MERCEDES BENZ 3.5 LITER TURBODIESEL INTEREST GROUP NEWSLETTER

March 31, 1999

INTRODUCTION

This newsletter is being sent to all those interested in the problems with the 3.5 liter turbodiesel engine used in S-Class Mercedes between 1990 and 1995. It incorporates significant new research and information and the input of several list members since my last communication some time ago.

Briefly, this engine has problems. With distressing frequency these engines show significant, grossly premature wear, requiring expensive rebuilding. Symptoms are excessive oil consumption, mechanical noise, smoke, and a throbbing idle. Diagnostic procedures usually reveal that one or more cylinders have compression that is below specification, with excessive variation in the compression among all cylinders. Mechanical teardown frequently reveals cylinders that are out of round and connecting rods that are bent. Catastrophic engine failure has occurred quite often. These problems are clearly due to a design defect that Mercedes refuses to acknowledge. These problems can not be prevented with any sort of routine maintenance, nor can they be forestalled with changes in driving behavior. In essence, the engine self-destructs during normal operation. Symptoms have appeared as early as 50,000 miles. Due to the expense of individual repairs, Mercedes honors warranty repairs only after considerable pressure is applied. Out-of-warranty claims are summarily rejected.

THE ENGINE

The problem engine is a 3,449 cubic centimeter displacement in-line 6-cylinder turbo-charged diesel engine. Diesel engines were first used in the W-116 300SDL S-Class beginning in 1978, continuing through 1980. That engine was a 3 liter 5 cylinder turbodiesel, model 617. The W-126 S-Class debuted in 1981 with that same engine, which was changed to a 3.0 litre 6 cylinder (the 603.96x) in 1986-87. This same 3.0 liter engine was also used in the W-124 300D and 300TD in model year 1987. These engines are NOT the problem. That engine block and head, however, were the starting point for the 3.5 liter version. For comparison purposes it will be helpful to know how many of these 6 cylinder 3.0 liter versions were in use:

Year	Body Model	Engine Model	# Sold
1987	W-124 300D/300TD	603.960	6,022
1986-87	W-126 300SDL	603.961	13,830

Source: Robert Nitske's book "Mercedes-Benz Production Models Book," Motorbooks International.

MODELS INVOLVED

The problem engine was first installed in 1990 and, with minor modifications, was used through 1995. The models, with number of cars sold in the U.S. and the list price, are as follows:

Year	Body Model		Engine Model	# Sold	$ MSRP
1990	W-126	350SDL	603.970	855	56,800
1991	W-126	350SD/SDL	603.970	3,914	53,900/57,800
1992	W-140	300SD	603.971	1,131	69,400
1993	W-140	300SD	603.971	1,005	69,900
1994	W-140	S350	603.971	672	70,600
1995	W-140	S350	603.971	425	65,900

Source: MBUSA Web Site, 12-Year Model Overview

THE PROBLEM

The 3.0 liter 6-cylinder 603.96x engine was an extremely reliable engine during its production run. The problem-plagued 3.5 liter 603.97x engine is based on the 3.0 liter version and uses essentially the same head and the same block. What went wrong?

For whatever reason, Mercedes decided that beginning in model year 1990 the S-Class needed a turbo-diesel engine with greater displacement than the 3.0 liter version that had been used in 1986-1987. Rather than develop a new engine, a decision was made to increase the displacement of the existing engine. Three factors determine displacement: number of cylinders, bore, and stroke. Since the 603 block already had 6 cylinders, (the 617 had 5) that left an increase in bore and /or stroke as the only way to increase displacement. Specifications of these engines are as follows:

603.96x	2.996 liter	87.0 mm bore x 84.0 mm stroke
603.97x	3.449 liter	89.0 mm bore x 92.4 mm stroke

Because the previous 6-cylinder 3.0 liter turbodiesel engine, based on the same engine block, had been and continues to be so reliable, problems in the 3.5 liter version were presumably caused by changes in the bore and/or the stroke.

