HEAVY-DUTY ENGINE OIL CLASSIFICATION PANEL

OF
ASTM D02.B0.02
June 27, 2006
Sheraton Centre Toronto Hotel

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ACTION ITEMS

1. Forward the Mack Surveillance Panel Templates to the HDEOCP. Jim McGeehan/Jim Moritz

MINUTES

- 1.0 Call to order
 - 1.1 The Heavy Duty Engine Oil Classification Panel (HDEOCP) was called to order by Chairman Jim McGeehan at 1:05 p.m. on Thursday, June 27, 2006, in the Dominion Ballroom South of the Sheraton Centre Toronto Hotel, Toronto, Ontario.
 - 1.2 There were 18 members present and 46 guests present. The attendance list is shown as Attachment **2.**
- 2.0 Agenda
 - 2.1 The agenda shown (included as Attachment 1) was modified to include a T-12 report and a PC-10 fuel update. A presentation was also made with a proposal to use the Mack T-12 in place of the T-9 and T-6 tests
- 3.0 Minutes
 - 3.1 The minutes were approved as written.
- 4.0 Membership
 - 4.1 There were five membership changes. See Attachment 3. Shawn Whitacre replaces Dave Stehouwer at Cummins, Hind Abi-Akar replaces Abdul Cassim at Caterpillar, Bob Olree replaces Robert Stockwell at GM, Cathy Devlin replaces Charlie Passut at Afton, and Victor Kersey will replace Bill Runkle at Ashland.
- 5.0 Results on API CJ-4 ballot in D4485
 - 5.1 The ballot for CJ-4 in D4485 passed with one negative. See Attachment **4**. The ballot had an 85% return rate. There were 27 affirmative votes, 1 negative, and 13 abstains. Five affirmative votes had comments. The comments include: remove the label "EGR" from the test names, modify the elastomer table to include Vamac G, the seals table needs to be corrected for polyacrylate elongation to show +10/-35, and asked if Cl-4 PLUS should be included. The group agreed with the comments and decided that Cl-4 PLUS should not be included.

5.2 Discussion ensued to resolve the negative vote about the term "anchor". Dave Stehouwer showed why the term "anchor" should be used. See Attachment 5. The OEMs don't consider the anchors as targets that should be achieved. Dave Stehouwer moved to rule the negative non-persuasive. Steve Kennedy (and others) seconded. Comments followed. For consistency, the T-10 should be changed from target to anchor as well. This is a Subcommittee B ballot, so this group can not actually rule the negative non-persuasive. The motion was modified to recommend to Sub-committee B that the negative vote be considered non-persuasive. The motion passed unanimously with 18 votes for, 0 against and 0 waives. Greg Shank moved that the HDEOCP ask Sub-committee B to change the T-10 to use the term anchor in place of target. Steve Kennedy seconded. The motion passed unanimously with 18 votes for, 0 against and 0 waives.

6.0 Mack T-12 to Mack T-10 limits

6.1 The exit criteria ballot for the T-12 to the T-10 limits from the previous meeting was approved with 20 affirmative votes. See Attachment 6. Greg Shank **moved** to send the T-12 to T-10 equivalent limits to Sub-committee B and ask that this be "fast-tracked" with an electronic ballot. Lew Williams seconded. The **motion passed** with a unanimous voice vote.

7.0 Mack T-11A to Mack T-10A

- 7.1 Wim van Dam discussed the possibility of offering the T-11A as a replacement for the T-10A. The T-10 test is almost obsolete, but there is still one calibrated T-10A stand available now. The Mack Surveillance Panel has asked for data to develop a correlation between the T-10A and the T-11A. The TMC has created a template and it has been sent already. The Surveillance Panel has also sent a template for T-11 to T-8 data. Pat Fetterman asked that the templates be sent to the wider distribution of the HDEOCP.
- 8.0 Action item from HDEOCP meeting on October 27, 2005
 - 8.1 The HDEOCP action allowing a CAT 1P in place of the 1R needs to be sent to Sub-committee B for a ballot. Chairman McGeehan will report it at B.

