

Volvo Enthusiasts eXposing Egregious Design

D'Auria, Vincent (.)

From: Friberg, Norman (N.)
Sent: Tuesday, June 29, 2004 5:16 PM
To: Kvarfordt, Joakim (PVT.); Hinderman, Terry (T.); Dauerer, Christopher (C.J.); Prince, Hen (H.); Steinsson, Christer (C.); Lorentsson, Roger (R.); Lundgren, Magdalena (M.); Lindahl Lars (L.L.); Forsberg, Peter (PVT.); Hansson, Håkan (H.); Svensson, Bernd (B.); Andersson Lars (USA.)
Cc: Shapiro, William (W.); D'Auria, Vincent (.) ; Rein, Joe (J.)
Subject: RE: Telephone conference with US concerning Magneti Marelli ETM

In preparation for this meeting, I am attaching two documents. The first is a short powerpoint presentation that summarizes our observations about the MM-ETM in the US. The second is a list of questions that the CARB wants us answer.

I look forward to discussing this material at the meeting Thursday.

Best regards,
Norm

Note date: June 29, 2004

Norm Friberg
Manager, Technical & Regulatory
Volvo Cars of North America



ETM Business
Case.ppt (3 MB)



Questions sent by
the California...

-----Original Appointment-----

From: Kvarfordt, Joakim (PVT.)
Sent: Wednesday, June 23, 2004 10:16 AM
To: Kvarfordt, Joakim (PVT.); Hinderman, Terry (T.); Dauerer, Christopher (C.J.); Prince, Henry (H.); Steinsson, Christer (C.); Lorentsson, Roger (R.); Lundgren, Magdalena (M.); Lindahl, Lars (L.L.); Forsberg, Peter (PVT.); Friberg, Norman (N.); Hansson Håkan (H.); Svensson, Bernd (B.); Andersson, Lars (USA.)
Subject: Updated: Telephone conference with US concerning Magneti Marelli ETM
When: Thursday, July 01, 2004 9:00 AM-10:30 AM (GMT-05:00) Eastern Time (US & Canada).
Where: ÖrnÄstet TKSZ

Telephone conference with US concerning Magneti Marelli ETM.

Terry
Please send me your conference telephone number before the meeting. We will call you!

Technical situation
Magneti Marelli situation
Parts Pricing ETM
ETM reworking

Håkan Hansson
Magdalena Lundgren
Christer Steinsson/Roger Lorentsson
Bernd Svensson

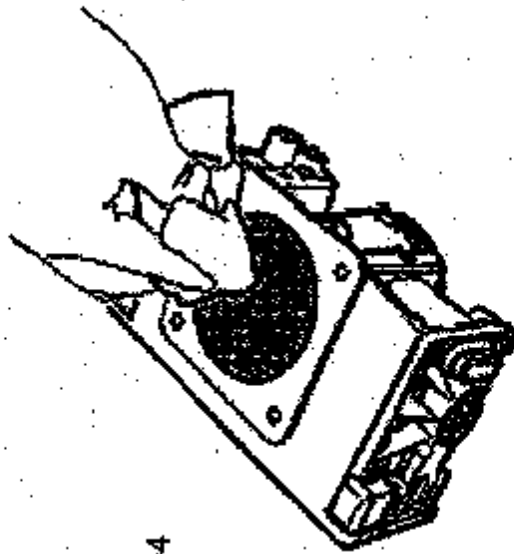
Best regards Joakim Kvarfordt

CONFIDENTIAL

VCNA 003774

Business Case, Electronic Throttle Module (ETM)

Update, June 29, 2004
ETM FOCUS Team



CONFIDENTIAL

VCNA 003775

VOLVO

Current Situation

- ETM issues are currently a major source of Warranty cost and Customer Dissatisfaction in the US market.
- Many vehicle buy-backs have resulted, at least in part, from failure of this component.
- The Magnetti Marelli ETM, model years 1999-2002 are affected
- Many cars are now out of warranty

CONFIDENTIAL

VCNA 003776

VOLVO

Volvo Enthusiasts eXposing Egregious Design

Estimated total cost for 2 years, Warranty, Goodwill plus Trade Assists and Repurchases:

Approximately **\$13,569,000**

Other Implications: **Emission Recall Exposure.**

California Air Resources Board (CARB) has requested Warranty and other information from VCNA
Answer is pending.

