APPENDIX 1

ENHANCED VAPOR RECOVERY TECHNOLOGY REVIEW

COMMENT/RESPONSE

Twenty-two comment letters/faxes/e-mails were received from November 2001 through February 28, 2002. These comments and CARB staff's responses are grouped as follows:

1. EVR schedule…….. 2
2. Feasibility assessment…… 3
3. In-station diagnostics……... 4
4. UST pressure standard……10
5. Max A/L of 1.0 for system w/o processor……..12
6. Phase II Emission Factor and Pressure-related fugitives……...12
7. Dispenser standards……12
8. Max A/L of 1.3 for system w/ processor……13
9. Processor standards……13
10. ORVR……...14
11. Nozzle standards……15
12. Balance system component pressure drops……17
13. Spillage……17
14. Phase I ……18
15. Cost analysis……...18
16. EVR Certification……24
17. Sole source concerns……27

1. EVR Schedule (ARID, CIOMA, Nella Oil, WSPA)

ARID Technologies comments that the new EVR requirements are quite fluid and dynamic. The practical interpretation of these evolving rules presents challenges for those who are not regulatory experts but who wish to comply and meet all of the requirements. ARID is very concerned that the present certification protocol has significantly delayed the air quality benefits available to the public.

Response: *Staff agree that the emission reductions associated with EVR should be implemented as quickly as practicable. However, the technology-forcing aspect of some of the EVR standards made it necessary to allow time to develop a new generation of vapor recovery equipment. The EVR certification protocol provides safeguards to ensure systems seeking certification are tested on sites representative of existing facilities.*

CIOMA believes that ARB staff has been baselessly optimistic about the technical progress and overall feasibility of EVR. Phase II EVR and ISD are scheduled to be implemented in April of 2003. A finding of 'Technologically Feasible' assumes that systems will magically appear, be tested, adjusted, retested, pass a six-month certification test, and go into production in time to adequately supply demand, all within a span of 14 months. Despite their failure to do so within the last two years and two months. We are now at the two-year review point for this technology-forcing program, and we have virtually nothing concrete to evaluate.

CIOMA notes that at the Technology Review Workshop on February 5, ARB staff mentioned their 'conservative assumption' that 94 certifications would be forthcoming- 14 in Phase I, 64 Phase II, 16 ISD. At the outset of the EVR program in 2000, ARB staff was confident that several Phase I systems would be certified within Phase I's deadlines. That confidence was misplaced. At the present time, seven months beyond the implementation date of Phase I EVR, there is one system certified and one other struggling repeatedly to pass certification. And Phase I EVR was considered the most readily achievable segment of this ambitious program.

Nella Oil believes it is unlikely that a Phase II system with ISD can be certified by April 2003. SaberVac suggests that the EVR timeline be modified to allow more technology development time.

WSPA has several concerns regarding the April 2003 implementation timing for Modules 2 and 6, Phase II and ISD, respectively. First, noting that April 2003 is only roughly one year away, WSPA is concerned that there does not appear to be much visible activity on the part of equipment manufacturers. For example, only one potential ISD system supplier participated in the pilot program which is currently underway, and, WSPA is not aware of any manufacturer that is actively

planning on submitting a Phase II vapor recovery system for EVR certification testing. WSPA believes that it is less than optimum to have only one EVR-certified Phase I system; WSPA is concerned that the same situation could happen with Phase II systems and ISD systems. Second, EVR-certification testing for Phase II systems will have to be conducted using an EVR-certified Phase I system. WSPA feels that the timing for the potential approval of any Phase I system will be critical to the successful implementation of Module 2 requirements. WSPA believes that a similar concern applies to the issue of matching nozzles with Phase II systems as the Phase II systems undergo EVR-certification testing. Third, WSPA is concerned that the need to conduct simultaneous EVR certification testing, on both a Phase II system and an ISD system, will unnecessarily encumber the testing process and will reduce the likelihood that both systems will pass. Therefore, WSPA suggests that consideration be given to postponing the implementation dates for Modules 2 and 6, or, in the alternative, assigning separate implementation dates for these two modules.

Response: *Our communications with vapor recovery equipment manufacturers indicate that one or more EVR Phase II systems could be certified by April 2003. If there are no Phase II systems on test by summer of 2002, we will consider modification of the schedule at the September 2002 board meeting.*

2. Feasibility Assessment (Chevron, CIOMA)

Chevron suggests that a "yes" for technological feasibility should include being able to function for 180 days "hands-off". His example: liquid removal devices can work at 5 ml/gal, but can they meet EVR specs for 6 months? What is our basis for saying so?

Response: *We agree that the EVR standards would constitute a higher bar, unfortunately, we do not have the data to confirm the 180-day performance at this time. However, we would argue that once a standard has been demonstrated for a shorter period than 6 months, that extending the durability of the system is assumed to be feasible. Also, CP-201 does not require "hands-off" performance. Reasonable maintenance is allowed and must be specified in the system maintenance manual.*

CIOMA states that the demonstration of proof as delineated on ARB's Criteria for Technological Feasibility (slide 7 from Feb. 5 presentation) is disturbingly vague.

Feasible?	Demonstration
Yes.	Certified system OR ARB or Manufacturer data shows meets standard
Likely	*Information suggests* standard can be met
Maybe	Development underway to meet standard
Not yet	Data indicates can't meet standard now

'Manufacturer data shows meets standard' sounds reasonable if it were not for the costly lessons learned from vapor recovery. What seemed to work fine for the manufacturer seldom if ever did so at certification or in common use. And with that hard experience in the same field of technology in mind, the demonstrations for "Likely" through "Not Yet" are mere variations on a theme of wishful thinking. The only concrete demonstration is a certified system, and there is only ONE of those in Phase I, and NONE in Phase II.

Feasibility is defined as "1.able to be accomplished: possible 2. appropriate, suitable". There is no evidence that currently supports the conclusion that EVR Phase II is able to be accomplished, and it is neither appropriate nor suitable to go back down the vapor recovery road of 'making do' with costly substandard interim equipment in hopes that better things will eventually come along. The whole point of EVR was to insure that industry would at last be able to buy durable equipment that actually operated at a stringent certified standard. ARB has, at present, nothing but degrees of hopefulness on which to base a conclusion that EVR Phase II is technologically feasible. The absence of substantive evidence upon which to base a technological assessment of feasibility, and the terrible impact that such an unsubstantiated favorable assessment is likely to have on California's small business fuel retailers demands that EVR and ISD be postponed until there is a probability rather than a fond hope that those 94 systems are deliverable, cost effective and certifiable.

Response: *Staff disagrees that a system must be certified to meet an EVR standard before making an assessment of technological feasibility. However, of the 37 EVR standards in this review, 13 or 35% are already demonstrated by currently certified systems. Another 13 or 35% are demonstrated by ARB in-house testing. Thus, 26 or 70% of the EVR standards are deemed technologically feasible based on ARB test data. 9 or 25% of the standards are assessed as "yes" or "likely" based on manufacturer information that is not yet supported by test data. Two or 5% of the standards have not yet been demonstrated.*

3. In-Station Diagnostics (API, ARID, Butte Co., CIOMA, Glenn Co., Healy, Mendocino, Fritz, Nella Oil, SaberVac, WSPA)

API comments that based on presentations and comments at the February 5th Tech Review Workshop, it appears there is still significant work needed to bring practical and cost-effective ISD systems into service. According to Slide 49 of the February 5th presentation, ISD adds some $7,000 to the cost of an EVR system at a 75,000 gallon/month station and approximately $13,000 to a 300,000 gallon/month location. ISD represents about 30% of the cost of an EVR installation. This is a significant outlay for a system that only monitors vapor control performance, but does not control emissions.

