BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

ADVISORY COUNCIL REGULAR MEETING

JOINT MEETING OF THE
PUBLIC HEALTH AND TECHNICAL COMMITTEES

PUBLIC HEALTH COMMITTEE:

BRIAN ZAMORA, CHAIRPERSON
ELINOR BLAKE
IGNATIUS DING
VICTOR TORREANO
LINDA WEINER

TECHNICAL COMMITTEE:

ROBERT HARLEY, Ph.D., CHAIRPERSON
SAM ALTSHULER, P.E.
LOUISE BEDSWORTH, Ph.D.
STAN HAYES
JOHN HOLTZCLAW, Ph.D.
WILLIAM HANNA
NORMAN LAPERA

MONDAY
JUNE 30, 2003
1:30 P.M.

4TH FLOOR CONFERENCE ROOM

AGENDA

1. **Call to Order – Roll Call**

2. **Public Comment Period**

   The public has the opportunity to speak on any agenda item. All agendas for Advisory Council Committee meetings are posted at the District, 939 Ellis Street, San Francisco, at least 72 hours before a meeting. At the beginning of the meeting, an opportunity is also provided for the public to speak on any subject within the Committee's purview. Speakers are limited to five minutes each.

3. **Approval of Minutes:**

   (A) Public Health Committee Meeting of May 19, 2003
   (B) Technical Committee Meeting of May 29, 2003

4. **The Role of Optical Remote Sensing Technology in Flare Emission Evaluation**

   Ted McKelvey, Project Coordinator of Terra Air Services, Inc., Texas and Robert Spellicy, President & CEO of IMACC, Inc., Texas, will address the Committee on the application of optical sensing technology to: a) the measurement of plume flare efficiencies and b) the generation of 3D distributions of emissions at the fence-line of facilities.

5. Committee Member Comments/Other Business

Committee or staff members on their own initiative, or in response to questions posed by the public, may: ask a question for clarification, make a brief announcement or report on their own activities, provide a reference to staff about factual information, request staff to report back at a subsequent meeting concerning any matter or take action to direct staff to place a matter of business on a future agenda.

6. Time and Place of Next Meeting

1:30 p.m., Monday, August 11, 2003, 939 Ellis Street, San Francisco, CA 94109.

7. Adjournment

BZ:jc

CONTACT CLERK OF THE BOARDS - 939 ELLIS STREET SF, CA 94109

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www.baaqmd.gov

- To submit written comments on an agenda item in advance of the meeting.
- To request, in advance of the meeting, to be placed on the list to testify on an agenda item.
- To request special accommodations for those persons with disabilities notification to the Clerk's Office should be given in a timely manner, so that arrangements can be made accordingly.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

939 ELLIS STREET, SAN FRANCISCO, CALIFORNIA 94109

(415) 771-6000

CLERK OF THE BOARDS OFFICE:
MONTHLY CALENDAR OF DISTRICT MEETINGS
J U N E 2 0 0 3

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Board of Directors Regular Meeting	Wednesday	4	9:45 a.m.	Board Room
Board of Directors Legislative Committee	Monday	9	9:30 a.m.	4th Floor Conf. Room
Advisory Council Public Health Committee - CANCELLED -	Monday	9	1:30 p.m.	Room 716
Board of Directors Mobile Source Committee	Thursday	12	9:30 a.m.	4th Floor Conf. Room
Board of Directors Public Outreach Committee	Monday	16	9:45 a.m.	4th Floor Conf. Room
Board of Directors Regular Meeting	Wednesday	18	9:45 a.m.	Board Room
Board of Directors Stationary Source Committee	Wednesday	18	10:30 a.m.; or immediately following the Regular Board Meeting	Board Room
Regional Agency Coordinating Committee Meeting	Friday	20	1:30 p.m. – 3:30 p.m.	MTC 101 Eighth St., 3rd Floor Conference Room 171 Oakland, CA 94607
Board of Directors Budget & Finance Committee - CANCELLED -	Wednesday	25	9:30 a.m.	4th Floor Conf. Room
Advisory Council Joint Meeting of Public Health and Technical Committees	Monday	30	1:30 p.m.	4th Floor Conf. Room