CONFIDENTIAL

VCNA 003780

VOLVO

3A

Volvo Enthusiasts eXposing Egregious Design

Replacements	25128	14,807	\$ 8,800.00
Cleaning, Turbo	02520	2167	708.00
Cleaning, Non-Turbo	25121	5842	805.00
Total Warranty, 2003			\$10,313.00

Replacements	25128	3219	\$ 2,002.00
Cleaning, Turbo	02520	502	178.00
Cleaning, Non-Turbo	25121	825	182.00
Total Warranty, 2004			\$ 2,362.00

Replacements	25128		\$ 202.00
Cleaning, Turbo	02520		9.00
Cleaning, Non-Turbo	25121		11.00
Total Goodwill, 2004			\$ 222.00

**Warranty and Goodwill,
2003-04:**

\$12,663,000

Repeat repairs, 2004, 6.9%

CONFIDENTIAL

VCNA 003777

VOLVO

Volvo Enthusiasts eXposing Egregious Design

PN	Sales 2001	Sales 2002	Sales 2003	Sales 2004 YTD
				Jan - Apr
8644347	7798	16107	29304	10995
8677867	2	19	34	8
8677868	5	208	303	115
30650013	0	1	98	58
8644344	205	408	791	393
8677796	0	0	41	21
8636753	1704	25454	44798	18451
Gasket, Cleaner				
1161436	1239	2638	2844	544

Total for 2001-2004
 Numbers in shaded area

Sales, 2003-04

64202 **42,160**

64 Claims,

631 **18,120**

156 **57%**

1800 Out of Warranty

62

88405

CONFIDENTIAL

VCNA 003778

VOLVO

Volvo Enthusiasts eXposing Egregious Design

Editorial comment by Don Willson

The next 3 pages show a bell graph. I am not well versed in graphing but simply, the plots are occurrences against mileage. The horizontal axis is mileage and the vertical is the number of failures. In the first two graphs, PN 9486793 and PN 8644646, each vertical bar is 5000 miles wide, so for the 50,000 mile bar it is for failures from 50,000 to 55,000 miles. In the third graph for PN 8644347, the bars are 8,333 miles wide (25,000 / 3).