Response: *The costs for ISD cited in the workshop presentation as taken from the EVR staff report have been demonstrated to be cost-effective. Staff concedes that ISD does not directly control emissions; however, ISD does result in emission reductions by alerting the station operator to take corrective action upon identification of vapor recovery equipment failures.*

API states that new EVR equipment should prove to be more effective given the implementation of the 180-day durability test, the new certification and field-testing procedures, and improved equipment quality control. In addition, the operating and maintenance requirements that will be specified in Executive Orders will assure that systems are operating optimally without ISD. Considering that EVR system performance should be equal or very close to the level observed during certification, the need for an expensive ISD system is difficult to justify.

Response: *Staff agrees new EVR equipment should be more durable and effective than previously certified systems. However, optimum performance of vapor recovery systems also relies heavily on proper installation, regular maintenance of equipment, and equipment replacement after completion of useful life. Significant emissions occur as vapor recovery system failures now cannot always be detected by visual inspection, and manual field testing is infrequent. ISD will provide continuous monitoring to ensure proper system operation at all times.*

API strongly urges ARB to compare the costs/benefits of a system that detects failures solely by monitoring UST pressure with the costs/benefits of the complex system specified in the EVR regulation. Such a comparison may show that most of the benefits attributed to ISD can be achieved at a fraction of the cost. Not only would this improve the cost-effectiveness of the system, but it would simplify the system and thereby improve the probability of multiple manufacturers successfully certifying ISD systems.

Response: *Staff has included this comparison as part of the technology review.*

ARID Technologies supports Staff's willingness to consider ISD alternatives in addition to the single approach proposed by one market leading supplier. We believe that we can provide the required functionality at a fraction of the cost stated by the supplier during the Workshop.

Response: *ISD alternatives must meet all of the requirements listed in the CP-201 ISD appendix. Equivalent strategies are allowed per section 1.6.*

CIOMA states that the failure to address the possible adoption of ISD into current vapor recovery systems, despite the fact that that is where they have been developed and pilot tested, is troubling. And if it is ARB's intent to use ISD on

existing systems until EVR is available, the repeated expense to small business is both potentially economically lethal and once again, staggeringly unjust.

Response: *The intent is that ISD will be part of an EVR-certified Phase II system. ISD will not be required for existing installations until the deadline for upgrading the Phase II system to meet EVR requirements.*

CIOMA also sees a potentially serious problem in market competition stemming from Veeder-Root's acquisition of Marconi/Gilbarco, one of the largest system manufacturers in the industry. What about system compatibility? How motivated will they be to insure compatibility with competing systems at comparable cost? And how many other dispensing system manufacturers will want to give their source coding information to their competitor, as must be done to integrate the Veeder-Root ISD with a dispensing system? While these are not strictly speaking technical flaws in the ISD, they certainly affect its use and applicability.

Response: *The EVR certification process addresses compatibility issues between ISD and Phase II equipment upfront. The ISD and Phase II manufacturers will need to work together in order to achieve CARB certification.*

Butte County AQMD states that the current trigger level of 160,000 gallons/year for ISD may serve the heavily congested areas of the state, but is an unwarranted financial burden to retail gasoline stations in Butte County. Butte Co. requests the trigger level for ISD be raised to 1,000,000 gallons/year. Butte Co. suggests a close examination of the implementation schedule for ISD and consider a pilot program for the first 2 or 3 years to determine if the installation and maintenance costs of ISD are realized. Butte Co. believes that the ISD final costs will far outweigh the insignificant emission reductions ISD will bring.

The Glenn County APCD believes that the ISD exemption level should be increased to include those GDFs in Level 3 (75,000 gpm). GCAPCD believes that the cost-effectiveness numbers are too high for requiring a system that does not actually control or eliminate emissions. For those GDFs in Levels 1, 2, or 3 an enhanced maintenance and monitoring program should be required in lieu of requiring ISD. The level and frequency of maintenance and monitoring for level 1, 2, or 3 GDF's could be worked out between CARB and CAPCOA committees.

Response: *Staff will consider modifications to the ISD exemption levels after adjusting the ISD costs based on more recent information and recalculating the cost-effectiveness of ISD. However, the continuous monitoring and shut-down consequences provided by ISD provide advantages over an enhanced maintenance and monitoring program.*

Healy believes it is not necessary to monitor gasoline flow rates to make ISD a reality. If a company such as Healy Systems can monitor vapor flow rates, it is unnecessary to monitor the liquid side of the equation. By use of the Healy 800

ORVR Nozzle and Healy electronic ISD Vapor Indicator, we can measure and record:

- A blocked vapor hose (no vapor flow)
- An ORVR fueling (partial vapor flow)
- A pre-1998 vehicle (full vapor flow)

This straightforward flow device sends a signal to the appropriate generic monitor, which would have a Healy-designed software interpret the signals generated by the flow device. Would CARB accept this device as an innovative system?

Response: *Staff will consider all approaches to fulfill ISD requirements. The CP-201 ISD Appendix specifies what parameters to measure, but not how to measure those parameters. ISD alternatives must meet all of the requirements listed in the CP-201 ISD appendix; however, equivalent strategies are allowed per section 1.6.*

Mendocino County AQMD requests that districts in ozone attainment, or that can demonstrate an overwhelming biogenic VOC inventory, be exempted from requiring ISD. Barring that, Mendocino requests that the statewide trigger be raised to 900,000 gallons throughput per year. Finally, barring that, Mendocino requests that districts in ozone attainment, or that can demonstrate an overwhelming biogenic VOC inventory, be allowed to set the exemption level at 900,000 gallons per year. In these cases, the EVR costs incurred by the community have absolutely zero air quality benefits. Furthermore, it will be a serious attack on the viability of those few rural stations that managed to survive the UST requirements. Government loses its credibility when it imposes restrictions and costs on its citizens that demonstrably do not have benefit to the community.

Response: *Benzene emissions from improperly functioning vapor recovery systems can harm the health of the local population. In addition, hydrocarbon emissions can potentially travel to neighboring districts that are currently in or near non-attainment status.*

Fritz Curtius reports that one small European country has recently decided to control vapor recovery systems with a portable ISD system.

Response: *An ISD system that measures the hermeticity (leak tightness) of vapor recovery systems has been developed and is currently in limited use in Europe.*

Nella Oil concerns include the fear that the Veeder-Root system is expensive, problematic and can't recognize ORVR vehicles. Nella believes that there is no full ISD system at any of the pilot program test sites. The pilot program consists

of only one vendor (Veeder-Root) that is being developed for only one brands of dispenser and will be an add-on to Veeder-Root UST monitors. Nella fears a Veeder-Root monopoly that will lead to high costs and limited availability. Nella thinks EVR Phase II systems will be much improved so don't need ISD now, can develop in future.