DIAGNOSTIC PROCEDURES

Any owner who suspects that his or her engine is experiencing the types of problems discussed in this bulletin has several options. The first question, however, is whether any sort of warranty coverage still applies to the vehicle. If so, act NOW, before your warranty expires. Perform a carefully executed test of oil consumption. Consider getting a check of compression and leakdown, recognizing that the expense (probably about $200 or so) may be necessary to document your warranty claim. If, however, no warranty coverage remains, a decision must be made as to how much information, potentially bad, you want to know. Generally speaking, the problems discussed here, although disconcerting, do not affect short-term drive-ability. The problem may get progressively worse, however. Catastrophic failures due to these problems occur quite often. The most significant short-term consequence is increased oil consumption. Repair costs may escalate if catastrophic failure occurs, since damage may prevent installation of cylinder sleeves, may damage the otherwise reusable head, and may prevent the recovery of the core charge deposit if a remanufactured short block is purchased.

Assuming, however, that an accurate diagnosis is desired, here is what needs to be done.

Oil consumption test

Excessive oil consumption (generally considered to be consumption of one quart of oil in significantly less than 1,000 miles) is an indication that the design tolerances of the engine's internally lubricated parts (generally speaking, the piston rings and valve guides/seals) no longer prevail, or that the head gasket has failed. Sources of external oil leakage (e.g. valve cover and oil pan gaskets) and fuel dilution should be ruled out, and corrected if found. There is a specific test procedure for measuring oil consumption. Basically, it involves draining old oil, and with car parked level, refilling with new oil to a carefully measured level using a calibrated dipstick (p/n 120-589-06-21-00) and thermometer (p/n 124-589-07-21-00) and then driving a minimum 100 miles. Thereafter, again under controlled conditions where the car is level, the temperature of the oil is the same, and the amount of time the warm oil is permitted to drain into the crankcase is the same, the amount of oil consumed is determined and converted to miles per quart.

Compression test

Diesel engines operate under much higher compression ratios than gasoline engines – in this case, 22.0 to 1, compared to about 10.0 to 1 in a gas engine. A compression ratio, however, is only as good as the cylinder's ability to maintain the intended compression pressure. In these engines, the specified compression value is 375 to 465 psi, also expressed as 26 to 32 bar. The minimum compression value is approximately 260 psi, or 18 bar. Some variation in values from one cylinder to another in the same engine is inevitable, but too much variation is bad. There must be no more than 43.5 psi (3.0 bar) difference between the highest and lowest values in the same engine.

Compression is measured on an engine that has been warmed to operating temperature, with all fuel injectors removed before the test begins, and using a Moto-Meter compression gauge (p/n 001-589-78-21-00) specifically designed for diesel engines. (Gauges designed for gasoline engines are not adequate for these tests.)

Leakdown test

A leakdown test is designed to be done in conjunction with a compression test and can provide additional information as to the likely cause for any irregularities in compression values. Tests are typically first done 'dry,' then 'wet.' Properly done and interpreted these tests can determine whether cylinder pressure is being lost through the cylinder head gasket, the intake manifold, the exhaust, the oil filler cap, the pre-chambers of adjacent cylinders, or into the coolant expansion tank. A 'wet' test helps to determine specifically whether pressure loss occurs at the piston ring (which can indicate worn or broken piston rings, worn or scored cylinder walls, or cylinders that are out-of-round) or not. An engine show excessive pressure loss if the total pressure loss (dry test) for all cylinders combined exceeds 25%, if the loss through the valves or cylinder head gasket of any one cylinder exceeds 10%, or if the pressure loss past the piston rings in any one cylinder exceeds 20%. (Source: 602, 603 Service Manual).

THE INVESTIGATION

An investigation into this problem has revealed many disturbing things. That there was a defect in the design (or rather, its redesign) is obvious. That Mercedes took certain belated partial corrective measures, largely in desperation, is also obvious. Several written sources provide valuable insight into this problem. In 1991 Mercedes published the "Service Manual Diesel Engines 602, 603" Part Number LZ S-2517-091. It provides the "official" description of how to diagnose and repair problems in these engines. I also obtained and consulted the ALLDATA CD ROM of Automotive Repair Information. This is a collection of technical specifications, and repair and diagnostic procedures. Certain other materials have been reviewed and will be described.