Lets summarize the graphs

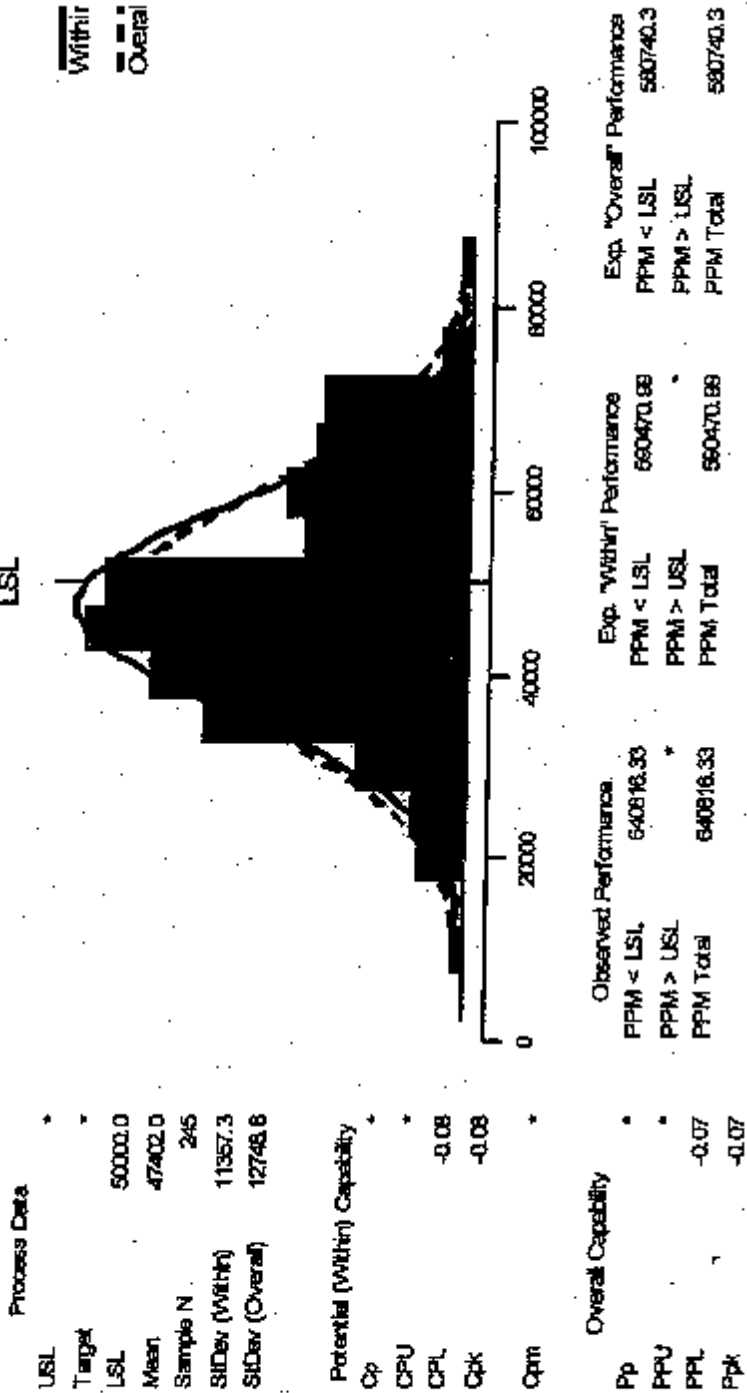
Part number	9186793	8644346	8644347
Sample size	245	87	85
Mean mileage at failure (equal number below and above)	47,402	46,823	57,860

Several things to consider:

- Data is at least 2 years old
- The first graph is probably an original equipment ETM so may have run its course, though many cars have not yet reached these miles. Thus the high mileage side of the graph is probably open ended.
- The second graph is on a small sample size and it too is open ended.
- The third graph, 8644347, is for the current 'yellow label' now being installed. Considering the date codes on these ETMs it is unlikely that any were installed on the cars originally. Cars with these ETMs are at the left side of the curve as they are 2 to 5 years newer. But note the low mileage failures. Imagine what these will look like as the cars approach the 200,000 mile range.
- The sharper the curve the tighter the control on the process and the more similar the driving conditions, soccer mom vs. highway commuter.

