

From: Doug L Parks
To: Dennis M Mooney
CC:
BCC:
Sent Date: 2009-01-29 15:56:36:000
Received Date:
Subject: Big File - Fw: Cobalt PQSR Jan. 29
Attachments: Altman - Quality Review - Lordstown January 29 09 Draft6 Wed. AM.pptx

Denny,

Sorry for the big file, but we are digging hard on the current products to hit our 09 Quality targets. This is for Cobalt. I will pass along similar info on HHR in the next 2-3 weeks. I am also going through this in GME for the Zafira (Astra has only 6-7 months left) and J200 in GMDAT.

Cobalt CPV

09 BP = \$92 (12 MIS)

Curr month = \$96

Suff planned by mid 09

Cobalt IPTV

09 BP = 609 IPTV

Curr month = 740

Suff planned to get to mid 600's by mid 09 (still working to achieve target)

CR

Reliability G (slightly better than ave)

Safety G

Perf R (score=50, Req=60)

Result Not Recommended (No add'l action plans)

In addition, we launched SS Turbo last year and took a big warranty hit. Sufficiency exists by Feb 1, 2009 to get this back to target.

I will plan on covering this info briefly in our 1-1's in the future.

Thanks,

Parks

----- Forwarded by Doug L Parks/US/GM/GMC on 01/29/2009 09:26 AM -----

Gary F.

Altman/US/GM/GMC

01/28/2009 05:52 PM

To Colleen Thompson/US/GM/GMC [REDACTED]

cc Steve Matsil/US/GM/GMC [REDACTED] Terry Woychowski/US/GM/GMC [REDACTED] Rick

Spina/US/GM/GMC [REDACTED] Doug Parks [REDACTED] Dave Stenson/US/GM/GMC [REDACTED]

Daniel R. Devine/US/GM/GMC [REDACTED] Chuck Russell/US/GM/GMC [REDACTED] Ronald P.

Mills/US/GM/GMC [REDACTED] Ronald S. Marlowe/US/GM/GMC [REDACTED] Matthew A.

Hurley/US/GM/GMC [REDACTED] Julie Rainey/US/GM/GMC [REDACTED]

Subject Cobalt PQSR Jan. 29

Colleen,

Attached is an update to the Cobalt presentation for tomorrow. PQSR. I will also be bringing the information on a memory stick.

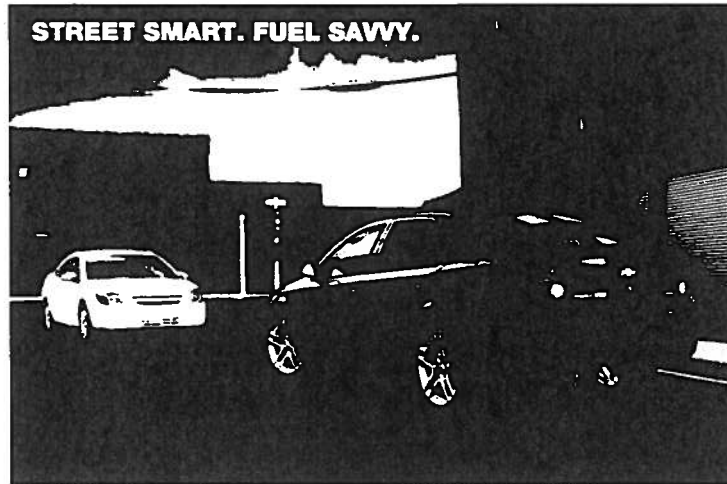


Gary Armer - Quarry Review - Lonsdale January 28 25 Draft Wed. 1/17/2005

X001 Program Quality Sufficiency Review

Gary Altman – Senior Program Engineering Manager

January 29, 2009



GM

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**January 29, 2009 PQSR
2009 Lordstown Presentation Summary**

- **Warranty CPV and IPTV (through Sept 08):**
 - 12 MIS CPV 3MMA at \$110 to target of \$92
 - 12 MIS IPTV 3MMA at 820 to target of 609
- **CR Recommended Buy status - Not Recommended**
- **J. D. Power Tracking Survey - will not be covered**
 - 3MMA at 81 PPH to target of 76 PPH
 - 2008 MYTD at 91 PPH to target of 76 PPH
 - 2009 MYTD at 81 PPH to target of 76 PPH
- **GCA – December score 108.6 to 115 target - will not be covered**

GM

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Lordstown Warranty

GM

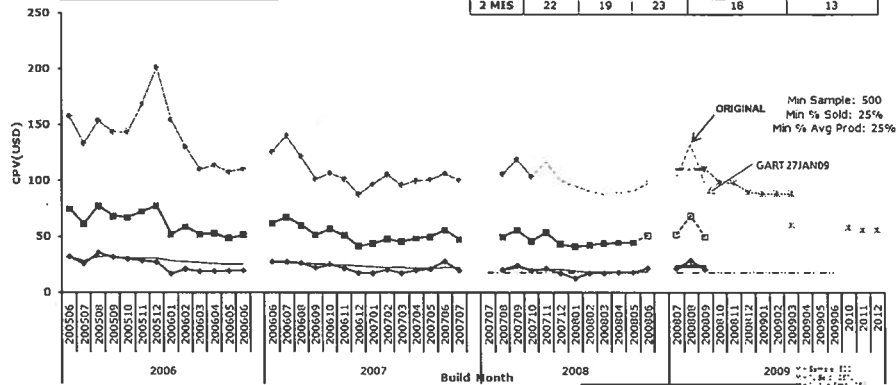
GMNA - Lordstown - TOTAL VEHICLE **CPV(USD) - Warranty 2, 6 and 12 MIS**



2MIS		
2008 MY		\$ 19
2009 MY		\$ 23

Status: Dec 28, 2008(version 1.00)

MYTD	2007	2008	2009	2008 Target	Benchmark
1/2 MIS					
2 MIS	22	19	23	18	13



Sufficiency - Top Issues				
LC	Issue	12MIS CPV	Breakpoint	
K2720	Trans replace	\$4.64	2/09	
J1840	Engine replace	\$3.35	8/08	
C8836	PSIR replace	\$2.80	9/08	
D2460	HVAC upper: rpl	\$2.42	10/08	
E7650	Ign lock cyl mdrpl	\$2.42	4/09	

12MIS	
3 MMA	\$110
Current Month	\$96
Mar Sufficiency	\$15
2008 BP	\$96
2009 BP	\$92



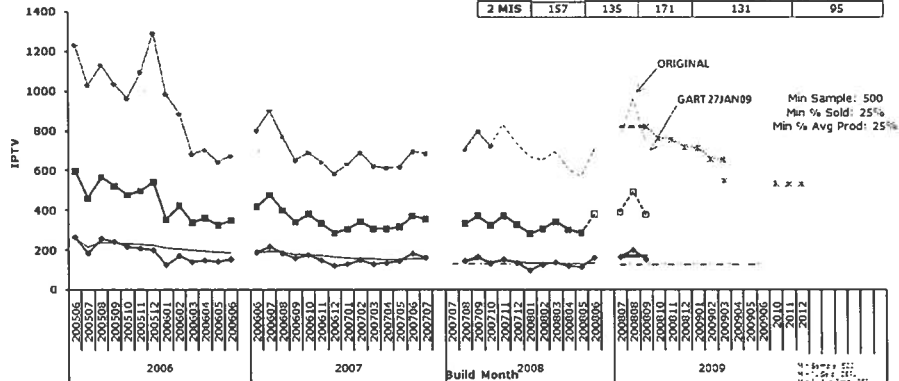
GMNA - Lordstown - TOTAL VEHICLE IPTV - Warranty 2, 6 and 12 MIS



2MIS	
2008 MY	135
2009 MY	171

Status: Dec 28, 2008(version 1.00)

MYTD	2007	2008	2009	2008 Target	Benchmark
1/2 MIS					
2 MIS	157	135	171	131	95








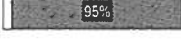


Sufficiency - Top Issues			
LC	Issue	12MIS	Breakpoint
E0716	TPM diagnostic	30.24	TBD
N6624	Occ safety wiring	27.31	11/08
N0681	Park/turn signal bulb	20.89	2/09
J0822	Camshaft pos act rpl	11.32	12/08
C8800	SW inflatable restraint	10.17	2/09