One of the first issues to appear dealt with Head Bolts and Torque Specifications. In order to withstand the pressures inherent in any engine, and especially the much higher stress and pressure of a high compression diesel engine, the engine block must be a rigid structure. It achieves its rigidity largely through the sheer mass of its metal casting. Additional strength is provided by the sandwich affect of rigidly affixing the head (and, in some engines, the crankcase.) Increasing the bore, however, removes some of the material that otherwise would be available to provide strength (assuming, as is the case here, that the other dimensions of the block remain the same.) Apparently shortly after the 3.5 liter engine was in production Mercedes realized that the head/block unit required greater strength than the 3.0 liter version, or that internal pressures were higher than expected, since changes were suddenly made to the dimension and torque specifications of the head bolts. Technical Service Bulletin 01/22b, issued May 1992 but referring to changes made as of May 1990 (engine end number 260). The head casting was changed in October 1988 to increase the thickness to help prevent cracking, which had been known to occur on the exhaust side 'ears' and less often between the exhaust valve and the prechamber hole.

The head gasket plays a critical role in confining the compressive forces to the individual cylinders. Machining head and block surfaces, no matter how well done, can not eliminate all surface irregularities or prevent slight flexing while in operation. Head gaskets prevent the compressive forces in one cylinder from leaking out, particularly into adjacent cylinders. These gaskets also prevent leaks in lubrication and cooling passages across and through the block and head. Here again, however, by increasing the bore the amount of material left to 'channel' fluids and confine gasses may be reduced. This apparently caused a problem in the 3.5 liter engine. Consider "Service Advisory 01-93101. Indications for removal and replacement of the head gasket." This applies where "engine smokes blue, makes knocking noises, runs unevenly, valve tappets are noisy with engine at operating temperature." The affected vehicles are 603.97x engines manufactured up to April 1, 1994. (Note: very few of these engines were manufactured after this date.) The cause of these problems is acknowledged to be "insufficient sealing of cylinder head gasket in area of cylinder head lateral oil channel . . ." which runs between Cylinder 1 and the timing chain compartment.

Another provocative issue deals with cylinder sleeves. Sleeves refer to the metal 'tubes' sometimes used to line the cylinder walls. Cylinder sleeves are most often used to provide a longer-wearing lining made of a more wear-resistant material such as cast iron in an engine block that is cast from a lighter weight material such as aluminum where the friction of the moving piston would wear out the relatively soft aluminum. Even in a cast iron block sleeves can be used in rebuilding engines because they can be manufactured to more exacting tolerances than can sometimes be achieved by boring in the local engine machine shop, or where a damaged block that could not be re-bored or over-bored can be salvaged. What is tremendously interesting here is that when this 3.5 liter engine first went into production Mercedes determined that in the event the engine was ever to need rebuilding, the installation of cylinder sleeves "is not permissable." (Source: 602/603 Service Manual). There is nothing necessarily troubling about this position; it simply most likely reflects an engineering analysis by Mercedes that installation of cylinder sleeves, which requires the boring out of the cylinder to a diameter sufficient to accept the outside diameter of the sleeve (here, from 89.0 mm to 92.5 mm) risked damage to coolant or lubrication passages, the wall between adjacent cylinders, or anyplace in the engine block immediately adjacent to the cylinder where insufficient material might be left. However, after this engine was in production Mercedes did an 'about face' on this issue, advising in Technical Service Bulletin 01/32, issued in August 1994 on how to install cylinder sleeves in any 603 engine, including the 603.97x. "In the event of an engine rebuild, cylinder sleeves may be subsequently installed in these engines."

It is elementary that without adequate lubrication no engine would run for very long. Pistons and connecting rods and all the other moving parts need oil. Getting oil to where it is needed is not an easy task. In the 603.96x (and other engines too) Mercedes had designed into the pistons an annular ring channel. This permitted oil to be splashed by the rotating crankshaft up under the crown of the piston to flow through a passage, lubricating and cooling the piston crown. In the 602/603 Service Manual Mercedes advised that "due to the higher thermal load the pistons are cooled with oil via an annular channel in the piston crown. Moreover the piston pins are supplied with oil injected through the two bores . . . ending in the annular channel." But in a turnabout that to this writer makes no sense whatsoever, Mercedes goes on to say "the annular channel is deleted on engine 603.970. Only the piston crown is supplied with oil." No explanation whatsoever is given for why the 3.5 did not need, or would not benefit from, this form of cooling and lubrication, and it is fair to assume that this may represent a miscalculation on Mercedes part, particularly when considering the following section.