9.0 DEOAP Report

9.1 Steve Kennedy reported that the DEOAP has been creating some communications for the industry to address possible questions from end users. The group will go forward with printed material as there is not time or resources for a video.

10.0 API CJ-4 Learning Look-back

10.1 Charlie Passut showed the ACC consensus presentation on opportunities to improve efficiencies. See Attachment 7. Many desirable aspects of category development occured, but a few problems still existed. Cooperation between trade groups was good. The ACC desires a longer category life. Some ideas for improvement were suggested. The ACC recommends forming teams to investigate the top 5 issues that need improvement with a deadline for reporting. Lew Williams added that the ACC would like a commitment from the HDEOCP for the support to form these teams between categories to improve the process. There were teams during PC-10 development that were task oriented. What is being asked is for teams that are process oriented to lay the groundwork for the next time tasks are needed. The main objective is to start a little earlier. The EMA has started talking about gathering data as oils and engines are put into use. The EMA does want to improve the process. DEOAP actually owns the new category development. This will have to be considered. Lew Williams moved that the HDEOCP create a team to identify processes for improvement and that the support for the team will be there when needed. Bill Kleiser

- seconded. Chairman McGeehan added that the team could investigate the applicability of a global specification. The **motion passed** with 17 votes for, 0 against and 1 waive. Roger Gault suggested that the initial step should be a small group representing the 3 groups. Greg Shank suggested it should be himself, Lew Williams, and Steve Kennedy.
- 10.2 Chairman McGeehan also had a presentation showing seven successful factors for delivery of the category. See Attachment 8. All interested parties were on the same team and compromise worked. Hopefully this category can be worked into a world specification.

11.0 T-12 to replace the older tests in older specifications

11.1 Phil Scinto presented a proposal to use the Mack T-12 for the older Mack tests. See Attachment 9. Phil said we have some things we know, we have some things we're assuming and there are some things we don't have, like data. Lubrizol took a look at this and using some of their candidate data developed this proposal. Without any data and a desire to keep these categories going, Lubrizol took a best guess at these limits. Phil asked that other companies take these proposed limits and compare them to their own data. Greq Shank announced that the EMA recently discussed what categories need to be maintained. For the first time, the EMA decided that CF-4 could go away and that CG-4 could go away. The minimum category that EMA would like to see maintained is CH-4. The Cummins HST test stills needs a correlation with the ISM if CH-4 is the baseline. Oils marketed as CF and CG would not have actual engine tests to back them up. CF-4 is still commercially active in parts of the world. Lubrizol would like to run a CF-4 oil in a Mack T-12 test. Lew Williams reiterated the request for other companies to bring forward data. Steve Kennedy reminded the HDEOCP that the Surveillance Panels could handle this initially and develop the recommendations. The HDEOCP recommends that the Mack and Cummins Surveillance Panels address this. Pat Fetterman pointed out that the background data exists at the HDEOCP level and the Surveillance Panels will need help from this group.

12.0 Mack T-12 Piston Deposit ratings.

12.1 The Mack Surveillance Panel moved to eliminate the piston ratings from the T-12. The vote at the Surveillance Panel was 3 for, 1 against, and 9 waives. The Surveillance Panel requests feedback from the HDEOCP. If this panel indicates that piston deposit ratings are desirable, then the Surveillance Panel can re-address. John Zalar reminded the HDEOCP that since there was one negative vote at the Surveillance Panel, the Information Letter will have to be balloted at Sub-committee B before it takes effect. The HDEOCP doesn't need to act.

13.0 PC-10 Fuel Availability

13.1 Jim Gutzwiller announced that a lab had a delivery delay of PC-10 fuel. See Attachment 10. The fuel supplier did experience a problem delivering PC-10 fuel to the labs. The supplier is still tight on PC-10 supplies and will be through the third quarter. Also, at times, the fuel supplier injects the required dye into the tank truck rather than the whole supply. Sometimes, the first few gallons coming out of the truck will not look dyed. This is just to make everyone aware of the issues.

14.0 Next meetings

- 14.1 The next meeting is scheduled for December 5, 2006 during ASTM in Miami, FL.
- 15.0 The meeting was adjourned at 2:45 pm.