Response: *ISD systems must be cost-effective. In addition, ISD systems must have the reliability and durability to pass the 180 day (minimum) EVR certification test. ISD developers must determine how to identify or account for ORVR vehicles. The ISD systems currently installed at the ISD Pilot Program test sites have demonstrated the capability to measure both vapor collection and vapor containment for both balance and vacuum-assist vapor recovery systems; have demonstrated the capability to record and store ISD data and reports; and have demonstrated the capability to detect vapor recovery system failures.*

Staff agrees new EVR equipment should be more durable and effective than previously certified systems. However, optimum performance of vapor recovery systems also relies heavily on proper installation, regular maintenance of equipment, and equipment replacement after completion of useful life. During the ISD Pilot Program, the pilot ISD systems have identified and quantified the emissions from various vapor recovery system failures on a near real-time basis.

Staff expect multiple ISD solutions by many ISD developers will be certified.

SaberVac suggests that times of deliveries and non-operational hours of the station be excluded from ISD monitoring and reporting requirements. CARB should be open to partial solutions of ISD that meet the spirit and goals of EVR. CARB should set operational/functional ISD requirements, not technology requirements that stifle creativity. Once an ISD system is approved, then use on another system should not have to undergo a complete new test. ISD should be a tool for the marketer, not a "policing mechanism".

Response: *ISD systems must be continuously operational 24 hours a day. Emissions from improper Phase I deliveries and other causes can occur 24 hours a day. The CP-201 ISD Appendix describes what parameters to measure (vapor collection and vapor containment), but not how to measure those parameters. Staff believe this approach encourages and enhances creativity. CARB is willing, and has encouraged, ISD developers to present full or partial ISD solutions for evaluation. However, ISD alternatives must still meet all of the requirements listed in the CP-201 ISD appendix. Staff has developed a "system-type" certification strategy for ISD systems that is expected to allow an ISD system, once certified, to be certified on other Phase II systems with reduced testing. ISD is expected to be a diagnostic tool for marketers and maintenance staff to maintain vapor recovery systems at higher in-use vapor recovery efficiencies; the pilot ISD systems have already demonstrated their effectiveness to assist*

maintenance staff expeditiously identify and repair defective vapor recovery system components.

WSPA provided several comments on the ISD pilot program protocol. Their main points were that ARB consider ISD that meets a subset of total ISD goals, distinguish between need to determine ISD features and ISD performance (testing), improvements to challenge-mode testing, evaluation of unattended operation and a review of ISD cost-effectiveness.

Response: *ISD systems must meet all of the requirements listed in the CP-201 ISD appendix. During the ISD Pilot Program, the ISD systems were tested using challenge mode techniques; during certification, ISD systems will be tested using challenge mode techniques. Although ISD cost-effectiveness was initially based solely on vacuum-assist vapor recovery system emissions expected to be prevented by ISD systems, data from the ISD Pilot Program have identified potential balance vapor recovery system emission reductions that could be prevented by ISD systems that equal or exceed vacuum-assist vapor recovery system emission reductions.*

Module 6 of the EVR Program, the requirements for In-Station Diagnostic (ISD) systems, continues to be one of WSPA's most significant concerns. WSPA's concerns are based on, what in their view, is a very questionable, overly-optimistic emissions benefit coupled with an understated estimate of the true installed cost for ISD systems (these issues are discussed in greater detail in the section on cost analysis). WSPA expects that, upon further analyses of both costs and benefits by the ARB staff, it will be concluded that the target slate of performance goals for ISD systems (as stated in the ISD Appendix of CP-201) cannot be met in a cost-effective manner. Therefore, WSPA strongly encourages ARB to explore alternatives such as those as mentioned at the workshop (i.e., manual monitoring, partial ISD with supplements, etc.). We believe that alternate approaches to fulfilling the concept of In-Station Diagnostics could prove attractive to all stakeholders, including the ARB.

WSPA strongly urges ARB to evaluate actual potential emissions benefits and obtain actual pricing information for various alternative ISD solutions, and then to compare the costs and benefits of these various systems. For example, we are aware of an ISD system that detects failures solely by monitoring tank ullage pressure – that system is the Blackmer EnviroSentry™ Electronic Vapor Recovery Monitoring System. (It is important to note that the mention herein of this proprietary product is solely for the purpose of providing an example of an existing, commercially-available monitoring system. It is neither intended to endorse the product, nor, to be negative toward it in any way.)

WSPA believes that comparisons of costs, benefits, and cost-effectiveness values, for systems which potentially meet the specifications in the ISD Appendix of CP-201, with those of alternative systems, may show that most of the benefit

attributable to ISD can be achieved relatively economically with alternative systems. Thus, in addition to improving the cost-effectiveness of ISD systems, the ARB would improve the probability of multiple manufacturers being able to certify systems.

Response: *ISD systems must be cost-effective, and must meet all of the requirements listed in the CP-201 ISD appendix. Equivalent strategies are allowed per section 1.6. Data from the ISD Pilot Program indicated that the actual emission reductions identified by and prevented by ISD systems may exceed twice the estimate used in the original cost-effectiveness calculations. Alternative ISD solutions are encouraged and allowed, and staff expects multiple ISD solutions from multiple ISD developers to be certified. Staff have evaluated the performance and capability of the Blackmer EnviroSentry electronic monitoring system, and will evaluate additional ISD systems as they are presented to CARB for review.*

4. UST Pressure Standard (ARID, CIOMA, Marconi, SaberVac, Chevron, WSPA)

ARID Technologies suggests that the calculation methodology for average tank pressure has been modified from typical arithmetic average calculation methods. The decision to characterize times at negative pressures as “zero” pressure results in calculated average storage tank pressure values greater than those obtained with traditional math. Perhaps the threshold pressure of + 0.25 inches water should be appropriately adjusted to take into account the new averaging technique.

Response: *The calculation method for determining compliance with UST pressure drop limits has not been changed, but merely clarified in the amendment to CP-201 presented to the Board in October 2001. The UST pressure limits will not be adjusted.*

CIOMA comment on UST Pressure Criteria (slide 21) Daily average $\leq$ +0.25 in water, Daily high $\leq$ +1.5 in water- Feasibility adjudged “Yes”, despite the text of slide itself.

> Comment: ‘Vacuum system cannot meet w/o processor (non-operational hours, winter fuel).
>
> Response: Will collect additional data at stations with overnight closure and winter fuel.’

Staff has agreed that they don’t have the answer to that objection, but that they will look into it. That should not generate a yes; rather by your own criteria, a maybe or a likely. And the further issues raised in verbal comments, that low throughput stations may well not be able to pass this requirement, that

uncontrolled emissions differ substantially summer to winter, and that turbine systems can generate false positives, underline the expanse of uncertainty here.

Response: *The UST pressure criteria can be met by Phase II systems with processors that maintain continuous negative pressure. Thus, the technical feasibility is "yes". When EVR was adopted, staff believed that other Phase II systems could also meet these pressure drop limits without a processor. Data submitted by vapor recovery equipment manufacturers show that service stations which shut-down overnight while dispensing winter fuel show increases in vapor growth which preclude meeting the UST pressure limits (see next comment).*

Marconi does not believe a vacuum assist system can meet the UST standard (daily ave 0.25 in, daily high 1.5 in) without a processor. Data shows that the standard can be met while service station is operational, but cannot control UST pressure during closed or non-operational hours, especially for winter fuels. Marconi requests exemptions to the UST pressure standards to account for non-operational hours, winter fuel and ORVR vehicle penetration.