Volvo Enthusiasts eXposing Egregious Design

Miles at Warranty claim, ETM Part No.9186793

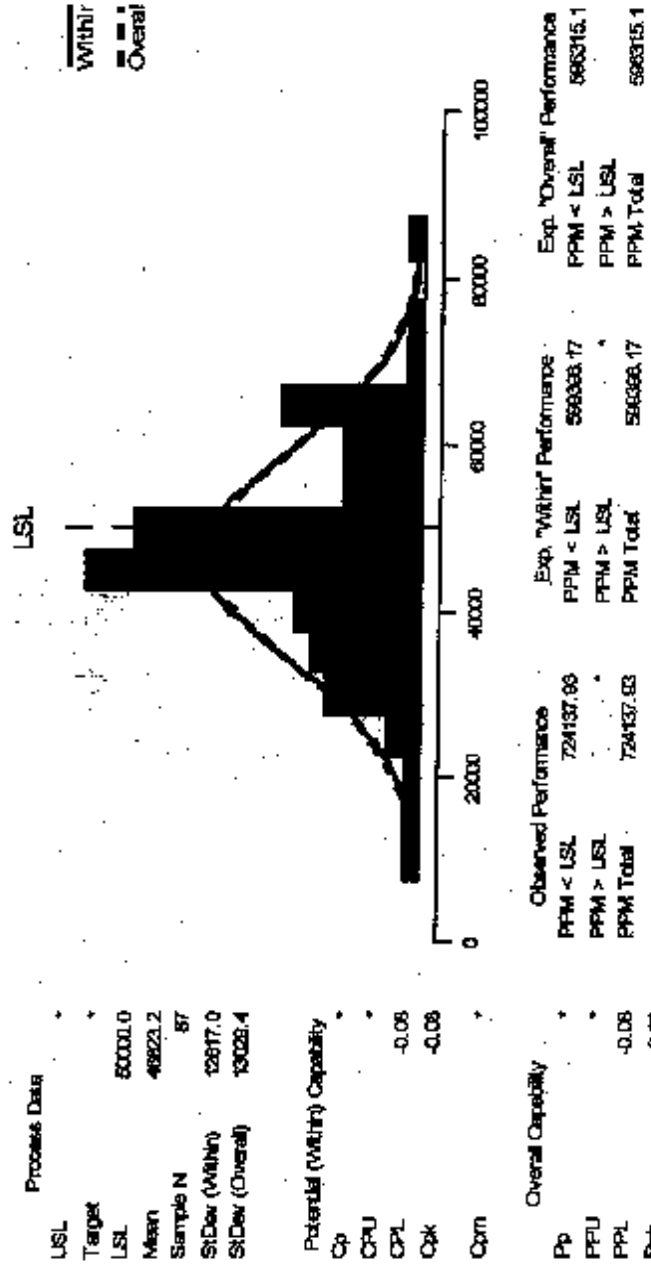


CONFIDENTIAL VCNA 003761

VOLVO

Volvo Enthusiasts eXposing Egregious Design

Miles at Warranty Claim, PN. 8644346



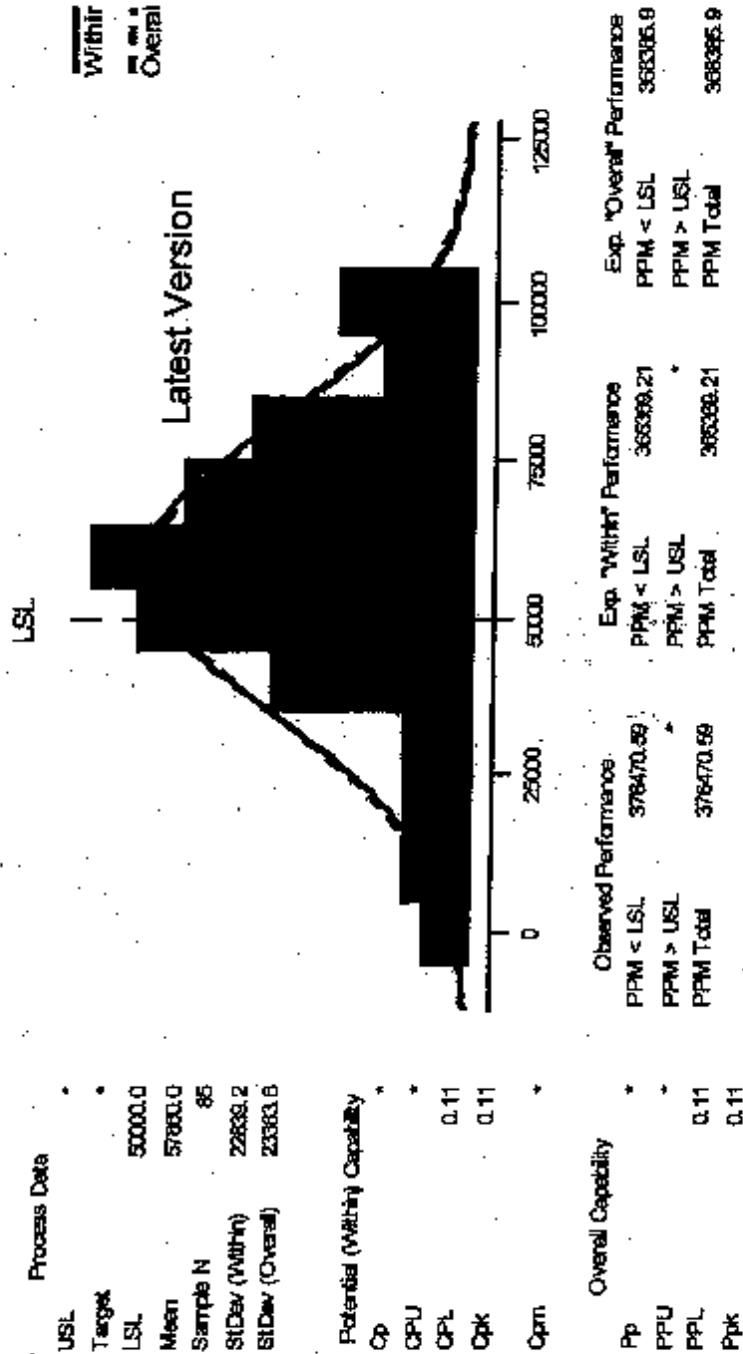
CONFIDENTIAL VCNA 003752

VOLVO

76

Volvo Enthusiasts eXposing Egregious Design

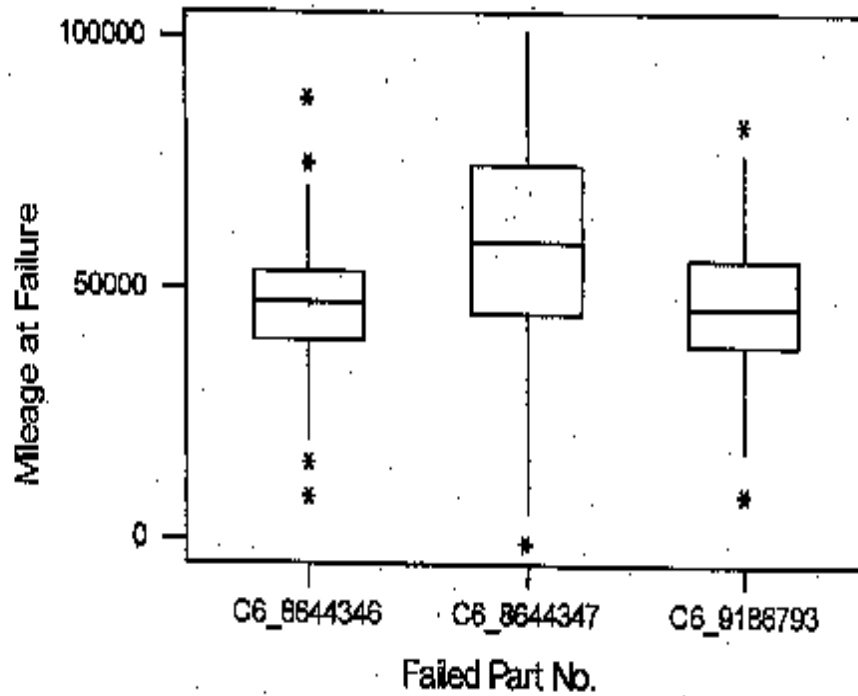