12MIS	
3 MMA	820
Current Month	740
Mar Sufficiency	166
2008 BP	632
2009 BP	609






Top Warranty 12 MIS Issues July-Sept

Issues 1 - 8

Labor Code	IPTV	CPV		PRTS	BP	Issue	Exec Champion
1 K2720 TRANSMISSION REPLACEMENT	1.64	\$4.64		1037805 EWO 1016728	200902 200902	M86 3-4 Clash,Bldr Ring Mtrl Change Power Hop Case Crack Peak Torque Limiter	GMPT - M Bande
2 J1840 ENGINE, UNIVERSAL - REPLACE	0.79	\$3.36		1054766 1076669	200812 PDF	Cam Phaser. Cyl. Machining Debris in Gallery Engine rpl due to loose hose clamp	GMPT - M Bande GMPT - M Bande Plant -
3 N6824 OCCUPANT SAFETY WIRING	27.31	\$1.92		1070791 1067067 1049222	100811 200810 200812	Air Bag Light is On. Numerous Causes.Various. Largest IOS ECU Connection Proposed CPA &	Eng - L Visc Supplier -
4 E0716 DIAGNOSTIC SYSTEM CHECK - TPM	30.24	\$0.71		1075841 1075840 1039423	RC RC 200807	Dead Battery Bad C5 Capacitor L2 Issue Turbo Dealers Charging to Add Air	Eng - K Siemen Supplier -
5 R0754_60 RADIO RECEIVER-RETURN TO ACDELCO ESCI	10.70	\$2.44		1064982	200810 200905	UUI I-Pod Compatibility Reflash RED X NTF Project Mikael Baatall Intermittent button	Eng - D DeFrein
6 C8836 MODULE, SIR IP- REPLACE	4.84	\$2.80		1058141	CNTU 185E08 TID 1011068	PSIR Door Overflush to IP Topper Restrike Tool; TSB060941004H PSIR Not Flush Repo Lock Tabs	Eng - W Shikany
7 E7650 MODULE, IGNITION LOCK CYLINDER -R&RR D2460	8.11	\$2.41		1068392	TID 200904	Key Won't Turn or Come Out; Rel. Lambda Lock Cyl / Remove Lock Pin	Eng - T Copelyn
8 MODULE/CASE, HVAC ASSEMBLY - UPPER -	4.30	\$2.42		5P	200810	Flash Blocking HVAC Case Drain. Delphi Thermal Vandella	Supplier - L Gencay







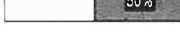
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 Implementation (On Vehicle)
 Waiting Implementation (Waiting on Break point)
 Remaining Opportunity

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Top Warranty 12 MIS Issues July-Sept

Issues 9 - 15

	Labor Code	IPTV	CPV		PRTS	BP	Issue	Exec Champion
9	K7000 TRANSMISSION REPLACEMENT	0.79	\$2.41		1052818 1058143	200807 200809	Brng Drive Sprocket 13JN-26JN Input Speed Sensor P0717	GMPT - M Bande
10	E7200 IGNITION LOCK CYLINDER REPLACEMENT	10.38	\$2.08		1068392	TID 200904	Key Won't Turn or Come Out; Rel. Lambda Lock Cyl / Remove Lock Pin	Eng - T Copelyn
11	N0681 BULBS, PARK AND TURN SIGNAL LAMP (LEFT) -	20.89	\$0.59		1072874 PRR 393701	TID 200902	Amber Front Park / Turn Bulb Burned Out - Philips to Osram Sylvania	Supplier/Eng - L Chota
12	C8800 STEERING WHEEL INFLATABLE RESTRAINT MODULE	10.17	\$1.68		1076192	Contain 200902	SIR Coil Wiring Conduit Moving, Exposing Wires to Chaff	Supplier/Eng - K Siemen
13	J6360 POWERTRAIN CONTROL MODULE REPLACEMENT	4.93	\$1.73		1054766	200812 200901	Cam Phaser P0011, 14 Mach. Chips LNF Bosch ECMs on parts restriction	GMPT - M Bande
14	E7680 STEERING COLUMN REPLACEMENT	4.50	\$1.74		1026424	200803	Backlash between Nylon Spur Gear and Steel Worm Gear WPC Return, Hob 200807; Burnish 200902	Supplier/Eng - L Lie
15	N0110 BATTERY REPLACEMENT	8.33	\$1.55		1058456	200811	Batt Sensor Wire Cut - Add Hank Ignition Lock Cyl Collateral/ On- Star	Eng - K Siemen

 Implementation (On Vehicle)
 Waiting Implementation (Waiting on Break point)
 Remaining Opportunity

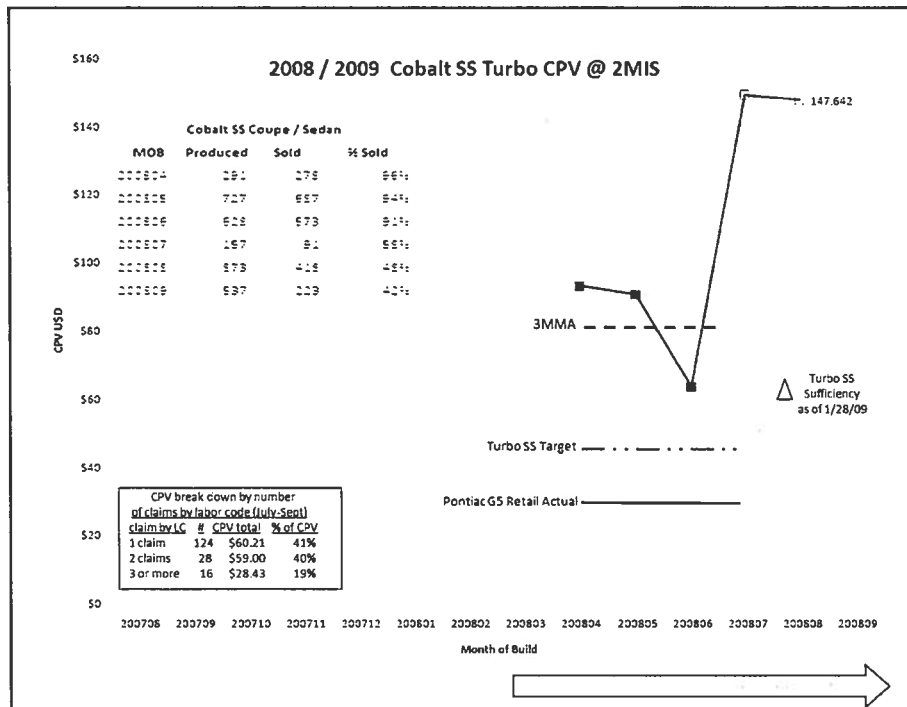
Top Warranty 12 MIS Issues July-Sept Turbo SS

	IPTV	CPV	% Coverage		PRTS	BP	Status/Description	Exec Champion
Labor Code	12MIS	12MIS						
K2720 - TRANSMISSION REPLACEMENT	2.40	\$ 7.98			WO 1016728	200902	Add a peak torque limiter to the clutch hydraulic system to reduce the torque loading during a hard launch	GMPT
K1200/K1120 MAN SHIFTER CABLE/MAN TRANS CONTROL RPL	42.58	\$ 4.18			1068149	200810	A new asm aid tool was developed to help stabilize the shifter while installing the shift cables	Plant
					200903	Bulletin to limit warranty on customer abuse vehicles scheduled for release		Brand Quality
B2780/B2720 SUNROOF WINDOW RPL/SUNROOF FIT	25.37	\$ 3.30			1058149	200810	A new asm aid tool was developed to help stabilize the shifter while installing the shift cables	Plant
					1064892	200902	Adding foam on drain channel to prevent a rattle	Engineering
E2780/B2720 SUNROOF WINDOW RPL/SUNROOF FIT	25.37	\$ 3.30			1066871	200902	Changing glass screw to one with a thicker washer which will improve glass adjustment	Engineering
					391826/	200808	Process changes made to glass measurement	Supplier
					394043	200809	Process changes made to module measurement process	Supplier
					200901	Sunroof Frame Tox Rivet Rattle (Install Flocking Tape)		
					200810	Added cover to high pressure fuel pump		Engineering
L1200/J5434 FUEL LEVEL SENDER/FUEL PUMP REPLACE	30.24	\$ 0.71			1056192	200810	100% Dry test at the end of the pump line	Supplier
						200902	Changing toe in heads in the pits (2/4 complete, 2/4 will be comp by 2/2/09)	Plant
E2020/E2000 WHEEL ALIGNMENT/STEERING WHEEL ALIGN	4.84	\$ 2.80						

