comments provided to EPA 6-98 from:

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Comments on the Description and Documentation for Interim Vehicle Clean Screening Credit Utility.

This note addresses the following issues:

- Use of a single NOx reading vs. two NOx readings;

- Impact of a 30 or 60 day cutoff period for mailing notices;

-The impact of pre-lIM repair on assessments of clean screening effectiveness;

- The effect of fliture fleet composition on clean screening methods;

Use of a single NOx reading vs. two NOx readings

Section 1.6.1 of the Description and Documentation for Interim Vehicle Clean Screening Credit Utility outlines operational rules that should be observed by states implementing clean screen programs, specifically: *two valid RSD tests with all three pollutants on each test are required to make a clean screening determination. If a valid reading for one pollutant is not obtained, it must be assumed that the vehicle failed for that pollutant and is not yet excused from I/M testing* In reference [4] 'The Colorado Enhanced I'M Program *0.5%* Sample Armual Report', however, only a single NOx reading was required to achieve the results shown in Tables 1 & 2.

Impact of a 30 or 60 day cutoff period for mailing notices

To simulate the effect of a 30 or 60 day cutoff, vehicles whose final RSD result was obtained within 30 days and 60 days of their I/M test were excluded from the Colorado Enhanced I/M Program 0.5% Sample dataset. With clean screen standards of:

HC	CO	NOx
200	0.5%	1500 (on at least one reading)

the calculated RSD effectiveness for the remaining vehicles was:

Window prior to IM Test	Sample	HC	CO Retained	NOx Retained	Retained
0 days	594	95%	99%	88%	
30 days	467	95%	99%	89%	
60 davs	307	96%	99%	92%	

The result actually appears to improve slightly, so the earlier cutoff did not make a material change.

Note that if the typical motorist obtains their I/M test 20 days in advance of their due date, then a 60 day RSD cutoff window will effectively be an average 40 day window prior to the actual I'M test.

The impact of pre-I/IM repair on assessments of clean screening effectiveness

Section 2.1, contains the paragraph: *'Strictly speaking it is appropriate to use the data from the RSD study in Colorado in the way this guidance does use it only if vehicle owners do not often repair their cars in anticipation of the initial 1M240 test. If a car in Colorado passed RSD despite having an emissions defect, or prior to developing one, but the owner pre-emptively obtained an effective repair prior to the 1M240 test, that car would not play any role in the calculation of the credit retention/loss factors in this report. In actuality, if such a car were exempted based on its RSD tests the owner might not get the repair, and the I/M program benefit would be less. EPA invites reviewers of this draft guidance to comment or offer specific data relevant to this uncertainty.'*

The methodology used to estimate the effectiveness of RSD Clean Screening,i.e. by comparison of RSD results to a following I/M 240 test, already stacks tile deck against *seeing* 100% RSD effectiveness:

The measured RSD effectiveness will be reduced by variability in the I/M test results. The 'Phase Two Study of Preconditioning Effects in 1M240 Testing' presented by Sierra Research at the 13th Annual Mobile Sources/Clean Air Conference has reported 47% of vehicles failing an initial IM240 test at final standards passed on a second test and concluded that false failures due to preconditioning are more prevalent in vehicles failing the final IM240 standards than in vehicles failing the start-up standards.

Since no State is currently operating final IM240 standards, RSD effectiveness has been projected using IM240 results from vehicles whose actual pass/fail determination was based on phase-in standards. Many vehicles that passed the IM240 phase-in standards were projected to fail the final standards. Had these vehicles been given a second 1M240 test a number might have passed the final standard. Thus it is likeIy that some of the 'lost' effectiveness projected in RSD clean screening when *comp&ed* to final IM240 standards is due to 'false' projected failures in the IM240 data.

If RSD is indeed Clean Screening vehicles accurately, then pre-emptive repair of vehicles prior to normal I/M testing would not influence the results but would explain why the percentage of vehicles clean screened by RSD is not higher. In this context, pre-emptive repairs would make RSD look worse when compared to other methods for similar %'s of vehicles clean screened.

Pre-emptive repair of vehicles prior to I/M testing may bias the projected effectiveness of low emitter profiling and mode! year exemption estimates. Whereas RSD actually measures vehicle emissions and results are then compared to IM240 results with all discrepancies being assumed to be the fault of RSD, low emitter profiling and rnodel year exemption estimates are inevitably based on I/M statistics in order to achieve large enough samples. If the I/M results are lower than on-road emissions because of repairs carried out prior to initial

inspection (or because of avoidance by some high emitting vehicles), then LEP and model year exemption projected emission impacts will be underestimated.

Finally, RSD Clean Screening provides an incentive to motorists to keep vehicles clean all the time rather than waiting until just before the I/M inspection.

The effect of future fleet composition fin clean screening methods

In today's vehicle fleets, the largest contributions to excess emissions are coming from the mid to late 1980's model year vehicles, i.e cars 10 years and older. The major improvement in emissions deterioration of recent model vehicles vs. the mid SO's models appears to be the results of fuel injected vehicles vs. carbueted vehicles. Design documents for Mobile6 indicate that fuel injected vehicles are expected to deteriorate linearly with mileage over their life at a considerably slower rate than the older vehicles do today. Therefore, the large difference in emissions levels seen today between 10-15 year old cars vs. newer model cars is predicted to become smaller in the future. In this new scenario, there are basically two categories of vehicles, normal emitters and high emitters - vehicles that are broken.

The impact of Tier1 vehicles is to further lower the average emission levels of normal emitters and, hopefully, slow the rate at which vehicles 'break' and become high emitters. Presumably properly operating Tier1 vehicles should not exhibit the variability in tailpipe emissions that can be seen in IM240 traces of vehicles that can pass today's I/M standards. There does not appear to be evidence yet, however, that broken Tier 1 vehicles will necessarily emit less than broken Tier 0 vehicles. Thus, although the overall percentage of high emitters may be reduced, the impact of each broken vehicle will be relatively greater.

From and RSD Clean Screening perspective, this should make life easier since broken vehiles will stand out more from the crowd - especially as conect application of the technology continues to develop. From the Colorado Enhanced I/M Program 0.5% Sample Annual Report, in section IV.D.l, Table IV-10 the projected excess emissions retained for 36% of the 1990+ model years exempted are:93% for HC, 95% for CO and 100% for NOx.

For LEP, the future is less clear. As mentioned in section 2.2.2, today's low emitter profiling is strongly dependent upon vehicle age, e.g. from table 6 in section 2.2.2 when 40% of the fleet are exempted, 73% of 1990+ cars, 15% of l986-1989 are exempted and no 1985 and older cars are exempted. As the difference in emission levels between the older and newer model years diminishes, the effectiveness of profiling by age will be reduced. LEP therefore becomes more dependent for success upon differences in fail rates between vehicle models. But will rogue models with significantly higher early failure rates continue to exist, and if they do, why not catch them as early as possible by having a substantial on-road RSD presence to protect the consumer.

As a consequence of changes in the make-up of the future vehicle fleet, it is probable that RSD Clean Screening will prove to be the fairest and most effective approach.