MR:mr
6/23/03 (9:35 a.m.)
P/Library/Calendar/Moncal

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

939 ELLIS STREET, SAN FRANCISCO, CALIFORNIA 94109
(415) 771-6000

CLERK OF THE BOARDS OFFICE:
MONTHLY CALENDAR OF DISTRICT MEETINGS
J U L Y 2 0 0 3

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Board of Directors Regular Meeting	Wednesday	2	9:45 a.m.	Board Room
Advisory Council Executive Committee	Wednesday	9	9:00 a.m.	Room 716
Advisory Council Regular Meeting	Wednesday	9	10:00 a.m.	Board Room
Board of Directors Mobile Source Committee	Thursday	10	9:30 a.m.	4th Floor Conf. Room
Board of Directors Regular Meeting	Wednesday	16	9:45 a.m.	Board Room
Board of Directors Stationary Source Committee	Wednesday	16	10:30 a.m.; or immediately following the Regular Board Meeting	Board Room
Advisory Council Air Quality Planning Committee	Tuesday	22	9:30 a.m.	Room 716
Board of Directors Budget & Finance Committee	Wednesday	23	9:30 a.m.	4th Floor Conf. Room
Board of Directors Executive Committee	Wednesday	30	9:30 a.m.	4th Floor Conf. Room

MR:hl
5/27/03 (11:30 a.m.)
P/Library/Calendar/Moncal

AGENDA NO. 3a

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109

DRAFT MINUTES

Advisory Council Public Health Committee
1:30 p.m., Monday, May 19, 2003
Rodeo Senior Center, 189 Parker Avenue, Rodeo, California

1. **Call to Order – Roll Call. 1:33 p.m.** Quorum Present: Brian Zamora, Chairperson, Elinor Blake, Linda Weiner. Absent: Ignatius Ding, Jane Kelly. Also present: Victor Torreano.

2. **Public Comment Period.** There were none.

3. **Approval of Minutes of April 14, 2003.** Ms. Blake moved approval of the minutes; seconded by Ms. Weiner; carried.

4. **Receipt of Community Input on Optical Sensing Emissions Monitoring and Data.** Chairperson Zamora stated the Committee has met twice to discuss the optical open path monitoring system at the ConocoPhillips refinery fence line. It has received presentations from the equipment vendor and the staff of the Contra Costa County Health Services (CCCHS) department. Today community input will be received on the utility of the data generated by the monitoring system.

   Several individuals came forward and offered their comments as follows:

   Howard Adams
   Shoreline Environmental Alliance
   Crockett, California

   - At a Crockett high school two miles east of the refinery, the California Air Resources Board (CARB) installed a monitor that provides real-time data within three to four hours of initial measurement. Fenceline data from an April 5, 2002 flare event showed an increase in nitric oxide (NOx) from 300 parts per billion (ppb) to 400 ppb. The CARB monitor showed an increase in NOx from 0 to 4 ppb and in hydrocarbons (HC) from 200 ppb to 260 ppb. After the July 10, 2002 flaring event no data was recorded at the CARB monitor due to westerly winds, but the north fenceline monitors recorded a sharp increase of butane emissions.
   - Monitoring system data can be cumulatively reviewed on a daily, monthly or annual basis. This is helpful in trend analysis. The data is generated independently of community member complaints and can be of additional use in Air District enforcement actions. MTBE has been measured at the refinery fenceline, but it was traced to the adjacent Shoreline Terminal facility. Thus, the data optical monitoring data can assist in locating other sources of air pollution.
   - This monitoring data could be used in anticipating a release by being integrated with the local Community Warning System. This type of arrangement would require County authorization.
   - The fence line and CARB monitors indicate low levels of emissions from a wide variety of chemicals. Both the community members and the refinery should find such data reassuring.