Miles at Warranty Claim, P.N.8644347



CONFIDENTIAL VCNA 003783

VOLVO

Volvo Enthusiasts eXposing Egregious Design



CONFIDENTIAL

VCNA 003764

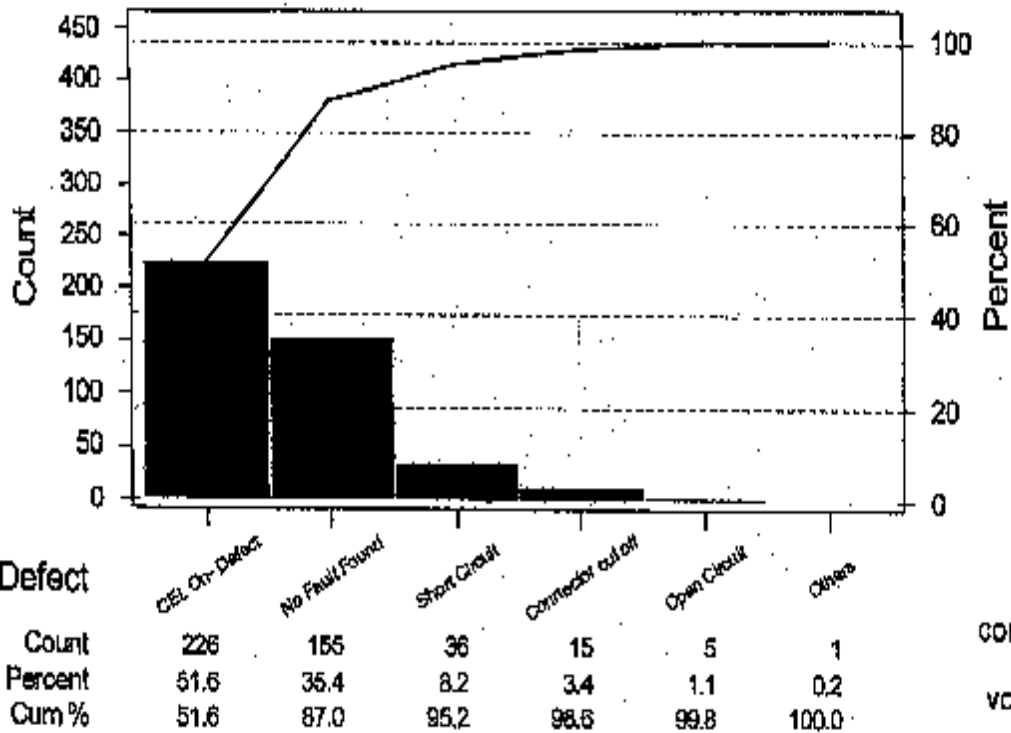
P/N 8644347 HAS A SIGNIFICANTLY LONGER LIFE EXPECTANCY THAN EITHER OF THE OTHER P/N'S. (99% CONFIDENCE LEVEL).

VOLVO

For a part that should last the life of the car I do not consider 22% 'significant'. A new technology (fly-by-wire) should be better than the old technology (accelerator rod and carburetor); when was the last time you had a carburetor fail?
Don Willson

Volvo Enthusiasts eXposing Egregious Design

Throttle Module, Results of TMA Testing



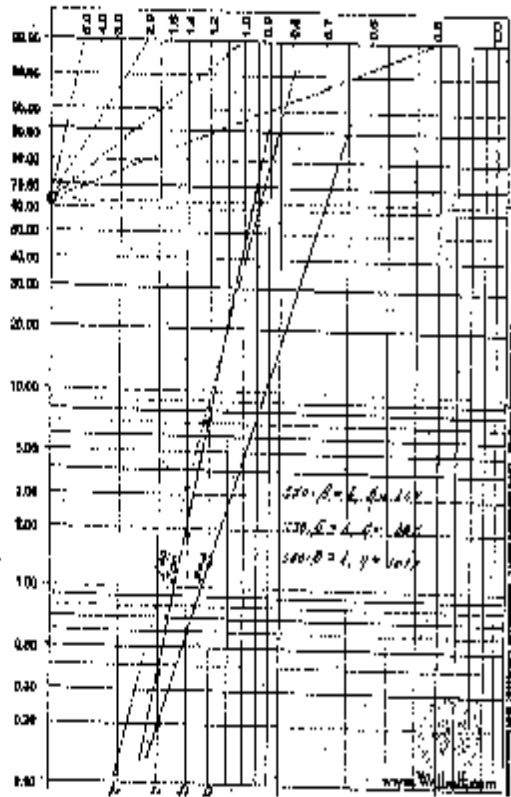
Note: NFF units may have mechanical fault not detected in TMA testing.

VOLVO

This is apparently results of some failure analysis studies .