Response: *UST pressures that exceed the EVR limits lead to unacceptable fugitive emissions. These cannot be ignored by exempting non-operating hours, winter fuel dispensing or ORVR vehicle penetration.*

WSPA recommends that, in view of the proposal to disallow the use of negative pressures in the calculation of average pressure, staff review the 0.25-inch WC UST ullage pressure limit for appropriateness. We are seeking assurances that a well-maintained facility will be able to comply with the pressure limit after taking into consideration such factors as product deliveries, ambient temperature, product RVP, hours of operation, etc.

Response: *As discussed above, the calculation procedure for UST pressures is not proposed to be changed. The UST pressure limits ensure that fugitive emissions do not compromise the total Phase II emission factor of 0.38 lbs/1000 gallons dispensed.*

5. Max A/L of 1.0 for assist w/o processor (Marconi)

Marconi does not think their system can meet this requirement 100% of the time due to pressure drop differences in assist system hanging hardware. Marconi suggests an A/L requirement of 1.0 + 0.10 or develops an assist system pressured drop budget similar to that for EVR balance systems.

Response: *We agree. An assist system pressure budget will be proposed in the next EVR amendments. In the meantime, Marconi may submit pressure drop allowances for each component in their EVR system application.*

6. Phase II Emission Factor and Pressure-related fugitives (ARID, Marconi, Husky)

ARID Technologies requests a sample calculation for the fugitive emission factor according to the new EVR requirements.

Response: *An example calculation is included in TP-201.2F, Pressure-Related Fugitive Emissions. However, the example calculation in TP-201.2F, as adopted February 1, 2001, is missing Equation 9.3 that provides the calculation of the mass emission factor. This equation will be added back in during the next EVR amendments. The missing text is as follows:*

$$E_{prf} = \left[\frac{(0.152\text{lb/hr})(24\text{hr})(1{,}000)}{8{,}500\text{gal}} \right] = 0.429\text{lb}/1{,}000\text{gal}$$

Marconi is concerned that changes to the Phase II emission standard may affect their ability to certify, however, it is difficult to tell until an EVR certification test is conducted. Marconi may request a modification of this standard after further testing.

Response*: Assist systems with processors that maintain continuous negative pressure can meet this standard.*

7. Dispenser standards (SaberVac, Marconi)

SaberVac would like a dispenser to be considered non-system specific. If a system with certain vapor piping does not electrically interface with the dispenser, it should be able to be approved with other dispensers that meet the same piping criteria.

Response: *Dispenser vapor piping (balance) is already listed as a non-system specific component in Table 16-2 of CP-201. Staff will propose to remove the "balance" specificity for the next EVR amendments.*

Marconi would like an exemption for some older balance dispensers that may not meet the dispenser pressure drop requirements.

Response: *Balance dispensers must be upgraded by April 2007 to meet pressure drop requirements. No exemption to this requirement is expected.*

8. Max A/L of 1.3 for system w/ processor (OPW, Hirt)

OPW's Hasstech system currently operates with an allowable A/L range of 1.4 to 2.4, with a nominal A/L of 1.7. Modifying the system to meet a maximum A/L of 1.3 would not achieve adequate recovery of vapors or hose liquid removal unless expensive variable vapor valves are developed. OPW chooses to discontinue

sales of the Hasstech system after March 31, 2003 in CA, but will continue to offer it in other states.

The Hirt VCS 400-7 system requires a minimum A/L of 1.35 when dispensing at 8-10 gpm. The system design raises the A/L for lower dispensing rates. Hirt does not understand a need for the requirement of 1.3 as their system suffers from none of the reasons given in the staff report that led to this limit. Hirt believes that the high A/L was needed to overcome the vacuum from the "sleeve test".

Response: *Staff understands that the design of currently certified processor systems will need to change to meet EVR requirements. No change to the standard is expected.*

9. Processor standards (CIOMA, VST, ARID, OPW, Hirt)

CIOMA points out that ARB's presentation included a feasibility upgrade from Maybe to Yes on the Maximum Hydrocarbon Rate to Processor (slide 23). The rationale given was: "Existing certified vapor processors cannot meet. Proposed membrane processors can meet." On what objective criteria was this conclusion reached? What testing led to this assumption? If ARB was given manufacturer data demonstrating this, what was it? Is it universally applicable to appropriate existing systems? If, after careful testing, it is found that membrane processors can achieve the standard, that is the point at which feasibility should be evaluated as a "yes".

Response: *The upgrade in feasibility from "maybe" to "yes" is based on data from a membrane manufacturer (see below).*

Ted Tiberi indicates the ARID system has demonstrated it can meet the 5.7 lbs/1000 gal feedrate to the system, but the demonstration did not include ORVR fuelings while operating in a "slight positive" pressure mode. Operating in negative pressure modes could generate feed rates exceeding the 5.7 lbs/1000 gal threshold.

OPW states that the Hasstech processor cannot meet the 5.7 lbs/1000 gal processor feed rate and the certified efficiency rate simultaneously, and OPW questions the value of this feedrate limit.

VST states that their membrane processor can meet the 5.7 lbs/1000 gal processor feed rate limit using the net flow concept. In their design, the net flow to and through the processor is less than 0.10 lb/1000 gal. In extreme failure mode, such as breach of membrane, the net HC rate is less than 2 lbs/1000 gal.

Response*: Change feasibility status of processor feed rate limit from "maybe" to "yes".*

VST suggests that the intent of the standard could be better achieved by rephrasing the standard to address the maximum rate of HC emissions in the event of processor failure. This would address scenarios where the processor meets the feedrate limit under normal conditions, but exceed this emission rate immensely under a failure mode. The change suggested is the maximum HC rate **FROM** a processor shall not exceed 5.7 lbs/1000 gal. VST states it may be desirable to specify a time period with this standard (X hours or days). Another approach would be to set a maximum HC rate from an EVR system, which would cover failure mode emissions for all types of technologies, not just the processor.

Response: *We agree. This change will be proposed as part of the next EVR regulation amendments.*

Hirt understands the reason for the limit is to minimize vapor emissions in the event of a processor failure. A processor must be a fairly large capacity to handle bootless nozzles. A limit on feedrate would stifle development and severely limit the design choices available.

Response: *The limit on feedrate is proposed to be changed to a maximum hydrocarbon emission rate from a processor during failure mode (see comment above).*

OPW cannot find testing labs which can meet the challenge of evaluating the HAPs limits. OPW notes that San Diego APCD suggests 1,3-butadiene is created during the refining process and is neither created or destroyed by the processor.

Response: *Staff will provide a listing of laboratories that can conduct the HAPs analysis. 1,3-butadiene may be present in some winter fuels. In these cases, the 1,3-butadiene may be measured before and after the processor to assess the contribution of the processor to the HAPs emissions.*

10. ORVR (ARID, CIOMA, Fritz, Nella Oil)

ARID points out that high penetrations of ORVR vehicles, such as at rental car stations, can overwhelm processors with lean vapors.