Perhaps the most explicit recognition of this problem can be found in Service Bulletin 03T95121, issued December 1995 and revised February 1996. This bulletin speaks to the availability of 'special' pistons. It reports that "a very limited availability exists of optimized pistons with piston rings for use as [a] remedy against oil consumption complaints." It claims to apply only to the 603.971 engine used in the W-140, from engines number 1 through 18446 (not sure how engines are numbered, since there were less than 4,000 turbodiesel W-140s sold in North America). No explanation is given as to why this should not also apply to the 603.970 used in the W-126. Nor is any explanation given as to the respects in which these 'optimized' pistons differ from those originally installed.

One of the most disturbing findings upon disassembly has been the frequency of bent connecting rods and cylinders that are out of round. Bent rods can be caused by hydro-lock, where a fluid, typically coolant, gets into the combustion chamber through a leak in the head gasket. Because liquids do not compress as readily as do gasses, the fluid exerts a mechanical force that can result in bent rods and/or damaged pistons. At least one owner has reported this problem and explanation to me.

The more intriguing theory deals with the relationship between the length of the stroke and the length of the connecting rod, called the "rod ratio." Recall that in order to increase the displacement in this engine, the stroke (as well as the bore) was increased. Stroke is increased by lengthening the distance that the connecting rod journal is offset from the central axis of the crankshaft. If, as in this case, the distance from the central axis of the crankshaft to the top surface of the block remains unchanged, then increasing the stroke requires shortening the length of the connecting rod (assuming that the distance from the wrist pin to the piston crown also remains the same.) Here the length (center of the rod journal to the center of the wrist pin) of the connecting rod in the 3.0 liter 603.96x was 149 mm; in the 3.5 liter 603.97x it was reduced to 145 mm. This results in a rod ratio of 1.56:1 in the 603.97x compared to 1.8:1 in the 603.96x. This is important because it affects the extent of the arc through which the connecting rod must swing – the greater the arc, the greater the lateral force (thrust vector) being applied to the piston. Engine designers prefer higher rod ratios for reasons of longevity, high-RPM, and torque.

There must be some explanation for the out-of-round cylinders that are all too often discovered upon disassembly. An engine that simply 'wears out' typically experiences symmetrical concentric wear patterns in the cylinders that can, during rebuilding, be repaired by over-boring and installing over-size pistons, or by installing cylinder sleeves. In these 3.5 engines, however, the wear pattern is egg shaped or elliptical, strongly suggesting that the cylinders are being exposed to a force that is lateral (i.e. side to side) in direction.

Speculative Causes

A number of causes have been suggested but for which no objective evidence has yet surfaced. Several people have reported to me that the injection pump, for some reason, distributes fuel unevenly, resulting in a mixture that is over-rich in certain cylinders. Those cylinders that are over-rich are prone, it is surmised, to develop bent rods. The rods themselves, in addition to being shortened (see discussion later) are said to have been made 'lighter' and less 'beefy.' This may have been a consequence of changes made to the crankshaft webs caused by the longer stroke. 'Thermal shock' is claimed to affect the # 1 cylinder, resulting in warping from uneven temperature distribution.

Finally, there has been speculation that the poor quality of diesel fuel available in recent years has caused problems. There was an article in Four Wheeler magazine recently, commenting on the problems that certain Ford turbodiesel engines have experienced allegedly due to the reduced cetane in diesel fuel. Tom Ishler, Mercedes Benz Technical Service Representative, repeated this theory recently when asked for his knowledge of the 3.5 liter problem. No explanation has been given, however, for why this reduced cetane would only affect the 3.5 and not all Mercedes diesels. Unless, of course, the 3.5 was marginal to begin with, and the subtle change in cetane has been enough to cause mechanical damage.

SPECIFIC CASES

Readers should not think that this is an abstract, theoretical discussion from a single disgruntled owner. This study gained momentum simply because I discovered that there were a lot of people out there like me. Here are the case studies that I know of so far; as additional ones come to my attention I will incorporate them in further editions of this report.

John Blazer Lets start with my case, since mine is fairly typical. My car is a 1991 350SD. I am the second owner. I acquired it in 1994 when it had 45,000 conscientiously maintained and documented miles. It has never been run without proper oil or coolant. It has been maintained 'by the book' by either the selling dealer or by an independent mechanic previously employed at that dealer. By approximately 100,000 miles, oil consumption started to increase. At approximately 115,000 miles while driving at 60 mph the car 'burped' and emitted a puff of smoke. Compression test at 119,000 miles revealed compression values ranging from 320 to 400 psi; there is leakage in some cylinders as high as 34%, (10% wet), indicating pressure loss is occurring past the piston rings. Oil consumption of one quart per 300-400 miles. Current mileage 125,000. Mercedes refuses to contribute to cost of repairs, which remain undone. This is my third Mercedes.