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Implementation (On Vehicle)
 Waiting Implementation (Waiting on Break point)
 Remaining Opportunity

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Consumer Reports

GM

2009 GMX001 Consumer Reports Status

Overall Program Status	
CR Recommendation	X
CR Performance Score	X

• Green = All metrics Green
 • Yellow = Acceptable Risk or Approved Sufficiency Plan
 • Red = Recovery Plan Insufficient

Metric	Reliability	Performance	Safety
Status (latest metric status)	CR Reliability Rating = AVG Below 871 IPTV for 3 Yr Actual 805 IPTV Avg three year 	Top Quartile Min = 78 Program Target = 60 CR Actual 50 CR Recommendation X CR Performance X	NCAP = 4*/5* LINCAP = 3*/4* IIHS ODB = Good IIHS Side = Acceptable Rollover = 4* (No Tip) ESC Optional Rear Impact = Good 
Method of Assessment (circle one)	• BOM Based Reliability Prediction Model • CIPV (Integration) • CIPV (Man Val) • Warranty Based Reliab. Prediction Model • CR Reliability Survey Result	• CR Performance Prediction Model (Version 4.1) • CR Road Test Results	• Safety Scorecard – Predicted Results • Safety Scorecard – GM Internal Test Results • Safety Scorecard – NHTSA IIHS Test Results
Key Issues	• 2005 results no longer apply	• Sufficiency plan probably inadequate	•

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Status Date: 07/28/2008

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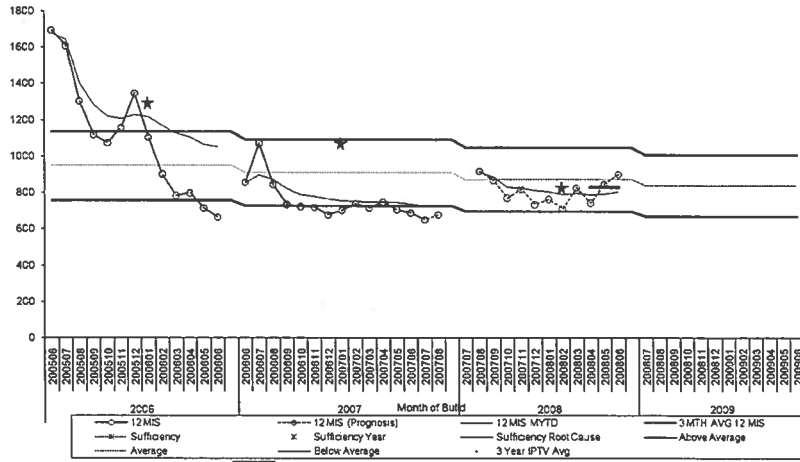
Warranty & Consumer Reports - 12 MIS Incidents per Thousand Vehicles Cobalt (Retail Sales Only)

2006	Actual	% Off of Industry Avg
12 MIS	1050	-11%
CR Average		-36%

2007	Actual	% Off of Industry Avg
12 MIS	727	-20%
CR Average		-18%

2008	Actual	% Off of Industry Avg
12 MIS	805	8%
CR Average		5%

2009	Actual	% Off of Industry Avg
12 MIS		
CR Average		



World's Best Vehicles by 2012

Quality – Consumer Reports

Chevrolet Cobalt



Tested versions:

Base MSRP price range:
\$15,660 - \$23,425

[Price it](#) [Compare it](#)

Highs: Acceleration, cornering grip,
braking, exhaust sound

Lows: Driving position, wind noise, fit
and finish, rear access.

Car Type: Sporty cars

CR overall score **78**
What's that?

P	F	G	V6	E
78	78	78	78	78

This model: **78**

Price: **\$15,660**

MPG: **24/34**

Chevrolet Cobalt



Tested versions:

Base MSRP price range:
\$15,660 - \$23,425

[Price it](#) [Compare it](#)

Highs: Turning circle.

Lows: Engine noise, fuel economy,
driving position, seating comfort, fit and
finish, no ESC on base trim

Car Type: Small cars (Automatic
transmission)

CR overall score **50**
What's that?

P	F	G	V6	E
50	50	50	50	50

This model: **50**

Price: **\$15,660**

MPG: **24/34**

Pontiac G5



Base MSRP price range:
\$16,275 - \$19,575

[Price it](#) [Compare it](#)

This model has not been fully
tested.

See our recommended
alternatives:

- Pontiac Vibe
- Volkswagen Rabbit
- Scion xD

GM

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Summary – On Going Focus

- Warranty CPV and IPTV:
 - 2009 MY 12 MIS CPV MYTD \$110 to target of \$92
 - 2009 MY 12 MIS IPTV MYTD 820 to target of 609
 - After consistently running at the \$20 CPV at 2MIS for the past several years, there were a number of spills in the first three months of production which have impacted the first quality projections for 2009 model year (turn signal bulbs inop, TPM failures, chips in camshaft phaser, ignition lock cylinder/module replacements, IOS...)
 - With vehicle sales being slow, there is risk for unexpected warranty due to lot rot (rotors, batteries, wiper blades, and TPM).
 - Preparing discussion with FPE for a Dealer Upgrade Bulletin (turn signal bulbs, sunroof screws, ignition cylinders, peak torque limiter, and adding felt tape to the steering wheel horn plate).
- Warranty Sufficiency Plans:
 - Sufficiency Plans for CPV/IPTV Top Issues w/ Implementation Dates Available
 - Have enough sufficiency to meet 2009 target for CPV and IPTV (includes issues in root cause and solution)
 - The CPIT team will continue to monitor claims weekly looking opportunities (spills)
- CR Forecast is Red
 - The performance score for the Cobalt is 10 points below the minimum rating to be considered for a Recommended Buy rating (50 vs. 60)
 - Reliability continues to improve with a current "Average" rating
 - Only 12 months of production remaining



Program Assessment

Sufficiency to Achieve Business Plan

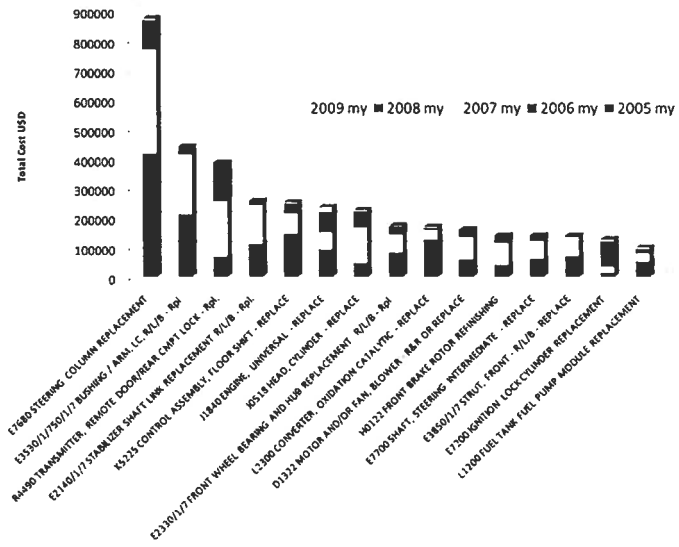
- Warranty CPV ☐
- Warranty IPTV ☐
- JD Power Tracking Study ☐
- 2009 Consumer Reports ☐

Achieve Previous 6 Months Sufficiency ☐

Back Up Slides

GM

LOA Nov 2008 Month of Warranty Repairs (Payments) - 2005 thru 2009MY



CPIT Scorecard

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CPIT Lordstown Assembly

Metric	Status	Trend	Comments
2008 Warranty CPV (2 MIS)	X	↓	MYTD (23) vs. Target (18) (R/G)
2008 Warranty CPV (Suff)	X		End of Year Forecast (89) vs. Target (92) (R/G)
2008 Warranty IPTV (2 MIS)	X	↓	MYTD (171) vs. Target (126) (R/G)
2008 Warranty IPTV (Suff)	X	↓	End of Year Forecast (735) vs. Target (609) (R/G)
2008 C R Reliability	X		Performance rating below minimum requirement of 60
2009 JD Power (3 MMA)	△		3 MMA vs. Target (R/G)
2009 JD Power (Suff)	○		Predicted vs. Target (R/G)
GCA - 2008	○		Current Month (108) vs. Target (115)

Note: Up arrow always indicates improvement, down arrow always indicates degradation