Response: *CP-201 requires vapor recovery system to operate within emission limits for ORVR penetrations up to 80% for certification. Staff will consider an increase to 90% ORVR penetration.*

CIOMA questions EVR's emissions benefits as outlined by staff. In slide 13, 2020 Calculation, the premises and conclusion are oddly slanted.

> 'Assume uncontrolled Phase II emissions of 230 tons /day statewide. Those emissions when mitigated by ORVR only (207 ORVR) (0.050) = 10 tons /day; = 23 uncontrolled + 33 tons day
> Emissions with ORVR and Phase II (230) (0.05) = 12 tons day total culminating in a 22 tons per day benefit!'

On what basis should we assume uncontrolled Phase II emissions statewide? Phase II emissions are currently controlled by existing vapor recovery equipment. There is no reason to assume that this equipment will be summarily removed. Surely a more valid assessment of EVR's benefit would be to compare known VR +ORVR as shown with EVR + ORVR projections, and the difference between those two is the EVR benefit. It would assuredly not be 22 tons per day. And the recalculation of that factor would significantly impact the cost effectiveness analysis.

Response: *The calculation in Slide 13 is intended to address the comment in Slide 10 that "there is no return on investment for EVR systems, as ORVR vehicles will replace Phase II". Our point is that Phase II will still be necessary in year 2020, even if the ORVR vehicle fleet penetration is 90%.* ***If*** *Phase II systems were removed in 2020, there would be 22 tons/day of excess emissions. The removal of Phase II systems is not being considered in EVR.*

Fritz Curtius from Europe comments that ORVR cars produce very high emissions at gas stations, because clean air is transported into the UST. The emission is 10 times the running emission of low emission vehicles. The compatibility of ORVR is not real. Mr. Curtius suggests that air return lines be equipped with saturation-humidifiers to reduce emissions during ORVR fuelings.

Response: *ARB field studies have shown that fueling ORVR vehicles with some Phase II systems can lead to air ingestion and subsequent vapor growth, which cause excess emissions. EVR requires Phase II systems to be ORVR-compatible, but leaves the mechanism for achieving compatibility to the vapor recovery system manufacturer.*

Nella Oil is concerned that there is no return on investment for EVR systems, as ORVR vehicles will eventually negate the need for Phase II vapor recovery.

Response*: Phase II will likely be required for many more years in California. Calculations show that if Phase II was removed in 2020 with a projected ORVR penetration of 90%, this would result in excess emissions of about 22 tons/day.*

11. Nozzle standards (ARID, Healy, Husky)

ARID Technologies requests that processor certifications be allowed with existing nozzles employed by presently installed Stage II vapor recovery systems. If the extremely stringent nozzle standards/specifications survive the

technical/feasibility review, allow engineering analysis or field testing at future date to retrofit appropriate new nozzles (Stringent nozzle standards include <1 drop per refueling, <1 ml/nozzle/test and <0.24 lb/1,000 gallons spillage).

Response: *CARB certifies processors as part of a Phase II systems, not as a separate component. Phase II systems must meet all the EVR standards in effect at the time of certification. The nozzle standards mentioned do not take effect until April 2004, so there is nothing to prevent a Phase II system to certify to all EVR standards except the nozzle standards. The Phase II system would need to undergo recertification with a nozzle that meets the EVR 2004 standards to be sold after April 2004.*

Healy believes that assist nozzles are being "held to a higher standard" than are balance-type nozzles. The only way an assist nozzle "spits" is if it is used in a non-standard fueling practice, whereas a balance nozzle will also spit when the boot is manually pulled back and the lever is lifted (i.e. Motorcycle or utility can). Why, then, is balance not subjected to the same non-standard fueling practice tests, as are assist systems?

Response: *Staff disagrees that balance and assist nozzles are being held to different spitting standards. Both nozzles will be evaluated for spitting using TP-201.2E, Gasoline Liquid Retention in Nozzles and Hoses. Section 6.4 of TP-201.2E describes the nozzle spitting test, which is independent of a fueling event. The tester removes the nozzle from the dispenser and points the nozzle down in a container. With the dispenser in the "off" position, the nozzle trigger is pulled and held until there is no gasoline flow for 10 seconds. This release of gasoline is recorded as "nozzle spitting".*

Husky says vehicles must meet the CA standard for vehicle fill necks in order to work properly.

Response*: Section 4.7.1 of CP-201 states that "each vapor recovery nozzle shall be capable of refueling any vehicle that complies with the fillpipe specifications and can be fueled by a conventional nozzle".*

Testing already indicates that the 100 ml liquid retention standard can be met, however, the test procedure is dependent on the vehicle and customer behavior (topping off).

Response*: Yes, we agree that the 100 ml liquid retention standard is technologically feasible.*

Husky is working to assess the feasibility of the "dripless" nozzle standard. Husky will supply CARB with the test results for lab tests with their nozzles using mineral sprits at a temperature and flow rate. Husky does not have results for gasoline because we do not know its RVP or its chemical make up. We do know

from our testing that temperature and such things as MTBE or ethanol content have an effect on the way that the fuel adheres to the nozzle spout. Flow rate has an effect because the higher the flow the more fuel that exits the spout when the nozzle shuts off because of its velocity. The 1 drop per fueling is not achievable. The cohesion, adhesion and viscosity of gasoline blends vary with temperature, etc. This causes some fuels to wet the surface and slowly drip off and some to leave the spout almost dry.

***Response**: We will consider modification of the 1 drop standard if necessary.*

The nozzle spitting standard of "less than 1 ml/nozzle/test" is already met by balance nozzles and can be added to assist nozzles.

***Response**: Update feasibility status from "maybe" to "likely".*

Husky makes the following comment regarding the 100-ml liquid retention standard. The test procedure (TP-201.2E) does not separate liquid retention caused by the nozzle from liquid retention in the nozzle from a splash back caused by the vehicle or the person doing the fueling. The 350 ml per 1000 gal testing that was done by CARB is proof that most of the liquid does not come from nozzle defects but from vehicle defects. Husky has supplied three suggested vapor recovery nozzle performance tests that eliminate the variability of the vehicle fueling interface.

***Response:** We appreciate the suggested nozzle performance tests and will evaluate these tests for possible incorporation in the EVR program. However, we cannot assess real-world nozzle emissions without evaluation of vehicle fuelings as done by our adopted test procedures. We disagree that the CARB testing proves that the liquid retained is due to vehicle defects.*

12. Balance system component pressure drops (Husky)

Husky is concerned that the Balance System Component Pressure Drops will not be repeatable. That is, the pressure drop found by doing a pressure drop test on an individual component would not equal its actual pressure drop when installed on a system. The connection to a mating part, such as a breakaway coupling to the hoses, can give different pressure drops then when tested by itself. Husky has observed this with their testing.

***Response:** We will investigate whether this is an issue with the CARB test bench and proposed test procedure.*

13. Spillage (Husky)

Husky states that the spillage test procedure (TP-201.2C) does not separate spills caused by the vapor recovery system from spills caused by the vehicle or

the person doing the fueling. Husky has found that most spills are not caused by the vapor recovery system.