Ralph Burnette Mr. Burnette's car is a 1993 300SD. Engine failure at 102,000 miles. #1 connecting rod bent. Engine rebuilt with all new pistons, connecting rods, and head (allegedly of different design.) Current mileage 116,000 miles. No current problems or excessive oil consumption. Mr. Burnette reports that he checked out many other turbodiesel W-140s in Connecticut, and all had similar engine problems.

Nick Christos Mr. Christos' car is a 1993 300SD. Excessive oil consumption, smoke, etc. Bent rods, etc. Not clear whether its yet been fixed.

Emmett Dibble Mr. Dibble has a customer with a 1991 350SDL. It had a new head installed and, despite that repair and low miles, still goes through a quart of oil every 300-500 miles.

Albert Fellers Mr. Feller's car is a 1991 350SD. It experienced catastrophic failure at 83,000 miles requiring the installation of a remanufactured engine (not clear whether it was a short or long block.) Current mileage 100,000. Oil consumption problem appears to be returning. Mr. Fellers also reports that he has a friend in New Jersey with a 1991 350SD that experienced catastrophic failure at 82,000 miles.

Angelo Giaimo Mr. Giaimo's car is a 1990 350SDL. At 98,000 miles he experienced the same 'burp' I described above. Now experiencing increasing oil consumption and smoke. No repairs yet.

George Hajos Mr. Hajos' car is a 1994 S350. Oil consumption was abnormal by 45,000 miles. Ultimate compression test revealed values ranging between 14 and 21 bar! Oil consumption about one quart per 600 miles. Engine rebuilt with short block.

Harry Hughes Mr. Hughes' car is a 1992 300SD. Purchased in 1996 with 69,000 miles; engine had been replaced in 1995 at 64,000 miles due to excessive oil consumption. Current mileage 120,000; no problems.

Vijay Kumar Mr. Kumar's car is a 1991 350SD. He is the second owner. It was acquired at 124,000 miles and shortly thereafter he replaced the turbo. Oil consumption about one quart every 600 miles. Compression test now reveals abnormalities. Dealer quotes him $6500 for short block or $7300 for long block, plus labor. No resolution or repair.

Walt Lasher Mr. Washer's car is a 1992 300SD (rebadged as a S350). Walt's travails are well known to most of us. He is the second owner; it was purchased at 72,000 miles. Despite Starmark Inspection car manifested numerous deficiencies. Excessive oil consumption; compression tests revealed irregularities. Short block, then turbo, then exhaust system replaced. Walt estimates total repair cost to Starmark at about $18,000. Currently with 75,000 miles; running great. MBNA refuses to be specific as to what 'improvements' were made to remanufactured engine to address design defect.

Randy Leiser Mr. Leiser's car is a 1991 350SDL. He is the second owner; he acquired the car in 1994 at 44,000 miles. Blown head gasket at 108,000 miles; repaired; out-of-warranty but some accommodation reached. Now with 173,000 miles; runs fine.

Dale Lockwood Mr. Lockwood's car is a 1992 300SD. Oil consumption 3 quarts in 1,000 miles. Current status unknown.

Bob Mahoney Mr. Mahoney takes the prize for bad luck. His first 3.5 liter turbodiesel S-Class Mercedes was a 1991 350SD. It sustained a catastrophic engine failure at 175,000 miles; engine rebuilt for $7,000 in April 1998. He also had a 1994 S350. It too experienced a catastrophic engine failure at 65,000 miles in May 1998.

Jackie Manson Mr. Manson's car is a 1994 S350. He is the second owner; he purchased it in 1998 at 48,000 miles. Problems became apparent immediately thereafter. Compression ranged from 320 to 400. Disassembly revealed two bent rods and numerous other problems including elliptical cylinders. A new short block and reconditioned head were installed; car runs fine now.

Peter Quinn Mr. Quinn reports that he has a friend with a 1990 350SDL that needed a new engine at 90,000 miles.