Andy Mechling
Selma, Oregon

- While he was a Crockett resident in the 1990's, he negotiated with the refinery on the selection and siting of the monitoring equipment. He gained expertise in both the technology and evaluating the data that it generates. Every page of data is in response to community concerns.
- There is no quality assurance plan governing the optical monitors at the refinery.
- Within the last four years monitoring data reports have been issued monthly. The posting of real-time data on a Contra Costa County website is anticipated in the near future. The Environmental Protection Agency (EPA) has inexplicably set aside its rules regarding data quality assurance even though it will be posted on-line. This matter requires resolution.
- The type of UV monitor at the refinery fence line is no longer manufactured or technically supported. The scientist who developed it now questions its accuracy.
- There are some problems with where the monitors are sited. The optical pathways are too long to be practical. If they were somewhat shortened they would be more dependable.
- The list of chemicals measured by the monitors is too extensive and should be shortened. Regulatory agency scientists could provide criteria for truncating them. Over the seven years that the monitors have operated, as many as 15-20 chemicals have never registered even a single measurement. Also, a tunable diode laser on each fenceline always reads zero.
- An incident on March 17, 2000 in which a junior high school principal smelled a noxious odor and called a shelter-in-place was confirmed by fence line data reviewed two months later showing the single highest release of butane in two years. Had this principal had access to a computer screen to read the data, this shelter-in-place might have been initiated even earlier.
- Since the monitors were installed in 1997, none of the fenceline monitors have registered a high alarm. However, no major release incident has occurred either. The monitors may constitute a deterrent against major releases since they provide useful emissions data that can be tracked.
- The utility of the optical monitoring system data is not at issue. The central concern is the lack of attention given to the data by professional scientists. In the initial phase (1997-99) of this project, regulatory agency attention was largely absent. Although agency participation has somewhat increased since then, the question remains whether regulatory agencies are willing to increase their dedication to gathering, interpreting and disseminating this optical monitoring data. It contains significant chemistry. Moreover, in the absence of a mandate from regulatory agencies, there is little market incentive for developing and installing technologically improved equipment that detects pressure relief valve leaks or monitors stack emissions.

Jay Gunkleman
Crockett, California

- The agreement between the refinery and the community allowed a community member with a computer screen connected to the system to "generally characterize" the data for three days after its initial posting. This was in response to community member requests. This data will soon be available on the County's website and no longer confined to a few computer screens.
- The computer screen at the Bay Area AQMD that reads the optical monitoring data is not connected to the refinery. It should become operational and read by trained District staff.

- The UV monitors are unreliable and should be replaced with the most up-to-date equipment.
- The community believes that the monitoring system provides useful information regarding events independently of the refinery as the sole source of information. This is important given some past difficulties with the refinery failing to fully inform the community of a release.
- Regulatory agencies should use optical monitoring, as it is superior to point source monitoring.
- Carbon disulfide is a neurotoxin that, like lead, cumulatively leads to damage to the nervous system. It should be monitored during refinery releases, particularly in nearby communities.

Bill Concannon
Crockett, California

- The optical monitoring system provides the community with useful on-going data. Community member contact with the refinery in connection with the observance of high readings, or the lack thereof, can help in tracking down the source of an odor incident. This occurred when foul-smelling emissions were traced to a sewage treatment plant rather than to the refinery. Screen shots are taken of the computer screen every five minutes and will soon be uploaded to the County website. In addition to chemical measurements, the screen provides data on wind direction which is also critical to tracking releases through a given period of time.
- A school principal in Crockett has expressed interest in accessing the real-time data. From the outset, a Rodeo resident should have had a computer screen with access to the monitoring data.
- The true gauge of refinery activity is the level of butane emissions.
- The system needs to be refined and upgraded where possible and applied to other refineries.

Julia May
Communities for a Better Environment
Oakland, California

- She participated with the community and refinery in the process of selecting monitoring equipment. At the time of its purchase the original UV equipment was innovative. However, it has since been discovered that it is unable to handle the cross-sensitivities of certain gas concentrations that must be measured at low levels and within good detection limits.
- The refinery will soon produce low sulfur diesel fuel. This will increase sulfur emissions at the refinery. The UV monitors measure sulfur compounds and must therefore be reliable. The refinery is willing to discuss this matter. The Advisory Council could also review this issue and make recommendations as appropriate regarding the upgrading of the UV monitors.
- Most refineries have hydrogen sulfide, sulfur dioxide, carbon monoxide and NOx point source monitors. However, optical monitors measure many other chemicals in real-time and have a better chance to capture emissions than point source monitors. Optical monitors should be installed along the fencelines of the other refineries in the Bay Area.
- While the optical monitoring system data has not yet been used to refute refinery statements about facility emissions, fenceline measurement data combined with wind direction indicators has helped to guide the deployment of the community's bucket brigade during a refinery release. The information gathered by the brigade was provided to the refinery.

- The system provides data relevant to odor complaints well in advance of inspector arrival.
- Bayo Vista residents in Rodeo, who are primarily from minority and low-income groups, were not provided with a computer screen to read the data. This environmental justice (EJ) problem will be solved when the optical monitoring system data is posted on the County's website. The Committee should keep the District's EJ policies in mind as it reviews these issues.

