental Quality) and identified huge and regular releases from oil refineries. For comparison with the MHA Nation's unduly optimistic and low assessment of emissions (which does not include malfunction emissions), we can see that documented actual releases from one month's accident at the Premcor Refining in Port Arthur, Texas (without including normal refinery functioning for the year) was larger than the claimed releases for the entire year's operations for the proposed MHA Nation refinery. Clearly releases from refinery accidents and malfunctions can be huge, can dwarf emissions from regular operations, and must be assessed in the DEIS.

Another report of the Refinery Reform Campaign,²⁵ (attached) provides the testimony of Dr. Neil Carman 7/30/02, a former State of Texas Air Pollution Control Agency Regional Field Investigator of industrial plants, including oil refineries in the 1980s-1990s. He cited numerous and continued huge releases of VOCs, NO_x, SO_x, and numerous toxics from oil refineries during refinery accidents which have occurred due to poor enforcement by regulators or due to regulatory loopholes, with releases reaching into the dozens of tons for single events. In the case of the proposed MHA Nation refinery, there would be no air permitting oversight.

²⁵ Refinery Reform Campaign, *Final Written Testimony of Dr. Neil Carman to Senate, 7/30/02*

A third report, by the Environmental Integrity Project, attached, focuses specifically on startup / shutdown events, (*Accidents Will Happen, Pollution From Plant Malfunctions, Startup, and Shutdowns in Port Arthur, Texas*) and showed the following data:

Upset Emissions in Port Arthur, Texas, Reported to Texas Commission on Environmental Quality, 2002
Excerpt from Table B, page 14, Emissions Measured in Pounds, with added conversion from lbs to tons

Premcor Refining	Sulfur Dioxide	Hydrogen Sulfide	Hazardous Substances/ VOCs*	Benzene	Carbon Monoxide
Jan	496,165	7,017	70,915	-	2
Feb	-	1,066	47,280	-	-
Mar	119,507	1,270	85,062	-	-
Apr	-	-	203	-	-
May	115,563	1,240	922	-	970
June	-	-	21,783	2,740	-
July	6,601	240	2,225	268	-
(Pounds)	737,836	10,833	228,390	3,008	972
(Tons)	368.9	5.4	114.2	1.5	0.5

The data in this table shows that this refinery, simply on the basis of its startup / shutdown / and malfunction emissions constituted a major source in 2002, and even if only the month of January had been counted that year. The planned and unplanned startup/shutdown and malfunction emissions for each process vessel, and piece of equipment proposed for the MHA Nation can be provided to the public based on information that must be available to Project proponents. This information is not currently provided to the public in the DEIS, including vessel sizing, range and maximum concentrations of chemical constituencies (including VOCs, H₂S and other sulfur compounds, metals, etc.) which will be present or produced during these events, as well as the volumes and masses of chemicals in maximum potential to emit during startup/shutdown and malfunctions. Such detailed evaluations need to be provided and included in the overall air emissions estimates for the Project.

Incident reports of the BAAQMD, attached, showed large emissions, visible smoke, and odor complaints from startup / shutdown / maintenance / or malfunction-related events in the San Francisco Bay Region regulated by the BAAQMD. In 2005 and 2006 accidents and malfunctions at local oil refineries causing sooty and waxy fallout over local towns and visible particulate emissions. Another refinery reported substantial SO_x emissions (over 4 tons) during a shutdown. Earlier incident reports showed a 7/10/02 event at the Conoco Phillips facility at 134 tons of VOCs, a shutdown event by Chevron/Texaco event in Aug of 2003 causing 6 tons of VOCs, 2 tons of SO_x, a half ton of hydrogen sulfide, numerous odor complaints, and an activation of the community warning system by the Health Department. During a Chevron, Richmond, CA October, 2002 event, an unplanned shutdown due to electrical power problems caused excessive smoke and a notice of violation from the BAAQMD. A July 2002 event at the Shell, Martinez, California facility during startup of a unit caused the release of only 5 gallons of sulfur compounds so odorous, that even this amount caused odor complaints from community members. In 2002 at the Valero facility, a power outage shutdown most of the refinery and several boilers, causing excessive smoking of the flare and a notice of violation.