Final Agenda ASTMSECTION D.02.BO.02

Attachment 1; Page 1 of 1

HEAVY-DUTY ENGINE OIL CLASSIFICATION PANELS

Sheraton Center Toronto Hotel June 27th, 2006 1:00 pm-5:00 pm

Chairman/ Secretary: Jim Mc Geehan/Jim Moritz

Purpose: API CJ-4

Desired Outcomes: Complete API CJ-4 ASTM D4485 ballot

TOPIC	PROCESS	WHO	TIME	
Agenda Review	Desired Outcomes & Agenda	Group	1:00-1:05	
Minutes Approval	• January 26 th , 2006	Group	1:05-1:10	
Membership	Changes: Additions	Jim Mc Geehan	1:10-1:15	
Results on API CJ-4 ballot in D4485.	 Review results Discuss and vote on any issues Report recommendation to B 	Jim McGeehan Group	1:15-2:15	
Mack T-12 to Mack T- 10 limits	 Review positive "Exit-Ballot" results Report recommendation to B and issue a ballot. 	Jim Mc Geehan Greg Shank	2:15-2:30	
Mack T-11A to Mack T-10A	Discuss potential limits from the surveillance panel Recommendation	Greg Shank	2:30-3:00	
Action item from HDEOCP meeting on Oct 27 th 2005	etion item from DEOCP meeting on • Affirmative vote (17 affirmative to zero); Cat IP be allowed as an		3:00-3:15	
DEOAP report			3:15-3:30	
API CJ-4 Learning Look-back			3:30-4:00	
Next Meetings	December 6 th 2006			

HDEOCP Attendance List

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Voting Members of ASTM HDEOCP

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1	Jim A. Mc Geehan – ChevronTexaco	Greg Shank – Volvo Power Train
2	Steve Kennedy - ExxonMobil	Shawn Whitacre - Cummins Inc.
3	Matthew Urbanak - Shell	Mesfin Belay - Detroit Diesel
4	Steve Goodier - Castrol	Hind Abi-Akar - Caterpillar Inc.
5	Bill Runkle - Ashland	Heather DeBaun - International
6	Scott Harold - CIBA	Ken Chao - John Deere
7	Steven Herzog - RohMax	Bob Olree - GM Powertrain
8	Cathy Devlin - Afton	
9	Bill Kleiser - Oronite	
10	Lew Williams - Lubrizol	
11	Pat Fetterman - Infineum U.S.A.	
12	David Taber,-ConocoPhillips	
13		
14		



SUBCOMMITTEE BALLOT REPORT D02.B0 (06-01)

PAGE 1 06/06/06

BALLOT ISSUE DATE: 05/04/06 CLOSING DATE: 06/05/06 NEXT SUB COMMITTEE MEETING IS 06/25/06 IN TORONTO CANADA

ITEMS WITHOUT NEGATIVES WILL BE ON NEXT MAIN COMMITTEE BALLOT

STAFF MANAGER: DAVID R BRADLEY

SUBCOMMITTEE OFFICERS: SUB CHRMN JOSEPH M FRANKLIN

SUB V-C TRACEY KING

SUB SEC LEWIS A WILLIAMS

NO OF ITEMS BALLOTS SENT BALLOTS RETURNED PERCENT RETURN

Please note that only voting members are counted in the tally of ballots. Also note that negative votes and comments from voting and non-official voting members shall be considered in accordance with the "Regulations Governing ASTM Technical Committees". Ballot report information and statements accompanying negative votes and comments shall not be reproduced or circulated in whole or part, outside if ASTM Committee activities, except with the approval of the Chairman of the committee having jurisdiction and President of the Society.