Chairperson Zamora inquired as to whether studies of long-term health effects were conducted on those exposed to refinery releases in the Crockett and Rodeo area. Ms. May replied that a survey was recently conducted by CBE in the Bayo Vista community which revealed that 60% of the children in the project have asthma. A non-random study of households conducted by a CBE youth organization reported one person in each Bayo Vista household has asthma. A UCLA study compared the health of citizens downwind of refineries with other residents not exposed to refinery emissions but with higher exposure to smog. It found that those downwind of refineries showed a greater decrease in lung capacity. Contra Costa County also conducted a study of complainants near the former Pacific Refinery in Hercules, and found that Air District data supported the finding of a correlation between refinery releases and complaints and health problems.

Mr. Mechling added that in the wake of the 1996 Catacarb incident a Good Neighbor Clinic was also created. About 66% of the patients complained of ocular problems and 40% suffered from asthma. A follow-up study of those citizens who moved out of Crockett would likely reveal many health problems, but this cannot take place because all the data from the health clinic was returned to UNOCAL, which operated the refinery at the time. Mr. Adams noted that the members of many families that left Crockett had developed various chemical sensitivities after the Catacarb release. Mr. Gunkelman added that some residents suffered dry eye syndrome due to alkaline burn and required tear duct implants. Immune response and neurological problems were also reported. Ms. May indicated that during flaring events many residents report eye irritation and skin rashes.

The community representatives agreed with the following summary provided by Ms. Weiner: the monitoring system provides the community with a sense of empowerment as well as with useful data but requires refinement and updating. Quality assurance protocols must be developed and the UV monitors upgraded. The Air District should establish a working connection to the fenceline monitoring data. Regulatory agency science should interface appropriately with this system.

5. **Committee Member Comments/Other Business.** There were none.

6. **Time and Place of Next Meeting.** 1:30 p.m., Monday, June 9, 2003, 939 Ellis Street, San Francisco, California 94109.

7. **Adjournment.** 2:57 p.m.

James N. Corazza
Deputy Clerk of the Boards

AGENDA NO. 3b

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

DRAFT MINUTES

Advisory Council Technical Committee
9:30 a.m., Thursday, May 29, 2003

1. **Call to Order – Roll Call**. 9:33 a.m. Quorum Present: Robert Harley, Ph.D., Sam Altshuler, P.E., Louise Bedsworth, Ph.D., William Hanna, Stan Hayes, John Holtzclaw, Ph.D. Absent: Norman Lapera.

2. **Public Comment Period.** There were no public comments.

3. **Approval of Minutes of April 1, 2003.** Chairperson Harley requested that "NMHC" replace "methane" on line three, paragraph two of page three. Mr. Altshuler moved adoption of the minutes as corrected; seconded by Mr. Hayes; carried unanimously.

4. **Overview of Refinery Flares.** Barry Friedman, Senior Consulting Engineer, The Washington Group, International, Denver, Colorado, reviewed a diagram of a flaring system. He noted that in certain systems a vapor recovery compressor can be placed in front of the seal drum to recover fuel vapors and reduce the amount of gas vented to the flares. However, fuel gas recovery is limited by the need to balance fuel produced with fuel consumed in the refinery, maintain the quality of recycled gas and retain sufficient capacity for emergency relief. To more fully utilize the recovered fuel gas, some refineries have installed power recovery gas turbines. However, enough waste gas must be recovered to justify their purchase and installation.

   Flare tip types vary from pipe flares to steam assisted, air assisted, steam and air assisted, staged, and fuel assisted. Pipe flares are the simplest. Steam assisted flares have a ring with jets that generate turbulence at the flare tip to reduce smoke. Steam and air assisted flares have exterior and interior steam rings. Staged flares utilize individual burner nozzles on a ring at the flare tip.

   Flaring provides for controlled equipment shutdown in emergencies arising out of the failure of instrumentation, process units and power supply, as well as operator error, fire exposure or loss of cooling water. Non-emergency flaring provides for the safe shutdown and start-up of equipment prior to maintenance and inspections, and prevents the direct venting to the atmosphere of small quantities of emissions from various miscellaneous systems that may contain hydrogen sulfide.