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#1 K2720 Manual Transmission Replacement

IPTV 1.64 CPV \$4.64 Cases 5 Cost/Incident \$2858.00

Issue: Work order 1016728

- Cracked transmission/clutch housings due to high torque loading at a hard launch

Solution:

- Adding a peak torque limiter to the clutch hydraulic system to reduce impact torque loading by 25% during a hard launch. Validation complete 10/23/08

Implement:

Containment: None

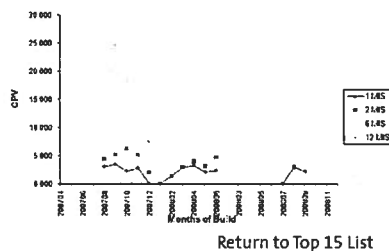
Permanent Fix: PTR 2/9/09

Stock Disposition: All transmissions pulled and returned prior to Asm. & in service

Field Fix: Bulletin for torque limiter released, discussion ongoing for bulletin on customer abuse (including waste gate adjustment)



The new torque limiter is 10mm longer than the current part



GM

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#1 K2720 Manual Transmission Replacement

Issue: 1037805

- Transmission - Synchronizer Complaint: 3rd & 4th gear clash, secondary complaint on 5-4 downshift

Root Cause:

- Identified clash condition on F23 manual transition during production audit (Getrag supplier spill)
- Too smooth surface condition of the carbon synchronizer material
- BOB and WOW analysis of clutch synchronizer material revealed low friction torque gradient measurements. (.67 – 1.49 Nm/ms, specification is minimum of 1 Nm/ms)

Solution:

- GMPT working with Getrag and Sulzer developed a refinement to the process to provide better control weight ratio of materials and surface penetration the carbon filler.
- increased friction torque gradient was measured to be 1.7 Nm/ms
- Validation complete; warm and cold vehicle evaluation (-15C), bench testing, Woodward test

Implement:

- Containment: None
- Production: 4/08
- Stock disposition: Return to Getrag for rework
- Field disposition: Bulletin to replace Clutch Pack versus Transmission Pending

New Issue:

- Stock not properly quarantined and returned to Getrag for rework



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#1 K2720 Manual Transmission Replacement

Issue: 1037805 Continued - Transmission Synchronizer Complaint: 3rd & 4th gear clash

- 5 2009MY Warranty Claims for Cobalt (M86) and 1 for HHR (M86)
 - 3 Cobalt Claims – On original Suspect List (2 were never located / 1 was originally contained but inadvertently shipped to assembly plant)
 - 2 Cobalt Claims – Not on original Suspect List / Produced prior to understanding the issue and built into vehicles
- 1 2009 MY HHR Claim
 - On original Suspect List (already in the vehicle assembly process and was not returned)

GMPT Engineering Issues:

- 2,200 M86 Manual Transmissions identified in Bank with HD material that were not part of the original supplier spill. GMPT has taken position to remove all HD material from system.
 - Getrag to contain all HD material Manual Transmissions in warehouse – Sort began 1/22/09
 - CS Material Breakpoint from Warehouse: Next shipment to Assembly Plant
- 83 units were identified on the Getrag Suspect List / not located at warehouse. Units were identified as Suspect by Getrag but were not returned to supplier for rework.
 - 394 MT's in route from Warehouse to Getrag / 61 MT contained at LOA / Ramos identification in process
 - Transmission Serial numbers being identified (due 1/30/09 from Getrag) / Cross reference serial numbers with VINs (08/09 Model Years; Cobalt/HHR). Determine if MTs built into vehicles or at assembly plant.
- Service Bulletin #41931 in place that identifies suspect MT's and instructs dealers to replace ¾ synchronizers (K3161) instead of MT replacement (K2720).
- Cost Recovery on-going



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#2 J1840 Engine Replacement

IPTV 0.79 CPV \$3.35 Cases 17 Cost/Incident \$4777.42

GMPT Issue: Engine Replacement

Root Cause:

- 7 Claims Over Heat/Coolant Loss
 - 2 Mis-installed radiator hose clamps. PRTS 1076659 sent to vehicle plant – see following 5 phase
 - 4 Unknown root cause. Engine on return for analysis
 - 1 Engine returned for analysis. Source of over heat unknown
- 8 Claims Engine Noise
 - 2 Debris in cam phaser. Engine replace is pre-bulletin explaining issue – see following 5 phase
 - 1 Spun Rod Bearing. Engine analysis suspect non-conforming bearing shell
 - 2 Dealer comments of loose timing chain guide bolts. Information sent to Tonawanda for process review. 2/3/09
 - 2 Unknown. Engines on return for analysis
 - 1 Evidence of water ingestion into engine. Water hydra lock with bent rods
- 1 Claim oil leak
 - Block porosity in oil filter bowl area. Engine on return for supplier analysis
- 1 Claim unknown from outside the United States



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#2 J1840 Engine Replacement

IPTV 0.79 CPV \$3.35 Cases 10 Cost/Incident \$4777.42

2009 LAP/LE8 Machining Chips in Cam Phaser

Vehicle Line/Plant: Cobalt HHR / Lordstown Ramos Update as of: 11/20/08 PRTS #: 1054766

Issue Identified Date: 7/21/08 Contact: Larry Sziechta
Richard Snary Diamond #: 1.2

Concern: P0011 P0014 DTC's set at DVT in Lordstown and Ramos Assembly Plants DTC's also seen in the field along with J0822 J0824 OCV and cam phaser warranty

Containment: No containment Suspect engine build range '09 MY engines thru July 25 2008

Root Cause: AL chips in the cylinder head internal passages entered the cam phaser creating the fault code The process to produce the cylinder head without chips in the internal passages was inadequate The process to detect chips in the internal passages and protect the customer was inadequate

☐ PT Eng. ☒ PT Mfg. ☐ Supplier ☐ Vehicle Group

Solution: Redirect cylinder head spray nozzles probing and inspection July 25 2008 Re-sequencing of washer spray nozzles and pressure increase from 300psi to 500psi 9/14/08 New 2000psi pressure washer installed 9/29/08 4 Flute ball end machining tool change 11/18/08 Implement Spring Hill machining processes tooling and sequencing Jan '09

Current Status: Lordstown DVT failure rate was approx 0.5% during the build range through July 25th July 25th through Nov 14th DVT failure rate is 0.4%

Next Steps: Implement Spring Hill machining processes tooling and sequencing Jan '09 Design study of the cylinder head oil feed passages to see if the passages can be modified to reduce the potential of machining chips being trapped

Roadblocks: None

Field Impact: 150 combined J0822 J0824 cam phaser and OCV claims for LAP and LE8 as of 11/17/08 from ~72400 LAP LE8 sales. Claims are pre November vehicle builds.



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#2 J1840 Engine Replacement

Issue: 1028617 - Upper Radiator Hose Clamp - Coolant loss - Engine failure

Root Cause:

- Upper Radiator Hose Clamp leaking due to clamp mis-positioning and blowing off. The engine overheats and fails.

Solution:

- Change the current clamp to a grenade style pin clamp so the installation process can be error proofed to stop the line if the pin is not pulled.
- This is the last of four clamps to be changed. Packaging caused delay of implementation

Implement:

Containment: Layered audit

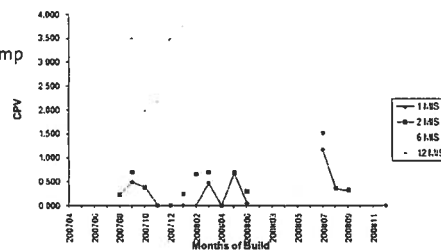
Production Fix: 3/09



Grenade style clamp



Error proofing



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#3 N6624 Occupant Safety Wiring and/or Connector Repair or Replace

IPTV 27.31 CPV \$1.92 Cases 207 Cost/Incident \$67.38

Issue: 1049222

- Seat Belt Retractor, Front, Right - SIR Telltale is Illuminated - BTS connection under seat can be only partially seated (Turbo only)

Root Cause

- BTS connection under seat can be only partially seated and the operator thinks it is fully seated. The connection passes DVT and becomes loose in the field. Push-Click-Pull being used but is difficult since the operator installs the seat and is holding it up during the connection. Lordstown requests a CPA connection. This is a Turbo only connection

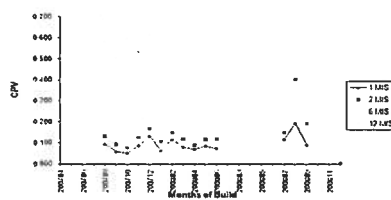
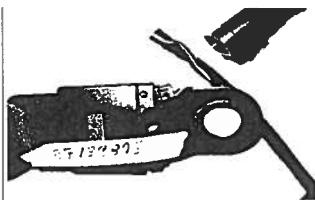
Solution:

- Addition of CPA to the BTS wire harness connector in order to avoid "loose connection".