The following charts are excerpted from the BAAQMD Draft Technical Assessment on Flares,²⁶ which identify startup / shutdown events as major causes of emissions. The largest emissions came from Tesoro which had over 15,000 lbs or about 7.5 tons of VOC emissions from startup / shutdown events for the three month period of June-August 2002, with an additional approximate 30,000 lbs or 15 tons for the same period for reasons of maintenance or equipment failure. This data illustrates examples of the large magnitude of emissions from startup / shutdown / maintenance and malfunctions, which must be included in the assessment for the MHA Project as well.

This facility totaled about 89,000 lbs or about 45 tons of VOC emissions during these three months just from flaring, much of it related to startup / shutdown / maintenance and malfunction emissions. These only included emissions from flaring events greater than 1 million standard cubic feet. The other refineries also showed very substantial emissions. (Much of Chevron's data, which appears lower, was missing or not fully monitored, since Chevron had much less available monitoring for flaring at the time.)

²⁶ BAAQMD Draft Technical Assessment Further Study Measure 8, Flares, December 2002, excerpt attached

Table 3: Emission Estimates from Causal Factors for Flaring Incidents in the Bay Area

Month of June 2002						
	Pounds of Total Hydrocarbon Occurrence of Events \geq 1MMSCF					Emission Estimates As Reported
	Chevron	Phillips ¹	Shell	Tesoro ²	Valero	Hydrocarbon (lbs)
Startup/Shutdown	0	10874	0	3053	0	13927
Maintenance	1506	0	0	3053	0	4559
Human Factor	0	0	0	3053	0	3053
Equipment failure	884	0	0	3053	27334	31271
Operational	0	0	9713	2874	3038	15625
Unknown	0	0	0	2874	0	2874
Total	2390	10874	9713	17960	30372	71309
¹ Phillips reported emissions using a combustion efficiency of 98.5% all other facilities used 99.5%.						
² Tesoro reported emissions above 1MMSCF on every day. It was not possible to distinguish individual events						

Month of July 2002						
	Pounds of Total Hydrocarbon Occurrence of Events \geq 1MMSCF					Emission Estimates As Reported
	Chevron	Phillips ¹	Shell	Tesoro ²	Valero	Hydrocarbon (lbs)
Startup/Shutdown	0	8182	0	6955	7876	23013
Maintenance	2113	0	0	6955	0	9068
Human Factor	0	0	0	6955	0	6955
Equipment failure	719	1672	0	6955	0	9346
Operational	0	2258	2522	6545	2654	13979
Unknown	0	1314	0	6545	1641	9500
Total	2832	13426	2522	40910	12171	71861
¹ Phillips reported emissions using a combustion efficiency of 98.5% all other facilities used 99.5%.						
² Tesoro reported emissions above 1MMSCF on every day. It was not possible to distinguish individual events						

Month of August 2002						
	Pounds of Total Hydrocarbon Occurrence of Events \geq 1MMSCF					Emission Estimates As Reported
	Chevron	Phillips ¹	Shell	Tesoro ²	Valero	Hydrocarbon (lbs)
Startup/Shutdown	0	21776	0	5127	0	26903
Maintenance	0	0	459	5127	0	5586
Human Factor	0	0	0	5127	0	5127
Equipment failure	0	0	0	5127	0	5127
Operational	0	0	1549	4826	2187	8562
Unknown	0	0	0	4826	0	4826
Total	0	21776	2008	30160	2187	56131
¹ Phillips reported emissions using a combustion efficiency of 98.5% all other facilities used 99.5%.						
² Tesoro reported emissions above 1MMSCF on every day. It was not possible to distinguish individual events						

Based on these many examples of emissions caused by various types of startup / shutdown / and malfunctions, emissions could vary greatly at the MHA facility, from 45 tpy (Tesoro partial year example) to 368 tpy (Premcor partial year example) or more could occur due to startup / shutdown emissions, not currently included in the DEIS. The DEIS needs to provide a detailed, well justified assessment of all the separate sources and their maximum potential to emit during shutdowns, as well as an assessment of the average frequency of shutdowns / startups/ maintenance and malfunctions at oil refineries, based on actual data from facilities around the country.