   In the early 1980's, the Energy and Environmental Research Corporation and the Environmental Protection Agency (EPA) studied flare efficiency by placing a hood above a small flare tip and sampling the gases coming off the hood. With a stable flame, flare efficiencies of 98% or greater were achieved. Flame stability is affected by heating value, wind velocity and flare tip design. Flare efficiency is highest when the flame is connected to the tip, but it drops when too much steam separates it from the tip. The Chemical Manufacturer's Association (CMA) also conducted studies at this time and found high combustion efficiencies over a wide range of flow rates.

More recently flare emissions have been analyzed with Fourier Transform Infrared Spectroscopy (FTIR). EPA compared FTIR with the hood samples and found it accurate, although it requires use of EPA's engineering assumptions. These assumptions are that soot constitutes less than 0.05%, and unburned heavier hydrocarbons (HC) less than 0.05%, of the total HCs entering the flare. BP Oil has developed a Light Detecting and Ranging (LIDAR) technology. It is similar to radar and measures gases, HCs and methane.

In 1997, Shell Oil studied the combustion efficiency of three large operating natural gas plant flares and found that at high flows efficiency ranged from 99.5-99.7% and at low flows from 98.8-99.2%. In October of 2001, Shell studied two flares at a European olefin plant and found that combustion efficiency in an elevated flare registered at 98%, and at 92% in a poorly maintained ground flare. In June of 2002, Shell studied eight solution gas flares and measured efficiency at 98%.

In 1996, BP Oil studied three steam-assisted refinery flares in England with 42"-48" tips. Flare efficiency registered at 98%. Some data showed even higher efficiencies but these did not discount for soot and unburned HCs. This study used LIDAR and considered the effect of crosswind speed on flare emissions as well.

In 1996, the Alberta Research Council (ARC) studied two small oil production flares and measured sweet solution flare efficiency at 62-71% and sour gas flare efficiency at 84%. Sampling devices were suspended from cranes near the flare plume. Some experts have criticized this sampling method. Also, the advisory group to the ARC study opined that the results of that study deviated in a major way from all previous studies and applied exclusively to flares 6" or less in diameter.

The University of Alberta subsequently studied oil production flares in a wind tunnel and found that crosswind velocity considerably reduced efficiency of flares with 2"-6" tips. The study also opined that these results could not be extrapolated to flare tips larger than 6". In 2000, Blackwell used FTIR to study CO in a flare with a high heating value and subjected to crosswinds. He measured flare efficiency at 98% and found that he could not replicate the ARC study.

EPA flaring regulations (40 CFR 60.18) are based on tests in the 1980's when flares were used for emissions control. The standards are used in setting flare emission inventories and set minimum heating values and velocity requirements, as well as applied Ringelmann opacity standards to smoke levels. They contain broad limits for continuous emissions but do not mandate record keeping.

In reply to questions, Mr. Friedman noted the following:

- Variability in fuel type may prohibit the consistent use of a steam-to-gas ratio in flaring. Automated gas recovery compressors may occasionally require operator adjustment.
- Flare operators can observe flare opacity to a certain extent at night.
- If a flaring event occurs, the operator usually has advanced warning and can react to situations where high-pressure set points are exceeded by high inflows. However, if the events that lead to a flaring event occur in rapid succession, the flare is the only indicator of an upset.
- Operator judgment must not be affected by imposing flare limits that adversely affect safe refinery operations. An error in operator judgment arising out of an effort to conform to flaring limits could result in an accident that emits a far greater than normal quantity of emissions.

Chairperson Harley called for public comment and the following individuals came forward:

Julia May
Communities for a Better Environment
Oakland, California

- A recently published EPA fact-sheet stated that flaring that could be predicted (i.e., start-up/shut-down) may not comply with the Clean Air Act. The District should address this.
- Today's presentation does not necessarily apply to Bay Area refineries. For example, the Tesoro refinery knock-out system vents directly to the atmosphere rather than to the flares.
- Residents near refineries experience eye irritation and adverse respiratory impacts during flaring. The District estimates that flaring emits 15 tons per day of sulfur oxides (SOx). Combustion efficiency does not affect the levels of SOx emitted. Some combusted HCs are converted into toxic PM. Flares also emit such greenhouse gases as CO2 and methane.
- Combustion efficiency estimates are controversial. Industry sponsored studies lack objectivity. A recent Swedish study evaluated high and low flaring loads and found high combustion efficiency at high loads but low efficiency at low loads, with emissions remaining fairly constant. Steam-to-fuel ratios for high loading levels worked well but could not be applied to lower loading levels. This may explain the lower combustion efficiency at lower load levels.
- The Blackwell study also found combustion efficiencies of 85%. The State of Texas has adopted a low loading contingency and selected the mid-range efficiency rate of 93%.
- A recent Dow Chemical study urged that dispersion analyses of flare emissions be conducted. A study of optical sensing techniques to evaluate flares is underway in Texas. Optical monitors measure ground level emissions at the ConocoPhillips refinery fenceline. The Council might opine on how optical sensing might be applied to flare plume analysis in the Bay Area.