ITEM SUB ACTION AFF NEG ABST PCNT

001 B0 REVISION OF D4485-06 D02.B000 27.00 1.00 13.00 96.42

TECHNICAL CONTACT : LYLE O BOWMAN

WORK ITEM: WK10881

TABLE 1

NEGATIVE VOTERS:

LYLE O BOWMAN

COMMENTS:

DAVID M STEHOUWER PH D
DOUGLAS E DECKMAN
THOMAS J COUSINEAU
* ABDUL H CASSIM
* CHRISTIAN CASTANIEN

^{*} INDICATES NON-OFFICIAL VOTING MEMBER

Negative

Date: 5/8/2006

Ballot Number: D02.B0 (01-06) Close Date: JUNE 05, 2006

Item Number: 001 REVISION OF D4485-06 SPECIFICATION FOR Performance of En-

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TABLE 1(SEE VOLUME 05.02)

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File Attachment: 000102662_D02B0000106_1.doc

Statement:

I'm voting negative because the ambiguous term 'Anchor' is used for the mid-range test result values in the proposed D 4485 engine test merit systems contained in this ballot.

The mid-range test result values in D 4485 engine test merit systems are particularly important, because if candidate oil test results exactly duplicate the mid-range values, the total merits received will equal 1000, the minimum passing merits total.

Previously, when the Mack T-10 specification limits were discussed in a HDEOCP Meeting, the panel agreed that the term 'Target', rather than 'Anchor', was more descriptive of what was intended for the mid-range test result values in the proposed merit system. Subsequently, the T-10 specification limits, including the term 'Target', are now contained in Specification D 4485.

Definitions of the term 'Anchor', such as "a reliable support" and "something that serves to hold an object firmly", seem irrelevant for describing what the mid-range test result values in a D 4485 engine merit system represent.

In contrast, definitions for the term 'Target', such as "a mark to shoot at" and "a goal to be achieved", are very relevant in describing accurately what the mid-range test result values represent in D 4485 engine test merit systems, particularly in terms of the merits received; i.e., the mid-range, or 'Target', values are the marks to shoot at to achieve a goal of 1000 merits, minimum, a passing score.

Because of the precedent of using 'Target' in the MackT-10 merit system, and because of the forgoing discussion of the ambiguous term 'Anchor' and the contrasting relevancy of the term 'Target', I cannot support the use of the term 'Anchor' in this ballot.

Lyle Bowman

Date: 5/5/2006

Ballot Number: D02.B0 (01-06) Close Date: JUNE 05, 2006

Item Number: 001 REVISION OF D4485-06 SPECIFICATION FOR Performance of En-

gine Oils WK10881

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Email Address: DMSTEHOUWER@COMCAST.NET

File Attachment:

Statement:

Under Elastomer Compatability, the limits for Vamac G should be in the table with the other elastomers.

Date: 6/1/2006

Ballot Number: D02.B0 (01-06) Close Date: JUNE 05, 2006

Item Number: 001 REVISION OF D4485-06 SPECIFICATION FOR Performance of En-

gine Oils WK10881

TABLE 1(SEE VOLUME 05.02)

TECHNICAL CONTACT: LYLE O BOWMAN

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Member's Name: DOUGLAS E DECKMAN

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PAULSBORO RESEARCH LAB

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File Attachment:

Statement:

- (1) The "EGR" should be removed from the names of the engine tests -- T-12, ISM, ISB, and C13 -- since this is not part of the names for these tests. This is particularly true since the C13 uses ACERT technology, not cooled EGR
- (2) Seal Requirement Tables -- although Vamac G is not part of D7216, it would be useful to modify the table to include Vamac G to have all five elastomer compatibility requirements in the same format.

Date: 6/6/2006

Ballot Number: D02.B0 (01-06) Close Date: JUNE 05, 2006

Item Number: 001 REVISION OF D4485-06 SPECIFICATION FOR Performance of En-

gine Oils WK10881

TABLE 1(SEE VOLUME 05.02)

TECHNICAL CONTACT: LYLE O BOWMAN

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Member's Name: THOMAS J COUSINEAU
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File Attachment:

Statement:

Two editorial comments/questions

On page 5, should ASTM D 7216 Seal Compatibility Polyacrylate Elongation limits be $(+\ 10\ /\ -35)$ rather than $(+\ 20\ /\ -35)$?

For A1.1.1 and A1.1.2 should CI-4 PLUS be included?