Implement:

Containment: 2 layer audit 7/08

Production Fix: 12/1/08



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#3 N6624 Occupant Safety Wiring and/or Connector Repair or Replace

Issue: 1067067

- Passenger Seat Complaint: 24hr CPD - SIR light on with code B0081,
- Passenger Position System module connector was not seated

Root Cause:

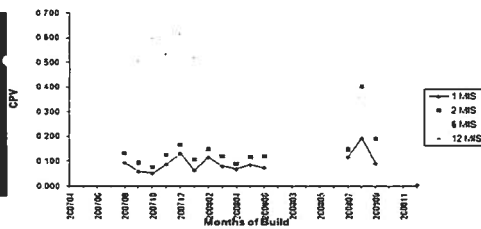
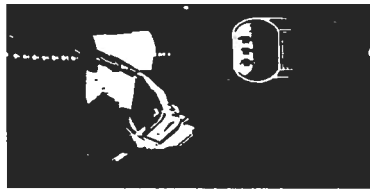
- Connection had witness mark showing it was not fully connected

Solution:

- PRR 403566 issued. Turbo issue only. Delphi began a secondary tug check & secondary witness mark

Implement:

- Containment: 10/21/08 Secondary Checks
- Production Fix: 10/21/08 Same



GM

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27

#3 N6624 Occupant Safety Wiring and/or Connector Repair or Replace

Issue: 1070791

- Seat Wiring Harness Asm – 24 hr CPD - Air Bag Light is On

Root Cause:

- The breakout in the seat wiring harness for IOS module is being snagged by a bracket as the seat travels fore and aft causing the IOS module connector to disconnect from the module.

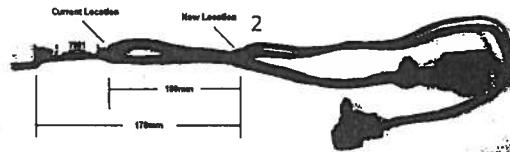
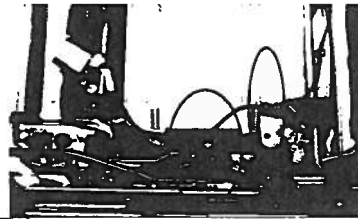
Solution:

- 1) Swap the heat and wire harness connector clip so that the IOS wire harness is in inboard position.
- 2) Move the harness breakout 100mm from the current location.
 - Eliminates excess slack and any opportunity for the wire harness to get caught on the connector bracket and the adjuster.

Implement:

Containment: 12/1/09

Production Fix: Same



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#4 E0716 Diagnostic System Check - Tire Pressure Monitoring

IPTV 30.24 CPV \$0.71 Cases 156 Cost/Incident \$24.42

Background:

- 2008 TPM Warranty Improvements in Cobalt
 - Sensor design and manufacture
(RF power, soldering process, potting process, calibration after reflow)
 - Dealership training and tools
(Dealer F2F, Bulletins, Essential Tool, IDL Broadcast)
 - Customer Education and subsystem improvements:
 - Cold Morning Algorithm
 - DIC Messaging (Remove LEARN screen, ADD AIR TO TIRE message)
 - OnStar OVD (Full implementation, direct email)

Issue:

- Continued higher-than-expected claims against E0722 TPM Sensor Replace
- Continued higher-than-expected claims against E0716 TPM System Diagnostic

Root Cause:

- PRTS 1075841 TPM battery inoperative – supplier analysis indicates sensors have dead batteries
- Improper warranty claims against E0716



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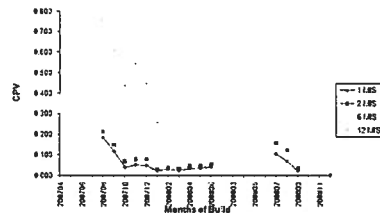
#4 E0716 Diagnostic System Check - Tire Pressure Monitoring

Solution: QLT Focus

- Red X Returned Warranty Parts Analysis
 - GMT 900, GMX 211, GMX 322 projects; parts are common with Cobalt
- Work with BQM to investigate warranty administration solutions
 - For legitimate charges – refer to Red X and parts return
 - Debit E0716 warranty claims when it is appropriate
 - Provide effective dealership training for proper service
 - Adding air is a customer-paid (or complimentary) service item
 - Vehicle diagnostic checks are not necessary

Implement:

- The tantalum capacitors of reflow oven profiling 11/08
- Plant tire inflation and Dealer notification and training 2/2/09



GM

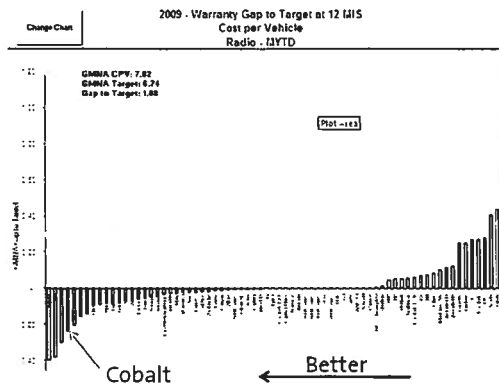
[Return to Top 15 List](#)

30

#5 R0754/R0760 Radio Receiver - Return to AC/Delco ESC

2008/09 Cobalt Radio Warranty 12 MIS

	GMNA	BIS 2012 Targets	Cobalt
CPV	\$7.82	\$5.36	\$2.50
IPTV	23.46	23.43	11



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#5 R0754/R0760 Radio Receiver - Return to AC/Delco ESC

IPTV 10.70 CPV \$2.44 Cases 67 Cost/Incident \$222.55.00

Issue: 1064982

- Radio AM/FM - Instrument Panel-Delphi UUI radio will not connect the latest generation iPods

Root Cause:

- Changes to the iPod software (by Apple) causes failed authentication. The time required by the new software is faster than the Radio can handle.

Solution:

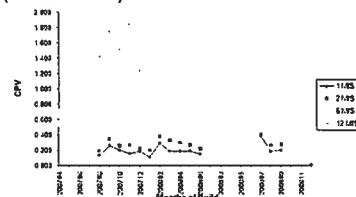
- Apple released new firmware to address this issue (Dec 2008)
- The Radio changed Software in the USB interface to enable faster speeds (Oct 2008)

Implement:

Containment: Reflash all Radios in the pipeline (10/8/2008)

Production: 10/15/08

Field Fix: Service Bulletin reflash radio, update iPod



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#5 R0754/R0760 Radio Receiver - Return to AC/Delco ESC

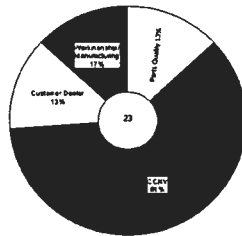
IPTV 10.70 CPV \$2.44 Cases 67 Cost/Incident \$222.55.00

Issue: 1064982

- Radio AM/FM - Instrument Panel-Delphi UUI Warranty Claims Analysis

Root Cause:

- Radio return analysis (23 cases)
 - 3 Workmanship/manufacturing – quality of the solder, process issue, specific 5 phase
 - 3 Customer/Dealer Induced (cosmetic damage), Cost Recovery
 - 3 Parts Quality: 2 Intermittent preset – specific 5 phase follows
1 Dice 2 IC Reception – sent to supplier for RC
 - 16 NTF (61%) - specific 5 phase follows



GM

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33

#5 R0754/R0760 Radio Receiver - Return to AC/Delco ESC

Issue:

- Solder issues causing various customer concerns

Root cause:

- 3 radios returned with solder issues from 09 warranty return analysis
- Solder process leaving residue on board and causing short circuit

Solution:

- Use vision system to identify shorts on fine lead pitch parts
- Use silkscreen legend lines on PCB between pads to prevent pad to pad shorts

Implement:

Containment: None

Production Fix: 9/2008

Field Fix: Replace radio with occurrence



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#5 R0754/R0760 Radio Receiver - Return to AC/Delco ESC

Issue:

- 2 radios with intermittent preset from 09 warranty return analysis
- Complaint of Preset 3 button as "sticky" or "INOP". Upon evaluating the returned radios the Preset 3 button is not stuck but rather intermittent

Root cause:

- Intermittent contact between the switch pad and circuit board due to dimensional stack up between pushbutton and trim plate combined with circuit board flex.