Kevin Buchan
Western States Petroleum Association (WSPA)

- Reviewed a slide entitled "Refinery Flare Emissions: January 2001 - March 2003."
- WSPA believes that voluntary measures to reduce flaring should be fully implemented before formal emission control measures are considered for refinery flaring.

5. Continued Discussion of Refinery Flares. Mr. Hayes made the following points:

- The ARC study greatly diverges from the predominance of evidence that shows 98% flare efficiency. A 6" pipe in an oil and gas production flare is not analogous to a 48" refinery flare.
- On high ozone days, winds are usually stagnant and therefore flare destabilization is unlikely. Hence, a 98% combustion efficiency estimate can be used for ozone attainment planning.
- PM emissions from flares are likely to be low since operators try to minimize smoke as much as possible and maintain a smokeless flame. Chairperson Harley replied that flares can be kept in a smokeless condition up to, but not beyond, specified flare tip design flow rates.
- A 1997 South Coast AQMD staff report on Rule 1118 indicated that, based on standard estimation techniques, one refinery emitted 1,000 tons of SOx over a six-month period. It is important to evaluate stack emissions and ground level concentrations of SOx.

- Refineries are required to conform to federal and state ambient air quality standards for SO2. The AB 2588 Hots Spots rule addresses toxic impacts from industrial facilities and refineries. The District is considering a toxics New Source Review rule for new and modified sources.

In further discussion, the Committee members offered the following comments:

- Raised stack elevation would increase SO2 dispersion. Refineries should use smart systems and algorithms to map steam and energy flow characteristics. Former Council member Robert Sawyer, Ph.D., would encourage consideration of flaring boundary conditions. (Altshuler)
- Methane in flare emissions affects global warming and should be inventoried. The time that a stable flame is absent is the key to quantifying ozone precursors from flares. (Bedsworth)
- Flare PM content should be studied and flow monitor calibration clearly described. (Holtzclaw)
- Routine maintenance, waste gas recycling, and refinery operational safety must be balanced. Differently sized stacks could accommodate different non-emergency, routine flows. (Hanna)
- The use of the optical remote sensing technology that measures vehicle emissions might be used to evaluate flare emissions. If successfully applied, it would obtain actual data and thereby avoiding having to extrapolate the results of other studies to the Bay Area. (Harley)

Mr. Hanna moved that the Committee recommend that the Advisory Council concur with the flare combustion efficiency estimate of 98%; seconded by Dr. Holtzclaw; carried unanimously.

In reply to Committee questions, Jim Karas, BAAQMD Air Quality Engineering Manager, stated:

- The Committee has responded to staff's request to opine on the combustion efficiency issue by reaching consensus on the estimate of 98% efficiency, based on the weight of evidence.
- Optical measurement of flares poses resource issues. Technically sophisticated spectroanalysis of flares is underway in Europe and staff will meet with the experts on this in the near future.
- The difference between District and industry calculations of flare HC content is due to different assumptions, the inclusion or exclusion of methane, and flow data variability. Much of the original flow data is unreliable. The flow-monitoring rule will generate better monitoring data.
- Boundary conditions are problematic, which is why the refineries are being encouraged to reduce flaring. One refinery has eliminated half of its flare emissions through gas recovery.

6. **Committee Member Comments/Other Business**. At its next meeting the Committee agreed to (1) receive presentations on flare emissions and the use of optical sensing technology to evaluate flares, and (2) discuss South Coast Rule 1118 with District staff, industry and the community.

7. **Time and Place of Next Meeting.** 9:30 a.m., Thursday, August 7, 2003, 939 Ellis Street, San Francisco, CA 94109.

8. **Adjournment.** 12:30 a.m.

James N. Corazza
Deputy Clerk of the Boards