***Response**: It is important that the spillage results represent "real-world" conditions that include variability from vehicles and persons conducting the fueling. The spillage test procedure allows exclusion of spillage test data due to improper fueling. Section 8.3 of TP-201.2C requires recording "any unusual aspects of any spill which could qualify such spill as resulting from inappropriate us of the system equipment. If the Executive Officer determines that spill resulted from in appropriate use of the system equipment, then record the spill but exclude the results of that spill from the calculations".*

14. Phase I (Nella Oil)

Nella Oil concerns include the sole source provider for EVR Phase I (Phil-Tite), the requirement to use ball floats rather than drop tube overfill prevention and problems with old Phil-Tite gray spill buckets.

***Response:** Phase I systems are outside the scope of the technical review. However, there are EVR Phase I systems under test that utilize drop tube overfill protection. Phil-Tite is offering a recall program for the older gray spill buckets.*

15. Cost Analysis (ARID, Butte Co., CIOMA, Glenn Co., Healy, Husky, Mendocino)

ARID Technologies believes the economics of vapor recovery are more attractive than discussed at the February 5, 2002 workshop due to an overestimate in capital costs and an underestimate in reduced emission levels. The economics of retrofitting existing equipment should not be overlooked or discounted in the cost-effectiveness calculations.

***Response:** The EVR cost analysis contains many conservative assumptions in assessing the EVR cost-effectiveness in terms of $/lb VOC reduced. This is intended to provide a "worst-case" cost, the real cost is expected to be lower.*

Butte County Air Quality Management District estimates that the cost to Butte County gasoline stations will be $42,000 to save one ton of VOC per year ($21/lb) and states that this is an unacceptable high cost for a rural area. Butte County assumes an ISD cost of $7,000 per station for 90 stations to reduce VOC emissions by 15 tons/year.

Response: The cost analysis submitted by Butte County assumes that the total cost of ISD will result in only one year of emissions reductions. The EVR cost analysis translates the total EVR costs into annualized costs by economic techniques, which can then be compared to annual emission reductions. But if we use Butte's simplified approach and assume the ISD system controls

emissions for 5 years without additional cost, then the cost is reduced to $8,400 per ton of VOC or $4.20/lb.

CIOMA questions the validity of the calculations used to derive the emissions benefits of EVR, and the cost projections and cost benefit analysis on ISD. ARB's response to the objection that ISD is too expensive (slide 36) was that "cost effectiveness of ISD systems will depend on the cost of ISD systems and the hydrocarbon emission prevented by ISD." That is a response without being an answer. ISD cost estimates from the single existing system in pilot testing have been murky at best. ARB's cost breakdowns cover only certain components of an ISD, and do not address the whole, nor a manufacturer's recoup of R&D costs, profit margin, testing, labor and market demand, particularly if one ISD has a monopoly. ARB's reluctance to interfere in market forces is well known, but it must surely be acknowledged that these forces will be in play.

The true cost of the ISD is the total cost to get it into performance mode at the station. Cost estimates should take into account not only the finished cost of the ISD itself, but also the cost of integrating that ISD into the Phase II system it is monitoring. Thus, while an ISD system may cost 'X', its total cost must also take into consideration such factors as integration with Phase II equipment, installation and upkeep. It is impossible to do a valid cost vs. emissions benefit analysis until all of the costs are known.

Response: *Staff is working with ISD manufacturers, air districts and other parties to refine the cost analysis for ISD to better reflect the actual cost to the station owner.*

Those costs will be even greater if ISD systems will be required on existing vapor recovery equipment in older or less common systems. Integration with that equipment, if it is even possible, will be more difficult and cost more than integration with new EVR equipment. And, what will be the requirement at stations where it is impossible to retrofit an ISD system because no compatible ISD system exists? If ISD is required on existing vapor recovery equipment, those station owners will have to go to the expense of installing an ISD system twice, once with the existing vapor recovery equipment and again to upgrade to EVR. Cost effectiveness evaluations need to be reassessed to take into account all of the probable costs associated with ISD.

Response: *EVR does not require use of ISD on non-EVR Phase II systems.*

ARB's estimate of the percentage of stations that sell 75,000 or fewer gallons per month (slide 43) is 64.5 % of California's stations. CIOMA believes that it may actually be less than that because so many small throughput stations have gone out of business in the last ten or so years. However, even assuming a 20% differential, that is roughly 44% of stations in California who will not have any realistic hope of affording the costs associated with this program. Their low

volume of throughput will not generate the dollars necessary to fund the new equipment. They would never be able to recoup and repay those costs in the ever-increasingly competitive market. The volume of fuel they sell is disproportionately low to their numbers and to state fuel sales overall. They exist primarily where competition is limited, often where population is thin, because they could not survive otherwise. And those small stations that remain after the 1998 UST upgrades are still years away from paying off the enormous debts incurred in complying with that mandate. What small financial margin they had is pledged already. If ARB wants to take feasibility to a logical conclusion, it would be sensible to exclude GDFs categories 1-3 from ISD.

Response: The revised cost-analysis using the updated ISD costs will be evaluated to determine if the cost-effectiveness for stations greater than160,000 gallons/year warrants exemption from ISD.

The Office of Advocacy, U.S. Small Business Administration report RFP No. SBAHQ-00-R-0027 "The Impact of Regulatory Costs on Small Firms" by W. Mark Crain and Thomas D. Hopkins (2000) observes: "Firms employing fewer than 20 employees face a … burden nearly 60 percent above that facing a firm employing over 500 employees. Environmental regulations and the paperwork burdens of tax compliance are particularly disproportionate in hitting small business. Such regulation imposes about 40 percent of total business regulatory burden." That analysis covers Federal regulations alone. For the small gasoline dispensing facilities in California's hyper-regulated petroleum business arena, the burden is significantly greater and more disproportionate to a major oil company's costs.

The California Regulatory Review Unit, in its "Introduction to RRU", states: "Regulations affect the lives of all Californians and nearly every aspect of the state economy. The Legislature and the Governor have long recognized that excessive or poorly designed regulations can place an unreasonable burden on the people and businesses of this state, and put California at a competitive disadvantage to other states and countries." CIOMA believes that EVR and ISD, as currently proposed, will be the unreasonable burden that drives small gasoline dispensing facilities out of business.

Response: *Staff recognizes that small businesses in petroleum marketing find it more difficult to meet the regulatory burden than major oil companies. However, state grant and loan programs, such as the RUST program, exist specifically to assist small businesses to maintain compliance with environmental regulations.*

The Glenn County Air Pollution Control District would like CARB to consider raising the ISD requirement exemption level to 75,000 gallons per month. Spreadsheets provided by GCAPCD demonstrate cost effectiveness estimates for levels 2 and 3 (37,500 and 75,000 gpm) for total system costs between $7,500 and $20,000. Although CARB supplied cost figures for ISD, the

GCAPCD believes the number to be higher than stated at the February 5 Technical Review for the following reasons:

- Annual maintenance and calibration costs were not included in the CARB estimate;
- Cost of debt service (if a loan could be secured) was not included in the CARB estimate;
- If the new generation of certified equipment and vapor recovery systems are truly more robust and dependable, the requirement for an ISD system on lower throughput GDFs appears to be excessive;
- Costs of testing (annual, semi-annual, or quarterly) for Leak decay, A/L or dynamic back pressure and any other applicable tests was not considered in the CARB estimate; and
- Existing equipment compatibility with ISD is a major cost issue that was not included in the CARB estimate but could drive installation costs quite high if the operator is required to use the ISD vendor's platform to make the system work. Many low throughput GDFs do not currently have state-of-the-art UST monitoring systems (because it was not cost effective or necessary for them to do so). If the ISD vendor(s) requires the use of their UST monitoring system as the platform, the ISD system cost would be very cost prohibitive.