Solution:

- Increase center switch pad dome height by 0.3mm to compensate for circuit board flex. Reduce Trim plate pushbutton hard stop by 0.3mm to allow for increased pushbutton over travel

Implement:

Containment: None

Production Fix: 5/2009

Field Fix: Replace radio with occurrence



GM

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Date: January 22, 2009
VLT Responsible: GCV
Vehicle Chief Engineer: Doug Parks
Functional EGM: Steve Gong
DRE: Interiors - Dave Dalton
Supplier/Location: TRW, Chihuahua, MEX

Issue: C8836 Module IP - PAB Cover exhibits poor fit to I/P Upper Trim



Identify: PRTS 1058141. PAB Cover is proud to I/P Upper Trim, causing objectionable gap/flush condition.

Analyze: Introduction of MY09 low risk deploy content in folded cushion assembly creates "taller" cushion pack than MY08 version, eating up the CLR that did exist between Cushion pack and the "B" side of the floating Cover that snaps into I/P Upper Trim opening. The taller pack pushes up on underside of Cover, preventing it from being seated into design position.

Plan: (Immediate): The following counter measures were put in place:

- 7/18/08 TRW reduced cushion pack height Go/No Go gage from 68mm to 67mm via improvements in bag press operation. LOA says it can process 67mm tall airbags.
- 8/7/08 EWO CSKXHJ approved. Raise mounting "ears" of Reaction Can 3mm. This will drop the Cushion pack 3mm in space, providing more CLR to the "B" side of floating Cover.
- 8/27/08 Temp DSXJZ authorizes LOA to "finesse" rework the Cover fit, as needed. Service Bulletin
- 9/10/08 Bag Press operation changes- Pressure doubled and hold time quadrupled from MY08.
- 9/22/08 TRW's "100% inspected & certified" stock breakpoints at LOA.
- 10/9/08 TRW hit with PR&R 402435 for shipping uninspected "tall" bag and placed on CS2.
- 10/9/08 Supplement EWO CSKXHK approved to shift Reaction Can flanges by 3mm, not 2mm, driven by more detailed physical & math build analysis (Reaction Can shared in Kappa platform).
- 12/3/08 ETO successful. 10 pieces in RedX buck with 2mm shift Reaction Cans off Production tool.
- 1/16/09 TRW's Red X project completed. The big knob to turn is in the Bag Press equipment, which was optimized to improve 1st time probability of building 67mm Max height cushion pack.

Implement (Immediate):

Containment: Finesse operation

Production Fix: Schedule PTR for new P/N week of 2/2/09, Production 2/23/09

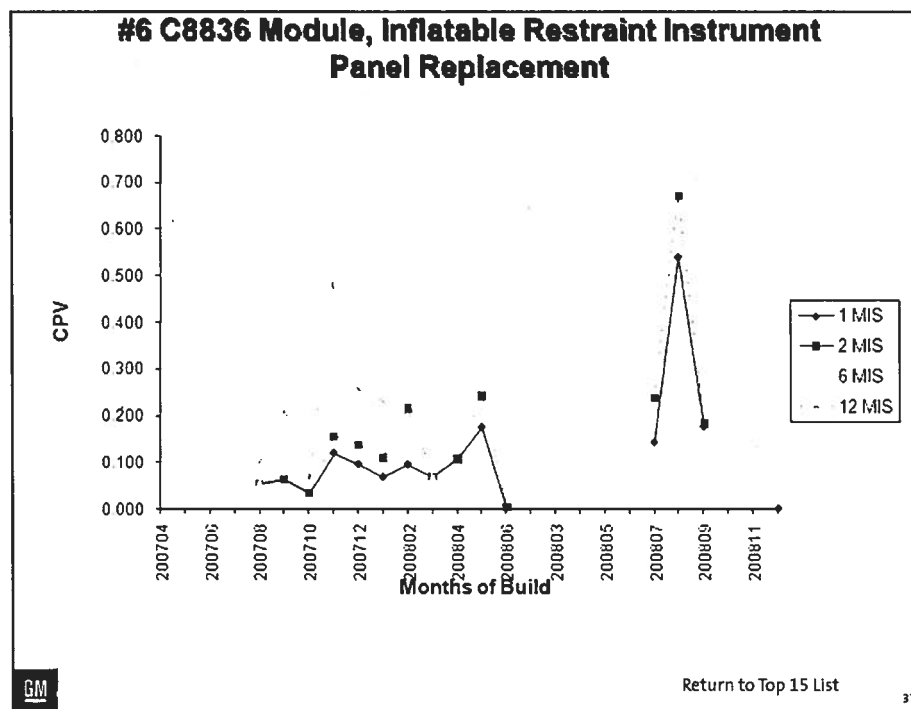
Field Fix: Service bulletin 12/02/08 - Reset, Replace Cover, Replace Module

GM

IPTV 4.84 CPV \$2.80 Cases 31 Cost/Incident \$614.83

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#7/10 E7200 Ignition Lock Cylinder Replacement

IPTV 10.38 CPV \$2.08 Cost per Incident \$188.81 # of Incidents 85

Issue: 1068392

- Ignition Lock Cylinder - Binds, Key Will Rotate or Will Not Come Out

Root Cause:

- System Design not able to maintain performance characteristics with side bar design
 - Several modifications made with no improvement in warranty (hardness, higher detent forces, assembly boss engagement, etc)

Solution:

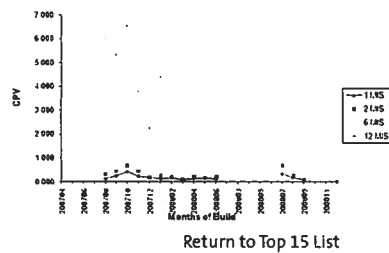
- Sidebar less ignition cylinder designs show much lower warranty
- Implement sidebar less "Lambda" design ignition cylinder (saves 1.92 IPTV).
 - AT only with lock bolt, AT & MT without lock bolt

Implement:

Containment: None

Production Fix: 4/22/09

Field Fix: Use Lambda style service kit 2009 SORP
AT only



GM

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#7/10 E7650/E7200 Module, Ignition Lock Cylinder (Housing) Replacement

IPTV 8.11 CPV \$2.41 Cost per Incident \$300.86 # of Incidents 68

Issue: 1068392

- Ignition Lock Cylinder - Binds, Key Will Not Rotate

Root Cause:

- Steering column lock bolt engaged. Sequence and Force to disengage may result in the customer not being able to Rotate the ignition key. Walk home
- Ignition lock bolt design is subject to high frictional forces. Square bolt in square slot

Solution:

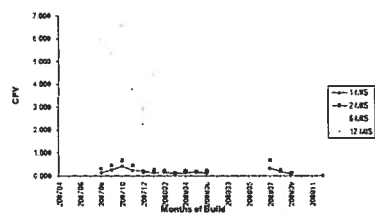
- Remove lock bolt from current system (1.0 IPTV savings)
 - Cobalt does have electronic theft deterrent
 - Estimate of theft impact 1-3 Thefts/thousand, Estimate of insurance impact : \$0
 - GM Tier 2 requirement for all new vehicles as of 2007
 - Other GM vehicles without lock bolts – STS, XLR, Escalade, T900s, X38x
 - SMT review 1/27/09, Pending Safety and PET review

Implement:

Containment: None

Production Fix: 8 weeks after EWO approval

Field Fix: Propose to use lock housing without lockbolt after approval



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#7/10 E7200 Ignition Lock Cylinder Replacement

Issue: 1068392 - Ignition Lock Cylinder inadvertent cut off

Root Cause:

- Low switch detent forces cause key to be pulled out of 'run' position
- Knee contact to key chain or weight on a key chain with vertical movement causing key to be pulled out of 'run' position

Solution:

- Change key slot to a hole

Implement:

Containment: none at the Assembly plant

Production Fix: Change key slot to hole - 4/09

Field Fix: Use plug available in service - 2007



GM

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#8 D2460 HVAC Assembly - Upper Replace

Issue:

- Delphi 5-phase - Water leaking into the interior of the vehicle from the HVAC module

Root Cause:

- Flash blocking drain hole in HVAC lower case

Solution:

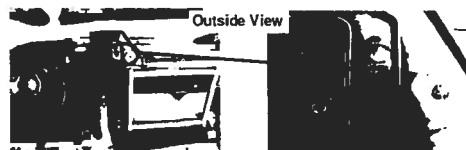
- Short term: 100% flash tool check & Quality Alert issued- Tool maintenance shimmed to correct flash.
- Long Term: Implement manufacturing process improvement to ensure drain hole opening flash free (Heat Gun)

Implement:

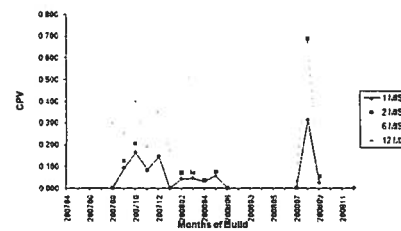
Containment: Quality alert, 100% inspection, shim the tool 10/15/08

Production Fix: 10/18/08

Field Fix: None



GM



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#9 K7000 Automatic Transmission Replacement

IPTV 0.79 CPV \$2.41 Cases 8 Cost/Incident \$3051.29

Issue: 1052818 - Bearing - Driven Sprocket Support Noise

- Bearing damaged from excess material lodged in the bearing pocket of the Driven Sprocket Support part

Root Cause:

- Material build up caused by a guide on the robot load at the debur operation that was steel. Proper guide material is nylon (changed from steel to nylon in 1997).

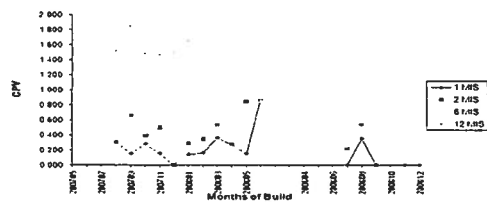
Solution:

- Guide has been changed back to nylon 6/24. Visual inspection in place – part check rack in place

Implement:

Containment: Visual Inspection

Production Fix: 7/14/08 at Windsor Transmission



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#9 K7000 Automatic Transmission Replacement

Issue: 1058143 - Input Speed Sensor

- Transmission Complaint: P0717 Input speed sensor Inop - cut and broken wires

Root Cause:

- 1) Delphi's Tier II supplier did not control the process to provide proper chamfer and resulted in a sharp edge.
- 2) Delphi's Tier II supplier UPG USA did not control the process for flash. This was a contributor to weaken the wire during the winding process.

Solution:

- 1) The edge on the bracket causing the wire insulation breakage was solved by a correction in the manufacturing process
- 2) The broken wire on the spool resulting from the flash was corrected by improving the plastic spool forming process and adding in 100% continuity inspection into the process.

Implement:

Production Fix: 8/15/08



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#11 N0681 Bulbs, Park and Turn Signal Lamp (left) Replacement

IPTV 20.89 CPV \$0.59 Cases 106 Cost/Incident \$7.24

Issue: 1072874 (PRR 393701)

- Bulb, Park / Turn - Font Combination Lamp Complaint: Burned Out (smoked glass due to oxygen getting into the bulb).

Root Cause:

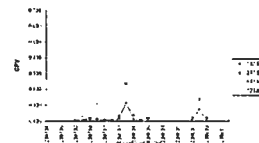
- Failures highest in DRL application (T201, X272). Two failure modes lead to O₂ in the bulb, causing failure: FM#1– Fast Leak–circular cracks due to incorrect temperature gradient in their annealing ovens, FM#2– Slow Leak–bubbles in the glass along the lead wires

Solution:

- Philips Amber Wedge Based Bulb has been removed from all Turn DRL Applications
- Cost Recovery has been issued to Philips.
- GMX001 change from Philips (3457NAK) to Osram (3157HT AK) for a piece cost reduction of \$0.06 per vehicle
- Review Osram's Process Controls to ensure they continue to be robust
- Evaluate other sources for this bulb to retain multiple sourcing options
- Create an organized plan to wind-down our supply from Philips

Implement:

Production Fix: 3/09



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#12 C8800 Steering Wheel Inflatable Restraint Module Coil Replace

IPTV10.17 CPV \$1.68 Cases 78 Cost/Incident \$159.59

Issue: 1076192 SIR Coil - Steering Column - Airbag Telltale is Illuminated

Root Cause:

- Analysis of warranty return parts - 12/31 parts had the wire insulation cut as the wires enter the coil (thought to be caused by a sharp edge on the horn plate)
- Also collateral damage while changing ignition lock cylinders.

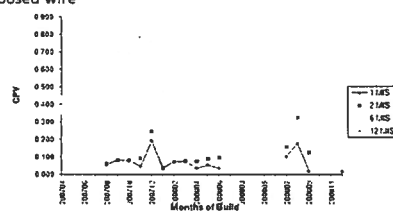
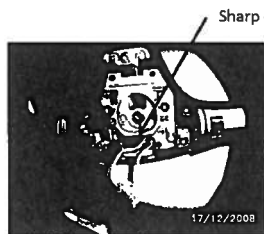
Solution:

- TWO 1079794 to add flocked tape to edge of horn bracket - TID
- Investigating adding additional protective heat shrink tubing to wires and/or coin edge of horn bracket to make it smooth

Implement:

Containment: Reintroduce flock tape to edge of horn bracket 2/2/09

Production Fix: TBD



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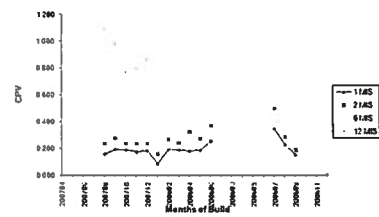
#13 J6360 Powertrain Control Module Replacement

IPTV 4.93 CPV \$1.73 Cases 49 Cost/Incident \$345.19

Labor code J6360 was also effected by the Cam Phaser issue reviewed labor code J1840 Engine replace

Comments

The Bosch controller used on the turbo vehicles are now on parts restriction in the warranty system



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#14 E7680 Steering Column Replacement

IPTV 4.50 CPV \$1.74 Cases 21 Cost/Incident \$446.19

Issue: 1025424 - Steering Column - Steering System Rattle

Root Cause:

- Source of rattle noise is backlash between nylon spur gear and steel worm gear.
- Customer Enthusiasm Limit is 0.9 minutes of angle final backlash from Attribute Tolerance Parallelogram.

Solution:

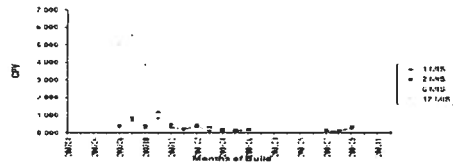
- Containment through successive reduction in backlash began on Feb 4th with a move from 0.9' backlash in the reduction gear housing to 0.5'.
- Hobbing process was initiated in July 08 as an interim.
- Final solution is burnishing the worm gear and the spur gears together reducing the backlash even further.

Implement:

Containment: Sorting to 0.9' or less - 2/08

Hobbing breakpoint - 7/08

Production Fix: Burnishing breakpoint - 2/09



GM

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#15 N0110 Battery Replacement

IPTV 8.33 CPV \$1.55 Cases 50 Cost/Incident \$181.24

Issue: 1058456 - Battery Current Sensor

- Main Body Harness Trunk Branch Complaint: Damaged wire - broken or cut wires

Root Cause:

- These 3 wires are pulled through the passenger compartment to the trunk during assembly.
- The battery current sensor plug and/or wire is prone to catch on the sheet metal as it is routed.
- The connector can also become trapped under spare tire or battery if not in the correct place before connections are made.
- Broken or cut wires occur (effects charging). Collateral damage due to ignition lock cylinder and On Star

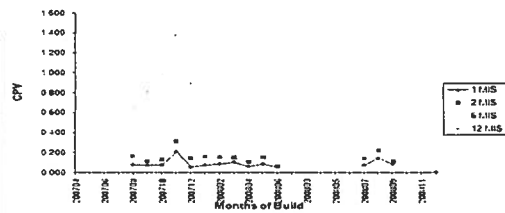
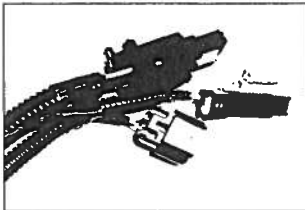
Solution:

- Add to the hanking for the RVC sensor branch to help clear all sheet metal

Implement:

Containment: 11/3/08

Production Fix: Same



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Back Up Slides Turbo SS

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#1 K2720 Manual Transmission Replacement - Turbo

IPTV 2.40 CPV \$7.98 Cases 1 Cost/Incident \$3323.79

Issue: Work order 1016728

- Cracked transmission/clutch housings due to high torque loading at a hard launch

Solution:

- Adding a peak torque limiter to the clutch hydraulic system to reduce impact torque loading by 25% during a hard launch. Validation complete 10/23/08

Implement:

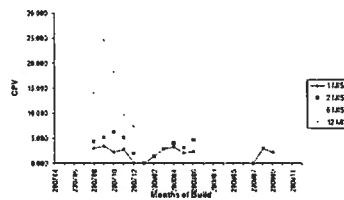
Containment: None

Permanent Fix: PTR 2/9/09

Stock Disposition: All transmissions pulled and returned prior to Asm. & in service

Field Fix: Bulletin for torque limiter released, discussion ongoing for bulletin on customer abuse (including waste gate adjustment)

The new torque limiter is 10mm longer than the current part



GM

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**#1 K2720 Manual Transmission Replacement/#2
K1200/K1120 Manual Trans Shift Cable Replace/
Trans Control Replace - Turbo**

IPTV 42.58 CPV \$4.17 Cases 17 Cost/Incident \$94.94

Issue: 1058149 - Current PVC shifter position tool does not maintain proper position.

Root Cause:

- Because of the short directional throws inherent in this shifter, the sensitivity to adjustment becomes critical.
- It was found that as little as 2.0mm at the shift knob would be enough to throw the entire system out of adjustment
- Because of shifter ratios of approximately 3:1, this translates into a movement of less than 0.7mm at the cable connection

Solution:

- A new shifter tool that would not only stabilize the for/aft movement, but would rigidly contain the cross car movement into a zero state was designed.
- This tool effectively locked the shifter in both directions until cable installation and adjustment were completed.

Implement:

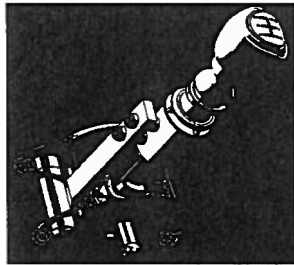
Production Fix: 10/31/08



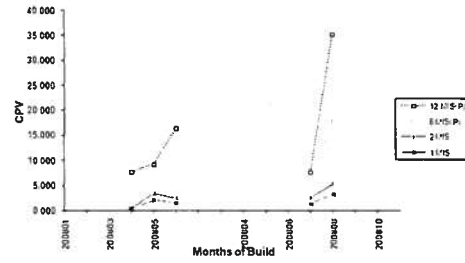
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#1 K2720 Manual Transmission Replacement/#2 K1200/K1120 Manual Trans Shift Cable Replace/ Trans Control Replace - Turbo



Old



#3 B2760/B2720 Sunroof Window Replace/Sunroof Window Height Adjustment

IPTV 25.37 CPV \$3.30 Cases 11 Cost/Incident \$123.39

Issue: 1064892

- Rattle between sun roof drain channel and roof sheet metal flange (90% penetration on turbo vehicles)

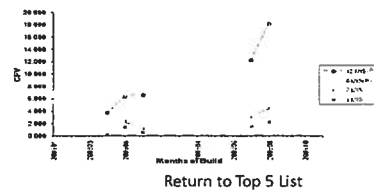
Solution:

- Because of build variation between the down turned flange of the roof and the rear drain channel of the sun roof,
- InAlfa is placing a foam pad on the drain channel to eliminate the rattle caused by sheet metal contact.

Implement:

Production Fix: 2/09

Field Fix: Bulletin 09-08-67-001 Service bulletin for Sunroof Frame Tox Rivet Rattle (Install Flocking Tape)



GM

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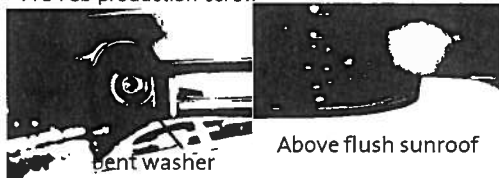
#3 B2760/B2720 Sunroof Window Replace/Sunroof Window Height Adjustment

Issue: 1066871 - Sun roof glass to roof flushness variation due to change in shape of POA glass screw washer during assembly

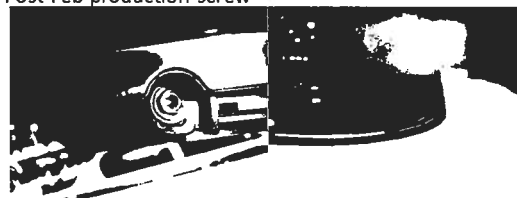
Solution: EWO 1050562 issued to change the glass screw to one with a thicker washer

Implement: 2/09

Pre-Feb production screw



Post-Feb production screw



GM

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#3 B2760/B2720 Sunroof Window Replace/Sunroof Window Height Adjustment

Issue: PRR 391825 Sunroof Glass Dimensionally Out of Specification

Root Cause:

- Glass measuring process was not datum based. There was not daily check's of the gage to verify it was properly zeroed.
- Overall inadequate development of measurement process.
- Temporary process was not developed with adequate process controls.

Solution:

- Work instructions were revised to include control measures.
- A master was implemented for zeroing gage daily.
- A sticker with the measurement results was added to the process, to assure 100% measurement takes place.

Implement: 8/22/08

Issue: PRR 394043 Sunroof Glass Dimensionally Out of Specification

Root Cause:

- The reinforcement on this glass panel was not fully seated. This glass may have been mishandled or damaged during inspection process. There was no process in place to verify flyers in dimensional variation

Solution:

- InAlfa introduced 100% measurement of Sedan glass using the Y=0 measurement from the coupe glass bend process. Blue stickers are being placed on the glass and the measurement results are recorded on the sticker.

Implement: 9/1/08



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#4 L1200 Fuel Level Sensor Replace Replacement - Turbo

IPTV 2.40 CPV \$1.06 Cases 1 Cost/Incident \$441.89

Issue: L1200 - Complaints for fuel pump noise under body

Solution:

- Red X study determined need to isolate fuel tank from body
- Optimum location TBD

Implement:

Containment: TWO for patches SOP 2009...Red X Study re-instituted to determine optimal location/quantity for final release
Production Fix: location to be finalized

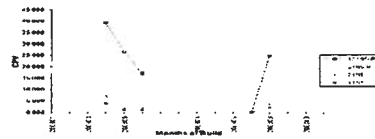
Issue: 1055192 - Fuel Pump Module Assembly Engine cranks but will not start

Root Cause:

- The root cause was determined to be high resistance or an open circuit in an armature winding connection to a commutator segment of the fuel pump.

Solution: 100% Dry test at the end of the pump line.

Implement: 10/1/08



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#4 J5434 Fuel Pump Replacement - Turbo

IPTV 2.62 CPV \$1.49 Cases 1 Cost/Incident \$569.16

Issue: J5354 - Complaints for direct injection fuel noise under hood (same issue on the HHR and Solstice/Sky)

Solution: Revise high pressure fuel pump cover

Implement: 10/9/08; 50% fix

Issue: 5 claims July through Sept builds for check engine light

Root Cause:

- Returned parts show evidence of connector damage on the pump. Over time and mileage the connector can vibrate and crack.
- 7 Diamond process review is being conducted at the vehicle plant - TID 2/9 (same parts are used on the HHR with minimal claims)

Solution: TBD

Implement: TBD



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#5 E2020/E2000 Wheel Alignment/Steering Wheel Alignment - Turbo

IPTV 26.11 CPV \$1.55 Cases 9 Cost/Incident \$73.35

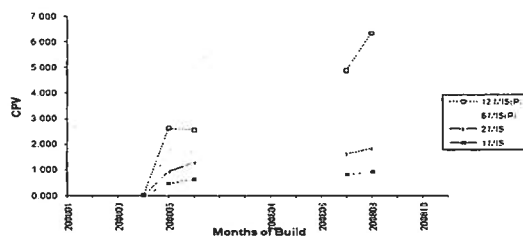
Issue: Steering wheel off alignment or vehicles pulls

Solution:

- Replace all four toe in heads on the alignment machines. Two have been change and the remaining two will be replaced in Feb 09.

Implement:

Containment: Volume allows all vehicles to flow thru 2 pits with new toe in heads
Production Fix: 2/09



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