E. Without enforceable air permit limits, the Project proponent could use highly sulfurous syncrude inputs, with greatly increased SO_x emissions

According to the DEIS, the proposed refinery will use synthetic crude oil as an input to the refinery, delivered through a pipeline from Canada. The DEIS states that (at least as of this time), the refiners plan to use a synthetic crude oil from Canada which is already hydrotreated to reduce sulfur content. However, no project air permits require this, and the extent to which sulfur content might be reduced is not set.

Sundyne Corporation, which produces synthetic crude oil in Canada, states on its website that synthetic crude oil has high concentrations of sulfur compounds that must be removed when this crude oil is refined, in order to produce lower-sulfur diesel or gasoline meeting air quality standards. The Sundyne Corporation site states:

Removing sulfur from synthetic crude oil The crude oil from tar sands is highly sulfurous—and this creates a complication. In the refining process, much of the sulfur must be removed to meet new government standards. The US Environmental Protection Agency has mandated that refineries reduce the sulfur content in diesel fuel from the previous limit of 500 parts per million (ppm) down to a mere 15 ppm, to reduce air pollution. The new standard went into effect June 2006, and companies like Suncor made improvements and modifications to its refinery to comply.²⁷

This means that if the Project proponents decide to switch to the use of “sour” (highly sulfurous) synthetic crude oil at the proposed refinery, much higher levels of sulfur contamination in gases and liquids will be present within the proposed refinery. Sulfur compounds coming into the refinery in the raw crude turn into deadly sulfur gases (including many compounds such as hydrogen sulfide (H₂S), carbon disulfide, and SO_x).

It is possible for the Project proponents to purchase sweeter synthetic crude oil already treated in Canada to remove sulfur compounds before it gets to the Project refinery, as it is stated in the DEIS that they intend to do. However, since there is currently no permit or other limit proposed by EPA or BIA requiring that the company do so, and no requirement that certain

²⁷ http://www.sundyne.com/ind/details/1,,CL11_DIV92_ETI8053,00.html ,attached

limitations be set for emissions of SO_x and other sulfur compound emissions from different parts of the refinery, the refiners could easily decide to opt after the project is approved, to use cheaper, sour synthetic crude.

It is highly unlikely that the public can permanently count on the refinery buying more expensive, lower-sulfur syncrude when the purpose of refinery operation is to maximize profits, and when there are no permit limit requiring lower sulfur crude. In fact, finding the cheapest crudestock that can be used in a particular refinery is one of the main ways that refinery managers increase profits. There is a general trend in the refining industry today toward modifying refinery operations toward using dirtier crude oil. Refinery managers must report the costs of input materials and profits to their stockholders, and are held accountable by them and their board of directors for making the best profits. Refining companies and managers have strong incentives to use the cheapest, most contaminated syncrude available unless required by permit conditions to meet certain air quality and other pollution limits. It must be assumed that without permit limits, the refinery company managers will at some point, and perhaps immediately seek to buy the cheapest, and consequently the most contaminated, heavy, high-sulfur, syncrude available to them.

Consequently EPA and BIA must require that the DEIS reflect the increased sulfur content within the refinery when calculating the potential air emissions from many sources for the project. EPA and BIA must require BACT controls to minimize emissions caused by whatever feedstocks are input to the refinery, unless EPA and BIA set limits requiring that the cleanest syncrude be used permanently in the refinery.

The Department of Energy found²⁸ a broad, nationwide trend of oil refiners moving toward using heavier, higher sulfur inputs to the refineries, which also led to a rapid, continuing growth in added capacity to refineries for intensive processes including coking, Fluid Catalytic Cracking, hydrocracking, and additional distillation:

Not surprisingly, with imports growing heavier and more sour, total refinery feedstocks have been moving to higher sulfur and lower gravity crude oils in general. . .