Dan Rajaratnam Mr. Rajaratnam's car is a 1991 350SDL. In was in need of a major rebuild at 71,500 miles. Present status unknown.

Chuck Rippel It is reported to me that Mr. Rippel owns a 1991 350SDL that required an engine rebuild at 60,000 miles.

Jag Sehra Mr. Sehra owns a 1991 350SDL. Excessive oil consumption. Short block installed.

Steve Sims Mr. Sims situation is unclear, but I am advised that he received a short block.

Wilton Strickland Mr. Strickland's car is a 1991 350SDL. It experienced a catastrophic failure at 89,000 miles.

Doris Wait Ms. Wait's car is a 1991 350SD. She is the second owner; the first owner received new pistons, connecting rods, and timing chain at 47,000 miles. Now has 70,000 miles; she reports that the engine is "making noise."

For a car company as large as Mercedes, this list of problem owners may not seem very long. However, this particular engine was essentially a limited production item – Mercedes sold over 175,000 cars in North America in just 1998, yet only 8,002 cars over six years are the subject of this study. I have been following the MBCA list closely for over a year now, being alert to anyone that owns one of these cars, and I can honestly say that a majority have experienced a serious problem. I periodically call owners that list their cars for sale in the classifieds and here also a majority of those with about 100,000 miles have experienced the types of problems discussed here; it is the rare car indeed with 150,000 miles or more that has not undergone some major internal engine repair.

My principal source for disgruntled owners has been the MBCA list. There are approximately 1,300 members 'on-line.' Considering the wide variety of models represented by those members, the frequency of complaints about the 3.5 engine is completely out of proportion.

QUESTIONS FOR MBNA

Anyone who enters into any sort of dialogue with Mercedes Benz of North America about these problem engines would be well-advised to ask the following questions. And, on the assumption that at least one MBNA/MBUSA representative is lurking out there and monitoring this list, be advised that we want, and intend to get, answers!

1. Do you consider the number and severity of problems experienced by 3.5 owners to be disproportionate to the number of such vehicles sold?

2. How many such problems are known to you?

3. What is your explanation?

4. When did these problems first come to your attention?

5. Were any corrective measures taken while this engine was still in production?

6. Was this engine, in this form, used in any other car or application elsewhere in the world?

7. Why were the annular channels deleted?

8. Were the connecting rods lightened as well as shortened?

9. Were any changes made to the head and/or head gasket during production?

10. Is the failure rate for this engine disproportionate when compared to the failure rate of the 603.96x?

11. Have any remanufactured engines experienced similar problems?

12. Why the change in position regarding sleeving during rebuilding?

13. What are 'optimized pistons?'

14. If a remanufactured short block was purchased from MBNA today, in what respects, if any, would it differ from that initially installed?

15. Are any long blocks (i.e. complete engines) available?

16. Has any thought been given to retrofitting problem cars with either 603.96x engines, or some intermediate version with the 3.5 liter bore but the 3.0 liter stroke?

17. If it is your position that a remanufactured 603.97x engine will achieve the same useful life as a 603.96x, what is your explanation for the problems with those 603.97x that were originally installed?

CONCLUSION

The sales promotional brochure for the 1991 TurboDiesel S-Class touted the engine's "frugality and long-term dependability that have long distinguished compression-ignition engines." This has proven to be completely untrue. Spending $10,000 to $15,000 to rebuild the engine after only 100,000 miles hardly seems to be an exercise in 'frugality,' especially considering the high purchase price of the car. Indexed for inflation, the MSRP for these cars would equal, and in some instances (1994, to be sure) would exceed, that of the Model Year 2000 S-Class just now being introduced. How well would those cars sell if their owners were told to expect a major engine rebuild, in some cases before their loan was even paid off?

We could buy safe, basic, reliable transportation and spend a lot less money than Mercedes charges us for their cars. We pay the premium price because we believe in the quality of the vehicle and the commitment of its manufacturer. We have a right to be upset.

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FOR FORTHER INFORMATION, FEEDBACK, ETC.

Readers receiving this Newsletter are invited to communicate directly with me. Subscribers to the MBCA List should consider posting their messages there as well. I encourage you to share your own thoughts and knowledge on the cause of these problems. Information about specific cases, not discussed here, would be particularly appreciated. I plan to incorporate any feedback, further information, and MBNA/MBUSA response, in future Newsletters and/or a Website.

Thank you for your interest.

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