Date: 5/17/2006

Ballot Number: D02.B0 (01-06) Close Date: JUNE 05, 2006

Item Number: 001 REVISION OF D4485-06 SPECIFICATION FOR Performance of En-

gine Oils WK10881

TABLE 1(SEE VOLUME 05.02)

TECHNICAL CONTACT: LYLE O BOWMAN

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Phone Nr: 3095789096 Fax Nr: 3095783653

Email Address: cassim_abdul_h@cat.com

File Attachment:

Statement:

In Table 3C, the C13 is qualified as and (EGR) engine. This is incorrect. The C13 ACERT 2004 engine does not use EGR technology. The wording and parantheses should be removed from the table and simply addressed as C13

Date: 5/15/2006

Ballot Number: D02.B0 (01-06) Close Date: JUNE 05, 2006

001 REVISION OF D4485-06 SPECIFICATION FOR Performance of En-Item Number:

gine Oils WK10881

TABLE 1(SEE VOLUME 05.02)

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Email Address: File Attachment:

Statement:

A number of editorial changes were suggested and not incorporated. These changes will come up again and need to be incorporated in a timely manner.

Anchor VS. **Target** for **Merit Systems**





Anchor Point: Definition

- Webster defines "to anchor":
 - "To secure firmly or fix"
- CJ-4 Includes Merit systems for Mack,
 Cummins & Cat.
 - Merit points are added for values between the Maximum and Anchor
 - Merit points are subtracted for values between the Minimum and the Anchor
- The Anchor is the mathematical value about which the system is fixed



Anchor Point: OEM view

- Anchor Points are NOT considered Targets
- Cummins and Mack tests ask for Merits different from CJ-4
 - These tests and the Merit System are used in other applications than CJ-4
 - Referring to the Anchor as "Target" gives an impression that is not valid for all situations for which the tests are used



Anchor Point: Other Uses

- Cummins CES 20081, Mack EO-O and Cat ECF-3 all use the Merit Systems and the Term Anchor
- The NCDT, and API Lubes Committee have accepted this terminology and included it in API 1509
- For consistency, ASTM 4485 should use the same terminology as all the other specifications
- It's what we will all continue to use anyway



Motion

• For the above reasons, I move the negative non-persuasive.



Mack T-12 to Mack T-10 Limits

(The Mack T-12 Will Replace the Mack T-10 Test With Limits Proposed)

	Cylinder Liner Wear	Top Ring Weight Loss	Oil Consumption	Delta PB	PB2
Weight	250	200	150	200	200
Max.	26	117	95	42	18
Anchor	23	82	82	35	13
Min.	12	47	50	10	0

Passed Unanimously

Mack T-12 to Mack T-10 Limits



(20 Affirmatives, 0 Negatives)

Company	Name	Affirmative	Negative
Afton Chemical	Charles Passut	X	
BP	Steve Goodier	Х	
Caterpillar Inc	Abdul Cassim	0	
Chevron Oronite LLC	Wm. Kleiser	Х	
Chevron Corporation	Jim Mc Geehan	Х	
Ciba Specialty Chemicals	Scott Harold	Х	
ConocoPhillips	David E. Taber	Х	
Cummins	David M. Stehouwer	Х	
DDC	Mesfin Belay	Х	
Dana Corporation	Howard Robins	Х	
Deere & Co	Ken Chao/Wm Place	Х	
EMA	Roger Gault	Х	
ExxonMobil	Steven Kennedy	Х	
GM	Robert Stockwell	Х	
Infineum	Pat Fetterman	Х	
Int'l Truck & Engine	Heather DeBaun	Х	
Lubrizol	Lewis Williams	Х	
Mack Division-Volvo Powertrain	Greg Shank	Х	
RohMax	Steven Herzog	Х	
Shell	Matthew Urbanak	Х	
Valvoline	Wm. Runkle Jr.	Х	
	Totals	20	0

Opportunities to Improve Efficiency in Category Development Presentation to the HDEOCP on Lessons Learned in PC-10—6/27/06



Opportunities to Improve Efficiency in Category Development

- Current State
- What is Needed
- Ideas for Improvement
- Recommendations

Current State

- Industry wide cooperation has improved significantly—
 more can be done to improve the effectiveness and
 efficiency of the process. Focus on better use of
 transition periods between categories….
- The current process does not fully meet everyone's needs.— test development and technology demonstration are compromised to meet a deadline.
 - Timing of EPA emissions regulations limits flexibility.
 - Performance profile based on limited knowledge of future specification needs.
 - Decisions on tests to be included occurs late in the process.
 - Limited time between final test procedure, test acceptance and limit setting.
 - Candidate approval time needed to qualify products for all classes of customers is negatively impacted

Current State (cont.)