There are numerous industry and government reports readily available documenting the common knowledge of the trend toward the use of sulfurous, heavier crude inputs to oil refineries as the competition to secure cleaner, lower sulfur inputs to refineries becomes more fierce. A few examples of industry reports are included in the attached comments on the Tesoro Bay Area oil refinery.²⁹ This trend and likely impacts on the Project must be considered in the DEIS.

²⁸ http://www.eia.doe.gov/pub/oil_gas/petroleum/presentations/2002/wfcs/wfcs_files/frame.htm, *Refining Challenges: Changing Crude Oil Quality & Product Specifications*, Joanne Shore, Energy Information Administration, World Fuels Conference, Washington, DC, September 2002, attached

²⁹ *Technical Comments on Tesoro's Request for an Exemption for its Coker Modification Project*, Julia May, February 10, 2006

Either actual permit limits must be set requiring that the refinery limit sulfur content in crude inputs to the refinery, with the DEIS emissions estimate reflecting this maximum, or the DEIS must be amended to assume use of the most highly sulfurous and heaviest syncrude, and emissions estimates increased to reflect such inputs.

IV. The Project fails to incorporate necessary air monitoring

The Project fails to identify and require necessary air monitoring equipment and standard quality assurance protocols which would verify air emissions and help effectively limit emissions. Without enforceable monitoring of emissions sources, the Project emissions are allowed to be unlimited. The Project must incorporate standard air monitoring techniques, using EPA-recognized quality assurance measures for the following sources. **The MHA Nation Project cannot justify minimized emissions from individual Project sources without permit conditions requiring standard monitoring procedures, with sufficient government enforcement oversight to ensure meeting emissions limits.** In particular, the DEIS cannot justify zero emissions from fugitives emissions sources without an extensive Inspection and Maintenance program. For example, the BAAQMD has strong monitoring programs for flares and fugitive emissions which provide the most accurate emissions assessments for many refinery components:

- **Flare monitoring** -- The BAAQMD adopted a model flare monitoring regulation (Rule Regulation 12, Miscellaneous Standards of Performance, Rule 11, Flare Monitoring at Petroleum Refineries, attached), comprising the most comprehensive flare monitoring program in the country, including methods for sampling or for continuous monitoring of gases within the flare, with test methods identified, frequency of monitoring, and detection limit requirements.
- **Fugitives monitoring -- Valves, flanges, pumps, and compressors** -- The BAAQMD fugitives monitoring regulations set tight leak standards (100 ppm) and monitoring requirements
- **CEMs (Continuous Emission Monitors) for Heaters and Boilers** Many NOx sources are required to be continuously monitored to meet strict permit limits throughout the country
- **Tanks monitoring**: Monitoring of tank seals, fittings, vapor recovery systems, and all emissions points is necessary to limit emissions, discussed in other parts of this document, with the BAAQMD regulation attached earlier.
- **Sulfur Recovery Unit Monitoring**: Discussed earlier in this comment, this BAAQMD rule is attached.
- **All proposed MHA Nation refinery components need enforceable monitoring**, which is also required by Title V.

V. Conclusions

The Project requires extensive additional scrutiny, first, simply to provide a clear Project description, second, to add air emissions assessments from many missing sources, third, to provide a PSD and other air permitting with enforceable limits, application of BACT standards, air monitoring provisions meeting standard EPA quality assurance requirements, and fourth, and most importantly, to seriously consider real, and much less harmful alternatives to the Project, including the development of a biodiesel plant.

Thanks very much for your consideration of these comments. I personally appreciate the extensive work which will be necessary for EPA and BIA staff to produce an accurate analysis of this Project. I feel sure that community members will greatly appreciate a full assessment which provides realistic emissions calculations and true Project impacts.

Julia May
Environmental Consultant