The spreadsheets provided by GCAPCD indicate a cost-effectiveness of between $14,000 to over $58,000 per ton. Realistically, the cost effectiveness number is probably somewhere in between these numbers. Keep in mind, periodic testing of the vapor recovery systems will still be required and is not included in any of these cost-effectiveness figures.

Response: *We will consider including these costs of in the update of the ISD cost analysis for the technical review.*

Regarding the conservative assumptions presented in the EVR cost analysis, Healy questions that "all vapor recovery equipment components would be replaced". By using the Healy VP1000 system with the Model 800 ORVR Nozzle, no components would have to be replaced since the Healy System as sold today is ORVR certified. Healy research and development efforts with the Model 800 metric ORVR Nozzle indicate that most assist systems will achieve ORVR compatibility without having to replace the vacuum source.

Healy also questions the statement that "EVR nozzles will cost 75% more." The present Healy 800 ORVR and Model 800 metric ORVR nozzles cost no more than do standard Healy vapor recovery nozzles.

Response*: We agree that the assumptions that all hanging hardware will be replaced and that nozzles will cost 75% more are conservative. These*

assumptions help ensure that the calculated EVR costs are "worst case" numbers and that the real costs are expected to be less.

Mendocino County AQMD states they have received essentially no cost analysis from CARB. Mendocino's calculations suggest that for stations pumping less than 450,000 gallons per year the annualized costs to the station will be $3-4,000/yr, with statewide cost per ton of hydrocarbon reduced much greater than $20,000. For stations pumping near 900,000 gallons/yr the annualized costs will be close to $6,000 and the statewide costs per ton reduced will be near $20,000. These costs are totally unreasonable.

Response: *The EVR cost analysis has been available for public review and comment since February 2000. Hardcopies of the EVR staff report and subsequent workshop notices have been provided to all California air districts. The cost analysis will be updated as part of the technical review to reflect the best data available.*

WSPA believes that the target goals for ISD systems, as specified in the ISD Appendix to CP-201, cannot be met in a cost-effective manner.

- The estimated emissions benefit[1] for ISD is slightly greater than the estimated benefit for other Modules; however, that benefit appears to be significantly overstated. In fact, it is entirely speculative to assume that ISD systems will do anything to improve the effectiveness of EVR-certified vapor recovery equipment, or, to further reduce emissions.
- At $7.6 million[2], ISD is the second-highest contributor (behind Module 2, Phase II systems) to the estimated annual costs for the EVR Program. By contrast, the next lower estimated cost (Module 3, ORVR compatibility) is only one-third of the cost of ISD. Nevertheless, in spite of this high estimated cost, we believe that the true installed cost will be even higher.

The estimated CY 2010 emissions benefit for ISD (February 4, 2000 Staff Report, Appendix D), was 6.63 tons/day (state-wide). This emissions estimate was based on circa 1997 observations by air districts of low A/L ratios for two vacuum-assist systems. It was further assumed that these two systems account for 55 percent of the state-wide highway gasoline throughput (in-use effectiveness estimates for balance systems were not factored into the emissions estimates). The circa 1997 estimates for vapor recovery system efficiencies are obsolete – they are simply no longer valid. The emissions benefit estimates need to be re-evaluated to comprehend the following factors:

- The primary motivation for creating the EVR Program was to provide more-effective and more-reliable vapor recovery equipment. Emissions benefits will

[1] EVR Staff Report, February 4, 2000.
[2] Ibid.

be obtained through the implementation of EVR Modules 1 through 5 – not from ISD.

- Ideally, ISD systems will merely remain on stand-by. Conversely, if ISD systems are active and are alerting operators to malfunctions of EVR-certified vapor recovery systems, it will arguably be because the EVR Program, or parts of it, will have proven to be less than successful. By contrast, WSPA believes that the EVR Program will be successful; thus, ISD systems will truly be superfluous.
- It must be assumed that the in-use performance of EVR-certified equipment will be better than, and will last significantly longer than, older-generation vapor recovery equipment. For example, manufacturers of EVR-certified equipment will be required to supply maintenance recommendations for new equipment, and owner/operators will be required to perform inspection and maintenance in accordance with schedules specified in the applicable Executive Order.
- Even older-generation vapor recovery equipment (i.e., that which is currently in use) is currently performing significantly better than the level observed in 1997 due to vastly improved I&M programs and heightened awareness of the benefits of those programs. These I&M programs have helped to identify potential problems early-on, thereby minimizing any degradation of system performance.
- Revised estimates of emissions which might be prevented due to ISD cannot reasonably be based on 365 days of substandard performance with resultant excess emissions. Current testing programs required by air districts would not allow long-term failures of vapor recovery systems to go un-noticed, or, un-corrected. Furthermore, it would be unrealistic to assume that system performance would spontaneously degrade immediately after an annual performance test was conducted.

Response: *Staff agree that EVR vapor recovery systems will be expected to perform better and be more durable that previously certified systems. This does not make ISD systems "superfluous". ISD systems are still needed to ensure systems are operating as certified. Optimum performance of vapor recovery systems relies heavily on proper installation, regular maintenance of equipment and equipment replacement after completion of useful life. ISD will alert the operator when failures occur and prohibit dispensing until the problem is fixed.*

We disagree that "vastly improve" I&M programs" have significantly reduced emissions noted in ARB-district audits for assist and balance systems. A few districts have significantly bolstered enforcement and testing efforts to improve vapor recovery system compliance after discovering that I&M programs did not work. Staff contend that the emission reductions attributable to ISD are higher than estimated in the staff report, as balance system emissions were not available at that time to be included in the total emission reductions.

The projected costs (Staff Report, Appendix E) for ISD systems, for five model RGOs, are based on estimates of the costs for three component parts. WSPA believes that costs for both the individual components (and, there will be more than three components in ISD systems), and for complete systems will be significantly greater than the initial estimates. These costs should be re-evaluated, and the following issues should be addressed in that re-evaluation:

A pressure transducer, plus a flow sensor, combined with a data-logger do not make an ISD system. Numerous other elements are required in order to have even a simple functional system. Thus, the installed cost of an ISD system is not merely the sum of "x" pressure transducers, "y" flow meters, one data-logger, plus installation labor. ISD systems will have to be "packaged". Packaging involves engineering, integration of all of the components, software, wiring, alarms, electrical switchgear, control panels and boxes to house the components, etc. Systems must also be third-party (e.g., UL, etc.) approved. And, the equipment supplier expects to cover overhead – and, to make a profit. All of these costs, combined, comprise the purchase cost of the system, and all of these types of costs must be considered when developing cost estimates for ISD systems. Clearly the most credible cost estimates are those which are derived from vendor quotations. Therefore, WSPA strongly urges the ARB to obtain firm pricing information from those vendors who are interested in supplying their respective ISD systems to the market. Finally, the installed cost of an ISD system is the sum of the purchase cost plus the cost of installation. Installation will include labor for installing pressure or flow sensors at the USTs (or vent lines) and at each dispenser, trenching for electrical wiring, installation of the control panel, tying into the electric circuits which power the turbine pumps, etc. In addition, there will be a cost for filing permits and obtaining construction permits from local air districts. All of these installation costs need to be included in the estimated total installed cost of an ISD system.