- New test development often takes longer than anticipated -compressing time needed for later category steps.
 - OEM hardware/emission strategies not finalized when test development begins.
 - Time pressure forces acceptance of unproven tests.
 - Test developed by updating hardware from previous tests (hardware different from field). As tests are developed the hardware continues to change = not enough time for new test development.
 - Data required to drop old tests (and old reference oils) is often not available resulting in redundancies
- The outcome of API CJ-4 is not yet known since first licensing is 10/15/06. Final lessons learned can be discussed at the 12/2006 HDEOCP meeting.

What is Needed

- Industry wide cooperation:
 - Essential to improve the effectiveness and efficiency of the category development process.
 - A clear understanding of all issues concerning all stakeholders must be developed with a commitment to address all issues.
- Longer Category Life:
 - Current rate of new category development is not sustainable; longer category life is needed.
- Performance tests:
 - Chemical limits are less desirable.
 - Correlation to field needs to be demonstrated.
 - Quality bench tests can be valuable.
 - Stable test platforms required
- Firm time commitment:
 - For test development and correlation
 - For technology assessment

Ideas for Improvement

- Reach early consensus on key issues
 - Needs Statement
 - Funding process for Matrix testing
 - Old and new engine tests to be included in "C" and OEM specs
 - Discovery and elimination of redundant tests.
 - Timeline
 - » including firm decision dates.
 - » Clear understanding of consequences of late delivery (in any step of the process).
- Consider options for greater industry participation in engine/ dyno development process.
- Build BOI/VGRA testing into Precision Matrix
 - Base stock type/availability and vis grades desired are changing.
 - Required for shortened category deployment.
- Develop a process to correlate testing from new tests to old tests.

Recommendations

- Maintain current category approval structure but focus on improvements in timing and decision making.
- Identify the top 5 issues that need improvement over PC-10 by June 2007 ASTM meeting.
- Motion to form a team of volunteers from the HDEOCP.
- Form small teams, at the June 2007 ASTM, to address the 5 performance issues from PC-10, that would be included in a new category. Teams report to the ASTM HDEOCP.
- Teams have a firm date of December 2007 ASTM meeting to recommend improvements.
- Final agreement at June 2008 ASTM meeting.

Seven Successful Factors for Attack Delivery of HDMO Oil Categories



- 1. Focus on API CJ-4 Timing Timeline
- 2. Frequent Meetings: HDEOCP NCDT DEOAP
- 3. Effective Meeting and Task-Force Groups
- 4. Exit-Criteria
- 5. Funding for CJ-4 Category
- 6. All on Same Team
- 7. Compromise "Can You Live With It"

T-12 Limits When the T-12 is Used to Replace the T-10, T-9 and T-6

Draft 6/19/06

Test Run is T-12

Test	T-12	T-10	T-9	T-6
Replace API "C"	CJ-4 limits	CI-4	CH-4	CF-4
TRW	105	117	120	180
	103	1 1 7	130	100
Loss				
Liner Wear	24	26	34	47
EOT Pb	35	42	67	

The outage in May was due to a key feedstock being off specification (high in Sulfur) for an extended period of time. This was in line with a planned Unit Turnaround and a subsequent unplanned upset. As a result, supplies were affected.

Going forward, we anticipate that product supplies will be tight through 3Q06. While this could result in 1-2 day delays, our production schedule and feedstock availability is geared to cover demand.

Providing additional lead-time will be a good idea though in view of the tightness of product transportation equipment combined with the tight product supply situation. We don't want to over promise and under deliver but our efforts and plans revolve around supplying in a manner to avoid a repeat of the May '06 experience

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