- **The first bar are confirmed failures,**
- **The second are 'No Fault Found' (I have one of these in my possession, but I was only able to look at the throttle position sensor, though the potentiometer was heavily grooved.)**
- **Did they find where the short circuit was?**
- **The fourth had the connector cut off. (When removing the ETM it is easier to cut the connector off than opening the wire harness.)**

Volvo Enthusiasts eXposing Egregious Design



Weibull Analysis of Warranty data

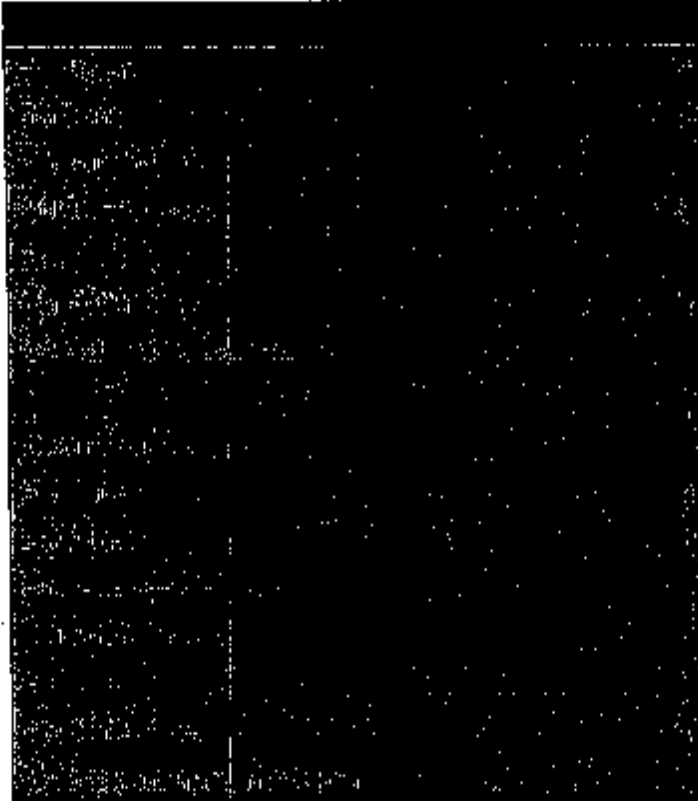
- Slope indicates "end of life" type failure with several failure modes
- S60 significantly better than S80, V70

CONFIDENTIAL

VCNA 003786

VOLVO

Volvo Enthusiasts eXposing Egregious Design



ETM Contributing Factor in 22
Buy-Backs/Trade Assists
January-April, 2004.

Also a factor in 103 cases in
2003

Estimated Cost: \$906,000

CONFIDENTIAL

VCNA 003778

VOLVO

The significant comment here is that in some cases they are doing a Buy-Back. So some of you that have had ETM, transmissions, brakes, etc might us this as precedent.

Conclusions

- Current version of MM ETM is improved over earlier version but still has an unacceptable life expectancy. **We have been telling Volvo this for more than a year.**
- Cleaning throttle and PCV nipple helps the situation, but cannot prevent the ultimate failure of the component. **We have been telling Volvo this for more than a year.**
- Many customers out of warranty are forced to pay for a new throttle
- CARB and EPA are increasingly aware of the issues around the ETM. (Laugh Test may apply here).

I hope this mean that telling Volvo executives that the California Air Resources Board and Enviromental Protection Agency are aware is redundant?

CONFIDENTIAL

VCNA 003787

OLVO

Recommendations

- VCC needs to develop a service replacement for the Magnetti Marelli ETM that will meet customer expectations for life expectancy and trouble-free operation. **See the second of the 4Rs at VEXEDvolvo.org**
- VCC must be prepared for potential action based on reporting to CARB and EPA. (TRC action).
- **All** involved VCC departments must do what they can to reduce the cost of this repair to the consumer.

No one has told the Volvo dealers and Service Managers this. There is evidence that there is misdiagnosis, stalling, hiding the evidence, and performing work that is not needed.

CONFIDENTIAL

VCNA 003788

VOLVO