The cost of some future ISD systems may be dependent upon the type of installation – that is, a new site, or, retrofit to an existing site. Any difference in installed cost between these two situations needs to be recognized by the cost estimates. In addition, some ISD systems will likely require a signal from electronic point-of-sale "pulsars" in each dispenser, and this requirement will represent an added cost for those sites that do not have compatible equipment.

Response: *Staff will update the cost of ISD as part of the technology review to reflect the cost to a station operator based on the best available information, including data from the ISD system manufacturers.*

16. EVR certification (API, ARID, Healy)

API believes that EVR Phase II systems capable of meeting EVR requirements will have to employ technology-forcing concepts and components. Use of this sophisticated equipment to enhance performance will likely increase the chances

of failure during the durability field-testing part of the certification. Consequently, to improve the likelihood of success, it makes sense to simplify the certification requirements without compromising performance standards.

EVR Module 2 and Module 6 are tied together with a concurrent effective date of April 1, 2003. In order for a Phase II system to become certified, it must be simultaneously certified with an ISD system. This requirement is a considerable burden to Phase II system manufacturers because they must go through certification hoping that the Phase II system and the ISD system will both operate flawlessly throughout the entire certification process.

Decoupling ISD from the Phase II certification requirements would encourage the certification of Phase II systems and allow certification of ISD systems independent of the Phase II certification process. Separating ISD from the Phase II system would provide flexibility to the marketplace, make it easier for states outside of California to allow the use of Phase II systems without requiring that operators install ISD, and certifying systems and equipment in Module 2 without an ISD system would not sacrifice performance and would enhance cost-effectiveness.

Response: *We have considered decoupling ISD from EVR Phase II certification, but have decided that the best EVR Phase II system will be certified while under the continuous monitoring of ISD. We will allow certification of EVR Phase II systems without ISD, however, the certification Executive Orders will be throughput limited to allow use on stations exempt from ISD requirements. We are very concerned about the possibility of an EVR Phase II system certified without ISD being installed with an ISD system that leads to excessive alarms.*

API states that components that are part of a certified system should not be decertified if they are used in a subsequent certification test that fails. Such a policy would have a chilling effect on manufacturers considering whether to pursue additional certifications for an already-certified component or system. It would also put manufacturers in jeopardy of loosing the ability to sell the product on the first certified system. If a previously-certified system or components were to be decertified, it would prohibit their sale and create chaos in the marketplace. Since the law requires system certification, all of the components that are part of that system should remain as certified components regardless of the performance of those components in a separate system certification attempt. That is not to say that the performance of these components should not be checked, but that it should not be a de facto decertification.

Response: *We agree. Certified systems will not be decertified based on their performance in subsequent certifications. However, any problems discovered with the certified system will need to be addressed and may result in amendment to the system Executive Order.*

ARID Technologies requests that "system type" certifications be made available for processor-based systems as discussed in an ARB meeting held on November 29, 2001. System-type certification is being considered for ISD systems, as described in an ARB letter dated January 2, 2002.

ARID Technologies requests that there be no penalty for failure of another system component during processor certification. If the processor performs properly over the operational test period, a failure of a Phase I or Phase II system component should not necessarily result in termination or failure of the processor portion of the test.

Response: *The processor is an integral part of the control of vapor recovery system emissions. The ISD system does not participate in the control of emissions, but serves instead to monitor vapor recovery system operation. This is a crucial difference. The processor must be certified with each system to ensure proper operation.*

Healy believes the certification testing for Phase II with ORVR compatibility should result in a separate certification. We propose that a single test program with both Phase II and ISD systems under simultaneous evaluation can result in both systems achieving their separate certifications. A failure of one of the applicants should not affect the results of the other. The financial risk is too large to require one manufacturer to rely upon another manufacturer's product to achieve certification. If either the Phase II ORVR or ISD Module is certified, the environment is the beneficiary.

Response: *(see response to API above)*

Healy suggests there should be separate calculations to determine efficiency, i.e., one for pre-1998 vehicles and another for ORVR vehicles. This is to insure that the ORVR vehicles do not mask an efficiency problem in fueling non-ORVR vehicles and vice versa. For example, if an A/L is set to 0.90, this would work well for ORVR vehicles, but it might not achieve 95% efficiency when refueling pre-1998 vehicles.

Response*: TP-201.2 requires calculation of the Phase II emission factor/efficiency for three scenarios: the entire 200-car matrix, ORVR cars and non-ORVR cars. What is not specified, however, is the scenario that would be used to determine compliance with the standard. We will clarify in the next EVR amendments.*

Healy points out that balance-type system testing for EVR certification does not provide for measurement of vapor loss from the underground storage tank under several operating conditions, such as refueling of a motorcycle of filling of a gascan. If the UST pressure at the time were 0.5 inches WC, the volume vented would be approximately 0.1% of the ullage volume. Each such episode would

vent 10.0 gallons of vapor when the gasoline dispensing facility's ullage is 10,000 gallons. This venting can also occur when the balance nozzle does not achieve a good seal at the vehicle fillpipe interface.

Healy encourages CARB to develop a failure mode test to measure the backflow of vapor from the UST during the slow-flow phase of a prepay sale with all bootless vapor recovery systems. Healy tests show about 0.02 cubic feet of vapor will vent through the assist nozzle.

Response: *We will consider including these "failure modes" as part o the next EVR amendments.*

The EVR cost analysis assumed 14 EVR Phase I, 64 EVR Phase II and 16 ISD certifications. Husky points out that the present certifications are really multiple certifications because they contain more then 1 nozzle, hose, swivel, and breakaway coupling. If you have 2 brands of nozzles, dispensers, hoses, breakaway couplings, swivels, and Phase I systems. It would require 2 x 2 x 2 x 2 x 2 x 2 = 64 certification tests to test all the possibilities for balance systems and another 64 for the assist systems. There are more than 2 manufacturers that produce most of these components.

Response: *It is true that "system-specific components" warrant a separate certification test. However, hoses, swivels, breakaways, etc. are listed as "non-system-specific components" and would not require full certification testing once already tested as part of a certified system.*

17. Sole source (CIOMA, WSPA)

CIOMA is concerned by the sole provider status of the only Phase I system and what that status implies. Also, there are serious market competition and practicality of application issues raised by the recent acquisition of Marconi/Gilbarco by Veeder-Root, the developer of the sole ISD nearly ready to begin certification testing.

Response: *Staff agrees that ideally there would be choice of EVR certified systems and is committed to working with equipment manufacturers to increase the number of certified systems. At the same time, a sole vendor should not be penalized for making the effort to comply first with the EVR requirements. Staff will take action if the sole certified system is not commercially available.*

WSPA is concerned that some future ISD systems may require that a site utilize specific proprietary equipment as a platform for the ISD function. Some future ISD systems may only be compatible with specific Phase I or Phase II systems from specific manufacturers. Where requirements of these types exist, the cost of all equipment needed to meet those requirements must be included in the cost assessment for these ISD systems.

Response: *We agree. The ISD cost update will reflect the total cost to station owner to comply.*